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CITY OF MONROE

Gibson Traffic Consultants, Inc.
2813 Rockefeller Avenue
Suite B
Everett, WA 98201
425.339.8266

Garibaldi
Traffic Impact Analysis

Jurisdiction: City of Monroe

March 2021

GTC #18-334

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ATTACHMENTS

1. DEVELOPMENT IDENTIFICATION

Gibson Traffic Consultants, Inc. (GTC) has been retained to provide a traffic impact analysis for the proposed Garibaldi development to address the City of Monroe, Snohomish County and Washington State Department of Transportation (WSDOT) traffic impacts. Brad Lincoln, responsible for this report and traffic analysis, is a licensed professional engineer (Civil) in the State of Washington and member of the Washington State section of ITE.

The Garibaldi development is proposed to consist of a total of 90 single-family residential units that will be constructed in one phase. There are 4 existing single-family residential units on site that will be removed and credited to the development. The analysis in this report has therefore been performed for 86 net new single-family residential units. The development site is located along the west side of Chain Lake Road, north of Rainier View Road SE. A site vicinity map has been included in Figure 1.

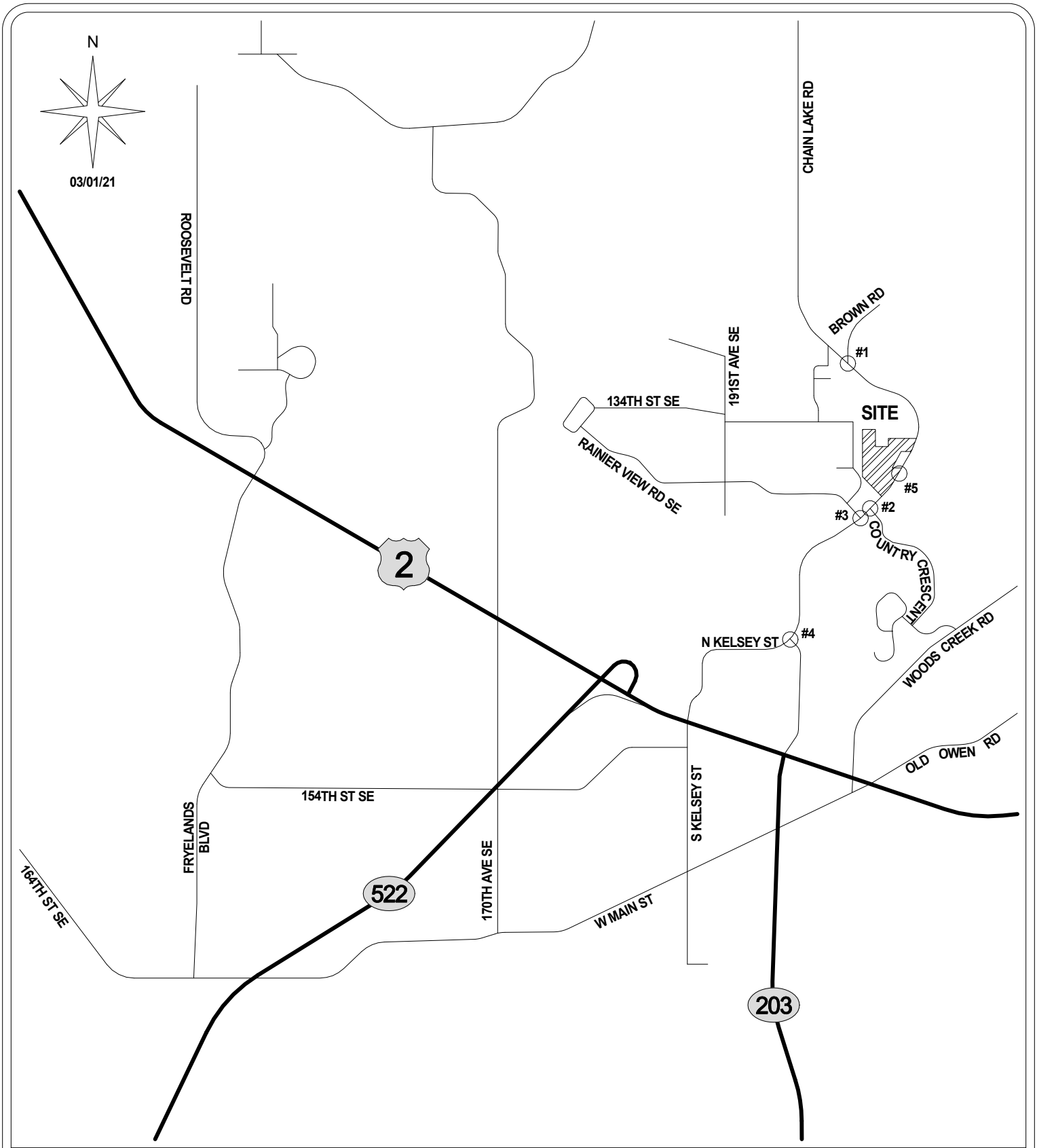
2. METHODOLOGY

Trip generation calculations for the Garibaldi development have been performed utilizing average trip generation data contained in the Institute of Transportation Engineers' (ITE) *Trip Generation, 10th Edition (2017)*. The distribution of trips generated by the site is based on approved distributions for developments in the site vicinity.

Intersection level of service analysis has been performed based on typical City of Monroe requirements and previous scoping conversations with City of Monroe staff. Level of service analysis has been performed for the following intersections:

1. Chain Lake Road at Brown Road
2. Chain Lake Road at Country Crescent Boulevard
3. Chain Lake Road at Rainier View Road SE
4. Chain Lake Road at Kelsey Street
5. Chain Lake Road at Site Access

Congestion at intersections is generally measured in terms of level of service (LOS). In accordance with *Highway Capacity Manual: 6th Edition (HCM)* by the Transportation Research Board, road facilities and intersections are rated between LOS A and LOS F, with LOS A being free flow and LOS F being forced flow or over-capacity conditions. The level of service at two-way stop-controlled intersections is based on the approach with the highest delay. The level of service at all-way stop-controlled, signalized and roundabout intersections is based on the average delay of all approaches. Geometric characteristics and conflicting traffic movements are taken into consideration when determining level of service values. A summary of the intersection level of service criteria is included in Table 1.



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TRAFFIC IMPACT STUDY
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GARIBALDI DEVELOPMENT
86 NET NEW SINGLE FAMILY DWELLINGS

CITY OF MONROE

LEGEND

DEVELOPMENT SITE

#X **STUDY INTERSECTION**

FIGURE 1

SITE VICINITY MAP

Table 1: Level of Service Criteria for Intersections

Level of Service[1]	Expected Delay	Intersection Control Delay (Seconds per Vehicle)	
		Unsignalized Intersections	Signalized Intersections
A	Little/No Delay	≤10	≤10
B	Short Delays	>10 and ≤15	>10 and ≤20
C	Average Delays	>15 and ≤25	>20 and ≤35
D	Long Delays	>25 and ≤35	>35 and ≤55
E	Very Long Delays	>35 and ≤50	>55 and ≤80
F	Extreme Delays[2]	>50	>80

The City of Monroe evaluates operations on a corridor level based on the weighted average delay of the intersections along the corridor. The level of service analysis has been performed utilizing the *Synchro 10.3 Build 151* software for signalized, two-way stop-controlled and all-way stop controlled intersections. The *Sidra 8.0* software has been utilized for the intersection of Chain Lake Road at Kelsey Street (Intersection 4), which is a roundabout. This intersection is not part of the Chain Lake Road corridor. The intersection level of service threshold for the Chain Lake Road corridor and the intersection of Chain Lake Road at Kelsey Street is LOS D.

The City of Monroe also has an interlocal agreement with Snohomish County to provide turning movements at Snohomish County key intersections impacted with 3 or more directional peak-hour trips on any approach or departure and for traffic mitigation fees.

[1] **Source:** *Highway Capacity Manual 6th Edition.*

LOS A: Free-flow traffic conditions, with minimal delay to stopped vehicles (no vehicle is delayed longer than one cycle at signalized intersection).
LOS B: Generally stable traffic flow conditions.
LOS C: Occasional back-ups may develop, but delay to vehicles is short term and still tolerable.
LOS D: During short periods of the peak hour, delays to approaching vehicles may be substantial but are tolerable during times of less demand (i.e. vehicles delayed one cycle or less at signal).
LOS E: Intersections operate at or near capacity, with long queues developing on all approaches and long delays.
LOS F: Jammed conditions on all approaches with excessively long delays and vehicles unable to move at times.

[2] When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection.

3. TRIP GENERATION

The trip generation calculations for the Garibaldi development are based on the average trip generation rates for ITE Land Use Code 210, Single-Family Detached Housing. The trip generation calculations are based on the 86 net new units of the Garibaldi development, which includes credit for the 2 existing units on the site, and are summarized in Table 2.

Table 2: Trip Generation Summary

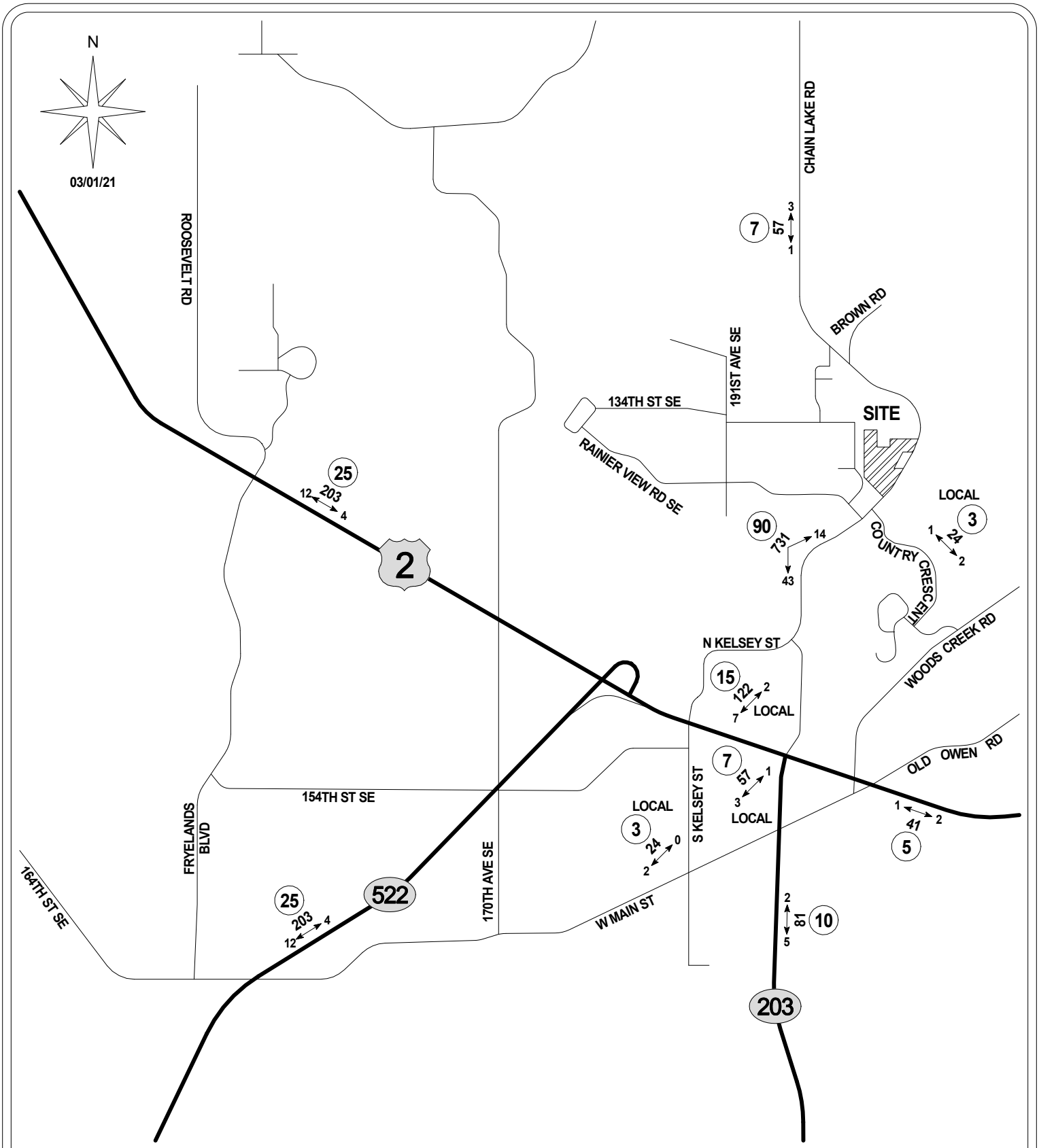
86 Net New Single-Family Residential Units	Average Daily Trips			AM Peak-Hour Trips			PM Peak-Hour Trips		
	Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
Generation Rate	9.44 trips per unit			0.74 trips per unit			0.99 trips per unit		
Splits	50%	50%	100%	25%	75%	100%	63%	37%	100%
Trips	405.92	405.92	811.84	15.91	47.73	63.64	53.64	31.50	85.14

The 86 net new units are anticipated to generate approximately 812 average daily trips with approximately 64 AM peak-hour trips and 85 PM peak-hour trips.

4. TRIP DISTRIBUTION

The distribution of trips generated by the Garibaldi development is based on approved distributions for developments in the site vicinity. It is anticipated that 25% of the trips generated by the development will travel to and from the west along US-2. Approximately 35% of the trips generated by the development will travel to and from the south, twenty-five percent along SR-522 and ten percent along SR-203. It is estimated that 28% of the trips generated by the development will travel to and from local areas in the vicinity of the development, ten percent south of US-2, fifteen percent north of US-2, and three percent to the east. The remaining 12% of the trips generated by the development are anticipated to travel to and from the north and east, seven percent to and from the north along Chain Lake Road and five percent to and from the east along US-2. Detailed distributions are included in Figure 2 for the AM peak-hour and Figure 3 for the PM peak-hour.

The interlocal agreement with Snohomish County requires key intersections impacted with 3 or more directional peak-hour trips on any approach or departure to be shown. The Garibaldi development will impact 7 key intersections during the AM and PM peak-hours. The key intersection impacts are shown in detail in the attachments of this report. Snohomish County's trip distribution policy states that trips along US-2 do not need to be distributed west of 88th Street SE. Trips traveling to and from the south along SR-522 and SR-203 are anticipated to travel to and from King County.



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GARIBALDI DEVELOPMENT
86 NET NEW SINGLE FAMILY DWELLINGS

CITY OF MONROE

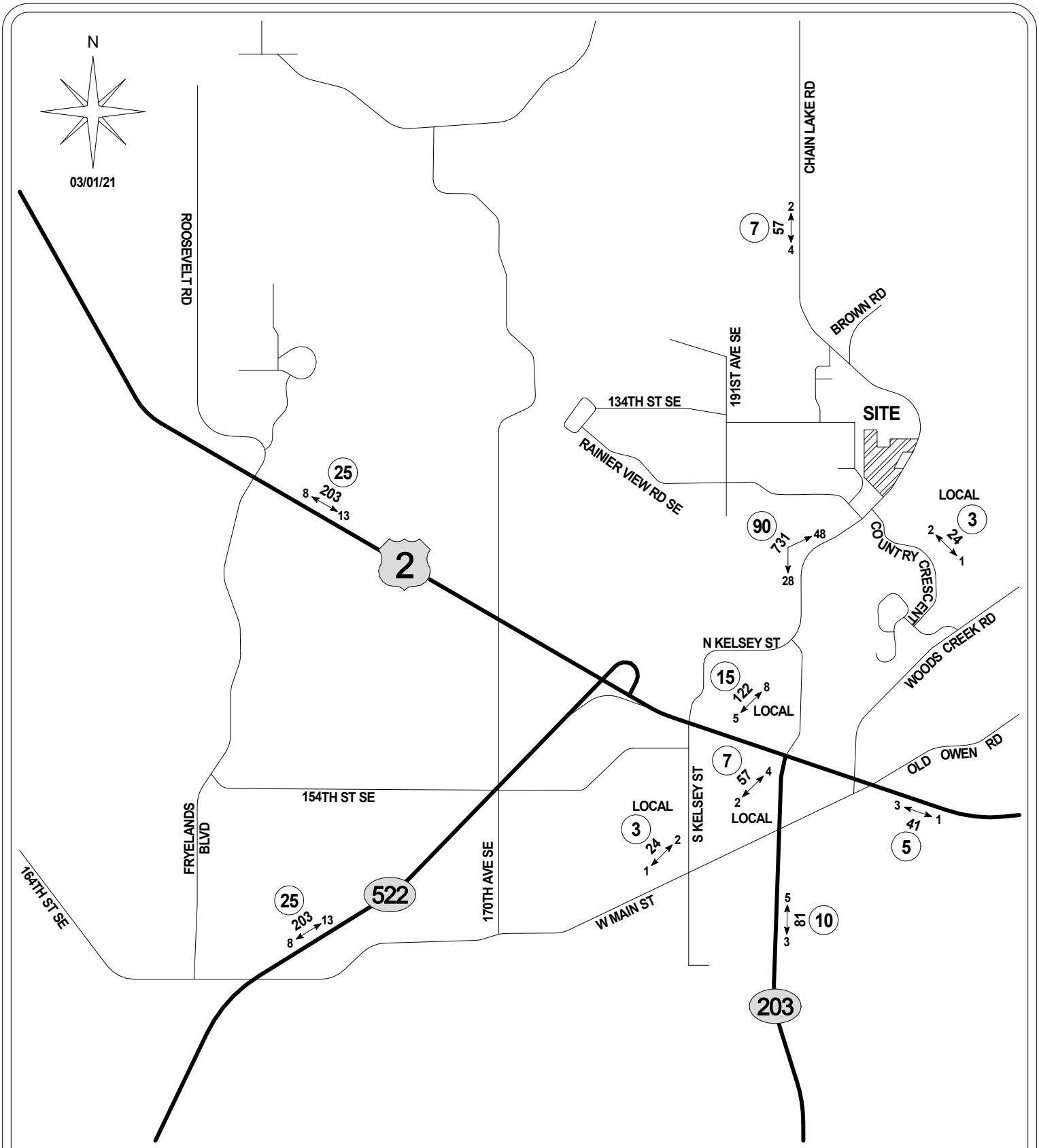
LEGEND

AWDT
AM ⟷ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

XX — TRIP DISTRIBUTION %

FIGURE 2

DEVELOPMENT TRIP DISTRIBUTION AM PEAK-HOUR



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AWDT
PM ↔ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

(XX) — TRIP DISTRIBUTION %

FIGURE 3

DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR

5. INTERSECTION LEVEL OF SERVICE ANALYSIS

The intersections that have been analyzed as part of this report are based on the typical City of Monroe and WSDOT requirements and previous scoping discussions with City of Monroe staff. Level of service analysis has been performed for the following intersections for the weekday PM peak-hour:

1. Chain Lake Road at Brown Road
2. Chain Lake Road at Country Crescent Boulevard
3. Chain Lake Road at Rainier View Road SE
4. Chain Lake Road at Kelsey Street
5. Chain Lake Road at Site Access

The analysis has been completed for the 2018 existing, 2031 baseline and 2031 future with development conditions.

5.1 Turning Movement Volumes

Historical counts were used in lieu of collecting new counts at the study intersection due to the Covid-19 Pandemic. The existing turning movements at the study intersections are based on data collected by the independent count firm, Traffic Data Gathering (TDG), in January and March 2018. An additional count was provided by the City of Monroe, performed in September 2018 by the independent count firm Idax. The existing turning movements at the study intersections are shown in Figure 4.

The 2031 baseline volumes have been calculated using a 10-year horizon period and applying a 2% annually compounding growth rate with the following pipeline developments:

- Eaglemont I-III (F.K.A. Eaglemont) – 15 unconstructed new single-family units
- Eaglemont IV (F.K.A. Eaglemont IV-VIII) – 117 new single-family units
- Eaglemont V – 15 new single-family units
- Eaglemont VI (F.K.A. Sky View Ridge) – 44 new single-family units
- Eaglemont VII – 41 new single-family units
- Easton Cove (F.K.A. Klier Property) – 88 new single-family units
- Worthington Heights – 100 new single-family units
- Raspberry Hill – 25 new single-family units
- Clothier Short Plat – 6 new single-family units
- 2 Short Plats north of Easton Cove – 10 new single-family units
- Kestrel Ridge – 30 new single-family units

The approved PM peak-hour trip distributions for the pipeline developments are included in the attachments. For the pipeline projects where a trip distribution was not available, the pipeline trips were distributed in accordance with the Garibaldi distribution.

The Eaglemont I-III development is anticipated to have a total of 149 units, however, GTC staff surveyed the area and found 134 completed and lived-in houses at the time of the counts in March 2018, resulting in 15 unconstructed houses for the Eaglemont I-III development. Additionally, Easton Cove has been updated to include one more unit (one more inbound trip) and Worthington Heights has been updated to include 6 fewer units (four fewer inbound trips and two fewer outbound trips) from the information provided in the attachments. Although the count provided by the city was performed later in the year, the same number of pipeline trips were applied to the intersection. This will make the volume at the intersection conservatively high as more houses would have been completed between the January/March counts and the September count.

The 2031 baseline turning movements at the study intersections are shown in Figure 5. The 2031 future with development turning movements were calculated by adding the trips from the development to the 2031 baseline turning movements. The 2031 future with development turning movements are shown in Figure 6. The existing turning movement counts and turning movement calculations are included in the attachments.

5.2 Intersection Level of Service Results

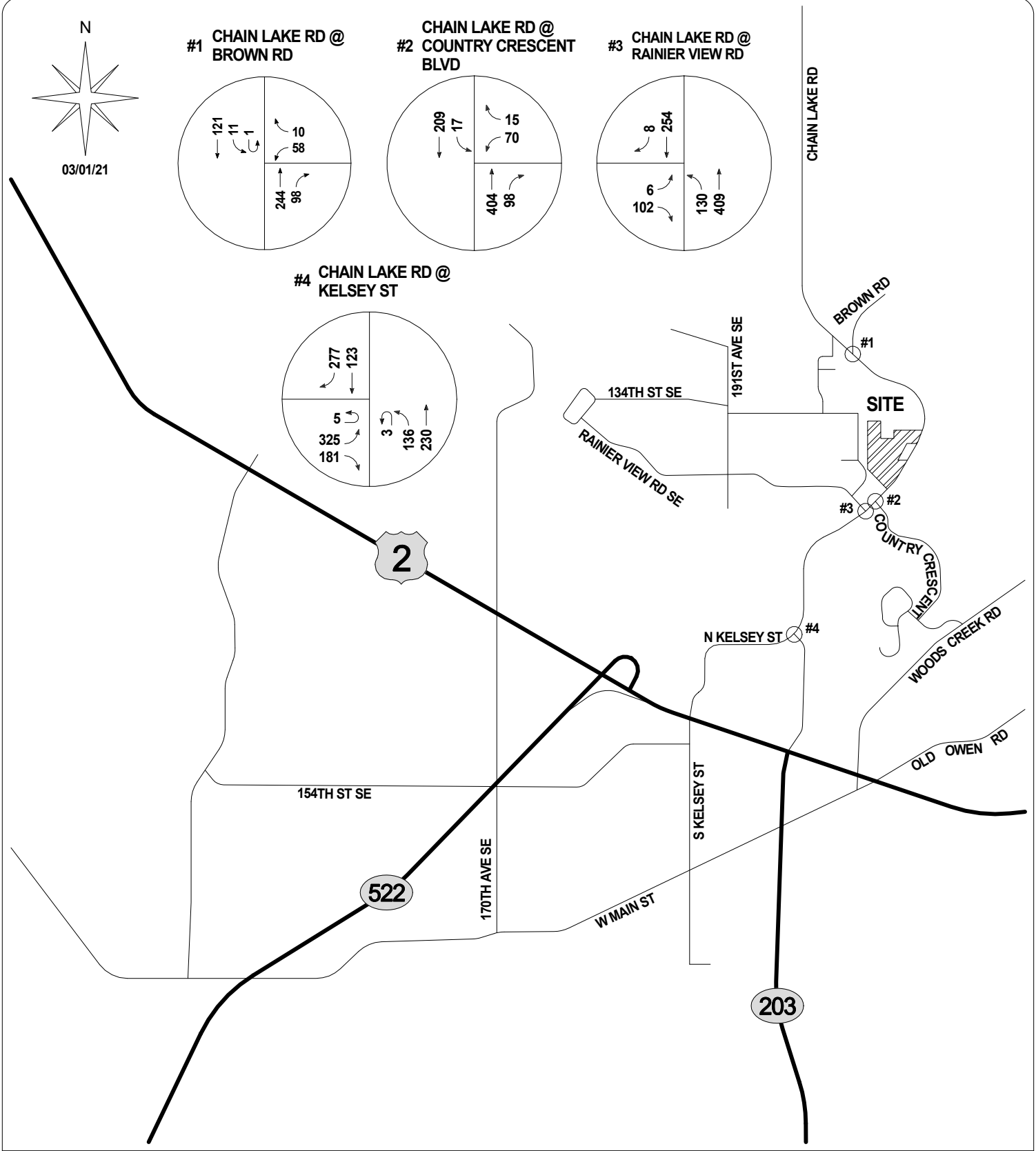
The level of service analysis has been performed utilizing the existing control, channelization, peak-hour factors and heavy-vehicle factors from the 2018 counts.

The level of service analysis shows that the development will not cause any intersection to operate at a deficient level of service. However, the development will add trips to Chain Lake Road at Rainier View Road, which is anticipated to operate at LOS E under the 2031 baseline conditions. The intersection of Chain Lake Road at Rainier View Road SW is discussed later in this report. The level of service results for the study intersections are summarized in Table 3.

Table 3: Intersection Level of Service Summary

Intersection	Intersection Type	2018 Existing Conditions		2031 Baseline Conditions		2031 Future Conditions with Development	
		LOS	Delay	LOS	Delay	LOS	Delay
1. Chain Lake Road at Brown Road	Two-Way Stop-Control	B	12.0 sec	C	18.4 sec	C	18.5 sec
2. Chain Lake Road at Country Crescent Blvd	Two-Way Stop-Controlled	C	15.1 sec	D	28.1 sec	D	32.6 sec
3. Chain Lake Road at Rainier View Road SW	Two-Way Stop-Control	B	11.3 sec	E	39.5 sec	E	49.8 sec
Chain Lake Corridor		**B**	**13.0 sec**	**D**	**32.0 sec**	**D**	**39.0 sec**
4. Chain Lake Road at Kelsey Street	Roundabout	A	7.3 sec	B	12.6 sec	B	15.3 sec
5. Chain Lake Road at Site Access	Two-Way Stop-Controlled	---	---	---	---	B	11.8 sec

The level of service calculations are included in the attachments.



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GARIBALDI DEVELOPMENT
86 NET NEW SINGLE FAMILY DWELLINGS

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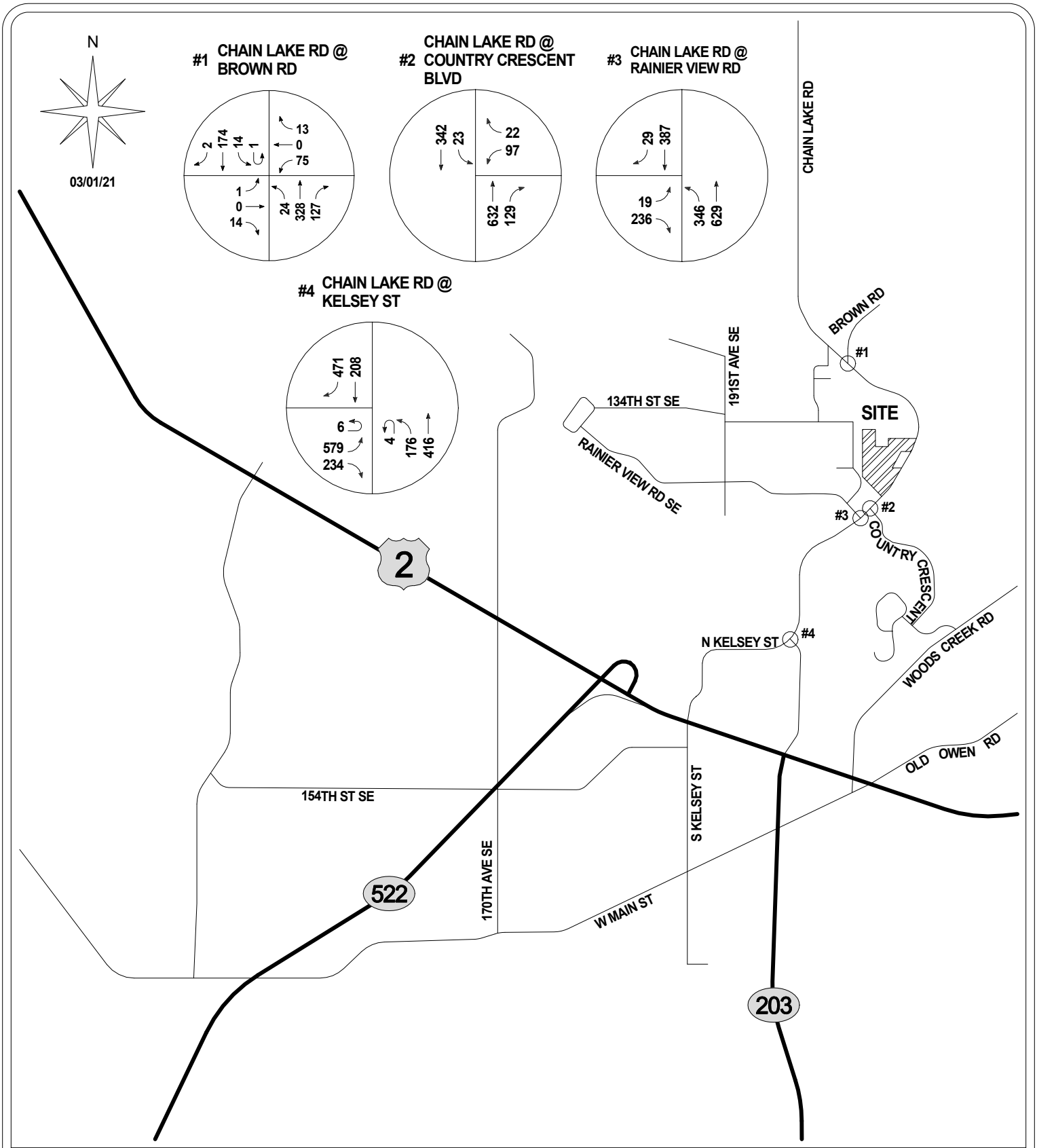
LEGEND

XXX → PM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 4

EXISTING TURNING MOVEMENTS



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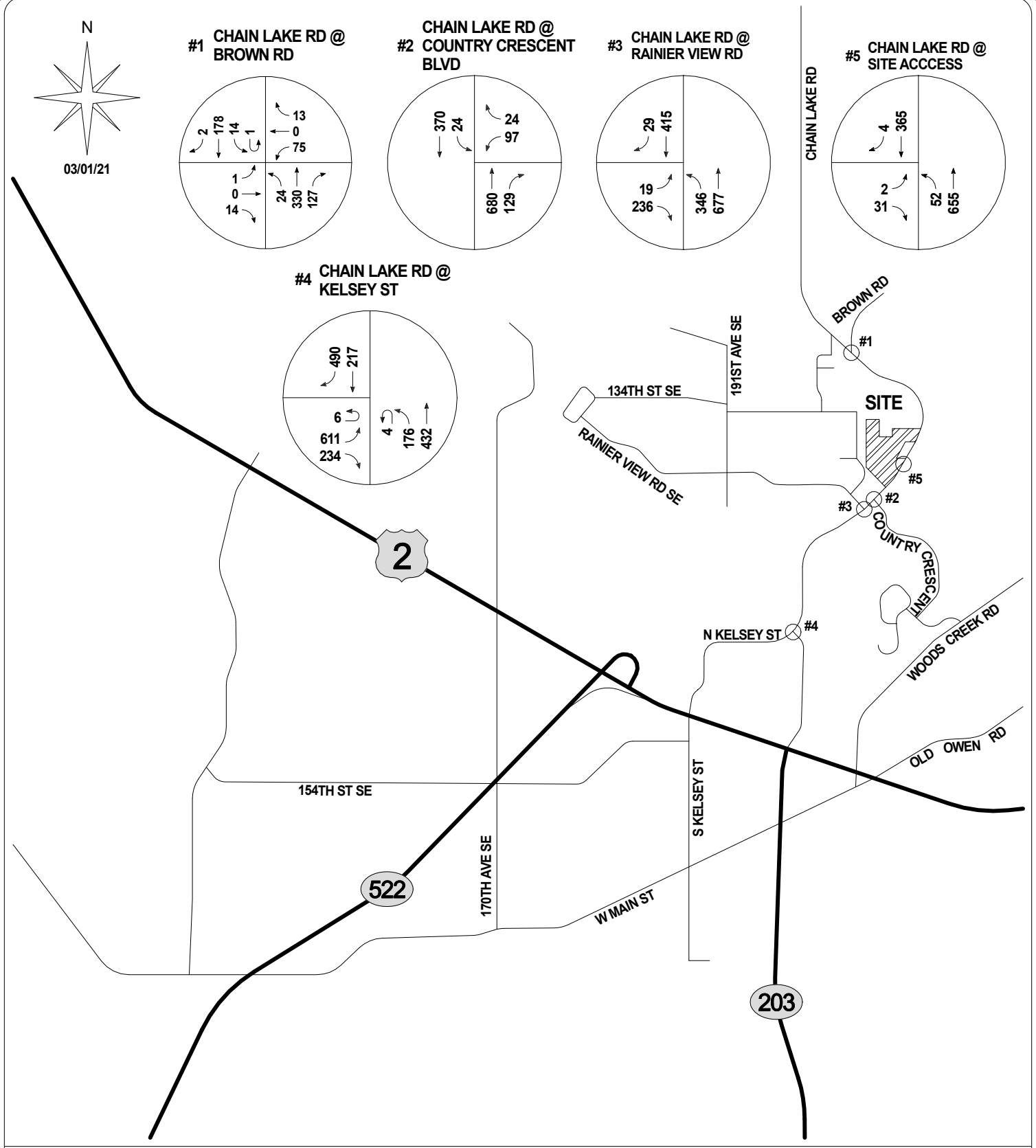
XXX → PM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 5

2031 BASELINE TURNING MOVEMENTS



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XXX → PM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 6

2031 FUTURE WITH DEVELOPMENT TURNING MOVEMENTS

6. TRAFFIC MITIGATION FEES

The Washington Growth Management Act and Revised Code of Washington 82.02.050(2) authorize local jurisdictions to establish proportionate share traffic mitigation fees in order to fund capital facilities, such as roads and intersections. The Garibaldi development is located within the City of Monroe, which has established traffic mitigation fees. The City of Monroe also has interlocal agreements with Snohomish County and WSDOT for traffic mitigation fees.

6.1 City of Monroe

The City of Monroe has established a traffic mitigation fee schedule. The fee for single-family residential units is $3,570 per unit. The 86 net new units of the Garibaldi development will result in City of Monroe traffic mitigation fees of $307,020. It should be noted that these fees may not vest and may be higher when the building applications are pulled.

6.2 Snohomish County

The City of Monroe and Snohomish County have an interlocal agreement that provides for the payment of traffic mitigation for impacts to Snohomish County roadways by City of Monroe developments. Traffic mitigation fees are based on predetermined area impacts or impacts to actual improvement projects. The trip distribution shows that the Garibaldi development will not impact any Snohomish County improvement projects in the Transportation Needs Report with three directional PM peak-hour trips. According to Section 3(a)2 of the S*nohomish County Traffic Worksheet and Traffic Study Requirements for Developments in the City of Monroe*, City of Monroe developments are only required to pay traffic mitigation fees for improvements in the Transportation Needs Report impacted with three directional peak-hour trips. Snohomish County traffic mitigation fees should therefore not be required for the Garibaldi development.

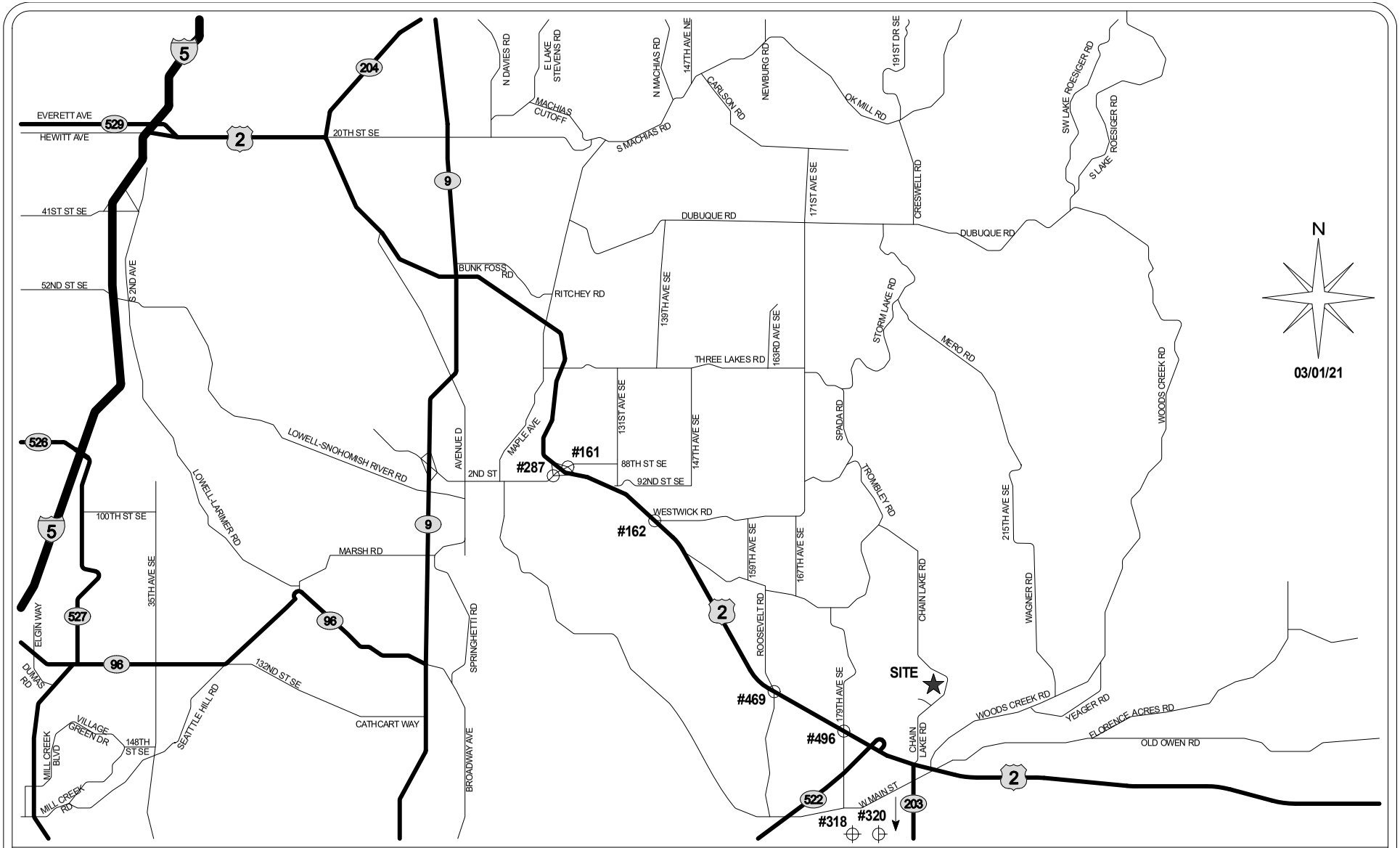
6.3 WSDOT

The City of Monroe and WSDOT have an interlocal agreement that provides for the payment of traffic mitigation fees. The interlocal agreement states that a development only has a "significant adverse impact" if the development contributes 25 or more trips to a WSDOT intersection. The WSDOT intersection impacted with more than 25 development trips is expected to operate at acceptable levels of service according to the interlocal agreement between the City of Monroe and WSDOT. WSDOT does not have a collection project for this intersection and therefore the WSDOT traffic mitigation fees should not be required for the Garibaldi development.

7. CONCLUSIONS

The Garibaldi development is proposed to consist of 90 single-family residential units with 4 existing units being removed. The 86 net new units of the Garibaldi development are anticipated to generate approximately 812 average daily trips with approximately 64 AM peak-hour trips and 85 PM peak-hour trips. The level of service analysis shows that all the Chain Lake Road corridor and the intersection of Chain Lake Road at Kelsey Street are anticipated to operate acceptably. The Garibaldi development will have City of Monroe traffic mitigation fees of $307,020. The impacts of the development will not meet the thresholds for paying traffic mitigation fees to Snohomish County or WSDOT.

Snohomish County Key Intersection Impacts



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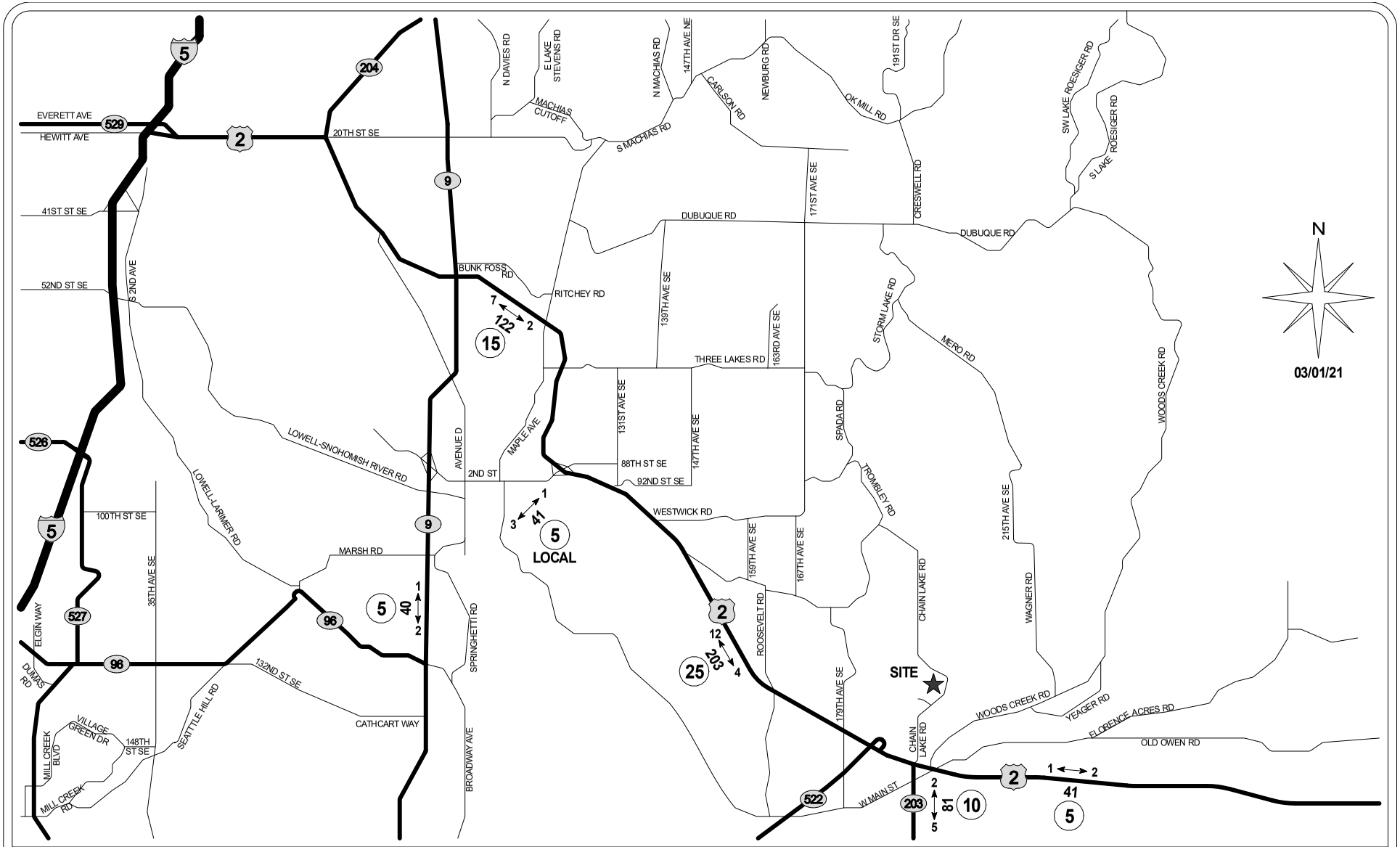
DEVELOPMENT SITE

KEY INTERSECTION

FIGURE A1

KEY INTERSECTION LOCATIONS



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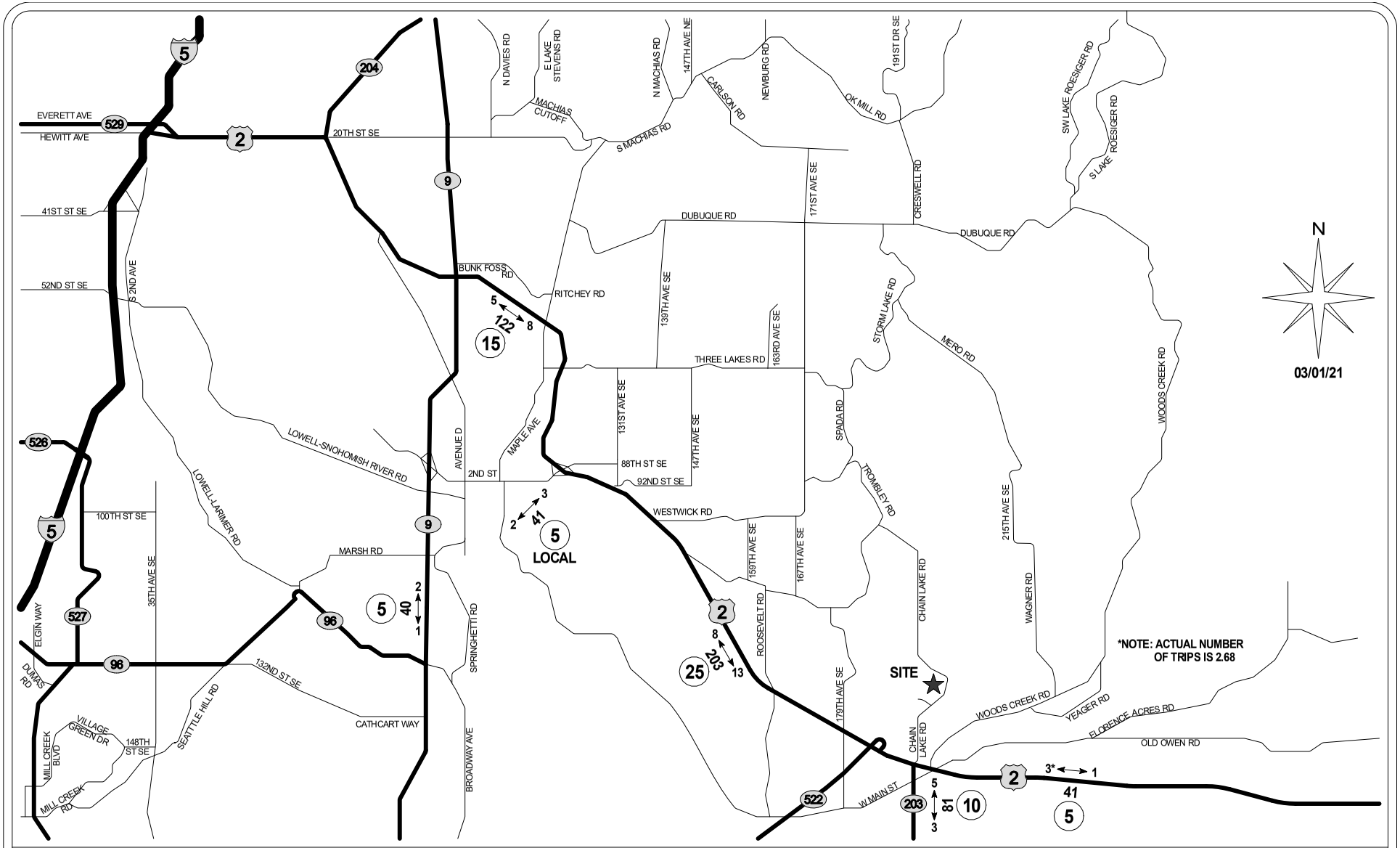
AWDT
AM ◄► PEAK — NEW SITE TRAFFIC DAILY AND AM PEAK-HOUR

XX — TRIP DISTRIBUTION %

FIGURE A2

DEVELOPMENT TRIP DISTRIBUTION AM PEAK-HOUR



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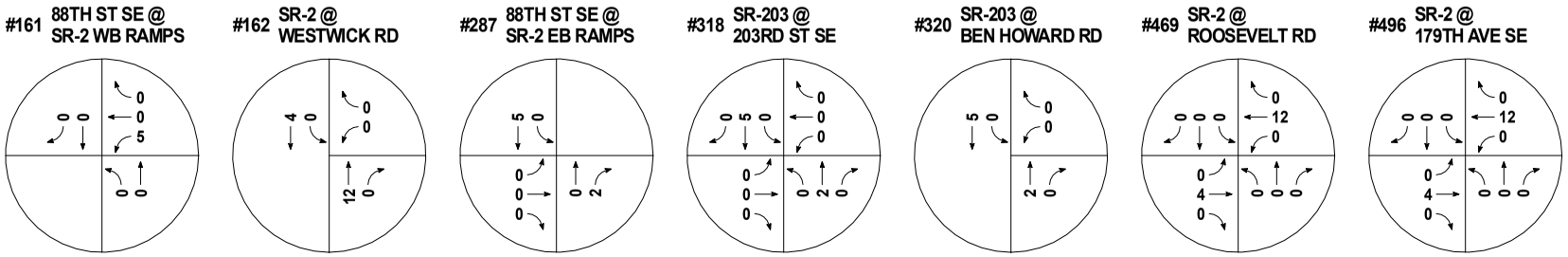
AWDT
PM ◄► PEAK — NEW SITE TRAFFIC DAILY AND PM PEAK-HOUR

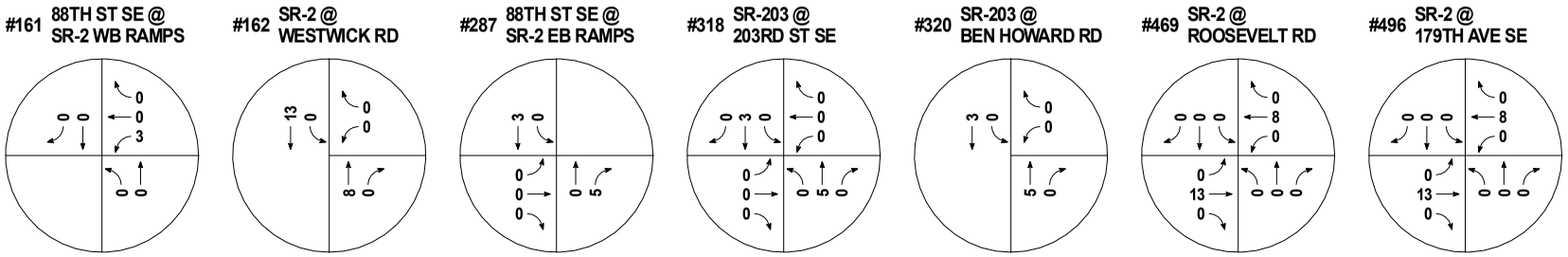
XX — TRIP DISTRIBUTION %

FIGURE A3

DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR



AM PEAK-HOUR



PM PEAK-HOUR

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XXX→ PEAK HOUR TURNING MOVEMENT VOLUME

FIGURE A4

DEVELOPMENT KEY INTERSECTION VOLUMES AM & PM PEAK-HOURS

Key AM Peak-Hour Key Intersection Volumes

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
#161: 88th St SE at SR-2 WB Ramps	N/A	N/A	N/A	5	0	0	0	0	N/A	N/A	0	0
#162: SR-2 at Westwick Rd	N/A	N/A	N/A	0	N/A	0	N/A	12	0	0	5	N/A
#287: 88th St SE at SR-2 EB Ramps	0	0	0	N/A	N/A	N/A	N/A	0	2	0	5	N/A
#318: SR-203 at 203rd St SE	0	0	0	0	0	0	0	2	0	0	5	0
#320: SR-203 at Ben Howard Rd	N/A	N/A	N/A	0	N/A	0	N/A	2	0	0	5	N/A
#469: SR-2 at Roosevelt Rd	0	4	0	0	12	0	0	0	0	0	0	0
#496: SR-2 at 179th Ave SE	0	4	0	0	12	0	0	0	0	0	0	0

PM Peak-Hour Key Intersection Volumes

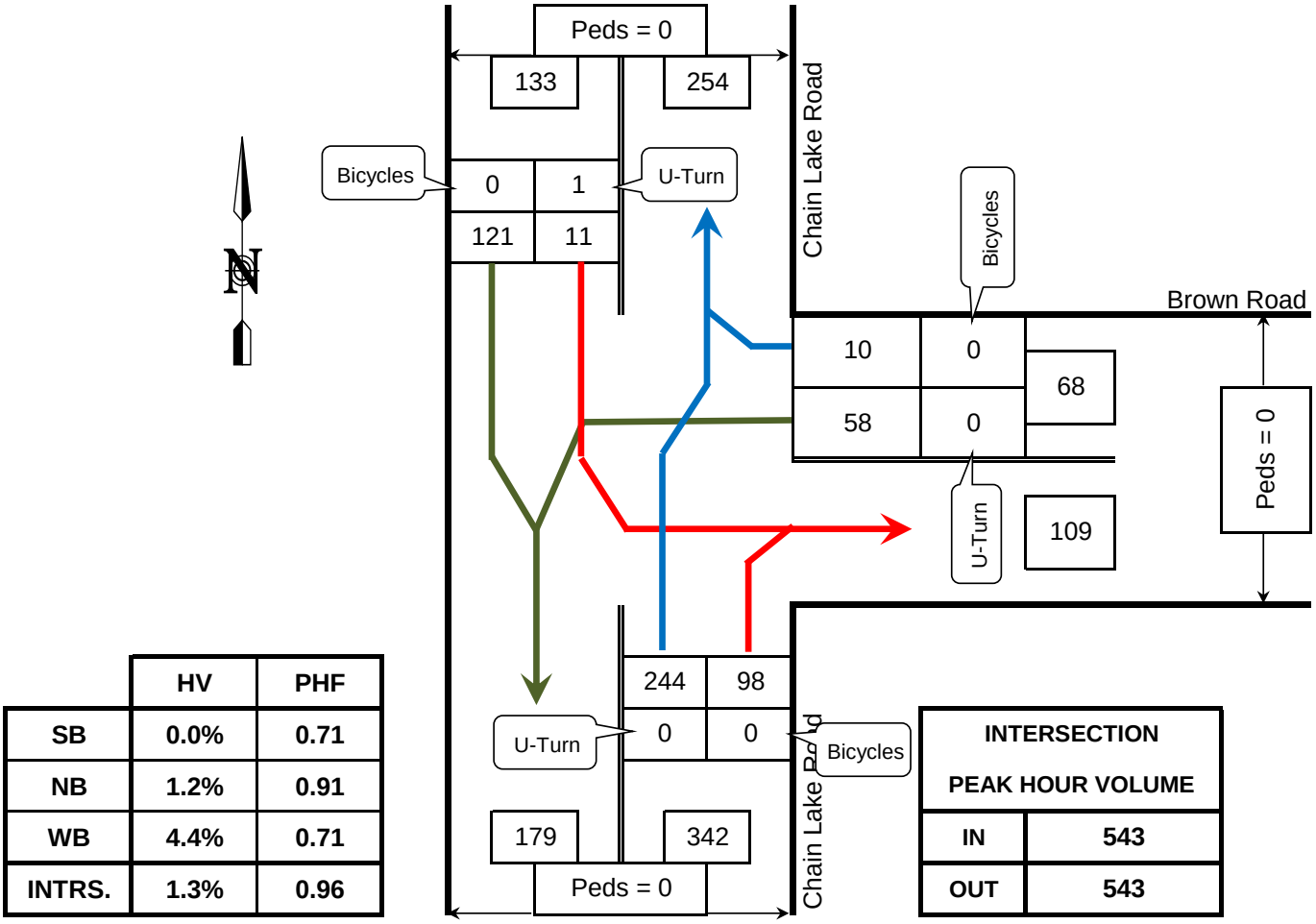
Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
#161: 88th St SE at SR-2 WB Ramps	N/A	N/A	N/A	3	0	0	0	0	N/A	N/A	0	0
#162: SR-2 at Westwick Rd	N/A	N/A	N/A	0	N/A	0	N/A	8	0	0	13	N/A
#287: 88th St SE at SR-2 EB Ramps	0	0	0	N/A	N/A	N/A	N/A	0	5	0	3	N/A
#318: SR-203 at 203rd St SE	0	0	0	0	0	0	0	5	0	0	3	0
#320: SR-203 at Ben Howard Rd	N/A	N/A	N/A	0	N/A	0	N/A	5	0	0	3	N/A
#469: SR-2 at Roosevelt Rd	0	13	0	0	8	0	0	0	0	0	0	0
#496: SR-2 at 179th Ave SE	0	13	0	0	8	0	0	0	0	0	0	0

Turning Movement Calculations and Counts

TRAFFIC DATA GATHERING

TURNING MOVEMENTS DIAGRAM

4:00 PM - 6:00 PM PEAK HOUR: 4:15 PM TO 5:15 PM



	HV	PHF
SB	**0.0%**	**0.71**
NB	**1.2%**	**0.91**
WB	**4.4%**	**0.71**
INTRS.	**1.3%**	**0.96**

INTERSECTION PEAK HOUR VOLUME	
IN	**543**
OUT	**543**

HV = Heavy Vehicles
PHF = Peak Hour Factor

Chain Lake Road @ Brown Road

Monroe, WA

COUNTED BY: VT/CN

REDUCED BY: CN

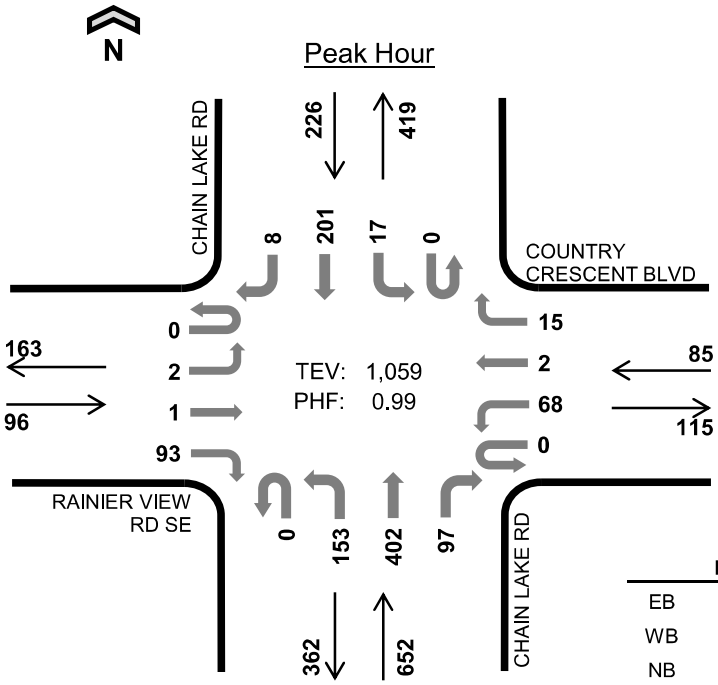
REDUCTION DATE: Tue. 2/6/18

DATE OF COUNT: Wed. 1/31/18

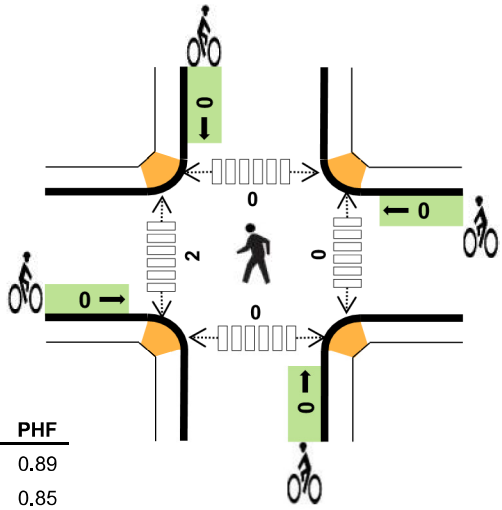
TIME OF COUNT: 4:00 PM - 6:00 PM

WEATHER: Rainy

CHAIN LAKE RD
COUNTRY CRESCENT BLVD



Date: Thu, Sep 27, 2018
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	3.1%	0.89
WB	1.2%	0.85
NB	0.5%	0.92
SB	0.4%	0.91
TOTAL	0.8%	0.99

Two-Hour Count Summaries

Interval Start	RAINIER VIEW RD SE				COUNTRY CRESCENT BLVD				CHAIN LAKE RD				CHAIN LAKE RD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	3	3	23	0	11	0	1	0	39	87	15	0	4	36	4	226	0
4:15 PM	0	1	1	24	1	14	2	5	0	35	95	22	0	2	55	2	259	0
4:30 PM	0	4	1	29	0	16	0	3	0	31	86	17	0	1	63	1	252	0
4:45 PM	0	1	0	22	0	18	2	2	0	35	68	23	0	5	48	1	225	962
5:00 PM	**0**	**0**	**0**	**19**	**0**	**13**	**1**	**3**	**0**	**40**	**106**	**32**	**0**	**2**	**47**	**2**	**265**	1,001
5:15 PM	**0**	**1**	**0**	**23**	**0**	**21**	**1**	**3**	**0**	**35**	**104**	**20**	**0**	**5**	**53**	**2**	**268**	1,010
5:30 PM	**0**	**0**	**1**	**25**	**0**	**15**	**0**	**4**	**0**	**38**	**100**	**24**	**0**	**6**	**45**	**2**	**260**	1,018
5:45 PM	**0**	**1**	**0**	**26**	**0**	**19**	**0**	**5**	**0**	**40**	**92**	**21**	**0**	**4**	**56**	**2**	**266**	**1,059**
Count Total	0	11	6	191	1	127	6	26	0	293	738	174	0	29	403	16	2,021	0
Peak Hour	**0**	**2**	**1**	**93**	**0**	**68**	**2**	**15**	**0**	**153**	**402**	**97**	**0**	**17**	**201**	**8**	**1,059**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

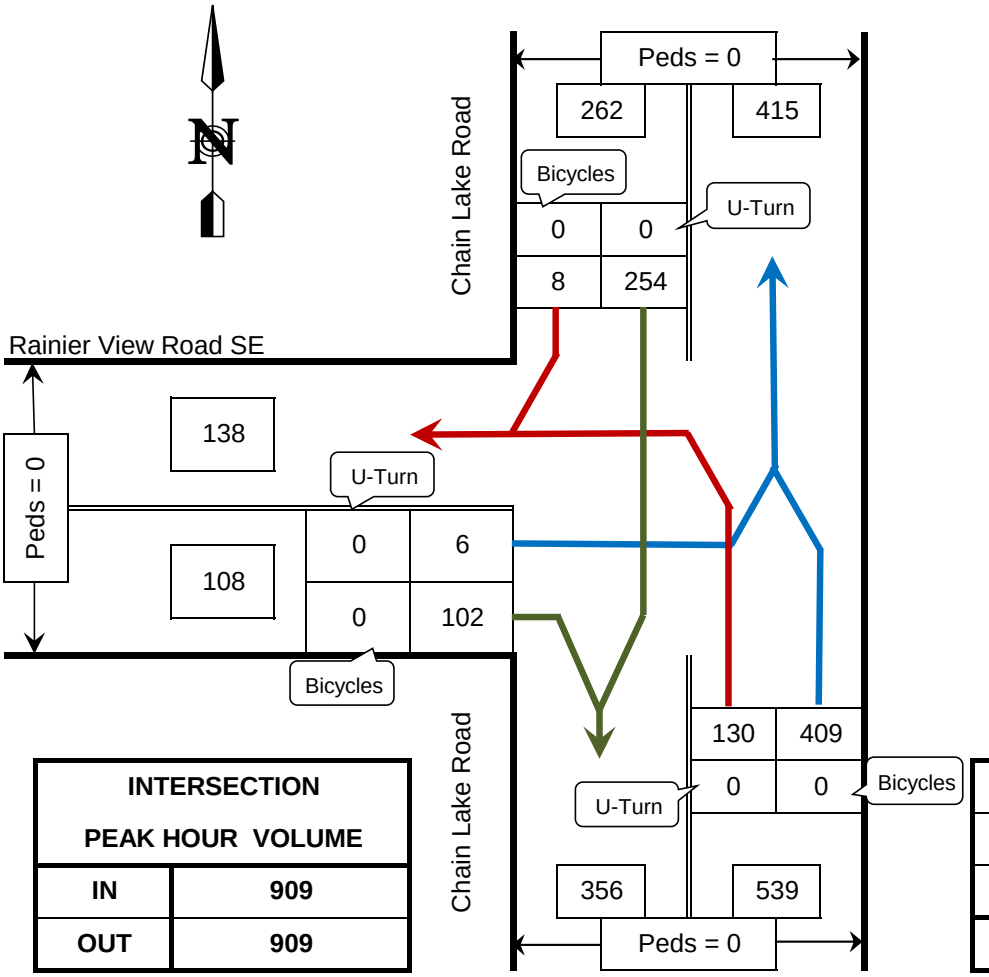
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	5	1	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	3	0	3	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	1	0	2	3	*6*	0	0	0	0	*0*	0	2	0	0	*2*
4:45 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	4	0	0	*4*
5:00 PM	**1**	**0**	**1**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**1**	**1**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	*2*
5:45 PM	**1**	**0**	**1**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	7	1	14	5	*27*	0	0	0	0	*0*	0	8	0	0	*8*
Peak Hour	**3**	**1**	**3**	**1**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	***2***

Mark Skaggs: (425) 250-0777 mark.skaggs@idaxdata.com

TRAFFIC DATA GATHERING

TURNING MOVEMENTS DIAGRAM

4:00 PM - 6:00 PM PEAK HOUR: 4:00 PM TO 5:00 PM



INTERSECTION PEAK HOUR VOLUME	
IN	909
OUT	909

	HV	PHF
SB	2.3%	0.89
NB	1.1%	0.89
EB	0.9%	0.90
INTRS.	1.4%	0.91

HV = Heavy Vehicles
PHF = Peak Hour Factor

Chain Lake Road @ Rainier View Road SE

Monroe, WA

COUNTED BY: VT/CN

REDUCED BY: CN

REDUCTION DATE: Tue. 2/6/18

DATE OF COUNT: Wed. 1/31/18

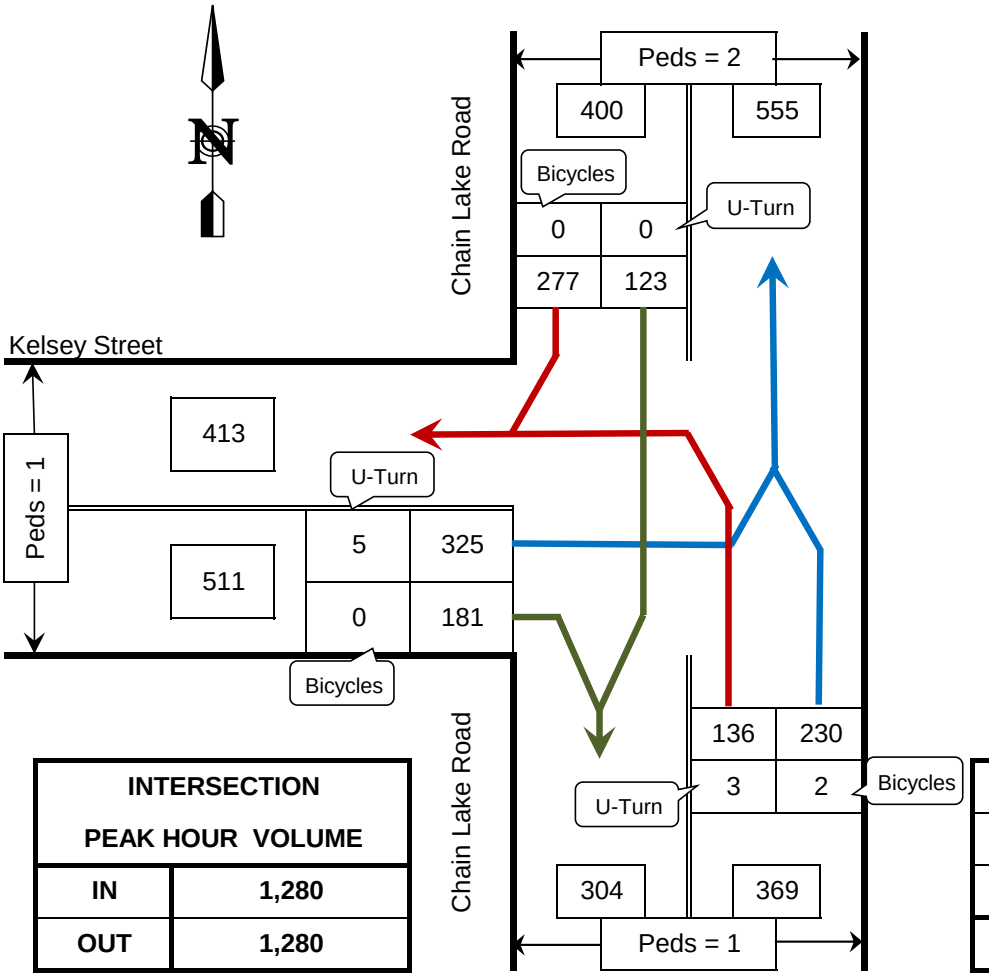
TIME OF COUNT: 4:00 PM - 6:00 PM

WEATHER: Rainy

TRAFFIC DATA GATHERING

TURNING MOVEMENTS DIAGRAM

4:00 PM - 6:00 PM PEAK HOUR: 4:00 PM TO 5:00 PM



INTERSECTION PEAK HOUR VOLUME	
IN	1,280
OUT	1,280

	HV	PHF
SB	2.8%	0.88
NB	4.6%	0.92
EB	2.0%	0.90
INTRS.	3.0%	0.93

HV = Heavy Vehicles
PHF = Peak Hour Factor

Chain Lake Road @ Kelsey Street

Monroe, WA

COUNTED BY: VT

REDUCED BY: CN

REDUCTION DATE: Fri. 3/9/18

DATE OF COUNT: Wed. 3/7/18

TIME OF COUNT: 4:00 PM - 6:00 PM

WEATHER: Overcast

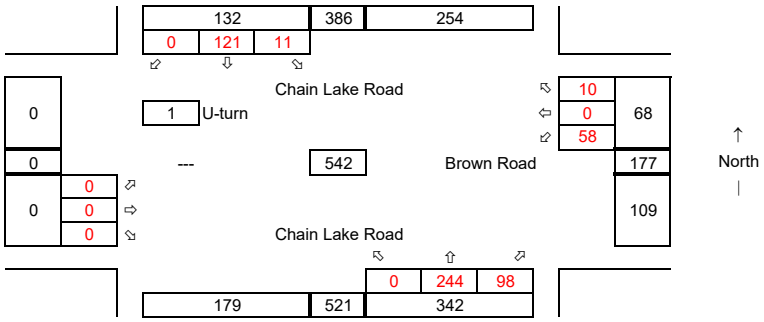
1 Brown Rd @ Chain Lake Rd

Synchro ID: 1

Existing
Average Weekday
PM Peak Hour

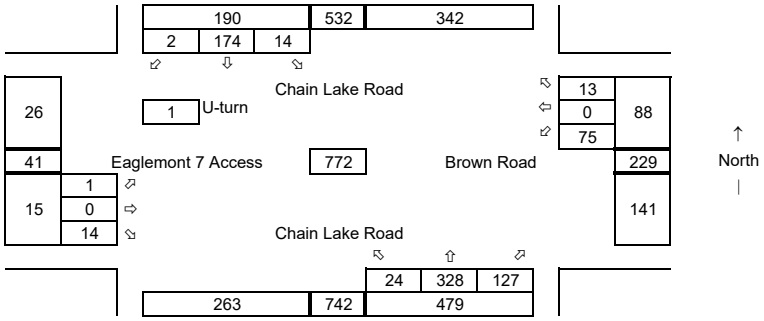
Year: **1/31/18**

Data Source: **TDG**

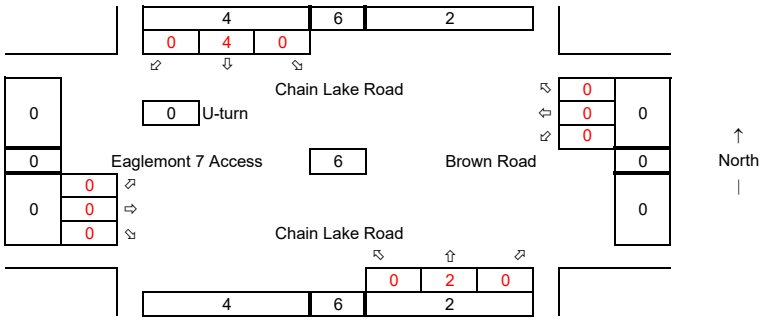


Future without Project
Average Weekday
PM Peak Hour

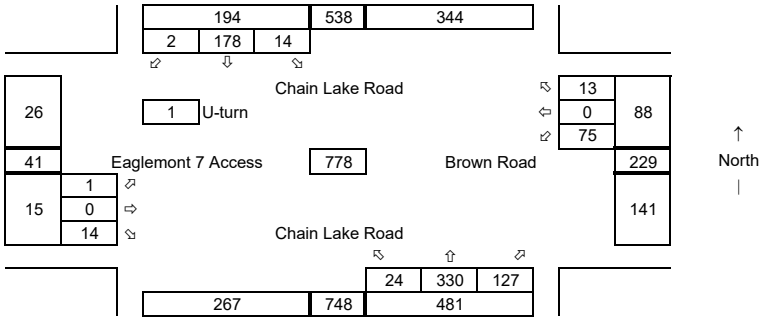
Year: 2031
Growth Rate = 2.0%
Years of Growth = 13
Total Growth = 1.2936



Total Project Trips
Average Weekday
PM Peak Hour

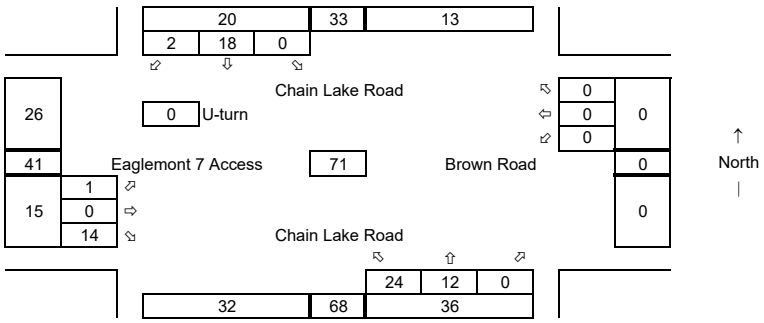


Future with Project
Average Weekday
PM Peak Hour



Pipeline Trips
Average Weekday
PM Peak Hour

Eaglemont 1-7
Easton Cove
Worthington Heights
Raspberry Hill
Clothier Short Plat
2 Short Plats
Kestrel Ridge



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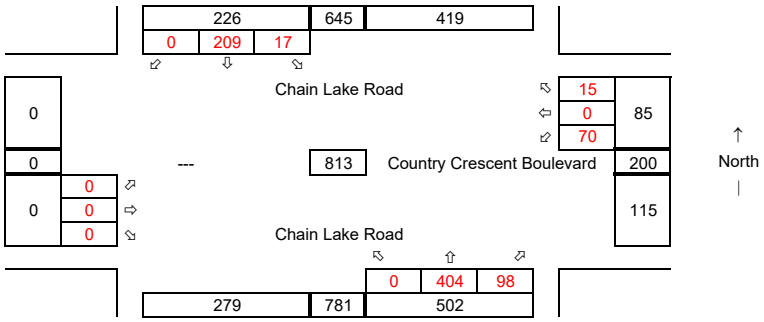
2 Country Crescent @ Chain Lake

Synchro ID: 2

Existing
Average Weekday
PM Peak Hour

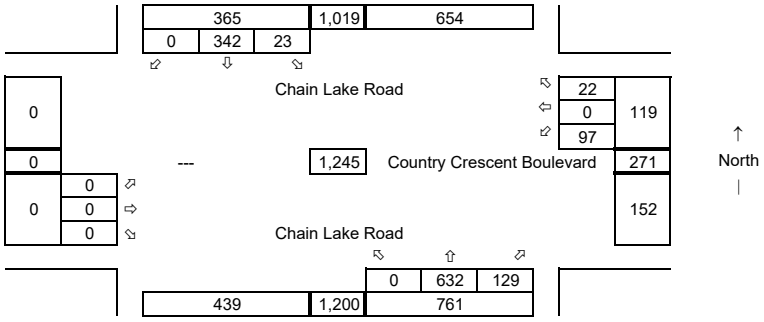
Year: **9/27/18**

Data Source: **Idax**

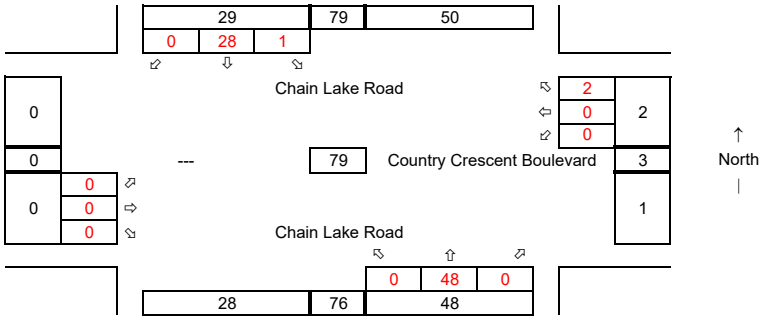


Future without Project
Average Weekday
PM Peak Hour

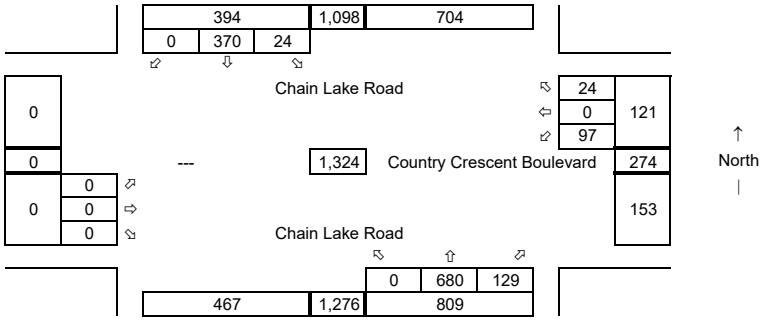
Year: 2031
Growth Rate = 2.0%
Years of Growth = 13
Total Growth = 1.2936



Total Project Trips
Average Weekday
PM Peak Hour

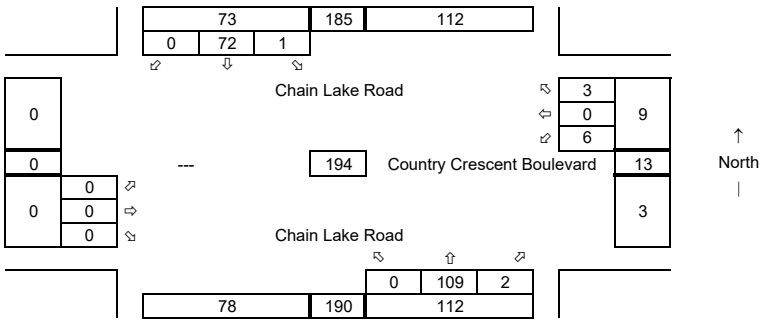


Future with Project
Average Weekday
PM Peak Hour



Pipeline Trips
Average Weekday
PM Peak Hour

Eaglemont 1-7
Easton Cove
Worthington Heights
Raspberry Hill
Clothier Short Plat
2 Short Plats
Kestrel Ridge



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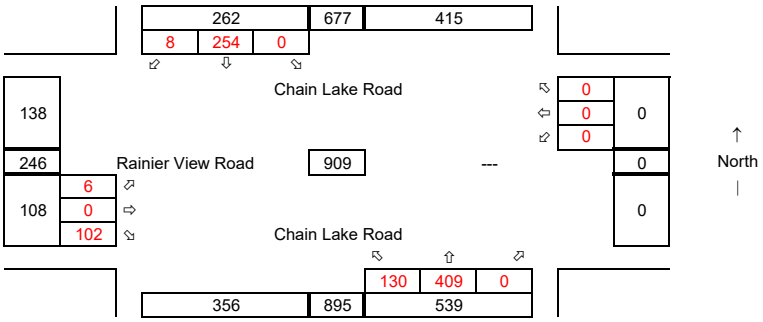
3 Rainier View @ Chain Lake

Synchro ID: 3

Existing
Average Weekday
PM Peak Hour

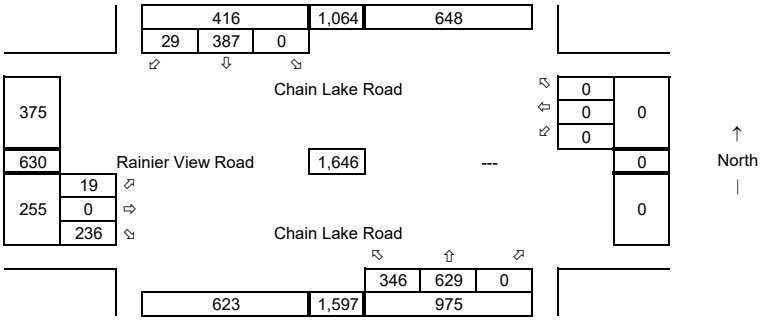
Year: **1/31/18**

Data Source: **TDG**

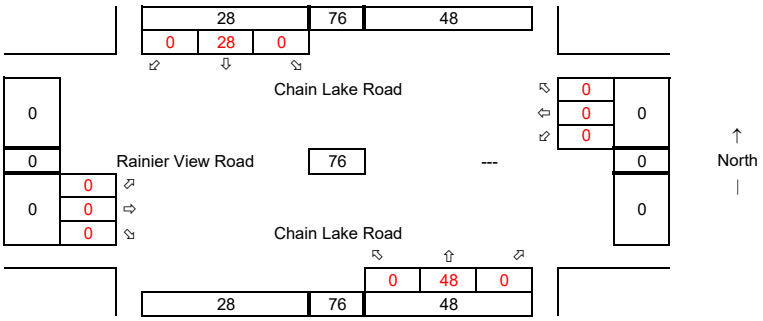


Future without Project
Average Weekday
PM Peak Hour

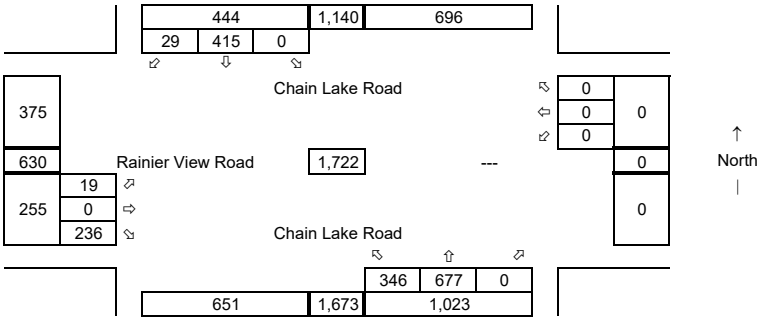
Year: 2031
Growth Rate = 2.0%
Years of Growth = 13
Total Growth = 1.2936



Total Project Trips
Average Weekday
PM Peak Hour

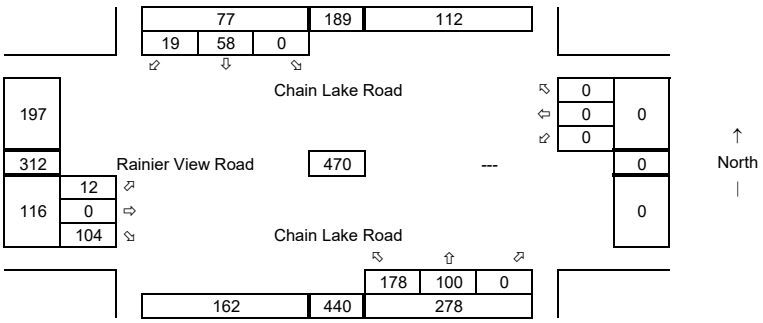


Future with Project
Average Weekday
PM Peak Hour



Pipeline Trips
Average Weekday
PM Peak Hour

Eaglemont 1-7
Easton Cove
Worthington Heights
Raspberry Hill
Clothier Short Plat
2 Short Plats
Kestrel Ridge



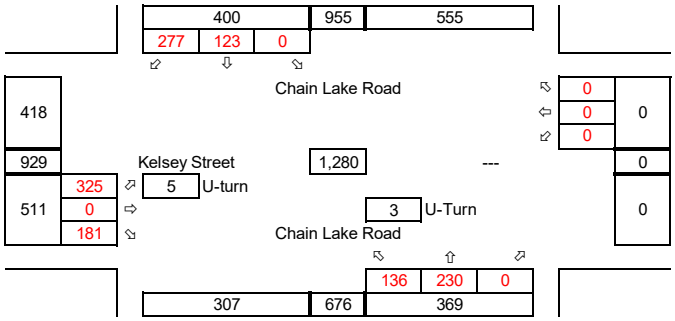
4 Kelsey St @ Chain Lake Rd

Synchro ID: 4

Existing
Average Weekday
PM Peak Hour

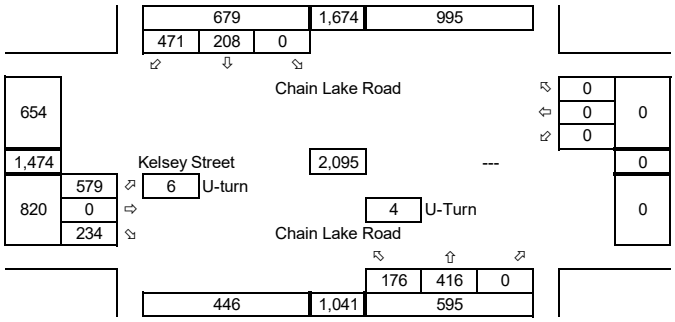
Year: **3/7/18**

Data Source: **TDG**

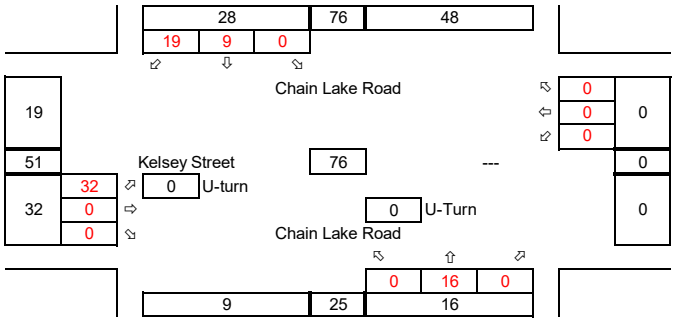


Future without Project
Average Weekday
PM Peak Hour

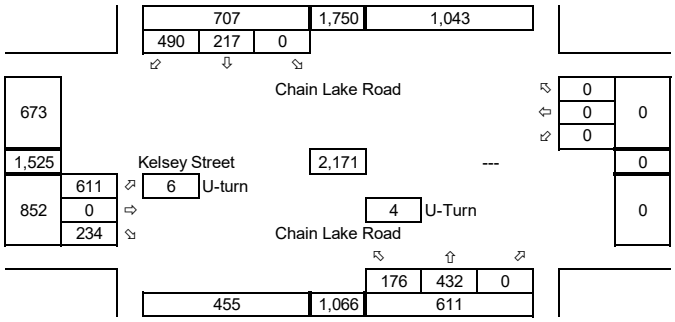
Year: 2031
Growth Rate = 2.0%
Years of Growth = 13
Total Growth = 1.2936



Total Project Trips
Average Weekday
PM Peak Hour

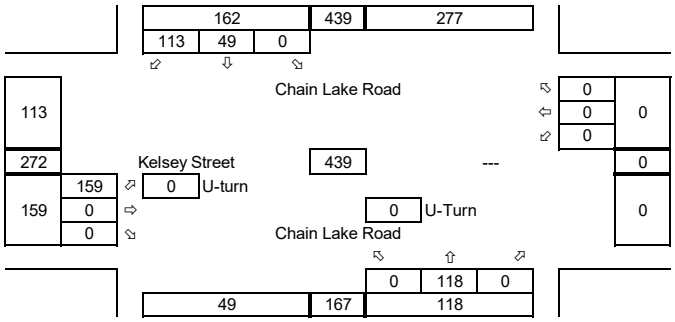


Future with Project
Average Weekday
PM Peak Hour



Pipeline Trips
Average Weekday
PM Peak Hour

Eaglemont 1-7
Easton Cove
Worthington Heights
Raspberry Hill
Clothier Short Plat
2 Short Plats
Kestrel Ridge



---

5 Site Access @ Chain Lake Rd

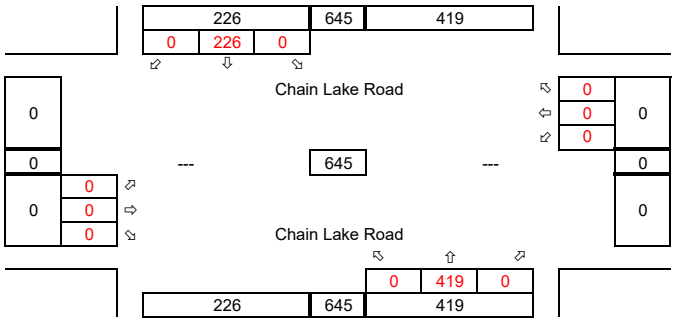
Synchro ID: 5

Existing
Average Weekday
PM Peak Hour

Year: **1/31/18**

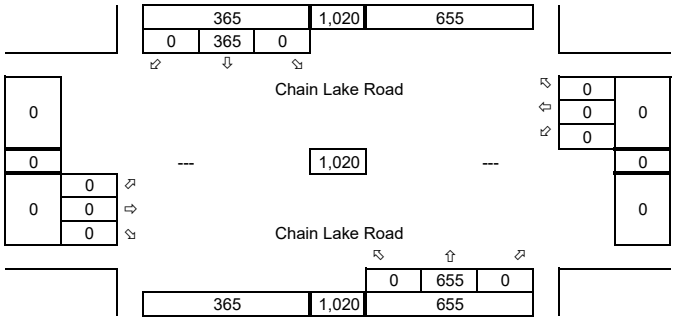
Data Source: **GTC**

Volumes extrapolated from the north leg of Country Crescent Blvd at Chain Lake Rd.

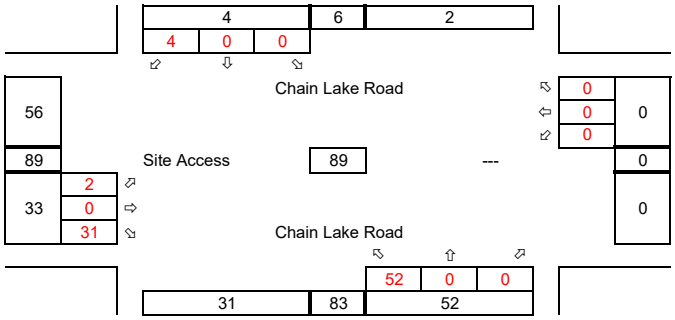


Future without Project
Average Weekday
PM Peak Hour

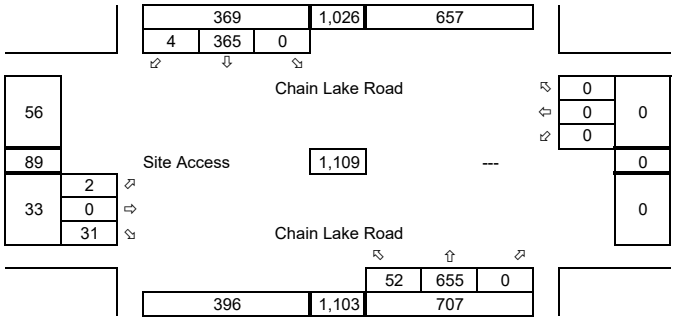
Year: 2031
Growth Rate = 2.0%
Years of Growth = 13
Total Growth = 1.2936



Total Project Trips
Average Weekday
PM Peak Hour

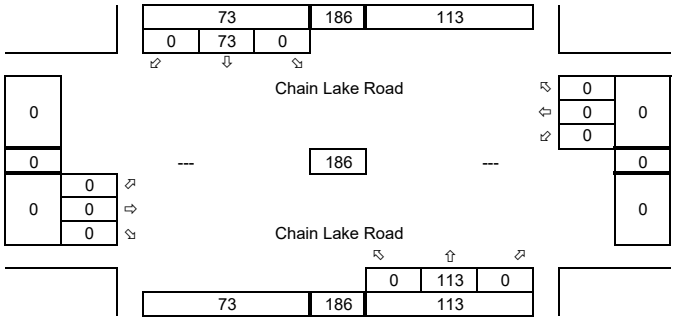


Future with Project
Average Weekday
PM Peak Hour

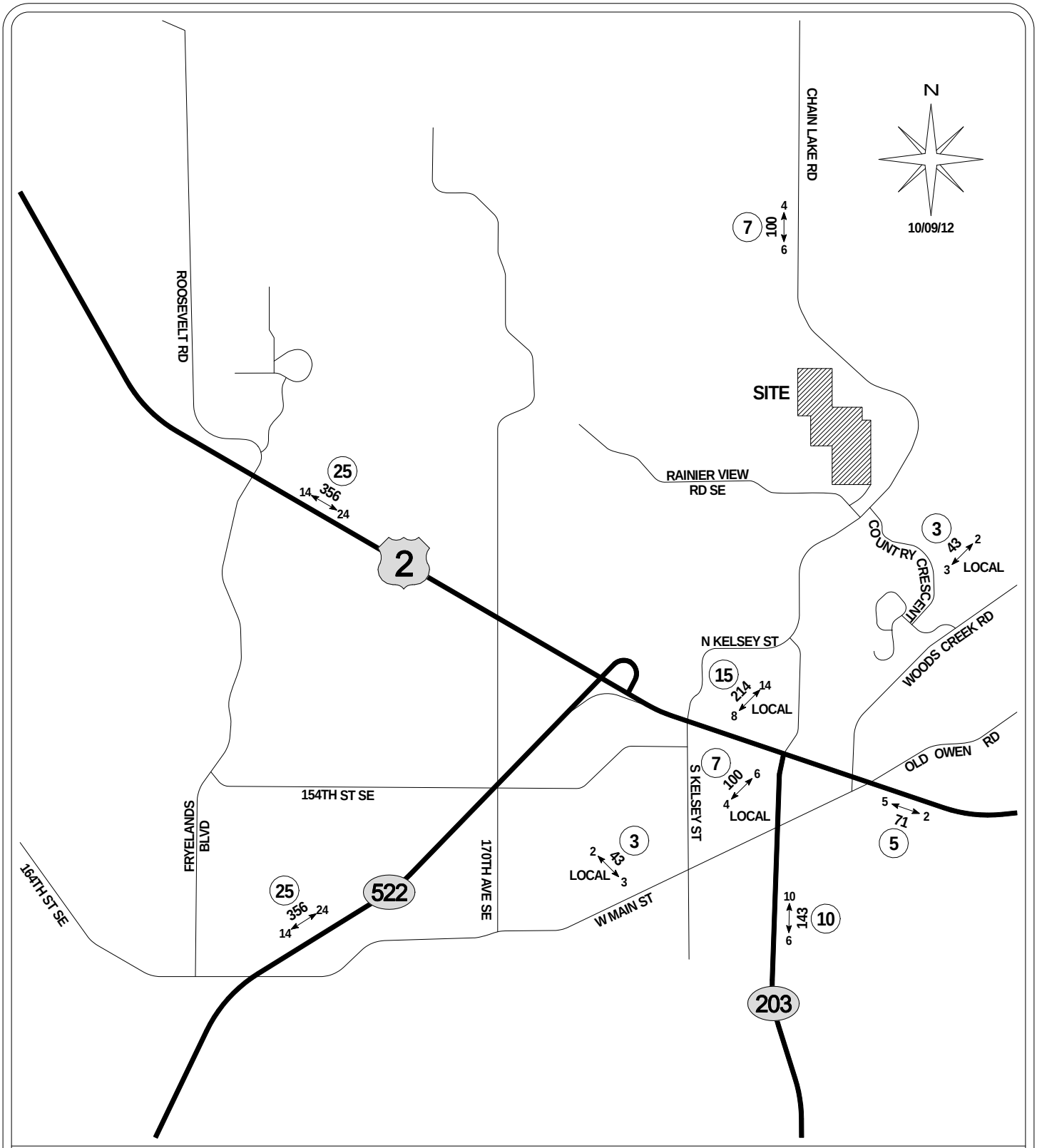


Pipeline Trips
Average Weekday
PM Peak Hour

Eaglemont 1-7
Easton Cove
Worthington Heights
Raspberry Hill
Clothier Short Plat
2 Short Plats
Kestrel Ridge



Pipeline Information



G IBSON T RAFFIC C ONSULTANTS

TRAFFIC IMPACT STUDY
GTC #12-087

EAGLEMONT
149 SINGLE-FAMILY UNITS

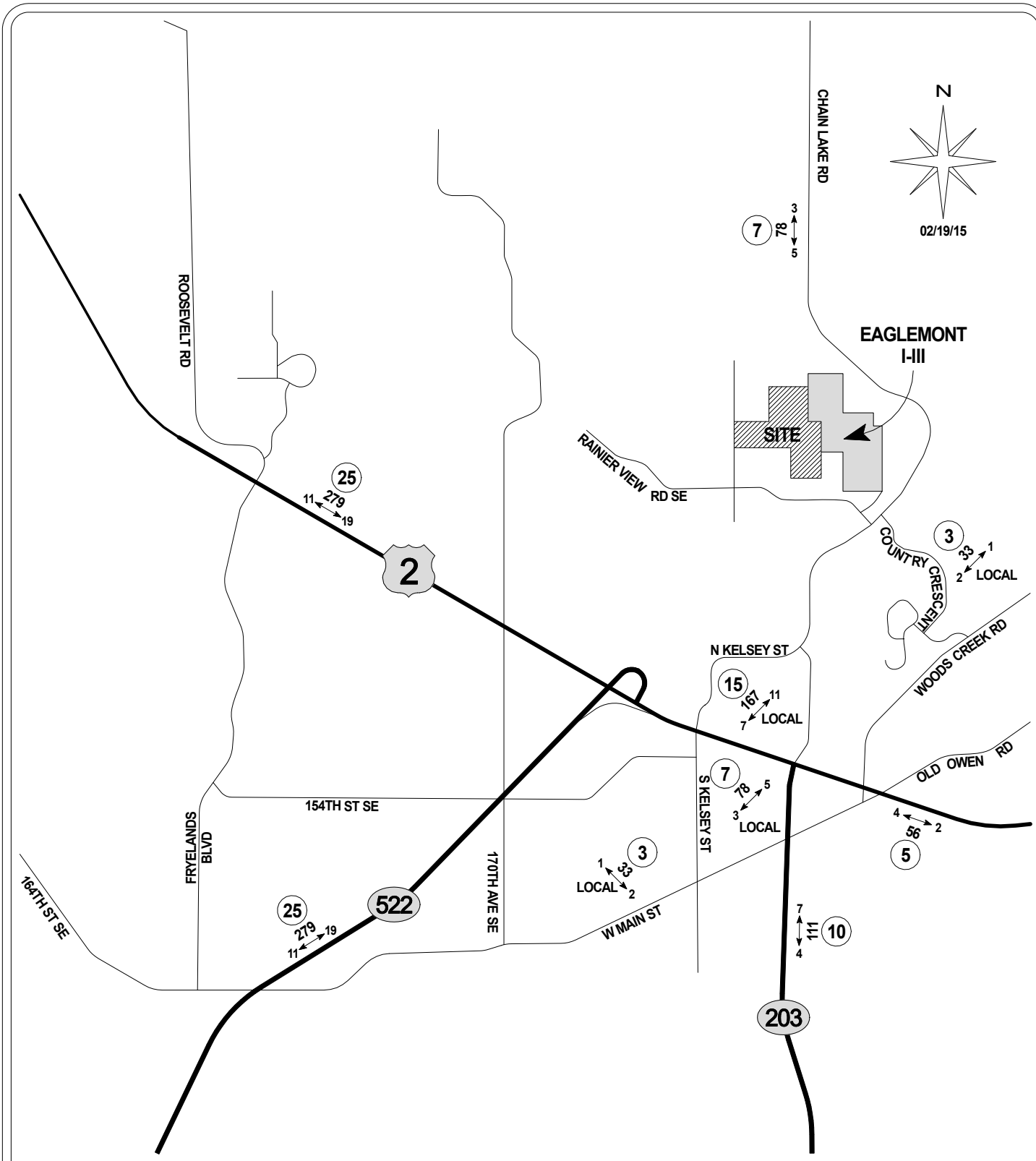
CITY OF MONROE

LEGEND

AWDT
PM ↔ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

25 — TRIP DISTRIBUTION %

FIGURE 3
DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR



G IBSON T RAFFIC C ONSULTANTS

TRAFFIC IMPACT STUDY
GTC #15-045

EAGLEMONT IV-VIII
117 NEW SINGLE-FAMILY UNITS

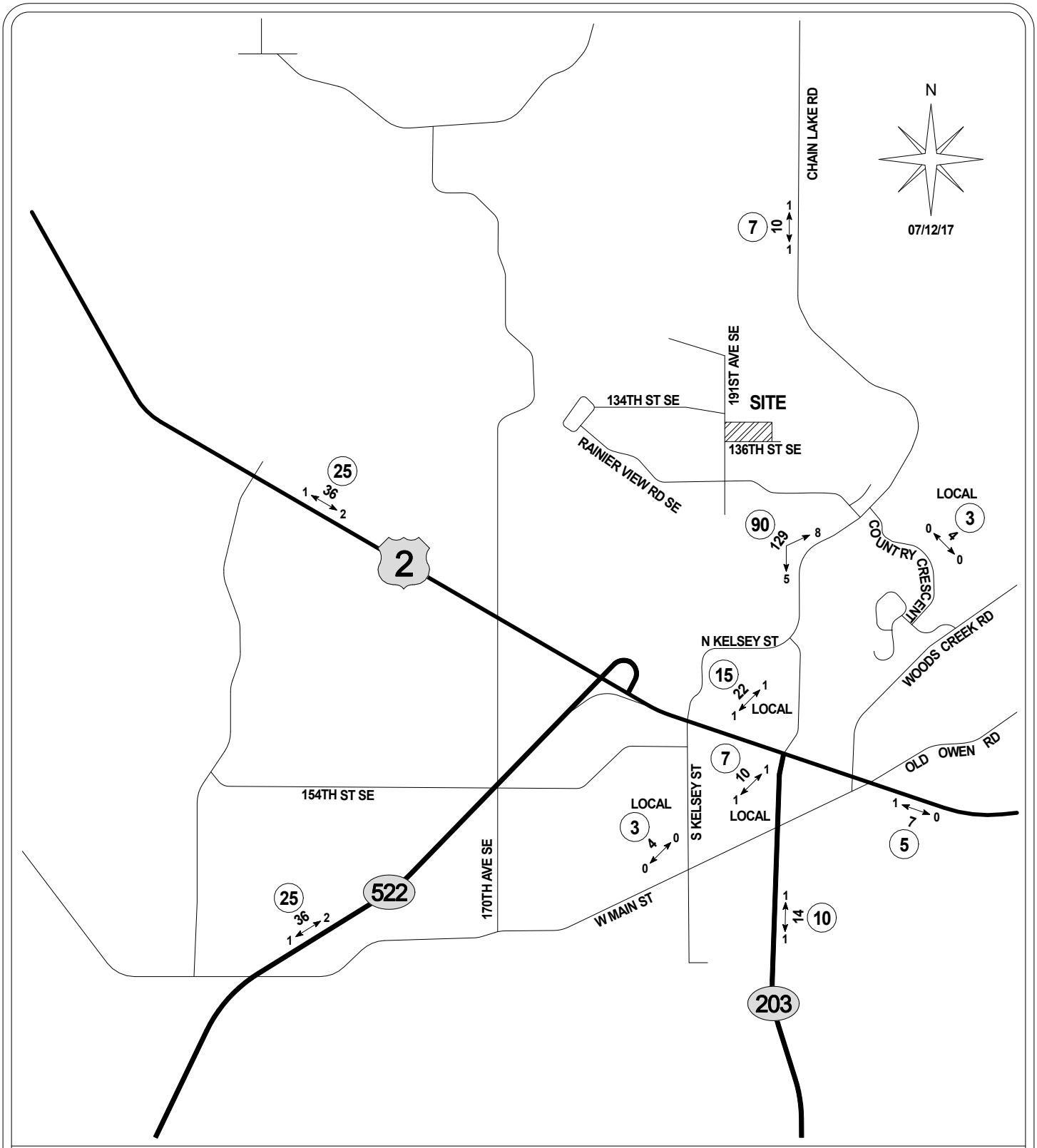
CITY OF MONROE

LEGEND

AWDT
PM ↔ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

(XX) — TRIP DISTRIBUTION %

FIGURE 3
DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR



G IBSON T RAFFIC C ONSULTANTS

TRAFFIC IMPACT STUDY
GTC #17-130

EAGLEMONT 5
15 NEW SINGLE FAMILY DWELLINGS

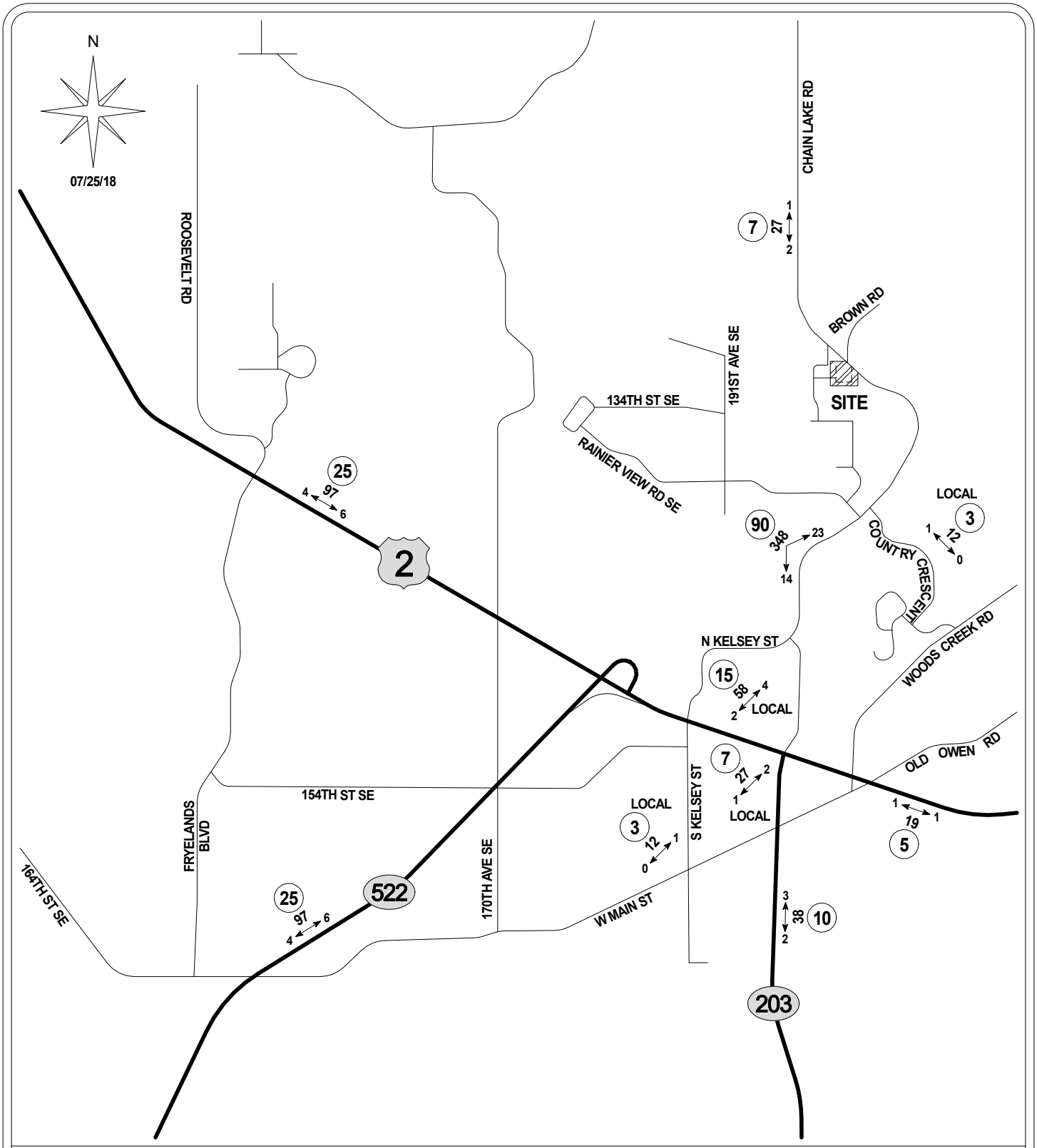
CITY OF MONROE

LEGEND

AWDT
PM ↔ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

(XX) — TRIP DISTRIBUTION %

FIGURE 3
DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR



G IBSON T RAFFIC C ONSULTANTS

TRAFFIC IMPACT STUDY
GTC #18-042

EAGLEMONT 7
41 NEW SINGLE FAMILY DWELLINGS

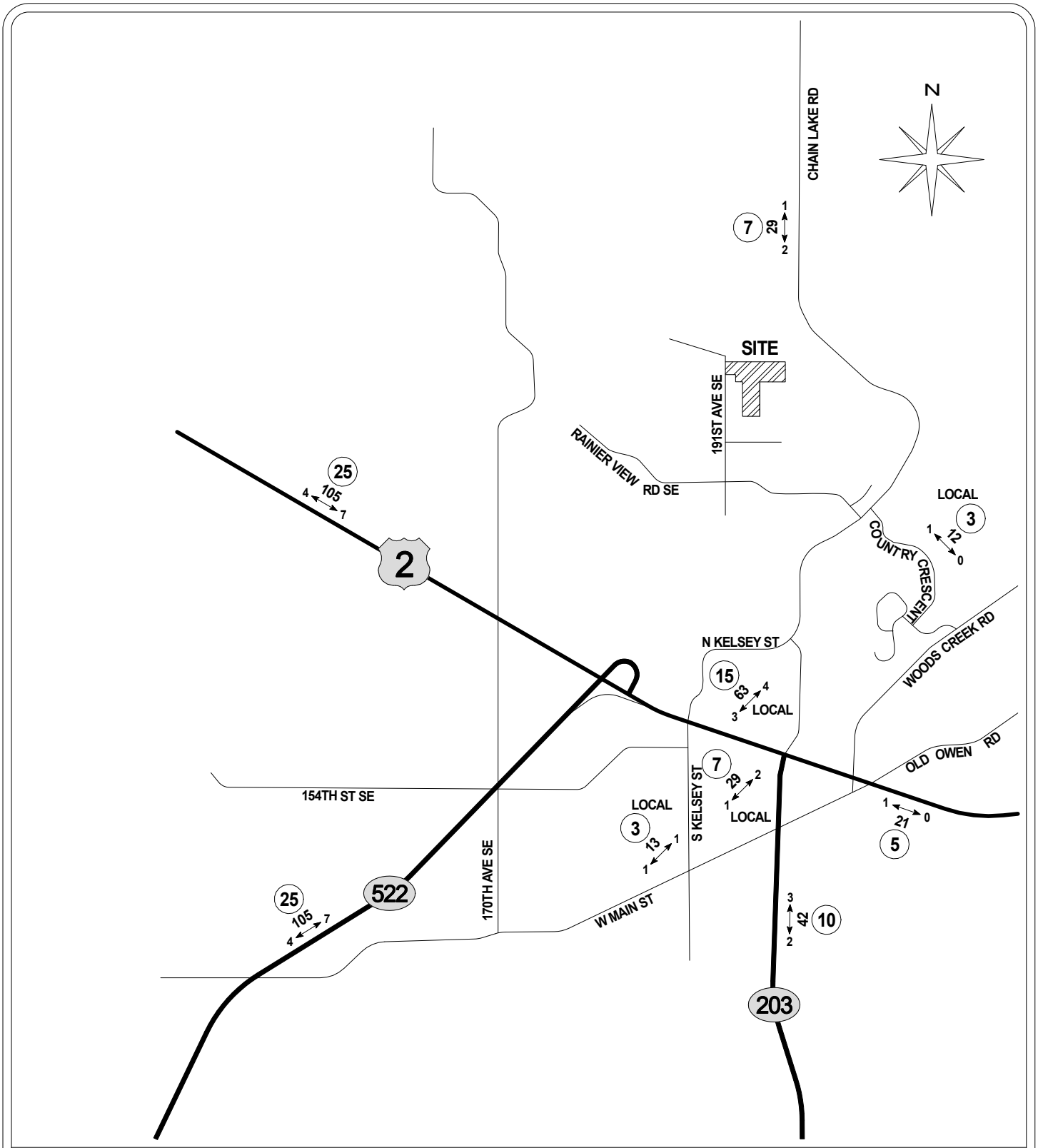
CITY OF MONROE

LEGEND

AWDT
PM ↔ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

(XX) — TRIP DISTRIBUTION %

FIGURE 3
DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR



G IBSON T RAFFIC C ONSULTANTS

TRAFFIC IMPACT STUDY
GTC #15-244

SKY VIEW RIDGE
44 NEW SINGLE-FAMILY UNITS

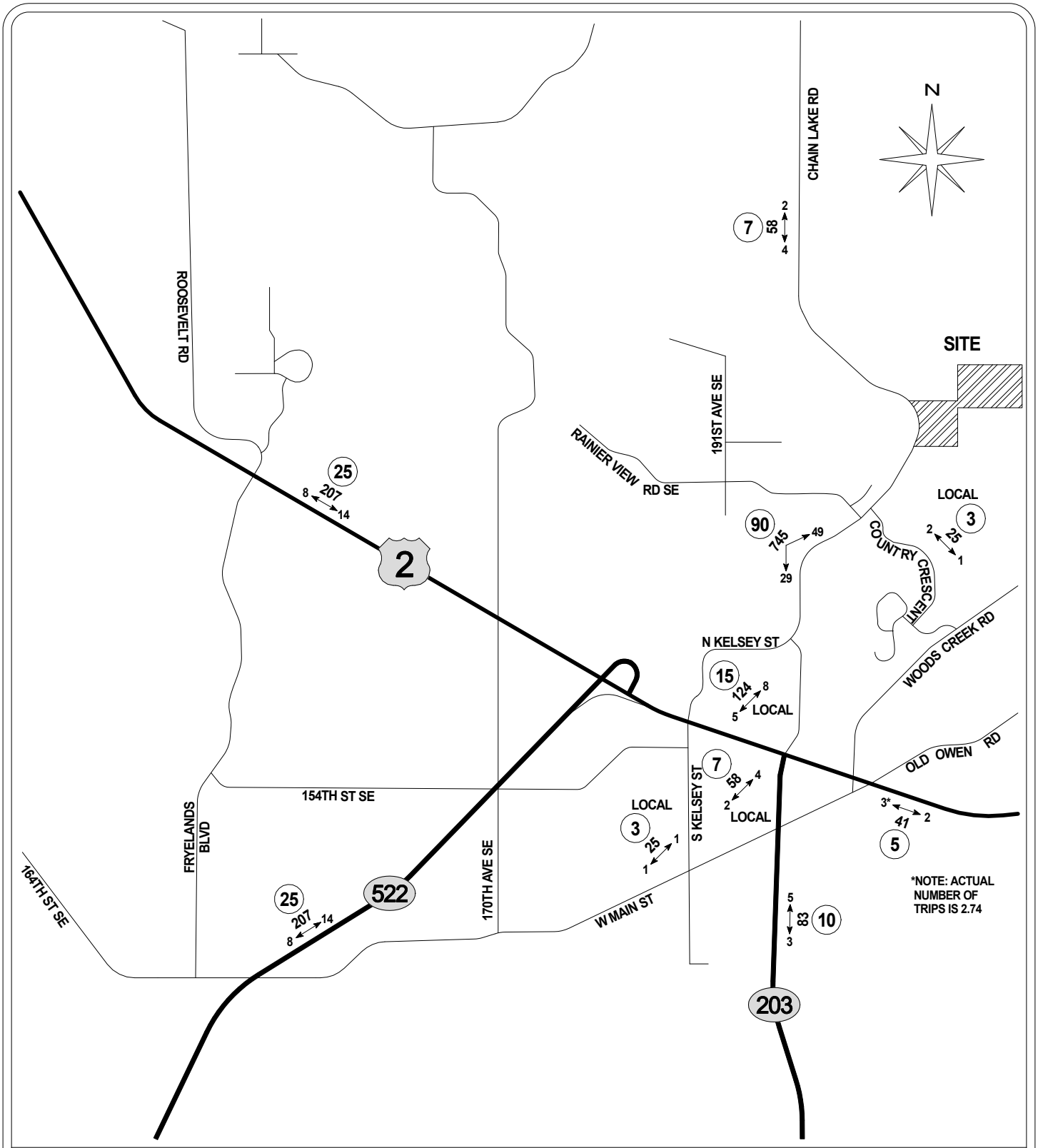
CITY OF MONROE

LEGEND

AWDT
PM ↔ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

(XX) — TRIP DISTRIBUTION %

FIGURE 2
DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR



G IBSON T RAFFIC C ONSULTANTS

TRAFFIC IMPACT STUDY
GTC #16-030

KLIER DEVELOPMENT
87 NEW SINGLE FAMILY DWELLINGS

CITY OF MONROE

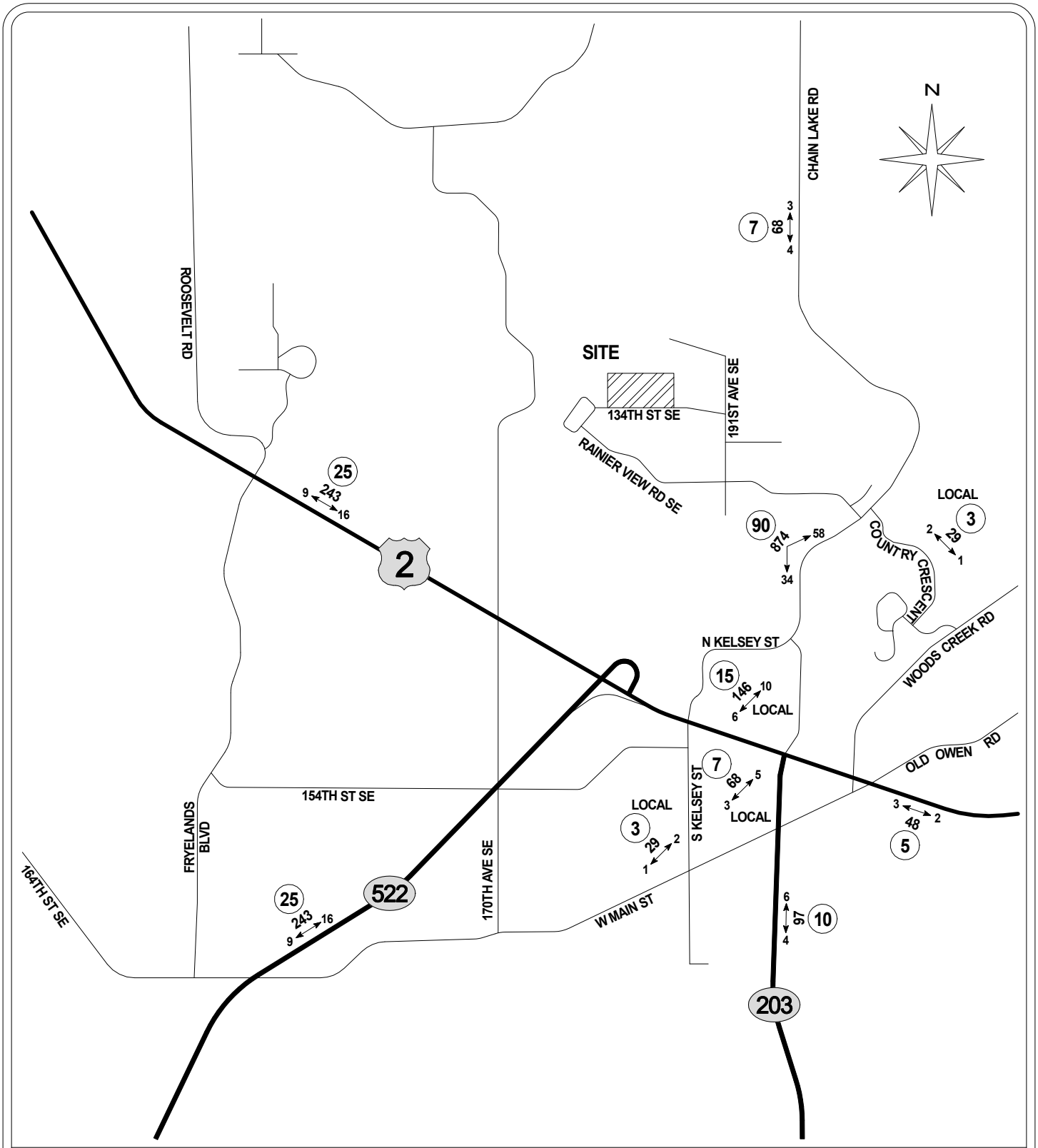
LEGEND

AWDT
PM ↔ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

(XX) — TRIP DISTRIBUTION %

FIGURE 3

DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR



G IBSON T RAFFIC C ONSULTANTS

TRAFFIC IMPACT STUDY
GTC #16-171

WORTHINGTON HEIGHTS
106 SINGLE FAMILY DWELLINGS

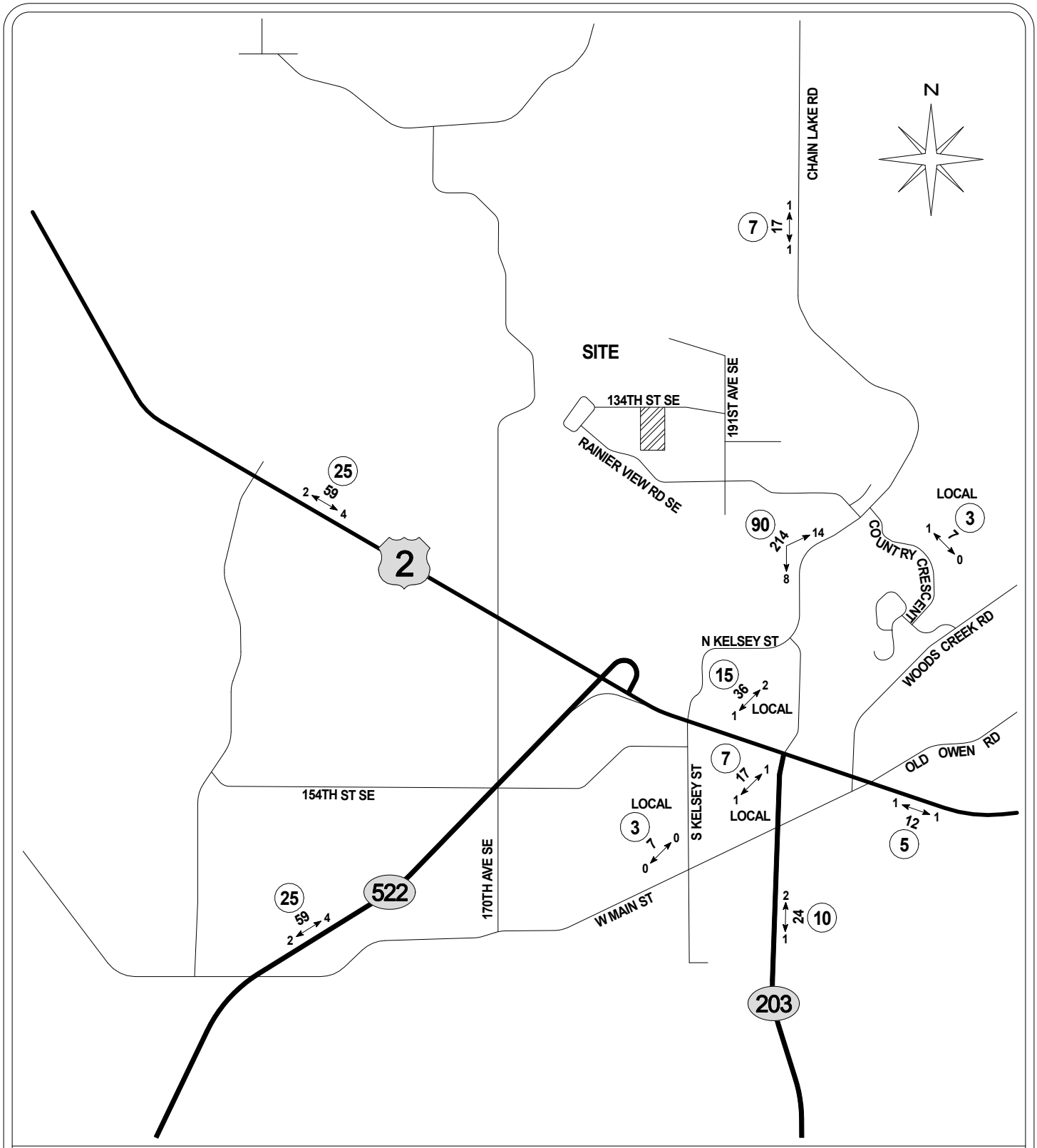
CITY OF MONROE

LEGEND

AWDT
PM ↔ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

(XX) — TRIP DISTRIBUTION %

FIGURE 3
DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR



G IBSON T RAFFIC C ONSULTANTS

TRAFFIC IMPACT STUDY
GTC #16-165

RASPBERRY HILL
25 NEW SINGLE FAMILY DWELLINGS

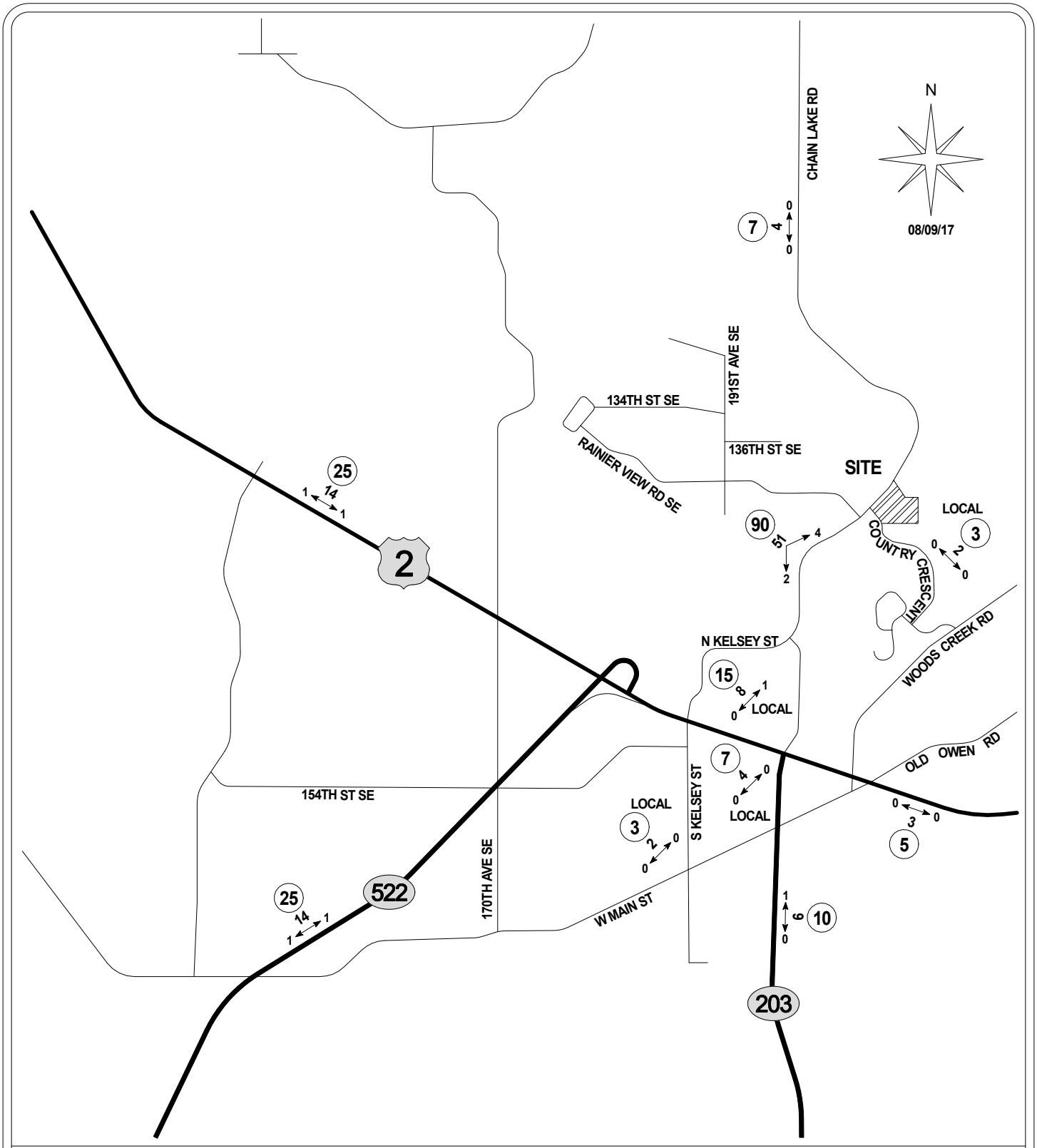
CITY OF MONROE

LEGEND

AWDT
PM ↔ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

(XX) — TRIP DISTRIBUTION %

FIGURE 3
DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR



G IBSON T RAFFIC C ONSULTANTS

TRAFFIC IMPACT STUDY
GTC #17-167

CLOTHIER SHORT PLAT
6 NEW SINGLE FAMILY DWELLINGS

CITY OF MONROE

LEGEND

AWDT
PM ↔ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

(XX) — TRIP DISTRIBUTION %

FIGURE 3
DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR

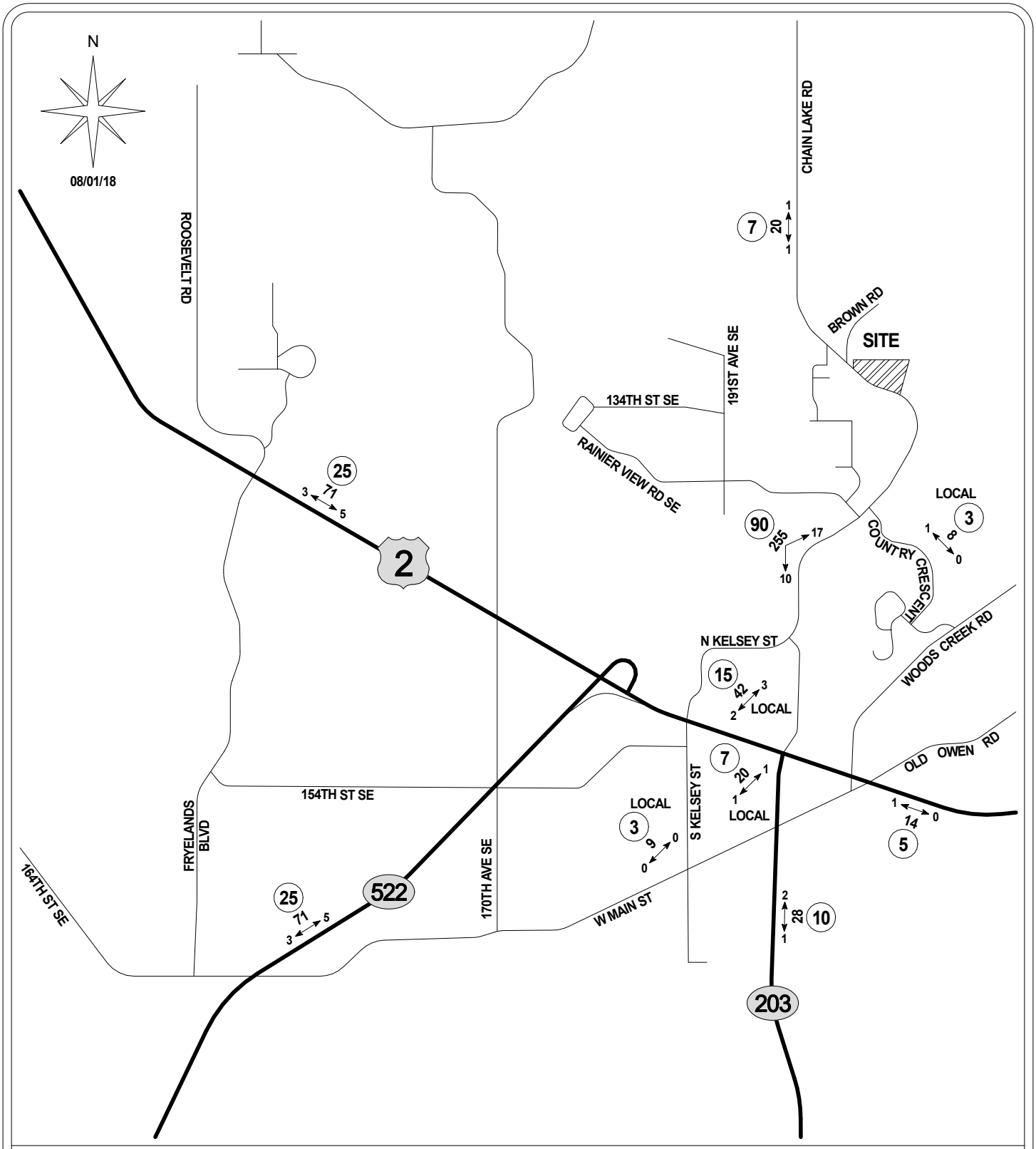
2 Short Plats North of Easton
Cove Trip Generation

Eaglemont 7
GTC #18-042

PM Peak-Hour

%	New ADT	New PM Peak Hour Trips		
		In	Out	Total
100%	94	6	4	9.90
1%	0.94	0.06	0.04	0.10
2%	1.89	0.12	0.07	0.20
3%	2.83	0.19	0.11	0.30
4%	3.78	0.25	0.15	0.40
5%	**4.72**	**0.31**	**0.18**	**0.50**
6%	5.66	0.37	0.22	0.59
7%	6.61	0.44	0.26	0.69
8%	7.55	0.50	0.29	0.79
9%	8.50	0.56	0.33	0.89
10%	**9.44**	**0.62**	**0.37**	**0.99**
11%	10.38	0.69	0.40	1.09
12%	11.33	0.75	0.44	1.19
13%	12.27	0.81	0.48	1.29
14%	13.22	0.87	0.51	1.39
15%	**14.16**	**0.94**	**0.55**	**1.49**
16%	15.10	1.00	0.59	1.58
17%	16.05	1.06	0.62	1.68
18%	16.99	1.12	0.66	1.78
19%	17.94	1.19	0.70	1.88
20%	**18.88**	**1.25**	**0.73**	**1.98**
21%	19.82	1.31	0.77	2.08
22%	20.77	1.37	0.81	2.18
23%	21.71	1.44	0.84	2.28
24%	22.66	1.50	0.88	2.38
25%	**23.60**	**1.56**	**0.92**	**2.48**
26%	24.54	1.62	0.95	2.57
27%	25.49	1.68	0.99	2.67
28%	26.43	1.75	1.02	2.77
29%	27.38	1.81	1.06	2.87
30%	**28.32**	**1.87**	**1.10**	**2.97**
31%	29.26	1.93	1.13	3.07
32%	30.21	2.00	1.17	3.17
33%	31.15	2.06	1.21	3.27
34%	32.10	2.12	1.24	3.37
35%	**33.04**	**2.18**	**1.28**	**3.47**
36%	33.98	2.25	1.32	3.56
37%	34.93	2.31	1.35	3.66
38%	35.87	2.37	1.39	3.76
39%	36.82	2.43	1.43	3.86
40%	**37.76**	**2.50**	**1.46**	**3.96**
41%	38.70	2.56	1.50	4.06
42%	39.65	2.62	1.54	4.16
43%	40.59	2.68	1.57	4.26
44%	41.54	2.75	1.61	4.36
45%	**42.48**	**2.81**	**1.65**	**4.46**
46%	43.42	2.87	1.68	4.55
47%	44.37	2.93	1.72	4.65
48%	45.31	3.00	1.76	4.75
49%	46.26	3.06	1.79	4.85
50%	**47.20**	**3.12**	**1.83**	**4.95**

%	New ADT	New PM Peak Hour Trips		
		In	Out	Total
100%	94	6	4	10
51%	48.14	3.18	1.87	5.05
52%	49.09	3.24	1.90	5.15
53%	50.03	3.31	1.94	5.25
54%	50.98	3.37	1.98	5.35
55%	**51.92**	**3.43**	**2.01**	**5.45**
56%	52.86	3.49	2.05	5.54
57%	53.81	3.56	2.09	5.64
58%	54.75	3.62	2.12	5.74
59%	55.70	3.68	2.16	5.84
60%	**56.64**	**3.74**	**2.20**	**5.94**
61%	57.58	3.81	2.23	6.04
62%	58.53	3.87	2.27	6.14
63%	59.47	3.93	2.31	6.24
64%	60.42	3.99	2.34	6.34
65%	**61.36**	**4.06**	**2.38**	**6.44**
66%	62.30	4.12	2.42	6.53
67%	63.25	4.18	2.45	6.63
68%	64.19	4.24	2.49	6.73
69%	65.14	4.31	2.53	6.83
70%	**66.08**	**4.37**	**2.56**	**6.93**
71%	67.02	4.43	2.60	7.03
72%	67.97	4.49	2.64	7.13
73%	68.91	4.56	2.67	7.23
74%	69.86	4.62	2.71	7.33
75%	**70.80**	**4.68**	**2.75**	**7.43**
76%	71.74	4.74	2.78	7.52
77%	72.69	4.80	2.82	7.62
78%	73.63	4.87	2.85	7.72
79%	74.58	4.93	2.89	7.82
80%	**75.52**	**4.99**	**2.93**	**7.92**
81%	76.46	5.05	2.96	8.02
82%	77.41	5.12	3.00	8.12
83%	78.35	5.18	3.04	8.22
84%	79.30	5.24	3.07	8.32
85%	**80.24**	**5.30**	**3.11**	**8.42**
86%	81.18	5.37	3.15	8.51
87%	82.13	5.43	3.18	8.61
88%	83.07	5.49	3.22	8.71
89%	84.02	5.55	3.26	8.81
90%	**84.96**	**5.62**	**3.29**	**8.91**
91%	85.90	5.68	3.33	9.01
92%	86.85	5.74	3.37	9.11
93%	87.79	5.80	3.40	9.21
94%	88.74	5.87	3.44	9.31
95%	**89.68**	**5.93**	**3.48**	**9.41**
96%	90.62	5.99	3.51	9.50
97%	91.57	6.05	3.55	9.60
98%	92.51	6.12	3.59	9.70
99%	93.46	6.18	3.62	9.80
100%	**94.40**	**6.24**	**3.66**	**9.90**



G IBSON T RAFFIC C ONSULTANTS

TRAFFIC IMPACT STUDY
GTC #18-042

KESTREL RIDGE
30 NEW SINGLE FAMILY DWELLINGS

CITY OF MONROE

LEGEND

AWDT
PM ↔ PEAK — NEW SITE TRAFFIC (DAILY/PEAK-HOUR)

(XX) — TRIP DISTRIBUTION %

FIGURE 3
DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR

Level of Service Calculations

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	58	10	244	98	1	11	121
Future Vol, veh/h	58	10	244	98	1	11	121
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	-	0
Grade, %	0	-	0	-	-	-	0
Peak Hour Factor	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1
Mvmt Flow	60	10	254	102	1	11	126

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	453	305	0	0	-	356	0
Stage 1	305	-	-	-	-	-	-
Stage 2	148	-	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	-	2.209	-
Pot Cap-1 Maneuver	566	737	-	-	-	1208	-
Stage 1	750	-	-	-	-	-	-
Stage 2	882	-	-	-	-	-	-
Platoon blocked, %			-	-			-
Mov Cap-1 Maneuver	566	737	-	-	~ -12	~ -12	-
Mov Cap-2 Maneuver	566	-	-	-	-	-	-
Stage 1	750	-	-	-	-	-	-
Stage 2	882	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	586	+	-
HCM Lane V/C Ratio	-	-	0.121	-	-
HCM Control Delay (s)	-	-	12	-	-
HCM Lane LOS	-	-	B	-	-
HCM 95th %tile Q(veh)	-	-	0.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	70	15	404	98	17	209
Future Vol, veh/h	70	15	404	98	17	209
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	71	15	408	99	17	211

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	703	458	0	0	507	0
Stage 1	458	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	405	605	-	-	1063	-
Stage 1	639	-	-	-	-	-
Stage 2	798	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	399	605	-	-	1063	-
Mov Cap-2 Maneuver	399	-	-	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	785	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.1	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	399	605	1063	-
HCM Lane V/C Ratio	-	-	0.177	0.025	0.016	-
HCM Control Delay (s)	-	-	16	11.1	8.4	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.1	0	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	102	130	409	254	8
Future Vol, veh/h	6	102	130	409	254	8
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	107	137	431	267	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	980	275	279	0	-	0
Stage 1	275	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	277	764	1284	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	245	761	1279	-	-	-
Mov Cap-2 Maneuver	245	-	-	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	488	-	-	-	-	-

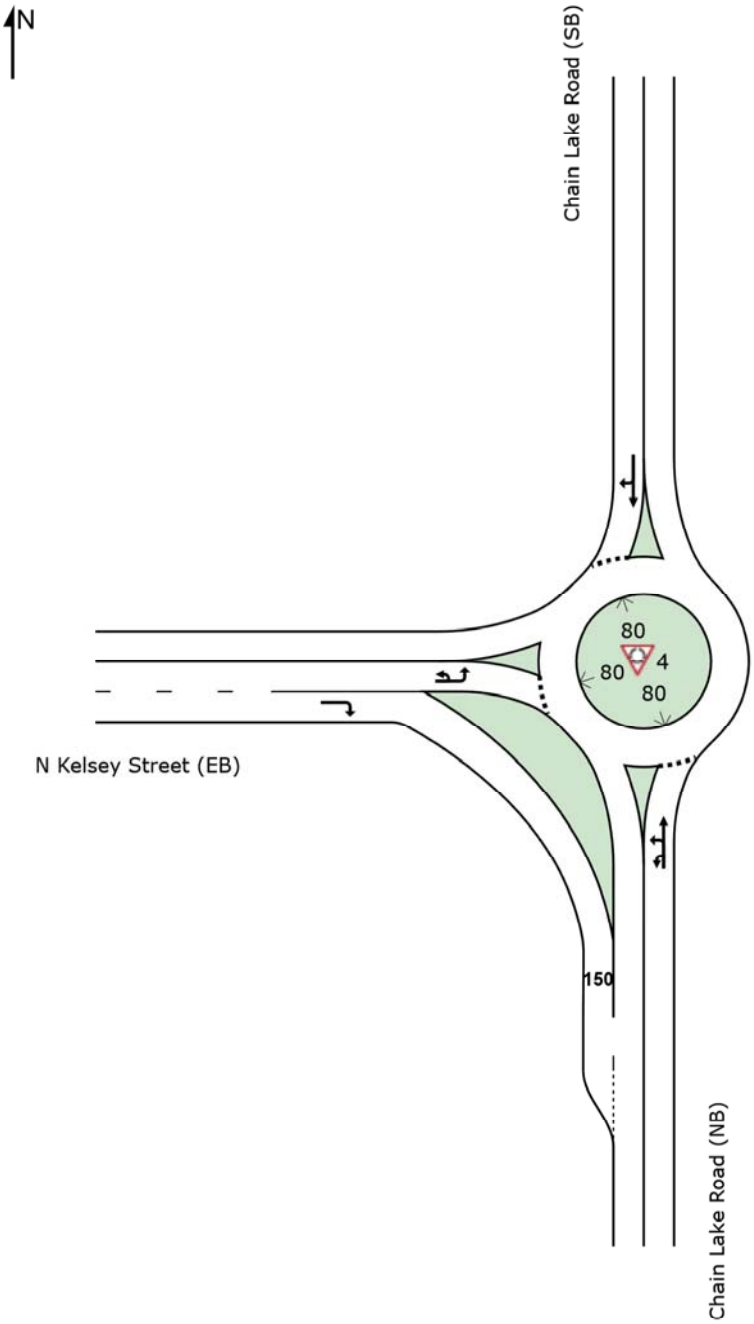
Approach	EB	NB	SB
HCM Control Delay, s	11.3	2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1279	-	681	-	-
HCM Lane V/C Ratio	0.107	-	0.167	-	-
HCM Control Delay (s)	8.2	-	11.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.6	-	-

SITE LAYOUT

Site: 4 [Existing Conditions]

Chain Lake Road at N Kelsey Street
Site Category: (None)
Roundabout



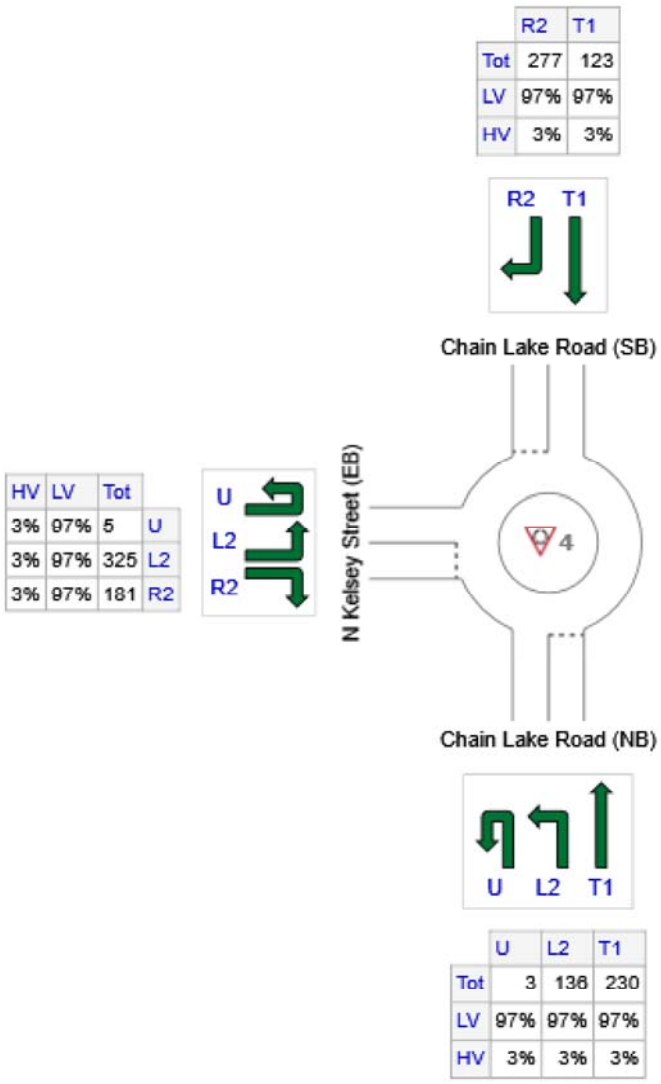
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 4 [Existing Conditions]

Chain Lake Road at N Kelsey Street
Site Category: (None)
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Chain Lake Road (NB)	369	358	11
N: Chain Lake Road (SB)	400	388	12
W: N Kelsey Street (EB)	511	496	15
Total	1280	1242	38

MOVEMENT SUMMARY

Site: 4 [Existing Conditions]

Chain Lake Road at N Kelsey Street
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed mph
South: Chain Lake Road (NB)												
3u	U	3	3.0	0.397	14.2	LOS B	2.7	68.8	0.63	0.71	0.63	35.2
3	L2	146	3.0	0.397	12.0	LOS B	2.7	68.8	0.63	0.71	0.63	34.5
8	T1	247	3.0	0.397	6.7	LOS A	2.7	68.8	0.63	0.71	0.63	34.6
Approach		397	3.0	0.397	8.7	LOS A	2.7	68.8	0.63	0.71	0.63	34.5
North: Chain Lake Road (SB)												
4	T1	132	3.0	0.369	5.3	LOS A	2.7	68.1	0.46	0.54	0.46	36.2
14	R2	298	3.0	0.369	5.2	LOS A	2.7	68.1	0.46	0.54	0.46	35.2
Approach		430	3.0	0.369	5.2	LOS A	2.7	68.1	0.46	0.54	0.46	35.5
West: N Kelsey Street (EB)												
5u	U	5	3.0	0.248	12.3	LOS B	1.6	40.7	0.35	0.62	0.35	34.4
5	L2	349	3.0	0.248	10.1	LOS B	1.6	40.7	0.35	0.62	0.35	33.8
12	R2	195	3.0	0.120	3.8	LOS A	0.0	0.0	0.00	0.47	0.00	36.8
Approach		549	3.0	0.248	7.9	LOS A	1.6	40.7	0.23	0.57	0.23	34.8
All Vehicles		1376	3.0	0.397	7.3	LOS A	2.7	68.8	0.42	0.60	0.42	34.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection													
Int Delay, s/veh	2.5												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				↕	
Traffic Vol, veh/h	1	0	14	75	0	13	24	328	127	1	14	174	2
Future Vol, veh/h	1	0	14	75	0	13	24	328	127	1	14	174	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	0	15	82	0	14	26	357	138	1	15	189	2

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	705	769	190	706	701	426	191	0	0	-	495	0	0
Stage 1	220	222	-	478	478	-	-	-	-	-	-	-	-
Stage 2	485	547	-	228	223	-	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	-	2.209	-	-
Pot Cap-1 Maneuver	352	333	854	352	364	631	1389	-	-	-	1074	-	-
Stage 1	785	722	-	570	557	-	-	-	-	-	-	-	-
Stage 2	565	519	-	777	721	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	337	324	854	339	355	631	1389	-	-	~ -15	~ -15	-	-
Mov Cap-2 Maneuver	337	324	-	339	355	-	-	-	-	-	-	-	-
Stage 1	765	722	-	555	543	-	-	-	-	-	-	-	-
Stage 2	538	506	-	763	721	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	18.4	0.4	
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1389	-	-	775	364	+	-	-
HCM Lane V/C Ratio	0.019	-	-	0.021	0.263	-	-	-
HCM Control Delay (s)	7.6	0	-	9.7	18.4	-	-	-
HCM Lane LOS	A	A	-	A	C	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	97	22	632	129	23	342
Future Vol, veh/h	97	22	632	129	23	342
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	98	22	638	130	23	345

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1094	703	0	0	768	0
Stage 1	703	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	238	439	-	-	850	-
Stage 1	493	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	232	439	-	-	850	-
Mov Cap-2 Maneuver	232	-	-	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	667	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.1	0	0.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	232	439	850	-
HCM Lane V/C Ratio	-	-	0.422	0.051	0.027	-
HCM Control Delay (s)	-	-	31.4	13.6	9.4	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	2	0.2	0.1	-

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	236	346	629	387	29
Future Vol, veh/h	19	236	346	629	387	29
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	248	364	662	407	31

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1817	427	442	0	-	0
Stage 1	427	-	-	-	-	-
Stage 2	1390	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	86	628	1118	-	-	-
Stage 1	658	-	-	-	-	-
Stage 2	231	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	57	626	1114	-	-	-
Mov Cap-2 Maneuver	57	-	-	-	-	-
Stage 1	441	-	-	-	-	-
Stage 2	230	-	-	-	-	-

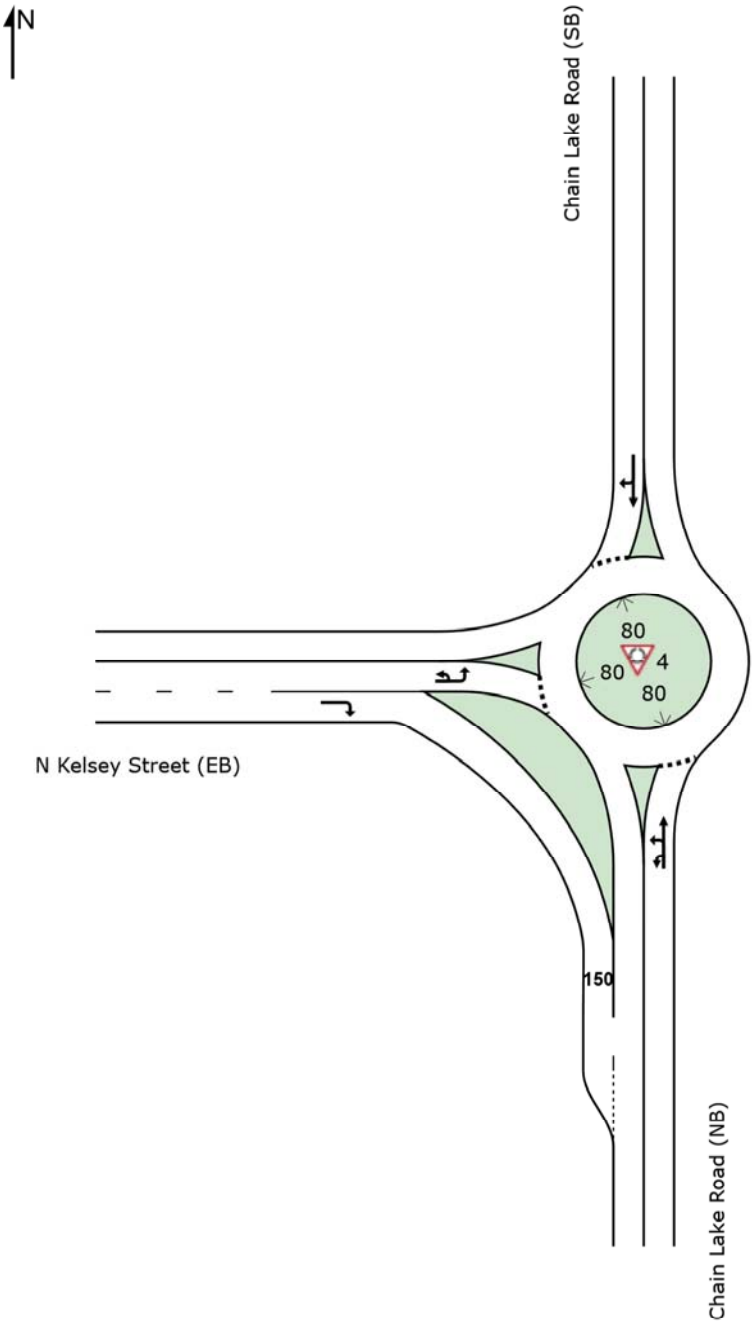
Approach	EB	NB	SB
HCM Control Delay, s	39.5	3.5	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1114	-	359	-	-
HCM Lane V/C Ratio	0.327	-	0.748	-	-
HCM Control Delay (s)	9.8	-	39.5	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	1.4	-	5.9	-	-

SITE LAYOUT

Site: 4 [2031 Baseline Conditions]

Chain Lake Road at N Kelsey Street
Site Category: (None)
Roundabout



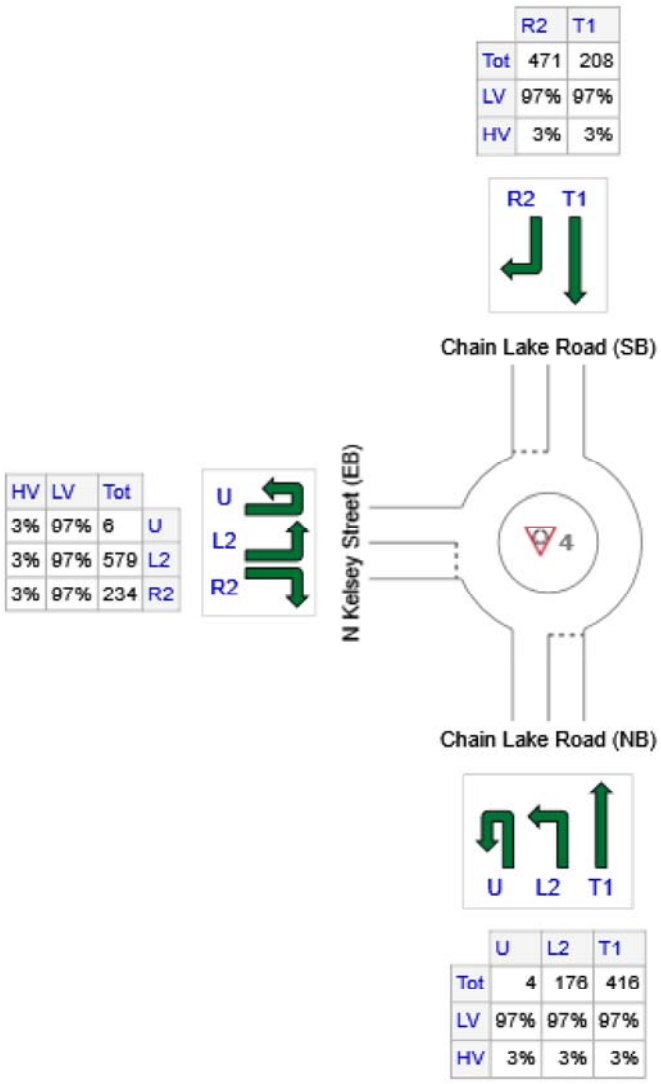
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 4 [2031 Baseline Conditions]

Chain Lake Road at N Kelsey Street
Site Category: (None)
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Chain Lake Road (NB)	596	578	18
N: Chain Lake Road (SB)	679	659	20
W: N Kelsey Street (EB)	819	794	25
Total	2094	2031	63

MOVEMENT SUMMARY

Site: 4 [2031 Baseline Conditions]

Chain Lake Road at N Kelsey Street
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed mph
South: Chain Lake Road (NB)												
3u	U	4	3.0	0.863	30.8	LOS D	15.4	394.1	1.00	1.35	1.88	28.4
3	L2	189	3.0	0.863	28.6	LOS D	15.4	394.1	1.00	1.35	1.88	28.0
8	T1	447	3.0	0.863	23.3	LOS D	15.4	394.1	1.00	1.35	1.88	28.0
Approach		641	3.0	0.863	24.9	LOS C	15.4	394.1	1.00	1.35	1.88	28.0
North: Chain Lake Road (SB)												
4	T1	224	3.0	0.670	6.6	LOS A	7.4	190.0	0.77	0.66	0.78	35.4
14	R2	506	3.0	0.670	6.4	LOS A	7.4	190.0	0.77	0.66	0.78	34.5
Approach		730	3.0	0.670	6.5	LOS A	7.4	190.0	0.77	0.66	0.78	34.7
West: N Kelsey Street (EB)												
5u	U	6	3.0	0.483	13.1	LOS B	4.1	104.4	0.59	0.67	0.59	33.9
5	L2	623	3.0	0.483	10.8	LOS B	4.1	104.4	0.59	0.67	0.59	33.2
12	R2	252	3.0	0.155	3.8	LOS A	0.0	0.0	0.00	0.47	0.00	36.8
Approach		881	3.0	0.483	8.8	LOS A	4.1	104.4	0.42	0.62	0.42	34.2
All Vehicles		2252	3.0	0.863	12.6	LOS B	15.4	394.1	0.70	0.84	0.95	32.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection													
Int Delay, s/veh	2.5												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				↕	
Traffic Vol, veh/h	1	0	14	75	0	13	24	330	127	1	14	178	2
Future Vol, veh/h	1	0	14	75	0	13	24	330	127	1	14	178	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	1	0	15	82	0	14	26	359	138	1	15	193	2

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	711	775	194	712	707	428	195	0	0	-	497	0	0
Stage 1	224	226	-	480	480	-	-	-	-	-	-	-	-
Stage 2	487	549	-	232	227	-	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	-	2.209	-	-
Pot Cap-1 Maneuver	349	330	850	349	361	629	1384	-	-	-	1072	-	-
Stage 1	781	719	-	569	556	-	-	-	-	-	-	-	-
Stage 2	564	518	-	773	718	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	334	321	850	336	351	629	1384	-	-	~ -15	~ -15	-	-
Mov Cap-2 Maneuver	334	321	-	336	351	-	-	-	-	-	-	-	-
Stage 1	760	719	-	554	541	-	-	-	-	-	-	-	-
Stage 2	536	504	-	759	718	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	18.5	0.4	
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1384	-	-	771	361	+	-	-
HCM Lane V/C Ratio	0.019	-	-	0.021	0.265	-	-	-
HCM Control Delay (s)	7.7	0	-	9.8	18.5	-	-	-
HCM Lane LOS	A	A	-	A	C	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	97	24	680	129	24	370
Future Vol, veh/h	97	24	680	129	24	370
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	98	24	687	130	24	374

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1174	752	0	0	817	0
Stage 1	752	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	213	412	-	-	815	-
Stage 1	468	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	207	412	-	-	815	-
Mov Cap-2 Maneuver	207	-	-	-	-	-
Stage 1	468	-	-	-	-	-
Stage 2	645	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32.6	0	0.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	207	412	815	-
HCM Lane V/C Ratio	-	-	0.473	0.059	0.03	-
HCM Control Delay (s)	-	-	37.1	14.3	9.6	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	2.3	0.2	0.1	-

Intersection						
Int Delay, s/veh	9.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	236	346	677	415	29
Future Vol, veh/h	19	236	346	677	415	29
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	248	364	713	437	31

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1898	457	472	0	-	0
Stage 1	457	-	-	-	-	-
Stage 2	1441	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	76	604	1090	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	218	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	50	602	1086	-	-	-
Mov Cap-2 Maneuver	50	-	-	-	-	-
Stage 1	422	-	-	-	-	-
Stage 2	217	-	-	-	-	-

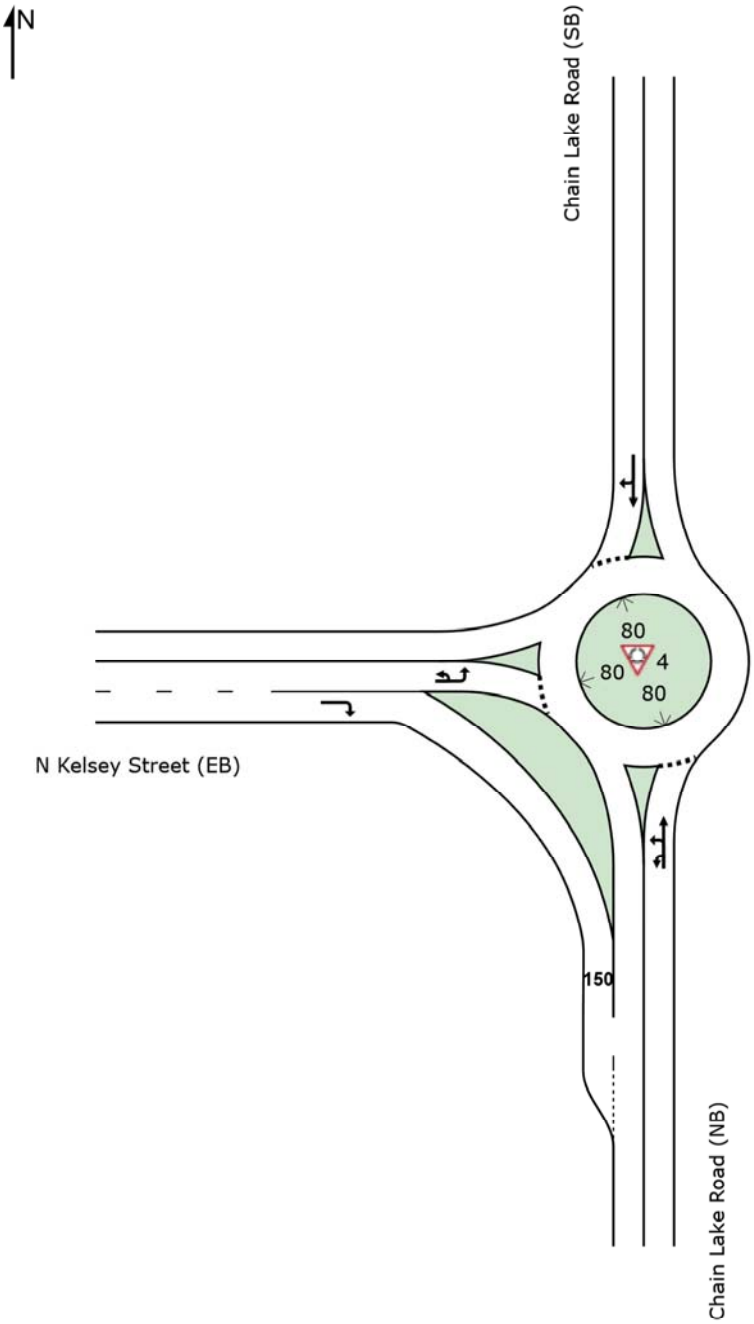
Approach	EB	NB	SB
HCM Control Delay, s	49.8	3.4	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1086	-	330	-	-
HCM Lane V/C Ratio	0.335	-	0.813	-	-
HCM Control Delay (s)	10	-	49.8	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	1.5	-	6.9	-	-

SITE LAYOUT

Site: 4 [2031 Future Conditions w Development]

Chain Lake Road at N Kelsey Street
Site Category: (None)
Roundabout



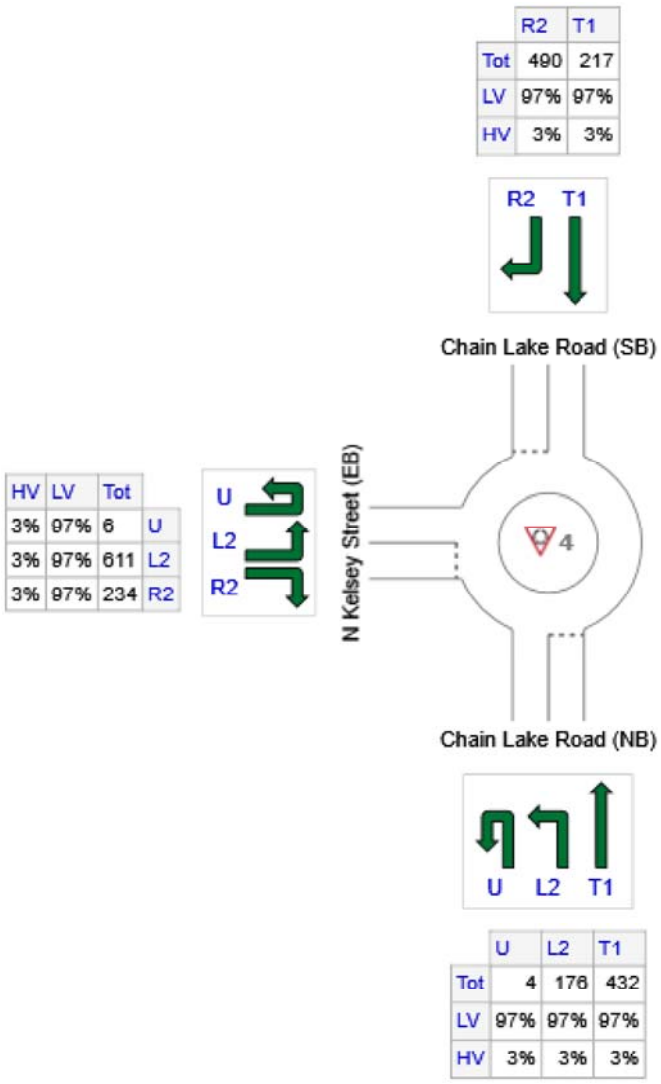
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 4 [2031 Future Conditions w Development]

Chain Lake Road at N Kelsey Street
Site Category: (None)
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Chain Lake Road (NB)	612	594	18
N: Chain Lake Road (SB)	707	686	21
W: N Kelsey Street (EB)	851	825	26
Total	2170	2105	65

MOVEMENT SUMMARY

Site: 4 [2031 Future Conditions w Development]

Chain Lake Road at N Kelsey Street
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed mph
South: Chain Lake Road (NB)												
3u	U	4	3.0	0.927	39.6	LOS D	20.4	521.7	1.00	1.52	2.31	25.6
3	L2	189	3.0	0.927	37.3	LOS D	20.4	521.7	1.00	1.52	2.31	25.2
8	T1	465	3.0	0.927	32.1	LOS D	20.4	521.7	1.00	1.52	2.31	25.3
Approach		658	3.0	0.927	33.7	LOS C	20.4	521.7	1.00	1.52	2.31	25.3
North: Chain Lake Road (SB)												
4	T1	233	3.0	0.697	6.9	LOS A	8.3	213.4	0.80	0.68	0.83	35.3
14	R2	527	3.0	0.697	6.8	LOS A	8.3	213.4	0.80	0.68	0.83	34.4
Approach		760	3.0	0.697	6.9	LOS A	8.3	213.4	0.80	0.68	0.83	34.7
West: N Kelsey Street (EB)												
5u	U	6	3.0	0.514	13.2	LOS B	4.5	115.3	0.63	0.68	0.63	33.8
5	L2	657	3.0	0.514	10.9	LOS B	4.5	115.3	0.63	0.68	0.63	33.2
12	R2	252	3.0	0.155	3.8	LOS A	0.0	0.0	0.00	0.47	0.00	36.8
Approach		915	3.0	0.514	9.0	LOS A	4.5	115.3	0.45	0.62	0.45	34.1
All Vehicles		2333	3.0	0.927	15.3	LOS B	20.4	521.7	0.72	0.90	1.10	31.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection						
Int Delay, s/veh	0.7					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	31	52	655	365	4
Future Vol, veh/h	2	31	52	655	365	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	34	57	712	397	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1225	399	401	0	-	0
Stage 1	399	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	198	651	1158	-	-	-
Stage 1	678	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	182	651	1158	-	-	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	430	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1158	-	563	-	-
HCM Lane V/C Ratio	0.049	-	0.064	-	-
HCM Control Delay (s)	8.3	0	11.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Existing Conditions

	Total Volume	Delay (sec)	Vol*Delay
Rainer	909	11	9999
Country Crescent	813	16	13008
Brown	543	12	6516
Totals	2265		29523
Level of Service		**13**	**B**

2031 Baseline Conditions

	Total Volume	Delay (sec)	Vol*Delay
Rainer	1646	40	65840
Country Crescent	1245	31	38595
Brown	773	18	13914
Totals	3664		118349
Level of Service		**32**	**D**

2031 Future with Development Conditions

	Total Volume	Delay (sec)	Vol*Delay
Rainer	1722	50	86100
Country Crescent	1324	37	48988
Brown	779	19	14801
Totals	3825		149889
Level of Service		**39**	**D**