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INTERSECTION EVALUATION AND TRAFFIC ANALYSIS

DATE: January 17, 2024

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EXPIRES: 12/31/2025

SUBJECT: Deschutes County NW Lower Bridge Way and NW 43rd Street Intersection Improvement — Project #24097-000

INTRODUCTION

The intersection of NW Lower Bridge Way and NW 43rd Street is one of the busier intersections northwest of Terrebonne, Oregon in Deschutes County, and is one of the main access points to the community of Crooked River Ranch. The intersection was identified as part of the improvements being made with the NW Lower Bridge Way: 43rd Street to Holmes Road Improvement Project that proposes to widen the roadway between NW 43rd Street and NW Holmes Road. The goals of the project are to upgrade NW Lower Bridge Way to collector roadway standards, improve multimodal roadway safety, and remove roadside hazards. This project was identified as medium priority in the draft 2020-2040 Transportation System Plan for Deschutes County.

The following memorandum summarizes the traffic analyses conducted for the NW Lower Bridge Way and NW 43rd Street intersection based on proposed alternatives for opening year (2026) and future year (2046) projections in comparison to existing geometric conditions. The purpose of this evaluation is to identify each alternative's mobility operations. Additional factors to consider in the selection of a preferred alternative include safety aspects, right-of-way (ROW) impacts, environmental impacts, and costs. Environmental impacts, ROW impacts, and costs, however, were not analyzed as part of the traffic analysis documented in this memo.

STUDY AREA

The current roadway network, nearby intersections, pedestrian and bicycle facilities, transit facilities, emergency response system, and land use are presented below. The study intersection is shown in **Figure 1**.

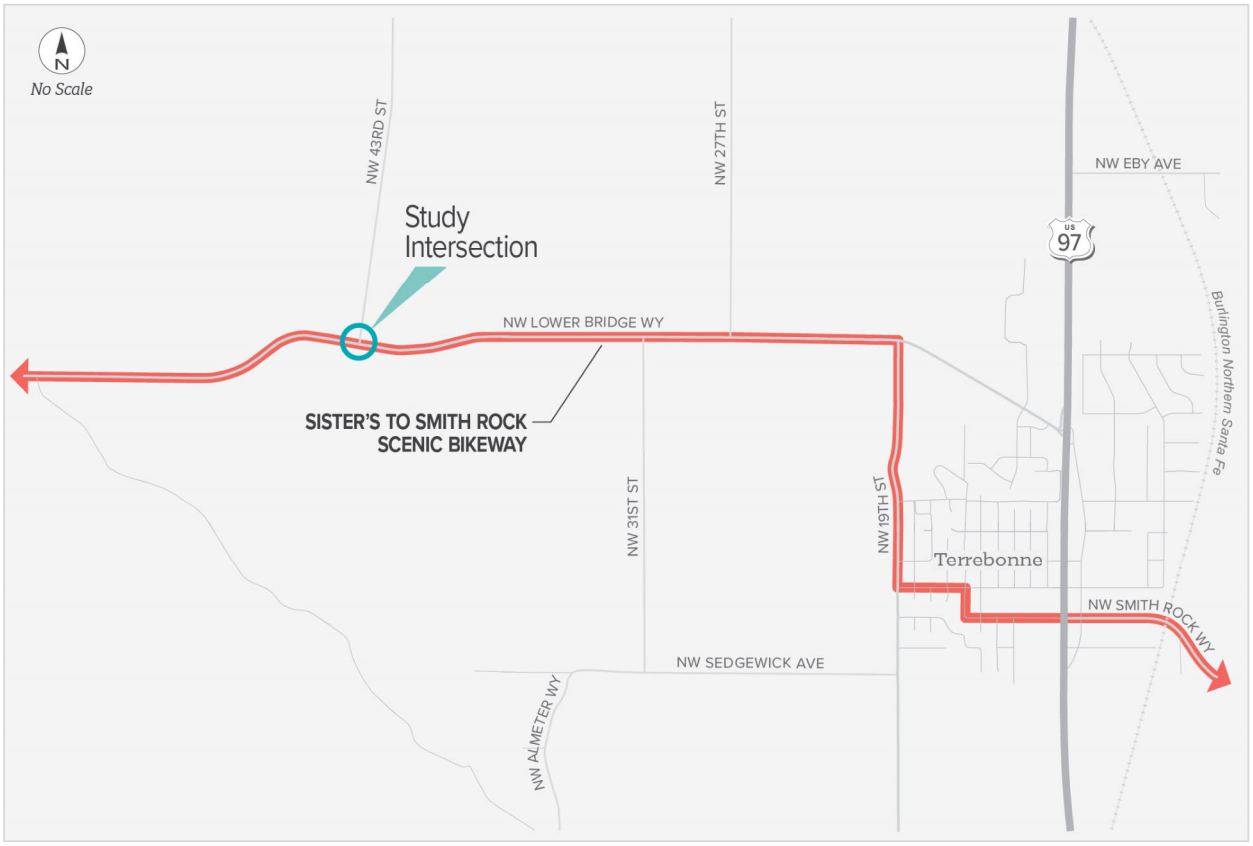


FIGURE 1: STUDY INTERSECTION

An inventory of existing conditions was conducted to determine characteristics of the study intersection and surrounding transportation network. A summary of existing study area roadway characteristics is provided in **Table 1**.

TABLE 1: EXISTING STUDY AREA ROADWAY CHARACTERISTICS

INTERSECTION LEG	FUNCTIONAL CLASSIFICATION [A]	POSTED SPEED LIMIT (MPH)	TRAFFIC CONTROL	NUMBER OF LANES	BIKE LANE	SIDE-WALK
NW 43RD STREET (NORTH LEG)	Minor Arterial [B]	Not posted, basic rule [C]	Stop Controlled	1	On Shoulder	None
NW LOWER BRIDGE WAY (EAST LEG)	Minor Arterial	Not posted, basic rule [C, D]	Uncontrolled	1	On Shoulder	None
NW LOWER BRIDGE WAY (WEST LEG)	Collector	Not posted, basic rule [C]	Uncontrolled	1	On Roadway	None

Note:

A. Functional classifications were defined with the draft 2023 Deschutes County Transportation System Plan (TSP), Source: https://www.deschutescountytsp.com/

B. NW 43rd St is proposed to upgrade from collector in the draft 2023 Deschutes County TSP.

C. Basic rule for Deschutes County is 55 MPH. Source: https://www.deschutes.org/road/page/speed-limits

D. Observations for traffic study were made in June of 2023, subsequent to a speed change order implemented in July 2023 that reduced the speed limit to 50 MPH.

As shown in **Table 1**, the intersection of NW Lower Bridge Way and NW 43rd Street is currently side-street stop-controlled for southbound vehicles with free movement for eastbound and westbound vehicles.

ADJACENT INTERSECTIONS AND ACCESS

Approximately 0.9 miles east of the intersection is the side-street stop-controlled intersection of NW Lower Bridge Way and NW 31st Street (south leg). Approximately 3 miles west is the side-street stop-controlled intersection of NW Lower Bridge Way and NW Quail Road (north leg). Approximately 1 mile north of the intersection is the side-street stop-controlled intersection of NW 43rd Street and NW Ice Avenue (east and west legs, although the west leg is an unpaved driveway) and approximately 0.8 miles further north is the side-street stop-controlled intersection of NW 43rd Street and NW Chinook Drive (east and west legs) which is one of the main access points for Crooked River Ranch. Based on the spacing and control of surrounding intersections, the intersection is not influenced by the operation of nearby intersections and thus operates in isolation. While not designated or paved, around the intersection are access points for the Bureau of Land Management (BLM) Off-Highway Vehicle (OHV) areas.

BICYCLE FACILITIES

The Sisters to Smith Rock Scenic Bikeway (STSRSB) trail travels along NW Lower Bridge Way as shown in **Figure 1**. There bicyclists can use the paved shoulder between NW 43rd Street and Highway 97. However, west of NW 43rd Street, bicyclists and vehicles share the roadway as designated by the "Bikes on Roadway" warning signs. There are no pavement markings for

dedicated bicycle lanes along this roadway. Although not part of the STSRSB trail, NW 43rd Street also has paved shoulders that bicyclists can use.

PEDESTRIAN FACILITIES

There are no protected pedestrian facilities, such as sidewalks or crosswalks, at this location.

TRANSIT FACILITIES

While there are no transit stops in the vicinity, route 25 (Cascade East Transit) and neighborhood school buses pass through this intersection.

LAND USE

The area surrounding the intersection is composed mainly of OHV use areas owned by the BLM. Other land in proximity to the intersection is privately owned and includes multiple ranches featuring farm animals such as cows, horses, and alpacas. Two major power lines run through the area, one owned by Portland General Electric (PGE) and the other by the Bonneville Power Association (BPA) which both cross the east leg of NW Lower Bridge Way. There are also Pacific Power and Light (PPL) lines that run alongside NW Lower Bridge Way.

North of the intersection is the community of Crooked River Ranch, home to approximately 5,000 residents. This community features many recreational areas including trails, parks, pools, a golf course, and a recreational vehicle (RV) park. East of the intersection is the community of Terrebonne, Oregon, which is home to Smith Rock State Park and a population of approximately 1,500 people.

FIELD OBSERVATIONS

A site visit was conducted in mid-June 2023 to observe the conditions during the AM and PM peak hours. During this visit, it was noted that the stopping sight distance on NW 43rd Street approaching the stop sign is good, with ability to see more than twice the required 570 ft for a 60 MPH roadway according to Table 3-1 in the American Association of State Highway and Transportation Officials (AASHTO)'s *A Policy on Geometric Design of Highways and Streets* [1]. As for intersection sight distance (ISD), the distance should be approximately 640 feet for left turning and 555 feet for right turning passenger vehicles based on the 85th percentile speeds from the ODOT 2020 speed study (58 MPH). The sight distance is met for both left and right turning vehicles, with a sight distance of approximately 750 feet for southbound right turning vehicles before NW Lower Bridge Way curves and approximately 650 feet for southbound left turning vehicles. The data can be found in the **Attachments: Section 1 – Intersection Sight Distance**. It should be noted that the sight line can be limited by westbound right-turning vehicles, especially larger vehicles, as these vehicles can block the view of a westbound through vehicle behind them. While the

[1] A Policy on Geometric Design of Highways and Streets, 7th Edition, American Association of State Highway and Transportation Officials, 2018.

southbound right must yield to westbound movements, and only proceed with sufficient gaps, the County has received reported concerns from local drivers regarding this obstructed view by westbound right-turning vehicles. This can be seen in **Figure 2**, as the red vehicle would be hidden by the turning truck only a few more feet back.

From the field observations, it was noted that the predominant movement in the AM peak was the southbound left turn from NW 43rd Street to eastbound NW Lower Bridge Way and during the PM peak was the westbound right turn from NW Lower Bridge Way to northbound NW 43rd Street. Overall, southbound queues extended approximately 10 vehicles at the NW 43rd Street stop sign as seen in **Figure 3**. This queue was observed to be caused by slower moving vehicles along NW 43rd Street (rather than insufficient gaps on NW Lower Bridge Way) that resulted in vehicles bunching behind it. However, it was noted that the queue dissipated quickly at the stop sign as there was minimal east-west vehicles and southbound vehicles could turn left as the right turning vehicles from NW Lower Bridge Way moved into the right turn lane. It was observed that most vehicles on NW Lower Bridge Way make a rolling stop.

Note: The arrow in the figure indicates the sight distance limitation

FIGURE 2: SIGHT DISTANCE FROM NW 43RD STREET

FIGURE 3: QUEUING AT INTERSECTION ON NW 43RD STREET

TRAFFIC VOLUMES

The following section describes the development of the existing volumes during the AM and PM peak hours, as well as development of the future year volumes for opening year (2026) and future year (2046). While the US-97 Terrebonne Corridor Improvements are expected to be completed within the short term, it is not anticipated that this project will change volume patterns in the area. This is because there are no comparative alternate routes in the area that drivers are using to avoid the NW Lower Bridge Way and NW 43rd Street intersection. As such, no additional adjustments were made in the development of future traffic volumes.

EXISTING VEHICLULAR VOLUMES

Roadway counts provided by Deschutes County at the intersection of NW Lower Bridge Way and NW 43rd Street were completed in June 2023 for all approaches. In comparison to the trends from historical counts (2011, 2018 and 2022) the counts were significantly lower and resulted in much lower growth rates than historical trends. Additionally, the tube counters on the east leg stopped collecting data midway through (they became dislodged from the roadway). Due to the uncertainty of this data, volume data collected in 2022, which is consistent with historical data trends, was used instead for the analysis. The 2022 count data was collected on June 14th and 15th, which was during the last week of school for the Redmond School District. Based on a review of the traffic trends for both days including peak hour counts for all approaches, the volumes on June 15th were selected for analysis. The count data can be found in the **Attachments: Section 2 – 2022 Count Data**.

Since only approach / departure volumes were provided, turning volumes were developed based on the turning movement percentage from the Replica database. Replica is an online database that collects data through its own sources as well as third-party sources and presents it visually. The

main movement data comes from mobile location including in-dash GPS and location-based services. Replica data can be filtered to identify the timeframe of data, including the time of day, day of the week, and year. For purposes of this study, a Thursday in Fall 2022 was chosen during the hours of 8 AM to 9 AM and 4 PM to 5 PM to represent the AM and PM peak hour, respectively. Thursday in Fall 2022 was chosen as the data represents a mid-week collection date in the same year as the roadway counts provided by Deschutes County. The data was then filtered for each approach as shown in **Table 2** and in **Attachments: Section 3 – Replica Data**.

TABLE 2: REPLICA TURNING VOLUMES DURING PEAK HOURS

PEAK HOUR	TURNING VOLUME					
	SOUTHBOUND RIGHT TURN	SOUTHBOUND LEFT TURN	EASTBOUND LEFT TURN	EASTBOUND THROUGH	WESTBOUND RIGHT TURN	WESTBOUND THROUGH
AM PEAK	1 (0.3%)	327 (99.7%)	2 (11.1%)	16 (88.9%)	133 (85.8%)	22 (14.2%)
PM PEAK	1 (0.5%)	200 (99.5%)	4 (33.3%)	8 (66.7%)	657 (95.8%)	29 (4.2%)

Note:
XX (YY%) = Turn Volume (% of approach volume)

As shown in **Table 2**, the main turning movements observed from the Replica data were southbound left turns in the morning and westbound right and through movements in the evening, which coincides with the field observations. The turning proportions shown in **Table 2** were then applied to the 2022 approach volumes. The existing 2022 turning volumes based on the Replica turning volume percentages is presented in **Figure 4**. The volumes in **Figure 4** were used as the basis for existing conditions. Detailed calculations for volume development can be found in **Attachments: Section 4 – Volume Development**.

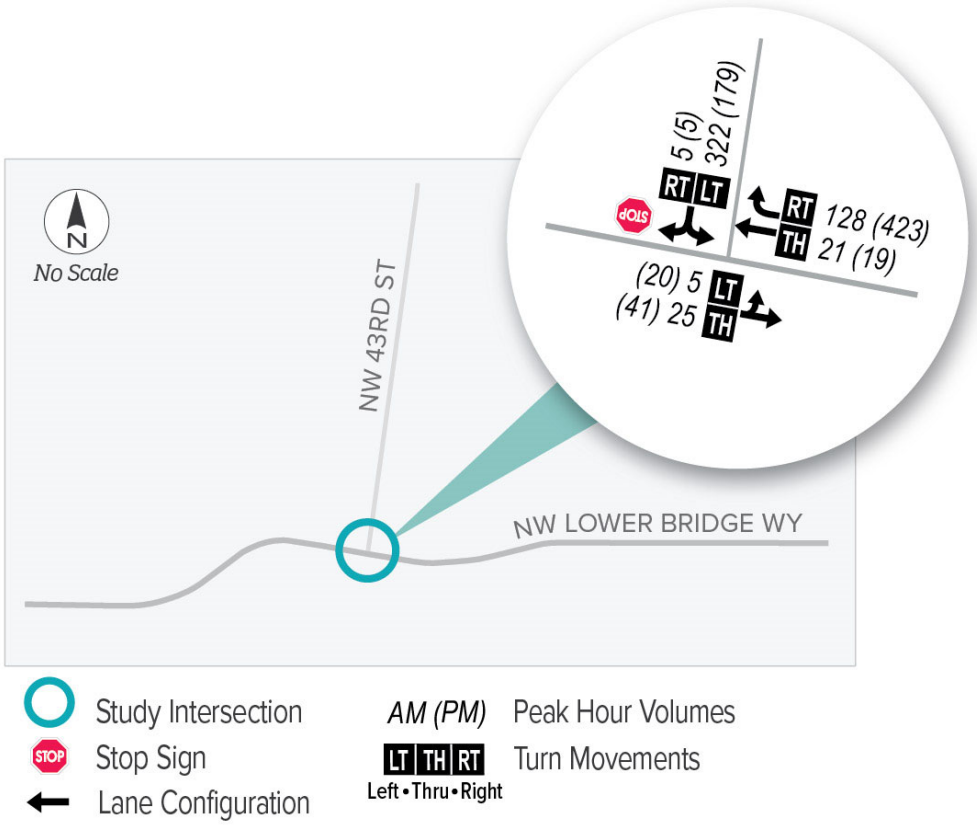


FIGURE 4: EXISTING (2022) VOLUMES

TRUCK VOLUMES

The 2022 count classification data and historical data indicate that heavy vehicles make up approximately 2% of the volume. Future truck proportions are not expected to change in the future.

FUTURE YEAR VEHICLULAR VOLUMES

It was assumed that the Opening Year for any alternative construction would occur in the first half of 2026. To develop Opening Year (2026) volumes, growth rates were developed from historical volumes provided by the County. Based on the data, a growth rate of 1% per year was used.

The turning volumes presented in **Figure 4** were grown at 1% per year until 2026 (4 years) and rounded up to the nearest 5 vehicles. **Figure 5** presents the Opening Year (2026) turning movement volumes. The Future Year (2046) turning volumes also used the same 1% per year growth from 2022 to 2046 and rounded up to the nearest 5 vehicles. **Figure 5** also shows the Future Year (2046) turning movement volumes. Detailed calculations for volume development can be found in **Attachments: Section 4 – Volume Development**.

BICYCLE VOLUMES

Since the STSRSB trail is routed through NW Lower Bridge Way, the area is expected to have more bicyclists along the roadway than other similarly characterized roadways. These bicycle volumes are expected to increase during the summer months as better weather encourages vacationing cyclists to utilize the trail. The future improvements expected with NW Lower Bridge Road widening also may encourage more cyclists to travel the trail. Impacts to bicyclists for each alternative are qualitatively analyzed in the bicycle safety section of this memo.

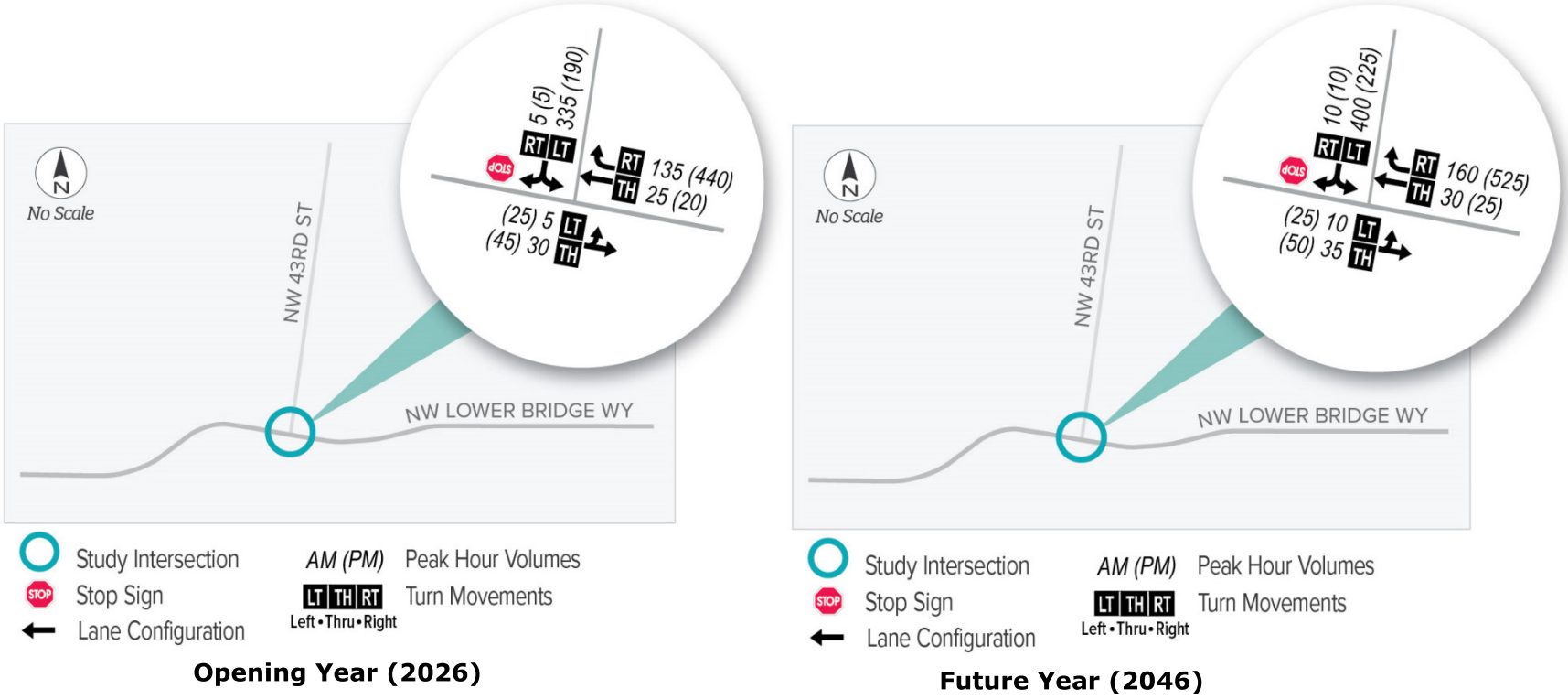


FIGURE 5: FUTURE YEAR VOLUMES

ALTERNATIVES OVERVIEW

Three intersection alternatives were proposed in response to the Request for Proposals issued by Deschutes County in January 2023. In addition to those options, all-way stop and signalized intersection alternatives were reviewed as well.

ALTERNATIVE 1: EXPANDED RIGHT TURN CHANNELIZATION

Alternative 1, Option 1 in the proposal, includes key updates such as shoulder widening with new striping at the intersection, added bicycle lane, and extending the westbound right-turn lane. **Figure 6** shows the proposed configuration of the roadway with this alternative. This alternative would remove the westbound right turn movements from conflicting with sight distance and minimize delays for the southbound left turn movement.

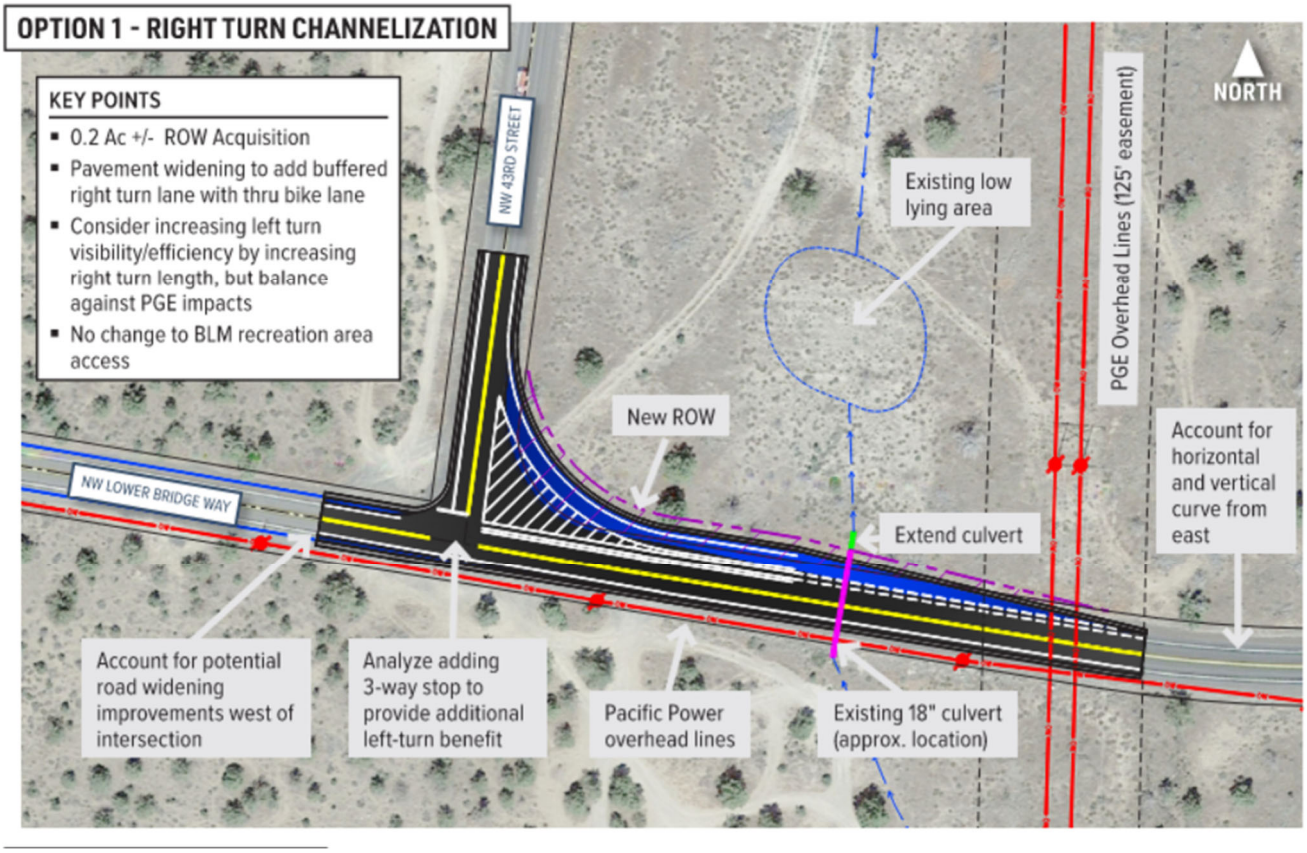


FIGURE 6: ALTERNATIVE 1 PROPOSED CONFIGURATION

ALTERNATIVE 2: INTERSECTION REALIGNMENT

Alternative 2, known as Option 2 in the proposal, includes the realignment of the roadway to have southbound and westbound traffic become the free movements of the intersection with eastbound traffic stop-controlled. This alternative was also assumed to have a 100-foot westbound left-turn lane. It was also assumed that the eastbound right-turn lane is not warranted based on the low volume of vehicles. The proposed concept is shown in **Figure 7**.

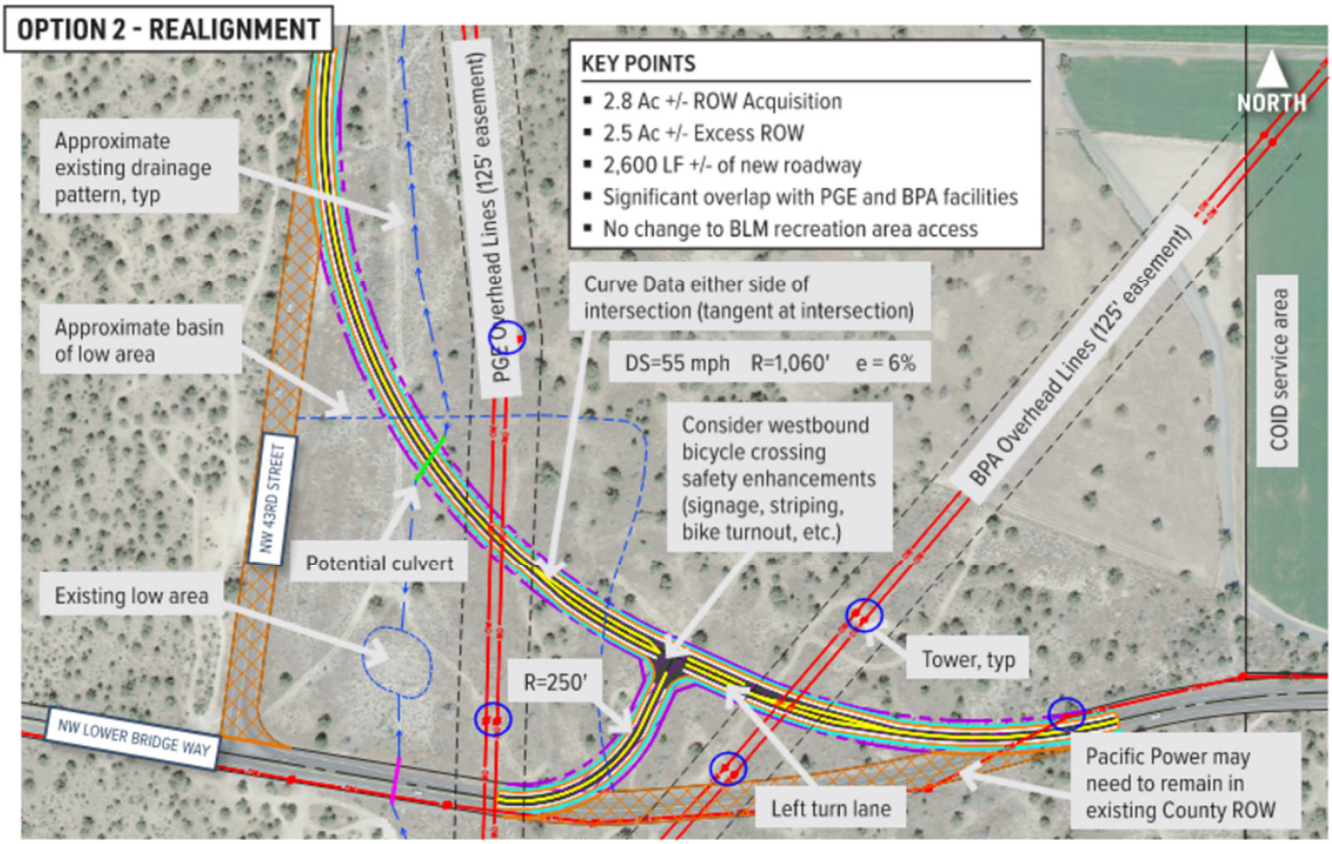


FIGURE 7: ALTERNATIVE 2 PROPOSED CONFIGURATION

ALTERNATIVE 3: ROUNDABOUT

Alternative 3, Option 3 in the proposal, includes construction of a roundabout at the intersection. This roundabout could either be placed to the east or west of the existing intersection. The east placement of the roundabout was used in the operations analysis. **Figure 8** shows the proposed roundabout alternative. This alternative would minimize turn conflicts, reduce vehicle speeds at the intersection, and provide a gateway treatment to the Crooked River Ranch.

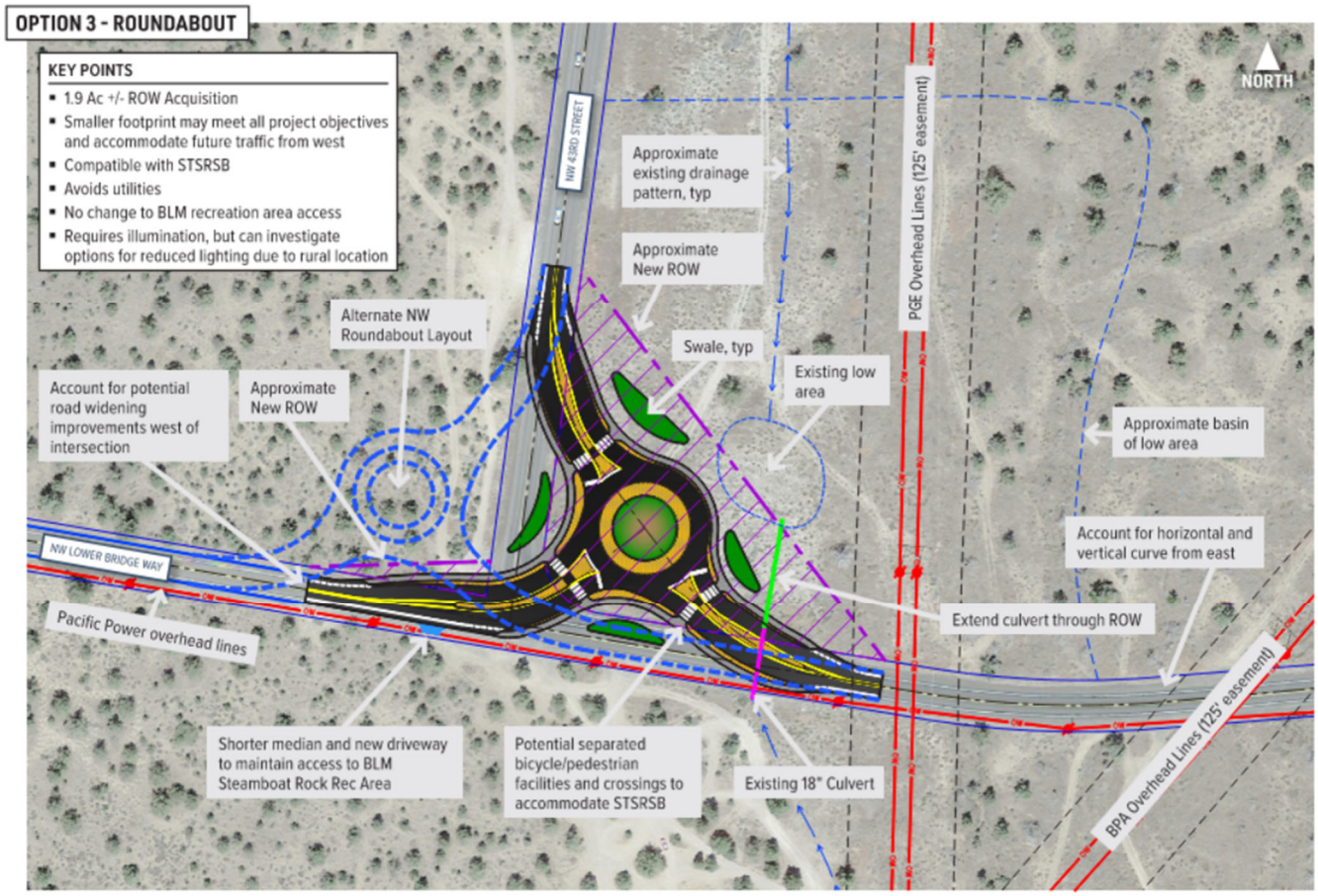


FIGURE 8: ALTERNATIVE 3 PROPOSED CONFIGURATION

ALTERNATIVE 4: ALL-WAY STOP

Alternative 4 would include the improvements outlined in Alternative 1 and add stop-control for all movements except the westbound right turns. However, before moving forward with this alternative, an All-Way Stop Control Warrant, as outlined in the 11th Edition of the Manual on Uniform Traffic Control Devices (MUTCD) Section 2B.12, should be reviewed. Future year 2031 traffic volumes were used to determine if the intersection meets the stop warrant, as this marks 5 years after the expected opening year (2026). 2031 traffic volumes were calculated using the same method above for developing the 2026 and 2046 traffic volumes.

Based on the analysis, the intersection meets All-Way Stop Control Warrants A, B, D, and E. Warrant A is met as there are 5 or more reported crashes in a 36-month period that may be corrected with installation of an all-way stop control. Warrant B is met as road users have reported not being able to see conflicting westbound thru vehicles as the westbound right-turning vehicles can hide those vehicles. Warrant D is met as the volume requirements for the 70% of volume for both major and minor street approaches. Additionally, the intersection meets Warrant E as there is a need to control left-turn conflicts. Results of this analysis are provided in the **Attachments: Section 5 – Alternative 4 All-Way Stop Control Warrant Analysis**.

As the intersection meets some criteria of the stop warrant, it was included in the operations analysis as a reasonable alternative.

ALTERNATIVE 5: TRAFFIC SIGNAL

The same 2031 volumes used in the all-way stop warrant analysis were used to analyze traffic signal warrants at the intersection as outlined in the 11th Edition MUTCD Chapter 4C. The results of this analysis are summarized in **Table 3** and provided in **Attachments: Section 6 – Alternative 5 Preliminary Signal Warrant Analysis**.

TABLE 3: TRAFFIC SIGNAL WARRANT ANALYSIS

WARRANT	APPLICABLE?	WARRANT MET?
WARRANT 1 EIGHT-HOUR VEHICULAR VOLUME	Yes	No
WARRANT 2, FOUR-HOUR VEHICULAR VOLUME	Yes	Yes
WARRANT 3, PEAK HOUR	Yes	No
WARRANT 4, PEDESTRIAN VOLUME	No	-
WARRANT 5, SCHOOL CROSSING	No	-
WARRANT 6, COORDINATED SIGNAL SYSTEM	No	-
WARRANT 7, CRASH EXPERIENCE	Yes	No
WARRANT 8, ROADWAY NETWORK	Yes	No
WARRANT 9, INTERSECTION NEAR GRADE CROSSING	No	-

Note:
Signal warrants as outlined in the 11th Edition MUTCD Chapter 4C.

The intersection only meets the four-hour vehicular volume. All other warrants are either not applicable (e.g., school crossing) or were not met based on the traffic volumes of each approach (minor and major). While the four-hour warrant is met, it should be noted that 85% to 95% of the westbound volume are turning right, which has its own lane to turn from. When discounting the westbound right from the approach volume (up to 55%), the four-hour warrant would no longer be met.

ALTERNATIVES ANALYSIS

For this analysis, the Existing Geometry, and Alternatives 1, 2, and 4, were analyzed using Synchro/SimTraffic software with the *Highway Capacity Manual, 6th Edition* (HCM)[2] methodologies. Alternative 3 was analyzed using Sidra software and the *Highway Capacity Manual, 6th Edition* (HCM)[1] methodologies.

Each alternative was analyzed to determine impacts to traffic operations (queuing and intersection delay) and safety at the study intersection. The results of these analyses are provided in **Attachments: Section 7** through **Section 11**.

INTERSECTION OPERATIONS

The following section describes the measures of effectiveness, jurisdictional mobility standards, and intersection operations of each alternative.

INTERSECTION PERFORMANCE MEASURES

Level of service (LOS) ratings and volume-to-capacity (v/c) ratios are two commonly used performance measures that provide a good picture of intersection congestion levels. Agencies often incorporate these performance measures into their mobility standards. Descriptions are given below:

Level of service (LOS)

LOS is a "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operational conditions. LOS F represents conditions where average vehicle delay has become excessive, and demand exceeds capacity. Deschutes County defines LOS D as the mobility standard for intersection operations.

[2] Highway Capacity Manual, 6th Edition, Transportation Research Board, 2016.

Volume-to-capacity (v/c) ratio

V/C ratio is a decimal representation (typically between 0.01 and 1.00) of the proportion of capacity that is being used at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given movement or intersection. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00 (generally above 0.70), congestion noticeably increases, and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays. ODOT's mobility target is documented in the Oregon Highway Plan, which requires a target v/c ratio of 0.75 for peak hour operating conditions based on the characteristics of the roadway (district/local interest roads outside the urban growth boundary) [3]. As noted above, a speed change order was implemented in July 2023 on the east leg of NW Lower Bridge Way after field observations were conducted (June 2023). However, this speed change does not result in a significant change to the results or recommendations, so was not changed in the analysis.

Queuing

95th percentile queue results are reported from SimTraffic and are defined as the length of the queue which is exceeded five percent of the time during the analysis time period. The 95th percentile queue is useful in determining the appropriate storage requirements such as length of turn pockets but is not representative of what an average driver would experience during their commute. The change in speed limit on the east leg would similarly not result in a significant change in queueing.

JURISDICTIONAL MOBILITY STANDARDS

NW Lower Bridge Way and NW 43rd Street are both minor arterial roadways within Deschutes County (i.e., not within a City jurisdiction) and therefore under the Deschutes County jurisdiction. Deschutes County typically uses LOS performance measures to evaluate acceptable vehicular performance.

INTERSECTION OPERATION

Table 4 below shows the analysis results for the intersection v/c for each alternative for both Opening Year (2026) and Future Year (2046) AM and PM peak hours.

[3] 1999 Oregon Highway Plan, Policy 1F, Table 6, updated January 2023.

TABLE 4: INTERSECTION PERFORMANCE – V/C RATIO

ALTERNATIVE	MOBILITY TARGET (V/C) [A]	V/C [B]			
		2026 AM PEAK HOUR	2026 PM PEAK HOUR	2046 AM PEAK HOUR	2046 PM PEAK HOUR
EXISTING GEOMETRY (NO BUILD)	0.75	0.43	0.23	0.53	0.28
ALTERNATIVE 1		0.43	0.23	0.53	0.28
ALTERNATIVE 2		0.07	0.12	0.10	0.15
ALTERNATIVE 3		0.31	0.37	0.37	0.44
ALTERNATIVE 4		0.61	0.59	0.75	0.73

Note:

A. 1999 Oregon Highway Plan, Policy 1F, Table 6

B. Results based on 55MPH speeds for the east leg of NW Lower Bridge Way. A speed change order was implemented in July 2023 after project observations taken in June 2023.

Based on the results presented in **Table 4**, all intersections are projected to meet the ODOT mobility target, with only Alternative 4 (All-Way Stop) in the Future Year (2046) AM peak hour approaching the mobility target.

Table 5 below presents the intersection delay and corresponding LOS for each alternative for Opening Year (2026) and Future Year (2046) AM and PM peak hours. It should be noted that for side-street stop-controlled alternatives, the operation of the intersection is defined as the worst movement, rather than the average intersection, as the main street is generally free-flow and experiences very little to no delay. Additionally, for all-way stop-controlled intersections, HCM defines the intersection operation as the average control delay for all vehicles. However, all movements / approaches were reviewed to ensure there was not one with unacceptable operation.

TABLE 5: INTERSECTION PERFORMANCE – DELAY AND LOS

ALTERNATIVE	DELAY [A, B] (LOS)			
	2026 AM PEAK HOUR	2026 PM PEAK HOUR	2046 AM PEAK HOUR	2046 PM PEAK HOUR
EXISTING GEOMETRY (NO BUILD)	SB – 11.8 (B)	SB – 10.3 (B)	SB – 13.4 (B)	SB – 10.8 (B)
ALTERNATIVE 1	SB – 11.8 (B)	SB – 10.3 (B)	SB – 13.4 (B)	SB – 10.8 (B)
ALTERNATIVE 2 [C]	NB – 11.3 (B)	NB – 11.9 (B)	NB – 12.7 (B)	NB – 12.9 (B)
ALTERNATIVE 3	4.6 (A)	5.0 (A)	5.1 (A)	5.5 (A)
ALTERNATIVE 4 [D]	14.0 (B) [SBL – 16.9 (C)]	12.8 (B) [WBR – 13.7 (B)]	18.6 (C) [SBL – 23.9 (C)]	16.8 (C) [WBR – 19.3 (C)]

Note:

A. Average delay in seconds per vehicle. For side-street stop-controlled alternatives (Existing, and Alternative 1 and 2), HCM defines the operation of the intersection based on the worst movement.

B. Results based on 55MPH speeds for the east leg of NW Lower Bridge Way. A speed change order was implemented in July 2023 after project observations taken in June 2023.

C. Northbound (NB) represents the eastbound NW Lower Bridge Way approach.

D. Per HCM, results are reported for intersection delay and LOS for all-way stop control. The worst movement operations are provided in brackets for comparison.

As seen in **Table 5**, Alternative 3 generally provides the best operation on average, while Alternative 4 generally provides the highest delay per vehicle. It should be noted, however, that all alternatives are projected to operate at LOS C or better with less than 24 seconds of delay per vehicle.

QUEUING ANALYSIS

SimTraffic 11 was used to identify the 95th percentile vehicle queues for approaching traffic for the existing conditions and Alternatives 1, 2, and 4. The ODOT SimTraffic Template was used as a starting point for the simulation parameters. The only change was that the ideal saturation flow rate was changed to 1750 vehicles per hour per lane (vphpl) following the ODOT Analysis Procedure Manual (APM) guidelines. Each Alternative was run ten times to generate results following APM guidelines. Before proceeding to the future year's analysis, the Existing 2022 model was run and checked to ensure it was replicating observed congestion. Queues observed in the field were generally replicated in the Existing conditions models. The Existing 2022 model results are also provided in **Attachments: Section 7 – Existing Geometry Results**.

Sidra 11 was used for the 95th percentile queues for the roundabout proposed in Alternative 3. All queues were rounded to the nearest 25 ft by movement, following APM guidelines.

Table 6 below shows the available storage lengths for each movement. Only the SBR from NW 43rd Street (small flare out), the WBR from NW Lower Bridge Way, and the added WBL in Alternative 2

have defined lanes for those movements. All other storage lengths were assumed to be represented by the length to the next upstream intersection.

TABLE 6: AVAILABLE STORAGE LENGTH

ALTERNATIVE	AVAILABLE STORAGE LENGTH (FT) [A, B]				
	EB LBW	SB NW 43RD STREET	SBR NW 43RD STREET	WB LBW	WBR LBW
EXISTING GEOMETRY	3 mi	1 mi	20 ft [C]	0.9 mi	200 ft
ALTERNATIVE 1	3 mi	1 mi	20 ft [C]	0.9 mi	200 ft [D]
ALTERNATIVE 2	3 mi	1 mi		0.9 mi	100 ft [E]
ALTERNATIVE 3	3 mi	1 mi		0.9 mi	-
ALTERNATIVE 4	3 mi	1 mi	20 ft [C]	0.9 mi	400 ft

Note:

LBW = Lower Bridge Way

A. No storage area defined; length represents to the next upstream intersections.

B. Results based on 55MPH speeds for the east leg of NW Lower Bridge Way. Speeds change order was implemented in July 2023 and project observations were taken in June 2023.

C. Existing stop area has wide turn out with a length of 20 ft.

D. Assumed the same storage as Existing, but with a larger turn radius at NW 43rd Street.

E. This represents the WBL for Alternative 2.

Table 7 below defines the 95th percentile queue length for each Alternative for both Opening Year (2026) and Future Year (2046) AM and PM peak hours. Vehicle queues are expected to increase for movements between 2026 and 2046. Alternatives 2, 3, and 4 include control for the eastbound and westbound approaches which results in an increase in queue length. However, the increase in queue length is at most 100 ft, representing approximately 4 vehicles. Overall, Alternative 3 generally resulted in a decrease in queue length. Meanwhile, queues generally remained the same under Alternative 1 as the Existing Geometry.

TABLE 7: 95TH PERCENTILE QUEUE LENGTHS

PEAK HOUR	ALTERNATIVE	95TH PERCENTILE QUEUE LENGTH (FT) [A]				
		EB LBW	SB NW 43RD STREET	SBR NW 43RD STREET	WB LBW	WBR LBW
2026 AM PEAK HOUR	EXISTING GEOMETRY	25	100	50	-	-
	ALTERNATIVE 1	<25	100	50	-	-
	ALTERNATIVE 2	75	-	<25	50	-
	ALTERNATIVE 3	25	50 [B]		25 [C]	
	ALTERNATIVE 4	50	100	50	50	-
2026 PM PEAK HOUR	EXISTING GEOMETRY	25	75	50	-	-
	ALTERNATIVE 1	25	100	25	-	-
	ALTERNATIVE 2	75	-	<25	25	-
	ALTERNATIVE 3	25	25 [B]		75 [C]	
	ALTERNATIVE 4	50	75	25	50	-
2046 AM PEAK HOUR	EXISTING GEOMETRY	25	150	50	-	-
	ALTERNATIVE 1	<25	125	50	-	-
	ALTERNATIVE 2	75	-	25	50	-
	ALTERNATIVE 3	25	75 [B]		25 [C]	
	ALTERNATIVE 4	75	125	50	50	-
2046 PM PEAK HOUR	EXISTING GEOMETRY	25	100	50	-	-
	ALTERNATIVE 1	25	100	50	-	-
	ALTERNATIVE 2	75	-	25	50	-
	ALTERNATIVE 3	25	25 [B]		100 [C]	
	ALTERNATIVE 4	50	75	50	50	-

Note:

LBW = Lower Bridge Way

A. Results based on 55MPH speeds for the east leg of NW Lower Bridge Way. Speeds change order was implemented in July 2023 and project observations were taken in June 2023.

B. SB NW 43rd traffic movements share lane in Alternative 3.

C. WB LBW traffic movements share lane in Alternative 3.

INTERSECTION SAFETY

This section summarizes the crashes that have occurred at the intersection, defines the crash modification factors for each alternative, and summarizes the bicycle safety with respect to each alternative.

CRASH FREQUENCY

Oregon Department of Transportation's (ODOT) Crash Data Viewer[4] was used to filter the last 5 year of available crash data (2017 to 2021) for the area around the intersection. A total of 11 crashes were identified. Of those 11, 3 crashes were removed because they were not intersection related with 2 of those 3 due to loss of vehicle control in snowy weather and one due to an animal. Of the 8 intersection related crashes, half are crashes involving the southbound left turn from NW 43rd Street and the other half are rear ends within the same lane. A total of 5 of the reported crashes involved injuries ranging from minor to serious and the rest involved only property damage. Most of the crashes occurred in clear weather, dry pavement conditions, and during the day. None of the reported crashes involved a bicycle or pedestrians. The crash data is provided in **Attachments: Section 12 – ODOT Crash Data**.

With relation to the Alternatives, Alternatives 1 is not expected to have an impact on these types of crashes. Alternative 2 would help as the high volume of cars from NW 43rd Street have free movement and the left turning vehicles are low volume. Alternative 3 would also help the crash types observed as it slows traffic and takes out the left turning movement. Alternative 4 is expected to increase the rear end crashes as it forces high-speed vehicles to come to a complete stop at the intersection. The left-turning related crashes is expected to be reduced.

CRASH RATE OF INTERSECTION

A crash rate analysis determines the relative safety of a location compared to other similar facilities. The crash rate at an intersection can then be compared to the State's crash rate to understand if this intersection is prone to crashes. Section 4.1.1 of the APM outlines the equation used to calculate the intersection crash rate. Based on the equation, the NW Lower Bridge Way and NW 43rd Street intersection has a crash rate of 0.56. The equation and calculations can be found in **Attachments: Section 13 – Crash Rate Calculation**.

The State crash rate was taken from the APM Version 2 Exhibit 4-1. In that exhibit, it lists the 90th percentile crash rate as 0.475 for a rural three-leg minor stop-controlled intersection. Comparing the calculated crash rate to similar facilities, the NW Lower Bridge Way and NW 43rd Street intersection has a higher crash rate than other similar facilities in the State.

CRASH MODIFICATION FACTOR REVIEW

A crash modification factor (CMF) is used to compute the expected number of crashes after implementing a given countermeasure. These factors have been developed by comparing crashes

[4] https://www.oregon.gov/odot/Data/Pages/Crash-Data-Viewer.aspx

"before" implementation and "after" implementation. The CMF Clearinghouse[5] is a website that contains 1,000s of CMFs; several of which have been identified as applicable to the alternatives analyzed are listed in **Table 8**.

TABLE 8: CRASH MODIFICATION FACTORS

ALTERNATIVE	CMF COUNTERMEASURE	CRASH TYPES ADDRESSED	APPROXIMATE CRASH REDUCTION (%)
ALTERNATIVE 1	Physical channelization of right-turn lane on major road	All	2-19%
ALTERNATIVE 2 [A]	Provide a left turn lane on one major road approach	All	18-44%
ALTERNATIVE 3	Convert High-Speed Rural Intersection (3-Leg) to Roundabout	All	26%
ALTERNATIVE 4	Convert Minor-Road Stop Control to All Way Stop	All	-46-64% [B]

Note:

A. It should be noted that realignment of side-street stop controlled to the free-flow movement is not provided as a countermeasure in the CMF Clearinghouse. The crash reduction reported is specifically for providing a left-turn lane on the NW Lower Bridge Way.

B. The negative crash reduction percentage indicates an increase in crashes after conversion. This range was based on all crash types and not a specified area. While the side-street CMF may see a decrease in the number of crashes, there is the potential for increases in rear-end crashes on the major approaches.

It should be noted that while an all-way stop-control may see a decrease in the number of crashes on the side-street, there is the potential for an increase in rear-end crashes on the major approaches, which do not stop currently. In addition to the alternatives proposed in this analysis, other design elements that could be considered to address the rear-end crashes include:

- Install transverse rumble strips prior to the stop
- Install a flashing beacon for the stop sign
- Provide an oversized stop sign
- Provide oversized and double up advance stop sign signage

[5] https://www.cmfclearinghouse.org/

BICYCLE SAFETY

Alternative 1 and Alternative 4 provide a new bicycle lane on the east leg, providing bicyclists their own space approaching the intersection (rather than sharing a lane with vehicles). This delineation helps improve the visibility of bicyclists and increases driver awareness at the intersection.

Alternative 2 poses the most risk of the alternatives to bicyclists, as the new intersection configuration results in a bicyclist having to make a left turn across two high-speed, high-volume lanes to continue west on the STSRSB trail. Enhancements to provide a safer crossing for bicyclists, other bicycle safety enhancements should be considered. This could include advanced warning signs or marked / protected trail crossing. Caution should be taken in the placement of this crossing to ensure the visibility of bicyclists to vehicles as the introduction of a large radius curve could introduce higher travel speeds.

Alternative 3 would also need to provide a westbound trail crossing for bicyclists through the roundabout. However, as opposed to the high speeds of Alternative 2, speeds at the roundabout would be considerably slower (20 to 30 mph as opposed to the 55 mph+ speeds along NW Lower Bridge Way). This can be done with either signage and pavement markings or raised crossings.

MULTIMODAL CONSIDERATIONS

Currently the intersection does not have lighting, marked pedestrian crossings, or bicycle lanes. It is unknown at this time if lighting will be provided in the design of these alternatives but could be considered in the design phase of the intersection. Alternative 1 and Alternative 4 do not currently provide marked pedestrian crossings at the intersection (although this could be included during the design phase if desired and warranted) but does provide a bicycle lane for westbound bicyclists. Alternative 2 does not provide a marked pedestrian crossing nor a bicycle lane. Alternative 3 provides the most multimodal benefits as the roundabout is currently planned to provide lighting and pedestrian crossings that can be utilized as bicycle crossings. However, any multimodal facility that is not provided in the preliminary concept can be added during the design phase if desired and warranted.

KEY FINDINGS

The following are the key findings from the traffic analysis:

- Larger vehicles turning right from NW Lower Bridge Way obstruct the view for the southbound left at the intersection. The County has received reported concerns from local drivers regarding vehicle obstruction behind large turning vehicles.
    - Although left turning vehicles should yield the right of way to mainline traffic, interim solutions to address the safety concern would be to close the right turn taper or fully develop the right turn lane. This would allow for better judgement between turning and through vehicles.
- The intersection meets All-Way Stop Control Warrants A, B, D, and E
    - This indicates an all-way stop as a possible alternative for this intersection
- The intersection would meet one of the nine signal warrants (four-hour)
- Alternative 1 (Expanded Right Turn Channelization) is operationally the same as the Existing Geometry with the same delay and similar queues for all movements
- Alternative 2 (Intersection Realignment) has similar delay as No Build and Alternative 1 with an increase for the eastbound queue (this approach is now stop controlled with this alternative), but provides the best v/c ratio of all the alternatives
- Alternative 3 (Roundabout) provides the lowest average delay per vehicle and generally the shortest approach queues
- Alternative 4 (All-Way Stop) has the highest average delay and v/c ratio per vehicle, but shorter queues for left-turning vehicles from NW 43rd Street compared to the Existing Geometry.
- Rear-ends and left turn conflicts are the two main types of crashes seen at the intersection
    - Alternatives 2 and 3 would best mitigate these types of crashes by removing the high volume left turning conflicts from NW 43rd Street.
    - Alternative 4 may increase frequency of rear-end crashes along NW Lower Bridge Way.

Overall, Alternative 2 and Alternative 3 provide the best improvements for mobility and address the NW 43rd Street queues. However, these alternatives increase the conflict with the STSMSB trail riders without additional features for bicycle safety and require more ROW acquisition than the other two alternatives. While this analysis focused mainly on operations and safety; cost, environmental impact, and public needs will also need to be considered when choosing the alternative to move forward into detailed design.

ATTACHMENTS

CONTENTS

SECTION 1: INTERSECTION SIGHT DISTANCE

INTERSECTION SIGHT DISTANCE:

85th Percentile Speed from ODOT 2020 Speed Study = ~58 MPH around 43rd Street.

Posted Speed Limit = 50 MPH

Left Turn from Stop (assuming 3% grade or less)

ISD for 85th Percentile Speed = 1.47 (58 MPH) (7.5 sec) 639 ft

ISD for Posted Speed Limit 50 MPH = 1.47 (50 MPH) (7.5 sec) 551 ft

Right Turn from Stop (assuming 3% grade or less)

ISD for 85th Percentile Speed = 1.47 (58 MPH) (6.5 sec) 554 ft

ISD for Posted Speed Limit 50 MPH = 1.47 (50 MPH) (6.5 sec) 478 ft

U.S. Customary

$$ISD = 1.47\, V_{major}\, t_g$$

where:

ISD = intersection sight distance (length of the leg of sight triangle along the major road) (ft)

V_{major} = design speed of major road (mph)

t_g = time gap for minor road vehicle to enter the major road (s)

Table 9-6. Time Gap for Case B1, Left Turn from Stop

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	7.5
Single-unit truck	9.5
Combination truck	11.5

Note: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and with minor-road approach grades of 3 percent or less. The time gaps are applicable to determining sight distance to the right in left-turn maneuvers. The table values should be adjusted as follows:

For multilane roadways or medians—For left turns onto two-way roadways with more than two lanes, including turn lanes, add 0.5 s for passenger cars or 0.7 s for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle. Median widths should be converted to an equivalent number of lanes in applying the 0.5 and 0.7 s criteria presented above; for example, an 18-ft [5.5-m] median is equivalent to one and a half lanes, and would require an additional 0.75 s for a passenger to cross and an additional 1.05 s for a truck to cross.

For minor-road approach grades—If the approach grade is an upgrade that exceeds 3 percent, add 0.2 s for each percent grade by which the approach grade exceeds zero percent.

Table 9-8. Time Gap for Case B2—Right Turn from Stop

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	6.5
Single-unit truck	8.5
Combination truck	10.5

Note: Time gaps are for a stopped vehicle to turn right onto or to cross a two-lane roadway with no median and with minor-road approach grades of 3 percent or less. The table values should be adjusted as follows:

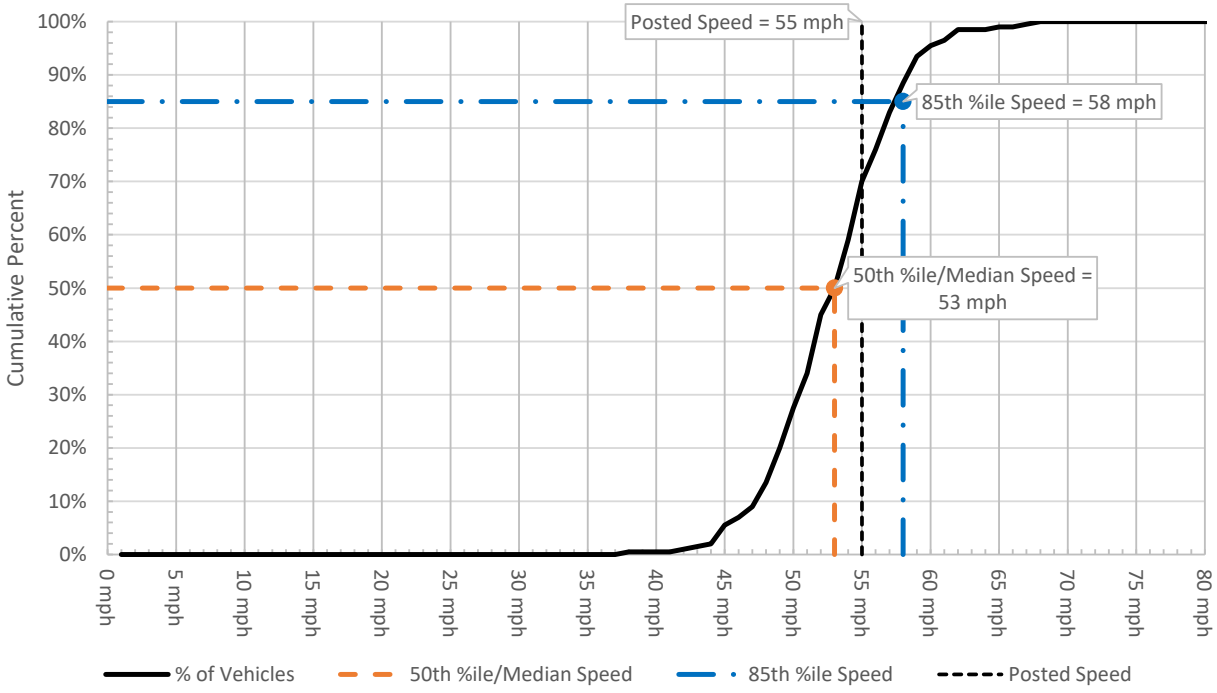
For minor-road approach grades—If the approach grade is an upgrade that exceeds 3 percent, add 0.1 s for each percent grade by which the approach grade exceeds zero percent.

Oregon Department of Transportation

Spot Speed Measurement Report

Roadway	NW Lower Bridge Way	**Date**	July 13, 2022
City	N/A	**Time**	10:39 AM - 11:23 AM
County	Deschutes	**Weather**	Sunny 80
Location	0.36 miles west of 31st St	**Investigator**	Alyson Shubert
Direction of Travel	Eastbound & Westbound	**Agency/Company**	ODOT

Combined Direction Speed Profile



Summary Statistics

Direction	Eastbound	Combined	Westbound
Total # of Vehicles	107 vehicles	200 vehicles	93 vehicles
50th %ile/Median Speed	53 mph	53 mph	54 mph
85th %ile Speed	57 mph	58 mph	58 mph
Mean Speed	53 mph	53 mph	53 mph
Standard Deviation	4 mph	5 mph	5 mph
Pace Limits*	48 mph - 57 mph	49 mph - 58 mph	49 mph - 58 mph
% In Pace	79%	75%	71%
Max Speed	68 mph	68 mph	65 mph
Posted Speed	55 mph	55 mph	55 mph
% Exceeding Posted Speed	31%	30%	29%

*10 mph range containing the largest number of sampled vehicles.

From the stop bar, driver could easily see to the west to the gravel pull out. According to Google, the distance is over 750’.

Looking east, driver could see to a point that lined up with a utility pole (PPL14-13 185902) on the south side of the roadway in the red circle. Sight distance could be increased by a few hundred feet if the tree in the yellow circle was removed.

SECTION 2: 2022 COUNT DATA

Data For Station: 43rd St - 20

Date	Time	Lane 1 (South)	Lane 2 (North)
06/15/22	00:00	0	3
06/15/22	00:15	2	2
06/15/22	00:30	1	3
06/15/22	00:45	2	2
06/15/22	01:00	1	6
06/15/22	01:15	1	2
06/15/22	01:30	0	1
06/15/22	01:45	0	3
06/15/22	02:00	0	2
06/15/22	02:15	1	0
06/15/22	02:30	4	2
06/15/22	02:45	2	0
06/15/22	03:00	2	2
06/15/22	03:15	9	1
06/15/22	03:30	9	1
06/15/22	03:45	12	2
06/15/22	04:00	10	2
06/15/22	04:15	20	2
06/15/22	04:30	26	2
06/15/22	04:45	23	1
06/15/22	05:00	36	1
06/15/22	05:15	42	6
06/15/22	05:30	41	2
06/15/22	05:45	67	2
06/15/22	06:00	65	4
06/15/22	06:15	77	10
06/15/22	06:30	85	12
06/15/22	06:45	91	9
06/15/22	07:00	114	15
06/15/22	07:15	99	8
06/15/22	07:30	89	16
06/15/22	07:45	61	21
06/15/22	08:00	66	22
06/15/22	08:15	78	34
06/15/22	08:30	111	29
06/15/22	08:45	68	46
06/15/22	09:00	46	39
06/15/22	09:15	72	31
06/15/22	09:30	66	24
06/15/22	09:45	66	37
06/15/22	10:00	53	40
06/15/22	10:15	49	44
06/15/22	10:30	74	43
06/15/22	10:45	68	44
06/15/22	11:00	57	44
06/15/22	11:15	49	42
06/15/22	11:30	74	31
06/15/22	11:45	39	57

Data For Station: 43rd St - 20

Date	Time	Lane 1 (South)	Lane 2 (North)
06/15/22	12:00	46	44
06/15/22	12:15	63	50
06/15/22	12:30	46	53
06/15/22	12:45	58	64
06/15/22	13:00	50	61
06/15/22	13:15	52	55
06/15/22	13:30	62	56
06/15/22	13:45	49	68
06/15/22	14:00	50	71
06/15/22	14:15	48	61
06/15/22	14:30	49	81
06/15/22	14:45	45	61
06/15/22	15:00	39	95
06/15/22	15:15	51	72
06/15/22	15:30	48	74
06/15/22	15:45	39	75
06/15/22	16:00	32	94
06/15/22	16:15	45	96
06/15/22	16:30	54	90
06/15/22	16:45	49	101
06/15/22	17:00	30	104
06/15/22	17:15	28	100
06/15/22	17:30	36	110
06/15/22	17:45	36	93
06/15/22	18:00	35	74
06/15/22	18:15	29	78
06/15/22	18:30	23	65
06/15/22	18:45	21	63
06/15/22	19:00	17	47
06/15/22	19:15	25	38
06/15/22	19:30	18	40
06/15/22	19:45	16	36
06/15/22	20:00	24	30
06/15/22	20:15	15	36
06/15/22	20:30	13	45
06/15/22	20:45	11	25
06/15/22	21:00	8	38
06/15/22	21:15	10	20
06/15/22	21:30	6	28
06/15/22	21:45	3	19
06/15/22	22:00	4	15
06/15/22	22:15	8	20
06/15/22	22:30	3	15
06/15/22	22:45	4	8
06/15/22	23:00	3	15
06/15/22	23:15	3	10
06/15/22	23:30	0	4
06/15/22	23:45	5	4

Data For Station: Lower Bridge Way - 20 (East Leg)

Date	Time	Lane 1 (East)	Lane 2 (West)
06/15/22	00:00	1	3
06/15/22	00:15	3	2
06/15/22	00:30	0	3
06/15/22	00:45	4	2
06/15/22	01:00	0	7
06/15/22	01:15	2	3
06/15/22	01:30	1	1
06/15/22	01:45	1	3
06/15/22	02:00	1	3
06/15/22	02:15	2	0
06/15/22	02:30	3	2
06/15/22	02:45	3	0
06/15/22	03:00	2	2
06/15/22	03:15	9	1
06/15/22	03:30	7	1
06/15/22	03:45	14	1
06/15/22	04:00	11	2
06/15/22	04:15	20	2
06/15/22	04:30	26	3
06/15/22	04:45	23	0
06/15/22	05:00	39	2
06/15/22	05:15	41	8
06/15/22	05:30	51	6
06/15/22	05:45	72	4
06/15/22	06:00	64	9
06/15/22	06:15	76	14
06/15/22	06:30	96	12
06/15/22	06:45	95	16
06/15/22	07:00	120	17
06/15/22	07:15	104	23
06/15/22	07:30	96	21
06/15/22	07:45	68	31
06/15/22	08:00	76	26
06/15/22	08:15	86	39
06/15/22	08:30	123	31
06/15/22	08:45	88	53
06/15/22	09:00	55	48
06/15/22	09:15	72	40
06/15/22	09:30	70	37
06/15/22	09:45	77	40
06/15/22	10:00	61	47
06/15/22	10:15	58	52
06/15/22	10:30	87	55
06/15/22	10:45	68	57
06/15/22	11:00	66	52
06/15/22	11:15	60	52
06/15/22	11:30	77	35
06/15/22	11:45	54	67

Data For Station: Lower Bridge Way - 20 (East Leg)

Date	Time	Lane 1 (East)	Lane 2 (West)
06/15/22	12:00	51	55
06/15/22	12:15	67	53
06/15/22	12:30	57	67
06/15/22	12:45	62	66
06/15/22	13:00	58	68
06/15/22	13:15	56	59
06/15/22	13:30	65	71
06/15/22	13:45	63	72
06/15/22	14:00	64	82
06/15/22	14:15	54	73
06/15/22	14:30	48	97
06/15/22	14:45	55	68
06/15/22	15:00	54	101
06/15/22	15:15	65	73
06/15/22	15:30	58	83
06/15/22	15:45	44	94
06/15/22	16:00	48	107
06/15/22	16:15	52	110
06/15/22	16:30	64	105
06/15/22	16:45	53	120
06/15/22	17:00	36	112
06/15/22	17:15	40	112
06/15/22	17:30	41	128
06/15/22	17:45	48	101
06/15/22	18:00	47	81
06/15/22	18:15	39	95
06/15/22	18:30	26	76
06/15/22	18:45	27	73
06/15/22	19:00	21	54
06/15/22	19:15	30	52
06/15/22	19:30	23	45
06/15/22	19:45	19	38
06/15/22	20:00	26	35
06/15/22	20:15	15	35
06/15/22	20:30	18	51
06/15/22	20:45	12	26
06/15/22	21:00	10	42
06/15/22	21:15	13	25
06/15/22	21:30	6	36
06/15/22	21:45	3	19
06/15/22	22:00	5	18
06/15/22	22:15	8	22
06/15/22	22:30	4	20
06/15/22	22:45	3	10
06/15/22	23:00	5	18
06/15/22	23:15	4	9
06/15/22	23:30	1	4
06/15/22	23:45	5	5

Data For Station: Lower Bridge Way - 30 (West Leg)

Date	Time	Lane 1 (West)	Lane 2 (East)
06/15/22	00:00	2	1
06/15/22	00:15	1	0
06/15/22	00:30	0	0
06/15/22	00:45	1	0
06/15/22	01:00	0	1
06/15/22	01:15	0	1
06/15/22	01:30	1	0
06/15/22	01:45	1	0
06/15/22	02:00	1	1
06/15/22	02:15	1	0
06/15/22	02:30	0	0
06/15/22	02:45	0	0
06/15/22	03:00	0	0
06/15/22	03:15	0	0
06/15/22	03:30	0	0
06/15/22	03:45	1	0
06/15/22	04:00	1	0
06/15/22	04:15	1	0
06/15/22	04:30	3	0
06/15/22	04:45	1	0
06/15/22	05:00	1	2
06/15/22	05:15	4	1
06/15/22	05:30	9	4
06/15/22	05:45	3	1
06/15/22	06:00	5	3
06/15/22	06:15	8	7
06/15/22	06:30	6	5
06/15/22	06:45	7	6
06/15/22	07:00	10	8
06/15/22	07:15	5	11
06/15/22	07:30	5	9
06/15/22	07:45	8	7
06/15/22	08:00	13	4
06/15/22	08:15	12	10
06/15/22	08:30	14	4
06/15/22	08:45	16	10
06/15/22	09:00	9	7
06/15/22	09:15	4	13
06/15/22	09:30	9	8
06/15/22	09:45	11	6
06/15/22	10:00	7	7
06/15/22	10:15	10	12
06/15/22	10:30	18	9
06/15/22	10:45	6	9
06/15/22	11:00	13	15
06/15/22	11:15	10	10
06/15/22	11:30	12	10
06/15/22	11:45	8	12

Data For Station: Lower Bridge Way - 30 (West Leg)

Date	Time	Lane 1 (West)	Lane 2 (East)
06/15/22	12:00	9	9
06/15/22	12:15	9	7
06/15/22	12:30	9	10
06/15/22	12:45	12	6
06/15/22	13:00	8	9
06/15/22	13:15	6	10
06/15/22	13:30	7	10
06/15/22	13:45	12	12
06/15/22	14:00	7	9
06/15/22	14:15	9	16
06/15/22	14:30	7	15
06/15/22	14:45	8	8
06/15/22	15:00	15	8
06/15/22	15:15	20	6
06/15/22	15:30	13	12
06/15/22	15:45	9	15
06/15/22	16:00	13	15
06/15/22	16:15	8	9
06/15/22	16:30	11	18
06/15/22	16:45	5	19
06/15/22	17:00	10	10
06/15/22	17:15	14	12
06/15/22	17:30	9	16
06/15/22	17:45	12	12
06/15/22	18:00	11	10
06/15/22	18:15	8	20
06/15/22	18:30	6	14
06/15/22	18:45	6	8
06/15/22	19:00	5	7
06/15/22	19:15	6	8
06/15/22	19:30	6	5
06/15/22	19:45	2	5
06/15/22	20:00	2	3
06/15/22	20:15	4	3
06/15/22	20:30	5	8
06/15/22	20:45	3	4
06/15/22	21:00	2	4
06/15/22	21:15	3	4
06/15/22	21:30	1	5
06/15/22	21:45	0	3
06/15/22	22:00	1	2
06/15/22	22:15	1	2
06/15/22	22:30	1	2
06/15/22	22:45	0	3
06/15/22	23:00	1	1
06/15/22	23:15	2	2
06/15/22	23:30	1	0

Classification Summary Report: 43rd St - 20

Station ID : 43rd St - 20

Info Line 1 : 02194-20 MP 6.099

Info Line 2 : 0.10 miles North of Lower Brid

GPS Lat/Lon :

Source File : 43rd St - 20 (Volume, 1100-061322 To 1449-061622)

Last Connected Device Type : RoadRunner3

Version Number : 1.37

Serial Number : 22358

Number of Lanes : 1

Posted Speed Limit : 0.0 mph

Lane Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length
1.		South	Axle-Axle	4.0 ft	
2.		North	Axle-Axle	4.0 ft	

Axle Class Summary:

(DEFAULTC) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
Total Count :	#1.	23	2303	3532	42	727	20	47	138	9	2	10	5	6	6864
	#2.	42	4803	1678	0	36	34	36	36	13	8	10	1	2	6699
		65	7106	5210	42	763	54	83	174	22	10	20	6	8	13563
Percents :	#1.	0%	34%	51%	1%	11%	0%	1%	2%	0%	0%	0%	0%	0%	51%
	#2.	1%	72%	25%	0%	1%	1%	1%	1%	0%	0%	0%	0%	0%	49%
		0%	52%	38%	0%	6%	0%	1%	1%	0%	0%	0%	0%	0%	

Speed Class Summary:

(DEFAULTX)		#1 0.0 - 19.9	#2 20.0 - 24.9	#3 25.0 - 29.9	#4 30.0 - 34.9	#5 35.0 - 39.9	#6 40.0 - 44.9	#7 45.0 - 49.9	#8 50.0 - 54.9	#9 55.0 - 59.9	#10 60.0 - 64.9	#11 65.0 - 69.9	#12 70.0 - 74.9	#13 75.0 - 79.9	#14 80.0 - 84.9	#15 85.0 - 89.9	#16 Other	Total
Total Count :	#1.	1	9	30	77	246	812	1801	2280	1262	295	41	5	3	2	0	0	6864
	#2.	0	8	75	728	3205	2285	330	43	17	1	3	1	2	1	0	0	6699
		1	17	105	805	3451	3097	2131	2323	1279	296	44	6	5	3	0	0	13563
Percents :	#1.	0%	0%	0%	1%	4%	12%	26%	33%	18%	4%	1%	0%	0%	0%	0%	0%	51%
	#2.	0%	0%	1%	11%	48%	34%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	49%
		0%	0%	1%	6%	25%	23%	16%	17%	9%	2%	0%	0%	0%	0%	0%	0%	
Avg, 50, 67, 85 :	#1.	50.5	51.0	53.6	57.4	Pace (pace %) :			45.0 - 54.9		59.5%	Days & ADT :	#1.		2.0	3432		
	#2.	39.1	39.0	41.0	43.7				35.0 - 44.9		82.0%		#2.		2.0	3350		
		44.9	43.9	48.8	54.1				35.0 - 44.9		48.3%				2.0	6782		

Classification Summary Report: Lower Bridge Way - 20

Station ID : Lower Bridge Way - 20
Info Line 1 : 02177-20 MP 1.9
Info Line 2 : 0.10 miles East of 43rd St
GPS Lat/Lon :
Source File : Lower Bridge Way - 20 (Volume, 1000-061322 To 1514-061622)

Last Connected Device Type : RoadRunner3
Version Number : 1.37
Serial Number : 22355
Number of Lanes : 1
Posted Speed Limit : 0.0 mph

Lane Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length
1.		East	Axle-Axle	4.0 ft	
2.		West	Axle-Axle	4.0 ft	

Axle Class Summary:

(DEFAULTC) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
Total Count :	#1.	99	6724	682	1	41	39	37	43	18	7	9	0	9	7709
	#2.	24	498	5364	64	1471	27	14	243	7	2	13	5	6	7738
		123	7222	6046	65	1512	66	51	286	25	9	22	5	15	15447
Percents :	#1.	1%	87%	9%	0%	1%	1%	0%	1%	0%	0%	0%	0%	0%	50%
	#2.	0%	6%	69%	1%	19%	0%	0%	3%	0%	0%	0%	0%	0%	50%
		1%	47%	39%	0%	10%	0%	0%	2%	0%	0%	0%	0%	0%	

Speed Class Summary:

(DEFAULTX)		#1 0.0 - 19.9	#2 20.0 - 24.9	#3 25.0 - 29.9	#4 30.0 - 34.9	#5 35.0 - 39.9	#6 40.0 - 44.9	#7 45.0 - 49.9	#8 50.0 - 54.9	#9 55.0 - 59.9	#10 60.0 - 64.9	#11 65.0 - 69.9	#12 70.0 - 74.9	#13 75.0 - 79.9	#14 80.0 - 84.9	#15 85.0 - 89.9	#16 Other	Total
Total Count :	#1.	13	7	10	149	1576	4217	1564	138	22	5	2	3	1	0	0	2	7709
	#2.	1	1	3	10	12	7	21	112	428	1402	2462	2016	918	247	68	30	7738
		14	8	13	159	1588	4224	1585	250	450	1407	2464	2019	919	247	68	32	15447
Percents :	#1.	0%	0%	0%	2%	20%	55%	20%	2%	0%	0%	0%	0%	0%	0%	0%	0%	50%
	#2.	0%	0%	0%	0%	0%	0%	0%	1%	6%	18%	32%	26%	12%	3%	1%	0%	50%
		0%	0%	0%	1%	10%	27%	10%	2%	3%	9%	16%	13%	6%	2%	0%	0%	

Avg, 50, 67, 85 :	#1.	42.4	42.5	44.1	46.9	Pace (pace %) :	35.2 - 45.1	75.1%	Days & ADT :	#1.	2.0	3855
	#2.	68.5	68.8	71.8	75.7		65.1 - 75.0	57.9%		#2.	2.0	3869
		55.4	52.6	66.4	72.4		37.3 - 47.2	37.6%			2.0	7724

Classification Summary Report: Lower Bridge Way - 30

Station ID : Lower Bridge Way - 30
Info Line 1 : 02177-30 MP 2.241
Info Line 2 : 0.05 miles West of 43rd St
GPS Lat/Lon :
Source File : Lower Bridge Way - 30 (Volume, 1000-061322 To 1438-061622)

Last Connected Device Type : RoadRunner3
Version Number : 1.37
Serial Number : 22360
Number of Lanes : 1
Posted Speed Limit : 0.0 mph

Lane Configuration

#	Dir.	Information	Vehicle Sensors	Sensor Spacing	Loop Length
1.		West	Axle-Axle	4.0 ft	
2.		East	Axle-Axle	4.0 ft	

Axle Class Summary:

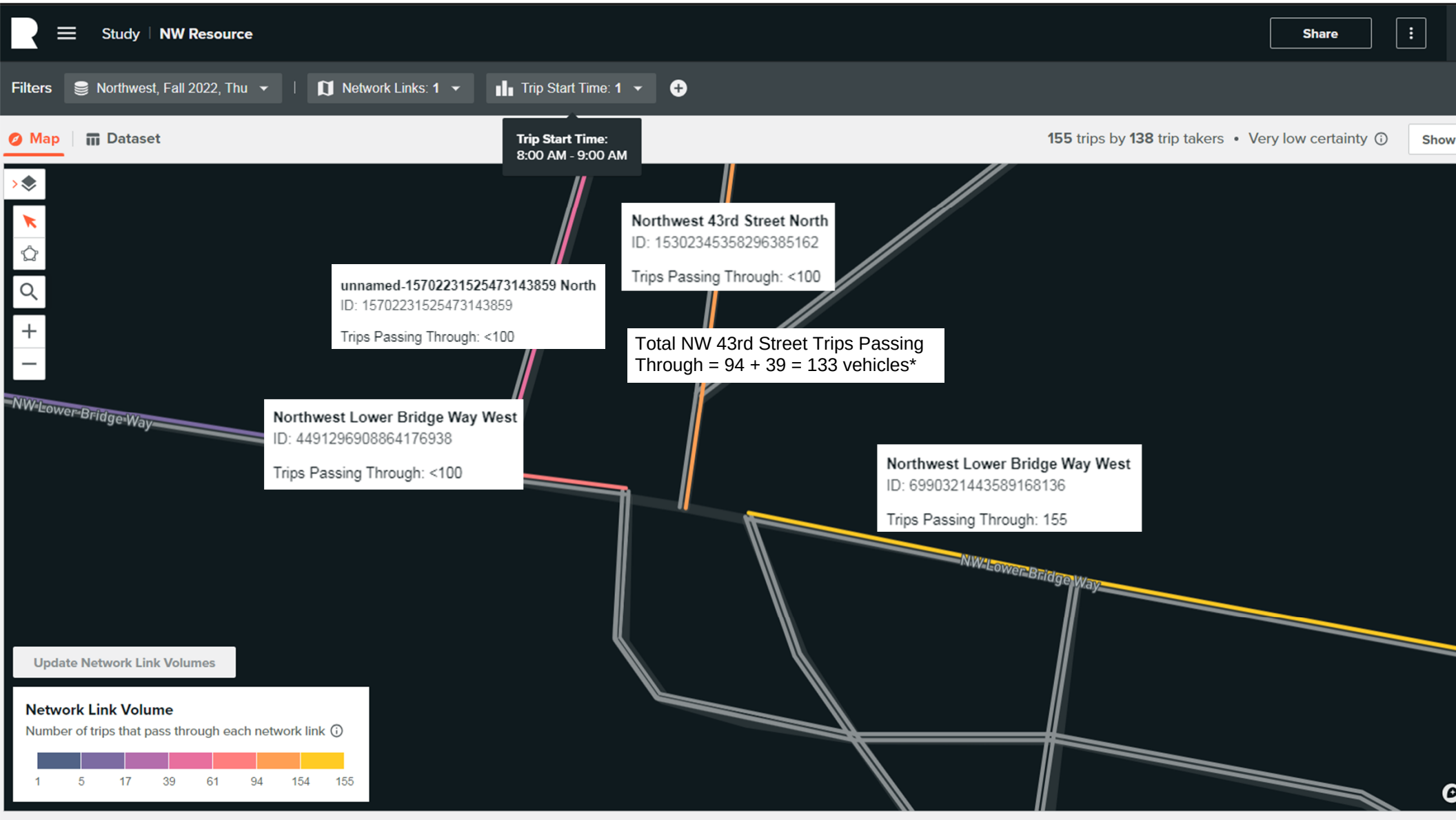
(DEFAULTC) Description	Lane	#1 Cycle	#2 Cars	#3 2A-4T	#4 Buses	#5 2A-SU	#6 3A-SU	#7 4A-SU	#8 4A-ST	#9 5A-ST	#10 6A-ST	#11 5A-MT	#12 6A-MT	#13 Other	Total
Total Count :	#1.	22	606	419	1	14	7	1	7	3	3	1	1	0	1085
	#2.	14	673	446	0	16	7	1	4	4	2	1	0	5	1173
		36	1279	865	1	30	14	2	11	7	5	2	1	5	2258
Percents :	#1.	2%	56%	39%	0%	1%	1%	0%	1%	0%	0%	0%	0%	0%	48%
	#2.	1%	57%	38%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	52%
		2%	57%	38%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	

Speed Class Summary:

(DEFAULTX)		#1 0.0 - 19.9	#2 20.0 - 24.9	#3 25.0 - 29.9	#4 30.0 - 34.9	#5 35.0 - 39.9	#6 40.0 - 44.9	#7 45.0 - 49.9	#8 50.0 - 54.9	#9 55.0 - 59.9	#10 60.0 - 64.9	#11 65.0 - 69.9	#12 70.0 - 74.9	#13 75.0 - 79.9	#14 80.0 - 84.9	#15 85.0 - 89.9	#16 Other	Total
Total Count :	#1.	1	5	7	21	45	110	263	381	200	44	5	2	1	0	0	0	1085
	#2.	0	1	18	53	61	121	399	360	129	19	9	3	0	0	0	0	1173
		1	6	25	74	106	231	662	741	329	63	14	5	1	0	0	0	2258
Percents :	#1.	0%	0%	1%	2%	4%	10%	24%	35%	18%	4%	0%	0%	0%	0%	0%	0%	48%
	#2.	0%	0%	2%	5%	5%	10%	34%	31%	11%	2%	1%	0%	0%	0%	0%	0%	52%
		0%	0%	1%	3%	5%	10%	29%	33%	15%	3%	1%	0%	0%	0%	0%	0%	
Avg, 50, 67, 85 :	#1.	50.3	51.3	53.6	57.3	Pace (pace %) :			45.0 - 54.9		59.4%			Days & ADT :	#1.	2.0	545	
	#2.	48.5	49.2	51.9	54.7				45.0 - 54.9		64.7%				#2.	2.0	590	
		49.3	50.1	52.8	56.2				45.0 - 54.9		62.1%					2.0	1135	

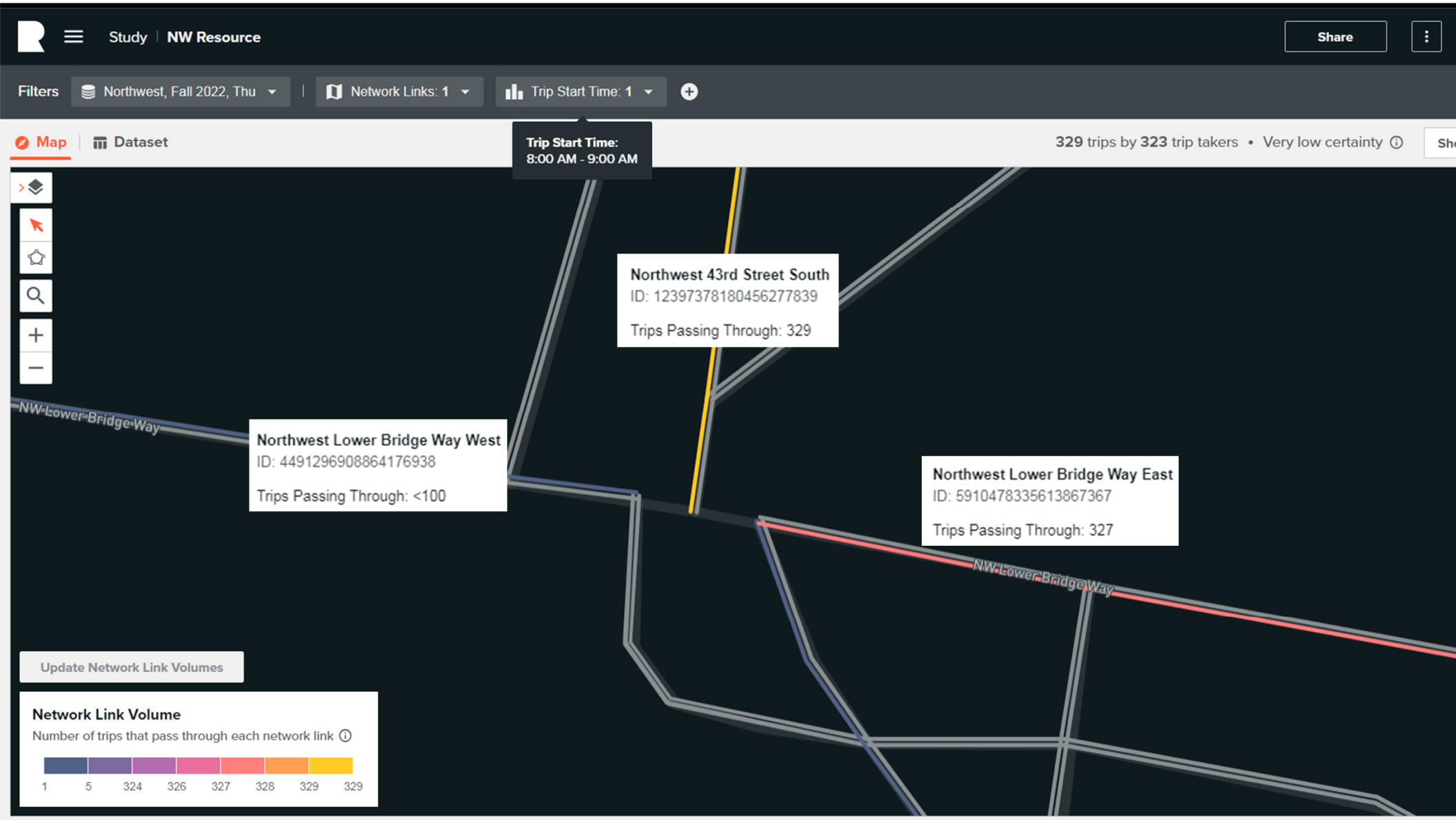
SECTION 3: REPLICA DATA

Westbound Replica AM Peak Turning Volumes

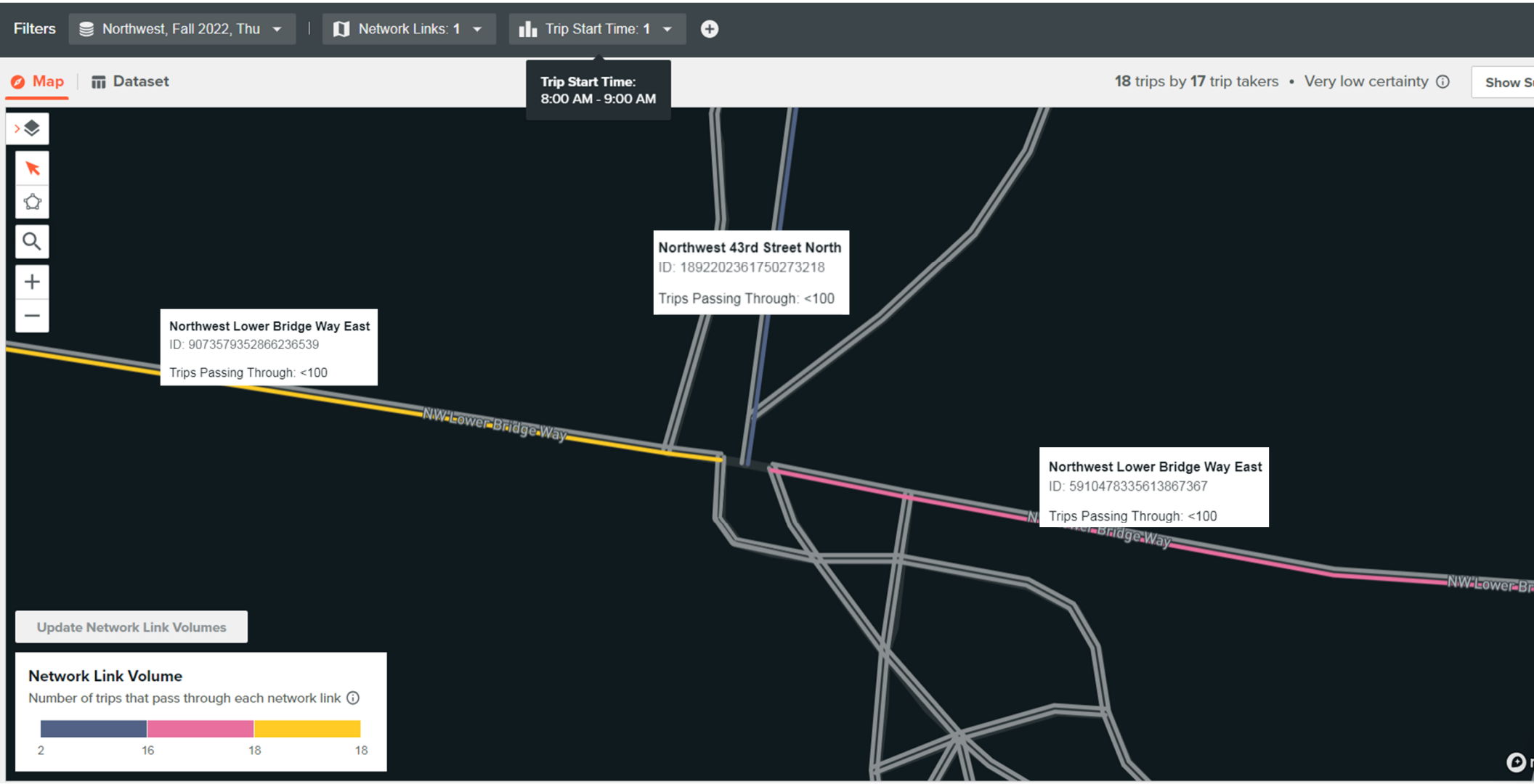


*__Note:__ The volume shown from the unnamed roadway was assumed to be additional NW 43rd Street volume due to the close proximity of the road to NW 43rd Street. This makes the westbound trips to NW 43rd Street a total of 657 vehicles.

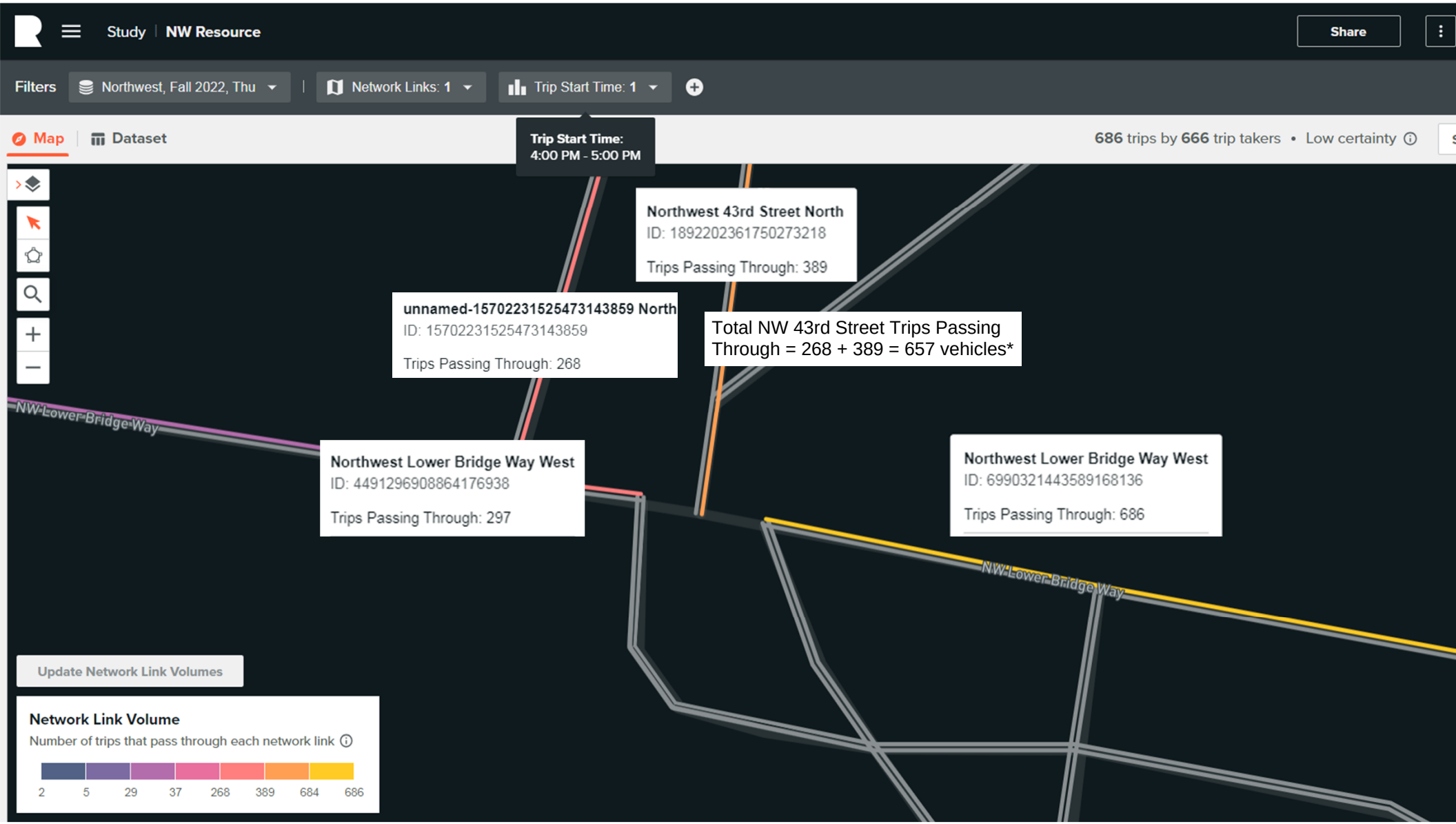
Southbound Replica AM Peak Turning Volumes



Eastbound Replica AM Peak Turning Volumes

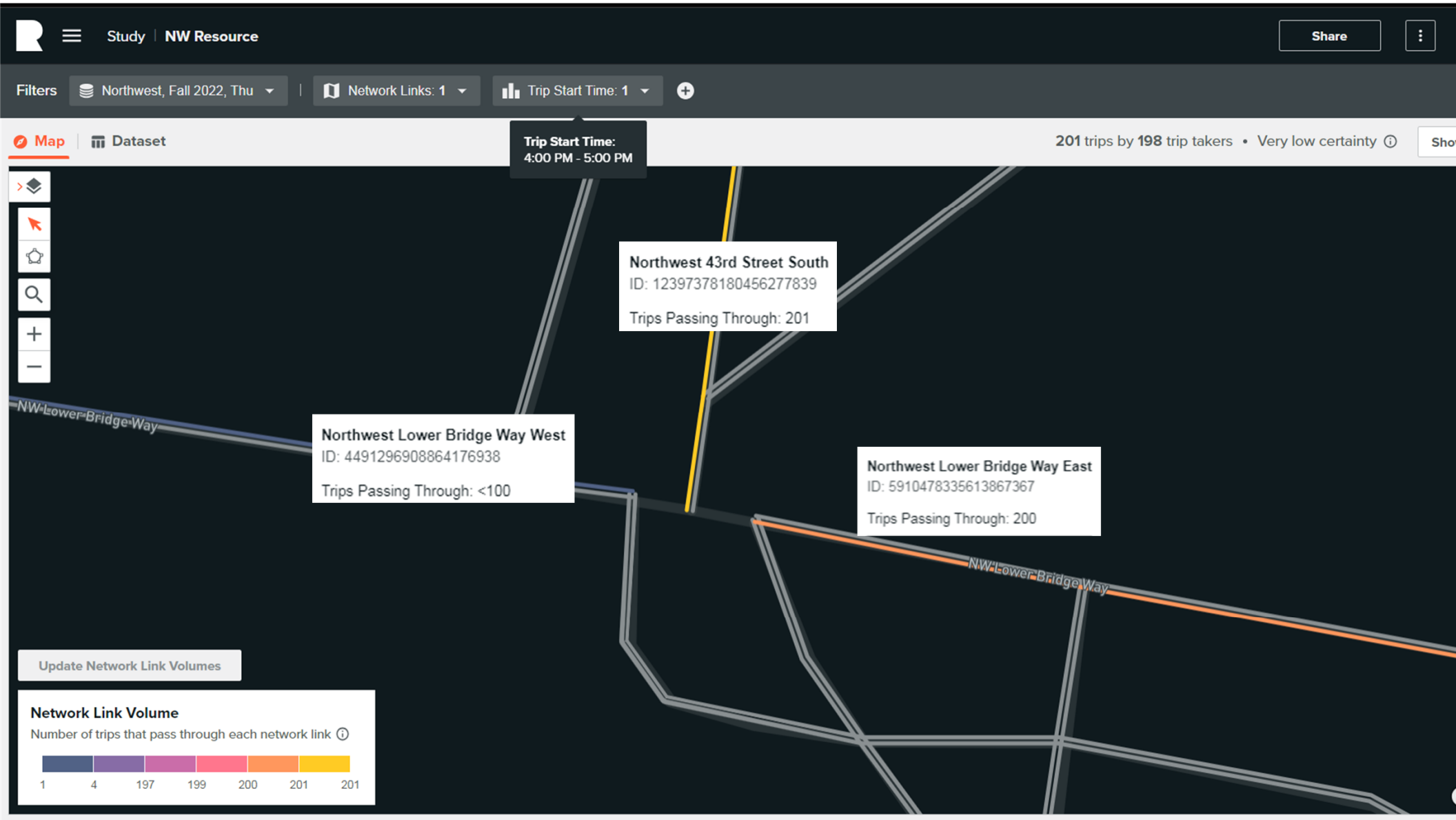


Westbound Replica PM Peak Turning Volumes

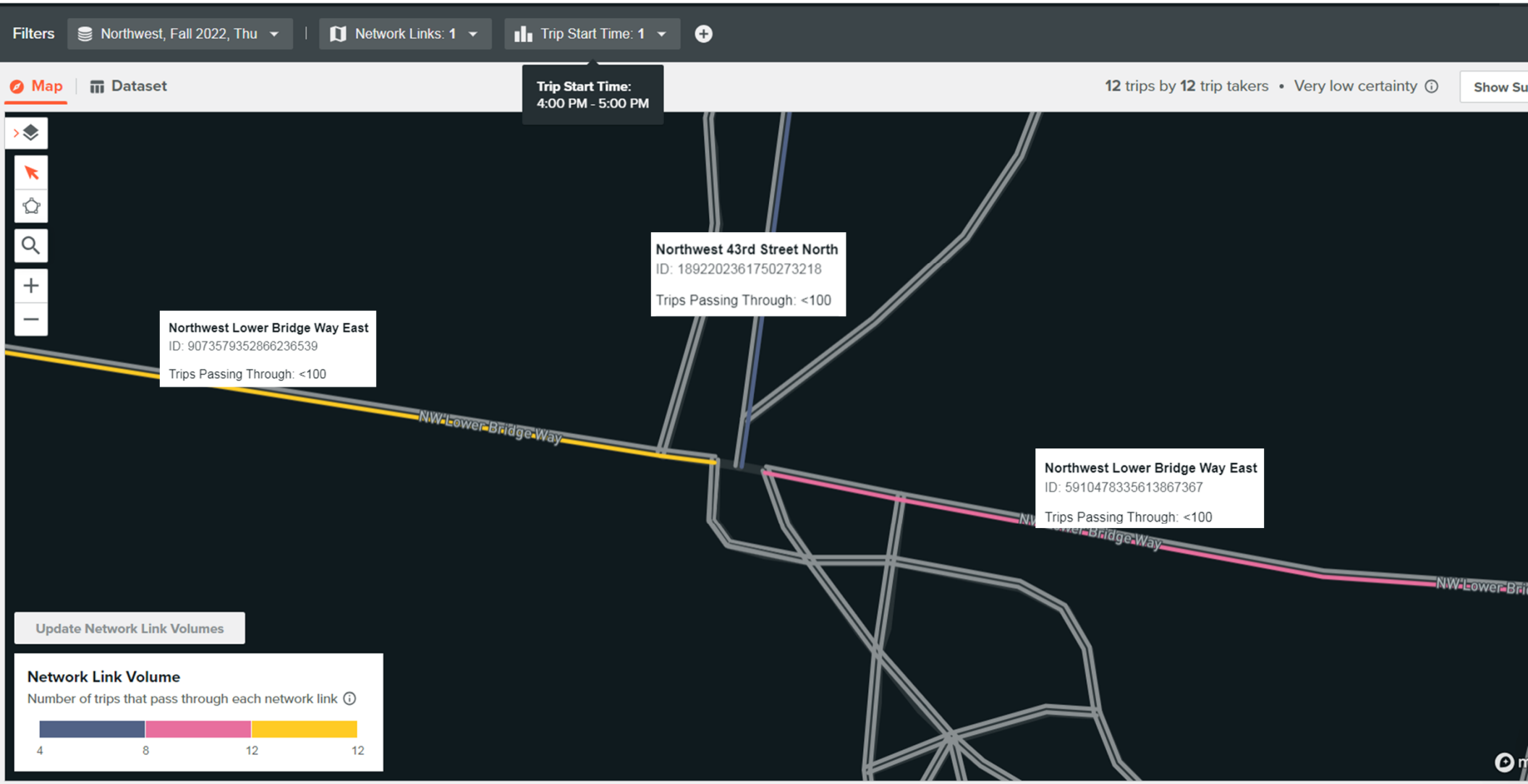


***Note:** The volume shown from the unnamed roadway was assumed to be additional NW 43rd Street volume due to the close proximity of the road to NW 43rd Street. This makes the westbound trips to NW 43rd Street a total of 657 vehicles.

Southbound Replica PM Peak Turning Volumes



Eastbound Replica PM Peak Turning Volumes



Replica Turning Volumes

AM Peak Hour 8AM - 9AM

APPROACH		*TURNING VOLUME* Count	*DEPARTURE*		
Southbound	SBR	1	North =WBR+EBL	135	
329*	SBL	327			
Eastbound	EBL	2	West =WBT+SBR	23	
18	EBT	16			
Westbound	WBR	133	East =EBT+SBL	343	
155	WBT	22			

PM Peak Hour 4PM - 5PM

APPROACH		*TURNING VOLUME* Count	*DEPARTURE*		
Southbound	SBR	1	North =WBR+EBL	0	
201	SBL	200			
Eastbound	EBL	4	West =WBT+SBR	0	
12	EBT	8			
Westbound	WBR	657	East =EBT+SBL	0	
686	WBT	29			

*1 trip excluded due to vehicle travelling off-road

Turning Volume Percentages

AM Peak Hour 8AM - 9AM	
SBR	0.3%
SBL	99.7%
EBL	11.1%
EBT	88.9%
WBR	85.8%
WBT	14.2%

PM Peak Hour 4PM - 5PM	
SBR	0.5%
SBL	99.5%
EBL	33.3%
EBT	66.7%
WBR	95.8%
WBT	4.2%

SECTION 4: VOLUME DEVELOPMENT

2022 Turning Movement Calculations

			Eastbound	Westbound	
Intersection Leg	**Peak Time**	**Time**	**Lane 1**	**Lane 2**	**Total**
East	AM	8AM-9AM	373	149	522
East	PM	4PM-5PM	217	442	659

			Westbound	Eastbound	
Intersection Leg	**Peak Time**	**Time**	**Lane 1**	**Lane 2**	**Total**
West	AM	8AM-9AM	55	28	83
West	PM	4PM-5PM	37	61	98

			Southbound	Northbound	
Intersection Leg	**Peak Time**	**Time**	**Lane 1**	**Lane 2**	**Total**
North	AM	8AM-9AM	323	131	454
North	PM	4PM-5PM	180	381	561

= Approach

REFERENCE

Turning Volume Percentages

AM Peak Hour	8AM - 9AM
SBR	0.3%
SBL	99.7%
EBL	11.1%
EBT	88.9%
WBR	85.8%
WBT	14.2%

PM Peak Hour	4PM - 5PM
SBR	0.5%
SBL	99.5%
EBL	33.3%
EBT	66.7%
WBR	95.8%
WBT	4.2%

Turning Volume Per Hour

*Multiplies Replica Turning Percentages by the ADT

	Veh/Day
SBR	1
SBL	322
EBL	3
EBT	25
WBR	128
WBT	21

	Veh/Day
SBR	1
SBL	179
EBL	20
EBT	41
WBR	423
WBT	19

Turning Volume Per Hour

*Values lower than 5 rounded up to 5

	Veh/Day
SBR	5
SBL	322
EBL	5
EBT	25
WBR	128
WBT	21

	Veh/Day
SBR	5
SBL	179
EBL	20
EBT	41
WBR	423
WBT	19

Growth Rate Analysis

Growth Rate = i = (F/P)^(1/n)-1

	Year	S	N	Analysis Timeframe	S Growth Rate	N Growth Rate
North Leg (43rd)	2011	2542.5	2405.5	2011-2018	3.44%	4.08%
	2018	3221	3183	2018-2023	6.20%	-6.93%
	2022	3432	3350	2018-2022	1.60%	1.29%
	2023	4351	2223	2022-2023	26.78%	-33.64%

Average Growth (2011 to 2018) = 4%

Average Growth/Year based on 2011 to 2018 value = 0.62%

		E	W	Analysis Timeframe	E Growth Rate	W Growth Rate
East Leg (LBW)						
	2011	2678	2547	2011-2018	3.66%	2.93%
	2018	3443.5	3116.8	2018-2023	2.05%	3.66%
	2022	3855	3869	2018-2022	2.86%	5.55%
	2023	3812	3730	2022-2023	-1.12%	-3.59%

Average Growth (2018 to 2023) = -7%

Average Growth/Year based on 2018 to 2013 value = -1.35%

		E	W	Analysis Timeframe	E Growth Rate	W Growth Rate
West Leg (LBW)						
	2011	308	325.5	2011-2018	5.47%	6.56%
	2019	471.5	541	2018-2023	-14.84%	-30.67%
	2022	590	545	2018-2022	7.76%	0.25%
	2023	248	125	2022-2023	-57.97%	-77.06%

Average Growth (2018 to 2022) = 3.22%

Average Growth/Year based on 2018 to 2022 value = 1.1%

Average Growth (2022 to 2023) = -24.43%

Average Growth/Year based on 2022 to 2023 value = -24.4%

Opening Year and Future Year Volume Development

2022 Turning Volume Per Hour		2026 Turning Volume Per Hour		2046 Turning Volume Per Hour		2026 Turning Volume Per Hour Rounded		2046 Turning Volume Per Hour Rounded	
*Values lower than 5 rounded up to 5		*Adding from 2022 4 times the 1% growth from 2022		*Adding from 2022 24 times the 1% growth from 2022		*Rounding values up to nearest 5 vehicles		*Rounding values up to nearest 5 vehicles	
AM	**Veh/Day**		**Veh/Day**		**Veh/Day**		**Veh/Day**		**Veh/Day**
SBR	5	SBR	5	SBR	6	SBR	5	SBR	10
SBL	322	SBL	335	SBL	399	SBL	335	SBL	400
EBL	5	EBL	5	EBL	6	EBL	5	EBL	10
EBT	25	EBT	26	EBT	31	EBT	30	EBT	35
WBR	128	WBR	133	WBR	159	WBR	135	WBR	160
WBT	21	WBT	22	WBT	26	WBT	25	WBT	30
PM	**Veh/Day**		**Veh/Day**		**Veh/Day**		**Veh/Day**		**Veh/Day**
SBR	5	SBR	5	SBR	6	SBR	5	SBR	10
SBL	179	SBL	186	SBL	222	SBL	190	SBL	225
EBL	20	EBL	21	EBL	25	EBL	25	EBL	25
EBT	41	EBT	42	EBT	50	EBT	45	EBT	50
WBR	423	WBR	440	WBR	525	WBR	440	WBR	525
WBT	19	WBT	19	WBT	23	WBT	20	WBT	25

SECTION 5: ALTERNATIVE 4 ALL-WAY STOP CONTROL WARRANT ANALYSIS

ALL-WAY STOP WARRANT ANALYSIS

PROJECT LOCATION/CHARACTERISTICS

Major Street: NW Lower Bridge Way

Minor Street: NW 43rd Street

85th Percentile Speed of Major Street Traffic ≥ 40 mph ☒

Analysis Scenario (Year): 2031

Date of Analysis: 01/02/2024

All-Way Stop Control Warrant A: Crash Experience

REQUIREMENT(S)		FULFILLED
For a four-leg intersection, 5 or more crashes in a 12-month period or 6 or more reported crashes in a 36-month period that were of a type susceptible to correction by the installation of all-way stop control. For a three-leg intersection, 4 or more crashes in a 12-month period or 5 or more reported crashes in a 36-month period that were of a type susceptible to correction by the installation of all-way stop control.		Yes ☒ No ☐
Crash Number & ID	Crash Type	
1 (1837212)	S-1 Stop, Rear Collision	
2 (1822778)	S-1 Stop, Rear Collision	
3 (1800243)	Angular, Turn Collison	
4 (1822297)	Angular, Turn Collison	
5 (1728375)	S-1 Stop, Rear Collision	
6 (1749184)	Angular, Turn Collision	

All-Way Stop Control Warrant B: Sight Distance

REQUIREMENT(S)	FULFILLED
An engineering study indicates that sight distance on the minor road approaches controlled by a STOP sign is not adequate for a vehicle to turn onto or cross the major road.	Yes ☐ No ☒
Location of intersection in which a road user after stopping cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop.	Yes ☒ No ☐

All-Way Stop Control Warrant C: Transition to Singal Control or Transition to Yield Control at a Circular Intersection

REQUIREMENT(S)	FULFILLED
The all-way stop is an interim measure that can be installed to control traffic while arrangements are being made for installation of a traffic control signal at the intersection or for the installation of yield control at a circular intersection.	Yes ☐ No ☒

All-Way Stop Control Warrant D: 8-Hour Volume (Vehicles, Pedestrians, Bicycles)

REQUIREMENT(S)							FULFILLED
Minimum Volumes (Vehicles, Pedestrians, and Bicycles) for any 8 Hours of an Average Day	Volume/Hour on Major Street (both approaches)			Volume/Hour on Minor Street (both approaches)[a]			Yes ☒ No ☐
	100%[b]	80%[c]	70%[d]	100%[b]	80%[c]	70%[d]	
	300	240	210	200	160	140	

[a] The average delay to minor-street vehicular traffic must be at least 30 seconds per vehicle during the highest hour.
[b] Basic minimum hourly volume.
[c] Used for combination of minimum volume and minimum number of accidents after adequate trial of other remedial measures.
[d] May be used when the major street speed exceeds 40 mph (65 km/h).

Volume Worksheet

	Eight Highest Hours (1st – 8th)							
	1	2	3	4	5	6	7	8
Time Period (Hour)	8am-9am	10am-11am	12pm-1pm	1pm-2pm	2pm-3pm	3pm-4pm	4pm-5pm	5pm-6pm
Major Street (Both Approaches)	210	285	315	355	415	450	565	570
Minor Street (Both Approaches)	365	275	245	240	215	205	200	150

All-Way Stop Control Warrant E: Other Factors

REQUIREMENT(S)	FULFILLED
The need to control left-turn conflicts.	Yes ☒ No ☐
The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes.	Yes ☐ No ☒
An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where all-way stop control would improve the traffic operational characteristics of the intersection.	Yes ☐ No ☒

Hourly Summary				
Date	Time	Major Street Volume (EB + WB)	Minor Street Volume (SB)	Sum of Major and Minor Street Volumes
6/15/2022	12AM-1AM	25	15	40
6/15/2022	1AM-2AM	35	10	45
6/15/2022	2AM-3AM	15	15	30
6/15/2022	3AM-4AM	20	40	60
6/15/2022	4AM-5AM	15	100	115
6/15/2022	5AM-6AM	50	210	260
6/15/2022	6AM-7AM	100	355	455
6/15/2022	7AM-8AM	155	405	560
6/15/2022	8AM-9AM	210	365	575
6/15/2022	9AM-10AM	235	285	520
6/15/2022	10AM-11AM	285	275	560
6/15/2022	11AM-12PM	300	250	550
6/15/2022	12PM-1PM	315	245	560
6/15/2022	1PM-2PM	355	240	595
6/15/2022	2PM-3PM	415	215	630
6/15/2022	3PM-4PM	450	205	655
6/15/2022	4PM-5PM	565	200	765
6/15/2022	5PM-6PM	570	150	720
6/15/2022	6PM-7PM	430	130	560
6/15/2022	7PM-8PM	255	90	345
6/15/2022	8PM-9PM	195	80	275
6/15/2022	9PM-10PM	170	40	210
6/15/2022	10PM-11PM	105	25	130
6/15/2022	11PM-12AM	55	20	75
		= Meets Defined Minimum Volumes		
		= Part of Eight Highest Hours		

SECTION 6: ALTERNATIVE 5 PRELIMINARY SIGNAL WARRANT ANALYSIS

Traffic Signal Warrant Analysis Workbook

STUDY AND ANALYSIS INFORMATION

Municipality:	Terrebonne, OR	**Analysis Date:**	1/2/2024
County:	Deschutes	**Conducted By:**	AMB
		Agency/Company Name:	DKS Associates

Analysis Information

Data Collection Date:	6/15/2022
Day of the Week:	Wednesday

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

Major Street Information

Major Street Name and Route Number:	NW Lower Bridge Way
Major Street Approach #1 Direction:	W-Bound
Major Street Approach #2 Direction:	E-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach:	1	**LANE(S)**
Speed Limit or 85th Percentile Speed on the Major Street:	55	**MPH**

Minor Street Information

Minor Street Name and Route Number:	NW 43rd Street
Minor Street Approach #1 Direction:	S-Bound
Minor Street Approach #2 Direction:	

Number of Lanes for Moving Traffic on Each Minor Street Approach:	1	**LANE(S)**

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	**Yes**	**No**
Warrant 2, Four-Hour Vehicular Volume	**Yes**	**Yes**
Warrant 3, Peak Hour	**Yes**	**No**
Warrant 4, Pedestrian Volume	**No**	**N/A**
Warrant 5, School Crossing	**No**	**N/A**
Warrant 6, Coordinated Signal System	**No**	**N/A**
Warrant 7, Crash Experience	**Yes**	**No**
Warrant 8, Roadway Network	**Yes**	**No**
Warrant 9, Intersection Near a Grade Crossing	**No**	**N/A**
Bicycle Signal Warrant (CA)	**No**	**N/A**

Traffic Signal Warrant Analysis Workbook

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (W-Bound)	Major Street Approach #2 (E-Bound)	Major Street Combined	Minor Street Approach #1 (S-Bound)	Minor Street Approach #2 ()
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM	5	5	10	0	
12:15 AM	12:29 AM	5	0	5	5	
12:30 AM	12:44 AM	5	0	5	5	
12:45 AM	12:59 AM	5	0	5	5	
1:00 AM	1:14 AM	10	5	15	5	
1:15 AM	1:29 AM	5	5	10	5	
1:30 AM	1:44 AM	5	0	5	0	
1:45 AM	1:59 AM	5	0	5	0	
2:00 AM	2:14 AM	5	5	10	0	
2:15 AM	2:29 AM	0	0	0	5	
2:30 AM	2:44 AM	5	0	5	5	
2:45 AM	2:59 AM	0	0	0	5	
3:00 AM	3:14 AM	5	0	5	5	
3:15 AM	3:29 AM	5	0	5	10	
3:30 AM	3:44 AM	5	0	5	10	
3:45 AM	3:59 AM	5	0	5	15	
4:00 AM	4:14 AM	5	0	5	15	
4:15 AM	4:29 AM	5	0	5	25	
4:30 AM	4:44 AM	5	0	5	30	
4:45 AM	4:59 AM	0	0	0	30	
5:00 AM	5:14 AM	5	5	10	40	
5:15 AM	5:29 AM	10	5	15	50	
5:30 AM	5:44 AM	10	5	15	45	
5:45 AM	5:59 AM	5	5	10	75	
6:00 AM	6:14 AM	10	5	15	75	
6:15 AM	6:29 AM	20	10	30	85	
6:30 AM	6:44 AM	15	10	25	95	
6:45 AM	6:59 AM	20	10	30	100	
7:00 AM	7:14 AM	20	10	30	125	
7:15 AM	7:29 AM	30	15	45	110	
7:30 AM	7:44 AM	25	10	35	100	
7:45 AM	7:59 AM	35	10	45	70	
8:00 AM	8:14 AM	30	5	35	75	
8:15 AM	8:29 AM	45	15	60	90	
8:30 AM	8:44 AM	35	5	40	125	
8:45 AM	8:59 AM	60	15	75	75	
9:00 AM	9:14 AM	55	10	65	55	
9:15 AM	9:29 AM	45	15	60	80	
9:30 AM	9:44 AM	45	10	55	75	
9:45 AM	9:59 AM	45	10	55	75	
10:00 AM	10:14 AM	55	10	65	60	
10:15 AM	10:29 AM	60	15	75	55	
10:30 AM	10:44 AM	60	10	70	85	
10:45 AM	10:59 AM	65	10	75	75	
11:00 AM	11:14 AM	60	20	80	65	
11:15 AM	11:29 AM	60	15	75	55	
11:30 AM	11:44 AM	40	15	55	85	
11:45 AM	11:59 AM	75	15	90	45	

Traffic Signal Warrant Analysis Workbook

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (W-Bound)	Major Street Approach #2 (E-Bound)	Major Street Combined	Minor Street Approach #1 (S-Bound)	Minor Street Approach #2 ()
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM	60	10	70	55	
12:15 PM	12:29 PM	60	10	70	70	
12:30 PM	12:44 PM	75	15	90	55	
12:45 PM	12:59 PM	75	10	85	65	
1:00 PM	1:14 PM	75	10	85	55	
1:15 PM	1:29 PM	65	15	80	60	
1:30 PM	1:44 PM	80	15	95	70	
1:45 PM	1:59 PM	80	15	95	55	
2:00 PM	2:14 PM	90	10	100	55	
2:15 PM	2:29 PM	80	20	100	55	
2:30 PM	2:44 PM	110	20	130	55	
2:45 PM	2:59 PM	75	10	85	50	
3:00 PM	3:14 PM	115	10	125	45	
3:15 PM	3:29 PM	80	10	90	60	
3:30 PM	3:44 PM	95	15	110	55	
3:45 PM	3:59 PM	105	20	125	45	
4:00 PM	4:14 PM	120	20	140	35	
4:15 PM	4:29 PM	120	10	130	50	
4:30 PM	4:44 PM	115	20	135	60	
4:45 PM	4:59 PM	135	25	160	55	
5:00 PM	5:14 PM	125	15	140	35	
5:15 PM	5:29 PM	125	15	140	35	
5:30 PM	5:44 PM	140	20	160	40	
5:45 PM	5:59 PM	115	15	130	40	
6:00 PM	6:14 PM	90	15	105	40	
6:15 PM	6:29 PM	105	25	130	35	
6:30 PM	6:44 PM	85	20	105	30	
6:45 PM	6:59 PM	80	10	90	25	
7:00 PM	7:14 PM	60	10	70	20	
7:15 PM	7:29 PM	60	10	70	30	
7:30 PM	7:44 PM	50	10	60	20	
7:45 PM	7:59 PM	45	10	55	20	
8:00 PM	8:14 PM	40	5	45	30	
8:15 PM	8:29 PM	40	5	45	20	
8:30 PM	8:44 PM	60	10	70	15	
8:45 PM	8:59 PM	30	5	35	15	
9:00 PM	9:14 PM	50	5	55	10	
9:15 PM	9:29 PM	30	5	35	15	
9:30 PM	9:44 PM	40	10	50	10	
9:45 PM	9:59 PM	25	5	30	5	
10:00 PM	10:14 PM	20	5	25	5	
10:15 PM	10:29 PM	25	5	30	10	
10:30 PM	10:44 PM	25	5	30	5	
10:45 PM	10:59 PM	15	5	20	5	
11:00 PM	11:14 PM	20	5	25	5	
11:15 PM	11:29 PM	10	5	15	5	
11:30 PM	11:44 PM	5	0	5	0	
11:45 PM	11:59 PM	10	0	10	10	
Approach Totals:		4465	860	5325	3965	0

MUTCD 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

Combination of Conditions A and B Necessary?*: No

**Only applicable for Warrant 1 if after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems. See Section 4C.02 of the 2014 MUTCD for application.*

Condition A - Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	**Minor Street**	**100%**	**80%**	**70%**	**56%**	**100%**	**80%**	**70%**	**56%**
1	**1**	500	400	350	280	150	120	105	84
2 or More	**1**	600	480	420	336	150	120	105	84
2 or More	**2 or More**	600	480	420	336	200	160	140	112
1	**2 or More**	500	400	350	280	200	160	140	112

Condition B - Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	**Minor Street**	**100%**	**80%**	**70%**	**56%**	**100%**	**80%**	**70%**	**56%**
1	**1**	750	600	525	420	75	60	53	42
2 or More	**1**	900	720	630	504	75	60	53	42
2 or More	**2 or More**	900	720	630	504	100	80	70	56
1	**2 or More**	750	600	525	420	100	80	70	56

Condition A Evaluation

Number of Unique Hours Met: 6 **Condition A Satisfied?** No

Condition B Evaluation

Number of Unique Hours Met: 2 **Condition B Satisfied?** No

Combination of Condition A and Condition B Evaluation

Number of Unique Hours Met for Condition A: N/A

Number of Unique Hours Met for Condition B: N/A

Combination of Condition A and Condition B Satisfied? N/A

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

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

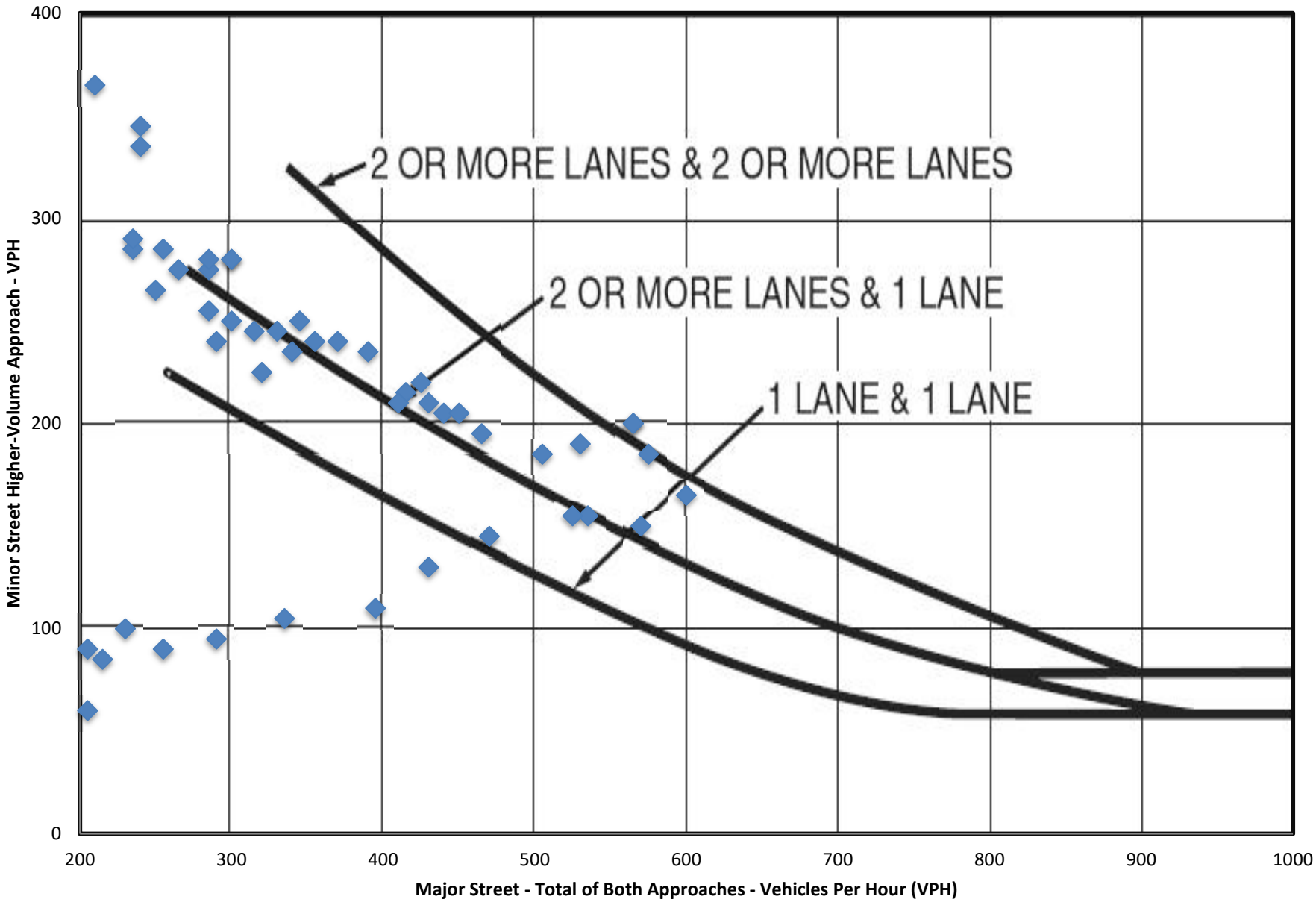
Total Number of Unique Hours Met On Figure 4C-2
12

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

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	25	15	
12:15 AM	30	20	
12:30 AM	35	20	
12:45 AM	35	15	
1:00 AM	35	10	
1:15 AM	30	5	
1:30 AM	20	5	
1:45 AM	20	10	
2:00 AM	15	15	
2:15 AM	10	20	
2:30 AM	15	25	
2:45 AM	15	30	
3:00 AM	20	40	
3:15 AM	20	50	
3:30 AM	20	65	
3:45 AM	20	85	
4:00 AM	15	100	
4:15 AM	20	125	
4:30 AM	30	150	
4:45 AM	40	165	
5:00 AM	50	210	
5:15 AM	55	245	
5:30 AM	70	280	
5:45 AM	80	330	
6:00 AM	100	355	
6:15 AM	115	405	Met
6:30 AM	130	430	Met
6:45 AM	140	435	Met
7:00 AM	155	405	Met
7:15 AM	160	355	Met
7:30 AM	175	335	Met
7:45 AM	180	360	Met
8:00 AM	210	365	Met
8:15 AM	240	345	Met
8:30 AM	240	335	Met
8:45 AM	255	285	Met
9:00 AM	235	285	Met
9:15 AM	235	290	Met
9:30 AM	250	265	Met
9:45 AM	265	275	Met
10:00 AM	285	275	Met
10:15 AM	300	280	Met
10:30 AM	300	280	Met
10:45 AM	285	280	Met
11:00 AM	300	250	Met
11:15 AM	290	240	Met
11:30 AM	285	255	Met
11:45 AM	320	225	Met

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 PM	315	245	Met
12:15 PM	330	245	Met
12:30 PM	340	235	Met
12:45 PM	345	250	Met
1:00 PM	355	240	Met
1:15 PM	370	240	Met
1:30 PM	390	235	Met
1:45 PM	425	220	Met
2:00 PM	415	215	Met
2:15 PM	440	205	Met
2:30 PM	430	210	Met
2:45 PM	410	210	Met
3:00 PM	450	205	Met
3:15 PM	465	195	Met
3:30 PM	505	185	Met
3:45 PM	530	190	Met
4:00 PM	565	200	Met
4:15 PM	565	200	Met
4:30 PM	575	185	Met
4:45 PM	600	165	Met
5:00 PM	570	150	Met
5:15 PM	535	155	Met
5:30 PM	525	155	Met
5:45 PM	470	145	Met
6:00 PM	430	130	
6:15 PM	395	110	
6:30 PM	335	105	
6:45 PM	290	95	
7:00 PM	255	90	
7:15 PM	230	100	
7:30 PM	205	90	
7:45 PM	215	85	
8:00 PM	195	80	
8:15 PM	205	60	
8:30 PM	195	55	
8:45 PM	175	50	
9:00 PM	170	40	
9:15 PM	140	35	
9:30 PM	135	30	
9:45 PM	115	25	
10:00 PM	105	25	
10:15 PM	105	25	
10:30 PM	90	20	
10:45 PM	65	15	
11:00 PM	55	20	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



MUTCD WARRANT 3, PEAK HOUR

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

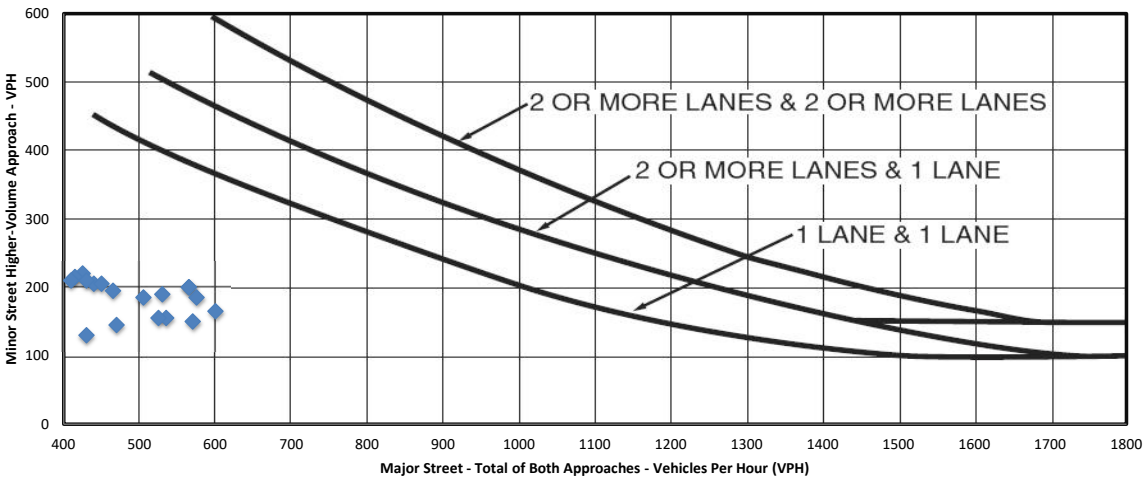
Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No

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?	Yes
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?	Yes
**If applicable, attach all supporting calculations and documentation.*	

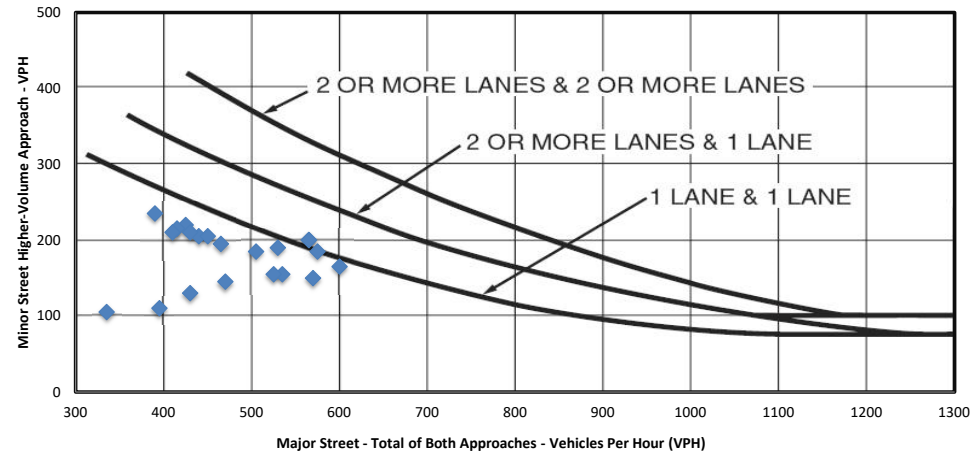
Total Number of Unique Hours Met On Figure 4C-4
1

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
6:45 AM	140	435	
7:00 AM	155	405	
7:15 AM	160	355	
7:30 AM	175	335	
7:45 AM	180	360	
8:00 AM	210	365	
8:15 AM	240	345	
8:30 AM	240	335	
8:45 AM	255	285	
9:00 AM	235	285	
9:15 AM	235	290	
1:30 PM	390	235	
1:45 PM	425	220	
2:00 PM	415	215	
2:15 PM	440	205	
2:30 PM	430	210	
2:45 PM	410	210	
3:00 PM	450	205	
3:15 PM	465	195	
3:30 PM	505	185	
3:45 PM	530	190	
4:00 PM	565	200	Met
4:15 PM	565	200	Met
4:30 PM	575	185	
4:45 PM	600	165	
5:00 PM	570	150	
5:15 PM	535	155	
5:30 PM	525	155	
5:45 PM	470	145	
6:00 PM	430	130	
6:15 PM	395	110	
6:30 PM	335	105	
6:45 PM	290	95	

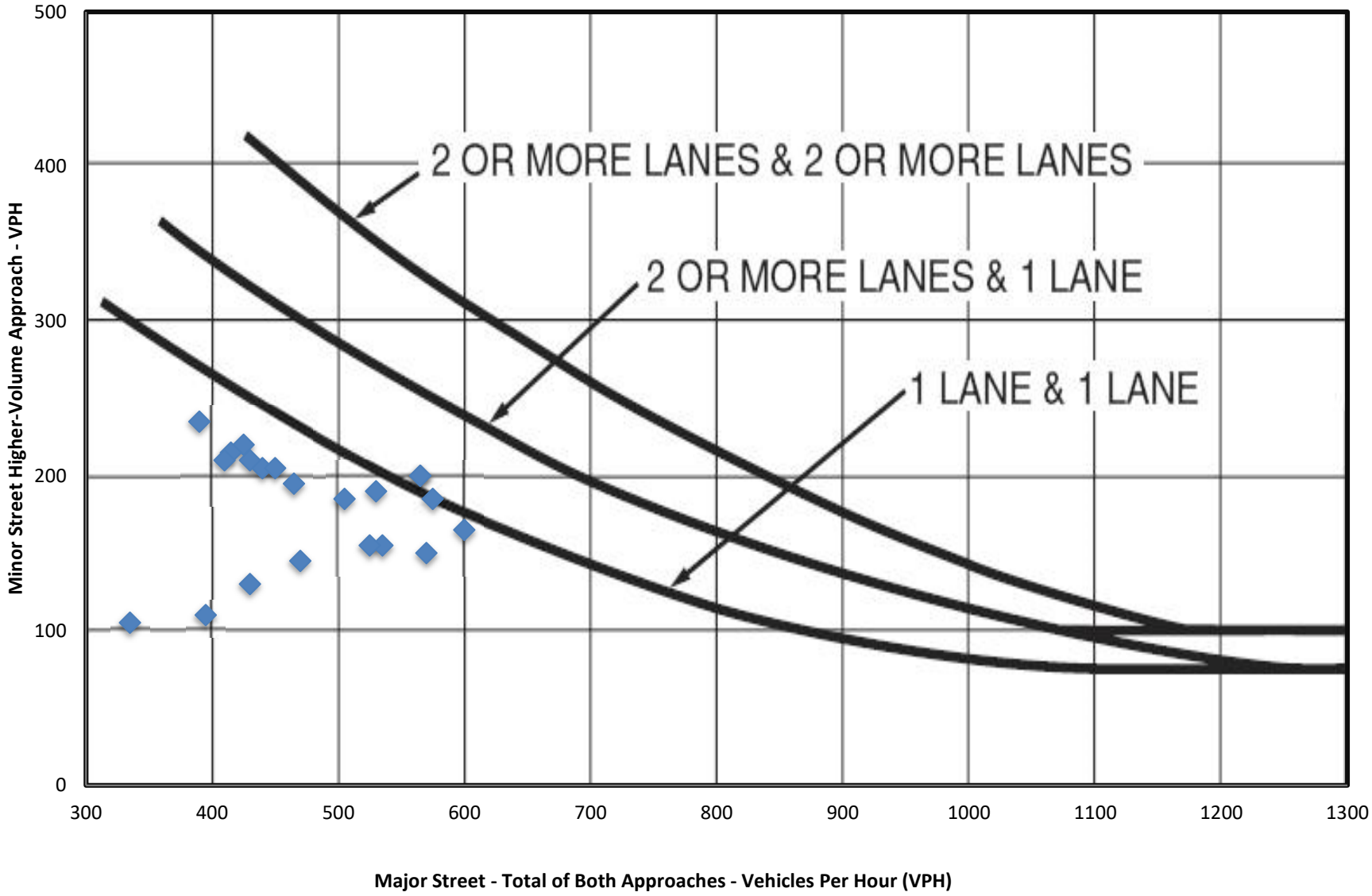
MUTCD Figure 4C-3. Warrant 3, Peak Hour



MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



MUTCD WARRANT 7, CRASH EXPERIENCE

Built-up Isolated Community With Less Than 10,000 Population or	Yes

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

Has adequate trial of alternatives with satisfactory observance and enforcement failed to reduce the crash frequency? — N/A

At least one of the following conditions applies to the reported crash history:

1. The number of reported angle crashes and pedestrian crashes within a 1-year period equals or exceeds the threshold number in Table 4C-2 fo total angle crashes and pedestrian crashes (all severities)

2. The number of reported fatal-and-injury angle crashes and pedestrian crasehs within a 1-year period equals or exceed the threshold number in Table 4C-2 *for total fatal-injury angle crashes and pedestrian crashes*

3. The number of reported angle crashes and pedestrian crashes within a 3-year period equals or exceeds the threshold number in Table 4C-3 for total angle crashes and pedestrian crashes (all severities)

4. The number of reported fatal-and-injury angle crashes and pedestrian crashes within a 3 year period equals or exceeds the threshold number in Table 4C-3 for total fatal-and-injury angle crashes and pedestrian crashes.

No

For each of any 8 hours of an average day, the vehicles per hour given in both the 80% columns of Condition A in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection. — **Yes**

For each of any 8 hours of an average day, the vehicles per hour given in both the 80% columns of Condition B in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection. — **No**

The volume of pedestrian traffic is not less than 80% of the requirements specified in Warrant 4, the Pedestrian Volume warrant.*
**If applicable, attach all supporting calculations and documentation.* — N/A

MUTCD WARRANT 8, ROADWAY NETWORK*

Is this a common intersection of two or more major routes*? — Yes

**A major route as used in this signal warrant shall have at least one of the following characteristics:*
A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow.
B. It includes rural or suburban highways outside, entering, or traversing a city
C. It appears as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study?

Does the intersection have a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has 5-year projected traffic volumes, based on an engineering study, that meet one or more of Warrants 1,2, and 3 during an average weekday? — No

Does the intersection have a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a non-normal business day (Saturday or Sunday)? — No

MUTCD WARRANT 9, INTERSECTION NEAR A GRADE CROSSING

Does the grade crossing exist on an approach controlled by a STOP or Yield sign and the center of the track nearest to the intersection is within 140 feet of the stop line or yield line on the approach?	N/A
During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the minor-street approach that crosses the track (one direction only, approaching the intersection) falls above the applicable curve in Figure 4C-9 or 4C-10 for the existing combination of approach lanes over the track and the distance D.	N/A
Number of approach lanes on the minor street approach that crosses the track:	1
Clear Storage Distance (D):	0 feet

Highest Traffic Volume Hour During Which Rail Traffic Uses the Crossing*

**If the rail traffic arrival times are unknown, the highest traffic volume hour of the day should be used.*

Major Street Volume (Total of Both Approaches):	0	vph
Actual Minor-Street Volume (One Direction Only, Approaching the Intersection):	0	vph
Apply Adjustment Factors to the Minor-Street Volume?:	No	

Minor-Street Approach Volume Adjustments*

**Refer to Section 4C.10 of the MUTCD for details on the application of these adjustment factors.*

	Inputs	Adjustment Factor
Occurrences of Rail Traffic per Day:	3 to 5	1.00
% of High-Occupancy Buses (buses with at least 20 people) on Minor-Street Approach:	0%	1.00
% of Tractor-Trailer Trucks on Minor-Street Approach:	7.6% to 12.5%	1.00

Adjusted Minor-Street Volume (One Direction Only, Approaching the Intersection):	N/A	vph

Traffic Volumes for Figure Comparison

Major Street Volume (Total of Both Approaches):	0	vph
Minor-Street Volume (One Direction Only, Approaching the Intersection):	0	vph
Applicable Figure for Comparison:	Figure 4C-9	

SECTION 7: EXISTING GEOMETRY RESULTS

HCM WORKSHEETS AND QUEUING REPORT

2: NW Lower Bridge Way & NW 43rd Street

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	30	25	135	335	5
Future Vol, veh/h	5	30	25	135	335	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	200	0	20
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	35	29	159	394	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	29	0	-	0	76	29
Stage 1	-	-	-	-	29	-
Stage 2	-	-	-	-	47	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1584	-	-	0	927	1046
Stage 1	-	-	-	0	994	-
Stage 2	-	-	-	0	975	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1584	-	-	-	923	1046
Mov Cap-2 Maneuver	-	-	-	-	923	-
Stage 1	-	-	-	-	990	-
Stage 2	-	-	-	-	975	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1584	-	-	923	1046
HCM Lane V/C Ratio	0.004	-	-	0.427	0.006
HCM Control Delay (s)	7.3	0	-	11.8	8.5
HCM Lane LOS	A	A	-	B	A
HCM 95th %tile Q(veh)	0	-	-	2.2	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	6	102	41
Average Queue (ft)	0	55	6
95th Queue (ft)	4	87	28
Link Distance (ft)	2340	1923	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			20
Storage Blk Time (%)		23	0
Queuing Penalty (veh)		1	1

Network Summary

Network wide Queuing Penalty: 2

2: NW Lower Bridge Way & NW 43rd Street

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	45	20	440	190	5
Future Vol, veh/h	25	45	20	440	190	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	200	0	20
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	47	21	463	200	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	21	0	-	0	120	21
Stage 1	-	-	-	-	21	-
Stage 2	-	-	-	-	99	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1595	-	-	0	876	1056
Stage 1	-	-	-	0	1002	-
Stage 2	-	-	-	0	925	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1595	-	-	-	861	1056
Mov Cap-2 Maneuver	-	-	-	-	861	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	925	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1595	-	-	861	1056
HCM Lane V/C Ratio	0.016	-	-	0.232	0.005
HCM Control Delay (s)	7.3	0	-	10.4	8.4
HCM Lane LOS	A	A	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	11	88	38
Average Queue (ft)	0	42	6
95th Queue (ft)	6	68	26
Link Distance (ft)	2340	1923	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			20
Storage Blk Time (%)		13	0
Queuing Penalty (veh)		1	1

Network Summary

Network wide Queuing Penalty: 1

Intersection	
Int Delay, s/veh	11.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	35	30	160	400	10
Future Vol, veh/h	10	35	30	160	400	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	200	0	20
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	41	35	188	471	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	35	0	-	0	100	35
Stage 1	-	-	-	-	35	-
Stage 2	-	-	-	-	65	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1576	-	-	0	899	1038
Stage 1	-	-	-	0	987	-
Stage 2	-	-	-	0	958	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1576	-	-	-	892	1038
Mov Cap-2 Maneuver	-	-	-	-	892	-
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	958	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1576	-	-	892	1038
HCM Lane V/C Ratio	0.007	-	-	0.528	0.011
HCM Control Delay (s)	7.3	0	-	13.5	8.5
HCM Lane LOS	A	A	-	B	A
HCM 95th %tile Q(veh)	0	-	-	3.2	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	6	176	42
Average Queue (ft)	0	72	11
95th Queue (ft)	5	127	39
Link Distance (ft)	2340	1923	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			20
Storage Blk Time (%)		30	1
Queuing Penalty (veh)		3	3

Network Summary

Network wide Queuing Penalty: 6

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	50	25	525	225	10
Future Vol, veh/h	25	50	25	525	225	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	200	0	20
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	53	26	553	237	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	26	0	-	0	131	26
Stage 1	-	-	-	-	26	-
Stage 2	-	-	-	-	105	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1588	-	-	0	863	1050
Stage 1	-	-	-	0	997	-
Stage 2	-	-	-	0	919	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1588	-	-	-	848	1050
Mov Cap-2 Maneuver	-	-	-	-	848	-
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	919	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1588	-	-	-	848	1050
HCM Lane V/C Ratio	0.017	-	-	-	0.279	0.01
HCM Control Delay (s)	7.3	0	-	-	10.9	8.5
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	1.1	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	14	103	40
Average Queue (ft)	1	48	9
95th Queue (ft)	8	80	34
Link Distance (ft)	2340	1923	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			20
Storage Blk Time (%)		17	1
Queuing Penalty (veh)		2	1

Network Summary

Network wide Queuing Penalty: 3

SECTION 8: ALTERNATIVE 1 RESULTS

HCM WORKSHEETS AND QUEUING REPORT

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	30	25	135	335	5
Future Vol, veh/h	5	30	25	135	335	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	250	0	20
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	35	29	159	394	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	29	0	-	0	76	29
Stage 1	-	-	-	-	29	-
Stage 2	-	-	-	-	47	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1584	-	-	0	927	1046
Stage 1	-	-	-	0	994	-
Stage 2	-	-	-	0	975	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1584	-	-	-	923	1046
Mov Cap-2 Maneuver	-	-	-	-	923	-
Stage 1	-	-	-	-	990	-
Stage 2	-	-	-	-	975	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1584	-	-	923	1046
HCM Lane V/C Ratio	0.004	-	-	0.427	0.006
HCM Control Delay (s)	7.3	0	-	11.8	8.5
HCM Lane LOS	A	A	-	B	A
HCM 95th %tile Q(veh)	0	-	-	2.2	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	SB	SB
Directions Served	L	R
Maximum Queue (ft)	119	41
Average Queue (ft)	56	7
95th Queue (ft)	95	32
Link Distance (ft)	1923	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		20
Storage Blk Time (%)	23	0
Queuing Penalty (veh)	1	2

Network Summary

Network wide Queuing Penalty: 3

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	45	20	440	190	5
Future Vol, veh/h	25	45	20	440	190	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	250	0	20
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	47	21	463	200	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	21	0	-	0	120	21
Stage 1	-	-	-	-	21	-
Stage 2	-	-	-	-	99	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1595	-	-	0	876	1056
Stage 1	-	-	-	0	1002	-
Stage 2	-	-	-	0	925	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1595	-	-	-	861	1056
Mov Cap-2 Maneuver	-	-	-	-	861	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	925	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1595	-	-	861	1056
HCM Lane V/C Ratio	0.016	-	-	0.232	0.005
HCM Control Delay (s)	7.3	0	-	10.4	8.4
HCM Lane LOS	A	A	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	13	89	41
Average Queue (ft)	0	41	5
95th Queue (ft)	7	66	25
Link Distance (ft)	2340	1923	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			20
Storage Blk Time (%)		12	0
Queuing Penalty (veh)		1	1

Network Summary

Network wide Queuing Penalty: 1

Intersection	
Int Delay, s/veh	11.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	35	30	160	400	10
Future Vol, veh/h	10	35	30	160	400	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	250	0	20
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	41	35	188	471	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	35	0	-	0	100	35
Stage 1	-	-	-	-	35	-
Stage 2	-	-	-	-	65	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1576	-	-	0	899	1038
Stage 1	-	-	-	0	987	-
Stage 2	-	-	-	0	958	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1576	-	-	-	892	1038
Mov Cap-2 Maneuver	-	-	-	-	892	-
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	958	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1576	-	-	892	1038
HCM Lane V/C Ratio	0.007	-	-	0.528	0.011
HCM Control Delay (s)	7.3	0	-	13.5	8.5
HCM Lane LOS	A	A	-	B	A
HCM 95th %tile Q(veh)	0	-	-	3.2	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	SB	SB
Directions Served	L	R
Maximum Queue (ft)	163	45
Average Queue (ft)	72	11
95th Queue (ft)	123	39
Link Distance (ft)	1923	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		20
Storage Blk Time (%)	31	1
Queuing Penalty (veh)	3	3

Network Summary

Network wide Queuing Penalty: 6

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	50	25	525	225	10
Future Vol, veh/h	25	50	25	525	225	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	250	0	20
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	53	26	553	237	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	26	0	-	0	131	26
Stage 1	-	-	-	-	26	-
Stage 2	-	-	-	-	105	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1588	-	-	0	863	1050
Stage 1	-	-	-	0	997	-
Stage 2	-	-	-	0	919	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1588	-	-	-	848	1050
Mov Cap-2 Maneuver	-	-	-	-	848	-
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	919	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1588	-	-	848	1050
HCM Lane V/C Ratio	0.017	-	-	0.279	0.01
HCM Control Delay (s)	7.3	0	-	10.9	8.5
HCM Lane LOS	A	A	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	1.1	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	12	92	40
Average Queue (ft)	1	47	11
95th Queue (ft)	8	77	37
Link Distance (ft)	2340	1923	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			20
Storage Blk Time (%)		16	1
Queuing Penalty (veh)		2	2

Network Summary

Network wide Queuing Penalty: 3

SECTION 9: ALTERNATIVE 2 RESULTS

HCM WORKSHEETS AND QUEUING REPORT

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	335	5	25	135	5	30
Future Vol, veh/h	335	5	25	135	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	394	6	29	159	6	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	400	0	614	397
Stage 1	-	-	-	-	397	-
Stage 2	-	-	-	-	217	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1159	-	455	652
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	819	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1159	-	444	652
Mov Cap-2 Maneuver	-	-	-	-	444	-
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	799	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	611	-	-	1159	-
HCM Lane V/C Ratio	0.067	-	-	0.025	-
HCM Control Delay (s)	11.3	-	-	8.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection: 5: NW Lower Bridge Way & NW 43rd St

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	42	59
Average Queue (ft)	8	24
95th Queue (ft)	34	54
Link Distance (ft)		2033
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 0

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	190	5	20	440	25	45
Future Vol, veh/h	190	5	20	440	25	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	200	5	21	463	26	47

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	205	0	708	203
Stage 1	-	-	-	-	203	-
Stage 2	-	-	-	-	505	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1366	-	401	838
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	606	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1366	-	395	838
Mov Cap-2 Maneuver	-	-	-	-	395	-
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	597	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	598	-	-	1366	-
HCM Lane V/C Ratio	0.123	-	-	0.015	-
HCM Control Delay (s)	11.9	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection: 5: NW Lower Bridge Way & NW 43rd St

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	38	75
Average Queue (ft)	5	36
95th Queue (ft)	24	61
Link Distance (ft)		2033
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	400	10	30	160	10	35
Future Vol, veh/h	400	10	30	160	10	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	471	12	35	188	12	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	483	0	735	477
Stage 1	-	-	-	-	477	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1080	-	387	588
Stage 1	-	-	-	-	624	-
Stage 2	-	-	-	-	785	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1080	-	375	588
Mov Cap-2 Maneuver	-	-	-	-	375	-
Stage 1	-	-	-	-	624	-
Stage 2	-	-	-	-	760	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	522	-	-	1080	-
HCM Lane V/C Ratio	0.101	-	-	0.033	-
HCM Control Delay (s)	12.7	-	-	8.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection: 5: NW Lower Bridge Way & NW 43rd St

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	2	53	65
Average Queue (ft)	0	13	29
95th Queue (ft)	2	42	57
Link Distance (ft)	1884		2033
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Network Summary

Network wide Queuing Penalty: 0

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	225	10	25	525	25	50
Future Vol, veh/h	225	10	25	525	25	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	237	11	26	553	26	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	248	0	848	243
Stage 1	-	-	-	-	243	-
Stage 2	-	-	-	-	605	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1318	-	332	796
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	545	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1318	-	325	796
Mov Cap-2 Maneuver	-	-	-	-	325	-
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	534	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	537	-	-	1318	-
HCM Lane V/C Ratio	0.147	-	-	0.02	-
HCM Control Delay (s)	12.9	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection: 5: NW Lower Bridge Way & NW 43rd St

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	2	37	74
Average Queue (ft)	0	5	36
95th Queue (ft)	2	26	62
Link Distance (ft)	1884		2033
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

SECTION 10: ALTERNATIVE 3 RESULTS

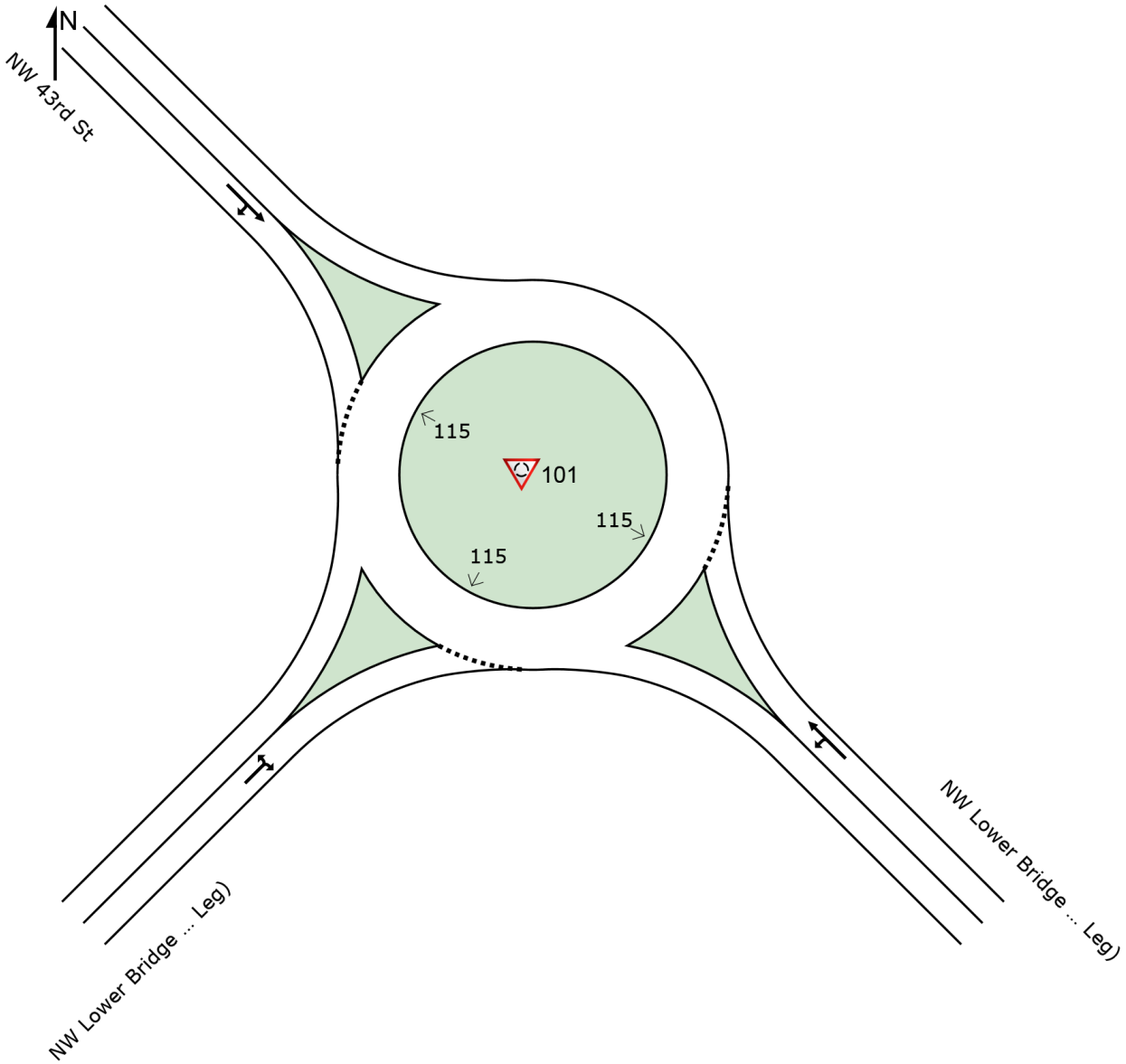
HCM WORKSHEETS AND QUEUING REPORT

SITE LAYOUT

Site: 101 [2026 AM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: AM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [2026 AM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: AM Peak Hour)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
SouthEast: NW Lower Bridge Way (East Leg)															
3x	L2	All MCs	29	2.0	29	2.0	0.140	3.5	LOS A	0.7	17.0	0.05	0.01	0.05	36.1
8x	T1	All MCs	159	2.0	159	2.0	0.140	3.5	LOS A	0.7	17.0	0.05	0.01	0.05	37.0
Approach			188	2.0	188	2.0	0.140	3.5	LOS A	0.7	17.0	0.05	0.01	0.05	36.9
NorthWest: NW 43rd St															
4x	T1	All MCs	394	2.0	394	2.0	0.305	5.1	LOS A	1.8	45.0	0.15	0.04	0.15	36.6
14x	R2	All MCs	6	2.0	6	2.0	0.305	5.1	LOS A	1.8	45.0	0.15	0.04	0.15	36.3
Approach			400	2.0	400	2.0	0.305	5.1	LOS A	1.8	45.0	0.15	0.04	0.15	36.6
SouthWest: NW Lower Bridge Way (West Leg)															
5x	L2	All MCs	6	2.0	6	2.0	0.046	4.5	LOS A	0.2	4.6	0.47	0.34	0.47	35.5
12x	R2	All MCs	35	2.0	35	2.0	0.046	4.5	LOS A	0.2	4.6	0.47	0.34	0.47	36.1
Approach			41	2.0	41	2.0	0.046	4.5	LOS A	0.2	4.6	0.47	0.34	0.47	36.0
All Vehicles			629	2.0	629	2.0	0.305	4.6	LOS A	1.8	45.0	0.14	0.05	0.14	36.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

QUEUE ANALYSIS

Site: 101 [2026 AM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: AM Peak Hour)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Lane Queues (Distance)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (ft)	Back of Queue (ft)		Queue at Start of Gap (ft)		Cycle-Average Queue (ft)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
SouthEast: NW Lower Bridge Way (East Leg)															
Lane 1		0.140	1.000	0.0	6.8	17.0	5.9	14.6	4.6	8.4	0.00	0.01	0.0	NA	NA
Approach		0.140			6.8	17.0	5.9	14.6	4.6	8.4	0.00	0.01			
NorthWest: NW 43rd St															
Lane 1		0.305	1.000	0.0	18.1	45.0	12.8	31.7	14.4	26.2	0.01	0.03	0.0	NA	NA
Approach		0.305			18.1	45.0	12.8	31.7	14.4	26.2	0.01	0.03			
SouthWest: NW Lower Bridge Way (West Leg)															
Lane 1		0.046	1.000	0.0	1.9	4.6	1.8	4.5	1.3	2.3	0.00	0.00	0.0	NA	NA
Approach		0.046			1.9	4.6	1.8	4.5	1.3	2.3	0.00	0.00			
Intersection		0.305			18.1	45.0	12.8	31.7	14.4	26.2	0.01	0.03			

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

Lane Queues (Vehicles)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (veh)	Back of Queue (veh)		Queue at Start of Gap (veh)		Cycle-Average Queue (veh)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
SouthEast: NW Lower Bridge Way (East Leg)															
Lane 1		0.140	1.000	0.0	0.3	0.7	0.2	0.6	0.2	0.3	0.00	0.01	0.0	NA	NA
Approach		0.140			0.3	0.7	0.2	0.6	0.2	0.3	0.00	0.01			
NorthWest: NW 43rd St															
Lane 1		0.305	1.000	0.0	0.7	1.8	0.5	1.2	0.6	1.0	0.01	0.03	0.0	NA	NA
Approach		0.305			0.7	1.8	0.5	1.2	0.6	1.0	0.01	0.03			
SouthWest: NW Lower Bridge Way (West Leg)															
Lane 1		0.046	1.000	0.0	0.1	0.2	0.1	0.2	0.1	0.1	0.00	0.00	0.0	NA	NA
Approach		0.046			0.1	0.2	0.1	0.2	0.1	0.1	0.00	0.00			
Intersection		0.305			0.7	1.8	0.5	1.2	0.6	1.0	0.01	0.03			

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

Continuous Lane Performance

Lane Number	Deg.	Unint.	Unint.	Hdwy Spacing	Aver.	Occup.	Space	Space	Time	Density	LOS

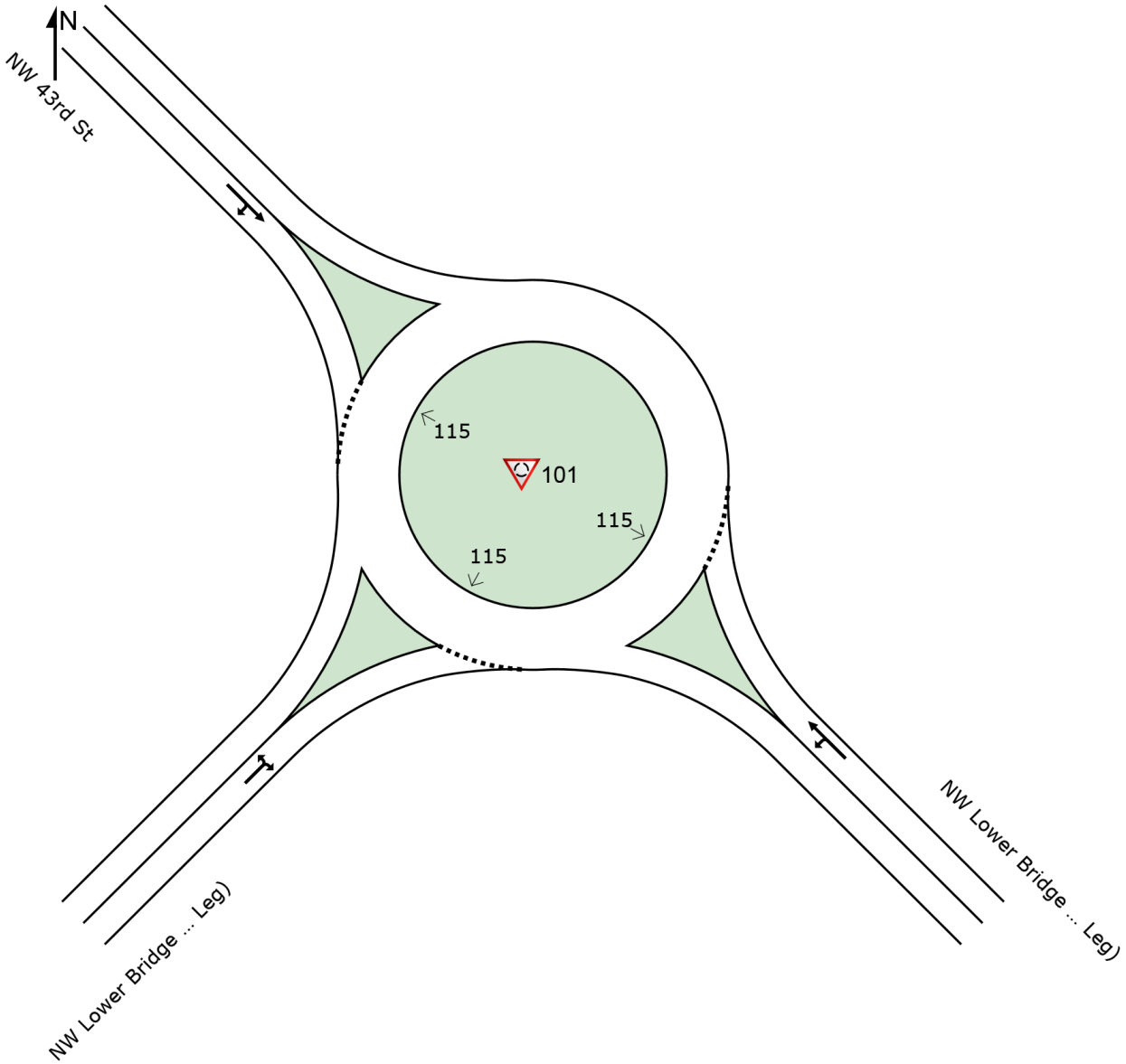
	Satn	Speed	Travel Delay			Vehicle Length	Time	Time	Occup. Ratio	Occup. Ratio			(Density Method)
	v/c	mph	sec	sec	ft	ft	sec	sec	%	%	veh/mi	pc/mi	
There are no Continuous Lanes at this Site.													

SITE LAYOUT

Site: 101 [2026 PM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: PM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [2026 PM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: PM Peak Hour)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
SouthEast: NW Lower Bridge Way (East Leg)															
3x	L2	All MCs	21	2.0	21	2.0	0.367	5.6	LOS A	2.3	59.6	0.16	0.04	0.16	35.3
8x	T1	All MCs	463	2.0	463	2.0	0.367	5.6	LOS A	2.3	59.6	0.16	0.04	0.16	36.2
Approach			484	2.0	484	2.0	0.367	5.6	LOS A	2.3	59.6	0.16	0.04	0.16	36.1
NorthWest: NW 43rd St															
4x	T1	All MCs	200	2.0	200	2.0	0.155	3.8	LOS A	0.7	19.0	0.11	0.03	0.11	37.4
14x	R2	All MCs	5	2.0	5	2.0	0.155	3.8	LOS A	0.7	19.0	0.11	0.03	0.11	37.0
Approach			205	2.0	205	2.0	0.155	3.8	LOS A	0.7	19.0	0.11	0.03	0.11	37.4
SouthWest: NW Lower Bridge Way (West Leg)															
5x	L2	All MCs	26	2.0	26	2.0	0.067	3.8	LOS A	0.3	7.2	0.34	0.20	0.34	35.2
12x	R2	All MCs	47	2.0	47	2.0	0.067	3.8	LOS A	0.3	7.2	0.34	0.20	0.34	35.7
Approach			74	2.0	74	2.0	0.067	3.8	LOS A	0.3	7.2	0.34	0.20	0.34	35.5
All Vehicles			763	2.0	763	2.0	0.367	5.0	LOS A	2.3	59.6	0.16	0.05	0.16	36.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

QUEUE ANALYSIS

Site: 101 [2026 PM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: PM Peak Hour)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Lane Queues (Distance)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (ft)	Back of Queue (ft)		Queue at Start of Gap (ft)		Cycle-Average Queue (ft)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
SouthEast: NW Lower Bridge Way (East Leg)															
Lane 1		0.367	1.000	0.0	24.0	59.6	15.4	38.3	19.3	34.9	0.01	0.04	0.0	NA	NA
Approach		0.367			24.0	59.6	15.4	38.3	19.3	34.9	0.01	0.04			
NorthWest: NW 43rd St															
Lane 1		0.155	1.000	0.0	7.7	19.0	6.5	16.2	5.5	10.0	0.00	0.01	0.0	NA	NA
Approach		0.155			7.7	19.0	6.5	16.2	5.5	10.0	0.00	0.01			
SouthWest: NW Lower Bridge Way (West Leg)															
Lane 1		0.067	1.000	0.0	2.9	7.2	2.7	6.8	2.0	3.6	0.00	0.00	0.0	NA	NA
Approach		0.067			2.9	7.2	2.7	6.8	2.0	3.6	0.00	0.00			
Intersection		0.367			24.0	59.6	15.4	38.3	19.3	34.9	0.01	0.04			

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

Lane Queues (Vehicles)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (veh)	Back of Queue (veh)		Queue at Start of Gap (veh)		Cycle-Average Queue (veh)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
SouthEast: NW Lower Bridge Way (East Leg)															
Lane 1		0.367	1.000	0.0	0.9	2.3	0.6	1.5	0.8	1.4	0.01	0.04	0.0	NA	NA
Approach		0.367			0.9	2.3	0.6	1.5	0.8	1.4	0.01	0.04			
NorthWest: NW 43rd St															
Lane 1		0.155	1.000	0.0	0.3	0.7	0.3	0.6	0.2	0.4	0.00	0.01	0.0	NA	NA
Approach		0.155			0.3	0.7	0.3	0.6	0.2	0.4	0.00	0.01			
SouthWest: NW Lower Bridge Way (West Leg)															
Lane 1		0.067	1.000	0.0	0.1	0.3	0.1	0.3	0.1	0.1	0.00	0.00	0.0	NA	NA
Approach		0.067			0.1	0.3	0.1	0.3	0.1	0.1	0.00	0.00			
Intersection		0.367			0.9	2.3	0.6	1.5	0.8	1.4	0.01	0.04			

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

Continuous Lane Performance

Lane Number	Deg.	Unint.	Unint.	Hdwy Spacing	Aver.	Occup.	Space	Space	Time	Density	LOS

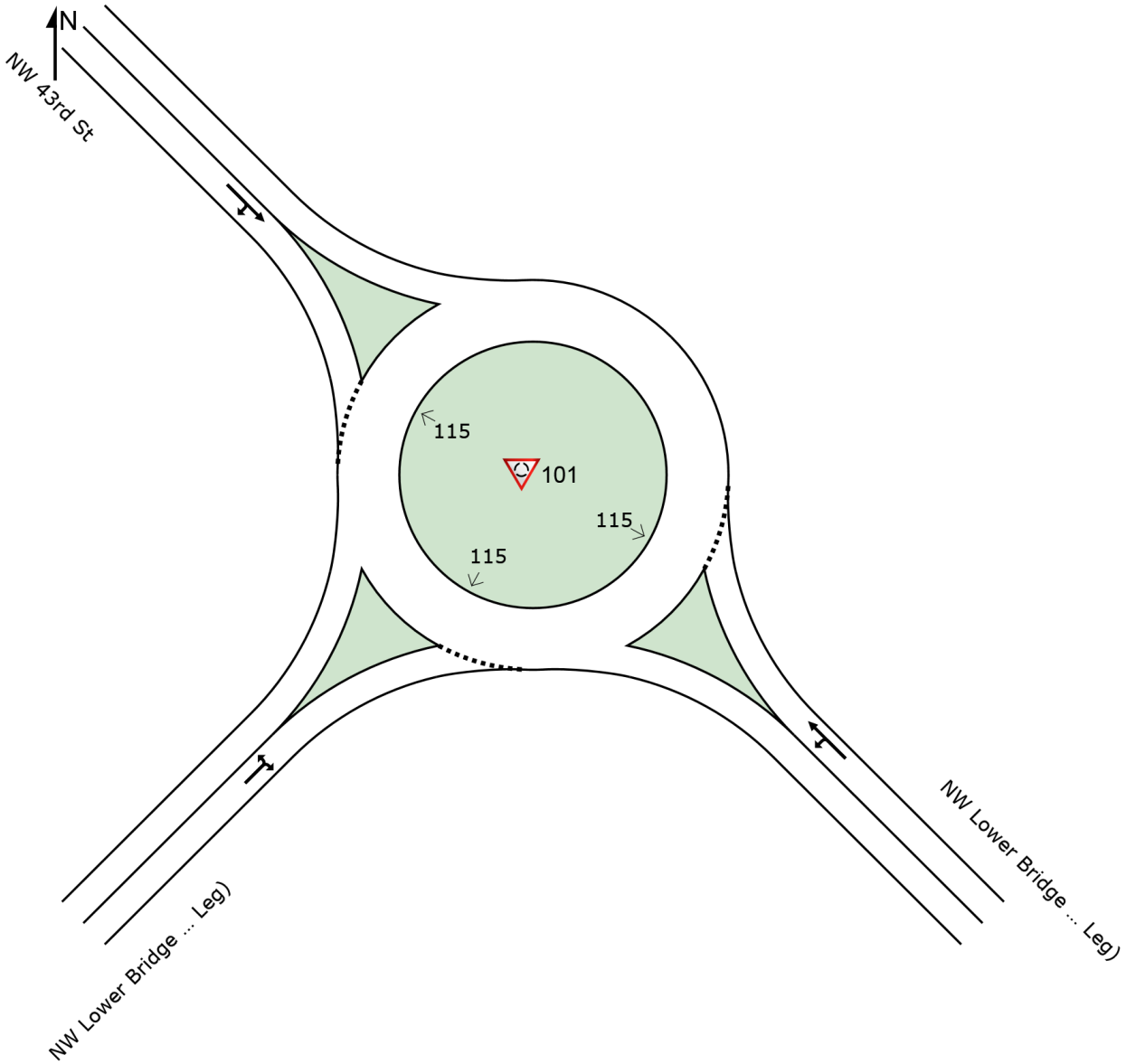
	Satn	Speed	Travel Delay			Vehicle Length	Time	Time	Occup. Ratio	Occup. Ratio			(Density Method)
	v/c	mph	sec	sec	ft	ft	sec	sec	%	%	veh/mi	pc/mi	
There are no Continuous Lanes at this Site.													

SITE LAYOUT

Site: 101 [2046 AM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: AM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [2046 AM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: AM Peak Hour)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
SouthEast: NW Lower Bridge Way (East Leg)															
3x	L2	All MCs	35	2.0	35	2.0	0.167	3.8	LOS A	0.8	20.9	0.08	0.01	0.08	36.0
8x	T1	All MCs	188	2.0	188	2.0	0.167	3.8	LOS A	0.8	20.9	0.08	0.01	0.08	36.9
Approach			224	2.0	224	2.0	0.167	3.8	LOS A	0.8	20.9	0.08	0.01	0.08	36.7
NorthWest: NW 43rd St															
4x	T1	All MCs	471	2.0	471	2.0	0.370	5.8	LOS A	2.4	59.7	0.19	0.06	0.19	36.2
14x	R2	All MCs	12	2.0	12	2.0	0.370	5.8	LOS A	2.4	59.7	0.19	0.06	0.19	35.9
Approach			482	2.0	482	2.0	0.370	5.8	LOS A	2.4	59.7	0.19	0.06	0.19	36.2
SouthWest: NW Lower Bridge Way (West Leg)															
5x	L2	All MCs	12	2.0	12	2.0	0.064	5.0	LOS A	0.3	6.5	0.51	0.40	0.51	35.0
12x	R2	All MCs	41	2.0	41	2.0	0.064	5.0	LOS A	0.3	6.5	0.51	0.40	0.51	35.5
Approach			53	2.0	53	2.0	0.064	5.0	LOS A	0.3	6.5	0.51	0.40	0.51	35.4
All Vehicles			759	2.0	759	2.0	0.370	5.1	LOS A	2.4	59.7	0.18	0.07	0.18	36.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

QUEUE ANALYSIS

Site: 101 [2046 AM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: AM Peak Hour)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Lane Queues (Distance)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (ft)	Back of Queue (ft)		Queue at Start of Gap (ft)		Cycle-Average Queue (ft)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
SouthEast: NW Lower Bridge Way (East Leg)															
Lane 1		0.167	1.000	0.0	8.4	20.9	7.0	17.5	5.9	10.7	0.01	0.01	0.0	NA	NA
Approach		0.167			8.4	20.9	7.0	17.5	5.9	10.7	0.01	0.01			
NorthWest: NW 43rd St															
Lane 1		0.370	1.000	0.0	24.0	59.7	15.5	38.5	19.8	35.9	0.02	0.04	0.0	NA	NA
Approach		0.370			24.0	59.7	15.5	38.5	19.8	35.9	0.02	0.04			
SouthWest: NW Lower Bridge Way (West Leg)															
Lane 1		0.064	1.000	0.0	2.6	6.5	2.5	6.2	1.9	3.4	0.00	0.00	0.0	NA	NA
Approach		0.064			2.6	6.5	2.5	6.2	1.9	3.4	0.00	0.00			
Intersection		0.370			24.0	59.7	15.5	38.5	19.8	35.9	0.02	0.04			

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

Lane Queues (Vehicles)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (veh)	Back of Queue (veh)		Queue at Start of Gap (veh)		Cycle-Average Queue (veh)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
SouthEast: NW Lower Bridge Way (East Leg)															
Lane 1		0.167	1.000	0.0	0.3	0.8	0.3	0.7	0.2	0.4	0.01	0.01	0.0	NA	NA
Approach		0.167			0.3	0.8	0.3	0.7	0.2	0.4	0.01	0.01			
NorthWest: NW 43rd St															
Lane 1		0.370	1.000	0.0	0.9	2.4	0.6	1.5	0.8	1.4	0.02	0.04	0.0	NA	NA
Approach		0.370			0.9	2.4	0.6	1.5	0.8	1.4	0.02	0.04			
SouthWest: NW Lower Bridge Way (West Leg)															
Lane 1		0.064	1.000	0.0	0.1	0.3	0.1	0.2	0.1	0.1	0.00	0.00	0.0	NA	NA
Approach		0.064			0.1	0.3	0.1	0.2	0.1	0.1	0.00	0.00			
Intersection		0.370			0.9	2.4	0.6	1.5	0.8	1.4	0.02	0.04			

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

Continuous Lane Performance

Lane Number	Deg.	Unint.	Unint.	Hdwy Spacing	Aver.	Occup.	Space	Space	Time	Density	LOS

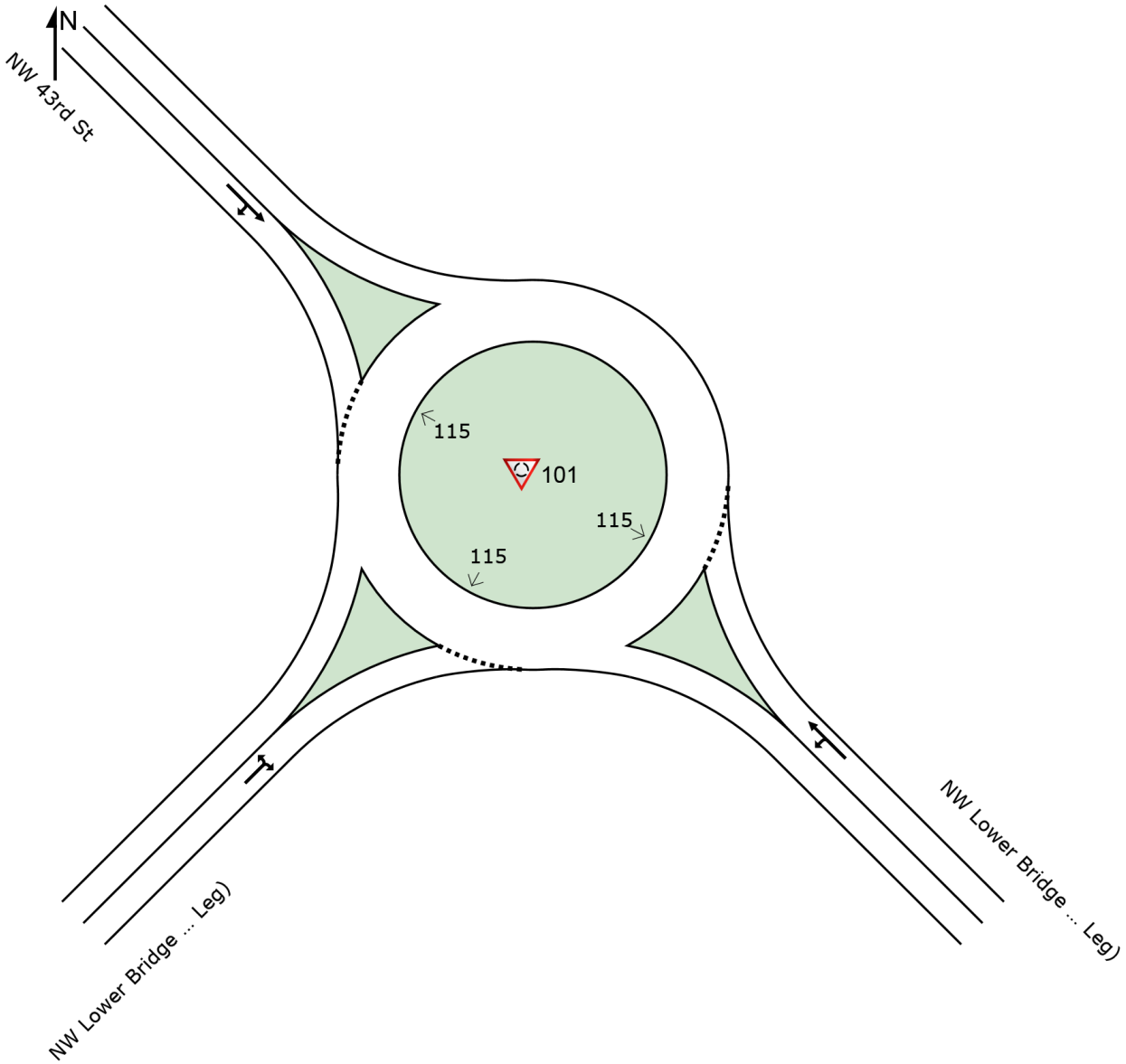
	Satn	Speed	Travel Delay			Vehicle Length	Time	Time	Occup. Ratio	Occup. Ratio			(Density Method)
	v/c	mph	sec	sec	ft	ft	sec	sec	%	%	veh/mi	pc/mi	
There are no Continuous Lanes at this Site.													

SITE LAYOUT

Site: 101 [2046 PM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: PM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [2046 PM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: PM Peak Hour)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
SouthEast: NW Lower Bridge Way (East Leg)															
3x	L2	All MCs	26	2.0	26	2.0	0.439	6.3	LOS A	3.1	80.0	0.18	0.05	0.18	34.9
8x	T1	All MCs	553	2.0	553	2.0	0.439	6.3	LOS A	3.1	80.0	0.18	0.05	0.18	35.8
Approach			579	2.0	579	2.0	0.439	6.3	LOS A	3.1	80.0	0.18	0.05	0.18	35.7
NorthWest: NW 43rd St															
4x	T1	All MCs	237	2.0	237	2.0	0.188	4.1	LOS A	0.9	23.9	0.13	0.03	0.13	37.2
14x	R2	All MCs	11	2.0	11	2.0	0.188	4.1	LOS A	0.9	23.9	0.13	0.03	0.13	36.9
Approach			247	2.0	247	2.0	0.188	4.1	LOS A	0.9	23.9	0.13	0.03	0.13	37.2
SouthWest: NW Lower Bridge Way (West Leg)															
5x	L2	All MCs	26	2.0	26	2.0	0.075	4.1	LOS A	0.3	8.0	0.38	0.23	0.38	35.2
12x	R2	All MCs	53	2.0	53	2.0	0.075	4.1	LOS A	0.3	8.0	0.38	0.23	0.38	35.7
Approach			79	2.0	79	2.0	0.075	4.1	LOS A	0.3	8.0	0.38	0.23	0.38	35.5
All Vehicles			905	2.0	905	2.0	0.439	5.5	LOS A	3.1	80.0	0.18	0.06	0.18	36.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

QUEUE ANALYSIS

Site: 101 [2046 PM Peak - NW 43rd St & NW Lower Bridge Way (Site Folder: PM Peak Hour)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Lane Queues (Distance)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (ft)	Back of Queue (ft)		Queue at Start of Gap (ft)		Cycle-Average Queue (ft)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
SouthEast: NW Lower Bridge Way (East Leg)															
Lane 1		0.439	1.000	0.0	32.2	80.0	18.4	45.8	25.9	47.0	0.02	0.05	0.0	NA	NA
Approach		0.439			32.2	80.0	18.4	45.8	25.9	47.0	0.02	0.05			
NorthWest: NW 43rd St															
Lane 1		0.188	1.000	0.0	9.6	23.9	7.9	19.6	7.1	13.0	0.01	0.01	0.0	NA	NA
Approach		0.188			9.6	23.9	7.9	19.6	7.1	13.0	0.01	0.01			
SouthWest: NW Lower Bridge Way (West Leg)															
Lane 1		0.075	1.000	0.0	3.2	8.0	3.0	7.5	2.3	4.1	0.00	0.00	0.0	NA	NA
Approach		0.075			3.2	8.0	3.0	7.5	2.3	4.1	0.00	0.00			
Intersection		0.439			32.2	80.0	18.4	45.8	25.9	47.0	0.02	0.05			

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

Lane Queues (Vehicles)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (veh)	Back of Queue (veh)		Queue at Start of Gap (veh)		Cycle-Average Queue (veh)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
SouthEast: NW Lower Bridge Way (East Leg)															
Lane 1		0.439	1.000	0.0	1.3	3.1	0.7	1.8	1.0	1.9	0.02	0.05	0.0	NA	NA
Approach		0.439			1.3	3.1	0.7	1.8	1.0	1.9	0.02	0.05			
NorthWest: NW 43rd St															
Lane 1		0.188	1.000	0.0	0.4	0.9	0.3	0.8	0.3	0.5	0.01	0.01	0.0	NA	NA
Approach		0.188			0.4	0.9	0.3	0.8	0.3	0.5	0.01	0.01			
SouthWest: NW Lower Bridge Way (West Leg)															
Lane 1		0.075	1.000	0.0	0.1	0.3	0.1	0.3	0.1	0.2	0.00	0.00	0.0	NA	NA
Approach		0.075			0.1	0.3	0.1	0.3	0.1	0.2	0.00	0.00			
Intersection		0.439			1.3	3.1	0.7	1.8	1.0	1.9	0.02	0.05			

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

Continuous Lane Performance

Lane Number	Deg.	Unint.	Unint.	Hdwy Spacing	Aver.	Occup.	Space	Space	Time	Density	LOS

	Satn	Speed	Travel Delay			Vehicle Length	Time	Time	Occup. Ratio	Occup. Ratio			(Density Method)
	v/c	mph	sec	sec	ft	ft	sec	sec	%	%	veh/mi	pc/mi	
There are no Continuous Lanes at this Site.													

SECTION 11: ALTERNATIVE 4 RESULTS

HCM WORKSHEETS AND QUEUING REPORT

Intersection	
Intersection Delay, s/veh	14
Intersection LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	30	25	135	335	5
Future Vol, veh/h	5	30	25	135	335	5
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	35	29	159	394	6
Number of Lanes	0	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	9.3	9.2	16.8
HCM LOS	A	A	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	14%	0%	0%	100%	0%
Vol Thru, %	86%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	25	135	335	5
LT Vol	5	0	0	335	0
Through Vol	30	25	0	0	0
RT Vol	0	0	135	0	5
Lane Flow Rate	41	29	159	394	6
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.066	0.047	0.223	0.614	0.007
Departure Headway (Hd)	5.797	5.763	5.057	5.605	4.401
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	614	620	708	642	808
Service Time	3.865	3.509	2.802	3.363	2.158
HCM Lane V/C Ratio	0.067	0.047	0.225	0.614	0.007
HCM Control Delay	9.3	8.8	9.3	16.9	7.2
HCM Lane LOS	A	A	A	C	A
HCM 95th-tile Q	0.2	0.1	0.9	4.2	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	EB	WB	SB	SB
Directions Served	LT	T	L	R
Maximum Queue (ft)	58	39	105	39
Average Queue (ft)	22	18	52	7
95th Queue (ft)	49	45	86	29
Link Distance (ft)	2340	1899	1923	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				20
Storage Blk Time (%)			21	0
Queuing Penalty (veh)			1	1

Network Summary

Network wide Queuing Penalty: 3

Intersection	
Intersection Delay, s/veh	12.8
Intersection LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	45	20	440	190	5
Future Vol, veh/h	25	45	20	440	190	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	47	21	463	200	5
Number of Lanes	0	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	9.4	13.5	12.4
HCM LOS	A	B	B

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	36%	0%	0%	100%	0%
Vol Thru, %	64%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	70	20	440	190	5
LT Vol	25	0	0	190	0
Through Vol	45	20	0	0	0
RT Vol	0	0	440	0	5
Lane Flow Rate	74	21	463	200	5
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.115	0.031	0.588	0.35	0.007
Departure Headway (Hd)	5.615	5.277	4.573	6.294	5.084
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	633	677	787	566	695
Service Time	3.698	3.022	2.317	4.093	2.882
HCM Lane V/C Ratio	0.117	0.031	0.588	0.353	0.007
HCM Control Delay	9.4	8.2	13.7	12.5	7.9
HCM Lane LOS	A	A	B	B	A
HCM 95th-tile Q	0.4	0.1	3.9	1.6	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	EB	WB	SB	SB
Directions Served	LT	T	L	R
Maximum Queue (ft)	53	42	71	38
Average Queue (ft)	30	15	38	5
95th Queue (ft)	50	43	57	24
Link Distance (ft)	2340	1899	1923	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				20
Storage Blk Time (%)			11	0
Queuing Penalty (veh)			1	1

Network Summary

Network wide Queuing Penalty: 1

Intersection	
Intersection Delay, s/veh	18.6
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	35	30	160	400	10
Future Vol, veh/h	10	35	30	160	400	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	41	35	188	471	12
Number of Lanes	0	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	9.9	10	23.5
HCM LOS	A	A	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	22%	0%	0%	100%	0%
Vol Thru, %	78%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	45	30	160	400	10
LT Vol	10	0	0	400	0
Through Vol	35	30	0	0	0
RT Vol	0	0	160	0	10
Lane Flow Rate	53	35	188	471	12
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.092	0.059	0.279	0.75	0.015
Departure Headway (Hd)	6.241	6.042	5.333	5.739	4.534
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	578	589	668	626	779
Service Time	4.241	3.818	3.109	3.53	2.324
HCM Lane V/C Ratio	0.092	0.059	0.281	0.752	0.015
HCM Control Delay	9.9	9.2	10.2	23.9	7.4
HCM Lane LOS	A	A	B	C	A
HCM 95th-tile Q	0.3	0.2	1.1	6.7	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	EB	WB	SB	SB
Directions Served	LT	T	L	R
Maximum Queue (ft)	57	45	138	42
Average Queue (ft)	25	19	63	13
95th Queue (ft)	51	47	107	42
Link Distance (ft)	2340	1899	1923	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				20
Storage Blk Time (%)			26	1
Queuing Penalty (veh)			3	3

Network Summary

Network wide Queuing Penalty: 6

Intersection	
Intersection Delay, s/veh	16.8
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	50	25	525	225	10
Future Vol, veh/h	25	50	25	525	225	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	53	26	553	237	11
Number of Lanes	0	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	10	18.8	14.2
HCM LOS	A	C	B

Lane	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	33%	0%	0%	100%	0%
Vol Thru, %	67%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	75	25	525	225	10
LT Vol	25	0	0	225	0
Through Vol	50	25	0	0	0
RT Vol	0	0	525	0	10
Lane Flow Rate	79	26	553	237	11
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.132	0.04	0.727	0.439	0.016
Departure Headway (Hd)	6.025	5.441	4.736	6.678	5.465
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	597	651	757	542	658
Service Time	4.045	3.231	2.525	4.382	3.169
HCM Lane V/C Ratio	0.132	0.04	0.731	0.437	0.017
HCM Control Delay	10	8.5	19.3	14.5	8.3
HCM Lane LOS	A	A	C	B	A
HCM 95th-tile Q	0.5	0.1	6.4	2.2	0

Intersection: 2: NW Lower Bridge Way & NW 43rd Street

Movement	EB	WB	SB	SB
Directions Served	LT	T	L	R
Maximum Queue (ft)	60	48	78	39
Average Queue (ft)	32	22	41	10
95th Queue (ft)	50	50	64	35
Link Distance (ft)	2340	1899	1923	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				20
Storage Blk Time (%)			13	1
Queuing Penalty (veh)			1	1

Network Summary

Network wide Queuing Penalty: 3

SECTION 12: ODOT CRASH DATA

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

2012-2021 Crash Data Viewer (Beta v2.8)

Updated 07/19/23

It is highly recomended to utilize the Unit's Coding Manual in conjunction with this data tool.

Data Disclaimers

Crash Coding Manual

User's Guide

Email: ODOTTDSCrashRequestGroup@odot.oregon.gov

Start Here (select crash year and area of interest)

*Limit your search area to improve performance.

Year	Multiple values
Urban Area	All
County	Deschutes
City	All
ODOT Region	All
ODOT District	All
Street Name	All
Int. Street	Multiple values
Route No	All
Hwy No	All
LRS	All
Milepoint	All

Injury Severity Filter	All
Participant Type	All
Participant Gender	All
Participant Age	All
Alcohol Involved	All
Drugs Involved	All
Marijuna Involved	All
Investigating Agency	All

Work Zone	All
School Zone	All
Speed Involved	All
Motorcycle Involved	All
Urban/Rural	All
On/Off Roadway	All
Intersection Related	All
Hit & Run	All
Collision Type	All
Crash Type	All
Crash Hour	All
Lighting Condition	All
Weather Condition	All

Note: Map shows only the selected years data.

This is a large data set (500k crashes) internet speed and filter selection will affect performance.

Map Injury Severity Legend
- (A) Serious Injury
- (B) Moderate Injury
- (C) Minor Injury
- (O) Property Damage Only

Summary Data (Selected Years) *Counts Participants in the crash

Total Crashes	33
(K) Total Fatalities	0
(A) Total Level A Injuries (Serious)	5
(B) Total Level B Injuries (Moderate)	7
(C) Total Level C Injuries (Minor/Possible)	15
(O) Property Damage Only (Participants)	43
Total Injuries	27
Total Uninjured Persons	61
Total Persons Involved	88
Total Occupants	87
Total Vehicles	57
Total Pedestrian Fatalities	0
Total Pedestrian Injuries	1
Total Pedestrians	1
Total Pedalcyclist Fatalities	0
Total Pedalcyclist Injuries	0
Total Pedalcyclists	0

Crash Trend (10 Years)

Counts Crashes by Crash Severity

*Chart only acts as filter for the years selected in Year dropdown menu.

**Map selection does not affect chart.

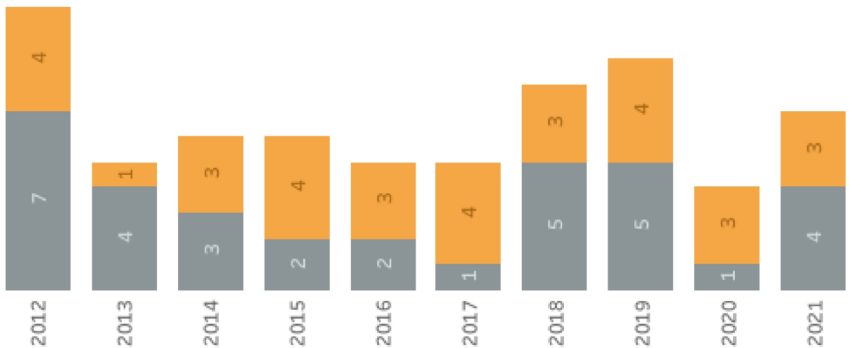


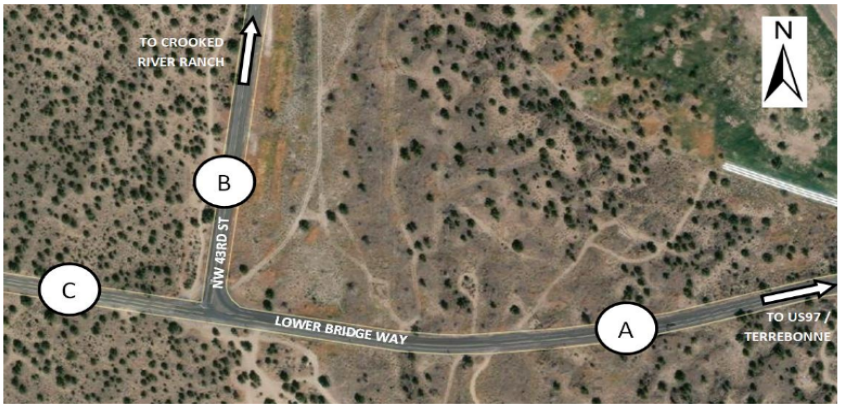
Chart Injury Severity Legend
- Injury
- Property Damage Only

Undo or Reset with buttons below

Crash Date	Ser No	Year	Vehicle Type (Original)	Injury Severity	Crash Severity	Action code	Alcohol Involved Indicator	Collision Type	County	Crash Hour	Crash Speed Invlv Flg	Crash Type	Drugs Involved	Gender	Highest Injury Level	Injury Severity Code	Intersecting Street	Intersection Related
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, January 10, 2017	90	2017	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	2P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		9 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		9 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		9 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		9 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		9 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		9 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		9 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		9 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		4 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		4 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		4 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		4 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Male	Injury C		4 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Female	Injury C		4 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Female	Injury C		4 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Female	Injury C		4 NW 43RD ST	FALSE
Wednesday, June 28, 2017	1211	2017	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	5P	No	S-1STOP	No	Female	Injury C		4 NW 43RD ST	FALSE
Friday, November 16, 2018	1861	2018	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	REAR	Deschutes	8A	No	S-1STOP	No	Unknown	Property Damage Only		9 NW LOWER BRIDGE WY	FALSE
Friday, November 16, 2018	1861	2018	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	REAR	Deschutes	8A	No	S-1STOP	No	Unknown	Property Damage Only		9 NW LOWER BRIDGE WY	FALSE
Friday, November 16, 2018	1861	2018	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	REAR	Deschutes	8A	No	S-1STOP	No	Unknown	Property Damage Only		9 NW LOWER BRIDGE WY	FALSE
Friday, November 16, 2018	1861	2018	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	REAR	Deschutes	8A	No	S-1STOP	No	Unknown	Property Damage Only		9 NW LOWER BRIDGE WY	FALSE
Saturday, December 15, 2018	2053	2018	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	9P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Saturday, December 15, 2018	2053	2018	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	9P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Saturday, December 15, 2018	2053	2018	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	9P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Saturday, December 15, 2018	2053	2018	Passenger Car	(O) Property Damage Only	Property Damage Only	No action or non-warranted	No	TURN	Deschutes	9P	No	ANGL-OTH	No	Unknown	Property Damage Only		9 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Male	Injury C		9 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Male	Injury C		9 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Male	Injury C		9 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Male	Injury C		9 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Male	Injury C		9 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Male	Injury C		9 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Male	Injury C		9 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Male	Injury C		9 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Female	Injury C		4 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Female	Injury C		4 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Female	Injury C		4 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Female	Injury C		4 NW 43RD ST	FALSE
Tuesday, December 11, 2018	2021	2018	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	TURN	Deschutes	1P	No	ANGL-OTH	No	Female	Injury C		4 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		9 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		9 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		9 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		9 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		9 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		9 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		9 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		9 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		4 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		4 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		4 NW 43RD ST	FALSE
Saturday, September 14, 2019	1621	2019	Passenger Car	(C) Minor Injury	Injury	No action or non-warranted	No	REAR	Deschutes	9P	Yes	S-1STOP	No	Female	Injury C		4 NW 43RD ST	FALSE
~~Tuesday, March 5, 2019~~	~~455~~	~~2019~~	~~Passenger Car~~	~~(C) Minor Injury~~	~~Injury~~	~~Lost control of vehicle~~	~~No~~	~~NCOL~~	~~Deschutes~~	~~7P~~	~~Yes~~	~~OVERTURN~~	~~No~~	~~Male~~	~~Injury B~~		~~4 NW LOWER BRIDGE WY~~	~~FALSE~~
~~Tuesday, March 5, 2019~~	~~455~~	~~2019~~	~~Passenger Car~~	~~(B) Moderate Injury~~	~~Injury~~	~~No action or non-warranted~~	~~No~~	~~NCOL~~	~~Deschutes~~	~~7P~~	~~Yes~~	~~OVERTURN~~	~~No~~	~~Female~~	~~Injury B~~		~~3 NW LOWER BRIDGE WY~~	~~FALSE~~
~~Tuesday, February 4, 2020~~	~~240~~	~~2020~~	~~Passenger Car~~	~~(B) Moderate Injury~~	~~Injury~~	~~Lost control of vehicle~~	~~No~~	~~FIX~~	~~Deschutes~~	~~10P~~	~~Yes~~	~~FIX OBJ~~	~~No~~	~~Male~~	~~Injury B~~		~~3 NW LOWER BRIDGE WY~~	~~FALSE~~
Thursday, March 25, 2021	454	2021	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	ANGL	Deschutes	1P	No	ANGL-OTH	No	Male	Injury A		9 NW 43RD ST	FALSE
Thursday, March 25, 2021	454	2021	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	ANGL	Deschutes	1P	No	ANGL-OTH	No	Male	Injury A		9 NW 43RD ST	FALSE
Thursday, March 25, 2021	454	2021	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	ANGL	Deschutes	1P	No	ANGL-OTH	No	Male	Injury A		9 NW 43RD ST	FALSE
Thursday, March 25, 2021	454	2021	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	ANGL	Deschutes	1P	No	ANGL-OTH	No	Male	Injury A		9 NW 43RD ST	FALSE
Thursday, March 25, 2021	454	2021	Passenger Car	(O) Property Damage Only	Injury	No action or non-warranted	No	ANGL	Deschutes	1P	No	ANGL-OTH	No	Male	Injury A		9 NW 43RD ST	FALSE
Thursday, March 25, 2021	454	2021	Passenger Car	(A) Serious Injury	Injury	No action or non-warranted	No	ANGL	Deschutes	1P	No	ANGL-OTH	No	Male	Injury A		2 NW 43RD ST	FALSE
Thursday, March 25, 2021	454	2021	SEMI TOW	(O) Property Damage Only	Injury	No action or non-warranted	No	ANGL	Deschutes	1P	No	ANGL-OTH	No	Male	Injury A		9 NW 43RD ST	FALSE
Thursday, March 25, 2021	454	2021	SEMI TOW	(O) Property Damage Only	Injury	No action or non-warranted	No	ANGL	Deschutes	1P	No	ANGL-OTH	No	Male	Injury A		9 NW 43RD ST	FALSE
Thursday, March 25, 2021	454	2021	SEMI TOW	(O) Property Damage Only	Injury	No action or non-warranted	No	ANGL	Deschutes	1P	No	ANGL-OTH	No	Male	Injury A		9 NW 43RD ST	FALSE
Thursday, March 25, 2021	454	2021	SEMI TOW	(O) Property Damage Only	Injury	No action or non-warranted	No	ANGL	Deschutes	1P	No	ANGL-OTH	No	Male	Injury A		9 NW 43RD ST	FALSE
Thursday, March 25, 2021	454	2021	SEMI TOW	(A) Serious Injury	Injury	No action or non-warranted	No	ANGL	Deschutes	1P	No	ANGL-OTH	No	Male	Injury A		2 NW 43RD ST	FALSE
Tuesday, May 18, 2021	721	2021	Passenger Car	(C) Minor Injury	Injury	Other action	No	REAR	Deschutes	5A	No	S-1STOP	No	Female	Injury B		4 NW LOWER BRIDGE WY	FALSE
Tuesday, May 18, 2021	721	2021	Passenger Car	(C) Minor Injury	Injury	Other action	No	REAR	Deschutes	5A	No	S-1STOP	No	Female	Injury B		4 NW LOWER BRIDGE WY	FALSE
Tuesday, May 18, 2021	721	2021	Passenger Car	(B) Moderate Injury	Injury	Driver's attention distracted	No	REAR	Deschutes	5A	No	S-1STOP	No	Male	Injury B		3 NW LOWER BRIDGE WY	FALSE
Tuesday, May 18, 2021	721	2021	Passenger Car	(B) Moderate Injury	Injury	Driver's attention distracted	No	REAR	Deschutes	5A	No	S-1STOP	No	Male	Injury B		3 NW LOWER BRIDGE WY	FALSE
~~Wednesday, February 3, 2021~~	~~80068~~	~~2021~~	~~Passenger Car~~	~~(O) Property Damage Only~~	~~Property Damage Only~~	~~No action or non-warranted~~	~~No~~	~~OTH~~	~~Deschutes~~	~~11A~~	~~No~~	~~ANIMAL~~	~~No~~	~~Unknown~~	~~Property Damage Only~~		~~9 NW 43RD ST~~	~~FALSE~~

Invstg Agy Short Desc	Lighting Condition	Marijuna Involved Indicator	Motorcycles	Off Roadway	Participant Age	Participant Type	Street Name	Urban/Rural	Weather Condition
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Snow
NONE	DAY	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	55-64	Passenger	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	55-64	Passenger	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	55-64	Passenger	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	55-64	Passenger	NW LOWER BRIDGE WY	Rural	Clear
NONE	DAY	No	No	On Roadway	55-64	Passenger	NW LOWER BRIDGE WY	Rural	Clear
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW 43RD ST	Rural	Clear
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW 43RD ST	Rural	Clear
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW 43RD ST	Rural	Clear
NO RPT	DAY	No	No	On Roadway	Unknown	Driver	NW 43RD ST	Rural	Clear
NONE	DARK	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	Unknown	Driver	NW LOWER BRIDGE WY	Rural	Clear
COUNTY	DAY	No	No	On Roadway	19-20	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	19-20	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	19-20	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	19-20	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	19-20	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	19-20	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	19-20	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	19-20	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	19-20	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
NONE	DARK	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	55-64	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
NONE	DARK	No	No	On Roadway	14-18	Driver	NW LOWER BRIDGE WY	Rural	Clear
~~COUNTY~~	~~DARK~~	~~No~~	~~No~~	~~Off Roadway~~	~~45-54~~	~~Driver~~	~~NW 43RD ST~~	~~Rural~~	~~Snow~~
~~COUNTY~~	~~DARK~~	~~No~~	~~No~~	~~Off Roadway~~	~~45-54~~	~~Passenger~~	~~NW 43RD ST~~	~~Rural~~	~~Snow~~
~~COUNTY~~	~~DARK~~	~~No~~	~~No~~	~~Off Roadway~~	~~14-18~~	~~Driver~~	~~NW 43RD ST~~	~~Rural~~	~~Snow~~
COUNTY	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	75+	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	65-74	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAY	No	No	On Roadway	75+	Driver	NW LOWER BRIDGE WY	Rural	Cloudy
COUNTY	DAWN	No	No	On Roadway	25-34	Driver	NW 43RD ST	Rural	Clear
COUNTY	DAWN	No	No	On Roadway	25-34	Driver	NW 43RD ST	Rural	Clear
COUNTY	DAWN	No	No	On Roadway	21-24	Driver	NW 43RD ST	Rural	Clear
COUNTY	DAWN	No	No	On Roadway	21-24	Driver	NW 43RD ST	Rural	Clear
~~NONE~~	~~DAY~~	~~No~~	~~No~~	~~On Roadway~~	~~Unknown~~	~~Driver~~	~~NW LOWER BRIDGE WY~~	~~Rural~~	~~Unknown~~

SECTION 13: CRASH RATE CALCULATION



	NB ADT	SB ADT	WB ADT	EB ADT
Location "A"	-	-	3,869	3,855
Location "B"	3,350	3,432	-	-
Location "C"	-	-	545	590

Figure 2 – 2022 Average Directional Daily Traffic (vehicles per day)

$$Intersection\ Crash\ Rate\ per\ MEV = \frac{Annual\ Number\ of\ Crashes\ x\ 10^6}{(AADT)x\ (365\ days/year)}$$

Intersection Crash Rate per MEV = (8 crashes/5 years)x10^6 / ((3432 veh/day+3869 veh/day+590 veh/day)*(365days/year))

Intersection Crash Rate per MEV = 0.56

*According to Exhibit 4-1 of the Analysis Procedures Manual Version 2 April 2023, for Rural three-leg minor stop-control, the 90th percentile crash rate is 0.475

Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control

	Rural				Urban			
	3SG	**3ST**	**4SG**	**4ST**	**3SG**	**3ST**	**4SG**	**4ST**
No. of Intersections	7	115	20	60	55	77	106	60
Mean Crash Rate	**0.226**	**0.196**	**0.324**	**0.434**	**0.275**	**0.131**	**0.477**	**0.198**
Median Crash Rate	0.163	0.092	0.320	0.267	0.252	0.105	0.420	0.145
Standard Deviation	0.185	0.314	0.223	0.534	0.155	0.121	0.273	0.176
Coefficient of Variation	0.819	1.602	0.688	1.230	0.564	0.924	0.572	0.889
90th Percentile Rate	**0.464**	**0.475**	**0.579**	**1.080**	**0.509**	**0.293**	**0.860**	**0.408**

Source: Assessment of Statewide Intersection Safety Performance, FHWA-OR-RD-18, Portland State University and Oregon State University, June 2011, Table 4.1, p. 47.

Note: Traffic control types include
3SG (three-leg signalized),
3ST (three-leg minor stop-control),
4SG (four-leg signalized),
4ST (four-leg minor stop-control).