

# WILSONVILLE CIS OFFICE TRAFFIC IMPACT ANALYSIS (TIA)

DECEMBER 2023

PREPARED FOR  
CITY OF WILSONVILLE



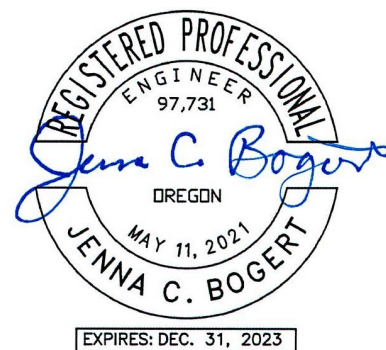
Amy Pepper, PE

PREPARED BY  
DKS ASSOCIATES



Jenna Bogert, PE

Harrison Steiger



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City of Wilsonville  
Exhibit B3 DB23-0015

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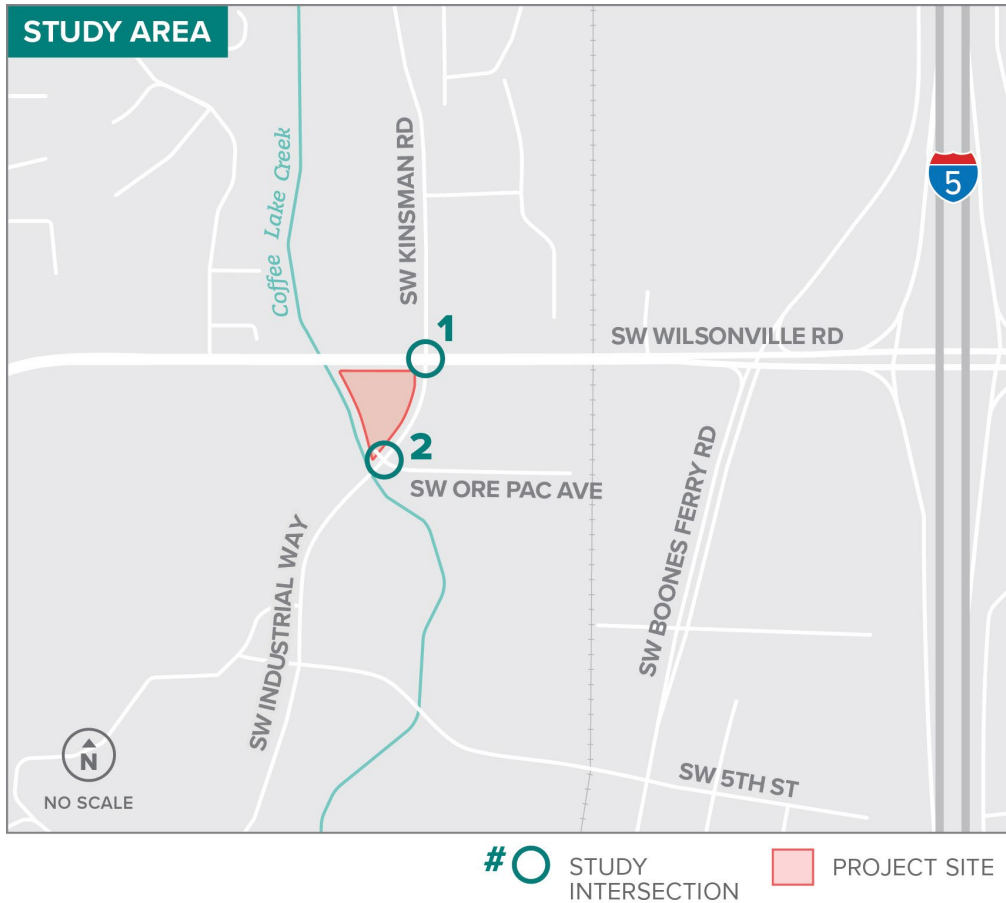
## INTRODUCTION

This study evaluates the transportation impacts associated with the proposed single-story office building located at 9770 SW Wilsonville Road in Wilsonville, Oregon.

The property is an approximately 2.05-acre empty plot of land on the southwest corner of the Wilsonville Road / Kinsman Road intersection. The proposed development will consist of approximately 15,750 square feet of office space for CIS.

The proposed site access will be located on Kinsman Road, opposite the Ore Pac Ave intersection.

The purpose of this transportation study is to conduct a traffic impact analysis (TIA), which will identify any potential mitigation measures that might be needed to offset transportation impacts that the proposed development may have on the nearby transportation network in the near-term.



**FIGURE 1: STUDY AREA**

## TRAFFIC IMPACT ANALYSIS (TIA)

The traffic impact analysis is focused on two existing intersections. The intersections are listed on the following page and shown in Figure 1. Important characteristics of the study area and proposed project are listed in Table 1.

1. SW Wilsonville Road / SW Kinsman Rd
2. SW Kinsman Road / SW Ore Pac Ave

**TABLE 1: STUDY AREA & DEVELOPMENT CHARACTERISTICS**

STUDY AREA	
NUMBER OF STUDY INTERSECTIONS	Two intersections
ANALYSIS PERIODS	Weekday PM peak hour (one hour between 4pm – 6pm)
PROPOSED DEVELOPMENT	
EXISTING LAND USE	Vacant
PROPOSED LAND USE	Office Space
PROJECT TRIPS	36 total PM peak hour trips (6 in, 36 out)
VEHICULAR ACCESS POINTS	One driveway access on Kinsman Rd

## EXISTING CONDITIONS

This chapter provides documentation of existing study area conditions, including the study area roadway network, pedestrian and bicycle facilities, and existing traffic volumes and operations.

### STUDY AREA ROADWAY NETWORK

Key roadways and their existing characteristics in the study area are summarized in Table 2. The functional classifications for City of Wilsonville streets are provided in the City of Wilsonville Transportation System Plan (TSP).<sup>a</sup>

<sup>a</sup> Chapter 3: The Standards, Wilsonville Transportation System Plan, City of Wilsonville, Amended November 2020.

**TABLE 2: STUDY AREA ROADWAY CHARACTERISTICS**

ROADWAY	FUNCTIONAL CLASS	OWNER	LANES	POSTED SPEED	SIDE-WALKS	BICYCLE FACILITIES	ON-STREET PARKING
SW WILSONVILLE RD	Major Arterial <sup>b</sup>	City of Wilsonville	4 <sup>c</sup>	35 mph	Yes	Yes	No
SW KINSMAN RD	Collector <sup>d</sup>	City of Wilsonville	3	30 mph	Yes	Yes	No

**Bicycle and Pedestrian Facilities**

Near the project site, there are on-street bicycle lanes along Kinsman Road and Wilsonville Road. The bicycle lanes on Wilsonville Rd, west of Kinsman Road are buffered. Sidewalks are present on Kinsman Road and Wilsonville Road. Along the project frontage, there are planter strips present that provide additional buffer between the sidewalks and roadway.

**Public Transit Service**

South Metro Area Regional Transit (SMART) provides public transportation services within Wilsonville and outlying areas. The Wilsonville Transit Center is located approximately 0.5 miles north of the project site along Kinsman Road. SMART provides bus service to Salem, Canby, and Tualatin. Additionally, Cherriots provides transit service from Keizer that stops in Woodburn and Wilsonville.

The Westside Express Service (WES) is a public commuter rail line that services Beaverton, Tigard, Tualatin, and Wilsonville. The WES station in Wilsonville shares a parking lot with the SMART Wilsonville Transit Center. Figure 2 below shows the transit stops near the project site. These stops are served by SMART Route 4.

<sup>b</sup> Wilsonville Road is classified as a Minor Arterial west of Kinsman Rd

<sup>c</sup> Wilsonville Road in the project area has 2 travel lanes in both directions and includes additional turning lanes at intersections

<sup>d</sup> Kinsman Road is classified as a Minor Arterial north of Wilsonville Rd



**FIGURE 2: TRANSIT STOPS**

## PLANNED PROJECTS

The City of Wilsonville Transportation System Plan (TSP) has a list of Higher Priority projects which includes the recommended projects reasonably expected to be funded through 2035. These are the highest priority solutions to meet the City’s most important needs. The list includes the following projects that impact the key roadways near the proposed project site.

- **RE-04 (Brown Road Extension)** – Construct remaining 2-lane roadway with bike lanes, sidewalks, and transit stop improvements from Wilsonville Road to Boones Ferry Road (connect at 5<sup>th</sup> St); includes roadway connection to Kinsman Road (with bike lanes and sidewalks), portion of the Ice Age Tonquin Trail connecting to trail terminus on Arrowhead Creek Ln, and Brown Road / Kinsman Road intersection.
- **SI-06 (Kinsman Road Spot Improvements)** - Rebuild the northwest corner of the Wilsonville Road/Kinsman Road intersection to accommodate truck turning movements and improve pedestrian safety. Requires right-of-way acquisition, widening, pedestrian ramp replacement, and traffic signal pole relocation.

## EXISTING TRAFFIC VOLUMES

New intersection turning movement count data was collected during the weekday PM peak period (4:00pm – 6:00pm) on Wednesday, November 8<sup>th</sup>, 2023, at the Kinsman Road / Ore Pac Ave intersection. Turning movement count data at the Wilsonville Road / Kinsman Road intersection was used from a previous project and no new counts were collected at this intersection because there was construction on SW Kinsman Road that had reduced travel to one-way on Kinsman Road. The counts for the Wilsonville Road / Kinsman Road were collected on Tuesday, August 8<sup>th</sup>, 2023. Because Wilsonville experiences higher vehicle volumes during the school year, a 6.2% growth was

applied to the Wilsonville Road / Kinsman Road intersection volumes to represent conditions when schools are in session. Figure 3 shows the adjusted Existing PM peak hour traffic volumes for the study intersections, along with the lane configurations and traffic control.

### **INTERSECTION PERFORMANCE MEASURES**

Agency mobility standards often require intersections to meet level of service (LOS) or volume-to-capacity (v/c) intersection operation thresholds.

- The intersection LOS is similar to a “report card” rating based upon average vehicle delay. Level of service A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. Level of service D and E are progressively worse operating conditions. Level of service F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.
- The volume-to-capacity (v/c) ratio represents the level of saturation of the intersection or individual movement. It is determined by dividing the peak hour traffic volume by the maximum hourly capacity of an intersection or turn movement. When the V/C ratio approaches 0.95, operations become unstable and small disruptions can cause the traffic flow to break down, resulting in the formation of excessive queues.

The City of Wilsonville requires study intersections on public streets to meet its minimum acceptable level of service (LOS) standard of LOS D for the PM peak period.





FIGURE 3: EXISTING PM PEAK HOUR TRAFFIC VOLUMES



## EXISTING INTERSECTION OPERATIONS

Intersection operations were analyzed for the PM peak hour at all study intersections for the existing conditions using Highway Capacity Manual (HCM) 6th Edition methodology.<sup>e</sup> The volume to capacity (v/c) ratio, delay, and level of service (LOS) of each study intersection are listed in Table 3. As shown, all study intersections meet the applicable operating standards under existing conditions.

**TABLE 3: EXISTING (2023) INTERSECTION OPERATIONS (PM PEAK)**

INTERSECTION	OPERATING STANDARD	EXISTING PM PEAK HOUR		
		V/C	DELAY	LOS
<b>SIGNALIZED</b>				
WILSONVILLE RD / KINSMAN RD	LOS D	0.63	18	B
<b>TWO-WAY STOP-CONTROLLED</b>				
KINSMAN RD / ORE PAC AVE	LOS D	0.01	9.9	A/A
<b>SIGNALIZED INTERSECTION:</b> Delay = Average Intersection Delay (secs) v/c = Total Volume-to-Capacity Ratio LOS = Total Level of Service		<b>TWO-WAY STOP-CONTROLLED INTERSECTION:</b> Delay = Critical Movement Delay (secs) v/c = Critical Movement Volume-to-Capacity Ratio LOS = Critical Levels of Service (Major/Minor Road)		

## PROJECT IMPACTS

This section reviews the impacts that the proposed development may have on the transportation system within the study area. This analysis includes trip generation, trip distribution, future traffic volume development, and operations analysis for the study intersections.

### PROPOSED DEVELOPMENT

The proposed development is a new single-story office building with a total square footage of approximately 15,750 SF with associated parking, landscaping, and site improvements at 9770 SW Wilsonville Road. The building will include office space, meeting areas, and training areas. A single access is proposed via an existing driveway on SW Kinsman Road.

### FUTURE ANALYSIS SCENARIOS

Operating conditions were analyzed at the study intersections for the following traffic scenarios. The comparison of the following scenarios enables the assessment of project impacts:

- Existing + Project
- Existing + Stage II

<sup>e</sup> Highway Capacity Manual, 6th Edition, Transportation Research Board, 2017.

- Existing + Project + Stage II

All future analysis scenarios assume the same traffic control as existing conditions. Stage II represents traffic from other developments that have Stage II approval or are under construction in Wilsonville, which are based on the list of currently approved Stage II developments provided by City staff.<sup>f</sup>

## TRIP GENERATION

Trip generation is the method used to estimate the number of vehicles added to site driveways and the adjacent roadway network by a development during a specified period (e.g., PM peak hour). The Institute of Transportation Engineers (ITE) publishes trip generation rates for the various land uses that can be applied to determine estimated traffic volumes.<sup>9</sup>

Table 4 shows the total number of trips that this development will produce daily and during the PM peak hour. ITE code 710 (General Office Building) was used. The proposed office building is estimated to produce a total of 36 PM peak hour trips (6 in, 30 out) and 232 daily trips (116 in, 116 out)

**TABLE 4: PROJECT VEHICLE TRIP GENERATION**

LAND USE	ITE CODE	PM PEAK HOUR TRIP GENERATION RATE	PM PEAK HOUR VEHICLE TRIPS				DAILY TRIPS		
			SIZE	IN	OUT	TOTAL	IN	OUT	TOTAL
General Office Building	710	2.29 trips per 1000 Sq. Ft. GFA	15,750 Sq. Ft. GFA	6	30	36	116	116	232

## VEHICLE TRIP DISTRIBUTION

Vehicle trip distribution provides an estimation of where vehicles would be coming from and going to. It is given as a percentage at key gateways to the study area and is used to route project trips through the study intersections. Figure 4 shows the trip distribution for the proposed site. The trip distribution for the passenger car trips was based on the Wilsonville Travel Demand model.

The vehicle trips generated by the site expansion were distributed as follows:

- 60% east of the project site (to/from I-5, Wilsonville Road, etc)
- 30% north of the project site via SW Kinsman Road
- 10% west of the project site via SW Wilsonville Road

<sup>f</sup> Provided via email from Daniel Pauly, City of Wilsonville, August 8th, 2023.

<sup>9</sup> Trip Generation Manual, 11th Edition, Institute of Transportation Engineers, 2021.

## Project Trips Through City of Wilsonville I-5 Interchange Areas

The project trips through the two City of Wilsonville I-5 interchange areas were estimated based on the trip generation and distribution assumptions as discussed prior. Approximately 60% of the total vehicle project trips (21 PM peak hour trips, 140 daily trips) are expected to travel through the I-5/Wilsonville Road interchange area and approximately 0% of the project trips are expected to travel through the I-5/Elligsen Road interchange.

## FUTURE TRAFFIC VOLUMES

Traffic volumes were estimated at the study intersections for the three future analysis scenarios previously listed using the various combinations of the three traffic types: Existing, Project, and Stage II. Figure 5 shows the Existing + Project PM peak hour traffic volumes, the Existing + Stage II PM peak hour traffic volumes, and the Existing + Project + Stage II PM peak hour traffic volumes.



FIGURE 4: PROJECT TRIPS & TRIP DISTRIBUTION

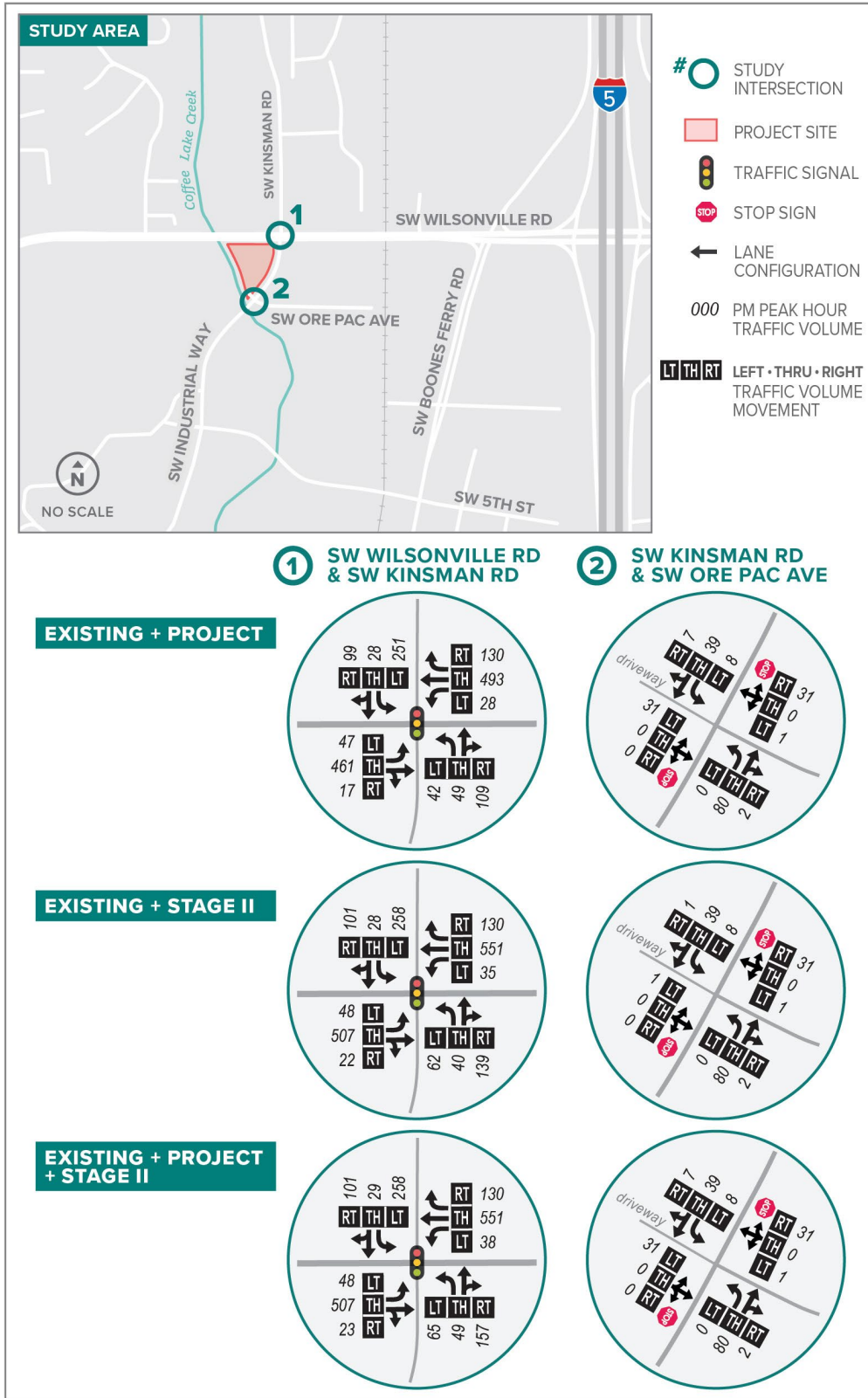


FIGURE 5: PM PEAK HOUR TRAFFIC VOLUMES FOR FUTURE SCENARIOS

## FUTURE INTERSECTION OPERATIONS

Intersection operations were analyzed for the PM peak hour at all study intersections for the future scenarios using Highway Capacity Manual (HCM) 6th Edition methodology.<sup>8</sup> The volume to capacity (v/c) ratio, delay, and level of service (LOS) of each study intersection are listed in Table 4.

As shown, all study intersections meet the applicable operating standards under all future analysis scenarios.

**TABLE 4: FUTURE INTERSECTION OPERATIONS (PM PEAK)**

INTERSECTION	OPERATING STANDARD	EXISTING + STAGE II			EXISTING + PROJECT			EXISTING + STAGE II + PROJECT		
		V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS
<b>SIGNALIZED</b>										
WILSONVILLE RD / KINSMAN RD	LOS D	0.69	20.0	B	0.65	18.0	B	0.75	22.0	C
<b>TWO-WAY STOP-CONTROLLED</b>										
KINSMAN RD / ORE PAC AVE	LOS D	0.01	9.9	A/A	0.05	10.2	A/B	0.05	10.2	A/B
<b><u>SIGNALIZED INTERSECTION:</u></b> Delay = Average Intersection Delay (secs) v/c = Total Volume-to-Capacity Ratio LOS = Total Level of Service					<b><u>TWO-WAY STOP-CONTROLLED INTERSECTION:</u></b> Delay = Critical Movement Delay (secs) v/c = Critical Movement Volume-to-Capacity Ratio LOS = Critical Levels of Service (Major/Minor Road)					

<sup>8</sup> Highway Capacity Manual, 6th Edition, Transportation Research Board, 2017.

**SITE PLAN REVIEW**

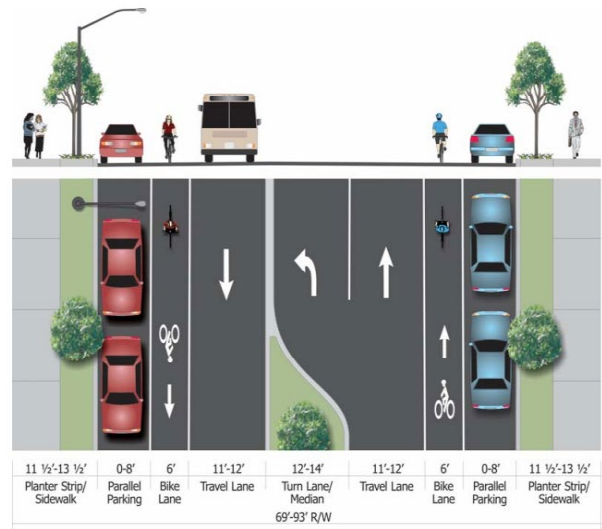
This section reviews the project site plan for consistency with the Wilsonville Transportation System Plan and other applicable transportation standards, including the Wilsonville Development Code and Wilsonville Public Works Standards. The purpose of this review is to help identify any major site plan design concerns that could impact the greater project goals and could necessitate overall site plan changes. The site plan is provided in the appendix.

**VEHICULAR SITE ACCESS**

There is one proposed site access (driveway) for the project. The access is located at the existing Kinsman Road / Ore Pac Ave intersection. This is an existing driveway.

The access point is required to meet the City’s Access Spacing Standards for Collectors.<sup>9</sup> The access spacing for collectors is to be a minimum of 100 feet from between adjacent curb returns, but the desired spacing is 300 feet. The proposed site access is approximately 350 feet from the Wilsonville Road / Kinsman Road intersection to the north. The proposed spacing meets the minimum and desired requirement. The access point to the development appears to align with SW Ore Pac Ave on the other side of Kinsman Rd, which is required by the City of Wilsonville.

Based on a preliminary sight distance evaluation, the sight distance at the proposed driveway on Kinsman Road appears to meet sight distance requirements, which is 335 feet of visibility. Prior to occupancy, sight distance at any existing or proposed driveways will need to be verified, documented, and stamped by a registered professional Civil Engineer licensed in the State of Oregon to assure that buildings, signs, or landscaping does not restrict sight distance.



**COLLECTOR CROSS SECTION STANDARD**

**FRONTAGE IMPROVEMENTS**

The project site shall provide street frontage improvements on Kinsman Road consistent with the City of Wilsonville’s collector cross section standard, for which the roadways are classified as such.<sup>10</sup> Today, Kinsman Road fronting the project site has two travel lanes with a center turn lane, planter strip, sidewalk, and marked bike lanes fronting the project site. Based on the standards, the site frontage is consistent with the cross section standard for collector streets. On-street parking is allowed on Collectors but is not required or recommended for Kinsman Road.

<sup>10</sup> Figure 3-8, Transportation System Plan, City of Wilsonville, Amended November 2020.

<sup>10</sup> Figure 3-8, Transportation System Plan, City of Wilsonville, Amended November 2020.



## **ON-SITE CIRCULATION**

The City requires that all modes of transportation have safe and convenient on-site circulation to the highest degree that the site practically allows.<sup>11</sup> The proposed parking lot shows 63 total parking stalls (38 standard, 22 compact, 3 accessible). According to the Wilsonville Development Code<sup>12</sup>, an office space of this size has a parking stall minimum of 43 and a maximum of 65. Throughout the parking lot there are 24-foot driving aisles which should provide adequate circulation. A layout of the proposed parking lot can be shown in the appendix.

## **DRIVEWAY AISLE LENGTH**

The City has minimum driveway aisle length standards.<sup>13</sup> For driveways with more than 100 average daily traffic (ADT), the drive aisle must be clear of parking stalls and intersecting drive aisles within 100 feet from the back of sidewalk. Proposed parking stalls appears to be approximately 60 feet from the back of the sidewalk, which does not meet the City's requirements. However, queuing analysis at the site's driveway shows that the anticipated 95<sup>th</sup> percentile queue length would be 45 feet, which is less than the proposed 60-foot driveway aisle. This indicates that the proposed driveway aisle length will be able to accommodate the estimated vehicle queues during the PM peak hour and will not impact on-site circulation or safety. Based on this information, it is recommended that the applicant apply for a code variance for a driveway aisle length that is less than the required 100 feet.

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<sup>11</sup> Section 4.421, Wilsonville Development Code, Updated March 2023.

<sup>12</sup> Section 4.155. – General Regulations – Parking, Loading, and Bicycle Parking – Table 5

<sup>13</sup> Section 201.2.23 (Driveways), Public Works Standards, City of Wilsonville, Revised September 2017.

## SUMMARY

The key findings of the transportation impact analysis (TIA).

- The proposed project is a general office building development that is expected to generate 36 (6 in, 30 out) PM peak hour vehicle trips, and 60% of those trips (21 vehicles) are expected to travel through the Wilsonville Road / I-5 interchange.
- The traffic operations at the two study intersections are expected to operate within the City's LOS standard under all future volume conditions.
- Kinsman Road along the project site frontage is consistent with the City's cross section standard for collector streets.
- The access point to the development appears to align with SW Ore Pac Ave on the other side of Kinsman Rd, which is required by the City of Wilsonville.
- Prior to occupancy, sight distance at any existing or proposed driveways will need to be verified, documented, and stamped by a registered professional Civil Engineer licensed in the State of Oregon to assure that buildings, signs, or landscaping does not restrict sight distance.
- It is recommended that the applicant apply for a code variance for a driveway aisle length that is less than the required 100 feet. Based on queuing analysis, there are no anticipated on-site circulation or safety concerns with the proposed 60-foot driveway aisle length.

# APPENDIX

**APPENDIX A: SITE PLAN**

**APPENDIX B: TRAFFIC COUNT DATA**

**APPENDIX C: STAGE II LIST**

**APPENDIX D: HCM REPORT - EXISTING**

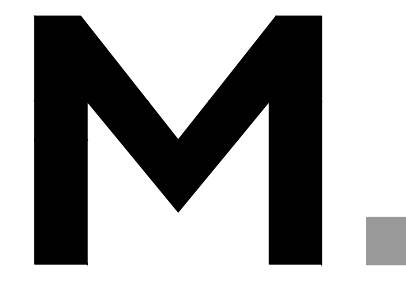
**APPENDIX E: HCM REPORT - EXISTING + PROJECT**

**APPENDIX F: HCM REPORT - EXISTING + STAGE II**

**APPENDIX G: HCM REPORT - EXISTING + PROJECT + STAGE II**

**APPENDIX A: SITE PLAN**

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Project

CIS

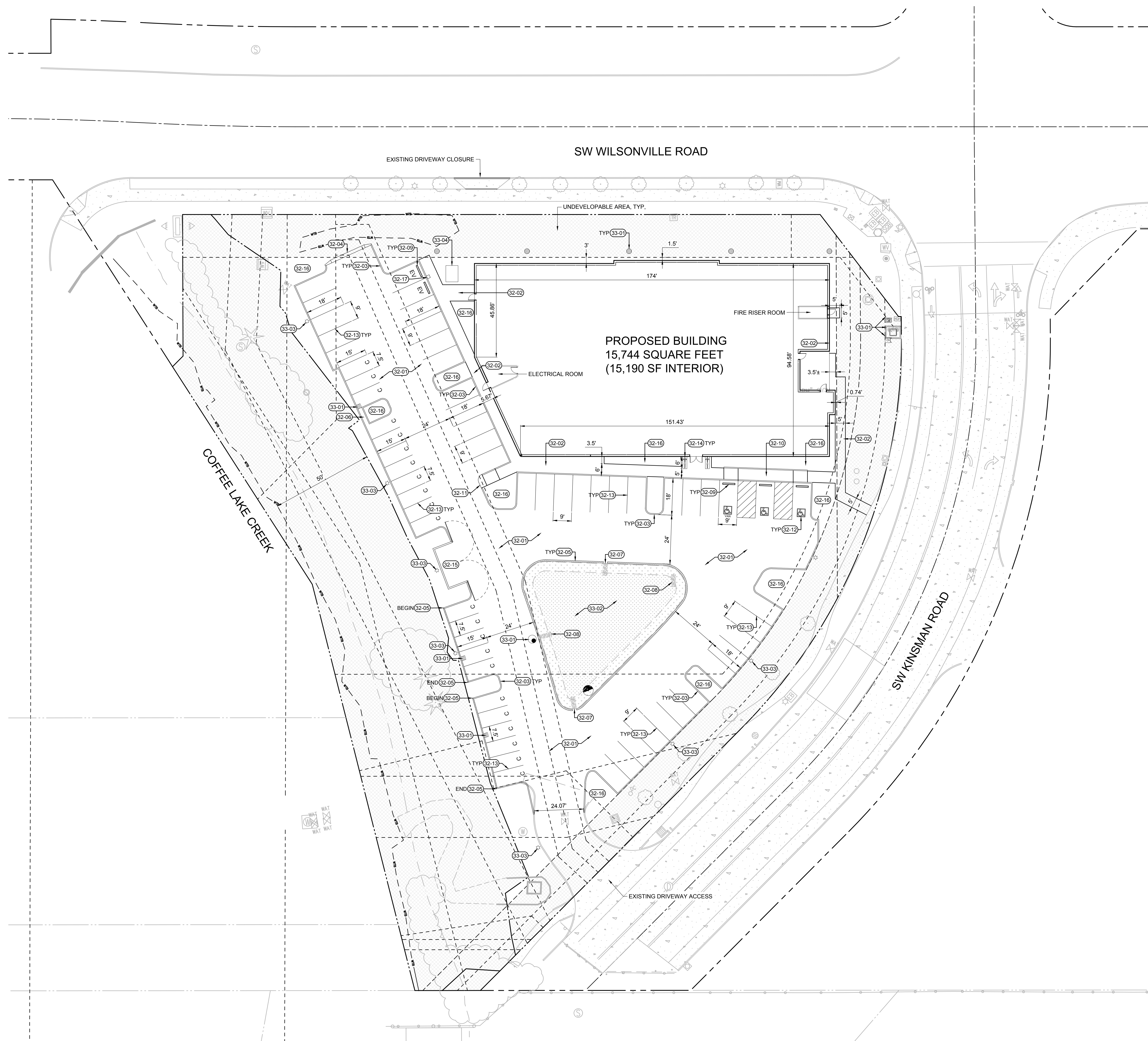
COLLABORATION

CENTER

9770 SW  
WILSONVILLE ROAD,  
WILSONVILLE, OR  
97070

### KEYNOTES

- 32-01 ASPHALT PAVEMENT PER X/
- 32-02 CONCRETE SIDEWALK PER X/
- 32-03 VERTICAL CURB PER X/
- 32-04 MOUNTABLE CURB PER X/
- 32-05 DEEPENED VERTICAL CURB PER X/
- 32-06 CONCRETE CURB CHANNEL PER X/
- 32-07 CURB BREAK WITH RIP RAP PER X/ AND X/
- 32-08 RIP RAP PER X/
- 32-09 PRECAST WHEEL STOP PER X/
- 32-10 PARALLEL CURB RAMP PER X/
- 32-11 PERPENDICULAR CURB RAMP PER X/
- 32-12 ACCESSIBLE PARKING STALL PER X/
- 32-13 PARKING STALL STRIPING PER X/
- 32-14 BIKE RACK PER X/
- 32-15 TRASH ENCLOSURE PER ARCHITECTURAL PLANS
- 32-16 LANDSCAPE AREA PER LANDSCAPE PLANS
- 32-17 ELECTRIC VEHICLE CHARGING STATION
- 33-01 UTILITY PER UTILITY PLAN
- 33-02 STORM FACILITY PER GRADING AND UTILITY PLANS
- 33-03 SITE LIGHT PER PLANS AND SPECIFICATIONS BY OTHERS
- 33-04 TRANSFORMER PER ELECTRICAL SERVICE PROVIDER PLANS AND SPECIFICATIONS



### SITE DATA

	AREA (SF)	AREA (AC)	COVERAGE
GROSS PROPERTY AREA	89,235	2.05	
UNDEVELOPABLE AREA	37,091	0.85	42%
NET BUILDABLE AREA	52,144	1.20	58%
AREA OF DISTURBANCE	51,146	1.17	57.3%
IMPERVIOUS AREA			
BUILDING AREA	15,744	0.36	17.6%
PAVED AREA	26,898	0.62	30.1%
TOTAL IMPERVIOUS AREA	42,642	0.98	47.8%
LANDSCAPE AREA	9,502	0.22	18.6%
PARKING AREA	23,073	0.53	
PARKING AREA LANDSCAPE	5,213	0.12	22.6%

### PARKING DATA

PARKING TYPE	REQUIRED STALLS		PROVIDED STALLS
	MINIMUM	MAXIMUM	
STANDARD	0	36	38
COMPACT	0	25	22
ACCESSIBLE	0	3	3
TOTAL PARKING	0	65	63
PARKING RATIO (SPACES/1,000 SF)	0	4.1	4
BICYCLE PARKING		REQUIRED SPACES	PROVIDED SPACES
SHORT TERM (1/5,000 SF, 2 MIN.)	4	-	4
LONG TERM	0	-	0
TOTAL BICYCLE PARKING			4

### Project Description:

CIS is proposing a new single-story office building with a total square footage of approximately 15,750 SF with associated parking, landscaping, and site improvements at 9770 SW Wilsonville Road. The building will include office space, meeting areas, and training areas. A single access is proposed via an existing driveway on SW Kinsman Road.

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REVISION SCHEDULE		
Delta	Issued As	Issue Date

SHEET TITLE:

**SITE PLAN**

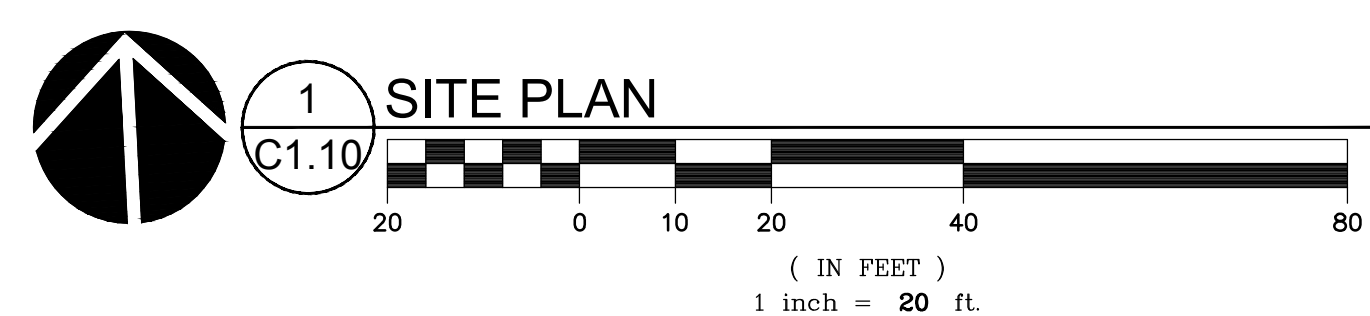
SHEET

**C1.10**

JOB NO. **2220098.00**

**SCHEMATIC DESIGN SET - 10/03/2023**

222009800DRAWINGS\CIVIL\098-C1.10.DWG:SITE PLAN VSN 09/29/23 12:22 1/20



# APPENDIX B: TRAFFIC COUNT DATA

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ALL TRAFFIC DATA SERVICES

(303) 216-2439

www.alltrafficdata.net

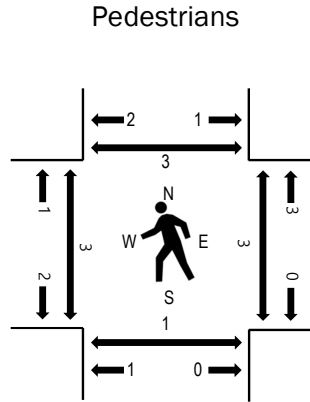
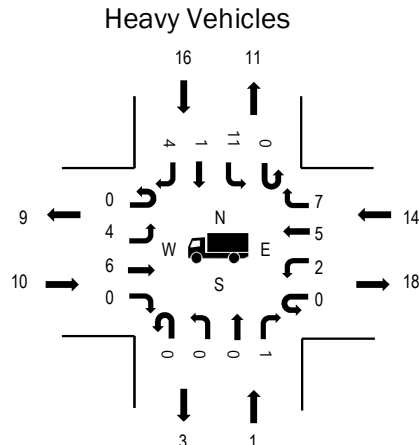
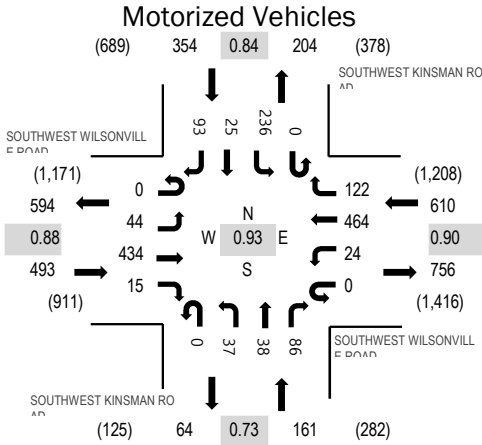
Location: 3 SOUTHWEST KINSMAN ROAD & SOUTHWEST WILSONVILLE ROAD PM

Date: Tuesday, August 1, 2023

Peak Hour: 04:35 PM - 05:35 PM

Peak 15-Minutes: 05:05 PM - 05:20 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.0%	0.88
WB	2.3%	0.90
NB	0.6%	0.73
SB	4.5%	0.84
All	2.5%	0.93

Traffic Counts - Motorized Vehicles

Interval Start Time	SOUTHWEST WILSONVILLE ROAD Eastbound				SOUTHWEST WILSONVILLE ROAD Westbound				SOUTHWEST KINSMAN ROAD Northbound				SOUTHWEST KINSMAN ROAD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	3	44	0	0	0	45	8	0	5	4	18	0	16	4	10	157	1,534
4:05 PM	0	2	26	4	0	3	40	9	0	0	4	14	0	10	0	11	123	1,491
4:10 PM	0	5	33	4	0	1	39	10	0	0	2	6	0	28	4	10	142	1,514
4:15 PM	0	2	30	0	0	2	39	12	0	1	2	6	0	16	2	7	119	1,518
4:20 PM	0	1	27	0	0	4	35	8	0	1	2	2	0	28	2	7	117	1,543
4:25 PM	0	2	31	1	0	0	46	11	0	3	2	7	0	10	4	6	123	1,570
4:30 PM	0	2	27	0	0	2	22	9	0	5	1	5	0	16	5	3	97	1,586
4:35 PM	0	7	43	1	0	0	38	11	0	5	5	5	0	21	2	10	148	1,618
4:40 PM	0	1	35	0	0	5	41	12	0	3	0	7	0	17	1	7	129	1,610
4:45 PM	0	6	35	6	0	1	40	10	0	2	1	7	0	20	1	10	139	1,613
4:50 PM	0	3	40	2	0	2	28	10	0	2	1	7	0	19	2	6	122	1,580
4:55 PM	0	2	31	0	0	4	33	11	0	0	4	8	0	14	3	8	118	1,565
5:00 PM	0	5	27	0	0	0	36	10	0	0	4	6	0	14	1	11	114	1,556
5:05 PM	0	2	29	1	0	2	38	8	0	6	6	15	0	27	3	9	146	
5:10 PM	0	2	42	2	0	2	49	10	0	7	3	2	0	20	1	6	146	
5:15 PM	0	6	41	1	0	2	39	10	0	6	4	6	0	24	3	2	144	
5:20 PM	0	1	45	0	0	3	44	12	0	2	3	9	0	16	0	9	144	
5:25 PM	0	4	32	1	0	2	36	11	0	3	2	8	0	25	5	10	139	
5:30 PM	0	5	34	1	0	1	42	7	0	1	5	6	0	19	3	5	129	
5:35 PM	0	7	34	1	0	2	37	10	0	2	2	4	0	29	2	10	140	
5:40 PM	0	4	43	0	0	0	50	10	0	0	1	2	0	11	0	11	132	
5:45 PM	0	1	25	0	0	1	35	8	0	2	2	4	0	17	4	7	106	
5:50 PM	0	1	33	1	0	3	36	9	0	0	0	1	0	13	2	8	107	
5:55 PM	0	5	19	0	0	2	40	10	0	1	3	7	0	18	1	3	109	
Count Total	0	79	806	26	0	44	928	236	0	57	63	162	0	448	55	186	3,090	
Peak Hour	0	44	434	15	0	24	464	122	0	37	38	86	0	236	25	93	1,618	

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

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	2	0	0	4	6	4:00 PM	0	0	0	0	0	4:00 PM	0	1	0	0	1
4:05 PM	0	2	3	0	5	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	1	0	3	3	7	4:10 PM	0	0	0	0	0	4:10 PM	0	3	0	0	3
4:15 PM	2	0	1	1	4	4:15 PM	0	0	0	0	0	4:15 PM	0	1	0	3	4
4:20 PM	0	0	1	1	2	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	1	1
4:25 PM	0	1	1	2	4	4:25 PM	0	0	0	0	0	4:25 PM	0	1	0	0	1
4:30 PM	2	0	1	2	5	4:30 PM	0	0	0	0	0	4:30 PM	0	0	2	0	2
4:35 PM	2	1	1	3	7	4:35 PM	0	0	0	0	0	4:35 PM	1	1	0	0	2
4:40 PM	2	0	2	0	4	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	1	0	1	1	3	4:45 PM	0	0	0	0	0	4:45 PM	0	0	1	1	2
4:50 PM	0	0	1	1	2	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	4	4
4:55 PM	0	0	2	1	3	4:55 PM	0	1	0	0	1	4:55 PM	1	1	0	0	2
5:00 PM	1	0	4	2	7	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	2	0	2	1	5	5:05 PM	0	0	0	0	0	5:05 PM	0	1	0	0	1
5:10 PM	0	0	0	1	1	5:10 PM	0	0	0	0	0	5:10 PM	0	0	1	0	1
5:15 PM	1	0	1	0	2	5:15 PM	0	0	0	2	2	5:15 PM	0	0	1	0	1
5:20 PM	1	0	0	2	3	5:20 PM	2	0	0	0	2	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	2	2	5:25 PM	0	0	0	0	0	5:25 PM	2	0	0	0	2
5:30 PM	0	0	0	2	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	1	0	0	1	2	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	2	2	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	1	1	2	0	4	5:45 PM	0	0	0	0	0	5:45 PM	0	0	2	0	2
5:50 PM	0	0	0	1	1	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	2	2	4	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	19	5	28	35	87	Count Total	2	1	0	2	5	Count Total	4	9	7	9	29
Peak Hour	10	1	14	16	41	Peak Hour	2	1	0	2	5	Peak Hour	4	3	3	5	15



ALL TRAFFIC DATA SERVICES

(303) 216-2439

www.alltrafficdata.net

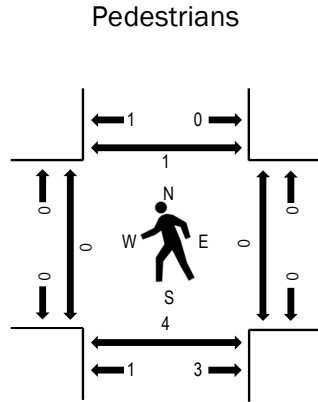
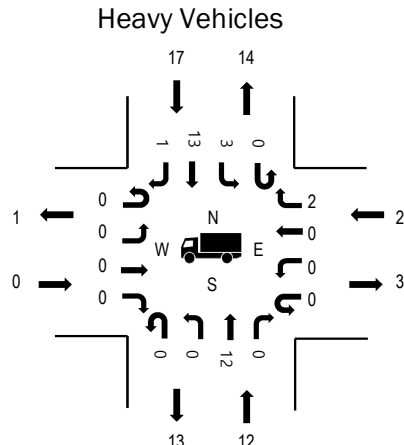
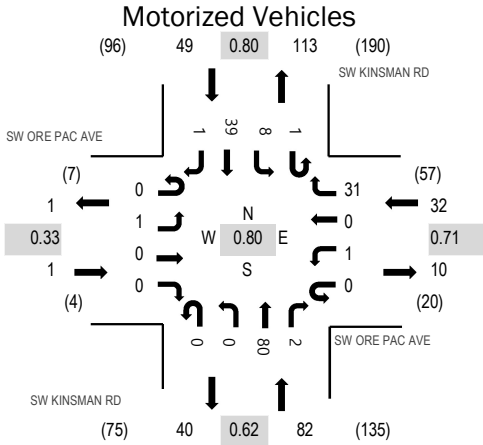
Location: 1 SW KINSMAN RD & SW ORE PAC AVE PM

Date: Wednesday, November 8, 2023

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.33
WB	6.3%	0.71
NB	14.6%	0.62
SB	34.7%	0.80
All	18.9%	0.80

Traffic Counts - Motorized Vehicles

Interval Start Time	SW ORE PAC AVE Eastbound				SW ORE PAC AVE Westbound				SW KINSMAN RD Northbound				SW KINSMAN RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	0	0	3	0	0	4	0	0	1	2	0	10	146
4:05 PM	0	0	0	0	0	1	0	1	0	2	3	0	0	1	2	0	10	152
4:10 PM	0	0	0	0	0	0	0	3	0	0	5	0	0	1	3	0	12	150
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	1	3	0	6	150
4:20 PM	0	0	0	0	0	0	0	6	0	0	2	0	0	2	2	0	12	157
4:25 PM	0	0	0	0	0	0	0	2	0	0	1	0	1	0	7	0	11	161
4:30 PM	0	0	0	0	0	0	0	4	0	0	13	0	0	1	3	0	21	164
4:35 PM	0	0	0	0	0	0	0	1	0	0	9	1	0	0	2	0	13	160
4:40 PM	0	0	0	0	0	0	0	3	0	0	10	0	0	2	2	0	17	164
4:45 PM	0	0	0	0	0	0	0	2	0	0	2	0	1	0	5	0	10	156
4:50 PM	0	0	0	0	0	0	0	2	0	0	3	0	0	0	2	0	7	149
4:55 PM	0	0	0	0	0	1	0	4	0	0	5	1	0	2	4	0	17	153
5:00 PM	0	1	0	0	0	0	0	1	0	0	11	0	0	1	2	0	16	146
5:05 PM	0	0	0	0	0	0	0	2	0	0	2	0	0	1	3	0	8	
5:10 PM	0	0	0	0	0	0	0	2	0	0	8	0	0	1	1	0	12	
5:15 PM	0	0	0	0	0	0	0	4	0	0	6	0	0	0	2	1	13	
5:20 PM	0	0	0	0	0	0	0	3	0	0	6	0	0	0	7	0	16	
5:25 PM	0	0	0	0	0	0	0	3	0	0	5	0	0	0	6	0	14	
5:30 PM	0	1	0	0	0	0	0	2	0	0	12	0	0	0	2	0	17	
5:35 PM	0	2	0	0	0	0	0	2	0	1	6	0	0	1	5	0	17	
5:40 PM	0	0	0	0	0	0	0	3	0	0	2	0	0	0	3	1	9	
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	
5:50 PM	0	0	0	0	0	0	0	1	0	0	3	1	0	2	2	2	11	
5:55 PM	0	0	0	0	0	0	0	1	0	0	7	0	0	0	2	0	10	
Count Total	0	4	0	0	0	2	0	55	0	3	129	3	2	17	73	4	292	
Peak Hour	0	1	0	0	0	1	0	31	0	0	80	2	1	8	39	1	164	

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

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	1	0	2	3	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	1	1	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	3	1	3	7	4:10 PM	0	0	0	0	0	4:10 PM	0	1	0	0	1
4:15 PM	0	0	0	1	1	4:15 PM	0	0	0	1	1	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	1	1	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	2	0	2	4	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	3	0	2	5	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	2	0	3	5	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	5	5	4:45 PM	0	0	0	0	0	4:45 PM	0	1	0	0	1
4:50 PM	0	1	0	0	1	4:50 PM	0	0	0	0	0	4:50 PM	0	1	0	0	1
4:55 PM	0	0	1	2	3	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	1	0	0	1
5:05 PM	0	1	0	0	1	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	1	1	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	2	1	1	4	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	1	1	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	1	1
5:25 PM	0	1	0	0	1	5:25 PM	0	0	0	0	0	5:25 PM	0	1	0	0	1
5:30 PM	0	0	0	1	1	5:30 PM	0	0	1	0	1	5:30 PM	0	0	0	0	0
5:35 PM	0	1	0	0	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	1	1	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	1	0	0	1
5:50 PM	0	0	0	1	1	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	1	0	0	1
Count Total	0	17	3	28	48	Count Total	0	0	1	1	2	Count Total	0	7	0	1	8
Peak Hour	0	12	2	17	31	Peak Hour	0	0	0	0	0	Peak Hour	0	4	0	1	5

**APPENDIX C: STAGE II LIST**

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Stage II Approved									
Project	Land Use	Status	Size	Total PM Peak Trips	Trip Allocation Percentage		Net New (Primary + Diverted) PM Peak Hour Trips not yet active		
					Internal	Pass-By	In	Out	Total
Hydro-Temp: Recent agreement with the City, the project is vested and so are the traffic trips	Office/Flex-Space	Not built	60.8 KSF				44	46	90
Mercedes Benz (Phase 2)	Auto Dealership	Not built					20	26	46
Town Center Ph III and trip dedication to Miller Paint store Uses marked with "*" have not been built and PM peak hr trip sum exceeds remaining vested trip level by 2 trips. It has yet to be determined how to allocate trips between remaining buildings.	*High Turnover Restaurant (Pad 1)	Not built	7.5 KSF				24	17	47*
	Remaining Approved Total								47
Wilsonville Road Business Park Phase II	Phase 2 - office (2-story building on west parcel)	Partially Built	21.7 KSF				15	71	86
Frog Pond-Frog Pond Meadows (Phase 3B, 4A, 4B of 10/18 Study)	Residential	Partially Built, 69 homes built and occupied	74 units				3	2	5
Frog Pond Ridge	Residential	Under construction, no homes occupied	71 units				43	28	71
Frog Pond Crossing	Residential	Under construction, no homes occupied	29 units				19	9	28
Frog Pond Estates	Residential	Approved	17 units				11	7	18
Frog Pond Oaks	Residential	Under construction, no homes occupied	41 units				27	14	41
Frog Pond Vista	Residential	Under construction, no homes occupied	38 units				27	17	44
Frog Pond Overlook	Residential	Approved	12 Units				8	5	13
Frog Pond Terrace	Residential	Approved	19 Units				12	8	20
Canyon Creek III	Residential	Under Construction	5 units (traffic study was for 11)				2	3	5
PW Complex on Boberg	Public	Under Construction	15,800 office, 17,900 warehouse				11	39	50
DAS North Valley Complex	Public/Industrial	Under Construction	174,700 sf				5	15	20
Black Creek Group-Garden Acres	Industrial	Under Construction	148,500 sf warehouse	178			69	109	178
Boones Ferry Gas Station/Convenience Store	Commercial	Under Construction	3,460 sf store, 12 gas pumps	240		134	53	53	106
Boones Ferry Construction Storage Yard	Industrial	Under Construction	1.25 acres	5			1	4	5
Frog Pond Primary School	Public	Under Construction	550 students	88			39	48	87
Delta Logistics	Industrial	Approved	56,100 sf warehouse	33			9	24	33
Building W5 Boeckman and Kinsman	Industrial	Approved	80,000 sf manufacturing	54			17	37	54
Precision Countertops	Industrial	Approved	65800 square feet	43			13	30	43
Town Center Mixed Use	Mixed Use Residential/Commercial	Approved	114 units, 4,000 square feet retail	55			31	24	55

Stage II Approved – Villebois													
Project	Phase	Status	Land Use					Total PM Peak Trips	Trip Allocation Percentage		Net New (Primary + Diverted) PM Peak Hour Trips not yet active		
			SF	Town.	Apt.	Retail	School		Internal	Pass-By	In	Out	Total
North (Entirety)	Residential	Partially built, 364 homes sold and occupied	451								53	34	87
Central	Residential	Partially Built, 991 homes (102 single family, 319 condo/row homes, 365 apartments) occupied	102	391	510						60	30	90
FOR REFERENCE SAP EAST			537	42									
REFERENCE SAP SOUTH (Includes PDP 7 Grande Pointe)								560					

Pending Projects for Which Traffic Analysis has been completed										
Project	Land Use	Status	Size	Total PM Peak	Trip Allocation Percentage			Net New (Primary) PM Peak Hour Trips		
					Internal	Pass-By	Diverted	In	Out	Total
Frog Pond Cottage Park Place	Residential	Under review	34 attached units	16				8	7	15
Frog Pond Petras	Residential	Under review	22 attached units	9				5	4	9
Parkway Woods Expansion	Public	under review	80,000 sf manufac	52				16	36	52



Import Counts	Export	Total Vehicle Volumes											
		Northbound			Southbound			Eastbound			Westbound		
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Stage II Trips - PM Peak													
Barber Street/Kinsman Road	0	1	0	0	10	1	0	16	0	0	28	0	
Barber Street/Boones Ferry Road	23	20	0	0	25	0	0	23	0	0	0	0	
Wilsonville Road/Kinsman Road	23	0	48	7	1	2	1	46	6	10	58	0	
Wilsonville Rd/Boones Ferry Road	0	4	3	51	6	10	14	85	2	2	58	18	
Barber Street/Transit Center Driveway	0	0	0	0	0	0	0	16	0	0	28	0	

**APPENDIX D: HCM REPORT - EXISTING**

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HCM 6th Signalized Intersection Summary  
 1: Kinsman Rd & Wilsonville Rd

Wilsonville Barber St TIA  
 Existing 2023 PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	461	16	25	493	130	39	40	91	251	27	99
Future Volume (veh/h)	47	461	16	25	493	130	39	40	91	251	27	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	0.98		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1885	1900	1781	1885	1811	1900	1900	1885	1826	1841	1841
Adj Flow Rate, veh/h	51	496	16	27	530	45	42	43	4	270	29	21
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	1	0	8	1	6	0	0	1	5	4	4
Cap, veh/h	267	647	21	272	644	522	305	137	13	499	208	151
Arrive On Green	0.04	0.36	0.36	0.02	0.34	0.34	0.03	0.08	0.08	0.17	0.21	0.21
Sat Flow, veh/h	1682	1814	59	1697	1885	1528	1810	1707	159	1739	977	707
Grp Volume(v), veh/h	51	0	512	27	530	45	42	0	47	270	0	50
Grp Sat Flow(s),veh/h/ln	1682	0	1873	1697	1885	1528	1810	0	1865	1739	0	1684
Q Serve(g_s), s	1.0	0.0	13.1	0.6	13.9	1.1	1.1	0.0	1.3	7.1	0.0	1.3
Cycle Q Clear(g_c), s	1.0	0.0	13.1	0.6	13.9	1.1	1.1	0.0	1.3	7.1	0.0	1.3
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.09	1.00		0.42
Lane Grp Cap(c), veh/h	267	0	668	272	644	522	305	0	150	499	0	359
V/C Ratio(X)	0.19	0.00	0.77	0.10	0.82	0.09	0.14	0.00	0.31	0.54	0.00	0.14
Avail Cap(c_a), veh/h	325	0	1181	356	1189	963	376	0	761	531	0	875
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.6	0.0	15.4	12.4	16.3	12.0	21.6	0.0	23.4	16.4	0.0	17.2
Incr Delay (d2), s/veh	0.3	0.0	1.9	0.2	2.7	0.1	0.2	0.0	1.2	1.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	5.1	0.2	5.6	0.3	0.5	0.0	0.6	2.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.9	0.0	17.2	12.6	19.0	12.1	21.8	0.0	24.6	17.4	0.0	17.4
LnGrp LOS	B	A	B	B	B	B	C	A	C	B	A	B
Approach Vol, veh/h		563			602			89			320	
Approach Delay, s/veh		16.8			18.2			23.3			17.4	
Approach LOS		B			B			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.3	24.2	6.9	16.5	7.1	23.4	14.0	9.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	4.0	34.0	4.0	28.0	4.0	34.0	10.0	22.0				
Max Q Clear Time (g_c+I1), s	2.6	15.1	3.1	3.3	3.0	15.9	9.1	3.3				
Green Ext Time (p_c), s	0.0	2.1	0.0	0.2	0.0	2.4	0.1	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				17.8								
HCM 6th LOS				B								

Intersection ID and Name	NB PhasingType	SB PhasingType	EB PhasingType	WB PhasingType	Cycle Length	Lost Time	Use Overlap Calculator	NBR Ov	SBR Ov	EBR Ov	WBR Ov
1: Kinsman Rd & Wilsonville Rd	Protected	Protected	Protected	Protected	90	20	No				

	1	3	4	5	6	7	8	9	10	11	12	13	14	Critical Flow Calculator	WBL/EBT	EBL/WBT	NBL/SBT	SBL/NBT	W/S E/W	W/S N/S
Adj Flow Rate, veh/h	51	496	16	27	530	45	42	43	4	270	29	21	Protected	0.29	0.31	0.05	0.18			
Sat Flow, veh/h	1682	1814	59	1637	1885	1528	1810	1707	159	1739	977	707	Permitted or Split	0.27	0.28	0.16	0.03			
W/S	0.03	0.27	0.27	0.02	0.28	0.03	0.02	0.03	0.03	0.16	0.03	0.03	selected phasing	0.29	0.31	0.05	0.18	0.31	0.18	

Overlap Critical Flow Calculator	NBR OV	NB OV W/S	SBR OV	SB OV W/S	EBR OV	EB OV W/S	WBR OV	WB OV W/S	W/S Overlap	Intersection VI	HCM 6th Ctrl Dela	HCM 6th LO	Synchro ID
Right Turn Overlap	No	0.00	No	0.00	No	0.00	No	0.00	0.00				
Right Turn Approach Phasing	Protected	0.16	Protected	0.16	Protected	0.03	Protected	0.03	No OV				
Overlap Approach Phasing	Protected	0.28	Protected	0.28	Protected	0.03	Protected	0.03	N/A	0.63	18	B	1

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	1	0	0	1	0	31	0	80	2	8	39	1
Future Vol, veh/h	1	0	0	1	0	31	0	80	2	8	39	1
Conflicting Peds, #/hr	1	0	4	4	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	6	0	15	0	38	33	100
Mvmt Flow	1	0	0	1	0	39	0	100	3	10	49	1

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	192	173	54	176	172	103	50	0	0	103	0	0
Stage 1	70	70	-	102	102	-	-	-	-	-	-	-
Stage 2	122	103	-	74	70	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.26	4.1	-	-	4.48	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.354	2.2	-	-	2.542	-	-
Pot Cap-1 Maneuver	772	724	1019	791	725	941	1570	-	-	1292	-	-
Stage 1	945	841	-	909	815	-	-	-	-	-	-	-
Stage 2	887	814	-	940	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	735	718	1016	784	719	940	1570	-	-	1292	-	-
Mov Cap-2 Maneuver	735	718	-	784	719	-	-	-	-	-	-	-
Stage 1	945	834	-	909	815	-	-	-	-	-	-	-
Stage 2	850	814	-	930	834	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Control Delay, s	9.9		9			0			1.3		
HCM LOS	A		A								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1570	-	-	735	934	1292	-	-
HCM Lane V/C Ratio	-	-	-	0.002	0.043	0.008	-	-
HCM Control Delay (s)	0	-	-	9.9	9	7.8	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

**APPENDIX E: HCM REPORT – EXISTING + PROJECT**

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HCM 6th Signalized Intersection Summary  
1: Kinsman Rd & Wilsonville Rd

Wilsonville Barber St TIA  
Existing + Project PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	461	17	28	493	130	42	49	109	251	28	99
Future Volume (veh/h)	47	461	17	28	493	130	42	49	109	251	28	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	0.98		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1885	1900	1781	1885	1811	1900	1900	1885	1826	1841	1841
Adj Flow Rate, veh/h	51	496	17	30	530	48	45	53	23	270	30	17
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	1	0	8	1	6	0	0	1	5	4	4
Cap, veh/h	262	639	22	268	642	520	320	113	49	483	239	136
Arrive On Green	0.04	0.35	0.35	0.03	0.34	0.34	0.04	0.09	0.09	0.17	0.22	0.22
Sat Flow, veh/h	1682	1810	62	1697	1885	1528	1810	1244	540	1739	1088	617
Grp Volume(v), veh/h	51	0	513	30	530	48	45	0	76	270	0	47
Grp Sat Flow(s),veh/h/ln	1682	0	1872	1697	1885	1528	1810	0	1784	1739	0	1705
Q Serve(g_s), s	1.1	0.0	13.4	0.6	14.2	1.2	1.2	0.0	2.2	7.1	0.0	1.2
Cycle Q Clear(g_c), s	1.1	0.0	13.4	0.6	14.2	1.2	1.2	0.0	2.2	7.1	0.0	1.2
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.30	1.00		0.36
Lane Grp Cap(c), veh/h	262	0	661	268	642	520	320	0	162	483	0	375
V/C Ratio(X)	0.19	0.00	0.78	0.11	0.83	0.09	0.14	0.00	0.47	0.56	0.00	0.13
Avail Cap(c_a), veh/h	319	0	1159	347	1167	946	386	0	714	512	0	869
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.8	0.0	15.8	12.7	16.6	12.3	21.5	0.0	23.7	16.5	0.0	17.2
Incr Delay (d2), s/veh	0.4	0.0	2.0	0.2	2.8	0.1	0.2	0.0	2.1	1.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	5.3	0.2	5.8	0.4	0.5	0.0	1.0	2.7	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	0.0	17.8	12.9	19.4	12.4	21.7	0.0	25.8	17.7	0.0	17.3
LnGrp LOS	B	A	B	B	B	B	C	A	C	B	A	B
Approach Vol, veh/h		564			608			121			317	
Approach Delay, s/veh		17.4			18.5			24.3			17.6	
Approach LOS		B			B			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	24.4	7.0	17.1	7.2	23.7	14.1	10.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	4.0	34.0	4.0	28.0	4.0	34.0	10.0	22.0				
Max Q Clear Time (g_c+I1), s	2.6	15.4	3.2	3.2	3.1	16.2	9.1	4.2				
Green Ext Time (p_c), s	0.0	2.1	0.0	0.2	0.0	2.4	0.1	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			18.4									
HCM 6th LOS			B									

Intersection ID and Name	use dropdown NB PhasingType	use dropdown SB PhasingType	use dropdown EB PhasingType	use dropdown WB PhasingType	Cycle Length	Lost Time	Use Overlap Calculator	use dropdown NBR Ovr	use dropdown SBR Ovr	use dropdown EBR Ovr	use dropdown WBR Ovr	BEGIN CALCULATED
1: Kinsman Rd & Wilsonville Rd	Protected	Protected	Protected	Protected	90	20	No					

	1	3	4	5	6	7	8	9	10	11	12	13	14	Critical Flow Calculator					
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		WBL/EBT	EBL/WBT	NBL/GBT	SBL/NBT	VIS E/W	VIS N/S
Adj Flow Rate, veh/l	51	496	17	30	530	48	45	53	23	270	30	17	Protected	0.29	0.31	0.05	0.20		
Sat Flow, veh/h	1682	1810	62	1697	1885	1528	1810	1244	540	1739	1088	617	Permitted or Split	0.27	0.28	0.16	0.04		
VIS	0.03	0.27	0.27	0.02	0.28	0.03	0.02	0.04	0.04	0.16	0.03	0.03	selected phasing	0.29	0.31	0.05	0.20	0.31	0.20

Overlap Critical Flow Calculator	NBR OV	NB OV VIS	SBR OV	SB OV VIS	EBR OV	EB OV VIS	WBR OV	WB OV VIS	VIS Overlap	Intersection W	HCM 6th Ctrl Dela	HCM 6th LO	Synchro ID
Right Turn Overlap	No	0.00	No	0.00	No	0.00	No	0.00	0.00				
Right Turn Approach Phasing	Protected	0.16	Protected	0.16	Protected	0.03	Protected	0.03	No OV				
Overlap Approach Phasing	Protected	0.28	Protected	0.28	Protected	0.04	Protected	0.04	N/A	<b>0.65</b>	<b>18</b>	<b>B</b>	<b>1</b>



Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	31	0	0	1	0	31	0	80	2	8	39	7
Future Vol, veh/h	31	0	0	1	0	31	0	80	2	8	39	7
Conflicting Peds, #/hr	1	0	4	4	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	6	0	15	0	38	33	2
Mvmt Flow	39	0	0	1	0	39	0	100	3	10	49	9

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	196	177	58	180	180	103	58	0	0	103	0	0
Stage 1	74	74	-	102	102	-	-	-	-	-	-	-
Stage 2	122	103	-	78	78	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.26	4.1	-	-	4.48	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.354	2.2	-	-	2.542	-	-
Pot Cap-1 Maneuver	767	720	1014	786	717	941	1559	-	-	1292	-	-
Stage 1	940	837	-	909	815	-	-	-	-	-	-	-
Stage 2	887	814	-	936	834	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	730	714	1011	779	711	940	1559	-	-	1292	-	-
Mov Cap-2 Maneuver	730	714	-	779	711	-	-	-	-	-	-	-
Stage 1	940	830	-	909	815	-	-	-	-	-	-	-
Stage 2	850	814	-	926	827	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	9	0	1.2
HCM LOS	B	A		
























Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1559	-	-	730	934	1292	-	-
HCM Lane V/C Ratio	-	-	-	0.053	0.043	0.008	-	-
HCM Control Delay (s)	0	-	-	10.2	9	7.8	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

**APPENDIX F: HCM REPORT – EXISTING + STAGE II**

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HCM 6th Signalized Intersection Summary  
1: Kinsman Rd & Wilsonville Rd

Wilsonville Barber St TIA  
Existing + Stage 2 PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	507	22	35	551	130	62	40	139	258	28	101
Future Volume (veh/h)	48	507	22	35	551	130	62	40	139	258	28	101
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	0.98		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1885	1900	1781	1885	1811	1900	1900	1885	1826	1841	1841
Adj Flow Rate, veh/h	52	545	22	38	592	45	67	43	15	277	30	24
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	1	0	8	1	6	0	0	1	5	4	4
Cap, veh/h	249	675	27	261	694	563	314	107	37	481	189	151
Arrive On Green	0.04	0.38	0.38	0.03	0.37	0.37	0.05	0.08	0.08	0.17	0.20	0.20
Sat Flow, veh/h	1682	1797	73	1697	1885	1529	1810	1333	465	1739	931	745
Grp Volume(v), veh/h	52	0	567	38	592	45	67	0	58	277	0	54
Grp Sat Flow(s),veh/h/ln	1682	0	1870	1697	1885	1529	1810	0	1799	1739	0	1675
Q Serve(g_s), s	1.1	0.0	15.8	0.8	16.8	1.1	2.0	0.0	1.8	7.9	0.0	1.5
Cycle Q Clear(g_c), s	1.1	0.0	15.8	0.8	16.8	1.1	2.0	0.0	1.8	7.9	0.0	1.5
Prop In Lane	1.00		0.04	1.00		1.00	1.00		0.26	1.00		0.44
Lane Grp Cap(c), veh/h	249	0	703	261	694	563	314	0	144	481	0	340
V/C Ratio(X)	0.21	0.00	0.81	0.15	0.85	0.08	0.21	0.00	0.40	0.58	0.00	0.16
Avail Cap(c_a), veh/h	299	0	1094	324	1103	894	356	0	681	488	0	807
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.1	0.0	16.3	12.8	16.9	12.0	23.1	0.0	25.4	17.9	0.0	19.1
Incr Delay (d2), s/veh	0.4	0.0	2.5	0.3	3.9	0.1	0.3	0.0	1.8	1.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	6.3	0.3	7.1	0.3	0.8	0.0	0.8	3.1	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.6	0.0	18.8	13.1	20.8	12.0	23.4	0.0	27.2	19.6	0.0	19.3
LnGrp LOS	B	A	B	B	C	B	C	A	C	B	A	B
Approach Vol, veh/h		619			675			125			331	
Approach Delay, s/veh		18.4			19.8			25.2			19.5	
Approach LOS		B			B			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	26.8	7.6	16.8	7.3	26.4	14.8	9.7				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	4.0	34.0	4.0	28.0	4.0	34.0	10.0	22.0				
Max Q Clear Time (g_c+I1), s	2.8	17.8	4.0	3.5	3.1	18.8	9.9	3.8				
Green Ext Time (p_c), s	0.0	2.3	0.0	0.2	0.0	2.6	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				19.6								
HCM 6th LOS				B								

Intersection ID and Name	NB PhasingType	SB PhasingType	EB PhasingType	WB PhasingType	Cycle Length	Lost Time	Use Overlap Calculator	NBR Ovr	SBR Ovr	EBR Ovr	WBR Ovr	BEGIN CALCULATION
1: Kinsman Rd & Wilsonville Rd	Protected	Protected	Protected	Protected	90	20	No					

	1	3	4	5	6	7	8	9	10	11	12	13	14	Critical Flow Calculator					
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		WBL/EBT	EBL/WBT	NBL/GBT	SBL/NBT	V/S E/W	V/S N/S
Adj Flow Rate, veh/h	52	545	22	38	592	45	67	43	15	277	30	24	Protected	0.33	0.34	0.07	0.19		
Sat Flow, veh/h	1682	1797	73	1697	1885	1529	1810	1333	465	1739	931	745	Permitted or Split	0.30	0.31	0.16	0.04		
V/S	0.03	0.30	0.30	0.02	0.31	0.03	0.04	0.03	0.03	0.16	0.03	0.03	selected phasing	0.33	0.34	0.07	0.19	0.34	0.19

Overlap Critical Flow Calculator	NBR OV	NB OV V/S	SBR OV	SB OV V/S	EBR OV	EB OV V/S	WBR OV	WB OV V/S	V/S Overlap	Intersection VI	HCM 6th Ctrl Dela	HCM 6th LO	Synchro ID
Right Turn Overlap	No	0.00	No	0.00	No	0.00	No	0.00	0.00				
Right Turn Approach Phasing	Protected	0.16	Protected	0.16	Protected	0.03	Protected	0.03	No OV				
Overlap Approach Phasing	Protected	0.31	Protected	0.31	Protected	0.03	Protected	0.03	N/A	<b>0.69</b>	<b>20</b>	<b>B</b>	<b>1</b>

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	1	0	0	1	0	31	0	80	2	8	39	1
Future Vol, veh/h	1	0	0	1	0	31	0	80	2	8	39	1
Conflicting Peds, #/hr	1	0	4	4	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	6	0	15	0	38	33	2
Mvmt Flow	1	0	0	1	0	39	0	100	3	10	49	1

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	192	173	54	176	172	103	50	0	0	103	0	0
Stage 1	70	70	-	102	102	-	-	-	-	-	-	-
Stage 2	122	103	-	74	70	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.26	4.1	-	-	4.48	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.354	2.2	-	-	2.542	-	-
Pot Cap-1 Maneuver	772	724	1019	791	725	941	1570	-	-	1292	-	-
Stage 1	945	841	-	909	815	-	-	-	-	-	-	-
Stage 2	887	814	-	940	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	735	718	1016	784	719	940	1570	-	-	1292	-	-
Mov Cap-2 Maneuver	735	718	-	784	719	-	-	-	-	-	-	-
Stage 1	945	834	-	909	815	-	-	-	-	-	-	-
Stage 2	850	814	-	930	834	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9	0	1.3
HCM LOS	A	A		






















Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1570	-	-	735	934	1292	-	-
HCM Lane V/C Ratio	-	-	-	0.002	0.043	0.008	-	-
HCM Control Delay (s)	0	-	-	9.9	9	7.8	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

**APPENDIX G: HCM REPORT – EXISTING + PROJECT + STAGE II**

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HCM 6th Signalized Intersection Summary  
1: Kinsman Rd & Wilsonville Rd

Wilsonville Barber St TIA  
Existing + Stage 2 + Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	507	23	38	551	130	65	49	157	258	29	101
Future Volume (veh/h)	48	507	23	38	551	130	65	49	157	258	29	101
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	0.99		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1885	1900	1781	1885	1811	1900	1900	1885	1826	1841	1841
Adj Flow Rate, veh/h	52	545	24	41	592	48	70	53	75	277	31	20
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	1	0	8	1	6	0	0	1	5	4	4
Cap, veh/h	231	659	29	243	684	554	365	86	122	454	243	157
Arrive On Green	0.04	0.37	0.37	0.03	0.36	0.36	0.05	0.12	0.12	0.16	0.24	0.24
Sat Flow, veh/h	1682	1790	79	1697	1885	1528	1810	701	991	1739	1030	665
Grp Volume(v), veh/h	52	0	569	41	592	48	70	0	128	277	0	51
Grp Sat Flow(s),veh/h/ln	1682	0	1868	1697	1885	1528	1810	0	1692	1739	0	1695
Q Serve(g_s), s	1.2	0.0	17.4	0.9	18.4	1.3	2.1	0.0	4.5	8.2	0.0	1.5
Cycle Q Clear(g_c), s	1.2	0.0	17.4	0.9	18.4	1.3	2.1	0.0	4.5	8.2	0.0	1.5
Prop In Lane	1.00		0.04	1.00		1.00	1.00		0.59	1.00		0.39
Lane Grp Cap(c), veh/h	231	0	688	243	684	554	365	0	209	454	0	400
V/C Ratio(X)	0.23	0.00	0.83	0.17	0.87	0.09	0.19	0.00	0.61	0.61	0.00	0.13
Avail Cap(c_a), veh/h	274	0	1008	295	1017	825	397	0	591	454	0	753
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.6	0.0	18.1	14.3	18.7	13.2	22.6	0.0	26.2	18.1	0.0	19.0
Incr Delay (d2), s/veh	0.5	0.0	3.8	0.3	5.4	0.1	0.3	0.0	2.9	2.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	7.4	0.3	8.2	0.4	0.9	0.0	1.9	3.3	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	0.0	21.9	14.6	24.0	13.3	22.9	0.0	29.1	20.5	0.0	19.1
LnGrp LOS	B	A	C	B	C	B	C	A	C	C	A	B
Approach Vol, veh/h		621			681			198				328
Approach Delay, s/veh		21.3			22.7			26.9				20.3
Approach LOS		C			C			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	28.2	7.9	19.9	7.4	27.9	15.0	12.8				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	4.0	34.0	4.0	28.0	4.0	34.0	10.0	22.0				
Max Q Clear Time (g_c+I1), s	2.9	19.4	4.1	3.5	3.2	20.4	10.2	6.5				
Green Ext Time (p_c), s	0.0	2.2	0.0	0.2	0.0	2.5	0.0	0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay												22.2
HCM 6th LOS												C

Intersection ID and Name	NB PhasingType	SB PhasingType	EB PhasingType	WB PhasingType	Cycle Length	Lost Time	Use Overlap Calculator	NBR Ovr	SBR Ovr	EBR Ovr	WBR Ovr
1: Kinsman Rd & Wilsonville Rd	Protected	Protected	Protected	Protected	90	20	No				

	1	3	4	5	6	7	8	9	10	11	12	13	14	Critical Flow Calculator					
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		WBL/EBT	EBL/WBT	NBL/SBT	SBL/NBT	V/S E/W	V/S N/S
Adj Flow Rate, veh/l	52	545	24	41	592	48	70	53	75	277	31	20	Protected	0.33	0.34	0.07	0.23		
Sat Flow, veh/h	1682	1790	79	1637	1885	1528	1810	701	991	1739	1030	665	Permitted or Split	0.30	0.31	0.16	0.08		
V/S	0.03	0.30	0.30	0.02	0.31	0.03	0.04	0.08	0.08	0.16	0.03	0.03	selected phasing	0.33	0.34	0.07	0.23	0.34	0.23

Overlap Critical Flow Calculator	NBR OV	NB OV V/S	SBR OV	SB OV V/S	EBR OV	EB OV V/S	WBR OV	WB OV V/S	V/S Overlap	Intersection VI	HCM 6th Ctrl Dela	HCM 6th LO	Synchro ID
Right Turn Overlap	No	0.00	No	0.00	No	0.00	No	0.00	0.00				
Right Turn Approach Phasing	Protected	0.16	Protected	0.16	Protected	0.03	Protected	0.03	No OV				
Overlap Approach Phasing	Protected	0.31	Protected	0.31	Protected	0.08	Protected	0.08	N/A	0.75	22	C	1



Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	31	0	0	1	0	31	0	80	2	8	39	7
Future Vol, veh/h	31	0	0	1	0	31	0	80	2	8	39	7
Conflicting Peds, #/hr	1	0	4	4	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	6	0	15	0	38	33	2
Mvmt Flow	39	0	0	1	0	39	0	100	3	10	49	9

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	196	177	58	180	180	103	58	0	0	103	0	0
Stage 1	74	74	-	102	102	-	-	-	-	-	-	-
Stage 2	122	103	-	78	78	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.26	4.1	-	-	4.48	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.354	2.2	-	-	2.542	-	-
Pot Cap-1 Maneuver	767	720	1014	786	717	941	1559	-	-	1292	-	-
Stage 1	940	837	-	909	815	-	-	-	-	-	-	-
Stage 2	887	814	-	936	834	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	730	714	1011	779	711	940	1559	-	-	1292	-	-
Mov Cap-2 Maneuver	730	714	-	779	711	-	-	-	-	-	-	-
Stage 1	940	830	-	909	815	-	-	-	-	-	-	-
Stage 2	850	814	-	926	827	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.2		9		0		1.2	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1559	-	-	730	934	1292	-	-
HCM Lane V/C Ratio	-	-	-	0.053	0.043	0.008	-	-
HCM Control Delay (s)	0	-	-	10.2	9	7.8	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Summary of All Intervals

Run Number	1	2	5	6	7	Avg
Start Time	4:20	4:20	4:20	4:20	4:20	4:20
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	3	3	3	3	3	3
# of Recorded Intervals	2	2	2	2	2	2
Vehs Entered	17114	17248	17097	17451	17370	17254
Vehs Exited	17138	17287	17057	17428	17371	17259
Starting Vehs	420	450	388	419	399	406
Ending Vehs	396	411	428	442	398	408
Travel Distance (mi)	8500	8469	8376	8533	8545	8484
Travel Time (hr)	442.2	441.1	429.9	442.2	442.4	439.5
Total Delay (hr)	155.8	156.1	147.4	154.7	154.4	153.7
Total Stops	15836	15833	15433	15972	15889	15787
Fuel Used (gal)	326.2	326.1	320.2	328.2	326.2	325.4

Interval #0 Information Seeding

Start Time	4:20
End Time	4:30
Total Time (min)	10
Volumes adjusted by Growth Factors, Anti PHF.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:30
End Time	4:45
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	2	5	6	7	Avg
Vehs Entered	4648	4677	4474	4684	4728	4640
Vehs Exited	4594	4616	4433	4640	4676	4592
Starting Vehs	420	450	388	419	399	406
Ending Vehs	474	511	429	463	451	454
Travel Distance (mi)	2300	2249	2158	2259	2299	2253
Travel Time (hr)	123.6	119.5	111.4	118.6	122.3	119.1
Total Delay (hr)	46.0	43.8	38.5	42.4	44.9	43.1
Total Stops	4429	4315	4004	4313	4411	4292
Fuel Used (gal)	89.4	87.6	82.3	87.1	88.4	87.0

Interval #2 Information Recording

Start Time	4:45
End Time	5:30
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	5	6	7	Avg
Vehs Entered	12466	12571	12623	12767	12642	12618
Vehs Exited	12544	12671	12624	12788	12695	12666
Starting Vehs	474	511	429	463	451	454
Ending Vehs	396	411	428	442	398	408
Travel Distance (mi)	6200	6219	6218	6273	6245	6231
Travel Time (hr)	318.5	321.6	318.4	323.5	320.1	320.4
Total Delay (hr)	109.7	112.3	108.9	112.3	109.5	110.5
Total Stops	11407	11518	11429	11659	11478	11497
Fuel Used (gal)	236.8	238.5	238.0	241.1	237.8	238.4

**Intersection: 1: Kinsman Rd & Wilsonville Rd**

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	197	312	196	415	172	108	183	174	272
Average Queue (ft)	36	174	34	187	39	34	71	113	64
95th Queue (ft)	113	280	115	340	102	76	133	180	164
Link Distance (ft)		1564		1262	1262		342		1215
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	200		200			110		150	
Storage Blk Time (%)	0	5		6		0	2	5	0
Queuing Penalty (veh)	0	2		2		0	2	6	1

**Intersection: 2: Kinsman Rd & Ore Pac Ave**

Movement	EB	WB	NB
Directions Served	LTR	LTR	R>
Maximum Queue (ft)	40	62	9
Average Queue (ft)	19	20	0
95th Queue (ft)	43	44	7
Link Distance (ft)	183	249	310
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

**Zone Summary**

Zone wide Queuing Penalty: 14
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