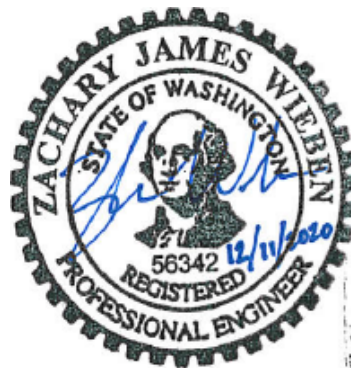


Gibson Traffic Consultants, Inc.  
2813 Rockefeller Avenue  
Suite B  
Everett, WA 98201  
425.339.8266

# McLeod Development Traffic Impact Analysis

Jurisdiction: City of Bellingham  
December 2020



**TABLE OF CONTENTS**

1. DEVELOPMENT IDENTIFICATION ..... 1  
 2. TRIP GENERATION ..... 1  
 3. TRIP DISTRIBUTION ..... 1  
 4. ROAD NETWORK..... 5  
 5. TRANSIT SERVICE ..... 5  
 6. ACCESS ANALYSIS ..... 5  
 7. COLLISION ANALYSIS ..... 6  
 8. TRAFFIC MITIGATION FEES ..... 6  
 9. CONCLUSIONS..... 7

**LIST OF FIGURES**

Figure 1: Site Vicinity Map ..... 2  
 Figure 2: Development Trip Distribution AM Peak-Hour ..... 3  
 Figure 3: Development Trip Distribution PM Peak-Hour ..... 4

**LIST OF TABLES**

Table 1: Development Trip Generation Summary ..... 1  
 Table 2: City of Bellingham TIF Calculation..... 6

**ATTACHMENTS**

Trip Generation.....A  
 AASHTO Information .....B  
 Site Plan .....C  
 Collision Data .....D

## 1. DEVELOPMENT IDENTIFICATION

The McLeod development is located south of McLeod Road and west of Magrath Road in the City of Bellingham. A site vicinity map is shown in Figure 1. The development is proposed to consist of 36 single-family detached units. The site is currently undeveloped. The site is proposed to have one access via an existing stub road to Pebble Place and one emergency-only access to McLeod Road.

Zach Wieben, 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.

## 2. TRIP GENERATION

The trip generation calculations for the McLeod development are based on average trip generation rates contained in *Trip Generation Manual, 10<sup>th</sup> Edition (2017)* by ITE. The average vehicle trip generation rates for Land Use Code (LUC) 210, Single-Family Detached Housing, were used in the analysis. Table 1 summarizes the expected development vehicle trip generation.

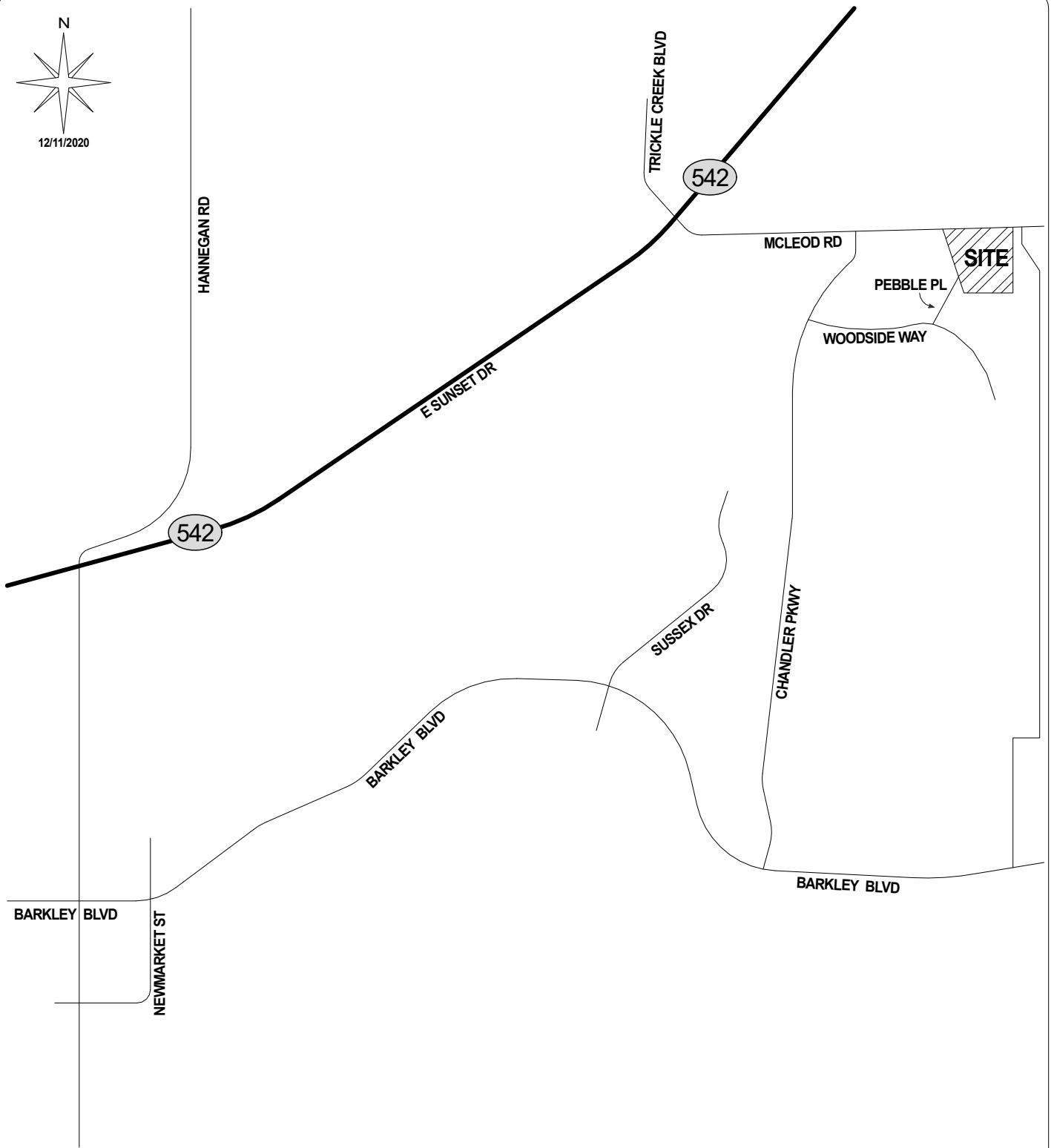
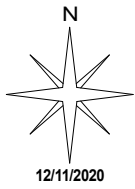
**Table 1: Development Trip Generation Summary**

36 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	170	170	340	7	20	27	23	13	36

The development is anticipated to generate 340 new average daily vehicle trips (ADT) with 27 new AM peak-hour vehicle trips and 36 new PM peak-hour vehicle trips.

## 3. TRIP DISTRIBUTION

The distribution of trips generated by the McLeod Development is based on previously approved trip distributions for developments in the area. It is estimated that 70% of the development's trips will travel to and from the south along Chandler Parkway. Approximately 25% of the development's trips are expected to travel along SR-542/E Sunset Drive—fifteen percent to and from the southwest and ten percent to and from the northeast. The remaining 5% of the development's trips are anticipated to travel to and from the east along McLeod Road. Detailed distributions of the development's trips generated during the AM and PM peak-hours are shown in Figure 2 and Figure 3, respectively.



**GIBSON TRAFFIC CONSULTANTS**

**TRAFFIC IMPACT STUDY  
GTC #20-032**

**MCLEOD DEVELOPMENT  
36 SINGLE-FAMILY UNITS**

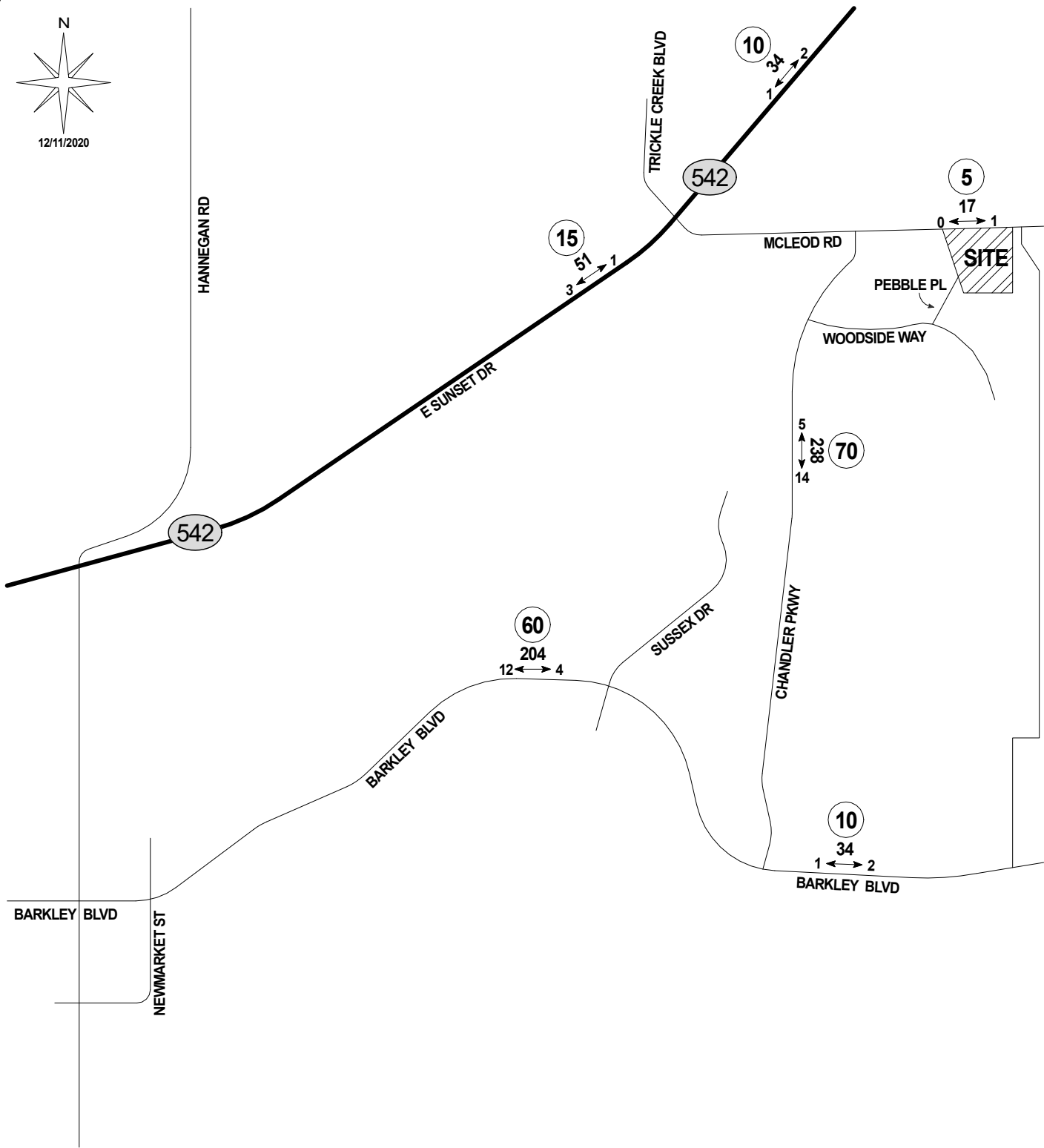
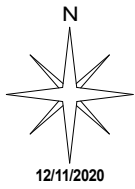
**LEGEND**



**DEVELOPMENT SITE**

**FIGURE 1  
SITE VICINITY  
MAP**

**CITY OF BELLINGHAM**



GIBSON TRAFFIC CONSULTANTS

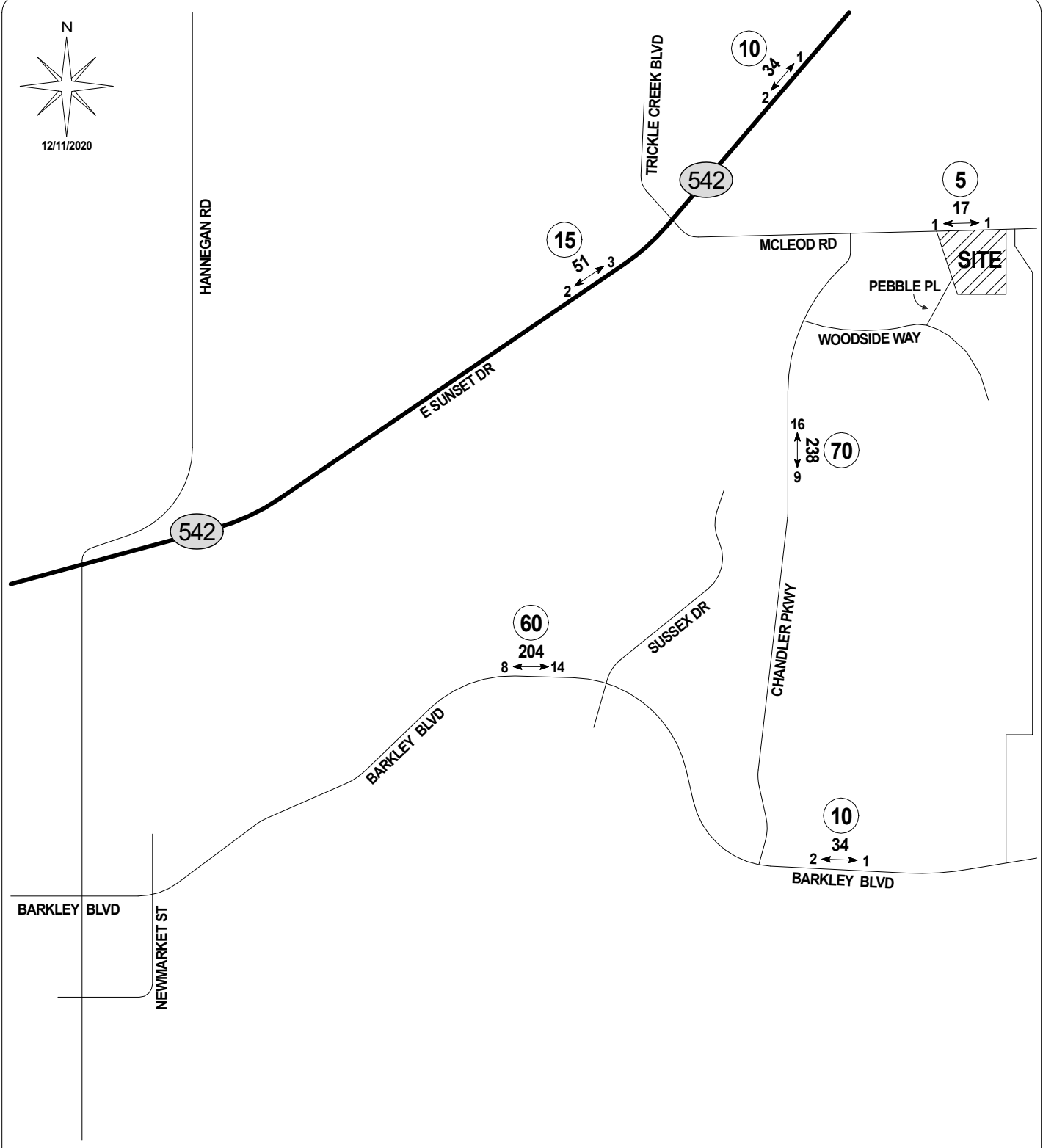
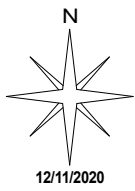
TRAFFIC IMPACT STUDY  
GTC #20-032

McLEOD DEVELOPMENT  
36 SINGLE-FAMILY UNITS

**LEGEND**  
 AWDT  
 AM ← → PEAK  
 (XX)  
 NEW DAILY TRAFFIC  
 NEW AM PEAK-HOUR TRIPS  
 TRIP DISTRIBUTION %

**FIGURE 2**  
**DEVELOPMENT**  
**TRIP DISTRIBUTION**  
**AM PEAK-HOUR**

CITY OF BELLINGHAM



GIBSON TRAFFIC CONSULTANTS

TRAFFIC IMPACT STUDY  
GTC #20-032

McLEOD DEVELOPMENT  
36 SINGLE-FAMILY UNITS

LEGEND  
AWDT  
PM ← → PEAK

NEW DAILY TRAFFIC  
NEW PM PEAK-HOUR TRIPS



TRIP DISTRIBUTION %

**FIGURE 3**  
**DEVELOPMENT**  
**TRIP DISTRIBUTION**  
**PM PEAK-HOUR**

CITY OF BELLINGHAM

#### **4. ROAD NETWORK**

The proposed McLeod Development has frontage along McLeod Road and Pebble Place. McLeod Road is a 2-3 lane Collector Arterial Street with a posted speed limit of 30 mph. There are continuous pedestrian and bicycle facilities from Magrath Road to SR-542/E Sunset Drive. Pebble Place is a local residential road with pedestrian facilities on both sides of the road. Other streets in the area include Chandler Parkway—which is a 2-3 lane Collector Arterial—and Woodside Way—which is a 2-lane residential street.

#### **5. TRANSIT SERVICE**

Whatcom Transportation Authority's (WTA) Route 540 has stops on McLeod Road at Desboro Place and at Squalicum High School's main entrance. Route 540 has weekday hourly headways between Sunset and Downtown. There are existing pedestrian facilities serving Route 540 stops on McLeod Road.

#### **6. ACCESS ANALYSIS**

The development will utilize the existing stub road on Pebble Place as the primary access for the site. Although the development has frontage along both McLeod Road and Pebble Place, Bellingham Code 13.52.120 states the City public works may deny access to arterial roadways when access via a lower classification road is available. This is also restated in the Bellingham Development Guidelines & Improvement Standards Section 12-15. The four existing residential driveways on Pebble Place and the 36 proposed single-family units would equate to a future roadway volume of approximately 380 daily trips (in and out combined). Only 18 feet of pavement is needed to accommodate this expected volume based on information from the American Association of State Highway Transportation Officials (AASHTO). Pebble Place is approximately 26 feet wide which exceeds the minimum width needed.

Providing primary access via Pebble Place also has the added benefit of minimizing the number of new trips travelling on McLeod Road. Congestion on McLeod Road during the peak 15-20 minutes of arrival and dismissal times for Squalicum High School is typical for roads adjacent to schools. Primary access to Pebble Place allows the 70% of development trips expected to travel to and from the south on Chandler Parkway to bypass congestion at the school driveways during arrival and dismissal times. Additionally, any primary access to McLeod Road would require 200 feet of separation from Magrath Road which would restrict it to right-in/right-out turns only due to the existing landscape median. This could lead to drivers attempting unwanted U-turn maneuvers at Magrath Road. Direct access to McLeod Road is therefore not recommended because of the potential to add unnecessary trips during peak congestion times and because of the potential to add unnecessary U-turn movements to an arterial intersection.

## 7. COLLISION ANALYSIS

WSDOT collision data from 2015 through June 2020 was reviewed near the development site. The collision data showed 3 collisions near the intersection of McLeod Road and Chandler Parkway although none were directly attributed to the intersection. This equates to an average collision frequency of less than one collision per year which is less than the typical threshold of 5 collisions per year at unsignalized intersections where additional safety analysis may be required. One other collision was reported along McLeod Road between SR-542/E Sunset Drive and Magrath Road. None of the reported collisions involved pedestrians or cyclists. Three of the four collisions had no reported injuries with the fourth only reporting a suspected minor injury. There were no reported collisions at the intersection of Chandler Parkway and Woodside Way. The collision data does not show any serious-injury collision trends in the site vicinity and therefore no additional safety mitigation should be a condition of approval for the development. Collision data is included in the attachments.

## 8. TRAFFIC MITIGATION FEES

The City of Bellingham has established a transportation impact fee (TIF) to help fund transportation capacity improvements. The current transportation impact fee is \$2,025 per new PM peak-hour person trip generated. The City of Bellingham identifies person trip generation rates to be used in the TIF calculation. Table 2 summarizes the person trip generation calculation for the McLeod development based on the methodology outlined by the City of Bellingham.

**Table 2: City of Bellingham TIF Calculation**

Land Use	Units	COB Person Trip Generation Rate	New Person Trips
Single-Family Units (ITE LUC 210)	36	1.44/unit	51.84
		Per Trip TIF	x \$2,025.00
		<b>Total TIF</b>	<b>\$104,976.00</b>

The McLeod development is anticipated to generate 51.84 new PM peak-hour person trips. The development's transportation impact fees should therefore total \$104,976.00. City of Bellingham fees identified in this report are only good for the time at which the report is completed. Transportation impact fees may change in the future.



## 9. CONCLUSIONS

The McLeod development is proposed to consist of 36 single-family detached units. The development is anticipated to generate 340 new average daily vehicle trips (ADT) with 27 new AM peak-hour vehicle trips and 36 new PM peak-hour vehicle trips.

The development will utilize the existing stub road on Pebble Place as the primary access for the site and include an emergency-only access to McLeod Road. Direct access to McLeod Road for non-emergency vehicles is not recommended because of the potential to add unnecessary trips during school arrival/dismissal peak congestion times and because of the potential to add unnecessary U-turn movements to an arterial intersection. The existing roadway width of Pebble Place is wide enough to accommodate the expected future volume based on information provided by AASHTO.

The City of Bellingham assesses transportation impact fees based on a per person-trip basis. The development is expected to generate 51.84 new person-trips that would travel in the public right-of-way based on City of Bellingham methodology. The development would therefore have a proportionate TIF of \$104,976.00 based on the per trip fee of \$2,025. Transportation impact fees may change in the future and are not vested to what is documented in this report.

# **Trip Generation**

McLeod Property  
 GTC #20-032

**Trip Generation for: Development Peak Weekday  
 (a.k.a.): Average Weekday Daily Trips (AWDT)**

LAND USES	ITE LU code	VARIABLE	Gross Trips				Internal Crossover		NET EXTERNAL TRIPS BY TYPE									
			Trip Rate	% IN	% OUT	In+Out (Total)	% of Gross Trips	In+Out (Total)	IN BOTH DIRECTIONS		DIRECTIONAL ASSIGNMENTS							
									TOTAL	PASS-BY	DIVERTED LINK	NEW	PASS-BY	DIVERTED LINK	NEW			
Single-Family Detached Housing	210	36 Units	9.44	50%	50%	339.84	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	169.92	169.92
<b>Total</b>						339.84	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	169.92	169.92

McLeod Property  
GTC #20-032

Trip Generation for: Development Peak Weekday, Peak Hour of Adjacent Street Traffic, One Hour between 7 and 9 AM  
(a.k.a.): Weekday AM Peak Hour

LAND USES		NET EXTERNAL TRIPS BY TYPE																	
		IN BOTH DIRECTIONS					DIRECTIONAL ASSIGNMENTS												
		TOTAL	PASS-BY		DIVERTED LINK		NEW	PASS-BY		DIVERTED LINK		NEW							
ITE LU code	VARIABLE	Trip Rate	% IN	% OUT	In+Out (Total)	% of Gross Trips	In+Out (Total)	% of Ext. Trips	In+Out (Total)	% of Ext. Trips	In+Out (Total)	In	Out	In	Out	In	Out		
Single-Family Detached Housing	36 Units	210	0.74	25%	75%	26.64	0%	0.00	0%	0.00	0%	26.64	0.00	0.00	0.00	0.00	0.00	6.66	19.98
<b>Total</b>					26.64		0.00			26.64		26.64	0.00	0.00	0.00	0.00	0.00	6.66	19.98

McLeod Property  
GTC #20-032

Trip Generation for: Development Peak Weekday, Peak Hour of Adjacent Street Traffic, One Hour between 4 and 6 PM  
(a.k.a.): Weekday PM Peak Hour

LAND USES	ITE LU code	VARIABLE	Gross Trips						Internal Crossover				NET EXTERNAL TRIPS BY TYPE									
			Trip Rate	% IN	% OUT	In+Out (Total)	% of Gross Trips	% of Gross Trips	Trips In+Out (Total)	% of Ext. Trips	PASS-BY In+Out (Total)	DIVERTED LINK In+Out (Total)	NEW In+Out (Total)	IN BOTH DIRECTIONS		DIRECTIONAL ASSIGNMENTS						
														PASS-BY	DIVERTED LINK	PASS-BY	DIVERTED LINK	NEW	NEW			
Single-Family Detached Housing	210	36 Units	0.99	63%	37%	35.64	0%	0.00	0%	0%	0.00	0%	0.00	0.00	35.64	35.64	0.00	0.00	0.00	0.00	22.45	13.19
<b>Total</b>						35.64		0.00			0.00		0.00	0.00	35.64	35.64	0.00	0.00	0.00	0.00	22.45	13.19

McLeod Property  
GTC #20-032

AM Peak-Hour

%	New ADT	New AM Peak Hour Trips		
		In	Out	Total
100%	340	7	20	27
1%	3.40	0.07	0.20	0.27
2%	6.80	0.13	0.40	0.53
3%	10.20	0.20	0.60	0.80
4%	13.59	0.27	0.80	1.07
<b>5%</b>	<b>16.99</b>	<b>0.33</b>	<b>1.00</b>	<b>1.33</b>
6%	20.39	0.40	1.20	1.60
7%	23.79	0.47	1.40	1.86
8%	27.19	0.53	1.60	2.13
9%	30.59	0.60	1.80	2.40
<b>10%</b>	<b>33.98</b>	<b>0.67</b>	<b>2.00</b>	<b>2.66</b>
11%	37.38	0.73	2.20	2.93
12%	40.78	0.80	2.40	3.20
13%	44.18	0.87	2.60	3.46
14%	47.58	0.93	2.80	3.73
<b>15%</b>	<b>50.98</b>	<b>1.00</b>	<b>3.00</b>	<b>4.00</b>
16%	54.37	1.07	3.20	4.26
17%	57.77	1.13	3.40	4.53
18%	61.17	1.20	3.60	4.80
19%	64.57	1.27	3.80	5.06
<b>20%</b>	<b>67.97</b>	<b>1.33</b>	<b>4.00</b>	<b>5.33</b>
21%	71.37	1.40	4.20	5.59
22%	74.76	1.47	4.40	5.86
23%	78.16	1.53	4.60	6.13
24%	81.56	1.60	4.80	6.39
<b>25%</b>	<b>84.96</b>	<b>1.67</b>	<b>5.00</b>	<b>6.66</b>
26%	88.36	1.73	5.19	6.93
27%	91.76	1.80	5.39	7.19
28%	95.16	1.86	5.59	7.46
29%	98.55	1.93	5.79	7.73
<b>30%</b>	<b>101.95</b>	<b>2.00</b>	<b>5.99</b>	<b>7.99</b>
31%	105.35	2.06	6.19	8.26
32%	108.75	2.13	6.39	8.52
33%	112.15	2.20	6.59	8.79
34%	115.55	2.26	6.79	9.06
<b>35%</b>	<b>118.94</b>	<b>2.33</b>	<b>6.99</b>	<b>9.32</b>
36%	122.34	2.40	7.19	9.59
37%	125.74	2.46	7.39	9.86
38%	129.14	2.53	7.59	10.12
39%	132.54	2.60	7.79	10.39
<b>40%</b>	<b>135.94</b>	<b>2.66</b>	<b>7.99</b>	<b>10.66</b>
41%	139.33	2.73	8.19	10.92
42%	142.73	2.80	8.39	11.19
43%	146.13	2.86	8.59	11.46
44%	149.53	2.93	8.79	11.72
<b>45%</b>	<b>152.93</b>	<b>3.00</b>	<b>8.99</b>	<b>11.99</b>
46%	156.33	3.06	9.19	12.25
47%	159.72	3.13	9.39	12.52
48%	163.12	3.20	9.59	12.79
49%	166.52	3.26	9.79	13.05
<b>50%</b>	<b>169.92</b>	<b>3.33</b>	<b>9.99</b>	<b>13.32</b>

%	New ADT	New AM Peak Hour Trips		
		In	Out	Total
100%	340	7	20	27
51%	173.32	3.40	10.19	13.59
52%	176.72	3.46	10.39	13.85
53%	180.12	3.53	10.59	14.12
54%	183.51	3.60	10.79	14.39
<b>55%</b>	<b>186.91</b>	<b>3.66</b>	<b>10.99</b>	<b>14.65</b>
56%	190.31	3.73	11.19	14.92
57%	193.71	3.80	11.39	15.18
58%	197.11	3.86	11.59	15.45
59%	200.51	3.93	11.79	15.72
<b>60%</b>	<b>203.90</b>	<b>4.00</b>	<b>11.99</b>	<b>15.98</b>
61%	207.30	4.06	12.19	16.25
62%	210.70	4.13	12.39	16.52
63%	214.10	4.20	12.59	16.78
64%	217.50	4.26	12.79	17.05
<b>65%</b>	<b>220.90</b>	<b>4.33</b>	<b>12.99</b>	<b>17.32</b>
66%	224.29	4.40	13.19	17.58
67%	227.69	4.46	13.39	17.85
68%	231.09	4.53	13.59	18.12
69%	234.49	4.60	13.79	18.38
<b>70%</b>	<b>237.89</b>	<b>4.66</b>	<b>13.99</b>	<b>18.65</b>
71%	241.29	4.73	14.19	18.91
72%	244.68	4.80	14.39	19.18
73%	248.08	4.86	14.59	19.45
74%	251.48	4.93	14.79	19.71
<b>75%</b>	<b>254.88</b>	<b>5.00</b>	<b>14.99</b>	<b>19.98</b>
76%	258.28	5.06	15.18	20.25
77%	261.68	5.13	15.38	20.51
78%	265.08	5.19	15.58	20.78
79%	268.47	5.26	15.78	21.05
<b>80%</b>	<b>271.87</b>	<b>5.33</b>	<b>15.98</b>	<b>21.31</b>
81%	275.27	5.39	16.18	21.58
82%	278.67	5.46	16.38	21.84
83%	282.07	5.53	16.58	22.11
84%	285.47	5.59	16.78	22.38
<b>85%</b>	<b>288.86</b>	<b>5.66</b>	<b>16.98</b>	<b>22.64</b>
86%	292.26	5.73	17.18	22.91
87%	295.66	5.79	17.38	23.18
88%	299.06	5.86	17.58	23.44
89%	302.46	5.93	17.78	23.71
<b>90%</b>	<b>305.86</b>	<b>5.99</b>	<b>17.98</b>	<b>23.98</b>
91%	309.25	6.06	18.18	24.24
92%	312.65	6.13	18.38	24.51
93%	316.05	6.19	18.58	24.78
94%	319.45	6.26	18.78	25.04
<b>95%</b>	<b>322.85</b>	<b>6.33</b>	<b>18.98</b>	<b>25.31</b>
96%	326.25	6.39	19.18	25.57
97%	329.64	6.46	19.38	25.84
98%	333.04	6.53	19.58	26.11
99%	336.44	6.59	19.78	26.37
<b>100%</b>	<b>339.84</b>	<b>6.66</b>	<b>19.98</b>	<b>26.64</b>

McLeod Property  
GTC #20-032

PM Peak-Hour

%	New ADT	New PM Peak Hour Trips		
		In	Out	Total
100%	340	22	13	36
1%	3.40	0.22	0.13	0.36
2%	6.80	0.45	0.26	0.71
3%	10.20	0.67	0.40	1.07
4%	13.59	0.90	0.53	1.43
<b>5%</b>	<b>16.99</b>	<b>1.12</b>	<b>0.66</b>	<b>1.78</b>
6%	20.39	1.35	0.79	2.14
7%	23.79	1.57	0.92	2.49
8%	27.19	1.80	1.06	2.85
9%	30.59	2.02	1.19	3.21
<b>10%</b>	<b>33.98</b>	<b>2.25</b>	<b>1.32</b>	<b>3.56</b>
11%	37.38	2.47	1.45	3.92
12%	40.78	2.69	1.58	4.28
13%	44.18	2.92	1.71	4.63
14%	47.58	3.14	1.85	4.99
<b>15%</b>	<b>50.98</b>	<b>3.37</b>	<b>1.98</b>	<b>5.35</b>
16%	54.37	3.59	2.11	5.70
17%	57.77	3.82	2.24	6.06
18%	61.17	4.04	2.37	6.42
19%	64.57	4.27	2.51	6.77
<b>20%</b>	<b>67.97</b>	<b>4.49</b>	<b>2.64</b>	<b>7.13</b>
21%	71.37	4.71	2.77	7.48
22%	74.76	4.94	2.90	7.84
23%	78.16	5.16	3.03	8.20
24%	81.56	5.39	3.17	8.55
<b>25%</b>	<b>84.96</b>	<b>5.61</b>	<b>3.30</b>	<b>8.91</b>
26%	88.36	5.84	3.43	9.27
27%	91.76	6.06	3.56	9.62
28%	95.16	6.29	3.69	9.98
29%	98.55	6.51	3.83	10.34
<b>30%</b>	<b>101.95</b>	<b>6.74</b>	<b>3.96</b>	<b>10.69</b>
31%	105.35	6.96	4.09	11.05
32%	108.75	7.18	4.22	11.40
33%	112.15	7.41	4.35	11.76
34%	115.55	7.63	4.48	12.12
<b>35%</b>	<b>118.94</b>	<b>7.86</b>	<b>4.62</b>	<b>12.47</b>
36%	122.34	8.08	4.75	12.83
37%	125.74	8.31	4.88	13.19
38%	129.14	8.53	5.01	13.54
39%	132.54	8.76	5.14	13.90
<b>40%</b>	<b>135.94</b>	<b>8.98</b>	<b>5.28</b>	<b>14.26</b>
41%	139.33	9.20	5.41	14.61
42%	142.73	9.43	5.54	14.97
43%	146.13	9.65	5.67	15.33
44%	149.53	9.88	5.80	15.68
<b>45%</b>	<b>152.93</b>	<b>10.10</b>	<b>5.94</b>	<b>16.04</b>
46%	156.33	10.33	6.07	16.39
47%	159.72	10.55	6.20	16.75
48%	163.12	10.78	6.33	17.11
49%	166.52	11.00	6.46	17.46
<b>50%</b>	<b>169.92</b>	<b>11.23</b>	<b>6.60</b>	<b>17.82</b>

%	New ADT	New PM Peak Hour Trips		
		In	Out	Total
100%	340	22	13	36
51%	173.32	11.45	6.73	18.18
52%	176.72	11.67	6.86	18.53
53%	180.12	11.90	6.99	18.89
54%	183.51	12.12	7.12	19.25
<b>55%</b>	<b>186.91</b>	<b>12.35</b>	<b>7.25</b>	<b>19.60</b>
56%	190.31	12.57	7.39	19.96
57%	193.71	12.80	7.52	20.31
58%	197.11	13.02	7.65	20.67
59%	200.51	13.25	7.78	21.03
<b>60%</b>	<b>203.90</b>	<b>13.47</b>	<b>7.91</b>	<b>21.38</b>
61%	207.30	13.69	8.05	21.74
62%	210.70	13.92	8.18	22.10
63%	214.10	14.14	8.31	22.45
64%	217.50	14.37	8.44	22.81
<b>65%</b>	<b>220.90</b>	<b>14.59</b>	<b>8.57</b>	<b>23.17</b>
66%	224.29	14.82	8.71	23.52
67%	227.69	15.04	8.84	23.88
68%	231.09	15.27	8.97	24.24
69%	234.49	15.49	9.10	24.59
<b>70%</b>	<b>237.89</b>	<b>15.72</b>	<b>9.23</b>	<b>24.95</b>
71%	241.29	15.94	9.36	25.30
72%	244.68	16.16	9.50	25.66
73%	248.08	16.39	9.63	26.02
74%	251.48	16.61	9.76	26.37
<b>75%</b>	<b>254.88</b>	<b>16.84</b>	<b>9.89</b>	<b>26.73</b>
76%	258.28	17.06	10.02	27.09
77%	261.68	17.29	10.16	27.44
78%	265.08	17.51	10.29	27.80
79%	268.47	17.74	10.42	28.16
<b>80%</b>	<b>271.87</b>	<b>17.96</b>	<b>10.55</b>	<b>28.51</b>
81%	275.27	18.18	10.68	28.87
82%	278.67	18.41	10.82	29.22
83%	282.07	18.63	10.95	29.58
84%	285.47	18.86	11.08	29.94
<b>85%</b>	<b>288.86</b>	<b>19.08</b>	<b>11.21</b>	<b>30.29</b>
86%	292.26	19.31	11.34	30.65
87%	295.66	19.53	11.48	31.01
88%	299.06	19.76	11.61	31.36
89%	302.46	19.98	11.74	31.72
<b>90%</b>	<b>305.86</b>	<b>20.21</b>	<b>11.87</b>	<b>32.08</b>
91%	309.25	20.43	12.00	32.43
92%	312.65	20.65	12.13	32.79
93%	316.05	20.88	12.27	33.15
94%	319.45	21.10	12.40	33.50
<b>95%</b>	<b>322.85</b>	<b>21.33</b>	<b>12.53</b>	<b>33.86</b>
96%	326.25	21.55	12.66	34.21
97%	329.64	21.78	12.79	34.57
98%	333.04	22.00	12.93	34.93
99%	336.44	22.23	13.06	35.28
<b>100%</b>	<b>339.84</b>	<b>22.45</b>	<b>13.19</b>	<b>35.64</b>

# **AASHTO Information**



Table 5-5. Minimum Width of Traveled Way and Shoulders

Design Speed (km/h)	Metric				Design Speed (mph)	U.S. Customary			
	Minimum Width of Traveled Way (m) for Specified Design Volume (veh/day)					Minimum Width of Traveled Way (ft) for Specified Design Volume (veh/day)			
	under 400	400 to 1500	1500 to 2000	over 2000		under 400	400 to 1500	1500 to 2000	over 2000
20	5.4	6.0 <sup>a</sup>	6.0	6.6	15	18	20 <sup>a</sup>	20	22
30	5.4	6.0 <sup>a</sup>	6.6	7.2 <sup>b</sup>	20	18	20 <sup>a</sup>	22	24 <sup>b</sup>
40	5.4	6.0 <sup>a</sup>	6.6	7.2 <sup>b</sup>	25	18	20 <sup>a</sup>	22	24 <sup>b</sup>
50	5.4	6.0 <sup>a</sup>	6.6	7.2 <sup>b</sup>	30	18	20 <sup>a</sup>	22	24 <sup>b</sup>
60	5.4	6.0 <sup>a</sup>	6.6	7.2 <sup>b</sup>	40	18	20 <sup>a</sup>	22	24 <sup>b</sup>
70	6.0	6.6	6.6	7.2 <sup>b</sup>	45	20	22	22	24 <sup>b</sup>
80	6.0	6.6	6.6	7.2 <sup>b</sup>	50	20	22	22	24 <sup>b</sup>
90	6.6	6.6	7.2 <sup>b</sup>	7.2 <sup>b</sup>	55	22	22	24 <sup>b</sup>	24 <sup>b</sup>
100	6.6	6.6	7.2 <sup>b</sup>	7.2 <sup>b</sup>	60	22	22	24 <sup>b</sup>	24 <sup>b</sup>
					65	22	22	24 <sup>b</sup>	24 <sup>b</sup>
All speeds	Width of graded shoulder on each side of the road (m)				All speeds	Width of graded shoulder on each side of the road (ft)			
	0.6	1.5, <sup>a,c</sup>	1.8	2.4		2	5 <sup>a,c</sup>	6	8

- <sup>a</sup> For roads in mountainous terrain with design volume of 400 to 600 veh/day, use 5.4-m [18-ft] traveled way width and 0.6-m [2-ft] shoulder width.
- <sup>b</sup> Where the width of the traveled way is shown as 7.2 m [24 ft], the width may remain at 6.6 m [22 ft] on reconstructed highways where there is no crash pattern suggesting the need for widening.
- <sup>c</sup> May be adjusted to achieve a minimum roadway width of 9 m [30 ft] for design speeds greater than 60 km/h [40 mph].

### Right-of-Way Width

Providing right-of-way widths that accommodate construction, adequate drainage, and proper maintenance of a highway is a very important part of the overall design. Wide rights-of-way permit the construction of gentle slopes, resulting in reduced crash severity potential and providing for easier and more economical maintenance. The procurement of sufficient right-of-way at the time of the initial construction permits the widening of the roadway and the widening and strengthening of the pavement at a reasonable cost as traffic volumes increase.

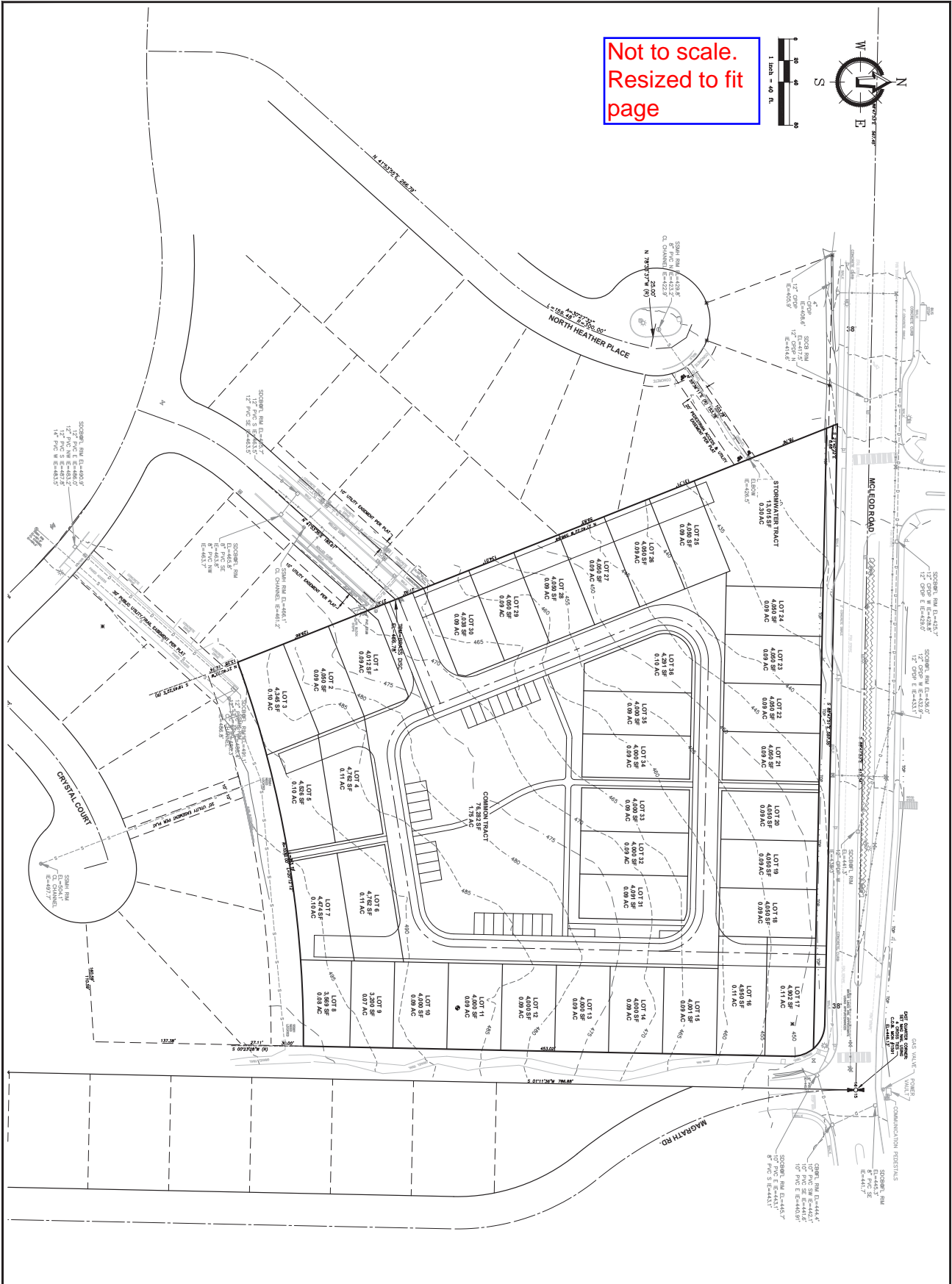
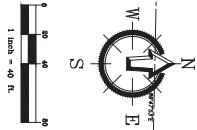
In developed areas, it may be necessary to limit the right-of-way width. However, the right-of-way width should not be less than that needed to accommodate all the elements of the design cross sections, utilities, and appropriate border areas.

### Medians

Medians are generally not provided for local rural roads. For additional information on medians, see Section 5.3 on "Local Urban Streets."

# Site Plan

Not to scale.  
Resized to fit  
page



Edits by GTC

SHEET CONTENTS  <b>PRELIMINARY</b>	PROJECT NAME PROJECT ADDRESS1 PROJECT ADDRESS2	CLIENT CLIENT NAME CLIENT ADDRESS1 CLIENT ADDRESS2	REV: DATE:      DESCRIPTION:	BY:	
	DRAWING #: 20001SP1.DWG DESIGNED BY: XX1	DRAWN BY: XXX2 CHECKED BY: XXX3	CALL BEFORE YOU DIG FOR BURIED UTILITY LOCATIONS 1-800-424-5555	PROJECT LOCATION:	

# Collision Data

PRIMARY TRAFFICWAY	INTERSECTING TRAFFICWAY/ REFERENCE POINT NAME	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# I N J U R I E S	# P E R I C I D E S	JUNCTION RELATIONSHIP	FIRST COLLISION TYPE / OBJECT STRUCK
MCLEOD RD	CHANDLER PKWY	248 F	E	NE	DESBOROUGH PL	E428157	2015-05-14	14:59	No Apparent Injury	0	0	Not at Intersection and Not Related	From same direction - both going straight - both moving - rear-end
CHANDLER PKWY	CHANDLER PKWY	52 F	NE	NE	CHANDLER PKWY	3649198	2017-12-27	22:41	No Apparent Injury	0	0	Not at Intersection and Not Related	Fence
CHANDLER PKWY	CHANDLER PKWY	21 F	S	S	MCLEOD RD	3629367	2018-12-13	21:05	Suspected Minor Injury	1	0	Not at Intersection and Not Related	Retaining Wall (concrete, rock, brick, etc.)
MCLEOD RD	CHANDLER PKWY	0				E887470	2019-01-26	19:00	No Apparent Injury	0	0	At Driveway within Major Intersection	Entering at angle