Attachment A

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Sisters Industrial Subdivision

Transportation Impact Study

Sisters, Oregon

Date: February 25, 2020

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Executive Summary

1. The proposed project involves a change in zoning from Urban Area Reserve (UAR) to Light Industrial (LI) on a currently undeveloped site located off W Barclay Drive in Sisters, Oregon.
2. A variety of permitted land uses were assumed for all 17 lots on the current site plan. In order to have a mid-range estimate of trip generation, it was assumed that four of the lots would have a retail/service land use, and the remaining 13 lots would have an industrial land use. The trip generation calculations show that the proposed variety of land uses is projected to generate 202 trips during the evening peak hour.
3. All intersections were calculated has having a crash rate below 1.00 CMEV. No significant trends or crash patterns were identified at any of the study intersections that are indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.
4. The most recent site plan shows that proposed site access locations are in compliance with the access spacing standards shown in Development Code 3.1.300(I)(1). Actual site access locations will be determined at the time of a future land division applications, following the zone change.
5. Due to insufficient traffic volumes, traffic signal warrants are not projected to be met at the unsignalized study intersections of W Barclay Drive at N Pine Street and N Pine Street at US Highway 20 under any of the analysis scenarios.
6. Three of the study intersections were shown to exceed operational standards for the year 2040 background scenario (US Highway 20 at W Barclay Drive, N Pine Street at US Highway 20, and N Locust Street at US Highway 20). Improvements to the intersections and/or nearby connecting roads are planned in the *2018 Sisters Transportation System Plan Refinement*.
7. The proposed zone change will not produce types or levels of travel or access that are inconsistent with the functional classification of the existing transportation facility. In addition, the proposed development is not projected to degrade the performance of existing or planned transportation below performance standards identified in the City's Transportation System Plan. Transportation Planning Rule 660-012-0060 is satisfied for the proposed land use.

Project Description

Introduction

The proposed project involves a change in zoning from Urban Area Reserve (UAR) to Light Industrial (LI) on a currently undeveloped site located off W Barclay Drive in Sisters, Oregon.

This report examines the impacts of the proposed change in land use on the transportation system in the vicinity of the project site. The purpose of this report is to analyze potential traffic impacts and recommend any required transportation mitigation measures to ensure safe and efficient performance of the transportation facilities that will be impacted by the proposed change in land use.

All supporting data and calculations are provided in the appendix to this report.

Location Description

The project site is currently undeveloped and is located east of the intersection of W Barclay Drive at US Highway 20 in Sisters, Oregon. The immediate proposal is for a change in zoning from Urban Area Reserve (UAR) to Light Industrial (LI). Eventually, a land division will be proposed to subdive the existing 17.11-acre lot into approximately 15 smaller lots, which could be occupied by various industrial land uses. The project site is shown in Figure 1.

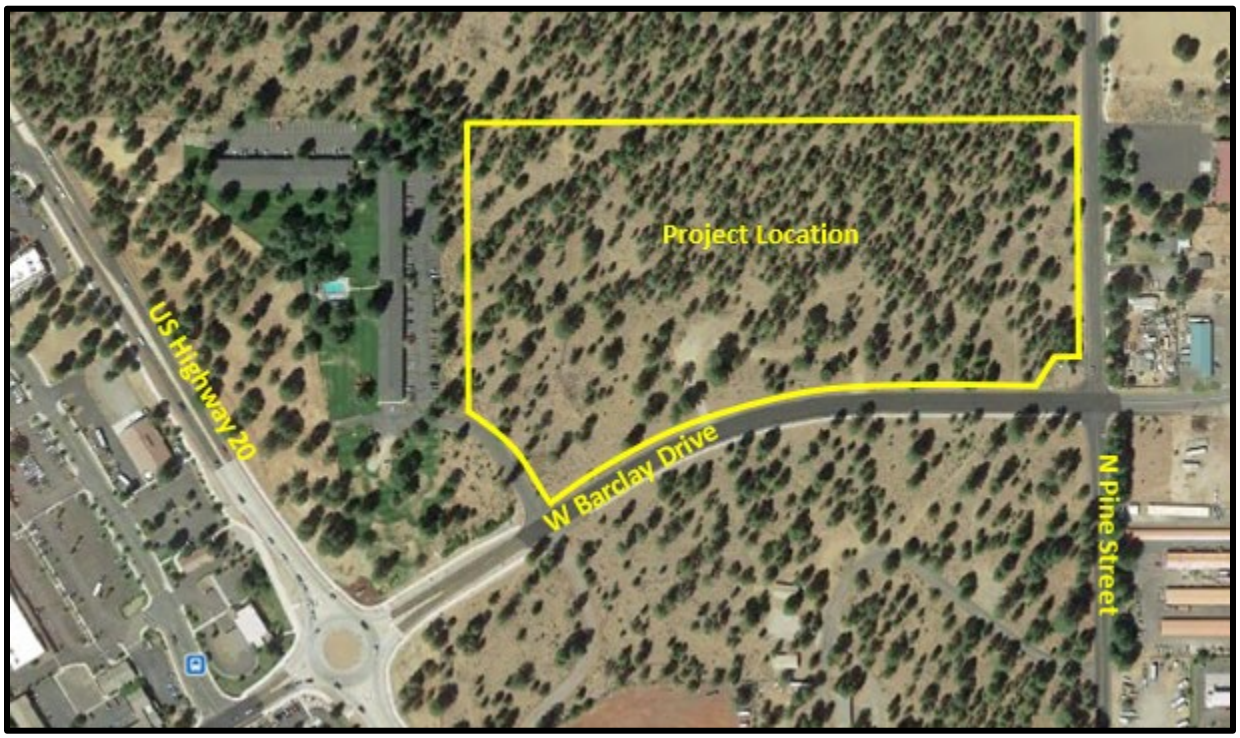


Figure 1: Project Location (image from Google Earth)

Vicinity Streets

The proposed project is expected to impact four roadways near the site. Table 1 provides a description of each of the vicinity roadways.

Table 1: Roadway Characteristics

Roadway	Jurisdiction	Functional Classification	Speed (MPH)	Curbs & Sidewalks	On-Street Parking	Bicycle Lanes
US Highway 20	ODOT	State Highway	20-35 posted	Yes	Yes	Partial
W Barclay Drive	City of Sisters	Minor Collector	30 posted	Partial	Yes	Partial
N Pine Street	City of Sisters	Minor Collector	25 posted	Partial	Yes	No
N Locust Street	City of Sisters	Urban Collector/Rural Major Collector	20-40 posted	Partial	Yes	Partial

Table Notes: Functional Classification provided by the City of Sisters Transportation Plan (January 2010)

Study Intersections

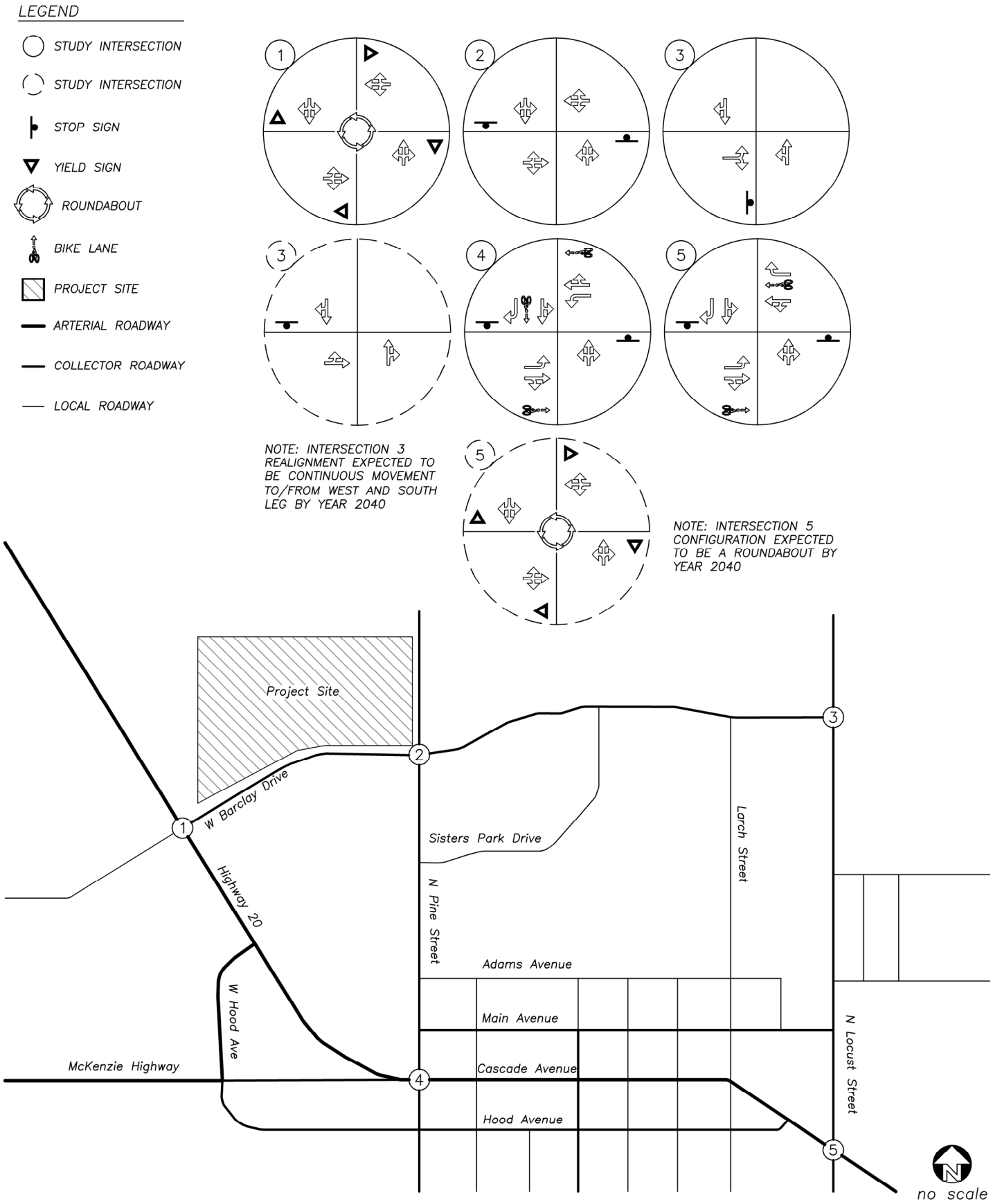
Based on the location of the subject property, preliminary calculations of trip generation, and coordination with the City of Sisters and the Oregon Department of Transportation (ODOT), the following intersections were identified for analysis:

- US Highway 20 at W Barclay Drive;
- W Barclay Drive at N Pine Street;
- E Barclay Drive at N Locust Street;
- N Pine Street at US Highway 20; and
- N Locust Street at US Highway 20

A summarized description of the study intersections is provided in Table 2. A vicinity map showing the project site, vicinity streets, and study intersection configurations is shown in Figure 2.

Table 2: Study Intersection Descriptions

Number	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	US Highway 20 at W Barclay Drive	Roundabout	Yield-Controlled	NB/SB/EB/WB Yield-Controlled
2	W Barclay Drive at N Pine Street	Four-Legged	Stop-Controlled	NB/SB Stop-Controlled
3	E Barclay Drive at N Locust Street	Three-Legged	Stop-Controlled	EB Stop-Controlled
4	N Pine Street at US Highway 20	Four-Legged	Stop-Controlled	NB/SB Stop-Controlled
5	N Locust Street at US Highway 20	Four-Legged	Stop-Controlled	EB/WB Stop-Controlled



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VICINITY MAP

Figure 2

Sisters Industrial Subdivision

1/24/2020

Site Trips

Trip Generation

The proposed project involves a change in zoning from Urban Area Reserve (UAR) to Light Industrial (LI) on a currently undeveloped site. Permitted land uses in the LI zone were determined from the City of Sister's Development Code 2.6.200. In order to estimate future trip generation of the site under the proposed LI zoning, a variety of permitted land uses were assumed for all 17 lots on the current site plan. In order to have a mid-range estimate of trip generation, it was assumed that four of the lots would have a retail/service land use, and the remaining 13 lots would have an industrial land use. To estimate the number of trips that will be generated by the proposed zoning, trip rates from the *Trip Generation Manual* [1] were used. Data for the following land use codes were used: 110 (*General Light Industrial*), 140 (*Manufacturing*), 150 (*Warehousing*), 180 (*Specialty Trade Contractor*), 640 (*Animal Hospital/Veterinary Clinic*), 842 (*Recreational Vehicle Sales*), 843 (*Automobile Parts Sales*), and 925 (*Drinking Place*). These land use codes were used to estimate the proposed zoning's trip generation based on the square footage of the buildings.

The trip generation calculations show that the proposed zoning is expected to generate 201 trips during the evening peak hour and 1,624 trips on a typical weekday. The trip generation calculations are summarized in Table 3 and detailed calculation worksheets are provided in the appendix.

[1] Institute of Transportation Engineers, *Trip Generation Manual*, 10th Edition, 2017.

Table 3: Trip Generation Summary

	ITE Code	Size	Evening Peak Hour			Weekday Total
			Enter	Exit	Total	
General Industrial	110	88,122	7	49	56	436
Manufacturing	140	34,102	7	16	23	134
Warehousing	150	21,344	1	3	4	38
Speciality Trade Contractor	180	3,049	2	4	6	32
Animal Hospital/Veterinary Clinic	640	11,217	16	24	40	241
Recreational Vehicle Sales	842	9,148	2	5	7	46
Automobile Parts Sales	843	8,494	20	22	42	470
Drinking Place	925	2,009	15	8	23	227
Total			70	131	201	1624

Note: The Sisters Transportation System Plan (TSP) did not allocate any trips to this site as part of the TSP. Therefore, for the purpose of the zone change, trip generation for development under the existing zoning was assumed to be zero.

Trip Distribution

The directional distribution of site trips to and from the proposed site was estimated based on locations of likely trip origins and destinations, was well as locations of major transportation facilities in the site vicinity. The following trip distribution was estimated and used for analysis:

- Approximately 35 percent of site trips will travel to/from the southeast along US Highway 20;
- Approximately 15 percent of site trips will travel to/from the west along Highway 242 (McKenzie Highway);
- Approximately 10 percent of site trips will travel to/from the northwest along US Highway 20;
- Approximately 10 percent of site trips will travel to/from the west along McKinney Butte Road;
- Approximately 10 percent of site trips will travel to/from the south along S Pine Street;
- Approximately 10 percent of site trips will travel to/from the north along Camp Polk Road; and

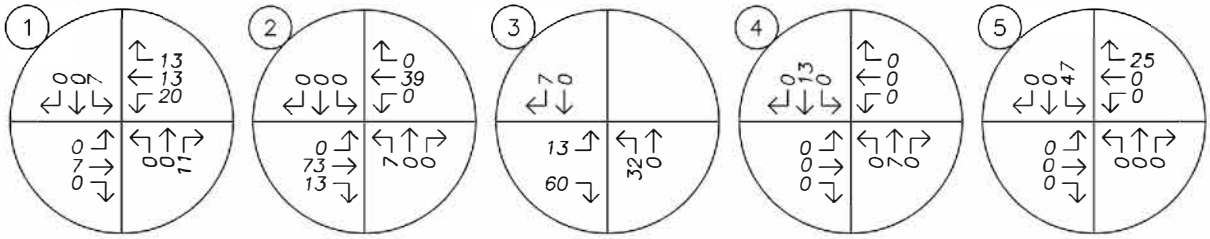
- Approximately 10 percent of site trips will travel to/from local destinations along N Locust Street.

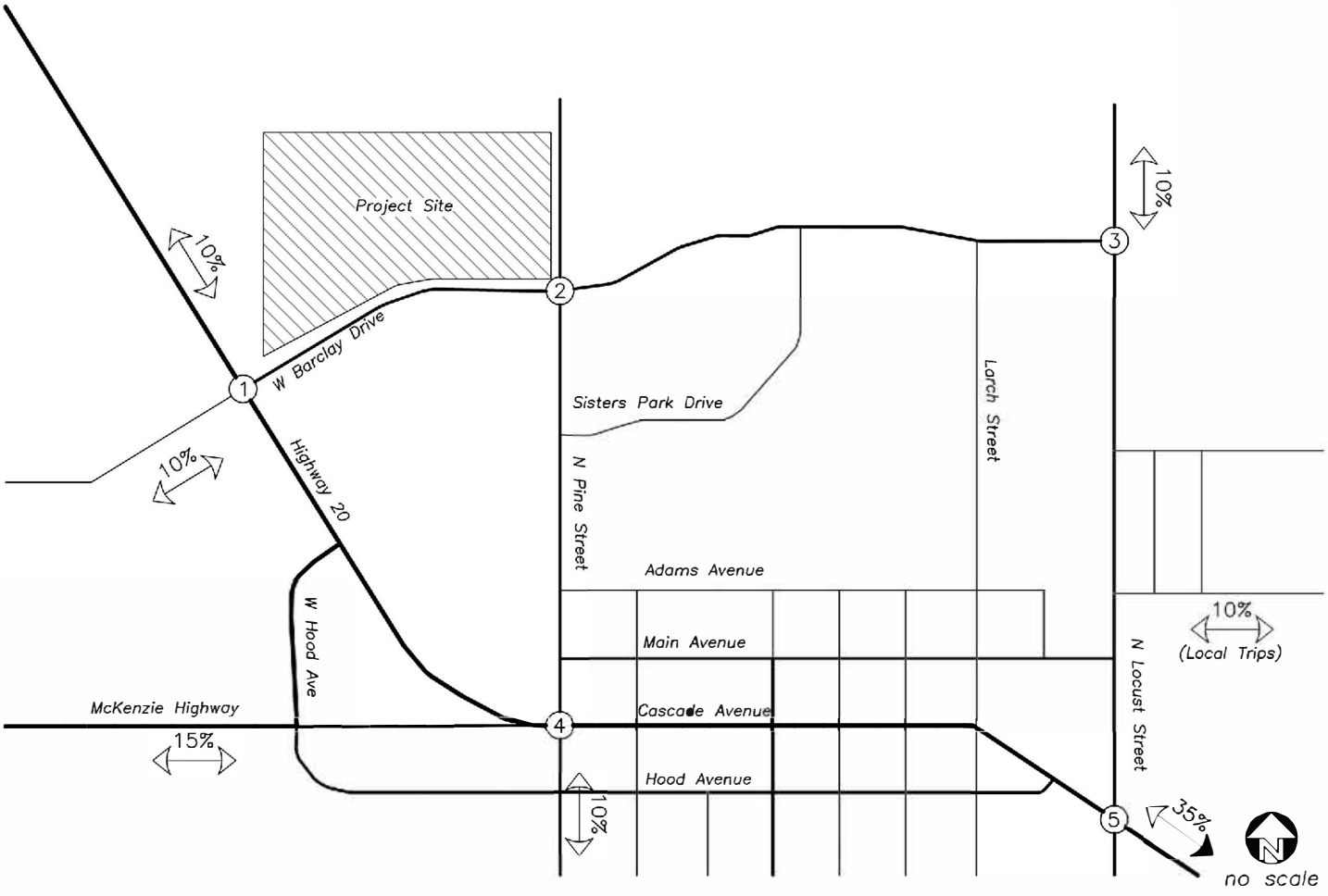
Figure 3 shows the site distribution and assignment for the proposed development.

LEGEND

XX% PERCENT OF PRIMARY TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
PM	70	131	201





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SITE TRIP DISTRIBUTION & ASSIGNMENT

Proposed Development Plan - Site Trips

PM Peak Hour

Figure 3

Sisters Industrial Subdivision

1/24/2020

Traffic Volumes

Existing Conditions

Traffic counts were conducted at the study intersections on October 15, 2019, from 4:00 PM to 6:00 PM, and again on October 16, 2019, from 7:00 AM to 9:00 PM. At the time of the counts, schools were in session and Highway 242 (McKenzie Highway) was still open over the pass. Turning movement volumes corresponding to the system peak hour were used for analysis.

Since US Highway 20 is under the juristiction of the Oregon Department of Transportation (ODOT), procedures described in ODOT's *Analysis Procedures Manual* were used to seasonally adjust existing traffic volumes to reflect the 30th-highest hour in a typical year. Using a map of seasonal trends, this portion of US Highway 20 was determined to show a summer trend.

The existing seasonally-adjusted traffic volumes at the study intersections are shown in Figure 4.

Background Conditions

To provide analyis of the impact of the proposed land use, an estimate of future traffic volumes is required. A growth rate must be applied to recorded traffic volumes in order to calculate future volumes.

Growth rates for through traffic on US Highway 20 were derived using ODOT's 2038 Future Volume Table. Corresponding data was used for each of the three intersections along US Highway 20:

- Data corresponding to Milepost 100.5 (ODOT Highway 16) was used for the intersection of US Highway 20 at W Barclay Drive;
- Data corresponding to Milepost 92.52 (ODOT Highway 15) was used for the interesction of N Pine Street at US Highway 20; and
- Data corresponding to Milepost 92.85 (ODOT Highway 15) was used for the intersection of N Locust Street at US Highway 20.

The growth rate was applied to US Highway 20 through volumes over a 21-year period to determine year 2040 background volumes.

For non-ODOT facilities, a compounded growth rate of two percent per year was applied to the existing traffic volumes over a 21-year period to determine year 2040 background volumes.

In addition to the expected background traffic growth in the site vicinity, the nearby McKenzie Meadows subdivision will impact future volumes at the study intersections. This development is proposed for the site west of McKinney Ranch Road and east of Sisters High School, on the north side of W McKinney Butte Road, and will include 150 single-family homes and 55 units of low-rise multi-family housing. Since this development will likely be contributing trips to the transportation system by 2040, the site trips it is projected to generate were included in the 2040 background traffic volumes. A figure showing the in-process site trips generated by this development that are expected to impact the study intersections is provided in the appendix.

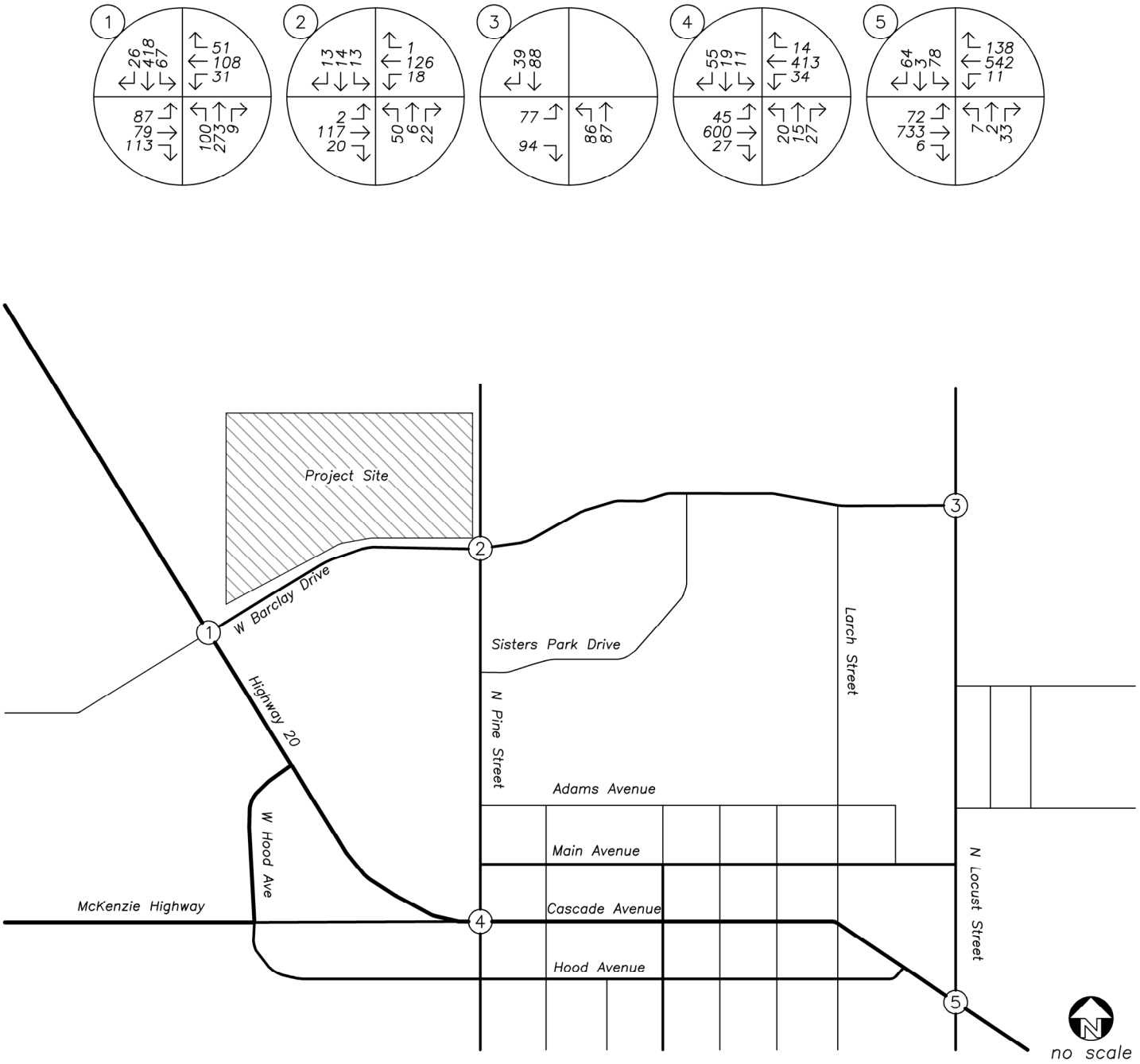
The Threewind Master Plan is also expected to impact future volumes at the study intersections. This development is proposed for the site southeast of W McKinney Butte Road and west of W Hood Avenue, and will include 50 units of multi-family housing and 28,000 square feet of commercial space. Since this development will likely be contributing trips to the transportation system by 2040, the site trips it is projected to generate were included in the 2040 background traffic volumes. A figure showing the in-process site trips generated by this development that are expected to impact the study intersections is provided in the appendix.

Finally, the Dollar General is also expected to impact future volumes at the study intersections. This development is proposed for the site southeast of McKinney Butte Road, east of N Wheeler Loop, and northwest of the existing Bi-Mart store, and includes construction of a 9,100 square foot building. Since this development will likely be contributing trips to the transportation system by 2040, the site trips it is projected to generate were included in the 2040 background traffic volumes. A figure showing the in-process site trips generated by this development that are expected to impact the study intersections is provided in the appendix.

Figure 5 shows the projected year 2040 background traffic volumes during the morning and evening peak hours.

Buildout Conditions

Figure 6 shows year 2040 background traffic volumes plus net trips generated by the proposed land use.



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TRAFFIC VOLUMES

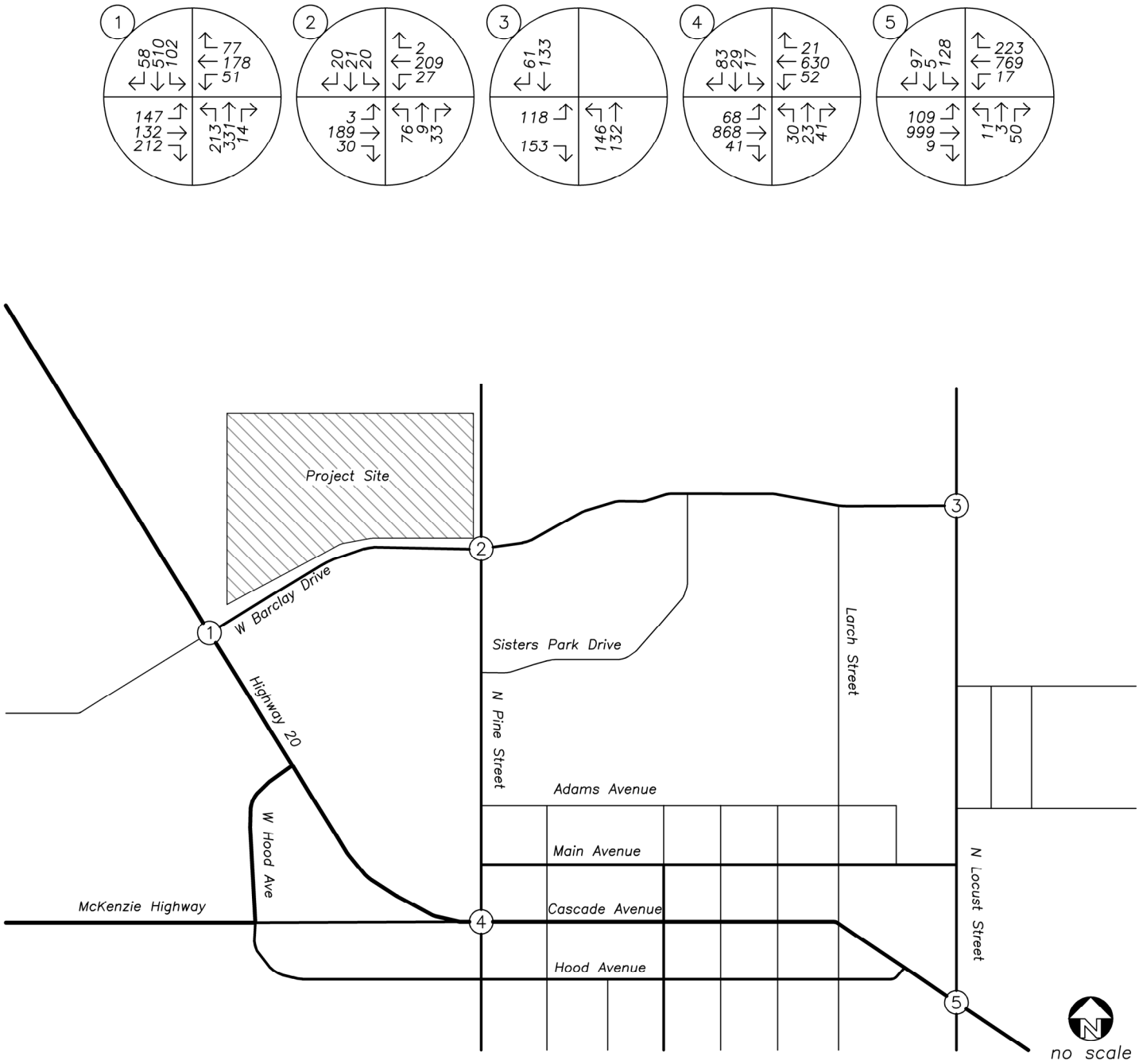
Year 2019 Existing Conditions

PM Peak Hour

Figure 4

Sisters Industrial Subdivision

1/24/2020



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TRAFFIC VOLUMES

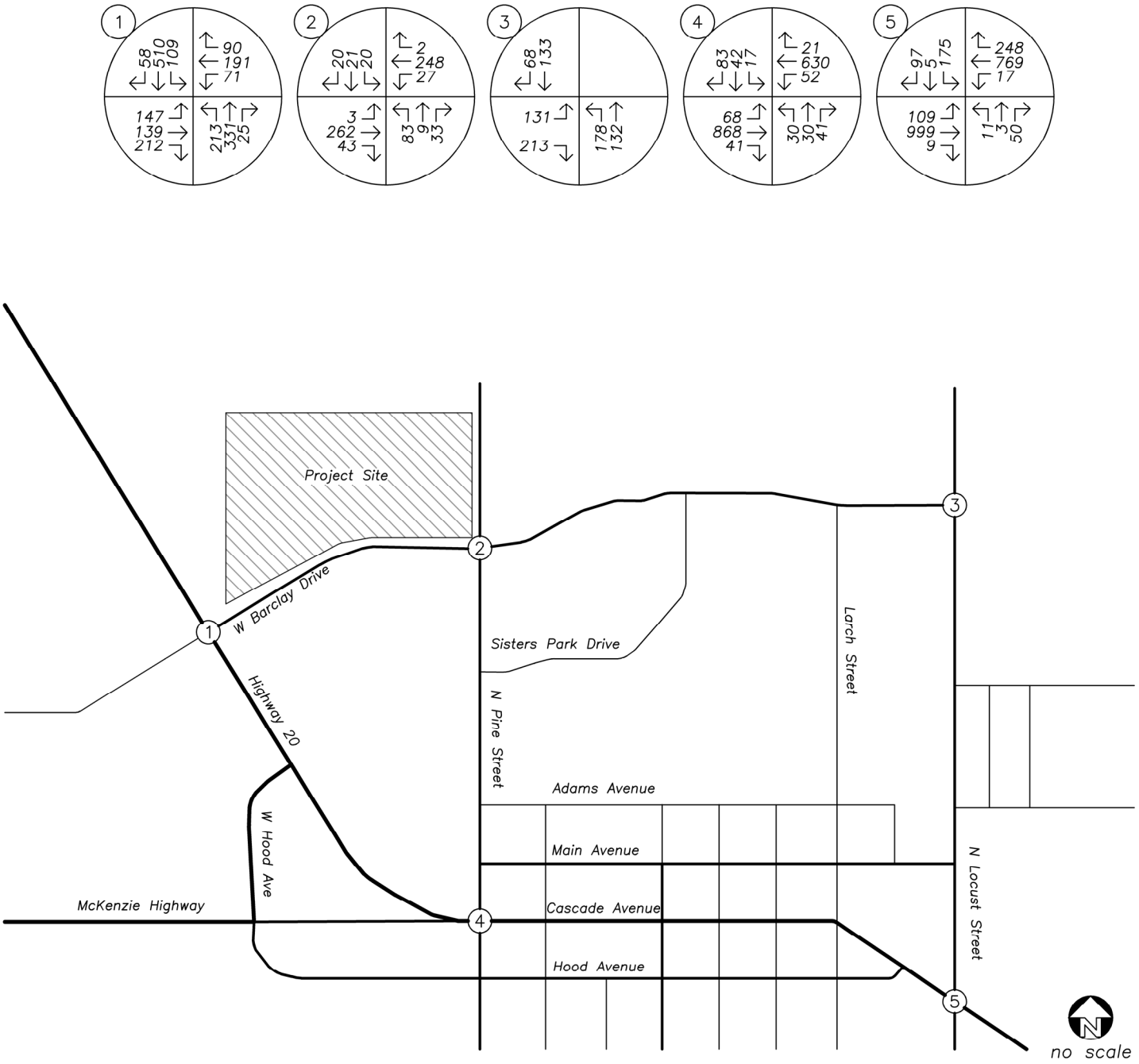
Year 2040 Background Conditions

PM Peak Hour

Figure 5

Sisters Industrial Subdivision

1/24/2020



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TRAFFIC VOLUMES

Year 2020 Buildout Conditions

PM Peak Hour

Figure 6

Sisters Industrial Subdivision

1/24/2020

Safety Analysis

Crash History Review

Using data obtained from ODOT's Crash Data System, a review of approximately five years of the most recent available crash history (January 1st, 2014 to December 31st, 2018) was performed at the study intersections. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Crash severity is based on injuries sustained by people involved in the crash, and includes five categories:

- PDO – property damage only;
- Injury C – possible injury or complaint of pain;
- Injury B – non-incapacitating injury;
- Injury A – incapacitating injury (i.e. bleeding or broken bones); and
- Fatality

Crash rates provide the ability to compare safety risks at different intersection 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 using the common assumption that traffic counted during the evening peak hour represents approximately 10 percent of the annual average daily traffic (AADT) at the intersection. Crash rates in excess of 1.0 crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

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

Table 4: Crash Type Summary

	Intersection	Crash Type								Total Crashes
		Rear End	Turn	Angle	Fixed Object	Side swipe	Other	Ped	Bike	
1	US Highway 20 at W Barclay Drive	0	0	0	2	0	0	0	0	2
2	W Barclay Drive at N Pine Street	0	0	3	0	0	0	0	0	3
3	E Barclay Drive at N Locust Street	0	1	0	0	0	0	0	0	1
4	N Pine Street at US Highway 20	2	1	0	0	0	0	1	0	4
5	N Locust Street at US Highway 20	2	2	1	0	0	0	0	0	5

Table 5: Crash Severity and Rate Summary

	Intersection	Crash Severity					Total Crashes	AADT	Crash Rate
		PDO	Injury C	Injury B	Injury A	Fatality			
1	US Highway 20 at W Barclay Drive	1	0	1	0	0	2	12,560	0.09
2	W Barclay Drive at N Pine Street	0	0	3	0	0	3	4,020	0.51
3	E Barclay Drive at N Locust Street	0	1	0	0	0	1	4,710	0.15
4	N Pine Street at US Highway 20	1	3	0	0	0	4	11,230	0.24
5	N Locust Street at US Highway 20	4	1	0	0	0	5	14,910	0.23

BOLDED text indicates a crash rate in excess of 1.00 CMEV.

Based on a review of the crash data, the intersection of N Pine Street at US Highway 20 had one crash which involved a pedestrian and was classified as *Injury C*. The crash occurred when the driver of a westbound vehicle

failed to yield right-of-way to a southbound pedestrian crossing in a marked crosswalk. The pedestrian sustained injuries consistant with *Injury C* classification.

Based on a review of available crash data between January 1st, 2014, and December 31st, 2018, all intersections were calculated has having a crash rate below 1.00 CMEV. No significant trends or crash patterns were identified at any of the study intersections that are indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.

Sight Distance Evaluation

Actual site access locations will be determined at the time of a future land division applications, following the zone change. The most recent site plan has one site access along W Barclay Drive, approximately 330 feet from the current site access driveway to the Best Western Ponderosa Lodge, and a second site access along N Pine Street, approximately 297 feet from the intersection of N Pine Street at W Barclay Drive.

The City of Sisters Development Code 3.1.300(I)(1) identifies access spacing standards for various roadway classifications. W Barclay Drive is classified by the City of Sisters as an Arterial, and the minimum driveway-to-driveway spacing along an arterial roadway is 330 feet. In addition, the minimum roadway-to-driveway spacing along an arterial roadway is also 330 feet. N Pine Street is classified by the City of Sisters as a minor collector, and the minimum roadway-to-driveway spacing along a collector is 100 feet.

The most recent site plan shows that proposed site access locations are in compliance with the access spacing standards shown in Development Code 3.1.300(I)(1).

Warrant Analysis

Left-turn lane warrants and preliminary traffic signal warrants were examined for the study intersections where such treatments would be applicable.

Left-Turn Lane Warrants

Left-turn lane warrants were examined for the study intersections where such treatments would be applicable.

A left-turn refuge lane is primarily a safety consideration for the major street, removing left-turning vehicles from the through traffic stream. The left-turn lane warrants were examined using methodologies provided in the ODOT's *Analysis Procedures Manual* (APM). Left-turn lane warrants were evaluated based on the number of advancing and opposing vehicles, number of turning vehicles, travel speed, and the number of through lanes.

Left-turn lane warrants were not examined for the intersection of E Barclay Drive at N Locust Street. This intersection is identified in the city's TSP, and a future project includes the realignment of the intersection to make a continuous movement to/from the west and south legs.

Left-turn lane warrants were also not examined for the intersection of N Locust Street at US Highway 20. This intersection is identified in the city's TSP, and a future project includes the construction of a roundabout.

Left-turn lane warrants are projected to be met under the year 2040 buildout scenario for the intersection of W Barclay Drive at N Pine Street, specifically for the westbound approach.

Preliminary Traffic Signal Warrants

Preliminary traffic signal warrants were examined for the following unsignalized study intersections to determine whether the installation of a new traffic signal will be warranted at the intersection upon completion of the proposed development:

- W Barclay Drive at N Pine Street;
- N Pine Street at US Highway 20.

Due to insufficient traffic volumes, traffic signal warrants are not projected to be met at the unsignalized study intersections under any of the analysis scenarios. Traffic signal warrants were not examined for the intersection of N Locust Street at US Highway 20 due to the intersection being listed in the *2018 Sisters Transportation System Plan Refinement*[2] as a candidate for a future roundabout. It was assumed in this study that the roundabout would be in place by the year 2040. In addition, traffic signal warrants were not examined for the intersection of E Barclay Drive at N Locust Street due to the intersection being listed in the *Transportation System Plan Refinement* as a candidate for a future intersection realignment. It was assumed in this study that the realignment would be in place by the year 2040.

Operational 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)[3]. 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

The study intersections of US Highway 20 at W Barclay Drive, N Pine Street at US Highway 20, and N Locust Street at US Highway 20 are under the jurisdiction of ODOT. The applicable minimum operation standard for this facility is established under the Oregon Highway Plan[4] and is based on the v/c ratio of the intersection. According to the Oregon Highway Plan, US Highway 20 is a freight route on a statewide highway, and has a maximum allowable v/c ratio of 0.85. The above mentioned intersections along US Highway 20 were analyzed according to this standard.

The study intersections of W Barclay Drive at N Pine Street and E Barclay Drive at N Locust Street, both two-way stop-controlled intersections, are under the jurisdiction of the City of Sisters. The *2018 Sisters Transportation System Plan Refinement* states that two-way stop-controlled intersections should have a v/c ratio no greater than 0.90.

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[2] Kittelson & Associates, *Sisters Transportation System Plan Refinement*, June 2018.
[3] Transportation Research Board, *Highway Capacity Manual 6th Edition*, 2016.
[4] Oregon Department of Transportation, *1999 Oregon Highway Plan: Including amendments November 1999 through May 2015*, 1999.

Delay & Capacity Analysis

TheLOS, delay, and v/c results of the capacity analysis are shown in Table 6 for the evening peak hour. 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

	PM Peak Hour		
	LOS	**Delay (s)**	**v / c**
US Highway 20 at W Barclay Drive			
2019 Existing Conditions	A	9	0.53
2040 Background Conditions	C	22	**0.86**
2040 Buildout Conditions	D	25	**0.90**
W Barclay Drive at N Pine Street			
2019 Existing Conditions	B	12	0.11
2040 Background Conditions	C	18	0.24
2040 Buildout Conditions	C	24	0.33
E Barclay Drive at N Locust Street			
2019 Existing Conditions	B	13	0.15
2040 Background Conditions (with realignment)	C	18	0.32
2040 Buildout Conditions (with realignment)	C	22	0.37
N Pine Street at US Highway 20			
2019 Existing Conditions	F	57	0.23
2040 Background Conditions	F	>200	**2.08**
2040 Buildout Conditions	F	>200	**4.30**
N Locust Street at US Highway 20			
2019 Existing Conditions	F	>200	**1.10**
2040 Background Conditions (with roundabout)	E	45	**1.06**
2040 Buildout Conditions (with roundabout)	F	55	**1.11**

BOLDED results indicate operation above acceptable jurisdictional standards

As seen in Table 7, the intersections of W Barclay Drive at N Pine Street and E Barclay Drive at N Locust Street are projected to operate acceptably through the 2040 buildout year, with or without the addition of site trips from the proposed zoning change.

US Highway 20 at Barclay Drive

The intersection of US Highway 20 at W Barclay Drive is projected to exceed ODOT's maximum v/c ratio of 0.85 under year 2040 background conditions, regardless of the proposed zone change, due to high southbound through volumes of traffic. However, the intersection remains within capacity and with delays that are not excessive (level of service D). US Highway 20 through Sisters is a key freight corridor for the Central Oregon region. An Alternate Route for the movement of trucks through Sisters is planned to route trucks off of US Highway 20 along Barclay Drive and N Locust Street. Future upgrades include widening Barclay Drive to a 3-

lane arterial section between Pine Street and N Locust Street, as well as realignment of N Locust Street at the Barclay Drive intersection to remove stop control on the predominant movement.

US Highway 20 at N Pine Street

The intersection of N Pine Street at US Highway 20 is projected to exceed ODOT's maximum v/c ratio of 0.85 under year 2040 background conditions. This is due primarily to a relatively high northbound left-turn volume from N Pine Street onto US Highway 20. The intersection operates acceptably for existing conditions, but delays increase in future years, regardless of the zoning change of the project site. No mitigations to improve capacity are recommended at this intersection for the following reason:

- During peak hours when delays are long, drivers will self-select how they enter US Highway 20 to avoid excessive delays. Local traffic may choose a number of other routes to avoid US Highway 20 and utilize the local street system.

In addition, the Motor Vehicle Master Plan Projects table (Table 7-5) in the *2018 Sisters Transportation System Plan Refinement* lists a possible mitigation of restricting northbound and southbound approaches at the intersection to right-turns only. The intersection should be monitored to determine whether these movement restrictions become necessary in the future.

US Highway 20 at N Locust Street

The intersection of N Locust Street at US Highway 20 is also projected to operate above acceptable ODOT standards; however, this issue is project to occur regardless of whether the proposed zoning change is approved. The City of Sisters is aware the intersection fails to meet operational standards, and recently conducted a roundabout feasibility study at the intersection. Future intersection improvements include a near-term mini-roundabout, with a long-term goal of installing a full-size roundabout, according to the *2018 Sisters Transportation System Plan Refinement*. For the purpose of this analysis, it was assumed that a standard roundabout would be constructed. However, based on the operational analysis results either with or without the proposed zone change, it is recommended that design options to add capacity be explored, such as the addition of a westbound right-turn slip lane.

Transportation Planning Rule

660-012-0060 Plan and Land Use Regulation Amendments

1. If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:

    (a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);

<u>Response</u>: The proposed zone change will not result in the need for additional changes to the functional classification of existing or planned transportation facilities. Accordingly, this section is not triggered.

(b) Change standards implementing a functional classification system; or

Response: The proposed zone change will not change any standards implementing the functional classification system. Accordingly, this section is not triggered.

> *(c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.*
>
> > *(A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;*
> >
> > *(B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or*
> >
> > *(C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.*

Response: The proposed zone change will not produce types or levels of travel or access that are inconsistent with the functional classification of the existing transportation facility. In addition, the proposed development is not projected to degrade the performance of existing or planned transportation below performance standards identified in the City's Transportation System Plan. The data contained in this TIA is sufficient to address the impacts to the transportation system that will result from the zone change from UAR to LI. Transportation Planning Rule 660-012-0060 is satisfied for the proposed land use.

Conclusions

The proposed project involves a change in zoning from Urban Area Reserve (UAR) to Light Industrial (LI) on a currently undeveloped site located off W Barclay Drive in Sisters, Oregon.

A variety of permitted land uses were assumed for all 17 lots on the current site plan. In order to have a mid-range estimate of trip generation, it was assumed that four of the lots would have a retail/service land use, and the remaining 13 lots would have an industrial land use. The trip generation calculations show that the proposed variety of land uses is projected to generate 201 trips during the evening peak hour.

All intersections were calculated has having a crash rate below 1.00 CMEV. No significant trends or crash patterns were identified at any of the study intersections that are indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.

The most recent site plan shows that proposed site access locations are in compliance with the access spacing standards shown in Development Code 3.1.300(I)(1). Actual site access locations will be determined at the time of a future land division applications, following the zone change.

Due to insufficient traffic volumes, traffic signal warrants are not projected to be met at the unsignalized study intersections of W Barclay Drive at N Pine Street and N Pine Street at US Highway 20 under any of the analysis scenarios.

Three of the study intersections were shown to exceed operational standards for the year 2040 background scenario (US Highway 20 at W Barclay Drive, N Pine Street at US Highway 20, and N Locust Street at US Highway 20). Improvements to the intersections and/or nearby connecting roads are planned in the *2018 Sisters Transportation System Plan Refinement*.

The proposed zone change will not produce types or levels of travel or access that are inconsistent with the functional classification of the existing transportation facility. In addition, the proposed development is not projected to degrade the performance of existing or planned transportation below performance standards identified in the City's Transportation System Plan. Transportation Planning Rule 660-012-0060 is satisfied for the proposed land use.

Appendix

TRIP GENERATION CALCULATIONS

Land Use: General Light Industrial
Land Use Code: 110
Setting/Location General Urban/Suburban
Variable: 1,000 Square Feet of Gross Floor Area
Variable Quantity: 88.1

AM PEAK HOUR

Trip Rate: 0.70

	Enter	Exit	Total
Directional Distribution	88%	12%	
Trip Ends	**55**	**7**	**62**

PM PEAK HOUR

Trip Rate: 0.63

	Enter	Exit	Total
Directional Distribution	13%	87%	
Trip Ends	**7**	**49**	**56**

WEEKDAY

Trip Rate: 4.96

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**218**	**218**	**436**

SATURDAY

Trip Rate: 1.99

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**88**	**88**	**176**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Manufacturing
Land Use Code: 140
Setting/Location: General Urban/Suburban
Variable: 1,000 Square Feet
Variable Quantity: 34.1

AM PEAK HOUR

Trip Rate: 0.62

	Enter	Exit	Total
Directional Distribution	77%	23%	
Trip Ends	**16**	**5**	**21**

PM PEAK HOUR

Trip Rate: 0.67

	Enter	Exit	Total
Directional Distribution	31%	69%	
Trip Ends	**7**	**16**	**23**

WEEKDAY

Trip Rate: 3.93

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**67**	**67**	**134**

SATURDAY

Trip Rate: 6.42

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**109**	**109**	**218**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Warehousing
Land Use Code: 150
Variable: 1,000 Square Feet
Variable Quantity: 21.3

AM PEAK HOUR

Trip Rate: 0.17

	Enter	Exit	Total
Directional Distribution	77%	23%	
Trip Ends	**3**	**1**	**4**

PM PEAK HOUR

Trip Rate: 0.19

	Enter	Exit	Total
Directional Distribution	27%	73%	
Trip Ends	**1**	**3**	**4**

WEEKDAY

Trip Rate: 1.74

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**19**	**19**	**38**

SATURDAY

Trip Rate: 0.15

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**2**	**2**	**4**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Specialty Trade Contractor
Land Use Code: 180
Setting/Location General Urban/Suburban
Variable: 1,000 Sq. Ft. GFA
Variable Value: 3.1

AM PEAK HOUR

Trip Rate: 1.66

	Enter	Exit	Total
Directional Distribution	73%	27%	
Trip Ends	**4**	**1**	**5**

PM PEAK HOUR

Trip Rate: 1.97

	Enter	Exit	Total
Directional Distribution	32%	68%	
Trip Ends	**2**	**4**	**6**

WEEKDAY

Trip Rate: 10.22

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**16**	**16**	**32**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Animal Hospital/Veterinary Clinic
Land Use Code: 640
Variable: 1000 Sq Ft Gross Floor Area
Variable Value: 11.2

AM PEAK HOUR

Trip Rate: 3.64

	Enter	Exit	Total
Directional Distribution	67%	33%	
Trip Ends	**27**	**14**	**41**

PM PEAK HOUR

Trip Rate: 3.53

	Enter	Exit	Total
Directional Distribution	40%	60%	
Trip Ends	**16**	**24**	**40**

WEEKDAY

Trip Rate: 21.5

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**121**	**120**	**241**

TRIP GENERATION CALCULATIONS

Land Use: Recreational Vehicle Sales
Land Use Code: 842
Setting/Location General Urban/Suburban
Variable: 1,000 Sq. Ft. GFA
Variable Value: 9.1

AM PEAK HOUR

Trip Rate: 0.46

	Enter	Exit	Total
Directional Distribution	85%	15%	
Trip Ends	**3**	**1**	**4**

PM PEAK HOUR

Trip Rate: 0.77

	Enter	Exit	Total
Directional Distribution	31%	69%	
Trip Ends	**2**	**5**	**7**

WEEKDAY

Trip Rate: 5.00

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**23**	**23**	**46**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Automobile Parts Sales
Land Use Code: 843
Setting/Location General Urban/Suburban
Variable: 1,000 Sq. Ft. GFA
Variable Value: 8.5

AM PEAK HOUR

Trip Rate: 2.59

	Enter	Exit	Total
Directional Distribution	55%	45%	
Trip Ends	**12**	**10**	**22**

PM PEAK HOUR

Trip Rate: 4.91

	Enter	Exit	Total
Directional Distribution	48%	52%	
Trip Ends	**20**	**22**	**42**

WEEKDAY

Trip Rate: 55.34

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**235**	**235**	**470**

SAT PEAK HOUR OF GENERATOR

Trip Rate: 11.53

	Enter	Exit	Total
Directional Distribution	51%	49%	
Trip Ends	**50**	**48**	**98**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Drinking Place
Land Use Code: 925
Setting/Location General Urban/Suburban
Variable: 1,000 Sq. Ft. GFA
Variable Value: 2

PM PEAK HOUR

Trip Rate: 11.36

	Enter	Exit	Total
Directional Distribution	66%	34%	
Trip Ends	**15**	**8**	**23**

WEEKDAY

Trip Rate: 113.60

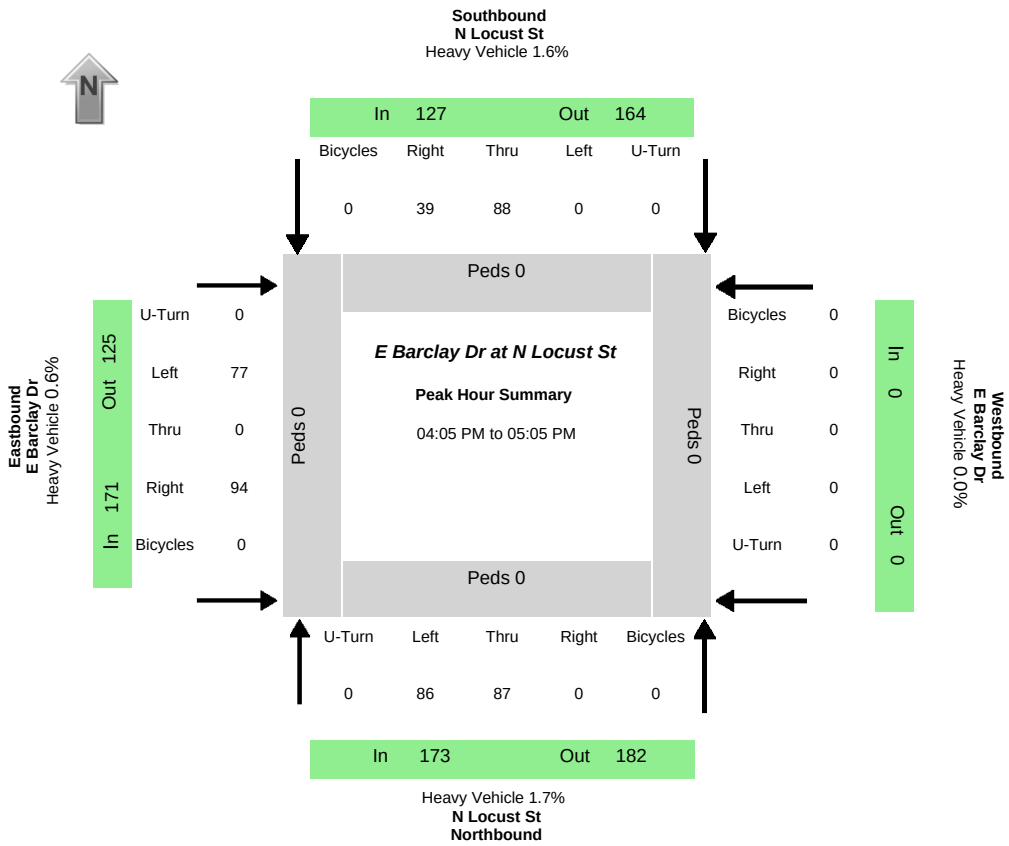
	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**114**	**113**	**227**

Note: Weekday rate assumed to be ten times the PM peak hour.

Source: TRIP GENERATION, Tenth Edition

K-D-N
KEY DATA NETWORK

Data Provided by K-D-N.com 503-594-4224	
N/S street	*N Locust St*
E/W street	*E Barclay Dr*
City, State	Sisters OR
Site Notes	
Location	44.297603 - -121.543743
Start Date	Tuesday, October 15, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:05:00 PM
Peak 15 Min Start	04:35:00 PM
PHF (15-Min Int)	0.93



Peak-Hour Volumes (PHV)																							
Northbound				**Southbound**				**Eastbound**				**Westbound**				**Entering**				**Leaving**			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
86	87	0	0	0	88	39	0	77	0	94	0	0	0	0	0	173	127	171	0	182	164	125	0
Percent Heavy Vehicles																							
3.5%	0.0%	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	1.6%	0.6%	0.0%	1.6%	0.0%	2.4%	0.0%

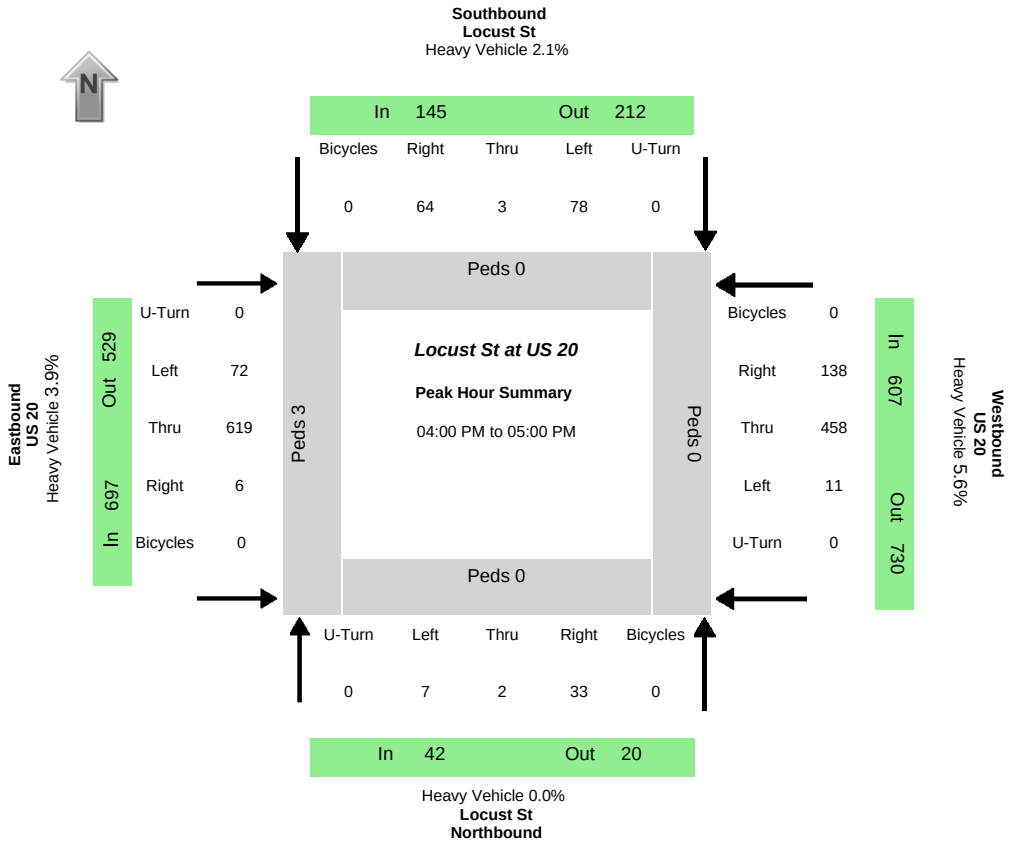
PHV- Bicycles																	PHV - Pedestrians				
Northbound				**Southbound**				**Eastbound**				**Westbound**					in Crosswalk				
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	**Sum**	NB	SB	EB	WB	**Sum**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

All Vehicle Volumes

	Northbound N Locust St				**Southbound** N Locust St				**Eastbound** E Barclay Dr				**Westbound** E Barclay Dr				15 Min	1 HR
Time	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	Sum
04:00:00 PM	8	13	0	0	0	4	3	0	3	0	5	0	0	0	0	0		
04:05:00 PM	12	6	0	0	0	8	3	0	5	0	8	0	0	0	0	0		
04:10:00 PM	7	9	0	0	0	7	1	0	7	0	9	0	0	0	0	0	118	
04:15:00 PM	8	7	0	0	0	9	3	0	5	0	7	0	0	0	0	0	121	
04:20:00 PM	8	5	0	0	0	9	5	0	8	0	4	0	0	0	0	0	118	
04:25:00 PM	9	6	0	0	0	3	4	0	3	0	8	0	0	0	0	0	111	
04:30:00 PM	7	9	0	0	0	6	3	0	3	0	6	0	0	0	0	0	106	
04:35:00 PM	4	8	0	0	0	7	3	0	11	0	12	0	0	0	0	0	112	
04:40:00 PM	7	5	0	0	0	8	7	0	7	0	9	0	0	0	0	0	122	
04:45:00 PM	5	9	0	0	0	7	3	0	7	0	8	0	0	0	0	0	127	
04:50:00 PM	10	8	0	0	0	8	1	0	8	0	9	0	0	0	0	0	126	
04:55:00 PM	0	8	0	0	0	6	5	0	7	0	6	0	0	0	0	0	115	466
05:00:00 PM	9	7	0	0	0	10	1	0	6	0	8	0	0	0	0	0	117	471
05:05:00 PM	9	9	0	0	0	3	1	0	5	0	6	0	0	0	0	0	106	462
05:10:00 PM	9	4	0	0	0	5	2	0	7	0	8	0	0	0	0	0	109	457
05:15:00 PM	5	10	0	0	0	8	5	0	4	0	10	0	0	0	0	0	110	460
05:20:00 PM	5	6	0	0	0	6	6	0	6	0	8	0	0	0	0	0	114	458
05:25:00 PM	6	17	0	0	0	3	2	0	3	0	0	0	0	0	0	0	110	456
05:30:00 PM	7	7	0	0	0	7	2	0	11	0	7	0	0	0	0	0	109	463
05:35:00 PM	5	11	0	0	0	7	4	0	6	0	5	0	0	0	0	0	110	456
05:40:00 PM	5	8	0	0	0	4	5	0	3	0	5	0	0	0	0	0	109	443
05:45:00 PM	7	11	0	0	0	7	3	0	2	0	2	0	0	0	0	0	100	436
05:50:00 PM	9	5	0	0	0	8	0	0	5	0	7	0	0	0	0	0	96	426
05:55:00 PM	7	3	0	0	0	6	1	0	9	0	2	0	0	0	0	0	94	422

K-D-N
KEY DATA NETWORK

Data Provided by K-D-N.com 503-594-4224	
N/S street	*Locust St*
E/W street	*US 20*
City, State	Sisters OR
Site Notes	
Location	44.290153 - -121.543805
Start Date	Tuesday, October 15, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:00:00 PM
Peak 15 Min Start	04:20:00 PM
PHF (15-Min Int)	0.94



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
7	2	33	0	78	3	64	0	72	619	6	0	11	458	138	0	42	145	697	607	20	212	529	730
Percent Heavy Vehicles																							
0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	1.6%	0.0%	1.4%	4.2%	0.0%	0.0%	0.0%	5.2%	7.2%	0.0%	0.0%	2.1%	3.9%	5.6%	0.0%	5.2%	4.7%	3.8%

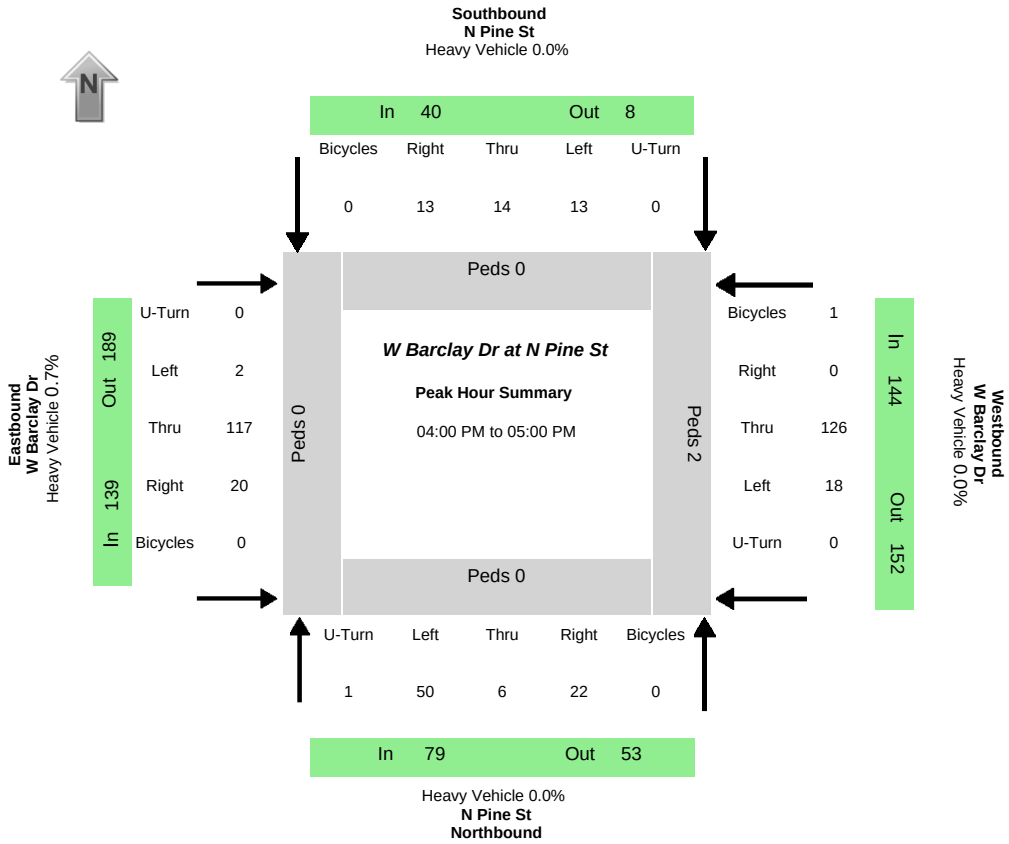
PHV- Bicycles																	PHV - Pedestrians				
Northbound				Southbound				Eastbound				Westbound					in Crosswalk				
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	**Sum**	NB	SB	EB	WB	**Sum**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3

All Vehicle Volumes

	Northbound Locust St				Southbound Locust St				Eastbound US 20				Westbound US 20				15 Min	1 HR
Time	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	Sum
04:00:00 PM	1	0	0	0	7	0	3	0	10	35	1	0	2	46	20	0		
04:05:00 PM	0	1	2	0	5	0	8	0	4	53	1	0	1	39	17	0		
04:10:00 PM	1	1	8	0	6	0	4	0	4	59	1	0	1	31	10	0	382	
04:15:00 PM	0	0	3	0	6	0	6	0	5	42	1	0	0	40	11	0	371	
04:20:00 PM	0	0	3	0	7	0	2	0	7	50	0	0	3	40	16	0	368	
04:25:00 PM	2	0	5	0	7	0	4	0	5	62	0	0	0	42	12	0	381	
04:30:00 PM	1	0	2	0	5	0	5	0	6	62	0	0	0	41	6	0	395	
04:35:00 PM	0	0	1	0	8	0	3	0	4	53	0	0	1	34	5	0	376	
04:40:00 PM	0	0	3	0	9	0	2	0	7	47	0	0	2	37	12	0	356	
04:45:00 PM	1	0	2	0	4	0	10	0	7	57	0	0	0	38	11	0	358	
04:50:00 PM	1	0	0	0	4	2	10	0	6	63	1	0	0	41	11	0	388	
04:55:00 PM	0	0	4	0	10	1	7	0	7	36	1	0	1	29	7	0	372	1491
05:00:00 PM	1	0	1	0	7	1	0	0	9	45	1	0	2	31	13	0	353	1477
05:05:00 PM	0	0	3	0	6	0	5	0	7	75	0	0	0	30	9	0	349	1481
05:10:00 PM	0	0	4	0	7	1	2	0	1	61	0	0	4	17	9	0	352	1461
05:15:00 PM	0	1	3	0	15	0	3	0	3	46	1	0	7	28	11	0	359	1465
05:20:00 PM	0	0	2	0	11	0	4	0	5	39	1	0	4	28	14	0	332	1445
05:25:00 PM	1	0	2	0	3	0	3	0	5	78	1	0	0	25	15	0	359	1439
05:30:00 PM	0	0	1	0	2	0	5	0	7	64	1	0	3	32	12	0	368	1438
05:35:00 PM	0	1	2	0	7	0	4	0	4	28	0	0	1	30	13	0	350	1419
05:40:00 PM	0	0	0	0	4	1	5	0	5	38	0	0	3	26	17	0	316	1399
05:45:00 PM	0	0	4	0	5	0	4	0	6	56	0	0	3	31	7	0	305	1385
05:50:00 PM	0	1	4	0	7	1	5	0	4	55	0	0	4	30	11	0	337	1368
05:55:00 PM	0	1	1	0	9	0	5	0	5	30	1	0	1	30	11	0	332	1359

K-D-N
KEY DATA NETWORK

Data Provided by K-D-N.com 503-594-4224	
N/S street	*N Pine St*
E/W street	*W Barclay Dr*
City, State	Sisters OR
Site Notes	
Location	44.29704 - -121.55394
Start Date	Tuesday, October 15, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:00:00 PM
Peak 15 Min Start	04:30:00 PM
PHF (15-Min Int)	0.84



Peak-Hour Volumes (PHV)																							
Northbound				**Southbound**				**Eastbound**				**Westbound**				**Entering**				**Leaving**			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
50	6	22	1	13	14	13	0	2	117	20	0	18	126	0	0	79	40	139	144	53	8	189	152
Percent Heavy Vehicles																							
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.7%

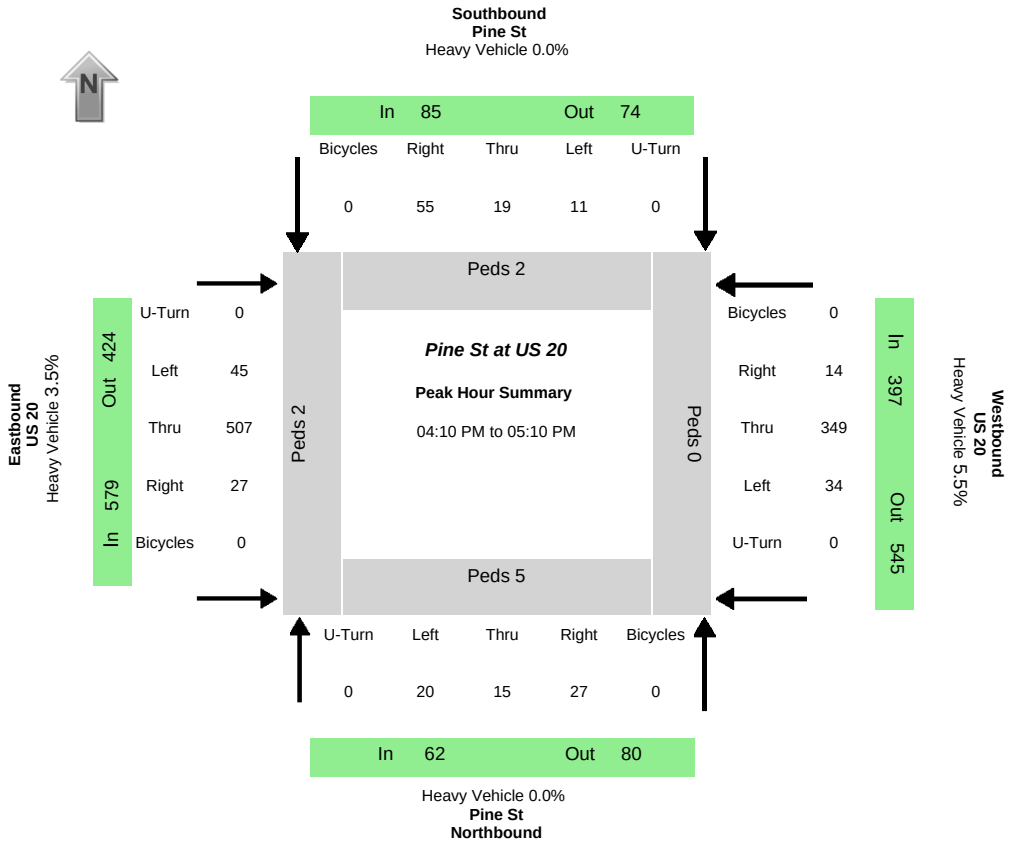
PHV- Bicycles																	PHV - Pedestrians				
Northbound				**Southbound**				**Eastbound**				**Westbound**					in Crosswalk				
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	**Sum**	NB	SB	EB	WB	**Sum**
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	2

All Vehicle Volumes

	Northbound N Pine St				**Southbound** N Pine St				**Eastbound** W Barclay Dr				**Westbound** W Barclay Dr				15 Min	1 HR
Time	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	Sum
04:00:00 PM	6	1	2	1	0	2	3	0	0	5	2	0	3	10	0	0		
04:05:00 PM	3	2	1	0	0	0	1	0	0	11	1	0	3	11	0	0		
04:10:00 PM	4	0	3	0	0	0	0	0	0	13	2	0	0	11	0	0	101	
04:15:00 PM	1	0	1	0	0	2	0	0	0	10	6	0	1	8	0	0	95	
04:20:00 PM	3	0	1	0	1	1	1	0	0	9	1	0	2	15	0	0	96	
04:25:00 PM	2	0	2	0	0	2	0	0	1	5	2	0	1	9	0	0	87	
04:30:00 PM	7	1	2	0	4	2	2	0	0	6	1	0	3	8	0	0	94	
04:35:00 PM	6	0	1	0	3	2	2	0	0	16	1	0	2	11	0	0	104	
04:40:00 PM	5	0	2	0	4	1	2	0	1	6	1	0	0	17	0	0	119	
04:45:00 PM	5	0	2	0	0	1	1	0	0	10	1	0	1	10	0	0	114	
04:50:00 PM	4	1	2	0	0	0	1	0	0	13	1	0	2	9	0	0	103	
04:55:00 PM	4	1	3	0	1	1	0	0	0	13	1	0	0	7	0	0	95	402
05:00:00 PM	3	0	2	0	1	0	2	0	0	11	1	0	1	6	0	0	91	394
05:05:00 PM	2	0	3	0	1	1	0	0	0	12	2	0	1	13	0	0	93	396
05:10:00 PM	5	1	1	0	0	1	0	0	0	14	1	0	1	12	1	0	99	400
05:15:00 PM	7	0	2	0	0	0	2	0	0	10	0	0	0	8	0	0	101	400
05:20:00 PM	3	0	0	0	0	0	0	0	1	8	0	0	0	17	1	0	96	396
05:25:00 PM	2	0	0	0	0	1	0	0	0	5	2	0	0	5	0	0	74	387
05:30:00 PM	2	1	5	0	0	0	0	0	1	7	0	0	0	7	0	0	68	374
05:35:00 PM	1	1	1	0	1	1	0	0	0	11	0	0	0	14	0	0	68	360
05:40:00 PM	6	1	0	0	0	1	0	0	0	8	2	0	0	8	0	0	79	347
05:45:00 PM	3	0	0	0	0	0	0	0	1	8	1	0	2	6	0	0	77	337
05:50:00 PM	0	0	2	0	0	0	2	0	0	10	0	0	0	16	0	0	77	334
05:55:00 PM	1	2	0	0	0	0	3	0	0	7	2	0	0	10	0	0	76	328

K-D-N
KEY DATA NETWORK

Data Provided by K-D-N.com 503-594-4224	
N/S street	*Pine St*
E/W street	*US 20*
City, State	Sisters OR
Site Notes	
Location	44.291346 - -121.553807
Start Date	Tuesday, October 15, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:10:00 PM
Peak 15 Min Start	04:20:00 PM
PHF (15-Min Int)	0.91



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
20	15	27	0	11	19	55	0	45	507	27	0	34	349	14	0	62	85	579	397	80	74	424	545
Percent Heavy Vehicles																							
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.9%	0.0%	0.0%	0.0%	6.3%	0.0%	0.0%	0.0%	0.0%	3.5%	5.5%	0.0%	0.0%	5.2%	3.7%

PHV- Bicycles																	PHV - Pedestrians				
Northbound				Southbound				Eastbound				Westbound					in Crosswalk				
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	0	9

All Vehicle Volumes

	Northbound Pine St				Southbound Pine St				Eastbound US 20				Westbound US 20				15 Min	1 HR
Time	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	Sum
04:00:00 PM	0	3	2	0	3	1	8	0	5	43	2	0	2	23	2	0		
04:05:00 PM	3	2	5	0	2	2	8	0	3	43	2	0	4	22	3	0		
04:10:00 PM	3	1	8	0	1	4	5	0	3	34	3	0	6	31	1	0	293	
04:15:00 PM	3	2	2	0	2	0	5	0	5	23	2	0	4	21	4	0	272	
04:20:00 PM	2	2	0	0	0	1	5	0	4	42	2	0	3	37	0	0	271	
04:25:00 PM	2	0	4	0	0	3	3	0	4	48	4	0	2	34	2	0	277	
04:30:00 PM	0	1	1	0	1	2	6	0	6	54	4	0	0	28	1	0	308	
04:35:00 PM	0	3	4	0	2	2	3	0	0	28	1	0	3	29	1	0	286	
04:40:00 PM	2	2	1	0	1	1	6	0	3	41	1	0	3	30	1	0	272	
04:45:00 PM	1	1	1	0	1	4	1	0	5	66	1	0	1	26	0	0	276	
04:50:00 PM	0	0	2	0	0	2	4	0	4	33	4	0	3	35	0	0	287	
04:55:00 PM	4	0	2	0	1	0	6	0	3	34	2	0	3	26	2	0	278	1120
05:00:00 PM	2	3	0	0	1	0	6	0	5	29	1	0	2	27	1	0	247	1103
05:05:00 PM	1	0	2	0	1	0	5	0	3	75	2	0	4	25	1	0	279	1123
05:10:00 PM	2	2	2	0	0	2	4	0	4	37	5	0	7	14	0	0	275	1102
05:15:00 PM	1	1	0	0	2	0	2	0	0	28	2	0	4	14	1	0	253	1084
05:20:00 PM	1	0	4	0	1	0	2	0	2	21	2	0	6	27	1	0	201	1053
05:25:00 PM	3	0	1	0	0	0	3	0	6	76	3	0	3	15	1	0	233	1058
05:30:00 PM	0	2	2	0	1	0	6	0	5	41	1	0	4	23	0	0	263	1039
05:35:00 PM	1	0	1	0	1	0	1	0	0	22	1	0	2	20	1	0	246	1013
05:40:00 PM	2	3	0	0	2	0	2	0	3	51	3	0	3	32	1	0	237	1023
05:45:00 PM	1	0	1	0	2	0	4	0	3	66	1	0	4	16	1	0	251	1014
05:50:00 PM	1	1	2	0	1	0	4	0	1	23	1	0	3	21	3	0	262	988
05:55:00 PM	1	1	0	0	0	1	5	0	1	15	3	0	2	30	2	0	221	966

Key Data Network
5477 SW Joshua St

Tualatin, Oregon, United States 97062
503.804.3294 conley@k-d-n.com
Key People serving Key Clients

Location: 44.295756, -121.559593

Count Name: Hwy 20 at W Barclay Rd
Site Code:
Start Date: 10/15/2019
Page No: 1

Turning Movement Data

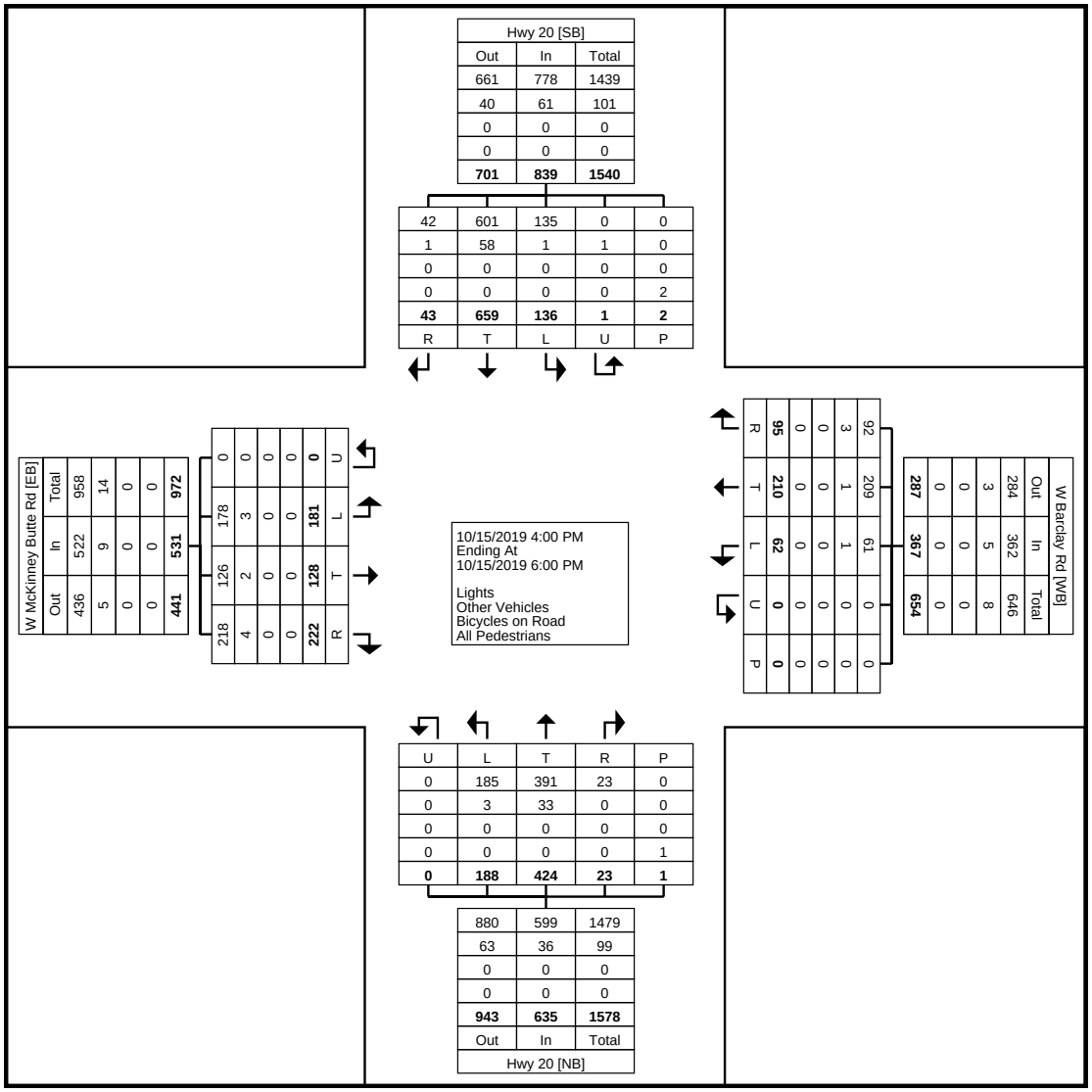
Start Time	Hwy 20 Northbound						Hwy 20 Southbound						W McKinney Butte Rd Eastbound					W Barclay Rd Westbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:00 PM	20	59	4	0	0	83	21	85	3	0	0	109	28	12	26	0	66	15	19	17	0	0	51	309
4:15 PM	25	69	1	0	0	95	18	95	9	0	0	122	20	14	29	0	63	3	26	12	0	0	41	321
4:30 PM	31	56	3	0	0	90	14	66	6	1	0	87	21	19	31	0	71	16	30	14	0	0	60	308
4:45 PM	22	63	2	0	1	87	15	90	6	0	0	111	19	25	27	0	71	8	25	12	0	0	45	314
Hourly Total	98	247	10	0	1	355	68	336	24	1	0	429	88	70	113	0	271	42	100	55	0	0	197	1252
5:00 PM	22	43	3	0	0	68	20	102	5	0	0	127	27	21	26	0	74	4	27	13	0	0	44	313
5:15 PM	15	49	3	0	0	67	18	108	5	0	1	131	24	11	31	0	66	7	28	12	0	0	47	311
5:30 PM	21	48	5	0	0	74	13	39	1	0	1	53	18	13	29	0	60	3	28	6	0	0	37	224
5:45 PM	32	37	2	0	0	71	17	74	8	0	0	99	24	13	23	0	60	6	27	9	0	0	42	272
Hourly Total	90	177	13	0	0	280	68	323	19	0	2	410	93	58	109	0	260	20	110	40	0	0	170	1120
Grand Total	188	424	23	0	1	635	136	659	43	1	2	839	181	128	222	0	531	62	210	95	0	0	367	2372
Approach %	29.6	66.8	3.6	0.0	-	-	16.2	78.5	5.1	0.1	-	-	34.1	24.1	41.8	0.0	-	16.9	57.2	25.9	0.0	-	-	-
Total %	7.9	17.9	1.0	0.0	-	26.8	5.7	27.8	1.8	0.0	-	35.4	7.6	5.4	9.4	0.0	22.4	2.6	8.9	4.0	0.0	-	15.5	-
Lights	185	391	23	0	-	599	135	601	42	0	-	778	178	126	218	0	522	61	209	92	0	-	362	2261
% Lights	98.4	92.2	100.0	-	-	94.3	99.3	91.2	97.7	0.0	-	92.7	98.3	98.4	98.2	-	98.3	98.4	99.5	96.8	-	-	98.6	95.3
Other Vehicles	3	33	0	0	-	36	1	58	1	1	-	61	3	2	4	0	9	1	1	3	0	-	5	111
% Other Vehicles	1.6	7.8	0.0	-	-	5.7	0.7	8.8	2.3	100.0	-	7.3	1.7	1.6	1.8	-	1.7	1.6	0.5	3.2	-	-	1.4	4.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
All Pedestrians	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	0	-	-
% All Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Key Data Network
5477 SW Joshua St

Tualatin, Oregon, United States 97062
503.804.3294 conley@k-d-n.com
Key People serving Key Clients

Location: 44.295756, -121.559593

Count Name: Hwy 20 at W Barclay Rd
Site Code:
Start Date: 10/15/2019
Page No: 2



Turning Movement Data Plot

Key Data Network
5477 SW Joshua St

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503.804.3294 conley@k-d-n.com
Key People serving Key Clients

Location: 44.295756, -121.559593

Count Name: Hwy 20 at W Barclay Rd
Site Code:
Start Date: 10/15/2019

Approach Data

Start Time	Nb Street Northbound						Sb Street Southbound						Eb Street Eastbound				Wb Street Westbound					
	Peds CCW	Peds CW	Circulating	Out	In	Next	Peds CCW	Peds CW	Circulating	Out	In	Next	Circulating	Out	In	Next	Peds CCW	Peds CW	Circulating	Out	In	Next
4:00 PM	0	0	62	126	82	4	0	0	53	106	108	3	119	42	66	26	0	0	106	39	50	17
4:15 PM	0	0	53	126	97	1	0	0	53	100	123	9	117	59	64	29	0	0	116	32	41	12
4:30 PM	0	0	54	114	89	3	0	0	78	94	87	6	98	66	71	31	0	0	108	37	60	14
4:45 PM	0	1	60	125	88	2	0	0	57	93	112	6	114	53	72	27	0	0	106	42	46	12
Hourly Total	0	1	229	491	356	10	0	0	241	393	430	24	448	220	273	113	0	0	436	150	197	55
5:00 PM	0	0	67	132	68	3	0	0	54	83	128	5	127	53	73	26	0	0	92	44	45	13
5:15 PM	0	0	51	145	68	3	1	0	48	84	131	5	134	47	66	31	0	0	90	31	46	12
5:30 PM	0	0	46	70	74	5	0	1	52	73	53	1	55	50	62	29	0	0	86	30	36	6
5:45 PM	0	0	54	104	71	2	0	0	66	71	99	8	97	67	60	23	0	0	93	32	43	9
Hourly Total	0	0	218	451	281	13	1	1	220	311	411	19	413	217	261	109	0	0	361	137	170	40
Grand Total	0	1	447	942	637	23	1	1	461	704	841	43	861	437	534	222	0	0	797	287	367	95
Approach %	-	-	21.8	46.0	31.1	1.1	-	-	22.5	34.4	41.0	2.1	41.9	21.3	26.0	10.8	-	-	51.6	18.6	23.7	6.1
Total %	-	-	5.8	12.2	8.3	0.3	-	-	6.0	9.1	10.9	0.6	11.2	5.7	6.9	2.9	-	-	10.4	3.7	4.8	1.2
Lights	-	-	439	876	600	23	-	-	457	662	781	42	801	432	524	218	-	-	756	283	363	92
% Lights	-	-	98.2	93.0	94.2	100.0	-	-	99.1	94.0	92.9	97.7	93.0	98.9	98.1	98.2	-	-	94.9	98.6	98.9	96.8
Other Vehicles	-	-	8	66	37	0	-	-	4	41	60	1	60	5	10	4	-	-	41	4	4	3
% Other Vehicles	-	-	1.8	7.0	5.8	0.0	-	-	0.9	5.8	7.1	2.3	7.0	1.1	1.9	1.8	-	-	5.1	1.4	1.1	3.2
Bicycles on Road	-	-	0	0	0	0	-	-	0	1	0	0	0	0	0	0	-	-	0	0	0	0
% Bicycles on Road	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0
Bicycles on Crosswalk	0	1	-	-	-	-	1	0	-	-	-	-	-	-	-	-	0	0	-	-	-	-
% Bicycles on Crosswalk	-	100.0	-	-	-	-	100.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	0	0	-	-	-	-	0	1	-	-	-	-	-	-	-	-	0	0	-	-	-	-
% Pedestrians	-	0.0	-	-	-	-	0.0	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Key Data Network
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Count Name: Hwy 20 at W Barclay Rd
Site Code:
Start Date: 10/15/2019

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Hwy 20 Northbound						Hwy 20 Southbound						W McKinney Butte Rd Eastbound					W Barclay Rd Westbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:15 PM	25	69	1	0	0	95	18	95	9	0	0	122	20	14	29	0	63	3	26	12	0	0	41	321
4:30 PM	31	56	3	0	0	90	14	66	6	1	0	87	21	19	31	0	71	16	30	14	0	0	60	308
4:45 PM	22	63	2	0	1	87	15	90	6	0	0	111	19	25	27	0	71	8	25	12	0	0	45	314
5:00 PM	22	43	3	0	0	68	20	102	5	0	0	127	27	21	26	0	74	4	27	13	0	0	44	313
Total	100	231	9	0	1	340	67	353	26	1	0	447	87	79	113	0	279	31	108	51	0	0	190	1256
Approach %	29.4	67.9	2.6	0.0	-	-	15.0	79.0	5.8	0.2	-	-	31.2	28.3	40.5	0.0	-	16.3	56.8	26.8	0.0	-	-	-
Total %	8.0	18.4	0.7	0.0	-	27.1	5.3	28.1	2.1	0.1	-	35.6	6.9	6.3	9.0	0.0	22.2	2.5	8.6	4.1	0.0	-	15.1	-
PHF	0.806	0.837	0.750	0.000	-	0.895	0.838	0.865	0.722	0.250	-	0.880	0.806	0.790	0.911	0.000	0.943	0.484	0.900	0.911	0.000	-	0.792	0.978
Lights	98	211	9	0	-	318	66	323	25	0	-	414	84	78	111	0	273	31	108	48	0	-	187	1192
% Lights	98.0	91.3	100.0	-	-	93.5	98.5	91.5	96.2	0.0	-	92.6	96.6	98.7	98.2	-	97.8	100.0	100.0	94.1	-	-	98.4	94.9
Other Vehicles	2	20	0	0	-	22	1	30	1	1	-	33	3	1	2	0	6	0	0	3	0	-	3	64
% Other Vehicles	2.0	8.7	0.0	-	-	6.5	1.5	8.5	3.8	100.0	-	7.4	3.4	1.3	1.8	-	2.2	0.0	0.0	5.9	-	-	1.6	5.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
All Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	0	-	-
% All Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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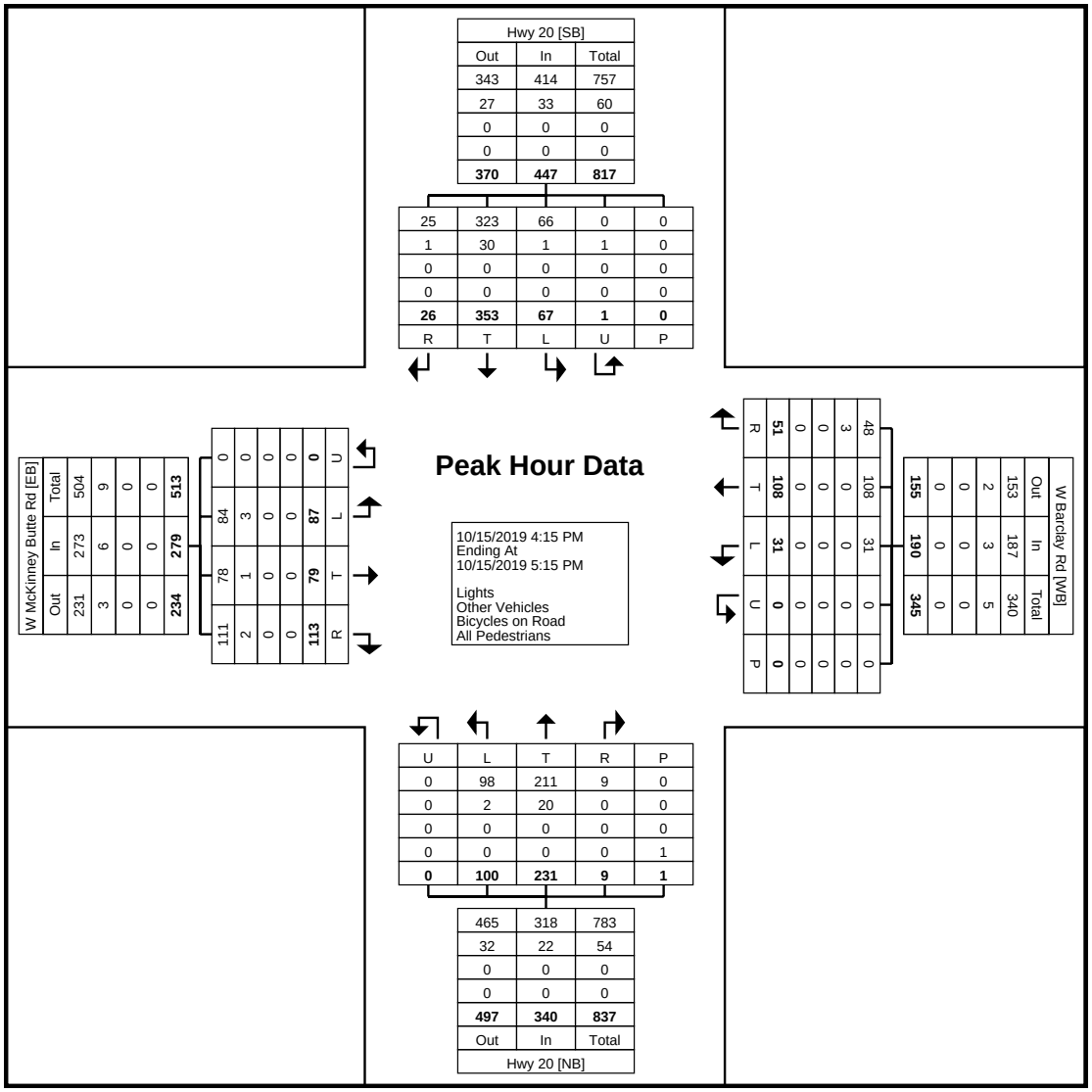
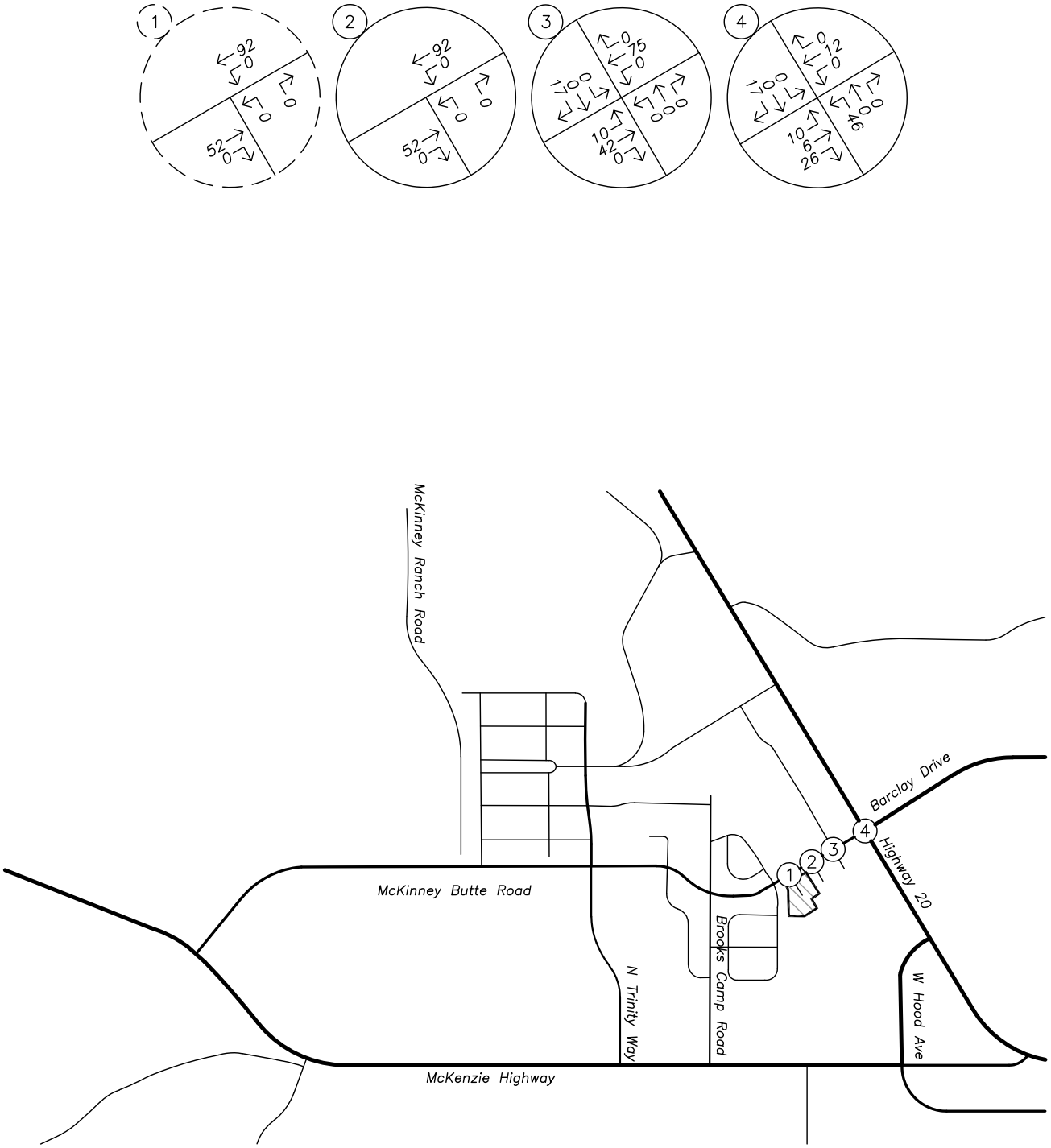
Count Name: Hwy 20 at W Barclay Rd
Site Code:
Start Date: 10/15/2019
Page No: 5



Turning Movement Peak Hour Data Plot (4:15 PM)

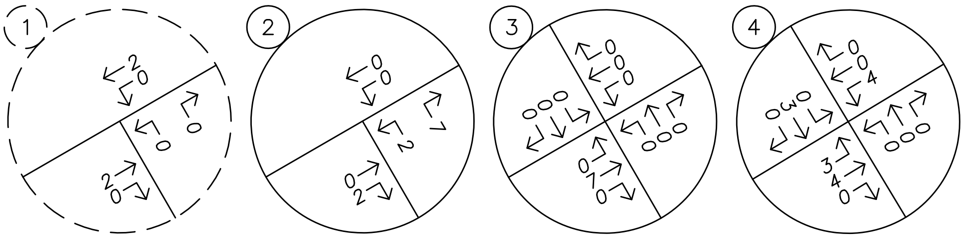


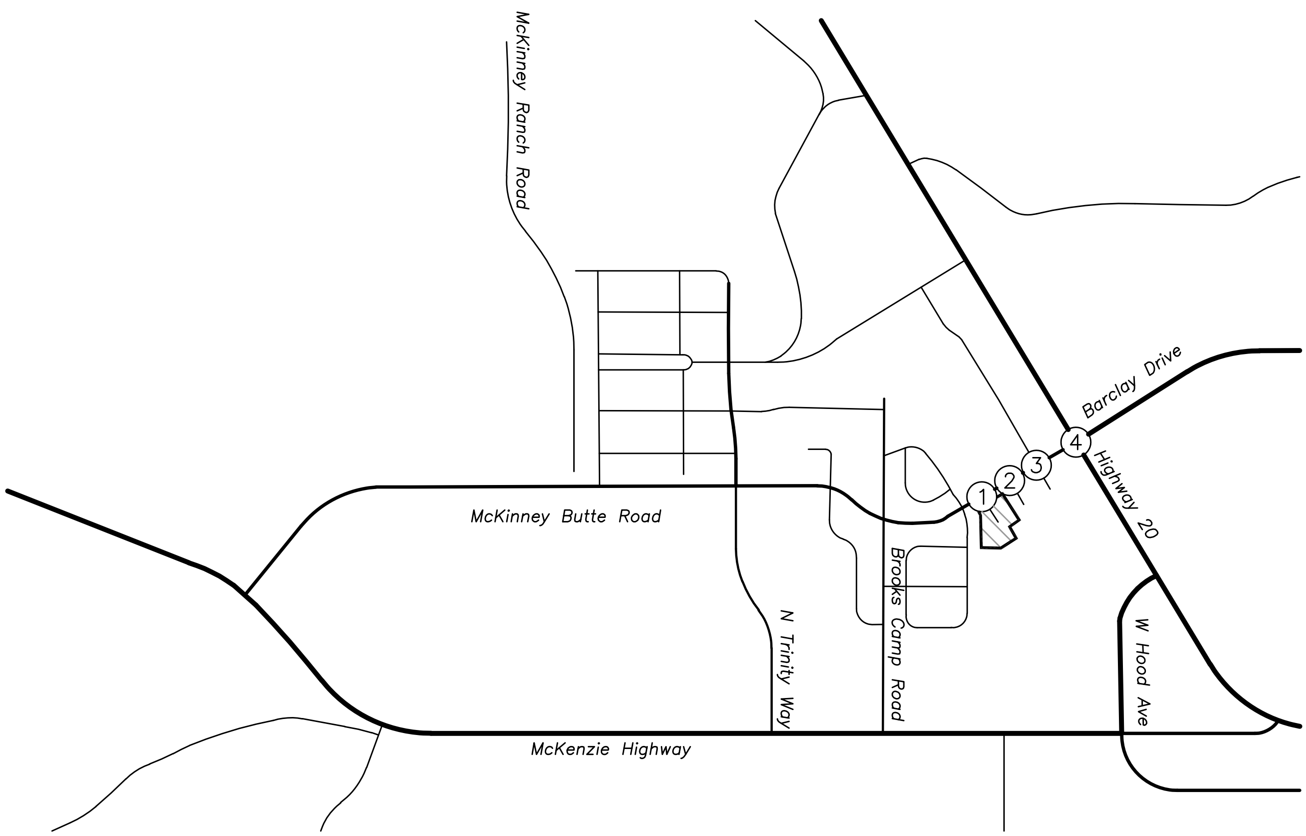
TRAFFIC VOLUMES
In-Process Trips – McKenzie Meadows
PM Peak Hour

no scale

FIGURE --

PAGE --





TRAFFIC VOLUMES
In-Process Trips – Threewind Master Plan
PM Peak Hour

no scale

FIGURE
--

PAGE
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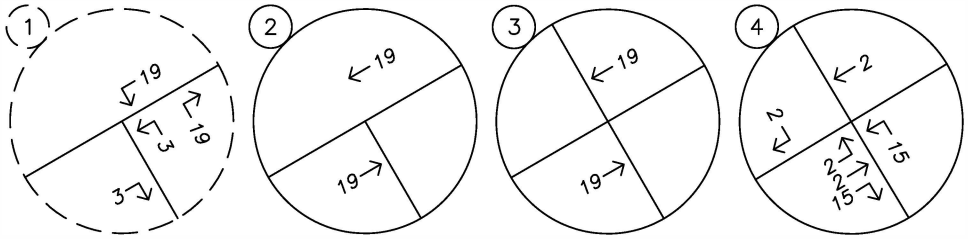
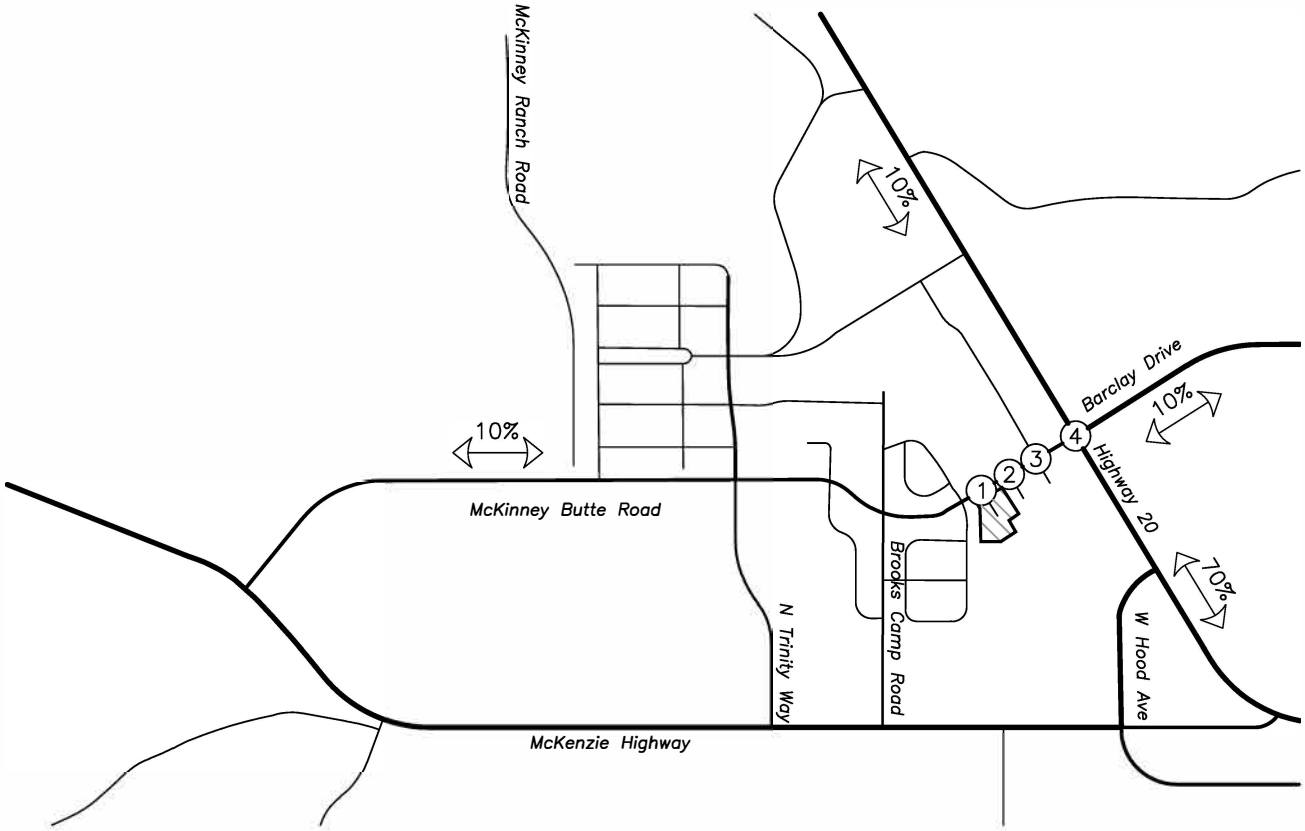
LEGEND

XX% PERCENT OF PRIMARY TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
AM	8	3	11
PM	22	22	44





TRAFFIC VOLUMES
In–Process Trips – Dollar General
PM Peak Hour

no scale

FIGURE 5

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF SISTERS, DESCHUTES COUNTY

BARCLAY DR at SANTIAM HY, City of Sisters, Deschutes County, 01/01/2014 to 12/31/2018

1 - 2 of 2 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	D R A C	M J U L G	S I N S	C H V	W O R L K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
02337	N	N	N		N	N	12/26/2016	02	BARCLAY WAY	INTER	CROSS	N	Y	CLR	FIX OBJ	01	NONE 9	STRGHT										058,092	26
COUNTY							MO		SANTIAM HY	NW		STOP SIGN	N	ICE	FIX		N/A	SE-NW									007		00
N							4P			05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							44 17 44.72	-121 33 34.75	001600100S00															UNK					
00078	Y	Y	N		N	N	01/11/2018	02	W BARCLAY DR	INTER	CROSS	N	Y	CLD	FIX OBJ	01	NONE 0	STRGHT										044,040	30
COUNTY							TH		SANTIAM HY	NW		YIELD	Y	WET	FIX		PRVTE	SE-NW									029	044,040	00
N							11P			06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	30	M	OR-Y		050,079,081	000		30
N							44 17 44.45	-121 33 33.58	001600200S00															OR>25					

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF SISTERS, DESCHUTES COUNTY

BARCLAY DR at PINE ST, City of Sisters, Deschutes County, 01/01/2014 to 12/31/2018

1 - 3 of 3 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R A U S G N V	M J I N L	S C H	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
00962	N	N	N		N	N	05/20/2017	07	BARCLAY DR	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										010	03,27
COUNTY							SA	0	PINE ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	W -E									000		00
N							3P			03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	46	F	OR-Y		000	000		00
N							44 17 49.37 -121 33 14.16																	OR<25					
																01	NONE 0	STRGHT											
																	PRVTE	W -E									000		00
																	PSNGR CAR		02	PSNG	INJC	18	F			000	000		00
																02	NONE 0	STRGHT											
																	PRVTE	N -S									000	010	00
																	PSNGR CAR		01	DRVR	INJB	52	F	OR-Y		021,016	038		03,27
																								OR<25					
01334	N	N	N		N	N	07/12/2017	07	BARCLAY DR	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										010	03
COUNTY							WE	0	PINE ST	CN		STOP SIGN	N	DRY	ANGL		PUBLC	E -W									000		00
N							1P			02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	42	M	OR-Y		000	000		00
N							44 17 49.37 -121 33 14.16																	OR>25					
																02	NONE 0	STRGHT											
																	PRVTE	S -N									000	010	00
																	PSNGR CAR		01	DRVR	INJB	63	F	OR-Y		021	000		03
																								OR>25					
																02	NONE 0	STRGHT											
																	PRVTE	S -N									000	010	00
																	PSNGR CAR		02	PSNG	INJB	08	F			000	000		00
01581	N	N	N		N	N	08/20/2017	07	BARCLAY DR	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											03
COUNTY							SU	0	PINE ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	N -S									000		00
N							7P			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	18	F	OR-Y		021	000		03
N							44 17 49.37 -121 33 14.16																	OR<25					
																01	NONE 0	STRGHT											
																	PRVTE	N -S									000		00
																	PSNGR CAR		02	PSNG	INJC	18	F			000	000		00
																02	NONE 0	STRGHT											
																	PRVTE	E -W									000		00
																	PSNGR CAR		01	DRVR	INJB	70	M	OR-Y		000	000		00
																								OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	E -W									000		00
																	PSNGR CAR		02	PSNG	INJB	62	F			000	000		00

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF SISTERS, DESCHUTES COUNTY

BARCLAY DR at LOCUST ST, City of Sisters, Deschutes County, 01/01/2014 to 12/31/2018

1 - 1 of 1 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R U G S	M J I N V	S C H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE		MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED / LOC	ERROR	ACT	EVENT	CAUSE
00370	N	N	N				02/13/2017	07	BARCLAY DR	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE	0	TURN-L											02
NONE							MO	0	LOCUST ST	CN		STOP SIGN	N	DRY	TURN		UNKN		W -N									015		00
N							4P			04	0		N	DAY	INJ		UNKNOWN			01	DRVR	NONE	00	Unk	UNK		028	000		02
N							44 17 51.38	-121 32 37.46																	UNK					
																02	NONE	0	TURN-L											
																	PRVTE		S -W									000		00
																	PSNGR CAR			01	DRVR	INJC	61	M	OR-Y		000	000		00
																									OR>25					

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF SISTERS, DESCHUTES COUNTY

PINE ST at CASCADE AVE, City of Sisters, Deschutes County, 01/01/2014 to 12/31/2018

1 - 3 of 4 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	D R A C	M J U L	I G S	S N V	C H	W O R L K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
01056	N	N	N					07/17/2014	02	CASCADE AVE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										006	06
NONE								TH		PINE ST	UN		STOP SIGN	N	DRY	REAR		PRVTE	E -W								000		00
N								4P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000		07
N								44 17 28.86	-121 33 13.82	001500100S00															UNK					
																	02	NONE 0	STOP											
																		PRVTE	E -W									011	006	00
																		PSNGR CAR		01	DRVR	INJC	52	M	OR-Y		000	000		00
																									OR<25					
																	02	NONE 0	STOP											
																		PRVTE	E -W									011	006	00
																		PSNGR CAR		01	PSNG	INJC	46	M			000	000		00
00158	N	N	N		N	N		01/30/2014	02	CASCADE AVE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
COUNTY								TH		PINE ST	E		UNKNOWN	N	DRY	REAR		PRVTE	E -W								000		00
N								1P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y		026	000		07
N								44 17 28.8605399	-121 33 13.824504	001500100S00															OR<25					
																	02	NONE 0	STOP											
																		PRVTE	E -W									011		00
																		PSNGR CAR		01	DRVR	NONE	20	M	OR-Y		000	000		00
																									OR<25					
01855	N	N	N		N	N		09/20/2017	02	CASCADE AVE	INTER	CROSS	N	N	CLD	PED	01	NONE 0	STRGHT											02,29
COUNTY								WE		PINE ST	E		STOP SIGN	N	DRY	PED		PRVTE	W -E								006		00
N								11A			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	70	M	OR-Y		029	000		02
N								44 17 28.86	-121 33 13.82	001500100S00															OR>25					
																			- STRGHT	01	PED	INJC	34	M		I XWLK	000	034		00
																	02	NONE 0	S N STRGHT											
																		PRVTE	W -E									022		00
																		PSNGR CAR		01	DRVR	NONE	70	F	OR-Y		026	000		29
																									OR<25					
01379	N	N	N		N	N		09/15/2014	02	CASCADE AVE	INTER	CROSS	N	N	CLD	O-1 L-TURN	01	NONE 0	TURN-L											02
CITY								MO		PINE ST	CN		STOP SIGN	N	DRY	TURN		PRVTE	S -W								000		00
N								11A			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	29	M	OR-Y		028,004	000		02
N								44 17 28.86	-121 33 13.82	001500100S00															OR<25					
																	01	NONE 0	TURN-L											
																		PRVTE	S -W									000		00
																		PSNGR CAR		01	PSNG	INJC	28	F			000	000		00

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CITY OF SISTERS, DESCHUTES COUNTY

PINE ST at CASCADE AVE, City of Sisters, Deschutes County, 01/01/2014 to 12/31/2018

4 - 4 of 4 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A	L	G	D R U M C S N V	J	I	S	C	H	L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED / LOC	ERROR	ACT	EVENT	CAUSE
																						02	NONE 0	STRGHT											
																							PRVTE	N -S									000		00
																							PSNGR CAR		01	DRVR	NONE	17	M	OR-Y		000	000		00
																														OR<25					

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TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF SISTERS, DESCHUTES COUNTY

CASCADE AVE at LOCUST ST, City of Sisters, Deschutes County, 01/01/2014 to 12/31/2018

1 - 5 of 5 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D / A L / R C / U S / J G / I N / C S / N V / O H / L R / W K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G / E	S E / X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
00528	N N N Y N	04/08/2014	09	CASCADE AVE	INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT											07
COUNTY		TU	0	LOCUST ST	N		STOP SIGN	N	DRY	REAR		PRVTE	N -S									000		00
N		7A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	52	F	OR-Y		026	000		07
N		44 17 28.75056	-121 32 37.4111159																OR<25					
											02	NONE	STOP											
												PRVTE	N -S									012		00
												SCHL BUS		01	DRVR	NONE	49	F	OR-Y		000	000		00
																			OR<25					
01049	N N N	07/15/2014	07	CASCADE AVE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	STRGHT											07
NONE		TU	0	LOCUST ST	E		STOP SIGN	N	DRY	REAR		PRVTE	E -W									000		00
N		10P			06	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	56	F	OR-Y		026	000		07
N		44 17 28.75	-121 32 37.41																OR<25					
											02	NONE 0	STOP											
												PRVTE	E -W									011		00
												PSNGR CAR		01	DRVR	NONE	56	M	OR-Y		000	000		00
																			OR<25					
01120	N N N	07/13/2016	07	CASCADE AVE	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	TURN-L											02
NONE		WE	0	LOCUST ST	CN		STOP SIGN	N	DRY	TURN		N/A	N -E									000		00
N		7P			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N		44 17 28.75	-121 32 37.41																UNK					
											02	NONE 9	TURN-L											
												N/A	W -N									000		00
												PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																			UNK					
01932	N N N Y	10/12/2017	07	CASCADE AVE	INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE 0	TURN-L										082	02,27
COUNTY		TH	0	LOCUST ST	CN		STOP SIGN	N	DRY	TURN		PRVTE	E -S									015		00
N		3P			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	47	F	OR-Y		028,016	000	082	02,27
N		44 17 28.75	-121 32 37.41																OR<25					
											02	NONE 0	STRGHT											
												PRVTE	N -S									000		00
												PSNGR CAR		01	DRVR	INJC	45	M	OR-Y		000	000		00
																			OR<25					
00039	Y N N Y	01/05/2017	07	CASCADE AVE	INTER	CROSS	N	N	UNK	ANGL-OTH	01	NONE 9	STRGHT											03,01
NONE		TH	0	LOCUST ST	CN		STOP SIGN	N	ICE	ANGL		N/A	W -E									000		00
N		1P			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N		44 17 28.75	-121 32 37.41																UNK					
											02	NONE 9	STRGHT											
												N/A	N -S									000		00
												PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																			UNK					

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Traffic Signal Warrant Analysis

Project: 19091 - Sisters Industrial Subdivision
Date: 1/27/2020
Scenario: SW 11th Street Extension

Major Street:	US Highway 20	Minor Street:	N Pine Street
Number of Lanes:	1	Number of Lanes:	2
PM Peak Hour Volumes:	1,680	PM Peak Hour Volumes:	121

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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
WARRANT 1, CONDITION 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?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	16,800	6,200	
Minor Street*	1,210	2,500	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	16,800	9,300	
Minor Street*	1,210	1,250	**No**
Combination Warrant			
Major Street	16,800	7,440	
Minor Street*	1,210	2,000	**No**

* Minor street right-turning traffic volumes reduced by 25%

Traffic Signal Warrant Analysis

Project: 19091 - Sisters Industrial Subdivision
Date: 1/27/2020
Scenario: SW 11th Street Extension

Major Street:	W Barclay Drive	Minor Street:	N Pine Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	584	PM Peak Hour Volumes:	116

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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
WARRANT 1, CONDITION 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?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	5,840	6,200	
Minor Street*	1,160	1,850	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	5,840	9,300	
Minor Street*	1,160	950	**No**
Combination Warrant			
Major Street	5,840	7,440	
Minor Street*	1,160	1,480	**No**

* Minor street right-turning traffic volumes reduced by 25%

Traffic Signal Warrant Analysis

Project: 19091 - Sisters Industrial Subdivision
Date: 1/27/2020
Scenario: SW 11th Street Extension

Major Street:	N Locust Street	Minor Street:	E Barclay Drive
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	512	PM Peak Hour Volumes:	289

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)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
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
WARRANT 1, CONDITION 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

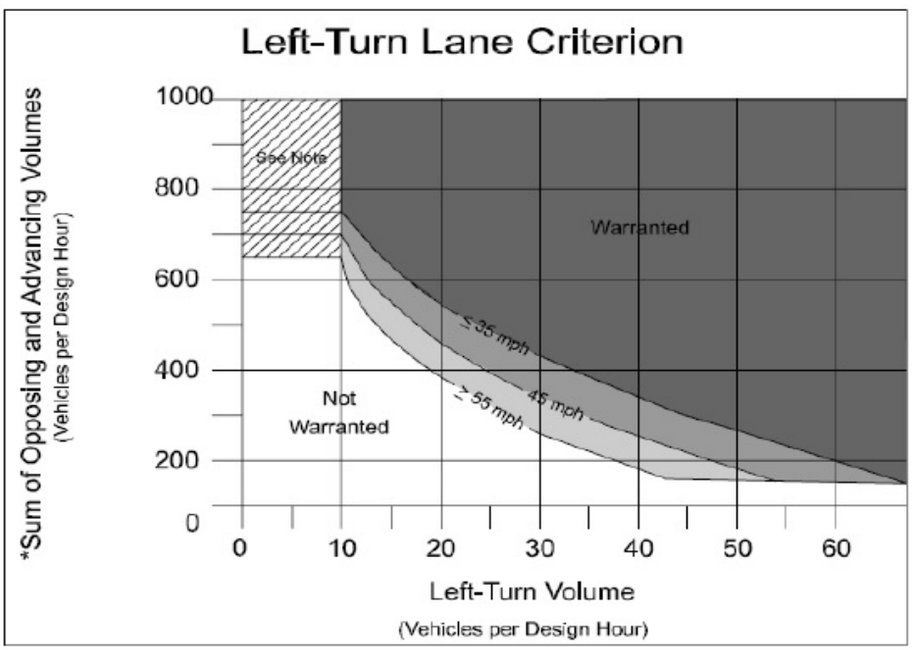
	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	5,120	6,200	
Minor Street*	2,890	1,850	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	5,120	9,300	
Minor Street*	2,890	950	**No**
Combination Warrant			
Major Street	5,120	7,440	
Minor Street*	2,890	1,480	**No**

* Minor street right-turning traffic volumes reduced by 25%

Project: 19091 Sisters Industrial Subdivision
Intersection: W Barclay Drive at N Pine Street
Date: 2/25/2020
Scenario: 2040 Buildout, Westbound Approach

Speed? 30 mph

AM Peak Hour		**PM Peak Hour**	
Left-Turn Volume		Left-Turn Volume	27
Approaching DHV		Approaching DHV	278
# of Advancing Through Lanes		# of Advancing Through Lanes	1
Opposing DHV		Opposing DHV	303
# of Opposing Through Lanes		# of Opposing Through Lanes	1
O+A DHV		**O+A DHV**	**581**
Lane Needed?		Lane Needed?	**Yes**



Source: Oregon DOT Analysis Procedures Manual 2008

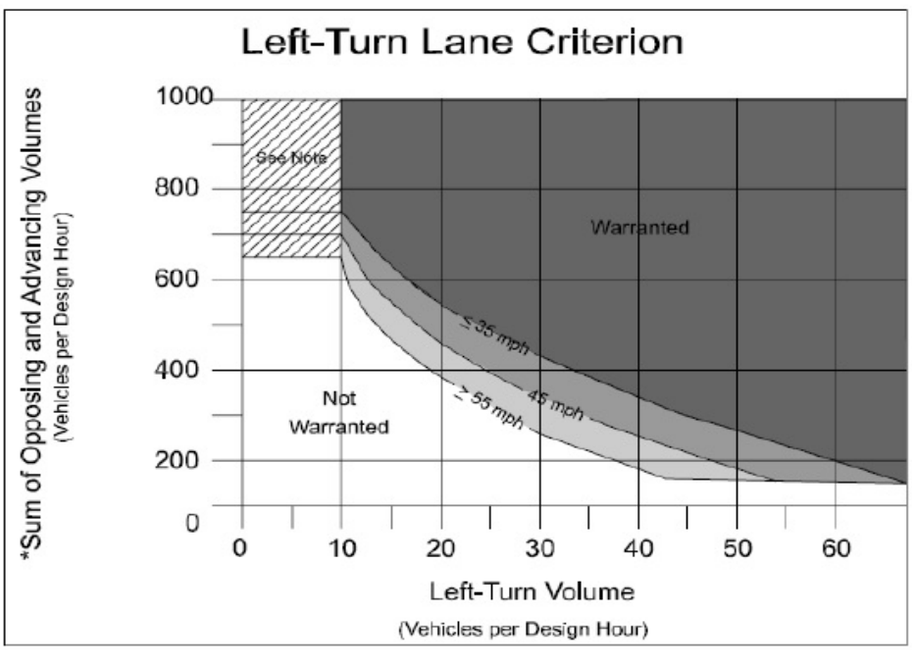
*(Advancing Vol/ # of Advancing Through Lanes)+
(Opposing Vol/ # of Opposing Through Lanes)

Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.

Project: 19091 Sisters Industrial Subdivision
Intersection: W Barclay Drive at N Pine Street
Date: 2/25/2020
Scenario: 2040 Buildout, Eastbound Approach

Speed? 30 mph

AM Peak Hour		**PM Peak Hour**	
Left-Turn Volume		Left-Turn Volume	3
Approaching DHV		Approaching DHV	306
# of Advancing Through Lanes		# of Advancing Through Lanes	1
Opposing DHV		Opposing DHV	251
# of Opposing Through Lanes		# of Opposing Through Lanes	1
O+A DHV		**O+A DHV**	**557**
Lane Needed?		Lane Needed?	**No**



Source: Oregon DOT Analysis Procedures Manual 2008

*(Advancing Vol/ # of Advancing Through Lanes)+
(Opposing Vol/ # of Opposing Through Lanes)

Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.

Vistro File: Z:\...\Spencer Industrial Park PM.vistro
Report File: Z:\...\Jan 24 2019 Existing PM Volumes.pdf

Scenario 4 Existing Volumes
1/28/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	US 20 at W Barclay Drive	Roundabout	HCM 6th Edition	SEB Thru		8.9	A
2	N Pine Street at W Barclay Drive	Two-way stop	HCM 6th Edition	NB Left	0.106	12.4	B
3	N Locust Street at W Barclay Drive	Two-way stop	HCM 6th Edition	EB Left	0.145	13.0	B
4	Pine Street at US 20	Two-way stop	HCM 6th Edition	NB Left	0.232	57.2	F
5	Locust Street at US 20	Two-way stop	HCM 6th Edition	SB Left	1.103	240.7	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: US 20 at W Barclay Drive

Control Type:	Roundabout	Delay (sec / veh):	8.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name												
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	87	79	113	31	108	51	100	273	9	67	418	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	2.20	2.20	1.60	1.60	1.60	6.50	6.50	6.50	7.40	7.40	7.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	79	113	31	108	51	100	273	9	67	418	26
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	20	29	8	28	13	26	70	2	17	107	7
Total Analysis Volume [veh/h]	89	81	115	32	110	52	102	279	9	68	427	27
Pedestrian Volume [ped/h]	0			0			1			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	564			497			247			253		
Exiting Flow Rate [veh/h]	249			165			609			441		
Demand Flow Rate [veh/h]	87	79	113	31	108	51	100	273	9	67	418	26
Adjusted Demand Flow Rate [veh/h]	89	81	115	32	110	52	102	279	9	68	427	27

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.94	0.93
Entry Flow Rate [veh/h]	292	198	416	561
Capacity of Entry and Bypass Lanes [veh/h]	777	832	1073	1067
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	760	819	1008	993
X, volume / capacity	0.38	0.24	0.39	0.53

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	B
95th-Percentile Queue Length [veh]	1.75	0.92	1.85	3.16
95th-Percentile Queue Length [ft]	43.76	23.03	46.27	78.93
Approach Delay [s/veh]	9.44	6.95	7.75	10.20
Approach LOS	A	A	A	B
Intersection Delay [s/veh]	8.90			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 2: N Pine Street at W Barclay Drive

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.106

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	50	6	22	13	14	13	2	117	20	18	126	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.70	7.00	0.70	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	6	22	13	14	13	2	117	20	18	126	0
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	2	7	4	4	4	1	35	6	5	38	0
Total Analysis Volume [veh/h]	60	7	26	15	17	15	2	139	24	21	150	0
Pedestrian Volume [ped/h]	0			0			0			2		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.01	0.03	0.03	0.03	0.02	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	12.35	12.31	10.00	11.84	11.87	9.44	7.50	0.00	0.00	7.56	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.51	0.51	0.51	0.24	0.24	0.24	0.00	0.00	0.00	0.04	0.04	0.04
95th-Percentile Queue Length [ft/ln]	12.87	12.87	12.87	5.94	5.94	5.94	0.10	0.10	0.10	1.12	1.12	1.12
d_A, Approach Delay [s/veh]	11.69			11.08			0.09			0.93		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	3.74											
Intersection LOS	B											

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Intersection Level Of Service Report
Intersection 3: N Locust Street at W Barclay Drive

Control Type:	Two-way stop	Delay (sec / veh):	13.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.145

Intersection Setup

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	86	87	88	39	77	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	1.70	1.60	1.60	0.60	0.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	87	88	39	77	94
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	23	24	10	21	25
Total Analysis Volume [veh/h]	92	94	95	42	83	101
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.00	0.00	0.00	0.15	0.11
d_M, Delay for Movement [s/veh]	7.65	0.00	0.00	0.00	12.95	10.49
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.20	0.20	0.00	0.00	1.00	1.00
95th-Percentile Queue Length [ft/ln]	5.08	5.08	0.00	0.00	24.96	24.96
d_A, Approach Delay [s/veh]	3.79		0.00		11.60	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	5.60					
Intersection LOS	B					

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Intersection Level Of Service Report
Intersection 4: Pine Street at US 20

Control Type:	Two-way stop	Delay (sec / veh):	57.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.232

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	20	15	27	11	19	55	45	600	27	34	413	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	3.50	3.50	3.50	5.50	5.50	5.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	15	27	11	19	55	45	600	27	34	413	14
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	4	7	3	5	15	12	165	7	9	113	4
Total Analysis Volume [veh/h]	22	16	30	12	21	60	49	659	30	37	454	15
Pedestrian Volume [ped/h]	5			2			2			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.23	0.11	0.07	0.11	0.15	0.10	0.05	0.01	0.00	0.04	0.00	0.00
d_M, Delay for Movement [s/veh]	57.25	44.40	27.24	48.87	40.18	11.68	8.49	0.00	0.00	9.26	0.00	0.00
Movement LOS	F	E	D	E	E	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.81	1.81	1.81	0.98	0.98	0.33	0.14	0.00	0.00	0.13	0.00	0.00
95th-Percentile Queue Length [ft/ln]	45.35	45.35	45.35	24.50	24.50	8.31	3.56	0.00	0.00	3.28	0.00	0.00
d_A, Approach Delay [s/veh]	40.99			22.91			0.56			0.68		
Approach LOS	E			C			A			A		
d_I, Intersection Delay [s/veh]	4.04											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 5: Locust Street at US 20

Control Type:	Two-way stop	Delay (sec / veh):	240.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.103

Intersection Setup

Name												
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	7	2	33	78	3	64	11	542	138	72	733	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.10	2.10	2.10	5.60	5.60	5.60	3.90	3.90	3.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	2	33	78	3	64	11	542	138	72	733	6
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	9	21	1	17	3	144	37	19	195	2
Total Analysis Volume [veh/h]	7	2	35	83	3	68	12	577	147	77	780	6
Pedestrian Volume [ped/h]	0			0			0			3		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.02	0.09	1.10	0.03	0.13	0.01	0.01	0.00	0.09	0.01	0.00
d_M, Delay for Movement [s/veh]	68.46	52.75	19.33	240.74	227.97	13.10	9.47	0.00	0.00	9.54	0.00	0.00
Movement LOS	F	F	C	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.83	0.83	0.83	6.34	6.34	0.46	0.04	0.04	0.00	0.29	0.00	0.00
95th-Percentile Queue Length [ft/ln]	20.85	20.85	20.85	158.51	158.51	11.38	1.12	1.12	0.00	7.26	0.00	0.00
d_A, Approach Delay [s/veh]	28.67			139.97			0.15			0.85		
Approach LOS	D			F			A			A		
d_I, Intersection Delay [s/veh]	13.17											
Intersection LOS	F											

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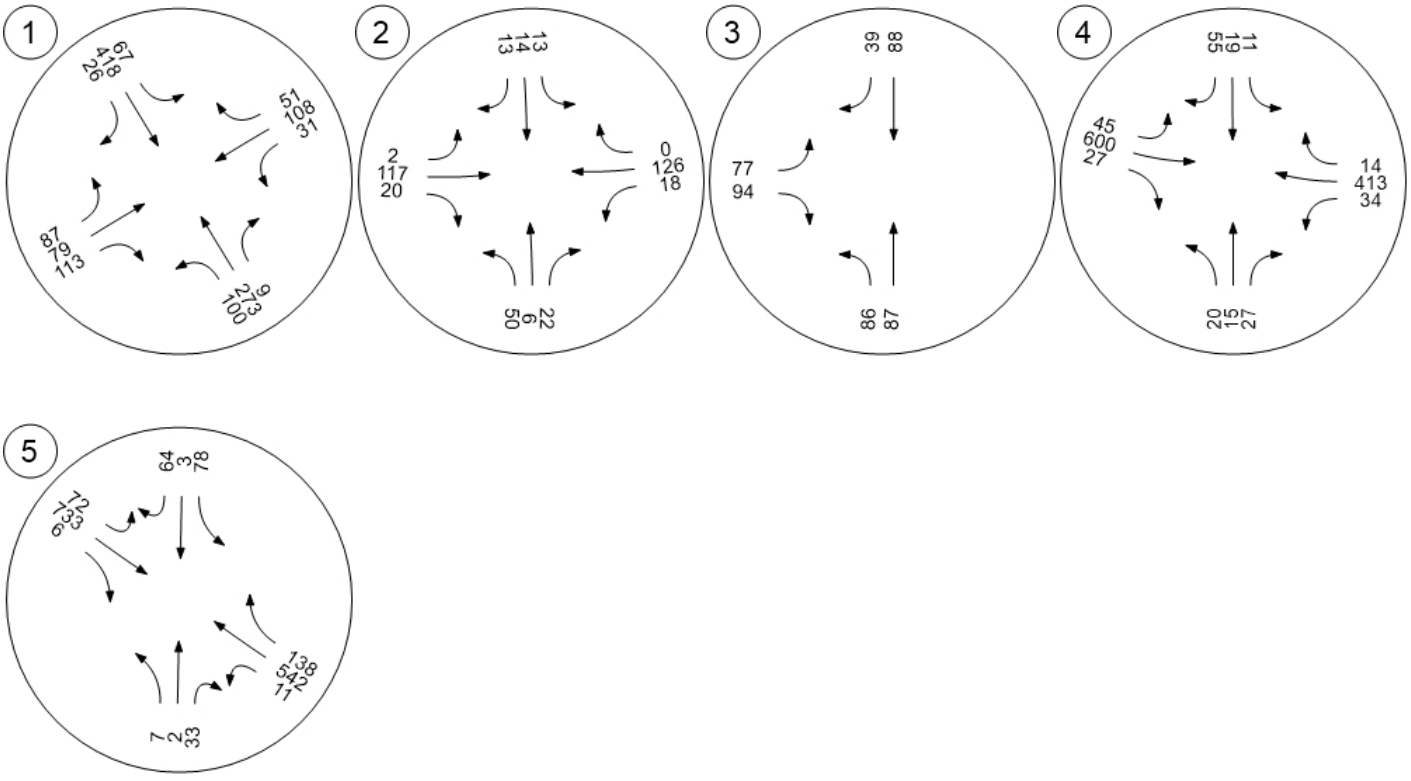
Traffic Volume - Base Volume



Vistro File: Z:\...\Spencer Industrial Park PM.vistro
Report File: Z:\...\Jan 24 2040 Background PM Volumes.pdf

Scenario 2 2040 Background Volumes
1/28/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	US 20 at W Barclay Drive	Roundabout	HCM 6th Edition	SEB Thru		22.3	C
2	N Pine Street at W Barclay Drive	Two-way stop	HCM 6th Edition	NB Left	0.236	18.0	C
3	N Locust Street at W Barclay Drive	Two-way stop	HCM 6th Edition	SB Thru	0.315	18.1	C
4	Pine Street at US 20	Two-way stop	HCM 6th Edition	NB Left	2.083	1,126.6	F
5	Locust Street at US 20	Roundabout	HCM 6th Edition	SEB Thru		44.6	E

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: US 20 at W Barclay Drive

Control Type:	Roundabout	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name												
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	132	120	171	47	164	77	152	331	14	102	507	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	2.20	2.20	1.60	1.60	1.60	6.50	6.50	6.50	7.40	7.40	7.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	15	12	41	4	14	0	61	0	0	0	3	19
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	132	212	51	178	77	213	331	14	102	510	58
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	34	54	13	45	20	54	84	4	26	130	15
Total Analysis Volume [veh/h]	150	135	216	52	182	79	217	338	14	104	520	59
Pedestrian Volume [ped/h]	0			0			1			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	723			744			403			469		
Exiting Flow Rate [veh/h]	479			265			832			594		
Demand Flow Rate [veh/h]	147	132	212	51	178	77	213	331	14	102	510	58
Adjusted Demand Flow Rate [veh/h]	150	135	216	52	182	79	217	338	14	104	520	59

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.94	0.93
Entry Flow Rate [veh/h]	513	319	606	734
Capacity of Entry and Bypass Lanes [veh/h]	661	646	915	856
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	646	636	859	797
X, volume / capacity	0.78	0.49	0.66	0.86

Movement, Approach, & Intersection Results

Lane LOS	D	B	C	D
95th-Percentile Queue Length [veh]	7.37	2.73	5.15	10.41
95th-Percentile Queue Length [ft]	184.32	68.14	128.86	260.30
Approach Delay [s/veh]	26.01	13.49	15.33	29.40
Approach LOS	D	B	C	D
Intersection Delay [s/veh]	22.29			
Intersection LOS	C			

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Intersection Level Of Service Report
Intersection 2: N Pine Street at W Barclay Drive

Control Type:	Two-way stop	Delay (sec / veh):	18.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.236

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	76	9	33	20	21	20	3	177	30	27	191	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.70	7.00	0.70	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	12	0	0	18	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	76	9	33	20	21	20	3	189	30	27	209	2
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	3	10	6	6	6	1	56	9	8	62	1
Total Analysis Volume [veh/h]	90	11	39	24	25	24	4	225	36	32	249	2
Pedestrian Volume [ped/h]	0			0			0			2		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.24	0.03	0.05	0.06	0.06	0.03	0.00	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	18.01	17.09	13.08	15.79	15.08	10.90	7.73	0.00	0.00	7.81	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.31	1.31	1.31	0.54	0.54	0.54	0.01	0.01	0.01	0.07	0.07	0.07
95th-Percentile Queue Length [ft/ln]	32.74	32.74	32.74	13.46	13.46	13.46	0.23	0.23	0.23	1.87	1.87	1.87
d_A, Approach Delay [s/veh]	16.56			13.94			0.12			0.88		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	4.75											
Intersection LOS	C											

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Intersection Level Of Service Report
Intersection 3: N Locust Street at W Barclay Drive

Control Type:	Two-way stop	Delay (sec / veh):	18.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.315

Intersection Setup

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

Volumes

Name						
Base Volume Input [veh/h]	130	132	133	59	117	142
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	2.00	2.00	2.00	2.00	0.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	16	0	0	2	1	11
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	132	133	61	118	153
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	1.0000	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	33	33	15	30	41
Total Analysis Volume [veh/h]	157	132	133	61	118	165
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane		No	
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.32	0.07	0.09	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	18.08	13.95	7.93	0.00
Movement LOS	A	A	C	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	1.83	1.83	0.29	0.29
95th-Percentile Queue Length [ft/ln]	0.00	0.00	45.71	45.71	7.19	7.19
d_A, Approach Delay [s/veh]	0.00		16.78		3.31	
Approach LOS	A		C		A	
d_I, Intersection Delay [s/veh]	5.47					
Intersection LOS	C					

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Intersection Level Of Service Report
Intersection 4: Pine Street at US 20

Control Type:	Two-way stop	Delay (sec / veh):	1,126.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.083

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	30	23	41	17	29	83	68	827	41	52	569	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	3.50	3.50	3.50	5.50	5.50	5.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	41	0	0	61	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	23	41	17	29	83	68	868	41	52	630	21
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	6	11	5	8	23	19	238	11	14	173	6
Total Analysis Volume [veh/h]	33	25	45	19	32	91	75	954	45	57	692	23
Pedestrian Volume [ped/h]	5			2			2			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	2.08	0.47	0.15	0.86	0.61	0.21	0.09	0.01	0.00	0.08	0.01	0.00
d_M, Delay for Movement [s/veh]	1126.61	967.11	911.20	556.38	462.51	15.40	9.50	0.00	0.00	10.84	0.00	0.00
Movement LOS	F	F	F	F	F	C	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	11.48	11.48	11.48	5.51	5.51	0.78	0.28	0.00	0.00	0.28	0.00	0.00
95th-Percentile Queue Length [ft/ln]	286.90	286.90	286.90	137.77	137.77	19.39	7.01	0.00	0.00	6.91	0.00	0.00
d_A, Approach Delay [s/veh]	993.79			188.54			0.66			0.80		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	62.39											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 5: Locust Street at US 20

Control Type:	Roundabout	Delay (sec / veh):	44.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes		

Intersection Setup

Name												
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	11	3	50	118	5	97	17	708	209	109	958	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.10	2.10	2.10	5.60	5.60	5.60	3.90	3.90	3.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	10	0	0	0	61	14	0	41	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	3	50	128	5	97	17	769	223	109	999	9
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	13	34	1	26	5	205	59	29	266	2
Total Analysis Volume [veh/h]	12	3	53	136	5	103	18	818	237	116	1063	10
Pedestrian Volume [ped/h]	0			0			0			3		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	1364			895			136			163		
Exiting Flow Rate [veh/h]	35			374			1296			981		
Demand Flow Rate [veh/h]	11	3	50	128	5	97	17	769	223	109	999	9
Adjusted Demand Flow Rate [veh/h]	12	3	53	136	5	103	18	818	237	116	1063	10

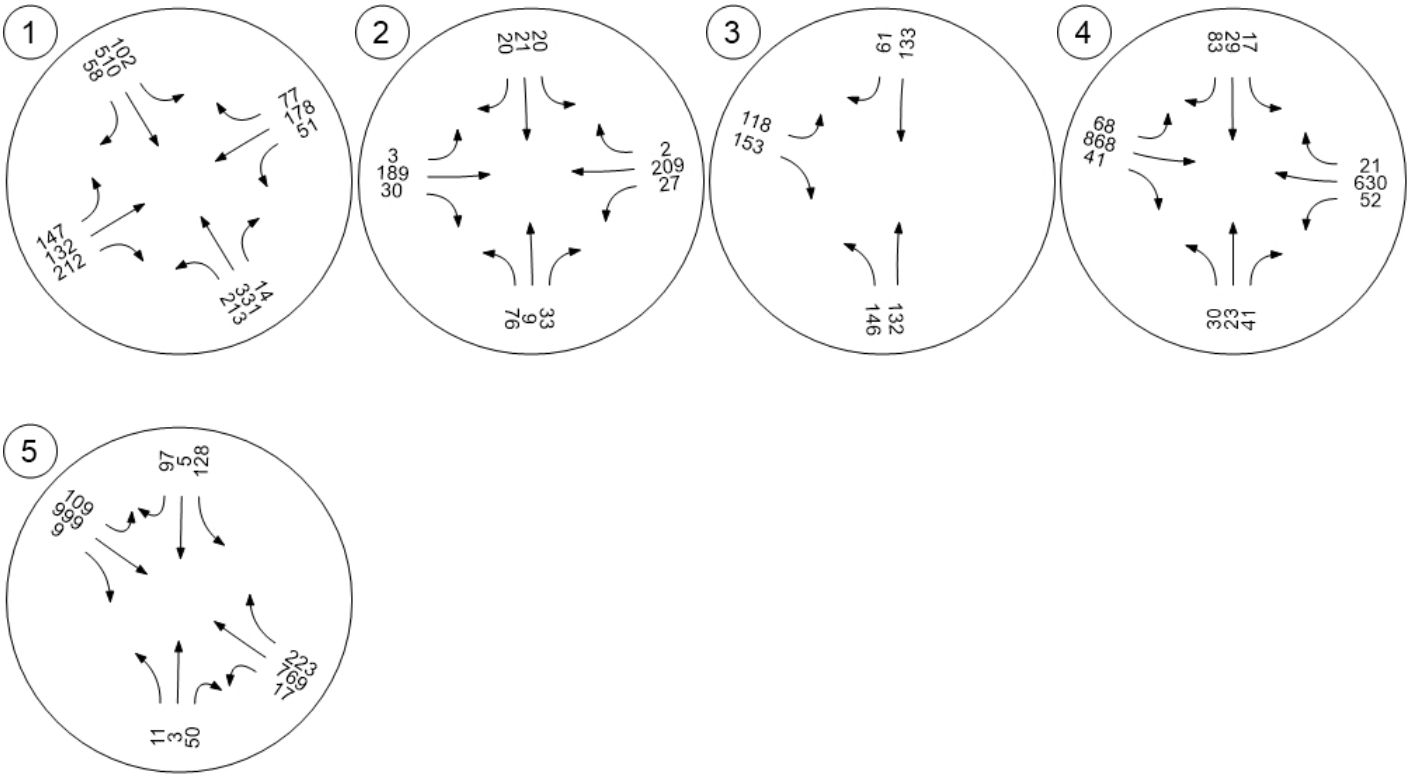
Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	1.00	0.98	0.95	0.96
Entry Flow Rate [veh/h]	68	250	1134	1236
Capacity of Entry and Bypass Lanes [veh/h]	344	554	1202	1169
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	344	543	1139	1125
X, volume / capacity	0.20	0.45	0.94	1.06

Movement, Approach, & Intersection Results

Lane LOS	B	B	D	F
95th-Percentile Queue Length [veh]	0.73	2.31	16.40	25.54
95th-Percentile Queue Length [ft]	18.14	57.72	409.97	638.53
Approach Delay [s/veh]	14.05	14.19	33.84	62.27
Approach LOS	B	B	D	F
Intersection Delay [s/veh]	44.58			
Intersection LOS	E			

Traffic Volume - Future Background Volume



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Report File: Z:\...\2040 Buildout PM 17 lots.pdf

Scenario 5 5 2040 Buildout Volumes
2/17/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	US 20 at W Barclay Drive	Roundabout	HCM 6th Edition	SEB Thru		25.3	D
2	N Pine Street at W Barclay Drive	Two-way stop	HCM 6th Edition	NB Left	0.327	23.8	C
3	N Locust Street at W Barclay Drive	Two-way stop	HCM 6th Edition	SB Thru	0.373	21.9	C
4	Pine Street at US 20	Two-way stop	HCM 6th Edition	NB Left	4.296	2,489.0	F
5	Locust Street at US 20	Roundabout	HCM 6th Edition	SEB Thru		55.2	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: US 20 at W Barclay Drive

Control Type:	Roundabout	Delay (sec / veh):	25.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes		

Intersection Setup

Name												
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	132	120	171	47	164	77	152	331	14	102	507	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	2.20	2.20	1.60	1.60	1.60	6.50	6.50	0.00	7.40	7.40	7.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	15	12	41	4	14	0	61	0	0	0	3	19
Site-Generated Trips [veh/h]	0	7	0	20	13	13	0	0	11	7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	139	212	71	191	90	213	331	25	109	510	58
Peak Hour Factor	0.9800	0.9800	0.9800	1.0000	0.9800	0.9800	0.9800	0.9800	1.0000	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	35	54	18	49	23	54	84	6	28	130	15
Total Analysis Volume [veh/h]	150	142	216	71	195	92	217	338	25	111	520	59
Pedestrian Volume [ped/h]	0			0			1			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	750			744			418			501		
Exiting Flow Rate [veh/h]	493			289			851			607		
Demand Flow Rate [veh/h]	147	139	212	71	191	90	213	331	25	109	510	58
Adjusted Demand Flow Rate [veh/h]	150	142	216	71	195	92	217	338	25	111	520	59

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.94	0.93
Entry Flow Rate [veh/h]	520	364	616	742
Capacity of Entry and Bypass Lanes [veh/h]	643	646	902	828
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	629	636	849	771
X, volume / capacity	0.81	0.56	0.68	0.90

Movement, Approach, & Intersection Results

Lane LOS	D	C	C	D
95th-Percentile Queue Length [veh]	8.19	3.51	5.56	11.82
95th-Percentile Queue Length [ft]	204.84	87.81	138.95	295.56
Approach Delay [s/veh]	29.44	15.53	16.30	34.99
Approach LOS	D	C	C	D
Intersection Delay [s/veh]	25.33			
Intersection LOS	D			

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Intersection Level Of Service Report
Intersection 2: N Pine Street at W Barclay Drive

Control Type:	Two-way stop	Delay (sec / veh):	23.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.327

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	76	9	33	20	21	20	3	177	30	27	191	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	12	0	0	18	0
Site-Generated Trips [veh/h]	7	0	0	0	0	0	0	73	13	0	39	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	9	33	20	21	20	3	262	43	27	248	2
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	3	10	6	6	6	1	78	13	8	74	1
Total Analysis Volume [veh/h]	99	11	39	24	25	24	4	312	51	32	295	2
Pedestrian Volume [ped/h]	0			0			0			2		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.33	0.03	0.06	0.08	0.07	0.03	0.00	0.00	0.00	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	23.78	22.17	16.98	18.91	17.69	11.87	7.84	0.00	0.00	8.06	0.00	0.00
Movement LOS	C	C	C	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.97	1.97	1.97	0.67	0.67	0.67	0.01	0.01	0.01	0.08	0.08	0.08
95th-Percentile Queue Length [ft/ln]	49.28	49.28	49.28	16.74	16.74	16.74	0.24	0.24	0.24	2.04	2.04	2.04
d_A, Approach Delay [s/veh]	21.88			16.18			0.09			0.78		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	5.15											
Intersection LOS	C											

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Intersection Level Of Service Report
Intersection 3: N Locust Street at W Barclay Drive

Control Type:	Two-way stop	Delay (sec / veh):	21.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.373

Intersection Setup

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

Volumes

Name						
Base Volume Input [veh/h]	130	132	133	59	117	142
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	2.00	2.00	2.00	2.00	0.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	16	0	0	2	1	11
Site-Generated Trips [veh/h]	32	0	0	7	13	60
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	178	132	133	68	131	213
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	1.0000	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	33	33	17	33	57
Total Analysis Volume [veh/h]	191	132	133	68	131	229
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane		No	
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.37	0.09	0.10	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	21.91	16.42	8.06	0.00
Movement LOS	A	A	C	C	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	2.36	2.36	0.33	0.33
95th-Percentile Queue Length [ft/ln]	0.00	0.00	59.09	59.09	8.33	8.33
d_A, Approach Delay [s/veh]	0.00		20.05		2.93	
Approach LOS	A		C		A	
d_I, Intersection Delay [s/veh]	5.75					
Intersection LOS	C					

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Intersection Level Of Service Report
Intersection 4: Pine Street at US 20

Control Type:	Two-way stop	Delay (sec / veh):	2,489.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.296

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	30	23	41	17	29	83	68	827	41	52	569	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	3.50	3.50	3.50	5.50	5.50	5.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	41	0	0	61	0
Site-Generated Trips [veh/h]	0	7	0	0	13	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	30	41	17	42	83	68	868	41	52	630	21
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	8	11	5	12	23	19	238	11	14	173	6
Total Analysis Volume [veh/h]	33	33	45	19	46	91	75	954	45	57	692	23
Pedestrian Volume [ped/h]	5			2			2			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	4.30	0.62	0.15	1.08	0.88	0.21	0.09	0.01	0.00	0.08	0.01	0.00
d_M, Delay for Movement [s/veh]	2489.03	2088.12	2032.21	800.98	665.73	15.40	9.50	0.00	0.00	10.84	0.00	0.00
Movement LOS	F	F	F	F	F	C	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	14.09	14.09	14.09	7.31	7.31	0.78	0.28	0.00	0.00	0.28	0.00	0.00
95th-Percentile Queue Length [ft/ln]	352.25	352.25	352.25	182.71	182.71	19.39	7.01	0.00	0.00	6.91	0.00	0.00
d_A, Approach Delay [s/veh]	2184.64			302.84			0.66			0.80		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	137.75											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 5: Locust Street at US 20

Control Type:	Roundabout	Delay (sec / veh):	55.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name												
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	11	3	50	118	5	97	17	708	209	109	958	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.10	2.10	2.10	5.60	5.60	5.60	3.90	3.90	3.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	10	0	0	0	61	14	0	41	0
Site-Generated Trips [veh/h]	0	0	0	47	0	0	0	0	25	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	3	50	175	5	97	17	769	248	109	999	9
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	13	47	1	26	5	205	66	29	266	2
Total Analysis Volume [veh/h]	12	3	53	186	5	103	18	818	264	116	1063	10
Pedestrian Volume [ped/h]	0			0			0			3		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	1415			895			136			214		
Exiting Flow Rate [veh/h]	35			402			1347			981		
Demand Flow Rate [veh/h]	11	3	50	175	5	97	17	769	248	109	999	9
Adjusted Demand Flow Rate [veh/h]	12	3	53	186	5	103	18	818	264	116	1063	10

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	1.00	0.98	0.95	0.96
Entry Flow Rate [veh/h]	68	301	1162	1236
Capacity of Entry and Bypass Lanes [veh/h]	326	554	1202	1110
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	326	543	1139	1068
X, volume / capacity	0.21	0.54	0.97	1.11

Movement, Approach, & Intersection Results

Lane LOS	B	C	F	F
95th-Percentile Queue Length [veh]	0.77	3.22	18.07	30.05
95th-Percentile Queue Length [ft]	19.31	80.38	451.70	751.29
Approach Delay [s/veh]	14.98	16.91	38.31	82.50
Approach LOS	B	C	F	F
Intersection Delay [s/veh]	55.16			
Intersection LOS	F			

Vistro File: Z:\...\Spencer Industrial Park PM.vistro
Report File: Z:\...\2040 Buildout PM 17 lots.pdf

Scenario 5 5 2040 Buildout Volumes
2/17/2020

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
12: Zone	Mixed Land Use	Multiple		1.000	0.000	50.00	50.00	70	132	202	100.00
					Added Trips Total			**70**	**132**	**202**	**100.00**

Vistro File: Z:\...\Spencer Industrial Park PM.vistro
Report File: Z:\...\2040 Buildout PM 17 lots.pdf

Scenario 5 5 2040 Buildout Volumes
2/17/2020

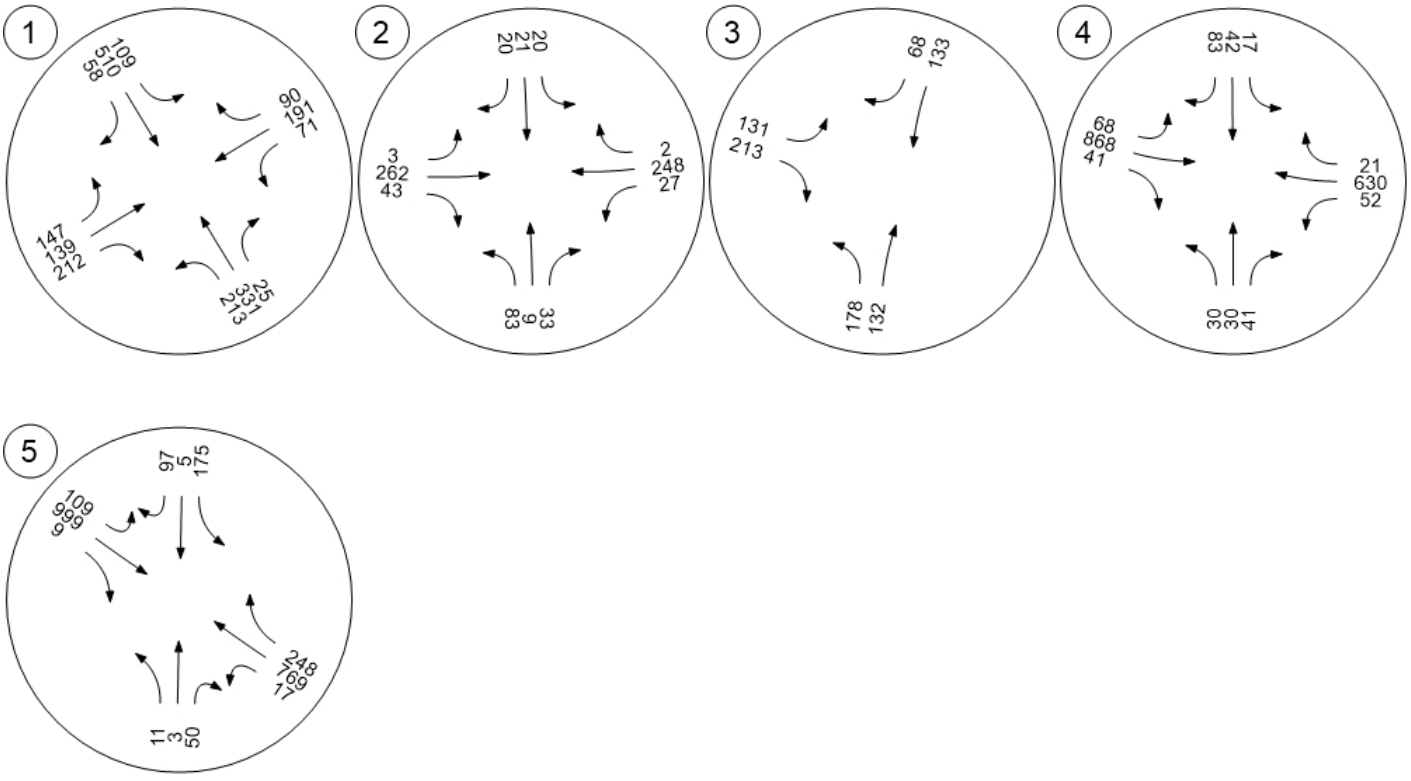
Trip Distribution summary

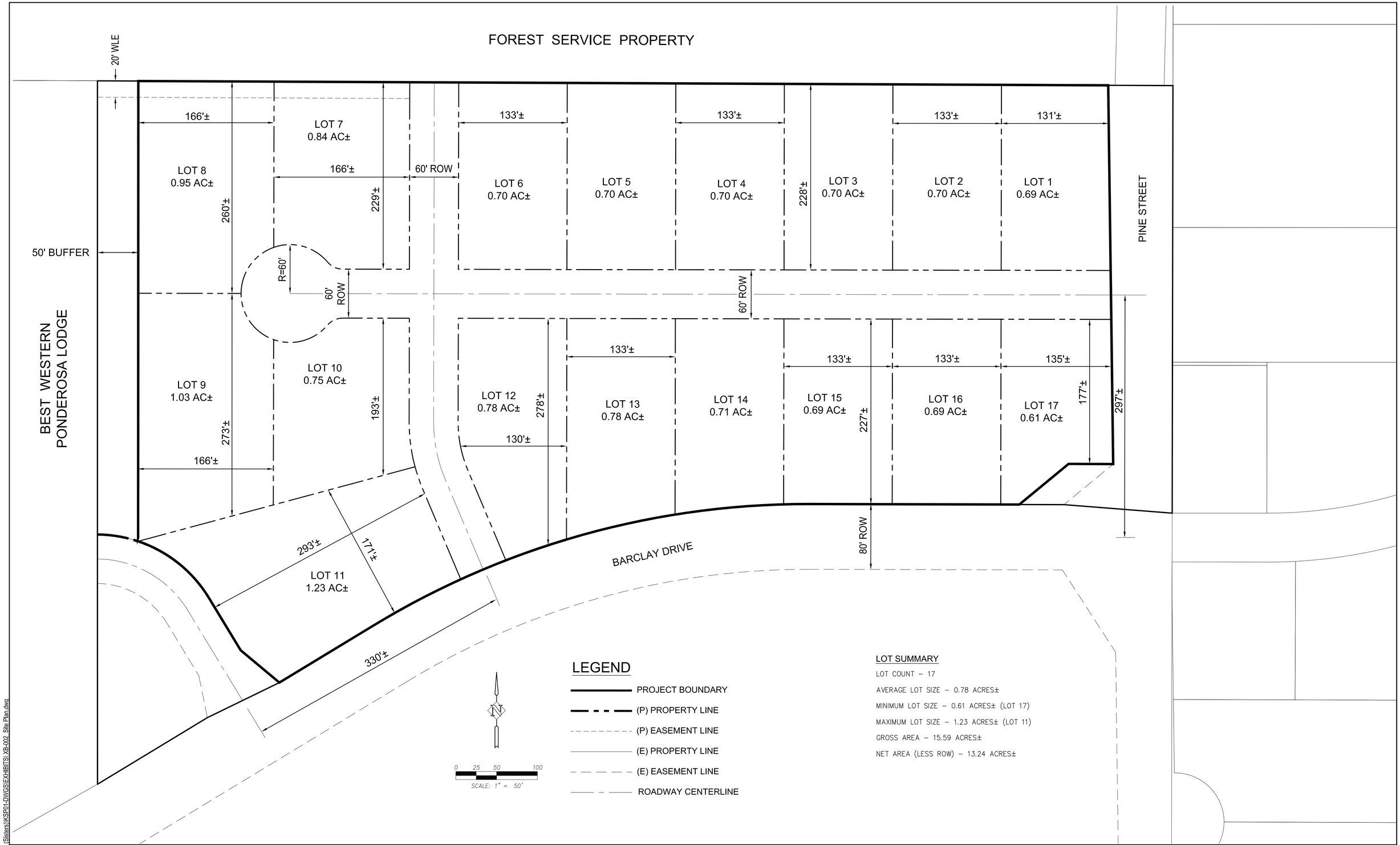
Zone / Gate	Zone 12: Zone			
	To Zone:		From Zone:	
	Share %	Trips	Share %	Trips
11: Gate	10.00	7	10.00	13
13: Gate	10.00	7	10.00	13
14: Gate	15.00	11	15.00	20
15: Gate	10.00	7	10.00	13
16: Gate	10.00	7	10.00	13
17: Gate	10.00	7	10.00	13
18: Gate	35.00	25	35.00	47
Total	**100.00**	**71**	**100.00**	**132**

Generated with PTV VISTRO

Version 7.00-06

Traffic Volume - Future Total Volume





DATE	NO.	DESCRIPTION

R E V I S I O N S

DESIGNED:
DRAWN:
CHECKED:
DATE: FEBRUARY 12, 2020

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CONCEPTUAL SITE PLAN

USFS PARCEL 3 - BARCLAY DRIVE

SISTERS, OREGON

SHEET NO. 1 OF 1

JOB KSP-01

P:\KSP (Kevin Spencer)\KSP-01 (Sisters)\KSP01-DWGS\EXHIBITS\ XB-002_Site Plan.dwg