

October 29, 2021

Mr. Richard Schermerhorn
Schermerhorn Construction
536 Bay Road, Suite 2
Queensbury, NY 12804

RE: Traffic Assessment, 112 Harrison Avenue Apartments, 112 Harrison Avenue, Town of Moreau, Warren County, New York; CM Project 121-345

Dear Mr. Schermerhorn:

Creighton Manning Engineering, LLP (CM) has conducted a Traffic Assessment for the proposed *112 Harrison Avenue Apartments* located at 112 Harrison Avenue in the Town of Moreau. This assessment is based on information provided in the "Site Plan," prepared by Environmental Design Partnership, LLP, dated September 7, 2021 (see Attachment A).

1.0 Project Description and Existing Conditions

The proposed project includes the development of four apartment buildings with four units each on the south side of Harrison Avenue in the Town of Moreau. The proposed development will replace an existing single family home. Access to the site is proposed via a new unsignalized driveway located on Harrison Avenue approximately 530-feet west of Sisson Road. The existing driveway associated with the residential home will be removed. The project location is shown on Figure 1.

2.0 Existing Conditions

Roadway Serving the Site

Harrison Avenue is classified as an urban minor arterial with two 10 ½-foot wide travel lanes in each direction and one-foot wide shoulders in the vicinity of the site. Harrison Avenue travels in an east-west direction through the Village of South Glens Falls and in the Town of Moreau. The posted speed limit is 30-mph. Sidewalks are not provided on Harrison Avenue and the land uses along the roadway generally consist of residential uses, commercial uses, and the *Harrison Avenue Elementary School*.

Data Collection

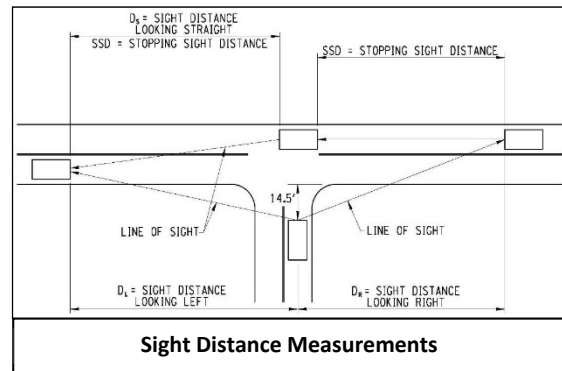
Creighton Manning collected volume and travel speed data on Harrison Avenue near the site driveway from Thursday, October 14, 2021 to Wednesday, October 20, 2021. The 85th percentile operating speed on Harrison Avenue was measured to be 41-mph in the eastbound direction and 39-mph in the westbound direction. The detailed speed data is included under Attachment B. Traffic volume data collected by CM in October 2021 indicates that Harrison Avenue serves approximately 3,365 vehicles per day (vpd) in the project corridor.



3.0 Sight Distance

A sight distance evaluation was completed at the proposed site driveway intersection with Harrison Avenue. Available *intersection* sight distance was measured from the perspective of a passenger car exiting the site and for a passenger car traveling westbound along Harrison Avenue looking straight ahead to turn left into the site driveway. The available intersection sight distance should provide drivers a sufficient view of the intersecting roadway to allow passenger cars to enter or exit the intersection without excessively slowing vehicles traveling at or near the operating speed on the intersecting mainline.

Stopping sight distance was also measured on Harrison Avenue at the proposed site driveway location. Stopping sight distance is the length of the roadway ahead that is visible to the driver. The available stopping sight distance on a roadway should be of sufficient length to enable a vehicle traveling at or near the operating speed to stop before reaching a stationary object in its path. The diagram illustrates these sight distance measurements.



The sight distances measured in the field were compared to the guidelines presented in *A Policy on Geometric Design of Highways and Streets, 2018* published by the American Association of State Highway Transportation Officials (AASHTO) and NYSDOT design guidance (EB 17-007) for the measured 40-mph travel speed in the eastbound and westbound directions. The results of the sight distance analysis are summarized in Table 1.

Table 1 – Sight Distance Summary (feet)

Intersection		Intersection Sight Distance ¹			Stopping Sight Distance ²		
		Right-Turn from Driveway (D_L)	Left-Turn from Driveway		Left-Turn from Harrison Avenue (D_S)	SSD _{EB}	SSD _{WB}
			Looking Left (D_L)	Looking Right (D_R)			
Harrison Avenue/ Site Driveway	Available	>950	>950	530	>950	900	
	Recommended	430	500	500	330	330	

¹ Intersection sight distance is measured at 14.5 feet back from the travel way at an object height of 3.5 feet and an eye height of 3.5 feet for a vehicle.

² Stopping sight distance measured for a 2 foot object located in the path of eastbound and westbound vehicles on Harrison Avenue at an eye height of 3.5 feet.

XXX = Available Sight Distance

The available intersection sight distance and stopping sight distances for a passenger car at the proposed Harrison Avenue/Site Driveway intersection meet AASHTO guidelines for the measured 40-mph operating speed. No mitigation is necessary. It is recommended that any site signing be placed a minimum of fifteen feet back from the travel way and that the landscaping plan consider sight lines in order to maintain visibility at the Site Driveway.

4.0 Traffic Assessment

Trip Generation

Trip generation determines the quantity of traffic expected to travel to/from a given site. The Institute of Transportation Engineers (ITE) Trip Generation, 11th edition, is the industry standard used for estimating trip generation for proposed land uses based on data collected at similar uses. The trip generation for the

proposed project was estimated based on ITE Land Use Code (LUC) 220 for Multifamily Housing (Low-Rise). Table 2 summarizes the trip generation estimate during the AM and PM peak hours.

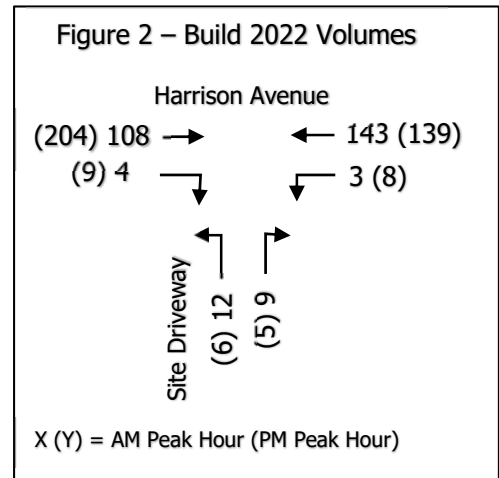
Table 2 – Trip Generation Summary

Land Use	Size	LUC	AM Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total
Multifamily Housing (Low-Rise)	16 Units	220	7	21	28	17	10	27

The proposed project could generate as much as 28 new vehicle trips during the AM peak hour and 27 new vehicle trips during the PM peak hour based on ITE equations. It is anticipated that approximately 55 percent of residents will travel to and from areas west of the site on Harrison Avenue while approximately 45 percent will travel to and from areas east of the site on Harrison Avenue based on a review of existing traffic volumes and local population centers. Traffic generated by the proposed development was distributed onto the surrounding roadway network based on these distribution patterns and probable travel routes. This distribution of traffic results in a maximum increase in traffic of approximately 12 new vehicle trips during the AM and PM peak hours on any one approach to an intersection located adjacent to the project site.

Traffic Volumes

As noted above, traffic volumes were collected on Harrison Avenue in October 2021 which were compared to traffic volume data collected by NYSDOT in April 2019. A review of the data indicates that the 2021 traffic volumes are consistent with historical data and do not need to be factored to account for pandemic conditions. To evaluate the impact of the proposed development, traffic projections were prepared for the expected year of completion, 2022. Historical traffic volume data found in the latest version of the *Traffic Data Report* published by NYSDOT indicates that traffic volumes on Harrison Avenue in the vicinity of the site has increased by approximately three-percent per year, therefore, a general background growth rate of three percent per year was applied for one year. Traffic generated by the proposed 16-unit project was distributed and assigned based on the travel patterns noted above. The results of the traffic assignment were added to the background traffic volumes to develop the Build traffic volumes. The Build traffic volumes represent future traffic conditions at the site driveway on Harrison Avenue after the completion of the project. The 2022 Build traffic volumes are shown on Figure 2.



Traffic Operations

Intersection Level of Service (LOS) and capacity analysis relate traffic volumes to the physical characteristics of an intersection. Intersection evaluations were made using Synchro Version 11 software, which automates the procedures contained in the Highway Capacity Manual. Table 3 summarizes the results of the level of service calculations for the proposed project. The detailed level of service analyses are included under Attachment C.

Table 3 – Level of Service Summary

Intersection	Control	Weekday AM Peak Hour	Weekday PM Peak Hour
		2022 Build	2022 Build
Harrison Avenue/Site Driveway	U		
Harrison Avenue WB LT		A (7.5)	A (7.7)
Site Driveway NB LR		A (9.7)	B (1.4)

Legend: U = Unsignalized intersection
 WB, NB= Westbound, Northbound intersection approaches
 L, T, R = Left-turn, Through, and/or Right-turn movements
 X (Y.Y) = Level of service (Average delay in seconds per vehicle)

The analysis indicates that the Site Driveway intersection on Harrison Avenue will operate at LOS B or better on all approaches during both peak hours. It is recommended that the northbound Site Driveway approach operate under stop sign control and that a single lane entering and exiting be provided.

Roadway Capacity

Roadway capacity criteria provided by the Capital District Transportation Committee (CDTC) indicates that arterial and collector roadways with one lane in each direction have a peak hour capacity of 1,000 vehicles per hour (vph) in each direction or 2,000 vph in both directions. Harrison Avenue currently has a total of approximately 300 vph during the PM peak hour which indicates that approximately 15% of the existing roadway capacity is being used. A review of the trip generation estimate indicates that more than adequate capacity will be provided on Harrison Avenue after development of the proposed site.

5.0 Conclusions

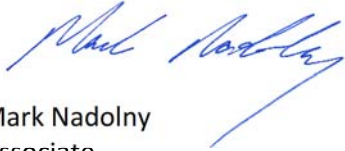
The proposed project includes the development of four apartment buildings with four units each on the south side of Harrison Avenue in the Town of Moreau. The proposed development will replace an existing single family home. Access to the site is proposed via a new unsignalized driveway located on Harrison Avenue approximately 530-feet west of Sisson Road. The existing driveway associated with the residential home will be removed. The following is noted regarding the proposed project:

- The proposed development could generate as much as 28 new vehicle trips during the AM peak hour and 27 new vehicle trips during the PM peak hour, based on ITE equations.
- The level of service analysis indicates that the Site Driveway intersection on Harrison Avenue will operate at LOS B or better on all approaches during both peak hours. It is recommended that the northbound Site Driveway approach operate under stop sign control and that a single lane entering and exiting be provided.
- A review of future traffic volumes and the trip generation estimate indicates that more than adequate roadway capacity will be provided on Harrison Avenue after development of the proposed site.
- The available intersection sight distance and stopping sight distances for a passenger car at the proposed Harrison Avenue/Site Driveway intersection meet AASHTO guidelines for the applicable operating speed. It is recommended that any site signing be placed a minimum of fifteen feet back from the travel way and that the landscaping plan consider sight lines in order to maintain visibility at the Site Driveway.

Mr. Richard Schermerhorn
October 29, 2021
Page 5 of 5

Please feel free to call our office if you have any questions or comments regarding the above evaluation.

Respectfully submitted,
Creighton Manning Engineering, LLP



Mark Nadolny
Associate









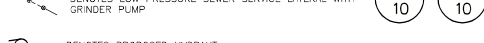





Attachments

N:\Projects\2021\121-345 Schermerhorn - 112 Harris Apartments\Working\Traffic\Reports\20211029_Traffic Assessment_121345.docx

Attachment A
Site Plan

112 Harrison Avenue Apartments
Town of Moreau, New York

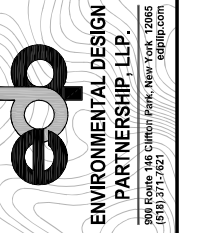
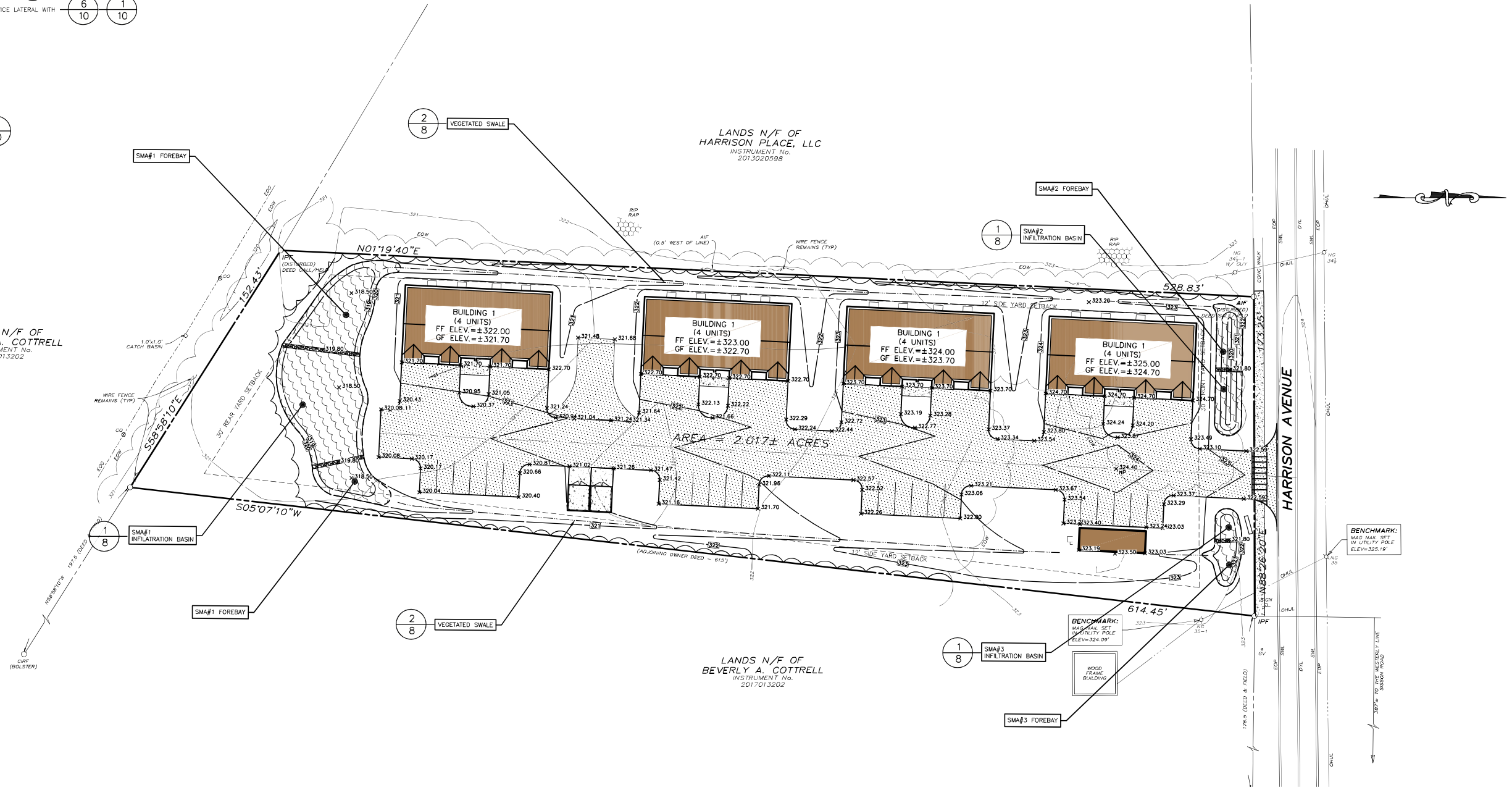
UTILITY AND GRADING PLAN LEGEND:

-  DENOTES TYPICAL PROPOSED SHALLOW CATCH BASIN
-  DENOTES TYPICAL PROPOSED DEEP CATCH BASIN
-  DENOTES FLARED END SECTION
-  DENOTES RIP-RAP OVERFLOW (4/8)
-  DENOTES PROPOSED SPOT ELEVATION
-  DENOTES EXISTING CONTOUR
-  DENOTES PROPOSED CONTOUR
-  DENOTES PROPOSED SANITARY MANHOLE (2/10)
-  DENOTES LOW PRESSURE SEWER SERVICE LATERAL WITH GRINDER PUMP (6/10) (1/10)
-  DENOTES PROPOSED HYDRANT
-  DENOTES PROPOSED M.J. BEND
-  DENOTES PROPOSED VALVE
-  DENOTES PROPOSED M.J. TEE
-  DENOTES WATER SERVICE LINE (3/10)

LANDS N/F OF
BEVERLY A. COTTRELL
INSTRUMENT No.
2017013202

LANDS N/F OF
HARRISON PLACE, LLC
INSTRUMENT No.
2013020598

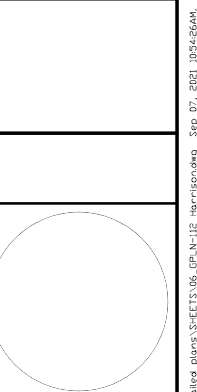
LANDS N/F OF
BEVERLY A. COTTRELL
INSTRUMENT No.
2017013202



TAX MAP ID: 37-1-18
SEPTEMBER 7, 2021

PROPOSED APARTMENTS FOR
112 HARRISON AVE APT.
SCHERMERHORN REAL ESTATE HOLDINGS LP
LOCATED AT 112 HARRISON AVENUE
TOWN OF MOREAU
SARATOGA COUNTY, NEW YORK

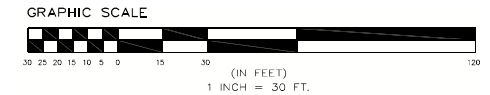
DRAWN BY	SKR
CHECK BY	JCD
EEP PROJECT NUMBER	12842
REVISION	DATE BY



SCALE:
1" = 30'

SHEET TITLE:
GRADING PLAN

SHEET:
4 of 10



R:\SARATOGA\Newell\Newell.dwg - schmerhorn\05-06_DP-N-112_harrison.dwg Sep 07, 2021 10:54:26AM

Attachment B
Speed Data

112 Harrison Avenue Apartments
Town of Moreau, New York

MetroCount Traffic Executive Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-41 -- English (ENU)

Datasets:

Site: [121-345] Harrison Ave, 425 feet west of Sisson Road
Attribute: 112 Harris Apartments
Direction: 8 - East bound A>B, West bound B>A. **Lane:** 1
Survey Duration: 12:55 Thursday, October 14, 2021 => 9:57 Wednesday, October 20, 2021,
Zone:
File: 121-345 0 2021-10-20 0957.EC1 (Plus)
Identifier: FZ12WDHB MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.08)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021 (5.625)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 5 - 100 mph.
Direction: North, East, South, West (bound), P = East, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 300 ft
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Vehicles = 17994 / 18280 (98.44%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-41

Site: 121-345.1.2EW
Description: Harrison Ave, 425 feet west of Sisson Road
Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021
Scheme: Vehicle classification (Scheme F3)
Filter: Cls(1-13) Dir(NESW) Sp(5,100) Headway(>0) Span(0 - 300) Lane(0-16)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages	
								1 - 5	1 - 7
0000-0100	19.0	18.0	19.0	*	27.0	27.0	18.0	20.8	21.3
0100-0200	13.0	7.0	7.0	*	10.0	19.0	13.0	9.3	11.5
0200-0300	8.0	10.0	3.0	*	17.0	13.0	7.0	9.5	9.7
0300-0400	12.0	8.0	7.0	*	11.0	18.0	7.0	9.5	10.5
0400-0500	19.0	23.0	23.0	*	23.0	9.0	13.0	22.0	18.3
0500-0600	51.0	55.0	68.0	*	52.0	35.0	31.0	56.5	48.7
0600-0700	117.0	118.0	107.0	*	119.0	45.0	41.0	115.3	91.2
0700-0800	254.0	228.0	248.0	*	246.0	85.0	55.0	244.0	186.0
0800-0900	213.0	205.0	*	*	202.0	120.0	102.0	206.7	168.4
0900-1000	184.0	181.0	*	*	180.0	179.0	162.0	181.7	177.2
1000-1100	170.0	196.0	*	*	227.0	211.0	168.0	197.7	194.4
1100-1200	178.0	189.0	*	*	210.0	261.0	218.0	192.3	211.2
1200-1300	207.0	216.0	*	*	223.0	273.0	202.0	215.3	224.2
1300-1400	214.0	214.0	*	*	221.0	255.0	229.0	216.3	226.6
1400-1500	269.0	261.0	*	*	297.0	234.0	204.0	275.7	253.0
1500-1600	261.0	295.0	*	*	321.0	197.0	201.0	292.3	255.0
1600-1700	332.0	315.0	*	*	351.0	193.0	205.0	332.7	279.2
1700-1800	294.0	294.0	*	326.0	289.0	175.0	196.0	300.8	262.3
1800-1900	212.0	237.0	*	247.0	318.0	143.0	171.0	253.5	221.3
1900-2000	164.0	171.0	*	161.0	160.0	143.0	136.0	164.0	155.8
2000-2100	114.0	115.0	*	140.0	130.0	121.0	113.0	124.8	122.2
2100-2200	93.0	87.0	*	88.0	129.0	93.0	64.0	99.3	92.3
2200-2300	40.0	58.0	*	49.0	82.0	71.0	36.0	57.3	56.0
2300-2400	21.0	31.0	*	39.0	43.0	40.0	31.0	33.5	34.2
Totals									
0700-1900	2788.0	2831.0	*	*	3085.0	2326.0	2113.0	2908.9	2658.9
0600-2200	3276.0	3322.0	*	*	3623.0	2728.0	2467.0	3412.2	3120.4
0600-0000	3337.0	3411.0	*	*	3748.0	2839.0	2534.0	3502.9	3210.5
0000-0000	3459.0	3532.0	*	*	3888.0	2960.0	2623.0	3630.4	3330.5
AM Peak	0700	0700	*	*	0700	1100	1100		
	254.0	228.0	*	*	246.0	261.0	218.0		
PM Peak	1600	1600	*	*	1600	1200	1300		
	332.0	315.0	*	*	351.0	273.0	229.0		

* - No data.

MetroCount Traffic Executive Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-43 -- English (ENU)

Datasets:

Site: [121-345] Harrison Ave, 425 feet west of Sisson Road
Attribute: 112 Harris Apartments
Direction: 8 - East bound A>B, West bound B>A. **Lane:** 1
Survey Duration: 12:55 Thursday, October 14, 2021 => 9:57 Wednesday, October 20, 2021,
Zone:
File: 121-345 0 2021-10-20 0957.EC1 (Plus)
Identifier: FZ12WDHB MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.08)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021 (5.625)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 5 - 100 mph.
Direction: AB , Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 300 ft
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Vehicles = 9251 / 18280 (50.61%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-43

Site: 121-345.1.2EW
Description: Harrison Ave, 425 feet west of Sisson Road
Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021
Scheme: Vehicle classification (Scheme F3)
Filter: Cls(1-13) Dir(EB) Sp(5,100) Headway(>0) Span(0 - 300) Lane(0-16)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages	
								1 - 5	1 - 7
0000-0100	11.0	9.0	11.0	*	19.0	16.0	12.0	12.5	13.0
0100-0200	8.0	5.0	4.0	*	6.0	12.0	7.0	5.8	7.0
0200-0300	3.0	7.0	1.0	*	5.0	8.0	4.0	4.0	4.7
0300-0400	3.0	3.0	1.0	*	4.0	6.0	5.0	2.8	3.7
0400-0500	8.0	12.0	8.0	*	10.0	5.0	7.0	9.5	8.3
0500-0600	18.0	17.0	27.0	*	18.0	14.0	12.0	20.0	17.7
0600-0700	53.0	50.0	48.0	*	47.0	20.0	22.0	49.5	40.0
0700-0800	107.0	86.0	109.0	*	117.0	32.0	30.0	104.8	80.2
0800-0900	96.0	99.0	*	*	92.0	65.0	48.0	95.7	80.0
0900-1000	97.0	87.0	*	*	91.0	88.0	67.0	91.7	86.0
1000-1100	84.0	105.0	*	*	122.0	106.0	77.0	103.7	98.8
1100-1200	81.0	101.0	*	*	98.0	132.0	104.0	93.3	103.2
1200-1300	103.0	111.0	*	*	120.0	135.0	103.0	111.3	114.4
1300-1400	104.0	90.0	*	*	111.0	127.0	115.0	101.7	109.4
1400-1500	151.0	145.0	*	*	146.0	124.0	105.0	147.3	134.2
1500-1600	153.0	166.0	*	*	174.0	101.0	101.0	164.3	139.0
1600-1700	185.0	184.0	*	*	224.0	99.0	99.0	197.7	158.2
1700-1800	154.0	174.0	*	162.0	162.0	86.0	98.0	163.0	139.3
1800-1900	114.0	116.0	*	131.0	151.0	82.0	96.0	128.0	115.0
1900-2000	88.0	93.0	*	100.0	88.0	79.0	70.0	92.3	86.3
2000-2100	64.0	63.0	*	77.0	80.0	76.0	70.0	71.0	71.7
2100-2200	47.0	47.0	*	53.0	72.0	53.0	36.0	54.8	51.3
2200-2300	20.0	31.0	*	28.0	54.0	39.0	20.0	33.3	32.0
2300-2400	12.0	17.0	*	22.0	24.0	21.0	18.0	18.8	19.0
Totals									
0700-1900	1429.0	1464.0	*	*	1608.0	1177.0	1043.0	1502.4	1357.7
0600-2200	1681.0	1717.0	*	*	1895.0	1405.0	1241.0	1769.9	1607.0
0600-0000	1713.0	1765.0	*	*	1973.0	1465.0	1279.0	1821.9	1658.0
0000-0000	1764.0	1818.0	*	*	2035.0	1526.0	1326.0	1876.4	1712.4
AM Peak	0700	1000	*	*	1000	1100	1100		
	107.0	105.0	*	*	122.0	132.0	104.0		
PM Peak	1600	1600	*	*	1600	1200	1300		
	185.0	184.0	*	*	224.0	135.0	115.0		

* - No data.

MetroCount Traffic Executive Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-44 -- English (ENU)

Datasets:

Site: [121-345] Harrison Ave, 425 feet west of Sisson Road
Attribute: 112 Harris Apartments
Direction: 8 - East bound A>B, West bound B>A. **Lane:** 1
Survey Duration: 12:55 Thursday, October 14, 2021 => 9:57 Wednesday, October 20, 2021,
Zone:
File: 121-345 0 2021-10-20 0957.EC1 (Plus)
Identifier: FZ12WDHB MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.08)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021 (5.625)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 5 - 100 mph.
Direction: BA , Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 300 ft
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Vehicles = 8743 / 18280 (47.83%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-44

Site: 121-345.1.2EW
Description: Harrison Ave, 425 feet west of Sisson Road
Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021
Scheme: Vehicle classification (Scheme F3)
Filter: Cls(1-13) Dir(WB) Sp(5,100) Headway(>0) Span(0 - 300) Lane(0-16)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages	
								1 - 5	1 - 7
0000-0100	8.0	9.0	8.0	*	8.0	11.0	6.0	8.3	8.3
0100-0200	5.0	2.0	3.0	*	4.0	7.0	6.0	3.5	4.5
0200-0300	5.0	3.0	2.0	*	12.0	5.0	3.0	5.5	5.0
0300-0400	9.0	5.0	6.0	*	7.0	12.0	2.0	6.8	6.8
0400-0500	11.0	11.0	15.0	*	13.0	4.0	6.0	12.5	10.0
0500-0600	33.0	38.0	41.0	*	34.0	21.0	19.0	36.5	31.0
0600-0700	64.0	68.0	59.0	*	72.0	25.0	19.0	65.8	51.2
0700-0800	147.0	142.0	139.0	*	129.0	53.0	25.0	139.3	105.8
0800-0900	117.0	106.0	*	*	110.0	55.0	54.0	111.0	88.4
0900-1000	87.0	94.0	*	*	89.0	91.0	95.0	90.0	91.2
1000-1100	86.0	91.0	*	*	105.0	105.0	91.0	94.0	95.6
1100-1200	97.0	88.0	*	*	112.0	129.0	114.0	99.0	108.0
1200-1300	104.0	105.0	*	*	103.0	138.0	99.0	104.0	109.8
1300-1400	110.0	124.0	*	*	110.0	128.0	114.0	114.7	117.2
1400-1500	118.0	116.0	*	*	151.0	110.0	99.0	128.3	118.8
1500-1600	108.0	129.0	*	*	147.0	96.0	100.0	128.0	116.0
1600-1700	147.0	131.0	*	*	127.0	94.0	106.0	135.0	121.0
1700-1800	140.0	120.0	*	164.0	127.0	89.0	98.0	137.8	123.0
1800-1900	98.0	121.0	*	116.0	167.0	61.0	75.0	125.5	106.3
1900-2000	76.0	78.0	*	61.0	72.0	64.0	66.0	71.8	69.5
2000-2100	50.0	52.0	*	63.0	50.0	45.0	43.0	53.8	50.5
2100-2200	46.0	40.0	*	35.0	57.0	40.0	28.0	44.5	41.0
2200-2300	20.0	27.0	*	21.0	28.0	32.0	16.0	24.0	24.0
2300-2400	9.0	14.0	*	17.0	19.0	19.0	13.0	14.8	15.2
Totals									
0700-1900	1359.0	1367.0	*	*	1477.0	1149.0	1070.0	1406.5	1301.2
0600-2200	1595.0	1605.0	*	*	1728.0	1323.0	1226.0	1642.3	1513.3
0600-0000	1624.0	1646.0	*	*	1775.0	1374.0	1255.0	1681.0	1552.5
0000-0000	1695.0	1714.0	*	*	1853.0	1434.0	1297.0	1754.0	1618.2
AM Peak	0700	0700	*	*	0700	1100	1100		
	147.0	142.0	*	*	129.0	129.0	114.0		
PM Peak	1600	1600	*	*	1800	1200	1300		
	147.0	131.0	*	*	167.0	138.0	114.0		

* - No data.

MetroCount Traffic Executive **Speed Statistics**

SpeedStat-45 -- English (ENU)

Datasets:

Site: [121-345] Harrison Ave, 425 feet west of Sisson Road
Attribute: 112 Harris Apartments
Direction: 8 - East bound A>B, West bound B>A. **Lane:** 1
Survey Duration: 12:55 Thursday, October 14, 2021 => 9:57 Wednesday, October 20, 2021,
Zone:
File: 121-345 0 2021-10-20 0957.EC1 (Plus)
Identifier: FZ12WDHB MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.08)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021
(5.625)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 5 - 100 mph.
Direction: North, East, South, West (bound), P = East, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 300 ft
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Vehicles = 17994 / 18280 (98.44%)

Speed Statistics

SpeedStat-45

Site: 121-345.1.2EW
Description: Harrison Ave, 425 feet west of Sisson Road
Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021
Scheme: Vehicle classification (Scheme F3)
Filter: Cls(1-13) Dir(NESW) Sp(5,100) Headway(>0) Span(0 - 300) Lane(0-16)

Vehicles = 17994

Posted speed limit = 30 mph, Exceeding = 16299 (90.58%), Mean Exceeding = 36.48 mph

Maximum = 71.1 mph, Minimum = 6.5 mph, Mean = 35.6 mph

85% Speed = 40.15 mph, 95% Speed = 43.51 mph, Median = 35.46 mph

10 mph Pace = 31 - 41, Number in Pace = 13454 (74.77%)

Variance = 23.46, Standard Deviation = 4.84 mph

Speed Bins (Partial days)

Speed	Bin	Below	Above	Energy	vMult	n * vMult
0 - 5	0 0.000%	0 0.000%	17994 100.0%	0.00	0.00	0.00
5 - 10	23 0.128%	23 0.128%	17971 99.87%	0.00	0.00	0.00
10 - 15	34 0.189%	57 0.317%	17937 99.68%	0.00	0.00	0.00
15 - 20	32 0.178%	89 0.495%	17905 99.51%	0.00	0.00	0.00
20 - 25	153 0.850%	242 1.345%	17752 98.66%	0.00	0.00	0.00
25 - 30	1453 8.075%	1695 9.420%	16299 90.58%	0.00	0.00	0.00
30 - 35	6533 36.31%	8228 45.73%	9766 54.27%	0.00	0.00	0.00
35 - 40	6905 38.37%	15133 84.10%	2861 15.90%	0.00	0.00	0.00
40 - 45	2343 13.02%	17476 97.12%	518 2.879%	0.00	0.00	0.00
45 - 50	424 2.356%	17900 99.48%	94 0.522%	0.00	0.00	0.00
50 - 55	75 0.417%	17975 99.89%	19 0.106%	0.00	0.00	0.00
55 - 60	13 0.072%	17988 100.0%	6 0.033%	0.00	0.00	0.00
60 - 65	2 0.011%	17990 100.0%	4 0.022%	0.00	0.00	0.00
65 - 70	3 0.017%	17993 100.0%	1 0.006%	0.00	0.00	0.00
70 - 75	1 0.006%	17994 100.0%	0 0.000%	0.00	0.00	0.00
75 - 80	0 0.000%	17994 100.0%	0 0.000%	0.00	0.00	0.00
80 - 85	0 0.000%	17994 100.0%	0 0.000%	0.00	0.00	0.00
85 - 90	0 0.000%	17994 100.0%	0 0.000%	0.00	0.00	0.00
90 - 95	0 0.000%	17994 100.0%	0 0.000%	0.00	0.00	0.00
95 - 100	0 0.000%	17994 100.0%	0 0.000%	0.00	0.00	0.00

Total Speed Rating = 0.00

Total Moving Energy (Estimated) = 0.00

Speed limit fields (Partial days)

Limit	Below	Above
0 30 (PSL)	1695 9.4%	16299 90.6%

MetroCount Traffic Executive Speed Statistics

SpeedStat-46 -- English (ENU)

Datasets:

Site: [121-345] Harrison Ave, 425 feet west of Sisson Road
Attribute: 112 Harris Apartments
Direction: 8 - East bound A>B, West bound B>A. **Lane:** 1
Survey Duration: 12:55 Thursday, October 14, 2021 => 9:57 Wednesday, October 20, 2021,
Zone:
File: 121-345 0 2021-10-20 0957.EC1 (Plus)
Identifier: FZ12WDHB MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.08)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021
(5.625)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 5 - 100 mph.
Direction: AB , Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 300 ft
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Vehicles = 9251 / 18280 (50.61%)

Speed Statistics

SpeedStat-46

Site: 121-345.1.2EW
Description: Harrison Ave, 425 feet west of Sisson Road
Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021
Scheme: Vehicle classification (Scheme F3)
Filter: Cls(1-13) Dir(EB) Sp(5,100) Headway(>0) Span(0 - 300) Lane(0-16)

Vehicles = 9251

Posted speed limit = 30 mph, Exceeding = 8664 (93.65%), Mean Exceeding = 37.34 mph

Maximum = 68.8 mph, Minimum = 8.1 mph, Mean = 36.7 mph

85% Speed = 41.38 mph, 95% Speed = 44.52 mph, Median = 36.57 mph

10 mph Pace = 31 - 41, Number in Pace = 6866 (74.22%)

Variance = 23.77, Standard Deviation = 4.88 mph

Speed Bins (Partial days)

Speed	Bin	Below	Above	Energy	vMult	n * vMult
0 - 5	0 0.000%	0 0.000%	9251 100.0%	0.00	0.00	0.00
5 - 10	7 0.076%	7 0.076%	9244 99.92%	0.00	0.00	0.00
10 - 15	17 0.184%	24 0.259%	9227 99.74%	0.00	0.00	0.00
15 - 20	17 0.184%	41 0.443%	9210 99.56%	0.00	0.00	0.00
20 - 25	71 0.767%	112 1.211%	9139 98.79%	0.00	0.00	0.00
25 - 30	475 5.135%	587 6.345%	8664 93.65%	0.00	0.00	0.00
30 - 35	2693 29.11%	3280 35.46%	5971 64.54%	0.00	0.00	0.00
35 - 40	3908 42.24%	7188 77.70%	2063 22.30%	0.00	0.00	0.00
40 - 45	1676 18.12%	8864 95.82%	387 4.183%	0.00	0.00	0.00
45 - 50	324 3.502%	9188 99.32%	63 0.681%	0.00	0.00	0.00
50 - 55	52 0.562%	9240 99.88%	11 0.119%	0.00	0.00	0.00
55 - 60	10 0.108%	9250 100.0%	1 0.011%	0.00	0.00	0.00
60 - 65	0 0.000%	9250 100.0%	1 0.011%	0.00	0.00	0.00
65 - 70	1 0.011%	9251 100.0%	0 0.000%	0.00	0.00	0.00
70 - 75	0 0.000%	9251 100.0%	0 0.000%	0.00	0.00	0.00
75 - 80	0 0.000%	9251 100.0%	0 0.000%	0.00	0.00	0.00
80 - 85	0 0.000%	9251 100.0%	0 0.000%	0.00	0.00	0.00
85 - 90	0 0.000%	9251 100.0%	0 0.000%	0.00	0.00	0.00
90 - 95	0 0.000%	9251 100.0%	0 0.000%	0.00	0.00	0.00
95 - 100	0 0.000%	9251 100.0%	0 0.000%	0.00	0.00	0.00

Total Speed Rating = 0.00

Total Moving Energy (Estimated) = 0.00

Speed limit fields (Partial days)

Limit	Below	Above
0 30 (PSL)	587 6.3%	8664 93.7%

MetroCount Traffic Executive **Speed Statistics**

SpeedStat-47 -- English (ENU)

Datasets:

Site: [121-345] Harrison Ave, 425 feet west of Sisson Road
Attribute: 112 Harris Apartments
Direction: 8 - East bound A>B, West bound B>A. **Lane:** 1
Survey Duration: 12:55 Thursday, October 14, 2021 => 9:57 Wednesday, October 20, 2021,
Zone:
File: 121-345 0 2021-10-20 0957.EC1 (Plus)
Identifier: FZ12WDHB MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.08)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021
(5.625)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 5 - 100 mph.
Direction: BA , Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 300 ft
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Vehicles = 8743 / 18280 (47.83%)

Speed Statistics

SpeedStat-47

Site: 121-345.1.2EW
Description: Harrison Ave, 425 feet west of Sisson Road
Filter time: 17:00 Thursday, October 14, 2021 => 8:00 Wednesday, October 20, 2021
Scheme: Vehicle classification (Scheme F3)
Filter: Cls(1-13) Dir(WB) Sp(5,100) Headway(>0) Span(0 - 300) Lane(0-16)

Vehicles = 8743

Posted speed limit = 30 mph, Exceeding = 7635 (87.33%), Mean Exceeding = 35.49 mph

Maximum = 71.1 mph, Minimum = 6.5 mph, Mean = 34.5 mph

85% Speed = 38.59 mph, 95% Speed = 41.50 mph, Median = 34.34 mph

10 mph Pace = 30 - 40, Number in Pace = 6891 (78.82%)

Variance = 20.64, Standard Deviation = 4.54 mph

Speed Bins (Partial days)

Speed	Bin	Below	Above	Energy	vMult	n * vMult
0 - 5	0 0.000%	0 0.000%	8743 100.0%	0.00	0.00	0.00
5 - 10	16 0.183%	16 0.183%	8727 99.82%	0.00	0.00	0.00
10 - 15	17 0.194%	33 0.377%	8710 99.62%	0.00	0.00	0.00
15 - 20	15 0.172%	48 0.549%	8695 99.45%	0.00	0.00	0.00
20 - 25	82 0.938%	130 1.487%	8613 98.51%	0.00	0.00	0.00
25 - 30	978 11.19%	1108 12.67%	7635 87.33%	0.00	0.00	0.00
30 - 35	3840 43.92%	4948 56.59%	3795 43.41%	0.00	0.00	0.00
35 - 40	2997 34.28%	7945 90.87%	798 9.127%	0.00	0.00	0.00
40 - 45	667 7.629%	8612 98.50%	131 1.498%	0.00	0.00	0.00
45 - 50	100 1.144%	8712 99.65%	31 0.355%	0.00	0.00	0.00
50 - 55	23 0.263%	8735 99.91%	8 0.092%	0.00	0.00	0.00
55 - 60	3 0.034%	8738 99.94%	5 0.057%	0.00	0.00	0.00
60 - 65	2 0.023%	8740 100.0%	3 0.034%	0.00	0.00	0.00
65 - 70	2 0.023%	8742 100.0%	1 0.011%	0.00	0.00	0.00
70 - 75	1 0.011%	8743 100.0%	0 0.000%	0.00	0.00	0.00
75 - 80	0 0.000%	8743 100.0%	0 0.000%	0.00	0.00	0.00
80 - 85	0 0.000%	8743 100.0%	0 0.000%	0.00	0.00	0.00
85 - 90	0 0.000%	8743 100.0%	0 0.000%	0.00	0.00	0.00
90 - 95	0 0.000%	8743 100.0%	0 0.000%	0.00	0.00	0.00
95 - 100	0 0.000%	8743 100.0%	0 0.000%	0.00	0.00	0.00

Total Speed Rating = 0.00

Total Moving Energy (Estimated) = 0.00

Speed limit fields (Partial days)

Limit	Below	Above
0 30 (PSL)	1108 12.7%	7635 87.3%

Attachment C
Level of Service Analysis

112 Harrison Avenue Apartments
Town of Moreau, New York

LOS Definitions

The following is an excerpt from the Highway Capacity Manual, 6th Edition (HCM).

Level of Service for Signalized Intersections

Level of Service (LOS) can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay *and* volume-to-capacity (v/c) ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a surrogate measure of driver discomfort and fuel consumption. The v/c ratio quantifies the degree to which a phase's capacity is utilized by a lane group. The following paragraphs describe each LOS.

LOS A describes operations with a control delay of 10 s/veh or less and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C describes operations with control delay between 20 and 35 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D describes operations with control delay between 35 and 55 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E describes operations with control delay between 55 and 80 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with control delay exceeding 80 s/veh or a v/c ratio greater than 1.0. This level is typically assigned when the v/c ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

A lane group can incur a delay less than 80 s/veh when the v/c ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and v/c ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 s/veh represents failure from a delay perspective).

Average control delay and queue length at roundabout controlled intersections are calculated using SIDRA Intersection. The physical geometry such as entry lane width and approach flare, and traffic volume at the roundabout are factors that influence the intersection's performance. The average delay reported using SIDRA Intersection is based on the signalized HCM Method of Delay for Level-of-Service.

Level of Service Criteria for Unsignalized Intersections

Level of service (LOS) for Two-Way Stop-Controlled (TWSC) intersections is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns by using criteria given in Exhibit 20-2. LOS is not defined for the intersection as a whole or for major-street approaches for three primary reasons: (a) major-street through vehicles are assumed to experience zero delay; (b) the disproportionate number of major-street through vehicles at a typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay for all vehicles; and (c) the resulting low delay can mask important LOS deficiencies for minor movements. LOS F is assigned to the movement if the volume-to-capacity (v/c) ratio for the movement exceeds 1.0, regardless of the control delay.

The LOS criteria for TWSC intersections are somewhat different from the criteria used in Chapter 18 for signalized intersections, primarily because user perceptions differ among transportation facility types. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will present greater delay than an unsignalized intersection. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable than they are at signals, which can reduce users' delay tolerance.

The LOS criteria for All-Way Stop-Controlled (AWSC) intersections are given in Exhibit 21-8. LOS F is assigned if the v/c ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.

**Exhibits 20-2/21-8:
Level-of-Service Criteria for Stop Controlled Intersections**

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤ 1.0	v/c ≥ 1.0
10.0	A	F
>10.0 and ≤ 15.0	B	F
>15.0 and ≤ 25.0	C	F
>25.0 and ≤ 35.0	D	F
>35.0 and ≤ 50.0	E	F
>50.0	F	F

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	108	4	3	143	12	9
Future Vol, veh/h	108	4	3	143	12	9
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	117	4	3	155	13	10

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	121	0	280
Stage 1	-	-	-	-	119
Stage 2	-	-	-	-	161
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1467	-	710
Stage 1	-	-	-	-	906
Stage 2	-	-	-	-	868
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1467	-	709
Mov Cap-2 Maneuver	-	-	-	-	709
Stage 1	-	-	-	-	906
Stage 2	-	-	-	-	866

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	790	-	-	1467	-
HCM Lane V/C Ratio	0.029	-	-	0.002	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	204	9	8	139	6	5
Future Vol, veh/h	204	9	8	139	6	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, #	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	222	10	9	151	7	5

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	232	0	396 227
Stage 1	-	-	-	-	227 -
Stage 2	-	-	-	-	169 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1336	-	609 812
Stage 1	-	-	-	-	811 -
Stage 2	-	-	-	-	861 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1336	-	605 812
Mov Cap-2 Maneuver	-	-	-	-	605 -
Stage 1	-	-	-	-	811 -
Stage 2	-	-	-	-	855 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	684	-	-	1336	-
HCM Lane V/C Ratio	0.017	-	-	0.007	-
HCM Control Delay (s)	10.4	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-