PIK-23-11.11 (2nd Street)

PIK-32 & SR 104 Safety Study

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I. Executive Summary

A. Purpose and Need

The purpose of this study is to analyze existing conditions and identify potential countermeasures to reduce crash frequency and severity at the intersection of US 23 and 2nd Street. The study limits include the intersection of US 23, 2nd Street and approximately 300 feet on each intersection approach.

ODOT Safety maintains a list of HSIP priority locations and ranks each location based on crash criteria. This intersection is ranked #169 on the 2021 Suburban Intersection, Non-Freeway list. In addition to the HSIP Priority List, ODOT TSMO maintains a TOAST list. On the 2024 TOAST list, this intersection is located within the 35th top ranked TOAST segment in District 9.

B. Overview of Safety Issues

Crash data was pulled from 2022 through 2024 from ODOT's crash database inside TIMS. There were 17 crashes within that 3-year period.

Of the 17 crashes, 6 crashes (35.3%) resulted in injuries. Of the 6 injury crashes, 3 crashes were serious injury crashes, 2 were minor injury crashes and 1 was injury possible crashes. 7 of the 17 crashes (41.2%) were rear end crashes. 7 of the 17 crashes (41.2%) were left turn/angle crashes. The 3 serious injury crashes were a result of left turn/angle crashes. There is a concerning trend of mainline US 23 left turning traffic failing to yield to mainline US 23 through traffic when making their left turn. It is believed that the current configuration of the left turn lanes on US 23 is leading to opposing through traffic being shadowed by traffic in the opposing left turn lane.

C. Recommended Countermeasures

Based on the crash report investigation resulting in a left turn/angle crash pattern being identified and the existing left turn lanes not being positively offset, it is recommended to restripe the left turn lanes to create a positive offset. The turn lane upgrades are expected to mitigate the injury crash pattern identified at the intersection. The estimated cost of the project is $346,354. This cost is based on a recent estimated completed by ODOT's Office of Roadway Engineering. The project was selected for funding through ODOT Central Office's Department of Safety.

II. Purpose and Need

The purpose of this study is to analyze existing conditions and identify potential countermeasures to reduce crash frequency and severity at the intersection of US 23 and 2nd Street. The study limits include the intersection of US 23, 2nd Street and approximately 300 feet on each intersection approach.

ODOT Safety maintains a list of HSIP priority locations and ranks each location based on crash criteria. This intersection is ranked #169 on the 2021 Suburban Intersection, Non-Freeway list. In addition to the HSIP Priority List, ODOT TSMO maintains a TOAST list. On the 2024 TOAST list, this intersection is located within the 35th top ranked TOAST segment in District 9.The ranking on the HSIP Priority indicates possible safety improvement at the intersection. A study location map is provided in **Figure 1.** A study area aerial is provided in **Figure 2**.

Figure 1: Project Location Map (Pike County outlined in red)

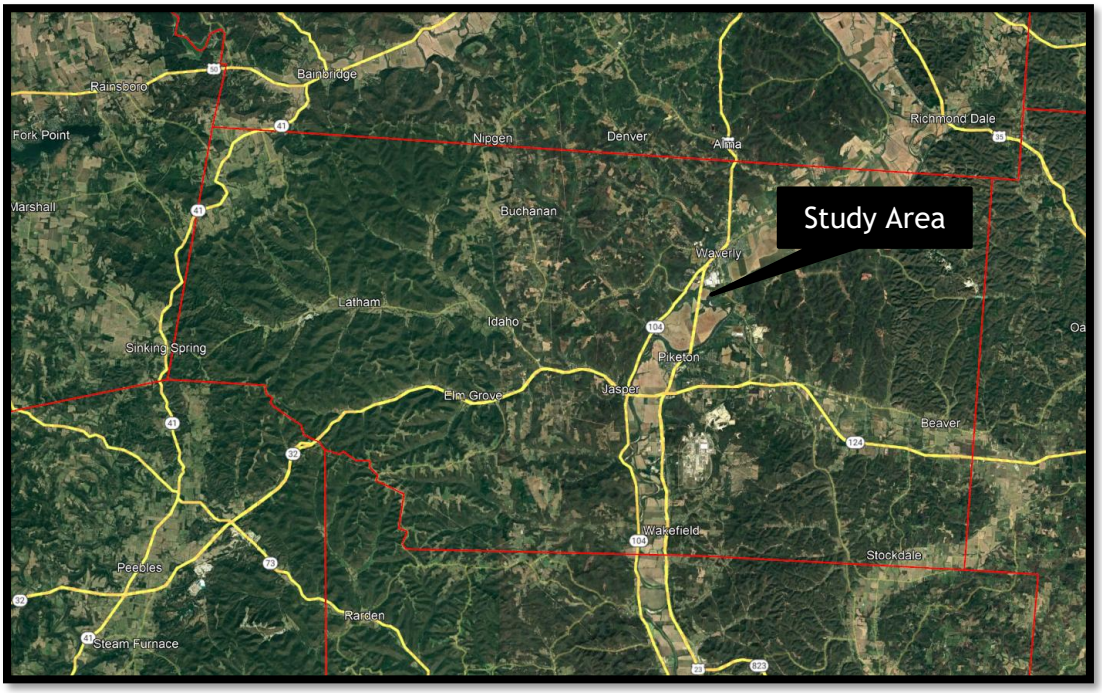
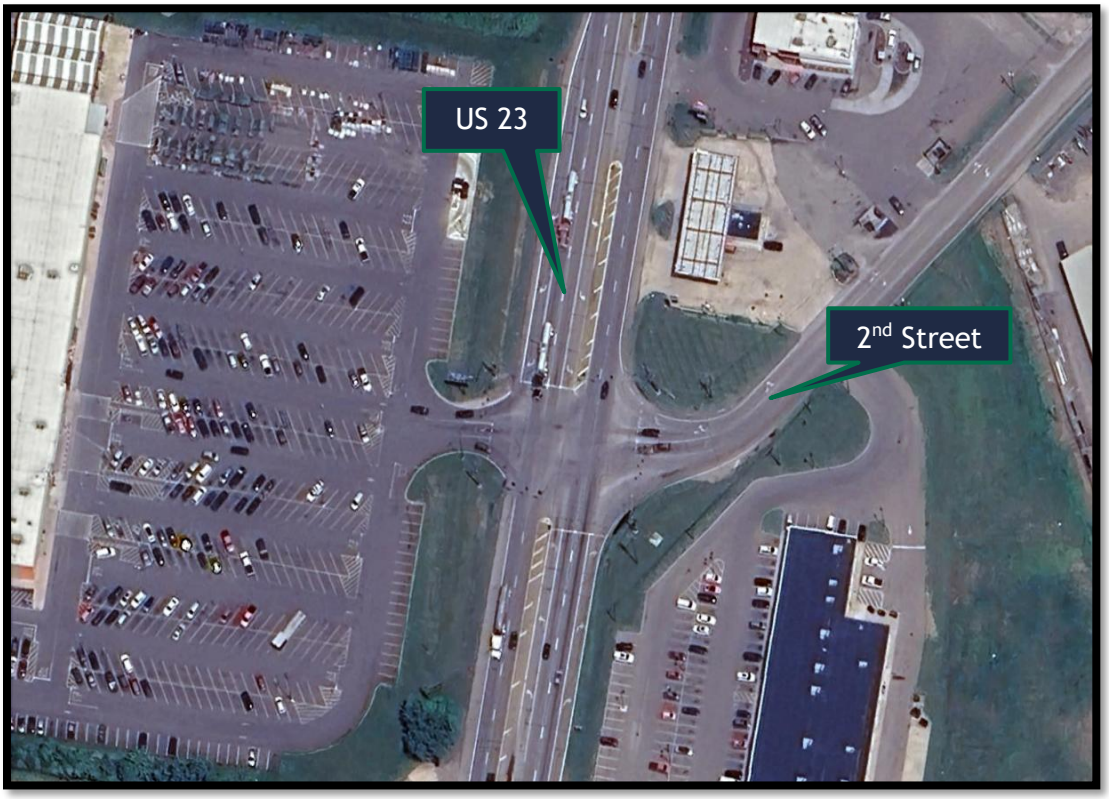


Figure 2: Study Area Aerial



III. Existing Conditions

A. Land Use

The study area is located within the corporation limits of Waverly, Ohio. The surrounding area of the study area includes undeveloped wooded space and commercial properties. According to the TIMS database, only one culvert exists in the study area, culvert 1813203. Culvert 1813203 is 15" span, 50' long culvert with a current rating of 6.

B. Roadway Conditions

US 23 acts as a north-south connector throughout Ohio and is one of the higher AADT routes in District 9 with an AADT of as high as 26,293 in locations along this corridor. US 23 is classified as a Principal Arterial Other and has a posted speed limit of 50 MPH in the study area. This segment of US 23 is a two-lane, suburban highway with 10-foot shoulders.

2nd Street (MR 96) is classified as a local road and has an AADT of 3995. This section of 2nd Street is a two-lane suburban street with a TWLTL with a posted speed limit of 25 MPH. 2nd Street has 2-foot shoulders through this section.

A private drive to Walmart exists as a 4th leg of the intersection.

C. Intersection Conditions

The intersection of US 23 and 2nd Street is a signalized 4-leg, suburban intersection. Dedicated left turn and right turn lanes exists on US 23 for northbound and southbound traffic. Dedicated left turn and right turn lanes also exist on 2nd Street. A dedicated left turn lane exists for access drive to Walmart.

D. Data Collection

Existing data for the routes and the intersection was obtained through TIMS.

IV. Existing Conditions Analysis

After it was discovered that the signal had been deannexed by the village of Waverly and a signal malfunction discovered, the signal was upgraded in 2021. Currently, there is a trend of injury crashes involving traffic turning left from US 23 failing to yield to opposing through traffic. From sight visits to the intersection, this is believed to be caused by traffic shadowing caused by traffic in the opposing left turn lanes on US 23. This is causing sight distance issues for vehicles wishing to turn left from US 23, leading to failure to yield crashes. **Table 1** shows 2024 TOAST data for the segment of roadway in which the intersection is located.

Table 1: 2024 TOAST Data

SPIKUS00023C_03.780_11.100_F**

Overall Score	66.5%
District	9
Functional Class	3
Roadway Category	UrbNonFwy
Statewide Overall Rank	1815
District Overall Rank	35
Statewide Category Rank	1114
District Category Rank	26

V. Crash Data

Crash data was pulled from 2022 through 2024 from ODOT's crash database inside TIMS. There were 17 crashes within that 3-year period.

Of the 17 crashes, 6 crashes (35.3%) resulted in injuries. Of the 6 injury crashes, 3 crashes were serious injury crashes, 2 were minor injury crashes and 1 was injury possible crashes. 7 of the 17 crashes (41.2%) were rear end crashes. 7 of the 17 crashes (41.2%) were left turn/angle crashes. The 3 serious injury crashes were a result of left turn/angle crashes. There is a concerning trend of mainline US 23 left turning traffic failing to yield to mainline US 23 through traffic when making their left turn. It is believed that the current configuration of the left turn lanes on US 23 is leading to opposing through traffic being shadowed by traffic in the opposing left turn lane. **Table 2** shows a breakdown of crash statistics over the 3-year period.

Table 2: Crash Statistics

Year	Crashes	%
2022	7	41.18%
2023	6	35.29%
2024	4	23.53%
Grand Total	17	100.00%

Crash Type	Crashes	%
Rear End	7	41.18%
Left Turn	5	29.41%
Angle	2	11.76%
Right Turn	1	5.88%
Backing	1	5.88%
Fixed Object	1	5.88%
Grand Total	17	100.00%

Crashes Per Year	5.67
Fatal and All Injury Crashes	6
Percent Injury	35.3%
Equivalent PDO Index Value	9.74

Crash Severity	Crashes	%
(2) Serious Injury Suspected	3	17.65%
(3) Minor Injury Suspected	2	11.76%
(4) Injury Possible	1	5.88%
(5) PDO/No Injury	11	64.71%
Grand Total	17	100.00%

Hour of Day	Crashes	%
7	1	5.88%
11	1	5.88%
13	1	5.88%
14	3	17.65%
15	3	17.65%
16	1	5.88%
17	3	17.65%
18	3	17.65%
20	1	5.88%
Grand Total	17	100.00%

VI. Recommended Countermeasures

A. Recommended Alternative

Based on the crash report investigation resulting in a left turn/angle crash pattern being identified and the existing left turn lanes not being positively offset, it is recommended to restripe the left turn lanes to create a positive offset. The turn lane upgrades are expected to mitigate the injury crash pattern identified at the intersection. The estimated cost of the project is $346,354. This cost is based on a recent estimated completed by ODOT's Office of Roadway Engineering. The project was selected for funding through ODOT Central Office's Department of Safety. **Figure 3** shows the proposed turn lane layout.

Figure 3: Proposed Turn Lane Layout

B. Alternatives Considered

Although there were 7 rear end crashes at the intersection, all injury crashes were left turn/angle crashes. For this reason, a countermeasure addressing those crash types specifically was pursued. Given that the turn lanes are not currently positively offset, and instances of traffic shadowing were observed during a field visit, it was decided to pursue a project to restripe the turn lanes to create a positive offset. The proposed project is expected to reduce instances of traffic shadowing by increasing sight distance for mainline left turners on US 23. This alternative is low cost and addresses the crash pattern observed. For these reasons, no other alternatives were considered at this time.