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# Gordon Truck Center Transportation Impact Study Millersburg, Oregon

Date:  
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## Executive Summary

1. The proposed Gordon Truck Centers project will include the expansion of an existing truck servicing/repair center and construction of a new warehouse building located on two properties (tax lots 10S03W21-00304 and 00305) at/near 5801 Old Salem Road NE in Millersburg, Oregon. The proposed expansion of the truck servicing/repair business will increase the number of vehicle service/repair bays from 3 bays to 14 bays (net increase of 11 bays) while the warehouse building will be 112,320 square feet. Access to the site will be provided via an existing driveway and a proposed driveway along Old Salem Road NE, located near the north and south sides of the site, respectively.
2. The trip generation calculations show that the proposed project is projected to generate 35 net new morning peak hour trips, 43 net new evening peak hour trips, and 430 net new average weekday trips.
3. No significant trends or crash patterns were identified at the existing north site access study intersection that were indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.
4. Provided any obstructing on-site trees along the east side of Old Salem Road NE are either removed or properly maintained, adequate intersection sight distances can be made available at the site access intersections along Old Salem Road NE to allow safe operation at each intersection for passenger cars and trucks. No other sight distance related mitigation is necessary at the access intersections.
5. Traffic signal warrants are not projected to be met at any of the unsignalized study intersections under year 2025 conditions, regardless of whether or not the proposed development is constructed. Therefore, no new traffic signals are necessary or recommended as part of the proposed development application.
6. All study intersections are currently operating acceptably per jurisdictional standards and are projected to continue operating acceptably through the 2025 site buildout year. Accordingly, no operational mitigation is necessary or recommended at the study intersections.
7. Based on the intersection queuing analysis, all applicable turning movements at the study intersections have adequate storage space to accommodate projected 95<sup>th</sup> percentile queues at each intersection. Accordingly, no intersection queuing related mitigation is necessary or recommended as part of the proposed development.

# Project Description

## Introduction

The proposed Gordon Truck Centers project will include the expansion of an existing truck servicing/repair center and construction of a new warehouse building located on two properties (tax lots 10S03W21-00304 and 00305) at/near 5801 Old Salem Road NE in Millersburg, Oregon. The proposed expansion of the truck servicing/repair business will increase the number of vehicle service/repair bays from 3 bays to 14 bays (net increase of 11 bays) while the warehouse building will be 112,320 square feet. Access to the site will be provided via an existing driveway and a proposed driveway along Old Salem Road NE, located near the north and south sides of the site, respectively.

Based on correspondence with the City of Millersburg staff, the report conducts safety and capacity/level of service analyses at the following intersections during the morning and evening peak hours:

1. North Site Access at Old Salem Road NE
2. South Site Access at Old Salem Road NE (Proposed)

The purpose of this study is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the existing and proposed uses, and to determine any mitigation that may be necessary to do so. Detailed information on traffic counts, trip generation calculations, safety analyses, and level of service calculations is included in the appendix to this report.

## Location Description

The project site is located east of Old Salem Road NE, north of Western Way NE, and south of Steelhead Run Drive in Millersburg, Oregon. The subject site is located in an area zoned as Limited Industrial (LI), with industrial land uses to the north and south, a religious institution to the northwest, residential land uses to the west, and Interstate 5 and a railroad to the east.

The project site includes two properties (tax lots 10S03W21-00304 and 00305) which encompass an approximate total of 22.59 acres. The site is currently developed with a 12,000 square foot truck repair shop building near the northwest edge of the site. There are currently two existing driveways along Old Salem Road NE: one access along the north side of the site and one located opposite Clearwater Drive. The north access will be maintained following redevelopment of the site while the access opposite Clearwater Drive will be relocated approximately 180 feet to the south.

Figure 1 presents an aerial image of the nearby vicinity with the project site outlined in yellow.



Figure 1: Aerial Photo of Site Vicinity (Image from Google Earth)

**Vicinity Streets**

The proposed development is expected to impact Old Salem Road NE near the site. Table 1 provides a description of the vicinity roadway under existing conditions.

Table 1: Vicinity Roadway Descriptions

Street Name	Jurisdiction	Functional Classification	Speed (MPH)	On-Street Parking	Curbs & Sidewalks	Bicycle Lanes
Old Salem Road NE	Linn County	Arterial	50	Not Permitted	Partial Both Sides	None

Table Notes: Jurisdiction and functional classification based on the City of Millersburg TSP and ODOT's TransGIS website.

**Study Intersections**

Based on coordination with agency staff, two intersections were identified for analysis. A summarized description of these study intersections is provided in Table 2.

Table 2: Study Intersection Descriptions

Number	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	North Site Access at Old Salem Road NE	Three-Legged	Stop-Controlled	WB Stop-Controlled Approach
2	South Site Access at Old Salem Road NE	Three-Legged	Stop-Controlled	WB Stop-Controlled Approach

A vicinity map showing the project site, vicinity streets, and study intersection configurations is shown in Figure 2.

## Site Trips

### Trip Generation

To estimate the number of trips that will be generated by the proposed use, trip rates from the *Trip Generation Manual*<sup>1</sup> were used. Data from the following land use codes were utilized:

- 150, *Warehousing*, based on the square footage of the gross building floor area.
- 942, *Automobile Care Center*, based on the number of vehicle service/repair bays.

For land use code 942, no data pertaining to entering/exiting trip splits is provided in the *Trip Generation Manual* for evening peak hour data using the “trips per service bays” rate. Therefore, entering/exiting trip split data was used referenced from the “trips per 1,000 square feet” evening peak hour rate.

The trip generation calculations show that the proposed project is projected to generate 35 net new morning peak hour trips, 43 net new evening peak hour trips, and 430 net new average weekday trips. The trip generation estimates are summarized in Table 3. Detailed trip generation calculations are included as an attachment to this memorandum.

**Table 3: Trip Generation Summary**

ITE Code	Size/Rate	Morning Peak Hour			Evening Peak Hour			Weekday Total	
		Enter	Exit	Total	Enter	Exit	Total		
<b>Existing Conditions</b>									
Automobile Care Center	942	3 Service Bays	3	2	5	3	4	7	66
<b>Proposed Conditions</b>									
Automobile Care Center	942	14 Service Bays	14	7	21	14	16	30	304
Warehousing	150	112,320 SF	15	4	19	6	14	20	192
Total			29	11	40	20	30	50	496
<b>Net Change</b>									
Net Change in Site Trips			26	9	35	17	26	43	430

<sup>1</sup> Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.



## Trip Distribution

The trip distribution for the site was estimated based on the traffic counts collected on April 4, 2023, at intersections within the study area. The following trip distribution was used for analysis:

- Approximately 55 percent of site trips will travel to/from the north along Old Salem Road NE.
- Approximately 45 percent of site trips will travel to/from the south along Old Salem Road NE.

The trip distribution and assignment for the site trips generated during the morning and evening peak hours are shown in Figure 2.

## Traffic Volumes

### Existing Conditions

Traffic counts were conducted on Tuesday, April 4, 2023, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM at the following intersections:

1. North Site Access at Old Salem Road NE
2. Clearwater Drive at Old Salem Road NE

The traffic volumes traveling to/from the south of the intersection of Clearwater Drive at Old Salem Road NE were used to estimate major-street volumes at the proposed south site access location. Data was used from each intersection's respective morning and evening peak hours.

Figure 2 shows the existing traffic volumes at the study intersections during the morning and evening peak hours.

## 2025 Background Conditions

### Volume Growth

To provide an analysis of the impact of the proposed development on the nearby transportation facilities, an estimate of future traffic volumes is required. It is expected that the proposed development will be constructed and in operation by year 2025. In order to approximate the future year 2025 traffic volumes at the study intersections, a compound growth rate of 1.16 percent per year, as calculated per the data found in the Millersburg's Transportation System Plan (TSP)<sup>2</sup>, was applied to the year 2023 volumes at the study intersections over a two-year period.

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<sup>2</sup> City of Millersburg, *Millersburg Transportation System Plan (TSP)*, Volume 2, December 2016.

### **In-Process Data**

In addition to the traffic volume growth described above, there are two in-process developments that are currently approved/proposed for construction within the site vicinity that are expected to impact nearby study intersections. These in-process developments include the following:

1. Agribusiness Millersburg Site
2. Intermodal Transfer Facility

The in-process developments are not currently/fully contributing trips to the transportation system but may potentially be by the assumed 2025 buildout year of the site. Additional trips corresponding to each in-process development were added to the existing year traffic volumes in addition to the two years of traffic growth at each of the applicable study intersections. To maintain a conservative analysis of operation at the study intersections, all in-process developments were assumed to be constructed by year 2025. Figure A in the technical appendix shows the in-process development trips at the study intersections during the morning and evening peak hours.

Figure 2 shows the projected year 2025 background traffic volumes at the study intersections during the morning and evening peak hours.

### **2025 Buildout Conditions**

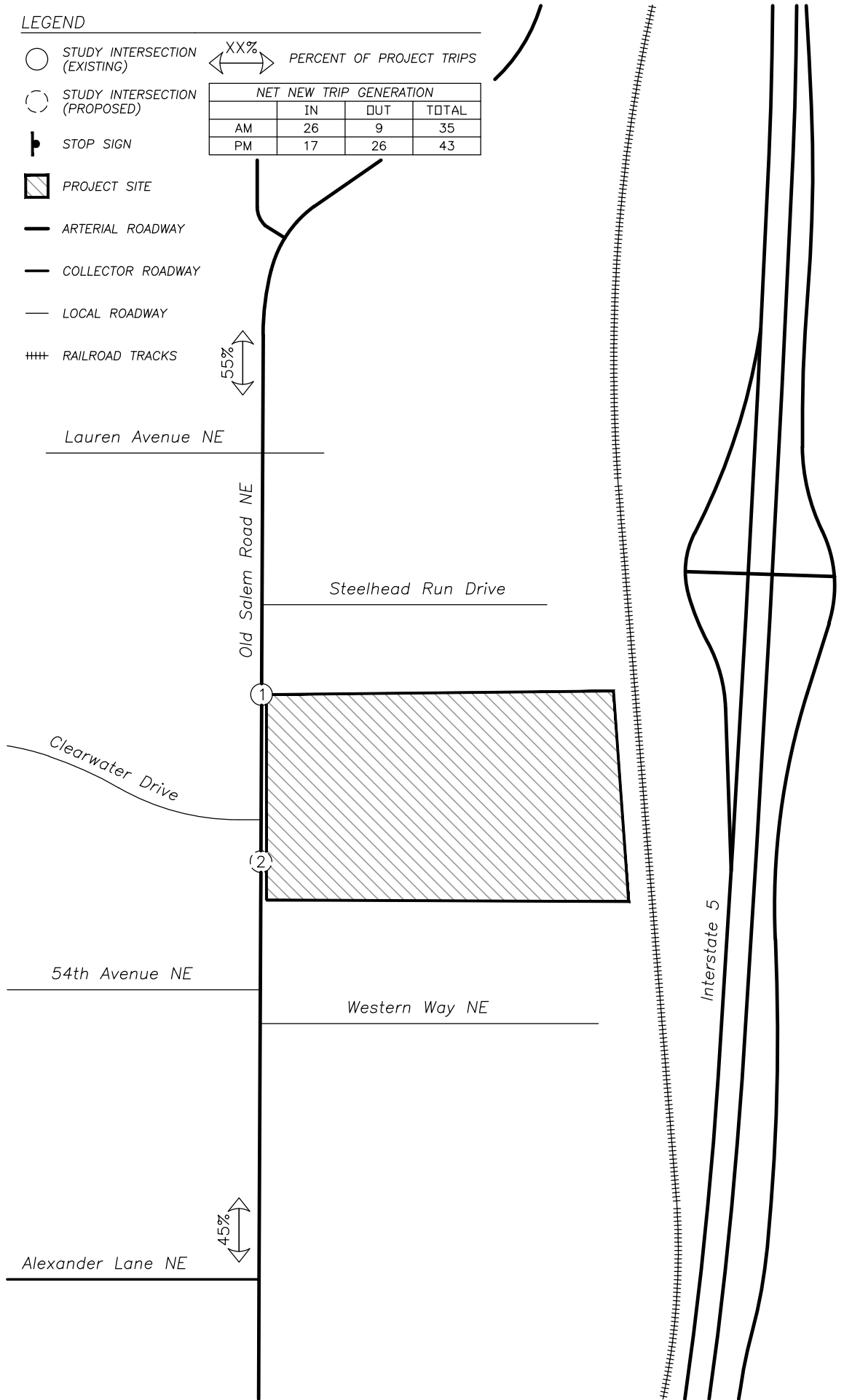
Peak hour trips calculated to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the projected year 2025 background traffic volumes to obtain the expected 2025 site buildout volumes.

Figure 2 shows year 2025 buildout traffic volumes at the study intersections during the morning and evening peak hours.

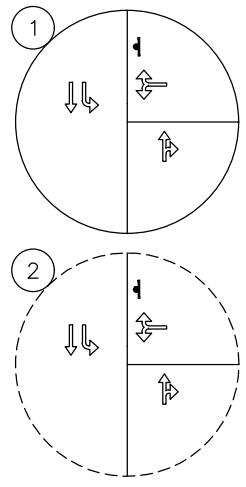
**LEGEND**

- STUDY INTERSECTION (EXISTING) XX% PERCENT OF PROJECT TRIPS
- STUDY INTERSECTION (PROPOSED)
- ▬ STOP SIGN
- ▨ PROJECT SITE
- ▬ ARTERIAL ROADWAY
- ▬ COLLECTOR ROADWAY
- ▬ LOCAL ROADWAY
- ▬ RAILROAD TRACKS

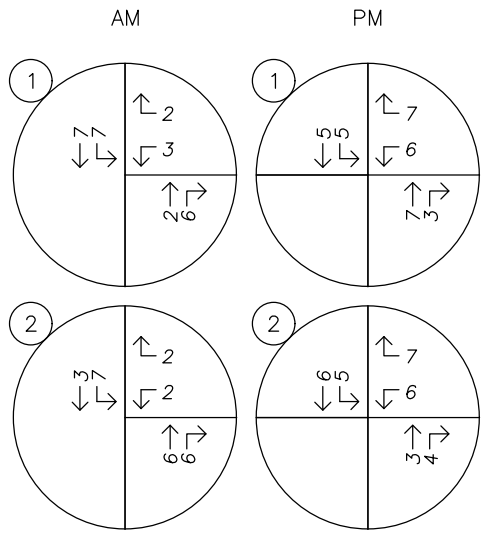
NET NEW TRIP GENERATION			
	IN	OUT	TOTAL
AM	26	9	35
PM	17	26	43



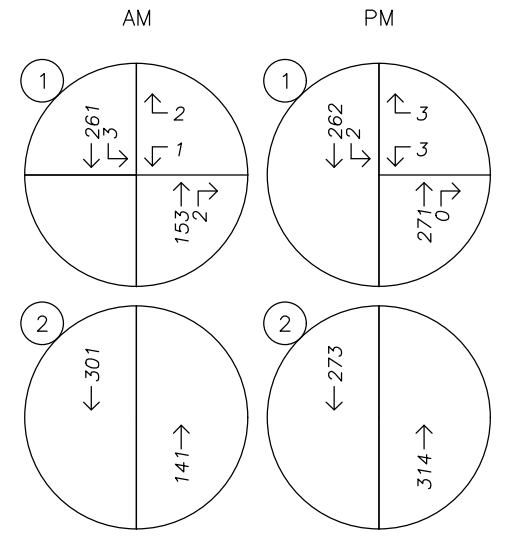
**INTERSECTION CONFIGURATION**



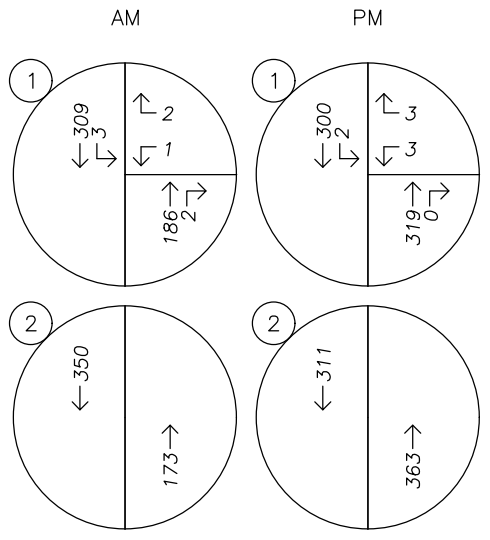
**SITE TRIP**



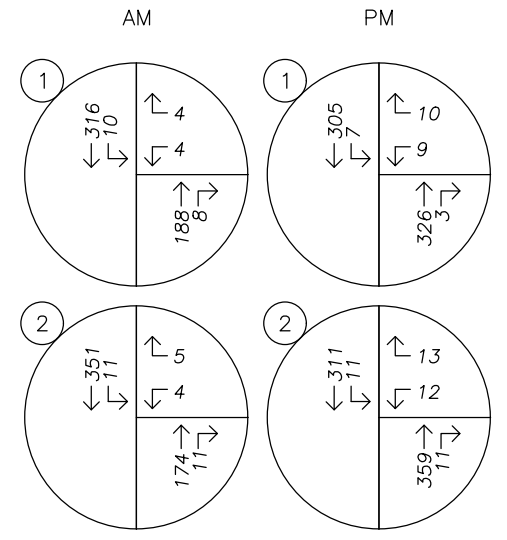
**EXISTING CONDITION**



**BACKGROUND CONDITION**



**BUILDOUT CONDITION**



No Scale



**VICINITY/SITE TRIP/TRAFFIC VOLUME**

2023 Existing, 2025 Background, & 2025 Buildout Conditions  
AM & PM Peak Hours

# Safety Analysis

## Crash History Review

Using data obtained from ODOT’s Crash Analysis and Reporting Unit and online TransGIS website, a review was performed of the most recent five years of available crash data at the existing north site access study intersection (January 2016 through December 2020). The crash data was evaluated based on the number of crashes, the type of collisions, the severity of the collisions, and the resulting crash rate for each intersection.

Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated under the common assumption that traffic counted during the evening peak hour represents approximately ten percent of annual average daily traffic (AADT) at each intersection. Crash rates in excess of 1.00 crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

With regard to crash severity, ODOT classifies crashes in the following categories:

- Property Damage Only (PDO);
- Possible Injury – Complaint of Pain (Injury C);
- Non-Incapacitating Injury (Injury B);
- Incapacitating Injury – Bleeding, Broken Bones (Injury A); and
- Fatality or Fatal Injury.

Table 4 provides a summary of crash types while Table 5 summarizes crash severities and rates for the study intersection. Detailed crash data is provided in the appendix to this report.

**Table 4: Crash Type Summary**

Number	Intersection	Crash Type						Total
		Rear End	Turn/ Angle	Fixed Object	Side swipe	Ped/ Bike	Other	
1	North Access at Old Salem Road NE	0	1	0	0	0	0	1

**Table 5: Crash Severity and Rate Summary**

Number	Intersection	Crash Severity						Total Crashes	AADT	Crash Rate
		PDO	C	B	A	Fatal	Unknown			
1	North Access at Old Salem Road NE	0	1	0	0	0	0	1	5,410	0.101

Table Notes: **BOLDED** text indicates a crash rate in excess of 1.00 CMEV



Based on the most recent five years of available crash data, no significant trends or crash patterns were identified at the existing north site access study intersection that were indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis. Crash reports for the study intersection are included in appendix.

## Sight Distance Evaluation

Intersection sight distances were measured at the two site access intersections along Old Salem Road NE. Sight distances along Old Salem Road NE were measured and evaluated in accordance with standards established in *A Policy on Geometric Design of Highways and Streets*<sup>3</sup> as well as per *Clackamas County Roadway Standards*.

### Sight Distance Methodology

According to AASHTO, the driver's eye is assumed to be approximately 14.5 feet from the near edge of the nearest travel lane, or traveled way, of the intersecting street and at a height of 3.5 feet (7.6 feet for trucks) above the minor-street approach pavement. The vehicle driver's eye height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement. Based on a posted speed of 50 mph along Old Salem Road NE, the minimum recommended intersection sight distances include the following:

- Old Salem Road NE (one travel lane per direction with a center two-way left-turn lane)
  - 590 feet to the north for left-turn vehicles (900 feet for trucks).
  - 480 feet to the south for right-turn vehicles (775 feet for trucks).

Note that Old Salem Road NE generally has a three-lane cross-section with a center two-way left-turn lane (TWLTL) which could serve minor-street left-turn vehicles as a receiving lane. For the two site accesses along Old Salem Road NE, left-turning vehicles are not required to immediately travel across more than one lane of traffic to enter the major-street (i.e. they can first enter the center TWLTL). For the purposes of this analysis, it was assumed vehicles generally would not use this TWLTL as a receiving lane, whereby a time gap of 8.0 seconds (12.2 seconds for trucks) was used when conducting a site egress left-turn.

At both site access intersections along Old Salem Road NE, sight distances for passenger vehicles were measured to be in excess of 590 feet to the north and in excess of 480 feet to the south. For trucks, provided any obstructing on-site trees along the east side of Old Salem Road NE are either removed or properly maintained, sight distances were measured to be in excess of 900 feet to the north and in excess of 775 feet to the south.

### Analysis Findings

Based on the above measurements, provided any obstructing on-site trees along the east side of Old Salem Road NE are either removed or properly maintained, adequate intersection sight distances can be made available at the site access intersections along Old Salem Road NE to allow safe operation at each intersection for passenger cars and trucks. No other sight distance related mitigation is necessary at the access intersections.

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<sup>3</sup> American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 7<sup>th</sup> Edition, 2018.

## Signal Warrant Analysis

Preliminary traffic signal warrants were examined for the unsignalized site access intersections to determine whether the installation of a new traffic signal will be warranted at the intersections by the 2025 future year. Based on the preliminary analysis following a review of Warrant 1 in the *Manual on Uniform Traffic Control Devices*, or MUTCD, traffic signal warrants are not projected to be met at the unsignalized study intersections under year 2025 conditions, regardless of whether or not the proposed development is constructed. Therefore, no new traffic signals are necessary or recommended as part of the proposed development application.



# Operational Analysis

## Intersection Capacity Analysis

A capacity and delay analysis were conducted for each of the study intersections per the unsignalized intersection analysis methodologies in the *Highway Capacity Manual (HCM)*<sup>4</sup>. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

## Performance Standards

According to the City of Millersburg’s TSP, adopted December 2016, the following minimum operation standards apply at intersections under City jurisdiction:

- All unsignalized intersections shall operate at LOS D or better.

According to Linn County’s TSP, adopted April 2018, stop-controlled intersections are to operate at LOS E or better with a v/c ratio no greater than 0.90. These standards are not applicable for intersection approaches that serve 20 or less vehicles during the peak hour.

## Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 6 for the morning and evening peak hours. Detailed calculations as well as tables showing the relationship between delay and LOS are included in the appendix to this report.

**Table 6: Capacity Analysis Summary**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
<b>1. North Access at Old Salem Road NE</b>						
2023 Existing Conditions	B	11	<0.01	B	11	0.01
2025 Background Conditions	B	11	<0.01	B	12	0.01
2025 Buildout Conditions	B	12	0.02	B	12	0.04
<b>2. South Access at Old Salem Road NE</b>						
2025 Buildout Conditions	B	12	0.02	B	12	0.05

Table Notes: **BOLDED** text indicates intersection operation above jurisdictional standards.

<sup>4</sup> Transportation Research Board, *Highway Capacity Manual 6<sup>th</sup> Edition*, 2016.



Based on the results of the operational analysis, all study intersections are currently operating acceptably per jurisdictional standards and are projected to continue operating acceptably through the 2025 site buildout year. Accordingly, no operational mitigation is necessary or recommended at the study intersections.

## Intersection Queuing Analysis

The queue lengths at the access intersections were projected based on the results of a Synchro/SimTraffic simulation, with the reported values representing the 95<sup>th</sup> percentile queue length. The 95<sup>th</sup> percentile queue is a statistical measurement which indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95<sup>th</sup> percentile queue length may theoretically never be met or observed in the field.

The projected 95<sup>th</sup> percentile queue lengths reported in the simulation are presented in Table 7 for the morning and evening peak hours. Note the reported queue lengths were rounded up to the nearest five feet. Available lane storages at applicable turning movements were rounded to the nearest five feet. Detailed queuing analysis worksheets are included in the technical appendix to this report.

**Table 7: Queuing Analysis Summary**

		Available Storage (ft)	AM Peak Hour 95th (ft)	PM Peak Hour 95th (ft)
<b>1. North Access at Old Salem Road NE</b>				
2023 Existing Conditions	WB Lane	180	40	30
	SB LT Lane	270*	5	15
2025 Background Conditions	WB Lane	180	25	35
	SB LT Lane	270*	5	10
2025 Buildout Conditions	WB Lane	180	60	60
	SB LT Lane	270*	20	30
<b>2. South Access at Old Salem Road NE</b>				
2025 Buildout Conditions	WB Lane	70	50	50
	SB LT Lane	160*	20	30

Table Notes: **BOLDED** text indicates queue length exceeds available storage.

\* The distance to adjacent intersection with public/private road.

Based on the intersection queuing analysis, all applicable turning movements at the study intersections have adequate storage space to accommodate projected 95<sup>th</sup> percentile queues at each intersection. Accordingly, no intersection queuing related mitigation is necessary or recommended as part of the proposed development.



## Conclusions

No significant trends or crash patterns were identified at the existing north site access study intersection that were indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.

Provided any obstructing on-site trees along the east side of Old Salem Road NE are either removed or properly maintained, adequate intersection sight distances can be made available at the site access intersections along Old Salem Road NE to allow safe operation at each intersection for passenger cars and trucks. No other sight distance related mitigation is necessary at the access intersections.

Traffic signal warrants are not projected to be met at any of the unsignalized study intersections under year 2025 conditions, regardless of whether or not the proposed development is constructed. Therefore, no new traffic signals are necessary or recommended as part of the proposed development application.

All study intersections are currently operating acceptably per jurisdictional standards and are projected to continue operating acceptably through the 2025 site buildout year. Accordingly, no operational mitigation is necessary or recommended at the study intersections.

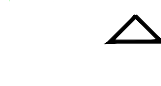

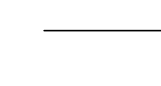



Based on the intersection queuing analysis, all applicable turning movements at the study intersections have adequate storage space to accommodate projected 95<sup>th</sup> percentile queues at each intersection. Accordingly, no intersection queuing related mitigation is necessary or recommended as part of the proposed development.

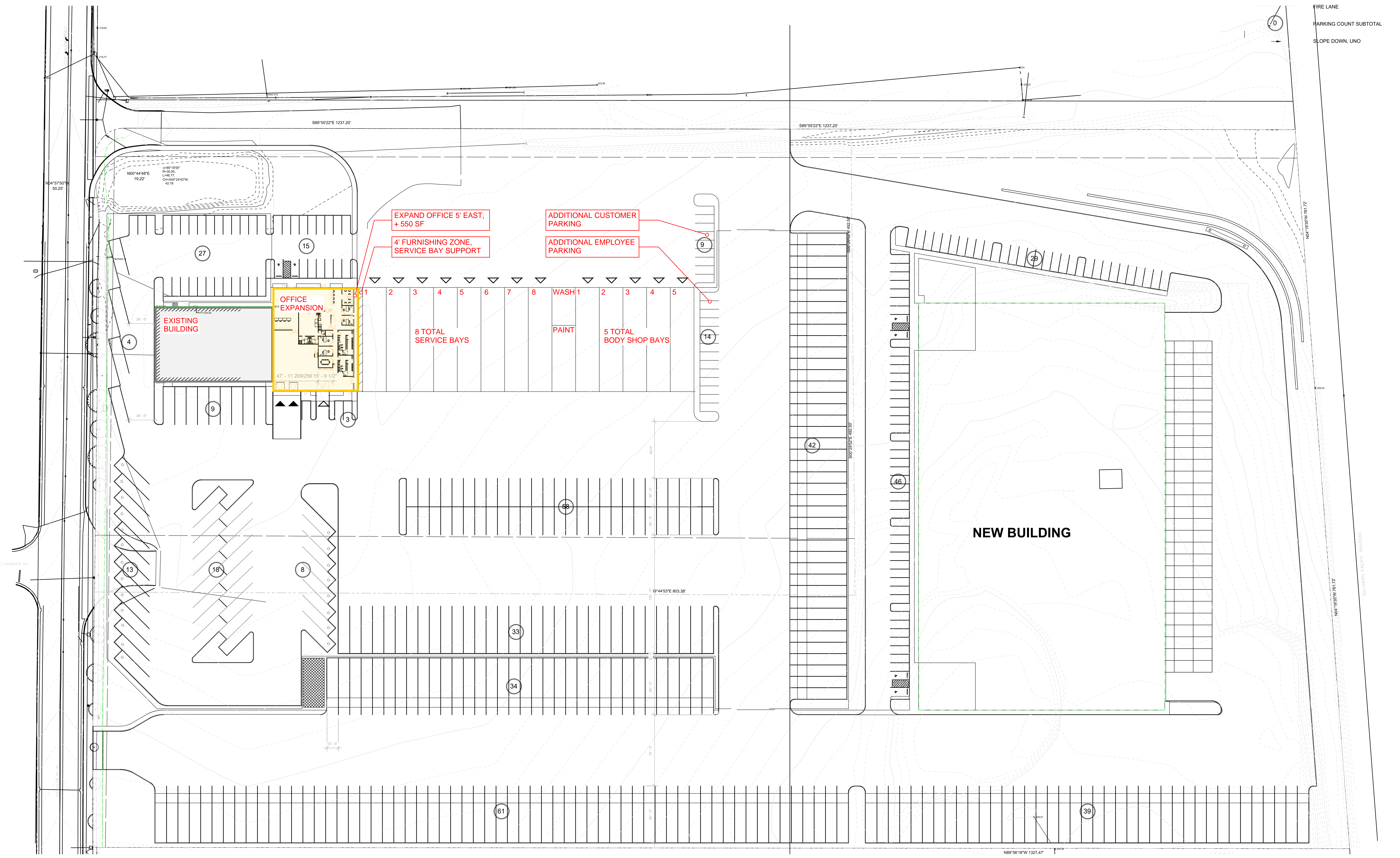
## Appendix A – Site Plan

Site Plan

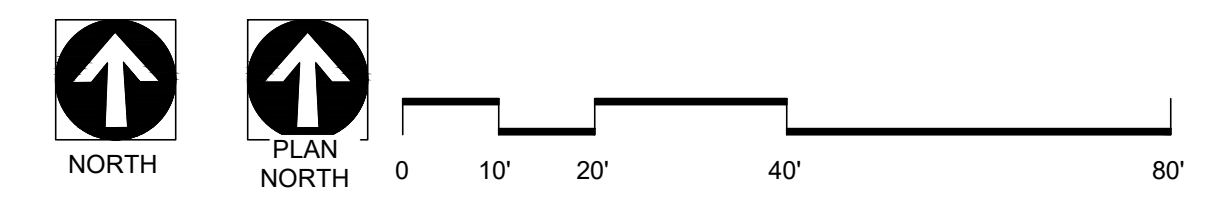


LEGEND

-  DRIVE-IN DOOR
-  DOCK-HEIGHT DOOR
-  AREA OF WORK
-  FIRE LANE
-  PARKING COUNT SUBTOTAL
-  SLOPE DOWN, UNO



**1 SITE PLAN**  
1" = 40'-0"



Client/ Owner:

**GORDON  
TRUCK  
CENTERS**

CLIENT ADDR

Project:

**BUILDING  
ADDITION**

OLD SALEM ROAD NE  
CLEARWATER DRIVE  
MILLERSBURG, OR

Sheet Title:

**SITE PLAN**

Revisions:

#	Description

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Date: 3/30/  
Job Number: 12  
Sheet

## Appendix B – Trip Generation

Trip Generation





### TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

Proposed Conditions

Land Use: Warehousing

Land Use Code: 150

Land Use Subcategory: All Sites

Setting/Location: General Urban/Suburban

Variable: 1000 SF GFA

Trip Type: Vehicle

Formula Type: Rate

Variable Quantity: **112.32**

#### AM PEAK HOUR

Trip Rate: 0.17

	Enter	Exit	Total
Directional Split	77%	23%	
Trip Ends	<b>15</b>	<b>4</b>	<b>19</b>

#### PM PEAK HOUR

Trip Rate: 0.18

	Enter	Exit	Total
Directional Split	28%	72%	
Trip Ends	<b>6</b>	<b>14</b>	<b>20</b>

#### WEEKDAY

Trip Rate: 1.71

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>96</b>	<b>96</b>	<b>192</b>

#### SATURDAY

Trip Rate: 0.15

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>8</b>	<b>8</b>	<b>16</b>



TRIP GENERATION CALCULATIONS  
Source: Trip Generation Manual, 11th Edition  
Proposed Conditions  
*Land Use:* Warehousing  
*Land Use Code:* 150  
*Land Use Subcategory:* All Sites  
*Setting/Location:* General Urban/Suburban  
*Variable:* 1000 SF GFA  
*Trip Type:* Truck  
*Formula Type:* Rate  
*Variable Quantity:* 112.32

### AM PEAK HOUR

*Trip Rate:* 0.02

	Enter	Exit	Total
Directional Split	52%	48%	
Trip Ends	1	1	2

### PM PEAK HOUR

*Trip Rate:* 0.03

	Enter	Exit	Total
Directional Split	52%	48%	
Trip Ends	2	1	3

### WEEKDAY

*Trip Rate:* 0.6

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	34	34	68

### SATURDAY

*Trip Rate:* 0

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	NA	NA	NA



TRIP GENERATION CALCULATIONS  
Source: Trip Generation Manual, 11th Edition  
Existing Conditions

Land Use: Automobile Care Center  
Land Use Code: 942  
Land Use Subcategory: All Sites  
Setting/Location: General Urban/Suburban  
Variable: Service Bays  
Trip Type: Vehicle  
Variable Quantity: 3

AM PEAK HOUR

Trip Rate: 1.52

	Enter	Exit	Total
Directional Split	68%	32%	
Trip Ends	3	2	5

PM PEAK HOUR

Trip Rate: 2.17

	Enter	Exit	Total
Directional Split	48%	52%	
Trip Ends	3	4	7

*Directional Split assumed to be opposite of AM split*

WEEKDAY

Trip Rate: 21.7

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	33	33	66

*Weekday Rate assumed to be 10x the PM Peak Hour*



TRIP GENERATION CALCULATIONS  
Source: Trip Generation Manual, 11th Edition  
Proposed Conditions

Land Use: Automobile Care Center  
Land Use Code: 942  
Land Use Subcategory: All Sites  
Setting/Location: General Urban/Suburban  
Variable: Service Bays  
Trip Type: Vehicle  
Variable Quantity: 14

AM PEAK HOUR

Trip Rate: 1.52

	Enter	Exit	Total
Directional Split	68%	32%	
Trip Ends	14	7	21

PM PEAK HOUR

Trip Rate: 2.17

	Enter	Exit	Total
Directional Split	48%	52%	
Trip Ends	14	16	30

*Directional Split assumed to be AM split from the "Trips per 1,000 SF" rate.*

WEEKDAY

Trip Rate: 21.7

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	152	152	304

*Weekday Rate assumed to be 10x the PM Peak Hour*



## Appendix C – Traffic Volumes

Traffic Counts

In-Process Data





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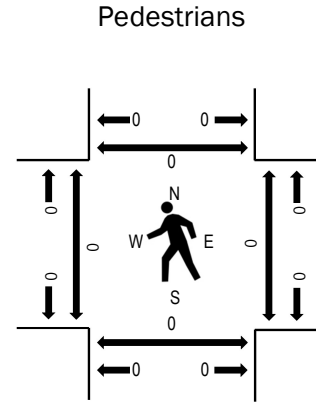
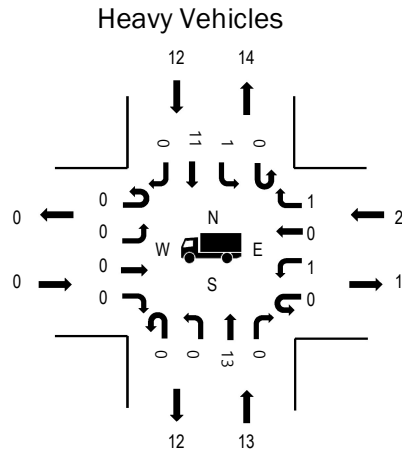
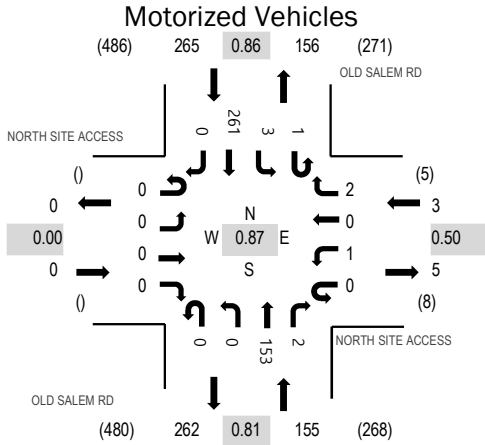
Location: 1 OLD SALEM RD & NORTH SITE ACCESS AM

Date: Tuesday, April 4, 2023

Peak Hour: 07:00 AM - 08:00 AM

Peak 15-Minutes: 07:10 AM - 07:25 AM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	66.7%	0.50
NB	8.4%	0.81
SB	4.5%	0.86
All	6.4%	0.87

**Traffic Counts - Motorized Vehicles**

Interval Start Time	NORTH SITE ACCESS Eastbound				NORTH SITE ACCESS Westbound				OLD SALEM RD Northbound				OLD SALEM RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	0	0	0	0	0	0	0	0	15	0	0	0	18	0	33	423
7:05 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	1	20	0	27	421
7:10 AM	0	0	0	0	0	0	0	1	0	0	14	0	0	0	14	0	29	416
7:15 AM	0	0	0	0	0	0	0	0	0	0	15	0	0	1	22	0	38	419
7:20 AM	0	0	0	0	0	0	0	1	0	0	19	0	0	0	34	0	54	412
7:25 AM	0	0	0	0	0	0	0	0	0	0	10	0	0	0	19	0	29	379
7:30 AM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	24	0	33	392
7:35 AM	0	0	0	0	0	0	0	0	0	0	12	0	0	0	20	0	32	388
7:40 AM	0	0	0	0	0	0	0	0	0	0	12	0	0	0	17	0	29	391
7:45 AM	0	0	0	0	0	0	0	0	0	0	15	1	1	0	18	0	35	389
7:50 AM	0	0	0	0	0	1	0	0	0	0	15	0	0	0	27	0	43	378
7:55 AM	0	0	0	0	0	0	0	0	0	0	11	1	0	1	28	0	41	353
8:00 AM	0	0	0	0	0	0	0	1	0	0	8	0	0	0	22	0	31	336
8:05 AM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	13	0	22	
8:10 AM	0	0	0	0	0	0	0	0	0	0	12	0	0	0	20	0	32	
8:15 AM	0	0	0	0	0	0	0	0	0	0	10	0	0	0	21	0	31	
8:20 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	1	14	0	21	
8:25 AM	0	0	0	0	0	0	0	0	0	0	16	0	0	1	25	0	42	
8:30 AM	0	0	0	0	0	0	0	0	0	0	12	0	0	1	16	0	29	
8:35 AM	0	0	0	0	0	0	0	0	0	0	10	0	0	0	25	0	35	
8:40 AM	0	0	0	0	0	0	0	1	0	0	6	0	0	0	20	0	27	
8:45 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	17	0	24	
8:50 AM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	9	0	18	
8:55 AM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	16	0	24	
Count Total	0	0	0	0	0	1	0	4	0	0	266	2	1	6	479	0	759	
Peak Hour	0	0	0	0	0	1	0	2	0	0	153	2	1	3	261	0	423	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	1	0	1	2	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	1	0	0	1	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	1	1	0	2	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	3	0	1	4	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	1	0	3	4	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	1	0	2	3	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	2	0	1	3	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	2	0	0	2	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	1	1	2	4	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	0	0	2	2	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	4	1	3	8	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	1	0	0	1	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	0	0	5	5	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	1	0	5	6	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	2	0	2	4	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	3	0	5	8	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	4	0	2	6	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	1	0	3	4	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	2	1	1	4	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	1	0	3	4	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	1	0	2	3	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	1	1	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	0	33	4	44	81	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	0	13	2	12	27	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0



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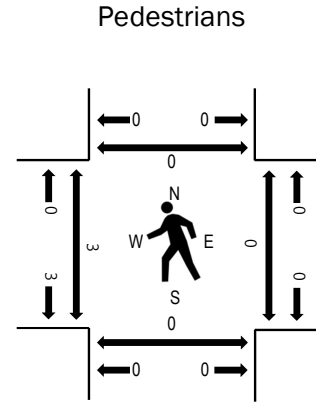
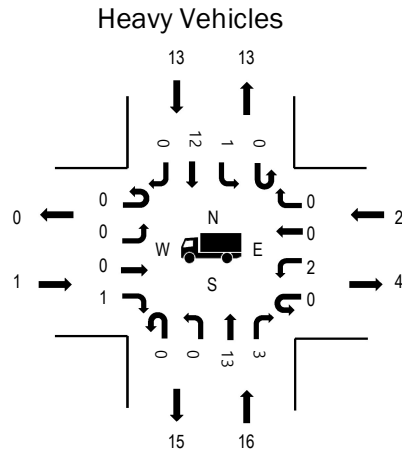
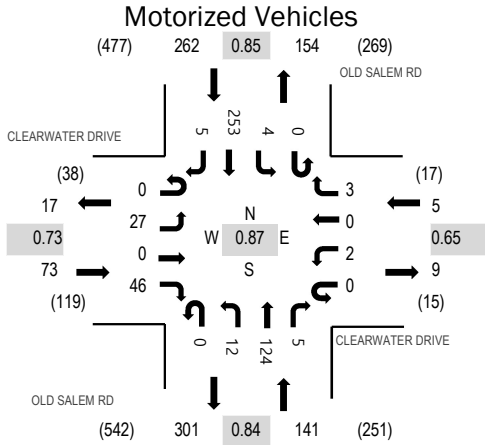
Location: 2 OLD SALEM RD & CLEARWATER DRIVE AM

Date: Tuesday, April 4, 2023

Peak Hour: 07:00 AM - 08:00 AM

Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.4%	0.73
WB	40.0%	0.65
NB	11.3%	0.84
SB	5.0%	0.85
All	6.7%	0.87

Traffic Counts - Motorized Vehicles

Interval Start Time	CLEARWATER DRIVE Eastbound				CLEARWATER DRIVE Westbound				OLD SALEM RD Northbound				OLD SALEM RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	2	0	5	0	0	0	0	0	1	12	0	0	0	18	0	38	481
7:05 AM	0	0	0	5	0	0	0	0	0	0	7	0	0	0	20	0	32	475
7:10 AM	0	3	0	3	0	1	0	0	0	1	10	0	0	0	14	0	32	467
7:15 AM	0	4	0	8	0	0	0	0	0	2	11	0	0	0	21	0	46	471
7:20 AM	0	2	0	5	0	1	0	0	0	0	17	0	0	0	34	0	59	462
7:25 AM	0	2	0	3	0	0	0	0	0	0	8	0	0	0	20	0	33	426
7:30 AM	0	3	0	2	0	0	0	0	0	1	6	2	0	0	23	0	37	438
7:35 AM	0	2	0	0	0	0	0	0	0	1	10	0	0	1	20	0	34	431
7:40 AM	0	2	0	4	0	0	0	0	0	0	10	0	0	0	16	1	33	437
7:45 AM	0	2	0	5	0	0	0	2	0	3	13	3	0	1	16	1	46	437
7:50 AM	0	2	0	4	0	0	0	1	0	1	12	0	0	1	24	2	47	420
7:55 AM	0	3	0	2	0	0	0	0	0	2	8	0	0	1	27	1	44	399
8:00 AM	0	1	0	2	0	0	0	2	0	0	5	0	0	0	20	2	32	383
8:05 AM	0	2	0	2	0	0	0	1	0	0	6	0	0	0	13	0	24	
8:10 AM	0	1	0	2	0	0	0	0	0	1	11	1	0	0	18	2	36	
8:15 AM	0	2	0	2	0	2	0	1	0	2	7	0	0	3	17	1	37	
8:20 AM	0	0	0	4	0	0	0	0	0	0	6	0	0	0	13	0	23	
8:25 AM	0	2	0	4	0	1	0	1	0	0	13	1	0	0	22	1	45	
8:30 AM	0	1	0	1	0	0	0	1	0	0	11	0	0	0	14	2	30	
8:35 AM	0	0	0	4	0	1	0	0	0	1	10	0	0	0	24	0	40	
8:40 AM	0	0	0	5	0	0	0	0	0	0	7	0	0	0	21	0	33	
8:45 AM	0	0	0	3	0	2	0	0	0	1	6	0	0	1	15	1	29	
8:50 AM	0	1	0	4	0	0	0	0	0	3	9	0	0	0	7	2	26	
8:55 AM	0	1	0	2	0	0	0	0	0	2	7	0	0	0	16	0	28	
Count Total	0	38	0	81	0	8	0	9	0	22	222	7	0	8	453	16	864	
Peak Hour	0	27	0	46	0	2	0	3	0	12	124	5	0	4	253	5	481	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	1	1	0	1	3	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	1	0	0	1	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	1	1	0	2	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	3	0	1	4	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	1	1	3	5	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0	7:25 AM	1	0	0	0	1
7:30 AM	0	2	0	3	5	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	2	0	1	3	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	2	0	0	2	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	3	0	0	3	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	3	3	7:50 AM	0	0	0	0	0	7:50 AM	2	0	0	0	2
7:55 AM	0	0	0	1	1	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	2	2	3	7	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	1	0	5	6	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	2	5	7	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	1	2	0	1	4	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	2	2	4	8	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	4	0	2	6	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	1	0	3	4	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	1	1	0	1	3	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	1	2	3	6	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	1	0	2	3	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	2	2	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	3	31	10	44	88	Count Total	0	0	0	0	0	Count Total	3	0	0	0	3
Peak Hour	1	16	2	13	32	Peak Hour	0	0	0	0	0	Peak Hour	3	0	0	0	3



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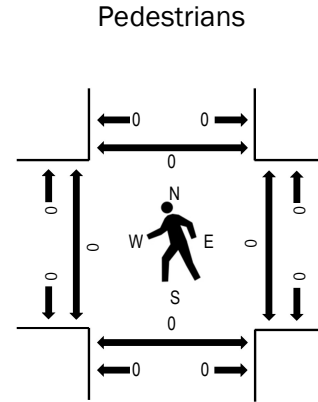
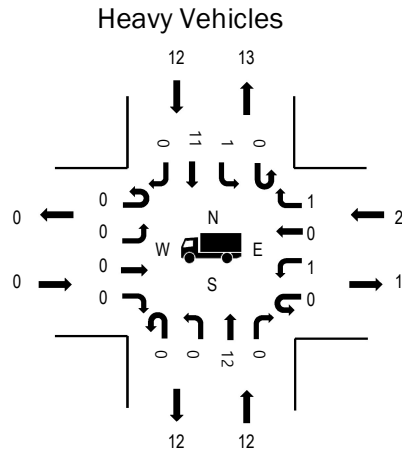
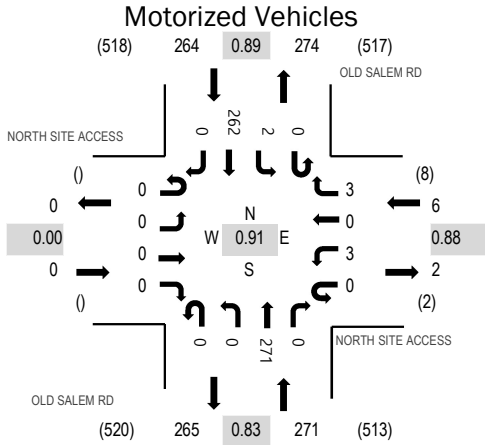
Location: 1 OLD SALEM RD & NORTH SITE ACCESS PM

Date: Tuesday, April 4, 2023

Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	33.3%	0.88
NB	4.4%	0.83
SB	4.5%	0.89
All	4.8%	0.91

Traffic Counts - Motorized Vehicles

Interval Start Time	NORTH SITE ACCESS Eastbound				NORTH SITE ACCESS Westbound				OLD SALEM RD Northbound				OLD SALEM RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	0	0	1	0	0	25	0	0	0	28	0	54	535
4:05 PM	0	0	0	0	0	0	0	0	0	0	23	0	0	0	21	0	44	527
4:10 PM	0	0	0	0	0	1	0	0	0	0	19	0	0	0	25	0	45	527
4:15 PM	0	0	0	0	0	0	0	0	0	0	17	0	0	0	26	0	43	541
4:20 PM	0	0	0	0	0	0	0	1	0	0	25	0	0	0	15	0	41	539
4:25 PM	0	0	0	0	0	0	0	0	0	0	20	0	0	0	29	0	49	537
4:30 PM	0	0	0	0	0	1	0	0	0	0	18	0	0	0	23	0	42	539
4:35 PM	0	0	0	0	0	1	0	0	0	0	15	0	0	1	24	0	41	534
4:40 PM	0	0	0	0	0	0	0	0	0	0	17	0	0	0	17	0	34	522
4:45 PM	0	0	0	0	0	0	0	1	0	0	31	0	0	1	24	0	57	532
4:50 PM	0	0	0	0	0	0	0	0	0	0	20	0	0	0	24	0	44	511
4:55 PM	0	0	0	0	0	0	0	0	0	0	26	0	0	0	15	0	41	504
5:00 PM	0	0	0	0	0	1	0	1	0	0	23	0	0	0	21	0	46	504
5:05 PM	0	0	0	0	0	0	0	0	0	0	27	0	0	0	17	0	44	
5:10 PM	0	0	0	0	0	0	0	0	0	0	32	0	0	0	27	0	59	
5:15 PM	0	0	0	0	0	0	0	0	0	0	14	0	0	0	27	0	41	
5:20 PM	0	0	0	0	0	0	0	0	0	0	20	0	0	0	19	0	39	
5:25 PM	0	0	0	0	0	0	0	0	0	0	27	0	0	0	24	0	51	
5:30 PM	0	0	0	0	0	0	0	0	0	0	16	0	0	0	21	0	37	
5:35 PM	0	0	0	0	0	0	0	0	0	0	12	0	0	0	17	0	29	
5:40 PM	0	0	0	0	0	0	0	0	0	0	20	0	0	0	24	0	44	
5:45 PM	0	0	0	0	0	0	0	0	0	0	18	0	0	0	18	0	36	
5:50 PM	0	0	0	0	0	0	0	0	0	0	22	0	0	0	15	0	37	
5:55 PM	0	0	0	0	0	0	0	0	0	0	26	0	0	0	15	0	41	
Count Total	0	0	0	0	0	4	0	4	0	0	513	0	0	2	516	0	1,039	
Peak Hour	0	0	0	0	0	3	0	3	0	0	271	0	0	2	262	0	541	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	1	3	4	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	1	0	2	3	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	3	3	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	1	0	1	2	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	3	0	2	5	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	1	0	0	1	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	2	2	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	1	1	1	3	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	2	0	1	3	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	3	1	2	6	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	1	1	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	1	0	1	2	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	1	1	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	3	3	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	3	3	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	2	2	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	2	0	1	3	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	1	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	1	1	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	1	1	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	3	3	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	0	15	3	34	52	Count Total	0	0	0	1	1	Count Total	0	0	0	0	0
Peak Hour	0	12	2	12	26	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0



ALL TRAFFIC DATA SERVICES

(303) 216-2439

www.alltrafficdata.net

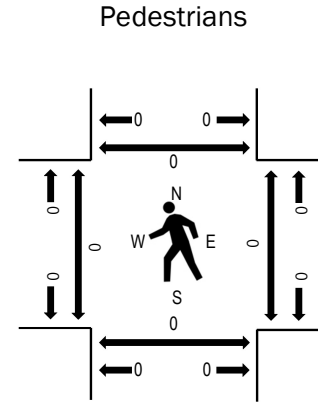
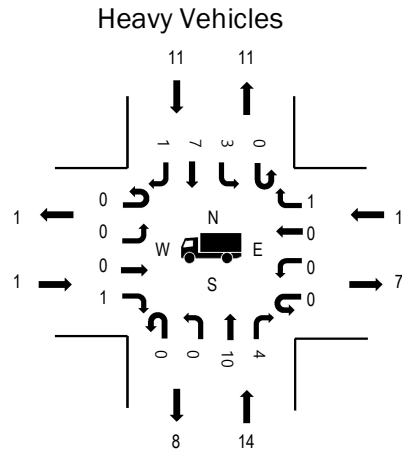
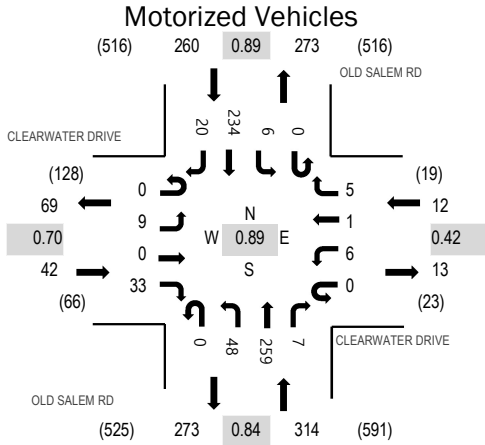
Location: 2 OLD SALEM RD & CLEARWATER DRIVE PM

Date: Tuesday, April 4, 2023

Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.4%	0.70
WB	8.3%	0.42
NB	4.5%	0.84
SB	4.2%	0.89
All	4.3%	0.89

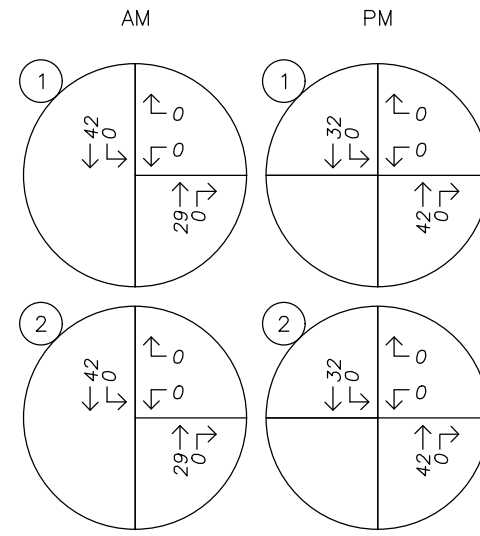
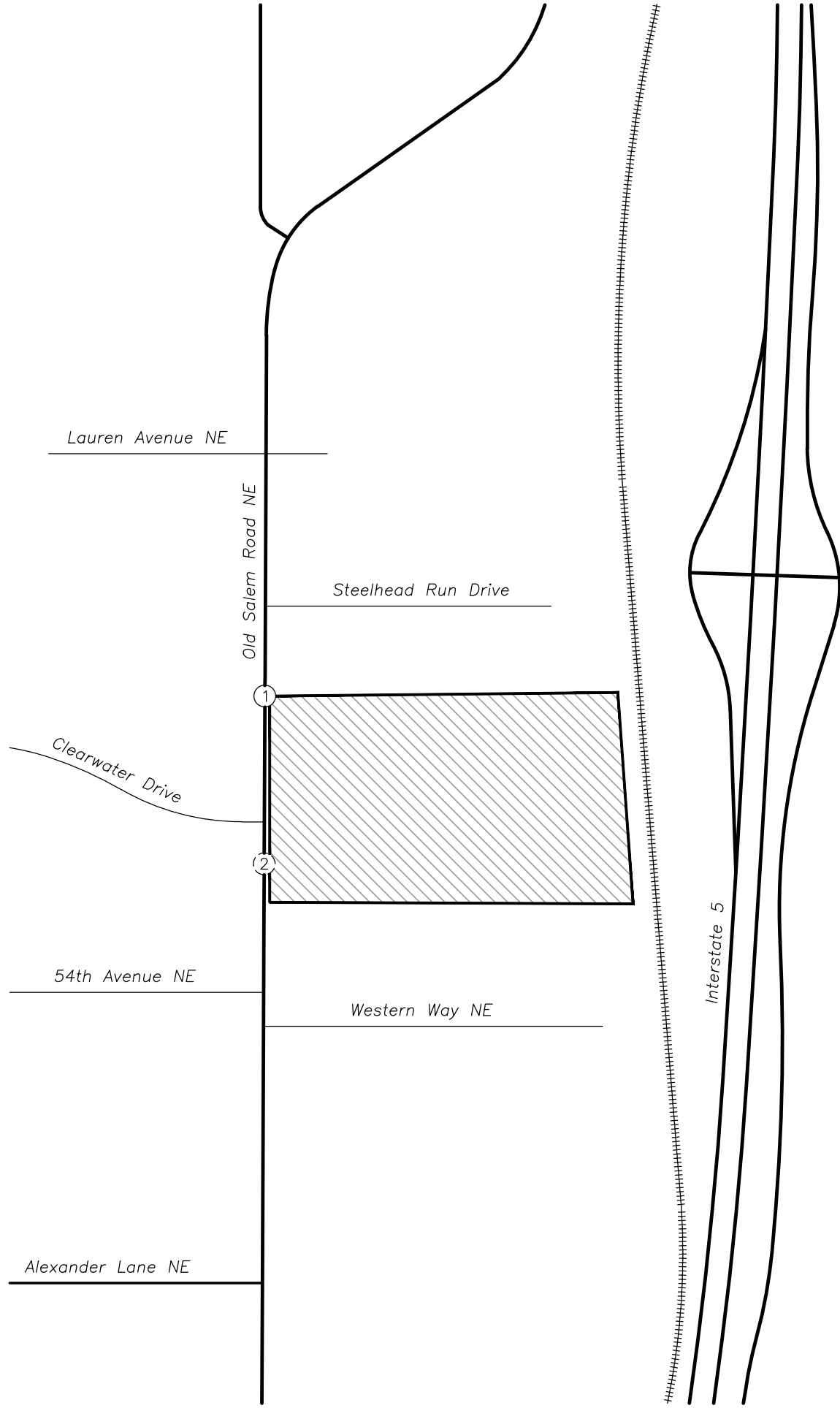
Traffic Counts - Motorized Vehicles

Interval Start Time	CLEARWATER DRIVE Eastbound				CLEARWATER DRIVE Westbound				OLD SALEM RD Northbound				OLD SALEM RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	2	0	3	0	0	0	0	0	5	22	1	0	0	25	3	61	625
4:05 PM	0	1	0	0	0	0	0	0	0	7	21	0	0	1	19	2	51	613
4:10 PM	0	0	0	1	0	0	0	0	0	4	19	0	0	0	24	2	50	611
4:15 PM	0	0	0	4	0	0	0	0	0	3	19	0	0	0	23	3	52	628
4:20 PM	0	1	0	1	0	1	0	0	0	6	23	0	0	0	14	1	47	625
4:25 PM	0	0	0	1	0	0	0	0	0	4	19	1	0	1	25	3	54	620
4:30 PM	0	1	0	1	0	0	0	0	0	4	17	0	0	1	17	3	44	625
4:35 PM	0	1	0	7	0	1	0	0	0	2	15	0	0	0	25	1	52	625
4:40 PM	0	0	0	2	0	0	0	1	0	1	16	1	0	0	15	2	38	609
4:45 PM	0	1	0	2	0	1	1	3	0	9	30	2	0	1	23	0	73	615
4:50 PM	0	3	0	5	0	1	0	1	0	3	15	2	0	0	24	0	54	585
4:55 PM	0	1	0	3	0	2	0	0	0	5	24	0	0	0	13	1	49	570
5:00 PM	0	0	0	1	0	0	0	0	0	4	23	0	0	1	18	2	49	567
5:05 PM	0	1	0	3	0	0	0	0	0	3	26	0	0	1	13	2	49	
5:10 PM	0	0	0	3	0	0	0	0	0	4	32	1	0	1	24	2	67	
5:15 PM	0	0	0	2	0	0	0	1	0	3	13	0	0	1	27	2	49	
5:20 PM	0	0	0	1	0	0	0	1	0	2	20	0	0	0	16	2	42	
5:25 PM	0	0	0	3	0	0	0	0	0	4	28	0	0	0	23	1	59	
5:30 PM	0	0	1	1	0	0	0	1	0	7	13	0	0	0	20	1	44	
5:35 PM	0	0	0	2	0	2	0	0	0	3	13	0	0	0	16	0	36	
5:40 PM	0	0	0	1	0	0	0	0	0	2	19	0	0	1	20	1	44	
5:45 PM	0	2	0	2	0	0	0	1	0	3	16	0	0	0	16	3	43	
5:50 PM	0	1	0	0	0	1	0	0	0	0	22	0	0	2	11	2	39	
5:55 PM	0	0	0	1	0	0	0	0	0	0	27	3	0	0	15	0	46	
Count Total	0	15	1	50	0	9	1	9	0	88	492	11	0	11	466	39	1,192	
Peak Hour	0	9	0	33	0	6	1	5	0	48	259	7	0	6	234	20	628	



### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	1	0	3	4	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	2	2	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	3	3	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	2	0	1	3	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	2	0	2	4	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	2	2	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	1	1	0	0	2	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	2	1	1	4	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	4	0	2	6	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	2	0	0	2	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	1	1	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	1	0	1	2	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	1	1	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	3	3	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	3	3	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	2	2	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	1	2	0	1	4	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	2	0	2	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	1	0	1	2	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	1	0	0	1	5:45 PM	0	0	0	1	1	5:45 PM	0	0	0	1	1
5:50 PM	0	0	1	3	4	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	2	0	0	2	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	2	21	4	32	59	Count Total	0	0	0	1	1	Count Total	0	0	0	1	1
Peak Hour	1	14	1	11	27	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0



## Appendix D – Safety Analysis

Crash History Data

Traffic Signal Warrant Analysis



URBAN NON-SYSTEM CRASH LISTING

CITY OF MILLERSBURG, LINN COUNTY

OLD SALEM RD and CLEARWATER DR, City of Millersburg, Linn County, 01/01/2016 to 12/31/2020

1 - 3 of 3 Crash records shown.

SER#	S	D	M	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE																								
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	MOVE																				
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED														
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE								
01092	N	N	N	N			09/07/2020	16	NE CLEARWATER DR	INTER	3-LEG	N	Y	FOG	FIX OBJ	01	NONE	0	TURN-L																		
COUNTY							MO	0	NE OLD SALEM RD	W		UNKNOWN	N	DRY	FIX		PRVTE	UN-UN																			
N							10P			05	0		N	DLIT	INJ		UNKNOWN		01	DRVR	INJC	32	M	OR-Y	001,016	000		053	08,27								
N							44 41 29.15	-123 3																OR<25													
01464	N	N	N	N			10/16/2019	16	NE CLEARWATER DR	INTER	3-LEG	N	N	CLD	O-1 L-TURN	01	NONE	1	TURN-L																		
COUNTY							WE	0	NE OLD SALEM RD	CN		UNKNOWN	N	WET	TURN		PRVTE	S -W																			
N							2P			01	0		N	DAY	INJ		SEMI TOW		01	DRVR	INJC	21	M	OR-Y	028	000			02								
N							44 41 29.14	-123 3																OR<25													
																	02	NONE		STRGHT																	
																	PRVTE	N -S		01	DRVR	INJB	38	F	OR-Y	000	000		00								
																	PSNGR CAR							OR<25					00								
																	02	NONE		STRGHT																	
																	PRVTE	N -S		02	PSNG	INJB	19	F		000	000		00								
																	PSNGR CAR												00								
01457	N	N	N	N			10/15/2019	16	NE OLD SALEM RD	STRGHT		N	N	CLD	O-1 L-TURN	01	NONE		TURN-L																		
COUNTY							TU	440	NE CLEARWATER DR	N	(NONE)	UNKNOWN	N	DRY	TURN		PRVTE	N -E																			
N							6A			07			Y	DARK	INJ		PSNGR CAR		01	DRVR	INJC	30	M	OR-Y	004	000			08								
N							44 41 33.71	-123 3			(02)													OR<25													
																	01	NONE		TURN-L																	
																	PRVTE	N -E		02	PSNG	INJC	24	M		000	000		00								
																	PSNGR CAR												00								
																	01	NONE		TURN-L																	
																	PRVTE	N -E		03	PSNG	INJC	54	M		000	000		00								
																	PSNGR CAR												00								
																	02	NONE		STRGHT																	
																	PRVTE	S -N		01	DRVR	INJC	28	F	OR-Y	000	000		00								
																	PSNGR CAR							OR<25					00								

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

# Traffic Signal Warrant Analysis



Project: Gordon Truck Center  
 Date: 4/26/2023  
 Scenario: 2025 Buildout

Major Street:	Old Salem Road NE	Minor Street:	North Access
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	656	PM Peak Hour Volumes:	16

**Warrant Used:**

\_\_\_\_\_ 100 percent of standard warrants used  
    X     70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<b>WARRANT 1, CONDITION A</b>					
		100%	70%	100%	70%
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<b>WARRANT 1, CONDITION B</b>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<b>Warrant 1</b>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	6,560	6,200	
Minor Street*	160	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	6,560	9,300	
Minor Street*	160	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	6,560	7,440	
Minor Street*	160	1,480	<b>No</b>

Note: Minor street right-turning traffic volumes reduced by 25%.

# Traffic Signal Warrant Analysis



Project: Gordon Truck Center  
 Date: 4/26/2023  
 Scenario: 2025 Buildout

Major Street:	Old Salem Road NE	Minor Street:	South Access
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	708	PM Peak Hour Volumes:	21

**Warrant Used:**

\_\_\_\_\_ 100 percent of standard warrants used  
    X     70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<b>WARRANT 1, CONDITION A</b>					
		100%	70%	100%	70%
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	<b>7,400</b>	2,650	<b>1,850</b>
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<b>WARRANT 1, CONDITION B</b>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	<b>11,100</b>	1,350	<b>950</b>
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<b>Warrant 1</b>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	7,080	6,200	
Minor Street*	210	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	7,080	9,300	
Minor Street*	210	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	7,080	7,440	
Minor Street*	210	1,480	<b>No</b>

Note: Minor street right-turning traffic volumes reduced by 25%.

## Appendix E – Operation Analysis

Level of Service Descriptions

Capacity Reports

Queuing Reports





## LEVEL OF SERVICE

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

*Level of service A:* Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.

*Level of service B:* Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.

*Level of service C:* Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.

*Level of service D:* Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.

*Level of service E:* Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.

*Level of service F:* Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.





*LEVEL OF SERVICE CRITERIA  
FOR SIGNALIZED INTERSECTIONS*

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

*LEVEL OF SERVICE CRITERIA  
FOR UNSIGNALIZED INTERSECTIONS*

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

HCM 6th TWSC  
 1: Old Salem Road NE & North Access

04/24/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	1	2	153	2	3	261
Future Vol, veh/h	1	2	153	2	3	261
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	100	50	9	0	33	4
Mvmt Flow	1	2	176	2	3	300

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	483	177	0	0	178
Stage 1	177	-	-	-	-
Stage 2	306	-	-	-	-
Critical Hdwy	7.4	6.7	-	-	4.43
Critical Hdwy Stg 1	6.4	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-
Follow-up Hdwy	4.4	3.75	-	-	2.497
Pot Cap-1 Maneuver	401	756	-	-	1231
Stage 1	664	-	-	-	-
Stage 2	569	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	400	756	-	-	1231
Mov Cap-2 Maneuver	459	-	-	-	-
Stage 1	664	-	-	-	-
Stage 2	568	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	622	1231
HCM Lane V/C Ratio	-	-	0.006	0.003
HCM Control Delay (s)	-	-	10.8	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

HCM 6th TWSC  
 1: Old Salem Road NE & North Access

04/24/2023

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	3	271	0	2	262
Future Vol, veh/h	3	3	271	0	2	262
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	33	33	4	0	50	4
Mvmt Flow	3	3	298	0	2	288

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	590	298	0	0	298
Stage 1	298	-	-	-	-
Stage 2	292	-	-	-	-
Critical Hdwy	6.73	6.53	-	-	4.6
Critical Hdwy Stg 1	5.73	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-
Follow-up Hdwy	3.797	3.597	-	-	2.65
Pot Cap-1 Maneuver	423	674	-	-	1034
Stage 1	688	-	-	-	-
Stage 2	692	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	422	674	-	-	1034
Mov Cap-2 Maneuver	507	-	-	-	-
Stage 1	688	-	-	-	-
Stage 2	691	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	579	1034
HCM Lane V/C Ratio	-	-	0.011	0.002
HCM Control Delay (s)	-	-	11.3	8.5
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

HCM 6th TWSC  
 1: Old Salem Road NE & North Access

05/01/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	2	186	2	3	309
Future Vol, veh/h	1	2	186	2	3	309
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	100	50	9	0	33	4
Mvmt Flow	1	2	214	2	3	355

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	576	215	0	0	216
Stage 1	215	-	-	-	-
Stage 2	361	-	-	-	-
Critical Hdwy	7.4	6.7	-	-	4.43
Critical Hdwy Stg 1	6.4	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-
Follow-up Hdwy	4.4	3.75	-	-	2.497
Pot Cap-1 Maneuver	349	718	-	-	1190
Stage 1	635	-	-	-	-
Stage 2	533	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	348	718	-	-	1190
Mov Cap-2 Maneuver	420	-	-	-	-
Stage 1	635	-	-	-	-
Stage 2	531	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	581	1190
HCM Lane V/C Ratio	-	-	0.006	0.003
HCM Control Delay (s)	-	-	11.2	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

HCM 6th TWSC  
1: Old Salem Road NE & North Access

05/01/2023

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	3	319	0	2	300
Future Vol, veh/h	3	3	319	0	2	300
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	33	33	4	0	50	4
Mvmt Flow	3	3	351	0	2	330

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	685	351	0	0	351
Stage 1	351	-	-	-	-
Stage 2	334	-	-	-	-
Critical Hdwy	6.73	6.53	-	-	4.6
Critical Hdwy Stg 1	5.73	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-
Follow-up Hdwy	3.797	3.597	-	-	2.65
Pot Cap-1 Maneuver	370	628	-	-	984
Stage 1	649	-	-	-	-
Stage 2	661	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	369	628	-	-	984
Mov Cap-2 Maneuver	467	-	-	-	-
Stage 1	649	-	-	-	-
Stage 2	660	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	536	984
HCM Lane V/C Ratio	-	-	0.012	0.002
HCM Control Delay (s)	-	-	11.8	8.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

HCM 6th TWSC  
1: Old Salem Road NE & North Access

05/01/2023

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	4	4	188	8	10	316
Future Vol, veh/h	4	4	188	8	10	316
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	100	50	9	0	33	4
Mvmt Flow	5	5	216	9	11	363

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	606	221	0	0	225
Stage 1	221	-	-	-	-
Stage 2	385	-	-	-	-
Critical Hdwy	7.4	6.7	-	-	4.43
Critical Hdwy Stg 1	6.4	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-
Follow-up Hdwy	4.4	3.75	-	-	2.497
Pot Cap-1 Maneuver	333	712	-	-	1181
Stage 1	630	-	-	-	-
Stage 2	517	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	330	712	-	-	1181
Mov Cap-2 Maneuver	405	-	-	-	-
Stage 1	630	-	-	-	-
Stage 2	512	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	516	1181
HCM Lane V/C Ratio	-	-	0.018	0.01
HCM Control Delay (s)	-	-	12.1	8.1
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM 6th TWSC  
2: Old Salem Road NE & South Access

05/01/2023

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	4	5	174	11	11	351
Future Vol, veh/h	4	5	174	11	11	351
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	100	0	11	60	25	5
Mvmt Flow	5	6	200	13	13	403

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	636	207	0	0	213
Stage 1	207	-	-	-	-
Stage 2	429	-	-	-	-
Critical Hdwy	7.4	6.2	-	-	4.35
Critical Hdwy Stg 1	6.4	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-
Follow-up Hdwy	4.4	3.3	-	-	2.425
Pot Cap-1 Maneuver	318	839	-	-	1232
Stage 1	641	-	-	-	-
Stage 2	490	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	315	839	-	-	1232
Mov Cap-2 Maneuver	390	-	-	-	-
Stage 1	641	-	-	-	-
Stage 2	485	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	555	1232
HCM Lane V/C Ratio	-	-	0.019	0.01
HCM Control Delay (s)	-	-	11.6	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM 6th TWSC  
 1: Old Salem Road NE & North Access

05/01/2023

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	10	326	3	7	305
Future Vol, veh/h	9	10	326	3	7	305
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	33	33	4	0	50	4
Mvmt Flow	10	11	358	3	8	335

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	711	360	0	0	361
Stage 1	360	-	-	-	-
Stage 2	351	-	-	-	-
Critical Hdwy	6.73	6.53	-	-	4.6
Critical Hdwy Stg 1	5.73	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-
Follow-up Hdwy	3.797	3.597	-	-	2.65
Pot Cap-1 Maneuver	357	620	-	-	975
Stage 1	642	-	-	-	-
Stage 2	649	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	354	620	-	-	975
Mov Cap-2 Maneuver	455	-	-	-	-
Stage 1	642	-	-	-	-
Stage 2	644	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	529	975
HCM Lane V/C Ratio	-	-	0.039	0.008
HCM Control Delay (s)	-	-	12.1	8.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0



HCM 6th TWSC  
2: Old Salem Road NE & South Access

05/01/2023

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	12	13	359	11	11	311
Future Vol, veh/h	12	13	359	11	11	311
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	20	5	57	50	3
Mvmt Flow	13	15	403	12	12	349

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	782	409	0	0	415
Stage 1	409	-	-	-	-
Stage 2	373	-	-	-	-
Critical Hdwy	6.4	6.4	-	-	4.6
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.48	-	-	2.65
Pot Cap-1 Maneuver	366	605	-	-	928
Stage 1	675	-	-	-	-
Stage 2	701	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	361	605	-	-	928
Mov Cap-2 Maneuver	477	-	-	-	-
Stage 1	675	-	-	-	-
Stage 2	692	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	536	928
HCM Lane V/C Ratio	-	-	0.052	0.013
HCM Control Delay (s)	-	-	12.1	8.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Queuing and Blocking Report  
2023 Existing Conditions - AM Peak Hour

04/26/2023

Intersection: 1: Old Salem Road NE & North Access

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	61	6
Average Queue (ft)	7	0
95th Queue (ft)	38	4
Link Distance (ft)	379	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

Queuing and Blocking Report  
2023 Existing Conditions - PM Peak Hour

04/26/2023

Intersection: 1: Old Salem Road NE & North Access

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	47	19
Average Queue (ft)	6	1
95th Queue (ft)	29	14
Link Distance (ft)	379	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

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Intersection: 1: Old Salem Road NE & North Access

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Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	52	16
Average Queue (ft)	4	0
95th Queue (ft)	24	5
Link Distance (ft)	379	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Zone Summary

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Zone wide Queuing Penalty: 0

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Intersection: 1: Old Salem Road NE & North Access

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Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	59	15
Average Queue (ft)	7	1
95th Queue (ft)	34	9
Link Distance (ft)	379	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Zone Summary

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Zone wide Queuing Penalty: 0

Queuing and Blocking Report  
2025 Buildout Conditions - AM Peak Hour

05/01/2023

Intersection: 1: Old Salem Road NE & North Access

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	76	34
Average Queue (ft)	16	2
95th Queue (ft)	57	16
Link Distance (ft)	379	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Old Salem Road NE & South Access

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	80	44
Average Queue (ft)	10	2
95th Queue (ft)	49	18
Link Distance (ft)	607	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0
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Queuing and Blocking Report  
2025 Buildout Conditions - PM Peak Hour

05/01/2023

Intersection: 1: Old Salem Road NE & North Access

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	65	48
Average Queue (ft)	19	5
95th Queue (ft)	56	30
Link Distance (ft)	379	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Old Salem Road NE & South Access

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	60	50
Average Queue (ft)	19	4
95th Queue (ft)	50	26
Link Distance (ft)	607	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0
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