TRANSPORTATION IMPACT STUDY

FOR

MCINTOSH SUBDIVISION

3210 NW MCINTOSH ROAD

CITY OF CAMAS, WASHINGTON

4/27/2022

PREPARED BY

KELLY ENGINEERING

April 2022

TRANSPORTATION IMPACT STUDY

McIntosh Subdivision

City of Camas, Washington

April 27, 2022

Prepared for:

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TRANSPORTATION IMPACT STUDY

MCINTOSH SUBDIVISION

April 27, 2022

INTRODUCTION

A transportation impact study (TIS) for the McIntosh Subdivision was conducted to determine the potential traffic related impacts of the development to the surrounding roadway system. The development will consist of 28 single family detached homes. The site is vacant with outbuildings. The McIntosh Subdivision TIS was based on guidelines as adopted by the City of Camas, correspondence with city staff and the Pre-Application meeting notes for the project.

The 9.94 acre site is located at 3210 NW McIntosh Road (Parcel 127449000) in the City of Camas. Land uses in the vicinity of the site consist of single family homes and undeveloped land. A vicinity map, aerial photograph and preliminary plat are shown in Figures 1a, 1b and 1c.

Roadway Characteristics

NW McIntosh Road is a 20 foot wide 2-lane paved roadway with no shoulders along the site frontage. Double yellow striping is along the centerline of the roadway indicating that passing is prohibited. The posted speed limit is 35 mph. A "Limited Sight Distance" sign is along the site frontage for eastbound traffic. The warning sign is due to the limited sight distance for vehicles entering McIntosh Road from NW Fremont Street and looking towards the west. NW McIntosh Road is classified as a 2 lane arterial and the average daily traffic is approximately 1,000 vehicles per day (VPD).

In addition to a direct access onto NW McIntosh Road the assumption was made that a connection will be made to NW Fremont Street to the east through The Ridge Subdivision. NW Fremont Street is a 36 foot wide dead end curb to curb roadway with sidewalks.

The study area intersections in the TIA are controlled by stop signs on the minor street approaches. The lane configurations for the intersections are shown in Figure 2.

Traffic Volumes

The traffic counts in this report were conducted from 7:00 to 9:00 am and 4:00 to 6:00 pm during April 2022 along the site frontage and at the NW Brady Road/NW Grand Ridge Drive, NW Brady Road/NW Mcintosh Road and NW Fremont Street/NW McIntosh Road intersections. The traffic counts were conducted to determine the peak hours. The peak hour at an intersection is the one hour time period when traffic volumes are the highest and congestion is most likely to occur. The existing traffic volumes are included in Figure 3. The raw traffic count data is included in Appendix A.

Trip Generation/Distribution

The McIntosh Subdivision will generate approximately 264 trips per day, ITE Trip Generation Manual, 11th edition. A trip is a one-directional vehicle movement. 20 trips will occur during the AM peak hour and 25 trips will occur during the PM peak hour. The trip generation rates are shown in Table 1.

Table 1
Site Traffic Generation

Land Use	ITE code	Dwelling Units	Daily Trips	AM Peak Hour Trips	PM Peak Hour Trips
Single-Family Detached Housing	210	28	264	20 (in-5, out-15)	26 (in-17, out-9)

The directional distribution of traffic generated by the development was assigned to the study area intersections. The distribution was based on the existing traffic volumes. Based on the volumes 65% of the site traffic will travel to and from SR-14 via NW Brady Road. The remaining 35% will travel to and from the east on NW Brady Road and NW McIntosh Road. The site traffic distribution and assignment diagrams are shown in Figure 5.

Year 2025 Traffic Volumes

The year 2025 traffic volumes at the study area intersections included a two percent per year compounded growth factor over the existing traffic volumes and in-process traffic. In-process traffic is traffic from developments that have been approved, but are not fully occupied. The only in-process traffic in the area is from Phase II of the Dawson Ridge Subdivision to the west. At the present time 10 homes are not occupied. The growth factor and in-process traffic was included to provide an analysis of the study area intersections for build-out of the McIntosh Subdivision, forecast year 2025 traffic conditions.

Peak Hour Traffic Operations

Based on discussions with representatives from the City of Camas an analysis was conducted at the following intersections during the weekday AM and PM peak hours of the adjacent street traffic:

(1) NW Brady Road & NW Grand Ridge Drive
(2) NW Brady Road & NW McIntosh Road
(3) NW Fremont Street & NW McIntosh Road
(4) Site Access & NW McIntosh Road

The study area intersections were analyzed to determine existing, year 2025 without project and year 2025 with project conditions. The direct site access onto NW McIntosh Road was analyzed for the year 2025 with project conditions. The year 2025 traffic volumes without and with the project are shown in Figures 4 and 6.

The intersection operational analysis was conducted using the procedures in the 2010 Highway Capacity Manual. These procedures describe the operation of an intersection in terms of its level of service (LOS). The LOS criteria ranges from "A", which indicates little, if any, delay to "F", which indicates that vehicles experience very long delays. The LOS criteria with the corresponding delay in seconds per vehicle is shown in Table 2. The capacity analysis summary is shown in Table 3 on page 4.

Table 2
Level of Service Criteria

Level of Service (LOS)	A	B	C	D	E	F
Unsignalized intersections Average Delay (seconds per vehicle)	≤10	>10 - 15	>15 - 25	>25 - 35	>35 - 50	>50

Table 3
Capacity Analysis Summary

	AM Peak Hour		PM Peak Hour	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
NW Brady Road & NW Grand Ridge Drive				
Existing	B	12.2	B	10.7
Year 2025 w/o Project	B	12.7	B	10.9
Year 2025 with Project	B	12.8	B	11.0
NW Brady Road & NW McIntosh Road				
Existing	C	16.0	B	14.4
Year 2025 w/o Project	C	17.3	C	15.3
Year 2025 with Project	C	17.9	C	15.8
NW Fremont Street & NW McIntosh Road				
Existing	A	9.1	A	9.5
Year 2025 w/o Project	A	9.8	A	9.6
Year 2025 with Project	A	9.4	A	9.4
Site access & NW McIntosh Road				
Year 2025 with Project	A	9.4	A	9.5

Based on the findings of the TIS the study area intersections will operate at acceptable levels with build-out of the McIntosh Subdivision. The LOS computer printouts are included in Appendix C.

Pedestrian, Bicycle & Transit Considerations

Low pedestrian and no bicycle activities were observed within the vicinity of the site. The site is not served by public transit service.

Collision Data

Collision data was obtained from the Washington State Department of Transportation (WSDOT) for the three year time period between December 23, 2018 and December 23, 2021. This is the most recent three years of available data. Based on the available data the calculated accident rates do not exceed 1.0 accidents per million entering vehicles (MEV) that usually identifies an intersection with a high accident rate. The collision data for the study area intersections is shown in Table 4 and Appendix B.

Table 4
Collision Data

Intersection	Number of Collisions	Collision Type		Rate MEV *
		Angle	Fixed Object	
NW Brady Road/ NW Grand Ridge Dr.	1	1		0.12
NW Brady Road/ NW McIntosh Road	2	1	1	0.27
NW Fremont Street/ NW McIntosh Road	0			

* Accident rate per million entering vehicles

Turn Lanes

The requirement for additional turn lanes was evaluated at the study area intersections and site access as based on guidelines in the Washington State Design Manual. Based on the findings additional turn lanes are not required.

Movement Conflicts with Adjacent Intersections/Driveways

Based on field observations including the existing traffic volumes no turning movement conflicts will occur with any adjacent intersections or driveways. The NW Ilwaco Street/NW McIntosh Road intersection to the west and NW Fremont Street/NW McIntosh Road intersection to the east both have very little traffic.

Sight Distance

Sight distance was measured at the site access onto NW McIntosh Road. The measured intersection sight distance was over 400 feet when looking towards the west and 350 feet when looking towards the east. The sight distance when looking towards the east was slightly restricted by the vertical curve on NW McIntosh Road. Based on the criteria in AASHTO, A Policy on Geometric Design of Highways and Streets and the posted speed limit of 35 mph on NW McIntosh Road the recommended intersection sight distance is 390 feet.

Transportation Improvements

Bike and pedestrian improvements on Brady Road from McIntosh to the west city limits are identified in the City of Camas 6-year Transportation Improvement Program. The project has a priority number of 23 with preliminary engineering scheduled for January 2025.

School Considerations

Elementary and middle school students will attend Prune Hill Elementary and Skyridge Middle School. High School Students will attend Camas High School. School bus service will be provided for all students. The school bus routes change on a yearly basis depending on where new developments occur. Currently there are school bus stops on Ilwaco Street to the west and NW Fremont Street to the east.

City of Vancouver Concurrency

Approximately 65% of the traffic from the McIntosh Subdivision will enter the City of Vancouver. The City of Vancouver maintains a list of concurrency corridors that are modeled according to their level of service standard and PM peak hour speed. 17 PM peak hour trips from the development are projected to enter the 192nd Avenue Concurrency Corridor. The concurrency corridors are shown in Table 5.

Table 5
Concurrency Corridors

Arterial Concurrency Corridor	Limits of Corridor	PM Peak hour trips entering corridors from the McIntosh Subdivision
Mill Plain Blvd.	Fourth Plain to I-5	0
	I-5 to Andresen	0
	Andresen to I-205	0
	I-205 to 136th Ave.	0
	136th Ave. to 164th Ave.	0
	164th Ave. to 192nd Ave.	0
St. Johns/Ft. Van Way	Mill Plain to 63rd St.	0
Fourth Plain Blvd.	Mill Plain to I-5	0
	I-5 to Andresen	0
	Andresen to I-205	0
	I-205 to 162nd Ave.	0
Andresen Road	Mill Plain to SR 500	0
	SR 500 to 78th St.	0
112th Avenue	Mill Plain to 28th St.	0
	28th St. to 51st St.	0
164th/162nd Avenue	SR 14 to SE 1st St.	0
	SE 1st St. to Fourth Plain	0
Burton Road/28th Street	18th St. to 112th Ave.	0
	112th Ave. to 138th Ave.	0
	138th Ave. to 162nd Ave.	0
18th Street	112th Ave. to 138th Ave.	0
	138th Ave. to 164th Ave.	0
136th/137th Avenue	Mill Plain to 28th St.	0
	28th St. to Fourth Plain	0
192nd Avenue	SR 14 to NE 18th St.	17

Proportionate Share Fees for COV Projects

The COV is collecting proportionate share fees for the following projects that are shown in Table 6.

Table 6
COV Projects

Project Location	Unit Cost per Trip
137th Ave. - 49th St. to Fourth Plain Blvd.	$3,000 per PM peak hour trip
192nd Ave. & SR-14 ramps	$2,000 per PM peak hour trip
Fourth Plain Blvd. & 152nd Ave. Signal	$333 per PM peak hour trip
Leiser/St. Helens/McArthur	$2,000 per PM peak hour trip
192nd Ave. & NE 13th St.	$400 per PM peak hour trip
192nd Ave. & NE 34th St.	$150 per PM peak hour trip
176th Ave. & NE 20th St.	$400 per PM peak hour trip
Grove St./Columbia House Blvd./SR-14 WB off-ramp	$600 per AM peak hour trip

17 PM peak hour trips from the McIntosh Subdivision are projected to enter the 192nd Ave. & SR-14 ramps. The unit cost per trip would be $2,000.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this transportation impact study the surrounding roadway system can adequately accommodate traffic from the McIntosh Subdivision. The study area intersections will operate at level of service "C" or better with build out of the development.

The sight distance when looking towards the east from the future site access is slightly restricted by a crest vertical curve on NW Mcintosh Road. The measured intersection sight distance was 350 feet and 390 feet would be desirable as based on the criteria in AASHTO, A Policy on Geometric Design of Highways and Streets. Consideration should be given to install a "Limited Sight Distance" sign similar to the one on McIntosh Road for eastbound traffic. The sign could be installed to the west of NW Fremont Street for westbound traffic. No additional off-site traffic control devices or roadway improvements were identified to accommodate the development.

17 trips from the McIntosh Subdivision are projected to enter the 192nd Ave. & SR-14 ramps during the PM peak hour. This project location is under the jurisdiction of the City of Vancouver. The City of Vancouver is collecting proportionate share fees with a unit cost per trip of $2,000.

Adequate sight distance should be maintained at the site access onto McIntosh Road. Obstructions by signs, vegetation or other objects should not be allowed.

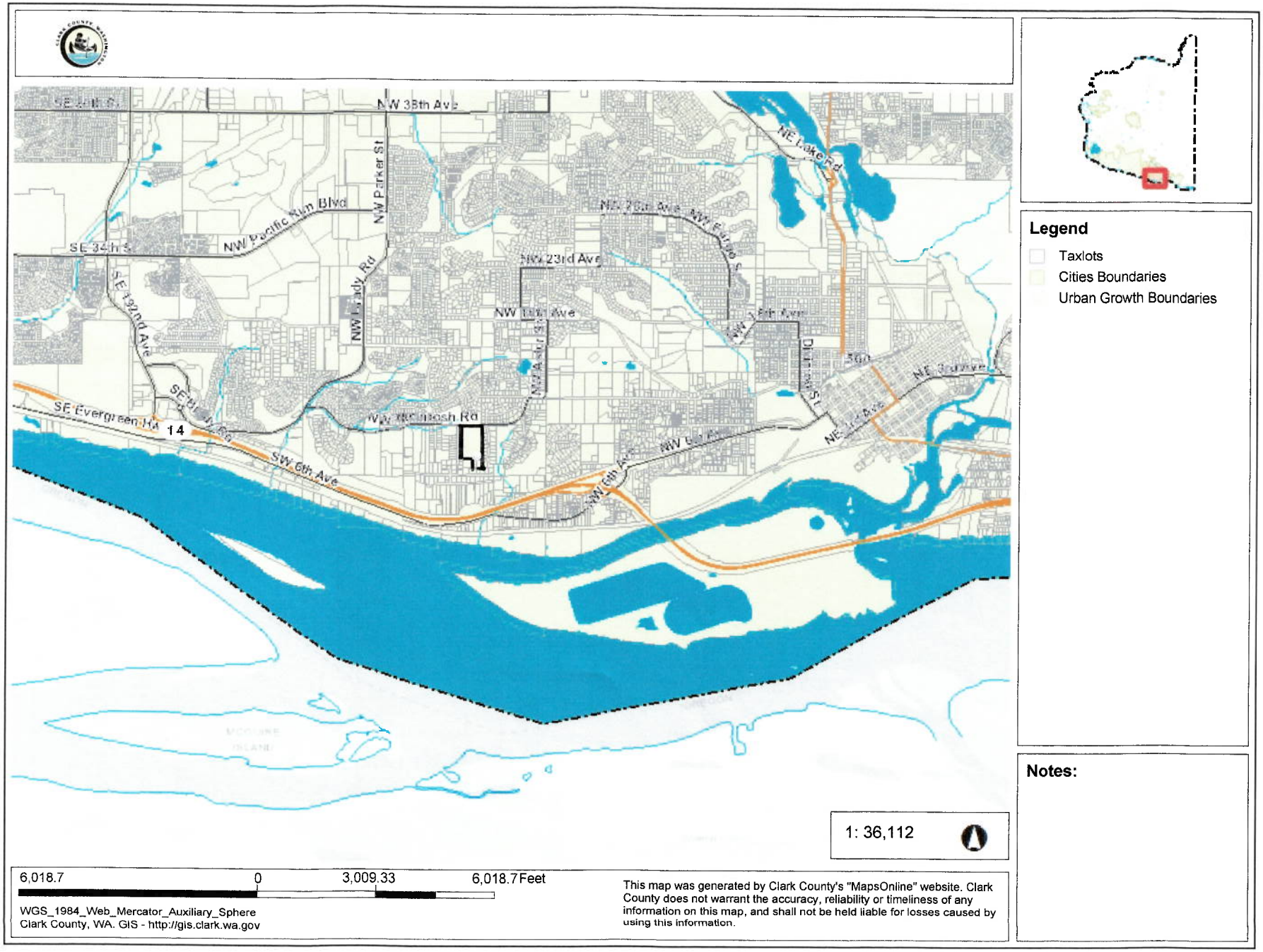

NW 38th Ave
NW Parker St
NW Pacific Rim Blvd
SE 34th St
NW Lindy Rd
NW 23rd Ave
NW 18th Ave
NE Lake Rd
SE 192nd Ave
SE Evergreen Hwy
14
SW 6th Ave
NW 6th Ave
NE 3rd Ave
Legend
Taxlots
Cities Boundaries
Urban Growth Boundaries
Notes:
1: 36,112
6,018.7
0
3,009.33
6,018.7 Feet
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

FIGURE 1a

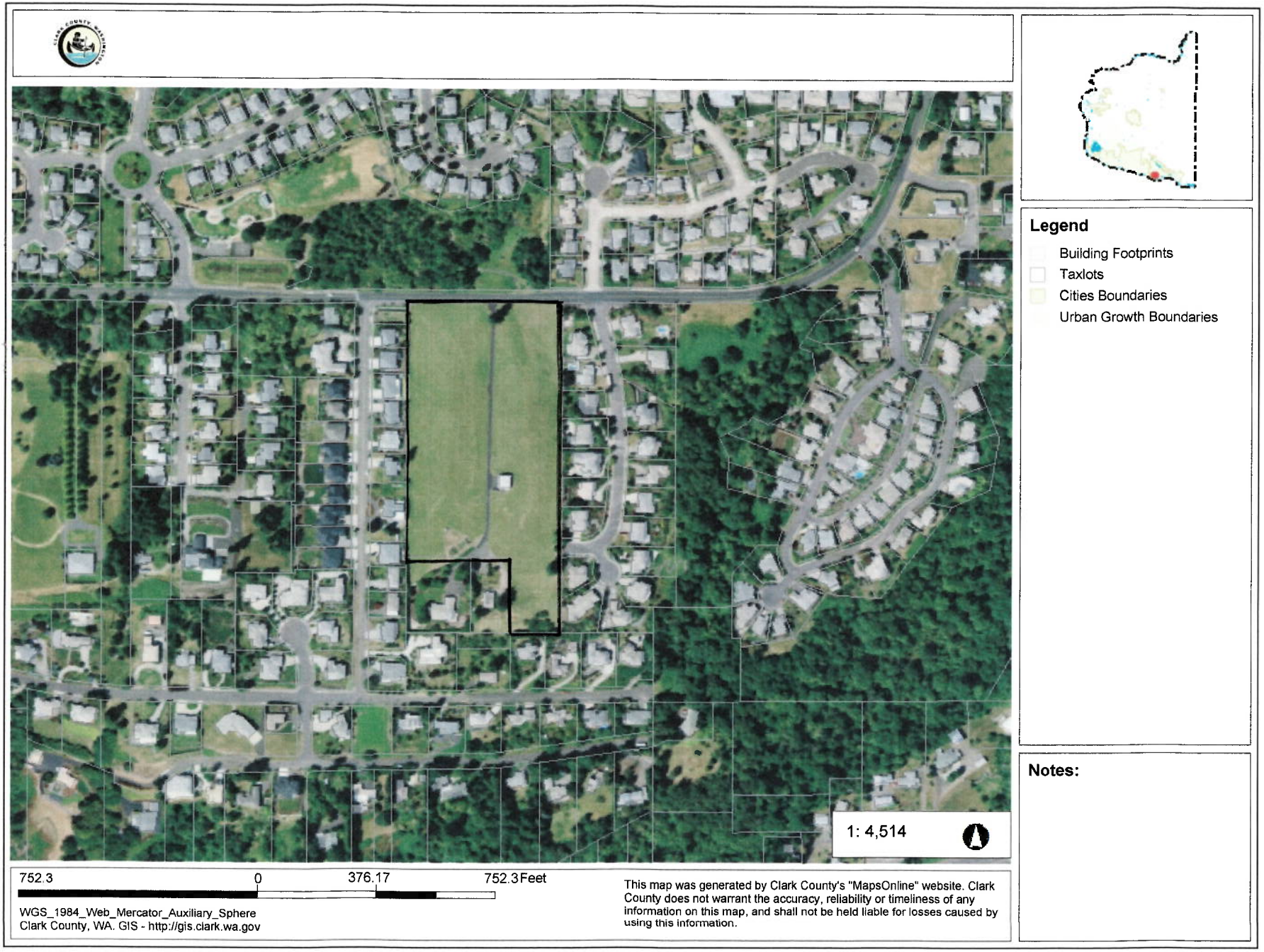
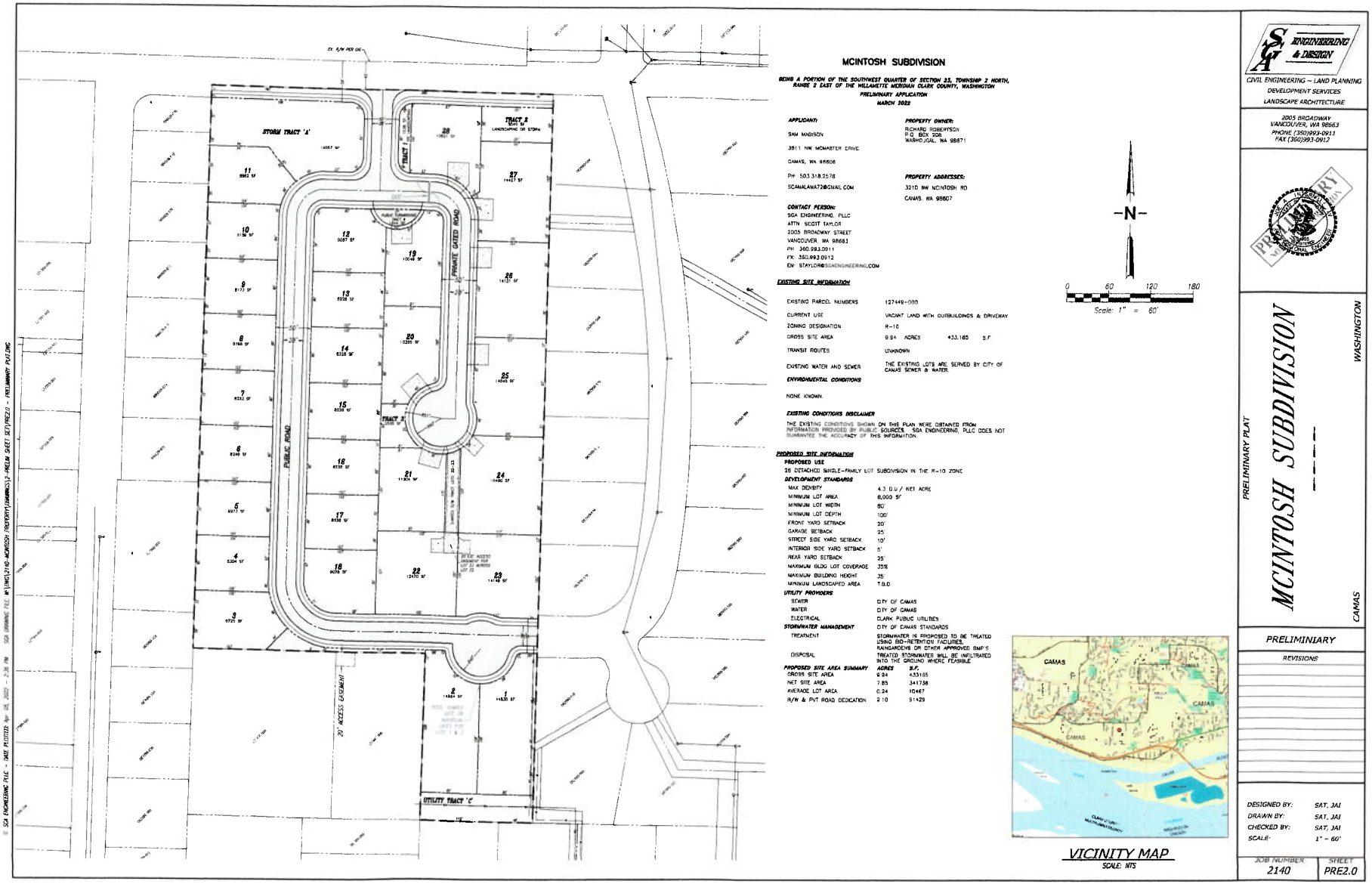

Legend
Building Footprints
Taxlots
Cities Boundaries
Urban Growth Boundaries
Notes:
1: 4,514
752.3
0
376.17
752.3 Feet
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

FIGURE 1b



MCINTOSH SUBDIVISION

BEING A PORTION OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 2 EAST OF THE WILLAMETTE MERIDIAN CLARK COUNTY, WASHINGTON

PRELIMINARY APPLICATION

MARCH 2022

APPLICANT:
SAM MADISON
3811 NW MCMASTER DRIVE
CAMAS, WA 98606
PH: 503.318.2578
SCANALAMA72@GMAIL.COM

PROPERTY OWNER:
RICHARD ROBERTSON
P.O. BOX 308
WASHOUGAL, WA 98671

PROPERTY ADDRESSES:
321D NW MCINTOSH RD
CAMAS, WA 98607

CONTACT PERSON:
SGA ENGINEERING, PLLC
ATTN: SCOTT TAYLOR
2005 BROADWAY STREET
VANCOUVER, WA 98663
PH: 360.993.0911
FX: 360.993.0912
EM: STAYLOR@SGAENGINEERING.COM

EXISTING SITE INFORMATION

EXISTING PARCEL NUMBERS	127449-000	
CURRENT USE	VACANT LAND WITH OUTBUILDINGS & DRIVEWAY	
ZONING DESIGNATION	R-10	
GROSS SITE AREA	9.94 ACRES	433,185 S.F.
TRANSIT ROUTES	UNKNOWN	
EXISTING WATER AND SEWER	THE EXISTING LOTS ARE SERVED BY CITY OF CAMAS SEWER & WATER.	

ENVIRONMENTAL CONDITIONS

NONE KNOWN.

EXISTING CONDITIONS DISCLAIMER

THE EXISTING CONDITIONS SHOWN ON THIS PLAN WERE OBTAINED FROM INFORMATION PROVIDED BY PUBLIC SOURCES. SGA ENGINEERING, PLLC DOES NOT GUARANTEE THE ACCURACY OF THIS INFORMATION.

PROPOSED SITE INFORMATION

PROPOSED USE

28 DETACHED SINGLE-FAMILY LOT SUBDIVISION IN THE R-10 ZONE

DEVELOPMENT STANDARDS

MAX DENSITY	4.3 D.U. / NET ACRE
MINIMUM LOT AREA	6,000 SF
MINIMUM LOT WIDTH	60'
MINIMUM LOT DEPTH	100'
FRONT YARD SETBACK	20'
GARAGE SETBACK	25'
STREET SIDE YARD SETBACK	10'
INTERIOR SIDE YARD SETBACK	5'
REAR YARD SETBACK	25'
MAXIMUM BLDG LOT COVERAGE	35%
MAXIMUM BUILDING HEIGHT	35'
MINIMUM LANDSCAPED AREA	TBD

UTILITY PROVIDERS

SEWER	CITY OF CAMAS
WATER	CITY OF CAMAS
ELECTRICAL	CLARK PUBLIC UTILITIES

STORMWATER MANAGEMENT

TREATMENT	CITY OF CAMAS STANDARDS
	STORMWATER IS PROPOSED TO BE TREATED USING BIO-RETENTION FACILITIES, RAINGARDENS OR OTHER APPROVED BMP'S
DISPOSAL	TREATED STORMWATER WILL BE INFILTRATED INTO THE GROUND WHERE FEASIBLE.

PROPOSED SITE AREA SUMMARY

	ACRES	S.F.
GROSS SITE AREA	9.94	433,185
NET SITE AREA	7.85	341738
AVERAGE LOT AREA	0.24	10467
R/W & PVT ROAD DEDICATION	2.10	91429

VICINITY MAP
SCALE: NTS

SGA ENGINEERING & DESIGN
CIVIL ENGINEERING – LAND PLANNING
DEVELOPMENT SERVICES
LANDSCAPE ARCHITECTURE

2005 BROADWAY
VANCOUVER, WA 98663
PHONE (360)993-0911
FAX (360)993-0912

PRELIMINARY PLAT

MCINTOSH SUBDIVISION

CAMAS WASHINGTON

PRELIMINARY

REVISIONS

DESIGNED BY:	SAT, JAI
DRAWN BY:	SAT, JAI
CHECKED BY:	SAT, JAI
SCALE:	1" = 60'

JOB NUMBER 2140 | SHEET PRE2.0

SGA ENGINEERING, PLLC - DATE PLOTTED: Apr 05, 2022 - 2:36 PM - SGA DRAWING FILE: M:\ENG\2140-MCINTOSH PROPERTY\DRAWINGS\2-PRELIM SHEET SET\PRE2.0 - PRELIMINARY PLAT.DWG

FIGURE 1c

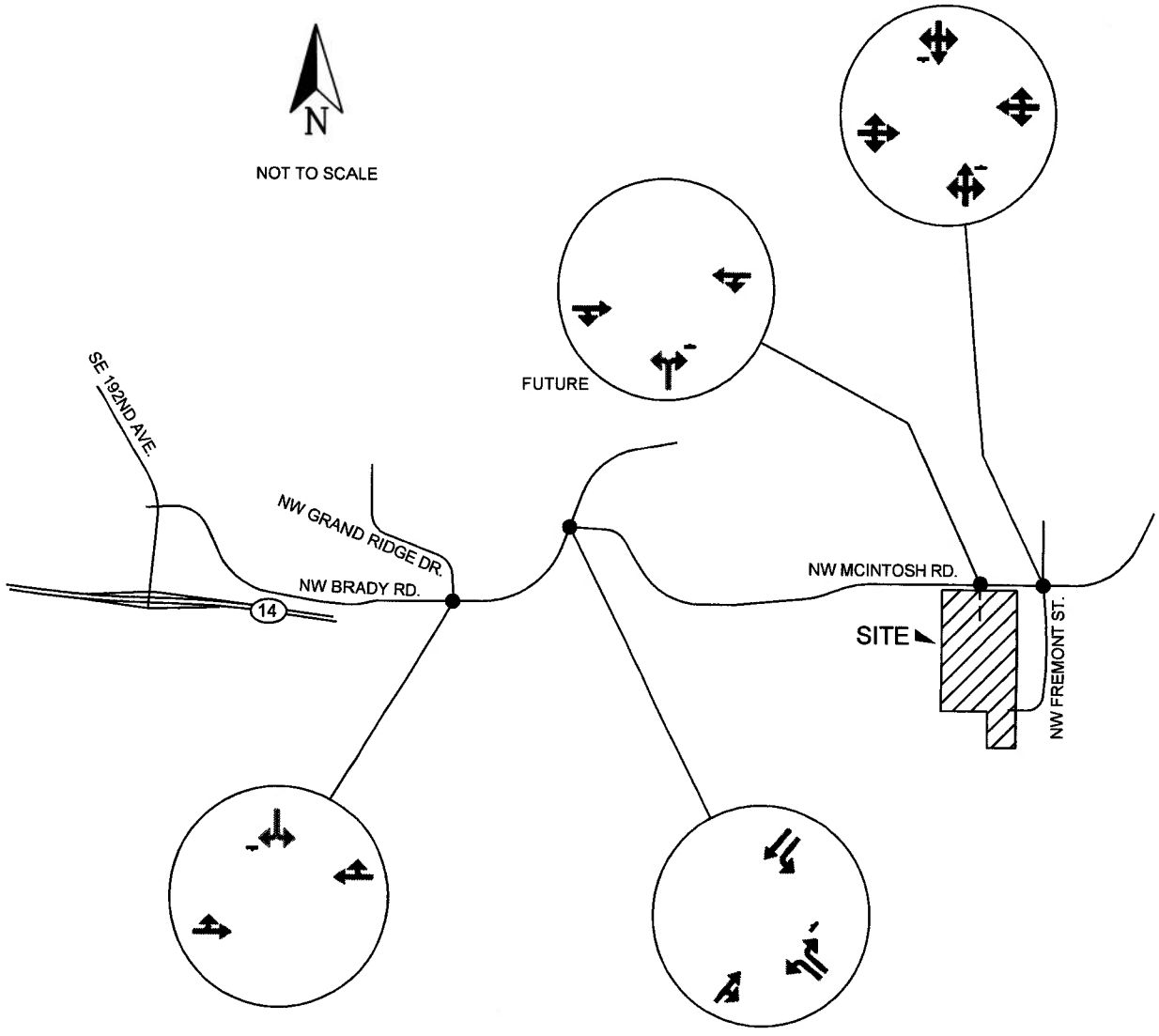


FIGURE 2
LANE CONFIGURATIONS

KELLY ENGINEERING
1805 NE 94th St. No. 19, Vancouver, WA 98665
Phone: 360-433-7530

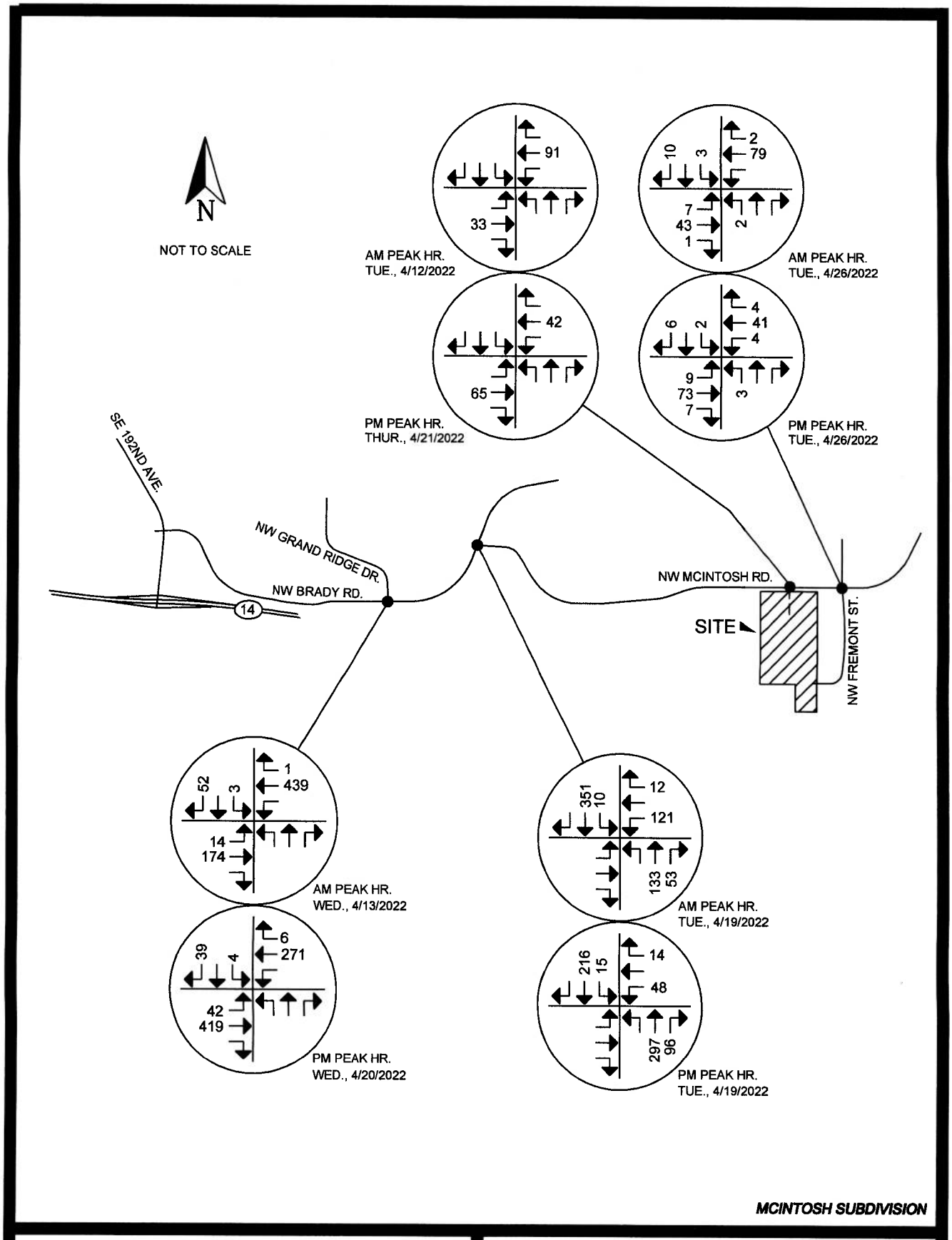


FIGURE 3
EXISTING TRAFFIC VOLUMES

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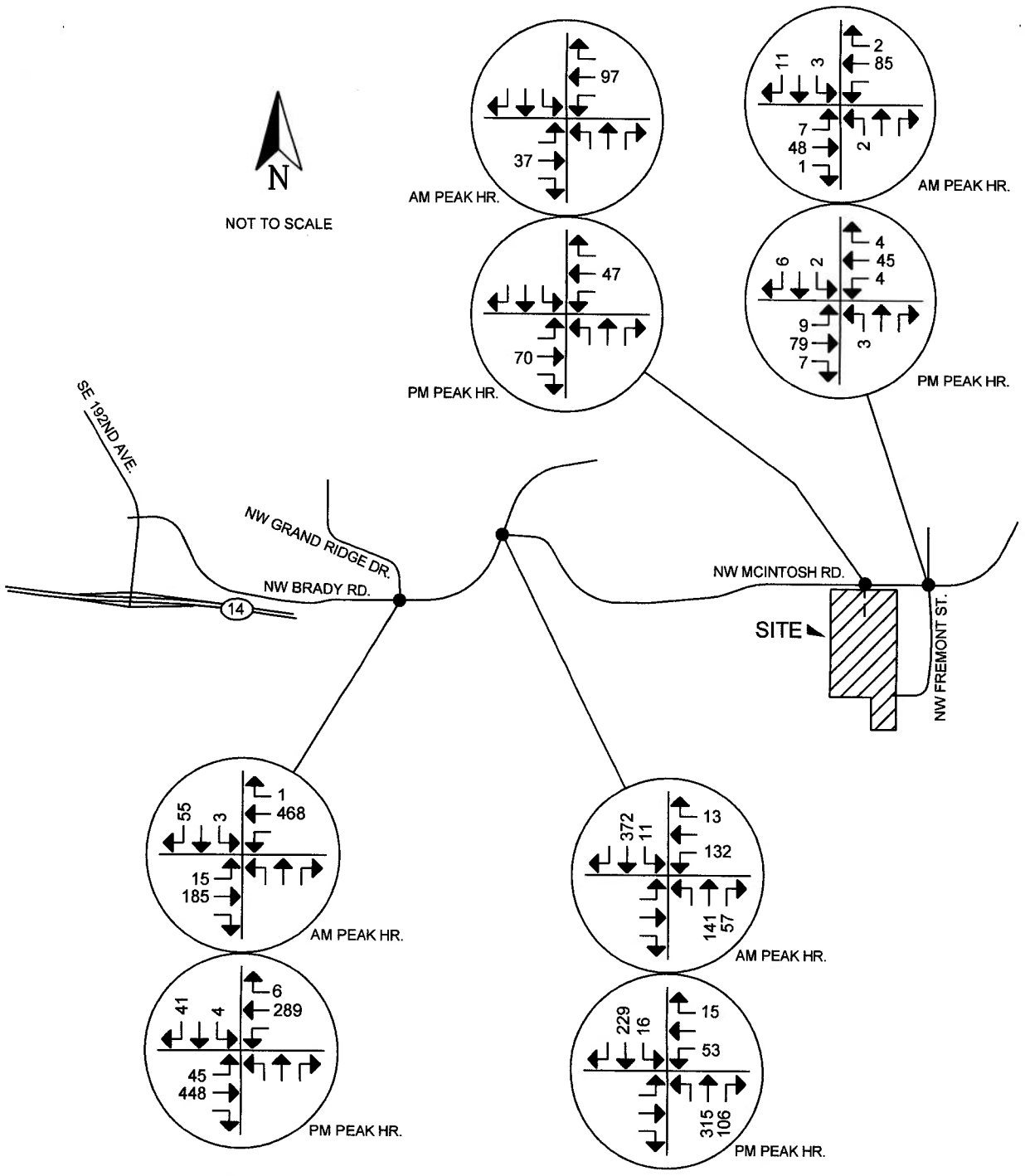
Phone: 360-433-7530



YEAR 2025 TRAFFIC VOLUMES INCLUDED
6% GROWTH FACTOR OVER EXISTING
TRAFFIC VOLUMES AND IN-PROCESS TRAFFIC
FROM DAWSON RIDGE PHASE II DEVELOPMENT

MCINTOSH SUBDIVISION

FIGURE 4
YEAR 2025 TRAFFIC VOLUMES
W/O PROJECT

KELLY ENGINEERING
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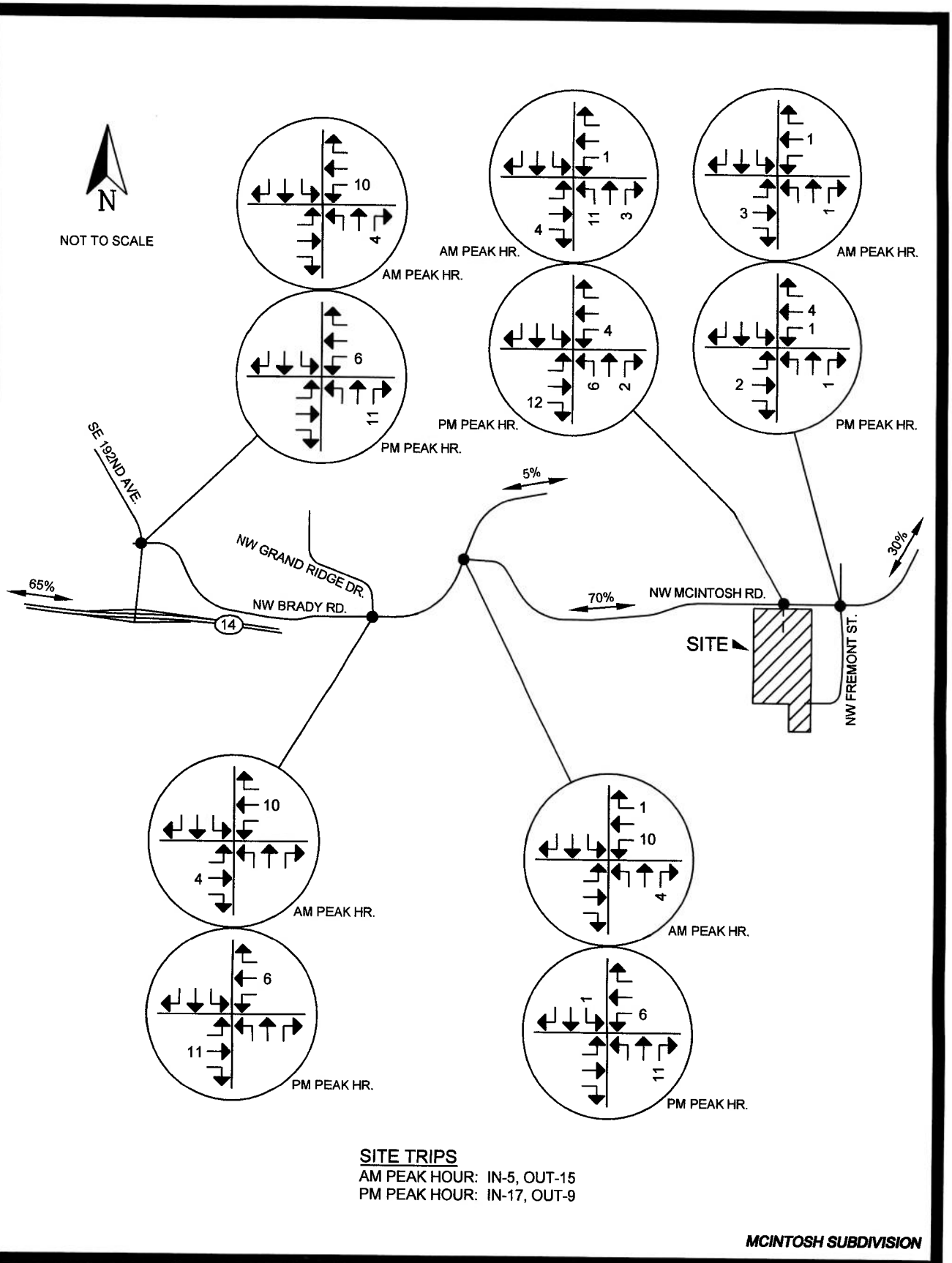
Phone: 360-433-7530



SITE TRIPS
AM PEAK HOUR: IN-5, OUT-15
PM PEAK HOUR: IN-17, OUT-9

MCINTOSH SUBDIVISION

FIGURE 5
SITE TRAFFIC DISTRIBUTION/ ASSIGNMENT

KELLY ENGINEERING
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Phone: 360-433-7530

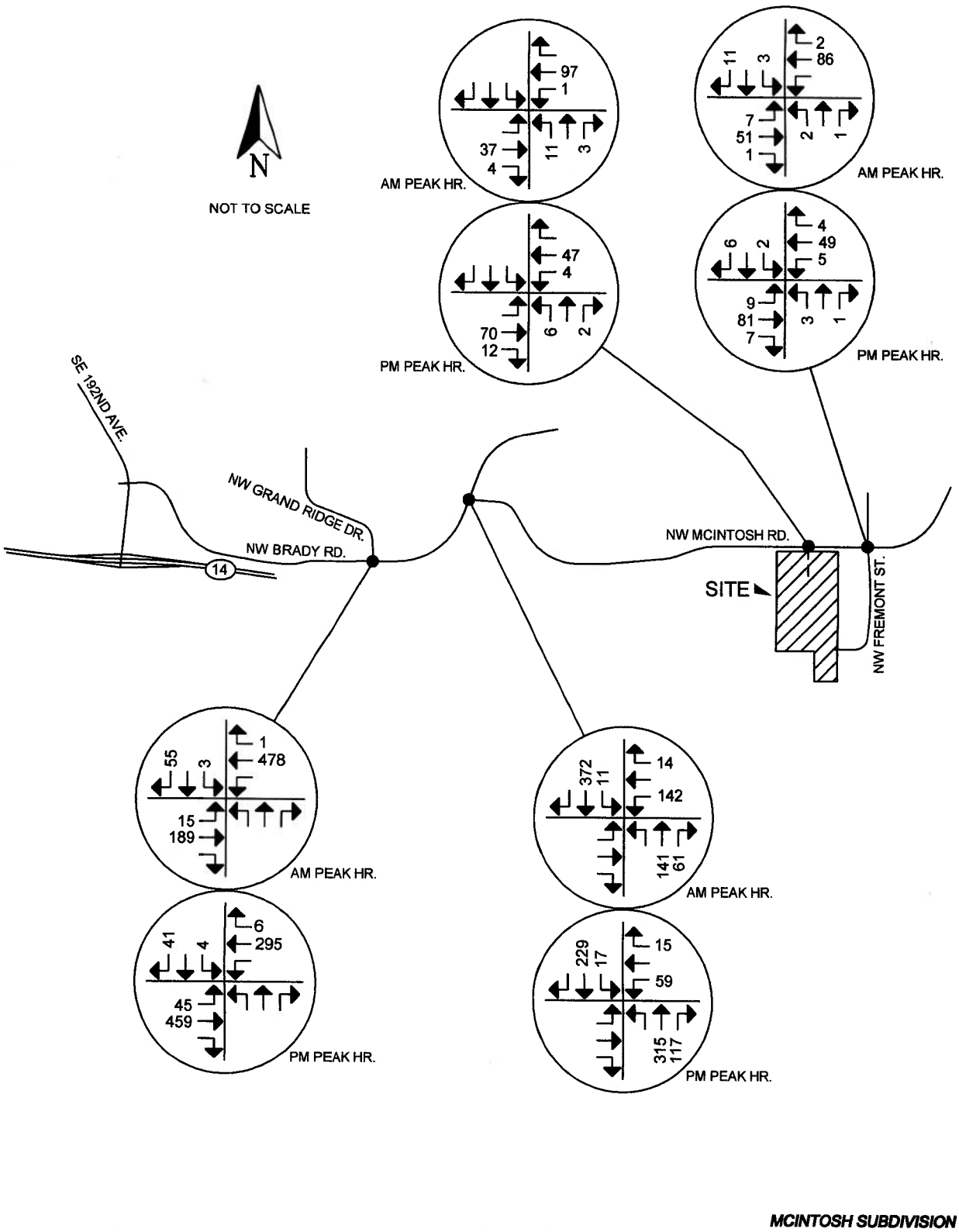

FIGURE 6
YEAR 2025 TRAFFIC VOLUMES
WITH PROJECT

KELLY ENGINEERING
1805 NE 94th St. No. 19, Vancouver, WA 98665
Phone: 360-433-7530

APPENDIX A
RAW TRAFFIC COUNT DATA

INTERSECTION TURN MOVEMENT SURVEY
NW BRADY ROAD & NW GRAND RIDGE DRIVE

DATE OF COUNT: 4/13/2022, 07:00-09:00
DAY OF WEEK: WED.
WEATHER: CLOUDY
COUNTER: KAK

Time Period From – To	FROM NORTH			FROM EAST			FROM SOUTH			FROM WEST			TOTAL
	L	T	R	L	T	R	L	T	R	L	T	R	
07:00-07:05	0	0	4	0	26	0	0	0	0	2	6	0	38
07:05-07:10	0	0	2	0	26	0	0	0	0	2	10	0	40
07:10-07:15	0	0	2	0	27	0	0	0	0	0	8	0	37
07:15-07:20	**0**	**0**	**3**	**0**	**38**	**0**	**0**	**0**	**0**	**2**	**9**	**0**	**52**
07:20-07:25	**0**	**0**	**4**	**0**	**23**	**0**	**0**	**0**	**0**	**1**	**19**	**0**	**47**
07:25-07:30	**0**	**0**	**4**	**0**	**40**	**0**	**0**	**0**	**0**	**1**	**15**	**0**	**60**
07:30-07:35	**0**	**0**	**5**	**0**	**39**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**50**
07:35-07:40	**0**	**0**	**6**	**0**	**43**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**56**
07:40-07:45	**0**	**0**	**3**	**0**	**48**	**0**	**0**	**0**	**0**	**3**	**15**	**0**	**69**
07:45-07:50	**1**	**0**	**8**	**0**	**46**	**0**	**0**	**0**	**0**	**1**	**13**	**0**	**69**
07:50-07:55	**0**	**0**	**3**	**0**	**35**	**1**	**0**	**0**	**0**	**0**	**16**	**0**	**55**
07:55-08:00	**1**	**0**	**2**	**0**	**42**	**0**	**0**	**0**	**0**	**4**	**24**	**0**	**73**
08:00-08:05	**0**	**0**	**4**	**0**	**26**	**0**	**0**	**0**	**0**	**2**	**20**	**0**	**52**
08:05-08:10	**1**	**0**	**4**	**0**	**30**	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**47**
08:10-08:15	**0**	**0**	**6**	**0**	**29**	**0**	**0**	**0**	**0**	**0**	**18**	**0**	**53**
08:15-08:20	0	0	1	0	26	0	0	0	0	1	9	0	37
08:20-08:25	0	0	2	0	25	0	0	0	0	1	19	0	47
08:25-08:30	0	0	3	0	28	0	0	0	0	2	17	0	50
08:30-08:35	0	0	5	0	25	0	0	0	0	0	20	0	50
08:35-08:40	0	0	4	0	28	0	0	0	0	1	22	0	55
08:40-08:45	0	0	1	0	27	0	0	0	0	0	12	0	40
08:45-08:50	0	0	2	0	25	0	0	0	0	1	9	0	37
08:50-08:55	0	0	3	0	27	0	0	0	0	0	9	0	39
08:55-09:00	0	0	3	0	26	0	0	0	0	0	10	0	39
Peak Hour Total	**3**	**0**	**52**	**0**	**439**	**1**	**0**	**0**	**0**	**14**	**174**	**0**	**683**
% Trucks	0	0	0	0	0	0	0	0	0	7	0	0	
Peds	0	0	0	0	0	0	0	0	0	0	0	0	
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	

PEAK HOUR: 07:15-08:15

PHF Intersection: 0.87

KELLY ENGINEERING

INTERSECTION TURN MOVEMENT SURVEY
NW BRADY ROAD & NW GRAND RIDGE DRIVE

DATE OF COUNT: 4/20/2022, 16:00-18:00
DAY OF WEEK: WED.
WEATHER: CLOUDY
COUNTER: DSK

Time Period From – To	FROM NORTH			FROM EAST			FROM SOUTH			FROM WEST			TOTAL
	L	T	R	L	T	R	L	T	R	L	T	R	
16:00-16:05	0	0	2	0	26	1	0	0	0	5	32	0	66
16:05-16:10	0	0	1	0	26	2	0	0	0	1	27	0	57
16:10-16:15	1	0	2	0	25	0	0	0	0	7	37	0	72
16:15-16:20	0	0	3	0	24	1	0	0	0	4	40	0	72
16:20-16:25	0	0	6	0	22	0	0	0	0	4	29	0	61
16:25-16:30	0	0	3	0	20	0	0	0	0	6	23	0	52
16:30-16:35	0	0	0	0	23	0	0	0	0	5	18	0	46
16:35-16:40	**0**	**0**	**3**	**0**	**29**	**0**	**0**	**0**	**0**	**6**	**38**	**0**	**76**
16:40-16:45	**0**	**0**	**2**	**0**	**24**	**1**	**0**	**0**	**0**	**4**	**33**	**0**	**64**
16:45-16:50	**0**	**0**	**2**	**0**	**21**	**0**	**0**	**0**	**0**	**3**	**41**	**0**	**67**
16:50-16:55	**1**	**0**	**4**	**0**	**23**	**0**	**0**	**0**	**0**	**4**	**42**	**0**	**74**
16:55-17:00	**1**	**0**	**5**	**0**	**23**	**1**	**0**	**0**	**0**	**0**	**27**	**0**	**57**
17:00-17:05	**0**	**0**	**3**	**0**	**23**	**0**	**0**	**0**	**0**	**1**	**35**	**0**	**62**
17:05-17:10	**0**	**0**	**2**	**0**	**19**	**0**	**0**	**0**	**0**	**4**	**27**	**0**	**52**
17:10-17:15	**0**	**0**	**3**	**0**	**25**	**1**	**0**	**0**	**0**	**4**	**37**	**0**	**70**
17:15-17:20	**2**	**0**	**4**	**0**	**23**	**0**	**0**	**0**	**0**	**4**	**31**	**0**	**64**
17:20-17:25	**0**	**0**	**3**	**0**	**22**	**1**	**0**	**0**	**0**	**5**	**36**	**0**	**67**
17:25-17:30	**0**	**0**	**4**	**0**	**19**	**1**	**0**	**0**	**0**	**3**	**34**	**0**	**61**
17:30-17:35	**0**	**0**	**4**	**0**	**20**	**1**	**0**	**0**	**0**	**4**	**38**	**0**	**67**
17:35-17:40	0	0	1	0	22	0	0	0	0	7	26	0	56
17:40-17:45	0	0	1	0	18	0	0	0	0	4	36	0	59
17:45-17:50	1	0	1	0	20	1	0	0	0	5	31	0	59
17:50-17:55	0	0	0	0	19	0	0	0	0	4	20	0	43
17:55-18:00	0	0	2	0	21	0	0	0	0	2	24	0	49
Peak Hour Total	**4**	**0**	**39**	**0**	**271**	**6**	**0**	**0**	**0**	**42**	**419**	**0**	**781**
% Trucks	0	0	0	0	0	17	0	0	0	0	0	0	
Peds	0	0	0	0	0	0	0	0	0	0	0	0	
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	

PEAK HOUR: 16:35-17:35

PHF Intersection: 0.94

KELLY ENGINEERING

INTERSECTION TURN MOVEMENT SURVEY
NW BRADY ROAD & NW MCINTOSH ROAD

DATE OF COUNT: 4/19/2022, 07:00-09:00
DAY OF WEEK: TUE.
WEATHER: CLOUDY
COUNTER: KAK

Time Period From – To	FROM NORTH			FROM EAST			FROM SOUTH			FROM WEST			TOTAL
	L	T	R	L	T	R	L	T	R	L	T	R	
07:00-07:05	0	0	0	0	18	0	6	0	1	0	3	4	32
07:05-07:10	0	0	0	0	17	0	8	0	0	0	7	3	35
07:10-07:15	0	0	0	0	25	0	3	0	1	0	8	0	37
07:15-07:20	0	0	0	0	22	0	5	0	0	0	8	1	36
07:20-07:25	0	0	0	0	19	0	7	0	0	0	9	2	37
07:25-07:30	**0**	**0**	**0**	**1**	**40**	**0**	**8**	**0**	**1**	**0**	**9**	**3**	**62**
07:30-07:35	**0**	**0**	**0**	**1**	**44**	**0**	**7**	**0**	**3**	**0**	**16**	**2**	**73**
07:35-07:40	**0**	**0**	**0**	**0**	**45**	**0**	**9**	**0**	**0**	**0**	**9**	**1**	**64**
07:40-07:45	**0**	**0**	**0**	**2**	**37**	**0**	**13**	**0**	**1**	**0**	**7**	**1**	**61**
07:45-07:50	**0**	**0**	**0**	**1**	**27**	**0**	**16**	**0**	**1**	**0**	**13**	**6**	**64**
07:50-07:55	**0**	**0**	**0**	**1**	**29**	**0**	**17**	**0**	**1**	**0**	**14**	**7**	**69**
07:55-08:00	**0**	**0**	**0**	**0**	**22**	**0**	**11**	**0**	**1**	**0**	**10**	**7**	**51**
08:00-08:05	**0**	**0**	**0**	**0**	**27**	**0**	**9**	**0**	**0**	**0**	**9**	**5**	**50**
08:05-08:10	**0**	**0**	**0**	**1**	**23**	**0**	**9**	**0**	**0**	**0**	**9**	**4**	**46**
08:10-08:15	**0**	**0**	**0**	**2**	**20**	**0**	**10**	**0**	**4**	**0**	**8**	**2**	**46**
08:15-08:20	**0**	**0**	**0**	**0**	**19**	**0**	**6**	**0**	**0**	**0**	**16**	**8**	**49**
08:20-08:25	**0**	**0**	**0**	**1**	**18**	**0**	**6**	**0**	**0**	**0**	**13**	**7**	**45**
08:25-08:30	0	0	0	0	13	0	7	0	2	0	15	3	40
08:30-08:35	0	0	0	0	23	0	4	0	2	0	12	4	45
08:35-08:40	0	0	0	0	19	0	14	0	0	0	8	4	45
08:40-08:45	0	0	0	1	13	0	9	0	1	0	10	5	39
08:45-08:50	0	0	0	0	14	0	8	0	0	0	9	4	35
08:50-08:55	0	0	0	0	20	0	7	0	0	0	9	3	39
08:55-09:00	0	0	0	0	19	0	10	0	2	0	11	3	45
Peak Hour Total	**0**	**0**	**0**	**10**	**351**	**0**	**121**	**0**	**12**	**0**	**133**	**53**	**680**
% Trucks	0	0	0	0	0	0	0	0	0	0	2	0	
Peds	0	0	0	0	0	0	0	0	0	0	0	0	
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	

PEAK HOUR: 07:25-08:25

PHF Intersection: 0.85

KELLY ENGINEERING

INTERSECTION TURN MOVEMENT SURVEY
NW BRADY ROAD & NW MCINTOSH ROAD

DATE OF COUNT: 4/19/2022, 16:00-18:00
DAY OF WEEK: TUE.
WEATHER: CLOUDY
COUNTER: KAK

Time Period From – To	FROM NORTH			FROM EAST			FROM SOUTH			FROM WEST			TOTAL
	L	T	R	L	T	R	L	T	R	L	T	R	
16:00-16:05	0	0	0	2	17	0	7	0	1	0	24	8	59
16:05-16:10	0	0	0	0	15	0	9	0	1	0	14	2	41
16:10-16:15	0	0	0	1	14	0	7	0	1	0	14	4	41
16:15-16:20	0	0	0	0	16	0	4	0	0	0	17	8	45
16:20-16:25	0	0	0	0	8	0	12	0	2	0	20	7	49
16:25-16:30	0	0	0	1	15	0	8	0	0	0	21	5	50
16:30-16:35	0	0	0	1	12	0	5	0	0	0	13	3	34
16:35-16:40	0	0	0	0	21	0	3	0	0	0	20	5	49
16:40-16:45	0	0	0	1	18	0	6	0	1	0	16	8	50
16:45-16:50	**0**	**0**	**0**	**1**	**15**	**0**	**3**	**0**	**0**	**0**	**29**	**6**	**54**
16:50-16:55	**0**	**0**	**0**	**0**	**15**	**0**	**6**	**0**	**2**	**0**	**18**	**8**	**49**
16:55-17:00	**0**	**0**	**0**	**0**	**17**	**0**	**6**	**0**	**0**	**0**	**18**	**5**	**46**
17:00-17:05	**0**	**0**	**0**	**1**	**21**	**0**	**9**	**0**	**1**	**0**	**26**	**4**	**62**
17:05-17:10	**0**	**0**	**0**	**2**	**23**	**0**	**3**	**0**	**1**	**0**	**22**	**7**	**58**
17:10-17:15	**0**	**0**	**0**	**0**	**16**	**0**	**4**	**0**	**2**	**0**	**19**	**7**	**48**
17:15-17:20	**0**	**0**	**0**	**5**	**23**	**0**	**2**	**0**	**2**	**0**	**19**	**13**	**64**
17:20-17:25	**0**	**0**	**0**	**1**	**25**	**0**	**4**	**0**	**1**	**0**	**24**	**8**	**63**
17:25-17:30	**0**	**0**	**0**	**0**	**15**	**0**	**5**	**0**	**3**	**0**	**32**	**11**	**66**
17:30-17:35	**0**	**0**	**0**	**1**	**13**	**0**	**2**	**0**	**0**	**0**	**32**	**10**	**58**
17:35-17:40	**0**	**0**	**0**	**2**	**15**	**0**	**2**	**0**	**1**	**0**	**29**	**10**	**59**
17:40-17:45	**0**	**0**	**0**	**2**	**18**	**0**	**2**	**0**	**1**	**0**	**29**	**7**	**59**
17:45-17:50	0	0	0	0	14	0	3	0	0	0	21	9	47
17:50-17:55	0	0	0	1	17	0	4	0	0	0	17	10	49
17:55-18:00	0	0	0	0	15	0	2	0	1	0	18	8	44
Peak Hour Total	**0**	**0**	**0**	**15**	**216**	**0**	**48**	**0**	**14**	**0**	**297**	**96**	**686**
% Trucks	0	0	0	20	0	0	0	0	0	0	0	1	
Peds	0	0	0	0	0	0	0	0	0	0	0	0	
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	

PEAK HOUR: 16:45-17:45

PHF Intersection: 0.89

KELLY ENGINEERING

ROADWAY SURVEY
NW MCINTOSH ROAD & FUTURE SITE ACCESS

DATE OF COUNT: 4/12/2022, 07:00-09:00
DAY OF WEEK: TUE.
WEATHER: CLOUDY
COUNTER: KAK

Time Period From – To	FROM NORTH			FROM EAST			FROM SOUTH			FROM WEST			TOTAL
	L	T	R	L	T	R	L	T	R	L	T	R	
07:00-07:05	0	0	0	0	8	0	0	0	0	0	1	0	9
07:05-07:10	0	0	0	0	2	0	0	0	0	0	2	0	4
07:10-07:15	0	0	0	0	6	0	0	0	0	0	2	0	8
07:15-07:20	0	0	0	0	0	0	0	0	0	0	0	0	0
07:20-07:25	0	0	0	0	3	0	0	0	0	0	1	0	4
07:25-07:30	0	0	0	0	7	0	0	0	0	0	1	0	8
07:30-07:35	0	0	0	0	6	0	0	0	0	0	4	0	10
07:35-07:40	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**10**
07:40-07:45	**0**	**0**	**0**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**18**
07:45-07:50	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**7**
07:50-07:55	**0**	**0**	**0**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**20**
07:55-08:00	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**6**
08:00-08:05	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**10**
08:05-08:10	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**11**
08:10-08:15	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**9**
08:15-08:20	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**8**
08:20-08:25	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**4**
08:25-08:30	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**9**
08:30-08:35	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**12**
08:35-08:40	0	0	0	0	7	0	0	0	0	0	2	0	9
08:40-08:45	0	0	0	0	5	0	0	0	0	0	1	0	6
08:45-08:50	0	0	0	0	4	0	0	0	0	0	0	0	4
08:50-08:55	0	0	0	0	7	0	0	0	0	0	2	0	9
08:55-09:00	0	0	0	0	3	0	0	0	0	0	1	0	4
Peak Hour Total	**0**	**0**	**0**	**0**	**91**	**0**	**0**	**0**	**0**	**0**	**33**	**0**	**124**
% Trucks	0	0	0	0	1	0	0	0	0	0	6	0	
Peds	0	0	0	0	0	0	0	0	0	0	0	0	
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	

PEAK HOUR: 07:35-08:35
PHF Roadway: 0.69

KELLY ENGINEERING

ROADWAY SURVEY
NW MCINTOSH ROAD & FUTURE SITE ACCESS

DATE OF COUNT: 4/21/2022, 16:00-18:00
DAY OF WEEK: THUR.
WEATHER: CLOUDY
COUNTER: KAK

Time Period From – To	FROM NORTH			FROM EAST			FROM SOUTH			FROM WEST			TOTAL
	L	T	R	L	T	R	L	T	R	L	T	R	
16:00-16:05	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**12**
16:05-16:10	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**11**
16:10-16:15	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**6**
16:15-16:20	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**8**
16:20-16:25	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**13**
16:25-16:30	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**10**
16:30-16:35	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**7**
16:35-16:40	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**8**
16:40-16:45	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**8**
16:45-16:50	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**4**
16:50-16:55	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**7**
16:55-17:00	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**13**
17:00-17:05	0	0	0	0	4	0	0	0	0	0	7	0	11
17:05-17:10	0	0	0	0	3	0	0	0	0	0	2	0	5
17:10-17:15	0	0	0	0	2	0	0	0	0	0	3	0	5
17:15-17:20	0	0	0	0	4	0	0	0	0	0	4	0	8
17:20-17:25	0	0	0	0	1	0	0	0	0	0	1	0	2
17:25-17:30	0	0	0	0	5	0	0	0	0	0	5	0	10
17:30-17:35	0	0	0	0	2	0	0	0	0	0	2	0	4
17:35-17:40	0	0	0	0	3	0	0	0	0	0	3	0	6
17:40-17:45	0	0	0	0	2	0	0	0	0	0	2	0	4
17:45-17:50	0	0	0	0	4	0	0	0	0	0	1	0	5
17:50-17:55	0	0	0	0	3	0	0	0	0	0	3	0	6
17:55-18:00	0	0	0	0	1	0	0	0	0	0	4	0	5
Peak Hour Total	**0**	**0**	**0**	**0**	**42**	**0**	**0**	**0**	**0**	**0**	**65**	**0**	**107**
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	1	0	0	0	0	0	0	0	0	0	0	
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	

PEAK HOUR: 16:00-17:00

PHF Roadway: 0.63

KELLY ENGINEERING

INTERSECTION TURN MOVEMENT SURVEY
NW MCINTOSH ROAD & NW FREMONT STREET

DATE OF COUNT: 4/26/2022, 07:00-09:00
DAY OF WEEK: TUE.
WEATHER: CLOUDY
COUNTER: DSK

Time Period From – To	FROM NORTH			FROM EAST			FROM SOUTH			FROM WEST			TOTAL
	L	T	R	L	T	R	L	T	R	L	T	R	
07:00-07:05	0	0	1	0	1	0	0	0	0	0	0	0	2
07:05-07:10	1	0	2	0	1	0	0	0	0	0	0	0	4
07:10-07:15	0	0	0	0	2	0	1	0	0	1	3	0	7
07:15-07:20	0	0	1	0	1	0	0	0	0	1	1	0	4
07:20-07:25	0	0	1	0	3	0	0	0	0	0	1	0	5
07:25-07:30	0	0	1	0	4	0	0	0	0	0	1	0	6
07:30-07:35	0	0	1	0	4	0	2	0	0	0	2	0	9
07:35-07:40	1	0	0	0	4	0	0	0	0	1	2	0	8
07:40-07:45	**1**	**0**	**1**	**0**	**9**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**13**
07:45-07:50	**1**	**0**	**4**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**19**
07:50-07:55	**0**	**0**	**1**	**0**	**8**	**0**	**0**	**0**	**0**	**2**	**4**	**0**	**15**
07:55-08:00	**1**	**0**	**1**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**13**
08:00-08:05	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**2**	**6**	**0**	**14**
08:05-08:10	**0**	**0**	**0**	**0**	**9**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**14**
08:10-08:15	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**10**
08:15-08:20	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**2**	**1**	**6**
08:20-08:25	**0**	**0**	**0**	**0**	**6**	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**11**
08:25-08:30	**0**	**0**	**1**	**0**	**5**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**10**
08:30-08:35	**0**	**0**	**2**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**14**
08:35-08:40	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**8**
08:40-08:45	0	0	0	0	4	0	0	0	0	0	3	0	7
08:45-08:50	0	0	0	0	3	0	0	0	0	1	2	0	6
08:50-08:55	1	0	1	0	2	0	0	0	0	0	3	0	6
08:55-09:00	0	0	0	0	5	0	0	0	0	0	2	0	7
Peak Hour Total	**3**	**0**	**10**	**0**	**79**	**2**	**2**	**0**	**0**	**7**	**43**	**1**	**147**
% Trucks	33	0	0	0	1	0	0	0	0	0	5	0	
Peds	0	0	0	0	1	0	0	1	0	0	0	0	
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	

PEAK HOUR: 07:40-08:40

PHF Intersection: 0.78

KELLY ENGINEERING

INTERSECTION TURN MOVEMENT SURVEY
NW MCINTOSH ROAD & NW FREMONT STREET

DATE OF COUNT: 4/26/2022, 16:00-18:00
DAY OF WEEK: TUE.
WEATHER: CLOUDY
COUNTER: KAK

Time Period From – To	FROM NORTH			FROM EAST			FROM SOUTH			FROM WEST			TOTAL
	L	T	R	L	T	R	L	T	R	L	T	R	
16:00-16:05	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**12**
16:05-16:10	**0**	**0**	**1**	**0**	**4**	**0**	**0**	**0**	**0**	**1**	**7**	**0**	**13**
16:10-16:15	**0**	**0**	**1**	**0**	**4**	**0**	**1**	**0**	**0**	**2**	**5**	**2**	**15**
16:15-16:20	**0**	**0**	**0**	**1**	**4**	**1**	**0**	**0**	**0**	**0**	**3**	**0**	**9**
16:20-16:25	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**1**	**9**	**0**	**13**
16:25-16:30	**0**	**0**	**0**	**0**	**2**	**1**	**1**	**0**	**0**	**1**	**7**	**2**	**14**
16:30-16:35	**0**	**0**	**1**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**11**
16:35-16:40	**0**	**0**	**2**	**0**	**2**	**1**	**0**	**0**	**0**	**3**	**5**	**1**	**14**
16:40-16:45	**1**	**0**	**0**	**1**	**5**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**11**
16:45-16:50	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**7**	**1**	**11**
16:50-16:55	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**1**	**6**	**1**	**12**
16:55-17:00	**1**	**0**	**1**	**0**	**3**	**1**	**0**	**0**	**0**	**0**	**8**	**0**	**14**
17:00-17:05	0	0	0	0	4	0	1	0	0	1	2	0	8
17:05-17:10	0	0	0	0	1	0	0	0	0	2	3	2	8
17:10-17:15	0	0	0	0	2	1	0	0	0	0	4	1	8
17:15-17:20	0	0	0	0	2	0	0	0	0	0	3	0	5
17:20-17:25	0	0	0	0	3	0	0	0	0	2	4	0	9
17:25-17:30	0	0	1	1	4	0	2	0	0	0	5	0	13
17:30-17:35	0	0	0	0	2	1	0	0	0	0	2	0	5
17:35-17:40	0	0	1	0	2	0	0	0	1	1	5	0	10
17:40-17:45	0	0	0	1	3	0	0	0	0	2	3	1	10
17:45-17:50	1	0	0	0	3	1	1	0	0	0	3	0	9
17:50-17:55	0	0	0	0	2	0	0	0	0	0	4	0	6
17:55-18:00	0	0	1	0	3	0	0	0	0	1	3	0	8
Peak Hour Total	**2**	**0**	**6**	**4**	**41**	**4**	**3**	**0**	**0**	**9**	**73**	**7**	**149**
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	0	0	0	0	0	0	0	0	0	0	0	
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	

PEAK HOUR: 16:00-17:00

PHF Intersection: 0.93

KELLY ENGINEERING

APPENDIX B
COLLISION DATA

OFFICER REPORTED CRASHES THAT OCCURRED *at* OR *in the vicinity of* THE FOLLOWING INTERSECTIONS IN THE CITY OF CAMAS

Brady Rd @ McIntosh Rd

Brady Rd @ Grand Ridge Dr

12/23/2018 - 12/23/2021

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

JURISDICTION	COUNTY	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	MILEPOST	A / B	SR ONLY HISTORY / SUSPENSE IND
City Street	Clark	Camas	NW BRADY RD	4600	NW MCINTOSH RD							No
City Street	Clark	Camas	NW BRADY RD	0	NW MCINTOSH RD							No
City Street	Clark	Camas	NW BRADY RD	20800		195	F	SW	NW MCINTOSH RD			No
City Street	Clark	Camas	SE BRADY RD	0	NW GRAND RIDGE DR							No
City Street	Clark	Camas	SE BRADY RD	20300		129	F	W	SE GRAND RIDGE DR			No

REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# INJ	# FAT	# VEH	# PEDS	# BIKES	VEHICLE 1 TYPE	VEHICLE 2 TYPE
E966063	09/08/2019	11:36	No Apparent Injury	0	0	1	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	
E900545	03/06/2019	07:39	Possible Injury	1	0	2	0	0	Passenger Car	Passenger Car
EB22271	04/12/2021	19:13	Suspected Minor Injury	1	0	1	0	0	Motorcycle	
E941259	07/09/2019	17:00	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car
EA13950	02/11/2020	14:40	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car

JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION
At Intersection and Related	Overcast	Wet	Daylight
At Intersection and Related	Sleet or Hail or Freezing Rain	Wet	Daylight
Not at Intersection and Not Related	Clear	Dry	Daylight
At Intersection and Related	Raining	Wet	Daylight
Intersection Related but Not at Intersection	Clear or Partly Cloudy	Dry	Daylight

FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM	VEHICLE 1 COMPASS DIRECTION TO
Linear Curb	Making Right Turn		Southeast	East
Entering at angle	Making Left Turn	Going Straight Ahead	East	South
Vehicle Strikes Deer	Going Straight Ahead		Southwest	Northeast
Entering at angle	Making Left Turn	Going Straight Ahead	North	East
From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	West	East

VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	FIRST IMPACT LOCATION (City, County & Misc Trafficways - 2010 forward)	WA STATE PLANE SOUTH - X 2010 - FORWARD	WA STATE PLANE SOUTH - Y 2010 - FORWARD
		Under Influence of Alcohol		Intersecting Trafficway	1139024.47	98463.24
South	North	Did Not Grant RW to Vehicle	None	Lane of Primary Trafficway	1139002.96	98479.44
		Other Contributing Circ Not Listed		Lane of Primary Trafficway	1138915.87	98304.51
East	West	Did Not Grant RW to Vehicle	None	Lane of Primary Trafficway	1137956.11	97818.21
Vehicle Stopped	Vehicle Stopped	Follow Too Closely	None	Lane of Primary Trafficway	1137828.12	97823.28

APPENDIX C
LEVEL OF SERVICE COMPUTER PRINTOUTS

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & Grand Ridge Dr.*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2022*
Analysis Time Period	*AM Peak Hour*		

Project Description *Existing*

East/West Street: *Brady Road* | North/South Street: *Grand Ridge Dr.*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*14*	*174*			*439*	*1*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*1.00*	*1.00*	*0.87*	*0.87*
Hourly Flow Rate, HFR (veh/h)	*16*	*199*	*0*	*0*	*504*	*1*
Percent Heavy Vehicles	*7*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*3*		*52*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.87*	*1.00*	*0.87*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*3*	*0*	*59*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (veh/h)	*16*						*62*	
C (m) (veh/h)	*1034*						*559*	
v/c	*0.02*						*0.11*	
95% queue length	*0.05*						*0.37*	
Control Delay (s/veh)	*8.5*						*12.2*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--					*12.2*	
Approach LOS	--	--					*B*	

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & Grand Ridge Dr.*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2025*
Analysis Time Period	*AM Peak Hour*		

Project Description *Year 2025 w/o Project*

East/West Street: *Brady Road* | North/South Street: *Grand Ridge Dr.*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*15*	*185*			*468*	*1*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*1.00*	*1.00*	*0.87*	*0.87*
Hourly Flow Rate, HFR (veh/h)	*17*	*212*	*0*	*0*	*537*	*1*
Percent Heavy Vehicles	*7*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*3*		*55*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.87*	*1.00*	*0.87*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*3*	*0*	*63*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (veh/h)	*17*						*66*	
C (m) (veh/h)	*1005*						*534*	
v/c	*0.02*						*0.12*	
95% queue length	*0.05*						*0.42*	
Control Delay (s/veh)	*8.6*						*12.7*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--					*12.7*	
Approach LOS	--	--					*B*	

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & Grand Ridge Dr.*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2025*
Analysis Time Period	*AM Peak Hour*		

Project Description	*Year 2025 with Project*
East/West Street: *Brady Road*	North/South Street: *Grand Ridge Dr.*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*15*	*189*			*478*	*1*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*1.00*	*1.00*	*0.87*	*0.87*
Hourly Flow Rate, HFR (veh/h)	*17*	*217*	*0*	*0*	*549*	*1*
Percent Heavy Vehicles	*7*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*3*		*55*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.87*	*1.00*	*0.87*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*3*	*0*	*63*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (veh/h)	*17*						*66*	
C (m) (veh/h)	*995*						*526*	
v/c	*0.02*						*0.13*	
95% queue length	*0.05*						*0.43*	
Control Delay (s/veh)	*8.7*						*12.8*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--					*12.8*	
Approach LOS	--	--					*B*	

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & Grand Ridge Dr.*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2022*
Analysis Time Period	*PM Peak Hour*		

Project Description *Existing*

East/West Street: *Brady Road* | North/South Street: *Grand Ridge Dr.*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*42*	*419*			*271*	*6*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*1.00*	*0.94*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*44*	*445*	*0*	*0*	*288*	*6*
Percent Heavy Vehicles	*7*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*4*		*39*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.94*	*1.00*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*4*	*0*	*41*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (veh/h)	*44*						*45*	
C (m) (veh/h)	*1239*						*677*	
v/c	*0.04*						*0.07*	
95% queue length	*0.11*						*0.21*	
Control Delay (s/veh)	*8.0*						*10.7*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--					*10.7*	
Approach LOS	--	--					*B*	

HCS+™ Version 5.6

Generated: 4/27/2022 5:13 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & Grand Ridge Dr.*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2025*
Analysis Time Period	*PM Peak Hour*		

Project Description	*Year 2025 w/o Project*
East/West Street: *Brady Road*	North/South Street: *Grand Ridge Dr.*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*45*	*448*			*289*	*6*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*1.00*	*0.94*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*47*	*476*	*0*	*0*	*307*	*6*
Percent Heavy Vehicles	*7*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*4*		*41*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.94*	*1.00*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*4*	*0*	*43*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (veh/h)	*47*						*47*	
C (m) (veh/h)	*1220*						*657*	
v/c	*0.04*						*0.07*	
95% queue length	*0.12*						*0.23*	
Control Delay (s/veh)	*8.1*						*10.9*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--					*10.9*	
Approach LOS	--	--					*B*	

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & Grand Ridge Dr.*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2025*
Analysis Time Period	*PM Peak Hour*		

Project Description	*Year 2025 with Project*
East/West Street: *Brady Road*	North/South Street: *Grand Ridge Dr.*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*45*	*459*			*295*	*6*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*1.00*	*0.94*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*47*	*488*	*0*	*0*	*313*	*6*
Percent Heavy Vehicles	*7*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*4*		*41*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.94*	*1.00*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*4*	*0*	*43*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (veh/h)	*47*						*47*	
C (m) (veh/h)	*1213*						*650*	
v/c	*0.04*						*0.07*	
95% queue length	*0.12*						*0.23*	
Control Delay (s/veh)	*8.1*						*11.0*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--					*11.0*	
Approach LOS	--	--					*B*	

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & McIntosh Road*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2022*
Analysis Time Period	*AM Peak Hour*		

Project Description *Existing*

East/West Street: *McIntosh Road* | North/South Street: *Brady Road*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*133*	*53*	*10*	*351*	
Peak-Hour Factor, PHF	*1.00*	*0.85*	*0.85*	*0.85*	*0.85*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*156*	*62*	*11*	*412*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*121*		*12*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*0.85*	*0.94*	*0.85*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*142*	*0*	*14*
Percent Heavy Vehicles	*7*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (veh/h)		*11*	*142*		*14*			
C (m) (veh/h)		*1364*	*450*		*860*			
v/c		*0.01*	*0.32*		*0.02*			
95% queue length		*0.02*	*1.34*		*0.05*			
Control Delay (s/veh)		*7.7*	*16.6*		*9.3*			
LOS		*A*	*C*		*A*			
Approach Delay (s/veh)	--	--	*16.0*					
Approach LOS	--	--	*C*					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & McIntosh Road*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2025*
Analysis Time Period	*AM Peak Hour*		
Project Description	*Year 2025 w/o Project*		
East/West Street:	*McIntosh Road*	North/South Street:	*Brady Road*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*141*	*57*	*11*	*372*	
Peak-Hour Factor, PHF	*1.00*	*0.85*	*0.85*	*0.85*	*0.85*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*165*	*67*	*12*	*437*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*132*		*13*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*0.85*	*0.94*	*0.85*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*155*	*0*	*15*
Percent Heavy Vehicles	*7*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (veh/h)		*12*	*155*		*15*			
C (m) (veh/h)		*1348*	*428*		*848*			
v/c		*0.01*	*0.36*		*0.02*			
95% queue length		*0.03*	*1.63*		*0.05*			
Control Delay (s/veh)		*7.7*	*18.1*		*9.3*			
LOS		*A*	*C*		*A*			
Approach Delay (s/veh)	--	--	*17.3*					
Approach LOS	--	--	*C*					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & McIntosh Road*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2025*
Analysis Time Period	*AM Peak Hour*		

Project Description	*Year 2025 with Project*
East/West Street: *McIntosh Road*	North/South Street: *Brady Road*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*141*	*61*	*11*	*372*	
Peak-Hour Factor, PHF	*1.00*	*0.85*	*0.85*	*0.85*	*0.85*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*165*	*71*	*12*	*437*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*142*		*14*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*0.85*	*0.94*	*0.85*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*167*	*0*	*16*
Percent Heavy Vehicles	*7*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (veh/h)		*12*	*167*		*16*			
C (m) (veh/h)		*1343*	*427*		*846*			
v/c		*0.01*	*0.39*		*0.02*			
95% queue length		*0.03*	*1.82*		*0.06*			
Control Delay (s/veh)		*7.7*	*18.7*		*9.3*			
LOS		*A*	*C*		*A*			
Approach Delay (s/veh)	--	--	*17.9*					
Approach LOS	--	--	*C*					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & McIntosh Road*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2022*
Analysis Time Period	*PM Peak Hour*		

Project Description *Existing*

East/West Street: *McIntosh Road*	North/South Street: *Brady Road*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*297*	*96*	*15*	*216*	
Peak-Hour Factor, PHF	*1.00*	*0.89*	*0.89*	*0.89*	*0.89*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*333*	*107*	*16*	*242*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*48*		*14*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*0.89*	*0.94*	*0.89*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*53*	*0*	*15*
Percent Heavy Vehicles	*7*	*0*	*0*	*20*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (veh/h)		*16*	*53*		*15*			
C (m) (veh/h)		*1131*	*395*		*666*			
v/c		*0.01*	*0.13*		*0.02*			
95% queue length		*0.04*	*0.46*		*0.07*			
Control Delay (s/veh)		*8.2*	*15.5*		*10.5*			
LOS		*A*	*C*		*B*			
Approach Delay (s/veh)	--	--	*14.4*					
Approach LOS	--	--	*B*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & McIntosh Road*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2025*
Analysis Time Period	*PM Peak Hour*		

Project Description *Year 2025 w/o Project*

East/West Street: *McIntosh Road* | North/South Street: *Brady Road*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*315*	*106*	*16*	*229*	
Peak-Hour Factor, PHF	*1.00*	*0.89*	*0.89*	*0.89*	*0.89*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*353*	*119*	*17*	*257*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*53*		*15*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*0.89*	*0.94*	*0.89*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*59*	*0*	*16*
Percent Heavy Vehicles	*7*	*0*	*0*	*20*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (veh/h)		*17*	*59*		*16*			
C (m) (veh/h)		*1100*	*372*		*644*			
v/c		*0.02*	*0.16*		*0.02*			
95% queue length		*0.05*	*0.56*		*0.08*			
Control Delay (s/veh)		*8.3*	*16.5*		*10.7*			
LOS		*A*	*C*		*B*			
Approach Delay (s/veh)	--	--	*15.3*					
Approach LOS	--	--	*C*					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Brady Road & McIntosh Road*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2025*
Analysis Time Period	*PM Peak Hour*		

Project Description	*Year 2025 with Project*
East/West Street:	*McIntosh Road*
Intersection Orientation:	*North-South*
North/South Street:	*Brady Road*
Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*315*	*117*	*17*	*229*	
Peak-Hour Factor, PHF	*1.00*	*0.89*	*0.89*	*0.89*	*0.89*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*353*	*131*	*19*	*257*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*59*		*15*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*0.89*	*0.94*	*0.89*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*66*	*0*	*16*
Percent Heavy Vehicles	*7*	*0*	*0*	*20*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (veh/h)		*19*	*66*		*16*			
C (m) (veh/h)		*1089*	*366*		*639*			
v/c		*0.02*	*0.18*		*0.03*			
95% queue length		*0.05*	*0.65*		*0.08*			
Control Delay (s/veh)		*8.4*	*17.0*		*10.8*			
LOS		*A*	*C*		*B*			
Approach Delay (s/veh)	--	--	*15.8*					
Approach LOS	--	--	*C*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Fremont St. & McIntosh Rd.*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2022*
Analysis Time Period	*AM Peak Hour*		
Project Description	*Existing*		
East/West Street:	*McIntosh Road*	North/South Street:	*Fremont St.*
Intersection Orientation:	*East-West*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*7*	*43*	*1*	*0*	*79*	*2*
Peak-Hour Factor, PHF	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*
Hourly Flow Rate, HFR (veh/h)	*8*	*55*	*1*	*0*	*101*	*2*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*2*	*0*	*0*	*3*	*0*	*10*
Peak-Hour Factor, PHF	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*
Hourly Flow Rate, HFR (veh/h)	*2*	*0*	*0*	*3*	*0*	*12*
Percent Heavy Vehicles	*0*	*0*	*0*	*33*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*8*	*0*		*2*			*15*	
C (m) (veh/h)	*1502*	*1562*		*773*			*900*	
v/c	*0.01*	*0.00*		*0.00*			*0.02*	
95% queue length	*0.02*	*0.00*		*0.01*			*0.05*	
Control Delay (s/veh)	*7.4*	*7.3*		*9.7*			*9.1*	
LOS	*A*	*A*		*A*			*A*	
Approach Delay (s/veh)	--	--	*9.7*			*9.1*		
Approach LOS	--	--	*A*			*A*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Fremont St. & McIntosh Rd.*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2025*
Analysis Time Period	*AM Peak Hour*		

Project Description *Year 2025 w/o Project*

East/West Street: *McIntosh Road* | North/South Street: *Fremont St.*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*7*	*48*	*1*	*0*	*85*	*2*
Peak-Hour Factor, PHF	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*
Hourly Flow Rate, HFR (veh/h)	*8*	*61*	*1*	*0*	*108*	*2*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*2*	*0*	*0*	*3*	*0*	*11*
Peak-Hour Factor, PHF	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*
Hourly Flow Rate, HFR (veh/h)	*2*	*0*	*0*	*3*	*0*	*14*
Percent Heavy Vehicles	*0*	*0*	*0*	*33*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*8*	*0*		*2*			*17*	
C (m) (veh/h)	*1493*	*1554*		*755*			*896*	
v/c	*0.01*	*0.00*		*0.00*			*0.02*	
95% queue length	*0.02*	*0.00*		*0.01*			*0.06*	
Control Delay (s/veh)	*7.4*	*7.3*		*9.8*			*9.1*	
LOS	*A*	*A*		*A*			*A*	
Approach Delay (s/veh)	--	--	*9.8*			*9.1*		
Approach LOS	--	--	*A*			*A*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Fremont St. & McIntosh Rd.*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2025*
Analysis Time Period	*AM Peak Hour*		
Project Description	*Year 2025 with Project*		
East/West Street:	*McIntosh Road*	North/South Street:	*Fremont St.*
Intersection Orientation:	*East-West*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*7*	*51*	*1*	*0*	*86*	*2*
Peak-Hour Factor, PHF	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*
Hourly Flow Rate, HFR (veh/h)	*8*	*65*	*1*	*0*	*110*	*2*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*2*	*0*	*1*	*3*	*0*	*11*
Peak-Hour Factor, PHF	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*	*0.78*
Hourly Flow Rate, HFR (veh/h)	*2*	*0*	*1*	*3*	*0*	*14*
Percent Heavy Vehicles	*0*	*0*	*0*	*33*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*8*	*0*		*3*			*17*	
C (m) (veh/h)	*1490*	*1549*		*818*			*892*	
v/c	*0.01*	*0.00*		*0.00*			*0.02*	
95% queue length	*0.02*	*0.00*		*0.01*			*0.06*	
Control Delay (s/veh)	*7.4*	*7.3*		*9.4*			*9.1*	
LOS	*A*	*A*		*A*			*A*	
Approach Delay (s/veh)	--	--		*9.4*			*9.1*	
Approach LOS	--	--		*A*			*A*	

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DSK*	Intersection	*Fremont St. & McIntosh Rd.*
Agency/Co.	*Kelly Engineering*	Jurisdiction	*City of Camas*
Date Performed	*4/27/2022*	Analysis Year	*2022*
Analysis Time Period	*PM Peak Hour*		
Project Description	*Existing*		
East/West Street:	*McIntosh Road*	North/South Street:	*Fremont St.*
Intersection Orientation:	*East-West*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*9*	*73*	*7*	*4*	*41*	*4*
Peak-Hour Factor, PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*9*	*78*	*7*	*4*	*44*	*4*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*3*	*0*	*0*	*2*	*0*	*6*
Peak-Hour Factor, PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*3*	*0*	*0*	*2*	*0*	*6*
Percent Heavy Vehicles	*0*	*0*	*0*	*33*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*9*	*4*		*3*			*8*	
C (m) (veh/h)	*1572*	*1524*		*804*			*939*	
v/c	*0.01*	*0.00*		*0.00*			*0.01*	
95% queue length	*0.02*	*0.01*		*0.01*			*0.03*	
Control Delay (s/veh)	*7.3*	*7.4*		*9.5*			*8.9*	
LOS	*A*	*A*		*A*			*A*	
Approach Delay (s/veh)	--	--		*9.5*			*8.9*	
Approach LOS	--	--		*A*			*A*	

APPENDIX D
REFERENCES

References

1. Trip Generation Manual, 11th Edition, 2021, Institute of Transportation Engineers.

2. Highway Capacity Manual, 2000 and 2010, Transportation Research Board, National Research Council.

3. McIntosh Subdivision, Pre-Application Meeting Notes, City of Camas Case Number PA21-51.