

**NEW STREET (T-442)**  
**ROADWAY SPEED LIMIT STUDY ANALYSIS**

**UPPER SAUCON TOWNSHIP  
LEHIGH COUNTY, PENNSYLVANIA**

**JANUARY 2017**

**Prepared for:**

**Upper Saucon Township  
Board of Supervisors  
5500 Camp Meeting Road  
Center Valley, PA 18034**

**Prepared by:**



**HanoverEngineering**

252 Brodhead Road • Suite 100 • Bethlehem, PA 18017-8944  
Phone: 610.691.5644 • Fax: 610.691.6968 • [HanoverEng.com](http://HanoverEng.com)

**Hanover Project US16-38**

## **TABLE OF CONTENTS**

INTRODUCTION.....	1
EXISTING ROADWAY NETWORK .....	1
Land Use Context .....	1
Roadway Typology.....	1
Pedestrian/Bike Facilities.....	2
CRASH ANALYSIS .....	2
EXISTING TRAFFIC CONDITIONS.....	2
SPEED STUDY ANALYSIS.....	3
CONCLUSIONS.....	4

### **Technical Appendices**

- Appendix A – Project Location Map
- Appendix B – Automatic Traffic Recorder (ATR) Printouts
- Appendix C – References

## **INTRODUCTION**

At the request of Upper Saucon Township, Hanover Engineering Associates, Inc. has completed a Speed Study Analysis along the total length of New Street (T-442), from Station Avenue (T-455) to Flint Hill Road (T-451), to the south in Upper Saucon Township, Lehigh County. The purpose of this analysis is to determine the appropriateness of the 35 MPH posted speed limit along this roadway segment due to recent residents' concerns of speeding.

This study has been completed in accordance with the following:

- PennDOT Publication 212 Traffic Control Devices, Section 212.108 "Speed Limits";
- Title 75 PA C.S. §3363 of the PA Vehicle Code.

## **EXISTING ROADWAY NETWORK**

The roadway network within the study area was reviewed to determine the existing roadway characteristics. A summary of these roadways are shown in **Table 1** below. A project location map can be found in **Appendix A**.

**TABLE 1**  
**EXISTING STUDY AREA ROADWAY CHARACTERISTICS**

Road Name	Ownership/ Route	Roadway Classification	Roadway Direction/ Orientation	ADT Volumes	Width	Posted Speed Limit
New Street	Township (T-442)	Local Road	North-South	546 <sup>1</sup> (Bi-directional)	11' Lanes 1' Shoulders	35 mph

<sup>1</sup>Per Automatic Traffic Recorder (ATR) count data

### **Land Use Context**

The Smart Transportation Guidebook, dated March 2008, was referenced in determining the land use context of the surround areas. Based upon a review of this information contained in Chapter 4, the project site and surrounding area appears to be best described as a Rural Corridor as outlined below:

**Suburban Neighborhood**, "Predominantly low-density residential communities, many built since WWII. House lots are typically arranged along a curvilinear internal system of streets with limited connections to regional road network or surrounding streets."

### **Roadway Typology**

The Smart Transportation Guidebook provides additional guidance to further define the roadway contexts for the given area. Using Table 5.1 presented in Chapter 5 of the Smart Transportation Guidebook, New Street (T-442) can be classified as the following:

**Local Road**, roadways with a desired operating speed between 20 mph and 30 mph, daily traffic volumes of <3,000 vehicles per day and intersection spacing between 200-660 ft.

Pedestrian/Bike Facilities

As part of our assessment, we reviewed the study area for pedestrian and bicycle facilities. Based upon field observations of the study area roadway, there are no existing pedestrian or bicycle facilities present along the roadway; therefore, pedestrians or bicyclists would need to use the roadway/shoulder.

**GEOMETRIC REVIEW**

New Street is a bituminous roadway, approximately twenty-two feet (22') wide with eleven foot (11') wide travel lanes delineated by a double yellow center line. Shoulder areas are unimproved with a one foot (1') paved drainage swale, and vertical clearance ranging from zero (0) to four (4) feet clearance to roadside features. The horizontal and vertical alignment of New Street is relatively straight, except for a horizontal curve located near the Flint Hill Road intersection. Sight distance appears to be adequate along the roadway segment.

**CRASH ANALYSIS**

A crash analysis was performed to determine if there are any correctable crash patterns along New Street. Based upon a review of the Township crash data, there were a total of two (2) reportable crashes along this roadway segment over the previous five (5) year period. One of the crashes occurred during slick snow roadway conditions and the other was due to driver error. Based upon this information, there do not appear to be any correctable crash patterns.

**EXISTING TRAFFIC CONDITIONS**

Automatic Traffic Recorder (ATR) counts were conducted for each direction of New Street on a 24 hour basis between Wednesday, August 3, 2016 and Thursday, August 11, 2016. Data for volume, speed and vehicle classification was recorded during the counts. A summary of the total weekday and peak hour volumes are shown in **Table 2**. Automatic Traffic Recorder (ATR) count sheets are provided in **Appendix B**.

**TABLE 2**  
**WEEKDAY TRAFFIC VOLUMES**

<b>Intersection</b>	<b>Max Daily Approach Volume</b>	<b>Max Peak Hour Volume</b>
Northbound New Street (T-442)	304 Vehicles	AM: 26 vehicles PM: 31 vehicles
Southbound New Street (T-442)	330 Vehicles	AM: 27 vehicles PM: 36 vehicles

<sup>1</sup>The peak hour consists of four consecutive 15 minute intervals where the highest volumes occur.

**CRITERIA FOR POSTED SPEED LIMIT STUDY**

PennDOT Publication 212, Section 212.108.(b) recommends that "Speed limits established in accordance with Title 75 PA.C.S. § 3363 may be established in multiples of 5 miles per hour up to the maximum lawful speed. The speed limit should be within 5 miles per hour of the average 85th percentile speed or the safe-running speed on the section of highway". The safe running speed is defined as:

*"The average speed for a portion of highway determined by making a minimum of five test runs while periodically recording the speed at different locations while driving at a speed which is reasonable and prudent, giving consideration to the available corner and stopping sight distance, spacing of intersections, roadside development and other conditions."*

### **SPEED STUDY ANALYSIS**

A speed study was conducted along New Street (T-442) utilizing Automatic Traffic Recorders (ATR's). The results of this speed study are summarized in **Table 4**.

**TABLE 4**  
**85<sup>TH</sup> PERCENTILE SPEED SUMMARY**

Roadway	Posted Speed	Mean Average Speed	85 <sup>th</sup> Percentile Speed
NB New Street	35 MPH	29 MPH	34 MPH
SB New Street	35 MPH	29 MPH	35 MPH

As shown in **Table 4**, the 85<sup>th</sup> percentile speed along New Street is at or below posted speed. PennDOT recommends that the posted speed limit be within 5 mph of the 85<sup>th</sup> percentile speed, which is validated by the data collected. The 85<sup>th</sup> percentile speed is the speed which motorists travel at or below 85 percent of the time and exceeded 15 percent of the time. Based on the data collected, the posted speed limit for New Street is consistent with PennDOT guidelines.

### **RECOMMENDED SPEED FOR CURVES**

In addition to determining the safe running speed, a car mounted ball-bank indicator was used to measure the overturning force, or side friction, in degrees of deflection, on a vehicle negotiating the horizontal curves along New Street. If the recommended speed for curves is determined to be lower than the posted speed limit, advisory speed signs should be posted in advance of the curve.

The ball-bank indicator study was conducted in accordance with PennDOT Publication 212, Appendix Section 17(iv). Speed trial runs are typically conducted at 5 mile per hour increments until the maximum allowable reading was observed. **Table C** in the Appendix of PennDOT Publication 212 outlines the maximum allowable ball-bank indicator readings based upon the travel speed. The recommended speed for the curve is the highest speed in which the ball-bank indicator does not exceed the indicated reading. **Table 5** below summarizes the results of the recommended curve speed for New Street.

**TABLE 5**  
**RECOMMENDED CURVE SPEED SUMMARY**

Test Run Speed (MPH)	Ball-bank Indication (Degrees)		
	Northbound Recorded Maximum	Southbound Recorded Maximum	PennDOT Maximum
20	14°	13°	14 °

As shown in **Table 4** above, the maximum recommended curve speed along the New Street curve is 20 MPH in the northbound direction and southbound direction. Therefore, it is recommended to erect an Advance Curve sign with an advisory speed plaque for 20 MPH in both directions.

The Manual for Uniform Traffic Control Devices (MUTCD) Table 2C-4 recommends that an advanced curve advisory speed sign for a 15 MPH reduction (35 MPH to 20 MPH) be placed between the point of curvature and 100 feet in advance of the horizontal curve.

## **CONCLUSIONS**

Based upon the traffic data presented in this report, we have reached the following conclusions:

1. A review of the Township crash history does not indicate any correctable crash patterns along this segment of roadway.
2. Speeds recorded along New Street do not indicate that there is an excessive speeding problem. Finally, the posted speed limit is within 5 mph of the 85<sup>th</sup> percentile speed, as recommended by PennDOT.
3. Based upon the data collected and PennDOT Publication 212, Appendix Section 17(iv), it is recommended that the New Street horizontal curve have advance curve signs placed within 100 feet of the point of curvature in each direction with an advisory speed of 20 MPH.

New Street (T-442) Speed Study  
Upper Saucon Township, Lehigh County

## **APPENDICES**

New Street (T-442) Speed Study  
Upper Saucon Township, Lehigh County

## **APPENDIX A**

Project Location Map



# Location Map

New Street Speed Study

## Legend

Speed Study Location

Study Area

Flint Hill Rd

Meadow Ln  
Skyview Ln

Bishop Rd

Saucon Rail Trail

New St

Station Ave

2030

309

700 ft

Google earth

© 2016 Google



New Street (T-442) Speed Study  
Upper Saucon Township, Lehigh County

## **APPENDIX B**

Automatic Traffic Recorder (ATR) Printouts

Site Code:  
 Station ID:

Latitude: 0' 0.0000 South

Start Time	01-Aug-16		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
12:00 AM	*	*	*	*	*	*	1	2	2	1	0	0	2	5	3	1
01:00	*	*	*	*	*	*	0	1	0	0	0	0	1	0	3	0
02:00	*	*	*	*	*	*	1	0	0	1	1	1	3	1	3	1
03:00	*	*	*	*	*	*	1	1	4	2	1	1	1	0	1	1
04:00	*	*	*	*	*	*	3	0	2	0	0	1	1	0	2	0
05:00	*	*	*	*	*	*	3	4	6	0	2	0	4	2	4	2
06:00	*	*	*	*	*	*	23	8	15	2	9	5	2	1	12	4
07:00	*	*	*	*	*	*	21	12	16	15	7	6	4	1	12	8
08:00	*	*	*	*	*	*	19	16	17	7	12	9	16	5	18	9
09:00	*	*	*	*	*	*	17	21	17	19	16	14	15	9	16	16
10:00	*	*	*	*	*	*	16	16	10	9	25	7	13	8	16	10
11:00	*	*	*	*	*	*	36	23	26	16	27	20	16	26	22	19
12:00 PM	*	*	*	*	*	*	18	19	30	18	26	21	24	30	26	22
01:00	*	*	*	*	*	*	17	18	18	18	12	12	19	26	18	22
02:00	*	*	*	*	*	*	16	12	12	16	11	16	10	10	13	14
03:00	*	*	*	*	*	*	14	12	14	20	19	7	14	16	17	15
04:00	*	*	*	*	*	*	12	24	21	17	32	19	30	11	23	18
05:00	*	*	*	*	*	*	20	25	18	21	8	17	12	12	15	21
06:00	*	*	*	*	*	*	21	19	8	20	17	21	12	12	16	18
07:00	*	*	*	*	*	*	7	21	9	21	12	22	17	13	12	19
08:00	*	*	*	*	*	*	12	22	12	12	12	8	9	16	11	15
09:00	*	*	*	*	*	*	9	9	9	12	8	18	6	9	8	12
10:00	*	*	*	*	*	*	9	6	10	9	14	6	17	11	13	9
11:00	*	*	*	*	*	*	8	9	4	7	11	6	3	2	6	6
Lane	0	0	0	0	193	216	330	304	286	268	282	257	251	227	284	266
Day	0	0	0	0	409	409	634	634	554	554	539	539	478	478	550	550
AM Peak	-	-	-	-	11:00	11:00	06:00	09:00	11:00	09:00	11:00	11:00	08:00	11:00	11:00	11:00
Vol.	-	-	-	-	17	19	23	21	26	19	27	20	16	26	22	19
PM Peak	-	-	-	-	13:00	17:00	12:00	17:00	17:00	17:00	16:00	13:00	16:00	12:00	12:00	12:00
Vol.	-	-	-	-	21	28	36	25	30	21	32	28	30	30	26	22

Latitude: 0' 0.0000 South

Comb. Total	570	558	895	751	554	539	478	1086
ADT	ADT 546	AADT 546						

# Hanover Engineering

252 Brodhead Road, Suite 100  
Bethlehem, PA 18017  
New Street

Site Code:  
Station ID:

Latitude: 0' 0.0000 Undefined

Southbound, Northbound																																
Start Time	1	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	Total	Pace Speed	Number In Pace		
08/03/16	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
10:00	6	0	1	0	1	2	3	3	3	3	2	2	0	0	2	6	5	5	0	0	0	0	0	0	0	0	0	0	22	27-36	12	
11:00	6	0	1	0	2	2	1	3	4	3	2	4	4	7	6	3	5	5	4	1	1	1	1	1	1	1	1	0	0	36	27-36	21
12 PM	2	2	2	2	2	2	3	3	3	3	4	5	5	5	7	7	2	2	3	3	2	2	2	2	2	2	2	0	0	32	24-33	20
13:00	3	0	0	0	6	3	4	4	1	3	5	6	4	4	1	1	2	2	2	3	3	3	3	3	3	3	3	0	0	38	24-33	22
14:00	2	2	0	3	3	3	2	2	3	3	5	6	4	4	3	3	3	3	3	2	2	2	2	2	2	2	2	0	0	29	23-32	17
15:00	2	0	0	3	3	3	1	2	3	3	6	7	5	5	2	3	3	3	3	2	2	2	2	2	2	2	2	0	0	27	27-36	17
16:00	4	1	1	2	2	3	5	3	3	3	3	7	8	5	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	32	25-34	24
17:00	2	0	0	3	3	3	3	7	3	9	7	7	6	6	3	3	3	3	1	1	2	2	2	2	2	2	2	0	0	46	25-34	35
18:00	3	0	0	3	3	3	4	7	3	3	4	4	3	3	3	3	2	2	1	1	1	1	1	1	1	1	1	0	0	40	23-32	26
19:00	4	1	1	3	3	3	4	4	5	3	7	7	6	6	3	3	3	3	1	1	2	2	2	2	2	2	2	0	0	33	23-32	19
20:00	0	0	2	2	2	2	1	1	1	1	7	7	1	1	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	23	27-36	15
21:00	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	0	0	16	26-35	10
22:00	1	1	0	2	2	2	7	7	2	2	2	2	3	3	3	3	2	2	1	1	2	2	2	2	2	2	2	0	0	25	25-34	17
23:00	0	0	0	0	0	0	1	1	0	0	2	2	2	2	1	1	1	1	2	2	1	1	0	0	0	0	0	0	0	10	29-38	8
Total	36	7	33	43	43	33	43	43	42	42	58	58	52	52	53	53	36	36	21	21	16	16	8	8	8	2	2	0	0	409		
Percent	8.8%	1.7%	8.1%	10.5%	10.5%	8.1%	10.5%	10.5%	10.3%	10.3%	14.2%	14.2%	12.7%	12.7%	13.0%	8.8%	8.8%	5.1%	5.1%	3.9%	3.9%	2.0%	2.0%	2.0%	0.5%	0.5%	0.5%	0.5%	0.5%			
AM Peak	10:00																															
Vol.	6																															
PM Peak	16:00																															
Vol.	4	2	6	7	7	6	7	7	9	9	7	7	8	8	8	8	5	5	3	3	3	3	2	2	1	1	1	1	1	46		

Latitude: 0° 0.0000 Undefined

Southbound, Northbound		Latitude: 0° 0.0000 Undefined																												
Start Time		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	Total	Pace	Number in Pace	
08/04/16	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	25-34	3
01:00	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	19-28	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	27-36	1
03:00	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	19-28	1
04:00	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	16-25	2	
05:00	0	0	2	2	0	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	7	18-27	4	
06:00	6	2	3	2	3	4	4	5	5	1	1	3	3	4	4	0	0	1	1	1	2	0	0	0	0	0	31	25-34	17	
07:00	6	1	1	1	1	2	3	3	5	1	5	4	4	6	6	5	5	3	3	1	1	0	0	0	0	0	33	27-36	18	
08:00	2	1	1	1	1	3	3	5	5	5	6	10	10	7	7	4	4	2	1	1	1	0	1	0	0	0	35	27-36	25	
09:00	6	1	0	0	0	3	3	4	4	8	8	5	5	5	5	3	3	1	1	1	1	0	0	0	0	0	38	25-34	29	
10:00	1	1	1	1	1	1	1	5	5	6	6	8	8	6	6	0	0	1	1	1	0	0	0	0	0	0	32	27-36	26	
11:00	2	1	2	2	2	1	1	4	12	4	4	7	7	5	5	4	4	3	3	2	2	2	2	1	1	0	39	27-36	26	
12 PM	7	2	4	4	4	4	4	5	6	6	8	11	11	1	1	4	4	0	0	3	3	1	1	0	0	0	59	25-34	36	
13:00	3	0	2	2	2	1	1	5	5	8	8	4	4	4	4	1	1	4	4	4	1	0	1	0	0	0	37	27-36	29	
14:00	4	2	2	1	1	1	1	2	2	4	4	9	9	6	6	1	1	2	2	4	1	0	0	0	0	0	28	29-38	17	
15:00	4	0	3	3	3	4	4	2	2	10	10	4	4	4	4	1	1	2	2	2	0	2	2	1	1	0	42	25-34	29	
16:00	5	0	3	3	3	5	5	5	5	7	7	7	7	6	6	2	2	2	2	1	1	1	1	0	0	2	46	25-34	30	
17:00	1	1	2	2	2	5	5	5	6	4	5	10	10	10	10	3	3	3	3	3	0	0	0	0	0	1	45	25-34	34	
18:00	2	1	2	1	2	1	1	6	6	5	5	8	8	7	7	3	3	1	1	1	1	1	1	1	1	1	40	27-36	29	
19:00	1	1	1	1	1	5	4	4	9	5	5	4	4	3	6	2	2	0	0	2	2	0	0	0	0	0	28	25-34	21	
20:00	0	0	2	2	2	2	2	9	4	4	4	4	4	4	3	3	3	2	2	0	0	1	1	1	0	0	34	26-35	26	
21:00	0	0	1	1	1	1	1	4	4	3	3	4	4	3	3	1	1	0	0	0	0	1	1	1	0	0	18	25-34	15	
22:00	0	0	2	2	1	1	1	1	1	4	4	3	3	2	2	1	1	0	0	0	0	0	0	1	1	0	15	23-32	11	
23:00	1	2	1	1	1	1	1	1	1	4	4	2	2	1	1	2	2	0	0	1	1	1	1	0	0	0	17	26-35	10	
Total	51	17	35	35	47	90	107	85	90	90	14.2%	16.9%	10.7	14.2%	9.0	44	29	16	29	16	13	13	5	5	5	634				
Percent	8.0%	2.7%	5.5%	5.5%	7.4%	14.2%	18.2%	13.4%	14.2%	14.2%	16.9%	19.6%	10.7	14.2%	12.2%	6.9%	4.6%	2.5%	4.6%	2.5%	2.1%	2.1%	0.8%	0.8%	0.8%	0.8%				
AM Peak	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	11:00			
Vol.	6	2	3	3	4	8	10	5	5	8	10	10	10	7	7	5	3	3	3	2	2	2	1	1	1	1	39			
PM Peak	12:00	12:00	12:00	12:00	16:00	16:00	13:00	12:00	12:00	15:00	13:00	13:00	11	17:00	10	13:00	14:00	14:00	14:00	12:00	12:00	15:00	15:00	15:00	15:00	16:00	12:00			
Vol.	7	2	4	4	5	12	12	12	12	10	10	11	11	10	10	4	4	4	4	3	3	2	2	1	1	2	59			



Site Code:  
Station ID:

Latitude: 0' 0.0000 Undefined

Southbound, Northbound																															
Start Time	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	Total	Pace	Speed	Number in Pace	
08/05/16	0	0	0	0	0	0	0	1	2	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	3	24-33	2		
01:00	0	0	0	0	0	1	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	21-30	5		
02:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	17-26	1		
03:00	1	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	1	0	0	6	23-32	3		
04:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	21-30	1		
05:00	0	0	0	1	0	0	0	2	0	2	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	6	23-32	5		
06:00	3	1	1	1	1	2	0	5	3	2	2	2	2	0	0	3	3	1	1	0	0	0	0	0	0	0	17	27-36	12		
07:00	2	1	0	1	1	2	2	3	3	7	3	6	3	3	1	1	1	3	1	1	1	0	0	2	1	0	31	23-32	19		
08:00	1	0	0	5	1	2	2	2	2	4	4	7	3	3	6	1	8	1	1	1	1	0	0	0	0	0	30	27-36	20		
09:00	4	0	0	1	2	4	2	2	1	4	4	3	3	3	3	2	1	4	1	1	1	2	0	0	0	0	36	25-34	23		
10:00	0	0	0	2	2	2	2	1	3	6	6	9	5	2	2	4	2	1	1	1	1	0	0	0	0	0	19	25-34	13		
11:00	4	1	3	3	3	5	4	8	3	11	4	6	5	5	4	4	6	4	4	0	0	0	0	1	0	0	42	23-32	26		
12 PM	6	2	2	1	1	3	4	4	4	4	4	6	5	5	4	4	6	1	1	1	1	1	0	0	0	0	48	23-32	31		
13:00	3	2	2	1	1	2	2	3	4	3	3	5	4	4	4	4	4	1	1	3	1	0	0	0	0	0	36	27-36	23		
14:00	1	0	0	1	1	2	2	4	3	4	3	6	5	4	3	4	4	1	1	1	1	1	0	0	0	0	28	27-36	21		
15:00	0	2	2	2	2	3	3	8	3	5	5	7	6	4	4	0	4	3	3	1	1	1	1	1	1	1	34	27-36	21		
16:00	1	1	1	5	2	4	4	4	4	4	4	7	7	3	3	1	1	2	1	2	2	2	0	0	0	0	38	23-32	27		
17:00	5	2	2	5	0	4	4	6	2	4	4	3	3	3	3	3	1	2	0	1	1	0	0	0	0	0	39	23-32	25		
18:00	3	0	0	0	3	5	4	2	4	4	4	9	5	4	4	2	2	0	1	1	0	0	0	0	0	0	28	25-34	21		
19:00	0	1	2	1	1	2	4	2	4	4	4	5	5	4	4	0	0	2	1	0	0	0	0	0	0	0	30	25-34	23		
20:00	0	2	0	1	1	0	0	4	4	4	4	5	4	4	4	0	0	2	0	0	0	0	0	0	0	0	24	25-34	19		
21:00	2	0	0	1	1	0	0	3	3	4	4	3	3	5	5	1	1	0	0	0	0	0	0	0	0	2	21	26-35	16		
22:00	2	1	0	0	0	2	2	5	3	2	2	0	0	4	4	1	1	0	0	1	1	0	0	0	0	1	19	25-34	13		
23:00	0	0	0	1	1	1	1	2	2	2	2	2	2	0	0	0	0	2	2	1	1	0	0	0	0	0	11	23-32	8		
Total	38	16	16	36	36	49	77	77	81	81	81	90	90	57	57	46	30	30	16	16	16	8	8	5	5	5	554				
Percent	6.9%	2.9%	2.9%	6.5%	6.5%	8.8%	13.9%	13.9%	14.6%	14.6%	14.6%	16.2%	16.2%	10.3%	10.3%	8.3%	5.4%	5.4%	2.9%	2.9%	2.9%	1.4%	1.4%	0.9%	0.9%	0.9%					
AM Peak	09:00	06:00	06:00	08:00	08:00	11:00	06:00	06:00	06:00	07:00	07:00	11:00	11:00	09:00	09:00	08:00	09:00	09:00	04:00	04:00	09:00	09:00	09:00	07:00	07:00	07:00	11:00				
Vol.	4	1	1	5	5	5	5	5	7	7	7	9	9	6	6	8	4	4	1	1	2	2	2	1	1	1	42				
PM Peak	12:00	12:00	12:00	16:00	16:00	18:00	12:00	12:00	12:00	12:00	12:00	19:00	19:00	13:00	13:00	14:00	15:00	15:00	13:00	13:00	16:00	16:00	15:00	21:00	21:00	21:00	12:00				
Vol.	6	2	2	5	5	5	8	8	11	11	11	9	9	5	5	6	3	3	3	3	2	2	1	2	2	2	48				

Site Code:  
Station ID:

Latitude: 0' 0.0000 Undefined

Southbound, Northbound																			
Start	1	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55
Time	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56
08:06/16	0	0	0	0	0	1	3	0	0	0	1	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
04:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
06:00	2	1	3	1	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0
07:00	2	0	3	1	1	2	0	1	1	2	0	0	0	0	0	0	0	0	0
08:00	3	1	2	1	3	4	2	2	0	1	0	0	0	0	0	0	0	0	0
09:00	9	0	0	3	6	2	3	4	0	2	0	0	1	0	0	0	0	0	0
10:00	9	1	4	2	3	1	4	1	1	2	0	0	0	0	0	0	0	0	0
11:00	9	4	4	7	5	9	3	3	3	1	1	0	0	0	0	0	0	0	0
12 PM	4	5	0	5	5	5	4	5	7	1	2	2	1	1	0	0	0	0	0
13:00	3	1	4	4	6	9	4	3	1	3	2	0	0	0	0	0	0	0	0
14:00	2	1	1	1	2	3	4	4	6	2	1	0	0	0	0	0	0	0	0
15:00	0	1	3	3	4	4	2	4	5	0	0	0	0	0	0	0	0	0	0
16:00	2	0	3	8	8	13	8	5	0	1	2	1	0	0	0	0	0	0	0
17:00	0	0	2	2	2	3	6	6	2	1	1	0	0	0	0	0	0	0	0
18:00	8	1	2	2	4	5	5	4	1	2	1	2	1	0	0	0	0	0	0
19:00	0	2	1	3	6	4	7	7	0	2	2	0	0	0	0	0	0	0	0
20:00	1	1	1	2	6	3	1	2	3	0	0	0	0	0	0	0	0	0	0
21:00	3	1	3	5	2	3	3	4	1	0	0	0	0	0	0	0	0	0	0
22:00	2	2	2	3	2	3	1	1	3	0	0	0	0	0	0	0	0	0	0
23:00	1	1	0	6	3	1	2	2	1	0	0	0	0	0	0	0	0	0	0
Total	60	22	40	61	69	76	65	59	36	20	15	11	3	2	0	0	0	0	0
Percent	11.1%	4.1%	7.4%	11.3%	12.8%	14.1%	12.1%	10.9%	6.7%	3.7%	2.8%	2.0%	0.6%	0.4%					
AM Peak	09:00	11:00	10:00	11:00	09:00	11:00	10:00	09:00	11:00	07:00	00:00	10:00	09:00						
Vol.	9	3	4	7	6	9	4	4	3	2	1	3	1						
PM Peak	18:00	12:00	13:00	16:00	16:00	16:00	16:00	19:00	12:00	13:00	12:00	12:00	12:00	12:00					
Vol.	8	5	4	8	8	13	8	7	7	3	2	2	1	1					



Site Code:  
Station ID:

Latitude: 0' 0.0000 Undefined

Southbound, Northbound		21	23	25	27	29	31	33	35	37	39	41	43	45	Pace	Number
Start	Time	20	24	26	28	30	32	34	36	38	40	42	44	999	Speed	In Pace
08/07/16	01:00	0	0	1	0	0	1	0	1	1	0	0	0	0	5	28-37
	02:00	2	0	0	0	0	0	0	0	0	0	0	0	0	4	21-30
	03:00	1	0	1	0	0	0	1	0	0	0	0	0	0	4	20-29
	04:00	0	0	0	0	0	0	0	0	0	0	0	0	1	1	*
	05:00	2	1	0	0	0	0	0	0	0	0	0	0	0	1	17-26
	06:00	0	0	1	0	0	0	0	0	0	0	0	0	0	6	20-29
	07:00	0	0	2	0	0	0	0	0	0	0	0	0	0	3	17-26
	08:00	0	0	1	1	2	0	0	0	1	0	0	0	0	5	21-30
	09:00	3	0	1	2	3	1	4	1	3	0	1	0	1	21	28-37
	10:00	6	0	0	3	0	3	2	3	0	0	0	0	2	24	25-34
	11:00	1	2	2	4	12	6	5	6	1	0	1	0	0	21	27-36
12 PM	12:00	4	1	8	6	9	7	7	3	4	0	0	0	0	42	27-36
	13:00	5	0	6	12	3	4	8	2	1	4	0	0	0	54	25-34
	14:00	0	0	2	1	4	2	1	3	4	2	0	0	0	45	25-34
	15:00	3	0	1	4	2	4	8	3	1	0	0	1	0	20	29-38
	16:00	3	1	0	5	3	4	10	8	2	1	0	0	0	30	27-36
	17:00	1	0	2	3	4	4	3	2	0	1	3	0	0	41	27-36
	18:00	1	2	4	2	2	2	3	3	1	0	2	0	0	24	24-33
	19:00	2	3	3	8	4	3	1	1	0	0	0	0	0	24	21-30
	20:00	1	1	3	3	3	3	3	3	0	2	0	0	2	30	21-30
	21:00	0	0	1	3	1	4	3	0	0	1	0	0	1	25	25-34
	22:00	1	0	8	5	3	4	0	1	0	2	2	0	0	15	25-34
	23:00	0	0	0	0	1	1	0	0	1	0	0	0	0	28	23-32
	Total	38	16	51	66	61	57	63	41	21	16	11	3	1	5	29-38
Percent		7.9%	3.3%	10.7%	13.8%	12.8%	11.9%	13.2%	8.6%	4.4%	3.3%	2.3%	0.6%	1.9%	478	
AM Peak		10:00	11:00	09:00	11:00	11:00	11:00	11:00	11:00	08:00	10:00	08:00	09:00	09:00	11:00	
Vol.		6	3	4	4	12	6	5	6	3	1	1	1	2	42	
PM Peak		13:00	18:00	12:00	13:00	12:00	12:00	16:00	16:00	12:00	12:00	16:00	14:00	19:00	12:00	
Vol.		5	3	8	12	9	7	10	8	4	4	3	1	2	54	

Site Code:  
Station ID:

Latitude: 0' 0.0000 Undefined

Southbound, Northbound																			
Start	1	21	23	25	27	29	31	33	35	37	39	41	43	45	Pace	Number			
Time	20	22	24	26	28	30	32	34	36	38	40	42	44	999	Speed	in Pace	Total		
08/08/16	0	1	1	1	0	0	1	4	1	1	0	0	0	0	29-38	7	10		
01:00	0	0	0	1	2	0	0	0	0	0	0	0	0	0	19-28	3	3		
02:00	0	0	0	1	0	0	0	0	0	0	1	0	0	0	17-26	1	2		
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*	0		
04:00	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1-10	1	2		
05:00	0	0	0	0	1	3	0	1	0	1	1	0	0	0	25-34	7	7		
06:00	5	2	1	4	3	5	3	3	6	4	0	1	1	0	27-36	12	23		
07:00	0	1	0	1	2	4	1	1	4	0	0	1	0	2	29-38	21	32		
08:00	5	2	1	1	1	5	5	5	1	0	0	1	0	0	25-34	17	27		
09:00	1	0	0	3	0	1	1	2	5	4	2	0	2	0	30-39	14	21		
10:00	3	1	2	1	3	6	5	3	2	3	2	1	0	0	27-36	19	32		
11:00	1	1	1	2	4	2	2	1	3	0	1	0	0	0	26-35	12	18		
12 PM	5	2	1	2	6	7	9	1	2	3	0	0	0	0	23-32	25	38		
13:00	2	2	0	5	4	5	8	7	1	4	2	0	0	0	25-34	29	40		
14:00	3	2	2	5	5	4	5	5	5	0	2	0	2	0	28-37	24	40		
15:00	0	0	3	2	2	5	6	5	5	3	1	2	0	1	23-32	27	35		
16:00	4	1	6	7	6	3	5	6	5	2	0	2	0	1	25-34	24	48		
17:00	2	3	6	2	6	3	14	6	6	0	3	0	0	0	27-36	35	51		
18:00	0	0	2	3	7	5	5	6	6	2	4	1	0	0	27-36	29	41		
19:00	1	0	1	5	6	3	2	2	2	0	0	0	0	0	24-33	18	22		
20:00	1	1	3	4	5	6	3	6	2	0	0	0	0	2	25-34	24	33		
21:00	1	0	1	4	6	0	4	1	2	0	1	0	0	0	23-32	15	20		
22:00	1	0	0	1	1	2	1	4	1	0	0	1	0	0	25-34	9	12		
23:00	1	0	0	1	1	4	1	2	1	1	1	0	0	0	25-34	9	13		
Total	37	19	31	56	71	73	81	71	61	28	21	10	5	6			570		
Percent	6.5%	3.3%	5.4%	9.8%	12.5%	12.8%	14.2%	12.5%	10.7%	4.9%	3.7%	1.8%	0.9%	1.1%					
AM Peak	06:00	06:00	10:00	07:00	11:00	10:00	08:00	08:00	07:00	07:00	09:00	06:00	09:00	07:00			07:00		
Vol.	5	2	2	4	4	6	5	5	6	4	2	1	2	2			32		
PM Peak	12:00	17:00	16:00	16:00	18:00	12:00	17:00	13:00	17:00	13:00	18:00	15:00	14:00	20:00			17:00		
Vol.	5	3	6	7	7	7	14	7	6	4	4	2	2	2			51		

Site Code:  
 Station ID:

Latitude: 0' 0.0000 Undefined

Southbound, Northbound																			
Start	1	21	23	25	27	29	31	33	35	37	39	41	43	45	Pace	Number			
Time	20	22	24	26	28	30	32	34	36	38	40	42	44	999	Speed	in Pace	Total		
08/09/16	0	0	0	0	1	0	0	1	0	1	0	0	0	0	24-33	2	3		
01:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	21-30	1	1		
02:00	0	0	0	1	0	1	0	0	0	0	0	0	0	0	20-29	2	2		
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*	0		
04:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	19-28	3	3		
05:00	0	0	0	0	1	0	4	0	0	0	0	0	0	1	23-32	5	6		
06:00	5	0	1	3	1	3	2	3	2	0	0	0	0	1	25-34	12	22		
07:00	3	1	0	1	3	2	3	4	0	2	2	0	0	2	25-34	14	24		
08:00	2	1	2	1	4	2	4	2	2	2	2	0	0	0	26-35	14	24		
09:00	0	0	1	0	3	4	6	10	4	3	2	0	1	1	27-36	27	34		
10:00	3	1	2	0	3	1	2	0	2	1	0	0	0	0	22-31	8	15		
11:00	1	0	4	7	5	10	7	4	2	2	1	0	0	0	23-32	33	45		
12 PM	4	0	3	3	1	5	4	7	2	1	2	0	0	1	25-34	20	33		
13:00	3	0	3	5	8	6	3	8	4	1	1	0	0	0	25-34	30	42		
14:00	1	0	4	8	2	6	7	2	3	1	1	0	0	0	23-32	27	35		
15:00	5	3	2	2	5	6	6	5	1	2	0	1	0	0	25-34	24	38		
16:00	5	1	2	5	6	3	4	6	7	1	1	0	0	0	27-36	26	44		
17:00	5	0	1	3	7	7	5	8	2	2	2	1	2	1	25-34	30	46		
18:00	4	4	1	6	7	3	5	4	2	3	2	0	0	0	25-34	25	41		
19:00	0	0	2	4	2	1	3	3	1	3	2	1	0	0	26-35	13	22		
20:00	0	1	3	3	4	6	2	4	4	3	0	0	0	0	27-36	21	30		
21:00	0	0	3	1	5	6	4	4	2	3	0	0	0	0	20-29	8	28		
22:00	0	2	0	3	2	1	1	0	0	0	1	0	0	0	27-36	8	10		
23:00	2	0	0	0	2	1	2	1	1	1	0	0	0	0	27-36	7	10		
Total	43	16	34	56	73	76	74	76	41	32	18	4	7	8			558		
Percent	7.7%	2.9%	6.1%	10.0%	13.1%	13.6%	13.3%	13.6%	7.3%	5.7%	3.2%	0.7%	1.3%	1.4%					
AM Peak	06:00	04:00	11:00	11:00	11:00	11:00	11:00	09:00	09:00	09:00	07:00	06:00	11:00	07:00			11:00		
Vol.	5	2	4	7	5	10	7	10	4	3	2	1	2	2			45		
PM Peak	15:00	18:00	14:00	14:00	13:00	17:00	14:00	13:00	16:00	18:00	12:00	15:00	16:00	12:00			17:00		
Vol.	5	4	4	8	8	7	7	8	7	3	2	1	2	1			46		

Site Code:  
Station ID:

Latitude: 0' 0.0000 Undefined

Southbound, Northbound																			
Start	21	23	25	27	29	31	33	35	37	39	41	43	45	Pace	Speed	Number			
Time	20	22	24	26	28	30	32	34	36	38	40	42	44	999	Total	in	Pace		
08/10/16	0	0	0	0	3	1	1	0	0	0	0	0	0	0	6	5	23-32		
01:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2	2	24-33		
02:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	2	18-27		
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*		
04:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	20-29		
05:00	2	0	0	0	0	0	0	1	2	1	0	0	0	0	8	4	28-37		
06:00	5	0	0	0	4	2	1	2	2	0	0	0	0	0	20	11	27-36		
07:00	1	0	2	0	2	3	5	3	3	4	3	1	0	0	29	20	29-38		
08:00	0	1	2	4	1	4	2	3	2	0	0	0	0	0	19	14	24-33		
09:00	3	0	1	3	3	3	2	4	4	2	1	0	0	0	26	16	26-35		
10:00	2	0	1	6	2	5	1	2	0	1	0	0	0	0	20	16	24-33		
11:00	2	3	3	1	4	8	4	4	3	0	0	0	0	0	35	24	27-36		
12 PM	7	2	3	2	4	4	2	4	4	0	0	1	0	0	33	17	27-36		
13:00	4	1	0	6	3	9	4	6	1	0	0	1	0	0	37	28	25-34		
14:00	3	0	2	2	4	1	3	3	2	3	0	0	0	0	23	13	25-34		
15:00	0	1	1	1	4	3	5	2	4	2	1	0	0	0	24	18	27-36		
16:00	0	0	2	6	9	3	6	5	3	2	0	0	0	0	36	29	25-34		
17:00	1	2	0	7	6	5	11	4	4	2	2	3	1	0	48	33	25-34		
18:00	2	0	0	4	4	7	5	4	3	2	2	2	0	0	35	24	25-34		
19:00	1	3	1	3	3	3	5	1	1	2	0	0	0	0	23	15	23-32		
20:00	0	1	1	5	4	5	2	1	3	2	1	0	0	0	27	18	21-30		
21:00	1	0	0	3	1	1	3	2	1	3	0	0	0	0	15	10	25-34		
22:00	0	2	0	1	3	1	2	3	0	0	0	0	0	0	12	10	25-34		
23:00	1	0	0	0	1	0	0	1	1	0	0	0	0	0	5	3	27-36		
Total	36	20	23	54	67	68	65	57	43	26	16	7	0	0	486				
Percent	7.4%	4.1%	4.7%	11.1%	13.8%	14.0%	13.4%	11.7%	8.8%	5.3%	3.3%	1.4%	0.8%	0.0%					
AM Peak	06:00	11:00	06:00	10:00	11:00	11:00	07:00	07:00	09:00	07:00	07:00	07:00	05:00		11:00				
Vol.	5	4	3	6	5	8	5	5	4	4	3	1	1		35				
PM Peak	12:00	19:00	12:00	17:00	16:00	13:00	17:00	13:00	12:00	14:00	13:00	17:00	12:00		17:00				
Vol.	7	3	3	7	9	9	11	6	4	3	2	3	1		48				

Site Code:  
Station ID:

Southbound, Northbound Latitude: 0' 0.0000 Undefined

Start Time	1	21	23	25	27	29	31	33	35	37	39	41	43	45	Pace	Number
	20	22	24	26	28	30	32	34	36	38	40	42	44	999	Speed	in Pace
08/11/16	0	0	0	0	0	1	2	0	0	0	0	0	0	0	23-32	3
01:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	19-28	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
03:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	14-23	2
04:00	0	1	0	0	0	0	0	0	1	0	0	0	0	0	13-22	1
05:00	0	0	1	1	0	4	0	0	0	1	0	0	0	0	21-30	6
06:00	4	1	2	3	5	5	1	3	4	0	0	0	0	0	26-35	14
07:00	1	1	3	5	3	4	4	5	6	2	4	2	1	0	26-35	24
08:00	7	2	2	4	3	3	4	5	3	1	0	0	0	0	25-34	19
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	12	6	9	13	11	17	11	13	14	4	4	2	1	0		
Percent	10.3%	5.1%	7.7%	11.1%	9.4%	14.5%	9.4%	11.1%	12.0%	3.4%	3.4%	1.7%	0.9%	0.0%		117
AM Peak	08:00	08:00	07:00	07:00	07:00	06:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00			
Vol.	7	2	3	5	5	5	4	5	6	2	4	2	1			43
PM Peak																
Vol.																

Total	351	139	266	430	561	600	602	539	362	211	138	74	35	37		
Percent	8.1%	3.2%	6.1%	9.9%	12.9%	13.8%	13.9%	12.4%	8.3%	4.9%	3.2%	1.7%	0.8%	0.9%		
15th Percentile :					23 MPH											
50th Percentile :					29 MPH											
85th Percentile :					34 MPH											
95th Percentile :					38 MPH											

Stats  
10 MPH Pace Speed : 25-34 MPH  
Number in Pace : 2732  
Percent in Pace : 63.4%  
Number of Vehicles > 35 MPH : 676  
Percent of Vehicles > 35 MPH : 15.7%  
Mean Speed(Average) : 29 MPH

New Street (T-442) Speed Study  
Upper Saucon Township, Lehigh County

## **APPENDIX C**

PennDOT Publication 212 Excerpts  
Title 75 PA C.S. 3363

**COMMONWEALTH OF PENNSYLVANIA**  
**DEPARTMENT OF TRANSPORTATION**  
*Bureau of Highway Safety and Traffic Engineering*

# **OFFICIAL TRAFFIC CONTROL DEVICES**

*Publication 212*



**Pub 212 (3-06)**

### **§ 212.107. Except Right Turn Sign (R1-1-1).**

When a major traffic movement at an intersection is a right turn, the Except Right Turn Sign (R1-1-1) may be placed below the Stop Sign (R1-1) on that approach to minimize the total delay at the intersection. When this sign is used, Stop Signs (R1-1) are required on all other intersection approaches except for the approach with a corresponding left-turn movement.

### **§ 212.108. Speed limits.**

(a) *General.* This section applies to maximum speed limits established according to 75 Pa.C.S. §§ 3362 and 3363 (relating to maximum speed limits; and alteration of maximum limits). Engineering and traffic studies are not required for statutory speed limits, but documentation should be on file for urban districts and residence districts to show that the requirements defined in the Vehicle Code are satisfied.

(b) *Engineering and traffic studies.* Speed limits established in accordance with 75 Pa.C.S. § 3363 may be established in multiples of 5 miles per hour up to the maximum lawful speed. The speed limit should be within 5 miles per hour of the average 85th percentile speed or the safe-running speed on the section of highway, except the speed limit may be reduced up to 10 miles per hour below either of these values if one or more of the following conditions are satisfied:

(1) A major portion of the highway has insufficient stopping sight distance if traveling at the 85th percentile speed or the safe-running speed.

(2) The available corner sight distance on side roads is less than the necessary stopping sight distance values for through vehicles.

(3) The majority of crashes are related to excessive speed and the crash rate during a minimum 12-month period is greater than the applicable rate in the most recent high-crash rate or high-crash severity rate table included in the appendix of Official Traffic-Control Devices (Department Publication 212). Crashes related to excessive speed include those crashes with causation factors of driving too fast for conditions, turning without clearance or failing to yield right-of-way.

(c) *Variable speed limits.* To improve safety, speed limits may be changed as a function of traffic speeds or densities, weather or roadway conditions or other factors.



(d) *Special speed limits.*

(1) Within a rest area or welcome center, a 25 mile per hour speed limit may be established without the need for an engineering and traffic study if pedestrians walk across the access roadways between the parking lot and the rest facilities.

(2) Within a toll plaza or a truck weight station, an appropriate speed limit may be established without an engineering and traffic study by the authorities in charge to enforce the safety of the operations or to protect the scales.

(e) *Posting of speed limits.* A Speed Limit Sign (R2-1) or variable speed limit sign showing the maximum speed limit shall be placed on the right side of the highway at the beginning of each numerical change in the speed limit, but an additional sign may also be installed on the left side of the highway. If the new speed limit begins at an intersection, the first sign should be installed within 200 feet beyond the intersection. The placement of this sign must satisfy both the requirement to post the beginning of the new speed limit and the requirement to post the end of the previous speed limit. Additional requirements for posting are as follows:

(1) Speed limits of 50 miles per hour or less shall be posted as follows:

(i) A Reduced Speed ( ) Ahead Sign (R2-5), or a Speed Reduction Sign (W3-5), shall be placed on the right side of the highway 500 to 1,000 feet before the beginning of every speed reduction unless one of the following applies:

(A) The speed reduction is 10 miles per hour or less.

(B) The speed reduction begins at an intersection and all traffic entering the roadway with the speed reduction has to either stop at a Stop Sign (R1-1) or make a turn.

(C) The new speed limit is posted on variable speed limit signs.

(ii) Speed Limit Signs (R2-1) or a variable speed limit sign showing the maximum speed shall be placed on the right side of the highway at the beginning of the speed limit and at intervals not greater than 1/2 mile throughout the area with the speed limit.

(iii) The end of a speed limit is typically identified by the placement of a sign indicating a new speed limit, but the End Plaque (R2-10) may be placed above a Speed Limit Sign (R2-1) at the end of the zone if the appropriate speed limit is not known on the following section of roadway.

(2) On freeways, a Speed Limit Sign (R2-1) shall be installed after each interchange unless insufficient space exists for the signs.

#### **§ 212.109. Bridge speed limits.**

(a) *Establishment.* A bridge speed limit shall be established under 75 Pa.C.S. § 3365(a) (relating to special speed limitations) if an engineering investigation by a professional engineer establishes the need to reduce the vibration and impact of vehicles due to a structural condition of the bridge or elevated structure.

(b) *Posting.* An established bridge speed limit shall be posted similar to other speed limits in § 212.108(e) (relating to speed limits), except that a Bridge Sign (R12-1-2) must be mounted directly above each Speed Limit Sign (R2-1) and Reduced Speed (\_\_\_\_) Ahead Sign (R2-5). The sign indicating the beginning of the bridge speed limit should be installed within 50 feet of the beginning of the structure. The end of the bridge or elevated structure must be the end of the bridge speed limit.

#### **§ 212.110. Hazardous grade speed limits.**

(a) *Establishment.* A hazardous grade speed limit may be established under 75 Pa.C.S. § 3365(c) (relating to special speed limitations) if an engineering and traffic study establishes the need for all vehicles or vehicles having a gross weight in excess of a designated weight to be limited to a maximum speed on a downgrade.

(1) The designated weight should be 26,000 pounds unless the engineering and traffic study determines that a different weight should be used.

(2) When a hazardous-grade speed limit is established, it should be consistent with the speed that similar vehicles can climb the hill or other Department-approved methodology, except that a hazardous-grade speed limit should not be greater than the lowest advisory speed or legal speed limit either on the hill or at the base of the hill.

(3) A hazardous-grade speed limit may be established when one or more of the following conditions exist:

**§ 3363. Alteration of maximum limits.**

On highways under their respective jurisdictions, local authorities subject to section 6109(e) (relating to specific powers of department and local authorities) or the department, upon the basis of an engineering and traffic investigation, may determine that the maximum speed permitted under this subchapter is greater or less than is reasonable and safe under the conditions found to exist upon any such highway or part thereof and establish a reasonable and safe maximum limit. The maximum speed limit may be made effective at all times or at times indicated and may vary for different weather conditions and other factors bearing on safe speeds. No maximum speed greater than 55 miles per hour shall be established under this section except on highways listed in section 3362(a)(1.1) (relating to maximum speed limits), where the maximum speed for all vehicles shall not be greater than 70 miles per hour.

(June 13, 1995, P.L.57, No.9, eff. 30 days; Dec. 21, 1998, P.L.1126, No.151, eff. 60 days; Nov. 25, 2013, P.L.974, No.89, eff. imd.)

**2013 Amendment.** See the preamble to Act 89 in the appendix to this title for special provisions relating to legislative findings and declarations.

**1995 Amendment.** See section 4 of Act 9 in the appendix to this title for special provisions relating to report on effect of increased speed limit.