

Randall Roberts, P.E.
City of Oberlin
City Engineer
85 South Main Street
Oberlin, Ohio 44074

Lorain Street (SR-511) Speed Zone Study City of Oberlin, Lorain County, Ohio

Dear Mr. Roberts,

The purpose of this letter is to perform a Speed Zone Study along Lorain Street (SR-511) within the City of Oberlin. The speed zone analysis was completed between Park Street and Cedar Street, a distance of 0.65 miles through downtown Oberlin. This assessment will analyze existing travel speeds, volumes and crash history in the area to determine if a reduced speed limit is appropriate through this segment given the presence of Oberlin College, Oberlin Elementary School, Oberlin Senior High School, Langston Middle School and Tappan Square within the downtown Oberlin area.

Traffic Data Collection

For this evaluation, traffic count data was collected on Lorain Street (SR-511) at four (4) locations, two (2) locations were selected east of Main Street and two (2) were selected west of Main Street. GPD Group personnel deployed four (4) traffic data collectors along Lorain Street on Tuesday, September 20, 2022 and retrieved on Friday, September 23, 2022. The traffic counts were performed utilizing both automatic tube counters and radar collectors. The install locations for the traffic data collectors are shown below in the picture.



The first traffic collector (Unit A) was deployed between Cedar Street and Professor Street along SR-511, the second traffic recorder (Unit B) was deployed between Professor Street and Main Street, the third traffic collector (Unit C) was deployed between Main Street and Pleasant Street, and the fourth traffic collector (Unit D) was deployed between Pleasant Street and Park Street.

See **Attachment A** for the traffic volume and speed data. The current posted speed limit on SR-511 within the study area is 35 MPH. **Table 1** summarizes the average daily traffic (ADT), average speed, the 85th percentile speed, the 10 MPH pace speed, the percent of vehicles traveling within the pace speed and the percentage of vehicles traveling over the speed limit of all vehicles recorded.

Table 1: SR-511 Travel Speed Summary							
Segment / Direction of Travel	ADT	Average Speed (mph)	85th Percentile (mph)	50th Percentile (mph)	10 mph Pace Speed	Percent in Pace (%)	Percent > Speed Limit (%)
Cedar Street to Professor Street							
Eastbound	2,621	25	30	25	21-30	62.3%	2.5%
Westbound	2,433	25	31	25	21-30	60.3%	3.4%
<i>Segment</i>	<i>5,054</i>	<i>25</i>	<i>31</i>	<i>25</i>	<i>21-30</i>	<i>61.4%</i>	<i>2.9%</i>
Professor Street to Main Street							
Eastbound	2,439	27	31	26	21-30	69.3%	3.1%
Westbound	2,540	28	32	27	26-35	65.7%	5.2%
<i>Segment</i>	<i>4,979</i>	<i>27</i>	<i>32</i>	<i>27</i>	<i>21-30</i>	<i>65.9%</i>	<i>4.1%</i>
Main Street to Pleasant Street							
Eastbound	2,332	26	32	26	21-30	61.8%	4.4%
Westbound	2,593	25	31	25	21-30	63.5%	2.4%
<i>Segment</i>	<i>4,925</i>	<i>26</i>	<i>31</i>	<i>25</i>	<i>21-30</i>	<i>62.6%</i>	<i>3.5%</i>
Pleasant Street to Park Street							
Eastbound	2,644	29	33	28	26-35	64.9%	8.8%
Westbound	2,841	28	34	28	26-35	63.4%	9.7%
<i>Segment</i>	<i>5,485</i>	<i>28</i>	<i>33</i>	<i>28</i>	<i>26-35</i>	<i>64.1%</i>	<i>9.2%</i>

The most significant, accepted, engineering factors used in evaluating traffic speed data are the 85th percentile speed (the speed at, or below which 85% of the sample vehicles are traveling), the pace (the 10 mph speed range which contains the highest number of vehicles) and the percentage of total sample vehicles in the pace. These are all factors that reflect the comfort range of the motorists driving on a specific roadway and are considered to represent reasonable operating speeds that can typically, be expected on that roadway. As shown in **Table 1**, the speed data recorded found that the 85th percentile speeds are less than the posted speed limit of 35 mph for each roadway segment studied. From the data collected, it can be seen that drivers do not appear to be comfortable driving at the posted speed limit along SR-511 in downtown Oberlin.

Please note that the number of vehicles shown on the speed data results in **Attachment A** will not match the volume data for the same segment shown in the same attachment. This is due to the fact that all speed data where the vehicular headway was less than 5.0 seconds was filtered out of the speed data to calculate an accurate free flow travel speed along SR-511 that was not impacted by the platooning that would be expected to occur along an urban, signalized corridor.

Crash History

The crash data for the study area was obtained from the Ohio Department of Transportation (ODOT) GCAT for the calendar years of 2019-2021. A total of seventeen (17) crashes occurred within the study area over three years. These crashes include 6 angle, 4 rear end, 3 pedestrian right turns and 1 bicycle crash. 71% of all crashes occurred in the daylight and 53% occurred on dry pavement. 65% of the crashes were property damage only and the other 35% of crashes were injury crashes. No fatal crashes were reported over the study period. All the crashes found occurred within an intersection and were not included as part of the speed zone evaluation as required per ODOT Traffic Engineering Manual 1203-3.4.2. See **Attachment B** for the crash analysis of the study area.

Speed Zone Evaluation

The speed data obtained as a part of this study was entered into ODOT's Speed Zone Evaluation Worksheet (Form 1296-2). This worksheet utilizes factors such as existing ADT, segment length, number of crashes, number of access points along the segment and roadway geometric data to determine if the posted speed limit is appropriate for the current roadway conditions. Additionally, USLIMITS2 was completed as part of the required referencing for every speed study in Ohio. USLIMITS2 is a tool to aid practitioners in determining appropriate speed limit recommendations while also utilizing existing ADT, segment length, number of crashes, access points and several other roadway factors. The 1296-2 form was completed for each of the four segments considered within the study area. **Table 2** provides a summary of the ODOT Speed Zone Evaluation Worksheet. See **Attachment C** for the Speed Zone Evaluation Worksheets and USLIMIT2 evaluations.

Table 2: Speed Evaluation Summary				
Segment	Posted Speed Limit (mph)	Calculated Speed Limit (mph)	USLIMITS2 Speed Limit (mph)	Recommended Speed Limit (mph)
Cedar Street to Professor Street	35	34	25	25
Professor Street to Main Street	35	35	25	25
Main Street to Pleasant Street	35	31	25	25
Pleasant Street to Park Street	35	32	30	25

As shown in **Table 2**, the Speed Zone Evaluation Worksheets indicate that the calculated speed limits for the four (4) segments being studied range from 31 – 35 mph and USLIMITS2 indicate that the speed limit should be 25 mph from Cedar Street to Pleasant Street and 30 mph from Pleasant Street to Park Street. The calculated speed limits and USLIMITS2 justify lowering the speed limit to 25 mph. While not all USLIMITS2 speed limits were 25 mph, the small eastern stretch that was calculated to be 30 mph should not be posted at 35 mph per either calculation and setting a speed zone for less than 0.5 miles is not recommended per the TEM. Additionally, the Lorain Street / Park Street intersection is a guarded crossing location in the morning due to the presence of the Oberlin Elementary and Oberlin Senior High Schools just north of Lorain Street on Park Street.

It should be noted that the 50th percentile speed was used in the Speed Zone Evaluation Worksheet due to the presence of vulnerable road users that were found during the field visit, as shown in **Figure 1**. These vulnerable road users were found along the corridor due to the presence of the schools and parks that were previously mentioned. Based on the results of the speed zone form, USLIMITS 2, field observations and the surrounding land uses, it is GPD Group's recommendation that the posted speed limit should be reduced to 25 MPH.



Figure 1: Vulnerable Road Users.

Summary

GPD Group has completed a speed study for Lorain Street (SR-511) from Cedar Street (SLM 19.34) to Park Street (SLM 19.98). The recorded traffic data found that vehicles do not appear to be comfortable driving at the posted speed limit of 35 mph as the 85th percentile speed ranges from 31 - 33 mph along the corridor and the average speed ranges from 25-28 mph. The ODOT Speed Zone Evaluation Worksheets that considered factors such as existing ADT, segment length, number of crashes, number of access points along the segment and roadway geometric data calculated speed limits for the four (4) studied segments ranging between 31 - 35 mph. Additionally, the results from the USLIMITS 2 program recommend 25 mph from Cedar Street to Pleasant Street and a 30 mph speed limit from Pleasant Street to Park Street. Based on the results of the speed zone form, USLIMITS 2, field observations and the surrounding land uses, it is GPD Group's recommendation that the posted speed limit should be reduced to 25 MPH.

GPD Group appreciates the opportunity to provide these types of traffic engineering services to the City of Oberlin. If you have any questions regarding this Speed Zone Study, please feel free to contact me at (330) 572-2495 or via email at cdeibel@gpdgroup.com.

Respectfully Submitted,
GPD Group

Curtis J. Deibel
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Associate Project Manager / Traffic Engineer

CC: Michael A. Hobbs, P.E., PTOE (GPD Group)
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