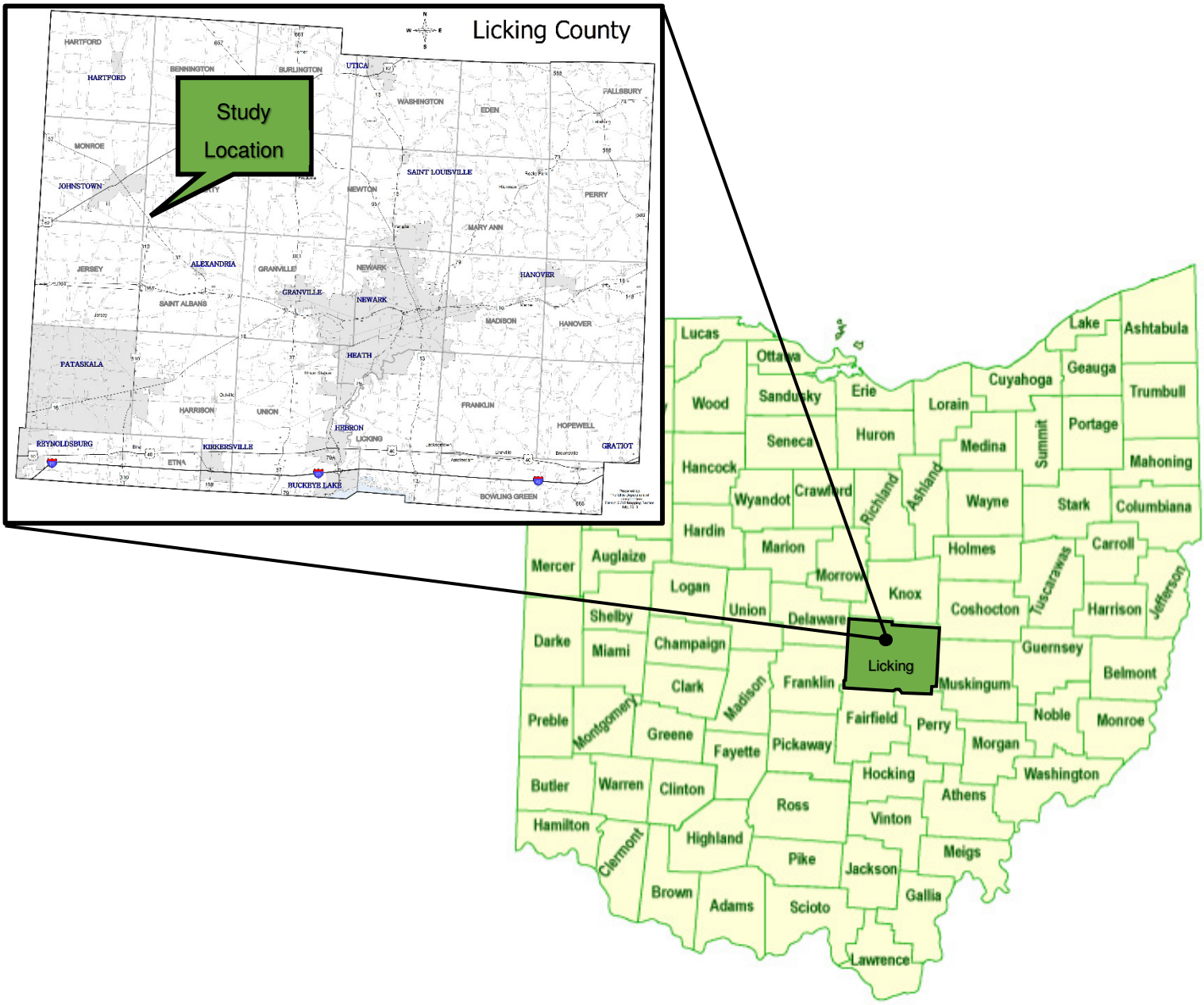
ODOT District 5 HSIP Safety Study
LIC-37-7.03 - SR 37 & SR 310
2021 HSIP Priority List #164 Rural Intersection



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Completion Date: August 2023

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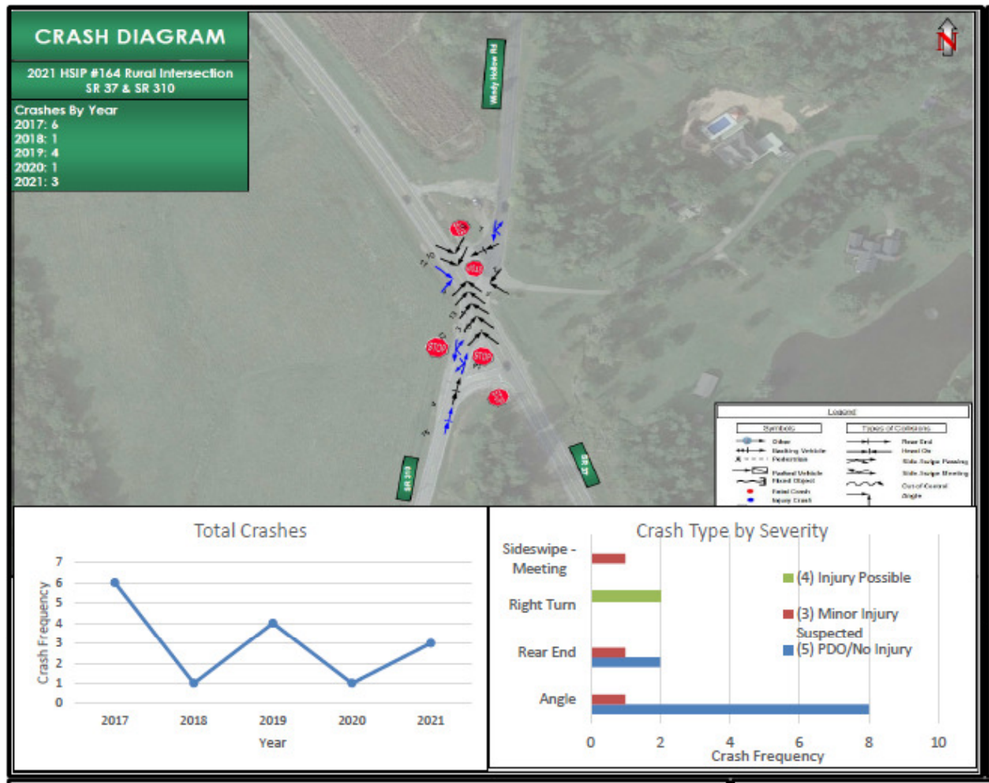
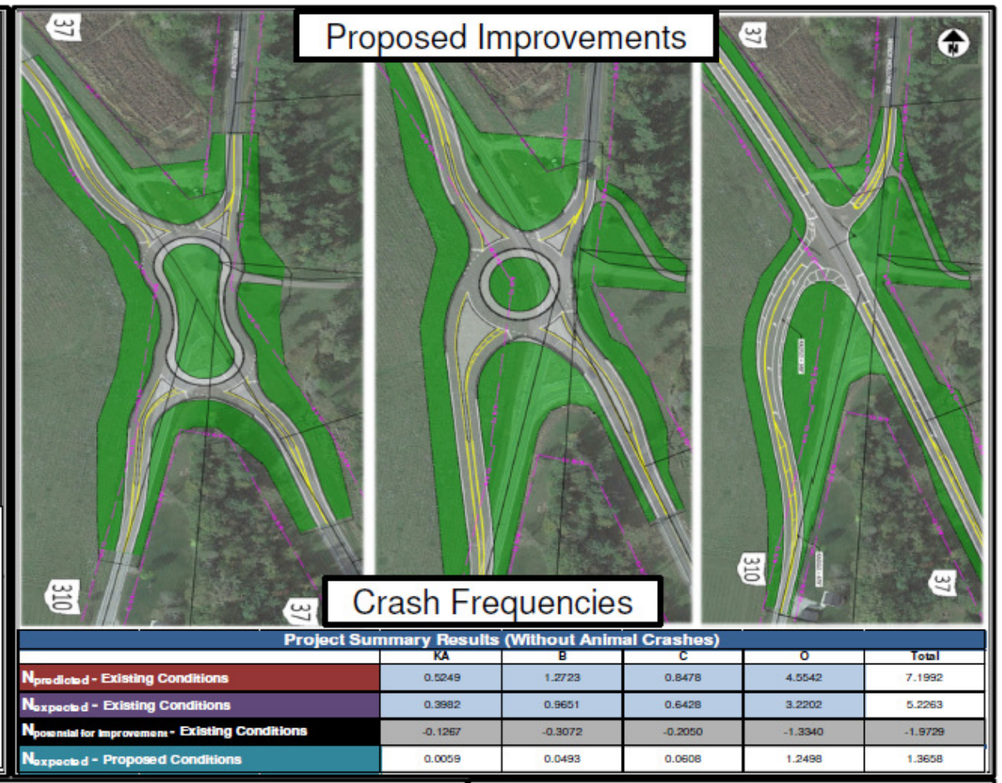
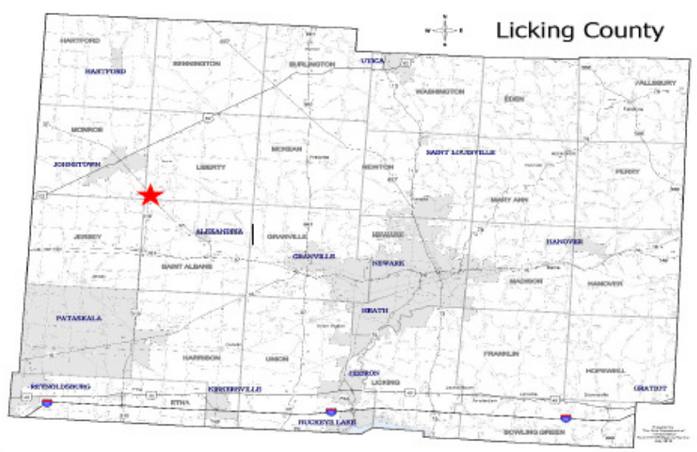
One Page Project Summary





Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.5249	1.2723	0.8478	4.5542	7.1992
$N_{expected}$ - Existing Conditions	0.3982	0.9651	0.6428	3.2202	5.2263
$N_{potential\ for\ improvement}$ - Existing Conditions	-0.1267	-0.3072	-0.2050	-1.3340	-1.9729
$N_{expected}$ - Proposed Conditions	0.0059	0.0493	0.0608	1.2498	1.3658



Safety Application Score

Application Scoring

Category	Scoring Value	Points Awarded	Points Possible
Ratio of Observed Fatal and Serious Injuries to Observed Total Crashes	0.00	0	30
Percentage of the Potential for Safety Improvement to Total Expected Crashes	0.00%	0	20
Relative Severity Index	57,213.85	20	20
Equivalent Property Damage Only Index	5.86	20	20
Location Equity Measure	9.00%	0	10
	Total	40	100

Countermeasures:

- Construct a roundabout OR construct a traffic signal with left turn lane widening OR construct left turn lane widening.
- Implement intersection lighting.

Project Summary:

- Intersection improvements at the SR 37 and SR 310 intersection. R/W acquisition and utility relocation required.

Application Request:

Design (FY 2025/26)	$600,000
R/W & Utilities (FY 2027)	$410,000
Construction (FY 2029)	$3,910,000
Total	$4,920,000

LIC-37-7.03 Safety Improvements
Intersection of SR 37 & SR 310
ODOT District 5

OHIO DEPARTMENT OF TRANSPORTATION

Executive Summary

Purpose and Need

The following study provides an overview of the purpose and need, possible causes, recommended countermeasures, and estimated costs from a safety engineering study at the intersection of SR 37, SR 310 and Windy Hollow Road (TR 96) in Liberty Township, Licking County. The study location is ranked the 164th Rural Intersection on ODOT's 2021 HSIP Priority List.

Background

The intersection of SR 37 and SR 310 is located approximately 2.5 miles southeast of the City of Johnstown, 3.5 miles northwest of the Village of Alexandria, 8 miles northeast of the City of New Albany and 8 miles northwest of the Village of Granville.

SR 37 runs northwest/southeast connecting the City of Sunbury, the City of Johnstown, the Village of Alexandria and the Village of Granville. SR 310 runs north/south connecting I-70, US 40, the City of Pataskala and the City of Johnstown.

SR 37 is classified as a principal arterial with a 2021 AADT of 5,661 vpd and 6% daily truck percentage. SR 310 is classified as a major collector with a 2021 AADT of 3,633 vpd and 10% daily truck percentage. Windy Hollow Road is a local township road.

Crash Data

Crash data from 2017-2021 was compiled and 15 crashes were observed within the study area. A review of the crash data shows:

- Angle crashes were the most prevalent with 9 crashes (60% of total crashes).
    - 5 of 9 Angle crashes (56%) involved northbound SR 310 vehicles and northwestbound SR 37 vehicles.
- 5 of 15 total crashes (33%) were injury crashes.
    - There were no fatal or serious injury crashes.

An existing conditions safety analysis calculated the predicted average crash frequency of the intersection to be 7.34 crashes per year and the expected crash frequency to be 5.28 crashes per year.

Recommended Countermeasures and Related Costs

From 2017 to 2021, 15 crashes occurred at the intersection including 9 angle crashes with 33% of all crashes resulting in injury. A safety performance analysis of the SR 37 & SR 310 intersection calculated expected crash frequency with existing site conditions as 5.28 crashes per year.

ODOT District 5 has not selected a preferred alternative at this time. All four alternatives require right-of-way acquisition and utility relocation.

Purpose and Need

The following study provides an overview of the purpose and need, possible causes, recommended countermeasures, and estimated costs from a safety engineering study at the intersection of SR 37, SR 310 and Windy Hollow Road (TR 96) in Liberty Township, Licking County. The purpose of this safety study is to evaluate the safety conditions at the intersection and determine crash countermeasures which will mitigate crash frequency and severity. The study location is ranked the 164th Rural Intersection on ODOT's 2021 HSIP Priority List.

Existing Conditions

The intersection of SR 37 and SR 310 is located approximately:

- 2.5 miles southeast of the City of Johnstown
- 3.5 miles northwest of the Village of Alexandria
- 8 miles northeast of the City of New Albany
- 8 miles northwest of the Village of Granville

SR 37 runs northwest/southeast connecting the City of Sunbury, the City of Johnstown, the Village of Alexandria and the Village of Granville. SR 310 runs north/south connecting I-70, US 40, the City of Pataskala and the City of Johnstown.

SR 37 is classified as a principal arterial with a 2021 AADT of 5,661 vpd and 6% daily truck percentage. SR 310 is classified as a major collector with a 2021 AADT of 3,633 vpd and 10% daily truck percentage. Windy Hollow Road is a local township road with a 2023 ADT of approximately 800 vpd. The regulatory speed limit on all intersection approaches is 55 mph.

Figure 1: SR 37/SR 310/Windy Hollow Road intersection (looking south)

The traffic control at the intersection is stop control on the minor road approaches (SR 310 and Windy Hollow Road). There is no existing roadway lighting. SR 310 intersects SR 37 at an approximate 50-degree skew. The SR 37 and SR 310 intersection has four legs with each approach having two travel lanes (one shared through-left-right lane and one receiving lane). There are right turn spurs on the minor road approaches which square up alternate approaches perpendicular to SR 37. The Windy Hollow Road approach has a private road or driveway providing access to multiple properties.

SR 37 has 12-feet lanes with 5-feet paved shoulders. SR 310 has 10-feet lanes with 1-foot unpaved shoulders. There are STOP AHEAD warning signs on the SR 310 and Windy Hollow Road approaches. Roadside objects and hazards adjacent to both roads include ditches, trees and utility poles. Adjacent land use within the study area is primarily residential and agricultural. The existing conditions diagram are presented in **Appendix A**.

Crash Data

Crash Data Summary

Crash data from 2017-2021 was compiled and 15 crashes were observed within the study area. The following tables provide an overview of the crash data:

Table 1: Crashes observed by year

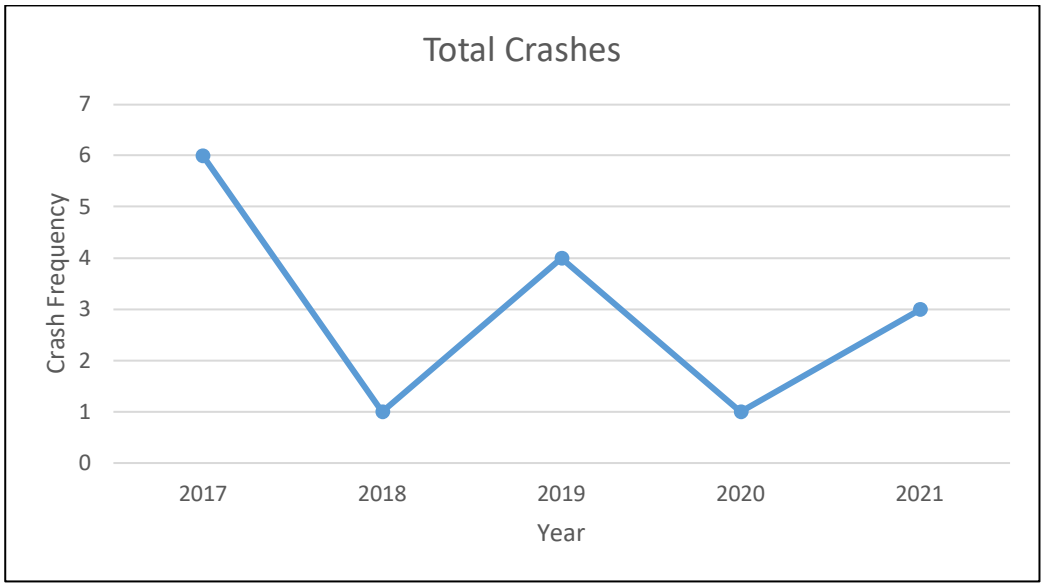
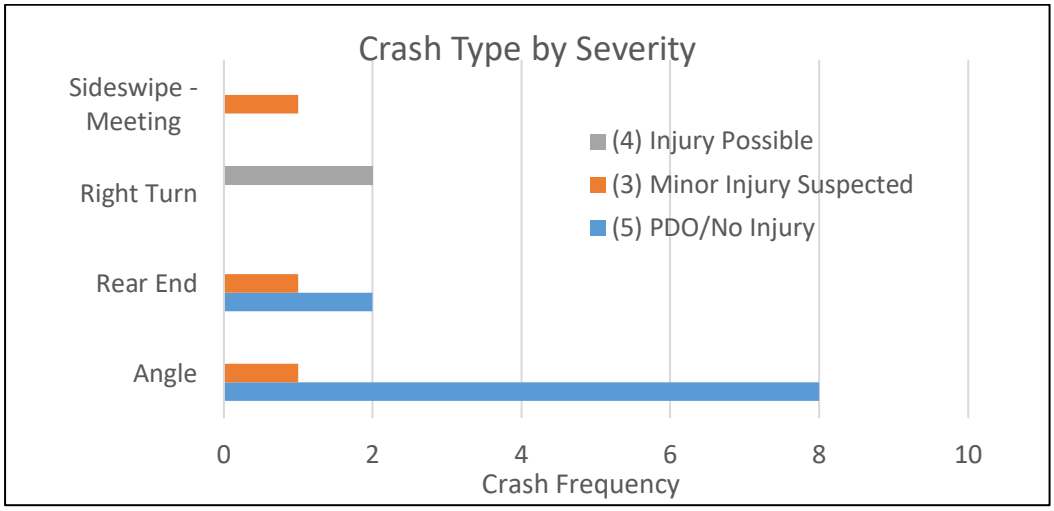


Table 2: Crashes observed by type and severity



A complete analysis of the crash data and crash diagram showing the location and severity of each accident can be found in **Appendix B**.

Crash Analysis

A review of the crash data shows:

- Angle crashes were the most prevalent with 9 crashes (60% of total crashes).
    - 5 of 9 angle crashes (56%) involved northbound SR 310 vehicles and northwestbound SR 37 vehicles.
- 5 of 15 total crashes (33%) were injury crashes.
    - There were no fatal or serious injury crashes.
- Failure to yield was the primary crash contributing factor in 53% of crashes.

Although not included in the study's crash data set, a fatal angle crash occurred at the study intersection in 2022. An existing conditions safety analysis calculated the predicted average crash frequency of the intersection to be 7.34 crashes per year and the expected crash frequency to be 5.28 crashes per year.

Figure 2: SR 37/SR 310/Windy Hollow Road intersection (looking NNW)

Other Traffic Analysis

An intersection turning movement count was performed on April 6th, 2023. Signal warrant analysis was conducted using guidance from the OMUTCD Chapter 4C and Traffic Engineering Manual Section 402-3. The analysis determined the intersection does not meets any traffic signal warrants at this time. The signal warrant analysis summary is presented in **Appendix F**.

The following traffic operations were analyzed using 2023 peak hour count data and linearly-grown 2028/2048 peak hour traffic volumes:

- Two-Way Stop Control (No Build)
- Left Turn Lane Widening
- Traffic Signalization with Left Turn Lane Widening
- Modern Roundabout

Due to the nearby Intel plant development expected impact on traffic volumes, linear growth rates were produced and provided by MORPC for the study intersection. Linear growth rates were applied to turn movement volumes as follows:

- Windy Hollow Road – 3.90%
- SR 37 north of SR 310 – 1.20%
- SR 310 – 1.60%
- SR 37 south of SR 310 – 1.80%

The signalization and turn lane widening alternative results in LOS C in the opening and design years.

The turn lane widening only alternative results in LOS B & C in the design year. The roundabout alternative results in the best traffic operations with LOS A in the opening and design years. **Table 3** below summarizes HCS analysis for each alternative. The HCS reports for each analyzed condition and MORPC growth rates documentation can be found in **Appendix F**.

Table 3: Capacity Analysis Summary

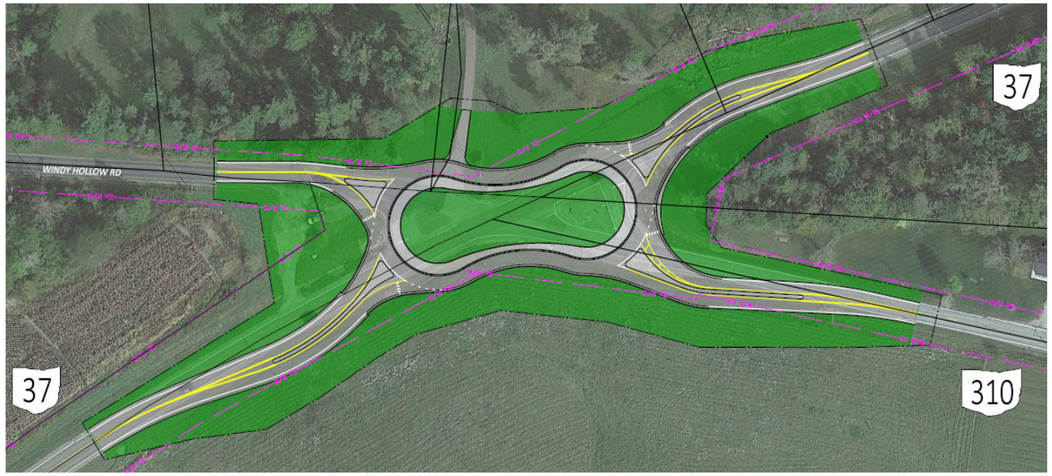
Traffic Control Condition	Approach LOS & Delay (s/veh)				Intersection LOS & Delay (s/veh)
	EB	WB	NB	SB	
Two-Way Stop (TWSC) - 2023	B (14.9)	B (12.0)	-	-	-
TWSC (No Build) - 2028	C (16.0)	B (12.4)	-	-	-
Left Turn Lane Widening - 2028	B (13.8	B (12.4)	-	-	-
Traffic Signal w/ Left Turn Lane Widening - 2028	C (20.7)	C (25.6)	C (23.3)	C (25.6)	C (23.8)
Roundabout - 2028	A (4.8)	A (3.9)	A (4.8)	A (4.8)	A (4.7)
TWSC (No Build) - 2048	D (25.4)	B (14.5)	-	-	-
Left Turn Lane Widening - 2048	C (18.0)	B (14.5)	-	-	-
Traffic Signal w/ Left Turn Lane Widening - 2048	C (23.3)	C (27.6)	C (22.7)	C (26.1)	C (24.6)
Roundabout - 2048	A (5.7)	A (4.6)	A (5.7)	A (5.4)	A (5.5)

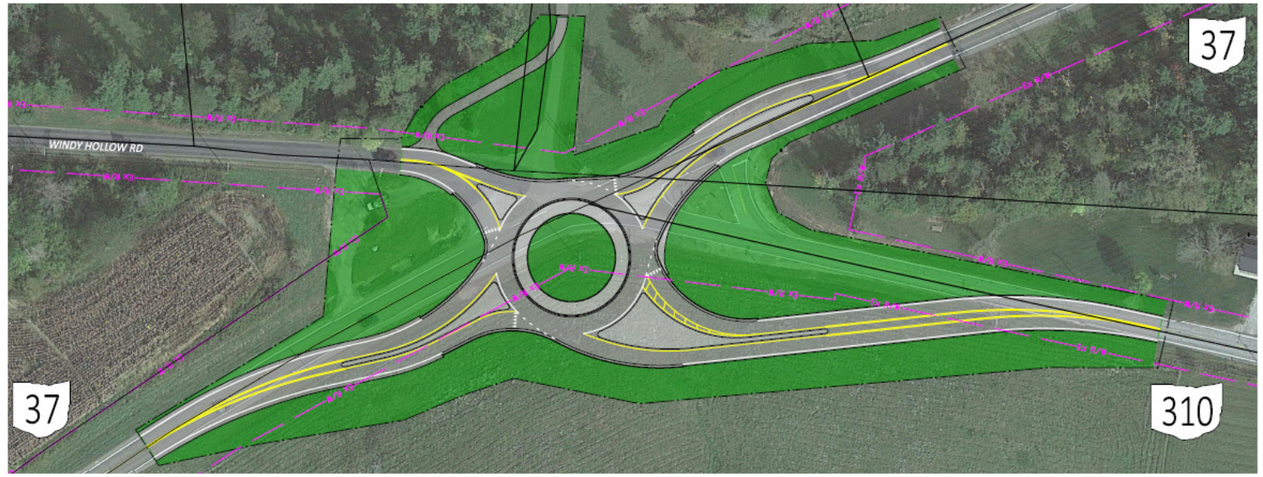
Identification of Potential Countermeasures

Short-term crash countermeasures (signage improvements) have been implemented in the past. Long-term countermeasures could include:

- Left turn lane widening
- Intersection realignment
- Constructing a roundabout
- Installing intersection lighting

Proposed Conditions Diagrams





Proposed Countermeasure Evaluation

Signalization and Left Turn Lane Widening

Left turn lane widening would remove left-turning vehicles from through-traffic stream reducing crash frequency and improving ease of driver gap judgements. Traffic signalization would provide LED signal heads with reflectorized backplates (proven crash countermeasures) and RADAR vehicle detection. Traffic signal timing and/or phasing providing yellow and red clearance intervals per the latest NCHRP guidance will optimize traffic operations and safety while mitigating red light running.

Strand Associates, Inc. assisted with preliminary engineering for the traffic signalization and left turn lane widening alternative. This alternative also realigns the intersection to mitigate the intersection skew and improve sight triangles. The design assumes construction of mast arm signal poles but strain poles would be evaluated in the detailed design phases.

The proposed widening would require right-of-way acquisition and utility relocation. The estimated final construction cost (including right-of-way acquisition, utility relocation, design and construction) for the signalization and left turn lane widening alternative is $4,130,000. This alternative has a proposed expected crash frequency is 5.67 crashes per year with an expected *increase* of 0.46 crashes per year. The net present value of safety benefits was found to be $3,968,240 and with a safety benefit-cost ratio of 0.96.

Left Turn Lane Widening Only

Because the intersection does currently meet traffic signal warrants, a left turn lane widening only alternative was evaluated. Assumptions are similar to the signalization and left turn lane widening alternative minus the construction of a traffic signal. If this alternative is advanced, the expectation is to eventually construct a traffic signal with a later project.

The proposed widening would require right-of-way acquisition and utility relocation. The estimated final construction cost (including right-of-way acquisition, utility relocation, design and construction) for the signalization and left turn lane widening alternative is $3,660,000. This alternative has a proposed expected crash frequency is 2.56 crashes per year with an expected decrease of 2.67 crashes per year. The net present value of safety benefits was found to be $2,415,806 and with a safety benefit-cost ratio of 0.66.

Roundabout

Converting the intersection to a roundabout would eliminate conflict points while also providing traffic capacity improvements. Roundabouts significantly reduce injury crash frequency and provide traffic capacity comparable to, if not better than, signalized intersections.

Strand Associates, Inc. assisted with preliminary engineering for a roundabout alternatives. Two roundabout alternatives were developed: a “peanut” roundabout and circular roundabout. The peanut roundabout alternative was selected for evaluation due to the intersections high skew angle. Elliptical shapes can better complement existing intersection footprints and alignments sometimes leading to mitigation of project impacts. The more typical circular roundabout alternative would likely require the intersection to be relocated northwest of its existing footprint to mitigate similar project right-of-way and utility impacts.

The roundabout alternatives will require right-of-way acquisition and utility relocation. The estimated final construction costs (including right-of-way acquisition, utility relocation, design and construction) for the peanut roundabout alternative and circular roundabout alternative are $4,920,000 and $4,550,000 respectively. These alternatives have a proposed expected crash frequency is 1.37 crashes per year with an expected decrease of 3.86 crashes per year. The net present value of safety benefits was found to be $6,032,817 with a safety benefit-cost ratios of 1.23 and 1.33 respectively.

Table 4 below summarizes safety cost benefit analysis for each alternative. Cost estimates are in **Appendix C**, ECAT safety analysis is in **Appendix D and** the proposed condition diagrams are in **Appendix E**.

Table 4: Alternative Analysis Summary

Crash Countermeasure Alternative	Present Cost Estimates				Proposed Expected Crash Frequency	Expected Crash Reduction	Safety Benefit	B/C Ratio
	Construction	R/W & Utilities	Design	**Total**				
Alt 1 - Peanut RABT	$ 3,910,000	$ 410,000	$600,000	**$4,920,000**	1.37	3.86	$ 6,032,817	**1.23**
Alt 2 - Circular RABT	$ 3,490,000	$ 460,000	$600,000	**$4,550,000**				**1.33**
Alt 3 - Signal/LTL's	$ 3,140,000	$ 490,000	$500,000	**$4,130,000**	5.67	-0.46	$ 3,968,240	**0.96**
Alt 4 - LTL Widening	$ 2,720,000	$ 490,000	$450,000	**$3,660,000**	2.56	2.67	$ 2,415,806	**0.66**

Conclusions

From 2017 to 2021, 15 crashes occurred at the intersection including 9 angle crashes with 33% of all crashes resulting in injury. A safety performance analysis of the SR 37 & SR 310 intersection calculated expected crash frequency with existing site conditions as 5.28 crashes per year.

ODOT District 5 has not selected a preferred alternative at this time. All four alternatives require right-of-way acquisition and utility relocation.

Implementation Plan

Design and other project development services for the preferred countermeasure alternative will need to be performed via consultant services. The estimated start of construction for the project is FY2029.

Appendix A: Existing Conditions Diagram

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LIC-37-7.03	LIC-37 & SR 310 EXISTING CONDITIONS	CALCULATED XXX CHECKED XXX	0 75 37.5 150 HORIZONTAL SCALE IN FEET	N

Appendix B: Crash Data & Crash Diagram

LIC-37 & SR 310

Crash Summary Sheet

Fatalities	0
Serious Injuries	0
Other Injuries	9

Crashes Per Year	3.00
Fatal and All Injury Crashes	5
Percent Injury	33.3%
Equivalent PDO Index Value	2.57

Crash Severity	Crashes	%
(3) Minor Injury Suspected	3	20.00%
(4) Injury Possible	2	13.33%
(5) PDO/No Injury	10	66.67%
Grand Total	15	100.00%

Year	Crashes	%
2017	6	40.00%
2018	1	6.67%
2019	4	26.67%
2020	1	6.67%
2021	3	20.00%
Grand Total	15	100.00%

Day of Week	Crashes	%
(1) Sunday	4	26.67%
(2) Monday	2	13.33%
(3) Tuesday	1	6.67%
(4) Wednesday	3	20.00%
(5) Thursday	2	13.33%
(6) Friday	2	13.33%
(7) Saturday	1	6.67%
Grand Total	15	100.00%

Crash Type	Crashes	%
Angle	9	60.00%
Rear End	3	20.00%
Right Turn	2	13.33%
Sideswipe - Meeting	1	6.67%
Grand Total	15	100.00%

Hour of Day	Crashes	%
5	1	6.67%
6	1	6.67%
8	1	6.67%
10	1	6.67%
11	1	6.67%
13	1	6.67%
15	1	6.67%
16	3	20.00%
17	3	20.00%
21	1	6.67%
22	1	6.67%
Grand Total	15	100.00%

Month	Crashes	%
2	1	6.67%
3	1	6.67%
4	1	6.67%
6	1	6.67%
7	2	13.33%
8	1	6.67%
9	3	20.00%
10	1	6.67%
11	2	13.33%
12	2	13.33%
Grand Total	15	100.00%

LIC-37 & SR 310

Crash Summary Sheet

Weather Condition	Crashes	%
Clear	10	66.67%
Cloudy	3	20.00%
Rain	2	13.33%
Grand Total	15	100.00%

Road Condition	Crashes	%
Dry	13	86.67%
Wet	2	13.33%
Grand Total	15	100.00%

Light Condition	Crashes	%
Daylight	11	73.33%
Dark - Roadway Not Lighted	3	20.00%
Dawn/Dusk	1	6.67%
Grand Total	15	100.00%

Number of Units	Crashes	%
2	14	93.33%
3	1	6.67%
Grand Total	15	100.00%

ODOT Location	Crashes	%
Four-Way Intersection	15	100.00%
Grand Total	15	100.00%

Work Zone Related	Crashes	%
No	15	100.00%
Grand Total	15	100.00%

Alcohol Related	Crashes	%
No	14	93.33%
Yes	1	6.67%
Grand Total	15	100.00%

Drug Related (Inc. Marijuana)	Crashes	%
No	15	100.00%
Grand Total	15	100.00%

Contour	Crashes	%
Straight Grade	1	6.67%
Straight Level	14	93.33%
Grand Total	15	100.00%

Marijuana Related	Crashes	%
No	15	100.00%
Grand Total	15	100.00%

Roadway Departure	Crashes	%
No	13	86.67%
Yes	2	13.33%
Grand Total	15	100.00%

Older Driver (65+)	Crashes	%
No	13	86.67%
Yes	2	13.33%
Grand Total	15	100.00%

Intersection Related	Crashes	%
Yes	13	86.67%
No	2	13.33%
Grand Total	15	100.00%

Young Driver (15-25)	Crashes	%
No	8	53.33%
Yes	7	46.67%
Grand Total	15	100.00%

Speed Related	Crashes	%
No	13	86.67%
Yes	2	13.33%
Grand Total	15	100.00%

Motorcycle Involved	Crashes	%
No	15	100.00%
Grand Total	15	100.00%

LIC-37 & SR 310

Crash Summary Sheet

Unit 1 Summary

Unit 1 Pre-Crash Action	Crashes	%
Straight Ahead	11	73.33%
Entering Traffic Lane	1	6.67%
Slowing or Stopped In Traffic	1	6.67%
Making Right Turn	1	6.67%
Other / Unknown	1	6.67%
Grand Total	15	100.00%

Unit 1 Contributing Factor	Crashes	%
Failure to Yield	8	53.33%
Following Too Closely/ACDA	3	20.00%
Left of Center	1	6.67%
Swerving to Avoid	1	6.67%
Ran Stop Sign	1	6.67%
None	1	6.67%
Grand Total	15	100.00%

Unit 1 Object Struck	Crashes	%
Nothing Struck	15	100.00%
Grand Total	15	100.00%

Unit 1 Traffic Control	Crashes	%
Stop Sign	11	73.33%
No Control	4	26.67%
Grand Total	15	100.00%

Unit 1 Posted Speed	Crashes	%
55	15	100.00%
Grand Total	15	100.00%

Unit 1 Direction From	Crashes	%
South	6	40.00%
Southwest	3	20.00%
Unknown	1	6.67%
Northeast	1	6.67%
Northwest	1	6.67%
West	1	6.67%
North	1	6.67%
Southeast	1	6.67%
Grand Total	15	100.00%

Unit 1 Direction To	Crashes	%
North	5	33.33%
Northeast	3	20.00%
South	2	13.33%
Southwest	1	6.67%
Unknown	1	6.67%
West	1	6.67%
East	1	6.67%
Northwest	1	6.67%
Grand Total	15	100.00%

LIC-37 & SR 310

Crash Summary Sheet

Unit 1 Summary

Unit 1 Type	Crashes	%
Passenger Car	9	60.00%
Pick up	3	20.00%
Sport Utility Vehicle	2	13.33%
Cargo Van	1	6.67%
Grand Total	15	100.00%

Unit 1 Special Function	Crashes	%
None	15	100.00%
Grand Total	15	100.00%

LIC-37 & SR 310
Crash Summary Sheet

Unit 2 Summary

Unit 2 Pre-Crash Action	Crashes	%
Straight Ahead	10	66.67%
Slowing or Stopped In Traffic	4	26.67%
Making Left Turn	1	6.67%
Grand Total	15	100.00%

Unit 2 Contributing Factor	Crashes	%
None	14	93.33%
Swerving to Avoid	1	6.67%
Grand Total	15	100.00%

Unit 2 Direction From	Crashes	%
East	3	20.00%
North	2	13.33%
Northwest	3	20.00%
South	3	20.00%
Southeast	2	13.33%
Southwest	2	13.33%
Grand Total	15	100.00%

Unit 2 Direction To	Crashes	%
North	2	13.33%
Northeast	2	13.33%
Northwest	3	20.00%
South	2	13.33%
Southeast	3	20.00%
West	3	20.00%
Grand Total	15	100.00%

Unit 2 Type	Crashes	%
Passenger Car	10	66.67%
Sport Utility Vehicle	2	13.33%
Pick up	2	13.33%
Semi-Tractor	1	6.67%
Grand Total	15	100.00%

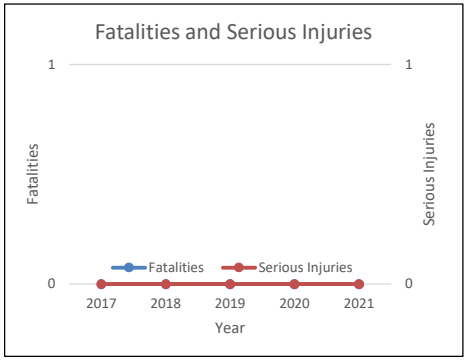
Unit 2 Special Function	Crashes	%
None	15	100.00%
Grand Total	15	100.00%

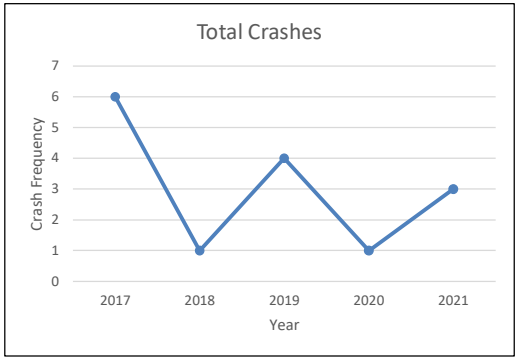
LIC-37 & SR 310

Crash Summary Sheet

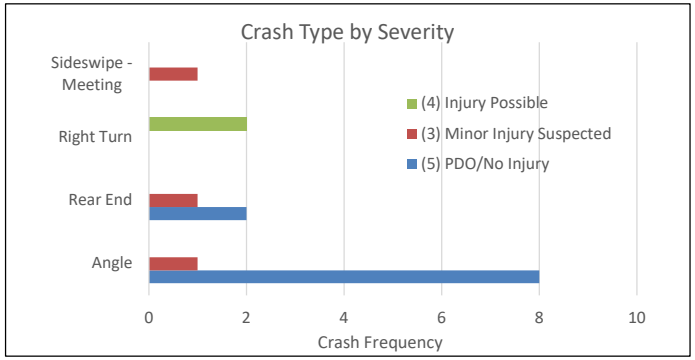
Crashes Per Year	3.00	Percent Injury	33.3%	EPDO	2.57

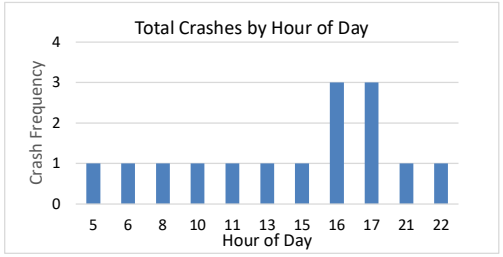
Year	Total Crashes	Fatalities	Serious Injuries
2017	6	0	0
2018	1	0	0
2019	4	0	0
2020	1	0	0
2021	3	0	0
Grand Total	15	0	0

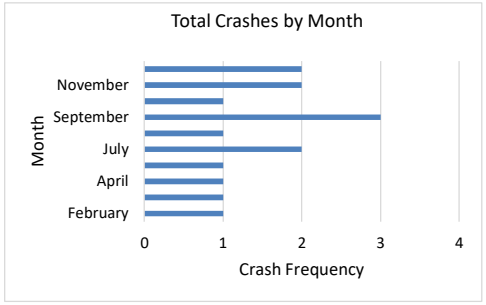




Total Crashes Crash Type	Injury Level (3) Minor Injury	(4) Injury Possi	(5) PDO/No Inj	Grand Total
Angle	1	0	8	9
Rear End	1	0	2	3
Right Turn	0	2	0	2
Sideswipe - Meeting	1	0	0	1
Grand Total	3	2	10	15







LIC-37 & SR 310
Crash Summary Sheet

Crashes Per Year	3.00	Percent Injury	33.3%	EPDO	2.57

Road Condition	Total Crashes	Fatalities	Serious Injuries
Dry	13	0	0
Wet	2	0	0
Grand Total	15	0	0

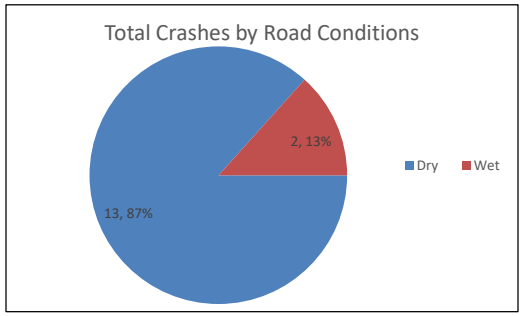
Hour of Day	Total Crashes
5	1
6	1
8	1
10	1
11	1
13	1
15	1
16	3
17	3
21	1
22	1
Grand Total	15

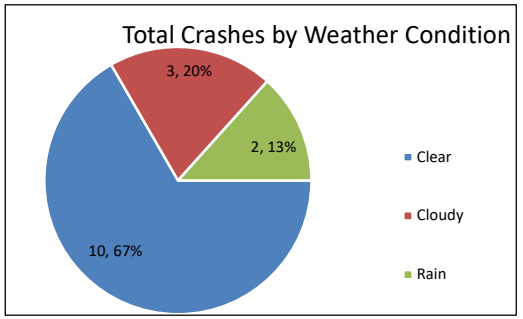
Month	Total Crashes
February	1
March	1
April	1
June	1
July	2
August	1
September	3
October	1
November	2
December	2
Grand Total	15

Weather	Total Crashes	Fatalities	Serious Injuries
Clear	10	0	0
Cloudy	3	0	0
Rain	2	0	0
Grand Total	15	0	0

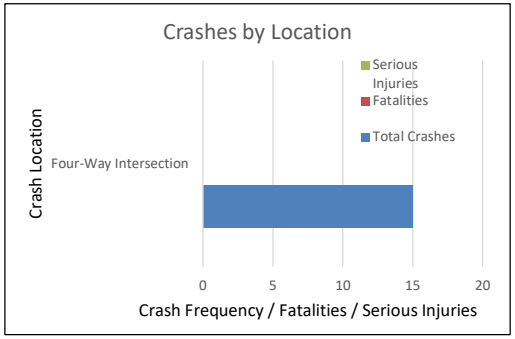
Day in Week	Total Crashes
(1) Sunday	4
(2) Monday	2
(3) Tuesday	1
(4) Wednesday	3
(5) Thursday	2
(6) Friday	2
(7) Saturday	1
Grand Total	15

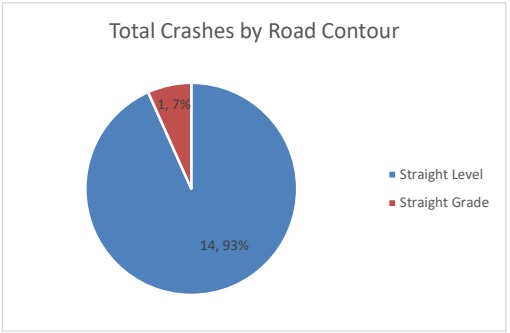
Crash Location	Total Crashes	Fatalities	Serious Injuries
Four-Way Intersection	15	0	0
Grand Total	15	0	0





Roadway Contour	Total Crashes	Fatalities	Serious Injuries
Straight Level	14	0	0
Straight Grade	1	0	0
Grand Total	15	0	0





OHIO DEPARTMENT OF PUBLIC SAFETY — TRAFFIC CRASH REPORT

*DENOTES MANDATORY FIELD FOR SUPPLEMENT REPORT

LOCAL REPORT NUMBER*: 2022-00028386

[X] PHOTOS TAKEN
[ ] SECONDARY CRASH
[ ] OH-2 [ ] OH-3 [ ] OH-1P [ ] OTHER [ ] PRIVATE PROPERTY

LOCAL INFORMATION

REPORTING AGENCY NAME*: Licking Co. SO

NCIC*: 04500

HIT/SKIP (1 - SOLVED, 2 - UNSOLVED):

NUMBER OF UNITS: 02

UNIT IN ERROR (98 - ANIMAL, 99 - UNKNOWN): 02

COUNTY*: 45

LOCALITY* (1 - CITY, 2 - VILLAGE, 3 - TOWNSHIP): 3

LOCATION: CITY, VILLAGE, TOWNSHIP*: LIBERTY

CRASH DATE / TIME*: 08/24/2022 0903

CRASH SEVERITY: 1 (1 - FATAL, 2 - SERIOUS INJURY SUSPECTED, 3 - MINOR INJURY SUSPECTED, 4 - INJURY POSSIBLE, 5 - PROPERTY DAMAGE ONLY)

LOCATION

ROUTE TYPE: SR
ROUTE NUMBER: 37
PREFIX (1 - NORTH, 2 - SOUTH, 3 - EAST, 4 - WEST):
LOCATION ROAD NAME: JOHNSTOWN-ALEXANDRIA
ROAD TYPE:
LATITUDE DECIMAL DEGREES: 40.125887

REFERENCE

ROUTE TYPE: SR
ROUTE NUMBER: 310
PREFIX (1 - NORTH, 2 - SOUTH, 3 - EAST, 4 - WEST):
REFERENCE ROAD NAME (ROAD, MILEPOST, HOUSE #): HAZELTON / ETNA
ROAD TYPE:
LONGITUDE DECIMAL DEGREES: -82.658290

REFERENCE POINT (1 - INTERSECTION, 2 - MILE POST, 3 - HOUSE #): 1
DIRECTION FROM REFERENCE (1 - NORTH, 2 - SOUTH, 3 - EAST, 4 - WEST):
DISTANCE FROM REFERENCE:
DISTANCE UNIT OF MEASURE (1 - MILES, 2 - FEET, 3 - YARDS):

ROUTE TYPE: IR - INTERSTATE ROUTE (TP); US - FEDERAL US ROUTE; SR - STATE ROUTE; CR - NUMBERED COUNTY ROUTE; TR - NUMBERED TOWNSHIP ROUTE

ROAD TYPE: AL - ALLEY; AV - AVENUE; BL - BOULEVARD; CR - CIRCLE; CT - COURT; DR - DRIVE; HE - HEIGHTS; HW - HIGHWAY; LA - LANE; MP - MILEPOST; OV - OVAL; PK - PARKWAY; PI - PIKE; PL - PLACE; RD - ROAD; SQ - SQUARE; ST - STREET; TE - TERRACE; TL - TRAIL; WA - WAY

INTERSECTION RELATED
[ ] WITHIN INTERSECTION OR ON APPROACH
[ ] WITHIN INTERCHANGE AREA
NUMBER OF APPROACHES:

ROADWAY
[ ] ROADWAY DIVIDED

LOCATION OF FIRST HARMFUL EVENT: 01
1 - ON ROADWAY; 2 - ON SHOULDER; 3 - IN MEDIAN; 4 - ON ROADSIDE; 5 - ON GORE; 6 - OUTSIDE TRAFFIC WAY; 7 - ON RAMP; 8 - OFF RAMP; 9 - CROSSOVER; 10 - DRIVEWAY/ALLEY ACCESS; 11 - RAILWAY GRADE CROSSING; 12 - SHARED USE PATHS OR TRAILS; 13 - BIKE LANE; 14 - TOLL BOOTH; 99 - OTHER / UNKNOWN

MANNER OF CRASH COLLISION/IMPACT: 6
1 - NOT COLLISION BETWEEN TWO MOTOR VEHICLES IN TRANSPORT; 2 - REAR-END; 3 - HEAD-ON; 4 - REAR-TO-REAR; 5 - BACKING; 6 - ANGLE; 7 - SIDESWIPE, SAME DIRECTION; 8 - SIDESWIPE, OPPOSITE DIRECTION; 9 - OTHER / UNKNOWN

DIRECTION OF TRAVEL: 1 - NORTH; 2 - SOUTH; 3 - EAST; 4 - WEST

MEDIAN TYPE: 1 - DIVIDED FLUSH MEDIAN (<4 FEET); 2 - DIVIDED FLUSH MEDIAN (≥4 FEET); 3 - DIVIDED, DEPRESSED MEDIAN; 4 - DIVIDED, RAISED MEDIAN (ANY TYPE); 9 - OTHER/UNKNOWN

[ ] WORK ZONE RELATED
[ ] WORKERS PRESENT
[ ] LAW ENFORCEMENT PRESENT
[ ] ACTIVE SCHOOL ZONE

WORK ZONE TYPE: 1 - LANE CLOSURE; 2 - LANE SHIFT/CROSSOVER; 3 - WORK ON SHOULDER OR MEDIAN; 4 - INTERMITTENT OR MOVING WORK; 5 - OTHER

LOCATION OF CRASH IN WORK ZONE: 1 - BEFORE THE 1ST WORK ZONE WARNING SIGN; 2 - ADVANCE WARNING AREA; 3 - TRANSITION AREA; 4 - ACTIVITY AREA; 5 - TERMINATION AREA

CONTOUR: 3
1 - STRAIGHT LEVEL; 2 - STRAIGHT GRADE; 3 - CURVE LEVEL; 4 - CURVE GRADE; 9 - OTHER/UNKNOWN

CONDITIONS: 1
1 - DRY; 2 - WET; 3 - SNOW; 4 - ICE; 5 - SAND, MUD, DIRT, OIL, GRAVEL; 6 - WATER (STANDING, MOVING); 7 - SLUSH; 9 - OTHER/UNKNOWN

SURFACE: 2
1 - CONCRETE; 2 - BLACKTOP, BITUMINOUS, ASPHALT; 3 - BRICK/BLOCK; 4 - SLAG, GRAVEL, STONE; 5 - DIRT; 9 - OTHER/UNKNOWN

LIGHT CONDITION: 1
1 - DAYLIGHT; 2 - DAWN/DUSK; 3 - DARK – LIGHTED ROADWAY; 4 - DARK – ROADWAY NOT LIGHTED; 5 - DARK – UNKNOWN ROADWAY LIGHTING; 9 - OTHER / UNKNOWN

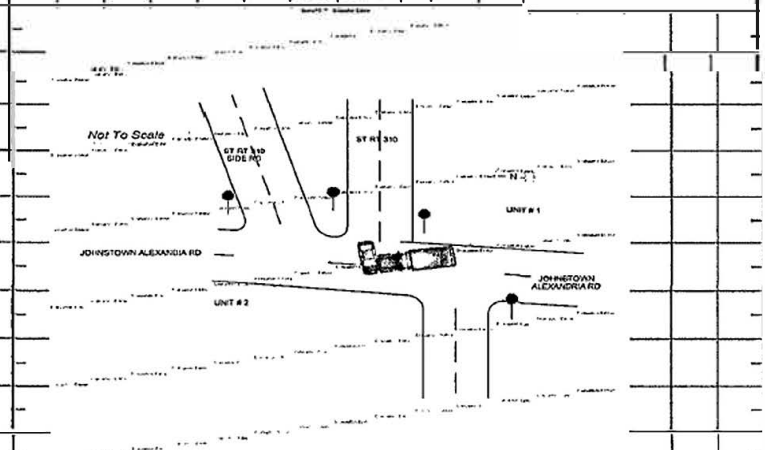
WEATHER: 01
1 - CLEAR; 2 - CLOUDY; 3 - FOG, SMOG, SMOKE; 4 - RAIN; 5 - SLEET, HAIL; 6 - SNOW; 7 - SEVERE CROSSWINDS; 8 - BLOWING SAND, SOIL, DIRT, SNOW; 9 - FREEZING RAIN OR FREEZING DRIZZLE; 99 - OTHER / UNKNOWN

NARRATIVE

Unit # 1 stated he was East on State Route 37 when a small black vehicle pulled out into his lane of travel from State Route 310. Unit # 1 a Dennis Weaver stated he was unable to stop in time hitting # 2 coming to rest with this vehicle stuck on his truck. Unit # 2 is at fault for this crash and damages. Nothing further at this time.

Deputy Campbell # 93

Indicate the north direction with an "N" on the compass diagram.



CRASH REPORTED DATE / TIME	DISPATCH DATE / TIME	ARRIVAL DATE / TIME	SCENE CLEARED DATE / TIME
08/24/2022 0903	08/24/2022 0914	08/24/2022 0938	08/24/2022 1238

REPORT TAKEN BY: [X] POLICE AGENCY [ ] MOTORIST [ ] SUPPLEMENT (CORRECTION OR ADDITION TO AN EXISTING REPORT SENT TO ODPS)

TOTAL TIME	OTHER INVESTIGATION TIME	TOTAL MINUTES	OFFICER'S NAME*	CHECKED BY OFFICER'S NAME*
180	60	240	CAMPBELL	RAMSEY

OFFICER'S BADGE NUMBER*: 45-093
CHECKED BY OFFICER'S BADGE NUMBER*: 45-S01

OHIO DEPARTMENT OF PUBLIC SAFETY

UNIT

LOCAL REPORT NUMBER: 2022-00028386

OWNER

UNIT #: 01

OWNER NAME: LAST, FIRST, MIDDLE (☐ SAME AS DRIVER): CAMPBELL OIL,

OWNER PHONE: INCLUDE AREA CODE (☐ SAME AS DRIVER): 3308338555

OWNER ADDRESS: STREET, CITY, STATE, ZIP (☐ SAME AS DRIVER): 7977 Hills and Dales RD N Massillon, OH 44646

COMMERCIAL CARRIER: NAME, ADDRESS, CITY, STATE, ZIP: CAMPBELL OIL 7977 Hills and Dales RD N Massillon, OH 44646

COMMERCIAL CARRIER PHONE: INCLUDE AREA CODE: 3308338555

VEHICLE

LP STATE	LICENSE PLATE #	VEHICLE IDENTIFICATION #	VEHICLE YEAR	VEHICLE MAKE
OH	PGQ5469	2FZHAZCV35AU158399	2005	Sterling

INSURANCE VERIFIED	INSURANCE COMPANY	INSURANCE POLICY #	COLOR	VEHICLE MODEL
X	Motorist Comm Mutual	5000118907	WHI	

TYPE OF USE: [X] COMMERCIAL [ ] GOVERNMENT [ ] IN EMERGENCY RESPONSE

US DOT #: 3368511

TOWED BY: COMPANY NAME: JAES

[ ] INTERLOCK DEVICE EQUIPPED [ ] HIT/SKIP UNIT

#OCCUPANTS: 01

VEHICLE WEIGHT GVWR/GCWR: 2 (1 - ≤10K LBS. 2 - 10,001 - 26K LBS. 3 - >26K LBS.)

HAZARDOUS MATERIAL: [ ] MATERIAL RELEASED [ ] PLACARD — CLASS # — PLACARD ID #

UNIT TYPE: 14
1 - PASSENGER CAR, 2 - PASSENGER VAN (MINIVAN), 3 - SPORT UTILITY VEHICLE, 4 - PICKUP, 5 - CARGO VAN, 6 - VAN (9-15 SEATS), 7 - MOTORCYCLE 2-WHEELED, 8 - MOTORCYCLE 3-WHEELED, 9 - AUTOCYCLE, 10 - MOPED OR MOTORIZED BICYCLE, 11 - ALL TERRAIN VEHICLE (ATV/UTV), 12 - GOLF CART, 13 - SNOWMOBILE, 14 - SINGLE UNIT TRUCK, 15 - SEMI-TRACTOR, 16 - FARM EQUIPMENT, 17 - MOTORHOME, 18 - LIMO (LIVERY VEHICLE), 19 - BUS (16+ PASSENGERS), 20 - OTHER VEHICLE, 21 - HEAVY EQUIPMENT, 22 - ANIMAL WITH RIDER OR ANIMAL-DRAWN VEHICLE, 23 - PEDESTRIAN/SKATER, 24 - WHEELCHAIR (ANY TYPE), 25 - OTHER NON-MOTORIST, 26 - BICYCLE, 27 - TRAIN, 99 - UNKNOWN OR HIT/SKIP

OF TRAILING UNITS:

WAS VEHICLE OPERATING IN AUTONOMOUS MODE WHEN CRASH OCCURRED? 2 (1 - YES 2 - NO 9 - OTHER / UNKNOWN)

AUTONOMOUS MODE LEVEL:
0 - NO AUTOMATION, 1 - DRIVER ASSISTANCE, 2 - PARTIAL AUTOMATION, 3 - CONDITIONAL AUTOMATION, 4 - HIGH AUTOMATION, 5 - FULL AUTOMATION, 9 - UNKNOWN

SPECIAL FUNCTION: 01
1 - NONE, 2 - TAXI, 3 - ELECTRONIC RIDE SHARING, 4 - SCHOOL TRANSPORT, 5 - BUS - TRANSIT/COMMUTER, 6 - BUS - CHARTER/TOUR, 7 - BUS - INTERCITY, 8 - BUS - SHUTTLE, 9 - BUS - OTHER, 10 - AMBULANCE, 11 - FIRE, 12 - MILITARY, 13 - POLICE, 14 - PUBLIC UTILITY, 15 - CONSTRUCTION EQUIPMENT, 16 - FARM, 17 - MOWING, 18 - SNOW REMOVAL, 19 - TOWING, 20 - SAFETY SERVICE PATROL, 21 - MAIL CARRIER, 99 - OTHER / UNKNOWN

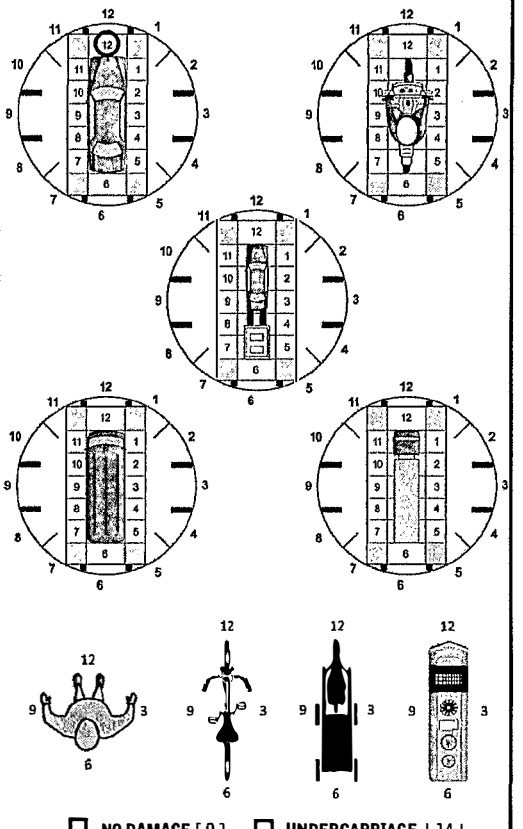
CARGO BODY TYPE: 11
1 - NO CARGO BODY TYPE / NOT APPLICABLE, 2 - BUS, 3 - VEHICLE TOWING ANOTHER MOTOR VEHICLE, 4 - LOGGING, 5 - INTERMODAL CONTAINER CHASSIS, 6 - CARGO VAN/ENCLOSED BOX, 7 - GRAIN/CHIPS/GRAVEL, 8 - POLE, 9 - CARGO TANK, 10 - FLAT BED, 11 - DUMP, 12 - CONCRETE MIXER, 13 - AUTO TRANSPORTER, 14 - GARBAGE/REFUSE, 99 - OTHER / UNKNOWN

VEHICLE DEFECTS:
1 - TURN SIGNALS, 2 - HEADLAMPS, 3 - TAIL LAMPS, 4 - BRAKES, 5 - STEERING, 6 - TIRE BLOWOUT, 7 - WORN OR SLICK TIRES, 8 - TRAILER EQUIPMENT DEFECTIVE, 9 - MOTOR TROUBLE, 10 - DISABLED FROM PRIOR ACCIDENT, 99 - OTHER / UNKNOWN

DAMAGE

DAMAGE SCALE: 4
1 - NONE, 2 - MINOR DAMAGE, 3 - FUNCTIONAL DAMAGE, 4 - DISABLING DAMAGE, 9 - UNKNOWN

DAMAGED AREA(S) — INDICATE ALL THAT APPLY



[ ] - NO DAMAGE [0] [ ] - UNDERCARRIAGE [14] [ ] - TOP [13] [ ] - ALL AREAS [15] [ ] - UNIT NOT AT SCENE [16]

INITIAL POINT OF CONTACT: 12
0 - NO DAMAGE, 1-12 - REFER TO UNIT DIAGRAM, 13 - TOP, 14 - UNDERCARRIAGE, 15 - VEHICLE NOT AT SCENE, 99 - UNKNOWN

EVENT(S)

NON-MOTORIST LOCATION AT IMPACT:
1 - INTERSECTION - MARKED CROSSWALK, 2 - INTERSECTION - UNMARKED CROSSWALK, 3 - INTERSECTION - OTHER, 4 - MIDBLOCK - MARKED CROSSWALK, 5 - TRAVEL LANE - OTHER LOCATION, 6 - BICYCLE LANE, 7 - SHOULDER/ROADSIDE, 8 - SIDEWALK, 9 - MEDIAN/CROSSING ISLAND, 10 - DRIVEWAY ACCESS, 11 - SHARED USE PATHS OR TRAILS, 12 - FIRST RESPONDER AT INCIDENT SCENE, 99 - OTHER / UNKNOWN

ACTION: 4
1 - NON-CONTACT, 2 - NON-COLLISION, 3 - STRIKING, 4 - STRUCK, 5 - BOTH STRIKING & STRUCK, 9 - OTHER / UNKNOWN

PRE-CRASH ACTIONS: 01
1 - STRAIGHT AHEAD, 2 - BACKING, 3 - CHANGING LANES, 4 - OVERTAKING/PASSING, 5 - MAKING RIGHT TURN, 6 - MAKING LEFT TURN, 7 - MAKING U-TURN, 8 - ENTERING TRAFFIC LANE, 9 - LEAVING TRAFFIC LANE, 10 - PARKED, 11 - SLOWING OR STOPPED IN TRAFFIC, 12 - DRIVERLESS, 13 - NEGOTIATING A CURVE, 14 - ENTERING OR CROSSING SPECIFIED LOCATION, 15 - WALKING, RUNNING, JOGGING, PLAYING, 16 - WORKING, 17 - PUSHING VEHICLE, 18 - APPROACHING OR LEAVING VEHICLE, 19 - STANDING, 20 - OTHER NON-MOTORIST, 21 - STANDING OUTSIDE DISABLED VEHICLE, 99 - OTHER / UNKNOWN

CONTRIBUTING CIRCUMSTANCES: 01
1 - NONE, 2 - FAILURE TO YIELD, 3 - RAN RED LIGHT, 4 - RAN STOP SIGN, 5 - UNSAFE SPEED, 6 - IMPROPER TURN, 7 - LEFT OF CENTER, 8 - FOLLOWING TOO CLOSE/ACDA, 9 - IMPROPER LANE CHANGE, 10 - IMPROPER PASSING, 11 - DROVE OFF ROAD, 12 - IMPROPER BACKING, 13 - IMPROPER START FROM A PARKED POSITION, 14 - STOPPED OR PARKED ILLEGALLY, 15 - SWERVING TO AVOID, 16 - WRONG WAY, 17 - VISION OBSTRUCTION, 18 - OPERATING DEFECTIVE EQUIPMENT, 19 - LOAD SHIFTING/FALLING/SPILLING, 20 - IMPROPER CROSSING, 21 - LYING IN ROADWAY, 22 - NOT DISCERNIBLE, 23 - OPENING DOOR INTO ROADWAY, 99 - OTHER IMPROPER ACTION

SEQUENCE OF EVENTS: 1: 20; 2: ; 3: ; 4: ; 5: ; 6:

EVENTS
1 - OVERTURN/ROLLOVER, 2 - FIRE/EXPLOSION, 3 - IMMERSION, 4 - JACKKNIFE, 5 - CARGO / EQUIPMENT LOSS OR SHIFT, 6 - EQUIPMENT FAILURE, 7 - SEPARATION OF UNITS, 8 - RAN OFF ROAD RIGHT, 9 - RAN OFF ROAD LEFT, 10 - CROSS MEDIAN, 11 - CROSS CENTERLINE - OPPOSITE DIRECTION OF TRAVEL, 12 - DOWNHILL RUNAWAY, 13 - OTHER NON-COLLISION, 14 - PEDESTRIAN, 15 - PEDALCYCLE, 16 - RAILWAY VEHICLE, 17 - ANIMAL - FARM, 18 - ANIMAL - DEER, 19 - ANIMAL - OTHER, 20 - MOTOR VEHICLE IN TRANSPORT, 21 - PARKED MOTOR VEHICLE, 22 - WORK ZONE MAINTENANCE EQUIPMENT, 23 - STRUCK BY FALLING, SHIFTING CARGO OR ANYTHING SET IN MOTION BY A MOTOR VEHICLE, 24 - OTHER MOVABLE OBJECT

COLLISION WITH FIXED OBJECT - STRUCK
25 - IMPACT ATTENUATOR / CRASH CUSHION, 26 - BRIDGE OVERHEAD STRUCTURE, 27 - BRIDGE PIER OR ABUTMENT, 28 - BRIDGE PARAPET, 29 - BRIDGE RAIL, 30 - GUARDRAIL FACE, 31 - GUARDRAIL END, 32 - PORTABLE BARRIER, 33 - MEDIAN CABLE BARRIER, 34 - MEDIAN GUARDRAIL BARRIER, 35 - MEDIAN CONCRETE BARRIER, 36 - MEDIAN OTHER BARRIER, 37 - TRAFFIC SIGN POST, 38 - OVERHEAD SIGN POST, 39 - LIGHT / LUMINARIES SUPPORT, 40 - UTILITY POLE, 41 - OTHER POST, POLE OR SUPPORT, 42 - CULVERT, 43 - CURB, 44 - DITCH, 45 - EMBANKMENT, 46 - FENCE, 47 - MAILBOX, 48 - TREE, 49 - FIRE HYDRANT, 50 - WORK ZONE MAINTENANCE EQUIPMENT, 51 - WALL, 52 - BUILDING, 53 - TUNNEL, 54 - OTHER FIXED OBJECT, 99 - OTHER / UNKNOWN

FIRST HARMFUL EVENT: 1 MOST HARMFUL EVENT: 1

TRAFFIC

TRAFFICWAY FLOW: 2 (1 - ONE-WAY, 2 - TWO-WAY)

TRAFFIC CONTROL: 6 (1 - ROUNDABOUT, 2 - SIGNAL, 3 - FLASHER, 4 - STOP SIGN, 5 - YIELD SIGN, 6 - NO CONTROL)

OF THROUGH LANES ON ROAD: 2

RAIL GRADE CROSSING: 1 (1 - NOT INVOLVED, 2 - INVOLVED-ACTIVE CROSSING, 3 - INVOLVED-PASSIVE CROSSING)

UNIT / NON-MOTORIST DIRECTION: FROM 1 TO 2
1 - NORTH, 2 - SOUTH, 3 - EAST, 4 - WEST, 5 - NORTHEAST, 6 - NORTHWEST, 7 - SOUTHEAST, 8 - SOUTHWEST, 9 - OTHER / UNKNOWN

UNIT SPEED: 55

DETECTED SPEED: 1 (1 - STATED / ESTIMATED SPEED, 2 - CALCULATED / EDR, 3 - UNDETERMINED)

POSTED SPEED: 55

OHIO DEPARTMENT OF PUBLIC SAFETY

UNIT

LOCAL REPORT NUMBER: 2022-00028386

OWNER

UNIT #: 02

OWNER NAME: LAST, FIRST, MIDDLE (☐ SAME AS DRIVER): JESUS TRANSPORTATION,

OWNER PHONE: INCLUDE AREA CODE (☐ SAME AS DRIVER):

OWNER ADDRESS: STREET, CITY, STATE, ZIP (☐ SAME AS DRIVER): 4971 OLIVE BRANCH RD PLAIN CITY, OH 43064

COMMERCIAL CARRIER: NAME, ADDRESS, CITY, STATE, ZIP:

COMMERCIAL CARRIER PHONE: INCLUDE AREA CODE:

VEHICLE

LP STATE	LICENSE PLATE #	VEHICLE IDENTIFICATION #	VEHICLE YEAR	VEHICLE MAKE
OH	JSK2619	KL1TD62625B502954	2005	Chevrolet

INSURANCE VERIFIED	INSURANCE COMPANY	INSURANCE POLICY #	COLOR	VEHICLE MODEL
☐			BLK	AVO

TYPE OF USE: ☐ COMMERCIAL ☐ GOVERNMENT ☐ IN EMERGENCY RESPONSE

US DOT #:

TOWED BY: COMPANY NAME: JAES

☐ INTERLOCK DEVICE EQUIPPED ☐ HIT/SKIP UNIT

OCCUPANTS: 03

VEHICLE WEIGHT GVWR/GCWR: 1 - ≤10K LBS. 2 - 10,001 - 26K LBS. 3 - >26K LBS.

HAZARDOUS MATERIAL: ☐ MATERIAL RELEASED ☐ PLACARD — CLASS # — PLACARD ID #

UNIT TYPE: 01
1 - PASSENGER CAR; 2 - PASSENGER VAN (MINIVAN); 3 - SPORT UTILITY VEHICLE; 4 - PICK UP; 5 - CARGO VAN; 6 - VAN (9-15 SEATS); 7 - MOTORCYCLE 2-WHEELED; 8 - MOTORCYCLE 3-WHEELED; 9 - AUTOCYCLE; 10 - MOPED OR MOTORIZED BICYCLE; 11 - ALL TERRAIN VEHICLE (ATV/UTV); 12 - GOLF CART; 13 - SNOWMOBILE; 14 - SINGLE UNIT TRUCK; 15 - SEMI-TRACTOR; 16 - FARM EQUIPMENT; 17 - MOTORHOME; 18 - LIMO (LIVERY VEHICLE); 19 - BUS (16+ PASSENGERS); 20 - OTHER VEHICLE; 21 - HEAVY EQUIPMENT; 22 - ANIMAL WITH RIDER OR ANIMAL-DRAWN VEHICLE; 23 - PEDESTRIAN/SKATER; 24 - WHEELCHAIR (ANY TYPE); 25 - OTHER NON-MOTORIST; 26 - BICYCLE; 27 - TRAIN; 99 - UNKNOWN OR HIT/SKIP

OF TRAILING UNITS:

WAS VEHICLE OPERATING IN AUTONOMOUS MODE WHEN CRASH OCCURRED? 2 (1 - YES 2 - NO 9 - OTHER / UNKNOWN)

AUTONOMOUS MODE LEVEL:
0 - NO AUTOMATION; 1 - DRIVER ASSISTANCE; 2 - PARTIAL AUTOMATION; 3 - CONDITIONAL AUTOMATION; 4 - HIGH AUTOMATION; 5 - FULL AUTOMATION; 9 - UNKNOWN

SPECIAL FUNCTION: 01
1 - NONE; 2 - TAXI; 3 - ELECTRONIC RIDE SHARING; 4 - SCHOOL TRANSPORT; 5 - BUS - TRANSIT/COMMUTER; 6 - BUS - CHARTER/TOUR; 7 - BUS - INTERCITY; 8 - BUS - SHUTTLE; 9 - BUS - OTHER; 10 - AMBULANCE; 11 - FIRE; 12 - MILITARY; 13 - POLICE; 14 - PUBLIC UTILITY; 15 - CONSTRUCTION EQUIPMENT; 16 - FARM; 17 - MOWING; 18 - SNOW REMOVAL; 19 - TOWING; 20 - SAFETY SERVICE PATROL; 21 - MAIL CARRIER; 99 - OTHER / UNKNOWN

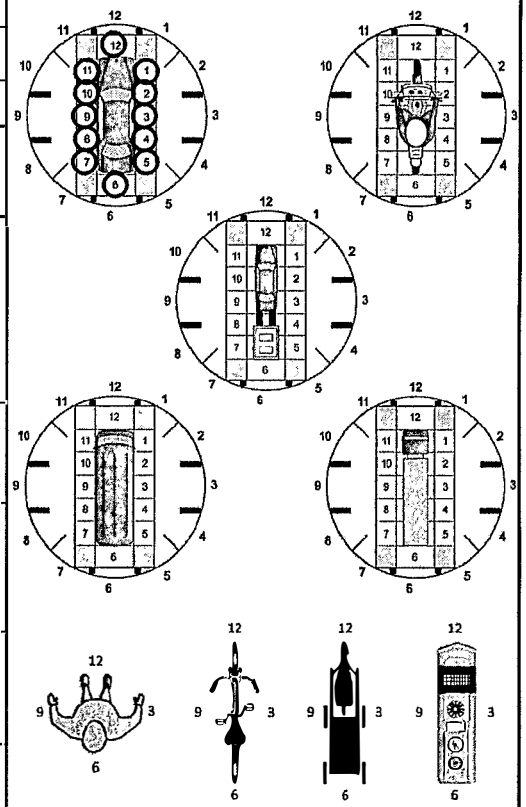
CARGO BODY TYPE: 01
1 - NO CARGO BODY TYPE / NOT APPLICABLE; 2 - BUS; 3 - VEHICLE TOWING ANOTHER MOTOR VEHICLE; 4 - LOGGING; 5 - INTERMODAL CONTAINER CHASSIS; 6 - CARGO VAN/ENCLOSED BOX; 7 - GRAIN/CHIPS/GRAVEL; 8 - POLE; 9 - CARGO TANK; 10 - FLAT BED; 11 - DUMP; 12 - CONCRETE MIXER; 13 - AUTO TRANSPORTER; 14 - GARBAGE/REFUSE; 99 - OTHER / UNKNOWN

VEHICLE DEFECTS:
1 - TURN SIGNALS; 2 - HEAD LAMPS; 3 - TAIL LAMPS; 4 - BRAKES; 5 - STEERING; 6 - TIRE BLOWOUT; 7 - WORN OR SLICK TIRES; 8 - TRAILER EQUIPMENT DEFECTIVE; 9 - MOTOR TROUBLE; 10 - DISABLED FROM PRIOR ACCIDENT; 99 - OTHER / UNKNOWN

DAMAGE

DAMAGE SCALE: 4
1 - NONE; 2 - MINOR DAMAGE; 3 - FUNCTIONAL DAMAGE; 4 - DISABLING DAMAGE; 9 - UNKNOWN

DAMAGED AREA(S) — INDICATE ALL THAT APPLY



☐ - NO DAMAGE [0] ☐ - UNDERCARRIAGE [14] ☐ - TOP [13] ☐ - ALL AREAS [15] ☐ - UNIT NOT AT SCENE [16]

INITIAL POINT OF CONTACT: 09
0 - NO DAMAGE; 1-12 - REFER TO UNIT DIAGRAM; 13 - TOP; 14 - UNDERCARRIAGE; 15 - VEHICLE NOT AT SCENE; 99 - UNKNOWN

EVENT(S)

NON-MOTORIST LOCATION AT IMPACT:
1 - INTERSECTION - MARKED CROSSWALK; 2 - INTERSECTION - UNMARKED CROSSWALK; 3 - INTERSECTION - OTHER; 4 - MIDBLOCK - MARKED CROSSWALK; 5 - TRAVEL LANE - OTHER LOCATION; 6 - BICYCLE LANE; 7 - SHOULDER/ROADSIDE; 8 - SIDEWALK; 9 - MEDIAN/CROSSING ISLAND; 10 - DRIVE WAY ACCESS; 11 - SHARED USE PATHS OR TRAILS; 12 - FIRST RESPONDER AT INCIDENT SCENE; 99 - OTHER / UNKNOWN

ACTION: 4
1 - NON-CONTACT; 2 - NON-COLLISION; 3 - STRIKING; 4 - STRUCK; 5 - BOTH STRIKING & STRUCK; 9 - OTHER / UNKNOWN

PRE-CRASH ACTIONS: 06
1 - STRAIGHT AHEAD; 2 - BACKING; 3 - CHANGING LANES; 4 - OVERTAKING/PASSING; 5 - MAKING RIGHT TURN; 6 - MAKING LEFT TURN; 7 - MAKING U-TURN; 8 - ENTERING TRAFFIC LANE; 9 - LEAVING TRAFFIC LANE; 10 - PARKED; 11 - SLOWING OR STOPPED IN TRAFFIC; 12 - DRIVERLESS; 13 - NEGOTIATING A CURVE; 14 - ENTERING OR CROSSING SPECIFIED LOCATION; 15 - WALKING, RUNNING, JOGGING, PLAYING; 16 - WORKING; 17 - PUSHING VEHICLE; 18 - APPROACHING OR LEAVING VEHICLE; 19 - STANDING; 20 - OTHER NON-MOTORIST; 21 - STANDING OUTSIDE DISABLED VEHICLE; 99 - OTHER / UNKNOWN

CONTRIBUTING CIRCUMSTANCES: 02
1 - NONE; 2 - FAILURE TO YIELD; 3 - RAN RED LIGHT; 4 - RAN STOP SIGN; 5 - UNSAFE SPEED; 6 - IMPROPER TURN; 7 - LEFT OF CENTER; 8 - FOLLOWING TOO CLOSE/ACDA; 9 - IMPROPER LANE CHANGE; 10 - IMPROPER PASSING; 11 - DROVE OFF ROAD; 12 - IMPROPER BACKING; 13 - IMPROPER START FROM A PARKED POSITION; 14 - STOPPED OR PARKED ILLEGALLY; 15 - SWERVING TO AVOID; 16 - WRONG WAY; 17 - VISION OBSTRUCTION; 18 - OPERATING DEFECTIVE EQUIPMENT; 19 - LOAD SHIFTING/FALLING/SPILLING; 20 - IMPROPER CROSSING; 21 - LYING IN ROADWAY; 22 - NOT DISCERNIBLE; 23 - OPENING DOOR INTO ROADWAY; 99 - OTHER IMPROPER ACTION

SEQUENCE OF EVENTS: 1: 20; 2: ; 3: ; 4: ; 5: ; 6:

EVENTS
1 - OVERTURN/ROLLOVER; 2 - FIRE/EXPLOSION; 3 - IMMERSION; 4 - JACKKNIFE; 5 - CARGO / EQUIPMENT LOSS OR SHIFT; 6 - EQUIPMENT FAILURE; 7 - SEPARATION OF UNITS; 8 - RAN OFF ROAD RIGHT; 9 - RAN OFF ROAD LEFT; 10 - CROSS MEDIAN; 11 - CROSS CENTERLINE - OPPOSITE DIRECTION OF TRAVEL; 12 - DOWNHILL RUNAWAY; 13 - OTHER NON-COLLISION; 14 - PEDESTRIAN; 15 - PEDALCYCLE; 16 - RAILWAY VEHICLE; 17 - ANIMAL - FARM; 18 - ANIMAL - DEER; 19 - ANIMAL - OTHER; 20 - MOTOR VEHICLE IN TRANSPORT; 21 - PARKED MOTOR VEHICLE; 22 - WORK ZONE MAINTENANCE EQUIPMENT; 23 - STRUCK BY FALLING, SHIFTING CARGO OR ANYTHING SET IN MOTION BY A MOTOR VEHICLE; 24 - OTHER MOVABLE OBJECT

COLLISION WITH FIXED OBJECT - STRUCK
25 - IMPACT ATTENUATOR / CRASH CUSHION; 26 - BRIDGE OVERHEAD STRUCTURE; 27 - BRIDGE PIER OR ABUTMENT; 28 - BRIDGE PARAPET; 29 - BRIDGE RAIL; 30 - GUARDRAIL FACE; 31 - GUARDRAIL END; 32 - PORTABLE BARRIER; 33 - MEDIAN CABLE BARRIER; 34 - MEDIAN GUARDRAIL BARRIER; 35 - MEDIAN CONCRETE BARRIER; 36 - MEDIAN OTHER BARRIER; 37 - TRAFFIC SIGN POST; 38 - OVERHEAD SIGN POST; 39 - LIGHT / LUMINARIES SUPPORT; 40 - UTILITY POLE; 41 - OTHER POST, POLE OR SUPPORT; 42 - CULVERT; 43 - CURB; 44 - DITCH; 45 - EMBANKMENT; 46 - FENCE; 47 - MAILBOX; 48 - TREE; 49 - FIRE HYDRANT; 50 - WORK ZONE MAINTENANCE EQUIPMENT; 51 - WALL; 52 - BUILDING; 53 - TUNNEL; 54 - OTHER FIXED OBJECT; 99 - OTHER / UNKNOWN

FIRST HARMFUL EVENT: 1 MOST HARMFUL EVENT: 1

TRAFFIC

TRAFFICWAY FLOW: 2 (1 - ONE-WAY; 2 - TWO-WAY)

TRAFFIC CONTROL: 4
1 - ROUNDABOUT; 2 - SIGNAL; 3 - FLASHER; 4 - STOP SIGN; 5 - YIELD SIGN; 6 - NO CONTROL

OF THROUGH LANES ON ROAD: 2

RAIL GRADE CROSSING: 1
1 - NOT INVOLVED; 2 - INVOLVED-ACTIVE CROSSING; 3 - INVOLVED-PASSIVE CROSSING

UNIT / NON-MOTORIST DIRECTION: FROM 8 TO 1
1 - NORTH; 2 - SOUTH; 3 - EAST; 4 - WEST; 5 - NORTHEAST; 6 - NORTHWEST; 7 - SOUTHEAST; 8 - SOUTHWEST; 9 - OTHER / UNKNOWN

UNIT SPEED: 10

DETECTED SPEED: 1
1 - STATED / ESTIMATED SPEED; 2 - CALCULATED / EDR; 3 - UNDETERMINED

POSTED SPEED: 45

OHIO DEPARTMENT OF PUBLIC SAFETY — MOTORIST / NON-MOTORIST

LOCAL REPORT NUMBER: 2022-00028386

MOTORIST / NON-MOTORIST

UNIT #	NAME: LAST, FIRST, MIDDLE	DATE OF BIRTH	AGE	GENDER
01	WEAVER, DENNIS RAY	08/07/1957	65	M

ADDRESS: STREET, CITY, STATE, ZIP: 6573 TOWNSHIP RD MILLERSBURG, OH 44654

CONTACT PHONE - INCLUDE AREA CODE: 3304885303

INJURIES	INJURED TAKEN BY	EMS AGENCY (NAME)	INJURED TAKEN TO: MEDICAL FACILITY (NAME, CITY)	SAFETY EQUIPMENT USED	DOT-COMPLIANT MC HELMET	SEATING POSITION	AIR BAG USAGE	EJECTION	TRAPPED
5				04	☐	04	1	1	1

OL STATE	OPERATOR LICENSE NUMBER	OFFENSE CHARGED	LOCAL CODE	OFFENSE DESCRIPTION	CITATION NUMBER
OH	RS294988		☐		

OL CLASS	ENDORSEMENT SELECT UP TO 2	RESTRICTION SELECT UP TO 3	DRIVER DISTRACTED BY	ALCOHOL / DRUG SUSPECTED	CONDITION	ALCOHOL TEST STATUS	ALCOHOL TEST TYPE	ALCOHOL TEST VALUE	DRUG TEST(S) STATUS	DRUG TEST(S) TYPE	DRUG TEST(S) RESULT SELECT UP TO 4
3			1	☐ ALCOHOL ☐ MARIJUANA ☐ OTHER DRUG	1	1	1	.	1	1	

MOTORIST / NON-MOTORIST

UNIT #	NAME: LAST, FIRST, MIDDLE	DATE OF BIRTH	AGE	GENDER
02	Lucas, Werner Efren Castanon	06/09/2003	19	M

ADDRESS: STREET, CITY, STATE, ZIP: 5625 Blue Logon LN Hillard, OH 43026

CONTACT PHONE - INCLUDE AREA CODE:

INJURIES	INJURED TAKEN BY	EMS AGENCY (NAME)	INJURED TAKEN TO: MEDICAL FACILITY (NAME, CITY)	SAFETY EQUIPMENT USED	DOT-COMPLIANT MC HELMET	SEATING POSITION	AIR BAG USAGE	EJECTION	TRAPPED
1	1	Monroe Twp FD		04	☐	01	2	1	2

OL STATE	OPERATOR LICENSE NUMBER	OFFENSE CHARGED	LOCAL CODE	OFFENSE DESCRIPTION	CITATION NUMBER
			☐		

OL CLASS	ENDORSEMENT SELECT UP TO 2	RESTRICTION SELECT UP TO 3	DRIVER DISTRACTED BY	ALCOHOL / DRUG SUSPECTED	CONDITION	ALCOHOL TEST STATUS	ALCOHOL TEST TYPE	ALCOHOL TEST VALUE	DRUG TEST(S) STATUS	DRUG TEST(S) TYPE	DRUG TEST(S) RESULT SELECT UP TO 4
6			9	☐ ALCOHOL ☐ MARIJUANA ☐ OTHER DRUG	9	1	1	.	1	1	

MOTORIST / NON-MOTORIST

UNIT #	NAME: LAST, FIRST, MIDDLE	DATE OF BIRTH	AGE	GENDER

ADDRESS: STREET, CITY, STATE, ZIP:

CONTACT PHONE - INCLUDE AREA CODE:

INJURIES	INJURED TAKEN BY	EMS AGENCY (NAME)	INJURED TAKEN TO: MEDICAL FACILITY (NAME, CITY)	SAFETY EQUIPMENT USED	DOT-COMPLIANT MC HELMET	SEATING POSITION	AIR BAG USAGE	EJECTION	TRAPPED
					☐				

OL STATE	OPERATOR LICENSE NUMBER	OFFENSE CHARGED	LOCAL CODE	OFFENSE DESCRIPTION	CITATION NUMBER
			☐		

OL CLASS	ENDORSEMENT SELECT UP TO 2	RESTRICTION SELECT UP TO 3	DRIVER DISTRACTED BY	ALCOHOL / DRUG SUSPECTED	CONDITION	ALCOHOL TEST STATUS	ALCOHOL TEST TYPE	ALCOHOL TEST VALUE	DRUG TEST(S) STATUS	DRUG TEST(S) TYPE	DRUG TEST(S) RESULT SELECT UP TO 4
				☐ ALCOHOL ☐ MARIJUANA ☐ OTHER DRUG				.			

INJURIES
1 - FATAL
2 - SUSPECTED SERIOUS INJURY
3 - SUSPECTED MINOR INJURY
4 - POSSIBLE INJURY
5 - NO APPARENT INJURY

INJURED TAKEN BY
1 - NOT TRANSPORTED /TREATED AT SCENE
2 - EMS
3 - POLICE
9 - OTHER / UNKNOWN

SAFETY EQUIPMENT
1 - NONE USED
2 - SHOULDER BELT ONLY USED
3 - LAP BELT ONLY USED
4 - SHOULDER & LAP BELT USED
5 - CHILD RESTRAINT SYSTEM - FORWARD FACING
6 - CHILD RESTRAINT SYSTEM - REAR FACING
7 - BOOSTER SEAT
8 - HELMET USED
9 - PROTECTIVE PADS USED (ELBOW, KNEES, ETC.)
10 - REFLECTIVE CLOTHING
11 - LIGHTING - PEDESTRIAN / BICYCLE ONLY
99 - OTHER / UNKNOWN

SEATING POSITION
1 - FRONT - LEFT SIDE (MOTORCYCLE DRIVER)
2 - FRONT - MIDDLE
3 - FRONT - RIGHT SIDE
4 - SECOND - LEFT SIDE (MOTORCYCLE PASSENGER)
5 - SECOND - MIDDLE
6 - SECOND - RIGHT SIDE
7 - THIRD - LEFT SIDE (MOTORCYCLE SIDE CAR)
8 - THIRD - MIDDLE
9 - THIRD - RIGHT SIDE
10 - SLEEPER SECTION OF TRUCK CAB
11 - PASSENGER IN OTHER ENCLOSED CARGO AREA (NON-TRAILING UNIT, BUS, PICK-UP WITH CAP)
12 - PASSENGER IN UNENCLOSED CARGO AREA
13 - TRAILING UNIT
14 - RIDING ON VEHICLE EXTERIOR (NON-TRAILING UNIT)
15 - NON-MOTORIST
99 - OTHER / UNKNOWN

AIR BAG
1 - NOT DEPLOYED
2 - DEPLOYED FRONT
3 - DEPLOYED SIDE
4 - DEPLOYED BOTH FRONT / SIDE
5 - NOT APPLICABLE
9 - DEPLOYMENT UNKNOWN

EJECTION
1 - NOT EJECTED
2 - PARTIALLY EJECTED
3 - TOTALLY EJECTED
4 - NOT APPLICABLE

TRAPPED
1 - NOT TRAPPED
2 - EXTRICATED BY MECHANICAL MEANS
3 - FREED BY NON-MECHANICAL MEANS

OL CLASS
1 - CLASS A
2 - CLASS B
3 - CLASS C
4 - REGULAR CLASS (OHIO = D)
5 - M/C MOPED ONLY
6 - NO VALID OL

OL ENDORSEMENT
H - HAZMAT
M - MOTORCYCLE
P - PASSENGER
N - TANKER
Q - MOTOR SCOOTER
R - THREE-WHEEL MOTORCYCLE
S - SCHOOL BUS
T - DOUBLE & TRIPLE TRAILERS
X - TANKER / HAZMAT

OL RESTRICTION(S)
1 - ALCOHOL INTERLOCK DEVICE
2 - CDL INTRASTATE ONLY
3 - CORRECTIVE LENSES
4 - FARM WAIVER
5 - EXCEPT CLASS A BUS
6 - EXCEPT CLASS A & CLASS B BUS
7 - EXCEPT TRACTOR-TRAILER
8 - INTERMEDIATE LICENSE RESTRICTIONS
9 - LEARNER'S PERMIT RESTRICTIONS
10 - LIMITED TO DAYLIGHT ONLY
11 - LIMITED TO EMPLOYMENT
12 - LIMITED - OTHER
13 - MECHANICAL DEVICES (SPECIAL BRAKES, HAND CONTROLS, OR OTHER ADAPTIVE DEVICES)
14 - MILITARY VEHICLES ONLY
15 - MOTOR VEHICLES WITHOUT AIR BRAKES
16 - OUTSIDE MIRROR
17 - PROSTHETIC AID
18 - OTHER

DRIVER DISTRACTION
1 - NOT DISTRACTED
2 - MANUALLY OPERATING AN ELECTRONIC COMMUNICATION DEVICE (TEXTING, TYPING, DIALING)
3 - TALKING ON HANDS-FREE COMMUNICATION DEVICE
4 - TALKING ON HAND-HELD COMMUNICATION DEVICE
5 - OTHER ACTIVITY WITH AN ELECTRONIC DEVICE
6 - PASSENGER
7 - OTHER DISTRACTION INSIDE THE VEHICLE
8 - OTHER DISTRACTION OUTSIDE THE VEHICLE
9 - OTHER / UNKNOWN

CONDITION
1 - APPARENTLY NORMAL
2 - PHYSICAL IMPAIRMENT
3 - EMOTIONAL (E.G., DEPRESSED, ANGRY, DISTURBED)
4 - ILLNESS
5 - FELL ASLEEP, FAINTED, FATIGUED, ETC.
6 - UNDER THE INFLUENCE OF MEDICATIONS / DRUGS / ALCOHOL
9 - OTHER / UNKNOWN

TEST STATUS
1 - NONE GIVEN
2 - TEST REFUSED
3 - TEST GIVEN, CONTAMINATED SAMPLE / UNUSABLE
4 - TEST GIVEN, RESULTS KNOWN
5 - TEST GIVEN, RESULTS UNKNOWN

ALCOHOL TEST TYPE
1 - NONE
2 - BLOOD
3 - URINE
4 - BREATH
5 - OTHER

DRUG TEST TYPE
1 - NONE
2 - BLOOD
3 - URINE
4 - OTHER

DRUG TEST RESULT(S)
1 - AMPHETAMINES
2 - BARBITURATES
3 - BENZODIAZEPINES
4 - CANNABINOIDS
5 - COCAINE
6 - OPIATES / OPIOIDS
7 - OTHER
8 - NEGATIVE RESULTS

OCCUPANT / WITNESS ADDENDUM

OHIO DEPARTMENT OF PUBLIC SAFETY

LOCAL REPORT NUMBER: 2022-00028386

OCCUPANT

UNIT #	NAME: LAST, FIRST, MIDDLE	DATE OF BIRTH	AGE	GENDER
02	LAPARRA, YOHATON BARRIOS	11/05/1998	23	M

ADDRESS: STREET, CITY, STATE, ZIP: 652 Galle ST Columbus, OH 43201

CONTACT PHONE - INCLUDE AREA CODE:

INJURIES	INJURED TAKEN BY	EMS AGENCY (NAME)	INJURED TAKEN TO: MEDICAL FACILITY (NAME, CITY)	SAFETY EQUIPMENT USED	DOT-COMPLIANT MC HELMET	SEATING POSITION	AIR BAG USAGE	EJECTION	TRAPPED
2	2	Monroe Twp FD	Grant	04	☐	04	1	1	2

OCCUPANT

UNIT #	NAME: LAST, FIRST, MIDDLE	DATE OF BIRTH	AGE	GENDER
02	Daiz, Lender Leodan			M

ADDRESS: STREET, CITY, STATE, ZIP:

CONTACT PHONE - INCLUDE AREA CODE:

INJURIES	INJURED TAKEN BY	EMS AGENCY (NAME)	INJURED TAKEN TO: MEDICAL FACILITY (NAME, CITY)	SAFETY EQUIPMENT USED	DOT-COMPLIANT MC HELMET	SEATING POSITION	AIR BAG USAGE	EJECTION	TRAPPED
2	2	Monroe Twp FD	Grant	04	☐	03	2	1	2

OCCUPANT

UNIT #	NAME: LAST, FIRST, MIDDLE	DATE OF BIRTH	AGE	GENDER

ADDRESS: STREET, CITY, STATE, ZIP:

CONTACT PHONE - INCLUDE AREA CODE:

INJURIES	INJURED TAKEN BY	EMS AGENCY (NAME)	INJURED TAKEN TO: MEDICAL FACILITY (NAME, CITY)	SAFETY EQUIPMENT USED	DOT-COMPLIANT MC HELMET	SEATING POSITION	AIR BAG USAGE	EJECTION	TRAPPED
					☐				

OCCUPANT

UNIT #	NAME: LAST, FIRST, MIDDLE	DATE OF BIRTH	AGE	GENDER

ADDRESS: STREET, CITY, STATE, ZIP:

CONTACT PHONE - INCLUDE AREA CODE:

INJURIES	INJURED TAKEN BY	EMS AGENCY (NAME)	INJURED TAKEN TO: MEDICAL FACILITY (NAME, CITY)	SAFETY EQUIPMENT USED	DOT-COMPLIANT MC HELMET	SEATING POSITION	AIR BAG USAGE	EJECTION	TRAPPED
					☐				

INJURIES
1 FATAL
2 - SUSPECTED SERIOUS INJURY
3 SUSPECTED MINOR INJURY
4 - POSSIBLE INJURY
5 NO APPARENT INJURY

INJURED TAKEN BY
1 - NOT TRANSPORTED /TREATED AT SCENE
2 EMS
3 - POLICE
9 OTHER / UNKNOWN

SAFETY EQUIPMENT USED
1 NONE USED VEHICLE OCCUPANT
2 - SHOULDER BELT ONLY USED
3 - LAP BELT ONLY USED
4 - SHOULDER & LAP BELT USED
5 CHILD RESTRAINT SYSTEM FORWARD FACING
6 - CHILD RESTRAINT SYSTEM – REAR FACING
7 - BOOSTER SEAT
8 - HELMET USED
9 - PROTECTIVE PADS USED (ELBOW, KNEES, ETC.)
10 - REFLECTIVE CLOTHING
11 - LIGHTING – PEDESTRIAN / BICYCLE ONLY
99 - OTHER / UNKNOWN

SEATING POSITION
1 FRONT – LEFT SIDE (MOTORCYCLE DRIVER)
2 - FRONT - MIDDLE
3 - FRONT – RIGHT SIDE
4 SECOND – LEFT SIDE (MOTORCYCLE PASSENGER)
5 SECOND MIDDLE
6 - SECOND - RIGHT SIDE
7 - THIRD – LEFT SIDE (MOTORCYCLE SIDE CAR)
8 THIRD – MIDDLE
9 - THIRD – RIGHT SIDE
10 - SLEEPER SECTION OF TRUCK CAB
11 - PASSENGER IN OTHER ENCLOSED CARGO AREA (NON-TRAILING UNIT, BUS, PICK-UP WITH CAP)
12 - PASSENGER IN UNENCLOSED CARGO AREA
13 - TRAILING UNIT
14 - RIDING ON VEHICLE EXTERIOR (NON-TRAILING UNIT)
15 - NON-MOTORIST
99 OTHER / UNKNOWN

AIR BAG USAGE
1 NOT DEPLOYED
2 - DEPLOYED FRONT
3 - DEPLOYED SIDE
4 DEPLOYED BOTH FRONT/SIDE
5 NOT APPLICABLE
9 - DEPLOYMENT UNKNOWN

EJECTION
1 - NOT EJECTED
2 - PARTIALLY EJECTED
3 - TOTALLY EJECTED
4 - NOT APPLICABLE

TRAPPED
1 - NOT TRAPPED
2 - EXTRICATED BY MECHANICAL MEANS
3 - FREED BY NON-MECHANICAL MEANS

WITNESS

NAME: LAST, FIRST, MIDDLE	DATE OF BIRTH	AGE	GENDER

ADDRESS: STREET, CITY, STATE, ZIP:

CONTACT PHONE - INCLUDE AREA CODE:

WITNESS

NAME: LAST, FIRST, MIDDLE	DATE OF BIRTH	AGE	GENDER

ADDRESS: STREET, CITY, STATE, ZIP:

CONTACT PHONE - INCLUDE AREA CODE:

WITNESS

NAME: LAST, FIRST, MIDDLE	DATE OF BIRTH	AGE	GENDER

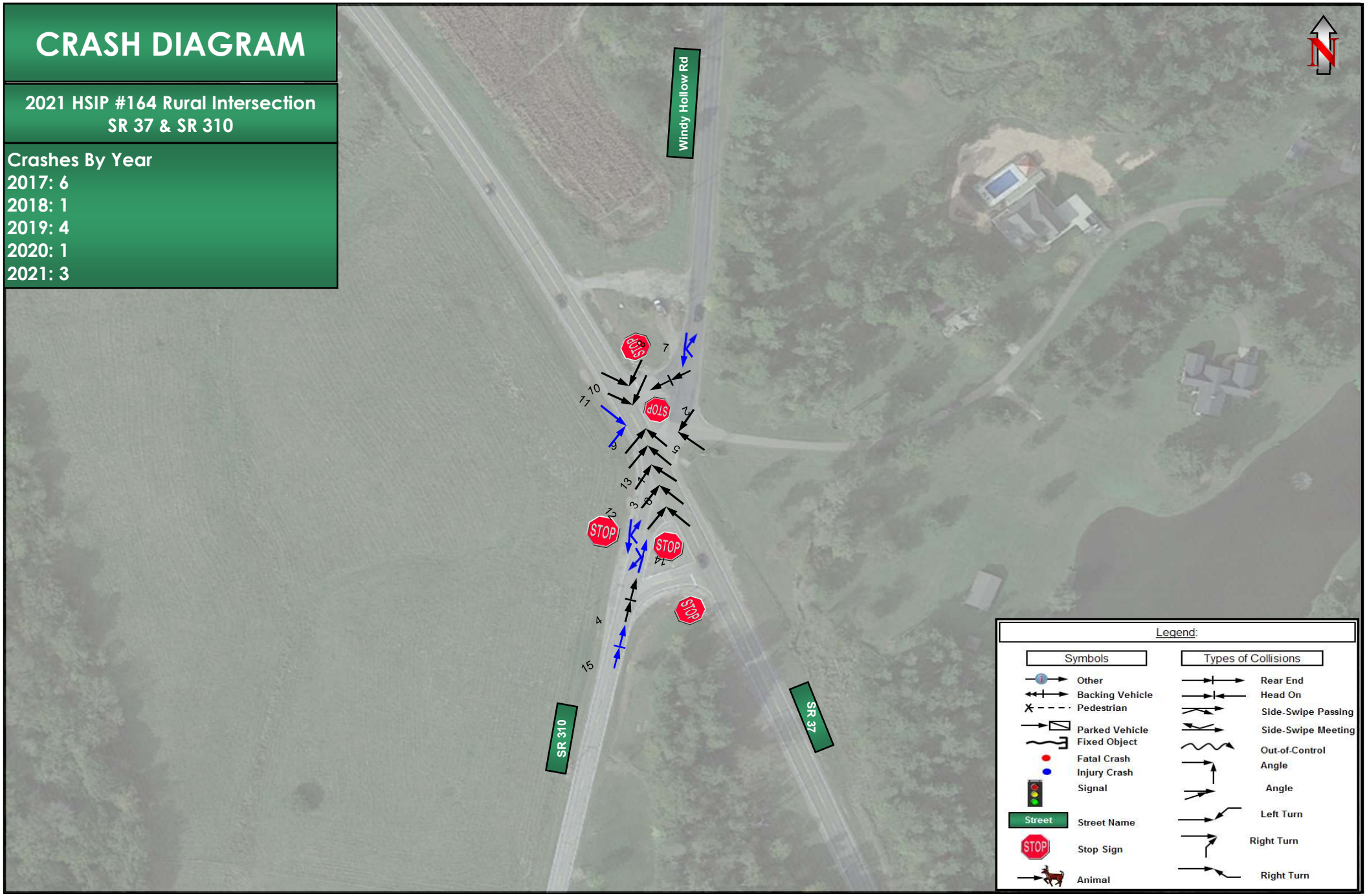
ADDRESS: STREET, CITY, STATE, ZIP:

CONTACT PHONE - INCLUDE AREA CODE:

CRASH DIAGRAM

2021 HSIP #164 Rural Intersection
SR 37 & SR 310

Crashes By Year
2017: 6
2018: 1
2019: 4
2020: 1
2021: 3



Appendix C: Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST

LIC-37/310-6.96/13.38 (PID 119442)
ODOT District 5
July 21, 2023
Alternative 1 - "Peanut" Roundabout

STRAND ASSOCIATES®

ITEM	UNIT	DESCRIPTION	QUANTITY	UNIT COST	EXTENSION
		ROADWAY			
201E11000	LS	CLEARING AND GRUBBING	1	$ 11,530.00	$ 11,530.00
202E23000	SY	PAVEMENT REMOVED	6485	$ 12.70	$ 82,359.50
202E34900	FT	PIPE REMOVED	30	$ 31.50	$ 945.00
202E75000	FT	FENCE REMOVED	850	$ 4.40	$ 3,740.00
203E10000	CY	EXCAVATION	10000	$ 23.10	$ 231,000.00
203E20000	CY	EMBANKMENT	6000	$ 23.10	$ 138,600.00
204E10000	SY	SUBGRADE COMPACTION	6888	$ 2.90	$ 19,975.20
204E13000	CY	EXCAVATION OF SUBGRADE	2296	$ 24.30	$ 55,792.80
204E30010	CY	GRANULAR MATERIAL, TYPE B	2296	$ 50.80	$ 116,636.80
204E51000	SY	GEOGRID	6888	$ 3.80	$ 26,174.40
607E15000	FT	FENCE, TYPE 47	850	$ 32.30	$ 27,455.00
				ROADWAY SUBTOTAL:	$ 714,208.70
		EROSION CONTROL			
659	LS	EROSION CONTROL	1	$ 165,000.00	$ 165,000.00
				EROSION CONTROL SUBTOTAL:	$ 165,000.00
		PAVEMENT			
302E56000	CY	ASPHALT CONCRETE BASE, PG64-22, (449)	966	$ 215.00	$ 207,690.00
304E20000	CY	AGGREGATE BASE	1148	$ 80.80	$ 92,758.40
407E20000	GAL	NON-TRACKING TACK COAT	77	$ 4.40	$ 338.80
442E10000	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (446)	199	$ 236.40	$ 47,043.60
442E10080	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 12.5 MM, TYPE A (446)	274	$ 276.80	$ 75,843.20
452E11010	SY	7" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	728	$ 98.10	$ 71,416.80
609E18000	FT	COMBINATION CURB AND GUTTER, TYPE 3	1095	$ 34.60	$ 37,887.00
609E26000	FT	CURB, TYPE 6	597	$ 35.00	$ 20,895.00
609E31000	FT	COMBINATION CURB AND GUTTER, TYPE 9	689	$ 40.00	$ 27,560.00
609E58000	SY	9" CONCRETE TRAFFIC ISLAND	504	$ 184.50	$ 92,988.00
				PAVEMENT SUBTOTAL:	$ 674,420.80
		LIGHTING			
625	LS	ROUNDABOUT LIGHTING	1	$ 175,000.00	$ 175,000.00
				LIGHTING SUBTOTAL:	$ 175,000.00
		TRAFFIC CONTROL			
630	LS	ROUNDABOUT SIGNING	1	$ 50,000.00	$ 50,000.00
644	LS	PAVEMENT MARKINGS	1	$ 20,000.00	$ 20,000.00
				TRAFFIC CONTROL SUBTOTAL:	$ 70,000.00
		LANDSCAPING			
661	LS	LANDSCAPING	1	$ 30,000.00	$ 30,000.00
				LANDSCAPING SUBTOTAL:	$ 30,000.00
		INCIDENTALS			
614E11000	LS	MAINTAINING TRAFFIC	1	$ 600,000.00	$ 600,000.00
619E16010	MNTH	FIELD OFFICE, TYPE B	4	$ 1,500.00	$ 6,000.00
623E10000	LS	CONSTRUCTION LAYOUT STAKES AND SURVEYING	1	$ 25,000.00	$ 25,000.00
624E10000	LS	MOBILIZATION	1	$ 100,000.00	$ 100,000.00
				INCIDENTALS SUBTOTAL:	$ 731,000.00
				SUBTOTAL CONSTRUCTION COST:	$ 2,559,629.50
				DESIGN CONTINGENCY (20%):	$ 511,925.90
				TOTAL CONSTRUCTION COST:	$ 3,071,555.40

Note: Costs provided are in 2023 dollars.

OPINION OF PROBABLE CONSTRUCTION COST

LIC-37/310-6.96/13.38 (PID 119442)
ODOT District 5
July 21, 2023
Alternative 2 - Circular Roundabout

STRAND ASSOCIATES®

ITEM	UNIT	DESCRIPTION	QUANTITY	UNIT COST	EXTENSION
		ROADWAY			
201E11000	LS	CLEARING AND GRUBBING	1	$ 11,530.00	$ 11,530.00
202E23000	SY	PAVEMENT REMOVED	6362	$ 12.70	$ 80,797.40
202E34900	FT	PIPE REMOVED	30	$ 31.50	$ 945.00
202E75000	FT	FENCE REMOVED	860	$ 4.40	$ 3,784.00
203E10000	CY	EXCAVATION	12000	$ 23.10	$ 277,200.00
203E20000	CY	EMBANKMENT	6000	$ 23.10	$ 138,600.00
204E10000	SY	SUBGRADE COMPACTION	7023	$ 2.90	$ 20,366.70
204E13000	CY	EXCAVATION OF SUBGRADE	2341	$ 24.30	$ 56,886.30
204E30010	CY	GRANULAR MATERIAL, TYPE B	2341	$ 50.80	$ 118,922.80
204E51000	SY	GEOGRID	7023	$ 3.80	$ 26,687.40
607E15000	FT	FENCE, TYPE 47	860	$ 32.30	$ 27,778.00
				ROADWAY SUBTOTAL:	$ 763,497.60
		EROSION CONTROL			
659	LS	EROSION CONTROL	1	$ 165,000.00	$ 165,000.00
				EROSION CONTROL SUBTOTAL:	$ 165,000.00
		PAVEMENT			
302E56000	CY	ASPHALT CONCRETE BASE, PG64-22, (449)	1024	$ 215.00	$ 220,160.00
304E20000	CY	AGGREGATE BASE	1171	$ 80.80	$ 94,616.80
407E20000	GAL	NON-TRACKING TACK COAT	72	$ 4.40	$ 316.80
442E10000	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (446)	211	$ 236.40	$ 49,880.40
442E10080	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 12.5 MM, TYPE A (446)	285	$ 276.80	$ 78,888.00
452E11010	SY	7" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	434	$ 98.10	$ 42,575.40
609E18000	FT	COMBINATION CURB AND GUTTER, TYPE 3	827	$ 34.60	$ 28,614.20
609E26000	FT	CURB, TYPE 6	256	$ 35.00	$ 8,960.00
609E31000	FT	COMBINATION CURB AND GUTTER, TYPE 9	343	$ 40.00	$ 13,720.00
609E58000	SY	9" CONCRETE TRAFFIC ISLAND	751	$ 184.50	$ 138,559.50
				PAVEMENT SUBTOTAL:	$ 676,291.10
		LIGHTING			
625	LS	ROUNDABOUT LIGHTING	1	$ 175,000.00	$ 175,000.00
				LIGHTING SUBTOTAL:	$ 175,000.00
		TRAFFIC CONTROL			
630	LS	ROUNDABOUT SIGNING	1	$ 50,000.00	$ 50,000.00
644	LS	PAVEMENT MARKINGS	1	$ 20,000.00	$ 20,000.00
				TRAFFIC CONTROL SUBTOTAL:	$ 70,000.00
		LANDSCAPING			
661	LS	LANDSCAPING	1	$ 20,000.00	$ 20,000.00
				LANDSCAPING SUBTOTAL:	$ 20,000.00
		INCIDENTALS			
614E11000	LS	MAINTAINING TRAFFIC	1	$ 300,000.00	$ 300,000.00
619E16010	MNTH	FIELD OFFICE, TYPE B	4	$ 1,500.00	$ 6,000.00
623E10000	LS	CONSTRUCTION LAYOUT STAKES AND SURVEYING	1	$ 3,500.00	$ 3,500.00
624E10000	LS	MOBILIZATION	1	$ 100,000.00	$ 100,000.00
				INCIDENTALS SUBTOTAL:	$ 409,500.00
				SUBTOTAL CONSTRUCTION COST:	$ 2,279,288.70
				DESIGN CONTINGENCY (20%):	$ 455,857.74
				TOTAL CONSTRUCTION COST:	$ 2,735,146.44

Note: Costs provided are in 2023 dollars.

OPINION OF PROBABLE CONSTRUCTION COST

LIC-37/310-6.96/13.38 (PID 119442)
ODOT District 5
July 21, 2023
Alternative 3 - Signalized Intersection

ITEM	UNIT	DESCRIPTION	QUANTITY	UNIT COST	EXTENSION
		ROADWAY			
201E11000	LS	CLEARING AND GRUBBING	1	$ 11,530.00	$ 11,530.00
202E23000	SY	PAVEMENT REMOVED	3149	$ 16.20	$ 51,013.80
202E34900	FT	PIPE REMOVED	30	$ 31.50	$ 945.00
202E75000	FT	FENCE REMOVED	725	$ 4.40	$ 3,190.00
203E10000	CY	EXCAVATION	5000	$ 23.10	$ 115,500.00
203E20000	CY	EMBANKMENT	10000	$ 23.10	$ 231,000.00
204E10000	SY	SUBGRADE COMPACTION	5712	$ 3.70	$ 21,134.40
204E13000	CY	EXCAVATION OF SUBGRADE	1904	$ 26.60	$ 50,646.40
204E30010	CY	GRANULAR MATERIAL, TYPE B	1904	$ 56.50	$ 107,576.00
204E51000	SY	GEOGRID	5712	$ 3.80	$ 21,705.60
607E15000	FT	FENCE, TYPE 47	725	$ 32.30	$ 23,417.50
				ROADWAY SUBTOTAL:	$ 637,658.70
		EROSION CONTROL			
659	LS	EROSION CONTROL	1	$ 165,000.00	$ 165,000.00
				EROSION CONTROL SUBTOTAL:	$ 165,000.00
		PAVEMENT			
254E01000	SY	PAVEMENT PLANING, ASPHALT CONCRETE	6598	$ 6.50	$ 42,887.00
302E56000	CY	ASPHALT CONCRETE BASE, PG64-22, (449)	967	$ 215.00	$ 207,905.00
304E20000	CY	AGGREGATE BASE	952	$ 80.80	$ 76,921.60
407E20000	GAL	NON-TRACKING TACK COAT	145	$ 4.40	$ 638.00
442E10000	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (446)	425	$ 236.40	$ 100,470.00
442E10080	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 12.5 MM, TYPE A (446)	580	$ 276.80	$ 160,544.00
				PAVEMENT SUBTOTAL:	$ 589,365.60
		LIGHTING			
625E98200	LS	LIGHTING, MISC.:LIGHTING	1	$ 60,000.00	$ 60,000.00
				LIGHTING SUBTOTAL:	$ 60,000.00
		TRAFFIC CONTROL			
630	LS	SIGNING	1	$ 5,000.00	$ 5,000.00
644	LS	PAVEMENT MARKINGS	1	$ 10,000.00	$ 10,000.00
				TRAFFIC CONTROL SUBTOTAL:	$ 15,000.00
		TRAFFIC SIGNALS			
632	LS	TRAFFIC SIGNAL	1	$ 275,000.00	$ 275,000.00
				TRAFFIC SIGNALS SUBTOTAL:	$ 275,000.00
		INCIDENTALS			
614E11000	LS	MAINTAINING TRAFFIC	1	$ 200,000.00	$ 200,000.00
619E16010	MNTH	FIELD OFFICE, TYPE B	4	$ 1,500.00	$ 6,000.00
623E10000	LS	CONSTRUCTION LAYOUT STAKES AND SURVEYING	1	$ 3,500.00	$ 3,500.00
624E10000	LS	MOBILIZATION	1	$ 100,000.00	$ 100,000.00
				INCIDENTALS SUBTOTAL:	$ 309,500.00
				SUBTOTAL CONSTRUCTION COST:	$ 2,051,524.30
				DESIGN CONTINGENCY (20%):	$ 410,304.86
				TOTAL CONSTRUCTION COST:	$ 2,461,829.16

Note: Costs provided are in 2023 dollars.

CY 2023-2027 Business Plan Inflation Calculator:

Not sure if you have the latest calculator? Click here.

Last Modified: 1/26/2023

Today's Date:
August 17, 2023

Please Enter Values in the Yellow Areas Only:

Estimation Start Date:
Less than or Equal to Today's Date
(mm/dd/yyyy)

8/17/2023
Start Date:

Enter Construction Mid-Point Date:
(cannot exceed 08/17/2048)
(mm/dd/yyyy)

7/29/2029
Construction Mid-Point Date:

Present-Day Estimated Cost:

$3,071,556.00
Estimated Dollar Amount:

Estimate Start Date to Construction Mid-Point Date: **71** **Months**

Inflation - Start to Mid-Point of Construction:

	(compounded growth rate)	**Inflated Dollar Amount:**
Business Plan	**27.2%**	**$3,908,553.83**

Estimator's Name:

County - Route - Section:

PID:

Estimator's Notes:

Otworth, Joshua

From: Wooldridge, John
Sent: Monday, July 31, 2023 10:43 AM
To: Otworth, Joshua; Schmelzer, Edward
Cc: Deitrich, William; Thompson, Tyrell; Morgan, Douglas
Subject: RE: 119442: LIC-37/SR 310 Alternative Concepts

Hello Josh:

Totals:

ALT 1 – Peanut Roundabout Option:
- $100,000.00 R/W Acquisition
- $60,000.00 R/W Services
- $250,000.00 R/W Utilities

Total R/W: $410,000.00 for R/W

ALT 2 – Circular Roundabout Option:
- $160,000.00 R/W Acquisition
- $50,000.00 R/W Services
- $250,000.00 R/W Utilities

Total R/W: $460,000.00 for R/W

ALT 3 – Signalized Intersection:
- $180,000.00 R/W Acquisition
- $60,000.00 R/W Services
- $250,000.00 R/W Utilities

Total R/W: $490,000.00 for R/W

Thanks!

Respectfully,

John R. Wooldridge
Real Estate Administrator
ODOT District 5
9600 Jacksontown Road, Jacksontown, OH 43030
740.323.5427
transportation.ohio.gov

From: Wooldridge, John
Sent: Friday, July 28, 2023 2:23 PM
To: Otworth, Joshua <Joshua.Otworth@dot.ohio.gov>; Schmelzer, Edward <Ed.Schmelzer@dot.ohio.gov>
Cc: Deitrich, William <William.Deitrich@dot.ohio.gov>; Thompson, Tyrell <Ty.Thompson@dot.ohio.gov>; Morgan,

Douglas <Doug.Morgan@dot.ohio.gov>
Subject: RE: 119442: LIC-37/SR 310 Alternative Concepts

Hi Josh,

Does the attached include the limits/area for MOT? I think that expanded area will add costs if applicable for both R/W and utilities. Here are the planning level cost estimates for R/W based on the alternatives submitted. Thanks!

ALT 1 – Peanut Roundabout Option:
- $100,000.00 R/W Acquisition
- $60,000.00 R/W Services
- $0,000.00 R/W Utilities

Total R/W: $,0,000.00 for R/W

ALT 2 – Circular Roundabout Option:
- $160,000.00 R/W Acquisition
- $50,000.00 R/W Services
- $0,000.00 R/W Utilities

Total R/W: $,0,000.00 for R/W

ALT 3 – Signalized Intersection:
- $180,000.00 R/W Acquisition
- $60,000.00 R/W Services
- $0,000.00 R/W Utilities

Total R/W: $,0,000.00 for R/W

Ed and Bill can provide the utility estimates and then the total can be developed. I assumed worse case based on how the last few roundabouts and signals have gone, including appropriation support costs (so the estimates could be high, and possibly reduced if less impactful).

Hope this helps. Thanks!

Respectfully,

John R. Wooldridge
Real Estate Administrator
ODOT District 5
9600 Jacksontown Road, Jacksontown, OH 43030
740.323.5427
transportation.ohio.gov

OHIO DEPARTMENT OF TRANSPORTATION

From: Otworth, Joshua <Joshua.Otworth@dot.ohio.gov>
Sent: Thursday, July 27, 2023 1:52 PM
To: Wooldridge, John <John.Wooldridge@dot.ohio.gov>; Schmelzer, Edward <Ed.Schmelzer@dot.ohio.gov>
Cc: Deitrich, William <William.Deitrich@dot.ohio.gov>; Thompson, Tyrell <Ty.Thompson@dot.ohio.gov>; Morgan, Douglas <Doug.Morgan@dot.ohio.gov>
Subject: FW: 119442: LIC-37/SR 310 Alternative Concepts

JR, Ed, Bill,
I'm requesting planning level cost estimates for right-of-way acquisition and utility relocation for the LIC-37/SR 310 safety study. There are three options to evaluate: *A)* peanut RABT, *B)* typical circular RABT, *C)* signalization/left turn lane widening. I have linked the alternative layouts below:

"I:\Planning\Safety\Safety Studies\2023 Safety Studies\LIC-37 & SR 310\From Strand\07-24-2023 Final\119442_Alternative Layouts.pdf"

I would like to have these estimates by **August 11th** so I can incorporate them into the final study report and analysis.

P.S. I will be sending along one more safety study layout any day now for a similar favor – LIC-310/Duncan Plains.

Thank you,
Josh Otworth, PE
740.323.5274

From: Heimann, Jeff <Jeff.Heimann@strand.com>
Sent: Monday, July 24, 2023 10:26 AM
To: Otworth, Joshua <Joshua.Otworth@dot.ohio.gov>
Cc: Ruf, Carl <Carl.Ruf@strand.com>
Subject: RE: 119442: LIC-37/SR 310 Alternative Concepts

Good Morning Josh,

I hope you had a great weekend!

We have uploaded the following files to ProjectWise using the link Ty sent (401-Engineering_StrandAssociates). All files are saved in 401-Engineering_StrandAssociates/Roadway/EngData. Please let me know if you do not see the files in ProjectWise or if you have any questions.

1. Concept plans for three alternatives showing parcel lines and R/W lines.
2. Construction costs for three alternatives. R/W and utility costs to be prepared by the District.
3. HCS traffic modeling reports for single lane roundabout.
4. Design parameters table for roundabout alternatives.
5. Truck turning movements for three alternatives.
6. Turn lane length calculations.

Please note the concepts for Alternatives 2 and 3 only provide 100-125 feet between the intersection and the driveway. This is less than the 550 feet the Licking County Engineer requires for clearance between intersections and new driveways.

Thanks!
Jeff

Jeff Heimann, P.E.
Strand Associates, Inc.®
513.861.5600 ext. 5223
jeff.heimann@strand.com | www.strand.com
P.E. (OH)

Excellence in Engineering Since 1946.

Otworth, Joshua

From: Schmelzer, Edward
Sent: Monday, July 31, 2023 10:40 AM
To: Otworth, Joshua; Wooldridge, John
Cc: Deitrich, William; Thompson, Tyrell; Morgan, Douglas
Subject: RE: 119442: LIC-37/SR 310 Alternative Concepts

Josh,

It appears most of the utilities are in existing road right of way. All three alternatives will affect the utilities in same manner, total estimated utility reimbursement cost of $250,000 for each alternative.

Electric Distribution $100,000

Telephone $50,000

Cable $50,000

Gas Distribution $50,000

Thanks,

Ed Schmelzer
Utility Relocation Coordinator
ODOT District 5
9600 Jacksontown Road, Jacksontown, Ohio 43030
740-323-5126
740-503-0534
transportation.ohio.gov

OHIO DEPARTMENT OF TRANSPORTATION

From: Otworth, Joshua <Joshua.Otworth@dot.ohio.gov>
Sent: Thursday, July 27, 2023 1:52 PM
To: Wooldridge, John <John.Wooldridge@dot.ohio.gov>; Schmelzer, Edward <Ed.Schmelzer@dot.ohio.gov>
Cc: Deitrich, William <William.Deitrich@dot.ohio.gov>; Thompson, Tyrell <Ty.Thompson@dot.ohio.gov>; Morgan, Douglas <Doug.Morgan@dot.ohio.gov>
Subject: FW: 119442: LIC-37/SR 310 Alternative Concepts

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Thank you,
Josh Otworth, PE
740.323.5274

From: Heimann, Jeff <Jeff.Heimann@strand.com>
Sent: Monday, July 24, 2023 10:26 AM
To: Otworth, Joshua <Joshua.Otworth@dot.ohio.gov>
Cc: Ruf, Carl <Carl.Ruf@strand.com>
Subject: RE: 119442: LIC-37/SR 310 Alternative Concepts

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6. Turn lane length calculations.

Please note the concepts for Alternatives 2 and 3 only provide 100-125 feet between the intersection and the driveway. This is less than the 550 feet the Licking County Engineer requires for clearance between intersections and new driveways.

Thanks!
Jeff

Jeff Heimann, P.E.
Strand Associates, Inc.®
513.861.5600 ext. 5223
jeff.heimann@strand.com | www.strand.com
P.E. (OH)

Excellence in Engineering Since 1946.

From: Heimann, Jeff
Sent: Wednesday, July 12, 2023 7:51 AM
To: Joshua.Otworth@dot.ohio.gov
Cc: Ruf, Carl <Carl.Ruf@strand.com>
Subject: RE: 119442: LIC-37/SR 310 Alternative Concepts

Got it, we will work on getting them over to you ASAP. Most things are complete or nearly complete, we just need to pull the costs together. We'll be in touch soon.

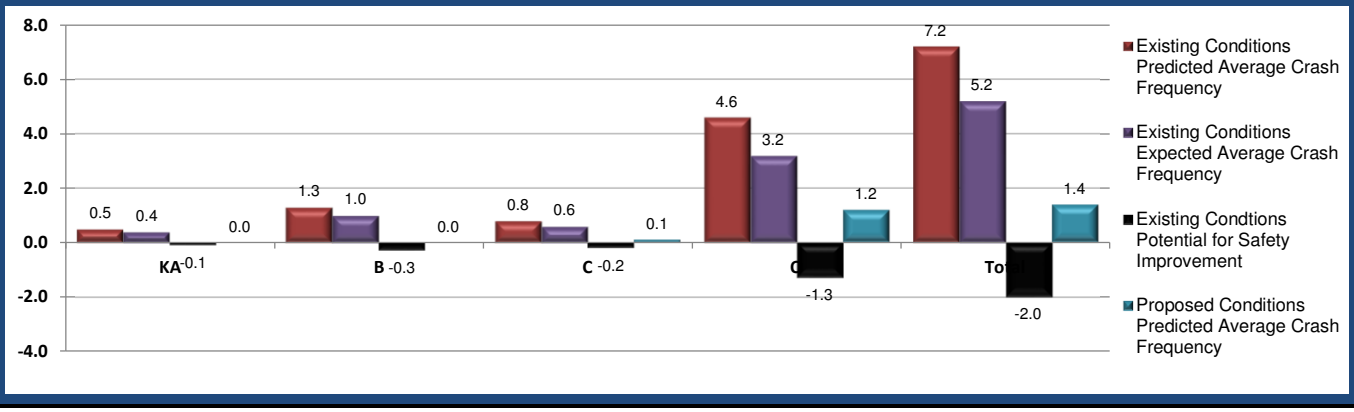
Appendix D: ECAT Analysis

Project Safety Performance Report

General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	Roundabout	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.5249	1.2723	0.8478	4.5542	7.1992
$N_{expected}$ - Existing Conditions	0.3982	0.9651	0.6428	3.2202	5.2263
$N_{potential\ for\ improvement}$ - Existing Conditions	-0.1267	-0.3072	-0.2050	-1.3340	-1.9729
$N_{expected}$ - Proposed Conditions	0.0059	0.0493	0.0608	1.2498	1.3658

Safety Benefit - Cost Analysis

General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	Roundabout	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Select Site Types to be used in Benefit-Cost Analysis:

All Sites

Comments:

Countermeasure Service Lives, Costs, and Safety Benefits

Countermeasures	Service Life (Years)	Initial Cost of Countermeasure	Annual Maintenance & Energy Costs	Salvage Value	Net Present Cost of Countermeasure	Total Cost of Countermeasures	Summary of Annual Crash Modifications	Net Present Value of Safety Benefits
Roundabout	20	$4,550,000.00			$4,550,000.00	$4,550,000.00	-5.833	$6,032,816
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
Totals		**$4,550,000.00**	**$0.00**	**$0.00**	**$4,550,000.00**	**$4,550,000.00**	**-5.833**	**$6,032,816**

Safety Benefit - Cost Analysis

ECAT Economic Crash Analysis Tool

General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	Roundabout	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Benefit - Cost Calculator

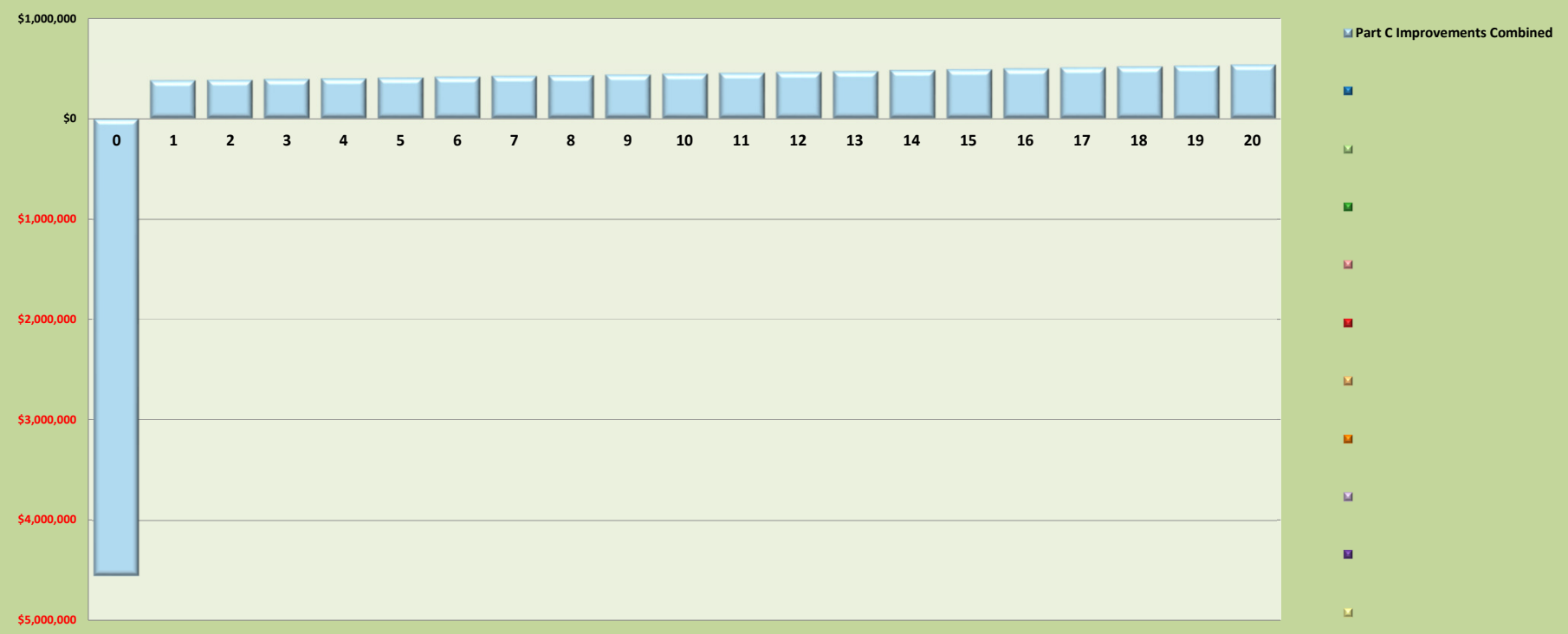
Net Present Value of Project	$4,550,000.00
Net Present Value of Safety Benefits	$6,032,816.44
Net Benefit	$1,482,816.44
Benefit / Cost Ratio	1.33

Expected Annual Crash Adjustment

Number of Fatal & Incapacitating Injury Crashes	-0.519
Number of Injury Crashes	-2.529
Number of Total Crashes	-5.833

Comments:

Safety Benefits and Project Costs Combined Cash Flows By Countermeasure Per Year

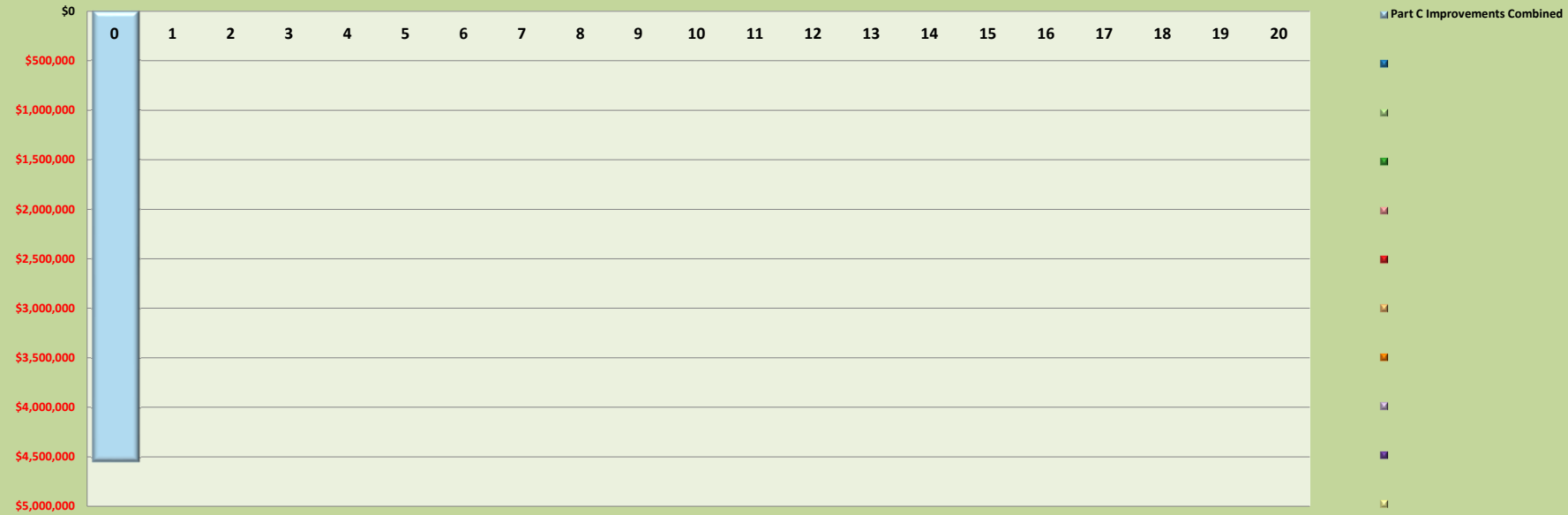


Safety Benefit - Cost Analysis

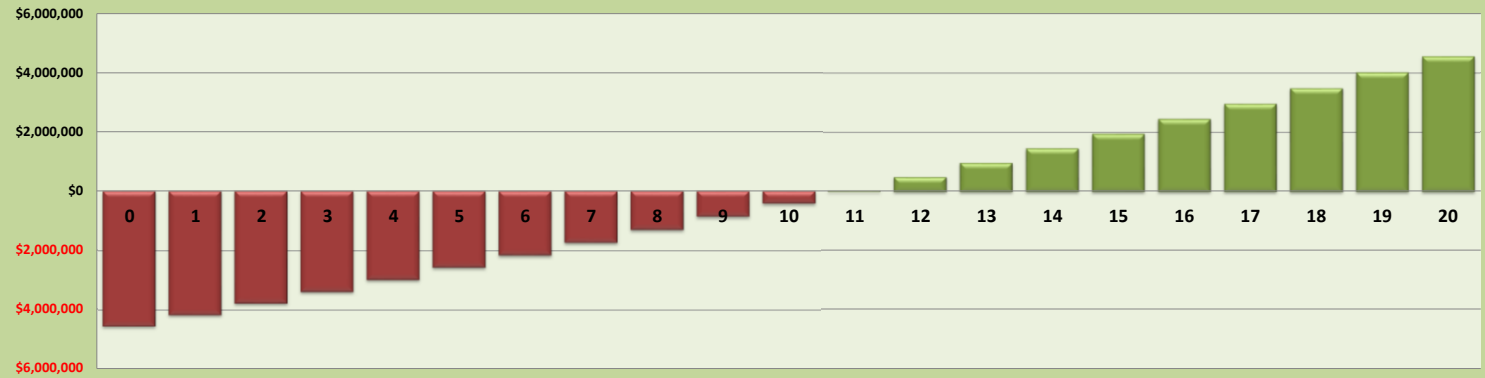
General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	Roundabout	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Project Costs Only Cash Flows By Countermeasure Per Year



Return on Investment (Safety Benefits and Project Investments)



First year to observe a positive return on investment: 2034 (11 years)

Percentage of Service Life to observe a continuous Positive Return on Investment: 50.00%

Safety Benefit - Cost Analysis

General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	Peanut Roundabout	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Select Site Types to be used in Benefit-Cost Analysis:

All Sites

Comments:

Countermeasure Service Lives, Costs, and Safety Benefits

Countermeasures	Service Life (Years)	Initial Cost of Countermeasure	Annual Maintenance & Energy Costs	Salvage Value	Net Present Cost of Countermeasure	Total Cost of Countermeasures	Summary of Annual Crash Modifications	Net Present Value of Safety Benefits
Roundabout	20	$4,920,000.00			$4,920,000.00	$4,920,000.00	-5.833	$6,032,816
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
Totals		**$4,920,000.00**	**$0.00**	**$0.00**	**$4,920,000.00**	**$4,920,000.00**	**-5.833**	**$6,032,816**

Safety Benefit - Cost Analysis

ECAT Economic Crash Analysis Tool

General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	Peanut Roundabout	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Benefit - Cost Calculator

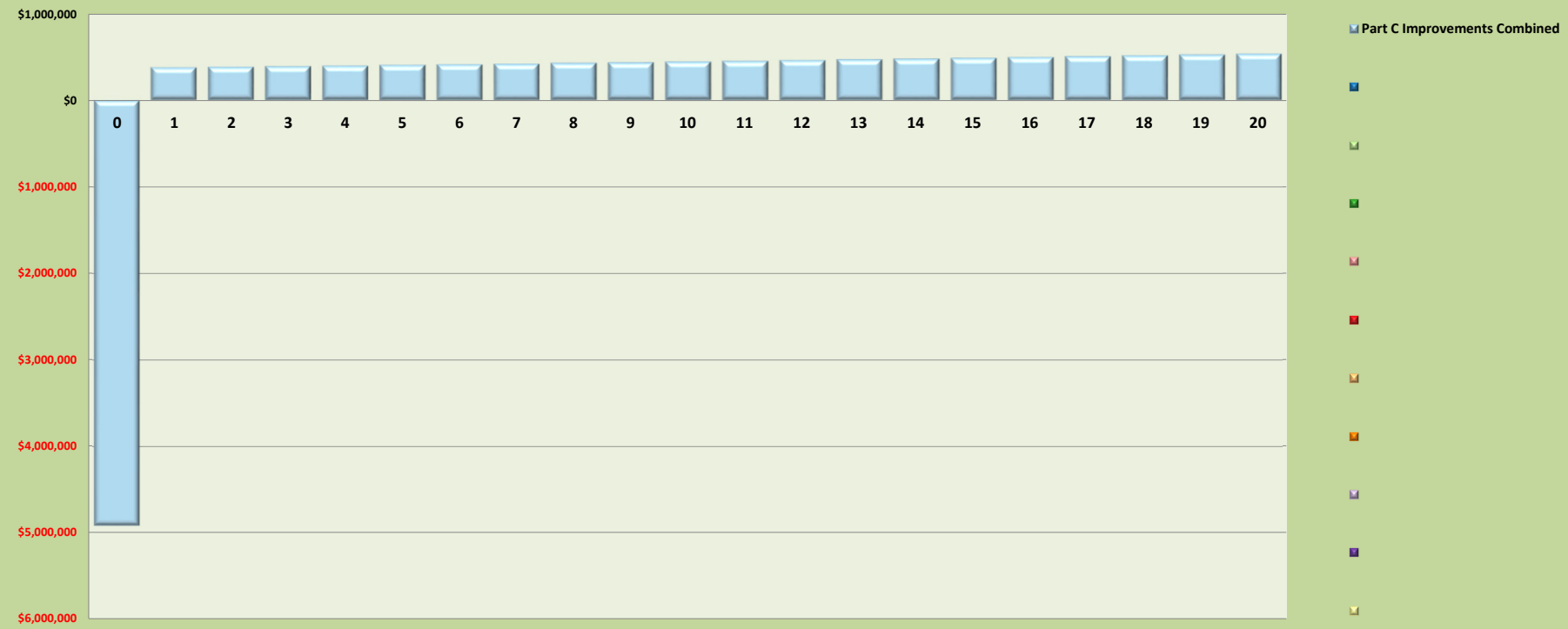
Net Present Value of Project	$4,920,000.00
Net Present Value of Safety Benefits	$6,032,816.44
Net Benefit	$1,112,816.44
Benefit / Cost Ratio	1.23

Expected Annual Crash Adjustment

Number of Fatal & Incapacitating Injury Crashes	-0.519
Number of Injury Crashes	-2.529
Number of Total Crashes	-5.833

Comments:

Safety Benefits and Project Costs Combined Cash Flows By Countermeasure Per Year

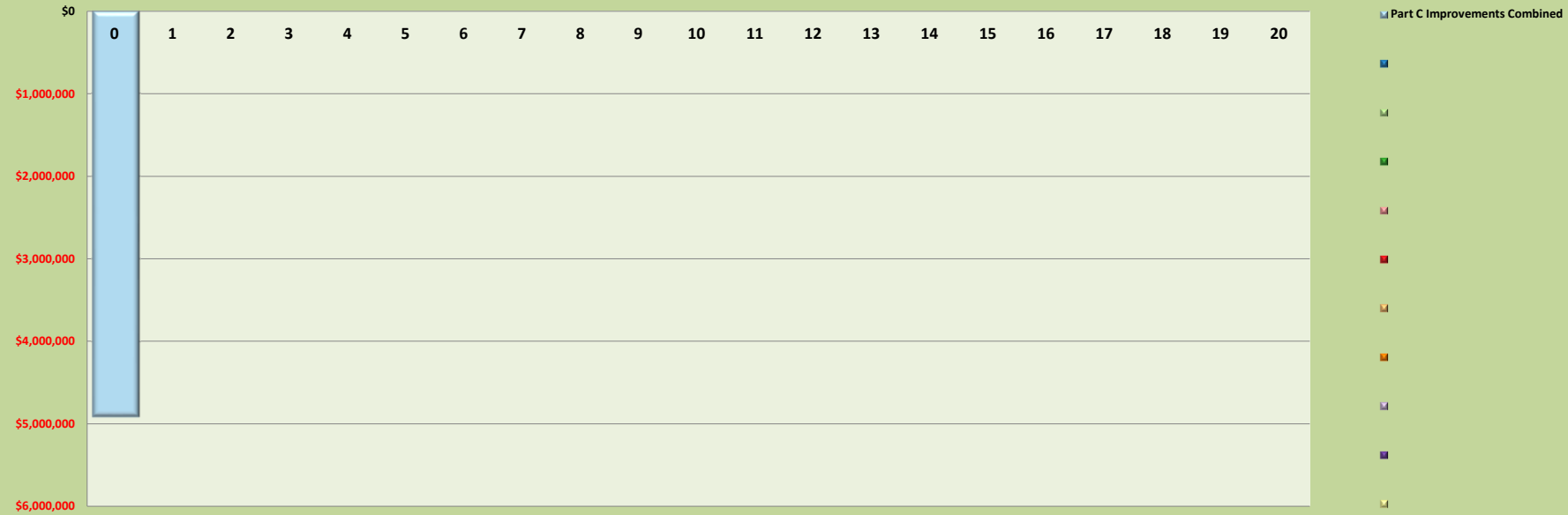


Safety Benefit - Cost Analysis

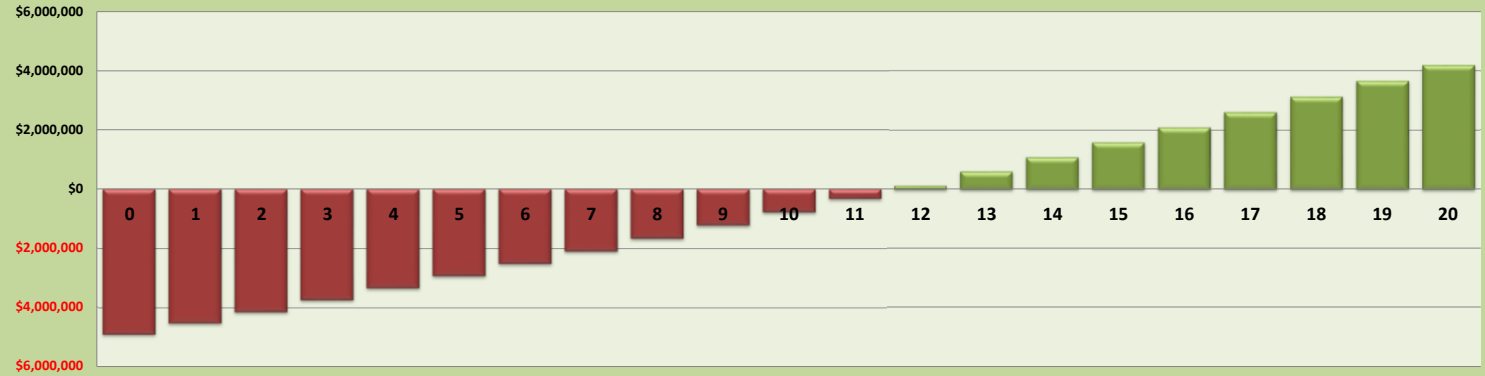
General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	Peanut Roundabout	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Project Costs Only Cash Flows By Countermeasure Per Year



Return on Investment (Safety Benefits and Project Investments)



First year to observe a positive return on investment: 2035 (12 years)

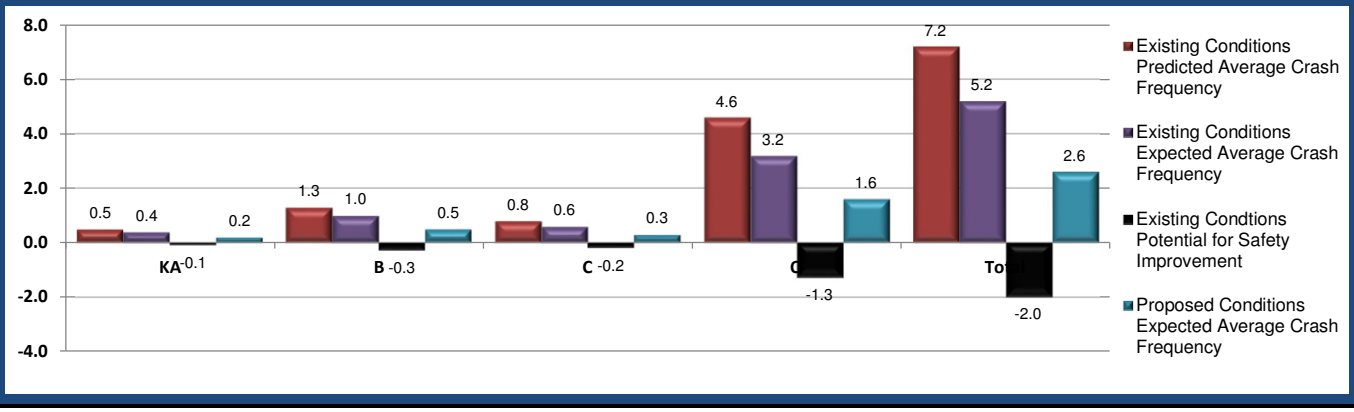
Percentage of Service Life to observe a continuous Positive Return on Investment: 45.00%

Project Safety Performance Report

General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	LTL Widening	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.5249	1.2723	0.8478	4.5542	7.1992
$N_{expected}$ - Existing Conditions	0.3982	0.9651	0.6428	3.2202	5.2263
$N_{potential\ for\ improvement}$ - Existing Conditions	-0.1267	-0.3072	-0.2050	-1.3340	-1.9729
$N_{expected}$ - Proposed Conditions	0.1930	0.4678	0.3116	1.5830	2.5554

Safety Benefit - Cost Analysis

ECAT Economic Crash Analysis Tool

General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	LTL Widening	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Select Site Types to be used in Benefit-Cost Analysis:

All Sites

Comments:

Countermeasure Service Lives, Costs, and Safety Benefits

Countermeasures	Service Life (Years)	Initial Cost of Countermeasure	Annual Maintenance & Energy Costs	Salvage Value	Net Present Cost of Countermeasure	Total Cost of Countermeasures	Summary of Annual Crash Modifications	Net Present Value of Safety Benefits
Left Turn Lane Widening	20	$3,660,000.00			$3,660,000.00	$3,660,000.00	-2.671	$2,415,805
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
Totals		**$3,660,000.00**	**$0.00**	**$0.00**	**$3,660,000.00**	**$3,660,000.00**	**-2.671**	**$2,415,805**

Safety Benefit - Cost Analysis

General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	LTL Widening	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Benefit - Cost Calculator

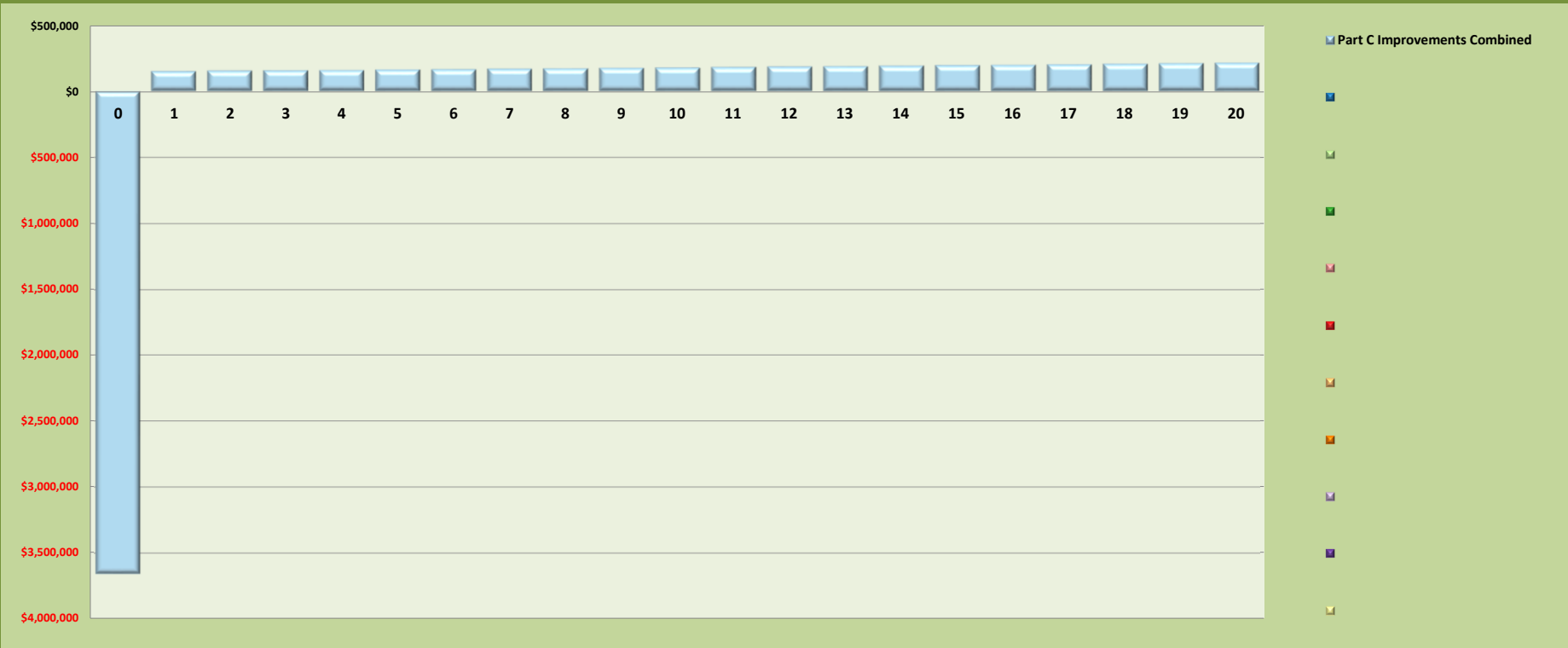
Net Present Value of Project	$3,660,000.00
Net Present Value of Safety Benefits	$2,415,805.47
Net Benefit	($1,244,194.53)
Benefit / Cost Ratio	0.66

Expected Annual Crash Adjustment

Number of Fatal & Incapacitating Injury Crashes	-0.205
Number of Injury Crashes	-1.034
Number of Total Crashes	-2.671

Comments:

Safety Benefits and Project Costs Combined Cash Flows By Countermeasure Per Year

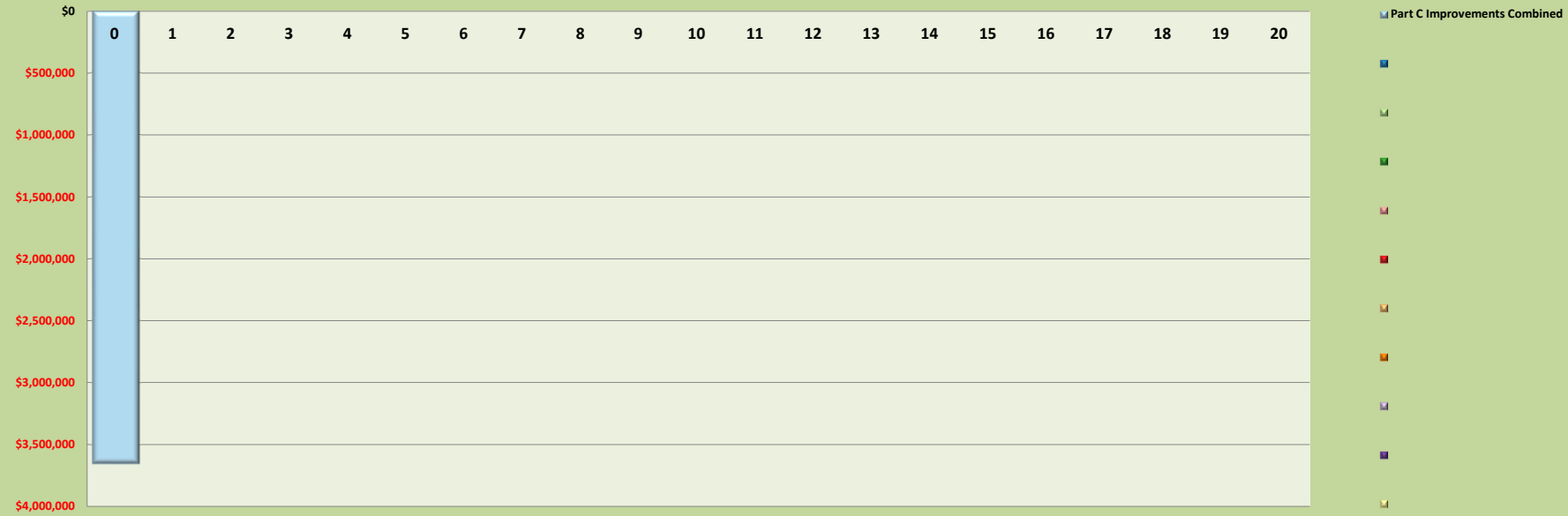


Safety Benefit - Cost Analysis

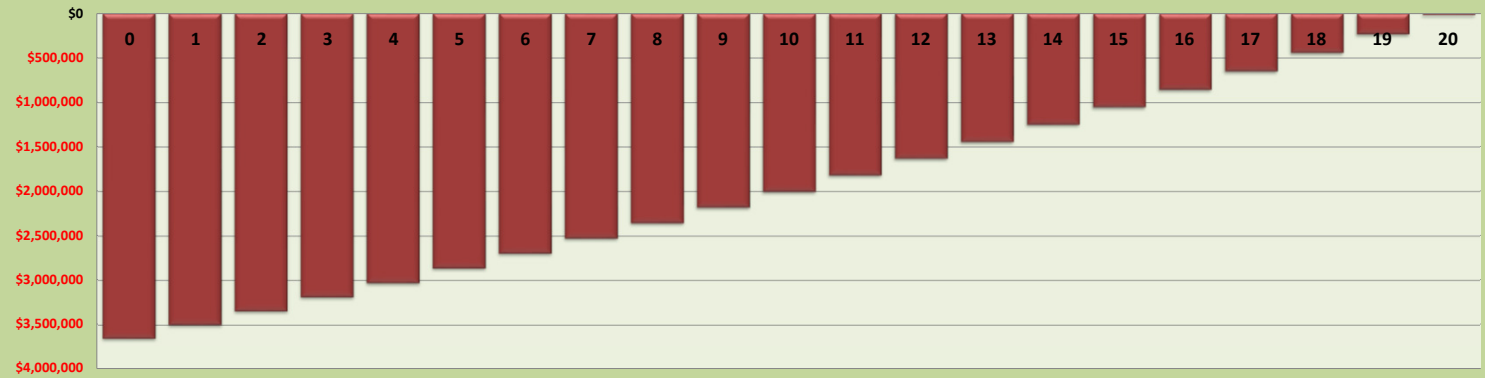
General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	LTL Widening	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Project Costs Only Cash Flows By Countermeasure Per Year



Return on Investment (Safety Benefits and Project Investments)



First year to observe a positive return on investiment: Unknown (Unknown years)

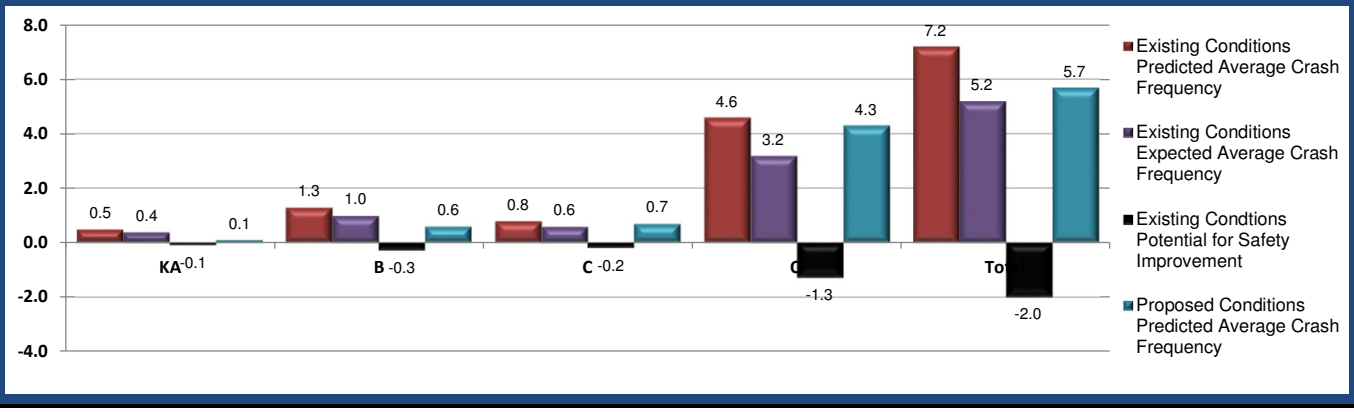
Percentage of Service Life to observe a continuous Positive Return on Investment: Unknown%

Project Safety Performance Report

General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	Signalization & LTL Widening	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	0.5249	1.2723	0.8478	4.5542	7.1992
$N_{expected}$ - Existing Conditions	0.3982	0.9651	0.6428	3.2202	5.2263
$N_{potential\ for\ improvement}$ - Existing Conditions	-0.1267	-0.3072	-0.2050	-1.3340	-1.9729
$N_{expected}$ - Proposed Conditions	0.1327	0.5642	0.7134	4.2627	5.6730

Safety Benefit - Cost Analysis

General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	Signalization & LTL Widening	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Select Site Types to be used in Benefit-Cost Analysis:

All Sites

Comments:

Countermeasure Service Lives, Costs, and Safety Benefits

Countermeasures	Service Life (Years)	Initial Cost of Countermeasure	Annual Maintenance & Energy Costs	Salvage Value	Net Present Cost of Countermeasure	Total Cost of Countermeasures	Summary of Annual Crash Modifications	Net Present Value of Safety Benefits
Signalization & LTL Widening	20	$4,130,000.00			$4,130,000.00	$4,130,000.00	-1.526	$3,968,240
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
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		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
Totals		**$4,130,000.00**	**$0.00**	**$0.00**	**$4,130,000.00**	**$4,130,000.00**	**-1.526**	**$3,968,240**

Safety Benefit - Cost Analysis

General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	Signalization & LTL Widening	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Benefit - Cost Calculator

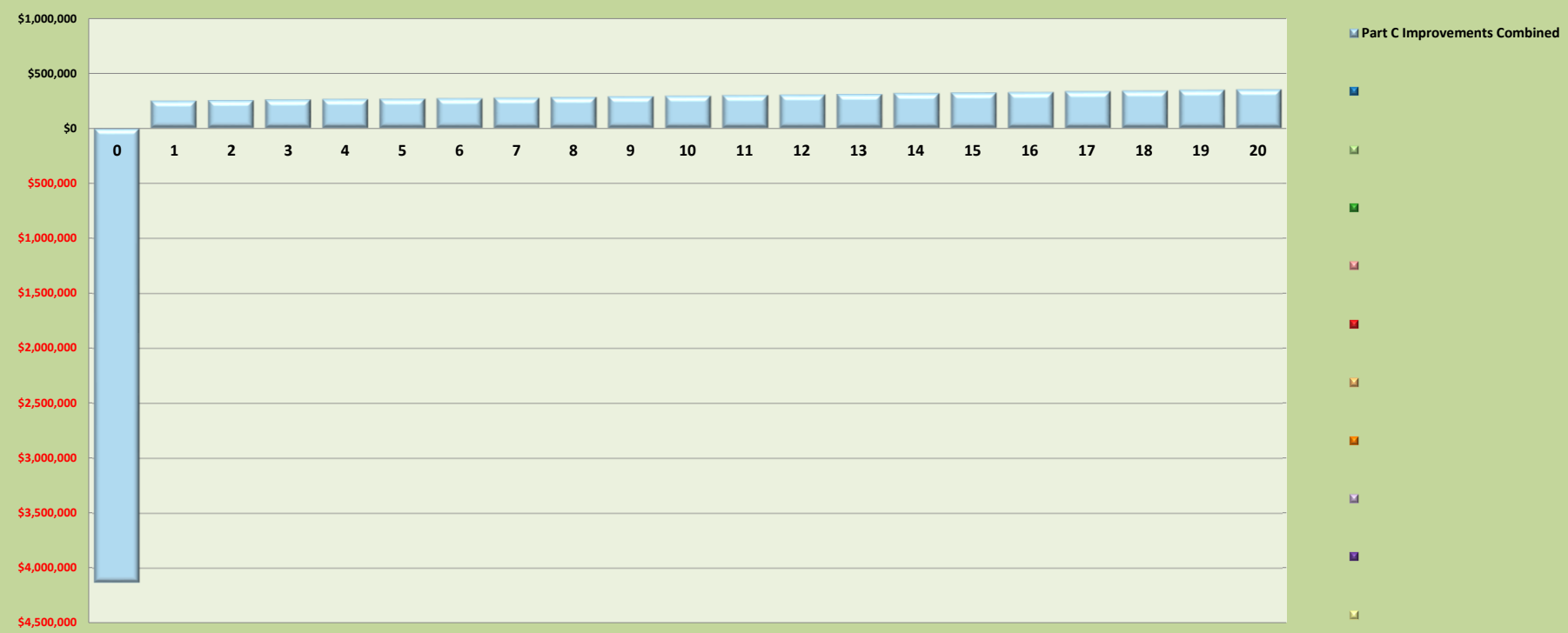
Net Present Value of Project	$4,130,000.00
Net Present Value of Safety Benefits	$3,968,239.80
Net Benefit	($161,760.20)
Benefit / Cost Ratio	0.96

Expected Annual Crash Adjustment

Number of Fatal & Incapacitating Injury Crashes	-0.392
Number of Injury Crashes	-1.235
Number of Total Crashes	-1.526

Comments:

Safety Benefits and Project Costs Combined Cash Flows By Countermeasure Per Year

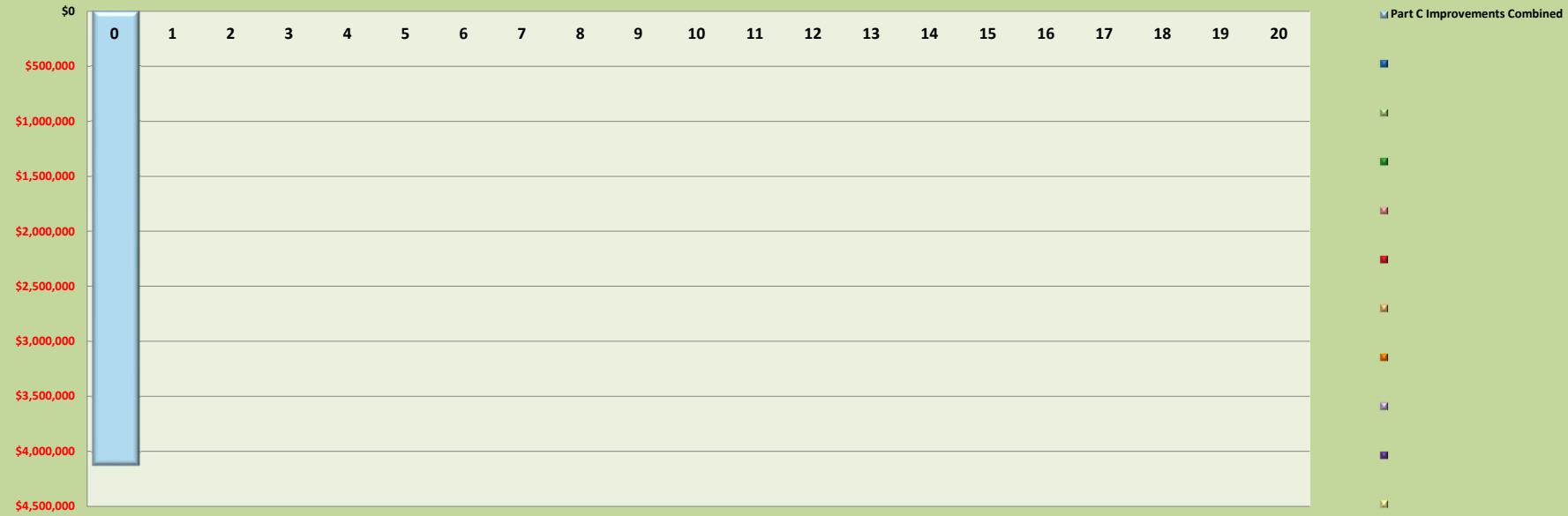


Safety Benefit - Cost Analysis

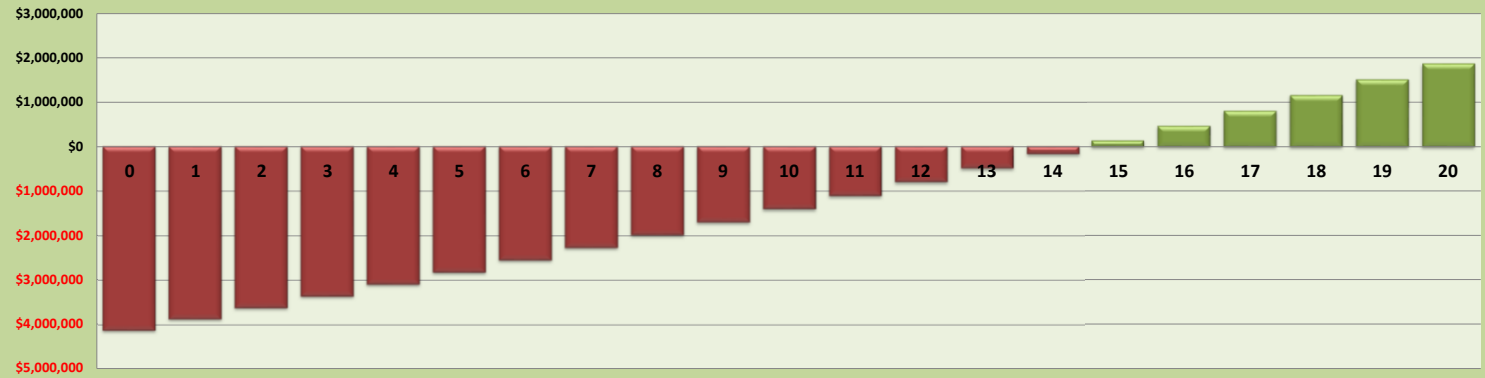
General Information

Project Name	LIC-37 & SR 310	Contact Email	
Project Description	Signalization & LTL Widening	Contact Phone	
Reference Number		Date Performed	
Analyst	Josh Otworth	Analysis Year	2023
Agency/Company	ODOT D5		

Project Costs Only Cash Flows By Countermeasure Per Year



Return on Investment (Safety Benefits and Project Investments)



First year to observe a positive return on investiment: 2038 (15 years)

Percentage of Service Life to observe a continuous Positive Return on Investment: 30.00%

Appendix E: Proposed Conditions Diagram

LIC-37/310-6.96/13.38

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ALTERNATIVE 1 - "PEANUT" ROUNDABOUT
SR 37 AND SR 310

HORIZONTAL SCALE IN FEET
0 40
20 80

SHEET	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
1 TOTAL	119442	JCH 6-29-23	CJR	STRAND ASSOCIATES

LIC-37/310-6.96/13.38

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ALTERNATIVE 2 - CIRCULAR ROUNDABOUT
SR 37 AND SR 310

HORIZONTAL SCALE IN FEET
0 40
20 80

DESIGNER	REVIEWER	PROJECT ID	SHEET
CJR	JCH 6-29-23	119442	1 TOTAL

DESIGN AGENCY
STRAND ASSOCIATES

LIC-37/310-6.96/13.38

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ALTERNATIVE 3 - SIGNALIZED INTERSECTION
SR 37 AND SR 310

HORIZONTAL SCALE IN FEET
0 50
25 100

SHEET	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
1 TOTAL	119442	JCH 6-29-23	CJR	STRAND ASSOCIATES

Roundabout Critical Design Parameters

LIC-37/310-6.96/13.38 (PID 119442)

Alternative 1 - "Peanut" Roundabout

Design Parameters	North	South	East	West
Inscribed Circle Diameter, FT	Two 145' Circles			
Entry Width, FT[1] (14 to 18 feet preferred)	13.7	14.7	13.2	13.1
Entry Angle PHI ϕ, DEG (min. 16° preferred)	20.5	16.0	6.9[3]	9.0[3]
Exit Width, FT[1] (14' to 18' feet preferred)	12.4	13.4	14.0	13.9
Circulatory Roadway Width Upstream of Entry, FT[2]	16	16	16	16

Fastest Path Speed	North	South	East	West
R_1, Radius/Speed, FT/MPH (25 mph recommended max.)	100 / 20.4	83 / 19	168 / 24.9	154 / 24.1
R_2, Radius/Speed, FT/MPH (15 mph to 20 mph recommended)[4]	50 / 14.6	43 / 13.8	53 / 14.9	56 / 15.2
R_3, Radius/Speed, FT/MPH	405 / 35	616 / 41.1	154 / 24.1	162 / 24.5
R_4, Radius/Speed, FT/MPH	60 / 15.5	60 / 15.5	60 / 15.5	60 / 15.5
R_5, Radius/Speed, FT/MPH (25 mph recommended max.)	64 / 17.1	70 / 17.7	N/A	N/A
R_5, Bypass Radius/Speed, FT/MPH	N/A	N/A	N/A	N/A

Minimum Required Sight Parameters	North	South	East	West
Approach Design Speed, MPH	30	60	60	60
Approach Stopping Sight Distance, FT/MPH	197 / 30	567 / 60	567 / 60	567 / 60
Circulatory Stopping Sight Distance, FT/MPH	81 / 15.5	81 / 15.5	81 / 15.5	81 / 15.5
Exit (Crosswalk) Stopping Sight Distance, FT/MPH	N/A	N/A	N/A	N/A
Intersection Sight Distance d_1, FT/MPH	N/A	N/A	120.4/16.4	128.5/17.5
Intersection Sight Distance d_2, FT/MPH	191.6/26.1	192.3/26.2	113.8/15.5	113.8/15.5

General	
Design Vehicle(s)	WB-62, Fire Truck (from Windy Hollow Rd)
Truck Apron Width, FT	12

Notes:

[1]Measured from inside edge line to outside edge of pavement/gutter per NCHRP 672 Section 6.4.2. Some entry and exit widths are narrower than preferred but are adequate for the design vehicle.

[2]Measured from inside face of curb to outside edge line. 16' to 20' preferred.

[3]Phi angles do not meet the recommended 16 degrees minimum, however, fastest path speeds are acceptable. Yield lines at westbound and eastbound approaches are pulled back to provide adequate sight distance to left. (See L&D Vol 1 Section 403.7.3).

[4]Radius within the narrow section of the roundabout is 183' which equates to a fastest path speed of 25.7 mph.

All minimum approach stopping, circulatory stopping, and intersection sight distances met.

Designer: Carl J. Ruf, P.E.

Signature: Carl J Ruf

Date: 7/6/2023

Roundabout Critical Design Parameters

LIC-37/310-6.96/13.38 (PID 119442)

Alternative 2 - Circular Roundabout

Design Parameters	North	South	East	West
Inscribed Circle Diameter, FT	145			
Entry Width, FT[1] (14 to 18 feet preferred)	15.2	14.2	15.3	15.4
Entry Angle PHI ϕ, DEG (min. 16° preferred)	23.2	22.5	5.6 [3]	8.2 [3]
Exit Width, FT[1] (14' to 18' feet preferred)	14.3	15.6	16.2	16.4
Circulatory Roadway Width Upstream of Entry, FT[2]	17	17	17	17

Fastest Path Speed	North	South	East	West
R_1, Radius/Speed, FT/MPH (25 mph recommended max.)	96 / 20	98 / 20.2	166 / 24.8	171 / 25
R_2, Radius/Speed, FT/MPH (15 mph to 20 mph recommended)	116 / 19.8	78 / 17.1	90 / 18.1	64 / 15.9
R_3, Radius/Speed, FT/MPH	224 / 27.8	323 / 32	159 / 24.4	157 / 24.2
R_4, Radius/Speed, FT/MPH	59 / 15.4	59 / 15.4	59 / 15.4	59 / 15.4
R_5, Radius/Speed, FT/MPH (25 mph recommended max.)	46 / 15.1	59 / 16.6	163 / 24.6	125 / 22.2
R_5, Bypass Radius/Speed, FT/MPH	N/A	N/A	N/A	N/A

Minimum Required Sight Parameters	North	South	East	West
Approach Design Speed, MPH	30	60	60	60
Approach Stopping Sight Distance, FT/MPH	197 / 30	567 / 60	567 / 60	567 / 60
Circulatory Stopping Sight Distance, FT/MPH	80 / 15.4	80 / 15.4	80 / 15.4	80 / 15.4
Exit (Crosswalk) Stopping Sight Distance, FT/MPH	N/A	N/A	N/A	N/A
Intersection Sight Distance d_1, FT/MPH	157.1/21.4	150.5/20.5	137.3/18.7	146.1/19.9
Intersection Sight Distance d_2, FT/MPH	113/15.4	113/15.4	113/15.4	113/15.4

General	
Design Vehicle(s)	WB-62, Fire Truck (from Windy Hollow Rd)
Truck Apron Width, FT	12

Notes:

[1]Measured from inside edge line to outside edge of pavement/gutter per NCHRP 672 Section 6.4.2

[2]Measured from inside face of curb to outside edge line. 16' to 20' preferred.

[3]Phi angles at the East and West approaches do not meet the recommended 16 degrees minimum because of intersection skew, however, sight angles to the left at these approaches are adequate and fastest path speeds are acceptable (See L&D Vol 1 Section 403.7.3).

All minimum approach stopping, circulatory stopping, and intersection sight distances met.

Designer: Carl J. Ruf, P.E.

Signature: 

Date: 7/5/2023

Legend

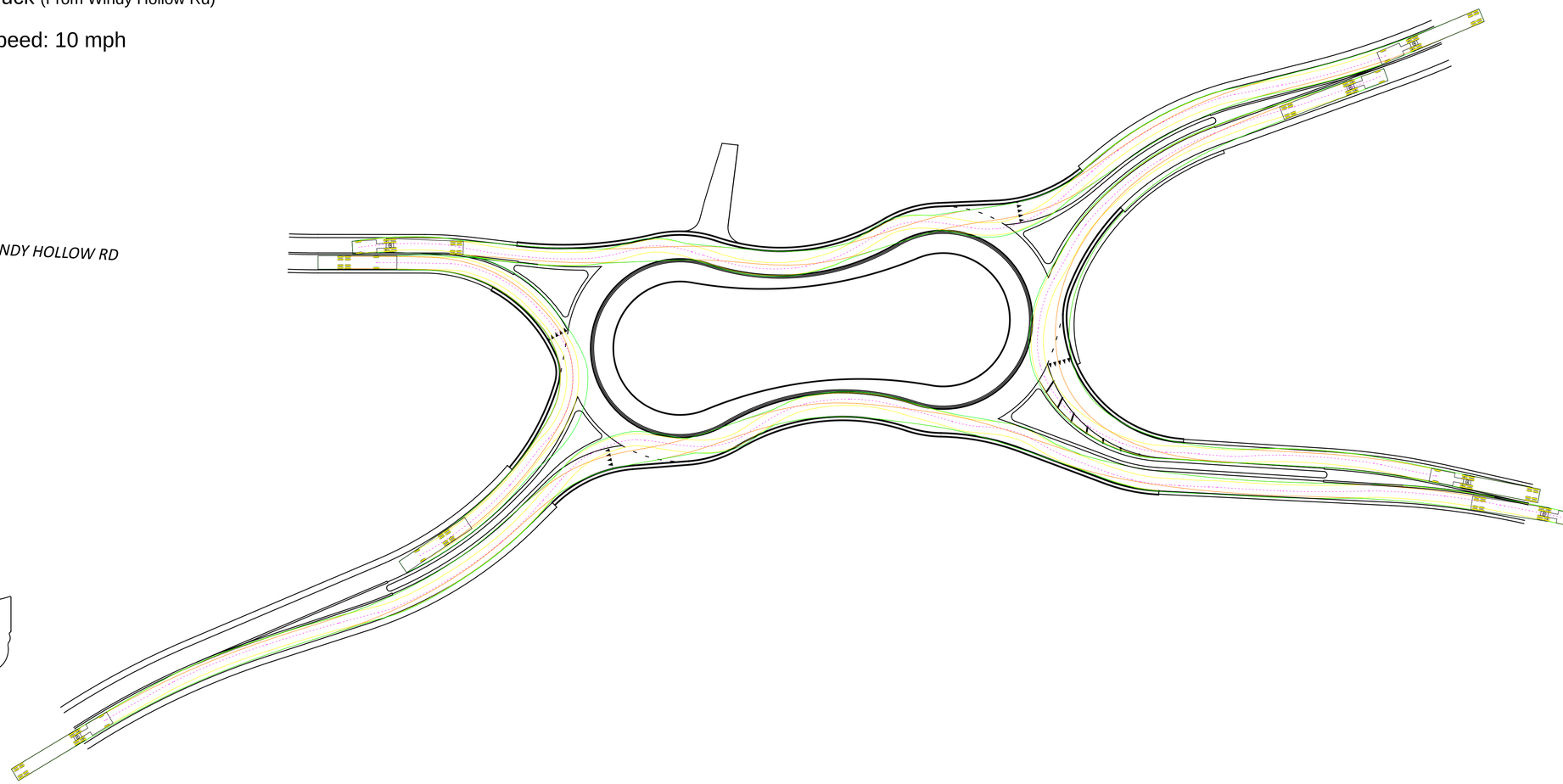
- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle:

WB-62 (All movements except from Windy Hollow Rd)

Fire Truck (From Windy Hollow Rd)

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 1 - "PEANUT" ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

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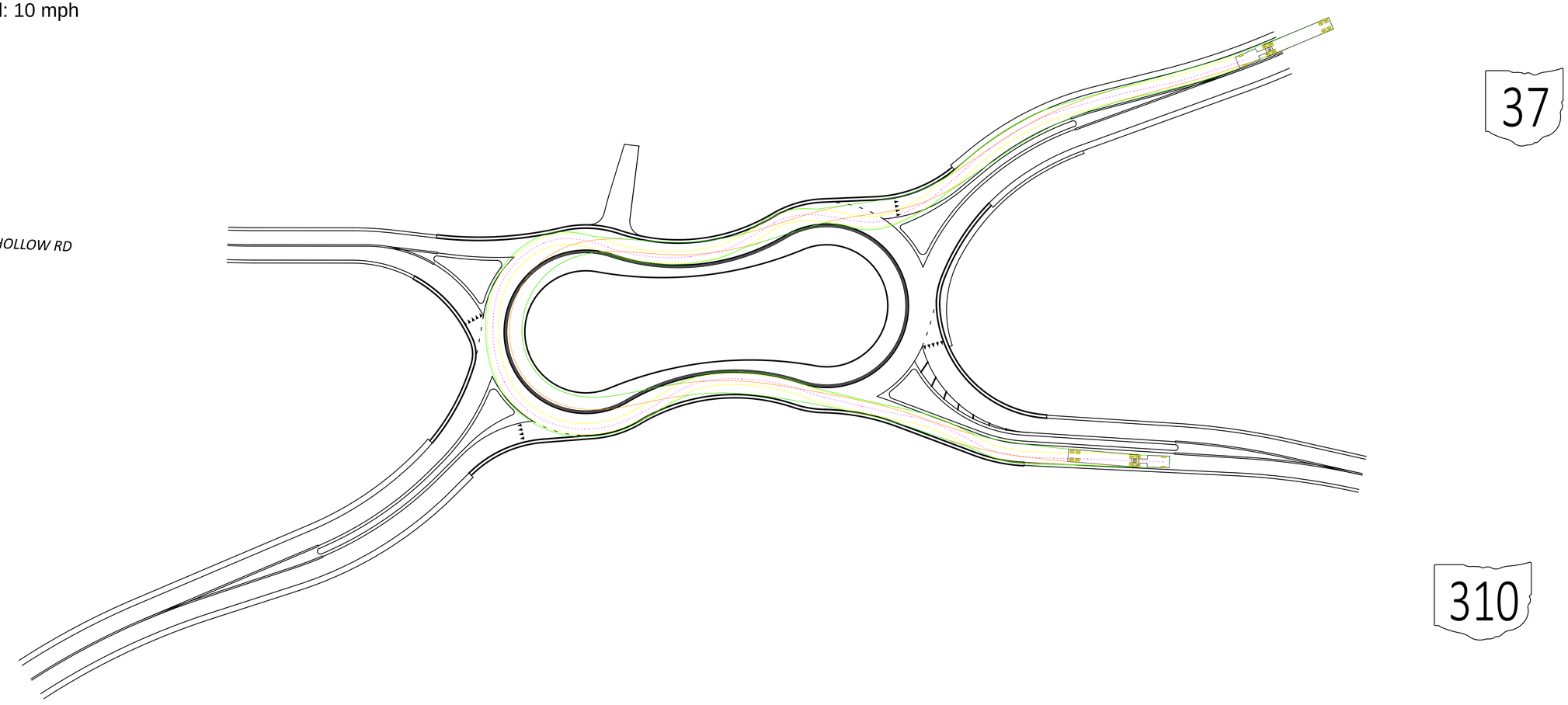
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: WB-62

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 1 - "PEANUT" ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

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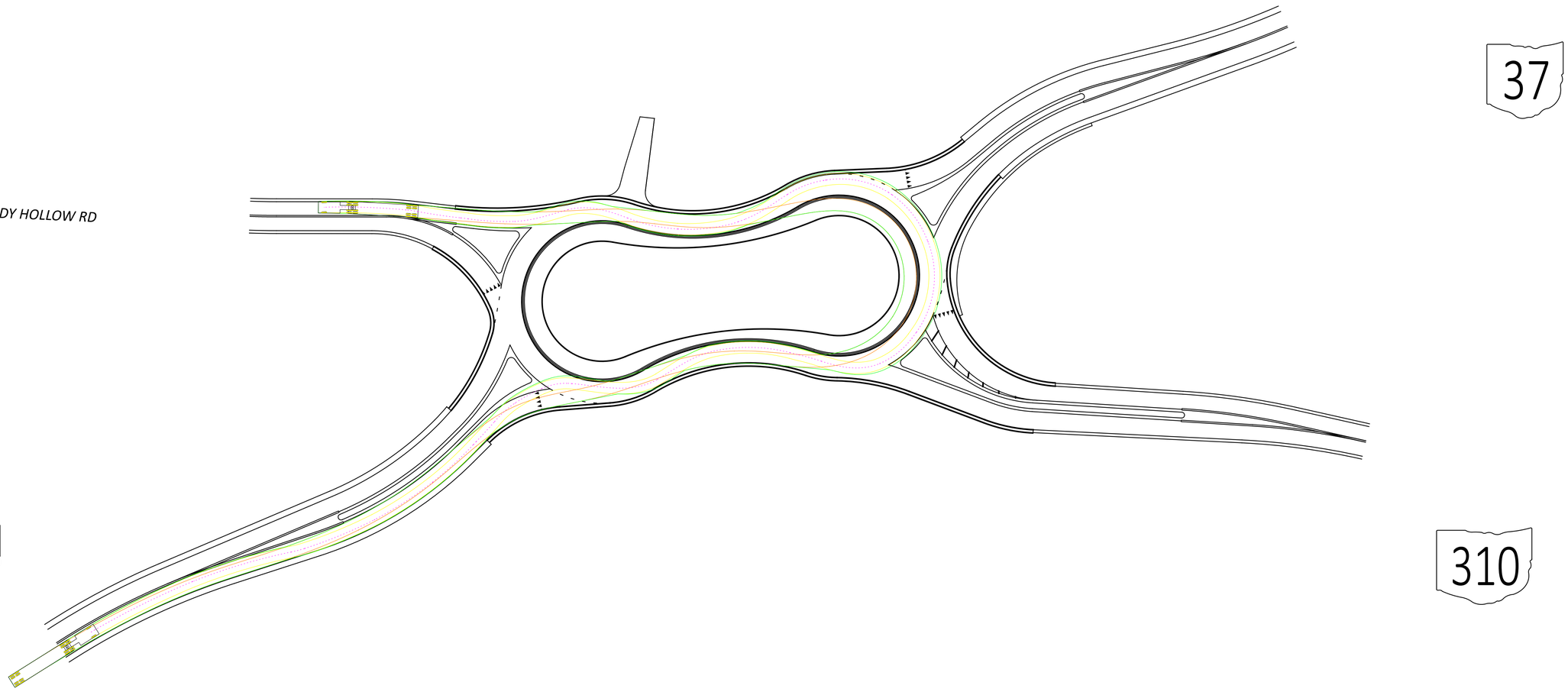
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: WB-62

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 1 - "PEANUT" ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

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Legend

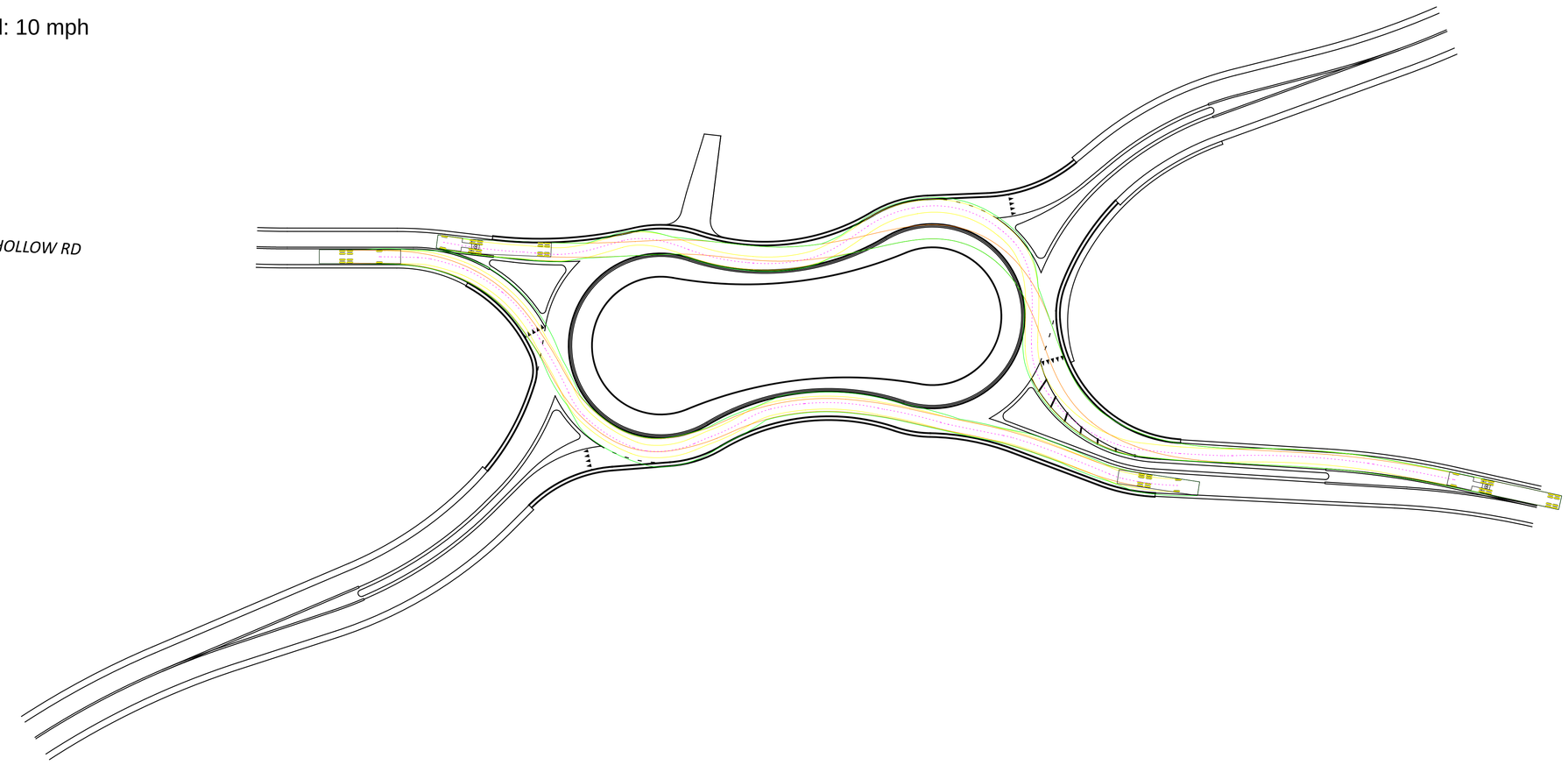
- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle:

WB-62 (All movements except from Windy Hollow Rd)

Fire Truck (From Windy Hollow Rd)

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 1 - "PEANUT" ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

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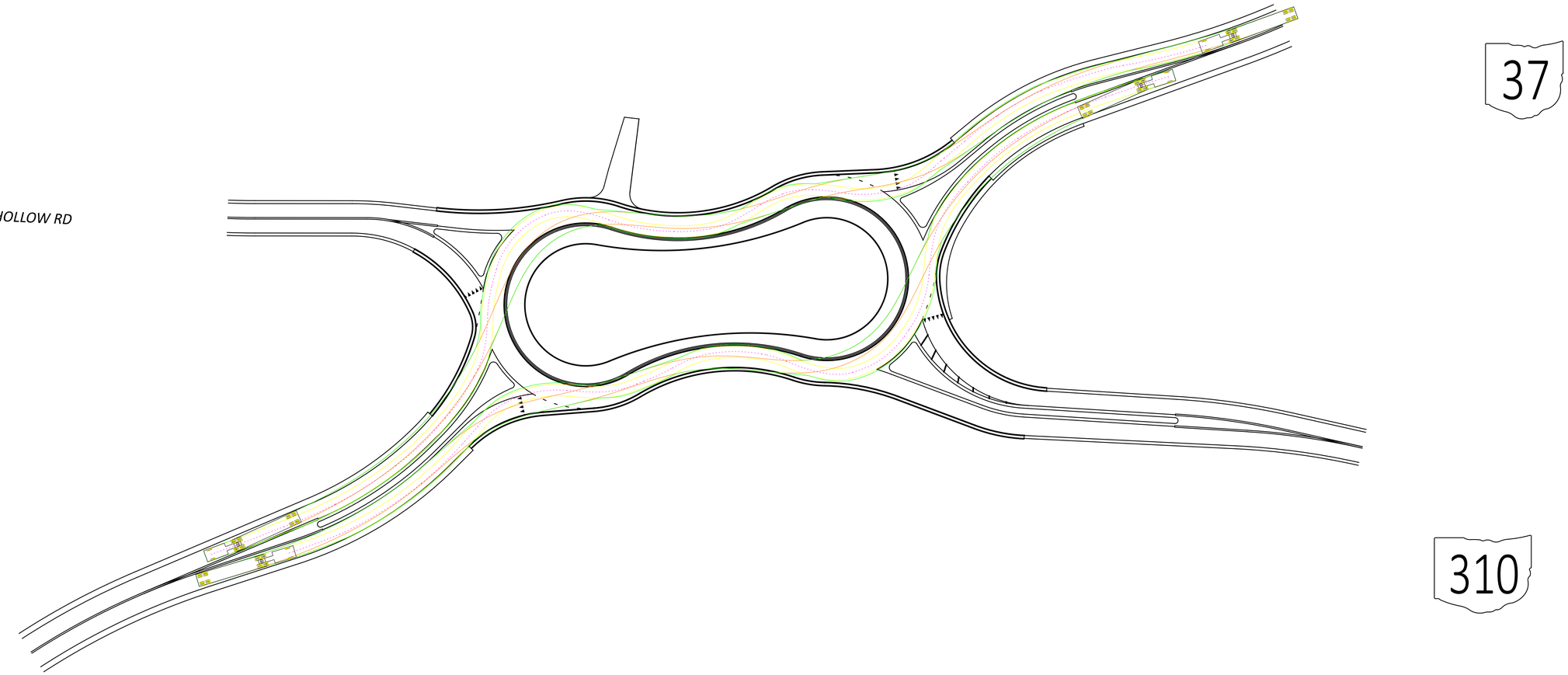
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: WB-62

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 1 - "PEANUT" ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

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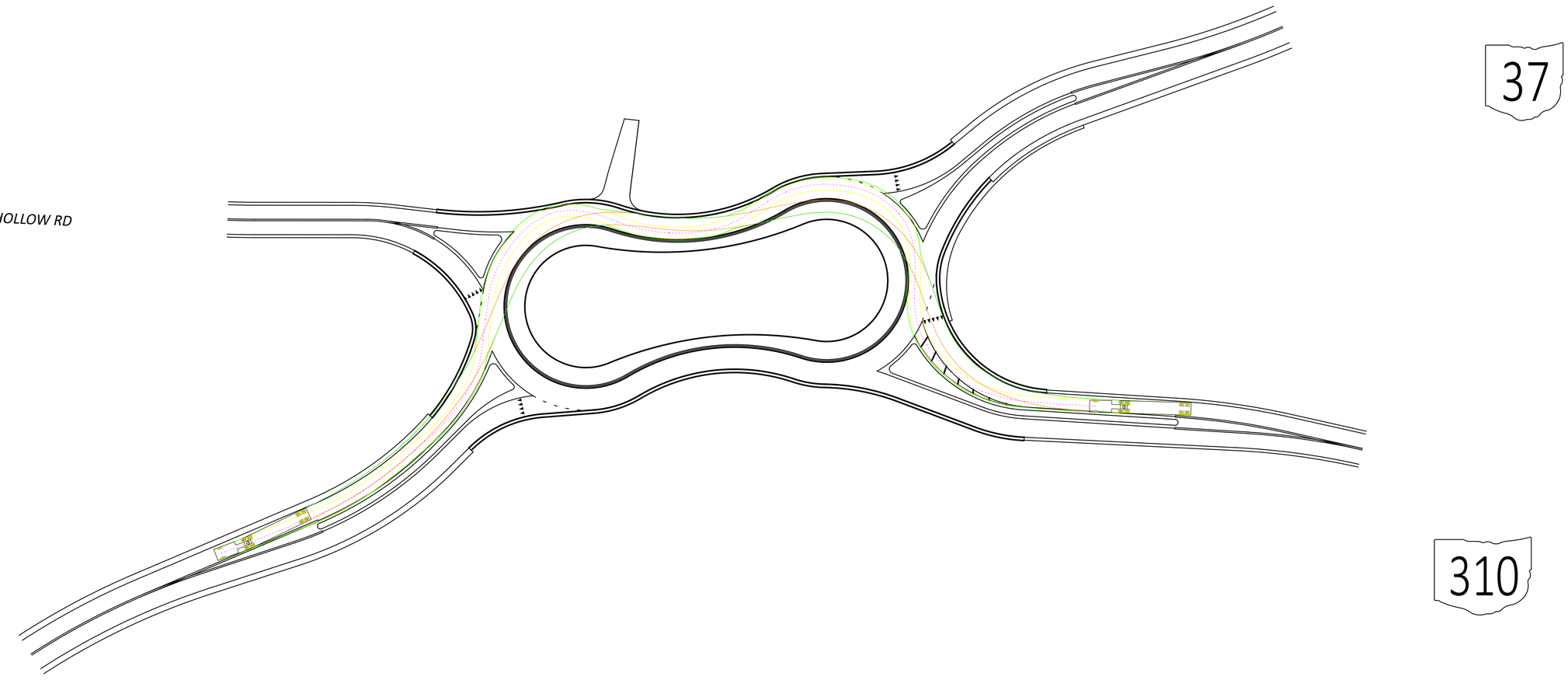
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: WB-62

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 1 - "PEANUT" ROUNDABOUT SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER CJR

REVIEWER JCH 6-29-23

PROJECT ID 119442

SHEET TOTAL

LIC-37/310-6.96/13.38

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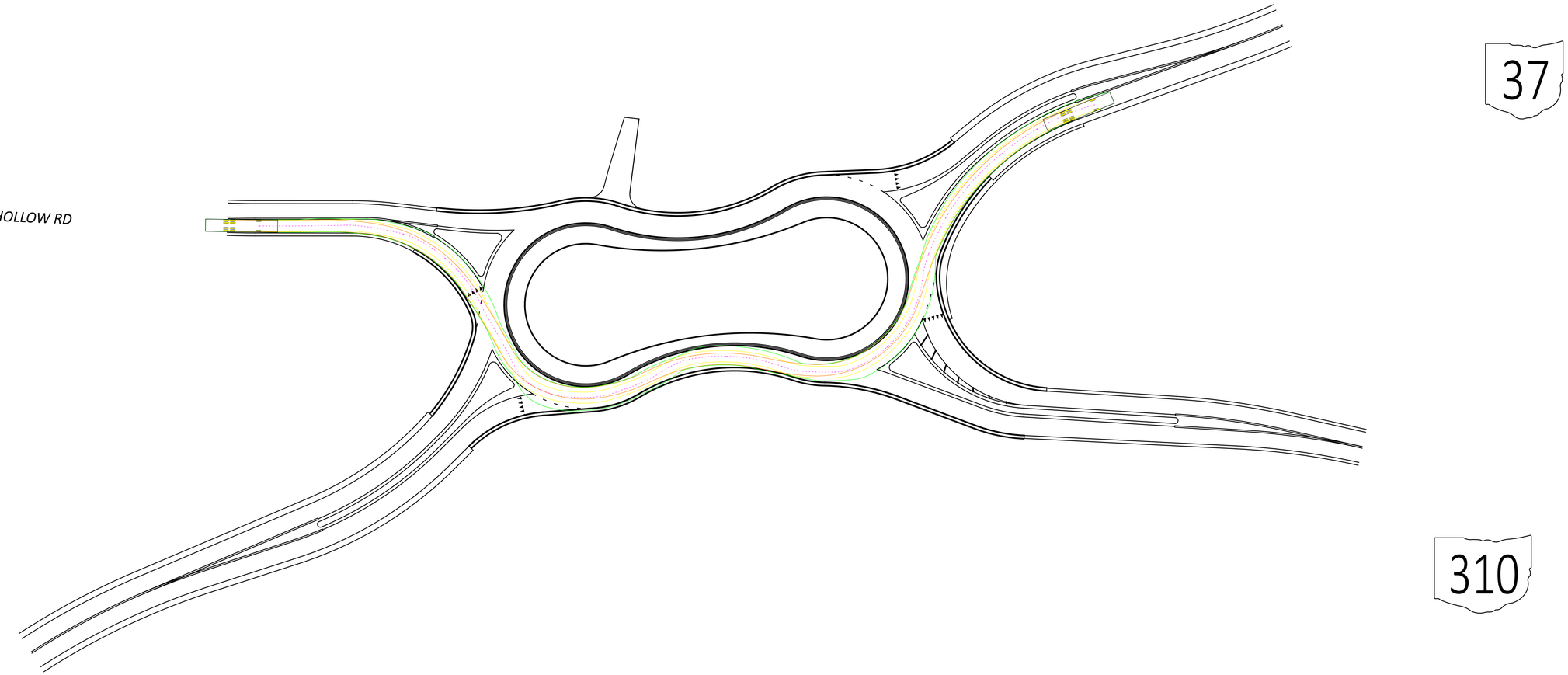
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: Fire Truck

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 1 - "PEANUT" ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

MODEL: Sheet_Survft PAPERSIZE: 34x22 (in.) DATE: 7/19/2023 TIME: 2:53:30 PM USER: CarlR
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Legend

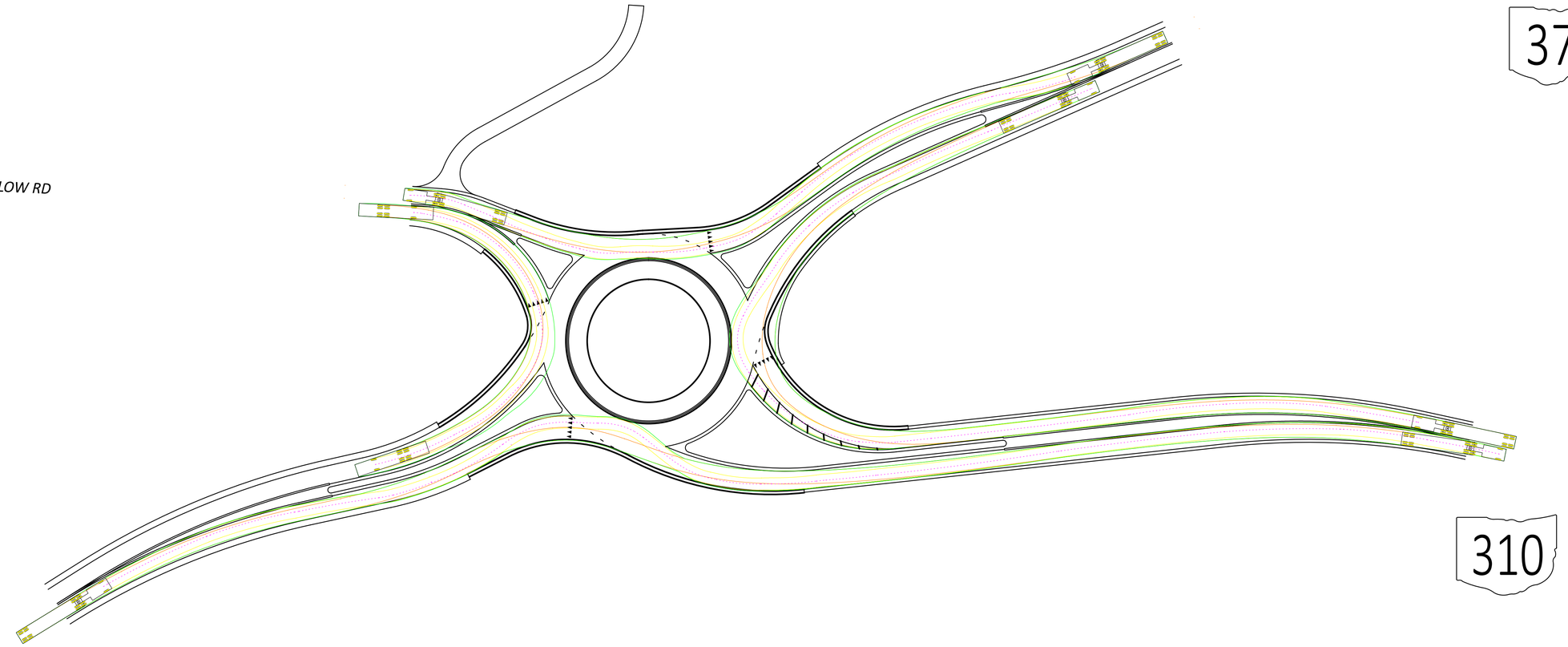
- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle:

WB-62 (All movements except from Windy Hollow Rd)

Fire Truck (From Windy Hollow Rd)

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 2 - CIRCULAR ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

MODEL: Sheet_Survft PAPERSIZE: 34x22 (in.) DATE: 7/19/2023 TIME: 2:53:30 PM USER: CarlR
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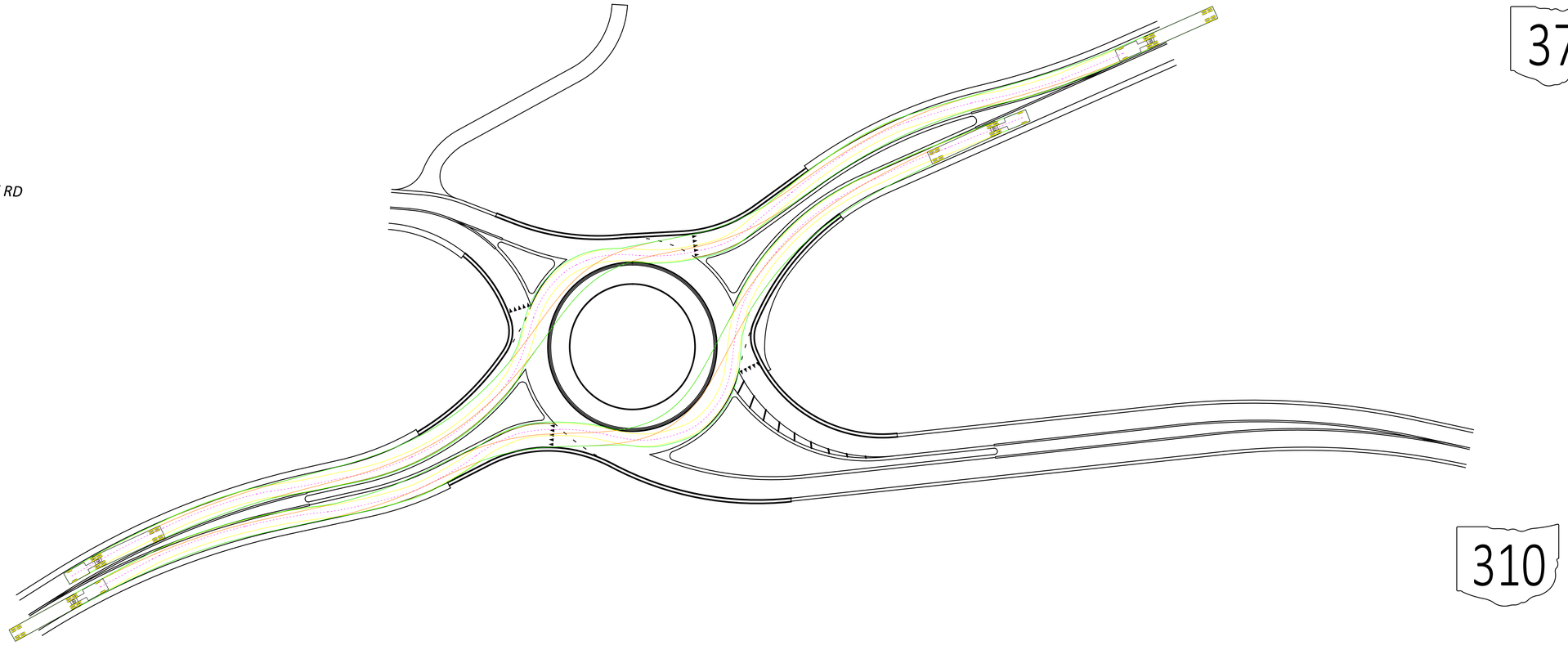
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: WB-62

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 2 - CIRCULAR ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER CJR

REVIEWER JCH 6-29-23

PROJECT ID 119442

SHEET TOTAL

LIC-37/310-6.96/13.38

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Legend

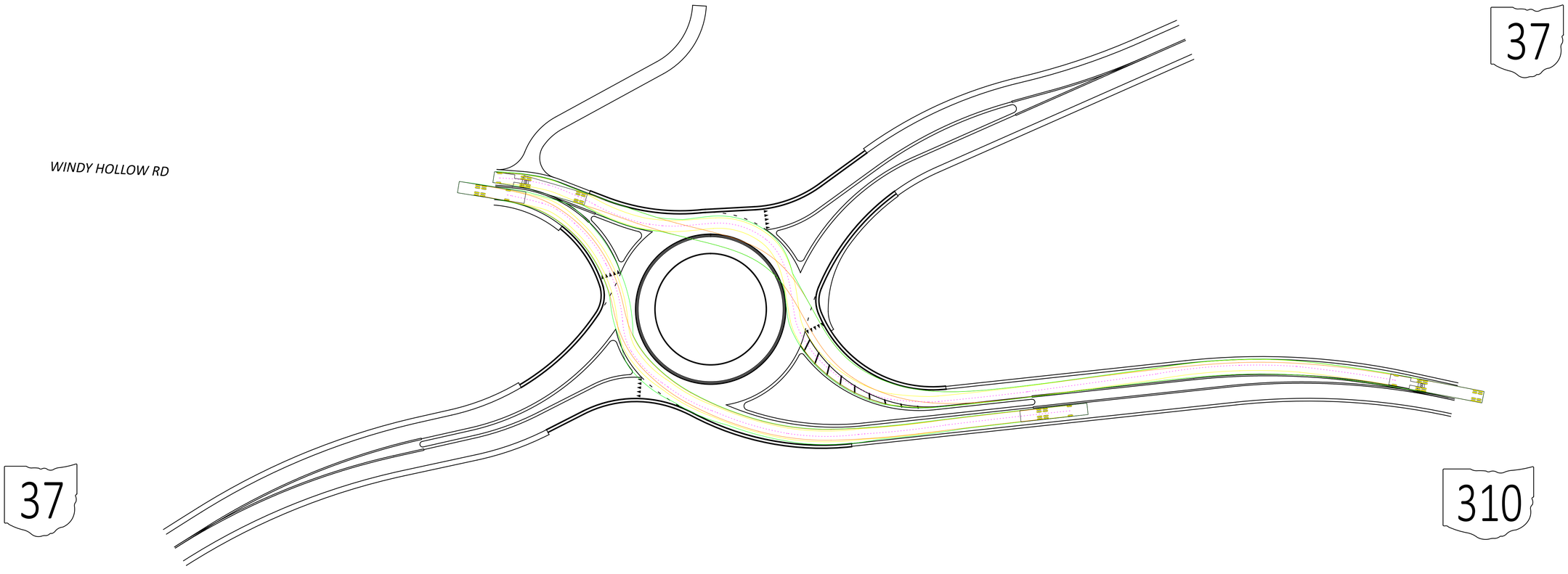
- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle:

WB-62 (All movements except from Windy Hollow Rd)

Fire Truck (From Windy Hollow Rd)

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 2 - CIRCULAR ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER CJR

REVIEWER JCH 6-29-23

PROJECT ID 119442

SHEET TOTAL

LIC-37/310-6.96/13.38

MODEL: Sheet_SurvFt PAPERSIZE: 34x22 (in.) DATE: 7/19/2023 TIME: 2:53:31 PM USER: CarlR
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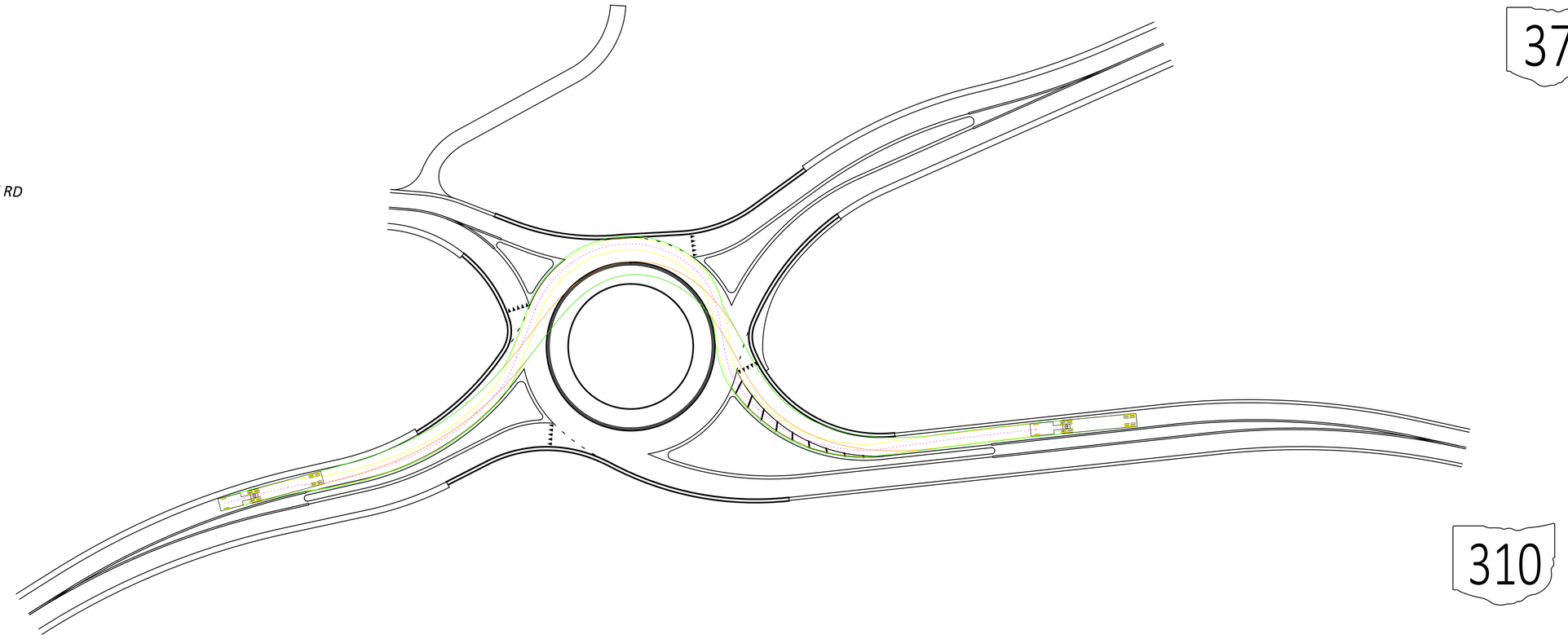
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: WB-62

Design Speed: 10 mph

WINDY HOLLOW RD



37

310

HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 2 - CIRCULAR ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER CJR
REVIEWER JCH 6-29-23
PROJECT ID 119442
SHEET TOTAL

LIC-37/310-6.96/13.38

MODEL: Sheet_Surv-ft PAPERSIZE: 34x22 (in.) DATE: 7/19/2023 TIME: 2:53:31 PM USER: CarlR
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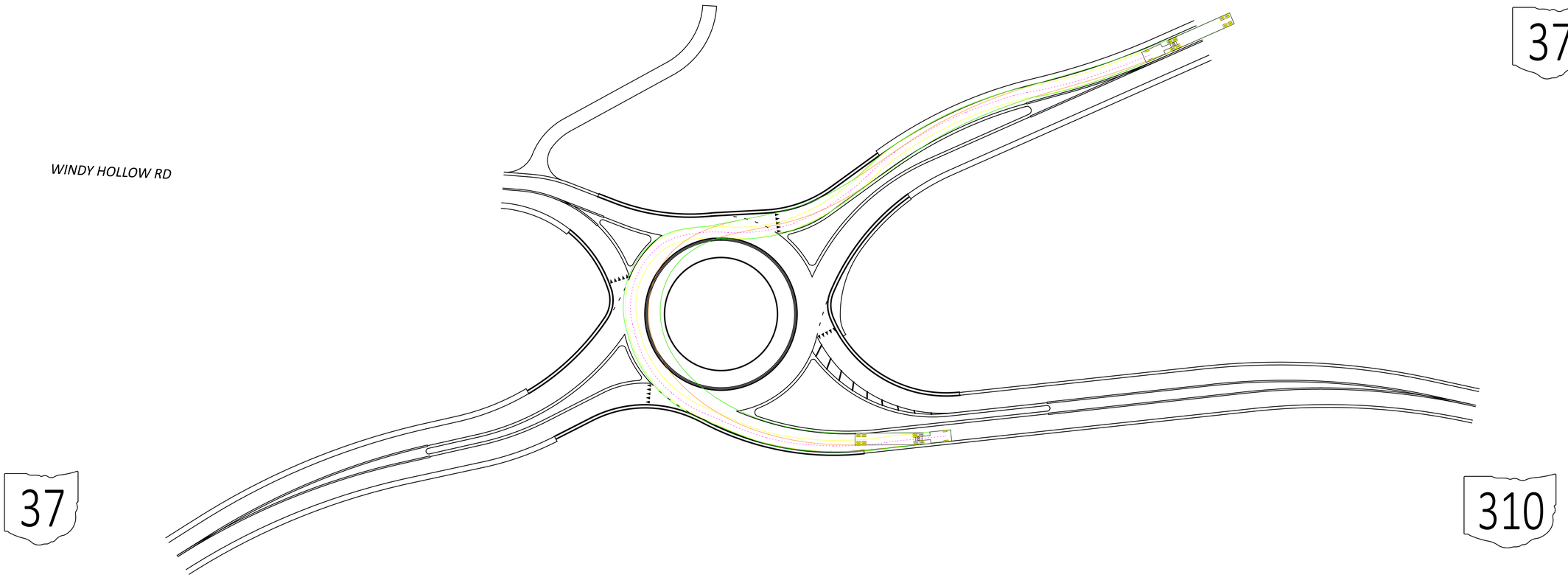
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: WB-62

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 2 - CIRCULAR ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER CJR

REVIEWER JCH 6-29-23

PROJECT ID 119442

SHEET TOTAL

LIC-37/310-6.96/13.38

MODEL: Sheet_Surv-ft PAPERSIZE: 34x22 (in.) DATE: 7/19/2023 TIME: 2:53:32 PM USER: CarlR
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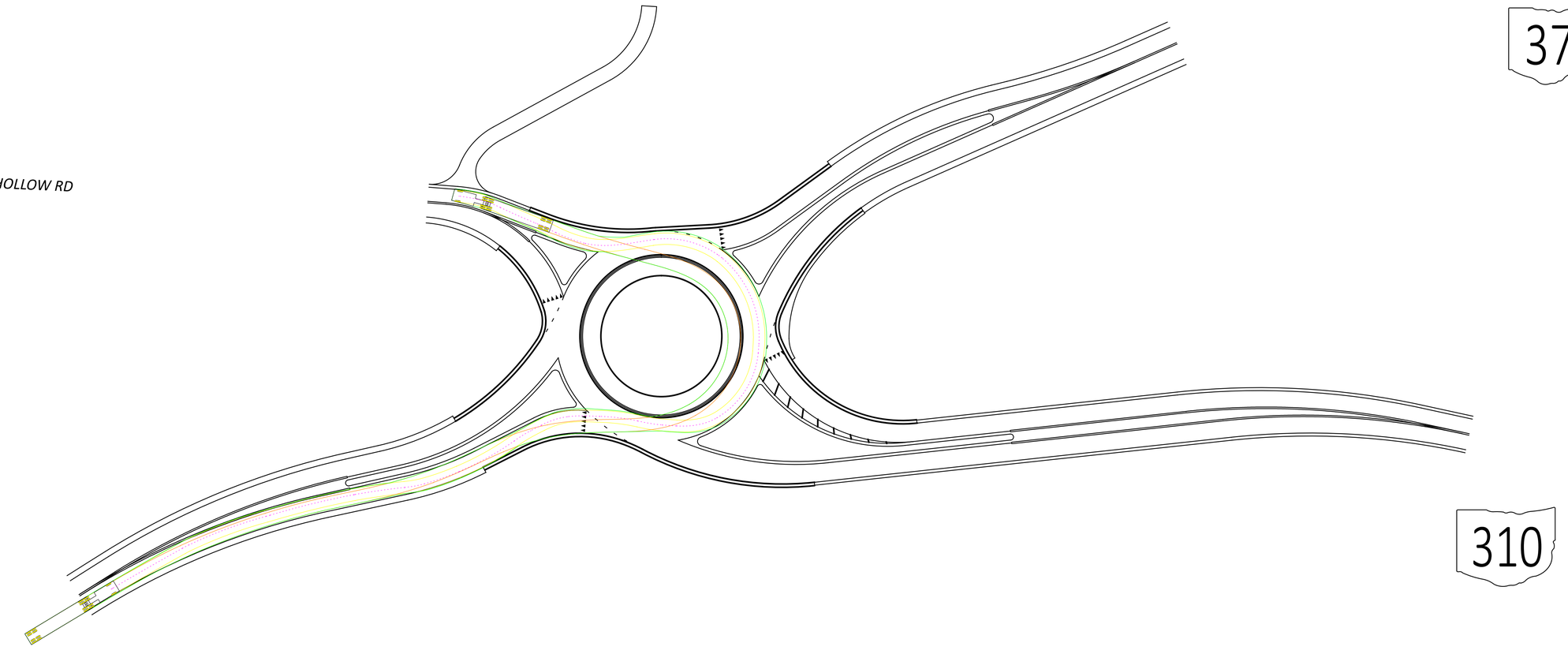
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: WB-62

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 2 - CIRCULAR ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

MODEL: Sheet_Survft PAPERSIZE: 34x22 (in.) DATE: 7/19/2023 TIME: 2:53:32 PM USER: CarlR
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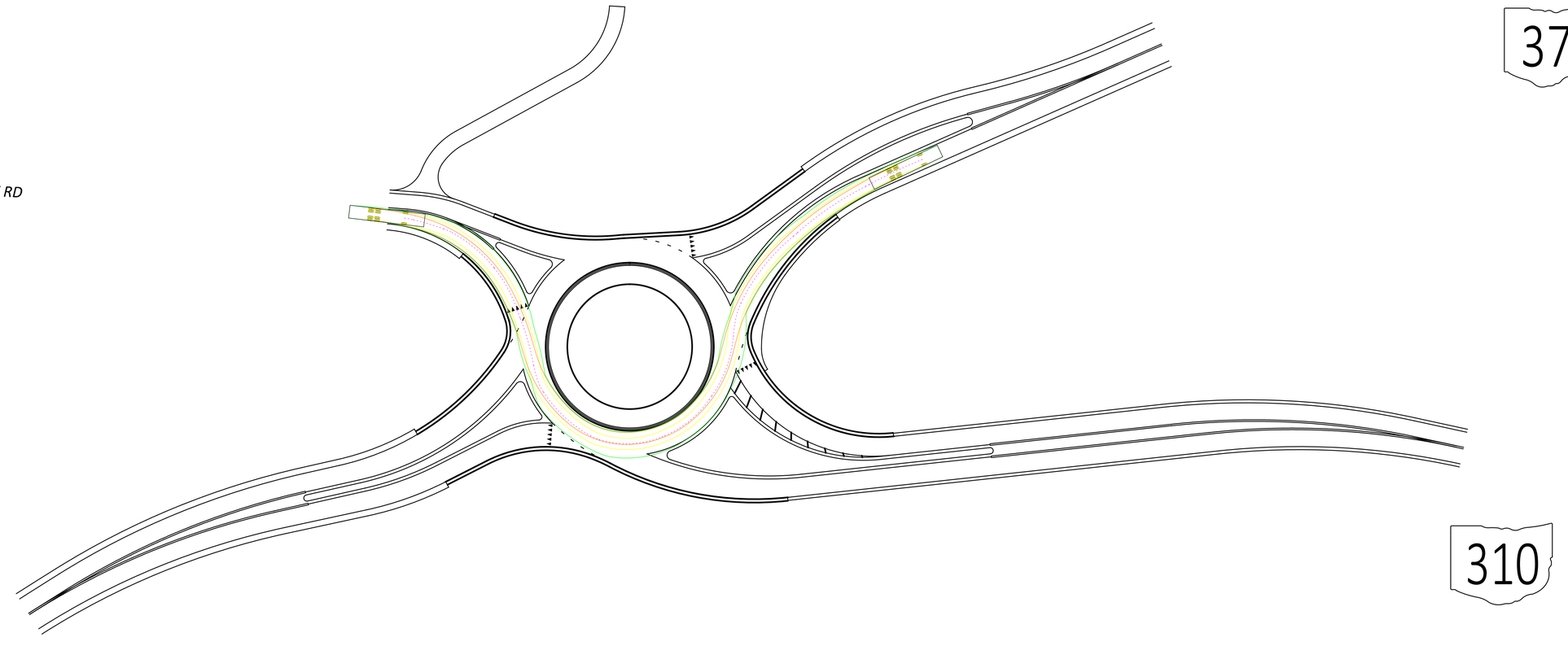
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: Fire Truck

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 20 40 80

ALTERNATIVE 2 - CIRCULAR ROUNDABOUT
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

MODEL: Sheet_Surv ft PAPERSIZE: 34x22 (in.) DATE: 7/19/2023 TIME: 2:53:32 PM USER: CarlR
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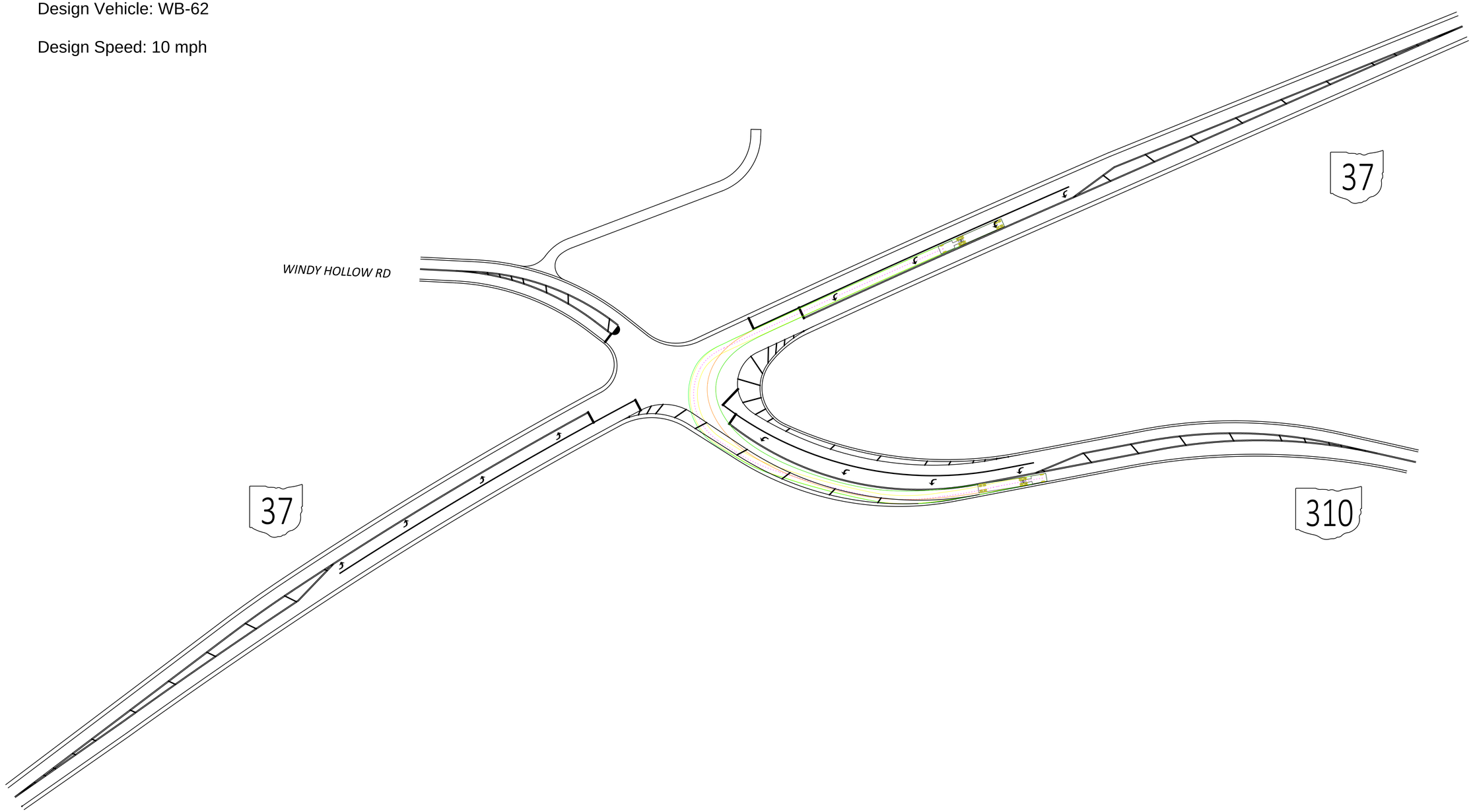
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: WB-62

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 25 50 100

ALTERNATIVE 3 - SIGNALIZED INTERSECTION
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

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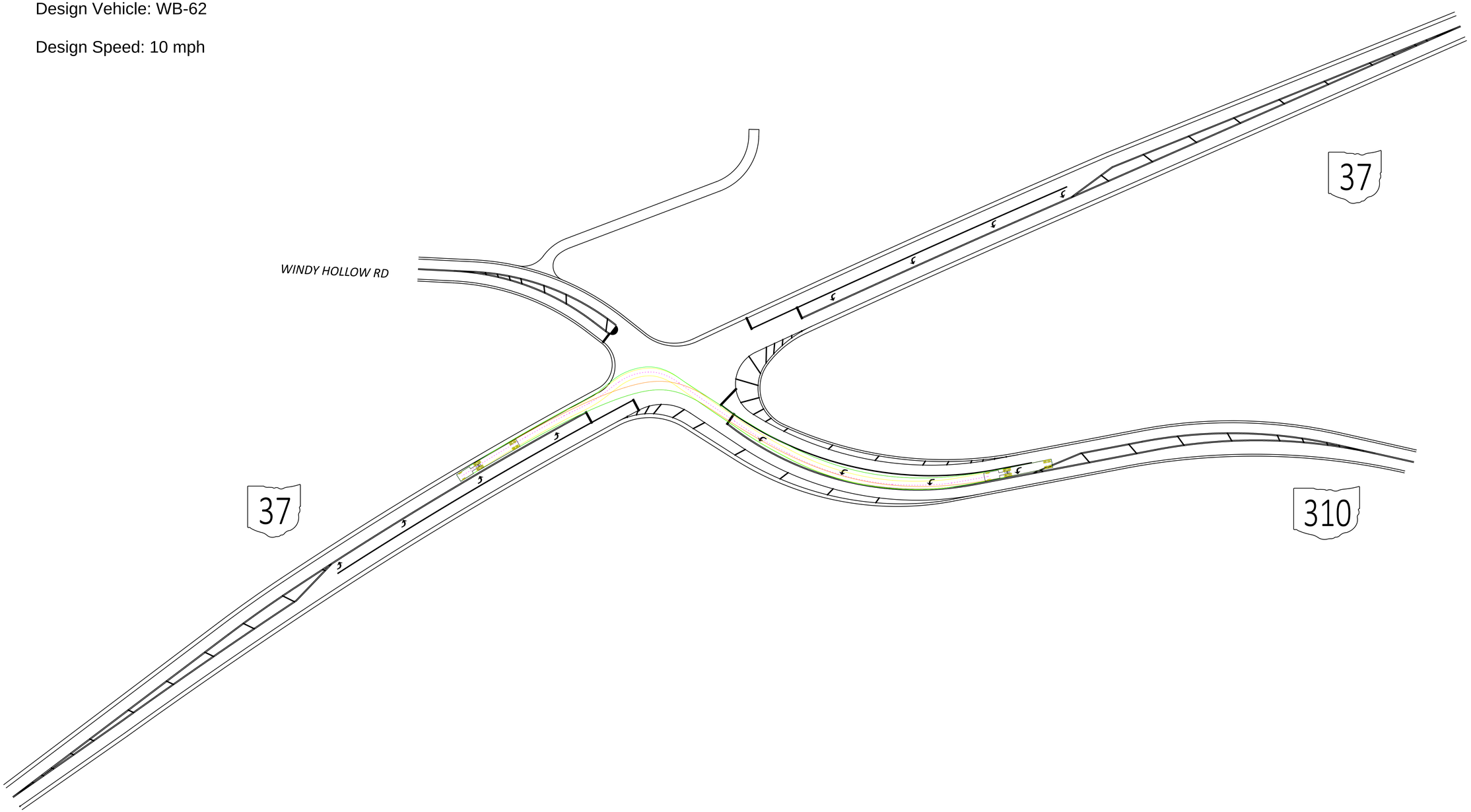
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: WB-62

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 25 50 100

ALTERNATIVE 3 - SIGNALIZED INTERSECTION
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

MODEL: Sheet_SurvFt PAPERSIZE: 34x22 (in.) DATE: 7/19/2023 TIME: 2:53:33 PM USER: CarlR
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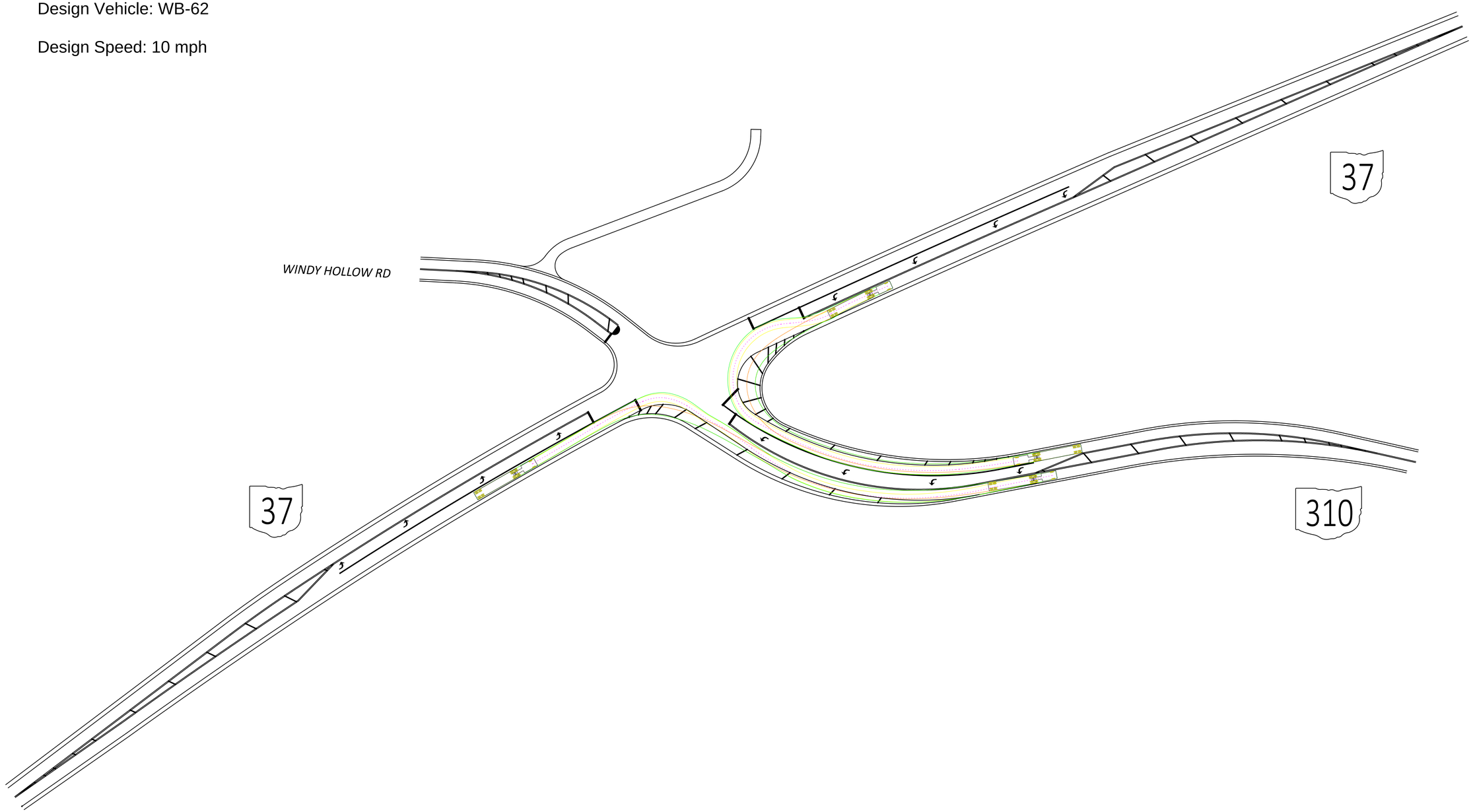
Legend

- Vehicle Body
- Front Tires
- Rear Tires
- Center of Vehicle

Design Vehicle: WB-62

Design Speed: 10 mph



HORIZONTAL SCALE IN FEET
0 25 50 100

ALTERNATIVE 3 - SIGNALIZED INTERSECTION
SR 37 AND SR 310

DESIGN AGENCY
STRAND ASSOCIATES®

DESIGNER
CJR

REVIEWER
JCH 6-29-23

PROJECT ID
119442

SHEET TOTAL

LIC-37/310-6.96/13.38

MODEL: Sheet_SurvPt PAPERSIZE: 34x22 (in.) DATE: 7/19/2023 TIME: 2:53:33 PM USER: CarlR
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SR 37 (Eastbound)
Left Turn % = 2/255 = 1%

BASIS FOR COMPUTING LENGTH OF TURN LANES

401-9

REFERENCE SECTIONS
401.6.1 & 401.6.3

Condition B = 345 ft
Condition C = 235 ft

USE 345 FT

Type of Traffic Control	Design Speed		
	30-35	40-65	
	Turn Demand Volume		
	All	Low*	High
Signalized	A	** B or C	** B or C
Unsignalized Stopped Crossroad	A	A	A
Unsignalized Through Road	A	B	** B or C

* Low is considered 10% or less of approach traffic volume

** Whichever is greater

CONDITION A	STORAGE ONLY
Length = 50' (diverging taper) + Storage Length (Figure 401-10)	

CONDITION B	HIGH SPEED DECELERATION ONLY
Design Speed	Length (including 50' Diverging Taper)
40	125
45	175
50	225
55	285
60	345
65	405

CONDITION C	MODERATE SPEED DECELERATION AND STORAGE
Design Speed	Length (including 50' Diverging Taper)
40	115 + Storage Length (Figure 401-10)
45	125 "
50	145 "
55	165 "
60	185 " 50
65	205 "

=235

For explanation, see Turn Lane Design Example

STORAGE LENGTH AT INTERSECTIONS

401-10

REFERENCE SECTIONS
401.6.1 & 401.6.3

* AVERAGE NO. OF VEHICLES/CYCLE	REQUIRED LENGTH (FT.)
1	50
2	100
3	150
4	175
5	200
6	250
7	275
8	325
9	350
10	375
11	400
12	450
13	475
14	500
15	525
16	550

* AVERAGE NO. OF VEHICLES/CYCLE	REQUIRED LENGTH (FT.)
17	600
18	625
19	650
20	675
21	725
22	750
23	775
24	800
25	825
30	975
35	1125
40	1250
45	1400
50	1550
55	1700
60	1850

* AVERAGE VEHICLES PER CYCLE = $\frac{\text{DHV (TURNING LANE)}}{\text{CYCLES/HOUR}}$ $\frac{(2 \text{ veh} * 1.18)}{60} = 3$

IF CYCLES ARE UNKNOWN ASSUME:
UNSIGNALIZED OR 2 PHASE = 60 CYCLES/HOUR
3 PHASE = 40 CYCLES/HOUR
4 PHASE = 30 CYCLES/HOUR

3/60=0.05

SR 37 (Westbound)
Left Turn % = 5/175 = 2.9%

BASIS FOR COMPUTING LENGTH OF TURN LANES

401-9

REFERENCE SECTIONS
401.6.1 & 401.6.3

Condition B = 345 ft
Condition C = 235 ft

USE 345 FT

Type of Traffic Control	Design Speed		
	30-35	40-65	
	Turn Demand Volume		
	All	Low*	High
Signalized	A	** B or C	** B or C
Unsignalized Stopped Crossroad	A	A	A
Unsignalized Through Road	A	B	** B or C

* Low is considered 10% or less of approach traffic volume

** Whichever is greater

CONDITION A	STORAGE ONLY
Length = 50' (diverging taper) + Storage Length (Figure 401-10)	

CONDITION B	HIGH SPEED DECELERATION ONLY
Design Speed	Length (including 50' Diverging Taper)
40	125
45	175
50	225
55	285
60	345
65	405

CONDITION C	MODERATE SPEED DECELERATION AND STORAGE
Design Speed	Length (including 50' Diverging Taper)
40	115 + Storage Length (Figure 401-10)
45	125 "
50	145 "
55	165 "
60	185 " 50
65	205 "

=235

For explanation, see Turn Lane Design Example

STORAGE LENGTH AT INTERSECTIONS

401-10

REFERENCE SECTIONS
401.6.1 & 401.6.3

* AVERAGE NO. OF VEHICLES/CYCLE	REQUIRED LENGTH (FT.)
1	50
2	100
3	150
4	175
5	200
6	250
7	275
8	325
9	350
10	375
11	400
12	450
13	475
14	500
15	525
16	550

* AVERAGE NO. OF VEHICLES/CYCLE	REQUIRED LENGTH (FT.)
17	600
18	625
19	650
20	675
21	725
22	750
23	775
24	800
25	825
30	975
35	1125
40	1250
45	1400
50	1550
55	1700
60	1850

* AVERAGE VEHICLES PER CYCLE = $\frac{\text{DHV (TURNING LANE)}}{\text{CYCLES/HOUR}}$ $\frac{(5 \text{ veh} * 1.18)}{60} = 6$

IF CYCLES ARE UNKNOWN ASSUME:
UNSIGNALIZED OR 2 PHASE = 60 CYCLES/HOUR
3 PHASE = 40 CYCLES/HOUR
4 PHASE = 30 CYCLES/HOUR

6/60=0.1

SR 310 (Northbound)
Left Turn % = 89/153 = 58%

BASIS FOR COMPUTING LENGTH OF TURN LANES

401-9

REFERENCE SECTIONS
401.6.1 & 401.6.3

Condition B = 345 ft
Condition C = 285 ft

USE 345 FT

Type of Traffic Control	Design Speed		
	30-35	40-65	
	Turn Demand Volume		
	All	Low*	High
Signalized	A	** B or C	** B or C
Unsignalized Stopped Crossroad	A	A	A
Unsignalized Through Road	A	B	** B or C

* Low is considered 10% or less of approach traffic volume

** Whichever is greater

CONDITION A	STORAGE ONLY
Length = 50' (diverging taper) + Storage Length (Figure 401-10)	

CONDITION B	HIGH SPEED DECELERATION ONLY
Design Speed	Length (including 50' Diverging Taper)
40	125
45	175
50	225
55	285
60	345
65	405

CONDITION C	MODERATE SPEED DECELERATION AND STORAGE
Design Speed	Length (including 50' Diverging Taper)
40	115 + Storage Length (Figure 401-10)
45	125 "
50	145 "
55	165 "
60	185 " 100
65	205 "

=285

For explanation, see Turn Lane Design Example

STORAGE LENGTH AT INTERSECTIONS

401-10

REFERENCE SECTIONS
401.6.1 & 401.6.3

* AVERAGE NO. OF VEHICLES/CYCLE	REQUIRED LENGTH (FT.)
1	50
2	100
3	150
4	175
5	200
6	250
7	275
8	325
9	350
10	375
11	400
12	450
13	475
14	500
15	525
16	550

* AVERAGE NO. OF VEHICLES/CYCLE	REQUIRED LENGTH (FT.)
17	600
18	625
19	650
20	675
21	725
22	750
23	775
24	800
25	825
30	975
35	1125
40	1250
45	1400
50	1550
55	1700
60	1850

* AVERAGE VEHICLES PER CYCLE = $\frac{\text{DHV (TURNING LANE)}}{\text{CYCLES/HOUR}}$ $\frac{(89 \text{ veh} * 1.18) = 105}{60}$

IF CYCLES ARE UNKNOWN ASSUME:
UNSIGNALIZED OR 2 PHASE = 60 CYCLES/HOUR
3 PHASE = 40 CYCLES/HOUR
4 PHASE = 30 CYCLES/HOUR

105/60=1.8

Appendix F: Other Traffic Analysis

STUDY AND ANALYSIS INFORMATION

Municipality:		**Traffic Volumes Obtained By:**	STS
County:	Licking	**Analysis Date:**	5/30/2023
ODOT Engineering District:	5	**Agency/ Company Name Performing Warrant Analysis:**	ODOT D5
Google map link:	.gl/maps/kBtZDfmVe2		

Analysis Information

Data Collection Date: 4/6/2023

Day of the Week: Thursday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: No

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: SR 37 (Johnstown-Alexandria Road)

Major Street Approach Direction: N-Bound / S-Bound

Number of Thru Lanes on Each Major Street Approach: 1 **LANE(S)**

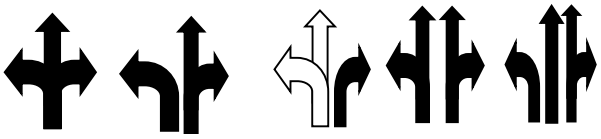
Speed Limit or 85th Percentile Speed on the Major Street*: 55 **MPH**

*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: SR 310 (Hazelton Etna Road)

Minor Street Approach Configuration: 3 E-Bound / 3 W-Bound



1 2 3 4 5

Number of Thru Lanes on Each Minor Street Approach: 1 **LANE(S)**

Apply Right Turn Lane Reduction*: Yes

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Satisfied?	Notes and Comments:	
Warrant 1, Eight-Hour Vehicular Volume	Yes	**No**		
Warrant 2, Four-Hour Vehicular Volume	Yes	**No**		
Warrant 3, Peak Hour	Yes	**No**	Signals installed under Warrant 3 should be traffic actuated.	**Peak Hour** 4:15 PM 5:15 PM
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)				
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.	**Peak Hour** 4:15 PM 5:15 PM
Warrant 5, School Crossing	No		N/A	
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)	
Warrant 7, Crash Experience	Yes	**No**	If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.	
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)	
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9	
Multi-Way Stop Warrant	Yes	**Yes**	May be used as an interim measure if traffic signal warrants are satisfied.	

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

If no warrants are satisfied, additional options may be considered:

1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.
2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The **Modeling and Forecasting Section** should provide the projected traffic volumes.
3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. **Please fill inputs on PHB Score Sheet and submit to ODOT.**

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion:

Notes:

Otworth, Joshua

From: Hwashik Jang <hjang@morpc.org>
Sent: Thursday, May 25, 2023 4:54 PM
To: Otworth, Joshua
Cc: Thompson, Tyrell; Nick Gill
Subject: RE: Growth Rates - LIC-310/Duncan Plains Rd & LIC-37/SR 310

Joshua,

We have completed processing growth rates for your traffic study.

Please use linear annual growth rates as summarized below.

Location	Linear Annual Growth Rate
SR 310 e/o SR 37	3.90%
SR 37 n/o SR 310	1.20%
SR 310 w/o SR 37	1.60%
SR 37 s/o SR 310	1.80%
Duncan Plains Rd e/o SR 310	2.80%
SR 310 n/o Duncan Plains Rd	1.60%
Duncan Plains Rd w/o SR 310	2.70%
SR 310 s/o Duncan Plains Rd	1.20%

Note: The rates provided should only be used for short term growth projections. Although, the planning level model runs used to calculate the rates includes the first phase of Intel area development (that expected to be open in 2025), it does not yet incorporate changes that the townships and local communities have made over the past year (or in process of making) to their visions for their jurisdiction's growth. Thus, applying these growth rates to develop 2047 design traffic will under state the future volumes. MORPC, along with LCATS are working to incorporate these into the development our official forecasts. These should be completed within the next 4-6 weeks to better inform long range traffic projections for this area of the region.

If you have any questions, please let me know.

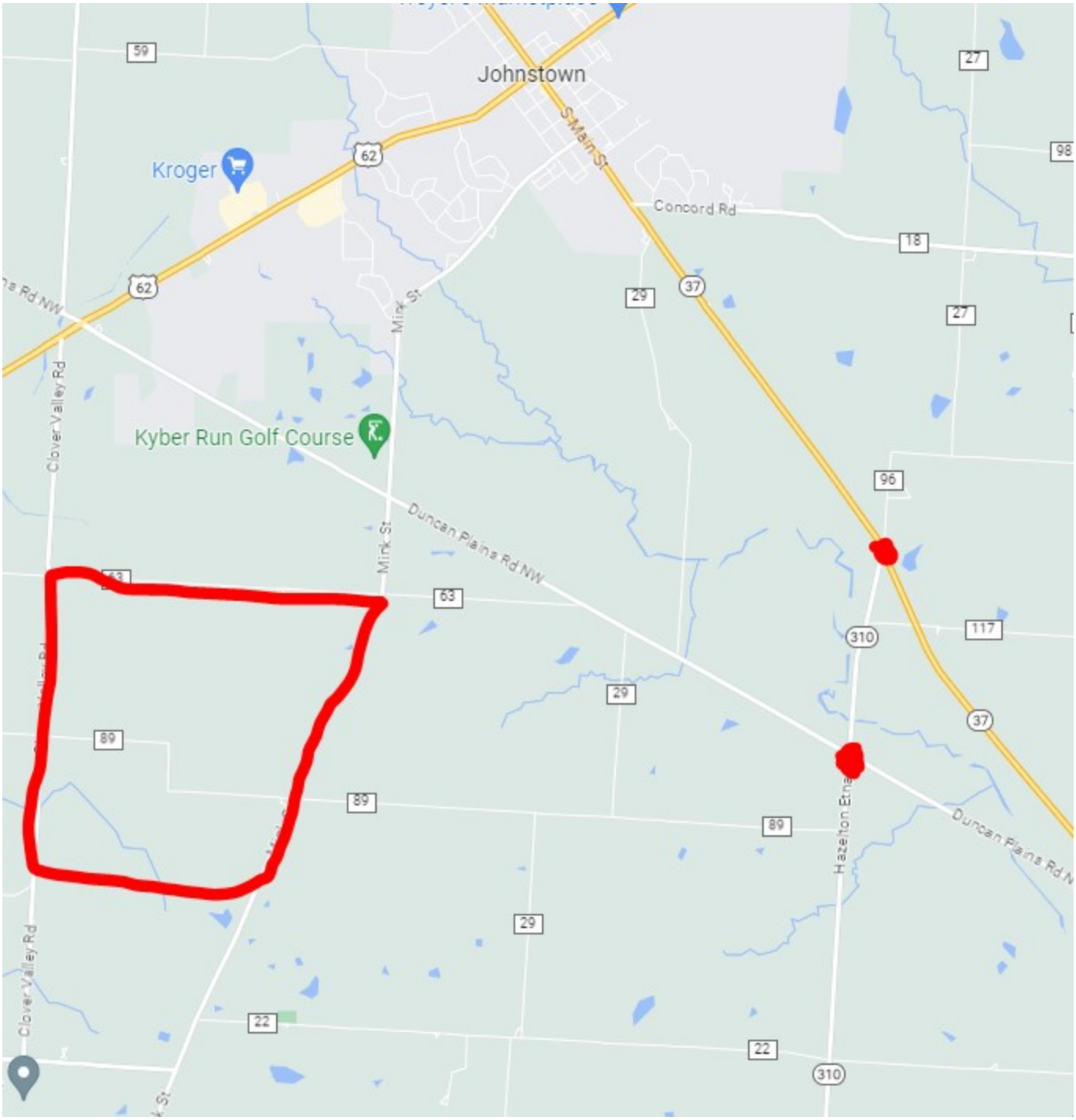
Thanks,

HWASHIK JANG
Senior Planner | **Mid-Ohio Regional Planning Commission**
T: 614.233.4145 | hjang@morpc.org
111 Liberty Street, Suite 100 | Columbus, OH 43215

From: Joshua.Otworth@dot.ohio.gov <Joshua.Otworth@dot.ohio.gov>
Sent: Wednesday, May 10, 2023 12:52 PM
To: Nick Gill <NGILL@morpc.org>; Hwashik Jang <hjang@morpc.org>
Cc: Thompson, Tyrell <ty.thompson@dot.ohio.gov>
Subject: Growth Rates - LIC-310/Duncan Plains Rd & LIC-37/SR 310

Nick,
We are working on safety studies (and some preliminary engineering) at the intersections of SR 310/Duncan Plains Rd (CR 33) and SR 37/SR 310 in Licking County near the Intel site. Due to the anticipated development in this area, we are requesting growth rates for this intersection to project existing turning movement counts to opening year 2027 and design year 2047. You may recall you provided similar rates for a safety study last year for the nearby intersection of Duncan Plains Rd./ Mink St.

I have attached turning movement counts for the both locations. Reach out with questions.



Thanks,

Joshua Otworth, PE
Traffic & Safety Engineer
ODOT District 5 Capital Programs
9600 Jacksontown Road, Jacksontown, Ohio 43030
740.323.5274
transportation.ohio.gov

EXCELLENCE IN GOVERNMENT

HCS Two-Way Stop-Control Report

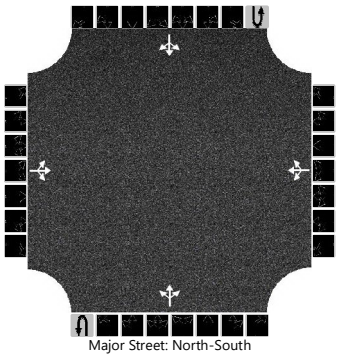
General Information

Analyst	Josh Otworth
Agency/Co.	ODOT D5
Date Performed	8/15/2023
Analysis Year	2023
Time Analyzed	2023 PM Peak
Intersection Orientation	North-South
Project Description	No Build

Site Information

Intersection	LIC-37 & SR 310
Jurisdiction	
East/West Street	SR 310/Windy Hollow Road
North/South Street	SR 37
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		79	60	7		2	24	7		5	165	5		2	184	69
Percent Heavy Vehicles (%)		4	1	30		1	1	1		5				5		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.14	6.51	6.50		7.11	6.51	6.21		4.15				4.15		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.54	4.01	3.57		3.51	4.01	3.31		2.25				2.25		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			152				34			5				2		
Capacity, c (veh/h)			515				547			1283				1381		
v/c Ratio			0.30				0.06			0.00				0.00		
95% Queue Length, Q_{95} (veh)			1.2				0.2			0.0				0.0		
Control Delay (s/veh)			14.9				12.0			7.8	0.0	0.0		7.6	0.0	0.0
Level of Service (LOS)			B				B			A	A	A		A	A	A
Approach Delay (s/veh)	14.9				12.0				0.3				0.1			
Approach LOS	B				B				A				A			

HCS Two-Way Stop-Control Report

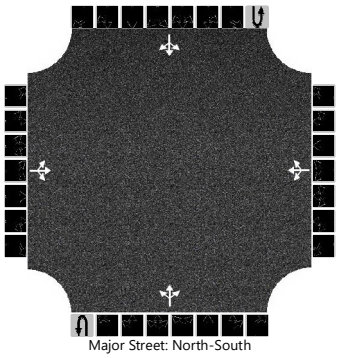
General Information

Analyst	Josh Otworth
Agency/Co.	ODOT D5
Date Performed	8/15/2023
Analysis Year	2023
Time Analyzed	2028 PM Peak
Intersection Orientation	North-South
Project Description	No Build

Site Information

Intersection	LIC-37 & SR 310
Jurisdiction	
East/West Street	SR 310/Windy Hollow Road
North/South Street	SR 37
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		86	65	8		2	29	8		5	178	5		2	195	73
Percent Heavy Vehicles (%)		4	1	30		1	1	1		5				5		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.14	6.51	6.50		7.11	6.51	6.21		4.15				4.15		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.54	4.01	3.57		3.51	4.01	3.31		2.25				2.25		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			166				41			5				2		
Capacity, c (veh/h)			491				526			1266				1365		
v/c Ratio			0.34				0.08			0.00				0.00		
95% Queue Length, Q_{95} (veh)			1.5				0.3			0.0				0.0		
Control Delay (s/veh)			16.0				12.4			7.9	0.0	0.0		7.6	0.0	0.0
Level of Service (LOS)			C				B			A	A	A		A	A	A
Approach Delay (s/veh)	16.0				12.4				0.2				0.1			
Approach LOS	C				B				A				A			

HCS Two-Way Stop-Control Report

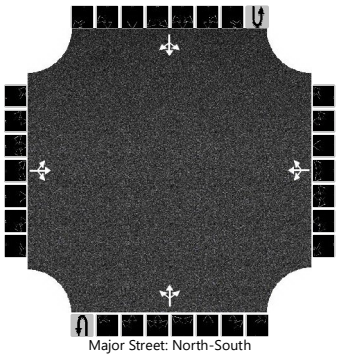
General Information

Analyst	Josh Otworth
Agency/Co.	ODOT D5
Date Performed	8/15/2023
Analysis Year	2023
Time Analyzed	2048 PM Peak
Intersection Orientation	North-South
Project Description	No Build

Site Information

Intersection	LIC-37 & SR 310
Jurisdiction	
East/West Street	SR 310/Windy Hollow Road
North/South Street	SR 37
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		115	87	10		4	47	14		7	231	7		3	239	90
Percent Heavy Vehicles (%)		4	1	30		1	1	1		5				5		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.14	6.51	6.50		7.11	6.51	6.21		4.15				4.15		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.54	4.01	3.57		3.51	4.01	3.31		2.25				2.25		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			221				68			7				3		
Capacity, c (veh/h)			392				446			1200				1300		
v/c Ratio			0.56				0.15			0.01				0.00		
95% Queue Length, Q_{95} (veh)			3.3				0.5			0.0				0.0		
Control Delay (s/veh)			25.4				14.5			8.0	0.1	0.1		7.8	0.0	0.0
Level of Service (LOS)			D				B			A	A	A		A	A	A
Approach Delay (s/veh)	25.4				14.5				0.3				0.1			
Approach LOS	D				B				A				A			

HCS Two-Way Stop-Control Report

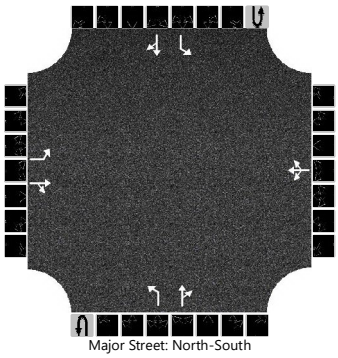
General Information

Analyst	Josh Otworth
Agency/Co.	ODOT D5
Date Performed	8/15/2023
Analysis Year	2023
Time Analyzed	2028 PM Peak
Intersection Orientation	North-South
Project Description	LTL Widening

Site Information

Intersection	LIC-37 & SR 310
Jurisdiction	
East/West Street	SR 310/Windy Hollow Road
North/South Street	SR 37
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		0	1	0	0	1	1	0	0	1	1	0
Configuration		L		TR			LTR			L		TR		L		TR
Volume (veh/h)		86	65	8		2	29	8		5	178	5		2	195	73
Percent Heavy Vehicles (%)		4	1	30		1	1	1		5				5		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.14	6.51	6.50		7.11	6.51	6.21		4.15				4.15		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.54	4.01	3.57		3.51	4.01	3.31		2.25				2.25		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		90		76			41			5				2		
Capacity, c (veh/h)		467		523			526			1266				1365		
v/c Ratio		0.19		0.15			0.08			0.00				0.00		
95% Queue Length, Q_{95} (veh)		0.7		0.5			0.3			0.0				0.0		
Control Delay (s/veh)		14.5		13.0			12.4			7.9				7.6		
Level of Service (LOS)		B		B			B			A				A		
Approach Delay (s/veh)	13.8				12.4				0.2				0.1			
Approach LOS	B				B				A				A			

HCS Two-Way Stop-Control Report

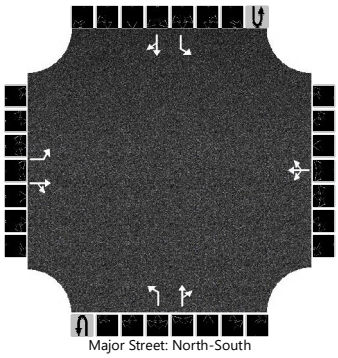
General Information

Analyst	Josh Otworth
Agency/Co.	ODOT D5
Date Performed	8/15/2023
Analysis Year	2023
Time Analyzed	2048 PM Peak
Intersection Orientation	North-South
Project Description	LTL Widening

Site Information

Intersection	LIC-37 & SR 310
Jurisdiction	
East/West Street	SR 310/Windy Hollow Road
North/South Street	SR 37
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		0	1	0	0	1	1	0	0	1	1	0
Configuration		L		TR			LTR			L		TR		L		TR
Volume (veh/h)		115	87	10		4	47	14		7	231	7		3	239	90
Percent Heavy Vehicles (%)		4	1	30		1	1	1		5				5		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

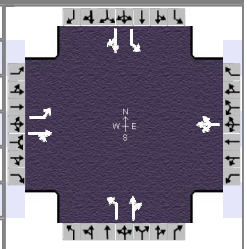
Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.14	6.51	6.50		7.11	6.51	6.21		4.15				4.15		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.54	4.01	3.57		3.51	4.01	3.31		2.25				2.25		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		120		101			68			7				3		
Capacity, c (veh/h)		355		449			447			1200				1300		
v/c Ratio		0.34		0.23			0.15			0.01				0.00		
95% Queue Length, Q_{95} (veh)		1.5		0.9			0.5			0.0				0.0		
Control Delay (s/veh)		20.2		15.3			14.5			8.0				7.8		
Level of Service (LOS)		C		C			B			A				A		
Approach Delay (s/veh)	18.0				14.5				0.2				0.1			
Approach LOS	C				B				A				A			

HCS Signalized Intersection Results Summary

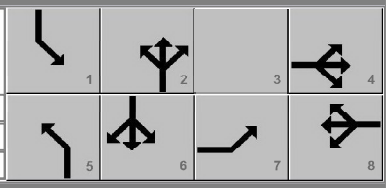
General Information				Intersection Information	
Agency	ODOT D5			Duration, h	0.250
Analyst	Josh Otworth	Analysis Date	8/15/2023	Area Type	Other
Jurisdiction		Time Period		PHF	0.96
Urban Street		Analysis Year	2023	Analysis Period	1> 7:00
Intersection	SR 37/SR 310	File Name	Streets 2028.xus		
Project Description	PM Peak 2028				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	86	65	8	2	29	8	5	178	5	2	195	73

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	7.0	29.0	7.0	23.0	0.0	0.0	
Yellow	4.0	4.0	4.0	4.0	0.0	0.0	
Red	2.0	2.0	2.0	2.0	0.0	0.0	



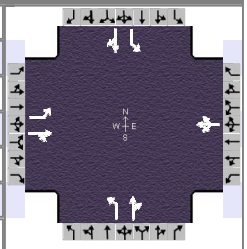
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4		8	5	2	1	6
Case Number	1.0	4.0		8.3	1.1	4.0	1.1	4.0
Phase Duration, s	13.0	42.0		29.0	13.0	35.0	13.0	35.0
Change Period, ($Y+R_c$), s	6.0	6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	2.9	2.9		2.9	2.9	2.9	2.9	2.9
Queue Clearance Time (g_s), s	5.4	4.6		25.0	2.2	9.8	2.1	14.9
Green Extension Time (g_e), s	0.0	0.1		0.0	0.0	0.7	0.0	0.7
Phase Call Probability	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability	1.00	0.00		1.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	90	76			41		5	191		2	279	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1615	1676			1668		1654	1674		1654	1603	
Queue Service Time (g_s), s	3.4	2.6			0.0		0.2	7.8		0.1	12.9	
Cycle Queue Clearance Time (g_c), s	3.4	2.6			1.7		0.2	7.8		0.1	12.9	
Green Ratio (*g/C*)	0.36	0.40			0.26		0.40	0.32		0.40	0.32	
Capacity (*c*), veh/h	206	670			468		383	539		464	517	
Volume-to-Capacity Ratio (*X*)	0.436	0.113			0.087		0.014	0.353		0.004	0.540	
Back of Queue (*Q*), ft/ln (95 th percentile)	54.6	40.6			27.8		2.6	130.9		1	206.2	
Back of Queue (*Q*), veh/ln (95 th percentile)	2.1	1.6			1.1		0.1	5.0		0.0	7.9	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.19	0.03			0.02		0.01	0.08		0.00	0.12	
Uniform Delay (d_1), s/veh	23.3	17.0			25.6		17.5	23.3		16.8	25.0	
Incremental Delay (d_2), s/veh	0.5	0.0			0.0		0.0	0.1		0.0	0.6	
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	23.8	17.0			25.6		17.5	23.5		16.8	25.7	
Level of Service (LOS)	C	B			C		B	C		B	C	
Approach Delay, s/veh / LOS	20.7	C		25.6	C		23.3	C		25.6	C	
Intersection Delay, s/veh / LOS	23.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.91	B	1.93	B	1.69	B	1.92	B
Bicycle LOS Score / LOS	0.76	A	0.55	A	0.81	A	0.95	A

HCS Signalized Intersection Results Summary

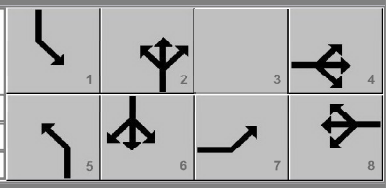
General Information				Intersection Information	
Agency	ODOT D5			Duration, h	0.250
Analyst	Josh Otworth	Analysis Date	8/15/2023	Area Type	Other
Jurisdiction		Time Period		PHF	0.96
Urban Street		Analysis Year	2023	Analysis Period	1> 7:00
Intersection	SR 37/SR 310	File Name	Streets 2048.xus		
Project Description	PM Peak 2048				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	115	87	10	4	47	14	7	231	7	3	239	90

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	7.0	31.0	7.0	21.0	0.0	0.0	
Yellow	4.0	4.0	4.0	4.0	0.0	0.0	
Red	2.0	2.0	2.0	2.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4		8	5	2	1	6
Case Number	1.0	4.0		8.3	1.1	4.0	1.1	4.0
Phase Duration, s	13.0	40.0		27.0	13.0	37.0	13.0	37.0
Change Period, (*Y+R c*), s	6.0	6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	2.9	2.9		2.9	2.9	2.9	2.9	2.9
Queue Clearance Time (g_s), s	6.8	5.6		23.0	2.2	12.3	2.1	18.0
Green Extension Time (g_e), s	0.0	0.2		0.0	0.0	0.9	0.0	0.9
Phase Call Probability	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability	1.00	0.00		1.00	0.01	0.00	0.00	0.00

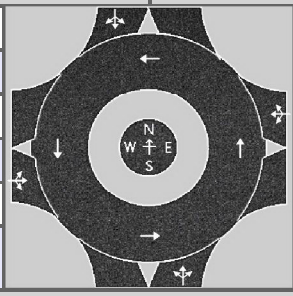
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	120	101			68		7	248		3	343	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1615	1678			1662		1654	1673		1654	1603	
Queue Service Time (g_s), s	4.8	3.6			0.0		0.2	10.3		0.1	16.0	
Cycle Queue Clearance Time (g_c), s	4.8	3.6			2.9		0.2	10.3		0.1	16.0	
Green Ratio (*g/C*)	0.33	0.38			0.23		0.42	0.34		0.42	0.34	
Capacity (*c*), veh/h	206	634			430		359	576		446	552	
Volume-to-Capacity Ratio (*X*)	0.583	0.159			0.157		0.020	0.430		0.007	0.621	
Back of Queue (*Q*), ft/ln (95 th percentile)	83.3	57.6			49		3.5	170		1.5	248	
Back of Queue (*Q*), veh/ln (95 th percentile)	3.2	2.3			1.9		0.1	6.5		0.1	9.5	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.28	0.04			0.03		0.01	0.10		0.01	0.15	
Uniform Delay (d_1), s/veh	24.5	18.5			27.6		16.9	22.7		15.9	24.6	
Incremental Delay (d_2), s/veh	2.8	0.0			0.1		0.0	0.2		0.0	1.6	
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	27.3	18.6			27.6		16.9	22.9		15.9	26.2	
Level of Service (LOS)	C	B			C		B	C		B	C	
Approach Delay, s/veh / LOS	23.3	C		27.6	C		22.7	C		26.1	C	
Intersection Delay, s/veh / LOS	24.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.91	B	1.93	B	1.69	B	1.92	B
Bicycle LOS Score / LOS	0.85	A	0.60	A	0.91	A	1.06	A

HCS Roundabouts Report

General Information

Analyst	Josh Otworth
Agency or Co.	ODOT D5
Date Performed	8/15/2023
Analysis Year	2023
Time Analyzed	2028 PM Peak
Project Description	



Site Information

Intersection	SR 37 & SR 310
E/W Street Name	SR 310/Woody Hollow Road
N/S Street Name	SR 37
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.96
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	86	65	8	0	2	29	8	0	5	178	5	0	2	195	73
Percent Heavy Vehicles, %	3	4	1	30	3	1	1	1	3	1	4	20	3	1	5	6
Flow Rate (v_{PCE}), pc/h	0	93	68	11	0	2	31	8	0	5	193	6	0	2	213	81
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway, s		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		172			41			204			296	
Entry Volume, veh/h		165			41			196			281	
Circulating Flow (v_c), pc/h	217			291			163			38		
Exiting Flow (v_{ex}), pc/h	76			117			294			226		
Capacity (c_{pce}), pc/h		1106			1026			1169			1328	
Capacity (c), veh/h		1062			1015			1120			1261	
v/c Ratio (x)		0.16			0.04			0.17			0.22	

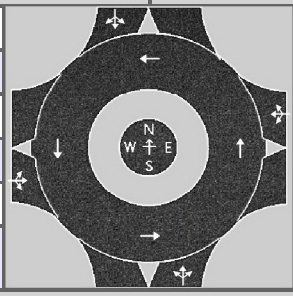
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.8			3.9			4.8			4.8	
Lane LOS		A			A			A			A	
95% Queue, veh		0.5			0.1			0.6			0.9	
Approach Delay, s/veh | LOS	4.8	A		3.9	A		4.8	A		4.8	A	
Intersection Delay, s/veh | LOS	4.7						A					

HCS Roundabouts Report

General Information

Analyst	Josh Otworth
Agency or Co.	ODOT D5
Date Performed	8/15/2023
Analysis Year	2023
Time Analyzed	2048 PM Peak
Project Description	



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Analysis Time Period, hrs	0.25
Peak Hour Factor	0.96
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	115	87	10	0	4	47	14	0	7	231	7	0	3	239	90
Percent Heavy Vehicles, %	3	4	1	30	3	1	1	1	3	1	4	20	3	1	5	6
Flow Rate (v_{PCE}), pc/h	0	125	92	14	0	4	49	15	0	7	250	9	0	3	261	99
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway, s		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		231			68			266			363	
Entry Volume, veh/h		222			67			255			345	
Circulating Flow (v_c), pc/h	268			382			220			60		
Exiting Flow (v_{ex}), pc/h	104			155			390			279		
Capacity (c_{pce}), pc/h		1050			935			1103			1298	
Capacity (c), veh/h		1009			925			1056			1233	
v/c Ratio (x)		0.22			0.07			0.24			0.28	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		5.7			4.6			5.7			5.4	
Lane LOS		A			A			A			A	
95% Queue, veh		0.8			0.2			0.9			1.2	
Approach Delay, s/veh | LOS	5.7	A		4.6	A		5.7	A		5.4	A	
Intersection Delay, s/veh | LOS	5.5						A					