Appendix A Scoping Memorandum

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MEMORANDUM

Date: February 16, 2015 Project #: 17808

To: Jabra Khasho, City of Beaverton
Jinde Zhu, Washington County DLUT
Mike McCarthy, City of Tigard
Dan Grimberg, West Hills Development
Mike Peebles, OTAK

From: Marc Butorac, PE and Anais Malinge

Project: West Hills Development South Cooper Mountain Development

Subject: Traffic Impact Study Scope for South Cooper Mountain Development

West Hills Development is proposing to develop a new subdivision in Beaverton's South Cooper Mountain Concept Plan area. The proposed development will be located northeast of the SW Roy Rogers Road/SW Scholls Ferry Road intersection. The current proposal calls for 682 residential units, including 308 detached- single family homes, 104 townhomes, and 270 apartment units.

Figure 1 shows the site vicinity of the proposed development and Figure 2 shows the proposed site plan. This memorandum presents our proposed methodology for the Traffic Impact Study needed to support the land use application per City of Beaverton Traffic Impact Analysis requirements and Washington County Access Report guidelines.

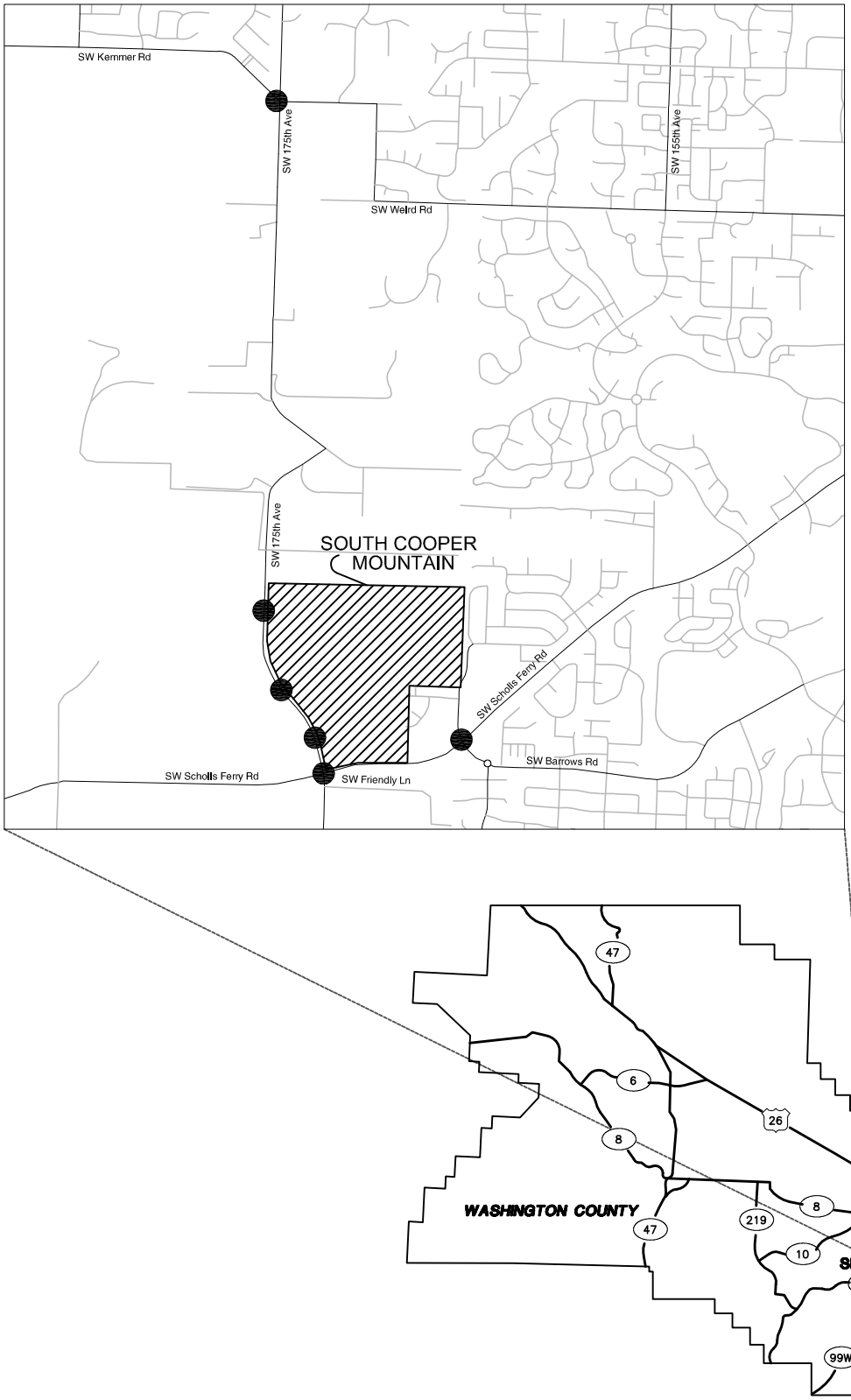
Trip Generation

The estimated trip generation for the proposed residential development is shown in Table 1. The calculated trip generation for each use is based on the rates included in the *Trip Generation Manual*, 9th Edition (Institute of Transportation Engineers, 2012).

Table 1 Estimated Trip Generation

Land Use	ITE Code	Size (Units)	Total Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Single Family Detached Housing	210	308	2,930	230	60	170	310	195	115
Townhome	230	104	600	45	10	35	55	35	20
Apartment	220	270	1,800	140	30	110	165	105	60
Total Net-New Trips		**682**	**5,330**	**415**	**100**	**315**	**530**	**335**	**195**

As shown in Table 1, the proposed residential development requires the preparation of a Traffic Impact Study/Access Report per City and County standards.



● - Study Intersections

Site Vicinity
Beaverton, Oregon

Figure
1

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Site plan provided by OTAK on 2/3/2015

Proposed Site Plan
Beaverton, Oregon

Figure
2

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Study Area Intersections

The West Hills proposed residential development will abut SW 175th Avenue-SW Roy Rogers Road, an arterial street. The closest arterial and collector streets that intersect SW Roy Rogers Road in the projects' vicinity are SW Scholls Ferry Road, SW Barrow Road, and SW Kemmer Road. As such, we propose to analyze the following:

- SW Roy Rogers Road/SW Scholls Ferry Road
- SW 175th Avenue/all proposed street connections to the proposed development
- SW Barrows Road/SW Scholls Ferry Road
- SW 175th Avenue/SW Kemmer Road

Study Time Periods

We propose to analyze weekday a.m. and p.m. peak hour conditions at the study intersections under existing year 2015, build-out year 2016, and horizon year 2035 conditions. Per City of Beaverton data collection procedures, three consecutive weekday counts will be collected. We propose the following future year analyses:

- Year 2016 total traffic conditions assuming full build-out of the proposed West Hills development; and,
- Year 2016 total build-out traffic conditions including all currently proposed developments within the South Cooper Mountain Concept Plan Area which intend to submit applications to the City of Beaverton prior to summer 2015. In addition, the development within the River Terrace Community Plan Area will be included. These applications tentatively include the following proposed developments and are shown in Figure 3:
    - West Hills Development proposed Arbor Terrace West development
    - West Hills Development proposed Arbor Terrace East development
    - Polygon Northwest proposed West River Terrace development
    - Polygon Northwest proposed Roshak Ridge development
    - Polygon Northwest proposed South River Terrace development
    - Polygon Northwest proposed Bull Mountain Dickson development
    - Metropolitan Land Group proposed development
    - West Hills Development proposed South Cooper Mountain development
    - Beaverton School District proposed high school development
- Year 2035 horizon year traffic conditions based on the Washington County Travel Demand Model growth assumptions. Model volumes will be post-processed applying NCHRP 255 methodology, and any roadway connections assumed in the model will be assumed.

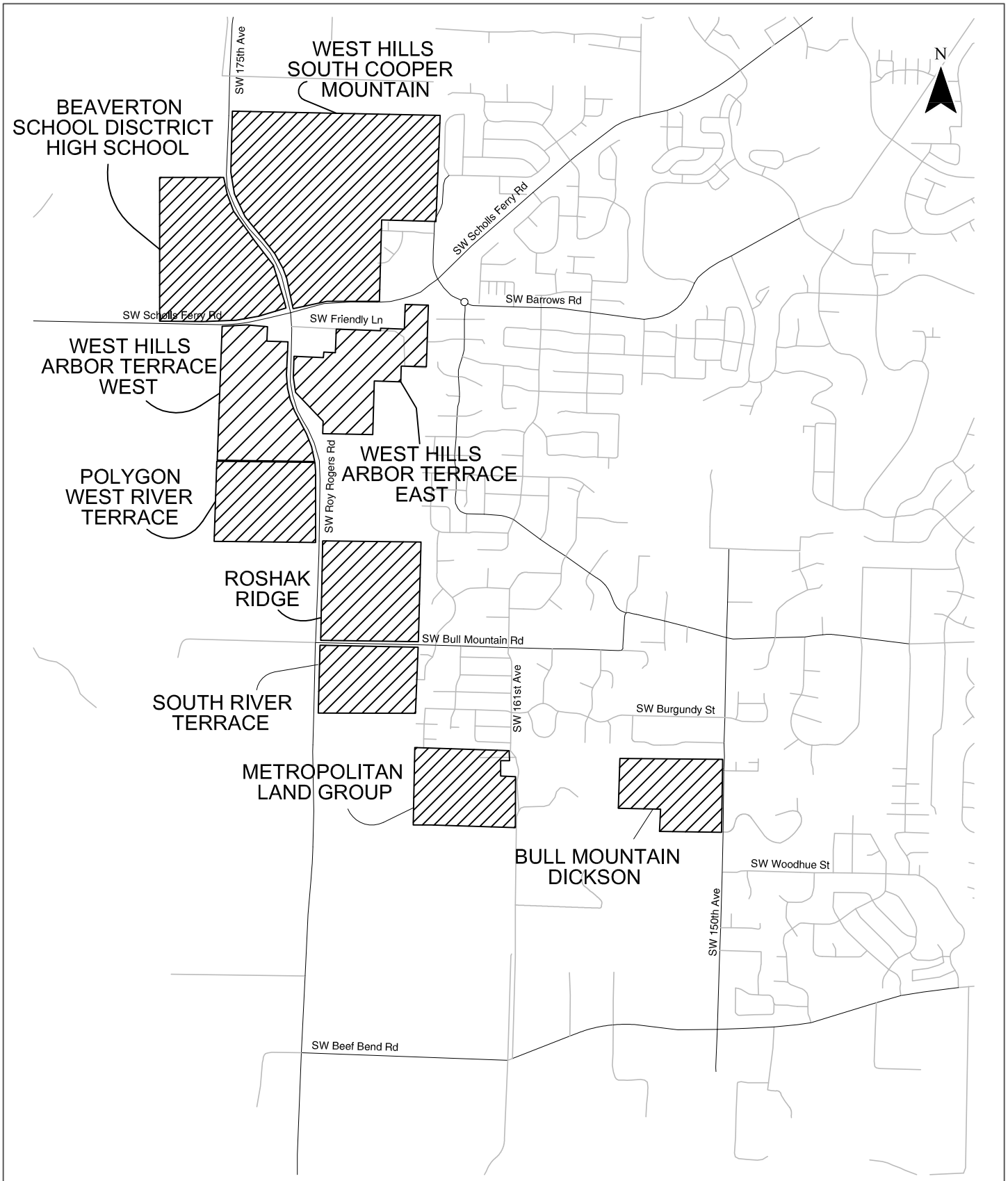
Please confirm a 1.5% growth rate for both 2016 total traffic conditions and any additional in-process developments to include in the proposed 2016 total build-out scenario.

Trip Distribution

Figure 4 shows the proposed trip distribution for the proposed development based on a select zone analysis of the Washington County Travel Demand Model, and in accordance with Washington County staff direction. Attachment "A" includes the Washington County Travel Demand Model select zone output from which the proposed trip distribution was developed.

Next Steps

We look forward to receiving your feedback on our proposed trip generation, trip distribution, study periods, and study intersections for the proposed development. Thanks for your assistance with this effort.



Assumed In-Process Developments
Beaverton, Oregon

Figure
3

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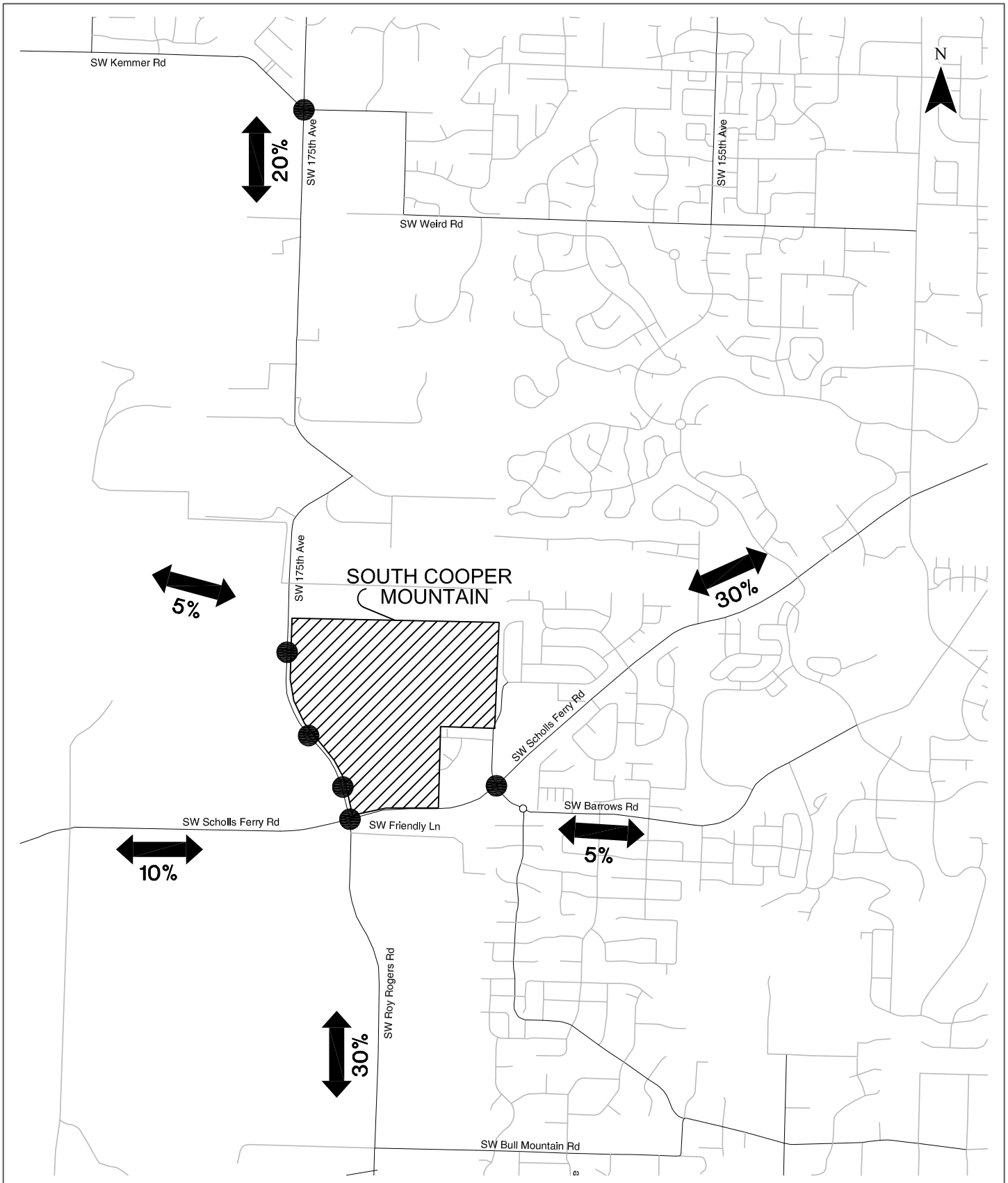

Proposed Trip Distribution (TAZ 5001)
Beaverton, Oregon

Figure
4

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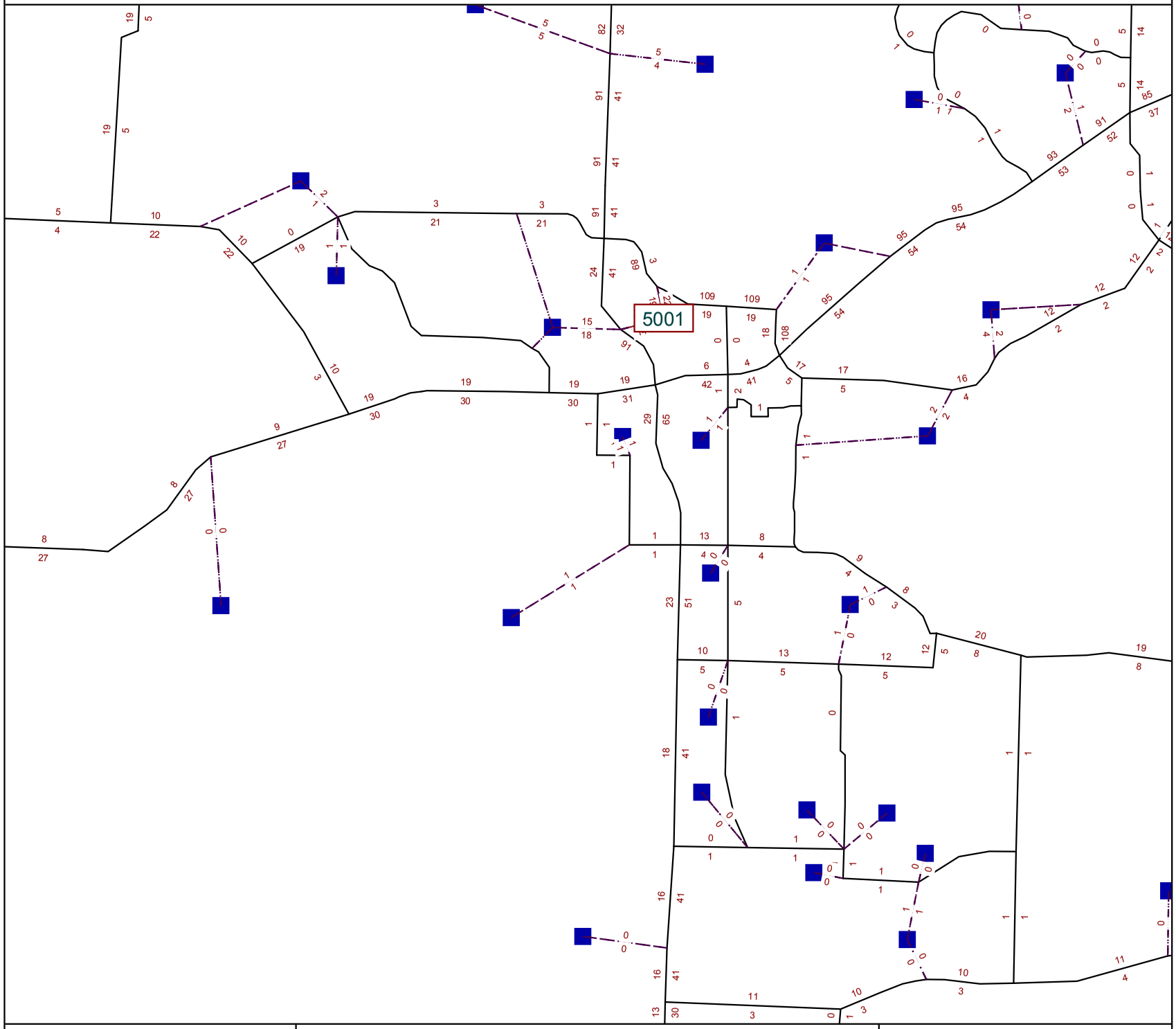
Attachment A WACO Travel Demand Model
TAZ 5001

2035 [Gamma+NB_SCM_RT]: SZ5001 pm1 vehicles



Washington County	Westside Focus Model (NB_SCM_RT)	2035 PM
Steve L Kelley	2035_TSP14-SCMRT_SZ5001.ver	05.11.2014

Anais Malinge

From: Steve L Kelley <SteveL_Kelley@co.washington.or.us>
Sent: Friday, February 13, 2015 12:19 PM
To: Anais Malinge
Cc: Jinde Zhu
Subject: RE: River Terrace & South Cooper Mountain Trip Distribution Assumptions
Attachments: SCMRT_dist.xlsx

Hi Anais-
These generally look good. I have 2 suggested changes:

Zone 4002 only adds up to 95%
Suggest the other 5% be allocated to the Roy Rogers (South).

Zone 4003 I suggest the following distribution:
175th (North) = 15%
Roy Rogers (South) = 10%
Scholls Ferry (West) = 15%
Scholls Ferry (East) = 30%
Bull Mountain (East) = 30%

Attached is a quick and dirty little spreadsheet I built to help my review.
Let me know if you have any questions. Enjoy the weekend.
Thank you.

Steve Kelley | **Senior Transportation Planner**
Washington County Department of Land Use & Transportation
Planning & Development Services | Long Range Planning
155 N First Avenue, Suite 350 MS14 | Hillsboro, OR 97124
(503) 846-3847 direct
stevel_kelley@co.washington.or.us | www.co.washington.or.us/lut

Plan Responsibly. **Build** Safely. **Live** Well.

From: Anais Malinge [mailto:amalinge@kittelson.com]
Sent: Thursday, February 12, 2015 12:54 PM
To: Steve L Kelley; * rm1- Broadway Room (VC); Jinde Zhu
Cc: Marc Butorac; Brian Dunn; Julia Kuhn
Subject: River Terrace & South Cooper Mountain Trip Distribution Assumptions

Hi Steve,

Thanks for your help with this. Please let me know when you're able to get to a courtesy review of these trip distribution assumptions.

Per our discussion, I estimated each proposed development's distribution based on their associated TAZ from the model outputs you sent Shaun in November.

Please find the trip distribution assumptions by development and the respective select zone outputs attached, for your review.

Thanks again!

Anais

Anais Malinge
Transportation Analyst

Kittelson & Associates, Inc.
Transportation Engineering / Planning
610 SW Alder St, Suite 700
Portland, Oregon 97205
503.228.5230
503.535.7483 (direct)

Streetwise Twitter Facebook

4000 in			out		both		
	171		84		255 raw		ave
N	15	10%	10	14%	25	11%	10%
S	37	24%	16	22%	53	23%	30%
W	29	19%	13	18%	42	18%	15%
E	73	47%	35	47%	108	47%	45%
	154		74		228		

4001 in			out		both		
	206		115		115 raw		ave
N	4	2%	16	14%	20	7%	10%
S	59	31%	33	29%	92	30%	30%
W	34	18%	19	17%	53	17%	15%
E	91	48%	47	41%	138	46%	45%
	188		115		303		

4002 in			out		both		
	89		43		132 raw		ave
N	11	15%	7	19%	18	16%	15%
S	11	15%	4	11%	15	14%	**15%**
W	12	16%	5	14%	17	15%	15%
NE	26	35%	12	32%	38	34%	35%
SE	14	19%	9	24%	23	21%	20%
	74		37		111		

4003 in			out		both		
	67		33		100 raw		ave
N	10	16%	6	21%	16	18%	15%
S	8	13%	3	11%	11	12%	10%
W	9	15%	3	11%	12	13%	**15%**
NE	16	26%	8	29%	24	27%	**30%**
SE	19	31%	8	29%	27	30%	**30%**
	62		28		90		

4005 in			out		both		
	99		51		150 raw		ave
N	9	10%	5	12%	14	11%	10%
S	11	12%	5	12%	16	12%	10%
W	8	9%	3	7%	11	8%	10%
NE	16	18%	9	21%	25	19%	20%
E	22	25%	9	21%	31	23%	25%
SE	23	26%	12	28%	35	27%	25%
	89		43		132		

5001 in			out		both		
	342		169		511 raw		ave
N	91	28%	41	27%	132	28%	30%
S	65	20%	29	19%	94	20%	20%
W	21	7%	3	2%	24	5%	5%
SW	31	10%	19	13%	50	11%	10%
NE	95	30%	54	36%	149	32%	30%
E	17	5%	5	3%	22	5%	5%
	320		151		471		

Appendix B Level-of-Service Description

APPENDIX B LEVEL-OF-SERVICE CONCEPT

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various level of service from "A" to "F".[1]

SIGNALIZED INTERSECTIONS

The six level-of-service grades are described qualitatively for signalized intersections in Table B1. Additionally, Table B2 identifies the relationship between level of service and average control delay per vehicle. Control delay is defined to include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Using this definition, Level of Service "D" is generally considered to represent the minimum acceptable design standard.

Table B-1 Level-of-Service Definitions (Signalized Intersections)

Level of Service	Average Delay per Vehicle
A	Very low average control delay, less than 10 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average control delay is greater than 10 seconds per vehicle and less than or equal to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for a level of service A, causing higher levels of average delay.
C	Average control delay is greater than 20 seconds per vehicle and less than or equal to 35 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average control delay is greater than 35 seconds per vehicle and less than or equal to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average control delay is greater than 55 seconds per vehicle and less than or equal to 80 seconds per vehicle. This is usually considered to be the limit of acceptable delay. These high delay values generally (but not always) indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average control delay is in excess of 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

[1] Most of the material in this appendix is adapted from the Transportation Research Board, *2000 Highway Capacity Manual*, (2000).

Table B-2 Level-of-Service Criteria for Signalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

UNSIGNALIZED INTERSECTIONS

Unsignalized intersections include two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections. The *2000 Highway Capacity Manual* (HCM) provides models for estimating control delay at both TWSC and AWSC intersections. A qualitative description of the various service levels associated with an unsignalized intersection is presented in Table B3. A quantitative definition of level of service for unsignalized intersections is presented in Table B4. Using this definition, Level of Service "E" is generally considered to represent the minimum acceptable design standard.

Table B-3 Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Delay per Vehicle to Minor Street
A	• Nearly all drivers find freedom of operation. • Very seldom is there more than one vehicle in queue.
B	• Some drivers begin to consider the delay an inconvenience. • Occasionally there is more than one vehicle in queue.
C	• Many times there is more than one vehicle in queue. • Most drivers feel restricted, but not objectionably so.
D	• Often there is more than one vehicle in queue. • Drivers feel quite restricted.
E	• Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. • There is almost always more than one vehicle in queue. • Drivers find the delays approaching intolerable levels.
F	• Forced flow. • Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.

Table B-4 Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10.0 and ≤ 15.0
C	>15.0 and ≤ 25.0
D	>25.0 and ≤ 35.0
E	>35.0 and ≤ 50.0
F	>50.0

It should be noted that the level-of-service criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less galling than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the control delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. While overall intersection level of service is calculated for AWSC intersections, level of service is only calculated for the minor approaches and the major street left turn movements at TWSC intersections. No delay is assumed to the major street through movements. For TWSC intersections, the overall intersection level of service remains undefined: level of service is only calculated for each minor street lane.

In the performance evaluation of TWSC intersections, it is important to consider other measures of effectiveness (MOEs) in addition to delay, such as v/c ratios for individual movements, average queue lengths, and 95th-percentile queue lengths. By focusing on a single MOE for the worst movement only, such as delay for the minor-street left turn, users may make inappropriate traffic control decisions. The potential for making such inappropriate decisions is likely to be particularly pronounced when the HCM level-of-service thresholds are adopted as legal standards, as is the case in many public agencies.

Appendix C Traffic Counts

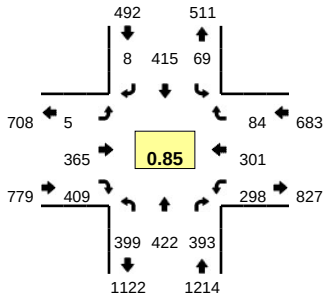
Type of peak hour being reported: System Peak

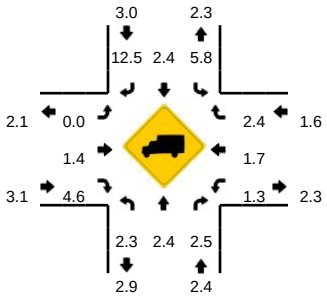
Method for determining peak hour: Total Entering Volume

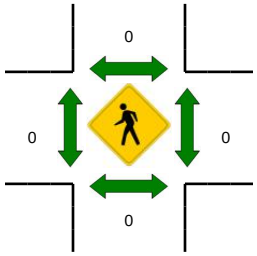
LOCATION: SW Roy Rogers Rd -- SW Scholls Ferry Rd
CITY/STATE: Beaverton, OR

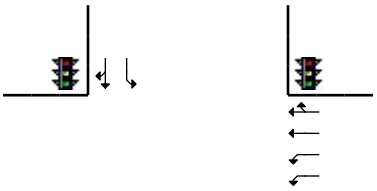
QC JOB #: 13209201
DATE: Tue, Feb 17 2015

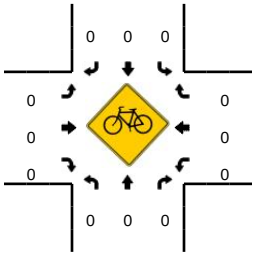
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

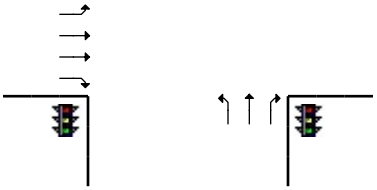


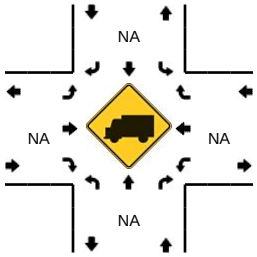


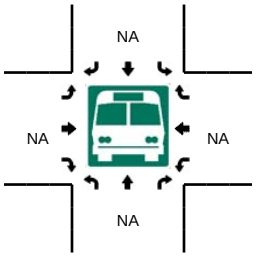












5-Min Count Period Beginning At	SW Roy Rogers Rd (Northbound)				SW Roy Rogers Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	26	23	20	0	4	30	0	0	0	17	22	0	18	17	4	0	181	
7:05 AM	35	39	27	0	1	33	0	0	2	22	42	0	35	16	13	0	265	
7:10 AM	23	24	40	0	7	35	0	0	1	28	33	0	20	14	4	0	229	
7:15 AM	27	31	34	0	7	35	0	0	1	24	28	0	19	30	9	0	245	
7:20 AM	36	44	19	0	5	27	1	0	0	32	29	0	24	27	4	0	248	
7:25 AM	30	32	33	0	6	38	1	0	0	38	44	0	23	36	6	0	287	
7:30 AM	55	36	36	0	4	46	0	0	1	30	38	0	24	28	8	0	306	
7:35 AM	44	37	35	0	10	36	0	0	0	32	51	0	30	32	5	0	312	
7:40 AM	32	45	42	0	4	44	1	0	0	40	28	0	39	28	9	0	312	
7:45 AM	35	38	40	0	10	27	0	0	0	42	38	0	24	24	12	0	290	
7:50 AM	17	26	28	0	8	32	3	0	0	29	20	0	24	29	5	0	221	
7:55 AM	34	22	12	0	3	31	0	0	0	29	35	0	17	26	3	0	212	3108
8:00 AM	31	48	47	0	4	31	2	0	0	19	23	0	19	11	6	0	241	3168
8:05 AM	35	43	40	0	3	21	0	0	1	20	30	0	14	27	7	0	241	3144
8:10 AM	19	34	42	0	1	31	1	0	2	28	19	0	29	14	5	0	225	3140
8:15 AM	16	8	29	0	8	13	2	0	2	30	27	0	30	23	4	0	192	3087
8:20 AM	18	29	33	0	3	24	1	0	4	28	21	0	28	13	1	0	203	3042
8:25 AM	35	23	25	0	4	20	1	0	1	21	30	0	25	25	5	0	215	2970
8:30 AM	15	28	36	0	8	31	0	0	0	27	22	0	28	10	7	0	212	2876
8:35 AM	16	18	43	0	4	18	0	0	0	36	24	0	10	16	7	0	192	2756
8:40 AM	20	25	30	0	4	16	1	0	0	23	23	0	16	19	6	0	183	2627
8:45 AM	23	17	28	0	1	22	0	0	0	24	20	0	22	21	7	0	185	2522
8:50 AM	15	17	24	0	2	21	1	0	1	16	16	0	16	17	7	0	153	2454
8:55 AM	15	21	30	0	5	21	0	0	1	12	18	0	15	9	7	0	154	2396

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	524	472	452	0	72	504	4	0	4	408	468	0	372	352	88	0	3720
Heavy Trucks	16	12	16		0	20	0		0	4	28		4	0	0		100
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:53 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

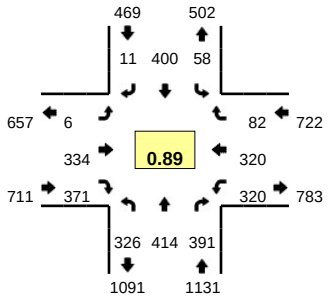
LOCATION: SW Roy Rogers Rd -- SW Scholls Ferry Rd

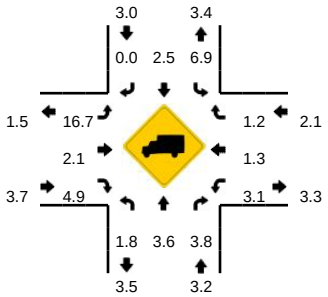
QC JOB #: 13209202

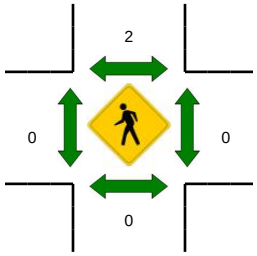
CITY/STATE: Beaverton, OR

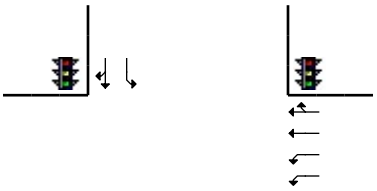
DATE: Wed, Feb 18 2015

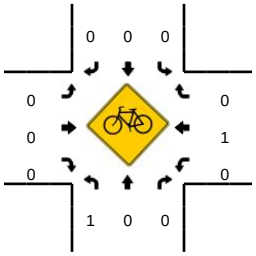
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

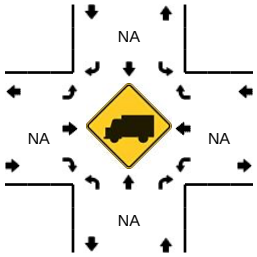


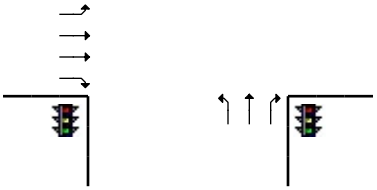


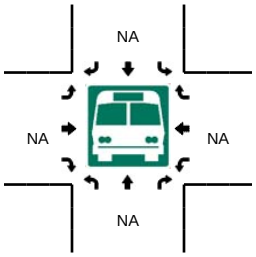












5-Min Count Period Beginning At	SW Roy Rogers Rd (Northbound)				SW Roy Rogers Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	30	21	27	0	2	34	0	0	1	25	19	0	18	17	6	0	200	
7:05 AM	21	29	33	0	2	28	0	0	1	26	40	0	37	21	7	0	245	
7:10 AM	25	28	29	0	4	38	0	0	0	22	26	0	25	33	8	0	238	
7:15 AM	34	34	16	0	8	35	1	0	0	25	21	0	15	22	6	0	217	
7:20 AM	30	35	24	0	9	23	2	0	0	39	31	0	36	31	7	0	267	
7:25 AM	15	38	43	0	2	44	2	0	1	16	23	0	30	27	13	0	254	
7:30 AM	26	27	45	0	5	33	1	0	0	43	48	0	28	30	6	0	292	
7:35 AM	38	41	37	0	5	48	1	0	1	25	46	0	21	21	2	0	286	
7:40 AM	37	32	29	0	8	28	0	0	0	41	39	0	24	33	7	0	278	
7:45 AM	18	40	37	0	5	46	0	0	2	30	19	0	25	26	6	0	254	
7:50 AM	33	35	34	0	4	30	1	0	1	26	38	0	32	27	6	0	267	
7:55 AM	25	44	29	0	4	33	2	0	0	16	21	0	20	22	11	0	227	3025
8:00 AM	24	31	35	0	2	14	1	0	0	25	19	0	27	27	3	0	208	3033
8:05 AM	28	36	40	0	4	31	0	0	2	8	25	0	20	19	2	0	215	3003
8:10 AM	26	25	21	0	5	21	0	0	0	31	21	0	25	23	7	0	205	2970
8:15 AM	26	34	36	0	5	37	0	0	0	17	21	0	21	17	10	0	224	2977
8:20 AM	12	24	31	0	5	24	1	0	0	30	31	0	33	23	5	0	219	2929
8:25 AM	24	28	23	0	3	21	0	0	0	25	20	0	27	33	8	0	212	2887
8:30 AM	19	26	22	0	5	21	2	0	1	23	24	0	12	14	5	0	174	2769
8:35 AM	14	24	27	0	0	19	1	0	0	21	16	0	29	21	9	0	181	2664
8:40 AM	15	15	21	0	0	26	0	0	0	25	24	0	20	18	4	0	168	2554
8:45 AM	23	21	33	0	4	11	0	0	2	25	28	0	22	13	3	0	185	2485
8:50 AM	21	20	27	0	2	11	0	0	3	21	8	0	14	17	2	0	146	2364
8:55 AM	13	16	12	0	1	14	0	0	0	16	10	0	14	22	6	0	124	2261

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	404	400	444	0	72	436	8	0	4	436	532	0	292	336	60	0	3424
Heavy Trucks	4	16	20		0	8	0		0	8	32		12	4	0		104
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:53 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

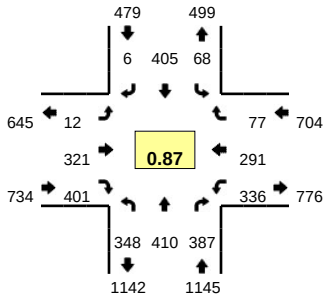
Type of peak hour being reported: System Peak

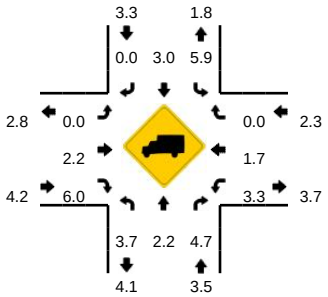
Method for determining peak hour: Total Entering Volume

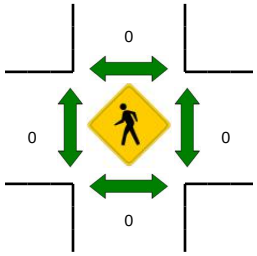
LOCATION: SW Roy Rogers Rd -- SW Scholls Ferry Rd
CITY/STATE: Beaverton, OR

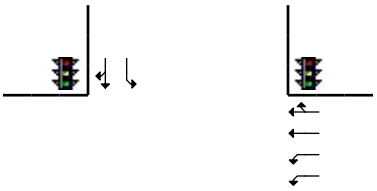
QC JOB #: 13209203
DATE: Thu, Feb 19 2015

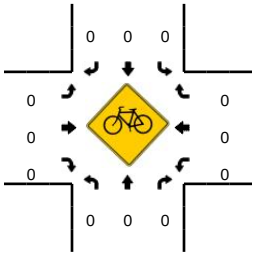
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

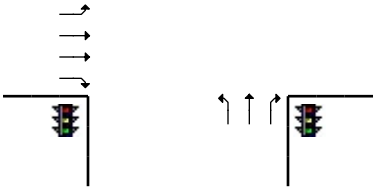


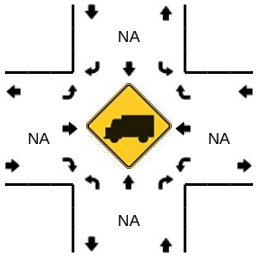


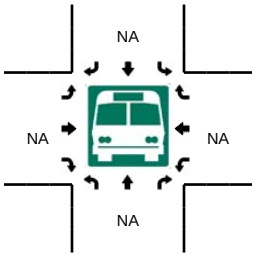












5-Min Count Period Beginning At	SW Roy Rogers Rd (Northbound)				SW Roy Rogers Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	24	31	28	0	4	28	0	0	0	17	26	0	18	18	8	0	202	
7:05 AM	21	27	32	0	6	31	0	0	1	23	26	0	28	22	9	0	226	
7:10 AM	31	30	34	0	5	36	0	0	1	22	25	0	19	21	6	0	230	
7:15 AM	31	30	29	0	10	32	1	0	0	25	33	0	26	25	9	0	251	
7:20 AM	24	25	24	0	4	26	0	0	1	40	45	0	32	20	5	0	246	
7:25 AM	39	49	40	0	5	35	2	0	1	31	31	0	22	25	2	0	282	
7:30 AM	31	26	25	0	8	29	1	0	2	40	53	0	30	34	8	0	287	
7:35 AM	32	52	35	0	5	54	0	0	2	28	36	0	18	22	3	0	287	
7:40 AM	25	34	39	0	6	30	0	0	2	26	45	0	46	37	12	0	302	
7:45 AM	27	39	30	0	3	51	1	0	1	16	32	0	42	20	6	0	268	
7:50 AM	29	31	29	0	4	26	0	0	0	14	27	0	35	18	7	0	220	
7:55 AM	36	32	27	0	7	27	1	0	0	26	26	0	20	28	7	0	237	3038
8:00 AM	22	35	43	0	5	28	0	0	1	30	22	0	18	19	3	0	226	3062
8:05 AM	30	41	40	0	2	15	1	0	1	40	38	0	28	16	8	0	260	3096
8:10 AM	30	37	36	0	4	44	0	0	0	18	26	0	25	27	13	0	260	3126
8:15 AM	26	35	33	0	7	27	0	0	0	23	22	0	21	18	6	0	218	3093
8:20 AM	28	32	37	0	1	19	1	0	0	35	22	0	14	21	6	0	216	3063
8:25 AM	15	36	36	0	5	20	0	0	3	22	25	0	30	22	2	0	216	2997
8:30 AM	29	21	25	0	4	26	0	0	0	22	25	0	24	24	7	0	207	2917
8:35 AM	13	23	28	0	4	25	0	0	0	26	21	0	30	26	7	0	203	2833
8:40 AM	28	22	24	0	5	25	1	0	1	32	25	0	22	13	4	0	202	2733
8:45 AM	16	30	31	0	4	20	1	0	0	13	26	0	23	24	6	0	194	2659
8:50 AM	16	21	39	0	4	10	0	0	2	22	15	0	19	14	4	0	166	2605
8:55 AM	13	19	22	0	1	15	1	0	0	18	20	0	12	12	3	0	136	2504

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	352	448	396	0	76	452	4	0	24	376	536	0	376	372	92	0	3504
Heavy Trucks	8	4	28		0	16	0		0	12	40		12	0	0		120
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:53 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

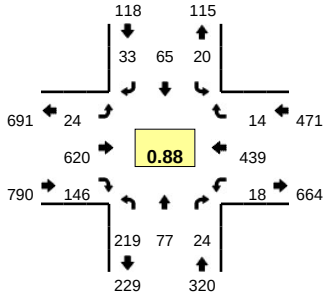
Type of peak hour being reported: System Peak

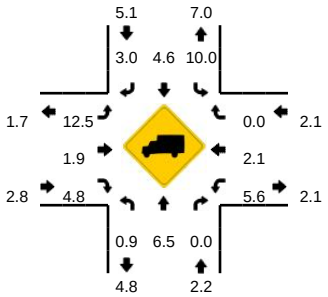
Method for determining peak hour: Total Entering Volume

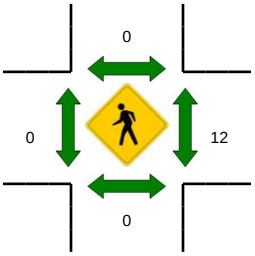
LOCATION: SW Barrows Rd -- SW Scholls Ferry Rd
CITY/STATE: Beaverton, OR

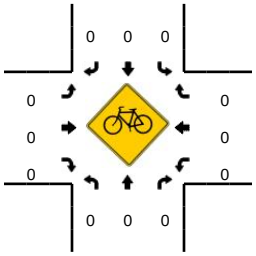
QC JOB #: 13209207
DATE: Tue, Feb 17 2015

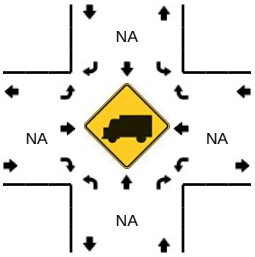
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

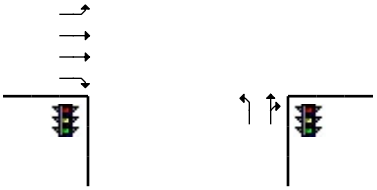


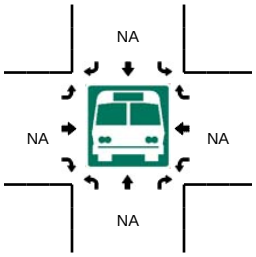












5-Min Count Period Beginning At	SW Barrows Rd (Northbound)				SW Barrows Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	26	0	2	0	1	0	2	0	0	30	4	0	9	16	1	0	91	
7:05 AM	21	3	1	0	1	1	3	0	0	45	4	0	0	37	0	0	116	
7:10 AM	15	0	3	0	0	2	3	0	2	48	13	0	1	34	1	0	122	
7:15 AM	19	3	1	0	3	1	1	0	7	51	7	0	0	30	0	0	123	
7:20 AM	23	0	2	0	2	1	3	0	2	45	16	0	1	33	0	0	128	
7:25 AM	17	2	1	0	0	0	5	0	1	58	10	0	1	38	0	0	133	
7:30 AM	29	3	5	0	4	2	0	0	0	55	17	0	0	45	3	0	163	
7:35 AM	15	9	1	0	0	4	2	0	1	48	15	0	0	37	1	0	133	
7:40 AM	18	11	0	0	1	5	2	0	5	70	18	0	4	50	0	0	184	
7:45 AM	26	17	5	0	3	5	6	0	3	69	15	0	2	44	3	0	198	
7:50 AM	16	20	1	0	0	13	5	0	2	34	7	0	2	29	5	0	134	
7:55 AM	11	7	2	0	1	16	2	0	1	28	11	0	2	33	1	0	115	1640
8:00 AM	9	2	2	0	5	15	1	0	0	69	13	0	5	29	0	0	150	1699
8:05 AM	13	0	1	0	0	3	2	0	0	58	10	0	2	40	0	0	129	1712
8:10 AM	11	3	2	0	1	3	2	0	0	52	11	0	2	35	1	0	123	1713
8:15 AM	16	0	1	0	0	0	2	0	1	49	13	0	1	39	1	0	123	1713
8:20 AM	8	0	1	0	2	2	1	0	0	53	12	0	2	29	1	0	111	1696
8:25 AM	21	0	3	0	2	0	1	0	1	50	6	0	3	26	1	0	114	1677
8:30 AM	17	2	4	0	2	1	1	0	0	55	15	0	1	26	0	0	124	1638
8:35 AM	13	0	1	0	2	2	2	0	0	62	17	0	3	27	1	0	130	1635
8:40 AM	14	0	3	0	1	1	3	0	0	52	8	0	1	29	1	0	113	1564
8:45 AM	19	1	2	0	1	1	4	0	2	39	12	0	3	22	0	0	106	1472
8:50 AM	12	0	3	0	0	0	1	0	0	35	9	0	3	27	3	0	93	1431
8:55 AM	13	0	2	0	2	0	1	0	0	33	11	0	2	24	0	0	88	1404

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	248	92	24	0	20	44	16	0	24	692	200	0	16	528	16	0	1920
Heavy Trucks	0	16	0		4	4	0		0	16	8		4	8	0		60
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:53 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

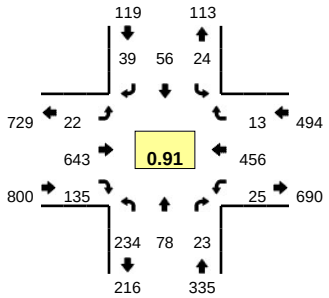
Type of peak hour being reported: System Peak

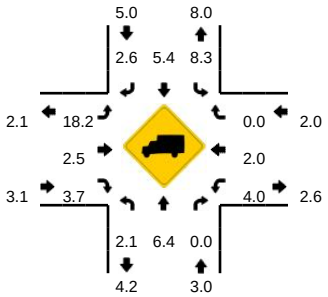
Method for determining peak hour: Total Entering Volume

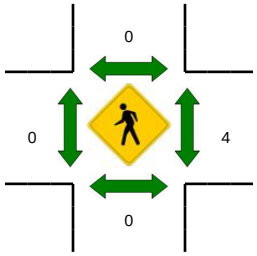
LOCATION: SW Barrows Rd -- SW Scholls Ferry Rd
CITY/STATE: Beaverton, OR

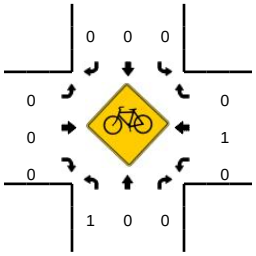
QC JOB #: 13209208
DATE: Wed, Feb 18 2015

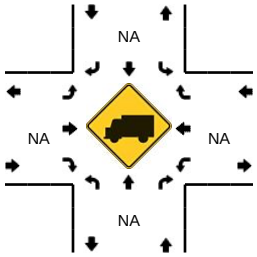
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

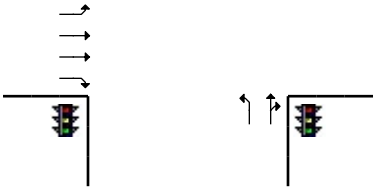


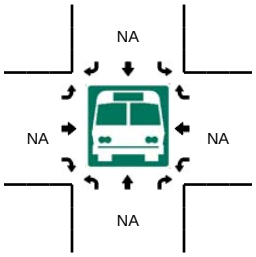












5-Min Count Period Beginning At	SW Barrows Rd (Northbound)				SW Barrows Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	13	1	0	0	6	0	4	0	1	31	14	0	2	36	1	0	109	
7:05 AM	28	0	1	0	0	2	6	0	2	58	6	0	2	33	1	0	139	
7:10 AM	25	2	4	0	1	0	1	0	3	48	12	0	0	40	0	0	136	
7:15 AM	21	0	1	0	1	1	2	0	6	40	8	0	0	33	0	0	113	
7:20 AM	22	2	4	0	1	1	6	0	0	40	17	0	3	51	0	0	147	
7:25 AM	20	0	1	0	2	0	2	0	3	57	8	0	2	34	1	0	130	
7:30 AM	22	9	1	0	2	2	2	0	2	59	14	0	1	37	0	0	151	
7:35 AM	12	7	3	0	1	2	4	0	2	63	15	0	5	36	3	0	153	
7:40 AM	25	9	1	0	1	7	0	0	1	66	18	0	1	46	0	0	175	
7:45 AM	11	24	2	0	2	7	4	0	1	58	11	0	2	31	3	0	156	
7:50 AM	14	17	3	0	2	11	7	0	1	62	14	0	8	41	3	0	183	
7:55 AM	18	6	1	0	6	12	3	0	1	40	5	0	0	31	2	0	125	1717
8:00 AM	16	2	1	0	5	11	2	0	0	52	7	0	1	43	0	0	140	1748
8:05 AM	15	3	0	0	0	1	3	0	0	39	17	0	2	28	0	0	108	1717
8:10 AM	26	2	1	0	0	4	4	0	0	44	14	0	4	30	0	0	129	1710
8:15 AM	21	0	2	0	1	1	4	0	2	36	12	0	5	30	0	0	114	1711
8:20 AM	22	0	2	0	0	1	0	0	0	49	14	0	5	39	0	0	132	1696
8:25 AM	22	1	4	0	1	1	5	0	0	40	12	0	1	34	1	0	122	1688
8:30 AM	13	2	2	0	4	1	1	0	1	42	8	0	1	24	0	0	99	1636
8:35 AM	12	3	1	0	0	1	1	0	1	49	3	0	1	41	0	0	113	1596
8:40 AM	20	1	0	0	0	0	1	0	0	34	6	0	3	24	0	0	89	1510
8:45 AM	6	0	1	0	2	0	2	0	0	44	10	0	4	31	2	0	102	1456
8:50 AM	9	0	3	0	1	2	1	0	1	40	12	0	3	22	0	0	94	1367
8:55 AM	10	0	3	0	1	1	0	0	0	28	7	0	1	35	0	0	86	1328

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	236	100	20	0	16	44	24	0	20	752	188	0	28	476	12	0	1916
Heavy Trucks	8	16	0		4	4	0		4	20	0		4	8	0		68
Pedestrians		0				0				0				0			0
Bicycles	1	0	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:53 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

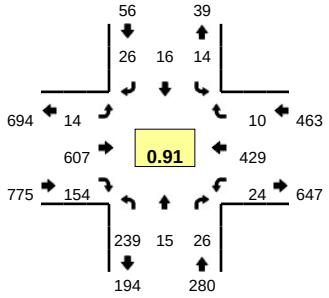
Type of peak hour being reported: System Peak

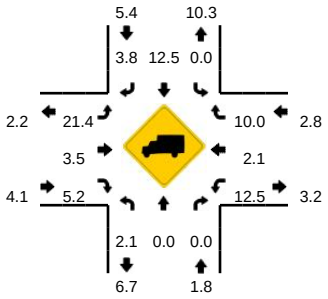
Method for determining peak hour: Total Entering Volume

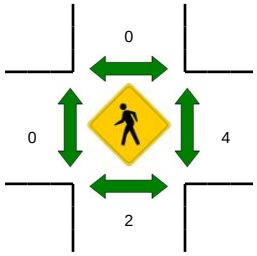
LOCATION: SW Barrows Rd -- SW Scholls Ferry Rd
CITY/STATE: Beaverton, OR

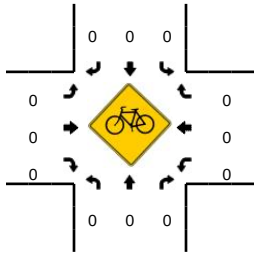
QC JOB #: 13209209
DATE: Thu, Feb 19 2015

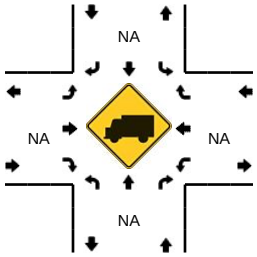
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

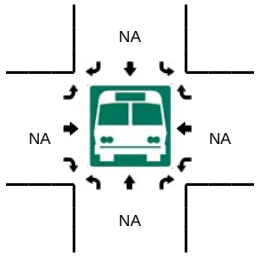












5-Min Count Period Beginning At	SW Barrows Rd (Northbound)				SW Barrows Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	19	1	2	0	2	0	3	0	0	30	8	0	3	33	1	0	102	
7:05 AM	18	0	1	0	1	2	3	0	3	59	7	0	1	23	2	0	120	
7:10 AM	26	0	3	0	2	1	2	0	1	44	11	0	0	27	2	0	119	
7:15 AM	20	1	4	0	0	1	6	0	3	46	13	0	0	43	1	0	138	
7:20 AM	16	0	4	0	1	2	3	0	1	48	10	0	3	32	0	0	120	
7:25 AM	20	0	3	0	0	1	2	0	2	67	23	0	0	34	0	0	152	
7:30 AM	19	5	2	0	1	1	2	0	2	42	17	0	0	39	0	0	130	
7:35 AM	30	1	0	0	2	1	2	0	0	50	17	0	3	38	0	0	144	
7:40 AM	19	0	3	0	1	0	0	0	0	64	10	0	3	55	2	0	157	
7:45 AM	22	3	2	0	2	0	2	0	0	51	9	0	2	42	1	0	136	
7:50 AM	17	3	1	0	0	5	4	0	2	25	7	0	2	29	0	0	95	
7:55 AM	18	2	2	0	1	1	0	0	0	48	18	0	6	35	1	0	132	1545
8:00 AM	14	0	1	0	3	1	0	0	0	63	12	0	4	32	1	0	131	1574
8:05 AM	14	2	1	0	0	0	5	0	1	60	10	0	4	38	0	0	135	1589
8:10 AM	23	1	0	0	1	0	0	0	1	61	10	0	1	30	1	0	129	1599
8:15 AM	14	3	3	0	1	2	1	0	0	56	9	0	3	29	0	0	121	1582
8:20 AM	18	0	1	0	1	0	1	0	0	60	11	0	2	32	0	0	126	1588
8:25 AM	17	0	2	0	2	2	4	0	1	48	5	0	2	39	0	0	122	1558
8:30 AM	13	1	1	0	3	0	1	0	0	44	10	0	3	36	1	0	113	1541
8:35 AM	15	5	2	0	0	0	1	0	0	47	11	0	3	47	1	0	132	1529
8:40 AM	7	1	0	0	2	1	2	0	0	46	16	0	5	29	1	0	110	1482
8:45 AM	16	1	1	0	3	3	1	0	0	39	11	0	4	33	0	0	112	1458
8:50 AM	12	1	0	0	1	0	1	0	0	50	12	0	4	22	0	0	103	1466
8:55 AM	11	2	3	0	0	2	0	0	0	39	3	0	6	24	1	0	91	1425

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	272	24	20	0	16	8	16	0	8	624	176	0	24	528	8	0	1724
Heavy Trucks	8	0	0		0	0	0		0	44	4		4	4	0		64
Pedestrians		8				0				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:53 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

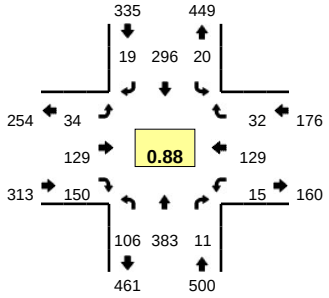
LOCATION: SW 175th Ave -- SW Kemmer Rd

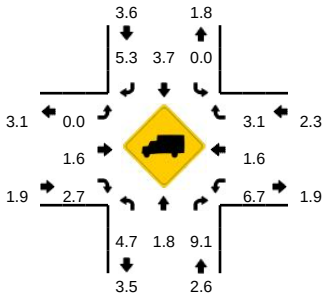
CITY/STATE: Beaverton, OR

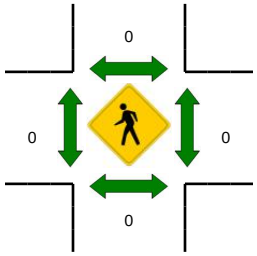
QC JOB #: 13209213

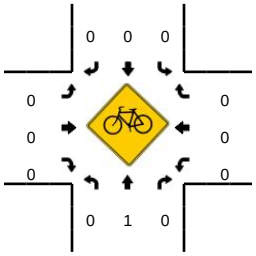
DATE: Tue, Feb 17 2015

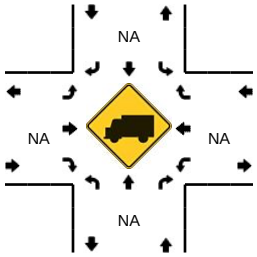
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

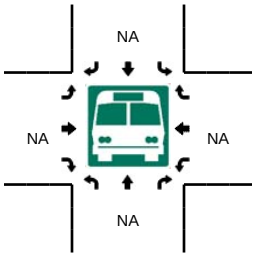












5-Min Count Period Beginning At	SW 175th Ave (Northbound)				SW 175th Ave (Southbound)				SW Kemmer Rd (Eastbound)				SW Kemmer Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	8	35	0	0	1	21	0	0	2	5	8	0	1	10	0	0	91	
7:05 AM	12	25	0	0	1	29	4	0	3	6	8	0	3	9	4	0	104	
7:10 AM	7	34	1	0	1	19	0	0	4	15	17	0	4	8	4	0	114	
7:15 AM	9	27	3	0	1	24	2	0	5	7	14	0	2	6	4	0	104	
7:20 AM	6	29	1	0	2	26	0	0	3	15	18	0	0	9	2	0	111	
7:25 AM	11	33	0	0	1	26	1	0	2	17	13	0	0	11	2	0	117	
7:30 AM	9	32	1	0	1	35	3	0	4	12	18	0	1	16	3	0	135	
7:35 AM	14	29	0	0	3	24	2	0	2	8	10	0	0	22	4	0	118	
7:40 AM	5	39	0	0	3	29	1	0	4	12	13	0	1	14	1	0	122	
7:45 AM	12	36	2	0	3	19	4	0	3	5	12	0	2	12	1	0	111	
7:50 AM	9	39	2	0	0	23	2	0	2	9	11	0	2	6	5	0	110	
7:55 AM	5	33	1	0	1	19	0	0	0	9	10	0	0	9	1	0	88	1325
8:00 AM	7	27	0	0	3	23	0	0	2	14	6	0	0	7	1	0	90	1324
8:05 AM	10	42	3	0	1	14	1	0	4	5	9	0	2	8	2	0	101	1321
8:10 AM	7	35	0	0	1	20	1	0	4	14	9	0	0	15	1	0	107	1314
8:15 AM	15	24	3	0	3	18	3	0	5	15	5	0	1	10	4	0	106	1316
8:20 AM	8	20	4	0	3	21	1	0	2	14	13	0	1	12	1	0	100	1305
8:25 AM	7	30	0	0	3	19	5	0	2	11	11	0	1	12	2	0	103	1291
8:30 AM	3	24	0	0	1	10	1	0	6	10	7	0	2	9	1	0	74	1230
8:35 AM	9	19	3	0	2	16	0	0	2	5	9	0	0	11	0	0	76	1188
8:40 AM	7	16	3	0	3	15	1	0	2	10	4	0	1	7	0	0	69	1135
8:45 AM	6	25	1	0	0	24	0	0	2	5	3	0	0	5	3	0	74	1098
8:50 AM	2	22	0	0	2	13	1	0	2	1	6	0	0	7	0	0	56	1044
8:55 AM	8	16	0	0	2	13	0	0	2	11	10	0	0	6	0	0	68	1024

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	112	400	4	0	28	352	24	0	40	128	164	0	8	208	32	0	1500
Heavy Trucks	8	0	0		0	8	4		0	0	12		4	4	0		40
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:53 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

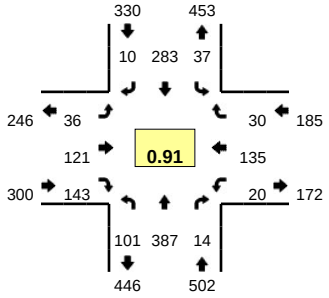
LOCATION: SW 175th Ave -- SW Kemmer Rd

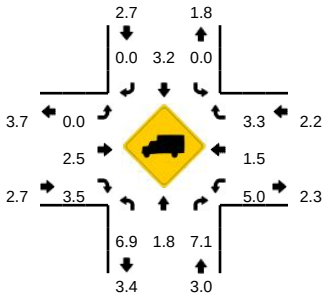
CITY/STATE: Beaverton, OR

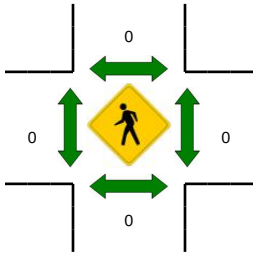
QC JOB #: 13209214

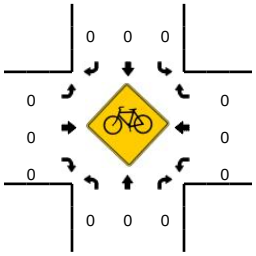
DATE: Wed, Feb 18 2015

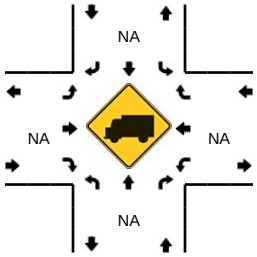
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

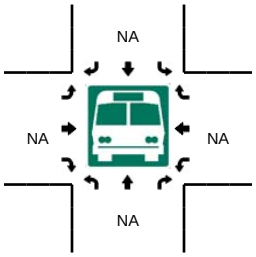












5-Min Count Period Beginning At	SW 175th Ave (Northbound)				SW 175th Ave (Southbound)				SW Kemmer Rd (Eastbound)				SW Kemmer Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	12	42	2	0	3	17	2	0	3	3	8	0	0	9	0	0	101	
7:05 AM	4	26	0	0	2	28	4	0	3	8	7	0	3	5	5	0	95	
7:10 AM	7	28	2	0	5	23	0	0	2	11	21	0	2	10	2	0	113	
7:15 AM	5	24	4	0	4	19	0	0	6	14	15	0	4	10	4	0	109	
7:20 AM	9	28	2	0	3	24	1	0	4	12	11	0	1	11	4	0	110	
7:25 AM	12	27	0	0	2	27	0	0	3	14	14	0	1	11	6	0	117	
7:30 AM	13	25	0	0	2	28	0	0	6	11	15	0	1	17	1	0	119	
7:35 AM	4	43	1	0	3	29	0	0	3	10	15	0	1	14	4	0	127	
7:40 AM	9	38	2	0	1	25	0	0	2	4	20	0	1	15	0	0	117	
7:45 AM	11	33	1	0	6	23	1	0	1	8	3	0	0	15	1	0	103	
7:50 AM	8	37	0	0	5	24	2	0	1	8	11	0	3	10	1	0	110	
7:55 AM	11	39	2	0	2	12	1	0	3	11	5	0	2	8	0	0	96	1317
8:00 AM	8	39	0	0	2	21	1	0	2	10	6	0	1	9	2	0	101	1317
8:05 AM	6	36	2	0	3	21	2	0	4	9	7	0	1	9	4	0	104	1326
8:10 AM	11	24	2	0	1	31	0	0	6	7	14	0	0	7	1	0	104	1317
8:15 AM	15	23	3	0	6	23	0	0	6	15	8	0	0	9	5	0	113	1321
8:20 AM	5	33	0	0	2	18	3	0	4	9	8	0	2	11	4	0	99	1310
8:25 AM	10	28	2	0	3	17	4	0	3	9	7	0	3	18	2	0	106	1299
8:30 AM	6	28	1	0	2	12	1	0	0	7	11	0	1	3	2	0	74	1254
8:35 AM	10	19	2	0	1	16	1	0	2	8	7	0	2	6	4	0	78	1205
8:40 AM	1	19	0	0	0	9	1	0	3	6	5	0	3	11	0	0	58	1146
8:45 AM	11	18	0	0	1	7	0	0	1	10	6	0	0	1	2	0	57	1100
8:50 AM	5	18	0	0	1	10	1	0	3	5	5	0	1	4	1	0	54	1044
8:55 AM	5	17	1	0	1	9	0	0	1	3	6	0	0	8	1	0	52	1000

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	104	424	12	0	24	328	0	0	44	100	200	0	12	184	20	0	1452
Heavy Trucks	12	8	0		0	16	0		0	4	4		4	0	0		48
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:53 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

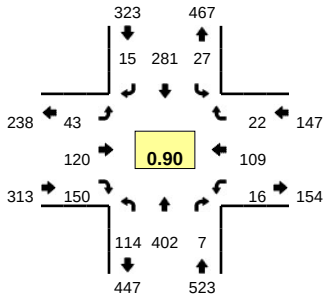
LOCATION: SW 175th Ave -- SW Kemmer Rd

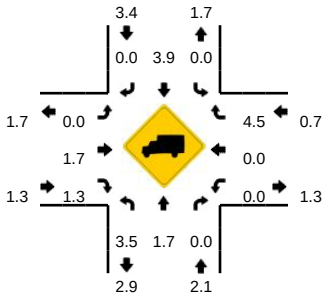
CITY/STATE: Beaverton, OR

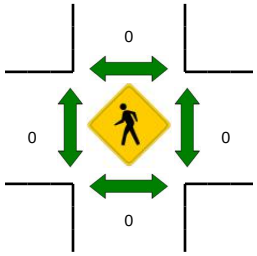
QC JOB #: 13209215

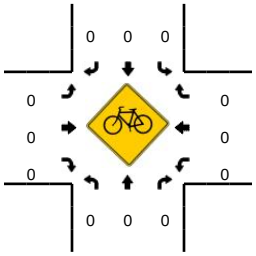
DATE: Thu, Feb 19 2015

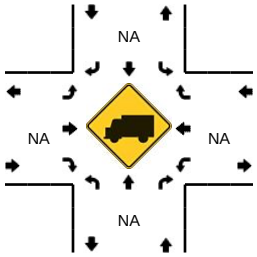
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

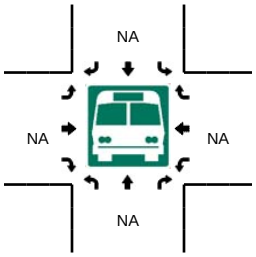












5-Min Count Period Beginning At	SW 175th Ave (Northbound)				SW 175th Ave (Southbound)				SW Kemmer Rd (Eastbound)				SW Kemmer Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	11	36	3	0	2	25	1	0	1	9	7	0	0	8	3	0	106	
7:05 AM	11	35	0	0	3	17	1	0	5	8	19	0	2	8	3	0	112	
7:10 AM	8	28	1	0	3	28	3	0	2	10	15	0	0	14	3	0	115	
7:15 AM	16	25	1	0	4	17	0	0	7	18	11	0	1	7	4	0	111	
7:20 AM	5	30	0	0	1	24	1	0	1	9	12	0	1	10	1	0	95	
7:25 AM	8	27	3	0	2	31	1	0	3	12	15	0	3	16	2	0	123	
7:30 AM	8	32	0	0	1	37	0	0	7	16	14	0	1	9	3	0	128	
7:35 AM	13	38	0	0	2	21	0	0	4	8	16	0	1	11	1	0	115	
7:40 AM	10	38	0	0	1	27	4	0	2	7	12	0	3	11	3	0	118	
7:45 AM	10	38	0	0	3	24	2	0	8	7	12	0	2	10	0	0	116	
7:50 AM	8	40	2	0	1	20	1	0	2	10	8	0	2	9	1	0	104	
7:55 AM	9	32	0	0	6	22	0	0	2	10	9	0	0	2	0	0	92	1335
8:00 AM	8	39	0	0	0	13	2	0	0	5	7	0	0	2	1	0	77	1306
8:05 AM	11	29	1	0	0	34	1	0	3	5	12	0	2	7	1	0	106	1300
8:10 AM	19	32	0	0	2	26	1	0	1	11	5	0	1	11	2	0	111	1296
8:15 AM	13	33	0	0	2	12	1	0	2	6	10	0	2	11	1	0	93	1278
8:20 AM	11	33	2	0	0	19	1	0	1	5	3	0	3	5	1	0	84	1267
8:25 AM	8	36	3	0	1	17	2	0	1	9	6	0	1	8	1	0	93	1237
8:30 AM	8	25	2	0	1	12	0	0	2	6	13	0	1	9	2	0	81	1190
8:35 AM	6	19	3	0	0	25	1	0	4	17	6	0	0	12	5	0	98	1173
8:40 AM	7	29	1	0	1	18	0	0	2	12	7	0	0	9	2	0	88	1143
8:45 AM	4	14	2	0	0	9	0	0	2	9	3	0	2	12	0	0	57	1084
8:50 AM	6	30	2	0	1	8	2	0	2	9	3	0	2	10	0	0	75	1055
8:55 AM	9	14	0	0	2	16	3	0	2	5	4	0	1	5	0	0	61	1024

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	124	432	0	0	16	340	16	0	52	124	168	0	20	124	28	0	1444
Heavy Trucks	12	8	0		0	20	0		0	4	0		0	0	0		44
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:53 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

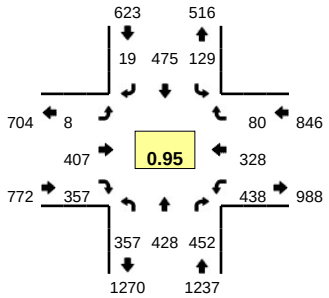
Type of peak hour being reported: System Peak

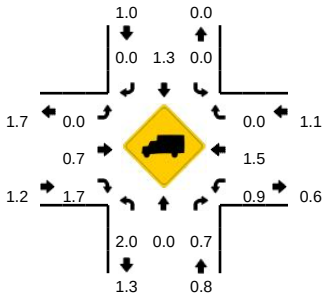
Method for determining peak hour: Total Entering Volume

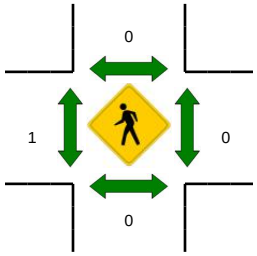
LOCATION: SW Roy Rogers Rd -- SW Scholls Ferry Rd
CITY/STATE: Beaverton, OR

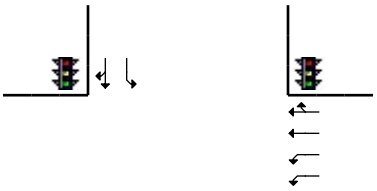
QC JOB #: 13209204
DATE: Tue, Feb 17 2015

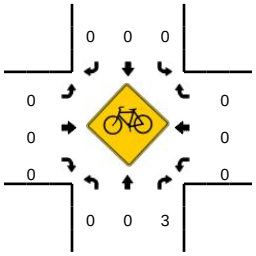
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

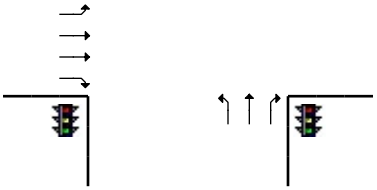


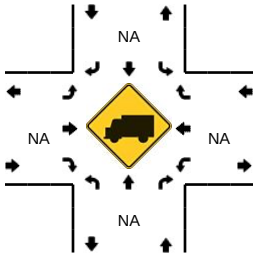


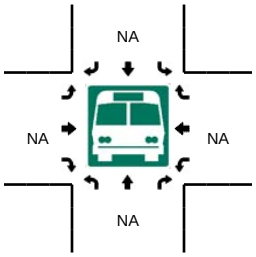












5-Min Count Period Beginning At	SW Roy Rogers Rd (Northbound)				SW Roy Rogers Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	29	29	32	0	7	20	0	0	0	25	23	0	24	16	2	0	207	
4:05 PM	11	25	42	0	2	35	2	0	1	18	22	0	49	33	2	0	242	
4:10 PM	23	29	32	0	8	33	1	0	0	21	26	0	31	31	6	0	241	
4:15 PM	22	32	33	0	6	28	0	0	0	30	20	0	44	34	7	0	256	
4:20 PM	29	33	48	0	8	34	1	0	3	32	30	0	25	18	5	0	266	
4:25 PM	24	29	51	0	7	57	2	0	2	25	32	0	32	19	5	0	285	
4:30 PM	23	26	24	0	11	34	0	0	1	41	25	0	60	35	7	0	287	
4:35 PM	34	40	33	0	6	49	3	0	1	20	27	0	37	22	5	0	277	
4:40 PM	12	30	34	0	10	39	2	0	1	41	29	0	42	35	3	0	278	
4:45 PM	28	35	43	0	12	52	1	0	0	29	37	0	25	20	5	0	287	
4:50 PM	23	35	26	0	11	44	0	0	2	29	39	0	41	30	6	0	286	
4:55 PM	31	27	34	0	14	38	1	0	1	42	33	0	27	30	8	0	286	3198
5:00 PM	34	52	46	0	5	30	1	0	0	31	24	0	35	20	8	0	286	3277
5:05 PM	23	27	41	0	9	43	0	0	1	27	35	0	32	24	3	0	265	3300
5:10 PM	23	30	33	0	12	28	2	0	0	42	25	0	46	37	6	0	284	3343
5:15 PM	39	43	37	0	12	46	1	0	0	20	19	0	21	16	3	0	257	3344
5:20 PM	27	35	39	0	7	38	4	0	2	27	27	0	46	37	11	0	300	3378
5:25 PM	27	36	34	0	13	46	1	0	1	48	40	0	39	26	8	0	319	3412
5:30 PM	42	38	38	0	12	35	4	0	0	35	26	0	36	23	12	0	301	3426
5:35 PM	29	35	46	0	13	43	3	0	0	39	25	0	32	25	5	0	295	3444
5:40 PM	31	35	35	0	9	32	1	0	1	38	27	0	58	40	5	0	312	3478
5:45 PM	39	26	23	0	16	41	1	0	1	28	29	0	19	13	6	0	242	3433
5:50 PM	19	35	31	0	6	51	5	0	1	28	24	0	31	33	7	0	271	3418
5:55 PM	21	19	28	0	13	40	1	0	0	42	48	0	28	24	2	0	266	3398

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	392	436	472	0	152	496	32	0	4	488	364	0	428	296	100	0	3660
Heavy Trucks	8	0	4		0	0	0		0	4	4		4	0	0		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

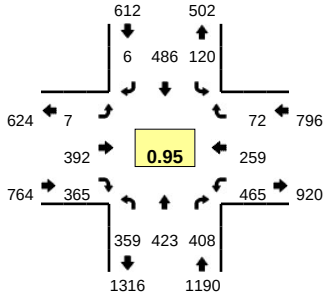
LOCATION: SW Roy Rogers Rd -- SW Scholls Ferry Rd

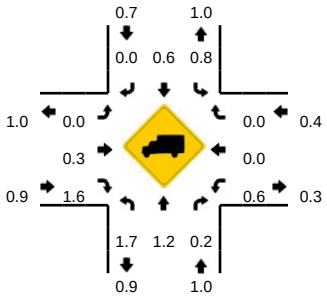
QC JOB #: 13209205

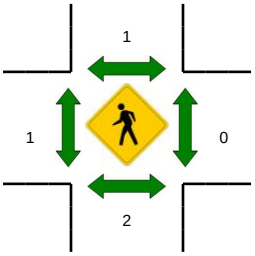
CITY/STATE: Beaverton, OR

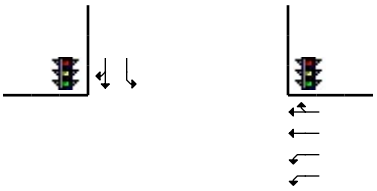
DATE: Wed, Feb 18 2015

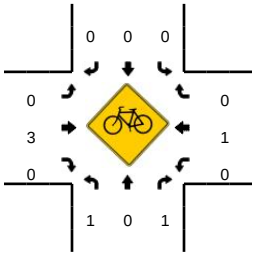
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

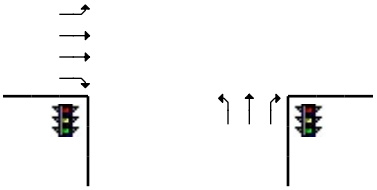


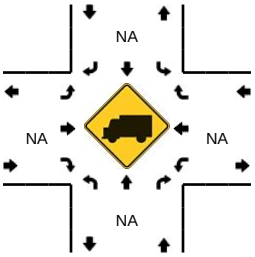


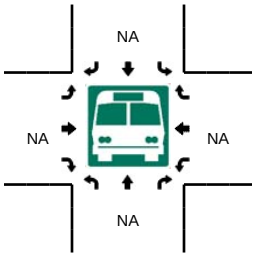












5-Min Count Period Beginning At	SW Roy Rogers Rd (Northbound)				SW Roy Rogers Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	32	26	22	0	10	16	1	0	1	28	26	0	25	21	4	0	212	
4:05 PM	18	34	26	0	10	40	0	0	2	15	19	0	26	21	3	0	214	
4:10 PM	29	25	13	0	8	22	0	0	0	25	23	0	37	31	7	0	220	
4:15 PM	22	28	27	0	8	41	1	0	0	19	26	0	37	30	10	0	249	
4:20 PM	34	35	26	0	15	31	0	0	0	33	48	0	19	25	5	0	271	
4:25 PM	24	31	29	0	7	47	1	0	0	37	24	0	39	31	0	0	270	
4:30 PM	23	31	34	0	12	20	1	0	1	27	37	0	31	35	1	0	253	
4:35 PM	26	28	34	0	6	47	0	0	1	18	32	0	37	23	6	0	258	
4:40 PM	26	26	18	0	4	32	0	0	0	35	41	0	57	41	10	0	290	
4:45 PM	35	32	35	0	11	46	1	0	0	32	31	0	33	14	7	0	277	
4:50 PM	30	46	26	0	3	50	0	0	0	34	26	0	32	19	4	0	270	
4:55 PM	28	37	27	0	6	35	1	0	0	33	50	0	46	34	6	0	303	3087
5:00 PM	31	44	33	0	13	25	0	0	0	28	29	0	26	13	4	0	246	3121
5:05 PM	22	30	30	0	10	37	1	0	1	29	36	0	47	21	8	0	272	3179
5:10 PM	30	31	32	0	8	40	1	0	1	47	19	0	37	13	4	0	263	3222
5:15 PM	41	31	29	0	21	37	1	0	3	18	31	0	36	25	7	0	280	3253
5:20 PM	28	40	42	0	4	57	1	0	0	34	36	0	34	19	7	0	302	3284
5:25 PM	27	38	45	0	7	50	0	0	1	36	18	0	54	17	8	0	301	3315
5:30 PM	25	32	36	0	8	37	0	0	0	39	32	0	43	31	7	0	290	3352
5:35 PM	34	38	40	0	20	32	0	0	0	30	33	0	40	19	6	0	292	3386
5:40 PM	28	24	33	0	9	40	0	0	1	32	24	0	37	34	4	0	266	3362
5:45 PM	19	30	35	0	6	37	2	0	0	43	35	0	34	26	8	0	275	3360
5:50 PM	33	37	34	0	20	48	0	0	2	20	22	0	31	21	9	0	277	3367
5:55 PM	22	35	33	0	9	36	3	0	1	26	24	0	31	15	1	0	236	3300

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	344	432	484	0	140	476	0	0	4	420	332	0	548	268	84	0	3532
Heavy Trucks	8	0	4		0	0	0		0	0	0		0	0	0		12
Pedestrians		0				0				0				0			0
Bicycles	1	0	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

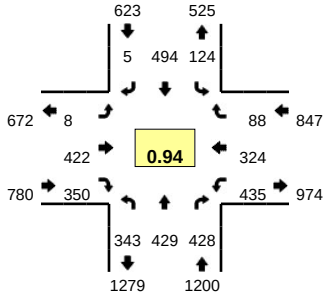
LOCATION: SW Roy Rogers Rd -- SW Scholls Ferry Rd

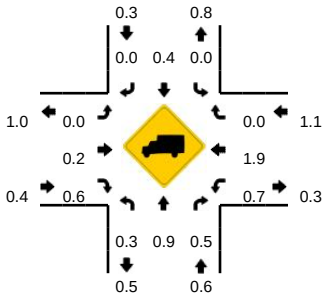
QC JOB #: 13209206

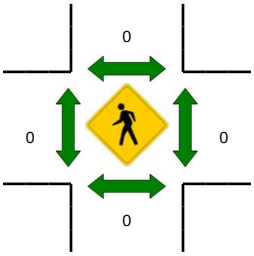
CITY/STATE: Beaverton, OR

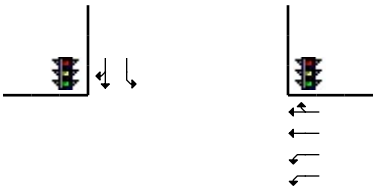
DATE: Thu, Feb 19 2015

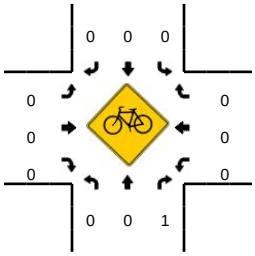
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

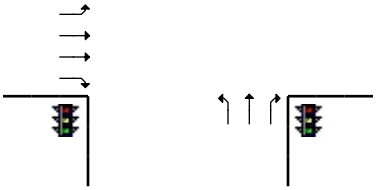


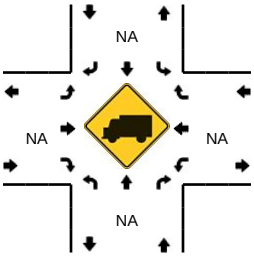


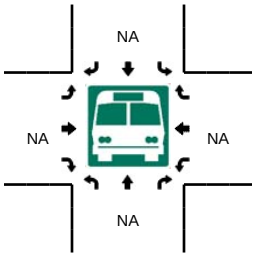












5-Min Count Period Beginning At	SW Roy Rogers Rd (Northbound)				SW Roy Rogers Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	29	34	31	0	4	19	0	0	0	24	19	0	40	21	5	0	226	
4:05 PM	25	26	38	0	3	29	0	0	1	16	14	0	35	24	10	0	221	
4:10 PM	27	22	25	0	7	35	2	0	2	23	20	0	27	26	8	0	224	
4:15 PM	22	22	33	0	9	33	0	0	2	26	25	0	25	23	6	0	226	
4:20 PM	18	34	30	0	7	28	1	0	1	26	44	0	46	34	7	0	276	
4:25 PM	35	32	27	0	8	38	0	0	1	27	31	0	30	25	4	0	258	
4:30 PM	24	22	36	0	10	56	2	0	4	30	26	0	41	32	0	0	283	
4:35 PM	26	33	25	0	7	43	0	0	0	39	31	0	47	30	3	0	284	
4:40 PM	30	33	39	0	14	42	1	0	1	21	31	0	32	23	8	0	275	
4:45 PM	12	32	27	0	16	55	1	0	0	38	33	0	26	28	4	0	272	
4:50 PM	30	36	29	0	3	40	0	0	0	43	34	0	40	27	11	0	293	
4:55 PM	44	38	37	0	10	31	0	0	3	33	27	0	34	23	7	0	287	3125
5:00 PM	27	44	33	0	11	43	0	0	0	16	21	0	36	26	8	0	265	3164
5:05 PM	22	24	38	0	12	36	0	0	0	41	27	0	32	28	7	0	267	3210
5:10 PM	37	40	34	0	12	35	1	0	0	27	23	0	36	24	6	0	275	3261
5:15 PM	23	32	31	0	8	36	1	0	1	39	28	0	63	40	10	0	312	3347
5:20 PM	33	32	34	0	11	37	1	0	1	37	31	0	33	22	8	0	280	3351
5:25 PM	34	44	41	0	8	45	1	0	1	34	26	0	31	24	10	0	299	3392
5:30 PM	26	31	41	0	9	53	0	0	1	32	31	0	38	22	5	0	289	3398
5:35 PM	21	39	34	0	12	39	0	0	0	51	45	0	42	42	7	0	332	3446
5:40 PM	34	37	49	0	12	44	0	0	1	31	24	0	24	18	5	0	279	3450
5:45 PM	24	34	34	0	8	40	0	0	0	33	31	0	41	20	6	0	271	3449
5:50 PM	23	21	20	0	12	39	0	0	1	48	19	0	29	20	6	0	238	3394
5:55 PM	34	35	25	0	8	47	1	0	0	21	25	0	20	25	5	0	246	3353

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	324	456	464	0	116	548	4	0	8	468	408	0	444	352	88	0	3680
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	4	0		4
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

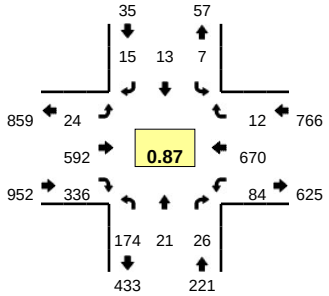
Type of peak hour being reported: System Peak

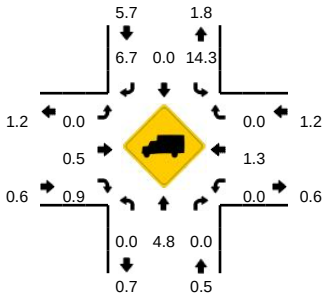
Method for determining peak hour: Total Entering Volume

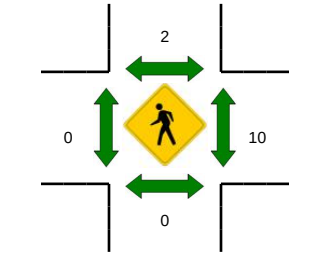
LOCATION: SW Barrows Rd -- SW Scholls Ferry Rd
CITY/STATE: Beaverton, OR

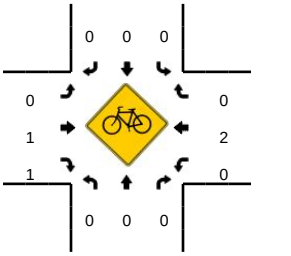
QC JOB #: 13209210
DATE: Tue, Feb 17 2015

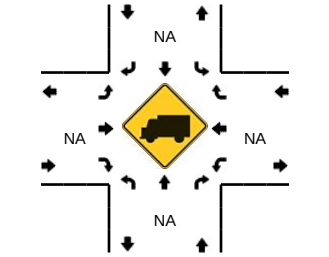
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

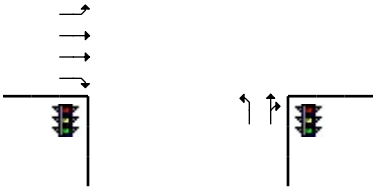


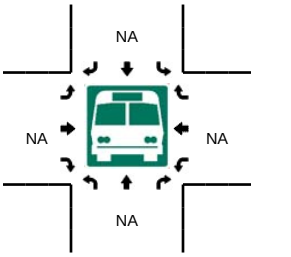












5-Min Count Period Beginning At	SW Barrows Rd (Northbound)				SW Barrows Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	10	2	0	0	0	3	1	0	0	40	4	0	8	41	3	0	112	
4:05 PM	15	1	4	0	1	2	2	0	0	53	18	0	4	50	1	0	151	
4:10 PM	14	1	3	0	1	0	0	0	0	44	16	0	7	74	1	0	161	
4:15 PM	19	2	1	0	0	1	0	0	2	43	17	0	3	50	2	0	140	
4:20 PM	16	1	5	0	1	6	3	0	2	46	30	0	3	40	0	0	153	
4:25 PM	13	2	3	0	0	3	2	0	3	61	30	0	5	58	0	0	180	
4:30 PM	17	2	1	0	1	1	5	0	3	46	28	0	8	57	1	0	170	
4:35 PM	21	2	3	0	0	1	2	0	0	48	14	0	9	44	0	0	144	
4:40 PM	11	1	0	0	0	2	1	0	0	49	25	0	5	70	2	0	166	
4:45 PM	9	3	2	0	0	1	1	0	0	52	31	0	7	43	1	0	150	
4:50 PM	16	1	2	0	1	1	2	0	2	42	26	0	10	48	0	0	151	
4:55 PM	7	2	2	0	2	1	3	0	5	62	26	0	2	62	1	0	175	1853
5:00 PM	22	0	1	0	0	4	2	0	3	50	16	0	7	60	0	0	165	1906
5:05 PM	11	1	2	0	0	1	2	0	1	48	20	0	5	44	0	0	135	1890
5:10 PM	14	1	3	0	1	2	0	0	2	46	29	0	11	61	1	0	171	1900
5:15 PM	12	2	0	0	0	2	0	0	1	47	30	0	5	48	4	0	151	1911
5:20 PM	19	1	6	0	0	1	1	0	2	42	21	0	4	55	2	0	154	1912
5:25 PM	13	5	5	0	2	0	0	0	4	39	25	0	10	82	0	0	185	1917
5:30 PM	18	1	0	0	1	0	3	0	2	68	45	0	11	59	0	0	208	1955
5:35 PM	23	1	1	0	0	0	1	0	1	53	37	0	3	56	0	0	176	1987
5:40 PM	10	3	2	0	0	0	0	0	1	43	30	0	9	52	3	0	153	1974
5:45 PM	11	1	2	0	1	1	0	0	3	47	17	0	10	32	2	0	127	1951
5:50 PM	16	1	0	0	2	1	0	0	2	44	24	0	13	62	2	0	167	1967
5:55 PM	7	3	3	0	0	1	0	0	4	43	28	0	6	47	5	0	147	1939

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	216	28	24	0	12	0	16	0	28	640	428	0	96	788	0	0	2276
Heavy Trucks	0	0	0		0	0	0		0	0	8		0	4	0		12
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

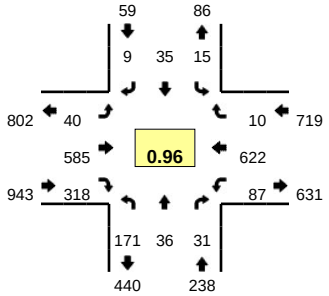
LOCATION: SW Barrows Rd -- SW Scholls Ferry Rd

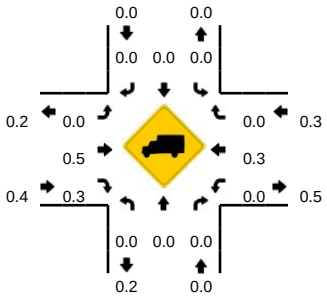
CITY/STATE: Beaverton, OR

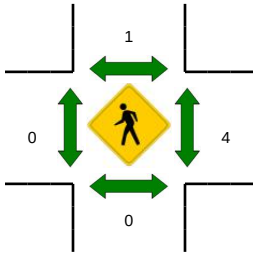
QC JOB #: 13209211

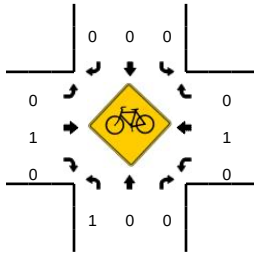
DATE: Wed, Feb 18 2015

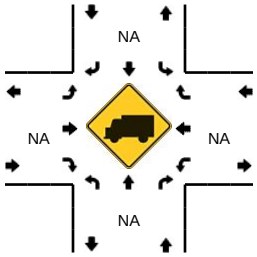
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

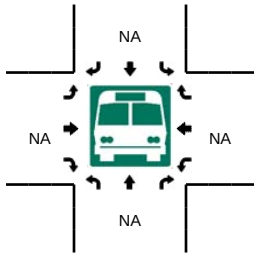












5-Min Count Period Beginning At	SW Barrows Rd (Northbound)				SW Barrows Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	2	1	0	1	3	1	0	1	50	13	0	5	41	1	0	125	
4:05 PM	10	3	4	0	2	6	1	0	1	29	16	0	9	53	3	0	137	
4:10 PM	10	3	2	0	0	2	1	0	0	38	12	0	4	44	4	0	120	
4:15 PM	17	2	2	0	1	1	0	0	2	36	18	0	5	50	1	0	135	
4:20 PM	9	2	3	0	3	2	1	0	2	53	20	0	3	61	0	0	159	
4:25 PM	16	3	3	0	2	3	0	0	4	44	30	0	3	49	0	0	157	
4:30 PM	10	2	4	0	2	5	0	0	2	47	19	0	4	61	1	0	157	
4:35 PM	28	1	0	0	3	3	3	0	2	46	17	0	4	44	4	0	155	
4:40 PM	20	2	4	0	2	3	2	0	1	27	24	0	11	69	2	0	167	
4:45 PM	19	2	5	0	2	8	1	0	1	46	21	0	7	46	2	0	160	
4:50 PM	5	3	4	0	1	3	1	0	1	55	22	0	10	51	1	0	157	
4:55 PM	13	2	5	0	0	3	1	0	2	39	15	0	6	55	0	0	141	1770
5:00 PM	15	1	1	0	4	1	0	0	2	40	29	0	5	42	1	0	141	1786
5:05 PM	9	5	3	0	0	3	1	0	3	50	27	0	10	52	0	0	163	1812
5:10 PM	11	4	4	0	2	4	0	0	2	51	18	0	7	56	2	0	161	1853
5:15 PM	14	4	1	0	1	1	1	0	8	57	34	0	7	61	2	0	191	1909
5:20 PM	26	4	3	0	0	5	1	0	0	51	30	0	8	43	0	0	171	1921
5:25 PM	16	1	0	0	1	2	0	0	5	60	31	0	3	55	1	0	175	1939
5:30 PM	18	3	3	0	2	2	2	0	6	40	27	0	8	47	1	0	159	1941
5:35 PM	12	6	0	0	1	2	1	0	7	56	31	0	5	56	0	0	177	1963
5:40 PM	13	1	2	0	1	1	0	0	3	40	33	0	11	58	0	0	163	1959
5:45 PM	22	3	3	0	1	1	3	0	2	48	23	0	3	49	2	0	160	1959
5:50 PM	16	7	2	0	0	0	1	0	6	41	42	0	6	55	2	0	178	1980
5:55 PM	6	2	1	0	1	0	0	0	2	36	20	0	9	40	0	0	117	1956

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	184	40	12	0	16	24	12	0	72	624	356	0	64	632	8	0	2044
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles	1	0	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

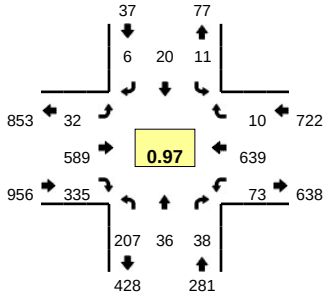
Type of peak hour being reported: System Peak

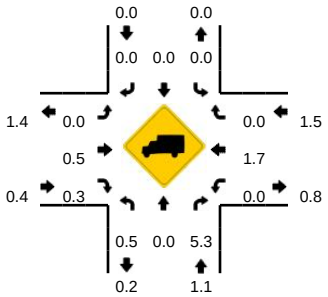
Method for determining peak hour: Total Entering Volume

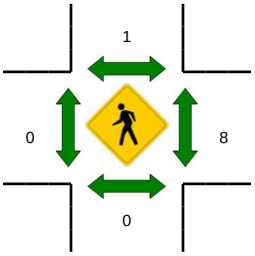
LOCATION: SW Barrows Rd -- SW Scholls Ferry Rd
CITY/STATE: Beaverton, OR

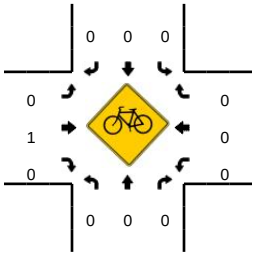
QC JOB #: 13209212
DATE: Thu, Feb 19 2015

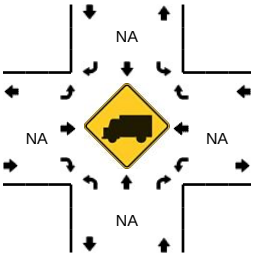
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

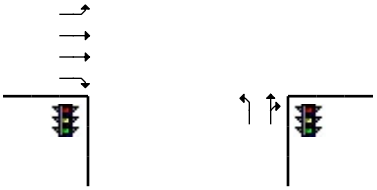


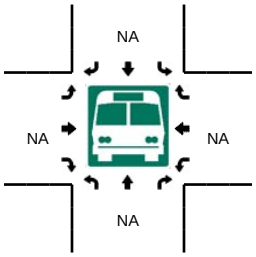












5-Min Count Period Beginning At	SW Barrows Rd (Northbound)				SW Barrows Rd (Southbound)				SW Scholls Ferry Rd (Eastbound)				SW Scholls Ferry Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	9	0	3	0	1	1	2	0	0	46	19	0	5	52	0	0	138	
4:05 PM	20	2	3	0	1	1	0	0	0	33	16	0	9	44	0	0	129	
4:10 PM	17	2	1	0	1	0	3	0	0	47	9	0	3	58	0	0	141	
4:15 PM	13	1	1	0	2	3	1	0	1	45	23	0	11	46	0	0	147	
4:20 PM	16	4	1	0	1	0	0	0	3	45	15	0	5	58	2	0	150	
4:25 PM	17	3	1	0	2	1	0	0	1	35	21	0	8	47	1	0	137	
4:30 PM	16	4	3	0	3	1	0	0	3	56	23	0	7	64	1	0	181	
4:35 PM	19	2	2	0	0	2	2	0	2	37	25	0	4	53	0	0	148	
4:40 PM	10	1	1	0	0	3	1	0	2	61	19	0	9	46	0	0	153	
4:45 PM	17	1	4	0	1	1	0	0	1	51	32	0	4	46	1	0	159	
4:50 PM	20	3	4	0	2	3	0	0	2	37	17	0	6	55	0	0	149	
4:55 PM	16	1	3	0	0	0	0	0	0	56	41	0	6	50	1	0	174	1806
5:00 PM	22	4	3	0	0	1	0	0	4	46	22	0	5	47	1	0	155	1823
5:05 PM	11	3	1	0	1	2	3	0	4	46	29	0	9	58	2	0	169	1863
5:10 PM	19	4	7	0	0	1	0	0	4	44	25	0	6	60	1	0	171	1893
5:15 PM	17	5	5	0	0	2	1	0	1	45	24	0	7	77	1	0	185	1931
5:20 PM	23	3	2	0	0	3	0	0	3	38	29	0	3	43	0	0	147	1928
5:25 PM	18	1	2	0	4	2	1	0	3	55	25	0	10	61	0	0	182	1973
5:30 PM	14	6	4	0	1	4	0	0	5	65	28	1	3	47	2	0	180	1972
5:35 PM	18	3	1	0	2	0	1	0	2	50	23	0	7	45	0	0	152	1976
5:40 PM	12	2	2	0	0	1	0	0	2	56	40	0	7	50	1	0	173	1996
5:45 PM	12	3	3	0	1	1	0	0	5	40	28	0	8	44	0	0	145	1982
5:50 PM	13	4	1	0	0	1	0	0	2	31	35	0	8	57	0	0	152	1985
5:55 PM	14	3	4	0	1	3	0	0	1	30	29	0	3	44	3	0	135	1946

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	200	40	28	0	28	24	8	0	40	680	304	4	80	612	8	0	2056
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	16	0		16
Pedestrians		0				0				0				20			20
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

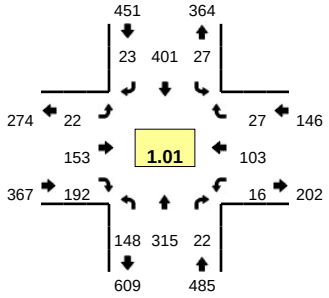
LOCATION: SW 175th Ave -- SW Kemmer Rd

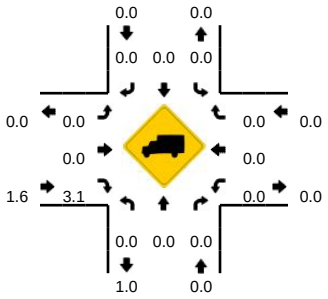
CITY/STATE: Beaverton, OR

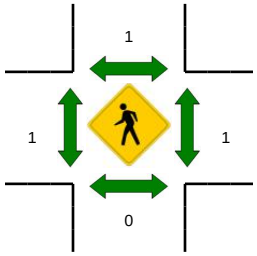
QC JOB #: 13209216

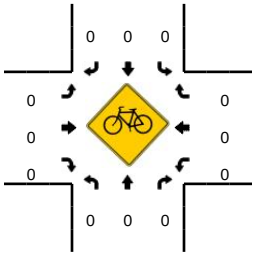
DATE: Tue, Feb 17 2015

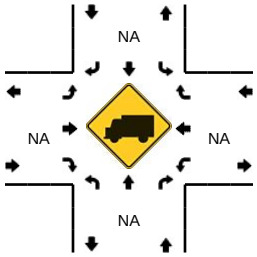
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

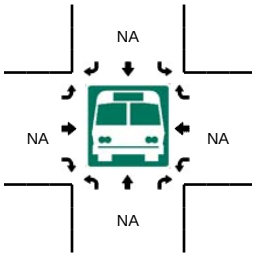












5-Min Count Period Beginning At	SW 175th Ave (Northbound)				SW 175th Ave (Southbound)				SW Kemmer Rd (Eastbound)				SW Kemmer Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	15	27	3	0	3	25	6	0	4	5	11	0	1	4	4	0	108	
4:05 PM	10	23	1	0	2	31	2	0	1	9	12	0	1	6	3	0	101	
4:10 PM	5	26	1	0	4	23	3	0	3	4	14	0	2	12	5	0	102	
4:15 PM	14	19	1	0	3	33	2	0	2	7	11	0	2	14	0	0	108	
4:20 PM	12	24	2	0	6	33	4	0	2	12	17	0	0	7	2	0	121	
4:25 PM	9	28	2	0	2	39	4	0	1	10	18	0	4	7	3	0	127	
4:30 PM	8	23	0	0	2	39	0	0	4	7	16	0	2	13	3	0	117	
4:35 PM	8	18	3	0	1	36	0	0	0	12	18	0	3	9	2	0	110	
4:40 PM	10	26	1	0	5	33	3	0	1	11	20	0	2	11	1	0	124	
4:45 PM	16	23	2	0	1	42	3	0	1	10	23	0	0	4	2	0	127	
4:50 PM	11	20	0	0	2	35	1	0	4	14	20	0	4	8	1	0	120	
4:55 PM	20	24	3	0	1	30	1	0	0	10	13	0	0	12	2	0	116	1381
5:00 PM	14	24	4	0	2	27	3	0	2	12	14	0	1	9	2	0	114	1387
5:05 PM	6	31	0	0	2	31	2	0	6	11	15	0	2	9	2	0	117	1403
5:10 PM	6	25	3	0	3	33	3	0	2	14	13	0	1	13	6	0	122	1423
5:15 PM	10	32	2	0	2	36	2	0	1	10	18	0	1	5	0	0	119	1434
5:20 PM	8	31	1	0	3	36	0	0	2	17	15	0	1	10	2	0	126	1439
5:25 PM	9	32	2	0	3	29	2	0	0	9	16	0	2	11	2	0	117	1429
5:30 PM	10	24	2	0	5	32	1	0	2	22	17	0	2	10	1	0	128	1440
5:35 PM	23	20	2	0	2	36	1	0	1	9	14	0	0	3	4	0	115	1445
5:40 PM	15	29	1	0	1	34	4	0	1	15	14	0	2	9	3	0	128	1449
5:45 PM	8	26	1	0	2	34	2	0	1	15	14	0	8	6	1	0	118	1440
5:50 PM	11	16	4	0	3	39	1	0	1	18	14	0	4	9	1	0	121	1441
5:55 PM	14	21	0	0	2	37	3	0	1	16	12	0	1	10	4	0	121	1446

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	168	304	24	0	40	388	16	0	12	160	188	0	16	96	28	0	1440
Heavy Trucks	0	0	0		0	0	0		0	0	8		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

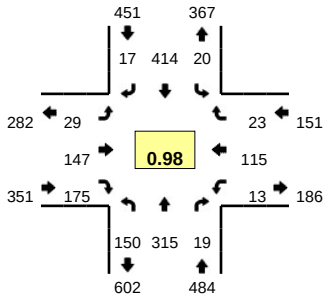
LOCATION: SW 175th Ave -- SW Kemmer Rd

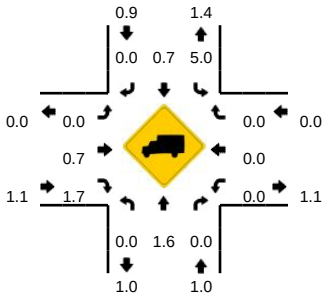
CITY/STATE: Beaverton, OR

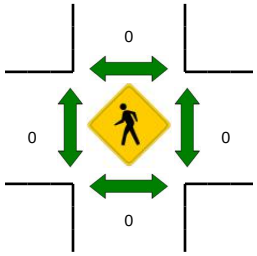
QC JOB #: 13209217

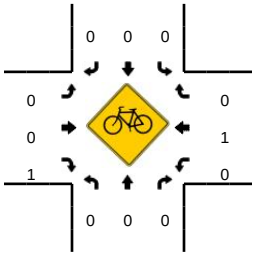
DATE: Wed, Feb 18 2015

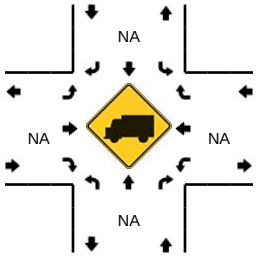
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

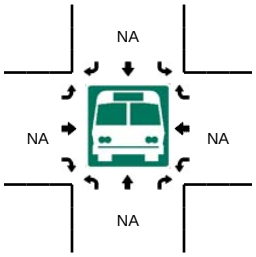












5-Min Count Period Beginning At	SW 175th Ave (Northbound)				SW 175th Ave (Southbound)				SW Kemmer Rd (Eastbound)				SW Kemmer Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	13	29	2	0	0	30	1	0	0	14	14	0	2	7	2	0	114	
4:05 PM	11	23	1	0	2	26	1	0	3	7	9	0	1	6	3	0	93	
4:10 PM	15	19	3	0	2	42	0	0	2	12	9	0	0	1	4	0	109	
4:15 PM	7	25	2	0	3	37	0	0	1	8	12	0	1	9	2	0	107	
4:20 PM	10	23	0	0	2	39	0	0	0	12	8	0	1	16	4	0	115	
4:25 PM	10	25	1	0	2	33	0	0	1	9	11	0	2	4	1	0	99	
4:30 PM	4	19	0	0	6	28	1	0	3	13	15	0	3	9	0	0	101	
4:35 PM	15	23	0	0	2	32	0	0	2	9	17	0	3	4	1	0	108	
4:40 PM	12	18	0	0	1	33	0	0	0	12	17	0	2	9	4	0	108	
4:45 PM	21	21	1	0	2	33	0	0	2	12	14	0	1	5	3	0	115	
4:50 PM	13	30	2	0	2	35	1	0	3	7	11	0	0	7	3	0	114	
4:55 PM	14	22	0	0	1	20	0	0	2	22	12	0	1	4	2	0	100	1283
5:00 PM	13	33	0	0	1	25	1	0	3	9	13	0	1	12	1	0	112	1281
5:05 PM	8	33	4	0	2	42	1	0	2	10	15	0	2	6	2	0	127	1315
5:10 PM	12	23	1	0	2	38	3	0	1	8	22	0	0	14	2	0	126	1332
5:15 PM	15	24	3	0	2	41	2	0	1	8	17	0	3	12	0	0	128	1353
5:20 PM	8	26	3	0	0	36	0	0	3	11	17	0	1	9	3	0	117	1355
5:25 PM	11	25	1	0	1	34	3	0	8	15	14	0	2	11	2	0	127	1383
5:30 PM	10	20	2	0	3	30	2	0	3	16	14	0	1	11	1	0	113	1395
5:35 PM	14	29	1	0	2	39	3	0	1	14	10	0	0	13	1	0	127	1414
5:40 PM	11	29	1	0	2	41	1	0	0	15	16	0	1	11	3	0	131	1437
5:45 PM	15	24	0	0	6	31	2	0	1	10	21	0	0	13	2	0	125	1447
5:50 PM	12	34	0	0	0	47	5	0	0	10	11	0	1	8	1	0	129	1462
5:55 PM	12	21	1	0	3	33	2	0	1	22	9	0	0	18	3	0	125	1487

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	140	296	16	0	24	412	32	0	48	180	152	0	12	140	16	0	1468
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

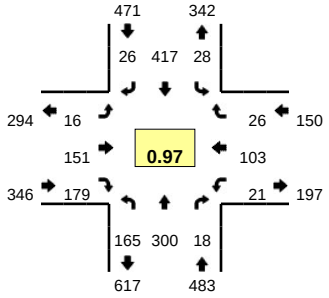
LOCATION: SW 175th Ave -- SW Kemmer Rd

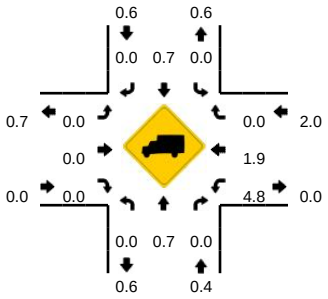
CITY/STATE: Beaverton, OR

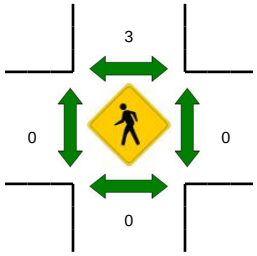
QC JOB #: 13209218

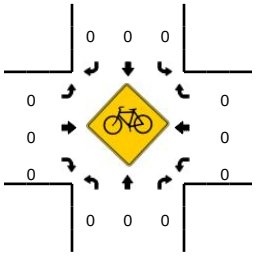
DATE: Thu, Feb 19 2015

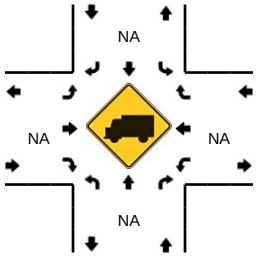
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

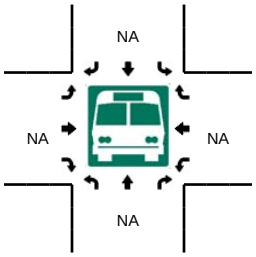












5-Min Count Period Beginning At	SW 175th Ave (Northbound)				SW 175th Ave (Southbound)				SW Kemmer Rd (Eastbound)				SW Kemmer Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	14	39	1	0	3	27	2	0	1	5	10	0	0	3	4	0	109	
4:05 PM	13	25	3	0	3	36	0	0	3	7	9	0	0	6	2	0	107	
4:10 PM	14	16	0	0	1	23	2	0	1	11	12	0	3	8	0	0	91	
4:15 PM	13	25	2	0	2	29	1	0	2	9	9	0	3	5	2	0	102	
4:20 PM	5	20	0	0	1	36	1	0	0	8	15	0	2	8	2	0	98	
4:25 PM	10	30	1	0	2	44	0	0	1	10	11	0	0	11	1	0	121	
4:30 PM	10	22	4	0	2	43	1	0	0	6	21	0	0	8	5	0	122	
4:35 PM	9	20	2	0	1	31	4	0	0	9	14	0	5	5	2	0	102	
4:40 PM	14	26	2	0	3	37	3	0	2	14	18	0	2	3	3	0	127	
4:45 PM	12	20	0	0	3	35	0	0	1	6	12	0	2	11	1	0	103	
4:50 PM	14	21	1	0	2	24	5	0	0	13	17	0	1	6	4	0	108	
4:55 PM	17	26	1	0	1	34	2	0	1	14	15	0	4	7	1	0	123	1313
5:00 PM	11	32	1	0	0	42	1	0	2	16	14	0	2	9	1	0	131	1335
5:05 PM	21	21	4	0	2	27	3	0	0	13	13	0	0	9	2	0	115	1343
5:10 PM	15	27	0	0	2	37	2	0	1	10	20	0	1	8	3	0	126	1378
5:15 PM	11	29	1	0	4	35	2	0	2	11	13	0	2	12	4	0	126	1402
5:20 PM	13	25	1	0	3	33	1	0	1	11	20	0	2	9	2	0	121	1425
5:25 PM	14	25	2	0	2	41	0	0	1	14	20	0	1	8	3	0	131	1435
5:30 PM	14	27	1	0	4	36	6	0	2	7	12	0	0	12	0	0	121	1434
5:35 PM	11	22	4	0	4	34	2	0	2	19	11	0	4	5	4	0	122	1454
5:40 PM	12	25	2	0	1	39	2	0	3	17	12	0	2	7	1	0	123	1450
5:45 PM	13	27	1	0	0	41	3	0	3	17	12	0	1	6	2	0	126	1473
5:50 PM	18	22	0	0	4	37	2	0	1	13	9	0	2	12	0	0	120	1485
5:55 PM	17	21	2	0	2	38	1	0	1	12	10	0	2	10	1	0	117	1479

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	156	296	28	0	40	444	32	0	20	160	172	0	20	100	28	0	1496
Heavy Trucks	0	0	0		0	4	0		0	0	0		4	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/2/2015 1:55 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix D Year 2015 Existing Traffic Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	34	129	150	15	129	32	106	383	11	20	296	19
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	39	147	170	17	147	36	120	435	12	23	336	22

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	356	200	568	359	22
Volume Left (vph)	39	17	120	23	0
Volume Right (vph)	170	36	13	0	22
Hadj (s)	-0.23	-0.05	0.08	0.08	-0.52
Departure Headway (s)	7.5	8.3	7.3	7.6	3.2
Degree Utilization, x	0.74	0.46	1.0	0.76	0.02
Capacity (veh/h)	463	390	494	456	1121
Control Delay (s)	29.0	18.2	117.9	31.0	6.3
Approach Delay (s)	29.0	18.2	117.9	29.6	
Approach LOS	D	C	F	D	

Intersection Summary			
Delay	61.3		
Level of Service	F		
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	365	409	298	309	84	399	422	393	69	415	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3574	1538	3467	3426		1770	1863	1568	1703	1854	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3574	1538	3467	3426		1770	1863	1568	1703	1854	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	6	429	481	351	364	99	469	496	462	81	488	9
RTOR Reduction (vph)	0	0	54	0	20	0	0	0	90	0	1	0
Lane Group Flow (vph)	6	429	427	351	443	0	469	496	372	81	496	0
Heavy Vehicles (%)	0%	1%	5%	1%	2%	2%	2%	2%	3%	6%	2%	12%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	1.3	21.3	46.3	14.4	34.4		25.0	47.5	61.9	8.5	31.0	
Effective Green, g (s)	1.3	21.3	46.3	14.4	34.4		25.0	47.5	61.9	8.5	31.0	
Actuated g/C Ratio	0.01	0.19	0.42	0.13	0.31		0.23	0.43	0.56	0.08	0.28	
Clearance Time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	21	687	643	450	1064		399	799	876	130	519	
v/s Ratio Prot	0.00	0.12	c0.15	c0.10	0.13		c0.27	0.27	0.06	0.05	c0.27	
v/s Ratio Perm			0.13						0.18			
v/c Ratio	0.29	0.62	0.66	0.78	0.42		1.18	0.62	0.42	0.62	0.96	
Uniform Delay, d1	54.2	41.0	25.9	46.6	30.2		42.9	24.6	14.1	49.5	39.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.4	1.8	2.6	8.5	0.3		102.3	1.5	0.3	9.0	28.5	
Delay (s)	61.6	42.8	28.5	55.1	30.5		145.1	26.1	14.4	58.5	67.7	
Level of Service	E	D	C	E	C		F	C	B	E	E	
Approach Delay (s)		35.4			41.1			61.4			66.4	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	51.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	110.7	Sum of lost time (s)	19.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	657	146	18	439	14	219	77	24	20	65	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0		5.0	5.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1612	3539	1538	1703	3525		1787	1743		1641	1729	
Flt Permitted	0.36	1.00	1.00	0.21	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	612	3539	1538	376	3525		1787	1743		1641	1729	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	29	801	178	22	535	17	267	94	29	24	79	40
RTOR Reduction (vph)	0	0	0	0	2	0	0	7	0	0	14	0
Lane Group Flow (vph)	29	801	178	22	550	0	267	116	0	24	105	0
Confl. Peds. (#/hr)									12	12		
Heavy Vehicles (%)	12%	2%	5%	6%	2%	0%	1%	6%	0%	10%	5%	3%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		Free	6								
Actuated Green, G (s)	27.5	25.3	75.0	27.1	25.1		20.5	20.5		9.2	9.2	
Effective Green, g (s)	27.5	25.3	75.0	27.1	25.1		20.5	20.5		9.2	9.2	
Actuated g/C Ratio	0.37	0.34	1.00	0.36	0.33		0.27	0.27		0.12	0.12	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		4.0	4.0	
Vehicle Extension (s)	2.6	3.1		2.4	3.1		1.4	1.4		1.4	1.4	
Lane Grp Cap (vph)	253	1193	1538	171	1179		488	476		201	212	
v/s Ratio Prot	0.00	c0.23		0.00	0.16		c0.15	0.07		0.01	c0.06	
v/s Ratio Perm	0.04		c0.12	0.04								
v/c Ratio	0.11	0.67	0.12	0.13	0.47		0.55	0.24		0.12	0.50	
Uniform Delay, d1	15.5	21.3	0.0	16.2	19.7		23.3	21.2		29.3	30.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	1.5	0.2	0.2	0.3		0.7	0.1		0.1	0.7	
Delay (s)	15.6	22.8	0.2	16.4	20.0		24.0	21.3		29.4	31.4	
Level of Service	B	C	A	B	B		C	C		C	C	
Approach Delay (s)		18.6			19.8			23.1			31.1	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

MOVEMENT SUMMARY

Site: SW Barrows Rd/SW Roshak Rd_exam

2015 Existing AM Peak
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Roshak Rd											
3	L2	101	1.0	0.235	6.6	LOS A	0.9	23.7	0.40	0.32	32.2
8	T1	4	0.0	0.235	6.6	LOS A	0.9	23.7	0.40	0.32	32.4
18	R2	99	2.0	0.235	6.6	LOS A	0.9	23.7	0.40	0.32	31.6
Approach		204	1.5	0.235	6.6	LOS A	0.9	23.7	0.40	0.32	31.9
East: SW Barrows Rd											
1	L2	15	0.0	0.317	7.0	LOS A	1.4	36.3	0.30	0.18	33.0
6	T1	291	3.0	0.317	7.0	LOS A	1.4	36.3	0.30	0.18	33.0
16	R2	4	0.0	0.317	7.0	LOS A	1.4	36.3	0.30	0.18	32.4
Approach		310	2.8	0.317	7.0	LOS A	1.4	36.3	0.30	0.18	33.0
North: Driveway											
7	L2	1	0.0	0.008	4.9	LOS A	0.0	0.7	0.43	0.28	33.7
4	T1	1	0.0	0.008	4.9	LOS A	0.0	0.7	0.43	0.28	33.8
14	R2	4	0.0	0.008	4.9	LOS A	0.0	0.7	0.43	0.28	33.1
Approach		6	0.0	0.008	4.9	LOS A	0.0	0.7	0.43	0.28	33.3
West: SW Barrows Rd											
5	L2	10	0.0	0.273	6.1	LOS A	1.1	30.2	0.10	0.03	33.4
2	T1	227	6.0	0.273	6.1	LOS A	1.1	30.2	0.10	0.03	33.4
12	R2	46	15.0	0.273	6.1	LOS A	1.1	30.2	0.10	0.03	32.4
Approach		283	7.2	0.273	6.1	LOS A	1.1	30.2	0.10	0.03	33.2
All Vehicles		802	4.0	0.317	6.6	LOS A	1.4	36.3	0.25	0.16	32.8

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	18	162	179	20	98	27	166	307	19	25	423	29
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	19	167	185	21	101	28	171	316	20	26	436	30

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	370	149	507	462	30
Volume Left (vph)	19	21	171	26	0
Volume Right (vph)	185	28	20	0	30
Hadj (s)	-0.29	-0.05	0.05	0.03	-0.60
Departure Headway (s)	7.6	8.8	7.5	7.4	3.2
Degree Utilization, x	0.78	0.37	1.0	0.95	0.03
Capacity (veh/h)	463	372	486	478	1121
Control Delay (s)	32.3	16.9	85.4	57.6	6.3
Approach Delay (s)	32.3	16.9	85.4	54.5	
Approach LOS	D	C	F	F	

Intersection Summary			
Delay	55.7		
Level of Service	F		
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	417	348	450	316	90	355	431	435	116	479	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	3467	3436		1805	1881	1599	1805	1879	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	3467	3436		1805	1881	1599	1805	1879	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	444	370	479	336	96	378	459	463	123	510	4
RTOR Reduction (vph)	0	0	53	0	21	0	0	0	73	0	0	0
Lane Group Flow (vph)	9	444	317	479	411	0	378	459	390	123	514	0
Heavy Vehicles (%)	0%	0%	0%	1%	2%	0%	0%	1%	1%	0%	1%	0%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	1.4	21.8	46.8	15.0	35.4		25.0	44.0	59.0	11.1	30.1	
Effective Green, g (s)	1.4	21.8	46.8	15.0	35.4		25.0	44.0	59.0	11.1	30.1	
Actuated g/C Ratio	0.01	0.20	0.42	0.14	0.32		0.23	0.40	0.53	0.10	0.27	
Clearance Time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	22	709	681	468	1096		406	746	850	180	509	
v/s Ratio Prot	0.00	c0.12	0.10	c0.14	0.12		c0.21	0.24	0.06	0.07	c0.27	
v/s Ratio Perm			0.09						0.18			
v/c Ratio	0.41	0.63	0.47	1.02	0.37		0.93	0.62	0.46	0.68	1.01	
Uniform Delay, d1	54.3	40.8	23.1	48.0	29.2		42.1	26.7	16.1	48.2	40.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.9	1.7	0.5	47.7	0.2		28.0	1.5	0.4	10.2	42.4	
Delay (s)	66.3	42.6	23.6	95.7	29.4		70.1	28.2	16.5	58.4	82.8	
Level of Service	E	D	C	F	C		E	C	B	E	F	
Approach Delay (s)		34.3			64.2			36.2			78.1	
Approach LOS		C			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	50.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	110.9	Sum of lost time (s)	19.0
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	601	331	77	648	9	202	38	37	11	20	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0		5.0	5.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.93		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3574	1582	1805	3532		1805	1703		1805	1837	
Flt Permitted	0.33	1.00	1.00	0.30	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	636	3574	1582	566	3532		1805	1703		1805	1837	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	38	639	352	82	689	10	215	40	39	12	21	6
RTOR Reduction (vph)	0	0	0	0	1	0	0	24	0	0	6	0
Lane Group Flow (vph)	38	639	352	82	698	0	215	55	0	12	21	0
Confl. Peds. (#/hr)	1					1			7	7		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	5%	0%	0%	0%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		Free	6								
Actuated Green, G (s)	24.0	20.8	60.8	28.0	22.8		13.8	13.8		3.0	3.0	
Effective Green, g (s)	24.0	20.8	60.8	28.0	22.8		13.8	13.8		3.0	3.0	
Actuated g/C Ratio	0.39	0.34	1.00	0.46	0.38		0.23	0.23		0.05	0.05	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		4.0	4.0	
Vehicle Extension (s)	2.6	3.1		2.4	3.1		1.4	1.4		1.4	1.4	
Lane Grp Cap (vph)	312	1222	1582	366	1324		409	386		89	90	
v/s Ratio Prot	0.01	0.18		0.02	c0.20		c0.12	0.03		0.01	0.01	
v/s Ratio Perm	0.04		c0.22	0.08								
v/c Ratio	0.12	0.52	0.22	0.22	0.53		0.53	0.14		0.13	0.24	
Uniform Delay, d1	11.4	16.0	0.0	9.6	14.8		20.6	18.8		27.7	27.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.4	0.3	0.2	0.4		0.6	0.1		0.3	0.5	
Delay (s)	11.6	16.4	0.3	9.8	15.2		21.2	18.8		27.9	28.3	
Level of Service	B	B	A	A	B		C	B		C	C	
Approach Delay (s)		10.7			14.6			20.6			28.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

MOVEMENT SUMMARY

Site: SW Barrows Rd/SW Roshak Rd_expm

2015 Existing PM Peak
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Roshak Rd											
3	L2	61	0.0	0.149	6.2	LOS A	0.5	13.6	0.45	0.39	32.4
8	T1	4	0.0	0.149	6.2	LOS A	0.5	13.6	0.45	0.39	32.5
18	R2	50	0.0	0.149	6.2	LOS A	0.5	13.6	0.45	0.39	31.8
Approach		115	0.0	0.149	6.2	LOS A	0.5	13.6	0.45	0.39	32.1
East: SW Barrows Rd											
1	L2	58	0.0	0.292	6.4	LOS A	1.3	33.3	0.23	0.12	33.0
6	T1	234	2.0	0.292	6.4	LOS A	1.3	33.3	0.23	0.12	33.0
16	R2	10	0.0	0.292	6.4	LOS A	1.3	33.3	0.23	0.12	32.4
Approach		301	1.6	0.292	6.4	LOS A	1.3	33.3	0.23	0.12	33.0
North: Driveway											
7	L2	11	0.0	0.023	4.8	LOS A	0.1	1.9	0.40	0.28	32.9
4	T1	2	0.0	0.023	4.8	LOS A	0.1	1.9	0.40	0.28	33.1
14	R2	5	0.0	0.023	4.8	LOS A	0.1	1.9	0.40	0.28	32.3
Approach		18	0.0	0.023	4.8	LOS A	0.1	1.9	0.40	0.28	32.8
West: SW Barrows Rd											
5	L2	12	0.0	0.446	8.4	LOS A	2.5	63.5	0.28	0.14	32.3
2	T1	351	1.0	0.446	8.4	LOS A	2.5	63.5	0.28	0.14	32.4
12	R2	102	1.0	0.446	8.4	LOS A	2.5	63.5	0.28	0.14	31.7
Approach		465	1.0	0.446	8.4	LOS A	2.5	63.5	0.28	0.14	32.3
All Vehicles		900	1.0	0.446	7.4	LOS A	2.5	63.5	0.29	0.17	32.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Appendix E ODOT Crash Data

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SW 175th Avenue & SW Kemmer Road
January 1, 2009 through December 31, 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
ANGLE	0	1	1	2	0	1	0	1	1	1	1	2	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2013 TOTAL	0	2	1	3	0	2	0	2	1	2	1	3	0	0
YEAR: 2012														
ANGLE	0	0	2	2	0	0	0	1	1	2	0	2	0	0
2012 TOTAL	0	0	2	2	0	0	0	1	1	2	0	2	0	0
YEAR: 2011														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	2	0	1	0	1	0	1	0	0
2011 TOTAL	0	2	0	2	0	3	0	2	0	2	0	2	0	0
YEAR: 2010														
ANGLE	0	1	0	1	0	1	0	0	1	0	1	1	0	0
2010 TOTAL	0	1	0	1	0	1	0	0	1	0	1	1	0	0
FINAL TOTAL	0	5	3	8	0	6	0	5	3	6	2	8	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

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

WASHINGTON COUNTY

SW 175th Avenue & SW Kemmer Road
January 1, 2009 through December 31, 2013

SER# INVEST	SPED	ALC	DRUG	SCHL	WORK	DATE DAY TIME	MILEPNT DIST FROM INTERSECT	COUNTY ROADS FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04548	N	N	N			8/26/2011		SW KEMMER RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Fri	0	SW 175TH AVE	S		FLASHBCN-R	N	DRY	REAR		PRVTE	S N									000		00
						3P			06	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	39	M	OR-Y		026	000		07
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	S N									011		00
																PSNGR CAR		01	DRVR	INJC	52	F	OR-Y		000	000		00
																							OR<25					
05097	N	N	N	N	N	9/20/2011		SW KEMMER RD	INTER	CROSS	N	N	CLR	O-1TURN	01	NONE 0	STRGHT											02
COUNTY						Tue	0	SW 175TH AVE	CN		FLASHBCN-R	N	DRY	TURN		PRVTE	N S									015		00
						7A			01	1		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	42	F	OR-Y		028	000		02
																							OR<25					
															02	NONE 0	TURN-L											
																PRVTE	S W									015		00
																PSNGR CAR		01	DRVR	INJC	44	M	OR-Y		000	000		00
																							OR<25					
04374	N	N	N			8/23/2012		SW KEMMER RD	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NONE						Thu	0	SW 175TH AVE	CN		STOP SIGN	N	DRY	ANGL		PRVTE	E W									015		00
						3P			01	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		028	000		02
																							OR<25					
															02	NONE 0	STRGHT											
																PRVTE	N S									015		00
																PSNGR CAR		01	DRVR	NONE	47	M	OR-Y		000	000		00
																							OR<25					
01107	N	N	N	N	N	3/4/2013		SW KEMMER RD	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											03
COUNTY						Mon	0	SW 175TH AVE	CN		FLASHBCN-R	N	DRY	ANGL		PRVTE	N S									000		00
						2P			01	1		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	45	F	OR-Y		021	000		03
																							OR<25					
															02	NONE 0	STRGHT											
																PRVTE	E W									000		00
																PSNGR CAR		01	DRVR	NONE	18	M	OR-Y		000	000		00
																							OR<25					
06882	N	N	N			12/9/2010		SW KEMMER RD	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											02
NONE						Thu	0	SW 175TH AVE	CN		STOP SIGN	N	WET	ANGL		PRVTE	W E									015		00
						6P			03	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	17	F	OR-Y		000	000		00
																							OR<25					
															02	NONE 0	STRGHT											
																PRVTE	N S									015		00
																PSNGR CAR		01	DRVR	NONE	26	M	OR-Y		028	000		02
																							OR<25					

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
COUNTY ROAD CRASH LISTING

WASHINGTON COUNTY

SW 175th Avenue & SW Kemmer Road
January 1, 2009 through December 31, 2013

SER# INVEST	SPED	ALC	DRUGS	SCHL	WORK	DATE DAY TIME	MILEPNT DIST FROM INTERSECT	COUNTY ROADS FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
07346	N	N	N			7/16/2013		SW KEMMER RD	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT						Tue	0	SW 175TH AVE	CN		FLASHBCN-R	N	DRY	TURN		PRVTE	S N									000		00
						7P			03	1		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	31	M	OR-Y	000		000		00
																							OR<25					
															02	NONE 0	TURN-L											
																PRVTE	W N									015		00
																PSNGR CAR		01	DRVR	NONE	44	F	OR-Y	028		000		02
																							OR<25					
00954	N	N	N	N	N	2/24/2012		SW KEMMER RD	INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT											02
COUNTY						Fri	0	SW 175TH AVE	CN		STOP SIGN	N	WET	ANGL		PRVTE	W E									015		00
						1P			04	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	54	M	OR-Y	028		000		02
																							OR<25					
															02	NONE 0	STRGHT											
																PRVTE	S N									015		00
																PSNGR CAR		01	DRVR	NONE	86	F	OR-Y	000		000		00
																							OR<25					
05601	N	N	N			10/2/2013		SW KEMMER RD	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											02
NONE						Wed	0	SW 175TH AVE	CN		FLASHBCN-R	N	WET	ANGL		PRVTE	W E									000		00
						7P			04	1		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	30	M	OR-Y	028		000		02
																							OR<25					
															02	NONE 0	STRGHT											
																PRVTE	S N									000		00
																PSNGR CAR		01	DRVR	NONE	00	F	UNK	000		000		00
																							OR<25					

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SW Roy Rogers Road / SW 175th Avenue & SW Scholls Ferry Road
January 1, 2009 through December 31, 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	1	1	1	1	2	0	0
2013 TOTAL	0	0	3	3	0	0	0	2	1	2	1	3	0	0
YEAR: 2012														
ANGLE	0	2	0	2	0	3	0	1	1	0	2	2	0	0
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	0	1	0	1	1	0	1
REAR-END	0	3	1	4	0	4	0	4	0	4	0	4	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2012 TOTAL	0	6	2	8	0	8	0	6	2	5	3	8	0	1
YEAR: 2011														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	0	1	0	1	1	0	1
REAR-END	0	1	3	4	0	1	0	2	1	2	2	4	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	0	1	1	1	1	2	0	0
2011 TOTAL	0	2	5	7	0	2	0	3	3	3	4	7	0	1
YEAR: 2010														
REAR-END	0	1	3	4	0	3	0	3	1	4	0	4	0	0
2010 TOTAL	0	1	3	4	0	3	0	3	1	4	0	4	0	0
YEAR: 2009														
REAR-END	0	2	0	2	0	3	0	0	2	1	1	2	0	0
2009 TOTAL	0	2	0	2	0	3	0	0	2	1	1	2	0	0
FINAL TOTAL	0	11	13	24	0	16	0	14	9	15	9	24	0	2

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

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

WASHINGTON COUNTY

SW Roy Rogers Road / SW 175th Avenue & SW Scholls Ferry Road
January 1, 2009 through December 31, 2013

SER# INVEST	SPED	ALC	DRUGS	SCHL	WRK	DATE DAY TIME	MILEPNT DIST FROM INTERSECT	COUNTY ROADS FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00120	Y	N	N			1/2/2009		SW ROY ROGERS RD	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											01
NONE						Fri	0	SW SCHOLLS FERRY RD	E		L-GRN-SIG	N	ICE	REAR		PRVTE	E W									001		00
						9P			06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		047,026	000		01
																							OR>25					
																		02	PSNG	INJB	18	F			000	000		00
															02	UNKN 9	STOP											
																UNKN	E W									012		00
																UNKNOWN		01	DRVR	NONE	00	M	UNK		000	000		00
																							UNK					
86807	N	N	N			7/7/2013		SW ROY ROGERS RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NO RPT						Sun	0	SW SCHOLLS FERRY RD	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W									000		00
						11A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	36	F	OR-Y		026	000		07
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	E W									011		00
																PSNGR CAR		01	DRVR	NONE	39	M	OR-Y		000	000		00
																							OR<25					
01984	Y	Y	N	N	N	4/17/2011		SW ROY ROGERS RD	INTER	CROSS	N	N	CLR	S-OTHER	01	NONE 0	TURN-L										079,010	01,08
COUNTY						Sun	0	SW SCHOLLS FERRY RD	S		TRF SIGNAL	N	DRY	TURN		PRVTE	E S									000		00
						11P			05	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y		047,080	000		01,08
																							OR<25					
															02	NONE 0	TURN-L											
																PRVTE	E S									000	079,010	00
																PSNGR CAR		01	DRVR	INJB	19	F	OR-Y		000	000		00
																							OR<25					
05668	Y	N	N	N	N	10/13/2011		SW ROY ROGERS RD	INTER	CROSS	N	Y	RAIN	FIX OBJ	01	NONE 0	TURN-L										100,073,124	01
COUNTY						Thu	0	SW SCHOLLS FERRY RD	S		TRF SIGNAL	N	WET	FIX		PRVTE	E S									088	100,073,124	00
						8P			05	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y		047,080,081	017		01
																							OR<25					
05883	Y	N	N	N	N	10/27/2012		SW ROY ROGERS RD	INTER	CROSS	N	Y	RAIN	FIX OBJ	01	NONE 0	TURN-L										100,079,040	01
COUNTY						Sat	0	SW SCHOLLS FERRY RD	S		TRF SIGNAL	N	WET	FIX		PRVTE	E S									000	010,079,124	00
						10P			05	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	20	F	OR-Y		047,080,081	017		01
																							OR<25					
																		02	PSNG	INJC	17	F			000	000		00
02472	N	N	N			5/14/2013		SW ROY ROGERS RD	INTER	CROSS	N	N	CLR	S-OTHER	01	NONE 0	TURN-L											08
NO RPT						Tue	0	SW SCHOLLS FERRY RD	S		TRF SIGNAL	N	DRY	TURN		PRVTE	E S									000		00
						4P			05	0		N	DAY	PDO		MTRCYCLE		01	DRVR	NONE	00	M	OR-Y		001	000		08
																							OR>25					
															02	NONE 0	TURN-L											
																PRVTE	E S									000		00
																PSNGR CAR		01	DRVR	NONE	52	M	OR-Y		000	000		00
																							OR<25					

WASHINGTON COUNTY

SW Roy Rogers Road / SW 175th Avenue & SW Scholls Ferry Road
January 1, 2009 through December 31, 2013

SER# INVEST	SPED	ALC	DRUGS	SCHL	WORK	DATE DAY TIME	MILEPNT DIST FROM INTERSECT	COUNTY ROADS FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00616	N	N	N			2/9/2010		SW ROY ROGERS RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Tue	0	SW SCHOLLS FERRY RD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
						3P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	28	M	OR-Y		026	000		07
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	NONE	57	F	OR-Y		000	000		00
																							OR<25					
06376	N	N	N			11/17/2010		SW ROY ROGERS RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Wed	0	SW SCHOLLS FERRY RD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N									000		00
						7A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	39	F	OR-Y		026	000		07
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	S N									011		00
																PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		000	000		00
																							OR>25					
00685	N	N	N			2/7/2011		SW ROY ROGERS RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											10
NONE						Mon	0	SW SCHOLLS FERRY RD	S		TRF SIGNAL	N	WET	REAR		PRVTE	S N									000		00
						7A			06	0		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	50	M	OR-Y		014,026	000		10
																							OR>25					
															02	NONE 0	STOP											
																PRVTE	S N									011		00
																PSNGR CAR		01	DRVR	NONE	32	M	OR-Y		000	000		00
																							OR<25					
																		02	PSNG	NO<5	02	F			000	000		00
04941	N	N	N			9/11/2011		SW ROY ROGERS RD	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 0	STRGHT										013	10
NONE						Sun	0	SW SCHOLLS FERRY RD	S		TRF SIGNAL	N	UNK	REAR		PRVTE	S N									000		00
						2P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		026	088		10
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	S N									011	013	00
																PSNGR CAR		01	DRVR	NONE	00	F	UNK		000	000		00
																							OR<25					
															03	NONE 0	STOP											
																UNKN	S N									022		00
																PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		000	000		00
																							OR<25					
01418	Y	N	N			3/19/2012		SW ROY ROGERS RD	INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT											01
NONE						Mon	0	SW SCHOLLS FERRY RD	S		TRF SIGNAL	N	DRY	REAR		UNKN	S N									000		00
						4P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	U	OR-Y		047,026	000		01
																							OR<25					

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

COUNTY ROAD CRASH LISTING

WASHINGTON COUNTY

SW Roy Rogers Road / SW 175th Avenue & SW Scholls Ferry Road

January 1, 2009 through December 31, 2013

SER# INVEST	SPED	ALC	DRUGS	SCHL	WORK	DATE DAY TIME	MILEPNT DIST FROM INTERSECT	COUNTY ROADS FIRST SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0	STOP											
																PRVTE	S N									011		00
																PSNGR CAR		01	DRVR	INJC	31	F	OR-Y		000	000		00
																							OR<25					
																		02	PSNG	NO<5	04	F			000	000		00
																		03	PSNG	INJC	06	M			000	000		00
01734	N	N	N			4/5/2012		SW ROY ROGERS RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	07
NONE						Thu	0	SW SCHOLLS FERRY RD	S		TRF SIGNAL	N	DRY	REAR		UNKN	S N									000		00
						4P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		026	000		07
																							UNK					
															02	NONE 0	STOP											
																PRVTE	S N									011	013	00
																PSNGR CAR		01	DRVR	INJC	45	F	OR-Y		000	000		00
																							OR<25					
															03	NONE 0	STOP											
																UNKN	S N									022		00
																PSNGR CAR		01	DRVR	NONE	00	M	UNK		000	000		00
																							UNK					
05591	Y	N	N			11/2/2009		SW ROY ROGERS RD	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											01
NONE						Mon	0	SW SCHOLLS FERRY RD	W		TRF SIGNAL	N	WET	REAR		PRVTE	W E									000		00
						11A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	57	M	OR-Y		047,026	000		01
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	INJC	54	F	OR-Y		000	000		00
																							OR<25					
																		02	PSNG	INJC	60	M			000	000		00
02990	N	N	N			6/8/2011		SW ROY ROGERS RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Wed	0	SW SCHOLLS FERRY RD	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
						10P			06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	22	M	OTH-Y		026	000		07
																							N-RES					
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		000	000		00
																							OR<25					
03549	N	N	N	N	N	7/11/2012		SW ROY ROGERS RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
COUNTY						Wed	0	SW SCHOLLS FERRY RD	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
						6P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	48	F	OR-Y		026	000		07
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	INJC	37	M	OR-Y		000	000		00
																							OR<25					

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

COUNTY ROAD CRASH LISTING

WASHINGTON COUNTY

SW Roy Rogers Road / SW 175th Avenue & SW Scholls Ferry Road

January 1, 2009 through December 31, 2013

SER# INVEST	SPED	ALC	DRUG	SCHL	WORK	DATE DAY TIME	MILEPNT DIST FROM INTERSECT	COUNTY ROADS FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
06449	N	N	N	N	N	11/16/2011		SW ROY ROGERS RD	INTER	CROSS	N	N	RAIN	S-OTHER	01	NONE 0	TURN-R											02
COUNTY						Wed	0	SW SCHOLLS FERRY RD	CN		L-GRN-SIG	N	WET	TURN		PRVTE	W S									016		00
						12P			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	60	F	OR-Y	028	000			02
																							OR<25					
															02	NONE 0	TURN-L											
																PRVTE	E S									000		00
																PSNGR CAR		01	DRVR	NONE	46	M	OR-Y	000	000			00
																							OR<25					
00459	N	N	N			1/12/2012		SW ROY ROGERS RD	INTER	CROSS	N	N	CLR	S-OTHER	01	NONE 0	TURN-R											07
NONE						Thu	0	SW SCHOLLS FERRY RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W S									000		00
						2P			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	43	M	OR-Y	026	000			07
																							OR<25					
															02	NONE 0	TURN-R											
																PRVTE	W S									013		00
																PSNGR CAR		01	DRVR	NONE	21	F	OR-Y	000	000			00
																							OR<25					
04597	N	N	N	N	N	9/1/2012		SW ROY ROGERS RD	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
COUNTY						Sat	0	SW SCHOLLS FERRY RD	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	N S									000		00
						6A			03	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	INJC	57	M	OR-Y	000	000			00
																							OR<25					
															02	NONE 0	STRGHT											
																PRVTE	W E									000		00
																PSNGR CAR		01	DRVR	INJB	59	M	OR-Y	020	028			04
																							OR<25					
00465	N	N	N			1/25/2013		SW SCHOLLS FERRY RD	INTER	CROSS	N	N	RAIN	ANGL-STP	01	NONE 0	TURN-R											08
NONE						Fri	0	SW 175TH AVE	N		TRF SIGNAL	N	WET	TURN		PRVTE	E N									000		00
						5P			06	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	22	M	OR-Y	001	000			08
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	N S									012		00
																PSNGR CAR		01	DRVR	NONE	45	F	OR-Y	000	000			00
																							OR<25					
00358	N	N	N			1/25/2010		SW SCHOLLS FERRY RD	INTER	CROSS	N	N	UNK	S-1STOP	01	UNKN 9	STRGHT											10
NONE						Mon	0	SW 175TH AVE	E		TRF SIGNAL	N	DRY	REAR		UNKN	E W									000		00
						1P			06	0		N	DAY	PDO		UNKNOWN		01	DRVR	NONE	00	U	UNK	026	000			10
																							UNK					
															02	NONE 0	STOP											
																PUBLC	E W									011		00
																PSNGR CAR		01	DRVR	NONE	59	M	OR-Y	000	000			00
																							OR>25					

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

COUNTY ROAD CRASH LISTING

WASHINGTON COUNTY

SW Roy Rogers Road / SW 175th Avenue & SW Scholls Ferry Road

January 1, 2009 through December 31, 2013

SER# INVEST	SPED	ALC	DRUG	SCHL	WRK	DATE DAY TIME	MILEPNT DIST FROM INTERSECT	COUNTY ROADS FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04900	N	N	N	N	N	9/18/2010		SW SCHOLLS FERRY RD	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											27
COUNTY						Sat	0	SW 175TH AVE	E		TRF SIGNAL	N	WET	REAR		PRVTE	E W									000		00
						11A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		016,026	038		10
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	E W									011		00
																PSNGR CAR		01	DRVR	INJC	31	F	OTH-Y		000	000		00
																							N-RES					
																		02	PSNG	INJC	37	F			000	000		00
																		03	PSNG	INJC	40	F			000	000		00
02266	N	N	N	N	N	5/3/2011		SW SCHOLLS FERRY RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											10
COUNTY						Tue	0	SW 175TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W									000		00
						7A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y		014,026	088		10
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	E W									011		00
																PSNGR CAR		01	DRVR	INJC	31	F	OR-Y		000	000		00
																							OR<25					
05263	N	N	N			10/3/2012		SW SCHOLLS FERRY RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
COUNTY						Wed	0	SW 175TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W									000		00
						6P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y		043,026	000		07
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	E W									011		00
																PSNGR CAR		01	DRVR	NONE	52	M	OR-Y		000	000		00
																							OR<25					
05487	N	N	N	N	N	10/12/2012		SW SCHOLLS FERRY RD	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											04
COUNTY						Fri	0	SW 175TH AVE	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	S N									000		00
						10P			02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	34	F	SUSP		020	000		04
																							OR<25					
															02	NONE 0	STRGHT											
																PRVTE	E W									000		00
																PSNGR CAR		01	DRVR	NONE	34	F	EXP		000	000		00
																							OR<25					
																		02	PSNG	NO<5	03	F			000	000		00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SW Scholls Ferry Rd & SW Barrows Rd
January 1, 2009 through December 31, 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2013 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2011														
REAR-END	0	2	2	4	0	2	0	3	1	4	0	4	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2011 TOTAL	0	3	2	5	0	3	0	4	1	5	0	5	0	0
YEAR: 2010														
REAR-END	0	2	0	2	0	2	1	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2010 TOTAL	0	3	0	3	0	3	1	3	0	3	0	3	0	0
YEAR: 2009														
REAR-END	0	1	2	3	0	2	0	3	0	2	1	3	0	0
TURNING MOVEMENTS	0	1	2	3	0	1	0	3	0	1	2	3	0	0
2009 TOTAL	0	2	4	6	0	3	0	6	0	3	3	6	0	0
FINAL TOTAL	0	8	7	15	0	9	1	14	1	12	3	15	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

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

CITY OF BEAVERTON, WASHINGTON COUNTY

SW Scholls Ferry Rd & SW Barrows Rd
January 1, 2009 through December 31, 2013

SER# INVEST	SPED	ALC	DRUGS	SCHL	WORK	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
06078	N	N	N			11/30/2009	14	BARROWS RD	INTER	3-LEG	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NONE						Mon	0	SCHOLLS FERRY RD	SW		TRF SIGNAL		N	DRY	REAR		PRVTE	SW NE								000		00
						10A			06	0			N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	55	M	OR-Y	026	000		07
																								OR<25				
															02	NONE 0	STOP											
																PRVTE	SW NE									011		00
																PSNGR CAR		01	DRVR	INJC	23	F	OR-Y	000	000		00
																								OR<25				
04283	N	N	N			08/29/2009	14	BARROWS RD	INTER	CROSS	N		N	CLR	O-1TURN	01	NONE 0	STRGHT										02
NO RPT						Sat	0	SCHOLLS FERRY RD	CN		L-GRN-SIG		N	DRY	TURN		PRVTE	SW NE								000		00
						10A			03	1			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	52	F	OR-Y	000	000		00
																								OR<25				
															02	NONE 0	TURN-L											
																PRVTE	NE S									000		00
																PSNGR CAR		01	DRVR	NONE	19	M	OR-Y	004	000		02
																								OR<25				
05973	N	N	N	N	N	11/03/2010	14	SW BARROWS RD	INTER	3-LEG	N		N	CLR	S-1STOP	01	NONE 1	STRGHT										02,10,12
CITY						Wed	0	SW SCHOLLS FERRY RD	NE		STOP SIGN		N	DRY	REAR		PRVTE	SW NE								000		00
						11A			05	0			N	DAY	INJ		SEMI TOW		01	DRVR	NONE	68	M	OR-Y	026	000		12
																								OR<25				
															02	NONE 0	STOP											
																PRVTE	SW NE									011		00
																PSNGR CAR		01	DRVR	INJC	35	M	OR-Y	028,009	088		02,10
																								OR<25				
01755	N	N	N			04/16/2009	14	SW BARROWS RD	INTER	3-LEG	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NO RPT						Thu	0	SW SCHOLLS FERRY RD	E		TRF SIGNAL		N	DRY	REAR		PRVTE	E W								000		00
						1A			06	0			N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	65	F	OR-Y	026	000		07
																								OR<25				
															02	NONE 0	STOP											
																PRVTE	E W									011		00
																PSNGR CAR		01	DRVR	NONE	29	M	OR-Y	000	000		00
																								OR<25				
03184	N	N	N			06/15/2013	14	SW BARROWS RD	INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NONE						Sat	0	SW SCHOLLS FERRY RD	S		TRF SIGNAL		N	DRY	REAR		PRVTE	S N								000		00
						12P			06	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK	026	000		07
																								OR<25				
															02	NONE 0	STOP											
																PRVTE	S N									011		00
																PSNGR CAR		01	DRVR	NONE	66	F	OR-Y	000	000		00
																								OR<25				
03972	N	N	N			08/07/2010	17	SW BARROWS RD	INTER	3-LEG	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NONE						Sat	0	SW SCHOLLS FERRY RD	SW		TRF SIGNAL		N	DRY	REAR		PRVTE	SW NE								000		00
						9A			06	0			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	53	M	OR-Y	026	000		07
																								OR<25				

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

CITY OF BEAVERTON, WASHINGTON COUNTY

SW Scholls Ferry Rd & SW Barrows Rd
January 1, 2009 through December 31, 2013

SER# INVEST	SPED	ALC	DRUG	SCHL	WORK	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0	STOP											
																PRVTE	SW NE								011		00
																PSNGR CAR		01	DRVR	INJC	22	F	OR-Y		000			00
																							OR<25					
02081	N	N	N	N	N	04/23/2011	17	SW BARROWS RD	INTER	3-LEG	N		N	CLR BIKE	01	NONE 0	TURN-R											18,02
CITY						Sat	0	SW SCHOLLS FERRY RD	SW		TRF SIGNAL		N	DRY TURN		PRVTE	SW E								016		00
						1P			06	0			N	DAY INJ		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y		027			02
																							OR<25					
																	STRGHT	01	BIKE	INJB	52	M		01	055			18
																	E W											
03612	N	N	N			07/11/2011	17	SW BARROWS RD	INTER	3-LEG	N		N	CLR S-1STOP	01	NONE 0	STRGHT											32,07
NO RPT						Mon	0	SW SCHOLLS FERRY RD	SW		TRF SIGNAL		N	DRY REAR		PRVTE	SW NE								000		00
						2P			06	0			N	DAY PDO		PSNGR CAR		01	DRVR	NONE	46	F	OR-Y		052,026	000		32,07
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	SW NE								011		00
																PSNGR CAR		01	DRVR	NONE	64	F	OTH-Y		000	000		00
																							N-RES					
03801	N	N	N			07/21/2011	17	SW BARROWS RD	INTER	3-LEG	N		N	CLR S-1STOP	01	NONE 0	STRGHT											07
NONE						Thu	0	SW SCHOLLS FERRY RD	SW		TRF SIGNAL		N	DRY REAR		UNKN	SW NE								000		00
						10A			06	0			N	DAY PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		026	000		07
																							UNK					
															02	NONE 0	STOP											
																PRVTE	SW NE								011		00
																PSNGR CAR		01	DRVR	NONE	67	F	OR-Y		000	000		00
																							OR<25					
04503	N	N	N			08/24/2011	14	SW BARROWS RD	INTER	3-LEG	N		N	CLR S-1STOP	01	NONE 0	STRGHT										001	32
NO RPT						Wed	0	SW SCHOLLS FERRY RD	SW		STOP SIGN		N	DRY REAR		PRVTE	SW NE								000		00
						4P			06	0			N	DAY INJ		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y		052,014,026	088		32,10
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	SW NE								011		00
																MTRCYCLE		01	DRVR	INJB	34	M	OR-Y		000	000	001	00
																							OR<25					
06635	N	N	N			11/24/2011	14	SW BARROWS RD	INTER	CROSS	N		N	RAIN S-1STOP	01	NONE 0	STRGHT											22,11
NO RPT						Thu	0	SW SCHOLLS FERRY RD	SW		TRF SIGNAL		N	WET REAR		PRVTE	SW NE								088		22,11
						10A			06	0			N	DAY INJ		PSNGR CAR		01	DRVR	NONE	67	F	OR-Y		026	088		10
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	SW NE								011		00
																PSNGR CAR		01	DRVR	INJC	49	F	OR-Y		000	000		00
																							OR>25					
01031	N	N	N			03/03/2009	14	SW BARROWS RD	INTER	3-LEG	N		N	CLR S-1STOP	01	UNKN 9	STRGHT											07
NONE						Tue	0	SW SCHOLLS FERRY RD	W		TRF SIGNAL		N	DRY REAR		UNKN	W E								000		00
						8A			06	0			N	DAY PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK		026	000		07
																							UNK					

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
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CITY OF BEAVERTON, WASHINGTON COUNTY

SW Scholls Ferry Rd & SW Barrows Rd
January 1, 2009 through December 31, 2013

SER# INVEST	SPED	ALC	DRUG	SCHL	WORK	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE PSNGR CAR	STOP W E									011	00
																		01	DRVR	NONE	25	F	OR-Y OR<25		000	000		00
																		02	PSNG	NO<5	01	F			000	000		00
03398	N	N	N			07/06/2010 Tue 6A	14 0	SW BARROWS RD SW SCHOLLS FERRY RD	INTER CN 02	CROSS 0	N TRF SIGNAL	N	N CLR DRY DAY	ANGL-OTH TURN INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT S N	01	DRVR	INJC	48	F	OR-Y OR<25		020		000	04
NO RPT																										000		00
															02	NONE 0 PRVTE PSNGR CAR	TURN-L NE S	01	DRVR	NONE	44	M	OR-Y OR<25		000	000		00
																										000		00
00297	N	N	N			01/19/2009 Mon 6P	14 0	SW BARROWS RD SW SCHOLLS FERRY RD	INTER CN 04	3-LEG 0	N TRF SIGNAL	N	N CLR DRY DLIT	ANGL-OTH TURN INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT W E	01	DRVR	INJB	44	F	OR-Y OR<25		020		000	04
NO RPT																										000		00
															02	NONE 0 PRVTE PSNGR CAR	TURN-L SW W	01	DRVR	NONE	38	M	OR-Y OR<25		000	000		00
																										000		00
00774	N	N	N			02/13/2009 Fri 5P	14 0	SW BARROWS RD SW SCHOLLS FERRY RD	INTER CN 04	3-LEG 0	N TRF SIGNAL	N	N CLR DRY DUSK	O-1TURN TURN PDO	01	UNKN 0 PRVTE PSNGR CAR	TURN-L E SW	01	DRVR	NONE	39	F	OR-Y OR<25		004,028	000		02
NO RPT																										000		00
															02	NONE 0 PRVTE PSNGR CAR	STRGHT W E	01	DRVR	NONE	53	F	OR-Y OR>25		000	000		00
																										000		00

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NOT VISIBLE: DARK / NON-REFLECTIVE CLOTHING
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1TURN	FROM OPPOSITE DIRECTION - ONE TURN, ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAYON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHI(
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY

PEDESTRIAN LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

Appendix F Year 2016 Background Traffic Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	131	152	15	131	32	108	389	11	20	300	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.98		1.00	1.00		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1729			1800		1719	1851		1805	1809	
Flt Permitted		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1729			1800		1719	1851		1805	1809	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	40	149	173	17	149	36	123	442	12	23	341	22
RTOR Reduction (vph)	0	37	0	0	9	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	325	0	0	193	0	123	453	0	23	361	0
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	3%	7%	2%	3%	5%	2%	9%	0%	4%	5%
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		18.3			13.8		8.8	29.5		1.4	22.1	
Effective Green, g (s)		18.3			13.8		8.8	29.5		1.4	22.1	
Actuated g/C Ratio		0.23			0.17		0.11	0.37		0.02	0.28	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		400			314		191	691		31	506	
v/s Ratio Prot		c0.19			c0.11		c0.07	c0.24		0.01	0.20	
v/s Ratio Perm												
v/c Ratio		0.81			0.61		0.64	0.66		0.74	0.71	
Uniform Delay, d1		28.7			30.1		33.6	20.5		38.6	25.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		11.9			3.5		7.2	2.2		64.1	4.7	
Delay (s)		40.6			33.7		40.8	22.8		102.7	30.3	
Level of Service		D			C		D	C		F	C	
Approach Delay (s)		40.6			33.7			26.6			34.6	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	79.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	370	415	302	314	85	405	428	399	70	421	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3574	1538	3467	3426		1770	1863	1568	1703	1855	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3574	1538	3467	3426		1770	1863	1568	1703	1855	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	6	435	488	355	369	100	476	504	469	82	495	9
RTOR Reduction (vph)	0	0	53	0	20	0	0	0	88	0	1	0
Lane Group Flow (vph)	6	435	435	355	449	0	476	504	381	82	503	0
Heavy Vehicles (%)	0%	1%	5%	1%	2%	2%	2%	2%	3%	6%	2%	12%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	1.3	21.5	46.5	14.5	34.7		25.0	47.5	62.0	8.5	31.0	
Effective Green, g (s)	1.3	21.5	46.5	14.5	34.7		25.0	47.5	62.0	8.5	31.0	
Actuated g/C Ratio	0.01	0.19	0.42	0.13	0.31		0.23	0.43	0.56	0.08	0.28	
Clearance Time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	21	692	644	452	1071		398	797	875	130	518	
v/s Ratio Prot	0.00	0.12	c0.15	c0.10	0.13		c0.27	0.27	0.06	0.05	c0.27	
v/s Ratio Perm			0.13						0.19			
v/c Ratio	0.29	0.63	0.67	0.79	0.42		1.20	0.63	0.44	0.63	0.97	
Uniform Delay, d1	54.4	41.1	26.1	46.7	30.2		43.0	24.9	14.3	49.7	39.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.4	1.8	2.8	8.7	0.3		110.3	1.6	0.3	9.6	32.2	
Delay (s)	61.8	42.9	28.9	55.5	30.4		153.3	26.5	14.6	59.3	71.7	
Level of Service	E	D	C	E	C		F	C	B	E	E	
Approach Delay (s)		35.7			41.2			64.3			70.0	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	53.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	111.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	667	148	18	446	14	222	78	24	20	66	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0		5.0	5.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1612	3539	1538	1703	3525		1787	1743		1641	1730	
Flt Permitted	0.35	1.00	1.00	0.20	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	602	3539	1538	367	3525		1787	1743		1641	1730	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	29	813	180	22	544	17	271	95	29	24	80	40
RTOR Reduction (vph)	0	0	0	0	2	0	0	7	0	0	14	0
Lane Group Flow (vph)	29	813	180	22	559	0	271	117	0	24	106	0
Confl. Peds. (#/hr)									12	12		
Heavy Vehicles (%)	12%	2%	5%	6%	2%	0%	1%	6%	0%	10%	5%	3%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		Free	6								
Actuated Green, G (s)	28.1	25.9	76.1	27.7	25.7		21.0	21.0		9.2	9.2	
Effective Green, g (s)	28.1	25.9	76.1	27.7	25.7		21.0	21.0		9.2	9.2	
Actuated g/C Ratio	0.37	0.34	1.00	0.36	0.34		0.28	0.28		0.12	0.12	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		4.0	4.0	
Vehicle Extension (s)	2.6	3.1		2.4	3.1		1.4	1.4		1.4	1.4	
Lane Grp Cap (vph)	251	1204	1538	168	1190		493	480		198	209	
v/s Ratio Prot	0.00	c0.23		0.00	0.16		c0.15	0.07		0.01	c0.06	
v/s Ratio Perm	0.04		c0.12	0.04								
v/c Ratio	0.12	0.68	0.12	0.13	0.47		0.55	0.24		0.12	0.51	
Uniform Delay, d1	15.6	21.5	0.0	16.3	19.8		23.5	21.4		29.8	31.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	1.5	0.2	0.2	0.3		0.7	0.1		0.1	0.7	
Delay (s)	15.8	23.0	0.2	16.6	20.1		24.2	21.5		29.9	32.0	
Level of Service	B	C	A	B	C		C	C		C	C	
Approach Delay (s)		18.8			20.0			23.3			31.7	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	76.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

MOVEMENT SUMMARY

Site: SW Barrows Rd/SW Roshak Rd_bkam

2016 Background AM Peak
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Roshak Rd											
3	L2	102	1.0	0.239	6.7	LOS A	1.0	24.1	0.41	0.32	32.2
8	T1	4	0.0	0.239	6.7	LOS A	1.0	24.1	0.41	0.32	32.3
18	R2	100	2.0	0.239	6.7	LOS A	1.0	24.1	0.41	0.32	31.6
Approach		206	1.5	0.239	6.7	LOS A	1.0	24.1	0.41	0.32	31.9
East: SW Barrows Rd											
1	L2	15	0.0	0.321	7.0	LOS A	1.4	36.9	0.30	0.18	33.0
6	T1	295	3.0	0.321	7.0	LOS A	1.4	36.9	0.30	0.18	33.0
16	R2	4	0.0	0.321	7.0	LOS A	1.4	36.9	0.30	0.18	32.3
Approach		314	2.8	0.321	7.0	LOS A	1.4	36.9	0.30	0.18	33.0
North: Driveway											
7	L2	1	0.0	0.008	4.9	LOS A	0.0	0.7	0.43	0.29	33.7
4	T1	1	0.0	0.008	4.9	LOS A	0.0	0.7	0.43	0.29	33.8
14	R2	4	0.0	0.008	4.9	LOS A	0.0	0.7	0.43	0.29	33.1
Approach		6	0.0	0.008	4.9	LOS A	0.0	0.7	0.43	0.29	33.3
West: SW Barrows Rd											
5	L2	10	0.0	0.278	6.2	LOS A	1.2	30.9	0.10	0.03	33.4
2	T1	231	6.0	0.278	6.2	LOS A	1.2	30.9	0.10	0.03	33.4
12	R2	47	15.0	0.278	6.2	LOS A	1.2	30.9	0.10	0.03	32.3
Approach		288	7.3	0.278	6.2	LOS A	1.2	30.9	0.10	0.03	33.2
All Vehicles		814	4.0	0.321	6.6	LOS A	1.4	36.9	0.26	0.16	32.8

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	164	182	20	99	27	168	312	19	25	429	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.97		1.00	0.99		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1767			1794		1805	1866		1805	1864	
Flt Permitted		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1767			1794		1805	1866		1805	1864	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	169	188	21	102	28	173	322	20	26	442	30
RTOR Reduction (vph)	0	37	0	0	9	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	339	0	0	142	0	173	340	0	26	469	0
Confl. Peds. (#/hr)	3					3						
Heavy Vehicles (%)	0%	0%	0%	5%	2%	0%	0%	1%	0%	0%	1%	0%
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		19.6			12.6		10.8	36.4		1.8	27.4	
Effective Green, g (s)		19.6			12.6		10.8	36.4		1.8	27.4	
Actuated g/C Ratio		0.23			0.15		0.12	0.42		0.02	0.32	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		400			261		225	786		37	591	
v/s Ratio Prot		c0.19			c0.08		c0.10	0.18		0.01	c0.25	
v/s Ratio Perm												
v/c Ratio		0.85			0.54		0.77	0.43		0.70	0.79	
Uniform Delay, d1		32.0			34.2		36.6	17.7		42.0	26.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.2			2.3		14.6	0.4		46.2	7.3	
Delay (s)		47.2			36.5		51.2	18.1		88.2	34.2	
Level of Service		D			D		D	B		F	C	
Approach Delay (s)		47.2			36.5			29.2			37.0	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	36.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	423	353	457	321	91	360	437	442	118	486	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	3467	3437		1805	1881	1599	1805	1879	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	3467	3437		1805	1881	1599	1805	1879	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	450	376	486	341	97	383	465	470	126	517	4
RTOR Reduction (vph)	0	0	53	0	21	0	0	0	70	0	0	0
Lane Group Flow (vph)	9	450	323	486	417	0	383	465	400	126	521	0
Heavy Vehicles (%)	0%	0%	0%	1%	2%	0%	0%	1%	1%	0%	1%	0%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	1.4	22.0	47.0	15.0	35.6		25.0	43.9	58.9	11.2	30.1	
Effective Green, g (s)	1.4	22.0	47.0	15.0	35.6		25.0	43.9	58.9	11.2	30.1	
Actuated g/C Ratio	0.01	0.20	0.42	0.14	0.32		0.23	0.40	0.53	0.10	0.27	
Clearance Time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	22	714	683	468	1101		406	743	847	181	509	
v/s Ratio Prot	0.00	c0.12	0.11	c0.14	0.12		c0.21	0.25	0.06	0.07	c0.28	
v/s Ratio Perm			0.09						0.19			
v/c Ratio	0.41	0.63	0.47	1.04	0.38		0.94	0.63	0.47	0.70	1.02	
Uniform Delay, d1	54.4	40.8	23.1	48.0	29.2		42.4	27.0	16.4	48.3	40.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.9	1.8	0.5	51.9	0.2		30.4	1.7	0.4	11.0	46.0	
Delay (s)	66.4	42.6	23.6	100.0	29.4		72.8	28.7	16.8	59.4	86.5	
Level of Service	E	D	C	F	C		E	C	B	E	F	
Approach Delay (s)		34.3			66.5			37.2			81.2	
Approach LOS		C			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	51.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	111.1	Sum of lost time (s)	19.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	610	336	78	658	9	205	39	38	11	20	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0		5.0	5.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.93		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3574	1582	1805	3532		1805	1702		1805	1837	
Flt Permitted	0.33	1.00	1.00	0.29	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	618	3574	1582	559	3532		1805	1702		1805	1837	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	39	649	357	83	700	10	218	41	40	12	21	6
RTOR Reduction (vph)	0	0	0	0	1	0	0	24	0	0	6	0
Lane Group Flow (vph)	39	649	357	83	709	0	218	57	0	12	21	0
Confl. Peds. (#/hr)	1					1			7	7		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	5%	0%	0%	0%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		Free	6								
Actuated Green, G (s)	24.5	21.2	61.4	28.3	23.1		14.0	14.0		3.0	3.0	
Effective Green, g (s)	24.5	21.2	61.4	28.3	23.1		14.0	14.0		3.0	3.0	
Actuated g/C Ratio	0.40	0.35	1.00	0.46	0.38		0.23	0.23		0.05	0.05	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		4.0	4.0	
Vehicle Extension (s)	2.6	3.1		2.4	3.1		1.4	1.4		1.4	1.4	
Lane Grp Cap (vph)	310	1234	1582	363	1328		411	388		88	89	
v/s Ratio Prot	0.01	0.18		0.02	c0.20		c0.12	0.03		0.01	0.01	
v/s Ratio Perm	0.04		c0.23	0.09								
v/c Ratio	0.13	0.53	0.23	0.23	0.53		0.53	0.15		0.14	0.24	
Uniform Delay, d1	11.4	16.1	0.0	9.7	14.9		20.8	18.9		28.0	28.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.4	0.3	0.2	0.4		0.7	0.1		0.3	0.5	
Delay (s)	11.6	16.5	0.3	9.9	15.4		21.5	19.0		28.2	28.6	
Level of Service	B	B	A	A	B		C	B		C	C	
Approach Delay (s)		10.8			14.8			20.8			28.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	61.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

MOVEMENT SUMMARY

Site: SW Barrows Rd/SW Roshak Rd_bkpm

2016 Background PM Peak
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Roshak Rd											
3	L2	62	0.0	0.152	6.3	LOS A	0.6	13.9	0.45	0.39	32.4
8	T1	4	0.0	0.152	6.3	LOS A	0.6	13.9	0.45	0.39	32.5
18	R2	51	0.0	0.152	6.3	LOS A	0.6	13.9	0.45	0.39	31.8
Approach		117	0.0	0.152	6.3	LOS A	0.6	13.9	0.45	0.39	32.1
East: SW Barrows Rd											
1	L2	59	0.0	0.297	6.5	LOS A	1.3	34.0	0.24	0.12	32.9
6	T1	237	2.0	0.297	6.5	LOS A	1.3	34.0	0.24	0.12	33.0
16	R2	10	0.0	0.297	6.5	LOS A	1.3	34.0	0.24	0.12	32.3
Approach		305	1.6	0.297	6.5	LOS A	1.3	34.0	0.24	0.12	33.0
North: Driveway											
7	L2	11	0.0	0.023	4.8	LOS A	0.1	2.0	0.40	0.28	32.9
4	T1	2	0.0	0.023	4.8	LOS A	0.1	2.0	0.40	0.28	33.0
14	R2	5	0.0	0.023	4.8	LOS A	0.1	2.0	0.40	0.28	32.3
Approach		18	0.0	0.023	4.8	LOS A	0.1	2.0	0.40	0.28	32.8
West: SW Barrows Rd											
5	L2	12	0.0	0.453	8.5	LOS A	2.6	65.1	0.28	0.15	32.3
2	T1	357	1.0	0.453	8.5	LOS A	2.6	65.1	0.28	0.15	32.4
12	R2	103	1.0	0.453	8.5	LOS A	2.6	65.1	0.28	0.15	31.7
Approach		472	1.0	0.453	8.5	LOS A	2.6	65.1	0.28	0.15	32.2
All Vehicles		913	1.0	0.453	7.5	LOS A	2.6	65.1	0.29	0.17	32.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Appendix G Policy Compliance

POLICY COMPLIANCE

This following appendix provides findings regarding the proposed South Cooper Mountain Heights development and the associated transportation network and its compliance with the City of Beaverton Comprehensive Plan and the South Cooper Mountain Concept Plan.

City of Beaverton Comprehensive Plan, 2002

The following policies from the City of Beaverton Comprehensive Plan 2002 were determined to be relevant to the proposed development. The relevant policies are provided below in *italics* with our responses shown in standard font.

6.2.1.a Maintain the livability of Beaverton through proper location and design of transportation facilities

Response: The local streets, neighborhood route, and planned Collector 6b, 6c will be designed in accordance with City of Beaverton design standards and the South Cooper Mountain Concept Plan.

6.2.1.d Locate and design multi-use paths to balance the needs of human use and enjoyment with resource preservation in areas identified on the Natural Resource Inventory Plan Map for their Significant Natural Resource values.

Response: A multi-use path will be designed along the planned collector 6b, 6c, and north-south along the creek corridor. The paths will be designed in accordance with City of Beaverton design standards and the South Cooper Mountain Concept Plan.

6.2.1.e Protect neighborhoods from excessive through traffic and travel speeds while providing reasonable access to and from residential areas. Build streets to minimize speeding.

Response: The local streets, neighborhood route, and planned Collector 6b, 6c will be designed in accordance with City of Beaverton design standards and the South Cooper Mountain Concept Plan. Based on projected volumes, the planned collector 6b, 6c will be designed as a 2-lane collector, following City of Beaverton design standards, thereby promoting a multi-modal environment and reducing speeds through the site and pedestrian and cyclist crossings.

6.2.1.g Provide convenient direct pedestrian and bicycle facilities to promote the health and physical well-being of Beaverton residents, to reduce traffic congestion, to provide commuting and recreational alternatives to the motor vehicle, and to support local commerce.

Response: Pedestrian and bicycle facilities will be installed throughout the site, in addition to the planned multi-use facilities per the South Cooper Mountain Concept Plan.

6.2.2.a Recognize that streets are important to community identity and provide a needed service. Implement Beaverton's public street standards that recognize the multipurpose nature of the street

right-of-way for a combination of utility, pedestrian, bicycle, transit, truck, auto uses, and railroad crossings.

Response: The local streets, neighborhood route, and planned Collector 6b, 6c will be designed in accordance to City of Beaverton design standards and the South Cooper Mountain Concept Plan. Pedestrian and bicycle facilities will be installed throughout the site, in addition to the planned multi-use facilities per the South Cooper Mountain Concept Plan.

6.2.2.c Develop and provide a safe, complete, attractive, efficient, and accessible system of pedestrian ways and bicycle ways, including bike lanes, cycletracks, bike boulevards, shared roadways, multi-use paths, and sidewalks according to the pedestrian and bicycle system maps, and the Development Code and Engineering Design Manual requirements.

Response: The local streets, neighborhood route, and planned Collector 6b, 6c will be designed in accordance with City of Beaverton design standards and the South Cooper Mountain Concept Plan. Pedestrian and bicycle facilities will be installed throughout the site, in addition to the planned multi-use facilities per the South Cooper Mountain Concept Plan.

6.2.2.d Design sidewalks and the pedestrian access systems to City standards to enhance walkability: complete the accessible pedestrian network, provide safe direct access to transit and activity centers, and provide safe crossings at intersections with pedestrian friendly design.

Response: The local streets, neighborhood route, and planned Collector 6b, 6c will be designed in accordance with City of Beaverton design standards and the South Cooper Mountain Concept Plan. Pedestrian and bicycle facilities will be installed throughout the site, in addition to the planned multi-use facilities per the South Cooper Mountain Concept Plan.

6.2.2.e Provide connectivity to each area of the City for convenient multimodal access. Ensure pedestrian, bicycle, transit, and vehicle access to schools, parks, commercial, employment, and recreational areas, and destinations in station areas, regional and town centers by identifying and developing improvements that address connectivity needs.

Response: The local streets, neighborhood route, and planned Collector 6b, 6c will be designed accordance with City of Beaverton design standards and the South Cooper Mountain Concept Plan. Pedestrian and bicycle facilities will be installed throughout the site, in addition to the planned multi-use facilities per the South Cooper Mountain Concept Plan. The multi-use path located along the planned Collector 6b, 6c is intended to connect the proposed Beaverton High School with the existing Scholls Heights Elementary School. These connections provide the intended connectivity throughout the City and are consistent with the Transportation System Plan.

6.2.2.f Develop neighborhood and local connections to provide convenient circulation into and out of neighborhoods. Work to prevent and eliminate pedestrian and bicycle "cul-de-sacs" that require substantial out-of-direction travel for pedestrians and bicyclists.

Response: The proposed site Is designed to promote convenient circulation in and out of the neighborhood. Upon build-out of the planned Collector 6b, 6b to SW Loon Drive, a connected east-west route will provide connection between neighborhood to the east and west of the proposed South Cooper Mountain Heights neighborhood.

6.2.3.b Design streets to serve anticipated function and intended uses as determined by the Comprehensive Plan.

Response: The local streets, neighborhood route, and planned Collector 6b, 6c will be designed in accordance to City of Beaverton design standards and the South Cooper Mountain Concept Plan. Pedestrian and bicycle facilities will be installed throughout the site, in addition to the planned multi-use facilities per the South Cooper Mountain Concept Plan.

6.2.3.d Designate safe walkway and bikeway routes from residential areas to schools, parks, transit, and other activity centers.

Response: The local streets, neighborhood route, and Planned collector 6b, 6c will be designed in accordance to City of Beaverton design standards and the South Cooper Mountain Concept Plan. Pedestrian and bicycle facilities will be installed throughout the site, in addition to the planned multi-use facilities per the South Cooper Mountain Concept Plan. The multi-use path located along the planned Collector 6b, 6c is intended to connect the proposed Beaverton High School with the existing Scholls Heights Elementary School.

6.2.3.e Construct multi-use paths only where they can be developed with satisfactory design components that address safety, security, maintainability, and acceptable uses. Multiuse paths should converge at traffic-controlled intersections to provide for safe crossing, and paths should be separate and distant from major streets for most of their length. Mid-block crossings for trails access, such as the Denney Road Fanno Creek Trail crossing, will be considered as appropriate where findings for safety are met and such crossings are approved by the City.

Response: The local streets, neighborhood route, and Planned collector 6b, 6c will be designed in accordance to City of Beaverton design standards and the South Cooper Mountain Concept Plan. Pedestrian and bicycle facilities will be installed throughout the site, in addition to the planned multi-use facilities per the South Cooper Mountain Concept Plan. The multi-use path located along the planned Collector 6b, 6c is intended to connect the proposed Beaverton High School with the existing Scholls Heights Elementary School.

6.2.4.e Maintain mobility and performance standards that meet the needs of the City and are consistent with regional and State standards.

Response: All study intersections operate within City of Beaverton and Washington County standards upon full build-out of the site with the recommended improvements documented in the transportation impact analysis.

South Cooper Mountain Concept Plan, 2014

The proposed South Cooper Mountain Heights development upholds the following strategies from the City of Beaverton South Cooper Mountain Concept Plan, 2014. The strategies are provided below in *italics* with our responses shown in standard font.

Disperse and Balance Regional Traffic

Response: Not Applicable

Provide a Well-Connected Local Street Network

Response: The local streets, neighborhood route, and planned Collector 6b, 6c will be designed in accordance with the City of Beaverton design standards and the South Cooper Mountain Concept Plan.

Provide a Diverse, Connected Pedestrian and Bicycle Network

Response: The local streets, neighborhood route, and planned Collector 6b, 6c will be designed in accordance with the City of Beaverton design standards and the South Cooper Mountain Concept Plan. Pedestrian and bicycle facilities will be installed throughout the site, in addition to the planned multi-use facilities per the South Cooper Mountain Concept Plan. The multi-use path located along the planned collector 6b, 6c is intended to connect the proposed Beaverton High School with the existing Scholls Heights Elementary School. In addition, the north-south multi-use path will connect to the River Terrace Community Plan area.

Be Transit-Ready

Response: The proposed South Cooper Mountain Heights development includes higher density housing in the proximity of the proposed Beaverton High School and the SW Roy Rogers Road/SW 175th Avenue intersection, in accordance with the Concept Plan and "to help the area support transit service in the future".

Set Transportation Priorities as Part of the Funding Plan

Response: Not Applicable

Appendix H Year 2016 Total Traffic Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	131	156	15	131	32	120	439	11	20	316	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.93			0.98		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1727			1800		1719	1852		1805	1827	1538
Flt Permitted		0.99			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1727			1800		1719	1852		1805	1827	1538
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	40	149	177	17	149	36	136	499	12	23	359	22
RTOR Reduction (vph)	0	38	0	0	9	0	0	1	0	0	0	16
Lane Group Flow (vph)	0	328	0	0	193	0	136	510	0	23	359	6
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	3%	7%	2%	3%	5%	2%	9%	0%	4%	5%
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	2	2		6	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)		18.8			12.9		9.6	30.7		1.4	22.5	22.5
Effective Green, g (s)		18.8			12.9		9.6	30.7		1.4	22.5	22.5
Actuated g/C Ratio		0.24			0.16		0.12	0.38		0.02	0.28	0.28
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		406			290		206	712		31	515	433
v/s Ratio Prot		c0.19			c0.11		c0.08	c0.28		0.01	0.20	
v/s Ratio Perm												0.00
v/c Ratio		0.81			0.66		0.66	0.72		0.74	0.70	0.01
Uniform Delay, d1		28.8			31.4		33.5	20.9		39.0	25.6	20.7
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		11.2			5.6		7.7	3.5		64.1	4.1	0.0
Delay (s)		40.0			37.1		41.2	24.3		103.1	29.7	20.7
Level of Service		D			D		D	C		F	C	C
Approach Delay (s)		40.0			37.1			27.9			33.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	71	39	558	23	13	512
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	75	41	587	24	14	539
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			1282			
pX, platoon unblocked	0.93	0.93			0.93	
vC, conflicting volume	1166	599			612	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1139	527			541	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	64	92			99	
cM capacity (veh/h)	205	514			961	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	75	41	612	14	539
Volume Left	75	0	0	14	0
Volume Right	0	41	24	0	0
cSH	205	514	1700	961	1700
Volume to Capacity	0.36	0.08	0.36	0.01	0.32
Queue Length 95th (ft)	25	4	0	1	0
Control Delay (s)	32.3	12.6	0.0	8.8	0.0
Lane LOS	D	B		A	
Approach Delay (s)	25.3		0.0	0.2	
Approach LOS	D				

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	165	39	541	53	13	570
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	1615	1843		1805	1863
Flt Permitted	0.95	1.00	1.00		0.35	1.00
Satd. Flow (perm)	1805	1615	1843		656	1863
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	41	569	56	14	600
RTOR Reduction (vph)	0	33	5	0	0	0
Lane Group Flow (vph)	174	8	620	0	14	600
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	6		8			4
Permitted Phases		6			4	
Actuated Green, G (s)	8.2	8.2	24.3		24.3	24.3
Effective Green, g (s)	8.2	8.2	24.3		24.3	24.3
Actuated g/C Ratio	0.19	0.19	0.57		0.57	0.57
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	348	311	1053		375	1065
v/s Ratio Prot	c0.10		c0.34			0.32
v/s Ratio Perm		0.00			0.02	
v/c Ratio	0.50	0.03	0.59		0.04	0.56
Uniform Delay, d1	15.3	13.9	5.9		4.0	5.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.0	0.8		0.0	0.7
Delay (s)	16.5	13.9	6.7		4.0	6.4
Level of Service	B	B	A		A	A
Approach Delay (s)	16.0		6.7			6.4
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	42.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	370	415	302	314	120	405	458	399	180	516	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3574	1538	3467	3392		1770	1863	1568	1703	3477	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3574	1538	3467	3392		1770	1863	1568	1703	3477	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	18	435	488	355	369	141	476	539	469	212	607	47
RTOR Reduction (vph)	0	0	47	0	32	0	0	0	91	0	5	0
Lane Group Flow (vph)	18	435	441	355	478	0	476	539	378	212	649	0
Heavy Vehicles (%)	0%	1%	5%	1%	2%	2%	2%	2%	3%	6%	2%	12%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	2.9	21.7	55.3	14.5	33.3		33.6	40.3	54.8	18.7	25.4	
Effective Green, g (s)	2.9	21.7	55.3	14.5	33.3		33.6	40.3	54.8	18.7	25.4	
Actuated g/C Ratio	0.03	0.19	0.48	0.13	0.29		0.29	0.35	0.48	0.16	0.22	
Clearance Time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	45	679	744	440	989		520	657	752	278	773	
v/s Ratio Prot	0.01	c0.12	0.17	c0.10	0.14		c0.27	c0.29	0.06	0.12	0.19	
v/s Ratio Perm			0.11						0.18			
v/c Ratio	0.40	0.64	0.59	0.81	0.48		0.92	0.82	0.50	0.76	0.84	
Uniform Delay, d1	54.8	42.7	21.3	48.5	33.4		38.9	33.7	20.4	45.6	42.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.7	2.1	1.3	10.4	0.4		20.7	8.1	0.5	11.7	8.2	
Delay (s)	60.5	44.7	22.6	58.9	33.7		59.7	41.8	20.9	57.3	50.6	
Level of Service	E	D	C	E	C		E	D	C	E	D	
Approach Delay (s)		33.5			44.0			40.9			52.3	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	114.2	Sum of lost time (s)	19.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

MOVEMENT SUMMARY

Site: SW Barrows Rd/SW Roshak Rd_ttam

2016 Total AM Peak
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Roshak Rd											
3	L2	102	1.0	0.244	6.9	LOS A	1.0	24.6	0.42	0.34	32.1
8	T1	4	0.0	0.244	6.9	LOS A	1.0	24.6	0.42	0.34	32.3
18	R2	100	2.0	0.244	6.9	LOS A	1.0	24.6	0.42	0.34	31.5
Approach		206	1.5	0.244	6.9	LOS A	1.0	24.6	0.42	0.34	31.8
East: SW Barrows Rd											
1	L2	15	0.0	0.327	7.1	LOS A	1.5	37.9	0.30	0.18	32.9
6	T1	301	3.0	0.327	7.1	LOS A	1.5	37.9	0.30	0.18	33.0
16	R2	4	0.0	0.327	7.1	LOS A	1.5	37.9	0.30	0.18	32.3
Approach		320	2.8	0.327	7.1	LOS A	1.5	37.9	0.30	0.18	32.9
North: Driveway											
7	L2	1	0.0	0.008	5.0	LOS A	0.0	0.7	0.43	0.29	33.7
4	T1	1	0.0	0.008	5.0	LOS A	0.0	0.7	0.43	0.29	33.8
14	R2	4	0.0	0.008	5.0	LOS A	0.0	0.7	0.43	0.29	33.0
Approach		6	0.0	0.008	5.0	LOS A	0.0	0.7	0.43	0.29	33.3
West: SW Barrows Rd											
5	L2	10	0.0	0.297	6.4	LOS A	1.3	33.8	0.10	0.03	33.3
2	T1	251	6.0	0.297	6.4	LOS A	1.3	33.8	0.10	0.03	33.2
12	R2	47	15.0	0.297	6.4	LOS A	1.3	33.8	0.10	0.03	32.2
Approach		307	7.2	0.297	6.4	LOS A	1.3	33.8	0.10	0.03	33.1
All Vehicles		840	4.1	0.327	6.8	LOS A	1.5	37.9	0.26	0.17	32.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	761	164	18	476	14	227	78	24	20	66	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0		5.0	5.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1612	3539	1538	1703	3526		1787	1743		1641	1730	
Flt Permitted	0.32	1.00	1.00	0.17	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	534	3539	1538	307	3526		1787	1743		1641	1730	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	29	928	200	22	580	17	277	95	29	24	80	40
RTOR Reduction (vph)	0	0	0	0	2	0	0	7	0	0	14	0
Lane Group Flow (vph)	29	928	200	22	595	0	277	117	0	24	106	0
Confl. Peds. (#/hr)									12	12		
Heavy Vehicles (%)	12%	2%	5%	6%	2%	0%	1%	6%	0%	10%	5%	3%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		Free	6								
Actuated Green, G (s)	33.5	29.9	81.3	30.3	28.3		21.8	21.8		9.6	9.6	
Effective Green, g (s)	33.5	29.9	81.3	30.3	28.3		21.8	21.8		9.6	9.6	
Actuated g/C Ratio	0.41	0.37	1.00	0.37	0.35		0.27	0.27		0.12	0.12	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		4.0	4.0	
Vehicle Extension (s)	2.6	3.1		2.4	3.1		1.4	1.4		1.4	1.4	
Lane Grp Cap (vph)	267	1301	1538	148	1227		479	467		193	204	
v/s Ratio Prot	0.00	c0.26		0.00	0.17		c0.15	0.07		0.01	c0.06	
v/s Ratio Perm	0.04		c0.13	0.05								
v/c Ratio	0.11	0.71	0.13	0.15	0.48		0.58	0.25		0.12	0.52	
Uniform Delay, d1	14.7	22.0	0.0	17.2	20.8		25.8	23.3		32.1	33.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.9	0.2	0.3	0.3		1.1	0.1		0.1	0.9	
Delay (s)	14.8	23.9	0.2	17.5	21.1		26.8	23.4		32.2	34.6	
Level of Service	B	C	A	B	C		C	C		C	C	
Approach Delay (s)		19.6			21.0			25.8			34.2	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	81.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	164	195	20	99	27	176	343	19	25	483	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.93			0.97		1.00	0.99		1.00	1.00	0.85
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1736			1830		1805	1885		1805	1900	1615
Flt Permitted		1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1736			1830		1805	1885		1805	1900	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	18	167	199	20	101	28	180	350	19	26	493	30
RTOR Reduction (vph)	0	44	0	0	10	0	0	2	0	0	0	20
Lane Group Flow (vph)	0	340	0	0	140	0	180	367	0	26	493	10
Confl. Peds. (#/hr)	3					3						
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	2	2		6	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)		19.3			11.4		10.2	34.1		2.8	26.7	26.7
Effective Green, g (s)		19.3			11.4		10.2	34.1		2.8	26.7	26.7
Actuated g/C Ratio		0.23			0.14		0.12	0.41		0.03	0.32	0.32
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		400			249		220	768		60	606	515
v/s Ratio Prot		c0.20			c0.08		c0.10	0.19		0.01	c0.26	
v/s Ratio Perm												0.01
v/c Ratio		0.85			0.56		0.82	0.48		0.43	0.81	0.02
Uniform Delay, d1		30.8			33.8		35.8	18.2		39.6	26.2	19.5
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		15.8			2.9		20.5	0.5		5.0	8.2	0.0
Delay (s)		46.5			36.6		56.3	18.7		44.6	34.4	19.5
Level of Service		D			D		E	B		D	C	B
Approach Delay (s)		46.5			36.6			31.0			34.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	83.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	44	24	561	75	42	650
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	46	25	591	79	44	684
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			1282			
pX, platoon unblocked	0.93	0.93			0.93	
vC, conflicting volume	1403	630			669	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1396	569			611	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	67	95			95	
cM capacity (veh/h)	140	491			914	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	46	25	669	44	684
Volume Left	46	0	0	44	0
Volume Right	0	25	79	0	0
cSH	140	491	1700	914	1700
Volume to Capacity	0.33	0.05	0.39	0.05	0.40
Queue Length 95th (ft)	21	3	0	2	0
Control Delay (s)	43.0	12.7	0.0	9.1	0.0
Lane LOS	E	B		A	
Approach Delay (s)	32.3		0.0	0.6	
Approach LOS	D				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	102	24	612	176	42	652
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.97		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	1615	1843		1805	1881
Flt Permitted	0.95	1.00	1.00		0.26	1.00
Satd. Flow (perm)	1805	1615	1843		496	1881
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	107	25	644	185	44	686
RTOR Reduction (vph)	0	21	13	0	0	0
Lane Group Flow (vph)	107	4	816	0	44	686
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	6		8			4
Permitted Phases		6			4	
Actuated Green, G (s)	6.8	6.8	32.9		32.9	32.9
Effective Green, g (s)	6.8	6.8	32.9		32.9	32.9
Actuated g/C Ratio	0.14	0.14	0.69		0.69	0.69
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	257	230	1271		342	1297
v/s Ratio Prot	c0.06		c0.44			0.36
v/s Ratio Perm		0.00			0.09	
v/c Ratio	0.42	0.02	0.64		0.13	0.53
Uniform Delay, d1	18.6	17.6	4.1		2.5	3.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.0	1.1		0.2	0.4
Delay (s)	19.7	17.6	5.2		2.7	4.0
Level of Service	B	B	A		A	A
Approach Delay (s)	19.3		5.2			3.9
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	47.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	423	353	457	321	209	360	538	442	186	545	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3574	1583	3467	3356		1770	1900	1599	1805	1870	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3574	1583	3467	3356		1770	1900	1599	1805	1870	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	44	445	372	481	338	220	379	566	465	196	574	25
RTOR Reduction (vph)	0	0	58	0	84	0	0	0	67	0	1	0
Lane Group Flow (vph)	44	445	314	481	474	0	379	566	398	196	598	0
Heavy Vehicles (%)	0%	1%	2%	1%	2%	0%	2%	0%	1%	0%	1%	0%
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	6.2	18.8	46.4	18.0	30.6		27.6	50.1	68.1	17.9	40.4	
Effective Green, g (s)	6.2	18.8	46.4	18.0	30.6		27.6	50.1	68.1	17.9	40.4	
Actuated g/C Ratio	0.05	0.15	0.37	0.15	0.25		0.22	0.40	0.55	0.14	0.33	
Clearance Time (s)	4.0	5.5	4.0	4.0	5.5		4.0	5.5	4.0	4.0	5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	90	542	593	504	829		394	768	879	260	610	
v/s Ratio Prot	0.02	c0.12	0.12	c0.14	0.14		c0.21	0.30	0.07	0.11	c0.32	
v/s Ratio Perm			0.08						0.18			
v/c Ratio	0.49	0.82	0.53	0.95	0.57		0.96	0.74	0.45	0.75	0.98	
Uniform Delay, d1	57.3	50.9	30.2	52.5	40.9		47.6	31.3	16.7	50.8	41.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.1	9.7	0.9	28.7	1.0		35.3	3.7	0.4	11.7	30.9	
Delay (s)	61.4	60.6	31.1	81.2	41.8		82.9	35.0	17.1	62.5	72.2	
Level of Service	E	E	C	F	D		F	C	B	E	E	
Approach Delay (s)		47.9			60.0			41.9			69.8	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	53.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	123.8	Sum of lost time (s)	19.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	669	346	78	758	9	222	39	38	11	20	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0		5.0	5.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.93		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3574	1566	1805	3568		1805	1701		1583	1804	
Flt Permitted	0.22	1.00	1.00	0.23	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	424	3574	1566	441	3568		1805	1701		1583	1804	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	43	769	398	90	871	10	255	45	44	13	23	7
RTOR Reduction (vph)	0	0	0	0	1	0	0	23	0	0	7	0
Lane Group Flow (vph)	43	769	398	90	880	0	255	66	0	13	23	0
Confl. Peds. (#/hr)	1					1			7	7		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	0%	5%	0%	14%	0%	7%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		Free	6								
Actuated Green, G (s)	29.5	26.1	71.1	33.3	28.0		18.6	18.6		3.1	3.1	
Effective Green, g (s)	29.5	26.1	71.1	33.3	28.0		18.6	18.6		3.1	3.1	
Actuated g/C Ratio	0.41	0.37	1.00	0.47	0.39		0.26	0.26		0.04	0.04	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		4.0	4.0	
Vehicle Extension (s)	2.6	3.1		2.4	3.1		1.4	1.4		1.4	1.4	
Lane Grp Cap (vph)	241	1311	1566	308	1405		472	444		69	78	
v/s Ratio Prot	0.01	0.22		0.02	c0.25		c0.14	0.04		0.01	0.01	
v/s Ratio Perm	0.07		c0.25	0.11								
v/c Ratio	0.18	0.59	0.25	0.29	0.63		0.54	0.15		0.19	0.30	
Uniform Delay, d1	13.0	18.1	0.0	11.4	17.3		22.6	20.2		32.8	32.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.7	0.4	0.3	0.9		0.7	0.1		0.5	0.8	
Delay (s)	13.2	18.8	0.4	11.7	18.2		23.3	20.2		33.3	33.7	
Level of Service	B	B	A	B	B		C	C		C	C	
Approach Delay (s)		12.6			17.6			22.5			33.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	71.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

MOVEMENT SUMMARY

Site: SW Barrows Rd/SW Roshak Rd_ttpm

2016 Background PM Peak
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Roshak Rd											
3	L2	62	0.0	0.154	6.4	LOS A	0.6	14.1	0.46	0.40	32.3
8	T1	4	0.0	0.154	6.4	LOS A	0.6	14.1	0.46	0.40	32.4
18	R2	51	0.0	0.154	6.4	LOS A	0.6	14.1	0.46	0.40	31.7
Approach		117	0.0	0.154	6.4	LOS A	0.6	14.1	0.46	0.40	32.1
East: SW Barrows Rd											
1	L2	59	0.0	0.315	6.7	LOS A	1.5	36.9	0.24	0.13	32.8
6	T1	255	2.0	0.315	6.7	LOS A	1.5	36.9	0.24	0.13	32.9
16	R2	10	0.0	0.315	6.7	LOS A	1.5	36.9	0.24	0.13	32.2
Approach		324	1.6	0.315	6.7	LOS A	1.5	36.9	0.24	0.13	32.9
North: Driveway											
7	L2	11	0.0	0.024	4.9	LOS A	0.1	2.0	0.41	0.30	32.9
4	T1	2	0.0	0.024	4.9	LOS A	0.1	2.0	0.41	0.30	33.0
14	R2	5	0.0	0.024	4.9	LOS A	0.1	2.0	0.41	0.30	32.3
Approach		18	0.0	0.024	4.9	LOS A	0.1	2.0	0.41	0.30	32.7
West: SW Barrows Rd											
5	L2	12	0.0	0.463	8.7	LOS A	2.7	67.7	0.29	0.15	32.2
2	T1	367	1.0	0.463	8.7	LOS A	2.7	67.7	0.29	0.15	32.3
12	R2	103	1.0	0.463	8.7	LOS A	2.7	67.7	0.29	0.15	31.6
Approach		483	1.0	0.463	8.7	LOS A	2.7	67.7	0.29	0.15	32.1
All Vehicles		942	1.0	0.463	7.6	LOS A	2.7	67.7	0.30	0.18	32.4

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Appendix I Signal Warrant Analysis

KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

Project #: 17808
Project Name: S Cooper Mt
Analyst: AXM
Date: 5/12/2015
File: H:\projfile\17808 - South Cooper Mountain\signal warrants\[Sig Warrant_175th&Kemmer.xls]Data Input
Intersection: 175th Ave and Kemmer Rd
Scenario: 2016 TTPM

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:45 PM	5:45 PM	519	508	183	120
2nd	Highest Hour	498	488	176	115
3rd	Highest Hour	488	478	172	113
4th	Highest Hour	415	406	146	96
5th	Highest Hour	394	386	139	91
6th	Highest Hour	353	345	124	82
7th	Highest Hour	327	320	115	76
8th	Highest Hour	311	305	110	72
9th	Highest Hour	249	244	88	58
10th	Highest Hour	234	229	82	54
11th	Highest Hour	234	229	82	54
12th	Highest Hour	223	218	79	52
13th	Highest Hour	202	198	71	47
14th	Highest Hour	187	183	66	43
15th	Highest Hour	187	183	66	43
16th	Highest Hour	182	178	64	42
17th	Highest Hour	104	102	37	24
18th	Highest Hour	57	56	20	13
19th	Highest Hour	52	51	18	12
20th	Highest Hour	21	20	7	5
21st	Highest Hour	16	15	5	4
22nd	Highest Hour	16	15	5	4
23rd	Highest Hour	10	10	4	2
24th	Highest Hour	10	10	4	2

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	Yes
Population < 10,000?	No
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:45 PM	5:45 PM	519	508	183	120
2nd	Highest Hour	498	488	176	115
3rd	Highest Hour	488	478	172	113
4th	Highest Hour	415	406	146	96
5th	Highest Hour	394	386	139	91
6th	Highest Hour	353	345	124	82
7th	Highest Hour	327	320	115	76
8th	Highest Hour	311	305	110	72
9th	Highest Hour	249	244	88	58
10th	Highest Hour	234	229	82	54
11th	Highest Hour	234	229	82	54
12th	Highest Hour	223	218	79	52
13th	Highest Hour	202	198	71	47
14th	Highest Hour	187	183	66	43
15th	Highest Hour	187	183	66	43
16th	Highest Hour	182	178	64	42
17th	Highest Hour	104	102	37	24
18th	Highest Hour	57	56	20	13
19th	Highest Hour	52	51	18	12
20th	Highest Hour	21	20	7	5
21st	Highest Hour	16	15	5	4
22nd	Highest Hour	16	15	5	4
23rd	Highest Hour	10	10	4	2
24th	Highest Hour	10	10	4	2

KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
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Project #: 17808
Project Name: S Cooper Mt
Analyst: AXM
Date: 5/12/2015
File: H:\projfile\17808 - South Cooper Mountain\signal warrants\[Sig Warrant_175th&S Access.xls]Data Input
Intersection: 175th Ave and Northern Access
Scenario: 2016 TTAM

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
7:00 AM	8:00 AM	570	525	0	71
2nd	Highest Hour	547	504	0	68
3rd	Highest Hour	535	494	0	67
4th	Highest Hour	456	420	0	57
5th	Highest Hour	433	399	0	54
6th	Highest Hour	387	357	0	48
7th	Highest Hour	359	331	0	45
8th	Highest Hour	342	315	0	43
9th	Highest Hour	273	252	0	34
10th	Highest Hour	256	236	0	32
11th	Highest Hour	256	236	0	32
12th	Highest Hour	245	226	0	31
13th	Highest Hour	222	205	0	28
14th	Highest Hour	205	189	0	26
15th	Highest Hour	205	189	0	26
16th	Highest Hour	199	184	0	25
17th	Highest Hour	114	105	0	14
18th	Highest Hour	63	58	0	8
19th	Highest Hour	57	53	0	7
20th	Highest Hour	23	21	0	3
21st	Highest Hour	17	16	0	2
22nd	Highest Hour	17	16	0	2
23rd	Highest Hour	11	11	0	1
24th	Highest Hour	11	11	0	1

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	Yes
Population < 10,000?	No
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
7:00 AM	8:00 AM	570	525	0	71
2nd	Highest Hour	547	504	0	68
3rd	Highest Hour	535	494	0	67
4th	Highest Hour	456	420	0	57
5th	Highest Hour	433	399	0	54
6th	Highest Hour	387	357	0	48
7th	Highest Hour	359	331	0	45
8th	Highest Hour	342	315	0	43
9th	Highest Hour	273	252	0	34
10th	Highest Hour	256	236	0	32
11th	Highest Hour	256	236	0	32
12th	Highest Hour	245	226	0	31
13th	Highest Hour	222	205	0	28
14th	Highest Hour	205	189	0	26
15th	Highest Hour	205	189	0	26
16th	Highest Hour	199	184	0	25
17th	Highest Hour	114	105	0	14
18th	Highest Hour	63	58	0	8
19th	Highest Hour	57	53	0	7
20th	Highest Hour	23	21	0	3
21st	Highest Hour	17	16	0	2
22nd	Highest Hour	17	16	0	2
23rd	Highest Hour	11	11	0	1
24th	Highest Hour	11	11	0	1

KITTELSON & ASSOCIATES, INC.
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Project #: 17808
Project Name: S Cooper Mt
Analyst: AXM
Date: 5/12/2015
File: H:\projfile\17808 - South Cooper Mountain\signal warrants\[Sig Warrant_175th&S Access.xls]Data Input
Intersection: 175th Ave and Northern Access
Scenario: 2016 TTAM

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
7:00 AM	8:00 AM	568	583	0	165
2nd	Highest Hour	545	560	0	158
3rd	Highest Hour	533	548	0	155
4th	Highest Hour	454	466	0	132
5th	Highest Hour	431	443	0	125
6th	Highest Hour	386	396	0	112
7th	Highest Hour	358	367	0	104
8th	Highest Hour	341	350	0	99
9th	Highest Hour	272	280	0	79
10th	Highest Hour	255	262	0	74
11th	Highest Hour	255	262	0	74
12th	Highest Hour	244	251	0	71
13th	Highest Hour	221	227	0	64
14th	Highest Hour	204	210	0	59
15th	Highest Hour	204	210	0	59
16th	Highest Hour	199	204	0	58
17th	Highest Hour	114	117	0	33
18th	Highest Hour	62	64	0	18
19th	Highest Hour	57	58	0	17
20th	Highest Hour	23	23	0	7
21st	Highest Hour	17	17	0	5
22nd	Highest Hour	17	17	0	5
23rd	Highest Hour	11	12	0	3
24th	Highest Hour	11	12	0	3

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	Yes
Population < 10,000?	No
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
7:00 AM	8:00 AM	568	583	0	165
2nd	Highest Hour	545	560	0	158
3rd	Highest Hour	533	548	0	155
4th	Highest Hour	454	466	0	132
5th	Highest Hour	431	443	0	125
6th	Highest Hour	386	396	0	112
7th	Highest Hour	358	367	0	104
8th	Highest Hour	341	350	0	99
9th	Highest Hour	272	280	0	79
10th	Highest Hour	255	262	0	74
11th	Highest Hour	255	262	0	74
12th	Highest Hour	244	251	0	71
13th	Highest Hour	221	227	0	64
14th	Highest Hour	204	210	0	59
15th	Highest Hour	204	210	0	59
16th	Highest Hour	199	204	0	58
17th	Highest Hour	114	117	0	33
18th	Highest Hour	62	64	0	18
19th	Highest Hour	57	58	0	17
20th	Highest Hour	23	23	0	7
21st	Highest Hour	17	17	0	5
22nd	Highest Hour	17	17	0	5
23rd	Highest Hour	11	12	0	3
24th	Highest Hour	11	12	0	3

Appendix J Year 2035 Total Traffic Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	168	178	56	160	34	168	514	38	15	651	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.93			0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1736			1808		1770	1844		1770	1863	1583
Flt Permitted		1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1736			1808		1770	1844		1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	19	177	187	59	168	36	177	541	40	16	685	7
RTOR Reduction (vph)	0	34	0	0	6	0	0	3	0	0	0	4
Lane Group Flow (vph)	0	349	0	0	257	0	177	578	0	16	685	3
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	2	2		6	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)		20.5			14.6		11.0	48.8		1.6	39.4	39.4
Effective Green, g (s)		20.5			14.6		11.0	48.8		1.6	39.4	39.4
Actuated g/C Ratio		0.20			0.14		0.11	0.48		0.02	0.39	0.39
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		350			260		191	886		27	723	614
v/s Ratio Prot		c0.20			c0.14		c0.10	0.31		0.01	c0.37	
v/s Ratio Perm												0.00
v/c Ratio		1.00			0.99		0.93	0.65		0.59	0.95	0.00
Uniform Delay, d1		40.5			43.4		44.9	19.9		49.6	30.0	19.0
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		46.8			52.1		44.3	1.7		30.3	21.3	0.0
Delay (s)		87.3			95.4		89.2	21.7		79.9	51.4	19.0
Level of Service		F			F		F	C		E	D	B
Approach Delay (s)		87.3			95.4			37.4			51.7	
Approach LOS		F			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	58.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	101.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	153	5	82	31	10	57	33	553	7	12	845	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.86		1.00	0.87		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1787	1640		1787	3533		1787	3506	
Flt Permitted	0.71	1.00		0.69	1.00		0.27	1.00		0.42	1.00	
Satd. Flow (perm)	1340	1615		1294	1640		509	3533		795	3506	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	158	5	85	32	10	59	34	570	7	12	871	62
RTOR Reduction (vph)	0	71	0	0	49	0	0	1	0	0	3	0
Lane Group Flow (vph)	158	19	0	32	20	0	34	576	0	12	930	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	2%	1%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.4	19.4		19.4	19.4		90.5	84.4		82.7	80.5	
Effective Green, g (s)	19.4	19.4		19.4	19.4		90.5	84.4		82.7	80.5	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.75	0.70		0.69	0.67	
Clearance Time (s)	5.0	5.0		5.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	216	261		209	265		448	2484		566	2351	
v/s Ratio Prot		0.01			0.01		c0.00	0.16		0.00	c0.27	
v/s Ratio Perm	c0.12			0.02			0.05			0.01		
v/c Ratio	0.73	0.07		0.15	0.07		0.08	0.23		0.02	0.40	
Uniform Delay, d1	47.8	42.7		43.2	42.7		6.8	6.3		6.6	8.8	
Progression Factor	1.00	1.00		1.00	1.00		0.32	0.72		1.00	1.00	
Incremental Delay, d2	12.0	0.1		0.3	0.1		0.1	0.2		0.0	0.5	
Delay (s)	59.8	42.8		43.6	42.8		2.3	4.8		6.6	9.3	
Level of Service	E	D		D	D		A	A		A	A	
Approach Delay (s)		53.6			43.0			4.6			9.3	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	10	91	49	10	26	189	518	49	26	831	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.86		1.00	0.89		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1642		1805	1692		1805	3499		1805	3489	
Flt Permitted	0.59	1.00		0.69	1.00		0.22	1.00		0.41	1.00	
Satd. Flow (perm)	1129	1642		1311	1692		418	3499		777	3489	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	51	10	94	51	10	27	195	534	51	27	857	104
RTOR Reduction (vph)	0	85	0	0	25	0	0	4	0	0	6	0
Lane Group Flow (vph)	51	19	0	51	12	0	195	581	0	27	955	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.3	11.1		16.1	9.0		88.8	80.2		65.8	62.2	
Effective Green, g (s)	20.3	11.1		16.1	9.0		88.8	80.2		65.8	62.2	
Actuated g/C Ratio	0.17	0.09		0.13	0.08		0.74	0.67		0.55	0.52	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	242	151		205	126		558	2338		456	1808	
v/s Ratio Prot	c0.02	0.01		0.01	0.01		c0.06	0.17		0.00	c0.27	
v/s Ratio Perm	c0.02			0.02			0.20			0.03		
v/c Ratio	0.21	0.12		0.25	0.10		0.35	0.25		0.06	0.53	
Uniform Delay, d1	42.6	50.0		46.3	51.7		15.1	7.9		14.2	19.2	
Progression Factor	1.00	1.00		1.00	1.00		0.38	0.28		0.59	0.70	
Incremental Delay, d2	0.4	0.4		0.6	0.3		0.3	0.2		0.1	1.1	
Delay (s)	43.1	50.4		46.9	52.0		6.1	2.4		8.4	14.5	
Level of Service	D	D		D	D		A	A		A	B	
Approach Delay (s)		48.0			49.1			3.3			14.3	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	658	469	285	439	139	382	605	473	142	805	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.5	5.0	5.0	5.5		5.0	5.5	5.0	5.0	5.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	3433	3412		3433	3539	1583	3433	3524	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	3433	3412		3433	3539	1583	3433	3524	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	12	678	484	294	453	143	394	624	488	146	830	25
RTOR Reduction (vph)	0	0	73	0	23	0	0	0	66	0	1	0
Lane Group Flow (vph)	12	678	411	294	573	0	394	624	422	146	854	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	3.0	27.0	46.0	21.4	45.4		19.0	33.6	55.0	17.0	31.6	
Effective Green, g (s)	3.0	27.0	46.0	21.4	45.4		19.0	33.6	55.0	17.0	31.6	
Actuated g/C Ratio	0.02	0.22	0.38	0.18	0.38		0.16	0.28	0.46	0.14	0.26	
Clearance Time (s)	5.0	5.5	5.0	5.0	5.5		5.0	5.5	5.0	5.0	5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	44	796	672	612	1290		543	990	791	486	927	
v/s Ratio Prot	0.01	c0.19	0.10	0.09	0.17		c0.11	0.18	c0.10	0.04	c0.24	
v/s Ratio Perm			0.16						0.17			
v/c Ratio	0.27	0.85	0.61	0.48	0.44		0.73	0.63	0.53	0.30	0.92	
Uniform Delay, d1	57.4	44.6	29.8	44.3	27.9		48.0	37.8	23.3	46.2	43.0	
Progression Factor	0.72	0.69	0.58	1.00	1.00		0.99	0.63	0.26	0.70	0.67	
Incremental Delay, d2	3.0	7.8	1.5	0.6	0.2		3.8	2.4	0.6	0.3	14.5	
Delay (s)	44.3	38.5	18.8	44.9	28.1		51.6	26.3	6.7	32.7	43.3	
Level of Service	D	D	B	D	C		D	C	A	C	D	
Approach Delay (s)		30.5			33.7			26.6			41.7	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	958	237	35	607	62	175	133	32	84	153	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0		5.0	5.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3490		1770	1808		1770	1765	
Flt Permitted	0.24	1.00	1.00	0.15	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	439	3539	1583	287	3490		1770	1808		1770	1765	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	83	1008	249	37	639	65	184	140	34	88	161	86
RTOR Reduction (vph)	0	0	0	0	7	0	0	7	0	0	14	0
Lane Group Flow (vph)	83	1008	249	37	697	0	184	167	0	88	233	0
Turn Type	pm+pt	NA	Free	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		Free	6								
Actuated Green, G (s)	35.1	29.0	77.0	29.1	26.0		11.7	11.7		15.2	15.2	
Effective Green, g (s)	35.1	29.0	77.0	29.1	26.0		11.7	11.7		15.2	15.2	
Actuated g/C Ratio	0.46	0.38	1.00	0.38	0.34		0.15	0.15		0.20	0.20	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		4.0	4.0	
Vehicle Extension (s)	2.6	3.1		2.1	3.1		1.4	1.4		1.4	1.4	
Lane Grp Cap (vph)	305	1332	1583	168	1178		268	274		349	348	
v/s Ratio Prot	c0.02	c0.28		0.01	0.20		c0.10	0.09		0.05	c0.13	
v/s Ratio Perm	0.10		c0.16	0.07								
v/c Ratio	0.27	0.76	0.16	0.22	0.59		0.69	0.61		0.25	0.67	
Uniform Delay, d1	12.9	20.9	0.0	16.2	21.1		30.9	30.5		26.1	28.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	2.5	0.2	0.3	0.8		5.7	2.8		0.1	4.0	
Delay (s)	13.3	23.4	0.2	16.5	21.9		36.6	33.3		26.2	32.5	
Level of Service	B	C	A	B	C		D	C		C	C	
Approach Delay (s)		18.5			21.7			35.0			30.9	
Approach LOS		B			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	77.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

MOVEMENT SUMMARY

Site: SW Barrows Rd/SW Roshak Rd_2035 ttam

2035 Total AM Peak
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Roshak Rd											
3	L2	91	1.0	0.301	9.1	LOS A	1.2	29.7	0.56	0.56	31.2
8	T1	4	0.0	0.301	9.1	LOS A	1.2	29.7	0.56	0.56	31.3
18	R2	109	2.0	0.301	9.1	LOS A	1.2	29.7	0.56	0.56	30.6
Approach		204	1.5	0.301	9.1	LOS A	1.2	29.7	0.56	0.56	30.9
East: SW Barrows Rd											
1	L2	9	0.0	0.343	7.2	LOS A	1.6	40.8	0.29	0.17	32.9
6	T1	327	3.0	0.343	7.2	LOS A	1.6	40.8	0.29	0.17	32.9
16	R2	4	0.0	0.343	7.2	LOS A	1.6	40.8	0.29	0.17	32.3
Approach		340	2.9	0.343	7.2	LOS A	1.6	40.8	0.29	0.17	32.9
North: Driveway											
7	L2	1	0.0	0.007	5.0	LOS A	0.0	0.6	0.44	0.29	33.6
4	T1	1	0.0	0.007	5.0	LOS A	0.0	0.6	0.44	0.29	33.7
14	R2	2	0.0	0.007	5.0	LOS A	0.0	0.6	0.44	0.29	32.9
Approach		5	0.0	0.007	5.0	LOS A	0.0	0.6	0.44	0.29	33.3
West: SW Barrows Rd											
5	L2	9	0.0	0.474	8.8	LOS A	2.7	70.4	0.10	0.02	32.2
2	T1	460	6.0	0.474	8.8	LOS A	2.7	70.4	0.10	0.02	32.1
12	R2	28	15.0	0.474	8.8	LOS A	2.7	70.4	0.10	0.02	31.2
Approach		498	6.4	0.474	8.8	LOS A	2.7	70.4	0.10	0.02	32.1
All Vehicles		1046	4.3	0.474	8.4	LOS A	2.7	70.4	0.25	0.18	32.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	201	305	70	127	20	201	455	71	26	859	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.92			0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected		1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1712			1810		1770	1825		1770	1863	1583
Flt Permitted		1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1712			1810		1770	1825		1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	218	332	76	138	22	218	495	77	28	934	17
RTOR Reduction (vph)	0	38	0	0	3	0	0	4	0	0	0	10
Lane Group Flow (vph)	0	520	0	0	233	0	218	568	0	28	934	7
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	2	2		6	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)		36.0			16.0		14.0	70.0		3.6	59.6	59.6
Effective Green, g (s)		36.0			16.0		14.0	70.0		3.6	59.6	59.6
Actuated g/C Ratio		0.25			0.11		0.10	0.49		0.03	0.42	0.42
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		435			204		175	902		45	784	666
v/s Ratio Prot		c0.30			c0.13		c0.12	0.31		0.02	c0.50	
v/s Ratio Perm												0.00
v/c Ratio		1.20			1.14		1.25	0.63		0.62	1.19	0.01
Uniform Delay, d1		52.8			62.8		63.8	26.3		68.3	41.0	23.9
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		108.4			107.1		149.2	1.4		23.8	98.6	0.0
Delay (s)		161.2			169.9		213.0	27.7		92.1	139.6	23.9
Level of Service		F			F		F	C		F	F	C
Approach Delay (s)		161.2			169.9			78.8			136.2	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	127.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	141.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	111.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	128	10	69	13	10	24	136	622	53	100	856	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.89		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1634		1787	1680		1787	3500		1787	3425	
Flt Permitted	0.73	1.00		0.69	1.00		0.20	1.00		0.37	1.00	
Satd. Flow (perm)	1381	1634		1304	1680		376	3500		688	3425	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	132	10	71	13	10	25	140	641	55	103	882	262
RTOR Reduction (vph)	0	61	0	0	22	0	0	3	0	0	15	0
Lane Group Flow (vph)	132	20	0	13	13	0	140	693	0	103	1129	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	2%	1%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.8	17.8		17.8	17.8		103.2	92.1		91.2	85.1	
Effective Green, g (s)	17.8	17.8		17.8	17.8		103.2	92.1		91.2	85.1	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.79	0.71		0.70	0.65	
Clearance Time (s)	5.0	5.0		5.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	189	223		178	230		440	2479		534	2242	
v/s Ratio Prot		0.01			0.01		c0.03	0.20		0.01	c0.33	
v/s Ratio Perm	c0.10			0.01			0.22			0.13		
v/c Ratio	0.70	0.09		0.07	0.06		0.32	0.28		0.19	0.50	
Uniform Delay, d1	53.5	49.0		48.9	48.8		10.8	6.9		8.5	11.6	
Progression Factor	1.00	1.00		1.00	1.00		0.52	1.36		1.00	1.00	
Incremental Delay, d2	10.7	0.2		0.2	0.1		0.4	0.3		0.2	0.8	
Delay (s)	64.2	49.2		49.1	48.9		6.0	9.7		8.6	12.4	
Level of Service	E	D		D	D		A	A		A	B	
Approach Delay (s)		58.5			49.0			9.0			12.1	
Approach LOS		E			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	20	188	85	15	47	278	662	80	44	743	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.86		1.00	0.89		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1643		1805	1683		1805	3490		1805	3461	
Flt Permitted	0.58	1.00		0.41	1.00		0.23	1.00		0.32	1.00	
Satd. Flow (perm)	1100	1643		784	1683		439	3490		609	3461	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	105	21	194	88	15	48	287	682	82	45	766	156
RTOR Reduction (vph)	0	176	0	0	44	0	0	5	0	0	10	0
Lane Group Flow (vph)	105	39	0	88	19	0	287	759	0	45	912	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.4	12.0		18.8	9.7		95.9	85.9		71.9	66.9	
Effective Green, g (s)	23.4	12.0		18.8	9.7		95.9	85.9		71.9	66.9	
Actuated g/C Ratio	0.18	0.09		0.14	0.07		0.74	0.66		0.55	0.51	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	259	151		184	125		576	2306		382	1781	
v/s Ratio Prot	c0.04	0.02		c0.03	0.01		c0.09	0.22		0.00	0.26	
v/s Ratio Perm	c0.04			0.04			c0.28			0.06		
v/c Ratio	0.41	0.26		0.48	0.15		0.50	0.33		0.12	0.51	
Uniform Delay, d1	46.4	54.9		50.1	56.3		20.6	9.6		17.8	20.8	
Progression Factor	1.00	1.00		1.00	1.00		0.14	0.80		0.45	0.64	
Incremental Delay, d2	1.0	0.9		2.0	0.6		0.4	0.2		0.1	0.9	
Delay (s)	47.5	55.8		52.1	56.8		3.3	7.9		8.1	14.3	
Level of Service	D	E		D	E		A	A		A	B	
Approach Delay (s)		53.0			54.1			6.7			14.0	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	540	492	546	611	192	518	840	452	240	738	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.5	5.0	5.0	5.5		5.0	5.5	5.0	5.0	5.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	3433	3412		3433	3539	1583	3433	3513	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	3433	3412		3433	3539	1583	3433	3513	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	22	557	507	563	630	198	534	866	466	247	761	39
RTOR Reduction (vph)	0	0	69	0	22	0	0	0	40	0	3	0
Lane Group Flow (vph)	22	557	438	563	806	0	534	866	426	247	797	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	4.2	24.6	47.6	28.8	49.2		23.0	35.6	64.4	20.0	32.6	
Effective Green, g (s)	4.2	24.6	47.6	28.8	49.2		23.0	35.6	64.4	20.0	32.6	
Actuated g/C Ratio	0.03	0.19	0.37	0.22	0.38		0.18	0.27	0.50	0.15	0.25	
Clearance Time (s)	5.0	5.5	5.0	5.0	5.5		5.0	5.5	5.0	5.0	5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	57	669	640	760	1291		607	969	845	528	880	
v/s Ratio Prot	0.01	c0.16	0.12	c0.16	0.24		c0.16	c0.24	0.11	0.07	0.23	
v/s Ratio Perm			0.16						0.16			
v/c Ratio	0.39	0.83	0.68	0.74	0.62		0.88	0.89	0.50	0.47	0.91	
Uniform Delay, d1	61.6	50.7	34.8	47.1	32.9		52.2	45.4	22.1	50.1	47.2	
Progression Factor	0.69	0.64	0.49	1.00	1.00		1.21	1.21	1.30	0.93	0.65	
Incremental Delay, d2	3.4	7.0	2.4	3.9	1.0		10.4	9.5	0.3	0.6	13.3	
Delay (s)	46.2	39.4	19.5	51.0	33.8		73.6	64.4	29.0	47.4	43.8	
Level of Service	D	D	B	D	C		E	E	C	D	D	
Approach Delay (s)		30.2			40.8			58.2			44.6	
Approach LOS		C			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	45.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	877	266	104	1037	38	292	90	73	49	35	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0		5.0	5.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.93		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3521		1770	1738		1770	1760	
Flt Permitted	0.12	1.00	1.00	0.15	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	229	3539	1583	286	3521		1770	1738		1770	1760	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	953	289	113	1127	41	317	98	79	53	38	22
RTOR Reduction (vph)	0	0	0	0	2	0	0	19	0	0	17	0
Lane Group Flow (vph)	97	953	289	113	1166	0	317	158	0	53	43	0
Turn Type	pm+pt	NA	Free	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		Free	6								
Actuated Green, G (s)	39.4	32.6	85.4	41.4	33.6		21.9	21.9		5.1	5.1	
Effective Green, g (s)	39.4	32.6	85.4	41.4	33.6		21.9	21.9		5.1	5.1	
Actuated g/C Ratio	0.46	0.38	1.00	0.48	0.39		0.26	0.26		0.06	0.06	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		4.0	4.0	
Vehicle Extension (s)	2.6	3.1		2.4	3.1		1.4	1.4		1.4	1.4	
Lane Grp Cap (vph)	228	1350	1583	274	1385		453	445		105	105	
v/s Ratio Prot	0.03	0.27		c0.04	c0.33		c0.18	0.09		c0.03	0.02	
v/s Ratio Perm	0.16		c0.18	0.16								
v/c Ratio	0.43	0.71	0.18	0.41	0.84		0.70	0.35		0.50	0.41	
Uniform Delay, d1	16.1	22.3	0.0	14.1	23.5		28.8	26.0		38.9	38.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	1.7	0.3	0.7	4.8		3.8	0.2		1.4	1.0	
Delay (s)	17.1	24.1	0.3	14.7	28.3		32.6	26.1		40.3	39.7	
Level of Service	B	C	A	B	C		C	C		D	D	
Approach Delay (s)		18.4			27.1			30.3			40.0	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	85.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

MOVEMENT SUMMARY

Site: SW Barrows Rd/SW Roshak Rd_2035 ttpm

2035 Total PM Peak
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Roshak Rd											
3	L2	38	0.0	0.087	5.5	LOS A	0.3	7.6	0.42	0.34	32.7
8	T1	1	0.0	0.087	5.5	LOS A	0.3	7.6	0.42	0.34	32.8
18	R2	29	0.0	0.087	5.5	LOS A	0.3	7.6	0.42	0.34	32.1
Approach		68	0.0	0.087	5.5	LOS A	0.3	7.6	0.42	0.34	32.4
East: SW Barrows Rd											
1	L2	64	0.0	0.503	9.3	LOS A	3.1	79.6	0.25	0.11	31.7
6	T1	452	2.0	0.503	9.3	LOS A	3.1	79.6	0.25	0.11	31.8
16	R2	16	0.0	0.503	9.3	LOS A	3.1	79.6	0.25	0.11	31.2
Approach		533	1.7	0.503	9.3	LOS A	3.1	79.6	0.25	0.11	31.8
North: Driveway											
7	L2	13	0.0	0.032	5.9	LOS A	0.1	2.6	0.49	0.42	32.3
4	T1	2	0.0	0.032	5.9	LOS A	0.1	2.6	0.49	0.42	32.4
14	R2	5	0.0	0.032	5.9	LOS A	0.1	2.6	0.49	0.42	31.7
Approach		21	0.0	0.032	5.9	LOS A	0.1	2.6	0.49	0.42	32.2
West: SW Barrows Rd											
5	L2	9	0.0	0.427	8.2	LOS A	2.3	58.6	0.29	0.15	32.5
2	T1	341	1.0	0.427	8.2	LOS A	2.3	58.6	0.29	0.15	32.5
12	R2	91	1.0	0.427	8.2	LOS A	2.3	58.6	0.29	0.15	31.8
Approach		441	1.0	0.427	8.2	LOS A	2.3	58.6	0.29	0.15	32.4
All Vehicles		1063	1.3	0.503	8.5	LOS A	3.1	79.6	0.28	0.15	32.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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