



FINAL DRAFT

POR SR 14 at Alliance Rd Safety Study

#146 Rural Intersection | 2024 ODOT HSIP Priority List

Ohio Department of Transportation District 4

May 12, 2025



Department of
Transportation





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**Department of
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Contents

1 Executive Summary	1
1.1 Background	1
1.2 Purpose and Need.....	1
1.3 Overview of Possible Causes	1
1.4 Recommended Countermeasures & Related Costs.....	1
2 Existing Conditions Analysis.....	2
2.1 Corridor Characteristics	2
2.2 Utilities and Topography.....	3
2.3 Signing and Marking	3
2.4 Existing Condition Capacity Analysis.....	4
3 Crash Data Analysis.....	7
3.1 Summary of Crash Patterns.....	8
3.2 Potential for Safety Improvement	8
3.3 Discussion of Potential Countermeasures	9
4 Countermeasure Evaluation	10
4.1 Short-Term Countermeasure Evaluation	10
4.2 Turn Lane Warrant Analysis	11
4.3 Signal Warrant Analysis.....	12
4.4 Roundabout Analysis.....	12
4.4.1 Geometric Evaluation.....	13
4.4.2 Capacity Analysis.....	18
5 Recommendation & Prioritization	21
5.1 Cost Estimating	21
5.2 Economic Safety Analysis and Benefit/Cost.....	21



1 Executive Summary

1.1 Background

The Ohio Department of Transportation (ODOT) retained Woolpert to conduct a formal safety study at the intersection of State Route 14 (SR 14), Alliance Rd (also known as County Rd 125), and Yale Rd (also known as County Rd 55) in Portage County Ohio. The intersections of SR 14 with Yale Rd and Alliance Rd are both two-way stop controlled (TWSC) intersections while the internal intersection of Alliance Rd and Yale Rd is all-way stop controlled (AWSC).

From 2019 to 2023 there were 21 total crashes in the study area including 13 injury crashes which resulted in one serious injury. There were no fatal crashes during the crash data period. Most crashes at the intersection were angle crashes, mostly involving failure to yield at the SR 14/Alliance Rd intersection within the broader study area. The crash pattern is reflective of a high-speed rural intersection where drivers are incorrectly judging available gaps. Additionally, the geometry of the intersection directly contributes to the crash pattern via intersection skew angle impacting the ability to see approaching vehicles from the side street stop sign locations.

1.2 Purpose and Need

The study area ranked as the #146 Rural Intersection on ODOT's 2024 Highway Safety Improvement Program priority list. Given the high proportion of injury crashes at this intersection, the purpose of this study is to analyze existing conditions, evaluate possible causes behind the crash pattern, and recommend countermeasures to address safety and movement through the intersection.

1.3 Overview of Possible Causes

Nearly all crashes in the study area from 2019 to 2023 were angle crashes, and the majority of those involved the intersection of SR 14 and Alliance Rd. 16 of the 18 angle crashes occurred at SR 14 and Alliance Rd, including 11 injury crashes.

The crash pattern is consistent with rural TWSC intersections where driver misjudgment of gap spacing is common. The significant skew angle of nearly 45 degrees is also a primary factor in the crash pattern as drivers on Alliance Rd (where most angle crashes occurred) must look over their shoulder and thru their vehicle to see approaching vehicles from the right-hand side. 12 of the 18 angle crashes involve the at-fault vehicle being struck on the right-hand side.

1.4 Recommended Countermeasures & Related Costs

Woolpert evaluated short-, medium-, and long-term countermeasures to address safety and movement through the study area. Based on this analysis, Woolpert recommends the following:

Short-Term Countermeasures

- Replace existing intersection signage (including W3, W2, and R1 series signs) with new signage in-kind, and revise placement of signage to follow the guidance in the Federal MUTCD (11th Edition) Table 2C-3

Long Term Countermeasures

- Convert existing TWSC and AWSC intersection to a six-leg circular roundabout with 180 ft ICD and linear pathway for OSOW vehicles.

2 Existing Conditions Analysis

The study area (Figure 1) includes the multi-leg intersection of State Route 14 (SR 14), Alliance Rd (also known as County Rd 125), and Yale Rd (also known as County Rd 55) in Portage County Ohio. The study area lies at the intersecting points of Edinburg Township, Palmyra Township, Atwater Township, and Deerfield Township. The exact intersection of these townships occurs at the intersection of Alliance Rd and Yale Rd within the study area. The intersections of SR 14 with Yale Rd and Alliance Rd are both two-way stop controlled (TWSC) intersections while the internal intersection of Alliance Rd and Yale Rd is all-way stop controlled (AWSC).

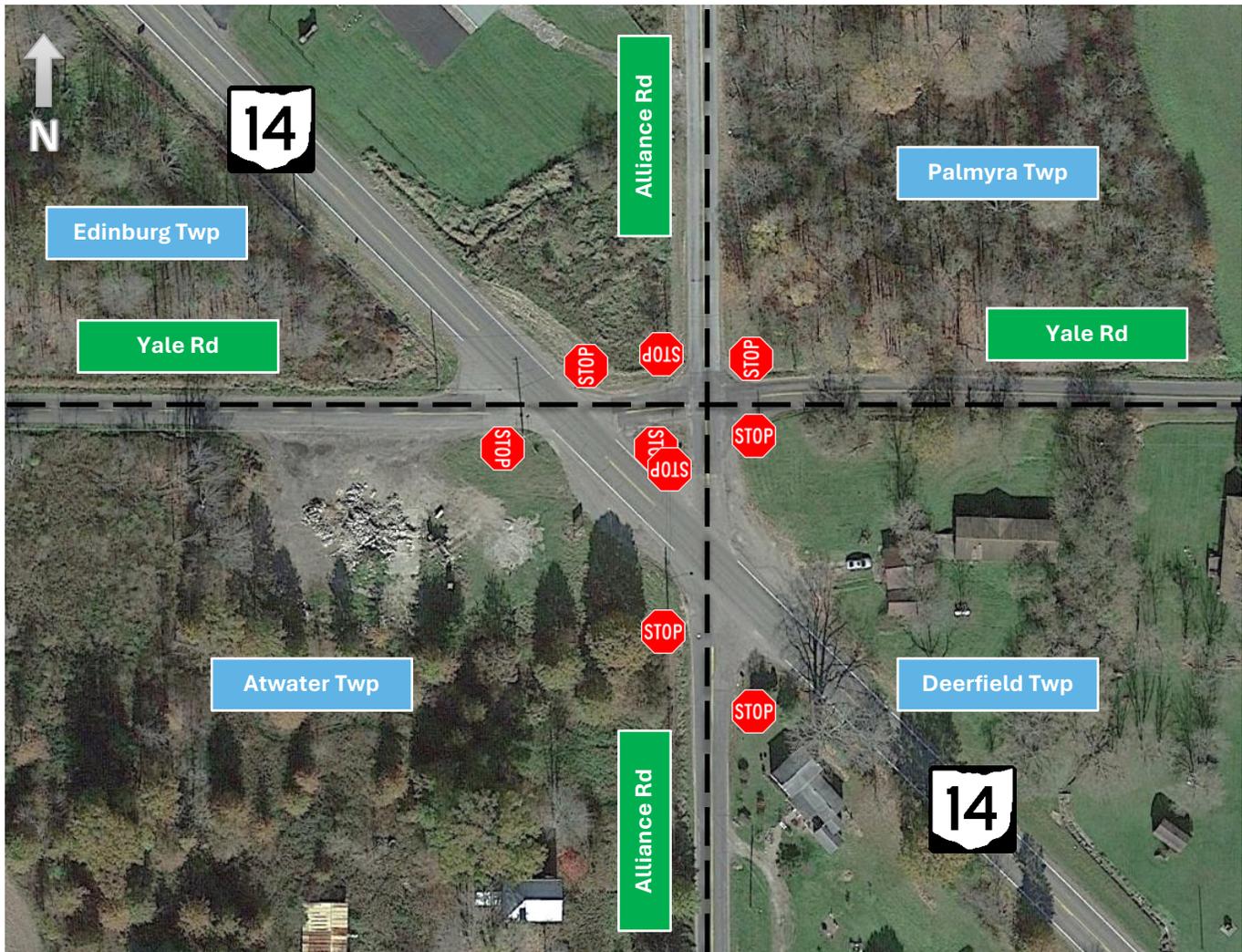


Figure 1 - Study Area

2.1 Corridor Characteristics

The study area is generally rural/agricultural in land use. Residential structures are present in the southeast, east, and northwest sections of the study area, and a rubble collection facility is present in the southwest section. SR 14 through the study area is classified as a Minor Arterial that runs through the study area on a northwest/southeast alignment. There are no speed limit signs present in the vicinity of the intersection however the statutory speed limit for highways outside of municipal corporations is 55 MPH. SR 14 lane widths are approximately 12 ft with 4 ft paved shoulders.

Both Alliance Rd and Yale Rd are functionally classified as Local Roads. Alliance Rd proceeds through the study area on a north/south alignment and Yale Rd proceeds on an east/west alignment. Yale Rd west of the study area is signed for a 45 MPH speed limit; no other speed limit signs are present on either roadway in the vicinity of the study area. The

statutory speed limit for highways outside of municipal corporations is 55 MPH. Lane widths on Alliance Rd and Yale Rd are 10 ft, with no paved or unpaved shoulders. Woolpert observed some evidence of off tracking at the intersections and in on the intersection approaches during field observations conducted on Thursday February 6, 2025.

There are no turn lanes on any approach to the intersection. During field observations, Woolpert observed several instances where drivers did not appear to understand how to navigate the intersection when turning left from SR 14. Woolpert observed a southbound vehicle pass the Yale Rd intersection, make a sharp left (greater than 90 degrees) onto northbound Alliance Rd followed by an immediate right onto eastbound Yale Rd. Pavement conditions through the intersection were fair to poor. SR 14 was in generally good condition, but rutting, off-tracking, and potholes were prevalent on the Alliance Rd and Yale Rd approaches to the intersection (Figure 2).



Figure 2 - Pavement Condition at the Study Intersection

2.2 Utilities and Topography

Woolpert did not observe any marked or defined underground utilities within the study area except for a ground mounted transformer box in the southwest corner of the intersection. All remaining observed utilities were overhead, including a pole line running along the west side of SR 14 north of the study area carrying electric and telecom utilities. This pole line joins an east/west pole line that is situated south of Yale Rd through the study area, along with a north/south pole line that is situated on the west side of Alliance Rd, both of which carry electric and telecom utilities.

Open ditches are present for drainage through the study area, along with two culverts, one north of the intersection on SR 14 and another north of the intersection on Alliance Rd. The intersection itself is situated on a raised plateau but is generally flat. A vertical grade rising from east to west is present on Yale Rd east of the intersection, along with a vertical grade rising from southeast to northwest on SR 14 approaching the intersection from the southeast.

2.3 Signing and Marking

Custom intersection ahead signage (Figure 3) with 45 MPH advisory speed plaques are present on both SR 14 approaches to the intersection. The custom legend captures the geometry of the approaching intersection as best possible to provide approaching vehicles with an idea of the layout of the intersection ahead.



Figure 3 - Custom Intersection Ahead Signs Installed by ODOT

W3-1 Stop Ahead signage is present on all stop-controlled approaches to the intersection, but this signage varies in distance from the sign to the study area between 600 and 800 ft. These distances exceed Federal Manual on Uniform Traffic Control Devices (MUTCD) 11th Edition Table 2C-3 which was effective January 2024, and which increased the advance placement distance for warning signs. Stop signs are appropriately placed for each stop-controlled approach, with dual stop signs present on the northbound Alliance Rd approach to the intersection. Stop signs are also posted at the internal Alliance Rd/Yale Rd intersection.

Red reflective post strips are present for stop signs controlling stop movements at SR 14. Reflective post strips were not present on stop signs for the internal Alliance Rd/Yale Rd intersection. Stop signs in the internal intersection had a supplemental “All Way” plaque installed. In clear conditions, existing signs were visible with legends and sign colors in good condition. Several signs had ownership stickers on their backs, but information pertaining to date of installation had either worn-off or went unmarked. The stickers indicated that signage at the intersection was last installed between 2015 and 2025.

Markings consist of solid double-yellow lines on all approaches, with white edge lines included on SR 14. No edge lines are present on either Alliance Rd or Yale Rd. No stop bars were present on any approach SR 14, or at the internal intersection. Edge line rumble stripes are present on SR 14 through the intersection, along with raised pavement markers on the SR 14 center line.

2.4 Existing Condition Capacity Analysis

Woolpert conducted Capacity Analysis for the existing TWSC condition using Highway Capacity Software (HCS) 2024 Version 8.3 following ODOT Analysis & Traffic Simulation (OATS) Manual guidance. The existing condition is defined as existing geometry and lane use and volumes based on 13-hour counts collected by ODOT District 4 on February 13, 2025. The AM peak period occurred between 7:15 AM and 8:15 AM and the PM peak period occurred between 4:15 PM and 5:15 PM.

Woolpert developed Design Hourly Volumes (DHV) for the existing 2025 year by multiplying existing count data by ODOT’s peak hour to design hour factors for Minor Arterials on a Thursday in February. Woolpert rounded resultant values and applied a minimum value of 5 to movements where calculated DHV was less than 5 vehicles. Woolpert applied an annual growth rate of 0.5% on calculated 2025 DHV to develop 2029 Opening and 2049 Design Year volumes. 2025, 2029, and 2049 traffic plates are presented in **Appendix A**.



The study area is made up of two TWSC intersections (SR 14 at Alliance and SR 14 at Yale) and one All-Way Stop Control (AWSC) intersection (Alliance at Yale). Woolpert used the HCS TWSC and AWSC modules as appropriate for the existing condition analysis, with HCS results reported following Highway Capacity Manual (HCM) definitions for Level of Service (LOS), as shown in Table 1:

Table 1 - HCM Definitions for Level of Service

Level of Service	Signalized (sec./veh.)	Unsignalized (sec./veh.)
A	≤ 10 sec.	≤ 10 sec.
B	10-20 sec.	10-15 sec.
C	20-35 sec.	15-25 sec.
D	35-55 sec.	25-35 sec.
E	55-80 sec.	35-50 sec.
F	> 80 sec.	> 50 sec.

The ODOT OATS manual contains operational goals for intersection analyses, which include intersection LOS of C or better for locations outside of a Municipal Planning Organization (MPO), individual approach LOS of E or better, Volume to Capacity (V/C) ratios of 1.0 or less on all approaches, and Queue Storage Ratios (QSR) of 1.0 or less on all movements.

Table 2 presents HCS LOS and Delay results for the 2025 Existing Condition analysis. Delay is not reported for the SR 14 mainline for TWSC analyses as there is no stop control for these movements, and therefore no significant control delay. Existing condition capacity analysis results are presented in **Appendix B**.

Table 2 - HCS Existing Condition Analysis LOS Results

Movement	2025 Existing AM Peak		2025 Existing PM Peak	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
<i>SR 14 at Alliance Rd (HCS TWSC)</i>				
Alliance Rd NB	C	15.0	C	16.0
Alliance Rd SB	B	14.0	B	14.5
<i>SR 14 at Yale Rd (HCS TWSC)</i>				
Yale Rd EB	B	13.9	B	14.6
Yale Rd WB	B	12.2	B	13.5
<i>Alliance Rd at Yale Rd (HCS TWSC)</i>				
Alliance Rd NB	A	7.0	A	7.1
Alliance Rd SB	A	7.2	A	7.0
Yale Rd EB	A	7.3	A	7.0
Yale Rd WB	A	7.2	A	7.1
Intersection Overall	A	7.2	A	7.1

Table 3 presents HCS LOS and Delay results for the 2049 No Build analysis. The 2049 No Build Condition is defined as grown 2049 Design Year Traffic on the existing geometry. Delay is not reported for the SR 14 mainline for TWSC analyses as there is no stop control for these movements, and therefore no significant control delay.



Table 3 - HCS No Build Analysis LOS Results

Movement	2049 No Build AM Peak		2049 No Build PM Peak	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
<i>SR 14 at Alliance Rd (HCS TWSC)</i>				
Alliance Rd NB	C	17.7	C	23.7
Alliance Rd SB	C	15.3	C	18.1
<i>SR 14 at Yale Rd (HCS TWSC)</i>				
Yale Rd EB	C	15.4	C	16.7
Yale Rd WB	B	14.9	C	15.9
<i>Alliance Rd at Yale Rd (HCS AWSC)</i>				
Alliance Rd NB	A	7.2	A	7.2
Alliance Rd SB	A	7.2	A	7.3
Yale Rd EB	A	7.2	A	7.3
Yale Rd WB	A	7.2	A	7.2
<i>Intersection Overall</i>	A	7.2	A	7.2

The study areas individually operate at acceptable LOS in both the 2025 Existing Condition and 2049 Design Year AM and PM peak periods. Field observations did not note any significant operational concerns, except for the minimal distance between each of the three individual intersections. Of the non-State Route approaches, the northbound movement from Alliance Rd is the heaviest movement, with the Alliance Rd northbound left turn movement being the largest of the non-State Route movements.

Woolpert constructed a model of the existing geometric condition in TransModeler 7 for the purpose of using grown turning movement counts to create an Origin-Destination (O-D) Matrix. Woolpert followed ODOT OATS Manual guidance in the development, calibration, and use of TransModeler on ODOT projects. Given the complexity of the intersection layout, an O-D Matrix is a useful tool for the evaluation of alternatives that require internal volume redistribution, such as a roundabout that requires one or more approaches to terminate prior to reaching the roundabout.

Woolpert extracted O-D matrices from the 2049 No Build AM and PM conditions, which are defined as existing geometry with grown 2049 volumes. Both the AM and PM O-D Matrix were based on an average of 10 TransModeler simulation runs. Woolpert then balanced the matrix and rounded values to whole numbers. The final O-D matrices for use in the development of countermeasures are presented in **Appendix C**.



3 Crash Data Analysis

Woolpert obtained crash data and a collision diagram of the study area from ODOT District 4 for the 2019-2023 crash years. There were 21 crashes in the study area during the crash data collection period, including 13 injury crashes resulting in one serious injury. There were no fatal crashes during the crash data collection period. There were no crashes in 2019, but the study area has averaged approximately five crashes per year from 2020 to 2023.

Table 4 and Figure 4 presents an overview of crash data in the study area and important crash data trends. Complete crash data is presented in **Appendix D**, a collision diagram is shown on the following page and in **Appendix E**.

Table 4 - Crash Data Summary

Crash Type	Frequency	%
Angle	18	85.71%
Left Turn	2	9.52%
Fixed Object	1	4.76%
Grand Total	21	100.00%

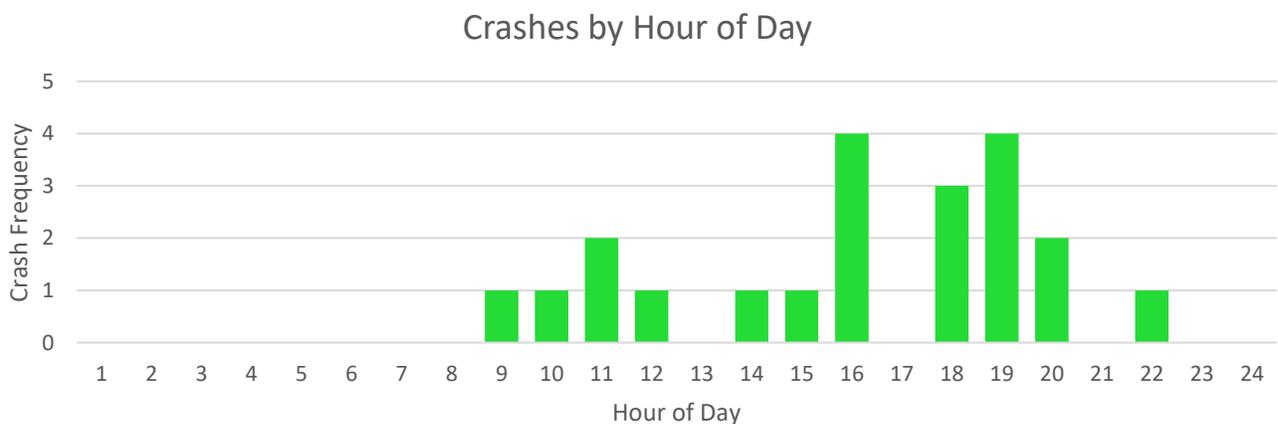
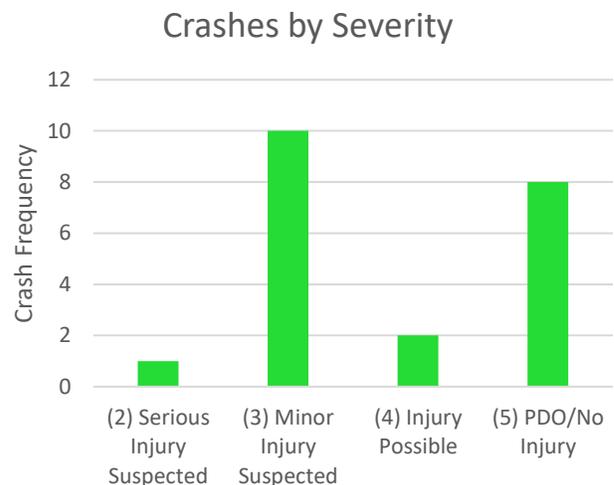
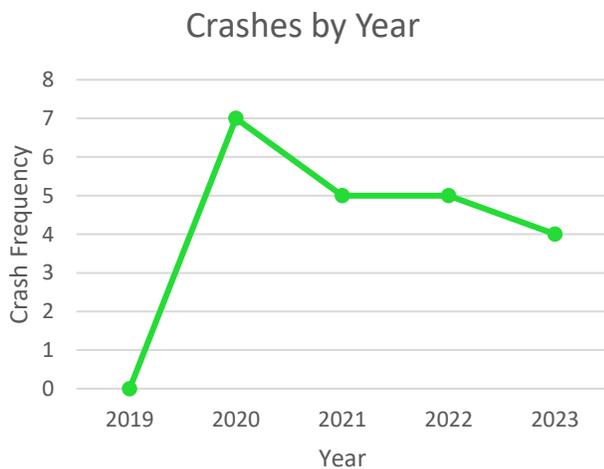


Figure 4 - Crash Data Summary

3.1 Summary of Crash Patterns

Nearly all crashes in the study area from 2019 to 2023 were angle crashes, and the majority of those involved the intersection of SR 14 and Alliance Rd. 16 of the 18 angle crashes occurred at SR 14 and Alliance Rd, including 11 injury crashes. Crashes were split almost evenly between the northbound and southbound approaches, with a slight prevalence for crashes involving the southbound approach on Alliance Rd. In almost every case, angle crashes were coded as “Failure to Yield” by responding officers, as opposed to “Failure to Stop”.

Failure to Yield was also the primary factor in both left turn crashes, which occurred on southeast-bound SR 14 at Yale Rd. In the case of the fixed object crashes recorded during the crash data period, the crashes occurred when a driver attempted to avoid a Failure to Yield crash with a vehicle on southbound Alliance Rd that had entered SR 14 without the right of way.

Over 80% of all crashes occurred in daylight conditions (85.71%), on dry pavements (100%) and in clear or cloudy weather conditions (100%) indicating environmental and lighting conditions did not play a factor in the overall crash pattern. There was no reported alcohol or drug involvement in any crash recorded during the crash data period.

The crash pattern is consistent with rural TWSC intersections where driver misjudgment of gap spacing is common. The significant skew angle of nearly 45 degrees is also a primary factor in the crash pattern as drivers on Alliance Rd (where most angle crashes occurred) must look over their shoulder and thru their vehicle to see approaching vehicles from the right-hand side. 12 of the 18 angle crashes involve the at-fault vehicle being struck on the right-hand side.

3.2 Potential for Safety Improvement

The high frequency of injury crashes, representing nearly 62% of all crashes at the intersection, exceeds the statewide average for rural intersections. While the geometry of this intersection is unique, most of the traffic using the intersection passes through one or two TWSC intersections. When evaluated on that basis, the existing crash patterns and injury frequencies are higher than other statewide TWSC intersections. Woolpert conducted an Economic Crash Analysis Tool (ECAT) analysis of the existing condition to determine the potential for safety improvement within the study area using Highway Safety Manual (HSM) methodology.

When evaluated as a study area, including all three intersections, the ECAT potential for safety improvement comes back negative. However, there is a **positive potential for safety improvement** at the SR 14/Alliance Rd intersection, which is in line considering that most of the crashes in the study area occurred at this intersection. A positive potential for safety improvement indicates that compared to sites of similar physical geometric characteristics, the specific site intersection sees more crashes than would be predicted at other sites by geometry alone. Figure 5 presents ECAT analysis results including potential for safety improvement in the study area.

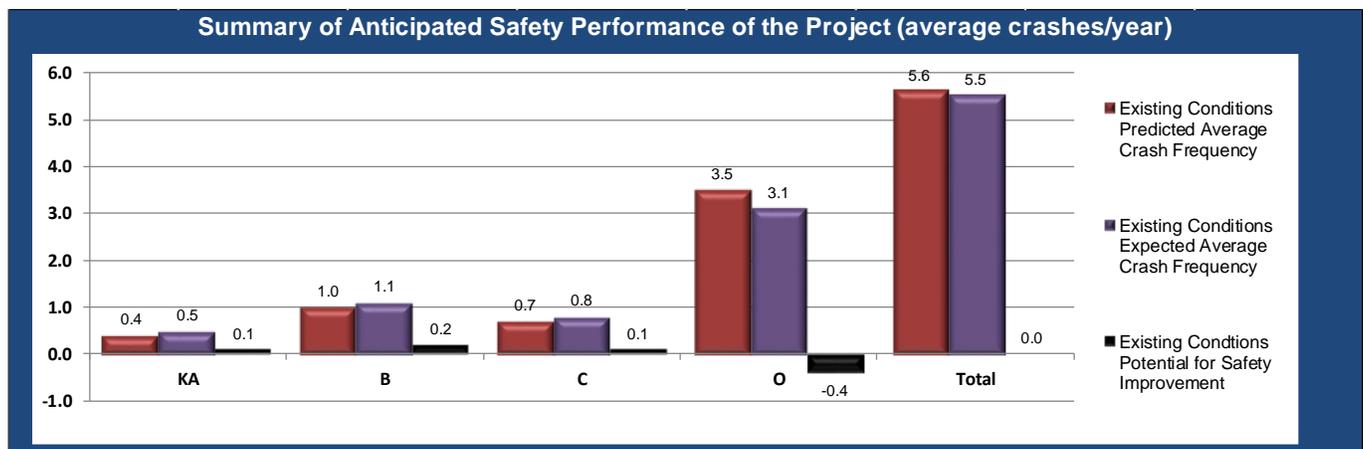


Figure 5 - ECAT Existing Condition Analysis

3.3 Discussion of Potential Countermeasures

Given a positive potential for safety improvement, and a high proportion of injury crashes within the study area, safety focused countermeasures are warranted. Safety countermeasures come in short-, medium-, and long-term varieties, generally increasing in cost and project complexity, from simple improvements like signs to physical improvements like intersection reconstructions.

Intersection geometry and gap awareness are the primary contributing factors to crashes at the intersection. Table 5 presents a series of short-, medium-, and long-term countermeasures that address the existing crash pattern and that warrant further analysis.

Table 5 - Discussion of Potential Countermeasures

Countermeasure	Timeline	Benefits	Drawbacks
Custom Intersection Ahead Signage (Minor Roadway)	Short	Increased driver awareness of complex intersection geometry ahead	Signage may not adequately describe geometric condition to approaching drivers
All Way Stop Control	Short	Requires all vehicles to stop and defines right of way assignment for approaching motorists	Can be very inefficient when approach volumes are high or unbalanced.
Install Left Turn Lanes	Medium	Separates left turning vehicles from mainline.	Typically addresses rear end crashes, which did not occur at the intersection.
Signalization	Medium	Explicitly defined right of way assignment for approaching motorists	Can be inefficient if unwarranted, and tends to increase rear end crash frequencies
Conventional (Circular) Single Lane Roundabout	Long	A roundabout is an efficient intersection design that can address poor intersection geometry	A circular roundabout can typically accommodate only 4 legs, which would require one or more T-intersections for remaining intersection approaches
Unconventional (Non-Circular) Single Lane Roundabout	Long	Can be very useful where complex intersection geometry exists	Unconventional roundabouts are uncommon in Ohio



4 Countermeasure Evaluation

4.1 Short-Term Countermeasure Evaluation

All Way Stop Control

The OMUTCD provides guidance on the use of All Way Stop Control (AWSC) at intersections. AWSC is beneficial as an interim measure where traffic signals are warranted, where high frequencies of right turn, left turn, and angle crashes are prevalent, and where volumes between approaches are similar.

AWSC has several advantages on paper for the study area. First, AWSC removes free flow movement, slowing traffic down approaching the intersection from all directions, and generally providing more direct right of way information to drivers. On the other hand, many of the crashes involve high speed free flow vehicles striking slower vehicles starting their movement from stop-controlled approaches. Operationally, AWSC produces acceptable LOS in the 2049 AM and PM peak at each of the three intersections making up the broader study area (Table 6).

Table 6 - 2049 HCS AWSC LOS and Queuing Results

Movement	2049 No Build AM Peak			2049 No Build PM Peak		
	LOS	Delay (sec/veh)	95th % Queue (ft)	LOS	Delay (sec/veh)	95th % Queue (ft)
<i>SR 14 at Alliance Rd (HCS AWSC)</i>						
SR 14 NEB	B	10.1	40.6	C	16.3	134.6
SR 14 SWB	B	12.6	78.7	A	9.9	30.5
Alliance Rd NB	A	9.4	10.2	A	9.8	12.7
Alliance Rd SB	A	9.0	5.1	A	9.2	5.1
Intersection Overall	B	11.3		B	13.7	
<i>SR 14 at Yale Rd (HCS AWSC)</i>						
Yale Rd EB	A	8.9	5.1	A	8.9	5.1
Yale Rd WB	A	8.8	5.1	A	8.9	5.1
SR 14 NEB	B	13.4	96.5	A	9.7	30.5
SR 14 SWB	B	10.3	43.2	C	16.0	137.2
Intersection Overall	B	11.9		B	13.7	
<i>Alliance Rd at Yale Rd (HCS AWSC)</i>						
Yale Rd EB	A	7.2	2.5	A	7.3	5.1
Yale Rd WB	A	7.2	2.5	A	7.2	2.5
Alliance Rd NB	A	7.2	5.1	A	7.2	5.1
Alliance Rd SB	A	7.2	5.1	A	7.3	5.1
Intersection Overall	A	7.2		A	7.2	

While both benefits would directly address existing crash patterns, the complexity of the intersection layout presents several significant drawbacks for the use of AWSC. Employing AWSC in the study area would likely require all three intersections to be converted to AWSC, which would create notable inefficiencies in the short segments between intersections where approaching vehicles must stop, restart, and stop again before exiting the intersection area. This



may result in new crash patterns, including rear end crashes, when motorists are unaware of the second stop condition immediately downstream of the first stop condition.

Partially implementing AWSC, such as converting SR 14 at Alliance to AWSC while keeping SR 14 at Yale as TWSC may alleviate some of this condition, and address crashes at the primary crash intersection (SR 14/Alliance) but continues to present an uncommon layout of intersection control which may result in new crash patterns not currently present at the intersection, while not guaranteeing existing angle crash patterns will be fully mitigated in the study area. Additionally, a partial application which stops SR 14 at either the northwest-bound approach to Yale Rd or the southeast-bound approach to Alliance Rd would likely produce QSR concerns where SR 14 spillback into the upstream intersection, creating the possibility for temporary gridlock conditions.

Reconfiguring the intersection to optimize it for AWSC presents significant cost, geometrics, environmental, and right of way impacts to the study area, on par with larger improvements such as signalization or a roundabout. Given the unique geometry, AWSC is not an ideal solution for the study area.

Signing and Marking

Existing stop-controlled approaches feature W3-1 Stop Ahead signage and their placement exceeds current OMUTCD or Federal MUTCD placement guidance. On SR 14 custom W2 series Intersection Warning signs are present and present a legend which generally represents the geometry of the approaching intersection. On the stop-controlled approaches, only the Alliance Rd northbound approach has a sign with a yellow reflective strip on the post, and none of the stop-controlled approaches feature enhanced, oversized, or dual signage. On SR 14, W2 series intersection ahead signage is of standard sizing, with a 45 MPH advisory plaque in both directions; no reflective strip is present on the post. Markings are adequate on SR 14 through the study area, with faded markings on all stop-controlled approaches.

Signing and marking does not play a significant factor in the crash pattern observed at the intersection, where most crashes are a function of poor intersection approach angles, and driver gap awareness. Enhanced signage, including solar powered LED enhanced signage, oversized signage, and dual signage (where appropriate) can enhance visibility of the intersection to approaching motorists, but cannot fully mitigate failure to yield crashes caused by poor gap awareness. There is no failure to stop or ran stop sign crash pattern, so the effectiveness of LED enhanced Stop Signs would be negligible.

4.2 Turn Lane Warrant Analysis

Woolpert examined whether right or left turn lanes are warranted in the 2049 DHV condition using ODOT L&D Figure 401-5b (left turn lanes) and 401-6b (right turn lanes). 2049 grown volumes were selected as a “worst case” analysis given very low volumes and turning counts in the existing condition on the SR 14 free flow approaches. Table 7 presents right and left turn warrant results based on 2049 DHV’s, and specific left and right turning movement counts on the SR 14 free flow approaches.

Table 7 - ODOT L&D Manual Turn Lane Analysis

Movement	AM Warrant	PM Warrant	Recommended?
SR 14 NBL at Yale	Not Met	Not Met	No
SR 14 SBL at Yale	Not Met	Met	No
SR 14 EBL at Alliance	Not Met	Not Met	No
SR 14 WBL at Alliance	Not Met	Not Met	No
SR 14 EBR at Alliance	Not Met	Met	No

SR 14 NBR and SRB at Yale, and SR 14 WBR at Alliance indicate RT DHV <10 in the 2049 period, below L&D Figure 401-6b minimum

Based on the results of the analysis, no turn lanes are recommended for the study area. The primary benefit of left and right turn lanes would be to remove slow or stopped turning vehicles from the high speed mainline free flow movement, with the goal of reducing rear end crashes. There were no rear end crashes in the study area from 2019 to 2023, indicating



that this improvement would not directly address any existing crash patterns. Additionally, the impacts of installing turn lanes would likely require significant realignment of the intersection, on par with broader geometric improvements such as a roundabout, which would necessarily negate the need for turn lanes.

Complete turn lane warrant analysis forms are presented in **Appendix F**.

4.3 Signal Warrant Analysis

Woolpert evaluated whether existing 2025 volumes warrant a traffic signal using the 8-Hour, 4-Hour, and Peak Hour traffic signal warrants as described in the OMUTCD. ODOT does not allow the use of future condition volumes in the determination of signal warrants (ODOT Traffic Engineering Manual (TEM) 402-2) and requires the use of a “right turn reduction factor” (ODOT TEM 402-5) and the use of 100% volume thresholds when evaluating existing intersection for new construction signal (ODOT TEM 402-3.6).

Woolpert used ODOT’s Traffic Signal Warrant Spreadsheet, and 13-hour traffic counts provided by ODOT District 4 in the evaluation of signal warrants. Following input of existing volumes, existing lane use, corridor speeds, and application of right turn reduction factors the warrant analysis produced the following results:

Table 8 - Signal Warrant Analysis Results (SR 14 at Alliance Rd)

Warrant	Condition	Hours Met?	Satisfied?
Eight Hour	100%	0 of 8	No
Eight Hour	70%	0 of 8	No
Four Hour	100%	0 of 4	No
Four Hour	70%	0 of 4	No
Peak Hour	70%	N/A	No

Table 9 - Signal Warrant Analysis Results (SR 14 at Yale Rd)

Warrant	Condition	Hours Met?	Satisfied?
Eight Hour	100%	0 of 8	No
Eight Hour	70%	0 of 8	No
Four Hour	100%	0 of 4	No
Four Hour	70%	0 of 4	No
Peak Hour	70%	N/A	No

Neither intersection meet warrants for a new construction traffic signal at the 100% condition (Warrant 1, 2) or 70% condition (Warrant 3 for Major Street Speed > 40 MPH) based on existing volumes. **Both intersections also fail to meet warrants for the 70% condition on Warrant 1 and 2**, indicating that neither intersection is close to meeting any of the warrants required for new signal construction. The intersection of SR 14 and Alliance Rd meet OMUTCD Warrant 7 for crash experience (five or more signal-correctible crashes) but the failure to meet Warrant 1, 2, and 3 at the 70% precluded the use of Warrant 7 as the sole warrant for a new signal. Signal warrant information is presented in **Appendix G**.

4.4 Roundabout Analysis

Woolpert explored long-term conversions of the study area into a roundabout, series of roundabouts, or a roundabout combined with minor intersection reconfiguration. Conversion to a roundabout would directly address high speed/high severity crashes in the study area, and maintain good operations along SR 14 without sacrificing operations on Alliance or Yale Rd.

Woolpert evaluated the following roundabout geometric configurations:

- Alternative 1: Peanut Roundabout with six legs
- Alternative 2: Circular Roundabout with six legs
- Alternative 3: Circular Roundabout with five legs, and TWSC and Yale WB at Alliance Rd
- Alternative 4: Oval Roundabout with five legs, and TWSC for Yale WB at Alliance Rd

4.4.1 Geometric Evaluation

Woolpert considered roundabout placement, maintenance of traffic, and speed control as key factors in the conceptual design of roundabout alternatives for the study area. Woolpert also identified a potential wetland in the northern half of the study area between SR 14 and Alliance Rd. In all cases, prioritization was given to avoiding environmental impacts to the extent possible and minimizing right of way acquisition or, when necessary, minimizing impacts to residential properties. To this end, Woolpert favored the southwest quadrant for roundabout placement.

Using the southwest quadrant creates advantages from a maintenance of traffic perspective, such as potentially keeping SR 14 open during construction, and allowing for the design of entry curvature that emphasizes speed reduction for safe travel through the final roundabout. This positioning requires significant modification to the Alliance Rd northbound approach; however, the right of way and physical property impacts of this modification are less when compared to other positioning alternatives.

All alternatives prioritize minimizing entry speeds into the roundabout by using an offset left configuration where possible. There is limited to no pedestrian activity in the study area, but including pedestrian features is feasible for all alternatives if desired. Woolpert followed ODOT standards for roundabout design, including splitter island design and entry curvature speed for approach design speeds of 60 MPH. Conceptual layouts of all roundabout alternatives including truck turning templates are presented in **Appendix H**. ODOT L&D design criteria for all alternatives are shown in **Appendix I**.

Design and Control Vehicles

Woolpert utilized a WB-67 template as the **design vehicle** for all alternatives. For certain movements, utilization of the proposed truck apron is necessary for completion of movements, or in extreme cases (such as the Alliance Rd northbound right to SR 14 southeast-bound, a 270-degree U-Turn through the roundabout may be required for successful movements. Woolpert also checked movements for smaller design vehicles such as school buses.

A Wisconsin Department of Transportation (WisDOT) Oversize/Overweight (OSOW) 165 ft Beam truck template was used as the **control vehicle** to account for oversize vehicles operated by Miller Transfer through the study area. For all alternatives, a linear path through the roundabout is proposed using visually distinct traversable pavement. This method has been used successfully at other roundabout conversions in Ohio (Figure 6) and is typically accompanied by physical barriers such as chains on removable bollards that remain in place except during OSOW movements through the roundabout.



Figure 6 - Ft Amanda Rd Roundabout in Lima, OH (Note East/West OSOW Linear Path)

Alternative 1: Peanut Roundabout

The peanut roundabout connects two 140 ft Inscribed Circle Diameter (ICD) roundabouts with a 140 ft radius concave connecting road to form a peanut shape, with six approach legs. Circulatory lane widths are 18 ft with truck aprons of 18 ft. The peanut concept (Figure 7) can accommodate all six approaches of the study area. A 17 ft wide linear path is provided for OSOW vehicles to proceed through the peanut roundabout without using the circulatory roadway. The linear path requires OSOW vehicles to enter from the normal direction of travel but exit in the opposite direction of travel before crossing back over the normal direction of travel after the exit side splitter island.

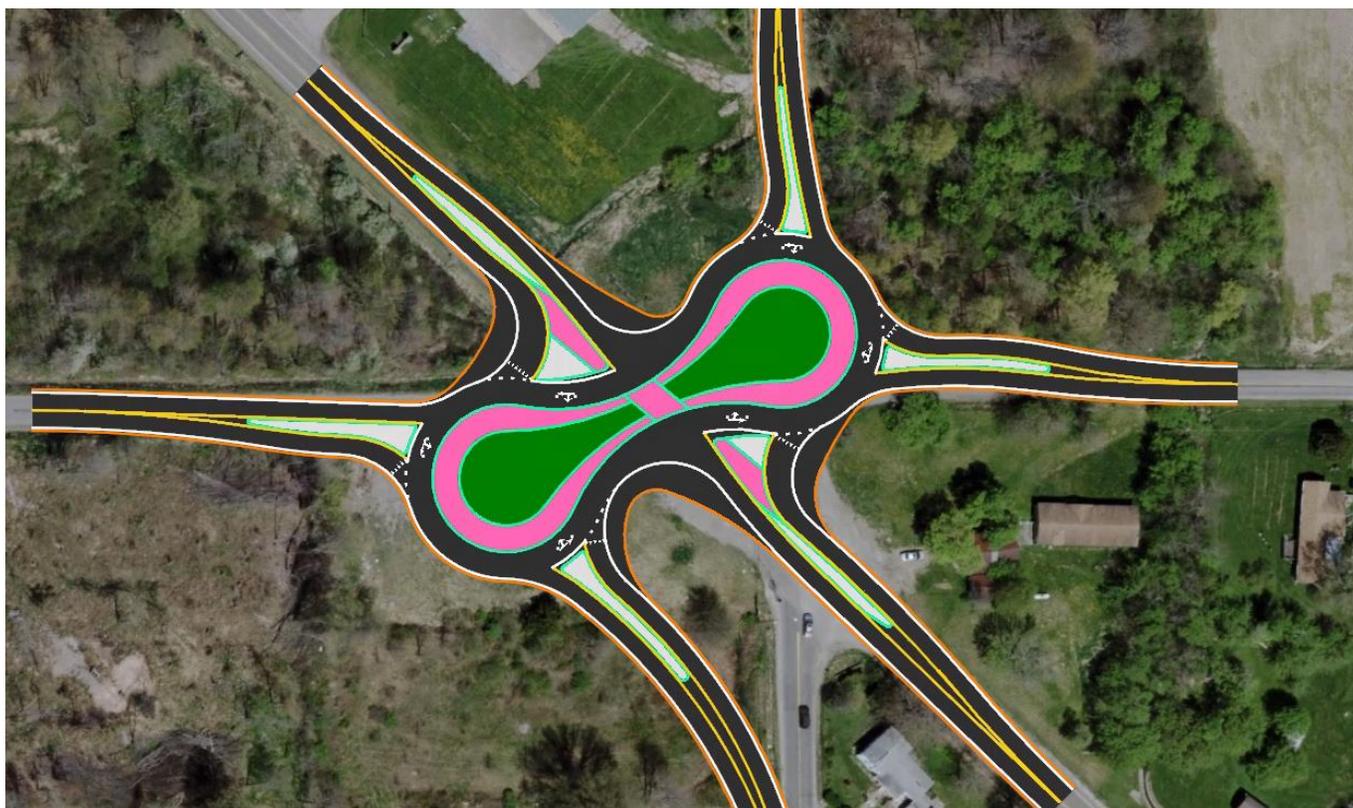


Figure 7 - Conceptual Peanut Roundabout at SR 14 and Alliance Rd/Yale Rd

The proposed peanut shaped geometry is aligned on a northeast/southwest alignment. The SR 14 southeast-bound, Yale Rd eastbound, and Alliance Rd northbound approaches intersect at the western end of the peanut and SR 14 northwest bound, Yale Rd westbound, and Alliance Rd southbound approaches intersect at the eastern end of the peanut. This layout provides acceptable entrance geometry for every approach to the roundabout, and enough geometric separation to allow for “U-turn” movements from Alliance Rd Southbound to SR 14 northwest-bound and Alliance Rd northbound to SR 14 southeast-bound.

The primary advantage of the peanut alternative is bringing all six approaches into a single roundabout. While uncommon, peanut-like geometries have been successfully used in cases where existing physical constraints preclude the use of a traditional circular design such as closely spaced offset T intersections, and intersections that meet at a sharp or otherwise unfavorable skew angle. ODOT Project DEL-61-4.71 (PID 104623) installed a peanut shaped roundabout to address crashes at a rural intersection in Delaware County, becoming the first “peanut-about” in the State (Figure 8).

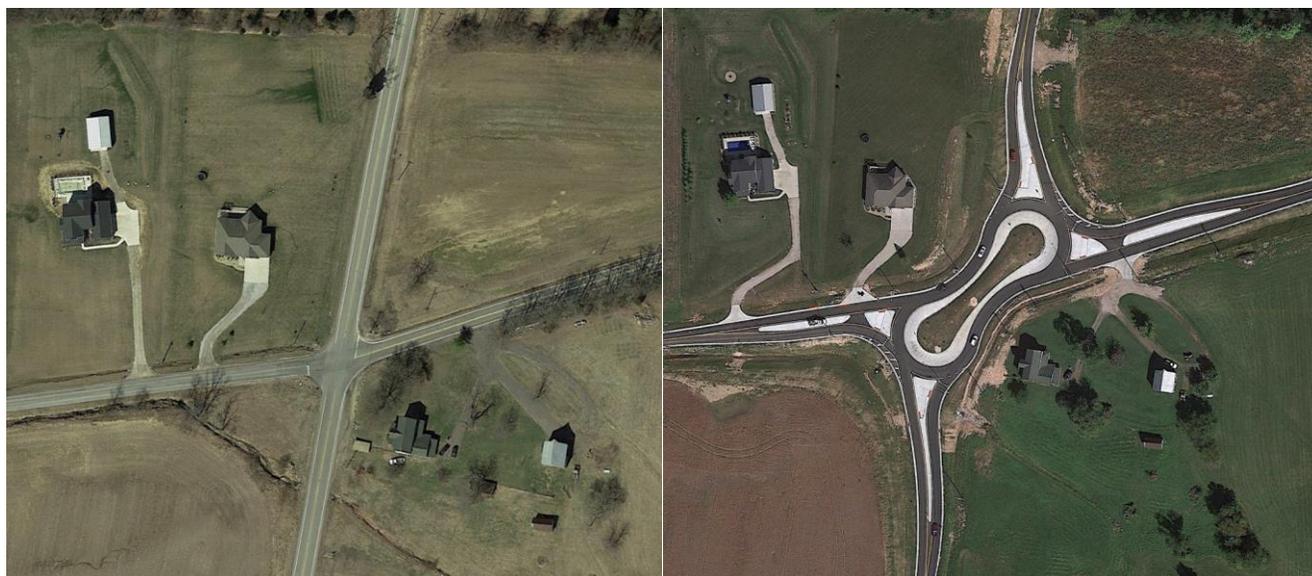


Figure 8 - Before and After of DEL-61-4.71 (PID 104623) (Google Earth)

The peanut configuration minimizes impacts to physical structures but also requires a significant amount of additional right of way and property acquisition. The peanut configuration does not require entirely new alignments or intersections, but significant alignment modification is necessary for the Alliance Rd northbound approach to tie it into the peanut while maintaining good separation between adjacent approaches for turning movement purposes.

The reverse curvature inherent to the peanut configuration is unique and can present challenges to larger vehicles such as heavy trucks, but the conceptual design has been optimized to accommodate a WB-67 design vehicle. In some cases, the use of a truck apron is necessary, but this is a balance between increasing ICD just to accommodate trucks off the apron versus the overall impact of the roundabout itself.

One disadvantage of the peanut configuration is the uncommon layout of the exit roadways. All thru movements through the roundabout require passing **two** roundabout exits as opposed to **one**. This unique condition can be addressed through signage and potentially pavement markings, along with public awareness campaigns as part of the construction process.

A second disadvantage of the peanut configuration is its size, which requires a significant amount of right of way. While the alternative avoids impacting physical structures, the cost and effort of property acquisition increases the complexity of a potential project as the magnitude of the acquisition increases.

Alternative 2: Six Leg Circular Roundabout

All approaches to the study area can be accommodated in a six-leg circular roundabout with an inscribed circle diameter (ICD) of 180 ft (Figure 9). Circulatory lane widths are 18 ft with truck aprons of 18 ft, with a single 17 ft wide cut-thru for OSOW movements on SR 14. The single OSOW lane requires OSOW vehicles to enter from the normal direction of travel but exit in the opposite direction of travel before crossing back over the normal direction of travel after the exit side splitter island. This operation mimics the method utilized at Ft. Amanda Rd in Lima, OH (reference Figure 6), and would require pilot car and/or law enforcement assistance to complete the movement, especially if physical barriers such as removable bollards with chains are utilized to restrict the cut-thru from normal travel.



Figure 9 - Conceptual Six-Leg Circular Roundabout at SR 14 and Alliance Rd/Yale Rd

The 180 ft ICD circle is located slightly southwest of the center of the existing intersections, but with minimum deflection for SR 14 movements. Offset left deflection is used for all entry movements, and existing alignments are held to the maximum extent possible. Splitter islands are minimized to approximately 100-130 ft based on approach geometry. The Yale Rd eastbound and Alliance Rd northbound alignments are adjusted to meet the roundabout, requiring notable right of way acquisition, but stopping short of impacting physical structures.

The primary advantage of the six-leg circular roundabout is its ability to accommodate all six legs of the study intersection in one roundabout, without the need for additional intersections or roadway alignments. Given lower volumes on the County Road approaches, including all six legs in the roundabout is advantageous as it negates the need for new intersections on low volume approaches, and the inclusion of more than four legs does not significantly impact traffic operations. The six-leg circular alternative is feasible without impacts to physical structures and requires the least right of way of all conceptual alternatives.

The primary disadvantage of the six-leg circular roundabout is its size. The size and shape of the six-leg roundabout requires modifications to approach alignments and places the approach legs in very close proximity when compared to a traditional four-leg roundabout. 180 ft is the minimum ICD that can accommodate all approaches and movements while balancing lower right of way impacts and approach turning radii. Larger ICDs would significantly increase the impact of not just the physical circle but also increase necessary modifications to approach geometry. Smaller ICDs would likely require one or more movements to be removed from the roundabout, while also requiring some right turn movements to be completed as 270-degree U-Turns, especially for larger vehicles.

A secondary disadvantage relates to driver familiarity, in that all thru movements through the roundabout require passing **two** roundabout exits as opposed to **one**. This unique condition can be addressed through signage and potentially pavement markings, along with public awareness campaigns as part of the construction process.

Additionally, the ICD requires a long linear path through the roundabout for OSOW vehicles, which will require the roundabout to be shut down for a longer duration as the OSOW vehicles proceed through the circle.

Alternative 3: Five-Leg Circular Roundabout

Woolpert developed a third conceptual roundabout alternative, a five-leg circular roundabout with one stop-controlled T intersection (Figure 10). The five-leg circular roundabout features a 140 ft ICD, with 18 ft circulatory lane widths and an 18 ft truck apron. A 17 ft wide linear path is provided for OSOW vehicles to proceed through the peanut roundabout without using the circulatory roadway. As with all other alternatives, the linear path requires OSOW vehicles to enter from the normal direction of travel but exit in the opposite direction of travel before crossing back over the normal direction of travel after the exit side splitter island.

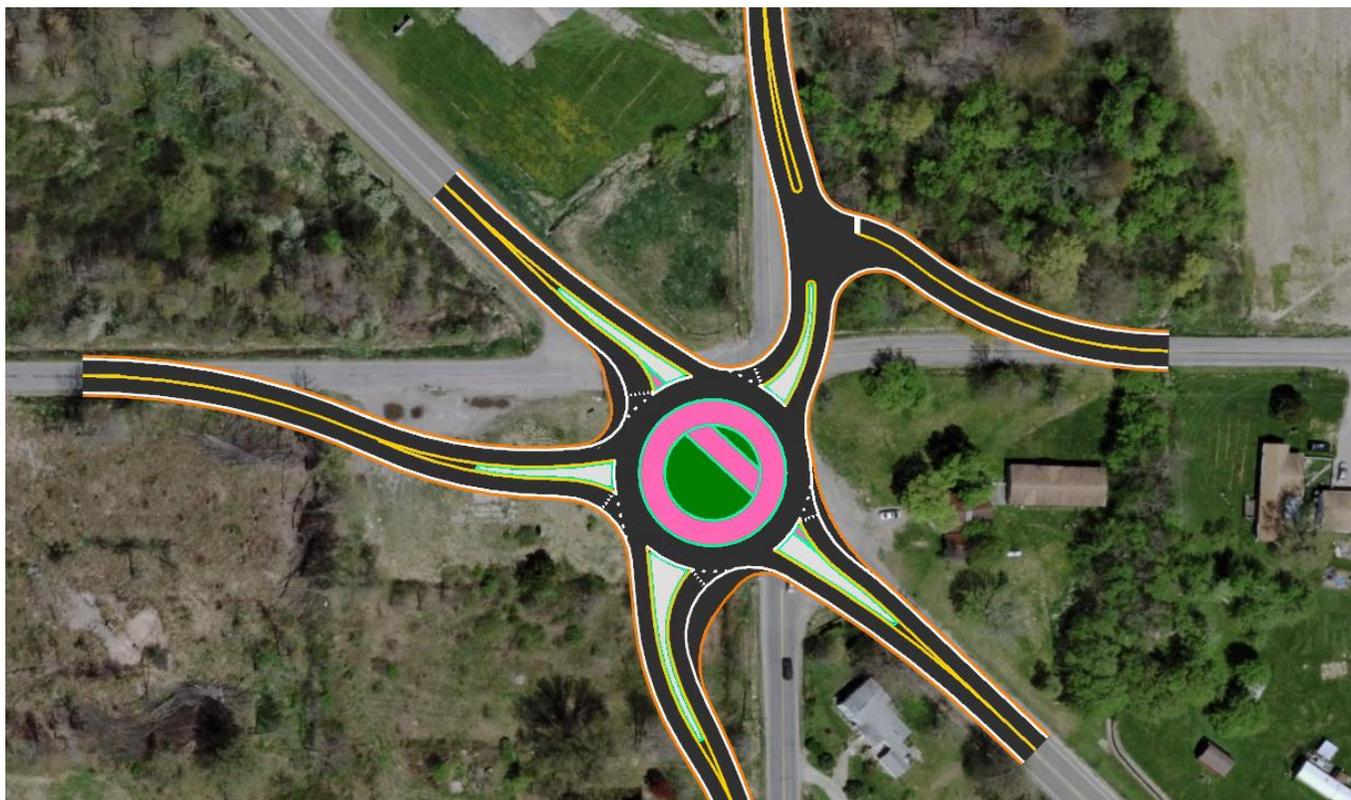


Figure 10 - Conceptual Five-Leg Circular Roundabout at SR 14 and Alliance Rd/Yale Rd

The 140 ft ICD produces the most conventional looking roundabout of those explored, with five-legs in the roundabout and one leg (Yale Rd westbound at Alliance Rd southbound) realigned as a standalone intersection north and east of the roundabout. The roundabout is located slightly south and west of the center of the study area, primarily to assist with the entry geometry of the included approaches. Given extremely low volumes on Yale Rd and Alliance Rd, a left turn lane is not warranted for Alliance Rd southbound at the stop-controlled T intersection.

The primary advantage of this concept is design simplicity, with a minimal footprint for the circle itself. Additionally, there is a minimal operational benefit by reducing the number of approaches within the circulatory roadway from six to five, while there is next to no negative impact from the presence of a single stop-controlled T intersection in the study area.

The primary disadvantage of this concept is related to its small circular footprint. By only accepting four legs in the roundabout, a new alignment must be created as stop-controlled T intersections for Yale Rd eastbound at Alliance Rd, north of the circular roundabout. As a very low volume approach, there is no operational penalty caused by the intersections, but the introduction of a new conventional intersection plus a roundabout is less favorable than a complete consolidation. Additionally, tight geometry in the southern half of the roundabout results in a very sharp movement between Alliance Rd northbound and SR 14 to the southeast, requiring a large outer truck apron.

Alternative 4: Oval Roundabout with One TWSC Intersection

Woolpert developed an oval roundabout geometry to determine whether multiple legs could be accommodated in a smaller footprint than the peanut or six leg circular roundabout. The Oval roundabout joins two 140 ft ICD circular outer circular roadways via 200 ft convex radii connecting circulatory roadways. Circulatory roadways widths are 18 feet with truck aprons of 18 ft.

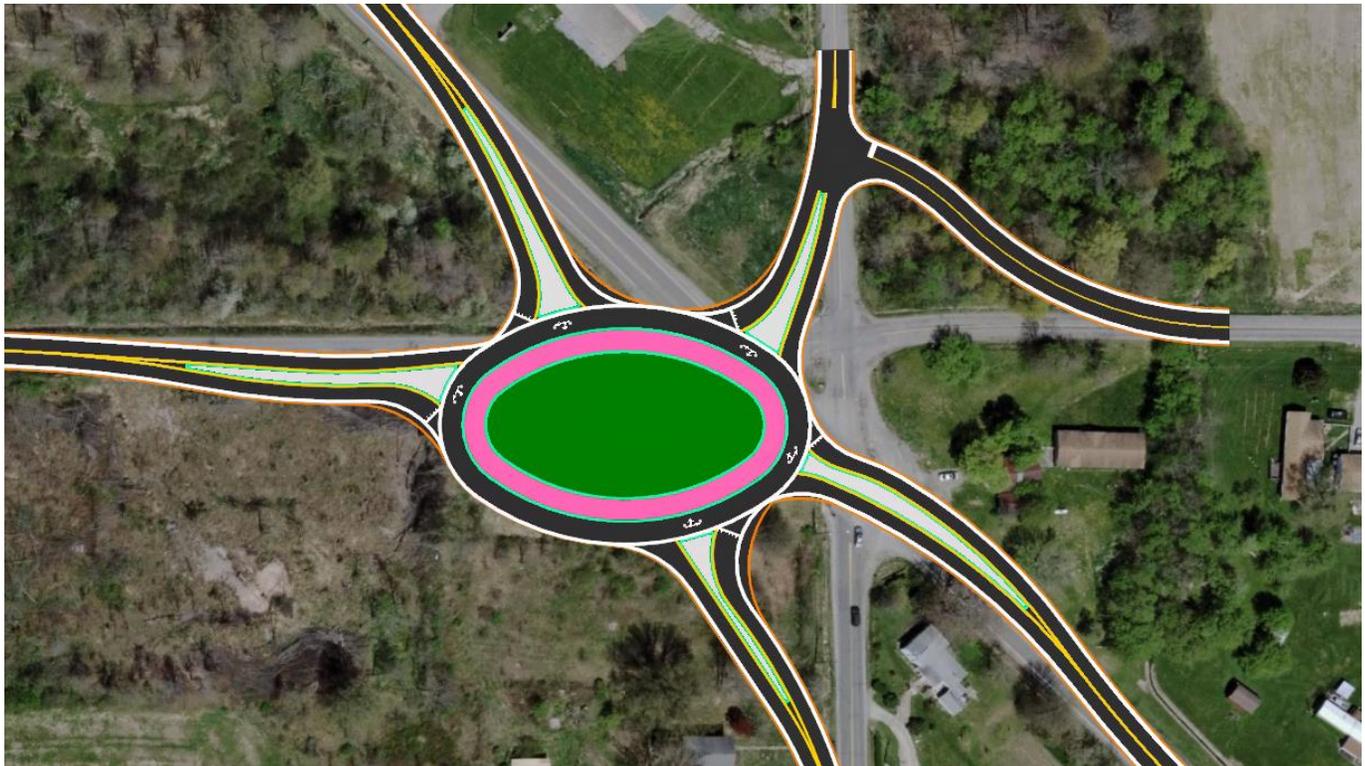


Figure 11 - Conceptual Oval Roundabout at SR 14 and Alliance Rd/Yale Rd

The wide oval design (Figure 11) allows five of the six approaches to be connected at an intersection with a more conventional appearance when compared to the peanut roundabout. The geometry also improves movement for larger vehicles by removing the reverse curvature found in the peanut roundabout. Spacing between each approach allows for movements between adjacent approaches where necessary, such as the “U turn” movements between Alliance Rd northbound and SR 14 to the southeast.

The primary drawback to this concept includes its larger footprint, which requires more of the property in the southwest quadrant than the peanut roundabout. The variation in circulatory curvature radius also introduces the potential for less consistent vehicle speeds through the circulatory movement, which impacts exit curvature speeds. The Oval roundabout is also not large enough to accept all six approaches. Yale Rd eastbound is realigned to form a stop-controlled T intersection at Alliance Rd north of the oval roundabout. As a very low volume intersection, there is no anticipated impact to operation from the presence of this stop-controlled T intersection. Because the oval configuration does not accommodate six legs, and because the five-leg circular roundabout provides similar performance in a smaller footprint and with more familiar geometry, **the oval configuration was not carried forward for further analysis.**

4.4.2 Capacity Analysis

Woolpert used TransModeler 7 to conduct capacity analysis on the conceptual multi-leg roundabout alternatives. Woolpert used ODOT OATS Manual guidance to construct models of the proposed geometry and utilized O-D information obtained from a TransModeler model of the 2049 volumes on the existing geometry to populate demand in each proposed condition model. Woolpert used TransModeler for the four-leg circular roundabout as well, to maintain an apples-to-apples comparison of each alternative.



Woolpert applied ODOT OATS fleet matrix values, and ODOT OATS Peak Hour Factor (PHF) values for O-D matrices as part of the proposed condition model. For each 2049 AM and PM analysis, results were obtained based on an average of 10 TransModeler simulation runs. Table 10 presents a comparison of LOS results for the proposed roundabout concepts in the 2049 AM condition. Table 11 presents the 2049 PM condition.

Complete TransModeler output results are presented in **Appendix J**.

Table 10 - 2049 AM Roundabout LOS Comparison

Movement	2049 AM Peanut		2049 AM 6 Leg Circular		2049 AM 5 Leg-Circular	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Yale EB	A	4.3	A	4.5	A	5.2
Alliance NB	A	6.7	A	3.4	A	5.7
SR 14 NWB	A	4.7	A	5.2	A	5.6
Alliance SB	A	5.9	A	5.8	A	1.9
SR 14 SEB	A	4.4	A	4.8	A	5.5
Yale WB	A	6.1	A	6.6		
Overall	A	4.9	A	5.0	A	5.3

Gray Boxes Indicate Yale Rd movements occurring at stop controlled T intersections **operating at LOS A**

Table 11 - 2049 PM Roundabout LOS Comparison

Movement	2049 PM Peanut		2049 PM 6 Leg Circular		2049 PM 5-Leg Circular	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Yale EB	A	5.3	A	6.1	A	6.4
Alliance NB	A	8.5	A	4.8	A	7.4
SR 14 NWB	A	4.5	A	5.0	A	5.4
Alliance SB	A	4.9	A	4.9	A	0.7
SR 14 SEB	A	4.8	A	5.2	A	6.0
Yale WB	A	5.1	A	5.5		
Overall	A	5.1	A	5.1	A	5.7

Gray Boxes Indicate Yale Rd movements occurring at stop controlled T intersections **operating at LOS A**

Regardless of configuration, each roundabout alternative achieves LOS A in both the 2049 AM and PM peak conditions. A combination of overall efficiency plus generally lower peak period volumes results in acceptable operations with capacity to spare across all alternatives. While not shown in the tables, all stop controlled T intersections operate at LOS A in both the 2049 AM and PM peak periods.



Table 12 presents a comparison of the roundabout alternatives considered:

Table 12 - Comparison of Roundabout Alternatives

Countermeasure	ICD	Right of Way Impact	Benefits	Drawbacks
Alternative 1 Six-Leg Peanut Roundabout	2 x 140 ft	Highest	Accommodates all movements	Uncommon design Challenges for larger vehicles Significant alignment changes
Alternative 2 Six-Leg Circular Roundabout	1 x 180 ft	Lowest	Accommodates all movements Conventional Design	Larger ICD
Alternative 3 Five-Leg Circular Roundabout	1 x 140 ft	Medium	Smaller ICD Conventional Design	Requires 1 new intersection
Alternative 4 Five-Leg Oval Roundabout	140-200 ft	High	Better approach layout	Uncommon design Significant alignment changes Requires 1 new intersection



5 Recommendation & Prioritization

Woolpert evaluated short-, medium-, and long-term countermeasures to address safety and movement through the study area. Based on this analysis, Woolpert recommends the following:

Short-Term Countermeasures

- Replace existing intersection signage (including W3, W2, and R1 series signs) with new signage in-kind, and revise placement of signage to follow the guidance in the Federal MUTCD (11th Edition) Table 2C-3

Long Term Countermeasures

- Convert existing TWSC and AWSC intersection to a six-leg circular roundabout with 180 ft ICD and linear pathway for OSOW vehicles (Alternative 2).

Alternative 2 was chosen as the preferred alternative due to its smaller footprint, lower cost, and overall traffic and safety performance. While Alternatives 1 and 3 generate similar traffic and safety performance, the costs and impacts of these alternatives outweigh those of Alternative 2.

5.1 Cost Estimating

Woolpert developed conceptual cost estimates for the peanut, six-leg, and five-leg roundabout configuration alternatives using ODOT bid tabs, summary of contracts awarded, and item master to establish current day costs. Woolpert used ODOT’s FY25-29 Business Plan Inflation Calculator to add inflation costs to the construction cost estimates for a midpoint of construction on July 1, 2030.

Major cost drivers, including pavement removal and construction, lighting, traffic control, and erosion control are included in each cost estimate. Costs for drainage including culverts, catch basins, and manholes are included along with basic cut/fill quantities based on a constant depth across the construction limit area.

Right of way costs were estimated as a function of a total impact multiplied by a unit cost per acre of land. Given that detailed design will likely adjust alignment and modify right of way impacts, a high-level value for right of way acquisition was deemed appropriate for this analysis. With inflation, and 25% design cost, and 30% contingency costs, the estimate provides a conservative basis for alternatives comparison. Table 13 presents the conceptual cost estimates for the peanut, six-leg, and five-leg roundabout configuration alternatives. Cost estimates are presented in **Appendix K**.

Table 13 - Conceptual Construction Cost Estimates (Alternatives 1-3)

Alternative	Acres of Right of Way Acquisition	Estimated Construction Cost (2030)
Peanut Configuration	1.250	\$5.88M
Six-Leg Circular Roundabout	1.021	\$4.77M
Five-Leg Circular Roundabout	1.112	\$5.00M

5.2 Economic Safety Analysis and Benefit/Cost

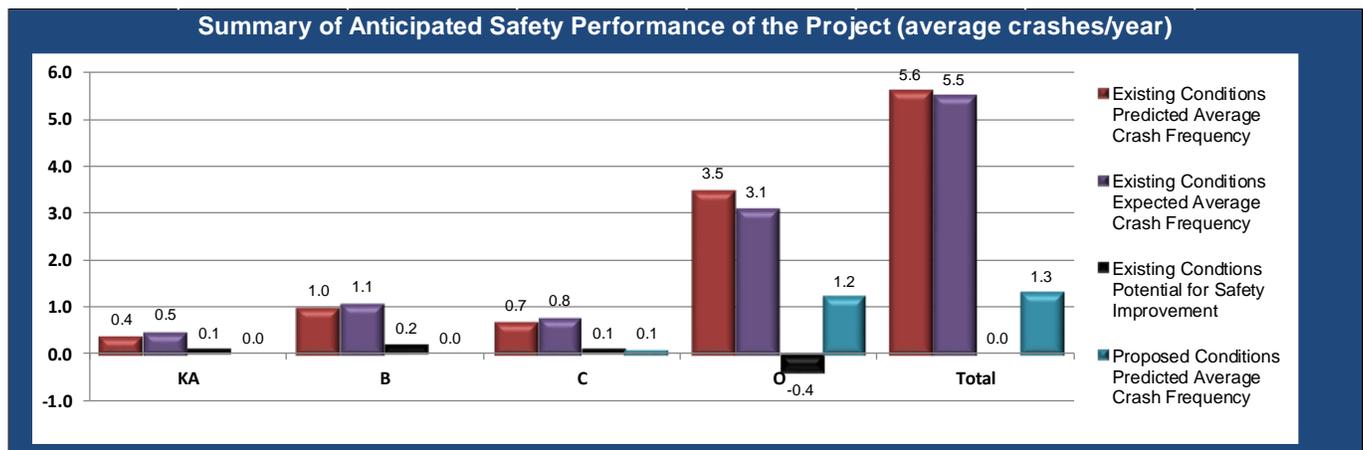
Based on the recommended alternative, Woolpert conducted an Economic Crash Analysis Tool (ECAT) study of the proposed alternative and its associated estimated construction cost. The ECAT tool computes the predicted average crash frequency of proposed geometric improvements and compares that to the predicted average crash frequency of the existing geometric condition to determine an average annual crash modification and convert that into a net present value of safety benefit. This net present value of safety benefit represents a monetary value of crashes prevented by the proposed condition as a basis for determining a benefit/cost (B/C) ratio for a given improvement.



Woolpert used the ECAT analysis for a standard four-leg roundabout configuration. ECAT, which is built upon HSM methodologies, cannot fully analyze 5+ leg roundabouts, and the current slate of HSM Part D Crash Modification Factors (CMFs) available on the HSM CMF Clearinghouse Website do not provide a reliable CMF value for 5+ leg roundabouts.

Given that the roundabout has two primary legs (SR 14) and four secondary low volume legs, it is likely that the safety performance of the roundabout will more closely resemble a four-leg roundabout than a five or six leg roundabout. If volumes on the secondary approaches were significantly higher, or closer to the two primary SR 14 approaches, further investigation would be warranted to fully evaluate the safety performance the six-leg configuration. As this is not the case, a higher-level analysis is sufficient.

Based on a conceptual cost of \$4.77M, and an ECAT calculated average annual crash reduction of 4.3 crashes/year and a net present value of safety benefit of \$4.23M, Alternative 2 has a benefit/cost ratio of 0.89. Figure 12 presents the ECAT analysis results for the preferred alternative. Full ECAT results are presented in **Appendix L**.



Benefit - Cost Calculator	
Net Present Value of Project	\$4,769,705.00
Net Present Value of Safety Benefits	\$4,230,291.58
Net Benefit	(\$539,413.42)
Benefit / Cost Ratio	0.89

Figure 12 - ECAT Analysis Results for Alternative 2



FINAL DRAFT

POR SR 14 at Alliance Rd Safety Study

#146 Rural Intersection | 2024 ODOT HSIP Priority List

Ohio Department of Transportation District 4

May 12, 2025



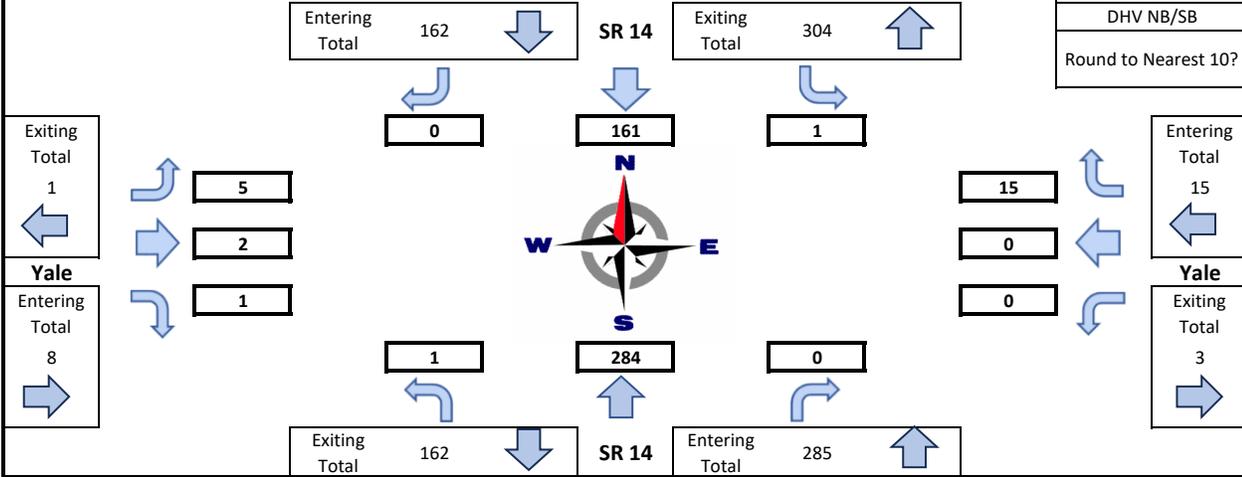
Department of
Transportation



Appendix A – Traffic Volume Plates

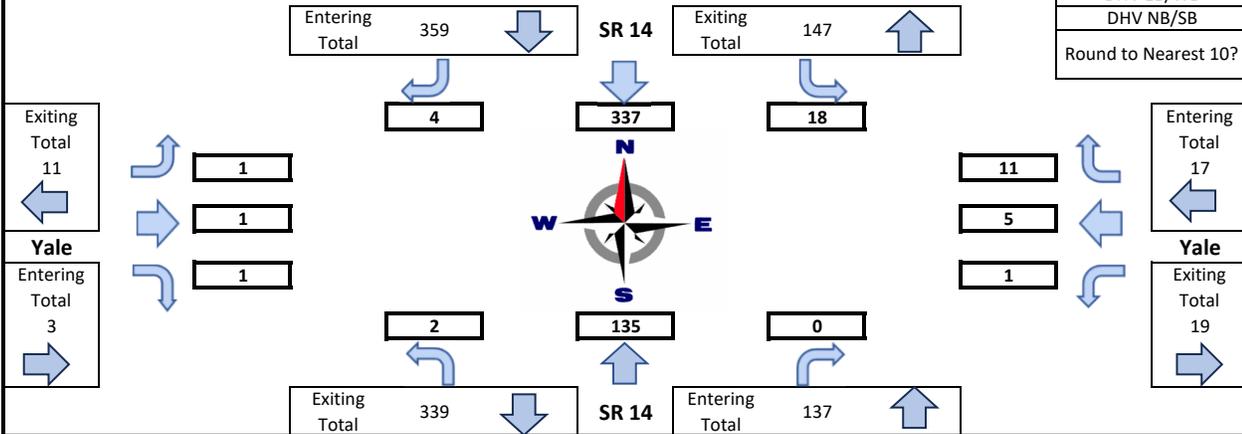
Traffic Count AM Peak 2/13/2025

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Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



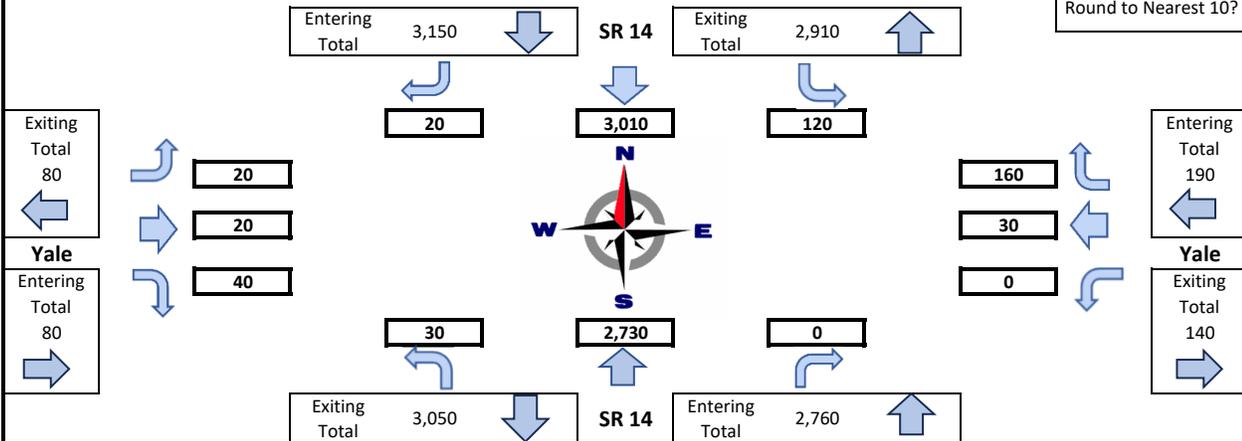
Traffic Count PM Peak 2/13/2025

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Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



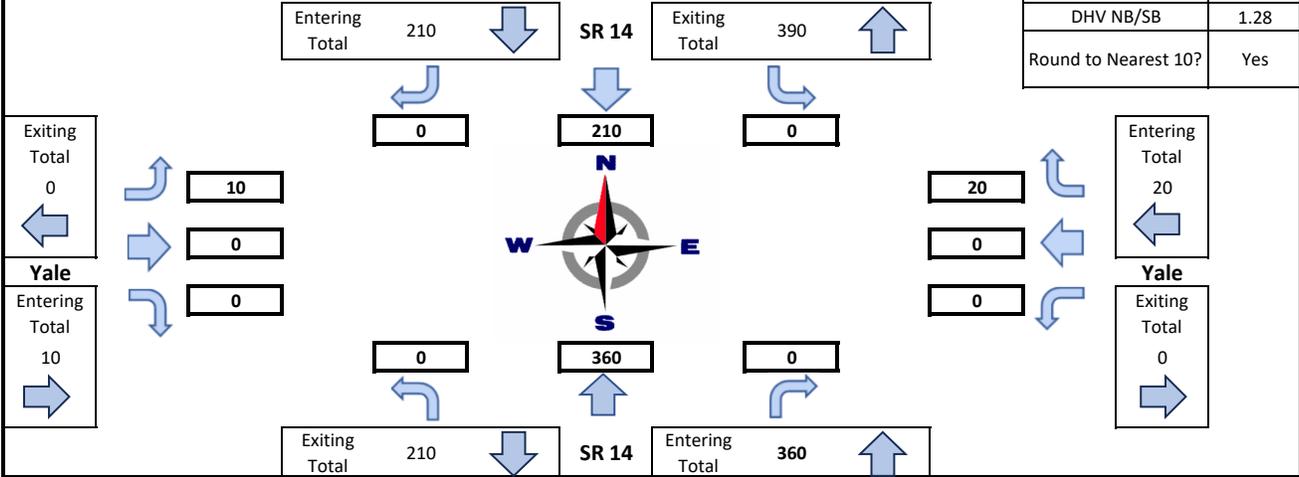
Traffic Count ADT 2/13/2025

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Design Year	2049
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Growth Rate EB/WB	0.50%
Round to Nearest 10?	Yes



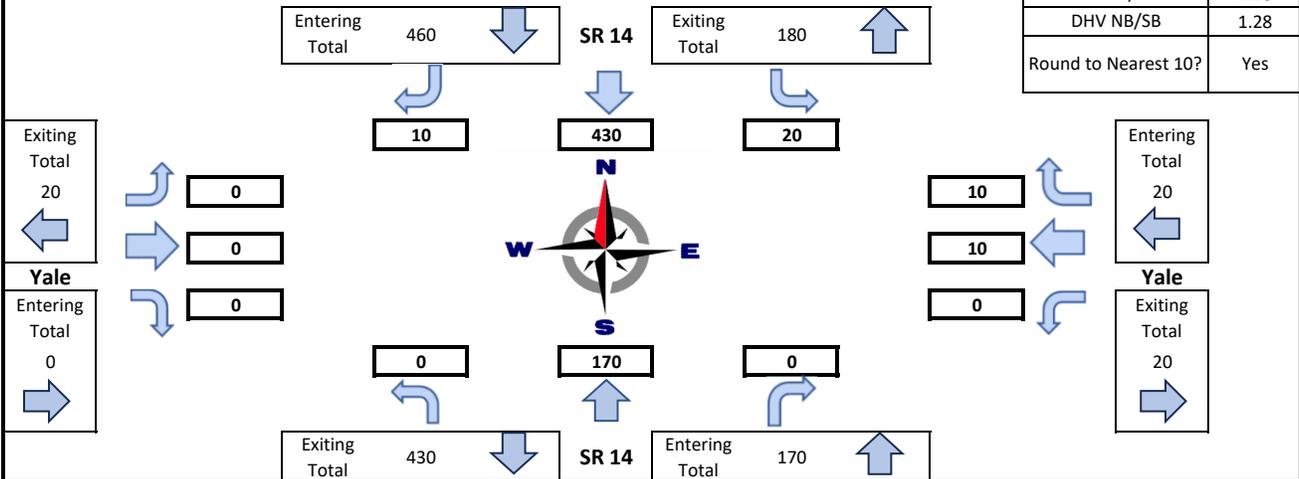
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Design Year	2049
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Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



Count Year DHV PM 2025

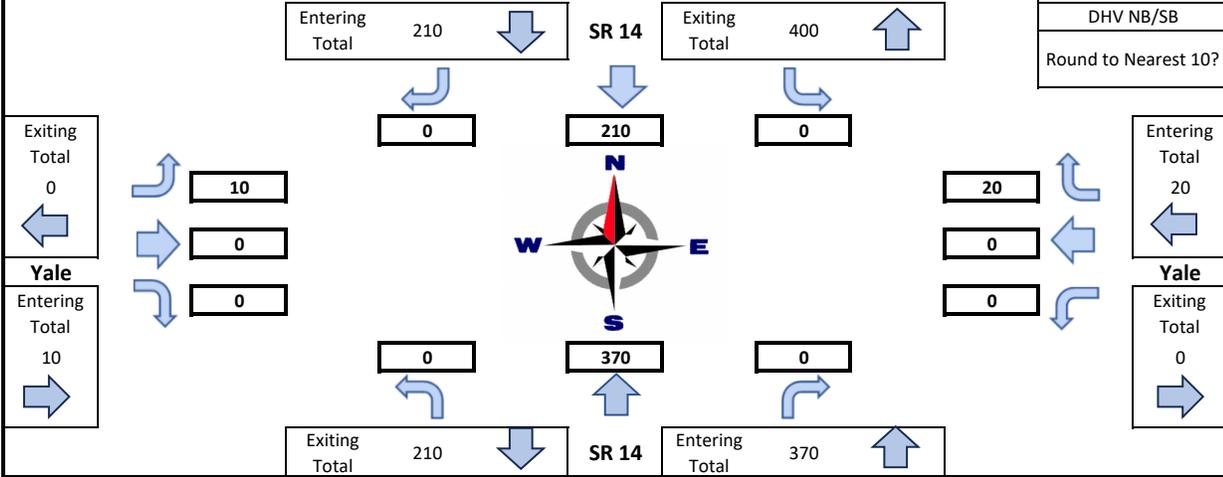
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Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



Design Designations		
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D%	53.0%	52.1%
T24%	6%	8%
TD%	4%	4%

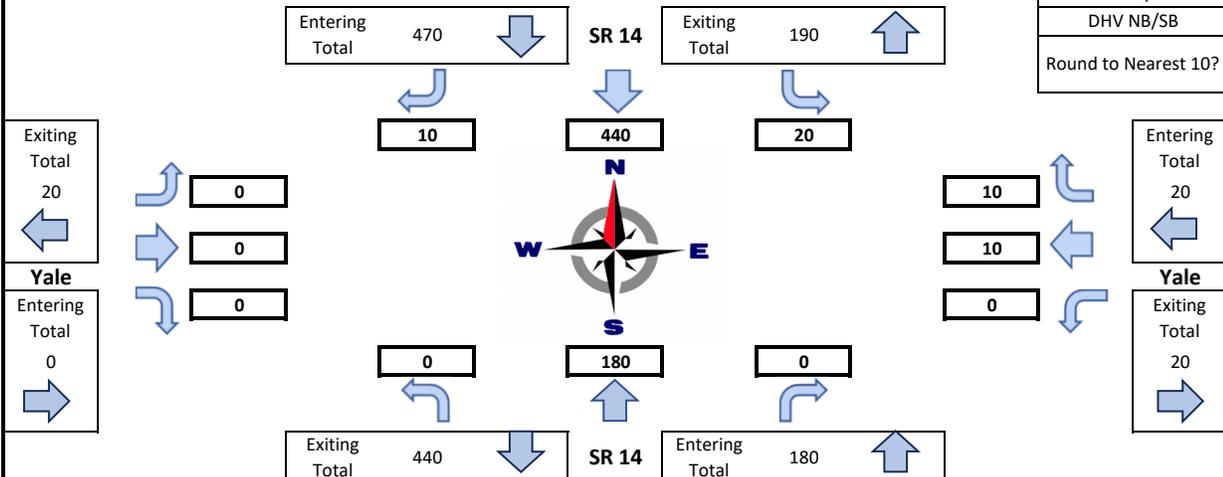
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DHV NB/SB	1.28
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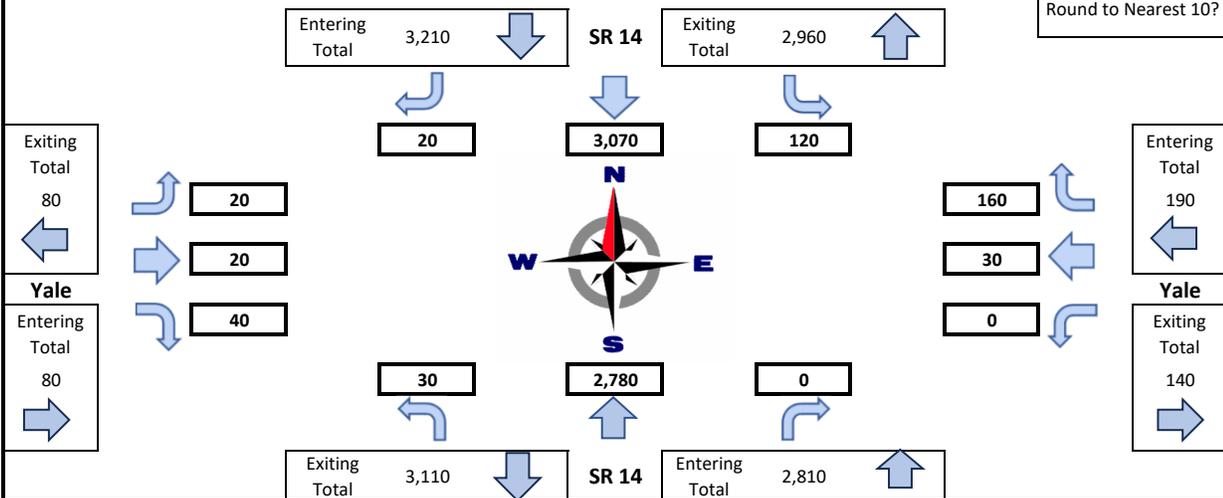
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Round to Nearest 10?	Yes



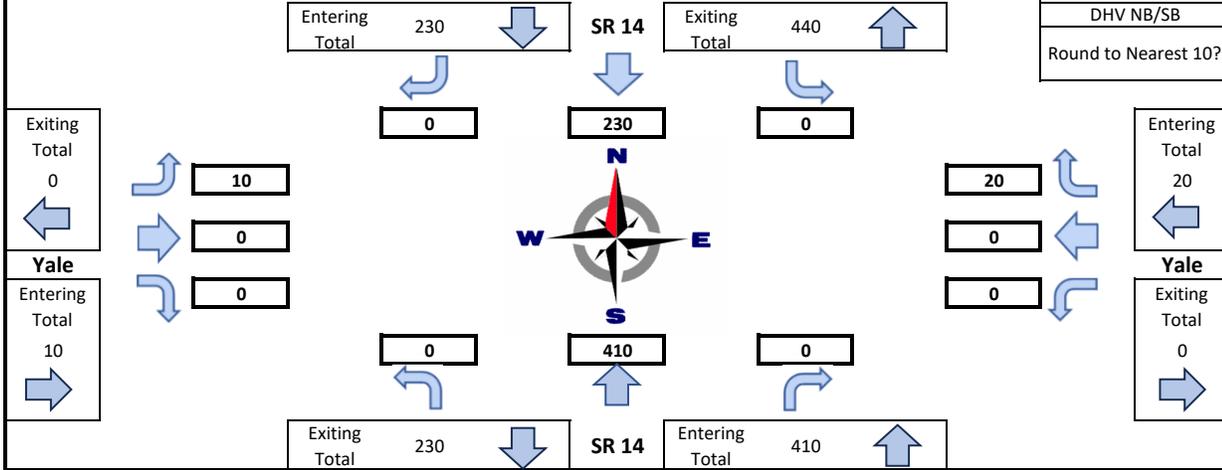
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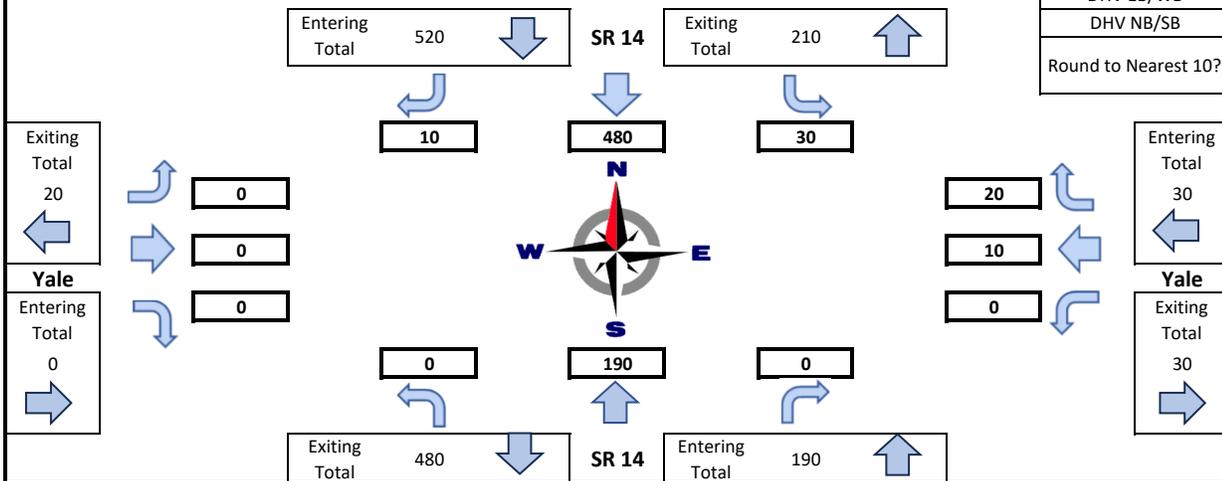
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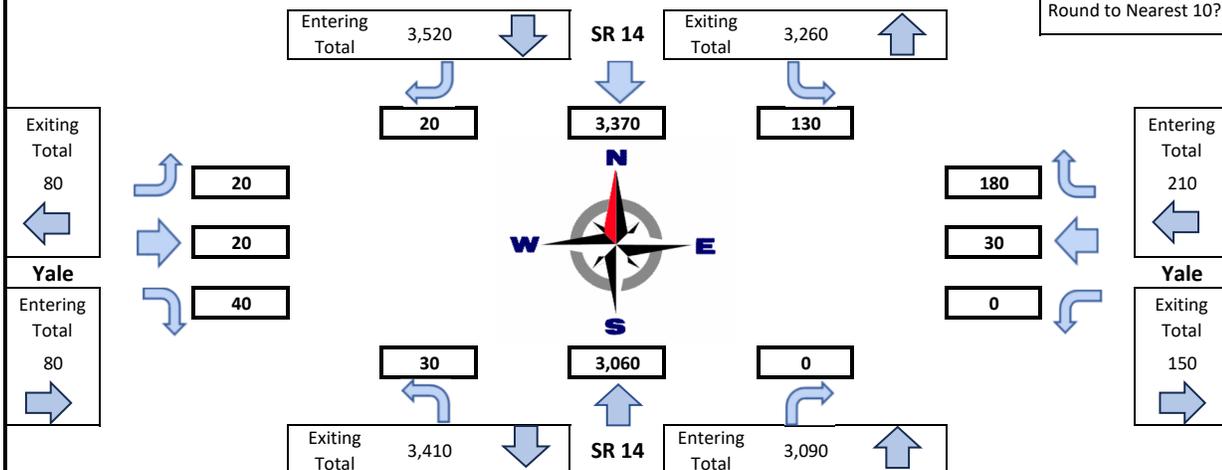
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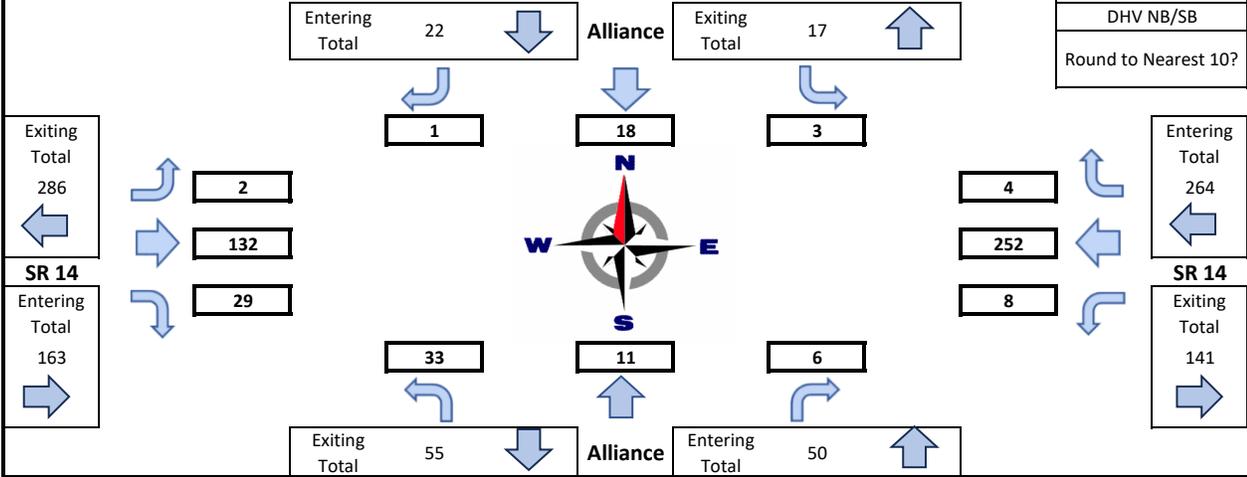
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Round to Nearest 10?	Yes



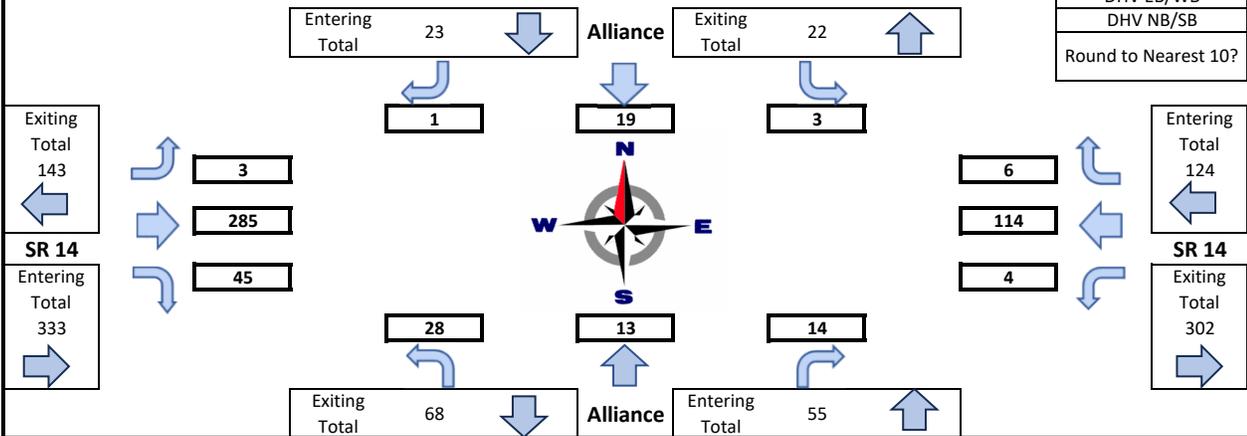
Traffic Count AM Peak 2/13/2025

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Round to Nearest 10?	Yes



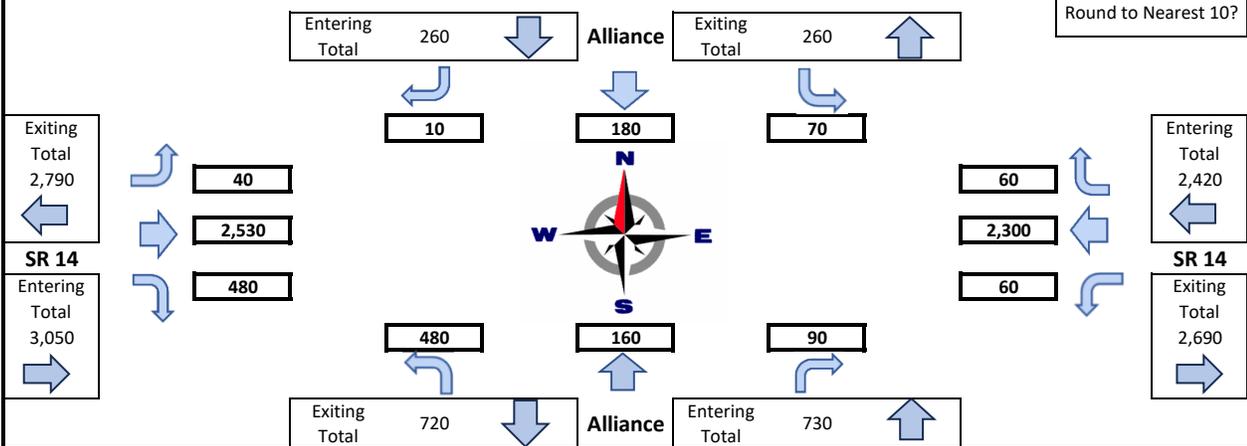
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DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



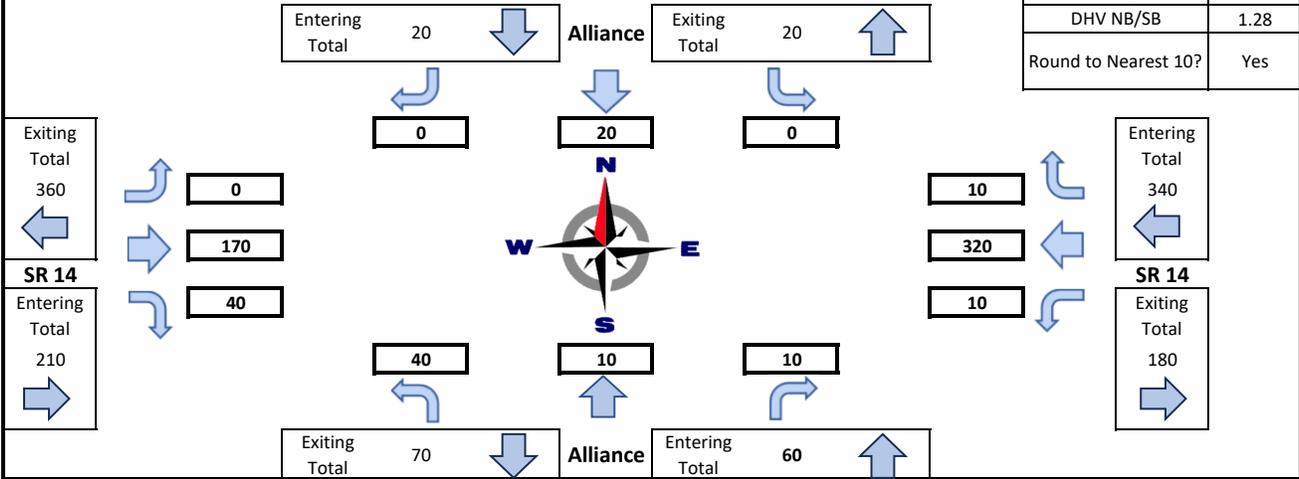
Traffic Count ADT 2/13/2025

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Design Year	2049
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Growth Rate EB/WB	0.50%
Round to Nearest 10?	Yes



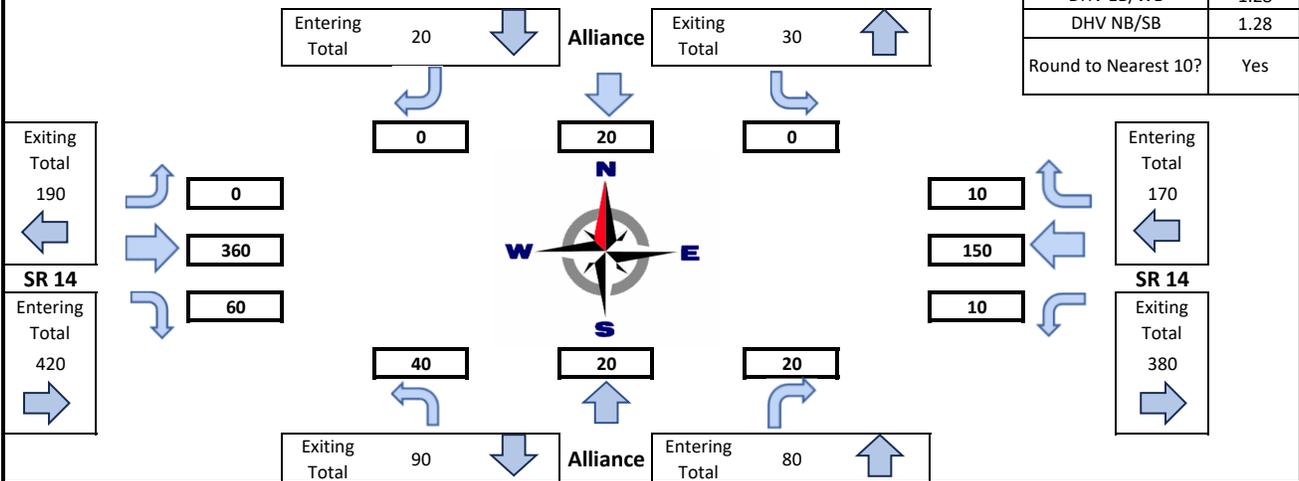
Count Year DHV AM 2025

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DHV NB/SB	1.28
Round to Nearest 10?	Yes



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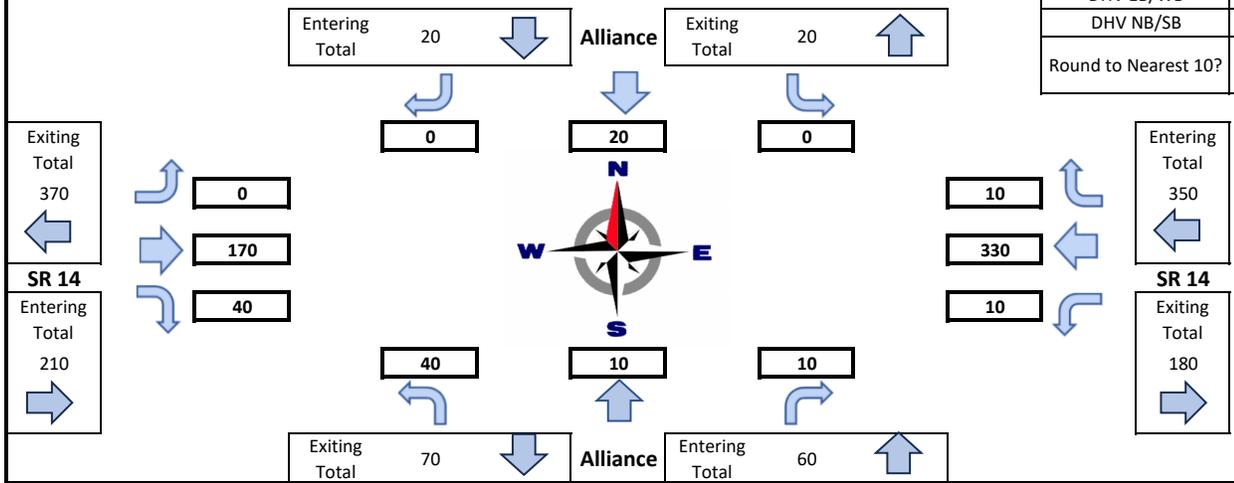
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Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



Design Designations		
	SR 46	SR 165
K%	14.0%	12.6%
D%	53.0%	52.1%
T24%	6%	8%
TD%	4%	4%

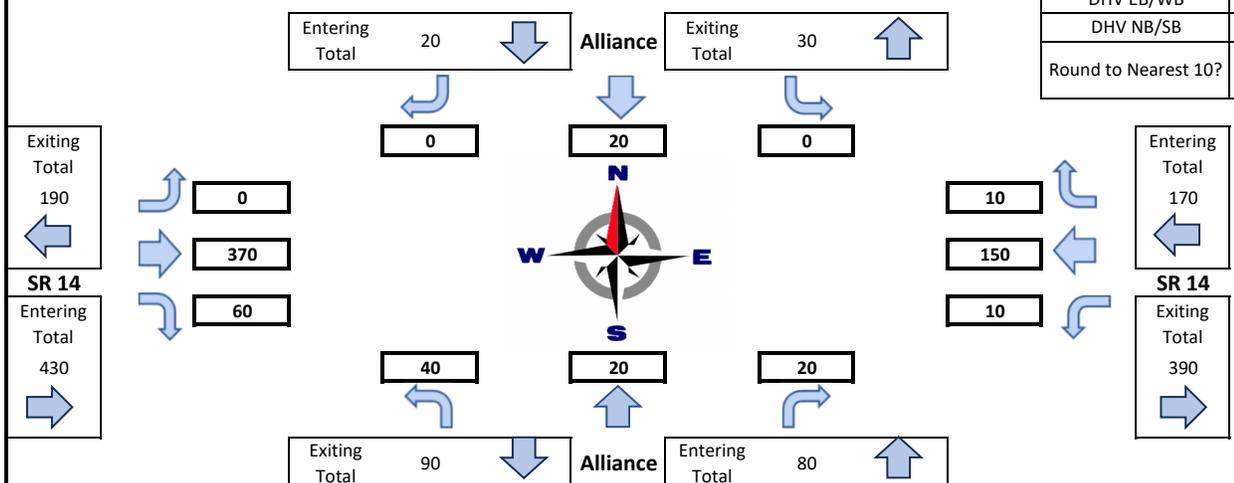
Opening Year AM 2029

Count Year	2025
Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



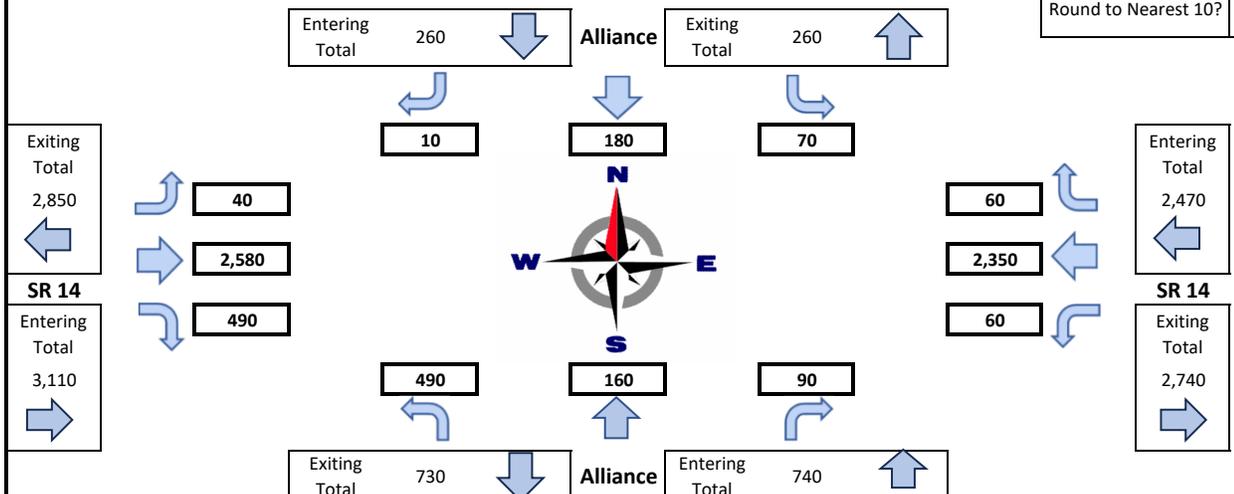
Opening Year PM 2029

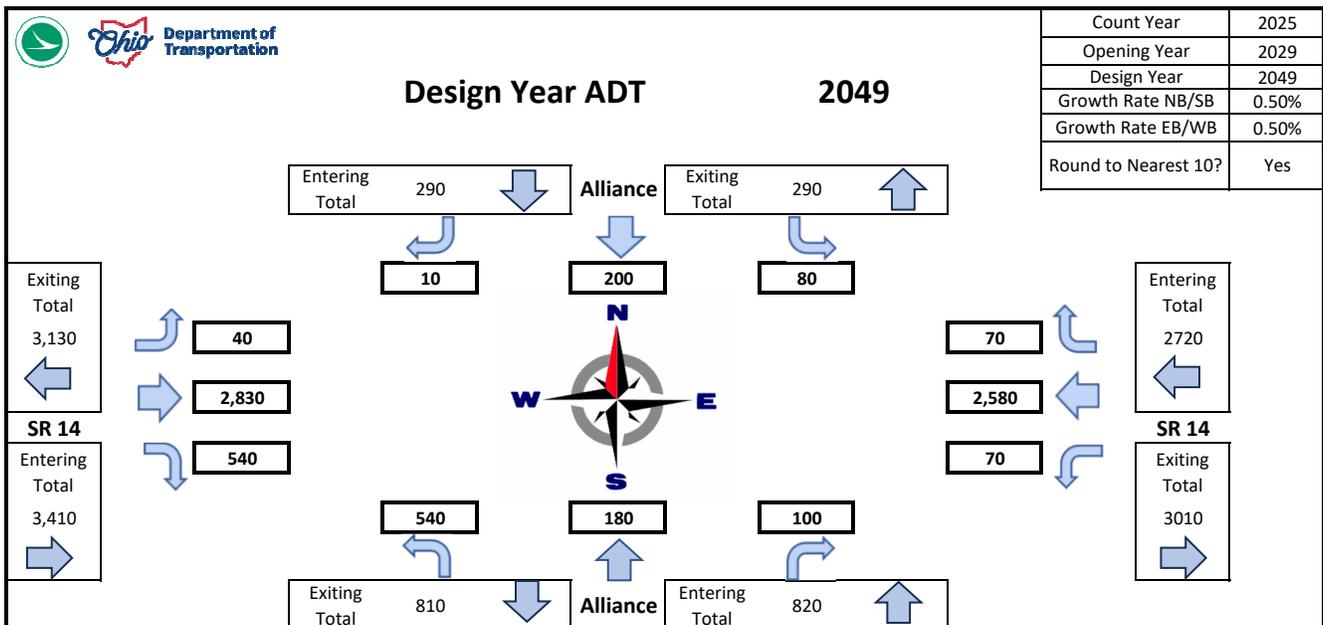
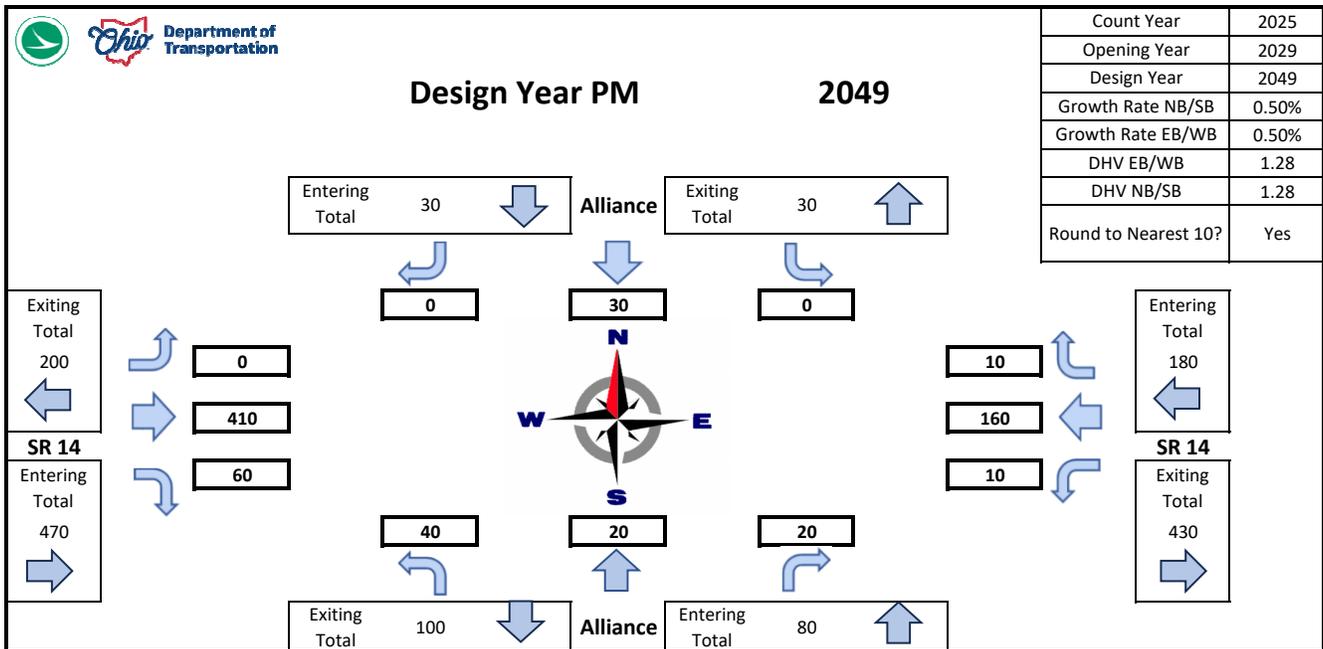
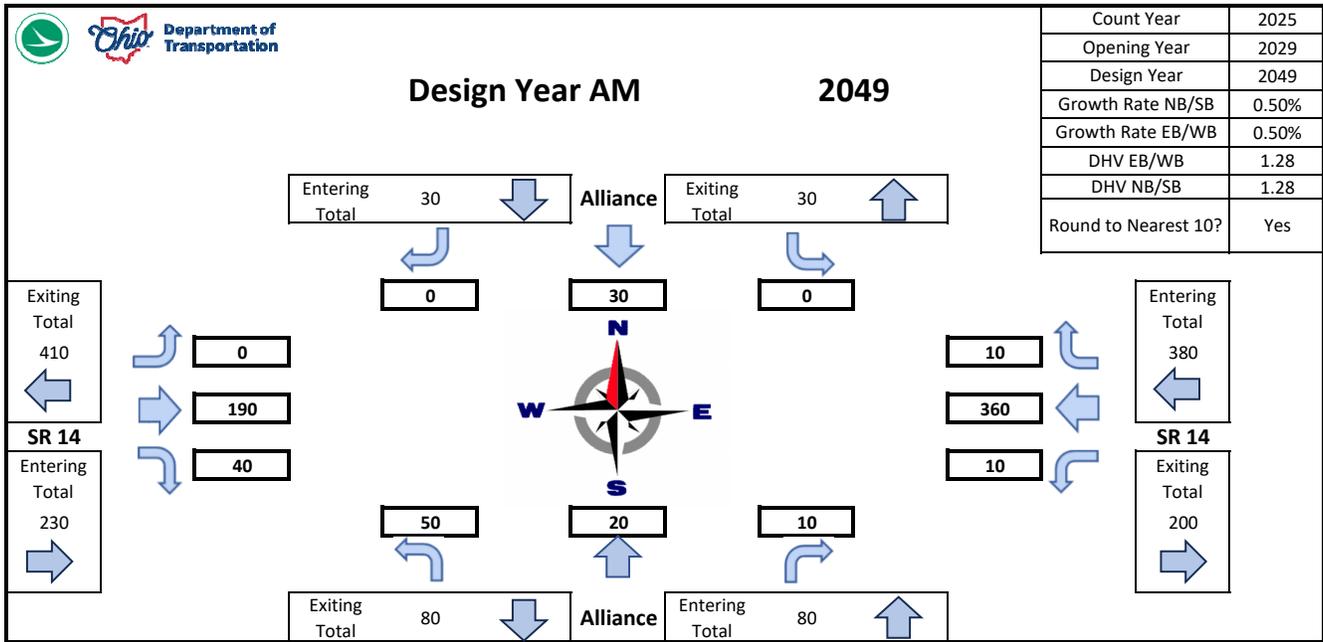
Count Year	2025
Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



Opening Year ADT 2029

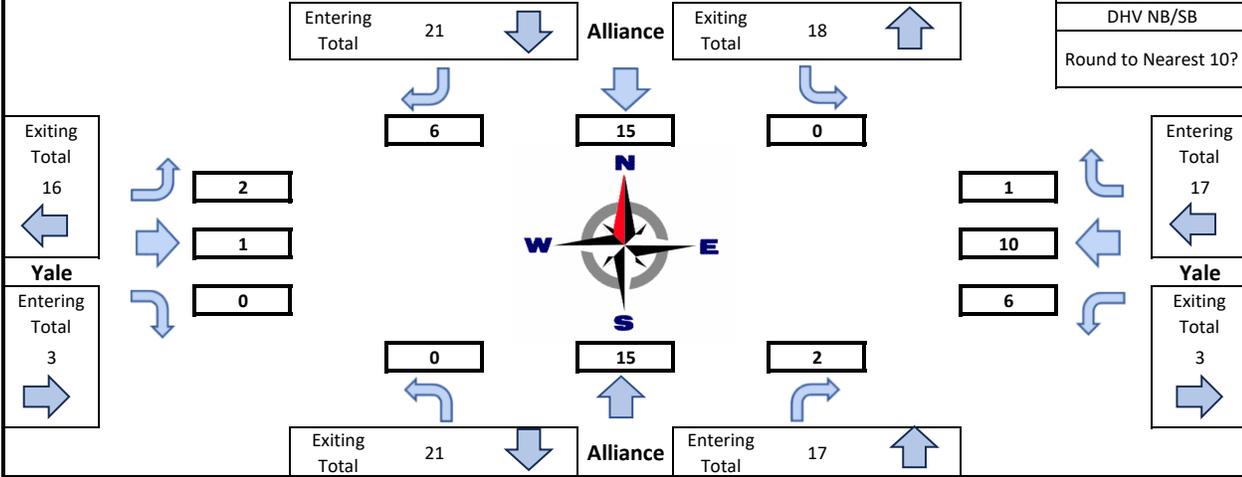
Count Year	2025
Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
Round to Nearest 10?	Yes





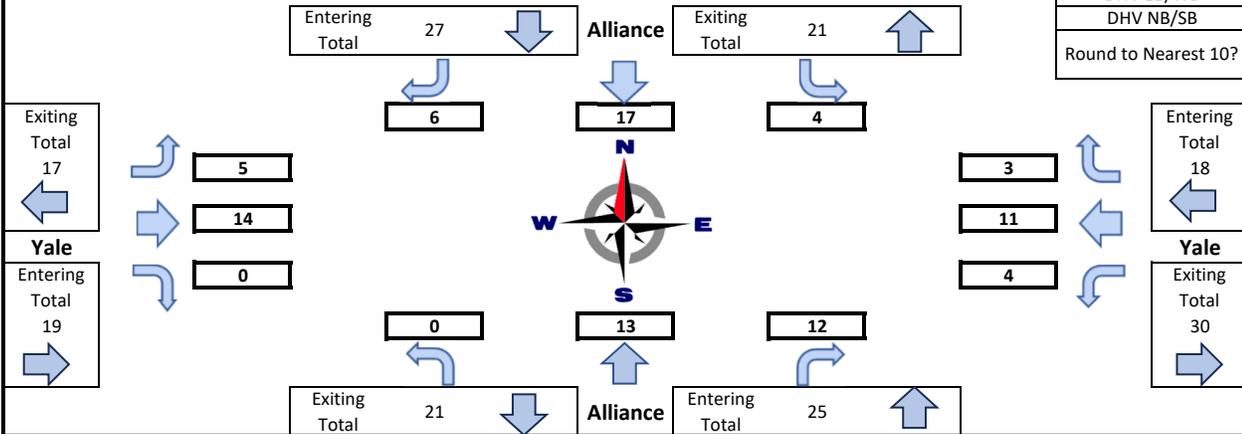
Traffic Count AM Peak 2/13/2025

Count Year	2025
Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



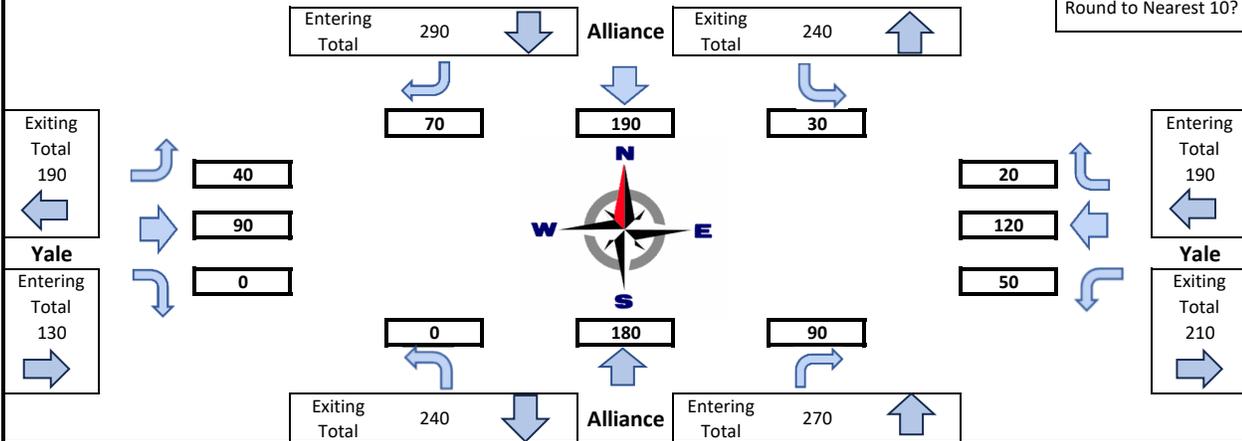
Traffic Count PM Peak 2/13/2025

Count Year	2025
Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



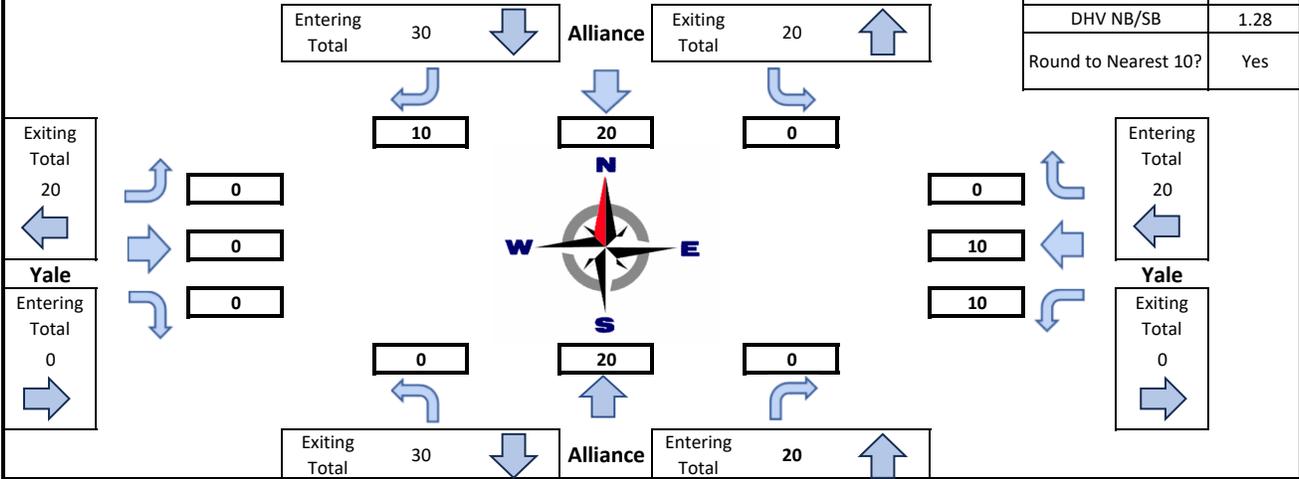
Traffic Count ADT 2/13/2025

Count Year	2025
Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
Round to Nearest 10?	Yes



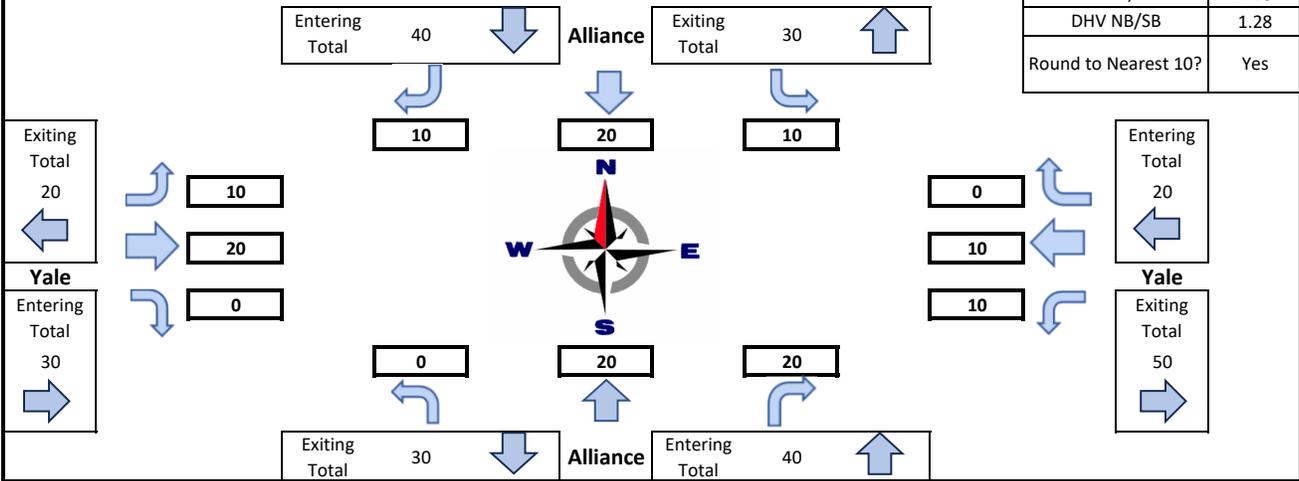
Count Year DHV AM 2025

Count Year	2025
Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



Count Year DHV PM 2025

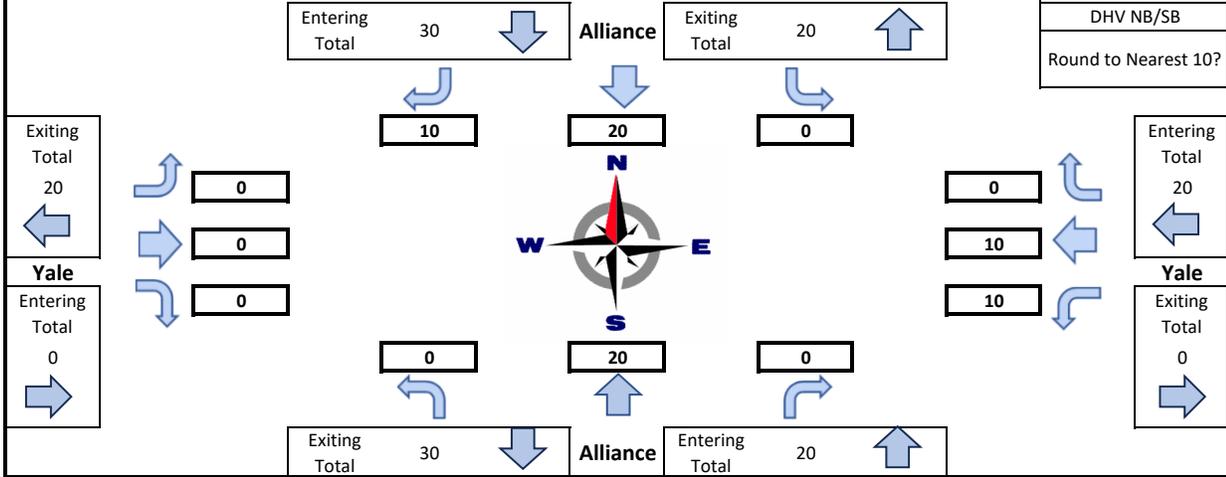
Count Year	2025
Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



Design Designations		
	SR 46	SR 165
K%	14.0%	12.6%
D%	53.0%	52.1%
T24%	6%	8%
TD%	4%	4%

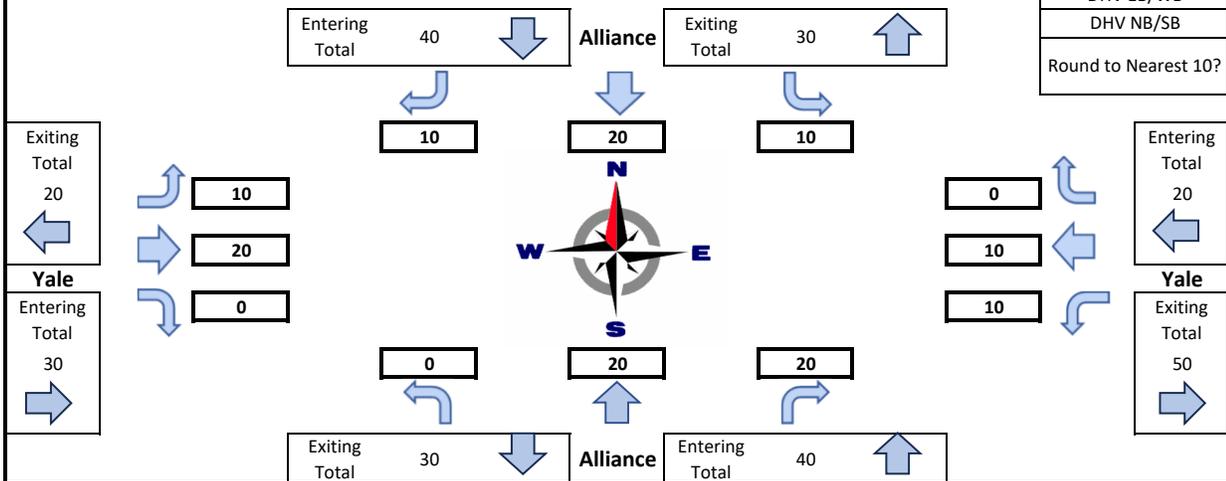
Opening Year AM 2029

Count Year	2025
Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



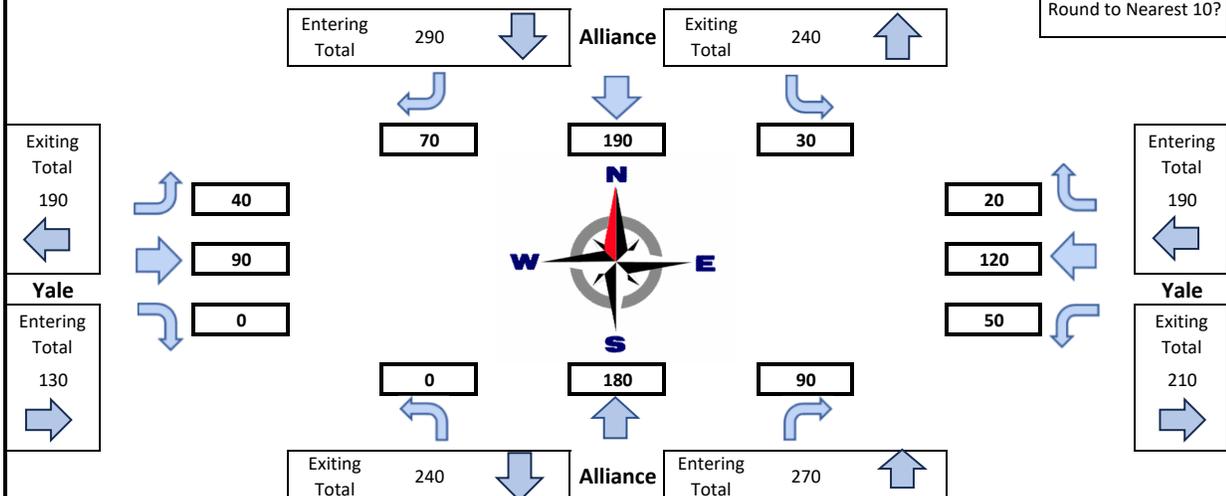
Opening Year PM 2029

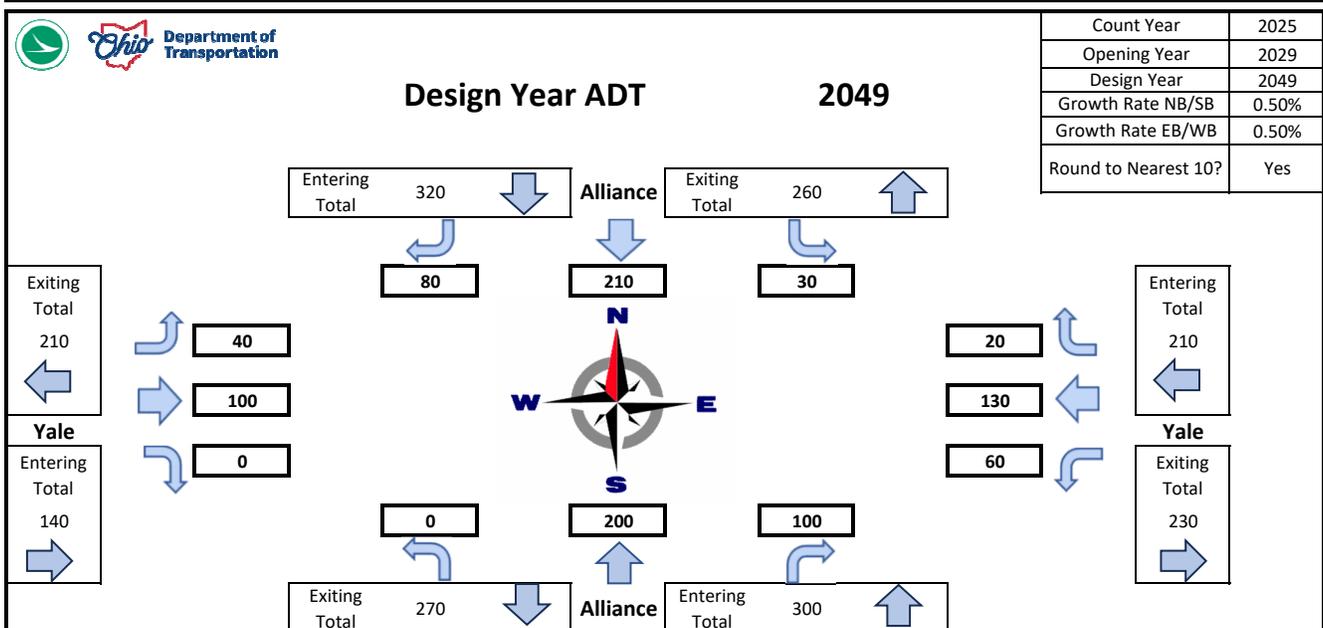
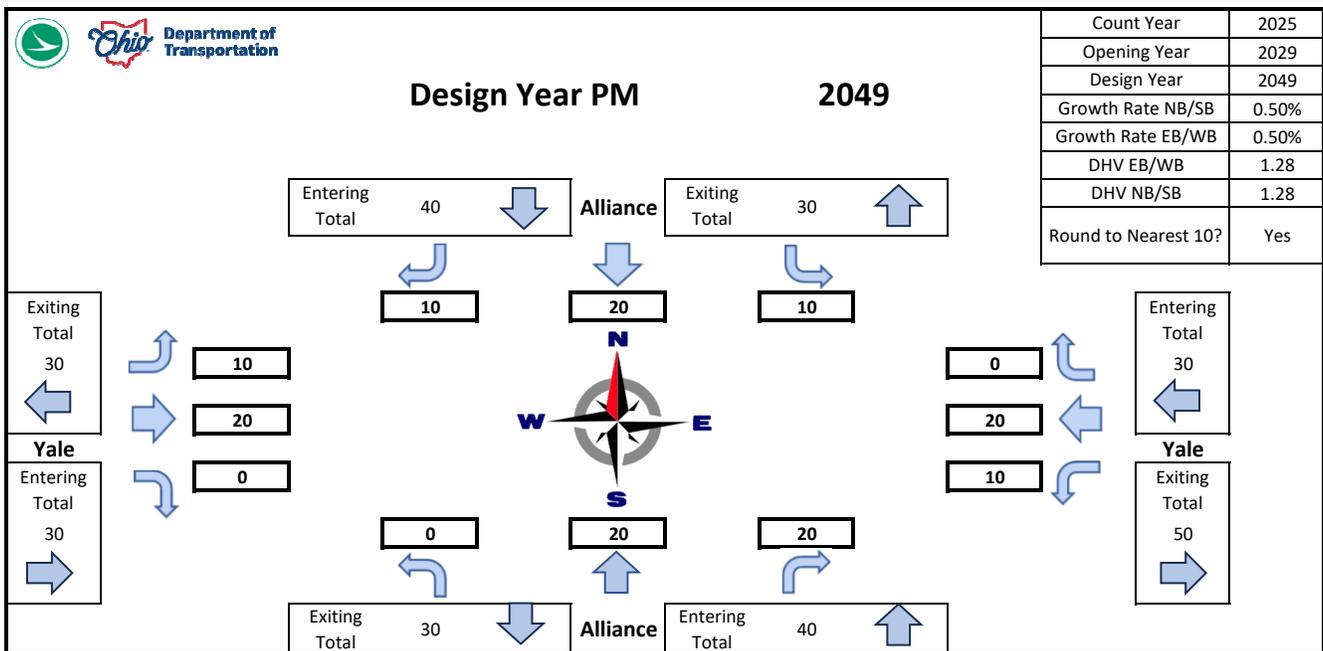
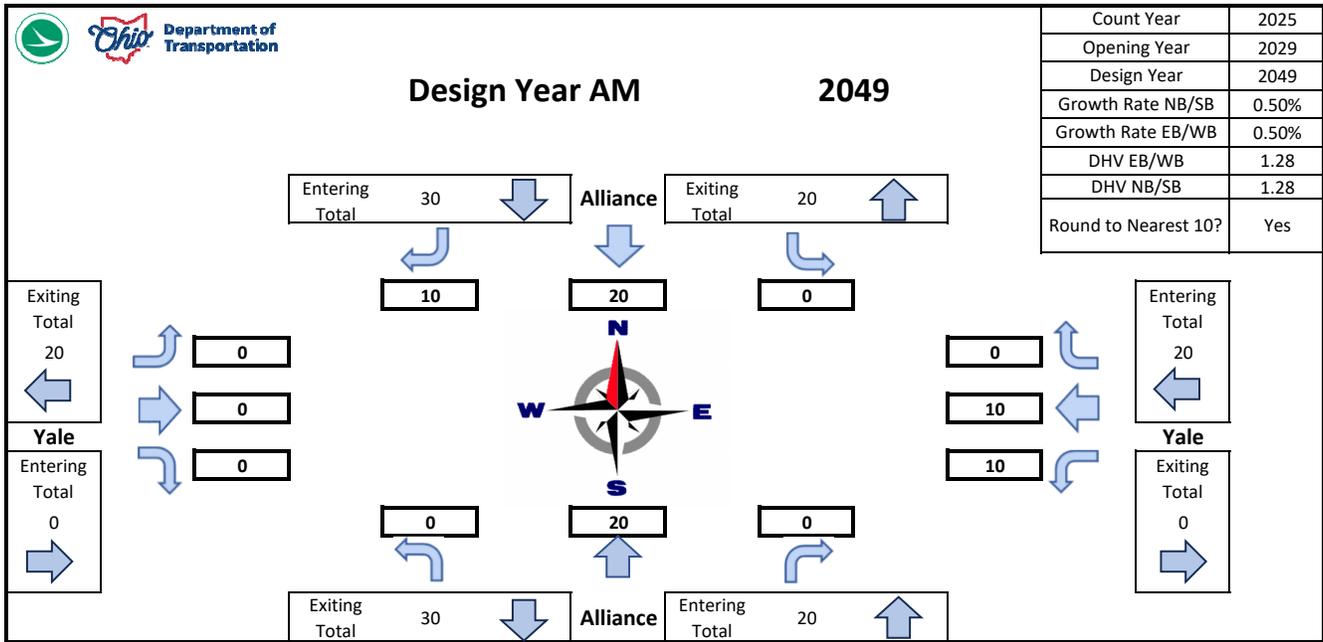
Count Year	2025
Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
DHV EB/WB	1.28
DHV NB/SB	1.28
Round to Nearest 10?	Yes



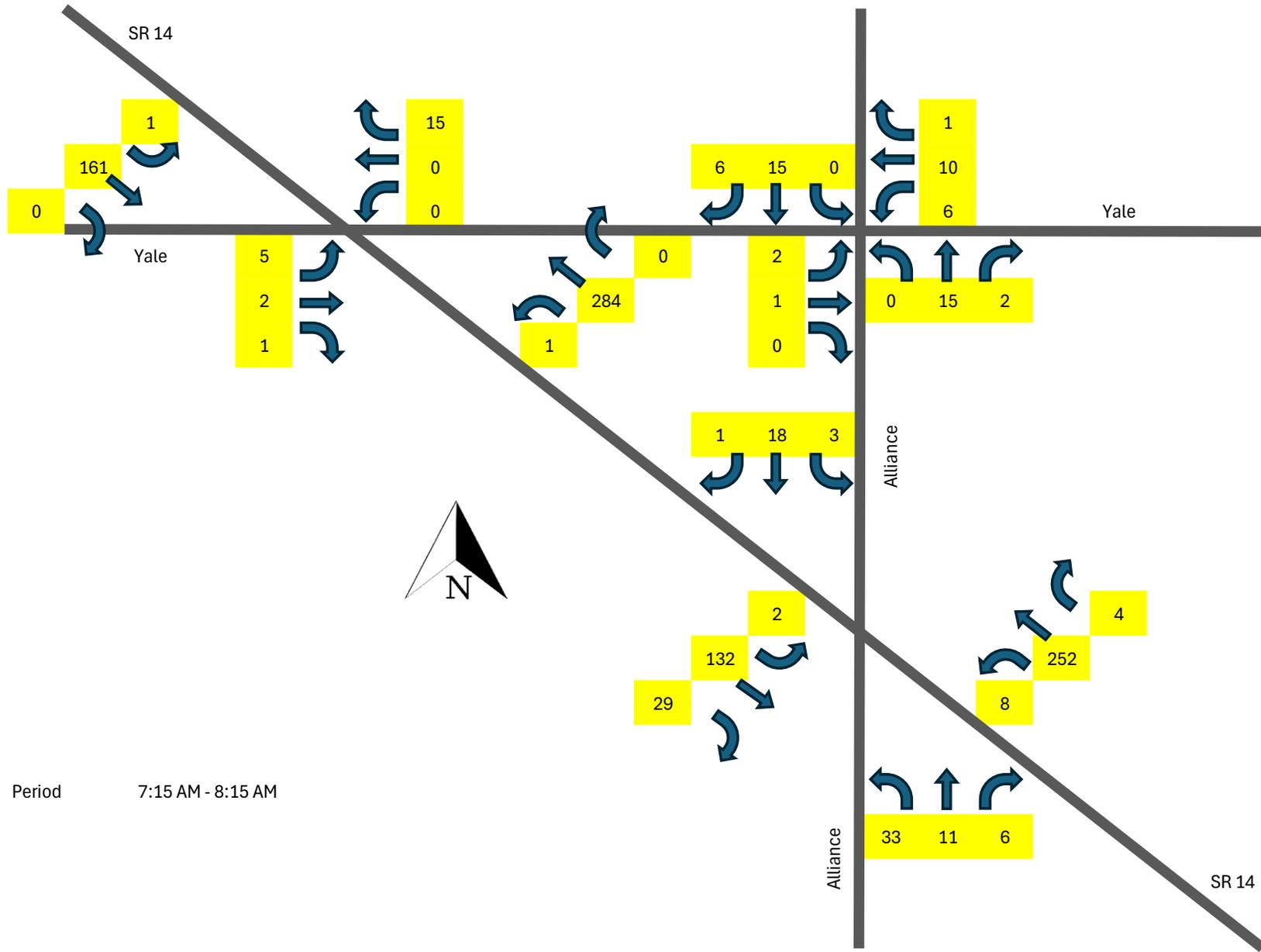
Opening Year ADT 2029

Count Year	2025
Opening Year	2029
Design Year	2049
Growth Rate NB/SB	0.50%
Growth Rate EB/WB	0.50%
Round to Nearest 10?	Yes



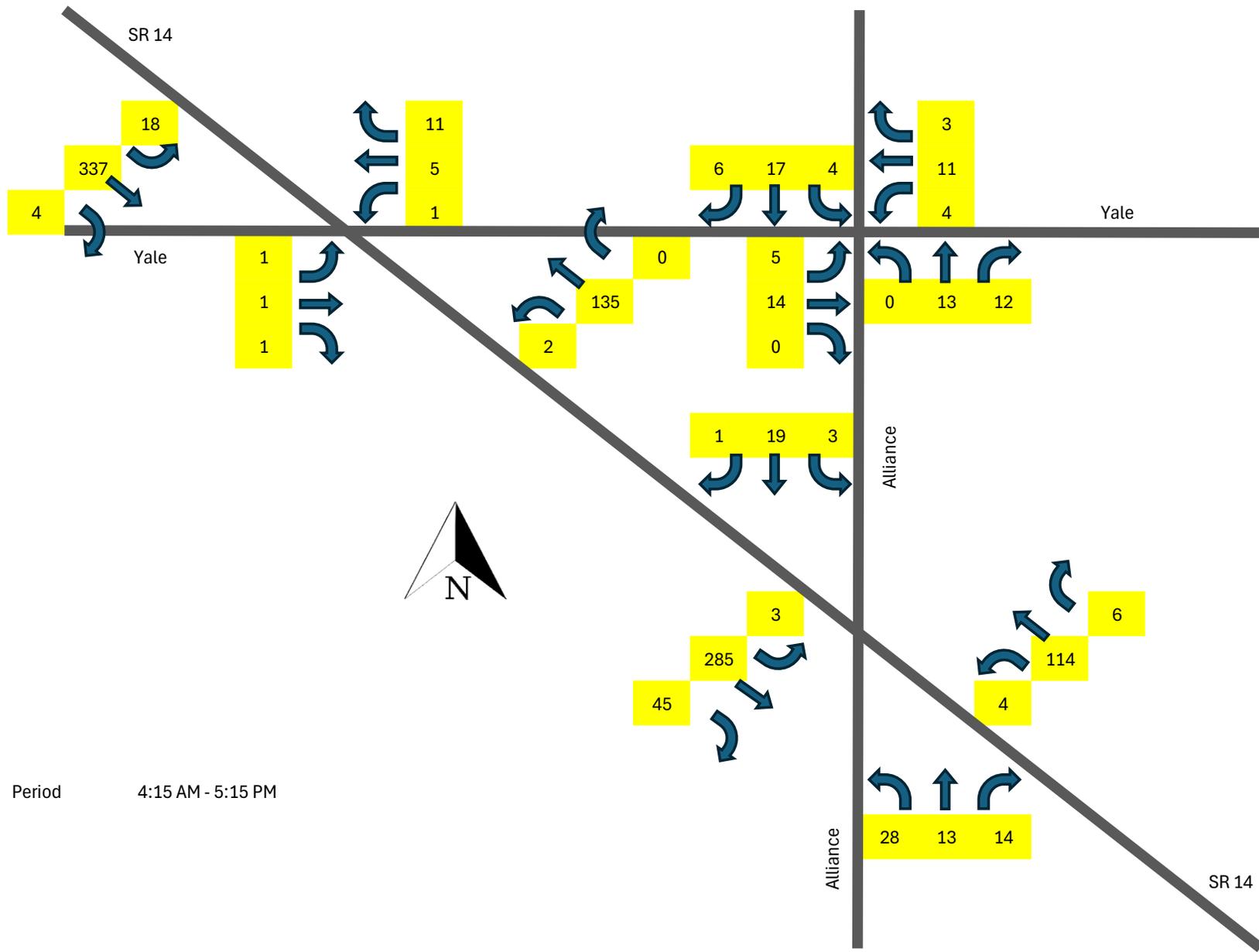


2025 AM Raw Counts

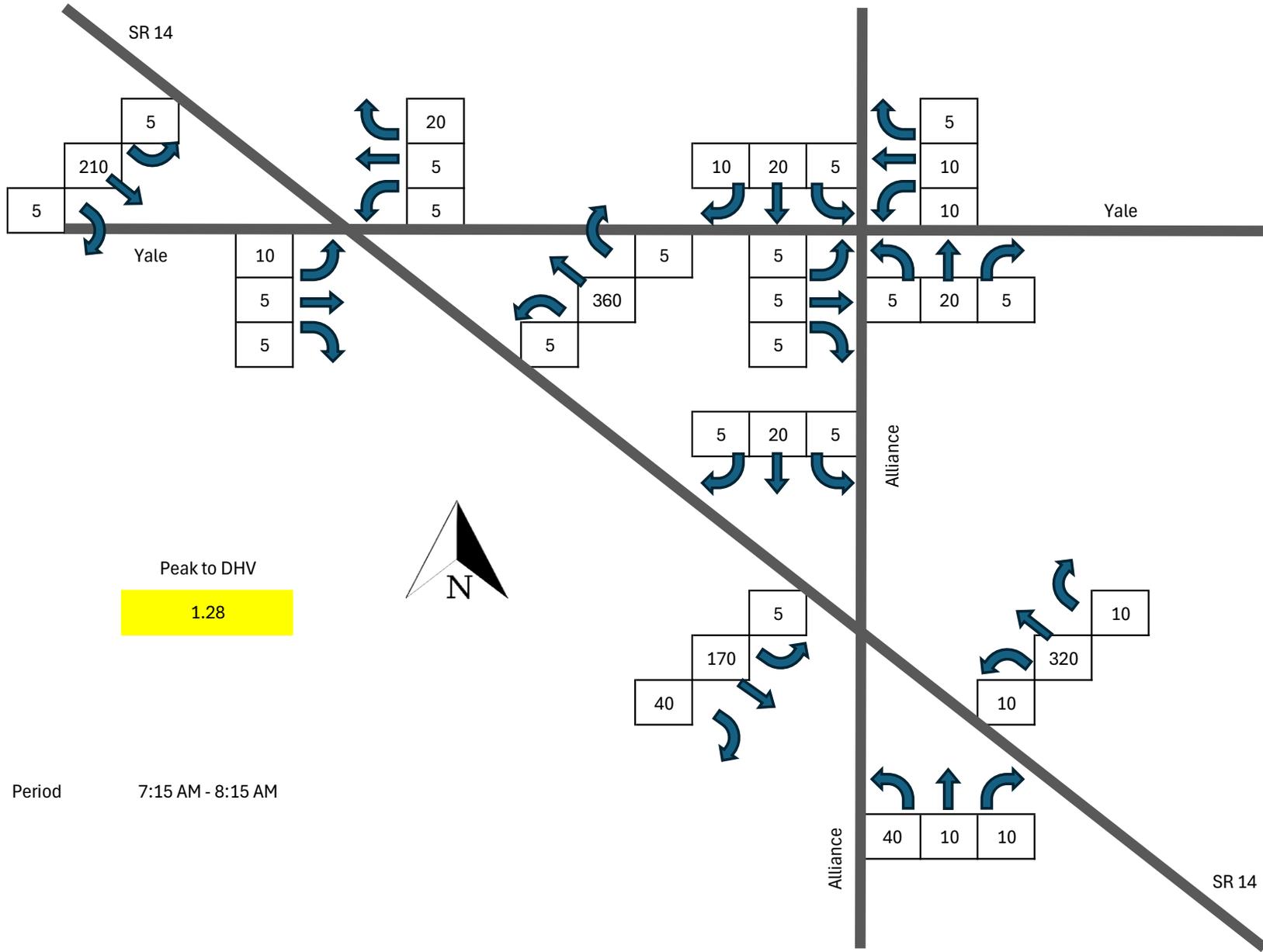


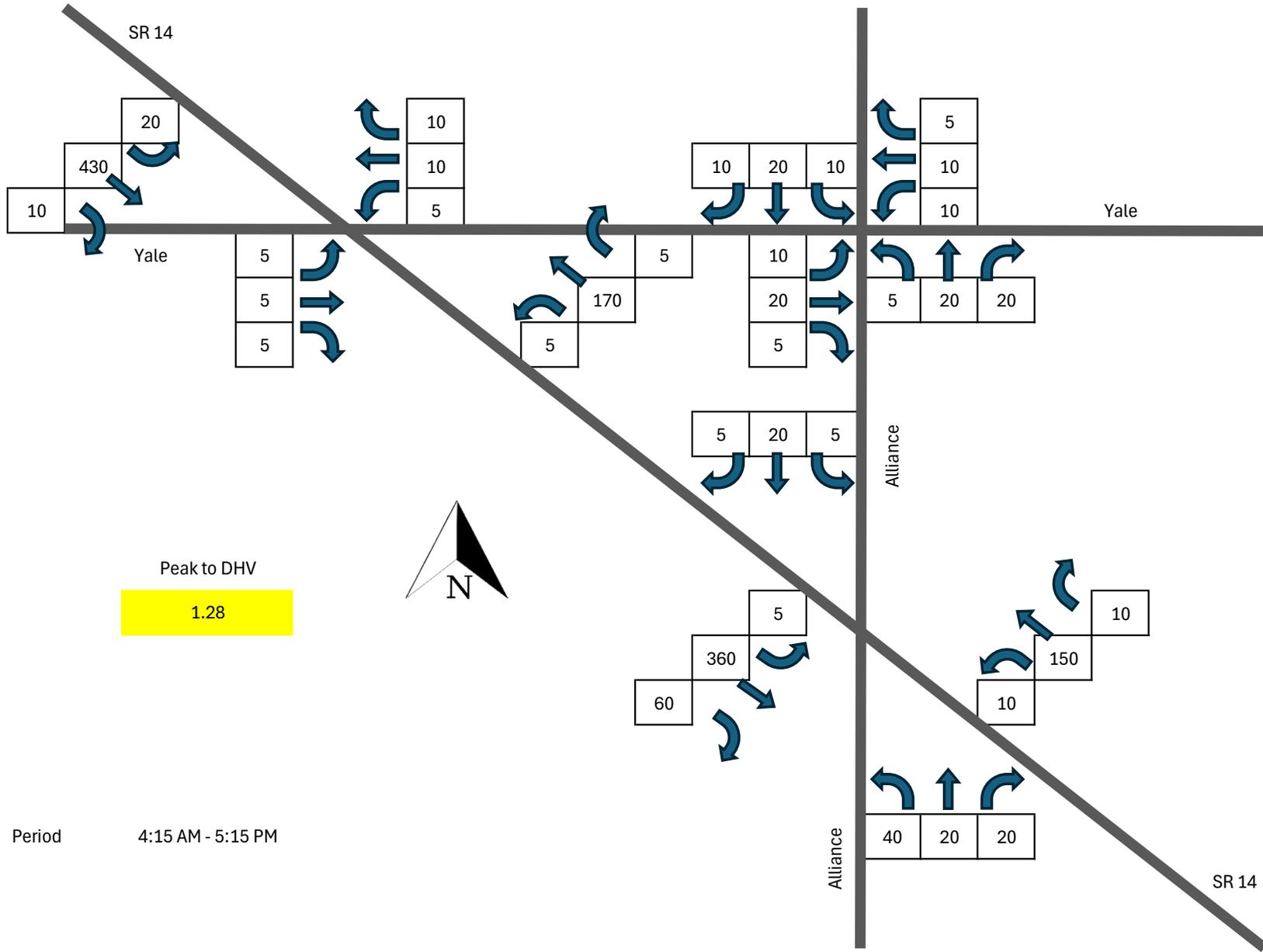
Period 7:15 AM - 8:15 AM

2025 PM Raw Counts



Period 4:15 AM - 5:15 PM



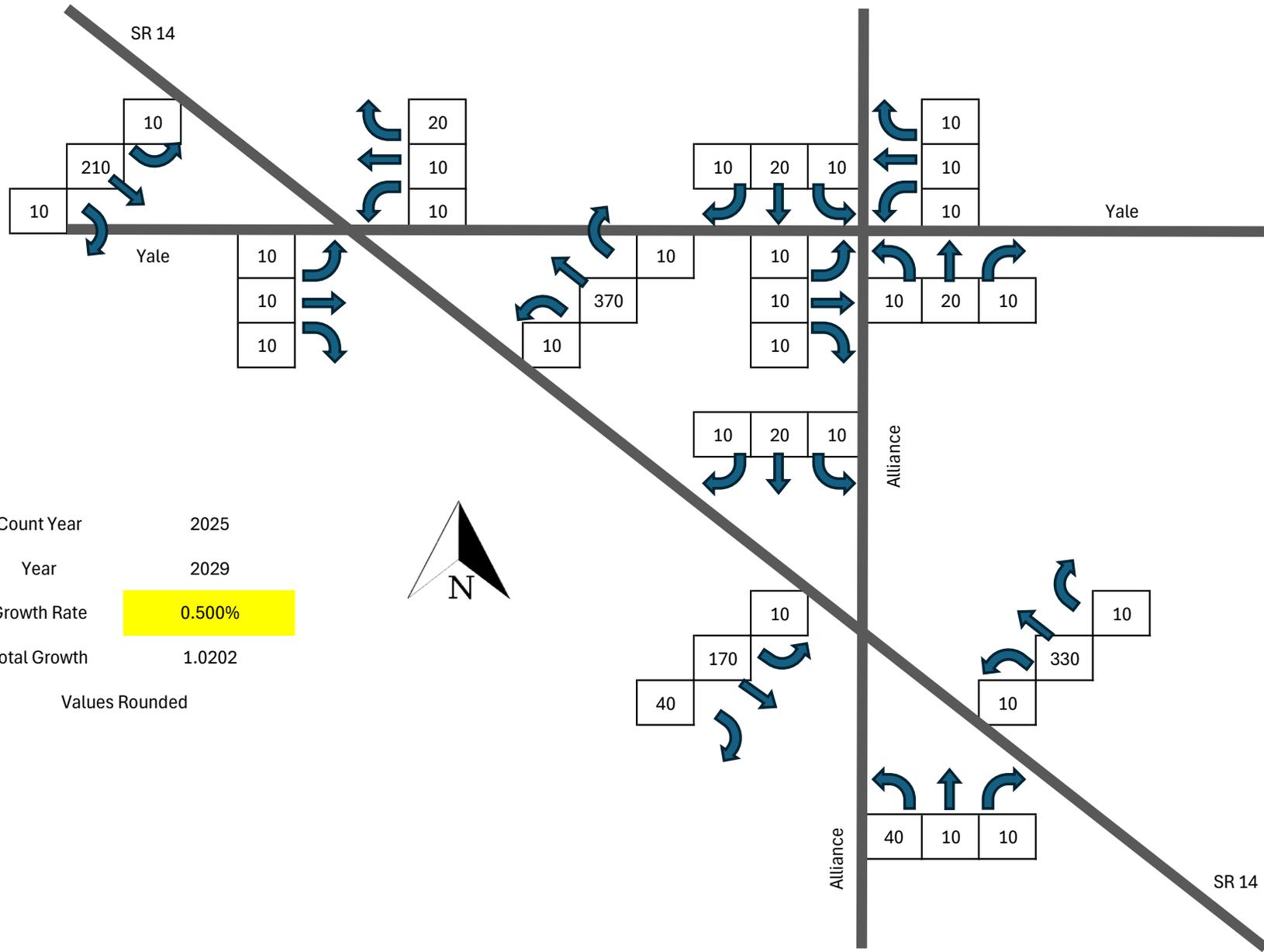


Peak to DHV

1.28

Period

4:15 AM - 5:15 PM



Count Year 2025

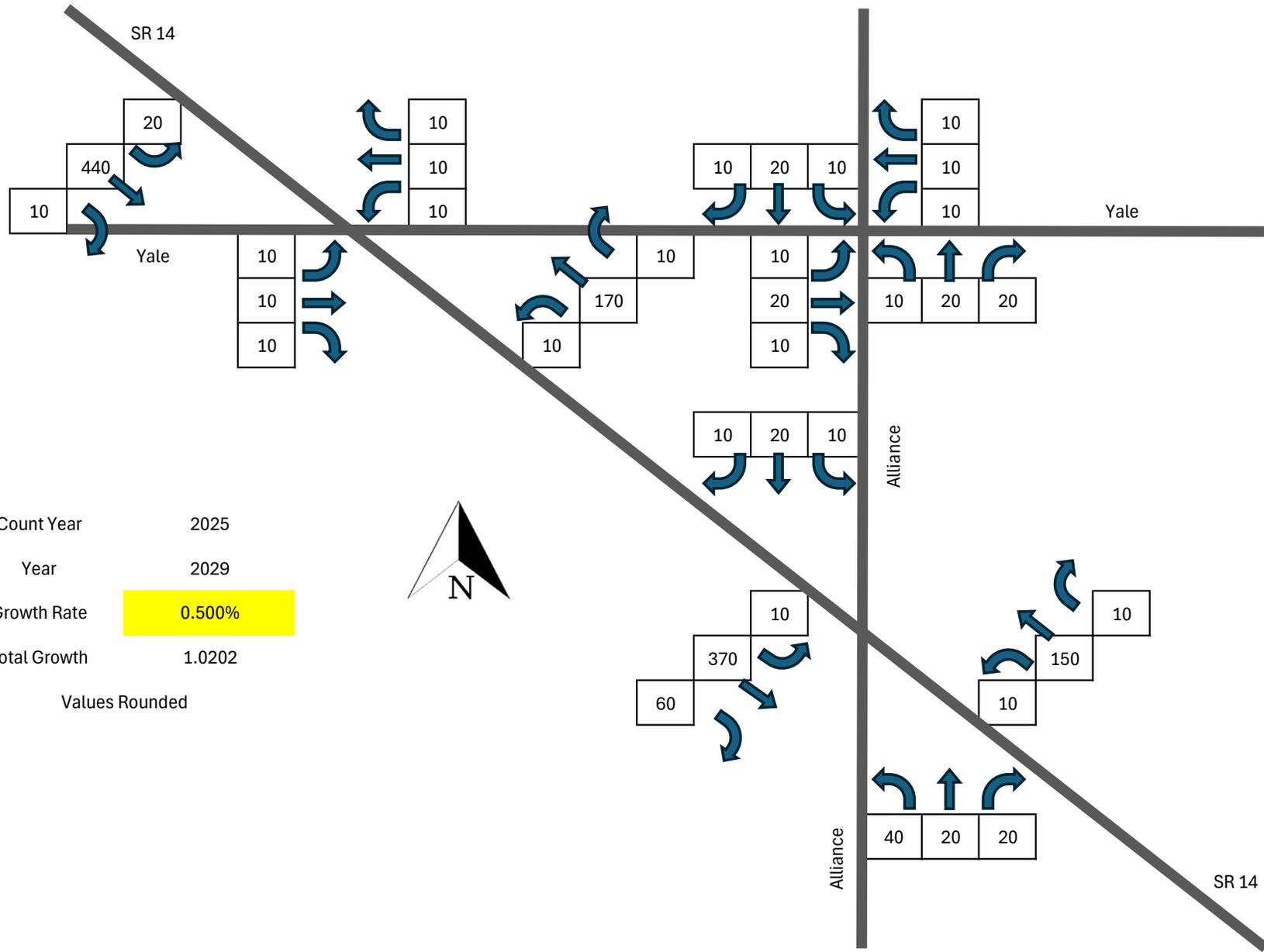
Year 2029

Growth Rate 0.500%

Total Growth 1.0202

Values Rounded





Count Year 2025

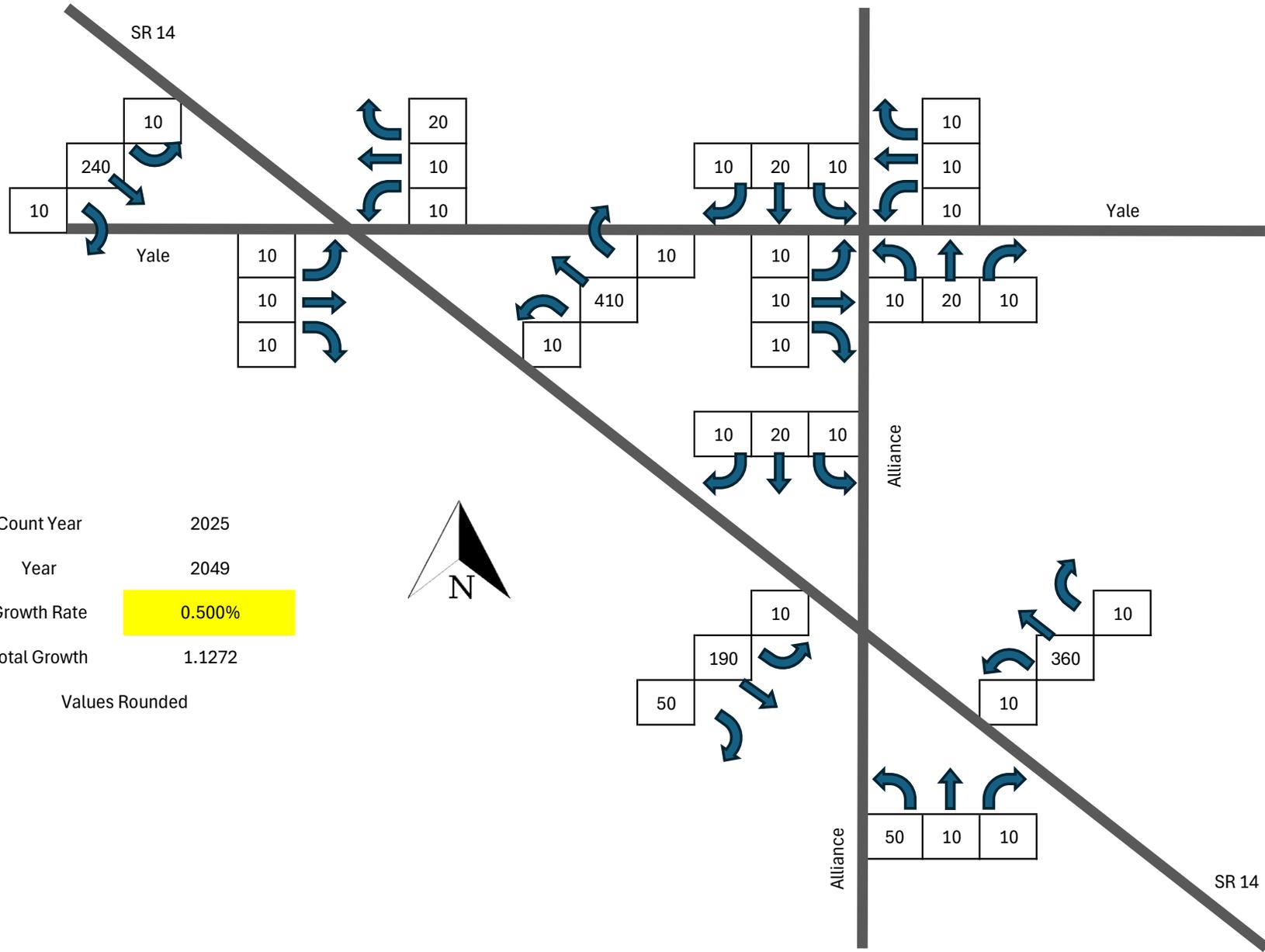
Year 2029

Growth Rate 0.500%

Total Growth 1.0202

Values Rounded





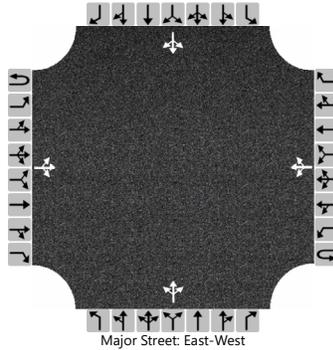
Count Year 2025
Year 2049
Growth Rate 0.500%
Total Growth 1.1272
Values Rounded

Appendix B – Existing Condition Capacity Analysis

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	AC			Intersection	SR 14 at Alliance Rd		
Agency/Co.	Woolpert			Jurisdiction	Portage County		
Date Performed	3/4/2025			East/West Street	SR 14		
Analysis Year	2025			North/South Street	Alliance Rd		
Time Analyzed	2025 AM Peak			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Existing Condition Analysis						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	170	40		10	320	10		40	10	10		5	20	5
Percent Heavy Vehicles (%)		0				0				1	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.11	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.51	4.00	3.30		3.50	4.00	3.30

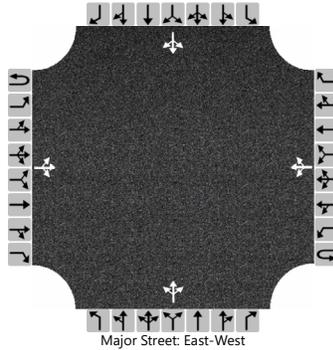
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5				11				65				33		
Capacity, c (veh/h)		1211				1352				424				431		
v/c Ratio		0.00				0.01				0.15				0.08		
95% Queue Length, Q ₉₅ (veh)		0.0				0.0				0.5				0.2		
95% Queue Length, Q ₉₅ (ft)										12.6				5.0		
Control Delay (s/veh)		8.0	0.0	0.0		7.7	0.1	0.1		15.0				14.0		
Level of Service (LOS)		A	A	A		A	A	A		C				B		
Approach Delay (s/veh)	0.2				0.3				15.0				14.0			
Approach LOS	A				A				C				B			

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	AC			Intersection	SR 14 at Alliance Rd		
Agency/Co.	Woolpert			Jurisdiction	Portage County		
Date Performed	3/4/2025			East/West Street	SR 14		
Analysis Year	2025			North/South Street	Alliance Rd		
Time Analyzed	2025 PM Peak			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Existing Condition Analysis						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		5	360	60		10	150	10		40	20	20		5	20	5	
Percent Heavy Vehicles (%)		0				0				1	0	0		0	0	0	
Proportion Time Blocked																	
Percent Grade (%)										0				0			
Right Turn Channelized																	
Median Type Storage	Undivided																

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.11	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.51	4.00	3.30		3.50	4.00	3.30

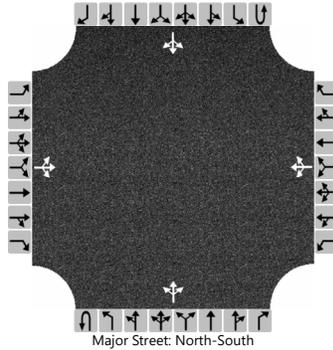
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5				11					87					33	
Capacity, c (veh/h)		1415				1115					414					413	
v/c Ratio		0.00				0.01					0.21					0.08	
95% Queue Length, Q ₉₅ (veh)		0.0				0.0					0.8					0.3	
95% Queue Length, Q ₉₅ (ft)											20.1					7.5	
Control Delay (s/veh)		7.6	0.0	0.0		8.3	0.1	0.1			16.0					14.5	
Level of Service (LOS)		A	A	A		A	A	A			C					B	
Approach Delay (s/veh)		0.1				0.6				16.0					14.5		
Approach LOS		A				A				C					B		

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	AC			Intersection	SR 14 at Alliance Rd		
Agency/Co.	Woolpert			Jurisdiction	Portage County		
Date Performed	3/4/2025			East/West Street	Yale Rd		
Analysis Year	2025			North/South Street	SR 14		
Time Analyzed	2025 AM Peak			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Existing Condition Analysis						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	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)		10	5	5		5	5	20		5	360	5		5	210	5
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
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)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
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)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

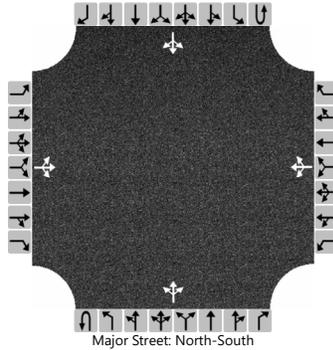
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			22				33			5				5		
Capacity, c (veh/h)			425				529			1346				1173		
v/c Ratio			0.05				0.06			0.00				0.00		
95% Queue Length, Q ₉₅ (veh)			0.2				0.2			0.0				0.0		
95% Queue Length, Q ₉₅ (ft)			5.0				5.0									
Control Delay (s/veh)			13.9				12.2			7.7	0.0	0.0		8.1	0.0	0.0
Level of Service (LOS)			B				B			A	A	A		A	A	A
Approach Delay (s/veh)	13.9				12.2				0.1				0.2			
Approach LOS	B				B				A				A			

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	AC			Intersection	SR 14 at Alliance Rd		
Agency/Co.	Woolpert			Jurisdiction	Portage County		
Date Performed	3/4/2025			East/West Street	Yale Rd		
Analysis Year	2025			North/South Street	SR 14		
Time Analyzed	2025 PM Peak			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Existing Condition Analysis						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	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)		5	5	5		5	10	10		5	170	5		20	430	10
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
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)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
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)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

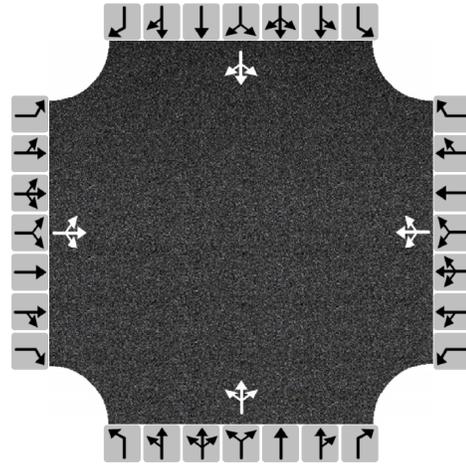
Flow Rate, v (veh/h)			16				27			5				22		
Capacity, c (veh/h)			390				449			1095				1396		
v/c Ratio			0.04				0.06			0.00				0.02		
95% Queue Length, Q ₉₅ (veh)			0.1				0.2			0.0				0.0		
95% Queue Length, Q ₉₅ (ft)			2.5				5.0									
Control Delay (s/veh)			14.6				13.5			8.3	0.0	0.0		7.6	0.2	0.2
Level of Service (LOS)			B				B			A	A	A		A	A	A
Approach Delay (s/veh)	14.6				13.5				0.3				0.5			
Approach LOS	B				B				A				A			

HCS All-Way Stop Control Report

General and Site Information

Analyst	AC
Agency/Co.	Woolpert
Date Performed	3/4/2025
Analysis Year	2025
Analysis Time Period (hrs)	0.25
Time Analyzed	2025 AM Peak
Project Description	Existing Condition
Intersection	Alliance Rd at Yale Rd
Jurisdiction	Portage County
East/West Street	Yale Rd
North/South Street	Alliance Rd
Peak Hour Factor	0.92

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume (veh/h)	5	5	5	10	10	5	5	20	5	5	20	10
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	16			27			33			38		
Percent Heavy Vehicles	0			0			0			0		
Initial Departure Headway, h_d (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.014			0.024			0.029			0.034		
Final Departure Headway, h_d (s)	3.94			4.02			3.96			3.88		
Final Degree of Utilization, x	0.018			0.030			0.036			0.041		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, t_s (s)	1.94			2.02			1.96			1.88		

Capacity, Delay and Level of Service

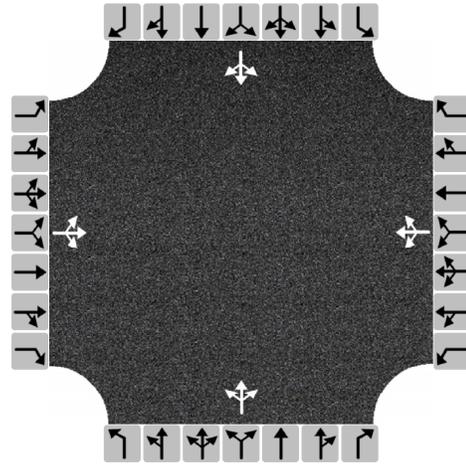
Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	16			27			33			38		
Capacity (veh/h)	914			895			909			928		
95% Queue Length, Q_{95} (veh)	0.1			0.1			0.1			0.1		
95% Queue Length, Q_{95} (ft)	2.5			2.5			2.5			2.5		
Control Delay (s/veh)	7.0			7.1			7.1			7.0		
Level of Service, LOS	A			A			A			A		
Approach Delay (s/veh) LOS	7.0		A	7.1		A	7.1		A	7.0		A
Intersection Delay (s/veh) LOS	7.1						A					

HCS All-Way Stop Control Report

General and Site Information

Analyst	AC
Agency/Co.	Woolpert
Date Performed	3/4/2025
Analysis Year	2025
Analysis Time Period (hrs)	0.25
Time Analyzed	2025 PM Peak
Project Description	Existing Condition
Intersection	Alliance Rd at Yale Rd
Jurisdiction	Portage County
East/West Street	Yale Rd
North/South Street	Alliance Rd
Peak Hour Factor	0.92

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume (veh/h)	10	20	5	10	10	5	5	20	20	10	20	10
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	38			27			49			43		
Percent Heavy Vehicles	0			0			0			0		
Initial Departure Headway, h_d (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.034			0.024			0.043			0.039		
Final Departure Headway, h_d (s)	4.09			4.09			3.84			3.99		
Final Degree of Utilization, x	0.043			0.031			0.052			0.048		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, t_s (s)	2.09			2.09			1.84			1.99		

Capacity, Delay and Level of Service

Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	38			27			49			43		
Capacity (veh/h)	880			881			938			903		
95% Queue Length, Q_{95} (veh)	0.1			0.1			0.2			0.2		
95% Queue Length, Q_{95} (ft)	2.5			2.5			5.0			5.0		
Control Delay (s/veh)	7.3			7.2			7.0			7.2		
Level of Service, LOS	A			A			A			A		
Approach Delay (s/veh) LOS	7.3		A	7.2		A	7.0		A	7.2		A
Intersection Delay (s/veh) LOS	7.2						A					

Appendix C – Origin-Destination Matrices

		Destination					
2049 AM		2	3	4	5	8	9
Origin	2		185	51	9	12	7
	3	362		12	9	10	6
	4	51	11		6	2	3
	5	11	7	11		3	11
	8	12	8	4	4		4
	9	8	4	6	11	3	

		Destination					
2049 PM		2	3	4	5	8	9
Origin	2		415	74	10	11	15
	3	149		12	7	9	9
	4	45	22		9	4	10
	5	8	9	11		4	11
	8	11	9	3	3		5
	9	6	5	6	11	4	



Appendix D – Crash Data

POR SR 14 at Alliance (CR125) & at Yale (CR55) CAMTool 2019-2023

Crash Summary Sheet

Fatalities	0
Serious Injuries	1
Other Injuries	22

Crashes Per Year	5.25
Fatal and All Injury Crashes	13
Percent Injury	61.9%
Equivalent PDO Index Value	6.10

Crash Severity	Crashes	%
(2) Serious Injury Suspected	1	4.76%
(3) Minor Injury Suspected	10	47.62%
(4) Injury Possible	2	9.52%
(5) PDO/No Injury	8	38.10%
Grand Total	21	100.00%

Year	Crashes	%
2020	7	33.33%
2021	5	23.81%
2022	5	23.81%
2023	4	19.05%
Grand Total	21	100.00%

Day of Week	Crashes	%
(1) Sunday	2	9.52%
(2) Monday	1	4.76%
(3) Tuesday	3	14.29%
(4) Wednesday	4	19.05%
(5) Thursday	4	19.05%
(6) Friday	2	9.52%
(7) Saturday	5	23.81%
Grand Total	21	100.00%

Crash Type	Crashes	%
Angle	18	85.71%
Left Turn	2	9.52%
Fixed Object	1	4.76%
Grand Total	21	100.00%

Hour of Day	Crashes	%
8	1	4.76%
9	1	4.76%
10	2	9.52%
11	1	4.76%
13	1	4.76%
14	1	4.76%
15	4	19.05%
17	3	14.29%
18	4	19.05%
19	2	9.52%
21	1	4.76%
Grand Total	21	100.00%

Month	Crashes	%
1	2	9.52%
2	1	4.76%
3	2	9.52%
4	1	4.76%
5	1	4.76%
6	4	19.05%
7	2	9.52%
8	2	9.52%
9	2	9.52%
10	2	9.52%
11	2	9.52%
Grand Total	21	100.00%

POR SR 14 at Alliance (CR125) & at Yale (CR55) CAMTool 2019-2023

Crash Summary Sheet

Weather Condition	Crashes	%
Clear	14	66.67%
Cloudy	7	33.33%
Grand Total	21	100.00%

Road Condition	Crashes	%
Dry	21	100.00%
Grand Total	21	100.00%

Light Condition	Crashes	%
Daylight	18	85.71%
Dark - Roadway Not Lighted	2	9.52%
Dark - Lighted Roadway	1	4.76%
Grand Total	21	100.00%

Number of Units	Crashes	%
2	20	95.24%
3	1	4.76%
Grand Total	21	100.00%

ODOT Location	Crashes	%
Four-Way Intersection	21	100.00%
Grand Total	21	100.00%

Work Zone Related	Crashes	%
No	21	100.00%
Grand Total	21	100.00%

Alcohol Related	Crashes	%
No	21	100.00%
Grand Total	21	100.00%

Contour	Crashes	%
Straight Grade	8	38.10%
Straight Level	13	61.90%
Grand Total	21	100.00%

Drug Related (Inc. Marijuana)	Crashes	%
No	21	100.00%
Grand Total	21	100.00%

Marijuana Related	Crashes	%
No	21	100.00%
Grand Total	21	100.00%

Roadway Departure	Crashes	%
No	19	90.48%
Yes	2	9.52%
Grand Total	21	100.00%

Older Driver (65+)	Crashes	%
No	13	61.90%
Yes	8	38.10%
Grand Total	21	100.00%

Intersection Related	Crashes	%
Yes	20	95.24%
No	1	4.76%
Grand Total	21	100.00%

Young Driver (15-25)	Crashes	%
No	11	52.38%
Yes	10	47.62%
Grand Total	21	100.00%

Speed Related	Crashes	%
No	21	100.00%
Grand Total	21	100.00%

Motorcycle Involved	Crashes	%
No	21	100.00%
Grand Total	21	100.00%

POR SR 14 at Alliance (CR125) & at Yale (CR55) CAMTool 2019-2023

Crash Summary Sheet

Unit 1 Summary

Unit 1 Pre-Crash Action	Crashes	%
Straight Ahead	14	66.67%
Making Left Turn	5	23.81%
Entering Traffic Lane	1	4.76%
Making Right Turn	1	4.76%
Grand Total	21	100.00%

Unit 1 Contributing Factor	Crashes	%
Failure to Yield	20	95.24%
Ran Stop Sign	1	4.76%
Grand Total	21	100.00%

Unit 1 Object Struck	Crashes	%
Nothing Struck	21	100.00%
Grand Total	21	100.00%

Unit 1 Traffic Control	Crashes	%
Stop Sign	18	85.71%
No Control	2	9.52%
Signal	1	4.76%
Grand Total	21	100.00%

Unit 1 Posted Speed	Crashes	%
40	1	4.76%
45	12	57.14%
55	8	38.10%
Grand Total	21	100.00%

Unit 1 Direction From	Crashes	%
North	10	47.62%
South	7	33.33%
East	2	9.52%
Northwest	2	9.52%
Grand Total	21	100.00%

Unit 1 Direction To	Crashes	%
South	9	42.86%
North	5	23.81%
East	3	14.29%
Northwest	3	14.29%
West	1	4.76%
Grand Total	21	100.00%

POR SR 14 at Alliance (CR125) & at Yale (CR55) CAMTool 2019-2023

Crash Summary Sheet

Unit 1 Summary

Unit 1 Type	Crashes	%
Passenger Car	9	42.86%
Sport Utility Vehicle	5	23.81%
Cargo Van	2	9.52%
Passenger Van (minivan)	2	9.52%
Unknown or Hit/Skip	1	4.76%
Semi-Tractor	1	4.76%
Pick up	1	4.76%
Grand Total	21	100.00%

Unit 1 Special Function	Crashes	%
None	20	95.24%
Other / Unknown	1	4.76%
Grand Total	21	100.00%

POR SR 14 at Alliance (CR125) & at Yale (CR55) CAMTool 2019-2023

Crash Summary Sheet

Unit 2 Summary

Unit 2 Pre-Crash Action	Crashes	%
Straight Ahead	21	100.00%
Grand Total	21	100.00%

Unit 2 Contributing Factor	Crashes	%
None	21	100.00%
Grand Total	21	100.00%

Unit 2 Direction From	Crashes	%
Northwest	9	42.86%
Southeast	10	47.62%
West	2	9.52%
Grand Total	21	100.00%

Unit 2 Direction To	Crashes	%
East	2	9.52%
Northwest	10	47.62%
Southeast	9	42.86%
Grand Total	21	100.00%

Unit 2 Type	Crashes	%
Sport Utility Vehicle	8	38.10%
Passenger Car	7	33.33%
Pick up	4	19.05%
Cargo Van	1	4.76%
Single Unit Truck	1	4.76%
Grand Total	21	100.00%

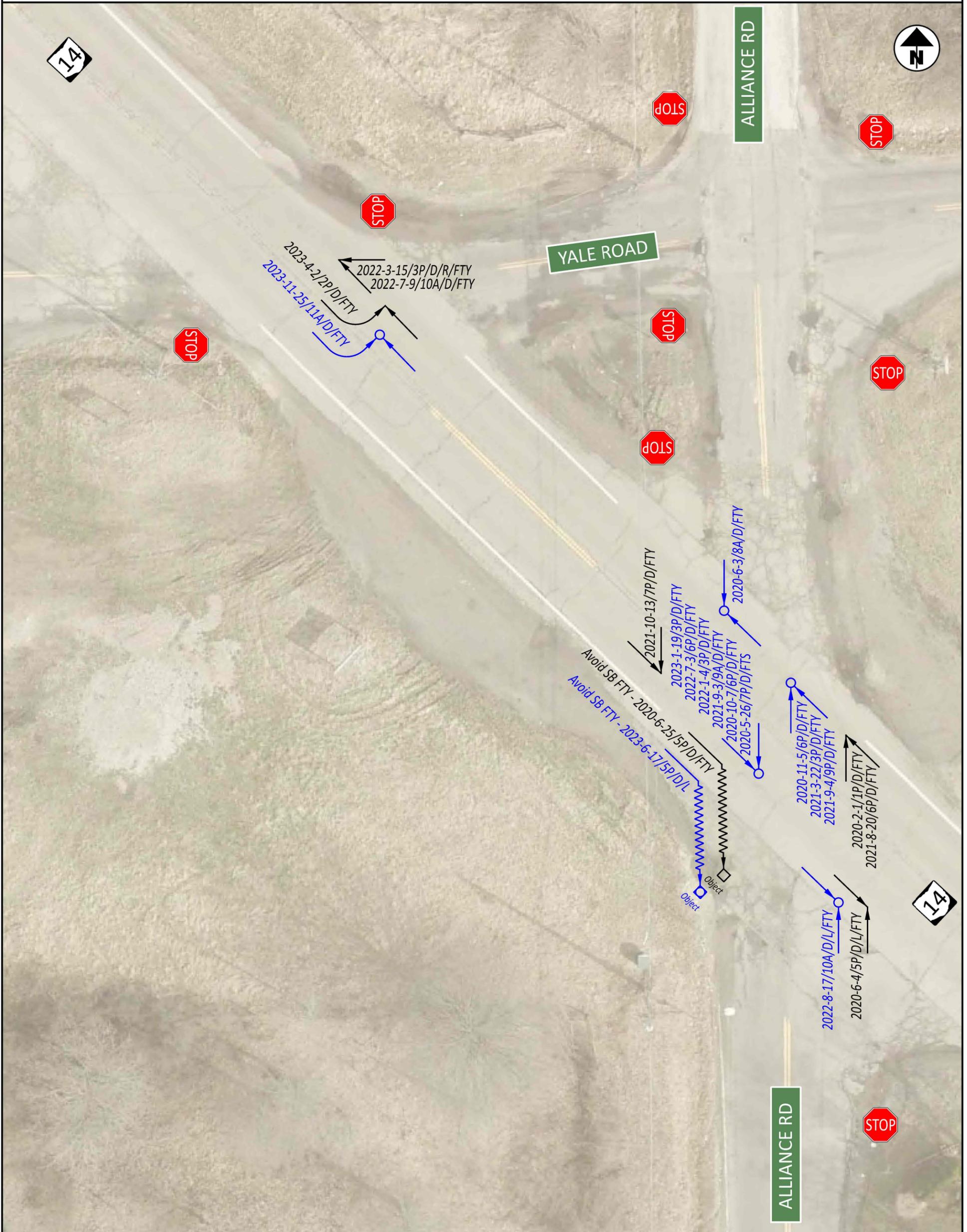
Unit 2 Special Function	Crashes	%
None	20	95.24%
Construction Equipment	1	4.76%
Grand Total	21	100.00%

Appendix E – Crash Diagram



COLLISION DIAGRAM

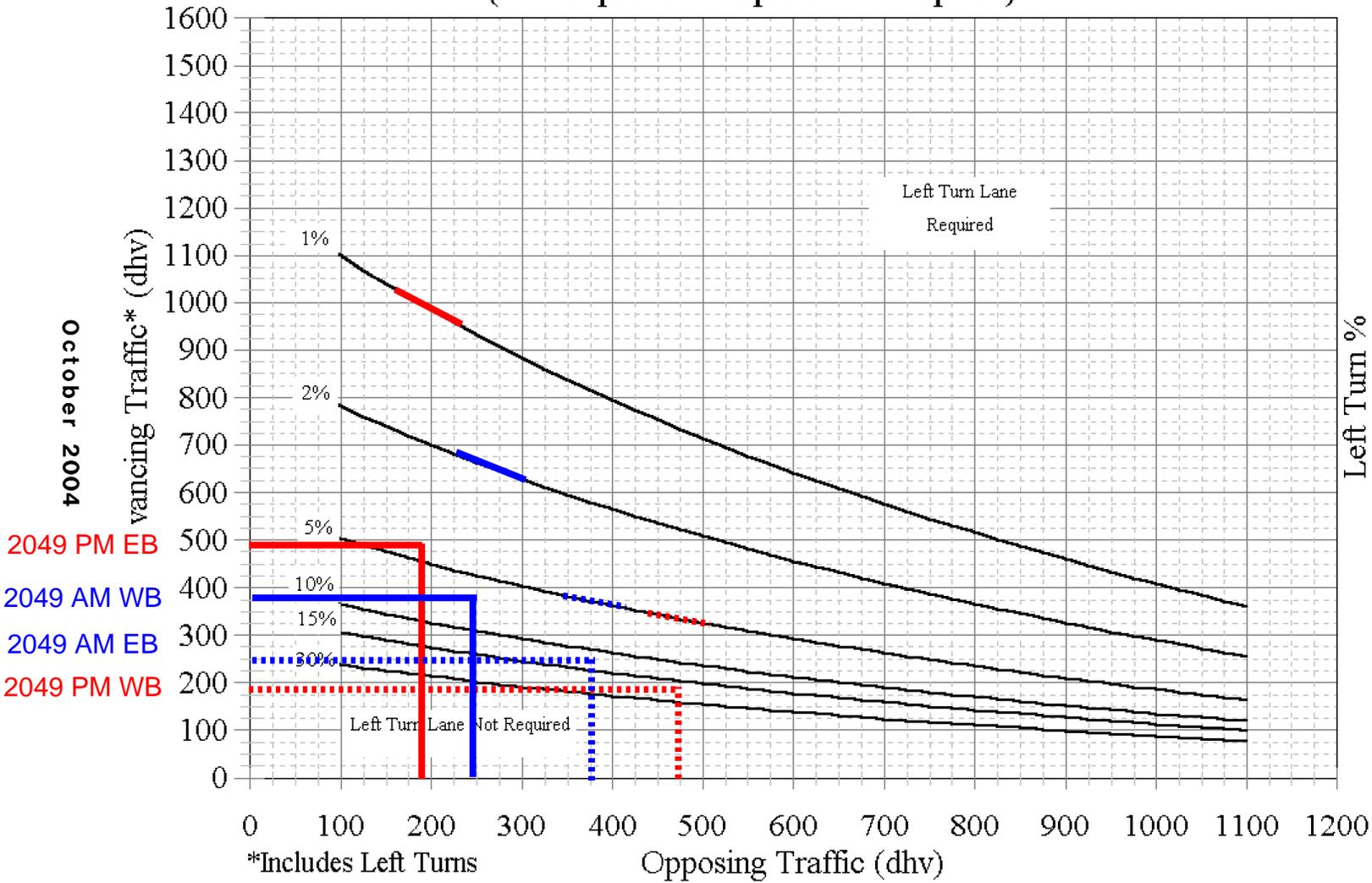
POR SR 14 at YALE RD (CR 55) & ALLIANCE RD (CR 125)
 SLM 21.69 & 21.72
 2019-2023



<ul style="list-style-type: none"> → Vehicle Direction ← Backing ↔ Pedestrian ⚡ Out of Control ○ Overturn 	<ul style="list-style-type: none"> ○ Injury ● Fatal □ Fixed Object ⊠ Parked Vehicle TEXT Collision Information 	<p>Road Condition:</p> <ul style="list-style-type: none"> D - Dry W - Wet S - Snow I - Ice 	<ul style="list-style-type: none"> FTY - Failure to Yield FTS - Failure to Stop FTC - Failure to Control LOC - Left of Center RRL - Ran Red Light OVI - Operating Vehicle Impaired 	TOTAL CRASHES ON PAGE	
				FREQUENCY	SEVERITY
				0 2019	8 NON-INJURY (38%)
				7 2020	13 INJURY/FATAL (62%)
				5 2021	
				5 2022	
				4 2023	21 TOTAL

Appendix F – Turn Lane Warrants

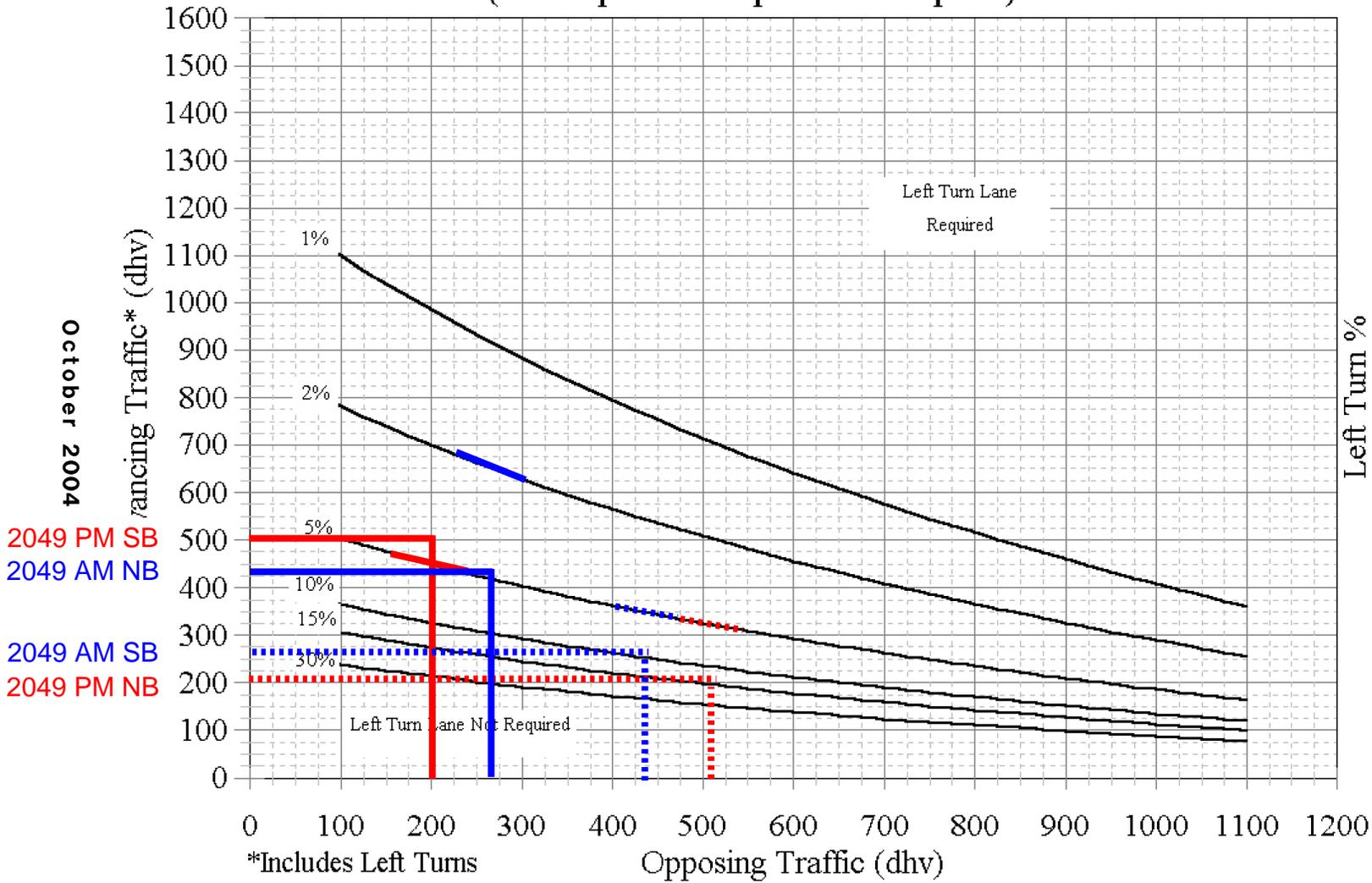
2-Lane Highway Left Turn Lane Warrant (>40 mph or 70 kph Posted Speed)



**2-LANE LEFT TURN LANE
 WARRANT (HIGH SPEED)**

401-5b
 REFERENCE SECTION
 401.6.1

2-Lane Highway Left Turn Lane Warrant (>40 mph or 70 kph Posted Speed)



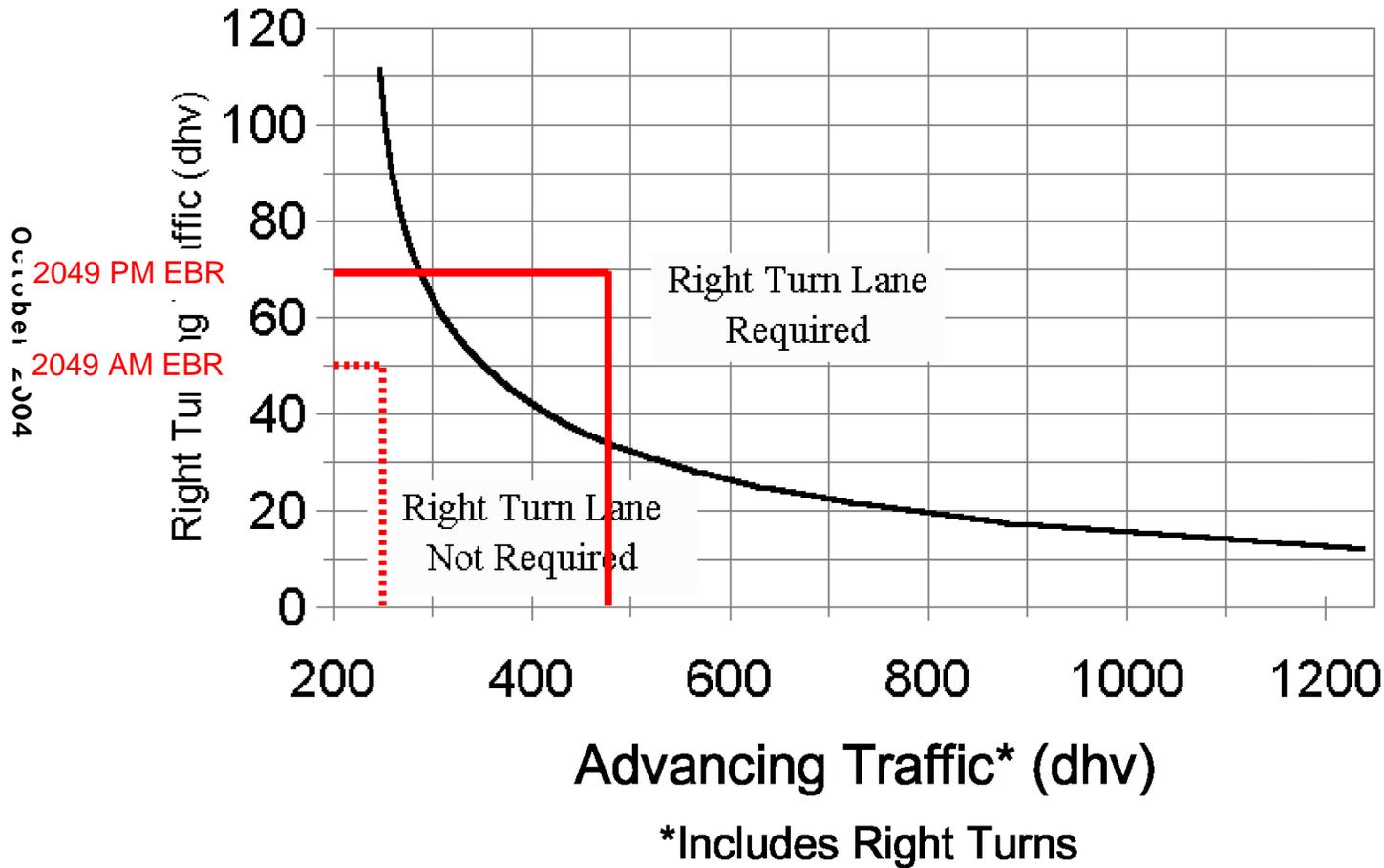
2-LANE LEFT TURN LANE WARRANT (HIGH SPEED)

401-5b

REFERENCE SECTION
401.6.1

SR 14 at Alliance
Right Turn Lane Warrant
All other RT movements < 10
2049 DHV Analysis

2-Lane Highway Right Turn Lane Warrant > 40 mph or 70 kph Posted Speed



2-LANE RIGHT TURN LANE WARRANT (HIGH SPEED)	
401-6b	REFERENCE SECTION 401.6.3

Appendix G – Signal Warrant Analysis

STUDY AND ANALYSIS INFORMATION

Municipality:	Portage County	Traffic Volumes Obtained By:	ODOT District 4
County:	Portage	Analysis Date:	3/5/2025
ODOT Engineering District:	4	Agency/ Company Name Performing Warrant Analysis:	Woolpert
Google map link:	Map		

Analysis Information

Data Collection Date:
Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Existing Traffic Signal at intersection:

Total Number of Approaches at Intersection:

Major Street Information

Major Street Name and Route Number:

Major Street Approach Direction:

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

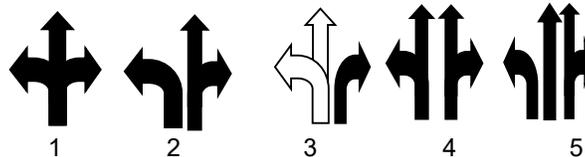
Speed Limit or 85th Percentile Speed on the Major Street*: MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number:

Minor Street Approach Configuration:

1	N-Bound
1	S-Bound



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

Apply Right Turn Lane Reduction*:

*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?	100% Warrant Satisfied?	Notes and Comments: <small>*Known error: if Speed Limit < 45mph, it may not state that it passes at 70%.</small>			
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. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">3:45 PM</td></tr> <tr><td style="text-align: center;">4:45 PM</td></tr> </table>	Peak Hour	3:45 PM	4:45 PM
Peak Hour						
3:45 PM						
4:45 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. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">3:45 PM</td></tr> <tr><td style="text-align: center;">4:45 PM</td></tr> </table>	Peak Hour	3:45 PM	4:45 PM
Peak Hour						
3:45 PM						
4:45 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	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	No		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.

<p>If no warrants are satisfied, additional options may be considered:</p> <ol style="list-style-type: none"> 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: Do Not Install New Traffic Signal

Notes:

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1	X		500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1			600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	0	0																
12:15 AM	0	0																
12:30 AM	0	0																
12:45 AM	0	0																
1:00 AM	0	0																
1:15 AM	0	0																
1:30 AM	0	0																
1:45 AM	0	0																
2:00 AM	0	0																
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5:15 AM	0	0																
5:30 AM	0	0																
5:45 AM	0	0																
6:00 AM	0	0																
6:15 AM	97	10																
6:30 AM	206	23																
6:45 AM	317	38													1			
7:00 AM	428	48			1						1	1					1	1
7:15 AM	427	49																
7:30 AM	405	56																
7:45 AM	362	54													1			
8:00 AM	306	54																
8:15 AM	269	48																
8:30 AM	239	38																
8:45 AM	228	36																
9:00 AM	242	37																
9:15 AM	249	41																
9:30 AM	253	39																
9:45 AM	249	28																
10:00 AM	245	27																
10:15 AM	237	22																
10:30 AM	253	20																
10:45 AM	269	29																
11:00 AM	284	30																
11:15 AM	296	32													1			
11:30 AM	281	35																
11:45 AM	279	40																
12:00 PM	260	38																
12:15 PM	250	43																
12:30 PM	279	41																
12:45 PM	271	37																
1:00 PM	301	40																
1:15 PM	313	46													1			
1:30 PM	317	51																
1:45 PM	353	50			1													
2:00 PM	342	48													1			
2:15 PM	388	41																
2:30 PM	396	45																
2:45 PM	399	46			1													
3:00 PM	449	47									1				1		1	1
3:15 PM	437	48																
3:30 PM	458	51																
3:45 PM	463	50			1													

4:00 PM	451	53								1				1		1	1				
4:15 PM	457	53																			
4:30 PM	433	47																			
4:45 PM	440	44			1																
5:00 PM	413	46								1			1								
5:15 PM	366	43																			
5:30 PM	337	41																			
5:45 PM	288	42																			
6:00 PM	252	35																			
6:15 PM	187	27																			
6:30 PM	116	18																			
6:45 PM	55	9																			
7:00 PM	0	0																			
7:15 PM	0	0																			
7:30 PM	0	0																			
7:45 PM	0	0																			
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10:30 PM	0	0																			
10:45 PM	0	0																			
11:00 PM	0	0																			
11:15 PM	0	0																			
11:30 PM	0	0																			
11:45 PM	0	0																			
HOURS MET			0	0	5	0	0	0	0	0	0	0	0	4	0	0	0	8	0	3	3
WARRANT SATISFIED?			NO		NO		NO		NO		NO		NO		NO		NO		NO		

Warrant Met: **No**

Notes:

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME										
Number of Lanes for Moving Traffic on Each Approach				Total Number of Unique Hours Met on Figure 4C-1					0	
Major street: 1 Lane				Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)					0	
Minor Street: 1 Lane										
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?								Yes		
Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Required Minimum Minor Street For 4C-1	Required Minimum Minor Street For 4C-2	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Minor - Alliance Rd		Major - SR 14							
	N-Bound	S-Bound	W-Bound	E-Bound						
12:00 AM	0	0	0	0	0	550	377	0		
12:15 AM	0	0	0	0	0	550	377	0		
12:30 AM	0	0	0	0	0	550	377	0		
12:45 AM	0	0	0	0	0	550	377	0		
1:00 AM	0	0	0	0	0	550	377	0		
1:15 AM	0	0	0	0	0	550	377	0		
1:30 AM	0	0	0	0	0	550	377	0		
1:45 AM	0	0	0	0	0	550	377	0		
2:00 AM	0	0	0	0	0	550	377	0		
2:15 AM	0	0	0	0	0	550	377	0		
2:30 AM	0	0	0	0	0	550	377	0		
2:45 AM	0	0	0	0	0	550	377	0		
3:00 AM	0	0	0	0	0	550	377	0		
3:15 AM	0	0	0	0	0	550	377	0		
3:30 AM	0	0	0	0	0	550	377	0		
3:45 AM	0	0	0	0	0	550	377	0		
4:00 AM	0	0	0	0	0	550	377	0		
4:15 AM	0	0	0	0	0	550	377	0		
4:30 AM	0	0	0	0	0	550	377	0		
4:45 AM	0	0	0	0	0	550	377	0		
5:00 AM	0	0	0	0	0	550	377	0		
5:15 AM	0	0	0	0	0	550	377	0		
5:30 AM	0	0	0	0	0	550	377	0		
5:45 AM	0	0	0	0	0	550	377	0		
6:00 AM	0	0	0	0	0	550	377	0		
6:15 AM	1	10	17	80	97	485	315	10		
6:30 AM	6	23	52	154	206	417	252	23		
6:45 AM	12	38	86	231	317	353	197	38		
7:00 AM	16	48	136	292	428	296	151	48		
7:15 AM	22	49	163	264	427	296	151	49		
7:30 AM	19	56	155	250	405	307	160	56		
7:45 AM	21	54	156	206	362	329	177	54		
8:00 AM	22	54	128	178	306	359	202	54		
8:15 AM	16	48	106	163	269	380	220	48		
8:30 AM	15	38	102	137	239	397	235	38		
8:45 AM	9	36	96	132	228	404	241	36		
9:00 AM	5	37	105	137	242	395	233	37		
9:15 AM	8	41	118	131	249	391	230	41		
9:30 AM	10	39	119	134	253	389	228	39		
9:45 AM	11	28	114	135	249	391	230	28		
10:00 AM	16	27	119	126	245	394	232	27		
10:15 AM	14	22	113	124	237	398	236	22		
10:30 AM	12	20	128	125	253	389	228	20		
10:45 AM	10	29	137	132	269	380	220	29		
11:00 AM	7	30	148	136	284	371	213	30		
11:15 AM	7	32	153	143	296	365	207	32		
11:30 AM	7	35	156	125	281	373	214	35		
11:45 AM	8	40	154	125	279	374	215	40		
12:00 PM	7	38	141	119	260	385	224	38		
12:15 PM	7	43	141	109	250	391	229	43		
12:30 PM	9	41	142	137	279	374	215	41		
12:45 PM	9	37	141	130	271	379	219	37		
1:00 PM	7	40	155	146	301	362	204	40		
1:15 PM	7	46	164	149	313	355	199	46		
1:30 PM	11	51	176	141	317	353	197	51		
1:45 PM	17	50	203	150	353	334	181	50		

2:00 PM	22	48	198	144	342	340	186	48		
2:15 PM	26	41	226	162	388	316	166	41		
2:30 PM	29	45	243	153	396	312	163	45		
2:45 PM	31	46	252	147	399	310	162	46		
3:00 PM	29	47	299	150	449	286	143	47		
3:15 PM	27	48	301	136	437	292	147	48		
3:30 PM	23	51	318	140	458	281	140	51		
3:45 PM	19	50	324	139	463	279	138	50		
4:00 PM	22	53	323	128	451	285	142	53		
4:15 PM	23	53	333	124	457	282	140	53		
4:30 PM	24	47	315	118	433	293	149	47		
4:45 PM	21	44	319	121	440	290	146	44		
5:00 PM	18	46	297	116	413	303	156	46		
5:15 PM	19	43	255	111	366	327	175	43		
5:30 PM	16	41	235	102	337	342	188	41		
5:45 PM	15	42	193	95	288	369	211	42		
6:00 PM	13	35	166	86	252	390	228	35		
6:15 PM	7	27	125	62	187	428	262	27		
6:30 PM	3	18	74	42	116	472	303	18		
6:45 PM	1	9	40	15	55	512	341	9		
7:00 PM	0	0	0	0	0	550	377	0		
7:15 PM	0	0	0	0	0	550	377	0		
7:30 PM	0	0	0	0	0	550	377	0		
7:45 PM	0	0	0	0	0	550	377	0		
8:00 PM	0	0	0	0	0	550	377	0		
8:15 PM	0	0	0	0	0	550	377	0		
8:30 PM	0	0	0	0	0	550	377	0		
8:45 PM	0	0	0	0	0	550	377	0		
9:00 PM	0	0	0	0	0	550	377	0		
9:15 PM	0	0	0	0	0	550	377	0		
9:30 PM	0	0	0	0	0	550	377	0		
9:45 PM	0	0	0	0	0	550	377	0		
10:00 PM	0	0	0	0	0	550	377	0		
10:15 PM	0	0	0	0	0	550	377	0		
10:30 PM	0	0	0	0	0	550	377	0		
10:45 PM	0	0	0	0	0	550	377	0		
11:00 PM	0	0	0	0	0	550	377	0		
11:15 PM	0	0	0	0	0	550	377	0		
11:30 PM	0	0	0	0	0	550	377	0		
11:45 PM	0	0	0	0	0	550	377	0		

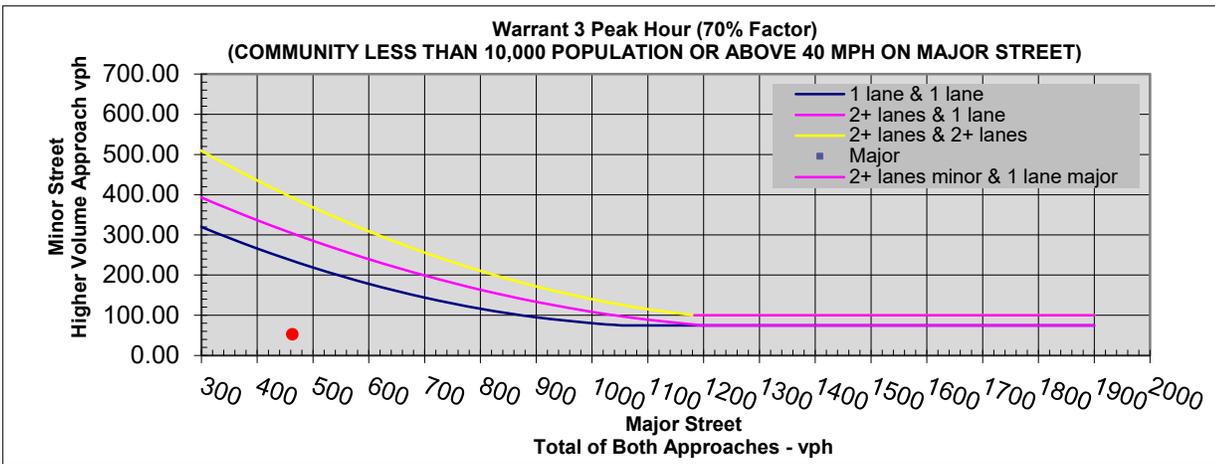
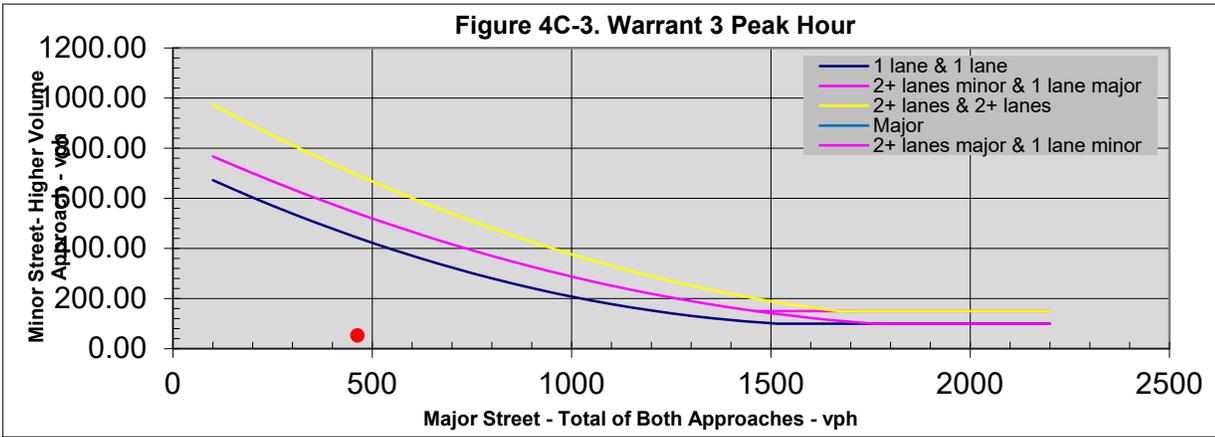
OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	3:45 PM
Major Street:	1 Lane	Peak Hour End Time	4:45 PM
Minor Street:	1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
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Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
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Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	No
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	No
<i>*If applicable, attach all supporting calculations and documentation.</i>	

Are the requirements for Warrant 3 met?:	No
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Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
12:00 AM	0	0	0	0
12:15 AM	0	0	0	0
12:30 AM	0	0	0	0
12:45 AM	0	0	0	0
1:00 AM	0	0	0	0
1:15 AM	0	0	0	0
1:30 AM	0	0	0	0
1:45 AM	0	0	0	0
2:00 AM	0	0	0	0
2:15 AM	0	0	0	0
2:30 AM	0	0	0	0
2:45 AM	0	0	0	0
3:00 AM	0	0	0	0
3:15 AM	0	0	0	0
3:30 AM	0	0	0	0
3:45 AM	0	0	0	0
4:00 AM	0	0	0	0
4:15 AM	0	0	0	0
4:30 AM	0	0	0	0
4:45 AM	0	0	0	0
5:00 AM	0	0	0	0
5:15 AM	0	0	0	0
5:30 AM	0	0	0	0
5:45 AM	0	0	0	0
6:00 AM	0	0	0	0
6:15 AM	97	10	107	108
6:30 AM	206	23	229	235
6:45 AM	317	38	355	367
7:00 AM	428	48	476	492
7:15 AM	427	49	476	498
7:30 AM	405	56	461	480
7:45 AM	362	54	416	437
8:00 AM	306	54	360	382
8:15 AM	269	48	317	333
8:30 AM	239	38	277	292
8:45 AM	228	36	264	273
9:00 AM	242	37	279	284
9:15 AM	249	41	290	298
9:30 AM	253	39	292	302
9:45 AM	249	28	277	288
10:00 AM	245	27	272	288
10:15 AM	237	22	259	273
10:30 AM	253	20	273	285
10:45 AM	269	29	298	308
11:00 AM	284	30	314	321
11:15 AM	296	32	328	335
11:30 AM	281	35	316	323
11:45 AM	279	40	319	327

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
463	53	443	236

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12:00 PM	260	38	298	305
12:15 PM	250	43	293	300
12:30 PM	279	41	320	329
12:45 PM	271	37	308	317
1:00 PM	301	40	341	348
1:15 PM	313	46	359	366
1:30 PM	317	51	368	379
1:45 PM	353	50	403	420
2:00 PM	342	48	390	412
2:15 PM	388	41	429	455
2:30 PM	396	45	441	470
2:45 PM	399	46	445	476
3:00 PM	449	47	496	525
3:15 PM	437	48	485	512
3:30 PM	458	51	509	532
3:45 PM	463	50	513	532
4:00 PM	451	53	504	526
4:15 PM	457	53	510	533
4:30 PM	433	47	480	504
4:45 PM	440	44	484	505
5:00 PM	413	46	459	477
5:15 PM	366	43	409	428
5:30 PM	337	41	378	394
5:45 PM	288	42	330	345
6:00 PM	252	35	287	300
6:15 PM	187	27	214	221
6:30 PM	116	18	134	137
6:45 PM	55	9	64	65
7:00 PM	0	0	0	0
7:15 PM	0	0	0	0
7:30 PM	0	0	0	0
7:45 PM	0	0	0	0
8:00 PM	0	0	0	0
8:15 PM	0	0	0	0
8:30 PM	0	0	0	0
8:45 PM	0	0	0	0
9:00 PM	0	0	0	0
9:15 PM	0	0	0	0
9:30 PM	0	0	0	0
9:45 PM	0	0	0	0
10:00 PM	0	0	0	0
10:15 PM	0	0	0	0
10:30 PM	0	0	0	0
10:45 PM	0	0	0	0
11:00 PM	0	0	0	0
11:15 PM	0	0	0	0
11:30 PM	0	0	0	0
11:45 PM	0	0	0	0

STUDY AND ANALYSIS INFORMATION

Municipality:	Portage County	Traffic Volumes Obtained By:	ODOT District 4
County:	Portage	Analysis Date:	3/5/2025
ODOT Engineering District:	4	Agency/ Company Name Performing Warrant Analysis:	Woolpert
Google map link:	Map		

Analysis Information

Data Collection Date:
Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Existing Traffic Signal at intersection:

Total Number of Approaches at Intersection:

Major Street Information

Major Street Name and Route Number:

Major Street Approach Direction:

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

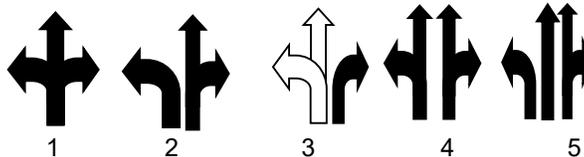
Speed Limit or 85th Percentile Speed on the Major Street*: MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number:

Minor Street Approach Configuration:

1	E-Bound
1	W-Bound



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

Apply Right Turn Lane Reduction*:

*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?	100% Warrant Satisfied?	Notes and Comments: <small>*Known error: if Speed Limit < 45mph, it may not state that it passes at 70%.</small>			
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. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">4:15 PM</td></tr> <tr><td style="text-align: center;">5:15 PM</td></tr> </table>	Peak Hour	4:15 PM	5:15 PM
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. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">4:15 PM</td></tr> <tr><td style="text-align: center;">5:15 PM</td></tr> </table>	Peak Hour	4:15 PM	5:15 PM
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	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	No		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.

<p>If no warrants are satisfied, additional options may be considered:</p> <ol style="list-style-type: none"> 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: Do Not Install New Traffic Signal

Notes:

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1	X		500	150	420	105	750	75	630	53	400	120	600	60	280	84	420	42
2+ / 1			600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	0	0																
12:15 AM	0	0																
12:30 AM	0	0																
12:45 AM	0	0																
1:00 AM	0	0																
1:15 AM	0	0																
1:30 AM	0	0																
1:45 AM	0	0																
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5:15 AM	0	0																
5:30 AM	0	0																
5:45 AM	0	0																
6:00 AM	0	0																
6:15 AM	100	2																
6:30 AM	211	5																
6:45 AM	331	7												1				
7:00 AM	449	8			1						1						1	
7:15 AM	447	8																
7:30 AM	435	6																
7:45 AM	391	6												1				
8:00 AM	334	5																
8:15 AM	298	5																
8:30 AM	263	5																
8:45 AM	255	4																
9:00 AM	267	4																
9:15 AM	276	3																
9:30 AM	276	6																
9:45 AM	260	8																
10:00 AM	259	8																
10:15 AM	249	7																
10:30 AM	263	5																
10:45 AM	291	3												1				
11:00 AM	308	4																
11:15 AM	322	5																
11:30 AM	311	5																
11:45 AM	311	5												1				
12:00 PM	293	3																
12:15 PM	287	3																
12:30 PM	311	4																
12:45 PM	302	3												1				
1:00 PM	332	6																
1:15 PM	344	6																
1:30 PM	352	7			1													
1:45 PM	383	11												1				
2:00 PM	371	12																
2:15 PM	412	14									1							
2:30 PM	421	16			1												1	
2:45 PM	428	9												1				
3:00 PM	476	9																
3:15 PM	463	8									1							
3:30 PM	494	4			1												1	
3:45 PM	489	7												1				

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	0
Major street: 1 Lane	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	0
Minor Street: 1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Required Minimum Minor Street For 4C-1	Required Minimum Minor Street For 4C-2	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - SR 14		Minor - Yale Rd							
	N-Bound	S-Bound	W-Bound	E-Bound						
12:00 AM	0	0	0	0	0	550	377	0		
12:15 AM	0	0	0	0	0	550	377	0		
12:30 AM	0	0	0	0	0	550	377	0		
12:45 AM	0	0	0	0	0	550	377	0		
1:00 AM	0	0	0	0	0	550	377	0		
1:15 AM	0	0	0	0	0	550	377	0		
1:30 AM	0	0	0	0	0	550	377	0		
1:45 AM	0	0	0	0	0	550	377	0		
2:00 AM	0	0	0	0	0	550	377	0		
2:15 AM	0	0	0	0	0	550	377	0		
2:30 AM	0	0	0	0	0	550	377	0		
2:45 AM	0	0	0	0	0	550	377	0		
3:00 AM	0	0	0	0	0	550	377	0		
3:15 AM	0	0	0	0	0	550	377	0		
3:30 AM	0	0	0	0	0	550	377	0		
3:45 AM	0	0	0	0	0	550	377	0		
4:00 AM	0	0	0	0	0	550	377	0		
4:15 AM	0	0	0	0	0	550	377	0		
4:30 AM	0	0	0	0	0	550	377	0		
4:45 AM	0	0	0	0	0	550	377	0		
5:00 AM	0	0	0	0	0	550	377	0		
5:15 AM	0	0	0	0	0	550	377	0		
5:30 AM	0	0	0	0	0	550	377	0		
5:45 AM	0	0	0	0	0	550	377	0		
6:00 AM	0	0	0	0	0	550	377	0		
6:15 AM	17	83	2	2	100	483	313	2		
6:30 AM	52	159	5	4	211	414	249	5		
6:45 AM	86	245	6	7	331	346	191	7		
7:00 AM	134	315	8	8	449	286	143	8		
7:15 AM	162	285	8	6	447	287	144	8		
7:30 AM	154	281	6	6	435	292	148	6		
7:45 AM	156	235	6	5	391	314	165	6		
8:00 AM	129	205	5	5	334	344	189	5		
8:15 AM	106	192	3	5	298	364	206	5		
8:30 AM	102	161	2	5	263	383	223	5		
8:45 AM	97	158	1	4	255	388	227	4		
9:00 AM	107	160	1	4	267	381	221	4		
9:15 AM	120	156	2	3	276	376	216	3		
9:30 AM	122	154	3	6	276	376	216	6		
9:45 AM	114	146	3	8	260	385	224	8		
10:00 AM	118	141	3	8	259	386	225	8		
10:15 AM	114	135	3	7	249	391	230	7		
10:30 AM	128	135	2	5	263	383	223	5		
10:45 AM	142	149	3	3	291	367	209	3		
11:00 AM	155	153	4	4	308	358	201	4		
11:15 AM	158	164	3	5	322	350	195	5		
11:30 AM	160	151	3	5	311	356	200	5		
11:45 AM	154	157	3	5	311	356	200	5		
12:00 PM	143	150	2	3	293	366	208	3		
12:15 PM	144	143	3	3	287	370	211	3		
12:30 PM	148	163	4	3	311	356	200	4		

SR 14 at Yale_ODOT+Signal+Warrant+Spreadsheet_Nov2024

12:45 PM	153	149	3	3	302	361	204	3		
1:00 PM	165	167	6	4	332	345	190	6		
1:15 PM	177	167	4	6	344	339	185	6		
1:30 PM	186	166	4	7	352	334	181	7		
1:45 PM	210	173	4	11	383	318	168	11		
2:00 PM	208	163	3	12	371	325	173	12		
2:15 PM	233	179	5	14	412	304	157	14		
2:30 PM	250	171	8	16	421	299	153	16		
2:45 PM	262	166	9	9	428	296	151	9		
3:00 PM	310	166	9	7	476	273	133	9		
3:15 PM	315	148	8	6	463	279	138	8		
3:30 PM	342	152	4	4	494	265	127	4		
3:45 PM	346	143	3	7	489	267	129	7		
4:00 PM	343	136	3	11	479	272	132	11		
4:15 PM	359	137	3	13	496	264	126	13		
4:30 PM	332	131	4	14	463	279	138	14		
4:45 PM	335	140	4	9	475	273	134	9		
5:00 PM	311	137	4	7	448	286	143	7		
5:15 PM	258	129	3	6	387	316	167	6		
5:30 PM	241	118	4	5	359	331	178	5		
5:45 PM	197	110	4	5	307	359	202	5		
6:00 PM	167	99	4	5	266	382	221	5		
6:15 PM	127	74	3	4	201	420	255	4		
6:30 PM	73	50	2	2	123	468	299	2		
6:45 PM	38	21	2	2	59	510	338	2		
7:00 PM	0	0	0	0	0	550	377	0		
7:15 PM	0	0	0	0	0	550	377	0		
7:30 PM	0	0	0	0	0	550	377	0		
7:45 PM	0	0	0	0	0	550	377	0		
8:00 PM	0	0	0	0	0	550	377	0		
8:15 PM	0	0	0	0	0	550	377	0		
8:30 PM	0	0	0	0	0	550	377	0		
8:45 PM	0	0	0	0	0	550	377	0		
9:00 PM	0	0	0	0	0	550	377	0		
9:15 PM	0	0	0	0	0	550	377	0		
9:30 PM	0	0	0	0	0	550	377	0		
9:45 PM	0	0	0	0	0	550	377	0		
10:00 PM	0	0	0	0	0	550	377	0		
10:15 PM	0	0	0	0	0	550	377	0		
10:30 PM	0	0	0	0	0	550	377	0		
10:45 PM	0	0	0	0	0	550	377	0		
11:00 PM	0	0	0	0	0	550	377	0		
11:15 PM	0	0	0	0	0	550	377	0		
11:30 PM	0	0	0	0	0	550	377	0		
11:45 PM	0	0	0	0	0	550	377	0		

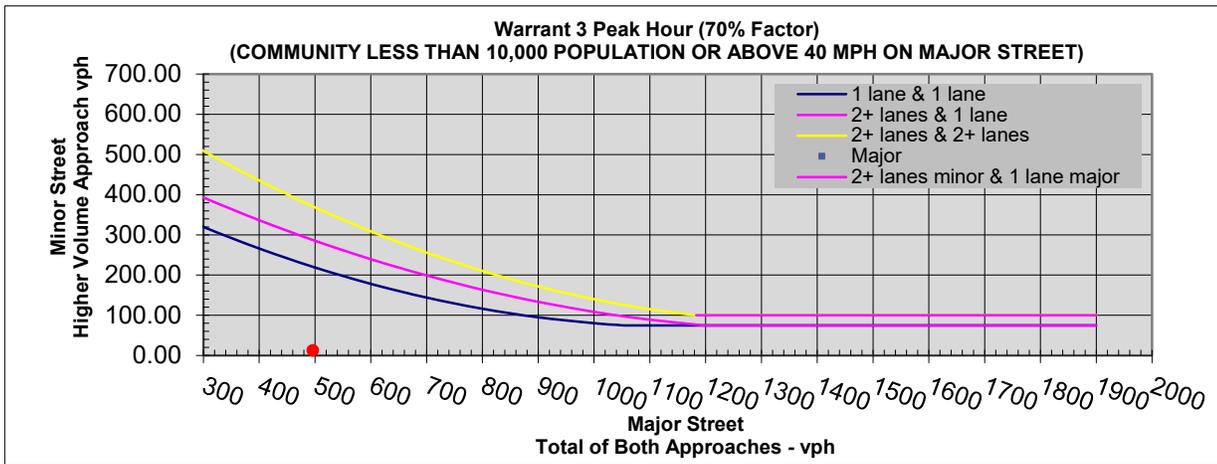
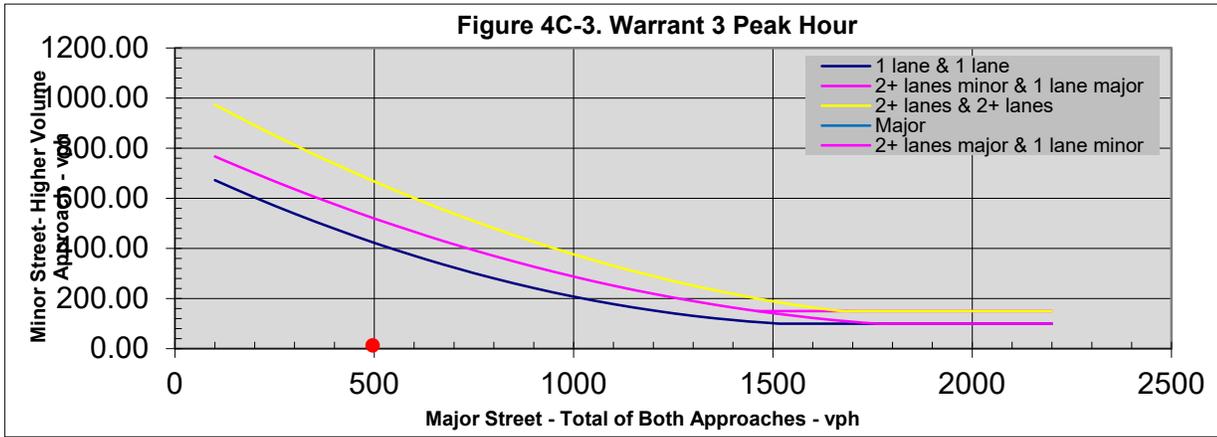
OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	4:15 PM
Major Street:	1 Lane	Peak Hour End Time	5:15 PM
Minor Street:	1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	No
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	No
<i>*If applicable, attach all supporting calculations and documentation.</i>	

Are the requirements for Warrant 3 met?:	No
--	----



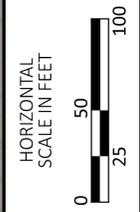
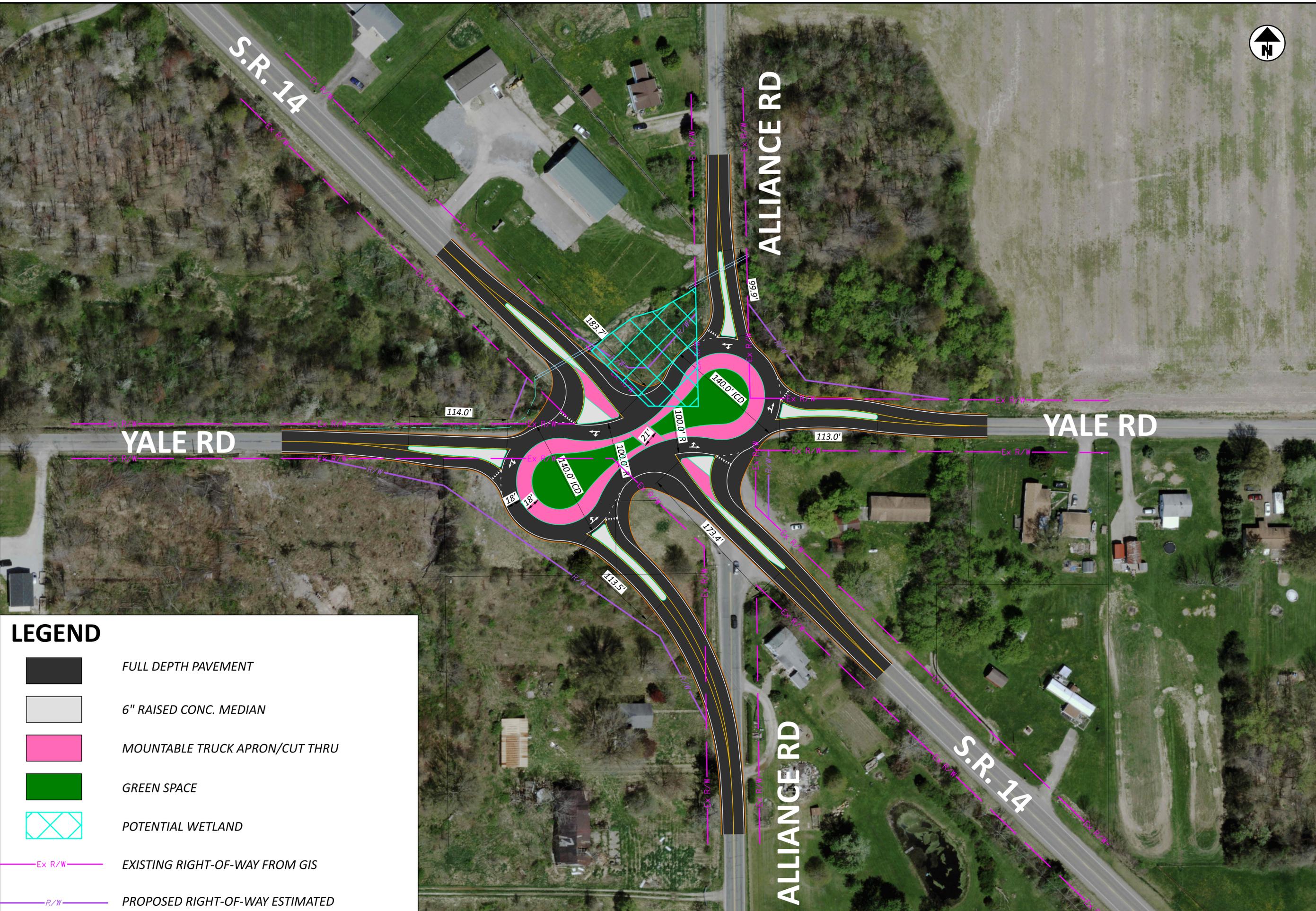
Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
12:00 AM	0	0	0	0
12:15 AM	0	0	0	0
12:30 AM	0	0	0	0
12:45 AM	0	0	0	0
1:00 AM	0	0	0	0
1:15 AM	0	0	0	0
1:30 AM	0	0	0	0
1:45 AM	0	0	0	0
2:00 AM	0	0	0	0
2:15 AM	0	0	0	0
2:30 AM	0	0	0	0
2:45 AM	0	0	0	0
3:00 AM	0	0	0	0
3:15 AM	0	0	0	0
3:30 AM	0	0	0	0
3:45 AM	0	0	0	0
4:00 AM	0	0	0	0
4:15 AM	0	0	0	0
4:30 AM	0	0	0	0
4:45 AM	0	0	0	0
5:00 AM	0	0	0	0
5:15 AM	0	0	0	0
5:30 AM	0	0	0	0
5:45 AM	0	0	0	0
6:00 AM	0	0	0	0
6:15 AM	100	2	102	104
6:30 AM	211	5	216	220
6:45 AM	331	7	338	344
7:00 AM	449	8	457	465
7:15 AM	447	8	455	461
7:30 AM	435	6	441	447
7:45 AM	391	6	397	402
8:00 AM	334	5	339	344
8:15 AM	298	5	303	306
8:30 AM	263	5	268	270
8:45 AM	255	4	259	260
9:00 AM	267	4	271	272
9:15 AM	276	3	279	281
9:30 AM	276	6	282	285
9:45 AM	260	8	268	271
10:00 AM	259	8	267	270
10:15 AM	249	7	256	259
10:30 AM	263	5	268	270
10:45 AM	291	3	294	297
11:00 AM	308	4	312	316
11:15 AM	322	5	327	330
11:30 AM	311	5	316	319
11:45 AM	311	5	316	319

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
496	13	425	221

SR 14 at Yale_ODOT+Signal+Warrant+Spreadsheet_Nov2024

12:00 PM	293	3	296	298
12:15 PM	287	3	290	293
12:30 PM	311	4	315	318
12:45 PM	302	3	305	308
1:00 PM	332	6	338	342
1:15 PM	344	6	350	354
1:30 PM	352	7	359	363
1:45 PM	383	11	394	398
2:00 PM	371	12	383	386
2:15 PM	412	14	426	431
2:30 PM	421	16	437	445
2:45 PM	428	9	437	446
3:00 PM	476	9	485	492
3:15 PM	463	8	471	477
3:30 PM	494	4	498	502
3:45 PM	489	7	496	499
4:00 PM	479	11	490	493
4:15 PM	496	13	509	512
4:30 PM	463	14	477	481
4:45 PM	475	9	484	488
5:00 PM	448	7	455	459
5:15 PM	387	6	393	396
5:30 PM	359	5	364	368
5:45 PM	307	5	312	316
6:00 PM	266	5	271	275
6:15 PM	201	4	205	208
6:30 PM	123	2	125	127
6:45 PM	59	2	61	63
7:00 PM	0	0	0	0
7:15 PM	0	0	0	0
7:30 PM	0	0	0	0
7:45 PM	0	0	0	0
8:00 PM	0	0	0	0
8:15 PM	0	0	0	0
8:30 PM	0	0	0	0
8:45 PM	0	0	0	0
9:00 PM	0	0	0	0
9:15 PM	0	0	0	0
9:30 PM	0	0	0	0
9:45 PM	0	0	0	0
10:00 PM	0	0	0	0
10:15 PM	0	0	0	0
10:30 PM	0	0	0	0
10:45 PM	0	0	0	0
11:00 PM	0	0	0	0
11:15 PM	0	0	0	0
11:30 PM	0	0	0	0
11:45 PM	0	0	0	0

Appendix H – Proposed Roundabout Alternatives



LEGEND

-  FULL DEPTH PAVEMENT
-  6" RAISED CONC. MEDIAN
-  MOUNTABLE TRUCK APRON/CUT THRU
-  GREEN SPACE
-  POTENTIAL WETLAND
-  EX R/W EXISTING RIGHT-OF-WAY FROM GIS
-  R/W PROPOSED RIGHT-OF-WAY ESTIMATED

POR-14-21.72
ALTERNATIVE 1: PEANUT ROUNDABOUT

DESIGN AGENCY



DESIGNER

AKA

REVIEWER

AC 05-07-2025

PROJECT ID

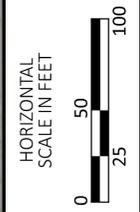
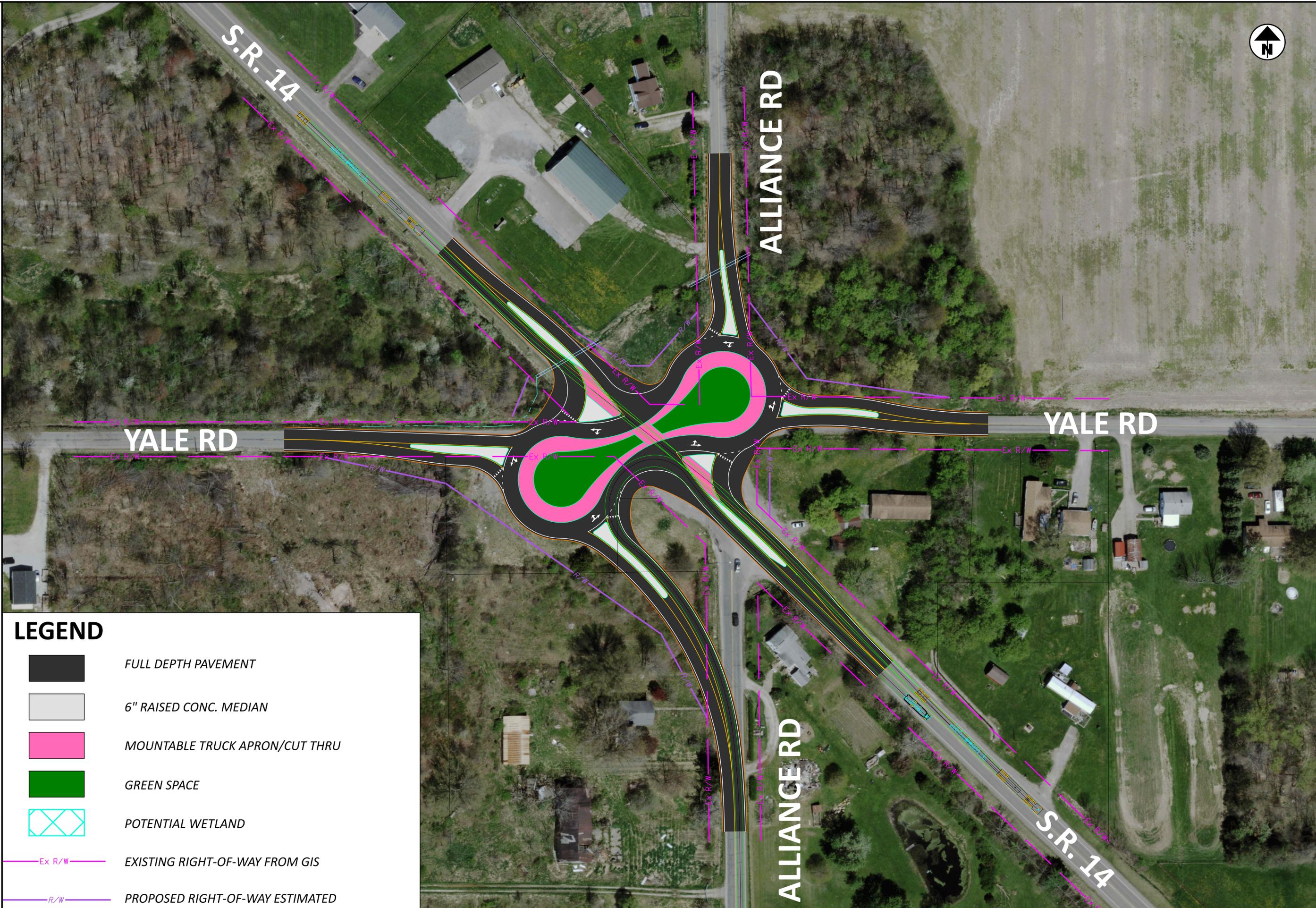
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SUBSET TOTAL

0 0

SHEET TOTAL

P.1 P.9



LEGEND

- FULL DEPTH PAVEMENT
- 6" RAISED CONC. MEDIAN
- MOUNTABLE TRUCK APRON/CUT THRU
- GREEN SPACE
- POTENTIAL WETLAND
- Ex R/W EXISTING RIGHT-OF-WAY FROM GIS
- R/W PROPOSED RIGHT-OF-WAY ESTIMATED

POR-14-21.72 - SUPERLOAD & BUS TRUCK TURNS
ALTERNATIVE 1: PEANUT ROUNDABOUT

DESIGN AGENCY



DESIGNER

AKA

REVIEWER

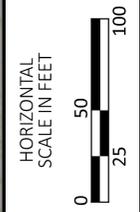
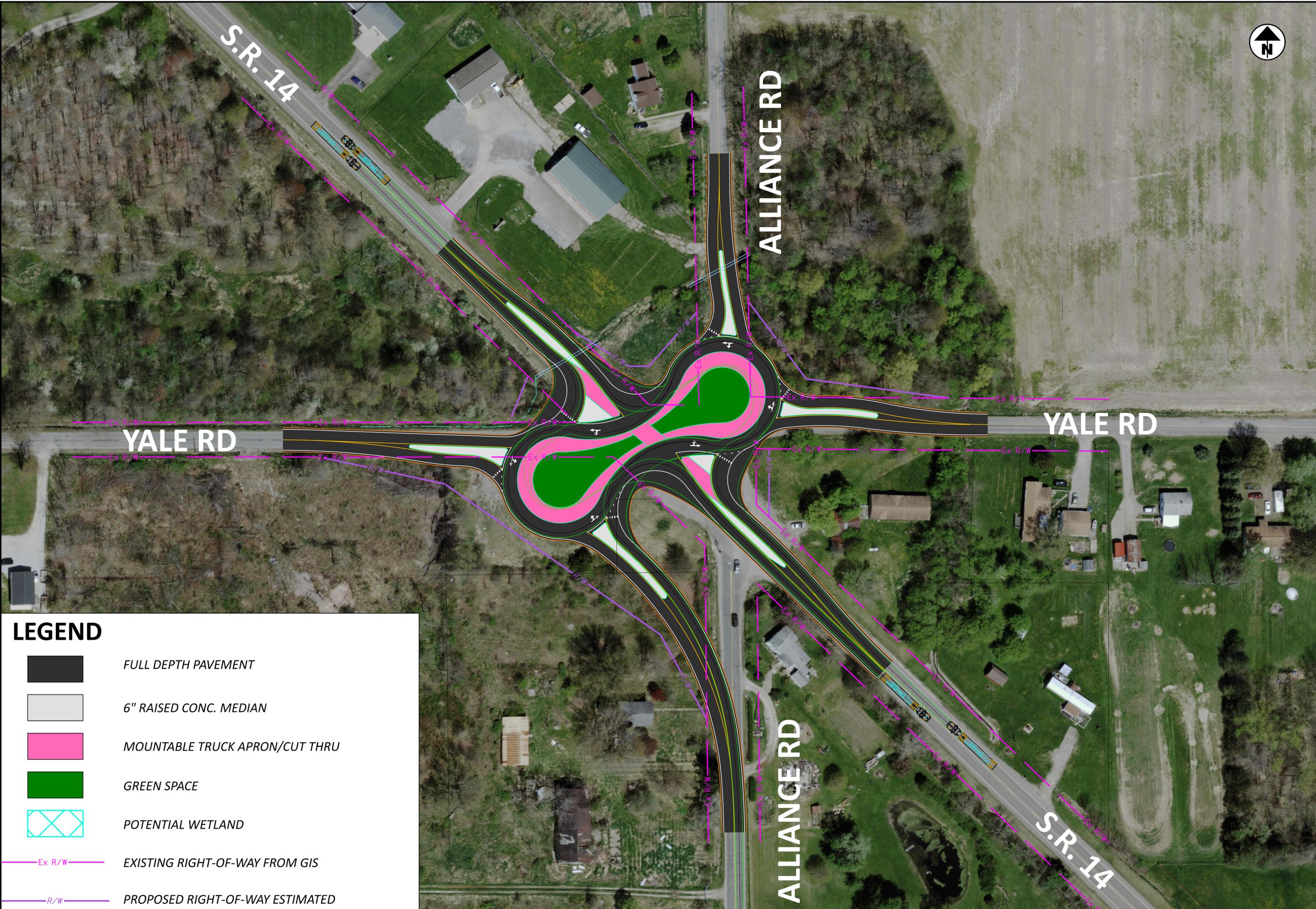
AC 05-07-2025

PROJECT ID

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SUBSET	TOTAL
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SHEET	TOTAL
P.2	P.9



LEGEND

-  FULL DEPTH PAVEMENT
-  6" RAISED CONC. MEDIAN
-  MOUNTABLE TRUCK APRON/CUT THRU
-  GREEN SPACE
-  POTENTIAL WETLAND
-  EX R/W EXISTING RIGHT-OF-WAY FROM GIS
-  R/W PROPOSED RIGHT-OF-WAY ESTIMATED

POR-14-21.72 - WB-67 TRUCK TURNS
ALTERNATIVE 1: PEANUT ROUNDABOUT

DESIGN AGENCY



DESIGNER

AKA

REVIEWER

AC 05-07-2025

PROJECT ID

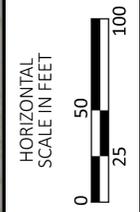
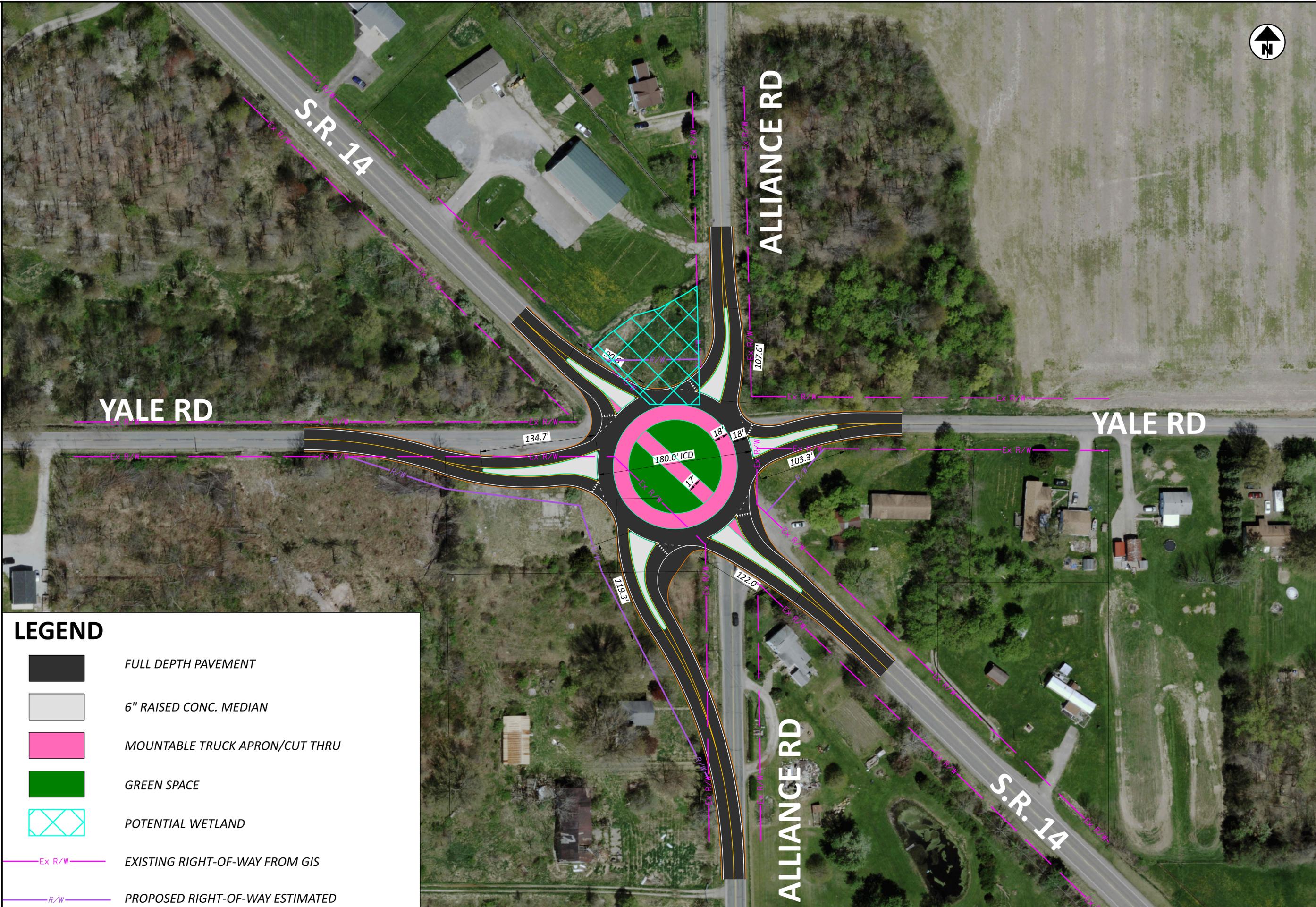
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SUBSET TOTAL

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SHEET TOTAL

P.3 P.9

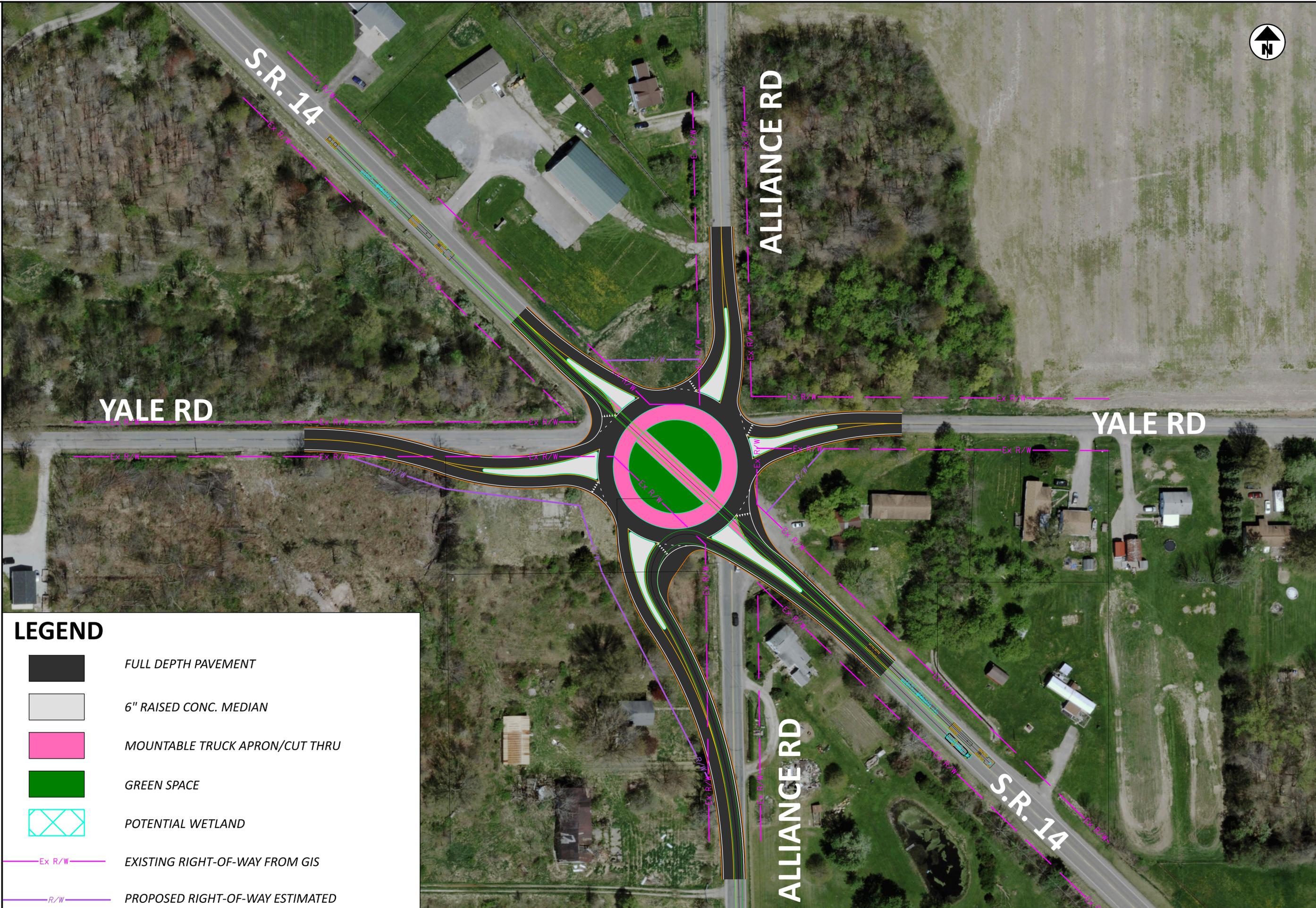


LEGEND

-  FULL DEPTH PAVEMENT
-  6" RAISED CONC. MEDIAN
-  MOUNTABLE TRUCK APRON/CUT THRU
-  GREEN SPACE
-  POTENTIAL WETLAND
-  EX R/W EXISTING RIGHT-OF-WAY FROM GIS
-  R/W PROPOSED RIGHT-OF-WAY ESTIMATED

POR-14-21.72
 ALTERNATIVE 2: 6 LEG CIRCLE ROUNDABOUT

DESIGN AGENCY	
	
DESIGNER	
AKA	
REVIEWER	
AC 05-07-2025	
PROJECT ID	
0	
SUBSET	TOTAL
0	0
SHEET	TOTAL
P.4	P.9



LEGEND

-  FULL DEPTH PAVEMENT
-  6" RAISED CONC. MEDIAN
-  MOUNTABLE TRUCK APRON/CUT THRU
-  GREEN SPACE
-  POTENTIAL WETLAND
-  Ex R/W EXISTING RIGHT-OF-WAY FROM GIS
-  R/W PROPOSED RIGHT-OF-WAY ESTIMATED



POR-14-21.72 - SUPERLOAD & BUS TRUCK TURNS
ALTERNATIVE 2: 6 LEG CIRCLE ROUNDABOUT

DESIGN AGENCY



DESIGNER

AKA

REVIEWER

AC 05-07-2025

PROJECT ID

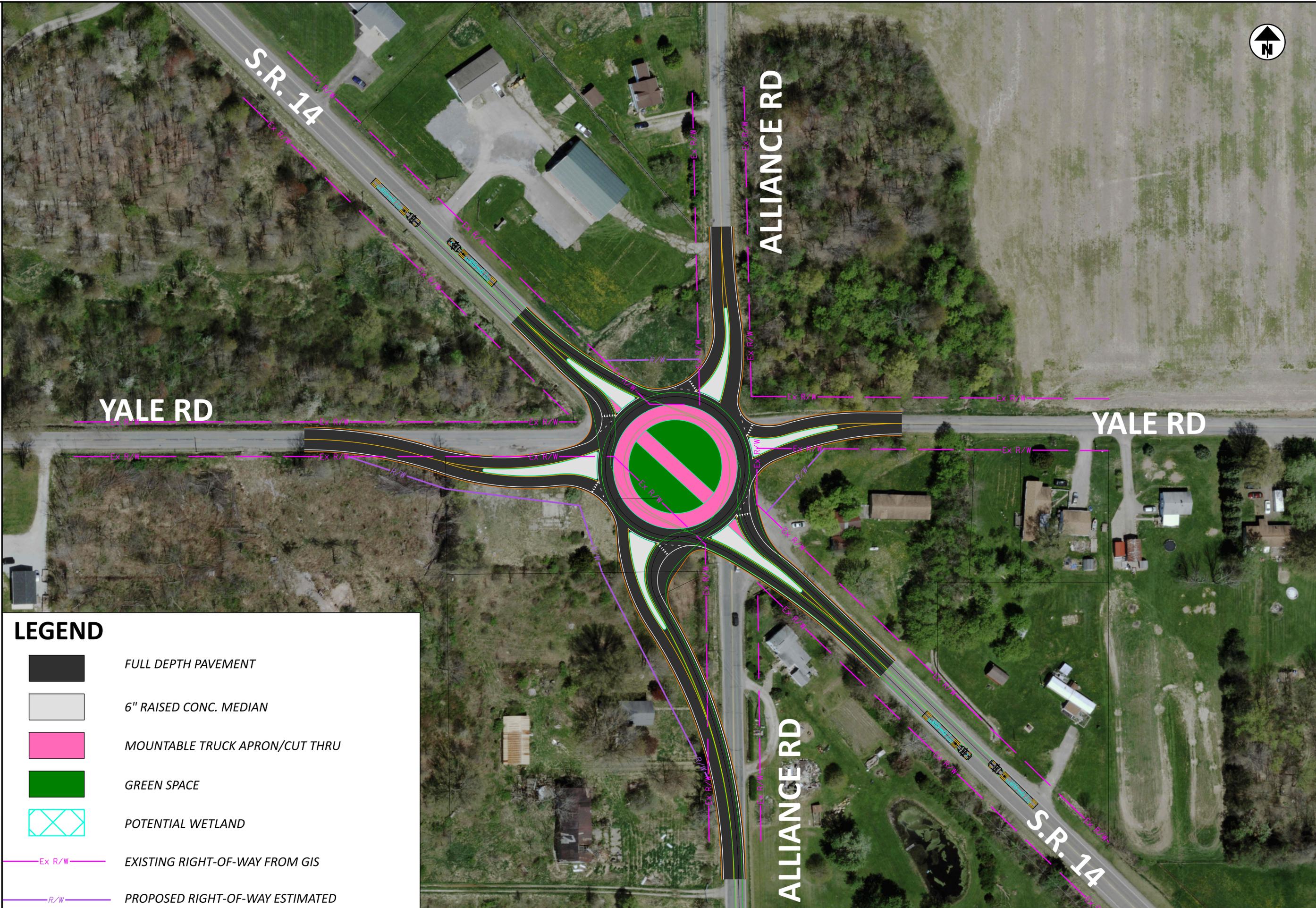
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SUBSET TOTAL

0 0

SHEET TOTAL

P.5 P.9



LEGEND

-  FULL DEPTH PAVEMENT
-  6" RAISED CONC. MEDIAN
-  MOUNTABLE TRUCK APRON/CUT THRU
-  GREEN SPACE
-  POTENTIAL WETLAND
-  EX R/W EXISTING RIGHT-OF-WAY FROM GIS
-  R/W PROPOSED RIGHT-OF-WAY ESTIMATED



POR-14-21.72 -WB-67 TRUCK TURNS
ALTERNATIVE 2: 6 LEG CIRCLE ROUNDABOUT

DESIGN AGENCY



DESIGNER

AKA

REVIEWER

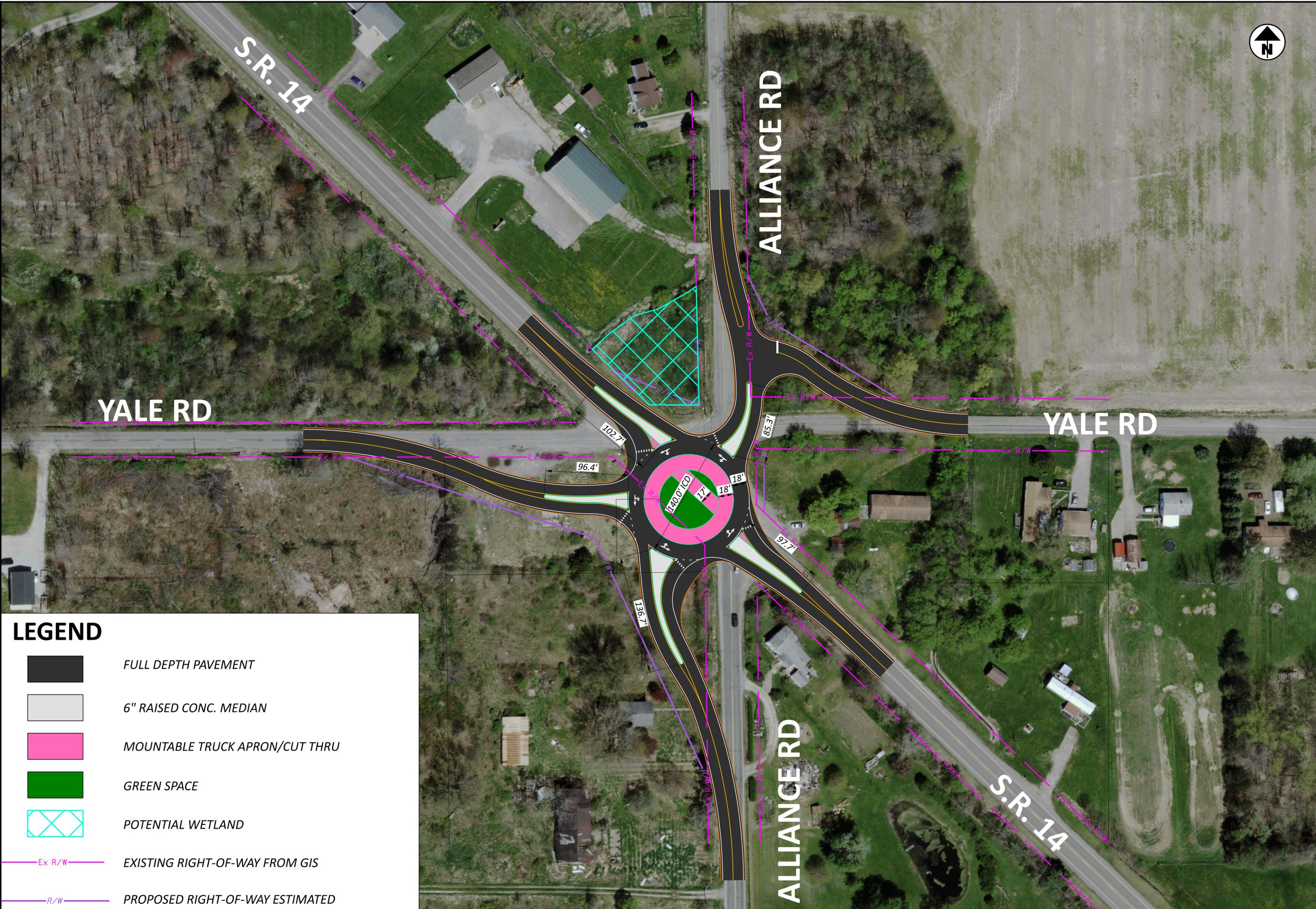
AC 05-07-2025

PROJECT ID

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SUBSET	TOTAL
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SHEET	TOTAL
P.6	P.9

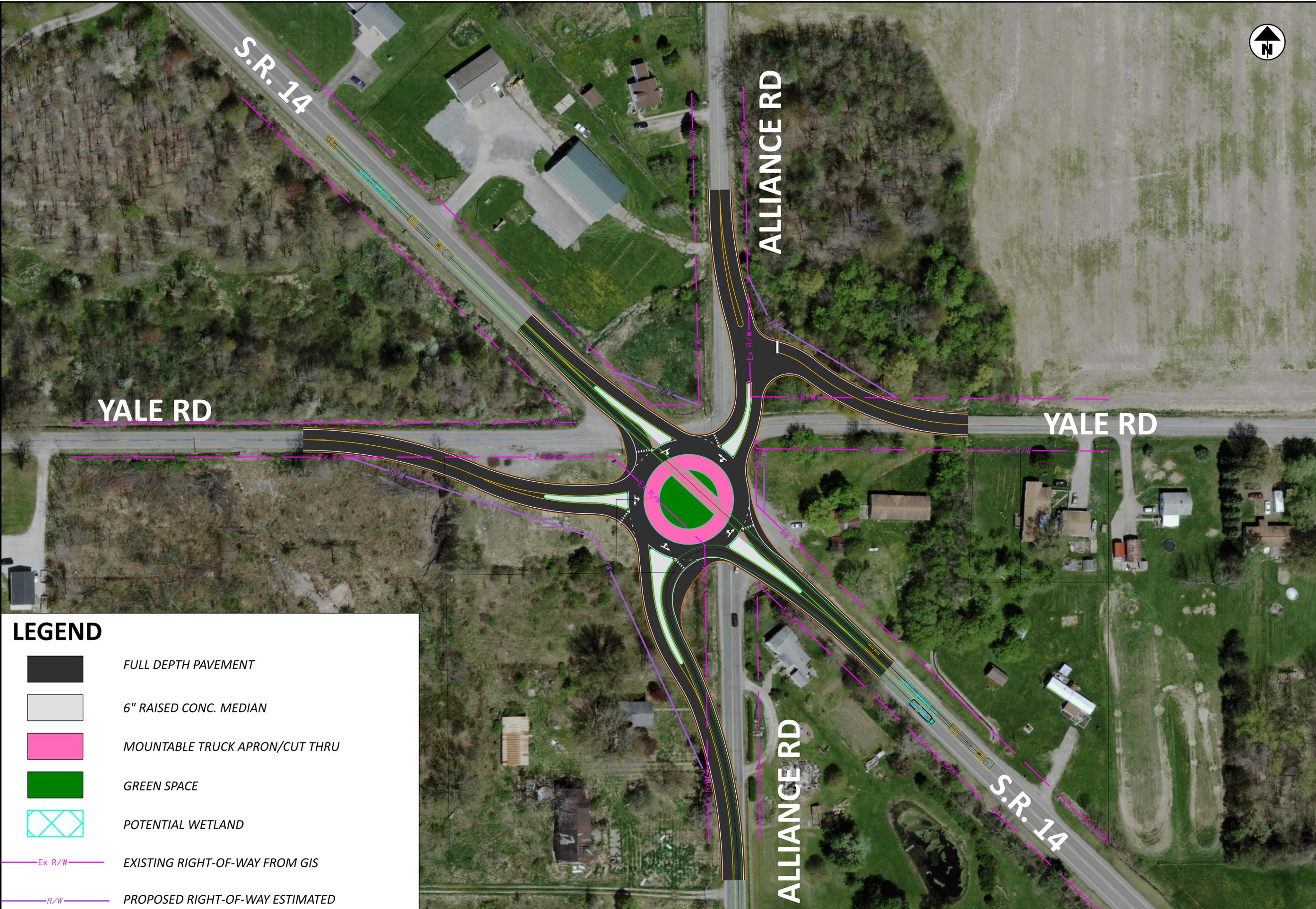


LEGEND

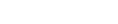
-  FULL DEPTH PAVEMENT
-  6" RAISED CONC. MEDIAN
-  MOUNTABLE TRUCK APRON/CUT THRU
-  GREEN SPACE
-  POTENTIAL WETLAND
-  EX R/W EXISTING RIGHT-OF-WAY FROM GIS
-  R/W PROPOSED RIGHT-OF-WAY ESTIMATED

POR-14-21.72
ALTERNATIVE 3: 5 LEG CIRCLE ROUNDABOUT

DESIGN AGENCY	
	
DESIGNER	AKA
REVIEWER	AC 05-07-2025
PROJECT ID	0
SUBSET	TOTAL
0	0
SHEET	TOTAL
P.7	P.9



LEGEND

-  FULL DEPTH PAVEMENT
-  6" RAISED CONC. MEDIAN
-  MOUNTABLE TRUCK APRON/CUT THRU
-  GREEN SPACE
-  POTENTIAL WETLAND
-  EX R/W EXISTING RIGHT-OF-WAY FROM GIS
-  R/W PROPOSED RIGHT-OF-WAY ESTIMATED

POR-14-21.72 - SUPERLOAD & BUS TRUCK TURNS
ALTERNATIVE 3: 5 LEG CIRCLE ROUNDABOUT

DESIGN AGENCY



DESIGNER

AKA

REVIEWER

AC 05-07-2025

PROJECT ID

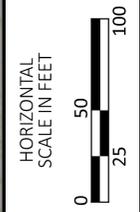
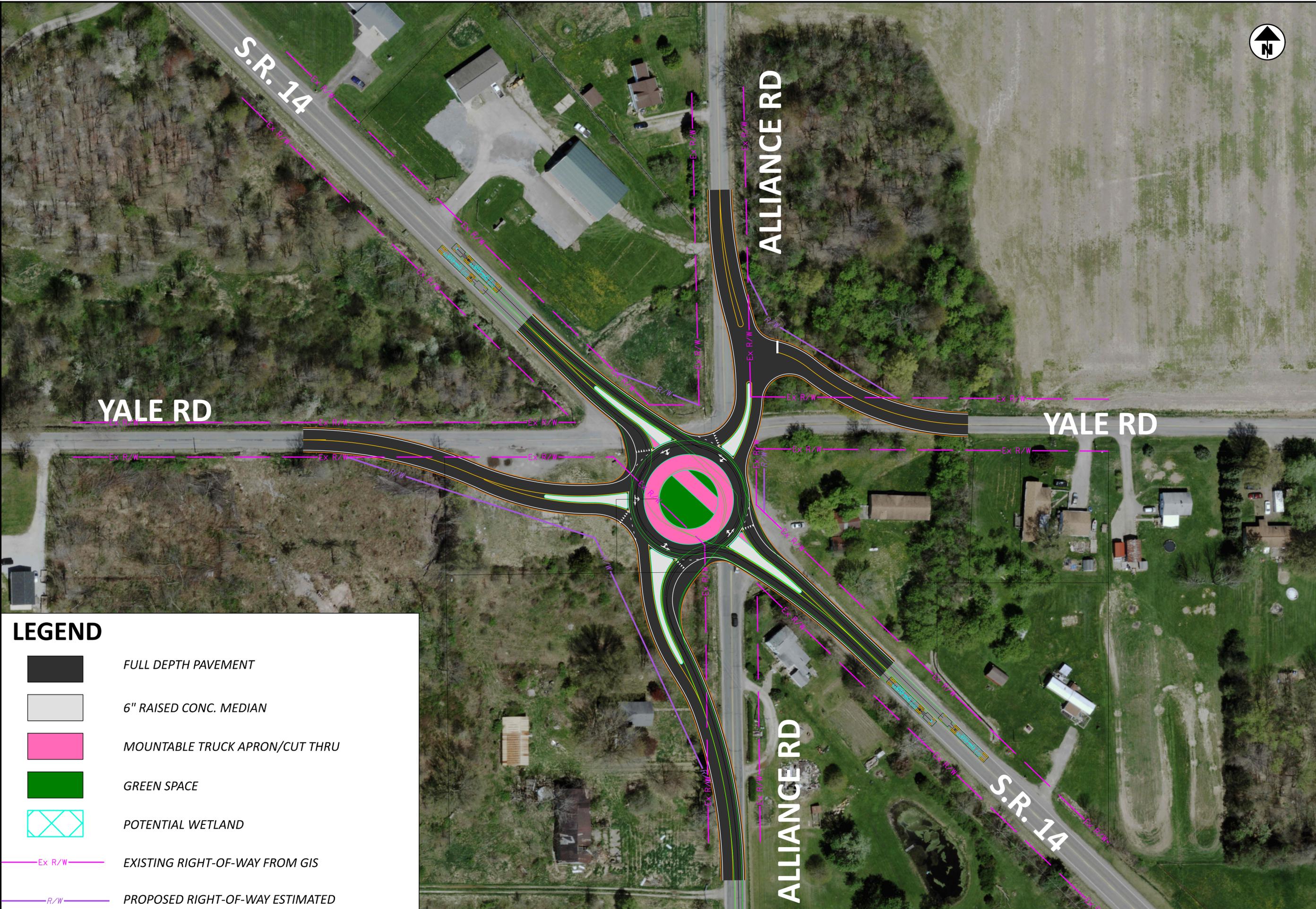
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SUBSET TOTAL

0 0

SHEET TOTAL

P.8 P.9



LEGEND

-  FULL DEPTH PAVEMENT
-  6" RAISED CONC. MEDIAN
-  MOUNTABLE TRUCK APRON/CUT THRU
-  GREEN SPACE
-  POTENTIAL WETLAND
-  EX R/W EXISTING RIGHT-OF-WAY FROM GIS
-  R/W PROPOSED RIGHT-OF-WAY ESTIMATED

POR-14-21.72 - WB-67 TRUCK TURNS
 ALTERNATIVE 3: 5 LEG CIRCLE ROUNDABOUT

DESIGN AGENCY	
	
DESIGNER	
AKA	
REVIEWER	
AC 05-07-2025	
PROJECT ID	
0	
SUBSET	TOTAL
0	0
SHEET	TOTAL
P.9	P.9

Appendix I – ODOT L&D Design Criteria

Roundabout Critical Design Parameters
Project - County Route Section
POR-14-21.72

ALT 1 - PEANUT	Alliance Rd NB	SR 14 NB	Yale Rd WB	Alliance Rd SB	SR 14 SB	Yale Rd EB
Design Parameters	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5	Leg 6
Inscribed Circle Diameter, FT	140'/200' Concave					
Entry Width, FT	14.5	20	15.4	15.5	21.6	15.4
Entry Angle PHI ϕ , DEG	29.9	48.5	43.3	43	49.5	42.6
Exit Width, FT	13.7	24.6	12.7	12.9	26.5	12.6
Circulatory Roadway Width, FT	18'	18'	18'	18'	18'	18'
Fastest Path Speed	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5	Leg 6
R ₁ , Radius/Speed, FT/MPH	57.9/16.5	44.7/14.9	52.8/15.9	90.9/19.6	48.9/15.5	78.3/18.5
R ₂ , Radius/Speed, FT/MPH	216.5/25.0	54.4/15.0	56.6/15.2	106.2/19.2	56.1/15.2	63.7/15.9
R ₃ , Radius/Speed, FT/MPH	236.2/28.4	237.2/28.4	43.0/14.7	260.6/29.5	190.7/26.1	50.8/15.7
R ₄ , Radius/Speed, FT/MPH	52.9/14.9	57.2/15.3	2378.2/60.2	53.3/14.9	55.0/15.1	221.8/25.2
R ₅ , Radius/Speed, FT/MPH	64.5/17.2	108.6/21.0	132.8/22.7	48.4/15.4	135.4/22.9	220.3/27.6
R ₅ , Bypass Radius/Speed, FT/MPH	N/A	N/A	N/A	N/A	N/A	N/A
Minimum Sight Parameters	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5	Leg 6
Approach Design Speed, MPH	60	60	60	60	60	60
Approach Stopping Sight Distance, FT/MPH	155/25	155/25	155/25	155/25	155/25	155/25
Circulatory Stopping Sight Distance, FT/MPH	155/25	155/25	155/25	155/25	155/25	155/25
Exit (Crosswalk) Stopping Sight Distance, FT/MPH	N/A	N/A	N/A	N/A	N/A	N/A
Intersection Sight Distance, FT/MPH	155/25	155/25	155/25	155/25	155/25	155/25
General						
Design Vehicle(s)	WB-67, 165' Beam Cut thru					
Truck Apron Width, FT	18'					

Designer: AKA

Signature:

Date:

Roundabout Critical Design Parameters
Project - County Route Section
POR-14-21.72

ALT 2 - 6 LEG CIRCLE	Alliance Rd NB	SR 14 NB	Yale Rd WB	Alliance Rd SB	SR 14 SB	Yale Rd EB
Design Parameters	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5	Leg 6
Inscribed Circle Diameter, FT	180'					
Entry Width, FT	18.6	16.8	15.3	16.3	16.6	14.6
Entry Angle PHI ϕ , DEG	46.4	36.9	36.3	37.2	41.3	37.1
Exit Width, FT	12.1	12	15.3	19.9	12.3	14
Circulatory Roadway Width, FT	18'	18'	18'	18'	18'	18'

Fastest Path Speed	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5	Leg 6
R ₁ , Radius/Speed, FT/MPH	41.5/14.5	82.3/18.9	91.4/19.7	83.4/19.0	74.0/18.1	90.8/19.6
R ₂ , Radius/Speed, FT/MPH	145.5/21.5	208.0/24.6	208.9/24.6	174.6/23.1	218.6/25.0	167.4/22.7
R ₃ , Radius/Speed, FT/MPH	121.4/22.0	436.5/36.0	263.8/29.6	230.2/28.1	1524/58.3	572.1/39.9
R ₄ , Radius/Speed, FT/MPH	79.5/17.3	72.3/16.7	79.4/17.3	77.1/17.1	71.9/16.6	68/16.3
R ₅ , Radius/Speed, FT/MPH	52.6/15.9	58.5/16.6	37.1/13.9	82.4/18.9	38.5/14.1	77.7/18.5
R ₅ , Bypass Radius/Speed, FT/MPH	N/A	N/A	N/A	N/A	N/A	N/A

Minimum Sight Parameters	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5	Leg 6
Approach Design Speed, MPH	60	60	60	60	60	60
Approach Stopping Sight Distance, FT/MPH	155/25	155/25	155/25	155/25	155/25	155/25
Circulatory Stopping Sight Distance, FT/MPH	155/25	155/25	155/25	155/25	155/25	155/25
Exit (Crosswalk) Stopping Sight Distance, FT/MPH	N/A	N/A	N/A	N/A	N/A	N/A
Intersection Sight Distance, FT/MPH	155/25	155/25	155/25	155/25	155/25	155/25

General	
Design Vehicle(s)	WB-67, 165' Beam Cut thru
Truck Apron Width, FT	18'

Designer: AKA

Signature:

Date:

Roundabout Critical Design Parameters

Project - County Route Section

POR-14-21.72

ALT 3 - 5 LEG CIRCLE	Alliance Rd NB	SR 14 NB	Alliance Rd SB	SR 14 SB	Yale Rd EB
Design Parameters	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5
Inscribed Circle Diameter, FT	140'				
Entry Width, FT	16.1	14.4	16.8	19.8	18
Entry Angle PHI ϕ , DEG	44.1	34.5	42.6	49.1	17.6
Exit Width, FT	12.7	14.2	15.5	12	15.7
Circulatory Roadway Width, FT	18'	18'	18'	18'	18'

Fastest Path Speed	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5
R ₁ , Radius/Speed, FT/MPH	53.3/16.0	113.9/21.4	67.1/17.5	71.2/17.9	143.3/23.4
R ₂ , Radius/Speed, FT/MPH	76.9/17.1	72.4/16.7	159.5/22.3	213.9/24.8	124.0/20.3
R ₃ , Radius/Speed, FT/MPH	250.2/29.0	1194.8/53.1	119.8/21.8	1528.3/58.4	174.3/25.2
R ₄ , Radius/Speed, FT/MPH	91.9/18.2	55.1/15.1	61.6/15.7	54.1/15.0	58.5/15.4
R ₅ , Radius/Speed, FT/MPH	51.0/15.7	110.5/21.2	45.2/15.0	42.2/14.6	58.5/16.6
R ₅ , Bypass Radius/Speed, FT/MPH	N/A	N/A	N/A	N/A	N/A

Minimum Sight Parameters	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5
Approach Design Speed, MPH	60	60	60	60	60
Approach Stopping Sight Distance, FT/MPH	155/25	155/25	155/25	155/25	155/25
Circulatory Stopping Sight Distance, FT/MPH	155/25	155/25	155/25	155/25	155/25
Exit (Crosswalk) Stopping Sight Distance, FT/MPH	N/A	N/A	N/A	N/A	N/A
Intersection Sight Distance, FT/MPH	155/25	155/25	155/25	155/25	155/25

General	
Design Vehicle(s)	WB-67, 165' Beam Cut thru
Truck Apron Width, FT	18'

Designer: AKA

Signature:

Date:

Appendix J – Proposed Condition Capacity Analysis

Peanut Roundabout

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 15

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
1	847.0	1.20	4.9	A
2	841.0	1.10	4.9	A
3	837.0	1.20	5.0	A
4	844.0	1.10	4.9	A
5	843.0	1.10	4.8	A
6	842.0	1.10	4.8	A
7	845.0	1.10	4.9	A
8	850.0	1.20	4.9	A
9	843.0	1.10	4.8	A
10	835.0	1.10	4.9	A
Average:	842.7	1.13	4.9	A

Project: POR-14 Peanut Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Total Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
15	SR 14, Yale Rd & Alliance Rd	Roundabout	1.1	0.0	1.1	1.2	10

Project: POR-14 Peanut Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Avg Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
15	SR 14, Yale Rd & Alliance Rd	Roundabout	4.9	0.0	4.8	5.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 15

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
EB R on Yale Rd: Lane ID 22				
1	32.0	0.00	4.1	A
2	32.0	0.00	4.0	A
3	32.0	0.00	4.9	A
4	33.0	0.00	4.4	A
5	33.0	0.00	4.6	A
6	33.0	0.00	4.9	A
7	32.0	0.00	3.6	A
8	34.0	0.00	4.3	A
9	32.0	0.00	3.9	A
10	30.0	0.00	4.6	A
Average:	32.0	0.00	4.3	A

NB R on Alliance Rd: Lane ID 24

1	75.0	0.10	6.9	A
2	76.0	0.10	6.5	A
3	74.0	0.10	6.9	A
4	73.0	0.10	6.9	A
5	75.0	0.10	6.2	A
6	73.0	0.10	7.1	A
7	72.0	0.10	6.6	A
8	74.0	0.10	6.7	A
9	74.0	0.10	6.7	A
10	72.0	0.10	6.3	A
Average:	73.0	0.10	6.7	A

NB R on SR 14: Lane ID 37

1	405.0	0.50	4.7	A
2	394.0	0.50	4.9	A
3	395.0	0.50	4.8	A
4	400.0	0.50	4.6	A
5	397.0	0.50	4.7	A
6	398.0	0.50	4.6	A
7	401.0	0.50	4.8	A
8	399.0	0.50	4.8	A
9	398.0	0.50	4.6	A
10	396.0	0.50	4.7	A

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 15

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
Average:	398.0	0.50	4.7	A

SB R on Alliance Rd: Lane ID 35

1	40.0	0.10	6.2	A
2	42.0	0.10	5.7	A
3	40.0	0.10	6.7	A
4	39.0	0.10	6.3	A
5	42.0	0.10	5.8	A
6	43.0	0.10	5.5	A
7	44.0	0.10	5.8	A
8	44.0	0.10	5.9	A
9	43.0	0.10	6.0	A
10	45.0	0.10	5.5	A
Average:	42.0	0.10	5.9	A

SEB R on SR 14: Lane ID 26

1	263.0	0.30	4.4	A
2	265.0	0.30	4.4	A
3	263.0	0.30	4.3	A
4	268.0	0.30	4.3	A
5	263.0	0.30	4.3	A
6	262.0	0.30	4.3	A
7	264.0	0.30	4.4	A
8	265.0	0.30	4.4	A
9	263.0	0.30	4.4	A
10	262.0	0.30	4.4	A
Average:	263.0	0.30	4.4	A

WB R on Yale Rd: Lane ID 39

1	32.0	0.00	5.4	A
2	32.0	0.10	6.0	A
3	33.0	0.10	6.0	A
4	31.0	0.10	6.4	A
5	33.0	0.10	6.5	A
6	33.0	0.10	6.0	A
7	32.0	0.10	6.4	A
8	34.0	0.10	6.1	A
9	33.0	0.10	5.6	A
10	30.0	0.10	6.3	A
Average:	32.0	0.09	6.1	A

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Total Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.0	0.0	0.0	0.0	10
NB R	24	Alliance Rd	0.1	0.0	0.1	0.1	10
SEB R	26	SR 14	0.3	0.0	0.3	0.3	10
SB R	35	Alliance Rd	0.1	0.0	0.1	0.1	10
NB R	37	SR 14	0.5	0.0	0.5	0.5	10
WB R	39	Yale Rd	0.1	0.0	0.0	0.1	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Avg Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
EB R	22	Yale Rd	4.3	0.4	3.6	4.9	10
NB R	24	Alliance Rd	6.7	0.3	6.2	7.1	10
SEB R	26	SR 14	4.4	0.0	4.3	4.4	10
SB R	35	Alliance Rd	5.9	0.4	5.5	6.7	10
NB R	37	SR 14	4.7	0.1	4.6	4.9	10
WB R	39	Yale Rd	6.1	0.4	5.4	6.5	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection

- Overview

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB R on Yale Rd - Lane ID 22						
1	119.0	0.0	0.0	0.0	0.0	0.0%
2	119.0	0.2	0.0	0.0	0.0	0.0%
3	119.0	1.0	0.0	0.0	0.0	0.0%
4	119.0	0.0	0.0	0.0	0.0	0.0%
5	119.0	0.2	0.0	0.0	0.0	0.0%
6	119.0	0.0	0.0	0.0	0.0	0.0%
7	119.0	0.0	0.0	0.0	0.0	0.0%
8	119.0	0.0	0.0	0.0	0.0	0.0%
9	119.0	0.0	0.0	0.0	0.0	0.0%
10	119.0	0.0	0.0	0.0	0.0	0.0%
Average:	119.0	0.1	0.0	0.0	0.0	0.0%

NB R on Alliance Rd - Lane ID 24

1	119.0	0.7	0.0	0.0	0.0	0.0%
2	119.0	0.1	0.0	0.0	0.0	0.0%
3	119.0	0.4	0.0	0.0	0.0	0.0%
4	119.0	1.2	0.1	0.8	0.1	0.0%
5	119.0	0.1	0.0	0.0	0.0	0.0%
6	119.0	0.0	0.0	0.0	0.0	0.0%
7	119.0	0.3	0.0	0.0	0.0	0.0%
8	119.0	0.1	0.0	0.0	0.0	0.0%
9	119.0	0.4	0.0	0.0	0.0	0.0%
10	119.0	0.2	0.0	0.0	0.0	0.0%
Average:	119.0	0.4	0.0	0.1	0.0	0.0%

NB R on SR 14 - Lane ID 37

1	119.0	0.8	0.0	0.0	0.0	0.0%
2	119.0	2.1	0.1	2.2	0.1	0.0%
3	119.0	0.0	0.0	0.0	0.0	0.0%
4	119.0	0.4	0.0	0.0	0.0	0.0%
5	119.0	0.6	0.0	0.0	0.0	0.0%
6	119.0	0.5	0.0	0.0	0.0	0.0%
7	119.0	0.6	0.0	0.0	0.0	0.0%
8	119.0	0.4	0.0	0.0	0.0	0.0%
9	119.0	0.7	0.0	0.0	0.0	0.0%

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB R on SR 14 - Lane ID 37						
10	119.0	0.7	0.0	0.0	0.0	0.0%
Average:	119.0	0.7	0.0	0.2	0.0	0.0%
SB R on Alliance Rd - Lane ID 35						
1	119.0	0.9	0.0	0.0	0.0	0.0%
2	119.0	0.3	0.0	0.0	0.0	0.0%
3	119.0	0.2	0.0	0.0	0.0	0.0%
4	119.0	0.3	0.0	0.0	0.0	0.0%
5	119.0	0.1	0.0	0.0	0.0	0.0%
6	119.0	0.9	0.0	0.0	0.0	0.0%
7	119.0	0.5	0.0	0.0	0.0	0.0%
8	119.0	0.0	0.0	0.0	0.0	0.0%
9	119.0	0.1	0.0	0.0	0.0	0.0%
10	119.0	0.3	0.0	0.0	0.0	0.0%
Average:	119.0	0.4	0.0	0.0	0.0	0.0%
SEB R on SR 14 - Lane ID 26						
1	119.0	0.1	0.0	0.0	0.0	0.0%
2	119.0	0.8	0.0	0.0	0.0	0.0%
3	119.0	0.0	0.0	0.0	0.0	0.0%
4	119.0	0.4	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.0	0.0	0.0	0.0	0.0%
7	119.0	0.6	0.0	0.0	0.0	0.0%
8	119.0	1.3	0.0	0.0	0.0	0.0%
9	119.0	0.0	0.0	0.0	0.0	0.0%
10	119.0	0.2	0.0	0.0	0.0	0.0%
Average:	119.0	0.3	0.0	0.0	0.0	0.0%
WB R on Yale Rd - Lane ID 39						
1	119.0	0.0	0.0	0.0	0.0	0.0%
2	119.0	0.1	0.0	0.0	0.0	0.0%
3	119.0	0.3	0.0	0.0	0.0	0.0%
4	119.0	0.0	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.1	0.0	0.0	0.0	0.0%
7	119.0	0.1	0.0	0.0	0.0	0.0%
8	119.0	0.2	0.0	0.0	0.0	0.0%
9	119.0	0.0	0.0	0.0	0.0	0.0%
10	119.0	0.1	0.0	0.0	0.0	0.0%
Average:	119.0	0.1	0.0	0.0	0.0	0.0%

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB R	24	Alliance Rd	0.4	0.4	0.0	1.2	10
SB R	35	Alliance Rd	0.4	0.3	0.0	0.9	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	26	SR 14	0.3	0.4	0.0	1.3	10
NB R	37	SR 14	0.7	0.5	0.0	2.1	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.1	0.3	0.0	1.0	10
WB R	39	Yale Rd	0.1	0.1	0.0	0.3	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB R	24	Alliance Rd	0.0	0.0	0.0	0.1	10
SB R	35	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10
NB R	37	SR 14	0.0	0.0	0.0	0.1	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.0	0.0	0.0	0.0	10
WB R	39	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB R	24	Alliance Rd	0.1	0.3	0.0	0.8	10
SB R	35	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10
NB R	37	SR 14	0.2	0.7	0.0	2.2	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.0	0.0	0.0	0.0	10
WB R	39	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB R	24	Alliance Rd	0.0	0.0	0.0	0.1	10
SB R	35	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10
NB R	37	SR 14	0.0	0.0	0.0	0.1	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.0	0.0	0.0	0.0	10
WB R	39	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Spillback Rate

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
SB R	35	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10
NB R	37	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.0	0.0	0.0	0.0	10
WB R	39	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Overview

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
EB on Yale Rd							
1	60.0	0.4	0.0	22.6	1.0	0.0	1.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.5	0.0	19.9	1.0	0.0	1.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.4	0.0	24.3	1.0	0.0	1.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.1	0.0	6.7	0.3	0.0	0.3
NB on Alliance Rd							
1	60.0	0.3	0.0	16.5	1.0	0.0	1.0
2	60.0	0.8	0.1	23.3	1.0	0.1	1.0
3	60.0	0.7	0.0	41.1	2.0	0.0	2.0
4	60.0	0.1	0.0	5.2	1.0	0.0	1.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.3	0.0	15.8	1.0	0.0	1.0
7	60.0	0.1	0.0	7.2	1.0	0.0	1.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.7	0.0	25.2	1.0	0.0	1.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.3	0.0	13.4	0.8	0.0	0.8
NB on SR 14							
1	60.0	1.6	0.0	94.6	2.0	0.0	2.0
2	60.0	3.2	0.1	64.4	2.0	0.1	2.0
3	60.0	0.7	0.0	44.2	2.0	0.0	2.0
4	60.0	1.3	0.1	58.6	2.0	0.1	2.0
5	60.0	1.2	0.1	55.0	2.0	0.1	2.0
6	60.0	0.3	0.0	15.3	1.0	0.0	1.0
7	60.0	0.3	0.0	18.7	1.0	0.0	1.0
8	60.0	0.4	0.0	21.6	1.0	0.0	1.0

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.3	0.0	15.5	1.0	0.0	1.0
Average:	60.0	0.9	0.0	38.8	1.4	0.0	1.4

SB on Alliance Rd

1	60.0	2.5	0.1	75.5	1.0	0.1	1.0
2	60.0	0.2	0.0	13.8	1.0	0.0	1.0
3	60.0	0.7	0.0	25.3	1.0	0.0	1.0
4	60.0	0.3	0.0	16.3	1.0	0.0	1.0
5	60.0	0.3	0.0	18.4	1.0	0.0	1.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.4	0.0	21.7	1.0	0.0	1.0
Average:	60.0	0.4	0.0	17.1	0.6	0.0	0.6

SEB on SR 14

1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.5	0.0	16.6	1.0	0.0	1.0
3	60.0	1.2	0.0	72.7	1.0	0.0	1.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.3	0.0	17.2	1.0	0.0	1.0
6	60.0	0.3	0.0	16.6	1.0	0.0	1.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	1.7	0.1	81.7	2.0	0.1	2.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.4	0.0	20.5	0.6	0.0	0.6

WB on Yale Rd

1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.3	0.0	18.1	1.0	0.0	1.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.0	0.0	1.8	0.1	0.0	0.1

ABOUT SPILLBACK QUEUES

Spillback queues begin at the front bumper of the first vehicle in queue on a link. From there, the queue can branch as a tree in different directions as it spills upstream through intersections. The various branches of the spillback queue will extend beyond the originating link and superlink boundaries until the back of the queue is reached on every branch in the tree.

- Average/Maximum Queue Length: Distance from the front bumper of the first queued vehicle to the back bumper of the last queued vehicle for the longest branch
- Average/Maximum Vehicles Queued: Number of vehicles queued in all lanes for the longest branch

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.1	0.2	0.0	0.5	10
NB	SR 14	0.6	0.8	0.0	3.2	10
SB	Alliance Rd	0.4	0.8	0.0	2.5	10
SEB	SR 14	0.4	0.6	0.0	1.7	10
WB	Yale Rd	0.0	0.1	0.0	0.3	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.0	10
NB	SR 14	0.0	0.0	0.0	0.1	10
SB	Alliance Rd	0.0	0.0	0.0	0.1	10
SEB	SR 14	0.0	0.0	0.0	0.1	10
WB	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Avg Total Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.0	10
NB	SR 14	0.0	0.0	0.0	0.1	10
SB	Alliance Rd	0.0	0.0	0.0	0.1	10
SEB	SR 14	0.0	0.0	0.0	0.1	10
WB	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	6.7	10.8	0.0	24.3	10
NB	SR 14	26.1	25.8	0.0	94.6	10
SB	Alliance Rd	17.1	22.8	0.0	75.5	10
SEB	SR 14	20.5	30.9	0.0	81.7	10
WB	Yale Rd	1.8	5.7	0.0	18.1	10

Project: POR-14 Peanut Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Max Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.3	0.5	0.0	1.0	10
NB	SR 14	1.1	0.7	0.0	2.0	10
SB	Alliance Rd	0.6	0.5	0.0	1.0	10
SEB	SR 14	0.6	0.7	0.0	2.0	10
WB	Yale Rd	0.1	0.3	0.0	1.0	10

Project: POR-14 Peanut Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Max Total Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.3	0.5	0.0	1.0	10
NB	SR 14	1.1	0.7	0.0	2.0	10
SB	Alliance Rd	0.6	0.5	0.0	1.0	10
SEB	SR 14	0.6	0.7	0.0	2.0	10
WB	Yale Rd	0.1	0.3	0.0	1.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 15

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
1	908.0	1.30	5.1	A
2	892.0	1.30	5.1	A
3	908.0	1.30	5.2	A
4	904.0	1.30	5.1	A
5	908.0	1.30	5.1	A
6	909.0	1.30	5.1	A
7	906.0	1.30	5.1	A
8	904.0	1.30	5.1	A
9	907.0	1.30	5.1	A
10	902.0	1.30	5.2	A
Average:	904.8	1.30	5.1	A

Project: POR-14 Peanut Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Total Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
15	SR 14, Yale Rd & Alliance Rd	Roundabout	1.3	0.0	1.3	1.3	10

Project: POR-14 Peanut Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Avg Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
15	SR 14, Yale Rd & Alliance Rd	Roundabout	5.1	0.0	5.1	5.2	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 15

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
EB R on Yale Rd: Lane ID 22				
1	30.0	0.00	4.7	A
2	29.0	0.00	4.7	A
3	31.0	0.00	5.7	A
4	29.0	0.00	5.4	A
5	32.0	0.00	5.1	A
6	32.0	0.10	6.3	A
7	31.0	0.00	5.2	A
8	33.0	0.00	5.5	A
9	30.0	0.00	5.4	A
10	28.0	0.00	4.9	A
Average:	30.0	0.01	5.3	A

NB R on Alliance Rd: Lane ID 24

1	89.0	0.20	8.9	A
2	88.0	0.20	7.9	A
3	93.0	0.20	9.1	A
4	89.0	0.20	8.3	A
5	90.0	0.20	8.0	A
6	89.0	0.20	8.5	A
7	91.0	0.20	8.9	A
8	88.0	0.20	8.7	A
9	88.0	0.20	8.3	A
10	91.0	0.20	8.6	A
Average:	89.0	0.20	8.5	A

NB R on SR 14: Lane ID 37

1	185.0	0.20	4.6	A
2	183.0	0.20	4.5	A
3	188.0	0.20	4.4	A
4	188.0	0.20	4.6	A
5	186.0	0.20	4.5	A
6	187.0	0.20	4.3	A
7	186.0	0.20	4.4	A
8	180.0	0.20	4.4	A
9	187.0	0.20	4.4	A
10	188.0	0.20	4.6	A

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 15

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
Average:	185.0	0.20	4.5	A

SB R on Alliance Rd: Lane ID 35

1	44.0	0.10	4.5	A
2	41.0	0.10	5.1	A
3	42.0	0.10	4.7	A
4	42.0	0.10	5.0	A
5	43.0	0.10	4.8	A
6	43.0	0.10	4.7	A
7	45.0	0.10	4.8	A
8	46.0	0.10	4.8	A
9	44.0	0.10	5.1	A
10	41.0	0.10	5.1	A
Average:	43.0	0.10	4.9	A

SEB R on SR 14: Lane ID 26

1	526.0	0.70	4.8	A
2	519.0	0.70	4.8	A
3	526.0	0.70	4.7	A
4	523.0	0.70	4.7	A
5	525.0	0.70	4.9	A
6	524.0	0.70	4.8	A
7	521.0	0.70	4.8	A
8	524.0	0.70	4.7	A
9	526.0	0.70	4.8	A
10	522.0	0.70	4.9	A
Average:	523.0	0.70	4.8	A

WB R on Yale Rd: Lane ID 39

1	34.0	0.00	5.2	A
2	32.0	0.00	4.9	A
3	28.0	0.00	5.5	A
4	33.0	0.00	4.8	A
5	32.0	0.00	5.3	A
6	34.0	0.00	5.2	A
7	32.0	0.00	4.8	A
8	33.0	0.00	5.4	A
9	32.0	0.00	5.0	A
10	32.0	0.00	5.1	A
Average:	32.0	0.00	5.1	A

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Total Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.0	0.0	0.0	0.1	10
NB R	24	Alliance Rd	0.2	0.0	0.2	0.2	10
SEB R	26	SR 14	0.7	0.0	0.7	0.7	10
SB R	35	Alliance Rd	0.1	0.0	0.1	0.1	10
NB R	37	SR 14	0.2	0.0	0.2	0.2	10
WB R	39	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Avg Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
EB R	22	Yale Rd	5.3	0.5	4.7	6.3	10
NB R	24	Alliance Rd	8.5	0.4	7.9	9.1	10
SEB R	26	SR 14	4.8	0.1	4.7	4.9	10
SB R	35	Alliance Rd	4.9	0.2	4.5	5.1	10
NB R	37	SR 14	4.5	0.1	4.3	4.6	10
WB R	39	Yale Rd	5.1	0.2	4.8	5.5	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection

- Overview

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB R on Yale Rd - Lane ID 22						
1	119.0	0.2	0.0	0.0	0.0	0.0%
2	119.0	0.0	0.0	0.0	0.0	0.0%
3	119.0	0.3	0.0	0.0	0.0	0.0%
4	119.0	0.5	0.0	0.0	0.0	0.0%
5	119.0	0.3	0.0	0.0	0.0	0.0%
6	119.0	0.8	0.0	0.0	0.0	0.0%
7	119.0	0.0	0.0	0.0	0.0	0.0%
8	119.0	0.2	0.0	0.0	0.0	0.0%
9	119.0	0.1	0.0	0.0	0.0	0.0%
10	119.0	0.5	0.0	0.0	0.0	0.0%
Average:	119.0	0.3	0.0	0.0	0.0	0.0%
NB R on Alliance Rd - Lane ID 24						
1	119.0	1.5	0.1	15.3	1.0	0.0%
2	119.0	1.4	0.1	14.0	1.0	0.0%
3	119.0	1.7	0.1	16.2	1.0	0.0%
4	119.0	1.3	0.1	14.7	1.0	0.0%
5	119.0	1.1	0.1	1.5	0.1	0.0%
6	119.0	1.1	0.1	14.4	1.0	0.0%
7	119.0	1.7	0.1	13.4	1.0	0.0%
8	119.0	1.3	0.1	13.6	1.0	0.0%
9	119.0	1.3	0.1	14.3	1.0	0.0%
10	119.0	1.4	0.1	0.0	0.0	0.0%
Average:	119.0	1.4	0.1	11.7	0.8	0.0%
NB R on SR 14 - Lane ID 37						
1	119.0	0.3	0.0	0.0	0.0	0.0%
2	119.0	0.5	0.0	0.0	0.0	0.0%
3	119.0	0.0	0.0	0.0	0.0	0.0%
4	119.0	0.4	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.0	0.0	0.0	0.0	0.0%
7	119.0	0.1	0.0	0.0	0.0	0.0%
8	119.0	0.0	0.0	0.0	0.0	0.0%
9	119.0	0.0	0.0	0.0	0.0	0.0%

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB R on SR 14 - Lane ID 37						
10	119.0	0.1	0.0	0.0	0.0	0.0%
Average:	119.0	0.1	0.0	0.0	0.0	0.0%
SB R on Alliance Rd - Lane ID 35						
1	119.0	0.0	0.0	0.0	0.0	0.0%
2	119.0	0.6	0.0	0.0	0.0	0.0%
3	119.0	0.0	0.0	0.0	0.0	0.0%
4	119.0	0.6	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.0	0.0	0.0	0.0	0.0%
7	119.0	0.0	0.0	0.0	0.0	0.0%
8	119.0	0.0	0.0	0.0	0.0	0.0%
9	119.0	0.6	0.0	0.0	0.0	0.0%
10	119.0	0.0	0.0	0.0	0.0	0.0%
Average:	119.0	0.2	0.0	0.0	0.0	0.0%
SEB R on SR 14 - Lane ID 26						
1	119.0	0.3	0.0	0.0	0.0	0.0%
2	119.0	0.9	0.0	0.0	0.0	0.0%
3	119.0	1.3	0.0	0.0	0.0	0.0%
4	119.0	0.4	0.0	0.0	0.0	0.0%
5	119.0	0.4	0.0	0.0	0.0	0.0%
6	119.0	0.3	0.0	0.0	0.0	0.0%
7	119.0	0.1	0.0	0.0	0.0	0.0%
8	119.0	0.3	0.0	0.0	0.0	0.0%
9	119.0	0.3	0.0	0.0	0.0	0.0%
10	119.0	1.2	0.0	0.0	0.0	0.0%
Average:	119.0	0.6	0.0	0.0	0.0	0.0%
WB R on Yale Rd - Lane ID 39						
1	119.0	0.3	0.0	0.0	0.0	0.0%
2	119.0	0.2	0.0	0.0	0.0	0.0%
3	119.0	0.2	0.0	0.0	0.0	0.0%
4	119.0	0.0	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.1	0.0	0.0	0.0	0.0%
7	119.0	0.1	0.0	0.0	0.0	0.0%
8	119.0	0.3	0.0	0.0	0.0	0.0%
9	119.0	0.0	0.0	0.0	0.0	0.0%
10	119.0	0.0	0.0	0.0	0.0	0.0%
Average:	119.0	0.1	0.0	0.0	0.0	0.0%

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB R	24	Alliance Rd	1.4	0.2	1.1	1.7	10
SB R	35	Alliance Rd	0.2	0.3	0.0	0.6	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	26	SR 14	0.6	0.4	0.1	1.3	10
NB R	37	SR 14	0.1	0.2	0.0	0.5	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.3	0.3	0.0	0.8	10
WB R	39	Yale Rd	0.1	0.1	0.0	0.3	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB R	24	Alliance Rd	0.1	0.0	0.1	0.1	10
SB R	35	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10
NB R	37	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.0	0.0	0.0	0.0	10
WB R	39	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB R	24	Alliance Rd	11.7	5.9	0.0	16.2	10
SB R	35	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10
NB R	37	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.0	0.0	0.0	0.0	10
WB R	39	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB R	24	Alliance Rd	0.8	0.4	0.0	1.0	10
SB R	35	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10
NB R	37	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.0	0.0	0.0	0.0	10
WB R	39	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Spillback Rate

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
SB R	35	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10
NB R	37	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	22	Yale Rd	0.0	0.0	0.0	0.0	10
WB R	39	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Overview

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
EB on Yale Rd							
1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.5	0.0	16.7	1.0	0.0	1.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.7	0.0	25.5	1.0	0.0	1.0
6	60.0	1.1	0.0	52.7	1.0	0.0	1.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.2	0.0	14.5	1.0	0.0	1.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.3	0.0	10.9	0.4	0.0	0.4
NB on Alliance Rd							
1	60.0	1.4	0.0	73.6	1.0	0.0	1.0
2	60.0	1.2	0.1	20.4	1.0	0.1	1.0
3	60.0	1.1	0.1	18.8	1.0	0.1	1.0
4	60.0	1.4	0.1	26.6	1.0	0.1	1.0
5	60.0	0.8	0.1	15.7	1.0	0.1	1.0
6	60.0	0.8	0.1	19.3	1.0	0.1	1.0
7	60.0	1.6	0.1	66.5	1.0	0.1	1.0
8	60.0	0.4	0.0	16.3	1.0	0.0	1.0
9	60.0	0.6	0.0	21.6	1.0	0.0	1.0
10	60.0	2.3	0.1	43.5	2.0	0.1	2.0
Average:	60.0	1.2	0.1	32.2	1.1	0.1	1.1
NB on SR 14							
1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.7	0.0	24.7	1.0	0.0	1.0
5	60.0	0.3	0.0	19.8	1.0	0.0	1.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.3	0.0	16.6	1.0	0.0	1.0

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
9	60.0	0.6	0.0	17.2	1.0	0.0	1.0
10	60.0	0.3	0.0	20.9	1.0	0.0	1.0
Average:	60.0	0.2	0.0	9.9	0.5	0.0	0.5

SB on Alliance Rd

1	60.0	0.3	0.0	20.5	1.0	0.0	1.0
2	60.0	0.4	0.0	23.0	1.0	0.0	1.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.3	0.0	16.4	1.0	0.0	1.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.2	0.0	14.5	1.0	0.0	1.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.1	0.0	7.4	0.4	0.0	0.4

SEB on SR 14

1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	1.8	0.0	106.3	2.0	0.0	2.0
3	60.0	0.3	0.0	16.1	1.0	0.0	1.0
4	60.0	1.2	0.0	74.5	1.0	0.0	1.0
5	60.0	5.2	0.1	146.4	4.0	0.1	4.0
6	60.0	1.1	0.1	47.0	2.0	0.1	2.0
7	60.0	0.3	0.0	17.2	1.0	0.0	1.0
8	60.0	0.9	0.0	27.0	1.0	0.0	1.0
9	60.0	0.6	0.0	22.4	1.0	0.0	1.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	1.1	0.0	45.7	1.3	0.0	1.3

WB on Yale Rd

1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.3	0.0	18.5	1.0	0.0	1.0
3	60.0	0.3	0.0	15.4	1.0	0.0	1.0
4	60.0	0.5	0.0	15.1	1.0	0.0	1.0
5	60.0	0.4	0.0	24.9	1.0	0.0	1.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.2	0.0	14.6	1.0	0.0	1.0
8	60.0	1.6	0.0	77.4	1.0	0.0	1.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.3	0.0	16.6	0.6	0.0	0.6

ABOUT SPILLBACK QUEUES

Spillback queues begin at the front bumper of the first vehicle in queue on a link. From there, the queue can branch as a tree in different directions as it spills upstream through intersections. The various branches of the spillback queue will extend beyond the originating link and superlink boundaries until the back of the queue is reached on every branch in the tree.

- Average/Maximum Queue Length: Distance from the front bumper of the first queued vehicle to the back bumper of the last queued vehicle for the longest branch
- Average/Maximum Vehicles Queued: Number of vehicles queued in all lanes for the longest branch

Project: POR-14 Peanut Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Avg Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.3	0.4	0.0	1.1	10
NB	SR 14	0.7	0.6	0.0	2.3	10
SB	Alliance Rd	0.1	0.2	0.0	0.4	10
SEB	SR 14	1.1	1.5	0.0	5.2	10
WB	Yale Rd	0.3	0.5	0.0	1.6	10

Project: POR-14 Peanut Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Avg Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.0	10
NB	SR 14	0.0	0.0	0.0	0.1	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
SEB	SR 14	0.0	0.0	0.0	0.1	10
WB	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Total Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.0	10
NB	SR 14	0.0	0.0	0.0	0.1	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
SEB	SR 14	0.0	0.0	0.0	0.1	10
WB	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	10.9	17.4	0.0	52.7	10
NB	SR 14	21.1	20.1	0.0	73.6	10
SB	Alliance Rd	7.4	9.9	0.0	23.0	10
SEB	SR 14	45.7	48.8	0.0	146.4	10
WB	Yale Rd	16.6	23.3	0.0	77.4	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.4	0.5	0.0	1.0	10
NB	SR 14	0.8	0.5	0.0	2.0	10
SB	Alliance Rd	0.4	0.5	0.0	1.0	10
SEB	SR 14	1.3	1.2	0.0	4.0	10
WB	Yale Rd	0.6	0.5	0.0	1.0	10

Project: POR-14 Peanut Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Total Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 15

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.4	0.5	0.0	1.0	10
NB	SR 14	0.8	0.5	0.0	2.0	10
SB	Alliance Rd	0.4	0.5	0.0	1.0	10
SEB	SR 14	1.3	1.2	0.0	4.0	10
WB	Yale Rd	0.6	0.5	0.0	1.0	10

Six Leg Circular Roundabout

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
1	851.0	1.20	5.0	A
2	845.0	1.20	4.9	A
3	838.0	1.10	4.8	A
4	836.0	1.10	5.0	A
5	840.0	1.20	5.1	A
6	846.0	1.20	4.9	A
7	845.0	1.10	4.9	A
8	847.0	1.20	5.0	A
9	843.0	1.20	5.1	A
10	843.0	1.10	4.9	A
Average:	843.4	1.16	5.0	A

Project: POR-14 Six-Leg Circular Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Total Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Yale Rd & Alliance Rd	Roundabout	1.2	0.1	1.1	1.2	10

Project: POR-14 Six-Leg Circular Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Avg Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Yale Rd & Alliance Rd	Roundabout	5.0	0.1	4.8	5.1	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
EB R on Yale Rd: Lane ID 28				
1	34.0	0.00	4.5	A
2	33.0	0.00	4.7	A
3	32.0	0.00	4.8	A
4	31.0	0.00	4.2	A
5	32.0	0.00	4.7	A
6	30.0	0.00	4.4	A
7	32.0	0.00	3.8	A
8	33.0	0.00	5.0	A
9	29.0	0.00	4.7	A
10	32.0	0.00	4.6	A
Average:	31.0	0.00	4.5	A

NEB R on Alliance Rd: Lane ID 24

1	71.0	0.10	3.7	A
2	73.0	0.10	3.3	A
3	71.0	0.10	3.1	A
4	70.0	0.10	3.6	A
5	74.0	0.10	3.6	A
6	76.0	0.10	3.4	A
7	73.0	0.10	3.5	A
8	74.0	0.10	3.3	A
9	74.0	0.10	3.5	A
10	73.0	0.10	3.1	A
Average:	72.0	0.10	3.4	A

NWB T on SR 14: Lane ID 22

1	402.0	0.60	5.1	A
2	400.0	0.60	5.1	A
3	399.0	0.60	5.0	A
4	397.0	0.60	5.1	A
5	397.0	0.60	5.3	A
6	400.0	0.60	5.1	A
7	399.0	0.60	5.1	A
8	402.0	0.60	5.3	A
9	399.0	0.60	5.4	A
10	398.0	0.60	5.1	A

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
Average:	399.0	0.60	5.2	A

SEB R on SR 14: Lane ID 26

1	269.0	0.40	4.8	A
2	264.0	0.40	4.8	A
3	265.0	0.40	4.8	A
4	264.0	0.30	4.8	A
5	263.0	0.40	4.9	A
6	265.0	0.40	4.8	A
7	264.0	0.40	4.8	A
8	264.0	0.30	4.8	A
9	265.0	0.40	4.8	A
10	267.0	0.40	4.8	A
Average:	265.0	0.38	4.8	A

SWB R on Alliance Rd: Lane ID 30

1	43.0	0.10	5.5	A
2	44.0	0.10	5.9	A
3	39.0	0.10	5.3	A
4	43.0	0.10	5.8	A
5	45.0	0.10	6.1	A
6	43.0	0.10	6.1	A
7	46.0	0.10	5.8	A
8	41.0	0.10	5.5	A
9	42.0	0.10	6.6	A
10	43.0	0.10	5.4	A
Average:	42.0	0.10	5.8	A

WB R on Yale Rd: Lane ID 20

1	32.0	0.10	6.2	A
2	31.0	0.10	6.5	A
3	32.0	0.10	6.4	A
4	31.0	0.10	6.7	A
5	29.0	0.00	5.9	A
6	32.0	0.10	7.2	A
7	31.0	0.10	6.0	A
8	33.0	0.10	6.8	A
9	34.0	0.10	6.9	A
10	30.0	0.10	7.0	A
Average:	31.0	0.09	6.6	A

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Total Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.1	0.0	0.0	0.1	10
NWB T	22	SR 14	0.6	0.0	0.6	0.6	10
NEB R	24	Alliance Rd	0.1	0.0	0.1	0.1	10
SEB R	26	SR 14	0.4	0.0	0.3	0.4	10
EB R	28	Yale Rd	0.0	0.0	0.0	0.0	10
SWB R	30	Alliance Rd	0.1	0.0	0.1	0.1	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Avg Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
WB R	20	Yale Rd	6.6	0.4	5.9	7.2	10
NWB T	22	SR 14	5.2	0.1	5.0	5.4	10
NEB R	24	Alliance Rd	3.4	0.2	3.1	3.7	10
SEB R	26	SR 14	4.8	0.0	4.8	4.9	10
EB R	28	Yale Rd	4.5	0.3	3.8	5.0	10
SWB R	30	Alliance Rd	5.8	0.4	5.3	6.6	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection

- Overview

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB R on Yale Rd - Lane ID 28						
1	120.0	0.3	0.0	0.0	0.0	0.0%
2	120.0	0.1	0.0	0.0	0.0	0.0%
3	120.0	0.1	0.0	0.0	0.0	0.0%
4	120.0	0.0	0.0	0.0	0.0	0.0%
5	120.0	0.3	0.0	0.0	0.0	0.0%
6	120.0	0.1	0.0	0.0	0.0	0.0%
7	120.0	0.0	0.0	0.0	0.0	0.0%
8	120.0	0.0	0.0	0.0	0.0	0.0%
9	120.0	0.1	0.0	0.0	0.0	0.0%
10	120.0	0.1	0.0	0.0	0.0	0.0%
Average:	120.0	0.1	0.0	0.0	0.0	0.0%

NEB R on Alliance Rd - Lane ID 24

1	120.0	0.0	0.0	0.0	0.0	0.0%
2	120.0	0.6	0.0	0.0	0.0	0.0%
3	120.0	0.3	0.0	0.0	0.0	0.0%
4	120.0	0.2	0.0	0.0	0.0	0.0%
5	120.0	0.9	0.0	0.0	0.0	0.0%
6	120.0	0.2	0.0	0.0	0.0	0.0%
7	120.0	0.1	0.0	0.0	0.0	0.0%
8	120.0	1.0	0.0	0.0	0.0	0.0%
9	120.0	0.0	0.0	0.0	0.0	0.0%
10	120.0	0.0	0.0	0.0	0.0	0.0%
Average:	120.0	0.3	0.0	0.0	0.0	0.0%

NWB T on SR 14 - Lane ID 22

1	120.0	0.0	0.0	0.0	0.0	0.0%
2	120.0	0.2	0.0	0.0	0.0	0.0%
3	120.0	0.4	0.0	0.0	0.0	0.0%
4	120.0	1.3	0.1	0.8	0.0	0.0%
5	120.0	0.2	0.0	0.0	0.0	0.0%
6	120.0	0.7	0.0	0.0	0.0	0.0%
7	120.0	0.4	0.0	0.0	0.0	0.0%
8	120.0	0.4	0.0	0.0	0.0	0.0%
9	120.0	0.3	0.0	0.0	0.0	0.0%

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB T on SR 14 - Lane ID 22						
10	120.0	1.9	0.1	0.0	0.0	0.0%
Average:	120.0	0.6	0.0	0.1	0.0	0.0%
SEB R on SR 14 - Lane ID 26						
1	120.0	0.3	0.0	0.0	0.0	0.0%
2	120.0	0.0	0.0	0.0	0.0	0.0%
3	120.0	0.0	0.0	0.0	0.0	0.0%
4	120.0	0.2	0.0	0.0	0.0	0.0%
5	120.0	1.0	0.0	0.0	0.0	0.0%
6	120.0	0.0	0.0	0.0	0.0	0.0%
7	120.0	0.3	0.0	0.0	0.0	0.0%
8	120.0	0.0	0.0	0.0	0.0	0.0%
9	120.0	0.4	0.0	0.0	0.0	0.0%
10	120.0	0.0	0.0	0.0	0.0	0.0%
Average:	120.0	0.2	0.0	0.0	0.0	0.0%
SWB R on Alliance Rd - Lane ID 30						
1	120.0	0.0	0.0	0.0	0.0	0.0%
2	120.0	0.4	0.0	0.0	0.0	0.0%
3	120.0	0.1	0.0	0.0	0.0	0.0%
4	120.0	0.2	0.0	0.0	0.0	0.0%
5	120.0	0.4	0.0	0.0	0.0	0.0%
6	120.0	0.0	0.0	0.0	0.0	0.0%
7	120.0	0.3	0.0	0.0	0.0	0.0%
8	120.0	0.0	0.0	0.0	0.0	0.0%
9	120.0	0.7	0.0	0.0	0.0	0.0%
10	120.0	0.4	0.0	0.0	0.0	0.0%
Average:	120.0	0.3	0.0	0.0	0.0	0.0%
WB R on Yale Rd - Lane ID 20						
1	120.0	0.0	0.0	0.0	0.0	0.0%
2	120.0	0.1	0.0	0.0	0.0	0.0%
3	120.0	0.3	0.0	0.0	0.0	0.0%
4	120.0	1.3	0.0	0.0	0.0	0.0%
5	120.0	0.3	0.0	0.0	0.0	0.0%
6	120.0	0.1	0.0	0.0	0.0	0.0%
7	120.0	0.0	0.0	0.0	0.0	0.0%
8	120.0	0.6	0.0	0.0	0.0	0.0%
9	120.0	0.5	0.0	0.0	0.0	0.0%
10	120.0	0.1	0.0	0.0	0.0	0.0%
Average:	120.0	0.3	0.0	0.0	0.0	0.0%

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NEB R	24	Alliance Rd	0.3	0.4	0.0	1.0	10
SWB R	30	Alliance Rd	0.3	0.2	0.0	0.7	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB T	22	SR 14	0.6	0.6	0.0	1.9	10
SEB R	26	SR 14	0.2	0.3	0.0	1.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.3	0.4	0.0	1.3	10
EB R	28	Yale Rd	0.1	0.1	0.0	0.3	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NEB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
SWB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB T	22	SR 14	0.0	0.0	0.0	0.1	10
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.0	0.0	0.0	0.0	10
EB R	28	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NEB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
SWB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB T	22	SR 14	0.1	0.3	0.0	0.8	10
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.0	0.0	0.0	0.0	10
EB R	28	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NEB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
SWB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB T	22	SR 14	0.0	0.0	0.0	0.0	10
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.0	0.0	0.0	0.0	10
EB R	28	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Spillback Rate

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NEB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
SWB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB T	22	SR 14	0.0	0.0	0.0	0.0	10
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.0	0.0	0.0	0.0	10
EB R	28	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Overview

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
EB on Yale Rd							
1	60.0	0.4	0.0	25.6	1.0	0.0	1.0
2	60.0	0.3	0.0	20.5	1.0	0.0	1.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.3	0.0	17.7	1.0	0.0	1.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.1	0.0	6.4	0.3	0.0	0.3
NEB on Alliance Rd							
1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.4	0.0	24.5	1.0	0.0	1.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.3	0.0	19.1	1.0	0.0	1.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.5	0.0	31.2	1.0	0.0	1.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.3	0.0	16.6	1.0	0.0	1.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.3	0.0	18.0	1.0	0.0	1.0
Average:	60.0	0.2	0.0	10.9	0.5	0.0	0.5
NWB on SR 14							
1	60.0	2.5	0.1	110.2	3.0	0.1	3.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.3	0.0	16.8	1.0	0.0	1.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.6	0.0	18.3	1.0	0.0	1.0
6	60.0	1.1	0.0	68.1	1.0	0.0	1.0
7	60.0	2.3	0.1	138.2	3.0	0.1	3.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
9	60.0	2.4	0.1	128.4	3.0	0.1	3.0
10	60.0	0.4	0.0	22.9	1.0	0.0	1.0
Average:	60.0	1.0	0.0	50.3	1.3	0.0	1.3

SEB on SR 14

1	60.0	1.7	0.0	103.9	2.0	0.0	2.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.7	0.0	43.1	2.0	0.0	2.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	1.1	0.0	68.4	1.0	0.0	1.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.4	0.0	21.5	0.5	0.0	0.5

SWB on Alliance Rd

1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.6	0.0	17.5	1.0	0.0	1.0
3	60.0	0.3	0.0	15.9	1.0	0.0	1.0
4	60.0	0.6	0.0	24.4	1.0	0.0	1.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.2	0.0	5.8	0.3	0.0	0.3

WB on Yale Rd

1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	1.1	0.0	68.1	1.0	0.0	1.0
3	60.0	0.6	0.0	17.2	1.0	0.0	1.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	1.2	0.0	71.1	1.0	0.0	1.0
7	60.0	0.3	0.0	16.0	1.0	0.0	1.0
8	60.0	0.3	0.0	16.8	1.0	0.0	1.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.4	0.0	18.9	0.5	0.0	0.5

ABOUT SPILLBACK QUEUES

Spillback queues begin at the front bumper of the first vehicle in queue on a link. From there, the queue can branch as a tree in different directions as it spills upstream through intersections. The various branches of the spillback queue will extend beyond the originating link and superlink boundaries until the back of the queue is reached on every branch in the tree.

- Average/Maximum Queue Length: Distance from the front bumper of the first queued vehicle to the back bumper of the last queued vehicle for the longest branch
- Average/Maximum Vehicles Queued: Number of vehicles queued in all lanes for the longest branch

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.1	0.2	0.0	0.4	10
NEB	Alliance Rd	0.2	0.2	0.0	0.5	10
NWB	SR 14	1.0	1.0	0.0	2.5	10
SEB	SR 14	0.4	0.6	0.0	1.7	10
SWB	Alliance Rd	0.2	0.3	0.0	0.6	10
WB	Yale Rd	0.4	0.5	0.0	1.2	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.0	10
NEB	Alliance Rd	0.0	0.0	0.0	0.0	10
NWB	SR 14	0.0	0.0	0.0	0.1	10
SEB	SR 14	0.0	0.0	0.0	0.0	10
SWB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Total Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.0	10
NEB	Alliance Rd	0.0	0.0	0.0	0.0	10
NWB	SR 14	0.0	0.0	0.0	0.1	10
SEB	SR 14	0.0	0.0	0.0	0.0	10
SWB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	6.4	10.4	0.0	25.6	10
NEB	Alliance Rd	10.9	12.2	0.0	31.2	10
NWB	SR 14	50.3	56.0	0.0	138.2	10
SEB	SR 14	21.5	37.6	0.0	103.9	10
SWB	Alliance Rd	5.8	9.5	0.0	24.4	10
WB	Yale Rd	18.9	27.8	0.0	71.1	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.3	0.5	0.0	1.0	10
NEB	Alliance Rd	0.5	0.5	0.0	1.0	10
NWB	SR 14	1.3	1.3	0.0	3.0	10
SEB	SR 14	0.5	0.8	0.0	2.0	10
SWB	Alliance Rd	0.3	0.5	0.0	1.0	10
WB	Yale Rd	0.5	0.5	0.0	1.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Total Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.3	0.5	0.0	1.0	10
NEB	Alliance Rd	0.5	0.5	0.0	1.0	10
NWB	SR 14	1.3	1.3	0.0	3.0	10
SEB	SR 14	0.5	0.8	0.0	2.0	10
SWB	Alliance Rd	0.3	0.5	0.0	1.0	10
WB	Yale Rd	0.5	0.5	0.0	1.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
1	910.0	1.30	5.3	A
2	899.0	1.30	5.1	A
3	912.0	1.30	5.2	A
4	908.0	1.30	5.2	A
5	911.0	1.30	5.2	A
6	906.0	1.30	5.1	A
7	913.0	1.30	5.1	A
8	903.0	1.30	5.1	A
9	915.0	1.30	5.1	A
10	911.0	1.30	5.0	A
Average:	908.8	1.30	5.1	A

Project: POR-14 Six-Leg Circular Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Total Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Yale Rd & Alliance Rd	Roundabout	1.3	0.0	1.3	1.3	10

Project: POR-14 Six-Leg Circular Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Avg Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Yale Rd & Alliance Rd	Roundabout	5.1	0.1	5.0	5.3	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
EB R on Yale Rd: Lane ID 28				
1	30.0	0.10	7.8	A
2	30.0	0.10	6.5	A
3	34.0	0.10	6.8	A
4	32.0	0.00	5.2	A
5	31.0	0.00	5.7	A
6	28.0	0.00	4.8	A
7	32.0	0.10	6.5	A
8	30.0	0.10	6.4	A
9	33.0	0.10	5.9	A
10	33.0	0.10	5.8	A
Average:	31.0	0.07	6.1	A

NEB R on Alliance Rd: Lane ID 24

1	89.0	0.10	5.3	A
2	90.0	0.10	4.5	A
3	90.0	0.10	5.0	A
4	91.0	0.10	5.1	A
5	91.0	0.10	4.8	A
6	90.0	0.10	5.2	A
7	92.0	0.10	4.6	A
8	92.0	0.10	4.9	A
9	91.0	0.10	4.5	A
10	92.0	0.10	4.4	A
Average:	90.0	0.10	4.8	A

NWB T on SR 14: Lane ID 22

1	187.0	0.30	5.2	A
2	185.0	0.30	5.1	A
3	188.0	0.30	5.0	A
4	187.0	0.30	5.1	A
5	187.0	0.30	4.9	A
6	184.0	0.30	5.0	A
7	186.0	0.30	5.0	A
8	185.0	0.30	5.1	A
9	186.0	0.20	4.8	A
10	185.0	0.20	4.8	A

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
Average:	186.0	0.28	5.0	A

SEB R on SR 14: Lane ID 26

1	526.0	0.80	5.2	A
2	522.0	0.70	5.1	A
3	525.0	0.80	5.2	A
4	520.0	0.80	5.2	A
5	525.0	0.80	5.2	A
6	524.0	0.70	5.1	A
7	528.0	0.80	5.2	A
8	525.0	0.70	5.0	A
9	528.0	0.80	5.2	A
10	525.0	0.70	5.1	A
Average:	524.0	0.76	5.2	A

SWB R on Alliance Rd: Lane ID 30

1	47.0	0.10	5.5	A
2	40.0	0.10	4.9	A
3	43.0	0.10	4.8	A
4	45.0	0.10	4.5	A
5	45.0	0.10	5.1	A
6	46.0	0.10	4.6	A
7	41.0	0.10	4.8	A
8	42.0	0.10	4.7	A
9	44.0	0.10	4.7	A
10	42.0	0.10	5.1	A
Average:	43.0	0.10	4.9	A

WB R on Yale Rd: Lane ID 20

1	31.0	0.00	5.3	A
2	32.0	0.00	5.2	A
3	32.0	0.00	5.2	A
4	33.0	0.10	5.6	A
5	32.0	0.00	5.4	A
6	34.0	0.10	5.7	A
7	34.0	0.00	5.1	A
8	29.0	0.00	5.8	A
9	33.0	0.10	6.0	A
10	34.0	0.10	5.5	A
Average:	32.0	0.04	5.5	A

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Total Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.0	0.1	0.0	0.1	10
NWB T	22	SR 14	0.3	0.0	0.2	0.3	10
NEB R	24	Alliance Rd	0.1	0.0	0.1	0.1	10
SEB R	26	SR 14	0.8	0.1	0.7	0.8	10
EB R	28	Yale Rd	0.1	0.0	0.0	0.1	10
SWB R	30	Alliance Rd	0.1	0.0	0.1	0.1	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Avg Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
WB R	20	Yale Rd	5.5	0.3	5.1	6.0	10
NWB T	22	SR 14	5.0	0.1	4.8	5.2	10
NEB R	24	Alliance Rd	4.8	0.3	4.4	5.3	10
SEB R	26	SR 14	5.2	0.1	5.0	5.2	10
EB R	28	Yale Rd	6.1	0.8	4.8	7.8	10
SWB R	30	Alliance Rd	4.9	0.3	4.5	5.5	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection

- Overview

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB R on Yale Rd - Lane ID 28						
1	120.0	0.4	0.0	0.0	0.0	0.0%
2	120.0	0.1	0.0	0.0	0.0	0.0%
3	120.0	0.7	0.0	0.0	0.0	0.0%
4	120.0	0.1	0.0	0.0	0.0	0.0%
5	120.0	0.4	0.0	0.0	0.0	0.0%
6	120.0	0.1	0.0	0.0	0.0	0.0%
7	120.0	0.9	0.1	12.6	1.0	0.0%
8	120.0	0.3	0.0	0.0	0.0	0.0%
9	120.0	0.0	0.0	0.0	0.0	0.0%
10	120.0	0.1	0.0	0.0	0.0	0.0%
Average:	120.0	0.3	0.0	1.3	0.1	0.0%

NEB R on Alliance Rd - Lane ID 24

1	120.0	1.9	0.1	15.4	1.0	0.0%
2	120.0	0.5	0.0	0.0	0.0	0.0%
3	120.0	1.3	0.1	0.0	0.0	0.0%
4	120.0	0.6	0.0	0.0	0.0	0.0%
5	120.0	0.7	0.0	0.0	0.0	0.0%
6	120.0	0.7	0.0	0.0	0.0	0.0%
7	120.0	1.4	0.1	0.7	0.0	0.0%
8	120.0	1.7	0.1	16.3	1.0	0.0%
9	120.0	0.7	0.0	0.0	0.0	0.0%
10	120.0	0.1	0.0	0.0	0.0	0.0%
Average:	120.0	1.0	0.0	3.2	0.2	0.0%

NWB T on SR 14 - Lane ID 22

1	120.0	0.4	0.0	0.0	0.0	0.0%
2	120.0	1.6	0.0	0.0	0.0	0.0%
3	120.0	0.5	0.0	0.0	0.0	0.0%
4	120.0	0.1	0.0	0.0	0.0	0.0%
5	120.0	0.3	0.0	0.0	0.0	0.0%
6	120.0	0.9	0.0	0.0	0.0	0.0%
7	120.0	0.7	0.0	0.0	0.0	0.0%
8	120.0	0.3	0.0	0.0	0.0	0.0%
9	120.0	0.0	0.0	0.0	0.0	0.0%

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB T on SR 14 - Lane ID 22						
10	120.0	0.0	0.0	0.0	0.0	0.0%
Average:	120.0	0.5	0.0	0.0	0.0	0.0%
SEB R on SR 14 - Lane ID 26						
1	120.0	0.1	0.0	0.0	0.0	0.0%
2	120.0	0.3	0.0	0.0	0.0	0.0%
3	120.0	0.6	0.0	0.0	0.0	0.0%
4	120.0	0.3	0.0	0.0	0.0	0.0%
5	120.0	1.4	0.1	0.9	0.0	0.0%
6	120.0	0.8	0.0	0.0	0.0	0.0%
7	120.0	1.5	0.1	0.0	0.0	0.0%
8	120.0	0.4	0.0	0.0	0.0	0.0%
9	120.0	1.2	0.0	0.0	0.0	0.0%
10	120.0	0.1	0.0	0.0	0.0	0.0%
Average:	120.0	0.7	0.0	0.1	0.0	0.0%
SWB R on Alliance Rd - Lane ID 30						
1	120.0	0.0	0.0	0.0	0.0	0.0%
2	120.0	0.0	0.0	0.0	0.0	0.0%
3	120.0	0.0	0.0	0.0	0.0	0.0%
4	120.0	0.0	0.0	0.0	0.0	0.0%
5	120.0	0.5	0.0	0.0	0.0	0.0%
6	120.0	0.0	0.0	0.0	0.0	0.0%
7	120.0	0.0	0.0	0.0	0.0	0.0%
8	120.0	0.0	0.0	0.0	0.0	0.0%
9	120.0	0.0	0.0	0.0	0.0	0.0%
10	120.0	0.0	0.0	0.0	0.0	0.0%
Average:	120.0	0.1	0.0	0.0	0.0	0.0%
WB R on Yale Rd - Lane ID 20						
1	120.0	0.0	0.0	0.0	0.0	0.0%
2	120.0	0.0	0.0	0.0	0.0	0.0%
3	120.0	0.0	0.0	0.0	0.0	0.0%
4	120.0	0.3	0.0	0.0	0.0	0.0%
5	120.0	0.0	0.0	0.0	0.0	0.0%
6	120.0	0.0	0.0	0.0	0.0	0.0%
7	120.0	0.2	0.0	0.0	0.0	0.0%
8	120.0	0.6	0.0	0.0	0.0	0.0%
9	120.0	0.2	0.0	0.0	0.0	0.0%
10	120.0	0.0	0.0	0.0	0.0	0.0%
Average:	120.0	0.1	0.0	0.0	0.0	0.0%

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NEB R	24	Alliance Rd	1.0	0.6	0.1	1.9	10
SWB R	30	Alliance Rd	0.1	0.2	0.0	0.5	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB T	22	SR 14	0.5	0.5	0.0	1.6	10
SEB R	26	SR 14	0.7	0.5	0.1	1.5	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.1	0.2	0.0	0.6	10
EB R	28	Yale Rd	0.3	0.3	0.0	0.9	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NEB R	24	Alliance Rd	0.0	0.1	0.0	0.1	10
SWB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB T	22	SR 14	0.0	0.0	0.0	0.0	10
SEB R	26	SR 14	0.0	0.0	0.0	0.1	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.0	0.0	0.0	0.0	10
EB R	28	Yale Rd	0.0	0.0	0.0	0.1	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NEB R	24	Alliance Rd	3.2	6.7	0.0	16.3	10
SWB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB T	22	SR 14	0.0	0.0	0.0	0.0	10
SEB R	26	SR 14	0.1	0.3	0.0	0.9	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.0	0.0	0.0	0.0	10
EB R	28	Yale Rd	1.3	4.0	0.0	12.6	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NEB R	24	Alliance Rd	0.2	0.4	0.0	1.0	10
SWB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB T	22	SR 14	0.0	0.0	0.0	0.0	10
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.0	0.0	0.0	0.0	10
EB R	28	Yale Rd	0.1	0.3	0.0	1.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Spillback Rate

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NEB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
SWB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB T	22	SR 14	0.0	0.0	0.0	0.0	10
SEB R	26	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movements	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB R	20	Yale Rd	0.0	0.0	0.0	0.0	10
EB R	28	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Overview

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
EB on Yale Rd							
1	60.0	0.4	0.0	24.5	1.0	0.0	1.0
2	60.0	0.2	0.0	14.9	1.0	0.0	1.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.7	0.0	26.6	1.0	0.0	1.0
5	60.0	0.3	0.0	18.9	1.0	0.0	1.0
6	60.0	0.3	0.0	16.3	1.0	0.0	1.0
7	60.0	0.7	0.0	26.7	1.0	0.0	1.0
8	60.0	0.8	0.1	18.1	1.0	0.1	1.0
9	60.0	0.3	0.0	16.0	1.0	0.0	1.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.4	0.0	16.2	0.8	0.0	0.8
NEB on Alliance Rd							
1	60.0	3.2	0.1	89.2	2.0	0.1	2.0
2	60.0	1.8	0.1	75.5	1.0	0.1	1.0
3	60.0	0.6	0.0	21.3	1.0	0.0	1.0
4	60.0	3.4	0.1	67.3	2.0	0.1	2.0
5	60.0	1.3	0.0	60.9	1.0	0.0	1.0
6	60.0	0.3	0.0	17.1	1.0	0.0	1.0
7	60.0	2.9	0.1	71.3	1.0	0.1	1.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.6	0.0	20.0	1.0	0.0	1.0
10	60.0	0.2	0.0	14.5	1.0	0.0	1.0
Average:	60.0	1.4	0.0	43.7	1.1	0.0	1.1
NWB on SR 14							
1	60.0	0.2	0.0	14.7	1.0	0.0	1.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.3	0.0	18.3	1.0	0.0	1.0
4	60.0	0.6	0.0	19.1	1.0	0.0	1.0
5	60.0	0.3	0.0	19.6	1.0	0.0	1.0
6	60.0	0.3	0.0	15.6	1.0	0.0	1.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.2	0.0	8.7	0.5	0.0	0.5

SEB on SR 14

1	60.0	3.3	0.1	132.2	4.0	0.1	4.0
2	60.0	0.7	0.0	22.1	1.0	0.0	1.0
3	60.0	1.1	0.0	63.6	1.0	0.0	1.0
4	60.0	1.7	0.0	100.6	1.0	0.0	1.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.4	0.0	21.1	1.0	0.0	1.0
7	60.0	0.6	0.0	20.2	1.0	0.0	1.0
8	60.0	0.2	0.0	14.4	1.0	0.0	1.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.4	0.0	24.6	1.0	0.0	1.0
Average:	60.0	0.8	0.0	39.9	1.1	0.0	1.1

SWB on Alliance Rd

1	60.0	0.5	0.0	16.1	1.0	0.0	1.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	1.2	0.0	72.9	1.0	0.0	1.0
6	60.0	0.2	0.0	13.9	1.0	0.0	1.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.5	0.0	19.0	1.0	0.0	1.0
Average:	60.0	0.2	0.0	12.2	0.4	0.0	0.4

WB on Yale Rd

1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.3	0.0	15.5	1.0	0.0	1.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.6	0.0	18.9	1.0	0.0	1.0
9	60.0	0.4	0.0	13.5	1.0	0.0	1.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.1	0.0	4.8	0.3	0.0	0.3

ABOUT SPILLBACK QUEUES

Spillback queues begin at the front bumper of the first vehicle in queue on a link. From there, the queue can branch as a tree in different directions as it spills upstream through intersections. The various branches of the spillback queue will extend beyond the originating link and superlink boundaries until the back of the queue is reached on every branch in the tree.

- Average/Maximum Queue Length: Distance from the front bumper of the first queued vehicle to the back bumper of the last queued vehicle for the longest branch
- Average/Maximum Vehicles Queued: Number of vehicles queued in all lanes for the longest branch

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.4	0.3	0.0	0.8	10
NEB	Alliance Rd	1.4	1.3	0.0	3.4	10
NWB	SR 14	0.2	0.2	0.0	0.6	10
SEB	SR 14	0.8	1.0	0.0	3.3	10
SWB	Alliance Rd	0.2	0.4	0.0	1.2	10
WB	Yale Rd	0.1	0.2	0.0	0.6	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.1	10
NEB	Alliance Rd	0.0	0.1	0.0	0.1	10
NWB	SR 14	0.0	0.0	0.0	0.0	10
SEB	SR 14	0.0	0.0	0.0	0.1	10
SWB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Total Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.1	10
NEB	Alliance Rd	0.0	0.1	0.0	0.1	10
NWB	SR 14	0.0	0.0	0.0	0.0	10
SEB	SR 14	0.0	0.0	0.0	0.1	10
SWB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	16.2	9.6	0.0	26.7	10
NEB	Alliance Rd	43.7	32.0	0.0	89.2	10
NWB	SR 14	8.7	9.3	0.0	19.6	10
SEB	SR 14	39.9	44.6	0.0	132.2	10
SWB	Alliance Rd	12.2	22.7	0.0	72.9	10
WB	Yale Rd	4.8	7.8	0.0	18.9	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.8	0.4	0.0	1.0	10
NEB	Alliance Rd	1.1	0.6	0.0	2.0	10
NWB	SR 14	0.5	0.5	0.0	1.0	10
SEB	SR 14	1.1	1.1	0.0	4.0	10
SWB	Alliance Rd	0.4	0.5	0.0	1.0	10
WB	Yale Rd	0.3	0.5	0.0	1.0	10

Project: POR-14 Six-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Total Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.8	0.4	0.0	1.0	10
NEB	Alliance Rd	1.1	0.6	0.0	2.0	10
NWB	SR 14	0.5	0.5	0.0	1.0	10
SEB	SR 14	1.1	1.1	0.0	4.0	10
SWB	Alliance Rd	0.4	0.5	0.0	1.0	10
WB	Yale Rd	0.3	0.5	0.0	1.0	10

Five-Leg Circular Roundabout

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
1	827.0	1.20	5.3	A
2	830.0	1.20	5.2	A
3	837.0	1.20	5.3	A
4	828.0	1.20	5.2	A
5	834.0	1.20	5.2	A
6	830.0	1.20	5.4	A
7	832.0	1.20	5.3	A
8	837.0	1.20	5.3	A
9	825.0	1.20	5.4	A
10	829.0	1.20	5.4	A
Average:	830.9	1.20	5.3	A

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Total Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Yale Rd & Alliance Rd	Roundabout	1.2	0.0	1.2	1.2	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Avg Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Yale Rd & Alliance Rd	Roundabout	5.3	0.1	5.2	5.4	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
EB R on Yale Rd: Lane ID 20				
1	32.0	0.00	5.3	A
2	34.0	0.00	4.8	A
3	33.0	0.00	5.4	A
4	32.0	0.00	5.3	A
5	31.0	0.00	5.7	A
6	32.0	0.00	5.1	A
7	33.0	0.00	4.8	A
8	33.0	0.00	5.1	A
9	30.0	0.00	5.1	A
10	33.0	0.00	5.3	A
Average:	32.0	0.00	5.2	A

NEB T on Alliance Rd: Lane ID 28

1	72.0	0.10	5.3	A
2	70.0	0.10	5.6	A
3	75.0	0.10	5.8	A
4	72.0	0.10	5.5	A
5	72.0	0.10	5.7	A
6	73.0	0.10	6.0	A
7	69.0	0.10	5.9	A
8	76.0	0.10	5.8	A
9	74.0	0.10	5.6	A
10	74.0	0.10	6.4	A
Average:	72.0	0.10	5.7	A

NWB T on SR 14: Lane ID 26

1	400.0	0.60	5.8	A
2	396.0	0.60	5.7	A
3	399.0	0.60	5.7	A
4	398.0	0.60	5.5	A
5	404.0	0.60	5.4	A
6	401.0	0.60	5.6	A
7	396.0	0.60	5.6	A
8	401.0	0.60	5.6	A
9	396.0	0.60	5.7	A
10	401.0	0.60	5.7	A

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
Average:	399.0	0.60	5.6	A

SEB R on SR 14: Lane ID 22

1	260.0	0.40	5.4	A
2	263.0	0.40	5.4	A
3	267.0	0.40	5.5	A
4	266.0	0.40	5.6	A
5	268.0	0.40	5.5	A
6	264.0	0.40	5.6	A
7	268.0	0.40	5.4	A
8	265.0	0.40	5.5	A
9	266.0	0.40	5.5	A
10	261.0	0.40	5.6	A
Average:	264.0	0.40	5.5	A

SWB R on Alliance Rd: Lane ID 24

1	63.0	0.00	1.9	A
2	67.0	0.00	1.9	A
3	63.0	0.00	1.8	A
4	60.0	0.00	1.5	A
5	59.0	0.00	1.5	A
6	60.0	0.00	2.2	A
7	66.0	0.00	1.9	A
8	62.0	0.00	2.3	A
9	59.0	0.00	2.6	A
10	60.0	0.00	1.4	A
Average:	61.0	0.00	1.9	A

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Total Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.0	0.0	0.0	0.0	10
SEB R	22	SR 14	0.4	0.0	0.4	0.4	10
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NWB T	26	SR 14	0.6	0.0	0.6	0.6	10
NEB T	28	Alliance Rd	0.1	0.0	0.1	0.1	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service by Lane - Avg Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
EB R	20	Yale Rd	5.2	0.3	4.8	5.7	10
SEB R	22	SR 14	5.5	0.1	5.4	5.6	10
SWB R	24	Alliance Rd	1.9	0.4	1.4	2.6	10
NWB T	26	SR 14	5.6	0.1	5.4	5.8	10
NEB T	28	Alliance Rd	5.7	0.3	5.3	6.4	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection

- Overview

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB R on Yale Rd - Lane ID 20						
1	120.0	0.2	0.0	0.0	0.0	0.0%
2	120.0	0.0	0.0	0.0	0.0	0.0%
3	120.0	0.1	0.0	0.0	0.0	0.0%
4	120.0	0.2	0.0	0.0	0.0	0.0%
5	120.0	0.2	0.0	0.0	0.0	0.0%
6	120.0	0.1	0.0	0.0	0.0	0.0%
7	120.0	0.0	0.0	0.0	0.0	0.0%
8	120.0	0.0	0.0	0.0	0.0	0.0%
9	120.0	0.2	0.0	0.0	0.0	0.0%
10	120.0	0.4	0.0	0.0	0.0	0.0%
Average:	120.0	0.1	0.0	0.0	0.0	0.0%
NEB T on Alliance Rd - Lane ID 28						
1	120.0	0.0	0.0	0.0	0.0	0.0%
2	120.0	0.1	0.0	0.0	0.0	0.0%
3	120.0	0.7	0.0	0.0	0.0	0.0%
4	120.0	0.1	0.0	0.0	0.0	0.0%
5	120.0	0.3	0.0	0.0	0.0	0.0%
6	120.0	0.0	0.0	0.0	0.0	0.0%
7	120.0	0.6	0.0	0.0	0.0	0.0%
8	120.0	0.8	0.0	0.0	0.0	0.0%
9	120.0	0.8	0.0	0.0	0.0	0.0%
10	120.0	0.9	0.0	0.0	0.0	0.0%
Average:	120.0	0.4	0.0	0.0	0.0	0.0%
NWB T on SR 14 - Lane ID 26						
1	120.0	1.4	0.1	0.0	0.0	0.0%
2	120.0	0.6	0.0	0.0	0.0	0.0%
3	120.0	1.0	0.1	0.0	0.0	0.0%
4	120.0	0.1	0.0	0.0	0.0	0.0%
5	120.0	0.4	0.0	0.0	0.0	0.0%
6	120.0	1.9	0.1	19.1	1.0	0.0%
7	120.0	0.3	0.0	0.0	0.0	0.0%
8	120.0	0.7	0.0	0.0	0.0	0.0%
9	120.0	0.6	0.0	0.0	0.0	0.0%

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB T on SR 14 - Lane ID 26						
10	120.0	0.3	0.0	0.0	0.0	0.0%
Average:	120.0	0.7	0.0	1.9	0.1	0.0%
SEB R on SR 14 - Lane ID 22						
1	120.0	0.3	0.0	0.0	0.0	0.0%
2	120.0	0.0	0.0	0.0	0.0	0.0%
3	120.0	0.3	0.0	0.0	0.0	0.0%
4	120.0	0.6	0.0	0.0	0.0	0.0%
5	120.0	0.4	0.0	0.0	0.0	0.0%
6	120.0	0.7	0.0	0.0	0.0	0.0%
7	120.0	0.3	0.0	0.0	0.0	0.0%
8	120.0	0.6	0.0	0.0	0.0	0.0%
9	120.0	0.1	0.0	0.0	0.0	0.0%
10	120.0	0.6	0.0	0.0	0.0	0.0%
Average:	120.0	0.4	0.0	0.0	0.0	0.0%
SWB R on Alliance Rd - Lane ID 24						
1	120.0	0.1	0.0	0.0	0.0	0.0%
2	120.0	0.3	0.0	0.0	0.0	0.0%
3	120.0	0.8	0.0	0.0	0.0	0.0%
4	120.0	0.4	0.0	0.0	0.0	0.0%
5	120.0	0.1	0.0	0.0	0.0	0.0%
6	120.0	0.4	0.0	0.0	0.0	0.0%
7	120.0	0.8	0.0	0.0	0.0	0.0%
8	120.0	0.7	0.0	0.0	0.0	0.0%
9	120.0	0.6	0.0	0.0	0.0	0.0%
10	120.0	0.6	0.0	0.0	0.0	0.0%
Average:	120.0	0.5	0.0	0.0	0.0	0.0%

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB TR on Alliance Rd - Lane ID 5						
1	120.0	0.0	0.0	0.0	0.0	0.0%
2	120.0	0.0	0.0	0.0	0.0	0.0%
3	120.0	0.0	0.0	0.0	0.0	0.0%
4	120.0	0.0	0.0	0.0	0.0	0.0%
5	120.0	0.0	0.0	0.0	0.0	0.0%
6	120.0	0.0	0.0	0.0	0.0	0.0%
7	120.0	0.0	0.0	0.0	0.0	0.0%
8	120.0	0.0	0.0	0.0	0.0	0.0%
9	120.0	0.0	0.0	0.0	0.0	0.0%
10	120.0	0.0	0.0	0.0	0.0	0.0%

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB TR on Alliance Rd - Lane ID 5						
Average:	120.0	0.0	0.0	0.0	0.0	0.0%
SB LT on Alliance Rd - Lane ID 18						
1	120.0	0.0	0.0	0.0	0.0	0.0%
2	120.0	0.0	0.0	0.0	0.0	0.0%
3	120.0	0.0	0.0	0.0	0.0	0.0%
4	120.0	0.0	0.0	0.0	0.0	0.0%
5	120.0	0.0	0.0	0.0	0.0	0.0%
6	120.0	0.0	0.0	0.0	0.0	0.0%
7	120.0	0.0	0.0	0.0	0.0	0.0%
8	120.0	0.0	0.0	0.0	0.0	0.0%
9	120.0	0.0	0.0	0.0	0.0	0.0%
10	120.0	0.0	0.0	0.0	0.0	0.0%
Average:	120.0	0.0	0.0	0.0	0.0	0.0%
WB LR on Yale Rd - Lane ID 16						
1	120.0	0.5	0.0	0.0	0.0	0.0%
2	120.0	0.3	0.0	0.0	0.0	0.0%
3	120.0	0.5	0.0	0.0	0.0	0.0%
4	120.0	0.8	0.1	0.6	0.0	0.0%
5	120.0	0.5	0.0	0.0	0.0	0.0%
6	120.0	1.4	0.1	0.3	0.0	0.0%
7	120.0	0.5	0.0	0.0	0.0	0.0%
8	120.0	1.1	0.0	0.0	0.0	0.0%
9	120.0	0.1	0.0	0.0	0.0	0.0%
10	120.0	1.4	0.1	13.7	1.0	0.0%
Average:	120.0	0.7	0.0	1.5	0.1	0.0%

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.5	0.3	0.1	0.8	10
NEB T	28	Alliance Rd	0.4	0.4	0.0	0.9	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	22	SR 14	0.4	0.2	0.0	0.7	10
NWB T	26	SR 14	0.7	0.6	0.1	1.9	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.1	0.1	0.0	0.4	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	5	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.7	0.5	0.1	1.4	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NEB T	28	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	22	SR 14	0.0	0.0	0.0	0.0	10
NWB T	26	SR 14	0.0	0.0	0.0	0.1	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	5	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.1	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NEB T	28	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	22	SR 14	0.0	0.0	0.0	0.0	10
NWB T	26	SR 14	1.9	6.0	0.0	19.1	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	5	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	1.5	4.3	0.0	13.7	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NEB T	28	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	22	SR 14	0.0	0.0	0.0	0.0	10
NWB T	26	SR 14	0.1	0.3	0.0	1.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	5	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.1	0.3	0.0	1.0	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Spillback Rate

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NEB T	28	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	22	SR 14	0.0	0.0	0.0	0.0	10
NWB T	26	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	5	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Overview

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
NB on Alliance Rd							
1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.0	0.0	0.0	0.0	0.0	0.0
SB on Alliance Rd							
1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.0	0.0	0.0	0.0	0.0	0.0
WB on Yale Rd							
1	60.0	0.6	0.0	19.8	1.0	0.0	1.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	1.5	0.0	54.9	1.0	0.0	1.0
4	60.0	1.8	0.1	72.3	1.0	0.1	1.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	3.2	0.1	72.2	1.0	0.1	1.0
7	60.0	0.3	0.0	16.5	1.0	0.0	1.0
8	60.0	1.1	0.1	20.7	1.0	0.1	1.0

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	-----LONGEST BRANCH-----				-----ALL BRANCHES-----	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
9	60.0	0.9	0.0	28.1	1.0	0.0	1.0
10	60.0	0.9	0.0	51.5	2.0	0.0	2.0
Average:	60.0	1.0	0.0	33.6	0.9	0.0	0.9

ABOUT SPILLBACK QUEUES

Spillback queues begin at the front bumper of the first vehicle in queue on a link. From there, the queue can branch as a tree in different directions as it spills upstream through intersections. The various branches of the spillback queue will extend beyond the originating link and superlink boundaries until the back of the queue is reached on every branch in the tree.

- Average/Maximum Queue Length: Distance from the front bumper of the first queued vehicle to the back bumper of the last queued vehicle for the longest branch
- Average/Maximum Vehicles Queued: Number of vehicles queued in all lanes for the longest branch

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Avg Queue

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	1.0	1.0	0.0	3.2	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Avg Num Queued

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.0	0.0	0.1	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Avg Total Queued

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.0	0.0	0.1	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Max Queue

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	33.6	27.3	0.0	72.3	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Max Num Queued

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.9	0.6	0.0	2.0	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Max Total Queued

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.9	0.6	0.0	2.0	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
1	895.0	1.40	5.6	A
2	886.0	1.40	5.7	A
3	897.0	1.50	5.9	A
4	895.0	1.40	5.7	A
5	896.0	1.50	5.9	A
6	905.0	1.40	5.7	A
7	888.0	1.40	5.6	A
8	899.0	1.40	5.6	A
9	898.0	1.40	5.6	A
10	896.0	1.40	5.6	A
Average:	895.5	1.42	5.7	A

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Total Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Yale Rd & Alliance Rd	Roundabout	1.4	0.0	1.4	1.5	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Avg Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Yale Rd & Alliance Rd	Roundabout	5.7	0.1	5.6	5.9	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Overview

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
EB R on Yale Rd: Lane ID 20				
1	31.0	0.10	6.5	A
2	30.0	0.10	6.7	A
3	32.0	0.10	6.9	A
4	36.0	0.10	6.0	A
5	32.0	0.10	7.1	A
6	31.0	0.10	6.8	A
7	32.0	0.10	5.8	A
8	29.0	0.00	5.5	A
9	32.0	0.10	5.8	A
10	30.0	0.10	6.9	A
Average:	31.0	0.09	6.4	A

NEB T on Alliance Rd: Lane ID 28

1	91.0	0.20	7.1	A
2	89.0	0.20	7.4	A
3	89.0	0.20	7.2	A
4	91.0	0.20	7.6	A
5	90.0	0.20	7.9	A
6	90.0	0.20	7.4	A
7	89.0	0.20	7.1	A
8	90.0	0.20	7.4	A
9	86.0	0.20	7.8	A
10	91.0	0.20	7.3	A
Average:	89.0	0.20	7.4	A

NWB T on SR 14: Lane ID 26

1	185.0	0.30	5.4	A
2	186.0	0.30	5.4	A
3	190.0	0.30	5.9	A
4	185.0	0.30	5.5	A
5	186.0	0.30	5.3	A
6	189.0	0.30	5.4	A
7	188.0	0.30	5.4	A
8	187.0	0.30	5.4	A
9	189.0	0.30	5.4	A
10	187.0	0.30	5.3	A

SR 14, YALE RD & ALLIANCE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
Average:	187.0	0.30	5.4	A

SEB R on SR 14: Lane ID 22

1	524.0	0.90	5.9	A
2	525.0	0.90	5.9	A
3	525.0	0.90	6.2	A
4	523.0	0.90	6.0	A
5	525.0	0.90	6.1	A
6	529.0	0.90	6.1	A
7	523.0	0.90	6.0	A
8	527.0	0.90	6.0	A
9	527.0	0.90	6.0	A
10	526.0	0.90	5.9	A
Average:	525.0	0.90	6.0	A

SWB R on Alliance Rd: Lane ID 24

1	64.0	0.00	0.3	A
2	56.0	0.00	1.0	A
3	61.0	0.00	1.0	A
4	60.0	0.00	1.0	A
5	63.0	0.00	1.3	A
6	66.0	0.00	0.6	A
7	56.0	0.00	0.4	A
8	66.0	0.00	0.3	A
9	64.0	0.00	0.8	A
10	62.0	0.00	0.8	A
Average:	61.0	0.00	0.7	A

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service by Lane - Total Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.1	0.0	0.0	0.1	10
SEB R	22	SR 14	0.9	0.0	0.9	0.9	10
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NWB T	26	SR 14	0.3	0.0	0.3	0.3	10
NEB T	28	Alliance Rd	0.2	0.0	0.2	0.2	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Avg Control Delay

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
EB R	20	Yale Rd	6.4	0.6	5.5	7.1	10
SEB R	22	SR 14	6.0	0.1	5.9	6.2	10
SWB R	24	Alliance Rd	0.7	0.3	0.3	1.3	10
NWB T	26	SR 14	5.4	0.2	5.3	5.9	10
NEB T	28	Alliance Rd	7.4	0.3	7.1	7.9	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection

- Overview

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB R on Yale Rd - Lane ID 20						
1	120.0	0.4	0.0	0.0	0.0	0.0%
2	120.0	0.3	0.0	0.0	0.0	0.0%
3	120.0	0.8	0.0	0.0	0.0	0.0%
4	120.0	0.2	0.0	0.0	0.0	0.0%
5	120.0	0.3	0.0	0.0	0.0	0.0%
6	120.0	0.1	0.0	0.0	0.0	0.0%
7	120.0	0.3	0.0	0.0	0.0	0.0%
8	120.0	0.0	0.0	0.0	0.0	0.0%
9	120.0	0.6	0.0	0.0	0.0	0.0%
10	120.0	0.5	0.0	0.0	0.0	0.0%
Average:	120.0	0.4	0.0	0.0	0.0	0.0%
NEB T on Alliance Rd - Lane ID 28						
1	120.0	1.1	0.1	14.4	1.0	0.0%
2	120.0	1.5	0.1	15.2	1.0	0.0%
3	120.0	1.0	0.1	13.6	1.0	0.0%
4	120.0	1.0	0.1	0.0	0.0	0.0%
5	120.0	1.3	0.1	12.6	1.0	0.0%
6	120.0	2.2	0.1	16.9	1.0	0.0%
7	120.0	1.7	0.1	15.0	1.0	0.0%
8	120.0	1.5	0.1	0.7	0.0	0.0%
9	120.0	1.9	0.1	13.9	1.0	0.0%
10	120.0	1.7	0.1	15.4	1.0	0.0%
Average:	120.0	1.5	0.1	11.8	0.8	0.0%
NWB T on SR 14 - Lane ID 26						
1	120.0	0.3	0.0	0.0	0.0	0.0%
2	120.0	0.5	0.0	0.0	0.0	0.0%
3	120.0	0.9	0.0	0.0	0.0	0.0%
4	120.0	0.4	0.0	0.0	0.0	0.0%
5	120.0	0.2	0.0	0.0	0.0	0.0%
6	120.0	0.5	0.0	0.0	0.0	0.0%
7	120.0	0.0	0.0	0.0	0.0	0.0%
8	120.0	0.4	0.0	0.0	0.0	0.0%
9	120.0	0.3	0.0	0.0	0.0	0.0%

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB T on SR 14 - Lane ID 26						
10	120.0	0.4	0.0	0.0	0.0	0.0%
Average:	120.0	0.4	0.0	0.0	0.0	0.0%
SEB R on SR 14 - Lane ID 22						
1	120.0	0.6	0.0	0.0	0.0	0.0%
2	120.0	1.0	0.1	0.0	0.0	0.0%
3	120.0	0.6	0.0	0.0	0.0	0.0%
4	120.0	0.2	0.0	0.0	0.0	0.0%
5	120.0	0.7	0.0	0.0	0.0	0.0%
6	120.0	1.6	0.1	0.7	0.0	0.0%
7	120.0	0.3	0.0	0.0	0.0	0.0%
8	120.0	0.3	0.0	0.0	0.0	0.0%
9	120.0	0.4	0.0	0.0	0.0	0.0%
10	120.0	1.0	0.0	0.0	0.0	0.0%
Average:	120.0	0.7	0.0	0.1	0.0	0.0%
SWB R on Alliance Rd - Lane ID 24						
1	120.0	0.1	0.0	0.0	0.0	0.0%
2	120.0	0.8	0.0	0.0	0.0	0.0%
3	120.0	0.3	0.0	0.0	0.0	0.0%
4	120.0	0.4	0.0	0.0	0.0	0.0%
5	120.0	0.5	0.0	0.0	0.0	0.0%
6	120.0	0.1	0.0	0.0	0.0	0.0%
7	120.0	0.0	0.0	0.0	0.0	0.0%
8	120.0	0.0	0.0	0.0	0.0	0.0%
9	120.0	0.5	0.0	0.0	0.0	0.0%
10	120.0	0.2	0.0	0.0	0.0	0.0%
Average:	120.0	0.3	0.0	0.0	0.0	0.0%

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB TR on Alliance Rd - Lane ID 5						
1	120.0	0.0	0.0	0.0	0.0	0.0%
2	120.0	0.0	0.0	0.0	0.0	0.0%
3	120.0	0.0	0.0	0.0	0.0	0.0%
4	120.0	0.0	0.0	0.0	0.0	0.0%
5	120.0	0.0	0.0	0.0	0.0	0.0%
6	120.0	0.0	0.0	0.0	0.0	0.0%
7	120.0	0.0	0.0	0.0	0.0	0.0%
8	120.0	0.0	0.0	0.0	0.0	0.0%
9	120.0	0.0	0.0	0.0	0.0	0.0%
10	120.0	0.0	0.0	0.0	0.0	0.0%

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB TR on Alliance Rd - Lane ID 5						
Average:	120.0	0.0	0.0	0.0	0.0	0.0%
SB LT on Alliance Rd - Lane ID 18						
1	120.0	0.0	0.0	0.0	0.0	0.0%
2	120.0	0.0	0.0	0.0	0.0	0.0%
3	120.0	0.0	0.0	0.0	0.0	0.0%
4	120.0	0.0	0.0	0.0	0.0	0.0%
5	120.0	0.5	0.0	0.0	0.0	0.0%
6	120.0	0.0	0.0	0.0	0.0	0.0%
7	120.0	0.0	0.0	0.0	0.0	0.0%
8	120.0	0.0	0.0	0.0	0.0	0.0%
9	120.0	0.0	0.0	0.0	0.0	0.0%
10	120.0	0.0	0.0	0.0	0.0	0.0%
Average:	120.0	0.1	0.0	0.0	0.0	0.0%
WB LR on Yale Rd - Lane ID 16						
1	120.0	0.4	0.0	0.0	0.0	0.0%
2	120.0	0.3	0.0	0.0	0.0	0.0%
3	120.0	0.8	0.0	0.0	0.0	0.0%
4	120.0	0.4	0.0	0.0	0.0	0.0%
5	120.0	0.6	0.0	0.0	0.0	0.0%
6	120.0	0.4	0.0	0.0	0.0	0.0%
7	120.0	0.7	0.0	0.0	0.0	0.0%
8	120.0	0.1	0.0	0.0	0.0	0.0%
9	120.0	0.6	0.0	0.0	0.0	0.0%
10	120.0	0.4	0.0	0.0	0.0	0.0%
Average:	120.0	0.5	0.0	0.0	0.0	0.0%

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.3	0.3	0.0	0.8	10
NEB T	28	Alliance Rd	1.5	0.4	1.0	2.2	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	22	SR 14	0.7	0.4	0.2	1.6	10
NWB T	26	SR 14	0.4	0.2	0.0	0.9	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.4	0.2	0.0	0.8	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	5	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.1	0.2	0.0	0.5	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.5	0.2	0.1	0.8	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NEB T	28	Alliance Rd	0.1	0.0	0.1	0.1	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	22	SR 14	0.0	0.0	0.0	0.1	10
NWB T	26	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	5	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Queue

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NEB T	28	Alliance Rd	11.8	6.1	0.0	16.9	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	22	SR 14	0.1	0.2	0.0	0.7	10
NWB T	26	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	5	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Num Queued

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NEB T	28	Alliance Rd	0.8	0.4	0.0	1.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	22	SR 14	0.0	0.0	0.0	0.0	10
NWB T	26	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	5	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Spillback Rate

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NEB T	28	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SEB R	22	SR 14	0.0	0.0	0.0	0.0	10
NWB T	26	SR 14	0.0	0.0	0.0	0.0	10

SR 14, YALE RD & ALLIANCE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB R	20	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	5	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Five-Leg Circular Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Overview

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
NB on Alliance Rd							
1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.0	0.0	0.0	0.0	0.0	0.0
SB on Alliance Rd							
1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	1.1	0.0	63.8	1.0	0.0	1.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.1	0.0	6.4	0.1	0.0	0.1
WB on Yale Rd							
1	60.0	0.4	0.0	23.1	1.0	0.0	1.0
2	60.0	1.0	0.1	23.4	1.0	0.1	1.0
3	60.0	0.8	0.1	33.4	2.0	0.1	2.0
4	60.0	0.2	0.0	11.1	1.0	0.0	1.0
5	60.0	0.5	0.0	15.6	1.0	0.0	1.0
6	60.0	0.3	0.0	16.6	1.0	0.0	1.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.7	0.0	42.9	2.0	0.0	2.0

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
9	60.0	2.5	0.1	61.0	2.0	0.1	2.0
10	60.0	1.1	0.1	49.9	2.0	0.1	2.0
Average:	60.0	0.8	0.0	27.7	1.3	0.0	1.3

ABOUT SPILLBACK QUEUES

Spillback queues begin at the front bumper of the first vehicle in queue on a link. From there, the queue can branch as a tree in different directions as it spills upstream through intersections. The various branches of the spillback queue will extend beyond the originating link and superlink boundaries until the back of the queue is reached on every branch in the tree.

- Average/Maximum Queue Length: Distance from the front bumper of the first queued vehicle to the back bumper of the last queued vehicle for the longest branch
- Average/Maximum Vehicles Queued: Number of vehicles queued in all lanes for the longest branch

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Avg Queue

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.1	0.3	0.0	1.1	10
WB	Yale Rd	0.8	0.7	0.0	2.5	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Avg Num Queued

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.1	0.0	0.1	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Avg Total Queued

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.1	0.0	0.1	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Max Queue

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	6.4	20.2	0.0	63.8	10
WB	Yale Rd	27.7	18.9	0.0	61.0	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Max Num Queued

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.1	0.3	0.0	1.0	10
WB	Yale Rd	1.3	0.7	0.0	2.0	10

Project: POR-14 Five-Leg Circular Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Spillback Queue by Intersection - Max Total Queued

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.1	0.3	0.0	1.0	10
WB	Yale Rd	1.3	0.7	0.0	2.0	10

Oval Roundabout

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service - Overview

SR 14, ALLIANCE RD & YALE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
1	819.0	1.10	4.6	A
2	828.0	1.10	4.7	A
3	820.0	1.00	4.5	A
4	820.0	1.00	4.6	A
5	816.0	1.00	4.5	A
6	822.0	1.10	4.7	A
7	818.0	1.00	4.6	A
8	818.0	1.10	4.7	A
9	822.0	1.10	4.6	A
10	816.0	1.00	4.5	A
Average:	819.9	1.05	4.6	A

Project: POR-14 Oval Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Total Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Alliance Rd & Yale Rd	Roundabout	1.1	0.1	1.0	1.1	10

Project: POR-14 Oval Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Avg Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Alliance Rd & Yale Rd	Roundabout	4.6	0.1	4.5	4.7	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Overview

SR 14, ALLIANCE RD & YALE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
EB T on Yale Rd: Lane ID 26				
1	32.0	0.00	4.3	A
2	34.0	0.00	4.1	A
3	32.0	0.00	3.6	A
4	32.0	0.00	4.1	A
5	32.0	0.00	3.7	A
6	33.0	0.00	4.3	A
7	32.0	0.00	3.9	A
8	32.0	0.00	4.0	A
9	33.0	0.00	4.9	A
10	34.0	0.00	3.7	A
Average:	32.0	0.00	4.1	A

NB R on Alliance Rd: Lane ID 30

1	76.0	0.10	5.0	A
2	75.0	0.10	5.4	A
3	71.0	0.10	5.0	A
4	74.0	0.10	5.2	A
5	74.0	0.10	5.0	A
6	75.0	0.10	4.7	A
7	69.0	0.10	5.4	A
8	74.0	0.10	5.0	A
9	74.0	0.10	5.0	A
10	69.0	0.10	5.0	A
Average:	73.0	0.10	5.1	A

NWB R on SR 14: Lane ID 22

1	398.0	0.60	5.1	A
2	398.0	0.50	4.8	A
3	399.0	0.50	4.9	A
4	399.0	0.50	4.8	A
5	396.0	0.50	4.8	A
6	399.0	0.50	4.9	A
7	396.0	0.50	4.8	A
8	396.0	0.50	4.9	A
9	397.0	0.50	4.8	A
10	396.0	0.50	4.7	A

SR 14, ALLIANCE RD & YALE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
Average:	397.0	0.51	4.8	A

SB R on SR 14: Lane ID 28

1	261.0	0.30	4.4	A
2	265.0	0.30	4.6	A
3	262.0	0.30	4.4	A
4	261.0	0.30	4.4	A
5	264.0	0.30	4.4	A
6	261.0	0.30	4.5	A
7	265.0	0.30	4.4	A
8	262.0	0.30	4.5	A
9	265.0	0.30	4.4	A
10	265.0	0.30	4.5	A
Average:	263.0	0.30	4.4	A

SWB R on Alliance Rd: Lane ID 24

1	52.0	0.00	2.4	A
2	56.0	0.10	3.3	A
3	56.0	0.00	2.7	A
4	54.0	0.00	2.9	A
5	50.0	0.00	2.6	A
6	54.0	0.10	3.7	A
7	56.0	0.00	3.2	A
8	54.0	0.10	3.7	A
9	53.0	0.10	3.5	A
10	52.0	0.00	2.5	A
Average:	53.0	0.04	3.0	A

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Total Control Delay

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.5	0.0	0.5	0.6	10
SWB R	24	Alliance Rd	0.0	0.1	0.0	0.1	10
EB T	26	Yale Rd	0.0	0.0	0.0	0.0	10
SB R	28	SR 14	0.3	0.0	0.3	0.3	10
NB R	30	Alliance Rd	0.1	0.0	0.1	0.1	10

Project: POR-14 Oval Roundabout
Scenario: 2049 AM
Run(s): Batch (10 runs)
Simulated: Various
Time: 08:00:00 - 09:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service by Lane - Avg Control Delay

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
NWB R	22	SR 14	4.8	0.1	4.7	5.1	10
SWB R	24	Alliance Rd	3.0	0.5	2.4	3.7	10
EB T	26	Yale Rd	4.1	0.4	3.6	4.9	10
SB R	28	SR 14	4.4	0.1	4.4	4.6	10
NB R	30	Alliance Rd	5.1	0.2	4.7	5.4	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection

- Overview

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB T on Yale Rd - Lane ID 26						
1	119.0	0.7	0.0	0.0	0.0	0.0%
2	119.0	0.0	0.0	0.0	0.0	0.0%
3	119.0	0.0	0.0	0.0	0.0	0.0%
4	119.0	0.2	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.0	0.0	0.0	0.0	0.0%
7	119.0	0.1	0.0	0.0	0.0	0.0%
8	119.0	0.1	0.0	0.0	0.0	0.0%
9	119.0	0.0	0.0	0.0	0.0	0.0%
10	119.0	0.0	0.0	0.0	0.0	0.0%
Average:	119.0	0.1	0.0	0.0	0.0	0.0%

NB R on Alliance Rd - Lane ID 30

1	119.0	0.2	0.0	0.0	0.0	0.0%
2	119.0	0.7	0.0	0.0	0.0	0.0%
3	119.0	0.1	0.0	0.0	0.0	0.0%
4	119.0	0.0	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.3	0.0	0.0	0.0	0.0%
7	119.0	0.6	0.0	0.0	0.0	0.0%
8	119.0	0.0	0.0	0.0	0.0	0.0%
9	119.0	0.1	0.0	0.0	0.0	0.0%
10	119.0	0.4	0.0	0.0	0.0	0.0%
Average:	119.0	0.2	0.0	0.0	0.0	0.0%

NWB R on SR 14 - Lane ID 22

1	119.0	0.3	0.0	0.0	0.0	0.0%
2	119.0	0.6	0.0	0.0	0.0	0.0%
3	119.0	0.1	0.0	0.0	0.0	0.0%
4	119.0	0.1	0.0	0.0	0.0	0.0%
5	119.0	0.4	0.0	0.0	0.0	0.0%
6	119.0	0.6	0.0	0.0	0.0	0.0%
7	119.0	0.9	0.0	0.0	0.0	0.0%
8	119.0	0.2	0.0	0.0	0.0	0.0%
9	119.0	0.1	0.0	0.0	0.0	0.0%

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB R on SR 14 - Lane ID 22						
10	119.0	0.3	0.0	0.0	0.0	0.0%
Average:	119.0	0.4	0.0	0.0	0.0	0.0%
SB R on SR 14 - Lane ID 28						
1	119.0	0.2	0.0	0.0	0.0	0.0%
2	119.0	0.2	0.0	0.0	0.0	0.0%
3	119.0	0.1	0.0	0.0	0.0	0.0%
4	119.0	0.0	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.1	0.0	0.0	0.0	0.0%
7	119.0	0.6	0.0	0.0	0.0	0.0%
8	119.0	0.5	0.0	0.0	0.0	0.0%
9	119.0	0.0	0.0	0.0	0.0	0.0%
10	119.0	0.6	0.0	0.0	0.0	0.0%
Average:	119.0	0.2	0.0	0.0	0.0	0.0%
SWB R on Alliance Rd - Lane ID 24						
1	119.0	0.3	0.0	0.0	0.0	0.0%
2	119.0	1.0	0.1	0.0	0.0	0.0%
3	119.0	0.3	0.0	0.0	0.0	0.0%
4	119.0	0.3	0.0	0.0	0.0	0.0%
5	119.0	0.3	0.0	0.0	0.0	0.0%
6	119.0	0.8	0.0	0.0	0.0	0.0%
7	119.0	0.1	0.0	0.0	0.0	0.0%
8	119.0	0.6	0.0	0.0	0.0	0.0%
9	119.0	0.1	0.0	0.0	0.0	0.0%
10	119.0	0.1	0.0	0.0	0.0	0.0%
Average:	119.0	0.4	0.0	0.0	0.0	0.0%

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB TR on Alliance Rd - Lane ID 11						
1	119.0	0.0	0.0	0.0	0.0	0.0%
2	119.0	0.0	0.0	0.0	0.0	0.0%
3	119.0	0.0	0.0	0.0	0.0	0.0%
4	119.0	0.0	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.0	0.0	0.0	0.0	0.0%
7	119.0	0.0	0.0	0.0	0.0	0.0%
8	119.0	0.0	0.0	0.0	0.0	0.0%
9	119.0	0.0	0.0	0.0	0.0	0.0%
10	119.0	0.0	0.0	0.0	0.0	0.0%

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB TR on Alliance Rd - Lane ID 11						
Average:	119.0	0.0	0.0	0.0	0.0	0.0%
SB LT on Alliance Rd - Lane ID 18						
1	119.0	0.0	0.0	0.0	0.0	0.0%
2	119.0	0.0	0.0	0.0	0.0	0.0%
3	119.0	0.0	0.0	0.0	0.0	0.0%
4	119.0	0.0	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.0	0.0	0.0	0.0	0.0%
7	119.0	0.0	0.0	0.0	0.0	0.0%
8	119.0	0.1	0.0	0.0	0.0	0.0%
9	119.0	0.0	0.0	0.0	0.0	0.0%
10	119.0	0.0	0.0	0.0	0.0	0.0%
Average:	119.0	0.0	0.0	0.0	0.0	0.0%
WB LR on Yale Rd - Lane ID 16						
1	119.0	0.4	0.0	0.0	0.0	0.0%
2	119.0	0.4	0.0	0.0	0.0	0.0%
3	119.0	1.1	0.0	0.0	0.0	0.0%
4	119.0	0.3	0.0	0.0	0.0	0.0%
5	119.0	0.5	0.0	0.0	0.0	0.0%
6	119.0	0.3	0.0	0.0	0.0	0.0%
7	119.0	1.3	0.0	0.0	0.0	0.0%
8	119.0	0.4	0.0	0.0	0.0	0.0%
9	119.0	0.4	0.0	0.0	0.0	0.0%
10	119.0	0.5	0.0	0.0	0.0	0.0%
Average:	119.0	0.6	0.0	0.0	0.0	0.0%

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Queue

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.4	0.3	0.1	1.0	10
NB R	30	Alliance Rd	0.2	0.3	0.0	0.7	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.4	0.3	0.1	0.9	10
SB R	28	SR 14	0.2	0.2	0.0	0.6	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB T	26	Yale Rd	0.1	0.2	0.0	0.7	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	11	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.1	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.6	0.3	0.3	1.3	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Num Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.1	10
NB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.0	0.0	0.0	0.0	10
SB R	28	SR 14	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB T	26	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	11	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Queue

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.0	0.0	0.0	0.0	10
SB R	28	SR 14	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB T	26	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	11	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Num Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.0	0.0	0.0	0.0	10
SB R	28	SR 14	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB T	26	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	11	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Spillback Rate

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.0	0.0	0.0	0.0	10
SB R	28	SR 14	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB T	26	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	11	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Overview

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
EB on Yale Rd							
1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.3	0.0	16.7	1.0	0.0	1.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.3	0.0	16.6	1.0	0.0	1.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.1	0.0	3.3	0.2	0.0	0.2
NB on Alliance Rd							
1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.3	0.0	15.5	1.0	0.0	1.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.3	0.0	20.8	1.0	0.0	1.0
Average:	60.0	0.1	0.0	3.6	0.2	0.0	0.2
NWB on SR 14							
1	60.0	1.8	0.1	45.4	2.0	0.1	2.0
2	60.0	0.3	0.0	17.9	1.0	0.0	1.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.8	0.0	46.6	2.0	0.0	2.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.8	0.0	48.8	2.0	0.0	2.0
7	60.0	0.5	0.0	14.7	1.0	0.0	1.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
9	60.0	0.6	0.0	17.9	1.0	0.0	1.0
10	60.0	0.3	0.0	16.1	1.0	0.0	1.0
Average:	60.0	0.5	0.0	20.7	1.0	0.0	1.0

SB on SR 14

1	60.0	0.2	0.0	13.8	1.0	0.0	1.0
2	60.0	0.4	0.0	23.1	1.0	0.0	1.0
3	60.0	1.0	0.0	59.5	1.0	0.0	1.0
4	60.0	0.8	0.0	47.9	2.0	0.0	2.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.3	0.0	18.7	1.0	0.0	1.0
10	60.0	1.2	0.0	70.0	1.0	0.0	1.0
Average:	60.0	0.4	0.0	23.3	0.7	0.0	0.7

SWB on Alliance Rd

1	60.0	0.6	0.0	18.5	1.0	0.0	1.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.2	0.0	13.8	1.0	0.0	1.0
4	60.0	0.6	0.0	20.1	1.0	0.0	1.0
5	60.0	0.6	0.0	20.1	1.0	0.0	1.0
6	60.0	1.4	0.1	50.0	2.0	0.1	2.0
7	60.0	0.2	0.0	13.9	1.0	0.0	1.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	1.5	0.1	48.2	2.0	0.1	2.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.5	0.0	18.5	0.9	0.0	0.9

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued

NB on Alliance Rd

1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.0	0.0	0.0	0.0	0.0	0.0

SB on Alliance Rd

1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.7	0.0	42.6	2.0	0.0	2.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.1	0.0	4.3	0.2	0.0	0.2

WB on Yale Rd

1	60.0	1.2	0.1	25.4	1.0	0.1	1.0
2	60.0	0.6	0.0	21.2	1.0	0.0	1.0
3	60.0	0.3	0.0	15.2	1.0	0.0	1.0
4	60.0	1.0	0.1	23.0	1.0	0.1	1.0
5	60.0	0.5	0.0	16.0	1.0	0.0	1.0
6	60.0	0.5	0.0	16.5	1.0	0.0	1.0
7	60.0	0.5	0.0	17.5	1.0	0.0	1.0
8	60.0	0.3	0.0	16.6	1.0	0.0	1.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.2	0.0	14.0	1.0	0.0	1.0
Average:	60.0	0.5	0.0	16.5	0.9	0.0	0.9

ABOUT SPILLBACK QUEUES

Spillback queues begin at the front bumper of the first vehicle in queue on a link. From there, the queue can branch as a tree in different directions as it spills upstream through intersections. The various branches of the spillback queue will extend beyond the originating link and superlink boundaries until the back of the queue is reached on every branch in the tree.

- Average/Maximum Queue Length: Distance from the front bumper of the first queued vehicle to the back bumper of the last queued vehicle for the longest branch
- Average/Maximum Vehicles Queued: Number of vehicles queued in all lanes for the longest branch

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Queue

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.1	0.1	0.0	0.3	10
NB	Alliance Rd	0.1	0.1	0.0	0.3	10
NWB	SR 14	0.5	0.5	0.0	1.8	10
SB	SR 14	0.4	0.5	0.0	1.2	10
SWB	Alliance Rd	0.5	0.6	0.0	1.5	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.1	0.2	0.0	0.7	10
WB	Yale Rd	0.5	0.4	0.0	1.2	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Num Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.0	10
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
NWB	SR 14	0.0	0.0	0.0	0.1	10
SB	SR 14	0.0	0.0	0.0	0.0	10
SWB	Alliance Rd	0.0	0.0	0.0	0.1	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.0	0.0	0.1	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Total Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.0	10
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
NWB	SR 14	0.0	0.0	0.0	0.1	10
SB	SR 14	0.0	0.0	0.0	0.0	10
SWB	Alliance Rd	0.0	0.0	0.0	0.1	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.0	0.0	0.1	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Queue

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	3.3	7.0	0.0	16.7	10
NB	Alliance Rd	3.6	7.8	0.0	20.8	10
NWB	SR 14	20.7	19.5	0.0	48.8	10
SB	SR 14	23.3	26.6	0.0	70.0	10
SWB	Alliance Rd	18.5	18.1	0.0	50.0	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	4.3	13.5	0.0	42.6	10
WB	Yale Rd	16.5	6.9	0.0	25.4	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Num Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.2	0.4	0.0	1.0	10
NB	Alliance Rd	0.2	0.4	0.0	1.0	10
NWB	SR 14	1.0	0.8	0.0	2.0	10
SB	SR 14	0.7	0.7	0.0	2.0	10
SWB	Alliance Rd	0.9	0.7	0.0	2.0	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.2	0.6	0.0	2.0	10
WB	Yale Rd	0.9	0.3	0.0	1.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 AM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 08:00:00 - 09:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Total Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.2	0.4	0.0	1.0	10
NB	Alliance Rd	0.2	0.4	0.0	1.0	10
NWB	SR 14	1.0	0.8	0.0	2.0	10
SB	SR 14	0.7	0.7	0.0	2.0	10
SWB	Alliance Rd	0.9	0.7	0.0	2.0	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.2	0.6	0.0	2.0	10
WB	Yale Rd	0.9	0.3	0.0	1.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service - Overview

SR 14, ALLIANCE RD & YALE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
1	876.0	1.20	4.7	A
2	883.0	1.20	5.0	A
3	889.0	1.20	4.7	A
4	884.0	1.20	4.8	A
5	885.0	1.20	5.0	A
6	881.0	1.10	4.6	A
7	883.0	1.20	4.8	A
8	872.0	1.20	4.9	A
9	885.0	1.20	5.0	A
10	880.0	1.20	4.8	A
Average:	881.8	1.19	4.8	A

Project: POR-14 Oval Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Total Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Alliance Rd & Yale Rd	Roundabout	1.2	0.0	1.1	1.2	10

Project: POR-14 Oval Roundabout
Scenario: 2049 PM
Run(s): Batch (10 runs)
Simulated: Various
Time: 16:00:00 - 17:00:00
Interval: Summary
Selection: Study Intersections

Roundabout Level of Service - Avg Control Delay

Node ID	Intersection	Control Type	Average	Std Dev	Minimum	Maximum	# Samples
12	SR 14, Alliance Rd & Yale Rd	Roundabout	4.8	0.1	4.6	5.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Overview

SR 14, ALLIANCE RD & YALE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
EB T on Yale Rd: Lane ID 26				
1	28.0	0.00	5.5	A
2	32.0	0.10	5.7	A
3	33.0	0.00	5.0	A
4	31.0	0.00	5.6	A
5	32.0	0.00	4.9	A
6	29.0	0.00	5.1	A
7	32.0	0.00	5.1	A
8	28.0	0.00	6.0	A
9	28.0	0.00	5.6	A
10	29.0	0.10	6.6	A
Average:	30.0	0.02	5.5	A

NB R on Alliance Rd: Lane ID 30

1	92.0	0.20	6.4	A
2	92.0	0.20	7.8	A
3	90.0	0.20	6.0	A
4	92.0	0.20	6.4	A
5	92.0	0.20	6.3	A
6	93.0	0.20	6.0	A
7	91.0	0.20	7.0	A
8	91.0	0.20	6.7	A
9	91.0	0.20	7.3	A
10	89.0	0.20	6.1	A
Average:	91.0	0.20	6.6	A

NWB R on SR 14: Lane ID 22

1	185.0	0.20	4.8	A
2	187.0	0.30	4.8	A
3	185.0	0.20	4.8	A
4	187.0	0.20	4.8	A
5	185.0	0.20	4.9	A
6	186.0	0.20	4.6	A
7	185.0	0.20	4.6	A
8	185.0	0.20	4.6	A
9	187.0	0.20	4.8	A
10	183.0	0.20	4.8	A

SR 14, ALLIANCE RD & YALE RD -- ROUNDABOUT

NODE: 12

Run	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
Average:	185.0	0.21	4.7	A

SB R on SR 14: Lane ID 28

1	521.0	0.70	4.7	A
2	523.0	0.70	4.8	A
3	523.0	0.70	4.8	A
4	520.0	0.70	4.8	A
5	527.0	0.70	5.1	A
6	521.0	0.70	4.7	A
7	525.0	0.70	4.7	A
8	521.0	0.70	4.9	A
9	528.0	0.70	4.9	A
10	528.0	0.70	4.8	A
Average:	523.0	0.70	4.8	A

SWB R on Alliance Rd: Lane ID 24

1	50.0	0.00	1.4	A
2	49.0	0.00	1.6	A
3	58.0	0.00	1.9	A
4	54.0	0.00	2.0	A
5	49.0	0.00	1.9	A
6	52.0	0.00	1.9	A
7	50.0	0.00	1.5	A
8	47.0	0.00	2.1	A
9	51.0	0.00	2.7	A
10	51.0	0.00	1.9	A
Average:	51.0	0.00	1.9	A

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Total Control Delay

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.2	0.0	0.2	0.3	10
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
EB T	26	Yale Rd	0.0	0.0	0.0	0.1	10
SB R	28	SR 14	0.7	0.0	0.7	0.7	10
NB R	30	Alliance Rd	0.2	0.0	0.2	0.2	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Roundabout Level of Service by Lane - Avg Control Delay

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Lane	Lane ID	Street Name	Average	Std Dev	Minimum	Maximum	# Samples
NWB R	22	SR 14	4.7	0.1	4.6	4.9	10
SWB R	24	Alliance Rd	1.9	0.4	1.4	2.7	10
EB T	26	Yale Rd	5.5	0.5	4.9	6.6	10
SB R	28	SR 14	4.8	0.1	4.7	5.1	10
NB R	30	Alliance Rd	6.6	0.6	6.0	7.8	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection

- Overview

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB T on Yale Rd - Lane ID 26						
1	119.0	0.3	0.0	0.0	0.0	0.0%
2	119.0	0.1	0.0	0.0	0.0	0.0%
3	119.0	0.1	0.0	0.0	0.0	0.0%
4	119.0	0.4	0.0	0.0	0.0	0.0%
5	119.0	0.1	0.0	0.0	0.0	0.0%
6	119.0	0.0	0.0	0.0	0.0	0.0%
7	119.0	0.3	0.0	0.0	0.0	0.0%
8	119.0	0.3	0.0	0.0	0.0	0.0%
9	119.0	0.3	0.0	0.0	0.0	0.0%
10	119.0	0.8	0.0	0.0	0.0	0.0%
Average:	119.0	0.3	0.0	0.0	0.0	0.0%

NB R on Alliance Rd - Lane ID 30

1	119.0	0.9	0.0	0.0	0.0	0.0%
2	119.0	1.9	0.1	14.4	1.0	0.0%
3	119.0	1.0	0.0	0.0	0.0	0.0%
4	119.0	0.8	0.0	0.0	0.0	0.0%
5	119.0	0.3	0.0	0.0	0.0	0.0%
6	119.0	0.2	0.0	0.0	0.0	0.0%
7	119.0	1.1	0.0	0.0	0.0	0.0%
8	119.0	0.8	0.0	0.0	0.0	0.0%
9	119.0	1.9	0.1	12.5	1.0	0.0%
10	119.0	0.8	0.0	0.0	0.0	0.0%
Average:	119.0	1.0	0.0	2.7	0.2	0.0%

NWB R on SR 14 - Lane ID 22

1	119.0	0.1	0.0	0.0	0.0	0.0%
2	119.0	0.5	0.0	0.0	0.0	0.0%
3	119.0	0.7	0.0	0.0	0.0	0.0%
4	119.0	0.0	0.0	0.0	0.0	0.0%
5	119.0	0.1	0.0	0.0	0.0	0.0%
6	119.0	0.1	0.0	0.0	0.0	0.0%
7	119.0	0.2	0.0	0.0	0.0	0.0%
8	119.0	0.3	0.0	0.0	0.0	0.0%
9	119.0	0.2	0.0	0.0	0.0	0.0%

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB R on SR 14 - Lane ID 22						
10	119.0	0.6	0.0	0.0	0.0	0.0%
Average:	119.0	0.3	0.0	0.0	0.0	0.0%
SB R on SR 14 - Lane ID 28						
1	119.0	1.0	0.0	0.0	0.0	0.0%
2	119.0	0.8	0.0	0.0	0.0	0.0%
3	119.0	0.3	0.0	0.0	0.0	0.0%
4	119.0	0.0	0.0	0.0	0.0	0.0%
5	119.0	1.7	0.0	0.0	0.0	0.0%
6	119.0	0.8	0.0	0.0	0.0	0.0%
7	119.0	0.7	0.0	0.0	0.0	0.0%
8	119.0	0.0	0.0	0.0	0.0	0.0%
9	119.0	0.8	0.0	0.0	0.0	0.0%
10	119.0	0.0	0.0	0.0	0.0	0.0%
Average:	119.0	0.6	0.0	0.0	0.0	0.0%
SWB R on Alliance Rd - Lane ID 24						
1	119.0	0.0	0.0	0.0	0.0	0.0%
2	119.0	0.0	0.0	0.0	0.0	0.0%
3	119.0	0.0	0.0	0.0	0.0	0.0%
4	119.0	0.3	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.2	0.0	0.0	0.0	0.0%
7	119.0	0.6	0.0	0.0	0.0	0.0%
8	119.0	0.1	0.0	0.0	0.0	0.0%
9	119.0	0.2	0.0	0.0	0.0	0.0%
10	119.0	0.1	0.0	0.0	0.0	0.0%
Average:	119.0	0.2	0.0	0.0	0.0	0.0%

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB TR on Alliance Rd - Lane ID 11						
1	119.0	0.0	0.0	0.0	0.0	0.0%
2	119.0	0.0	0.0	0.0	0.0	0.0%
3	119.0	0.0	0.0	0.0	0.0	0.0%
4	119.0	0.0	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.0	0.0	0.0	0.0	0.0%
7	119.0	0.0	0.0	0.0	0.0	0.0%
8	119.0	0.0	0.0	0.0	0.0	0.0%
9	119.0	0.0	0.0	0.0	0.0	0.0%
10	119.0	0.0	0.0	0.0	0.0	0.0%

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	Avg Queue Length (ft)	Avg Vehicles Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB TR on Alliance Rd - Lane ID 11						
Average:	119.0	0.0	0.0	0.0	0.0	0.0%
SB LT on Alliance Rd - Lane ID 18						
1	119.0	0.0	0.0	0.0	0.0	0.0%
2	119.0	0.0	0.0	0.0	0.0	0.0%
3	119.0	0.0	0.0	0.0	0.0	0.0%
4	119.0	0.0	0.0	0.0	0.0	0.0%
5	119.0	0.0	0.0	0.0	0.0	0.0%
6	119.0	0.0	0.0	0.0	0.0	0.0%
7	119.0	0.1	0.0	0.0	0.0	0.0%
8	119.0	0.0	0.0	0.0	0.0	0.0%
9	119.0	0.0	0.0	0.0	0.0	0.0%
10	119.0	0.0	0.0	0.0	0.0	0.0%
Average:	119.0	0.0	0.0	0.0	0.0	0.0%
WB LR on Yale Rd - Lane ID 16						
1	119.0	0.6	0.0	0.0	0.0	0.0%
2	119.0	1.1	0.1	14.0	1.0	0.0%
3	119.0	0.8	0.0	0.0	0.0	0.0%
4	119.0	0.3	0.0	0.0	0.0	0.0%
5	119.0	0.2	0.0	0.0	0.0	0.0%
6	119.0	0.8	0.0	0.0	0.0	0.0%
7	119.0	0.5	0.0	0.0	0.0	0.0%
8	119.0	0.2	0.0	0.0	0.0	0.0%
9	119.0	0.4	0.0	0.0	0.0	0.0%
10	119.0	0.3	0.0	0.0	0.0	0.0%
Average:	119.0	0.5	0.0	1.4	0.1	0.0%

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Queue

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.2	0.2	0.0	0.6	10
NB R	30	Alliance Rd	1.0	0.6	0.2	1.9	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.3	0.2	0.0	0.7	10
SB R	28	SR 14	0.6	0.5	0.0	1.7	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB T	26	Yale Rd	0.3	0.2	0.0	0.8	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	11	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.1	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.5	0.3	0.2	1.1	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Avg Num Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NB R	30	Alliance Rd	0.0	0.0	0.0	0.1	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.0	0.0	0.0	0.0	10
SB R	28	SR 14	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB T	26	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	11	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.1	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Queue

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NB R	30	Alliance Rd	2.7	5.7	0.0	14.4	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.0	0.0	0.0	0.0	10
SB R	28	SR 14	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB T	26	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	11	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	1.4	4.4	0.0	14.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Percentile Num Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NB R	30	Alliance Rd	0.2	0.4	0.0	1.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.0	0.0	0.0	0.0	10
SB R	28	SR 14	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB T	26	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	11	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.1	0.3	0.0	1.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Lane Queue by Intersection - Spillback Rate

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
SWB R	24	Alliance Rd	0.0	0.0	0.0	0.0	10
NB R	30	Alliance Rd	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NWB R	22	SR 14	0.0	0.0	0.0	0.0	10
SB R	28	SR 14	0.0	0.0	0.0	0.0	10

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB T	26	Yale Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB TR	11	Alliance Rd	0.0	0.0	0.0	0.0	10
SB LT	18	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Movement	Lane ID	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
WB LR	16	Yale Rd	0.0	0.0	0.0	0.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Overview

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
EB on Yale Rd							
1	60.0	0.3	0.0	18.1	1.0	0.0	1.0
2	60.0	0.2	0.0	11.6	1.0	0.0	1.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.3	0.0	15.3	1.0	0.0	1.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	1.2	0.0	74.4	1.0	0.0	1.0
Average:	60.0	0.2	0.0	11.9	0.4	0.0	0.4
NB on Alliance Rd							
1	60.0	2.1	0.1	62.5	1.0	0.1	1.0
2	60.0	2.5	0.1	73.5	1.0	0.1	1.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	1.8	0.1	41.6	2.0	0.1	2.0
5	60.0	0.3	0.0	18.2	1.0	0.0	1.0
6	60.0	0.8	0.1	18.7	1.0	0.1	1.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.5	0.0	28.2	1.0	0.0	1.0
9	60.0	2.0	0.1	105.7	2.0	0.1	2.0
10	60.0	0.2	0.0	14.5	1.0	0.0	1.0
Average:	60.0	1.0	0.1	36.3	1.0	0.1	1.0
NWB on SR 14							
1	60.0	1.1	0.0	65.8	1.0	0.0	1.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.9	0.1	19.4	1.0	0.1	1.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.8	0.0	48.1	2.0	0.0	2.0
Average:	60.0	0.3	0.0	13.3	0.4	0.0	0.4

SB on SR 14

1	60.0	0.8	0.0	48.4	2.0	0.0	2.0
2	60.0	0.3	0.0	15.1	1.0	0.0	1.0
3	60.0	2.0	0.1	117.9	3.0	0.1	3.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	5.3	0.1	199.5	5.0	0.1	5.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.9	0.0	54.7	2.0	0.0	2.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.9	0.0	43.6	1.3	0.0	1.3

SWB on Alliance Rd

1	60.0	0.2	0.0	12.8	1.0	0.0	1.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.5	0.0	32.9	1.0	0.0	1.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.3	0.0	15.8	1.0	0.0	1.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.3	0.0	16.1	1.0	0.0	1.0
Average:	60.0	0.1	0.0	7.8	0.4	0.0	0.4

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued

NB on Alliance Rd

1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0

YALE RD & ALLIANCE RD

NODE: 13

Run	Observations	LONGEST BRANCH				ALL BRANCHES	
		Avg Queue Length (ft)	Avg Vehicles Queued	Max Queue Length (ft)	Max Vehicles Queued	Avg Total Queued	Max Total Queued
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.0	0.0	0.0	0.0	0.0	0.0

SB on Alliance Rd

1	60.0	0.0	0.0	0.0	0.0	0.0	0.0
2	60.0	0.0	0.0	0.0	0.0	0.0	0.0
3	60.0	0.0	0.0	0.0	0.0	0.0	0.0
4	60.0	0.0	0.0	0.0	0.0	0.0	0.0
5	60.0	0.0	0.0	0.0	0.0	0.0	0.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	0.0	0.0	0.0	0.0	0.0	0.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.0	0.0	0.0	0.0	0.0	0.0

WB on Yale Rd

1	60.0	0.6	0.1	16.2	1.0	0.1	1.0
2	60.0	0.4	0.0	24.3	1.0	0.0	1.0
3	60.0	0.5	0.0	16.4	1.0	0.0	1.0
4	60.0	0.3	0.0	16.5	1.0	0.0	1.0
5	60.0	0.7	0.0	24.8	1.0	0.0	1.0
6	60.0	0.0	0.0	0.0	0.0	0.0	0.0
7	60.0	0.7	0.0	24.4	1.0	0.0	1.0
8	60.0	1.0	0.0	32.8	1.0	0.0	1.0
9	60.0	0.0	0.0	0.0	0.0	0.0	0.0
10	60.0	0.0	0.0	0.0	0.0	0.0	0.0
Average:	60.0	0.4	0.0	15.5	0.7	0.0	0.7

ABOUT SPILLBACK QUEUES

Spillback queues begin at the front bumper of the first vehicle in queue on a link. From there, the queue can branch as a tree in different directions as it spills upstream through intersections. The various branches of the spillback queue will extend beyond the originating link and superlink boundaries until the back of the queue is reached on every branch in the tree.

- Average/Maximum Queue Length: Distance from the front bumper of the first queued vehicle to the back bumper of the last queued vehicle for the longest branch
- Average/Maximum Vehicles Queued: Number of vehicles queued in all lanes for the longest branch

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Queue

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.2	0.4	0.0	1.2	10
NB	Alliance Rd	1.0	1.0	0.0	2.5	10
NWB	SR 14	0.3	0.5	0.0	1.1	10
SB	SR 14	0.9	1.7	0.0	5.3	10
SWB	Alliance Rd	0.1	0.2	0.0	0.5	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.4	0.3	0.0	1.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Num Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.0	10
NB	Alliance Rd	0.1	0.1	0.0	0.1	10
NWB	SR 14	0.0	0.0	0.0	0.1	10
SB	SR 14	0.0	0.0	0.0	0.1	10
SWB	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.0	0.0	0.1	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Avg Total Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.0	0.0	0.0	0.0	10
NB	Alliance Rd	0.1	0.1	0.0	0.1	10
NWB	SR 14	0.0	0.0	0.0	0.1	10
SB	SR 14	0.0	0.0	0.0	0.1	10
SWB	Alliance Rd	0.0	0.0	0.0	0.0	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.0	0.0	0.0	0.1	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Queue

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	11.9	23.1	0.0	74.4	10
NB	Alliance Rd	36.3	34.5	0.0	105.7	10
NWB	SR 14	13.3	24.1	0.0	65.8	10
SB	SR 14	43.6	66.9	0.0	199.5	10
SWB	Alliance Rd	7.8	11.3	0.0	32.9	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	15.5	11.9	0.0	32.8	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Num Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.4	0.5	0.0	1.0	10
NB	Alliance Rd	1.0	0.7	0.0	2.0	10
NWB	SR 14	0.4	0.7	0.0	2.0	10
SB	SR 14	1.3	1.7	0.0	5.0	10
SWB	Alliance Rd	0.4	0.5	0.0	1.0	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.7	0.5	0.0	1.0	10

Project: POR-14 Oval Roundabout
 Scenario: 2049 PM
 Run(s): Batch (10 runs)
 Simulated: Various
 Time: 16:00:00 - 17:00:00
 Interval: Summary
 Selection: Study Intersections

Spillback Queue by Intersection - Max Total Queued

SR 14, ALLIANCE RD & YALE RD

NODE: 12

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
EB	Yale Rd	0.4	0.5	0.0	1.0	10
NB	Alliance Rd	1.0	0.7	0.0	2.0	10
NWB	SR 14	0.4	0.7	0.0	2.0	10
SB	SR 14	1.3	1.7	0.0	5.0	10
SWB	Alliance Rd	0.4	0.5	0.0	1.0	10

YALE RD & ALLIANCE RD

NODE: 13

Direction	Street Name	Average	Std Deviation	Minimum	Maximum	# Samples
NB	Alliance Rd	0.0	0.0	0.0	0.0	10
SB	Alliance Rd	0.0	0.0	0.0	0.0	10
WB	Yale Rd	0.7	0.5	0.0	1.0	10

Appendix K – Cost Estimates



Engineer's Estimate of Probable Construction Costs

WOOLPERT WOOLPERT, INC.
 DESIGN | GEOSPATIAL | INFRASTRUCTURE
 4454 Idea Center Blvd
 Dayton, OH 45430
 Phone: 937.461.5660

Project: POR-14-21.72
 Location: Portage County, OH
 Description: Alternative 1 : 6 leg Peanut Roundabout

Date: May 5, 2025
 Calc. By: AKA
 Checked By: AC
 Project No:

ALT 1 : Peanut Roundabout

ITEM	GRAND TOTAL	UNIT	DESCRIPTION	UNIT COST	ESTIMATED COST
ROADWAY					
201	1	LS	CLEARING & GRUBBING	\$25,000.00	\$25,000.00
202	7,852	SY	PAVEMENT REMOVED	\$15.38	\$120,756.92
202	163	FT	PIPE REMOVED, OVER 24"	\$50.00	\$8,150.00
203	5,073	CY	EXCAVATION	\$25.00	\$126,835.42
203	10,147	CY	EMBANKMENT	\$20.00	\$202,936.67
204	10,900	SY	SUBGRADE COMPACTION	\$2.35	\$25,614.22
204	10,900	SY	STABILIZE SUBGRADE	\$35.00	\$381,488.33
609	4,666	FT	CURB TYPE 6	\$40.00	\$186,640.00
609	772	FT	CURB TYPE 10	\$30.00	\$23,160.00
609	683	SY	TRAFFIC ISLAND	\$129.13	\$88,238.83
EROSION CONTROL					
659	2	EACH	SOIL ANALYSIS TEST	\$154.22	\$308.44
659	1,043	CY	TOPSOIL	\$37.95	\$39,571.76
659	9,394	SY	SEEDING AND MULCHING	\$1.80	\$16,909.20
659	470	SY	REPAIR SEEDING AND MULCHING	\$1.40	\$657.58
659	470	SY	INTER SEEDING	\$1.16	\$544.85
659	1.27	TON	COMMERCIAL FERTILIZER	\$920.13	\$1,166.90
659	1.94	MGAL	WATER	\$5.38	\$10.44
659	51	ACRE	LIME	\$100.00	\$5,072.76
PAVEMENT					
MULTI	8,625	SY	ASPHALT PAVEMENT INSTALLATION	\$100.00	\$862,522.22
452	278	SY	6" NON-REINFORCED CONCRETE PAVEMENT FOR DRIVES	\$83.39	\$23,163.89
452	1,313	SY	9" NON-REINFORCED CONCRETE PAVEMENT FOR TRUCK APRON	\$109.22	\$143,442.27
DRAINAGE					
605	5,438	FT	6" BASE PIPE UNDERDRAINS	\$15.00	\$81,570.00
611	17	EA	CATCH BASIN, NO. 3A	\$3,500.00	\$59,500.00
611	9	EA	CATCH BASIN, NO. 3	\$4,200.00	\$37,800.00
611	13	EA	MANHOLE, NO. 3	\$5,000.00	\$65,000.00
611	975	FT	12" CONDUIT, TYPE B	\$130.00	\$126,750.00
611	244	FT	18" CONDUIT, TYPE B	\$145.00	\$35,343.75
611	163	FT	48" CONDUIT, TYPE A	\$380.00	\$61,940.00
TRAFFIC CONTROL					
630	1	LS	SIGN REMOVAL/INSTALLATION	\$12,000.00	\$12,000.00
644	1	LS	PAVEMENT MARKINGS	\$12,000.00	\$12,000.00
SIGNAL					
632	1	LS	ROUNDBOUT LIGHTING	\$200,000.00	\$200,000.00
MAINTENANCE OF TRAFFIC					
614	1	LS	MAINTAINING TRAFFIC	\$25,000.00	\$25,000.00
614	1	LS	DETOUR SIGNING	\$10,000.00	\$10,000.00
INCIDENTALS					
619	12	MNTH	FIELD OFFICE, TYPE A	\$2,500.00	\$30,000.00
623	1	LS	CONSTRUCTION LAYOUT STAKES AND SURVEYING	\$10,000.00	\$10,000.00
624	1	LS	MOBILIZATION	\$40,000.00	\$40,000.00
SUBTOTAL					\$3,089,094
INFLATION - BASED ON ESTIMATION START DATE OF 6/13/2024, CONSTRUCTION MID-POINT OF 7/1/2030 (23.9%)					\$738,294
DESIGN (25%)					\$772,274
CONTINGENCY (30%)					\$926,728
PRELIMINARY RIGHT OF WAY					
	1.250	ACRES	RIGHT OF WAY PURCHASE	\$250,000.00	\$312,597.57
	1	LS	ACQUISITION SERVICES	\$15,000.00	\$15,000.00
PRELIMINARY UTILITY IMPACTS					
	1	LS	RELOCATE UTILITIES	\$25,000.00	\$25,000.00
PRELIMINARY RIGHT OF WAY AND UTILITIES TOTAL					\$352,598
TOTAL					\$5,878,988



Engineer's Estimate of Probable Construction Costs

WOOLPERT WOOLPERT, INC.
 DESIGN | GEOSPATIAL | INFRASTRUCTURE 4454 Idea Center Blvd
 Dayton, OH 45430
 Phone: 937.461.5660

Project: POR-14-21.72
 Location: Portage County, OH
 Description: Alternative 2 : 6 leg Circle Roundabout

Date: May 5, 2025
 Calc. By: AKA
 Checked By: AC
 Project No:

ALT 2 : 6 Leg Circle Roundabout

ITEM	GRAND TOTAL	UNIT	DESCRIPTION	UNIT COST	ESTIMATED COST
ROADWAY					
201	1	LS	CLEARING & GRUBBING	\$20,000.00	\$20,000.00
202	6,994	SY	PAVEMENT REMOVED	\$15.38	\$107,569.43
202	163	FT	PIPE REMOVED, OVER 24"	\$50.00	\$8,150.00
203	4,033	CY	EXCAVATION	\$25.00	\$100,834.72
203	6,722	CY	EMBANKMENT	\$20.00	\$134,446.30
204	8,825	SY	SUBGRADE COMPACTION	\$2.35	\$20,739.27
204	8,825	SY	STABILIZE SUBGRADE	\$35.00	\$308,882.78
609	3,708	FT	CURB TYPE 6	\$40.00	\$148,320.00
609	513	FT	CURB TYPE 10	\$30.00	\$15,390.00
609	776	SY	TRAFFIC ISLAND	\$129.13	\$100,176.18
EROSION CONTROL					
659	2	EACH	SOIL ANALYSIS TEST	\$154.22	\$308.44
659	811	CY	TOPSOIL	\$37.95	\$30,785.99
659	7,308	SY	SEEDING AND MULCHING	\$1.80	\$13,155.00
659	365	SY	REPAIR SEEDING AND MULCHING	\$1.40	\$511.58
659	365	SY	INTER SEEDING	\$1.16	\$423.88
659	0.99	TON	COMMERCIAL FERTILIZER	\$920.13	\$907.82
659	1.51	MGAL	WATER	\$5.38	\$8.12
659	39	ACRE	LIME	\$100.00	\$3,946.50
PAVEMENT					
MULTI	6,743	SY	ASPHALT PAVEMENT INSTALLATION	\$100.00	\$674,277.78
452	278	SY	6" NON-REINFORCED CONCRETE PAVEMENT FOR DRIVES	\$83.39	\$23,163.89
452	1,029	SY	9" NON-REINFORCED CONCRETE PAVEMENT FOR TRUCK APRON	\$109.22	\$112,375.24
DRAINAGE					
605	4,221	FT	6" BASE PIPE UNDERDRAINS	\$15.00	\$63,315.00
611	14	EA	CATCH BASIN, NO. 3A	\$3,500.00	\$49,000.00
611	7	EA	CATCH BASIN, NO. 3	\$4,200.00	\$29,400.00
611	11	EA	MANHOLE, NO. 3	\$5,000.00	\$55,000.00
611	800	FT	12" CONDUIT, TYPE B	\$130.00	\$104,000.00
611	200	FT	18" CONDUIT, TYPE B	\$145.00	\$29,000.00
611	163	FT	48" CONDUIT, TYPE A	\$380.00	\$61,940.00
TRAFFIC CONTROL					
630	1	LS	SIGN REMOVAL/INSTALLATION	\$10,000.00	\$10,000.00
644	1	LS	PAVEMENT MARKINGS	\$10,000.00	\$10,000.00
SIGNAL					
632	1	LS	ROUNDBOUT LIGHTING	\$150,000.00	\$150,000.00
MAINTENANCE OF TRAFFIC					
614	1	LS	MAINTAINING TRAFFIC	\$25,000.00	\$25,000.00
614	1	LS	DETOUR SIGNING	\$10,000.00	\$10,000.00
INCIDENTALS					
619	12	MNTH	FIELD OFFICE, TYPE A	\$2,500.00	\$30,000.00
623	1	LS	CONSTRUCTION LAYOUT STAKES AND SURVEYING	\$10,000.00	\$10,000.00
624	1	LS	MOBILIZATION	\$40,000.00	\$40,000.00
SUBTOTAL					\$2,501,028
INFLATION - BASED ON ESTIMATION START DATE OF 6/13/2024, CONSTRUCTION MID-POINT OF 7/1/2030 (23.9%)					\$597,746
DESIGN (25%)					\$625,257
CONTINGENCY (30%)					\$750,308
PRELIMINARY RIGHT OF WAY					
	1.021	ACRES	RIGHT OF WAY PURCHASE	\$250,000.00	\$255,366.16
	1	LS	ACQUISITION SERVICES	\$15,000.00	\$15,000.00
PRELIMINARY UTILITY IMPACTS					
	1	LS	RELOCATE UTILITIES	\$25,000.00	\$25,000.00
PRELIMINARY RIGHT OF WAY AND UTILITIES TOTAL					\$295,366
TOTAL					\$4,769,705



Engineer's Estimate of Probable Construction Costs

WOOLPERT WOOLPERT, INC.
 DESIGN | GEOSPATIAL | INFRASTRUCTURE
 4454 Idea Center Blvd
 Dayton, OH 45430
 Phone: 937.461.5660

Project: POR-14-21.72
Location: Portage County, OH
Description: Alternative 3 : 5 Leg Circle Roundabout

Date: May 5, 2025
Calc. By: AKA
Checked By: AC
Project No:

ALT 3 : 5 Leg Circle Roundabout

ITEM	GRAND TOTAL	UNIT	DESCRIPTION	UNIT COST	ESTIMATED COST
ROADWAY					
201	1	LS	CLEARING & GRUBBING	\$25,000.00	\$25,000.00
202	7,291	SY	PAVEMENT REMOVED	\$15.38	\$112,140.71
202	163	FT	PIPE REMOVED, OVER 24"	\$50.00	\$8,150.00
203	5,622	CY	EXCAVATION	\$25.00	\$140,555.56
203	9,839	CY	EMBANKMENT	\$20.00	\$196,777.78
204	8,618	SY	SUBGRADE COMPACTION	\$2.35	\$20,251.52
204	8,618	SY	STABILIZE SUBGRADE	\$35.00	\$301,618.33
609	4,004	FT	CURB TYPE 6	\$40.00	\$160,160.00
609	387	FT	CURB TYPE 10	\$30.00	\$11,610.00
609	479	SY	TRAFFIC ISLAND	\$129.13	\$61,867.62
EROSION CONTROL					
659	2	EACH	SOIL ANALYSIS TEST	\$154.22	\$308.44
659	916	CY	TOPSOIL	\$37.95	\$34,748.50
659	8,249	SY	SEEDING AND MULCHING	\$1.80	\$14,848.20
659	412	SY	REPAIR SEEDING AND MULCHING	\$1.40	\$577.43
659	412	SY	INTER SEEDING	\$1.16	\$478.44
659	1.11	TON	COMMERCIAL FERTILIZER	\$920.13	\$1,024.67
659	1.70	MGAL	WATER	\$5.38	\$9.17
659	45	ACRE	LIME	\$100.00	\$4,454.46
PAVEMENT					
MULTI	7,192	SY	ASPHALT PAVEMENT INSTALLATION	\$100.00	\$719,177.78
452	278	SY	6" NON-REINFORCED CONCRETE PAVEMENT FOR DRIVES	\$83.39	\$23,163.89
452	669	SY	9" NON-REINFORCED CONCRETE PAVEMENT FOR TRUCK APRON	\$109.22	\$73,068.18
DRAINAGE					
605	4,391	FT	6" BASE PIPE UNDERDRAINS	\$15.00	\$65,865.00
611	15	EA	CATCH BASIN, NO. 3A	\$3,500.00	\$52,500.00
611	8	EA	CATCH BASIN, NO. 3	\$4,200.00	\$33,600.00
611	12	EA	MANHOLE, NO. 3	\$5,000.00	\$60,000.00
611	875	FT	12" CONDUIT, TYPE B	\$130.00	\$113,750.00
611	219	FT	18" CONDUIT, TYPE B	\$145.00	\$31,718.75
611	163	FT	48" CONDUIT, TYPE A	\$380.00	\$61,940.00
TRAFFIC CONTROL					
630	1	LS	SIGN REMOVAL/INSTALLATION	\$12,000.00	\$12,000.00
644	1	LS	PAVEMENT MARKINGS	\$12,000.00	\$12,000.00
SIGNAL					
632	1	LS	ROUNDBOUT LIGHTING	\$150,000.00	\$150,000.00
MAINTENANCE OF TRAFFIC					
614	1	LS	MAINTAINING TRAFFIC	\$25,000.00	\$25,000.00
614	1	LS	DETOUR SIGNING	\$10,000.00	\$10,000.00
INCIDENTALS					
619	12	MNTH	FIELD OFFICE, TYPE A	\$2,500.00	\$30,000.00
623	1	LS	CONSTRUCTION LAYOUT STAKES AND SURVEYING	\$10,000.00	\$10,000.00
624	1	LS	MOBILIZATION	\$40,000.00	\$40,000.00
SUBTOTAL					\$2,618,364
INFLATION - BASED ON ESTIMATION START DATE OF 6/13/2024, CONSTRUCTION MID-POINT OF 7/1/2030 (23.9%)					\$625,789
DESIGN (25%)					\$654,591
CONTINGENCY (30%)					\$785,509
PRELIMINARY RIGHT OF WAY					
	1,112	ACRES	RIGHT OF WAY PURCHASE	\$250,000.00	\$277,915.52
	1	LS	ACQUISITION SERVICES	\$15,000.00	\$15,000.00
PRELIMINARY UTILITY IMPACTS					
	1	LS	RELOCATE UTILITIES	\$25,000.00	\$25,000.00
PRELIMINARY RIGHT OF WAY AND UTILITIES TOTAL					\$317,916
TOTAL					\$5,002,169

Appendix L – ECAT Analysis Results

Proposed Conditions: General Information and Data for Roundabout Intersection

General Information		Location Information	
Analyst	AC	Route	SR14
Agency or Company	Woolpert	Logpoint	21.705
Date Performed	05/07/25	Common Name	SR 14 at Yale Rd and Alliance Rd
Intersection	SR14; 21.705	Analysis Year	2025
Signalized/Unsignalized	Unsignalized		
Input Data		Proposed Conditions	HSM Base Conditions
Area Type (Rural, Urban)		Rural	--
Number of Legs (3 or 4)		4	--
Single-Lane or Multi-lane Roundabout		Single-Lane	--
Total Entering AADT (veh/day)		8,100	--
			0
Presence of Outbound Only Leg (present/not present)		Not Present	Not Present
Calibration Factor, C _i		Varies, See Below	1.00
Locality:		State System	--
Leg 1	Leg 1 Entering AADT (veh/day)	AADT _{MAX} = 19,733 (veh/day)	3,400
	Bypass lane (present/not present) - Leg 1	Not Present	--
	Number of driveways or unsignalized access points - Leg 1	0	--
	Entry width (feet) - Leg 1	25	16-25 ft
	Number of entering lanes (1 lane, 2 lanes) - Leg 1	1	--
Leg 2	Leg 2 Entering AADT (veh/day)	AADT _{MAX} = 19,733 (veh/day)	900
	Bypass lane (present/not present) - Leg 2	Not Present	--
	Number of driveways or unsignalized access points - Leg 2	1	--
	Entry width (feet) - Leg 2	25	16-25 ft
	Number of entering lanes (1 lane, 2 lanes) - Leg 2	1	--
Leg 3	Leg 3 Entering AADT (veh/day)	AADT _{MAX} = 19,733 (veh/day)	3,400
	Bypass lane (present/not present) - Leg 3	Not Present	--
	Number of driveways or unsignalized access points - Leg 3	1	--
	Entry width (feet) - Leg 3	25	16-25 ft
	Number of entering lanes (1 lane, 2 lanes) - Leg 3	1	--
Leg 4	Leg 4 Entering AADT (veh/day)	AADT _{MAX} = 19,733 (veh/day)	300
	Bypass lane (present/not present) - Leg 4	Not Present	--
	Number of driveways or unsignalized access points - Leg 4	0	--
	Entry width (feet) - Leg 4	20	16-25 ft
	Number of entering lanes (1 lane, 2 lanes) - Leg 4	1	--

Proposed Conditions: Crash Modification Factors (CMFs) for Roundabout Intersection								
Crash Severity Level	Inscribed Circle CMF	Outbound Only Leg CMF	Leg CMFs				Total CMF Legs	Combined CMF
			Leg 1 CMF	Leg 2 CMF	Leg 3 CMF	Leg 4 CMF		
Fatal and Injury (FI)	1.00	0.43	1.00	1.07	1.07	1.00	1.04	0.44
Property Damage Only (PDO)	1.00	1.00	1.00	1.09	1.09	1.00	1.05	1.05

Proposed Conditions: Predicted Crash Summary for Roundabout Intersection								
(1)	(2)			(3)	(4)	(5)	(6)	(7)
Crash Severity Level	SPF Coefficients			N _{spf int}	Overdispersion Parameter, k	Combined CMFs from (6) of Worksheet 2B	Calibration Factor, C _i	Predicted average crash frequency, N _{predicted int}
	from Table 11-7 or 11-8							
	a	b	c					
Total	--	--	--	--	--	--	--	1.342
Fatal and Injury (FI)	-3.503	0.915	0.206	0.251	0.33	0.44	1.00	0.111
Property Damage Only (PDO)	-1.475	0.702	0.168	1.18	0.80	1.05	1.00	1.232

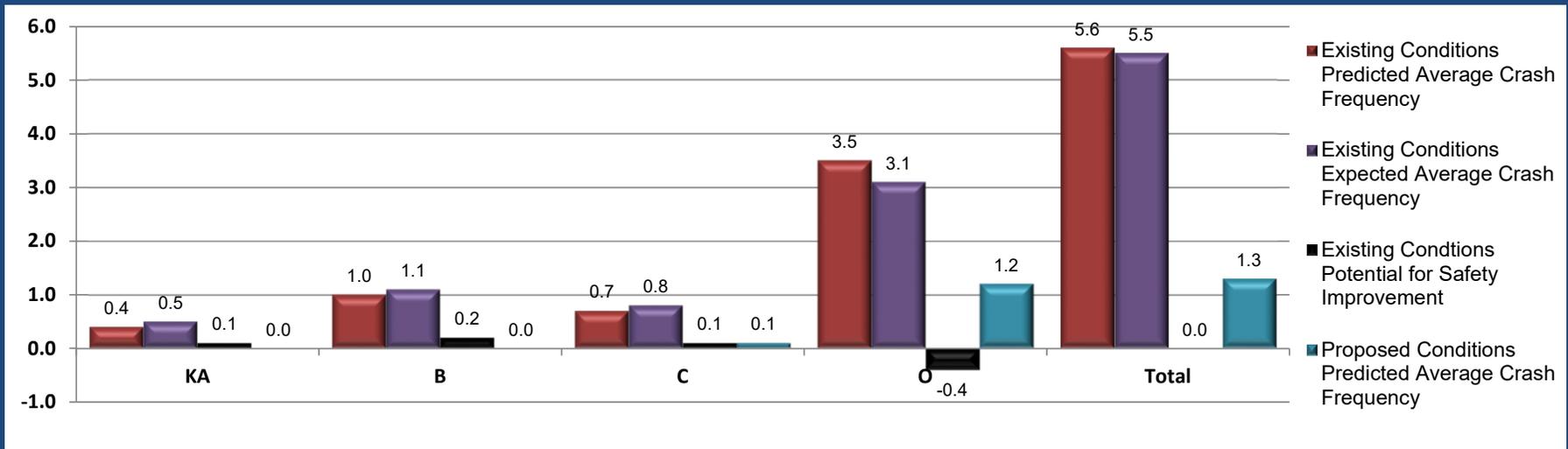


Project Safety Performance Report

General Information

Project Name	POR-14-21.72 Safety Study	Contact Email	alejandro.chock@woolpert.com
Project Description	Proposed Six Leg Circular Roundabout	Contact Phone	216-416-1512
Reference Number	10018798	Date Performed	5/7/2025
Analyst	AC	Analysis Year	2025
Agency/Company	Woolpert		

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



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{\text{predicted}}$ - Existing Conditions	0.4056	0.9821	0.6539	3.5151	5.5567
N_{expected} - Existing Conditions	0.4727	1.1457	0.7630	3.1458	5.5272
$N_{\text{potential for improvement}}$ - Existing Conditions	0.0671	0.1636	0.1091	-0.3693	-0.0295
N_{expected} - Proposed Conditions	0.0055	0.0465	0.0575	1.2193	1.3288



Project Safety Performance Report

General Information

Project Name	POR-14-21.72 Safety Study	Contact Email	alejandro.chock@woolpert.com
Project Description	Proposed Six Leg Circular Roundabout	Contact Phone	216-416-1512
Reference Number	10018798	Date Performed	5/7/2025
Analyst	AC	Analysis Year	2025
Agency/Company	Woolpert		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				Total
		KA	B	C	O	
CR55: 1.285	Yale at Alliance	0.0404	0.0972	0.0646	0.3481	0.5503
SR14: 21.686	SR 14 at Yale	0.1279	0.31	0.2069	1.1102	1.755
SR14: 21.724	SR 14 at Alliance	0.2373	0.5749	0.3824	2.0568	3.2514



Project Safety Performance Report

General Information

Project Name	POR-14-21.72 Safety Study	Contact Email	alejandro.chock@woolpert.com
Project Description	Proposed Six Leg Circular Roundabout	Contact Phone	216-416-1512
Reference Number	10018798	Date Performed	5/7/2025
Analyst	AC	Analysis Year	2025
Agency/Company	Woolpert		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
CR55: 1.285	Yale at Alliance	0.0384	0.0928	0.0618	0.3212	0.5142
SR14: 21.686	SR 14 at Yale	0.1174	0.2847	0.1896	1.0344	1.6261
SR14: 21.724	SR 14 at Alliance	0.3169	0.7682	0.5116	1.7902	3.3869



Project Safety Performance Report

General Information

Project Name	POR-14-21.72 Safety Study	Contact Email	alejandro.chock@woolpert.com
Project Description	Proposed Six Leg Circular Roundabout	Contact Phone	216-416-1512
Reference Number	10018798	Date Performed	5/7/2025
Analyst	AC	Analysis Year	2025
Agency/Company	Woolpert		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
CR55: 1.285	Yale at Alliance	-0.002	-0.0044	-0.0028	-0.0269	-0.0361
SR14: 21.686	SR 14 at Yale	-0.0105	-0.0253	-0.0173	-0.0758	-0.1289
SR14: 21.724	SR 14 at Alliance	0.0796	0.1933	0.1292	-0.2666	0.1355



Project Safety Performance Report

General Information

Project Name	POR-14-21.72 Safety Study	Contact Email	alejandro.chock@woolpert.com
Project Description	Proposed Six Leg Circular Roundabout	Contact Phone	216-416-1512
Reference Number	10018798	Date Performed	5/7/2025
Analyst	AC	Analysis Year	2025
Agency/Company	Woolpert		

Proposed Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				Total
		KA	B	C	O	
SR14: 21.705	SR 14 at Yale Rd and Alliance Rd	0.0055	0.0465	0.0575	1.2193	1.3288



Project Safety Performance Report

General Information

Project Name	POR-14-21.72 Safety Study	Contact Email	alejandro.chock@woolpert.com
Project Description	Proposed Six Leg Circular Roundabout	Contact Phone	216-416-1512
Reference Number	10018798	Date Performed	5/7/2025
Analyst	AC	Analysis Year	2025
Agency/Company	Woolpert		

Summary by Crash Type

Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Predicted Crash Frequency
Unknown	0.0219	0.0214	-0.0005	0.0381
Head On	0.0476	0.0511	0.0035	0.0011
Rear End	1.1875	1.1631	-0.0244	0.2023
Backing	0.2235	0.2030	-0.0205	0.0123
Sideswipe - Meeting	0.1614	0.1621	0.0007	0.0000
Sideswipe - Passing	0.2512	0.2405	-0.0107	0.4174
Angle	2.1204	2.1769	0.0565	0.3748
Parked Vehicle	0.1978	0.1825	-0.0153	0.0000
Pedestrian	0.0270	0.0303	0.0033	0.0011
Animal	0.0000	0.0000	0.0000	0.0134
Train	0.0010	0.0011	0.0001	0.0000
Pedalcycles	0.0205	0.0225	0.0020	0.0011
Other Non-Vehicle	0.0003	0.0004	0.0001	0.0000
Fixed Object	0.9322	0.9067	-0.0255	0.1342
Other Object	0.0326	0.0302	-0.0024	0.0000
Overturning	0.0562	0.0597	0.0035	0.0011
Other Non-Collision	0.0737	0.0692	-0.0045	0.0257
Left Turn	0.2019	0.2065	0.0046	0.0290
Right Turn	0.0000	0.0000	0.0000	0.0906



Safety Benefit - Cost Analysis

General Information

Project Name	POR-14-21.72 Safety Study	Contact Email	alejandro.chock@woolpert.com
Project Description	Proposed Six Leg Circular Roundabout	Contact Phone	216-416-1512
Reference Number	10018798	Date Performed	5/7/2025
Analyst	AC	Analysis Year	2025
Agency/Company	Woolpert		

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
Consolidation of three intersections into single six-leg roundabout	20	\$4,769,705.00			\$4,769,705.00	\$4,769,705.00	-4.228	\$4,230,292
					\$0.00	\$0.00		
					\$0.00	\$0.00		
					\$0.00	\$0.00	0.000	\$0
					\$0.00	\$0.00	0.000	\$0
					\$0.00	\$0.00	0.000	\$0
					\$0.00	\$0.00	0.000	\$0
					\$0.00	\$0.00	0.000	\$0
					\$0.00	\$0.00	0.000	\$0
					\$0.00	\$0.00	0.000	\$0
					\$0.00	\$0.00	0.000	\$0
					\$0.00	\$0.00	0.000	\$0
					\$0.00	\$0.00	0.000	\$0
Totals		\$4,769,705.00	\$0.00	\$0.00	\$4,769,705.00	\$4,769,705.00	-4.228	\$4,230,292



Safety Benefit - Cost Analysis

General Information

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Reference Number	10018798	Date Performed	5/7/2025
Analyst	AC	Analysis Year	2025
Agency/Company	Woolpert		

Benefit - Cost Calculator

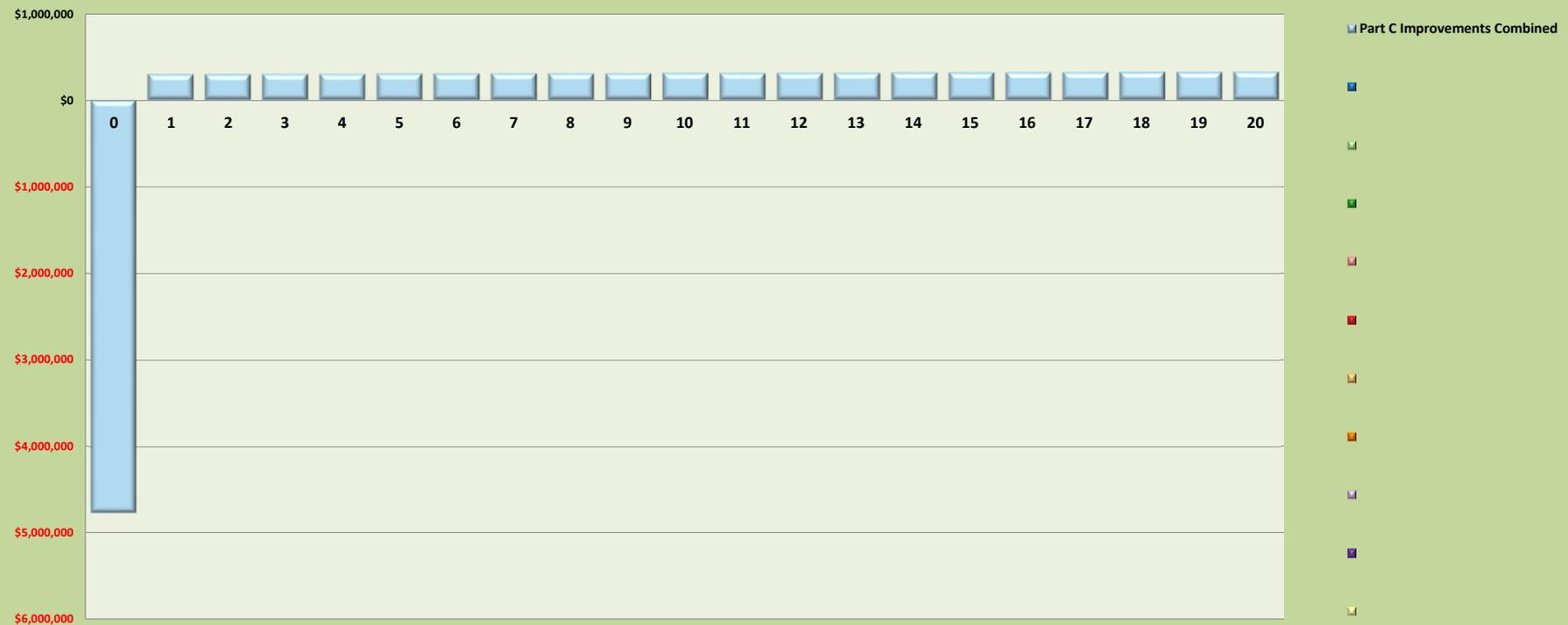
Net Present Value of Project	\$4,769,705.00
Net Present Value of Safety Benefits	\$4,230,291.58
Net Benefit	(\$539,413.42)
Benefit / Cost Ratio	0.89

Expected Annual Crash Adjustment

Number of Fatal & Incapacitating Injury Crashes	-0.400
Number of Injury Crashes	-1.932
Number of Total Crashes	-4.228

Comments:

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



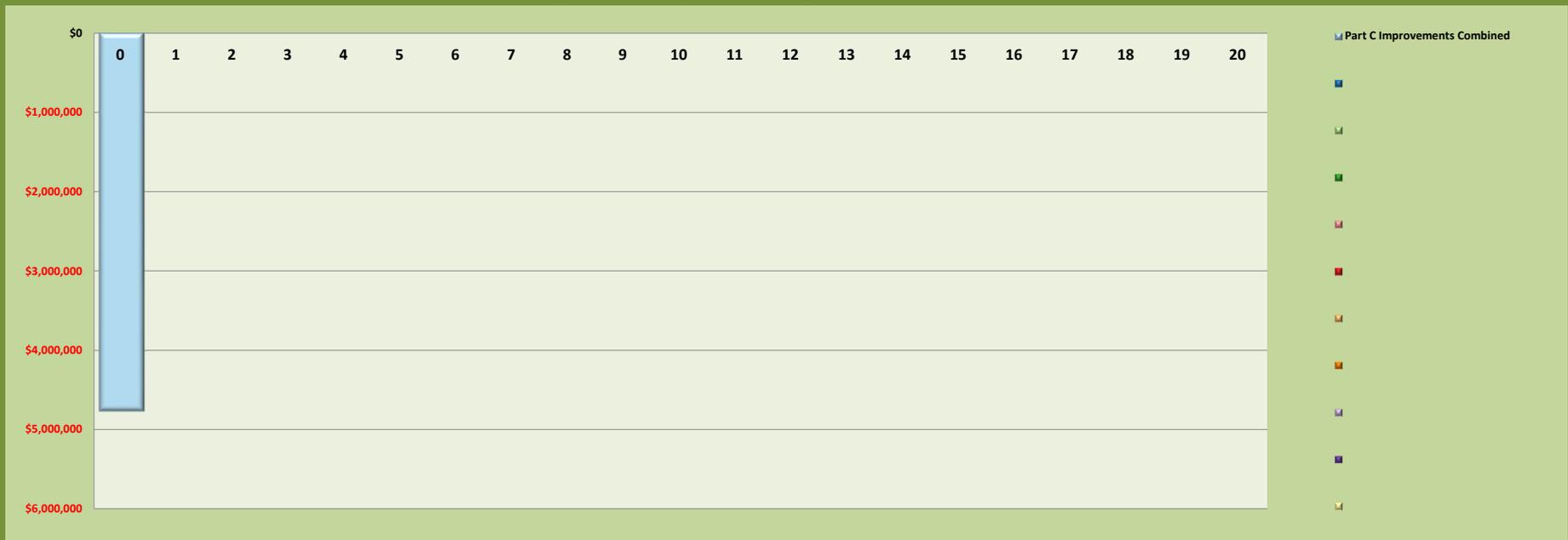


Safety Benefit - Cost Analysis

General Information

Project Name	POR-14-21.72 Safety Study	Contact Email	alejandro.chock@woolpert.com
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Project Costs Only Cash Flows By Countermeasure Per Year



Return on Investment (Safety Benefits and Project Investments)

