

SE 8th STREET SPEED STUDY

(SE 3rd Avenue to SE 15th Avenue)

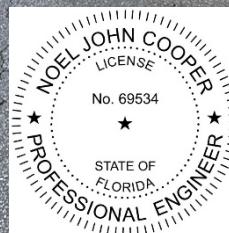
City of Ocala
Marion County



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EXECUTIVE SUMMARY

In response to speeding complaints along SE 8th Street, the Transportation Engineering Division conducted a speed study along SE 8th Street between SE 3rd Avenue and SE 15th Avenue. The study observed the established procedures published by the Institute of Transportation Engineers (ITE), Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, 2009 Edition, and the Florida Department of Transportation (FDOT)'s Speed Zoning for Highways, Roads, and Streets in Florida Manual, July 2017.

The study included field observations, 24-hour machine counts to obtain traffic volume and speed statistics, an analysis of speed characteristics, and an accident review.

Findings

Overall, the average daily traffic (ADT) for the study section of SE 8th Street is 2072 vehicles per day (both directions), with the highest ADT observed in section between SE 3rd Avenue and SE Tusawilla Avenue. The posted speed for the study section of SE 8th Street is 30 mph. Speed study analyses showed the average daily traffic (ADT), the average, 85th percentile, and 10-mile pace speeds for SE 8th Street as follows:

LOCATION	ADT (VPD)	Vehicle Speed (mph)				
		Average	85 th Percentile	10 mph Pace Speed	# in Pace	Pace (%)
SE 8 th Street (SE 3 rd Avenue to SE Tusawilla Avenue)	2400	26	31	20-30	1510	63%
SE 8 th Street (SE 9 th Avenue to SE 11 th Avenue)	2082	28	31	20-30	1388	67%
SE 8 th Street (SE 11 th Avenue to SE 15 th Avenue)	1733	32	37	30-40	1060	61%
Average	2072	29	33			

1. mph = Miles per Hour.

2. ADT = Average Daily Traffic.

3. VPD = Vehicle Per Day.

4. The Average Speed is calculated as the arithmetic mean of all observed speeds (the sum of all speeds divided by the number of speed observations).

5. The 85th percentile speed is defined as the speed at or below which 85 percent of the observed free-flowing vehicles are traveling.

6. The 10-mph pace speed is defined as the 10-mph range containing the highest number of such vehicles contained in the study sample data.

The highest 85th percentile speed of 37 mph was recorded on SE 8th Street between SE 11th Avenue and SE 15th Avenue.

Crash data for a three-year period, January 2020 to December 2022 reported a total of 15 accidents occurred within the study section of SE 8th Street, none of which were speed related.

Based on an intersection sight distance evaluation at the intersection of SE 8th Street and SE 13th Avenue, trees, shrubs, and fence restrict sight distance for both northbound and southbound motorists on SE 13th Avenue at the stop bar, looking to the west or east.

Action Items (Safety Measures)

- Implementing all-way stop control at the intersection of SE 8th Street/SE 13th Avenue due to restricted sight distance.
- Speed trailer deployment to alert motorists of their speed and remind them of the speed limit.

INTRODUCTION

In response to speeding complaints along SE 8th Street, the Transportation Engineering Division conducted a speed study. The study observed the established procedures published by the Institute of Transportation Engineers (ITE), Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways 2009 and the Florida Department of Transportation (FDOT)'s Speed Zoning for Highways, Roads, and Streets in Florida Manual, July 2017.

The study section of SE 8th Street is located between SE 3rd Avenue and SE 15th Avenue in the historic district (see Figure 1). The 0.96-mile segment of SE 8th Street is a two-lane, local roadway primarily providing access to abutting residential properties. Sidewalk exists on SE 8th Street between SE 3rd Avenue and SE 11th Avenue, and Street lighting is provided. (Photo #1) shows the roadway characteristics of SE 8th Street, just west of SE 12th Avenue. Eighth Street Elementary School is located on SE 8th Street between SE 3rd Avenue and SE Tusawilla Avenue. There are local businesses located on the south side of SE 8th Street between SE 3rd Avenue and SE Tusawilla Avenue.

The roadway of SE 8th Street is approximately 22 feet in width, mostly straight between SE 3rd Avenue and west of SE 13th Avenue. There is a reverse curve lane located from west of SE 14th Avenue to SE 15th Avenue. SE 11th Avenue and SE 8th Street intersection is all-way stop controlled with flashing red signals for all approached. There are two sets of speed humps located between SE Tusawilla Avenue and SE Wenona Avenue. North-south roadways intersect SE 8th Street at 12 locations within the study area, forming four T-type and eight four-legged intersections.

A list of these intersections and their traffic controls are presented in Table 1.



Photo #1: SE 8th Street (just east of SE 13th Avenue)

Figure 1: Location Map



Legend

-  Flashing Red Beacon
-  All - way Stop Controlled
-  Speed Hump

TABLE 1: INTERSECTION TRAFFIC CONTROL

LOCATION (SE 8 STREET @)	TYPE	INTERSECTION CONTROL
SE 3 rd AVENUE	4 legged	All-way Stop
SE ALVAREZ AVENUE	3 legged	Stop control for northbound movement
SE TUSCAWILLA AVENUE	3 legged	Stop control for southbound movement
SE SANCHEZ AVENUE	4 legged	Stop control for northbound and southbound movement
SE 8 th AVENUE / SE WENONA AVENUE	4 legged	Stop control for southbound movement
SE 9 th AVENUE	4 legged	All-way Stop
SE 10 th AVENUE	3 legged	Stop control for northbound movement
SE 11 th AVENUE	4 legged	All-way Stop with flashing red signals
SE 12 th AVENUE	3 legged	Stop control for southbound movement
SE 13 th AVENUE	4 legged	Stop control for northbound and southbound movement
SE 14 th AVENUE	4 legged	All-way Stop
SE 15 th AVENUE	4 legged	Stop control for northbound and southbound movement

TRAFFIC VOLUME AND SPEED

Machine counts were performed for a one-week period (4/5/23 to 4/12/23) to collect 24-hour, bi-directional traffic volume and speed data at three locations along SE 8th Street. These locations were:

1. SE 8th Street between SE 3rd Avenue and SE Tusawilla Avenue.
2. SE 8th Street between SE 9th Avenue and SE 11th Avenue.
3. SE 8th Street between SE 11th Avenue and SE 15th Avenue.

A summary of traffic data collected for (Highest Daily Volume) on Thursday, April 6, 2023, is provided in Table 2.

Overall, the average daily traffic (ADT) for the study section of SE 8th Street is 2072 vehicles per day (both directions), with the highest ADT observed in section between SE 3rd Avenue to SE Tusawilla Avenue. The posted speed limit is 30 mph. The recorded average and 85th percentile speeds for the entire study corridor were 29 mph and 33 mph, respectively. The highest 85th percentile speed of 37 mph was recorded between SE 11th Avenue and SE 15th Avenue. The 10-mph pace speed on SE 8th Street between SE 11th Avenue and SE 15th Avenue was 30-40 miles per hour, with 61 percent of vehicles traveling within this range.

TABLE 2: TRAFFIC DATA SUMMARY (April 6, 2023)

LOCATION	ADT (VPD)	Vehicle Speed (mph)				
		Average	85 th Percentile	10 mph Pace Speed	# in Pace	Pace (%)
SE 8 th Street (SE 3 rd Avenue to SE Tusawilla Avenue)	2400	26	31	20-30	1510	63%
SE 8 th Street (SE 9 th Avenue to SE 11 th Avenue)	2082	28	31	20-30	1388	67%
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	Average	2072	29	33		

Notes:

1. mph = Miles per Hour.
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3. VPD = Vehicle Per Day.

Table 3 below presents the number of vehicles recorded in specific speed ranges.

TABLE 3: SPEED STATISTICS

LOCATION	SPEED (mph)				
	< 10	10 to 20	21 to 30	31 to 40	> 40
SE 8 th Street (SE 3 rd Avenue to SE Tusawilla Avenue)	8	427	1510	445	10
SE 8 th Street (SE 9 th Avenue to SE 11 th Avenue)	3	117	1388	562	12
SE 8 th Street (SE 11 th Avenue to SE 15 th Avenue)	4	47	520	1060	102

SE 8th Street from SE 3rd Avenue to SE Tusawilla Avenue

Approximately 19 percent exceeded the posted speed limit of 30 mph.

SE 8th Street from SE 9th Avenue and SE 11th Avenue

Approximately 28 percent exceeded the posted speed limit of 30 mph.

SE 8th Street from SE 11th Avenue and SE 15th Avenue

Approximately 67 percent exceeded the posted speed limit of 30 mph.

PEDESTRIAN DATA

Very minor pedestrian activities were observed during our site investigations.

SAFETY REVIEW

Crash data for SE 8th Street was obtained from the University of Florida's Signal Four Analytics for a three-year period, January 2020 to December 2022, were reviewed, as reported by the City of Ocala Police Department. Signal Four Analytics is a statewide map-based crash analytical system hosted at the University of Florida's Geoplan Center for Florida public agencies and consultants. A total of 15 accidents occurred within the study section of SE 8th Street during the 3-year period. These crashes resulted in 2 injuries and \$48,500.00 in estimated property damage. Angle crashes and failure to yield right of way were the leading crash type and contributing cause, respectively. Vehicle speeds did not appear to be a factor in any of the crashes. Collision details are provided in Appendix A.

INTERSECTION SIGHT DISTANCES REVIEW

Based on field observation, an intersection sight distance evaluation was conducted at the intersection of SE 8th Street and SE 13th Avenue. Currently, this 4-legged intersection is stop-sign controlled for northbound and southbound approaches on SE 13th Avenue.

Sight distance evaluation revealed line of obstructions within the sight triangle to the west and east of SE 13th Avenue. These obstructions include shrubs and trees (Photo #2), which limit sight distance for northbound motorists at the stop bar looking to the left/west. The measurement distance to the shrubs is 24 feet, and the measurement distance to the trees is 86 feet. Looking towards the right/east, the obstructions include a 6-foot diameter tree (Photo #3), which limits visibility for northbound motorists at the stop bar. The measurement distance to the tree is 42 feet.

For the southbound approach looking left/east, the obstructions consist of shrubs and fence (Photo #4), which limits visibility for southbound motorist at the stop bar. The measurement distance to the edge of the shrub and fence is 26 feet. There was no sight restriction when looking to the right/west for southbound motorist (Photo #5). Per the Florida Department of Transportation Design Manual, January 2022 (Appendix B), for posted speed limit of 30 mph, the minimum required distance (passenger vehicle) for clear sight is 240 feet looking to the left and 155 feet looking right. Hence, trees, shrubs, and fences are within the clear sight (Appendix B). The 85th percentile speed of 37 mph was recorded on SE 8th Street between SE 11th Avenue and SE 15th Avenue. Using 35 mph as the design speed, the required clear sight distance is greater, 275 feet looking to the left and 175 feet looking to the right.

Photo#2: Sight Obstruction
(northbound looking left/west)



Photo#3: Sight Obstruction
(northbound looking right/east)



Photo#4: Sight Obstruction
(southbound looking left/east)



Photo#5: No Sight Obstruction
(southbound looking right/west)



CONCLUSION

Overall, the average daily traffic (ADT) for the study section of SE 8th Street is 2072 vehicles per day (both directions), with the highest ADT observed in section between SE 3rd Avenue and SE Tusawilla Avenue. The posted speed for the study section of SE 8th Street is 30 mph. Speed study analyses show the average daily traffic (ADT), the average, 85th percentile, and 10-mile pace speeds for SE 8th Street as follows:

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Action Items (Safety Measures)

- Implementing all-way stop control at the intersection of SE 8th Street/SE 13th Avenue due to restricted sight distance.
- Speed trailer deployment to alert motorists of their speed and remind them of the speed limit.

APPENDICES

APPENDIX A

Collision Data

Appendix A
Collision Data (1/1/2020 - 12/31/2023)

SE 8 Street Study

NO.	Date	Day	Time	Fatality	Injury	Property Damage	Crash Type	Weather	Day / Night	Form_Type	Contributing Cause		
1	3/7/2020	Saturday	1:00 AM	0	0	\$4,050	Off Road / Fixed Object	Clear	Night	Long	Careless Driving		
2	7/22/2020	Wednesday	8:00 PM	0	0	\$5,000	Angle	Clear	Night	Long	Failed to Yield Right Of Way		
3	2/10/2021	Wednesday	8:18 PM	0	1	\$2,000	Off Road / Fixed Object	Clear	Day	Long	Careless Driving		
4	4/16/2021	Friday	10:05 AM	0	0	\$250	Other	Cloudy	Day	Long	Careless Driving		
5	7/14/2021	Wednesday	1:30 PM	0	0	\$5,500	Angle	Rain	Day	Short	Failed to Yield Right Of Way		
6	8/18/2021	Wednesday	4:10 PM	0	0	\$600	Sideswipe	Clear	Day	Short	Following Too Closely		
7	8/28/2021	Saturday	2:45 PM	0	0	\$2,000	Rear-end	Cloudy	Day	Short	Careless Driving		
8	10/9/2021	Saturday	7:33 AM	0	1	\$3,500	Angle	Fog	Day	Update	Failed to Yield Right Of Way		
9	10/18/2021	Monday	1:07 PM	0	0	\$2,500	Angle	Clear	Day	Short	Failed to Yield Right Of Way		
10	11/6/2021	Saturday	1:27 PM	0	0	\$2,000	Angle	Clear	Day	Long	Failed to Yield Right Of Way		
11	11/8/2021	Monday	12:10 PM	0	0	\$3,500	Angle	Clear	Day	Short	Failed to Yield Right Of Way		
12	12/7/2021	Tuesday	2:18 PM	0	0	\$4,600	Angle	Clear	Day	Short	Failed to Yield Right Of Way		
13	2/17/2022	Thursday	7:45 PM	0	0	\$6,000	Other	Clear	Night	Long	Careless Driving		
14	3/1/2022	Tuesday	7:05 PM	0	0	\$1,000	Angle	Clear	Night	Short	Failed to Yield Right Of Way		
15	7/15/2022	Friday	8:55 PM	0	0	\$6,000	Angle	Clear	Night	Long	Failed to Yield Right Of Way		
Total				0	2	\$48,500							
	Severity			Crash by Type									
	Fatal	Injury	Property Damage Only	Rear End	Angle	Sideswipe	Off Road / Fixed Object	Left-Turn	Other	Rollover	Right-Turns	Pedestrian	Total
	0	2	13	1	9	1	2	0	2	0	0	0	15
	0.0%	13.3%	86.7%	6.7%	60.0%	6.7%	13.3%	0.0%	13.3%	0.0%	0.0%	0.0%	100.0%
	Contributing Cause												
	Careless Driving	Failure To Yield Right of Way	Improper Lane Change	Disregarded Traffic Control	Following Too Closely	Lost Control	Defective Equipment	Improper Right Turn	Improper Backing	Total			
	5	9	0	0	1	0	0	0	0	15			
	33.3%	60.0%	0.0%	0.0%	6.7%	0.0%	0.0%	0.0%	0.0%	100.0%			

APPENDIX B

Intersection Sight Distance Details

APPENDIX B – INTERSECTION SIGHT DISTANCE EVALUATION – SE 8th ST AT SE 13th AVE

LEGENDS:

- AREA FREE OF SIGHT OBSTRUCTIONS
- FENCE
- TREES/SHRUBS
- SIGHT DISTANCE PER FOOT DESIGN MANUAL, JANUARY 2022, EXHIBIT 212-4

SE 12th AVE

SE 13th AVE

SE 8th ST

SE 14 AVE

SOUTHBOUND LOOKING RIGHT (NO SIGHT RESTRICTIONS)

SOUTHBOUND LOOKING LEFT (FENCE)

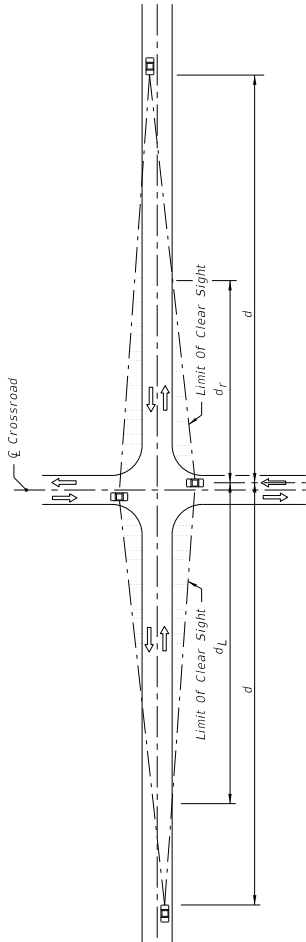
NORTHBOUND LOOKING LEFT (TREES AND SHRUBS)

NORTHBOUND LOOKING RIGHT (TREES)

INTERSECTION SIGHT DISTANCE AT SE 8th ST AND SE 13th AVE

DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

INTERSECTION SIGHT DISTANCE: 2-LANE UNDIVIDED



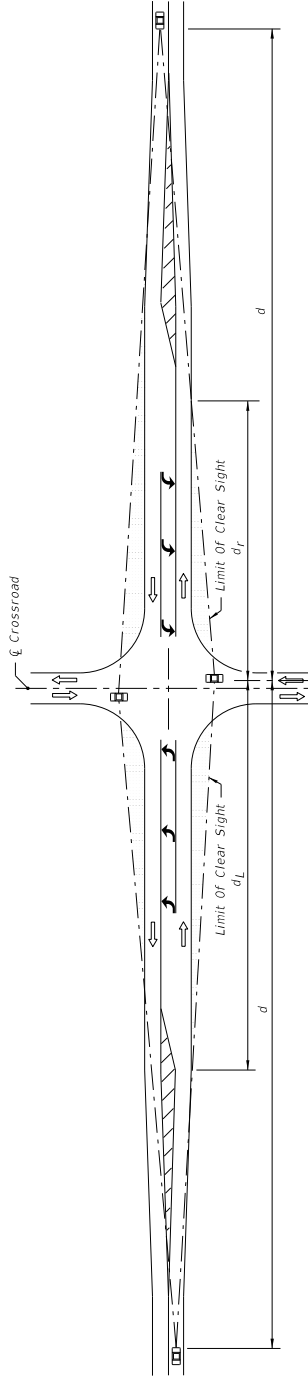
Design Speed (mph)	d (ft.)	d_L (ft.)	d_r (ft.)
≤ 30	335	240	155
35	390	275	175
40	445	315	200
45	500	355	225
50	555	395	250
55	610	435	275
60	665	470	300
65	720	510	325

Design Speed (mph)	d (ft.)	d_L (ft.)	d_r (ft.)
≤ 30	420	300	190
35	490	350	220
40	560	400	250
45	630	450	285
50	700	495	315
55	770	545	345
60	840	595	375
65	910	645	410

Design Speed (mph)	d (ft.)	d_L (ft.)	d_r (ft.)
≤ 30	510	365	230
35	595	420	265
40	680	480	305
45	765	545	345
50	845	600	380
55	930	660	415
60	1015	720	455
65	1100	780	495

SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L , d_r) (FEET)
2 LANE UNDIVIDED

2-LANE UNDIVIDED



Design Speed (mph)	d (ft.)	d_L (ft.)	d_r (ft.)
≤ 30	355	195	135
35	415	230	160
40	475	260	180
45	530	290	200
50	590	325	225
55	650	355	245
60	710	390	270
65	765	420	290

Design Speed (mph)	d (ft.)	d_L (ft.)	d_r (ft.)
≤ 30	450	250	170
35	525	290	200
40	600	330	230
45	675	370	255
50	750	410	285
55	825	455	315
60	900	495	340
65	975	535	370

Design Speed (mph)	d (ft.)	d_L (ft.)	d_r (ft.)
≤ 30	540	295	205
35	630	345	240
40	720	395	275
45	810	445	305
50	900	495	340
55	990	545	375
60	1080	590	410
65	1170	640	440

SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L , d_r) (FEET)
2-LANE WITH LEFT TURN

NOTE:
1. See Figure 212.11.1 for origin of clear sight line on the minor road.

LEGEND
Areas Free of Sight Obstructions

NOT TO SCALE