

LSC TRANSPORTATION CONSULTANTS, INC.

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January 12, 2018

Mr. Michael Bosma
1035 Pearl Street, #205
Boulder, CO 80302

Re: The Academy on Mapleton Hill
Boulder, CO
LSC #150520

Dear Mr. Bosma:

In response to your request, LSC Transportation Consultants, Inc. has prepared this updated traffic impact analysis for The Academy on Mapleton Hill redevelopment to address City comments. As shown on Figure 1, the site is located at north of Mapleton Avenue and west of 4th Street in Boulder, Colorado.

REPORT CONTENTS

The report contains the following: the existing roadway and traffic conditions in the vicinity of the site including the lane geometries, traffic controls, posted speed limits, etc.; the existing weekday peak-hour traffic volumes; the existing daily traffic volumes in the area; the typical weekday site-generated traffic volume projections for the site; the assignment of the projected traffic volumes to the area roadways; the projected short-term background and resulting total traffic volumes on the area roadways; the site's projected traffic impacts; and any recommended roadway improvements to mitigate the site's traffic impacts or impacts from growth in background traffic.

PROPOSED LAND USE AND ACCESS

The existing hospital campus is proposed to be redeveloped as Congregate Care consisting of about 91 independent living units and 52 memory care, subacute rehab, skilled nursing, and assisted living beds located in the proposed wellness center. There will also be two caretaker units. The site is expected to have about 80 full-time equivalent employees working two 12-hour shifts. The conceptual site plan is shown in Figure 2. The existing use and current structures on the site are approximately 184,355 square feet and were previously used as medical/dental office space. Vehicular access to the site is proposed to 4th Street and to Mapleton Avenue.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown on Figure 1 and are described below.

- **Maxwell Avenue** is an east-west, two-lane roadway east of the site. The intersection with 4th Street is stop-sign controlled on Maxwell Avenue. The intersection with 9th Street is all-way stop-sign controlled. The posted speed limit in the vicinity of the site is 25 mph.
- **Mapleton Avenue** is an east-west, two-lane, minor arterial roadway south of the site. The intersection with 4th Street is all-way stop-sign controlled. The intersection with 9th Street is stop-sign controlled on Mapleton Avenue. The posted speed limit in the vicinity of the site is 25 mph.
- **4th Street** is a north-south, two-lane roadway east of the site. The intersection with Mapleton Avenue is all-way stop-sign controlled. The intersection with Maxwell Avenue is stop-sign controlled on Maxwell Avenue. The posted speed limit in the vicinity of the site is 25 mph.
- **9th Street** is a north-south, two-lane, minor arterial roadway east of the site. The intersection with Mapleton Avenue is stop-sign controlled on Mapleton Avenue. The intersection with Maxwell Avenue is all-way stop-sign controlled. The posted speed limit between Mapleton Avenue and Maxwell Avenue varies from 20 mph to 25 mph.

Traffic Volumes and Lane Geometry

Figure 3a shows the existing peak-hour traffic, lane geometries, and traffic controls in the site's vicinity on a typical weekday. Figure 3b shows the 2015 and 2016 daily traffic volumes. The weekday peak-hour traffic volumes and daily traffic counts are from the attached traffic counts conducted by Counter Measures in May of 2015, June of 2016, and June of 2017. These volumes show the drop in existing daily traffic volumes from the closing of the prior medical office use.

2018 Background Traffic

Figure 4 shows the estimated 2018 background traffic. The projected 2018 background traffic volumes are based on an annual growth rate of about one half percent for two years based on historic data on the City's website plus additional traffic from the approved Trailhead residential development to the north. The historic data shows no growth from 1993 to 2014 so the one half percent annual growth rate is conservative.

Existing and 2018 Background Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A is indicative of little congestion or delay and LOS F is indicative of a high level of congestion or delay. Attached are specific level of service definitions for unsignalized intersections.

The intersections in Figures 3a and 4 were analyzed as appropriate to determine the existing and 2018 background levels of service using Synchro. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **Maxwell Avenue/4th Street/E. Site Access:** All movements at this stop-sign controlled intersection currently operate at LOS “A” during both morning and afternoon peak-hours and are expected to do so through 2018.
- **4th Street/Mapleton Avenue:** All movements at this all-way stop-sign controlled intersection currently operate at LOS “A” during both morning and afternoon peak-hours and are expected to do so through 2018.
- **4th Street/Avista Surgery Center Driveway:** All movements at this stop-sign controlled intersection currently operate at LOS “A” during both morning and afternoon peak-hours and are expected to do so through 2018.
- **Mapleton Avenue/S. Site Access:** All movements at this stop-sign controlled intersection currently operate at LOS “B” or better during both morning and afternoon peak-hours and are expected to do so through 2018.
- **9th Street/Maxwell Avenue:** All movements at this all-way stop-sign controlled intersection currently operate at LOS “C” or better during both morning and afternoon peak-hours and are expected to do so through 2018.
- **9th Street/Mapleton Avenue:** All movements at this stop-sign controlled intersection currently operate at LOS “D” or better during both morning and afternoon peak-hours and are expected to do so through 2018.

ALTERNATIVE TRAVEL MODES

An alternate travel mode reduction of 10 to 15 percent is assumed in this analysis. The site is well positioned to take advantage of the City’s extensive network of bike lanes, bike routes, existing transit routes and bus stops in the area. The closest bus stops are over a half mile away so the applicant proposes to operate a shuttle to/from bus stops during major employee shift changes. A separate Travel Demand Management (TDM) Plan with this and additional strategies has been completed and is attached for reference. To be conservative, the trip assignment and capacity analysis in this report assumes no alternative travel mode reduction.

TRIP GENERATION

Table 2 shows the estimated typical weekday, morning peak-hour, and afternoon peak-hour trip generation for the site as well as for the prior medical office use based on the rates from *Trip Generation, 9th Edition, 2012*, by the Institute of Transportation Engineers (ITE).

The prior medical office use was active as recent as 2015 and with a total of over 184,000 square feet would have had the potential to generate about 7,323 vehicle-trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about

348 vehicles could enter and about 93 vehicles could exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:30 p.m., about 141 vehicles could enter and about 364 vehicles could exit the site.

The proposed land use on the site is projected to generate about 468 vehicle-trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 12 vehicles would enter and about 16 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:30 p.m., about 21 vehicles would enter and about 18 vehicles would exit the site. These are the projections used in the balance of the analysis but should be considered conservative as they assume no adjustments for alternative travel modes.

TRIP DISTRIBUTION

Figure 5 shows the estimated directional distribution of the site-generated traffic volumes on the area roadways. The estimates were based on the location of the site with respect to the regional population, employment, and activity centers; and the site's proposed land use.

TRIP ASSIGNMENT

Figure 6 shows the estimated unadjusted site-generated traffic volumes which are the directional distribution percentages (from Figure 5) applied to the unadjusted trip generation estimate (from Table 2). This is a conservative assignment as there are no adjustments for alternative travel modes.

2018 TOTAL TRAFFIC

Figure 7 shows the 2018 total traffic which is the sum of the 2018 background traffic volumes (from Figure 4) and the unadjusted site-generated traffic volumes (from Figure 6). Figure 7 also shows the recommended 2018 lane geometry and traffic control.

AVERAGE DAILY TRAFFIC IMPACT

Figure 8 shows the variations in average daily traffic on the area streets for various scenarios. This information is also summarized in Table 3. The overall site impact is relatively low and generally will result in less traffic on the surrounding roadways than what existed when the site was used previously as medical/dental offices.

PROJECTED LEVELS OF SERVICE

The intersections in Figure 7 were analyzed to determine the 2018 total levels of service. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **Maxwell Avenue/4th Street/E. Site Access:** All movements at this stop-sign controlled intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2018.

- **4th Street/Mapleton Avenue:** All movements at this all-way stop-sign controlled intersection are expected to operate at LOS “A” during both morning and afternoon peak-hours through 2018.
- **Mapleton Avenue/S. Site Access:** All movements at this stop-sign controlled intersection are expected to operate at LOS “B” or better during both morning and afternoon peak-hours through 2018.
- **4th Street/Avista Surgery Center Driveway:** All movements at this stop-sign controlled intersection are expected to operate at LOS “A” during both morning and afternoon peak-hours through 2018.
- **9th Street/Maxwell Avenue:** All movements at this all-way stop-sign controlled intersection are expected to operate at LOS “C” or better during both morning and afternoon peak-hours through 2018.
- **9th Street/Mapleton Avenue:** All movements at this stop-sign controlled intersection are expected to operate at LOS “D” or better during both morning and afternoon peak-hours through 2018.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

1. The proposed land use on the site is projected to generate about 468 vehicle-trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak-hour, about 12 vehicles would enter and about 16 vehicles would exit the site. During the afternoon peak-hour, about 21 vehicles would enter and about 18 vehicles would exit the site. These are the projections used in the analysis but should be considered conservative as they assume no adjustments for alternative travel modes. This trip generation potential is considerably lower than the potential for the prior medical office use.

Projected Levels of Service

2. All movements at all the intersections analyzed are expected to operate at LOS “D” or better during both peak-hours through 2018.

Conclusions

3. Figure 8 shows the variations in average daily traffic on the area streets for various scenarios. This information is also shown in Table 3.
4. The impact of The Academy on Mapleton Hill redevelopment can be accommodated by the existing roadway network with the recommended improvements below.

Recommended Improvements

- 5. The applicant should implement Travel Demand Management (TDM) strategies as detailed in the separate Travel Demand Management (TDM) plan included in the appendix.

* * * * *

We trust this information will assist you in planning for The Academy on Mapleton Hill redevelopment.

Respectfully submitted,

LSC Transportation Consultants, Inc.

By: 
 Christopher S. McGranahan, P.E., PTOE
 Principal



1-12-18

CSM/wc

- Enclosure:
- Tables 1 - 3
 - Figures 1 - 8
 - Traffic Counts
 - Historic Traffic Data From City Website
 - Level of Service Definitions
 - LOS Printouts
 - The Academy on Mapleton Hill TDM Plan

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Table 1
Intersection Levels of Service Analysis
The Academy on Mapleton Hill
Boulder, Colorado
LSC #150520; January, 2018

Intersection Location	Traffic Control	Existing Traffic				2018 Background Traffic				2018 Total Traffic			
		AM		PM		AM		PM		AM		PM	
		Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay
<u>Maxwell Avenue/4th Street/E. Site Access</u>	TWSC	A	7.3	A	7.4	A	7.3	A	7.4	A	7.3	A	7.4
NB Approach		A	9.3	A	9.6	A	9.4	A	9.7	A	9.5	B	10.0
EB Approach		A	9.4	A	9.6	A	9.5	A	9.6	A	9.7	B	10.1
WB Approach		A	7.4	A	7.4	A	7.4	A	7.4	A	7.4	A	7.4
<u>4th Street/Mapleton Avenue</u>	AWSC	A	7.9	A	8.4	A	8.0	A	8.5	A	8.0	A	8.5
NB Approach		A	8.4	A	8.5	A	8.4	A	8.5	A	8.4	A	8.5
EB Left		A	8.8	A	8.6	A	8.8	A	8.7	A	8.9	A	8.7
EB Through/Right		A	8.4	A	9.1	A	8.4	A	9.1	A	8.5	A	9.2
WB Approach		A	7.9	A	8.3	A	8.0	A	8.3	A	8.1	A	8.5
<u>4th Street/Avista Surgery Center Driveway</u>	TWSC	A	7.3	A	7.4	A	7.3	A	7.4	A	7.3	A	7.4
NB Approach		A	8.5	A	9.0	A	8.9	A	9.0	A	8.7	A	9.0
<u>Mapleton Avenue/S. Site Access</u>	TWSC	A	7.5	A	7.7	A	7.5	A	7.7	A	7.5	A	7.7
EB Approach		A	9.7	B	10.5	A	9.9	B	10.5	A	9.9	B	10.5
SB Approach		B	11.9	B	14.1	B	12.0	B	14.2	B	12.2	B	14.9
<u>9th Street/Maxwell Avenue</u>	AWSC	A	9.9	A	9.8	A	9.9	A	9.9	A	10.1	B	10.1
NB Approach		A	9.9	A	9.8	A	9.9	A	9.8	B	10.1	B	10.0
EB Approach		C	15.6	B	11.8	C	15.8	B	11.9	C	16.8	B	12.2
WB Approach		A	8.7	A	8.2	A	8.7	A	8.2	A	8.8	A	8.2
<u>9th Street/Mapleton Avenue</u>	TWSC	D	28.1	C	21.4	D	28.9	C	21.7	D	31.3	C	23.4
NB Approach		C	24.4	C	24.7	C	24.8	D	25.3	D	25.8	D	27.0
EB Approach		A	7.8	A	8.2	A	7.8	A	8.2	A	7.8	A	8.2
WB Approach													

Table 2
ESTIMATED TRAFFIC GENERATION COMPARISON
The Academy on Mapleton Hill
Boulder, CO
(LSC #150520; January, 2018)

Trip Generating Category	Quantity	Trip Generation Rates ⁽¹⁾				Vehicle - Trips Generated													
		Average Weekday		PM Peak Hour		Average Weekday		AM Peak Hour		PM Peak - Hour									
		In	Out	In	Out	In	Out	In	Out										
Prior Use Trip Generation Potential																			
Medical-Dental Office ⁽²⁾	184,355 KSF ⁽³⁾	39.72	1.888	0.502	0.767	1.974	7,323	348	93	141	364								
Currently Proposed Land Use																			
Independent Living ⁽⁴⁾	91 DU ⁽⁵⁾	3.44	0.068	0.132	0.135	0.115	313	6	12	12	10								
Memory Care, Subacute Rehab, Skilled Nursing, Assisted Living ⁽⁶⁾	52 Beds	2.74	0.122	0.058	0.145	0.145	142	6	3	8	8								
Caretaker Units ⁽⁷⁾	2 DU	6.65	0.102	0.408	0.403	0.217	13	0	1	1	0								
						Total =	468	12	16	21	18								

Notes:

- (1) Source: *Trip Generation*, Institute of Transportation Engineers, 9th Edition, 2012. A Travel Demand Management Plan has been completed to show how the project will help reduce overall traffic volumes for the site. An alternative travel mode reduction of 10% - 15% is expected but no reduction was used in the trip assignment in Figure 6 to maintain a conservative analysis.
- (2) ITE Land Use No. 720 - Medical-Dental Office Building - formula rates where available
- (3) KSF = 1,000 square feet
- (4) ITE Land Use No. 252 - Senior Adult Housing - Attached
- (5) DU = dwelling unit
- (6) ITE Land Use No. 254 - Assisted Living - assumed for both Assisted Living and Memory Care uses
- (7) ITE Land Use No. 220 - Apartment

**Table 3
Daily Traffic Impacts
The Academy on Mapleton Hill
Boulder, Colorado
LSC #150520; January, 2018**

Intersection Location	2015 ⁽¹⁾	2016	2018	2018	2018
	Existing Traffic (vpd)	Existing Traffic (vpd)	Background Traffic (vpd)	Site-Generated Traffic (vpd)	Total Traffic (vpd)
4th Street s/o Concord Avenue	N/A	1,755	1,770	65	1,835
4th Street s/o Mapleton Avenue	N/A	2,015	2,035	25	2,060
3rd Street n/o Mapleton Avenue	720	415	420	50	470
Mapleton Avenue e/o 4th Street	N/A	3,875	3,915	185	4,100
Maxwell Avenue w/o 4th Street	2,615	725	725	375	1,100
Maxwell Avenue e/o 4th Street	N/A	705	710	330	940

Notes:

(1) Counts conducted when the prior medical office use was still active on the site. These counts were not required by the City but were completed to help demonstrate the prior impact of the site.



Approximate Scale
Scale: 1"=400'



Figure 1

Vicinity Map

The Academy on Mapleton Hill (LSC #150520)



Approximate Scale
Scale: 1"=300'

Note: The 2015 counts were conducted when the prior medical office use was still active on the site. These counts were not required by the City but were completed to help demonstrate the prior impact of the site.

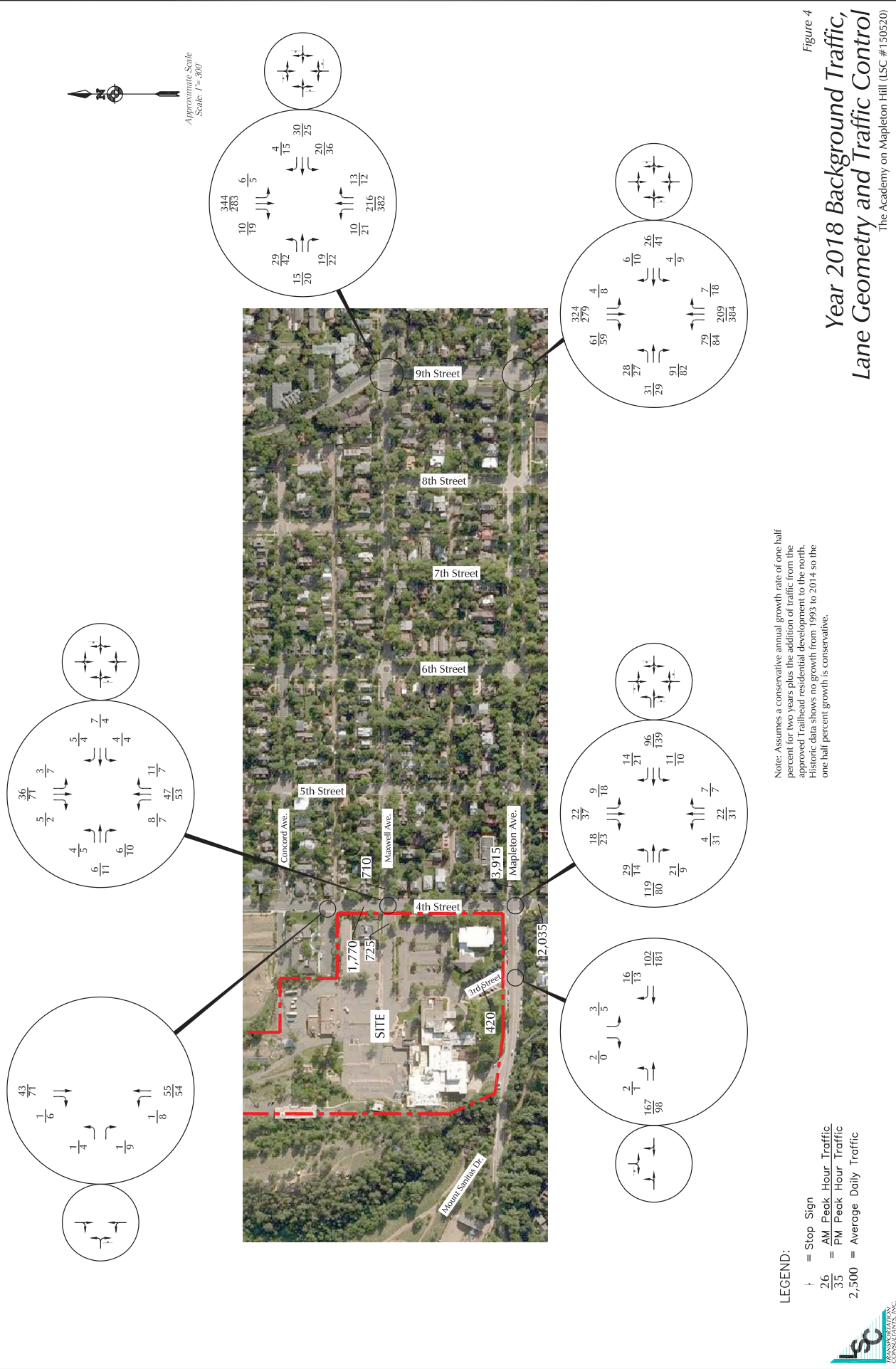
<p>1 Northwest Access west of Maxwell Avenue</p> <table border="0"> <tr><td>Wednesday</td><td>5-11-16</td><td>153vpd</td></tr> <tr><td>Thursday</td><td>5-12-16</td><td>152vpd</td></tr> <tr><td>Friday</td><td>5-13-16</td><td>155vpd</td></tr> <tr><td>Saturday</td><td>5-14-16</td><td>109vpd</td></tr> <tr><td>Sunday</td><td>5-15-16</td><td>128vpd</td></tr> <tr><td>Monday</td><td>5-16-16</td><td>115vpd</td></tr> <tr><td>Tuesday</td><td>5-17-16</td><td>73vpd</td></tr> </table>	Wednesday	5-11-16	153vpd	Thursday	5-12-16	152vpd	Friday	5-13-16	155vpd	Saturday	5-14-16	109vpd	Sunday	5-15-16	128vpd	Monday	5-16-16	115vpd	Tuesday	5-17-16	73vpd	<p>6 4th Street south of Maxwell Avenue</p> <table border="0"> <tr><td>Wednesday</td><td>5-27-15</td><td>2,549vpd</td></tr> <tr><td>Thursday</td><td>5-28-15</td><td>-</td></tr> <tr><td>Friday</td><td>5-29-15</td><td>-</td></tr> <tr><td>Saturday</td><td>5-30-15</td><td>-</td></tr> <tr><td>Sunday</td><td>5-31-15</td><td>-</td></tr> <tr><td>Monday</td><td>6-1-16</td><td>-</td></tr> <tr><td>Tuesday</td><td>6-2-16</td><td>-</td></tr> </table>	Wednesday	5-27-15	2,549vpd	Thursday	5-28-15	-	Friday	5-29-15	-	Saturday	5-30-15	-	Sunday	5-31-15	-	Monday	6-1-16	-	Tuesday	6-2-16	-						
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<p>4 Hospital West Access north of Mapleton Avenue</p> <table border="0"> <tr><td>Wednesday</td><td>5-11-16</td><td>173vpd</td></tr> <tr><td>Thursday</td><td>5-12-16</td><td>106vpd</td></tr> <tr><td>Friday</td><td>5-13-16</td><td>131vpd</td></tr> <tr><td>Saturday</td><td>5-14-16</td><td>58vpd</td></tr> <tr><td>Sunday</td><td>5-15-16</td><td>83vpd</td></tr> <tr><td>Monday</td><td>5-16-16</td><td>159vpd</td></tr> <tr><td>Tuesday</td><td>5-17-16</td><td>122vpd</td></tr> </table>	Wednesday	5-11-16	173vpd	Thursday	5-12-16	106vpd	Friday	5-13-16	131vpd	Saturday	5-14-16	58vpd	Sunday	5-15-16	83vpd	Monday	5-16-16	159vpd	Tuesday	5-17-16	122vpd	<p>9 4th Street north of Maxwell Avenue</p> <table border="0"> <tr><td>Tuesday</td><td>6-21-16</td><td>1,756vpd</td></tr> <tr><td>Wednesday</td><td>6-22-16</td><td>1,581vpd</td></tr> <tr><td>Thursday</td><td>6-23-16</td><td>1,717vpd</td></tr> <tr><td>Friday</td><td>6-24-16</td><td>-</td></tr> <tr><td>Saturday</td><td>6-25-16</td><td>-</td></tr> <tr><td>Sunday</td><td>6-26-16</td><td>-</td></tr> <tr><td>Monday</td><td>6-27-16</td><td>-</td></tr> <tr><td>Tuesday</td><td>6-28-16</td><td>-</td></tr> </table>	Tuesday	6-21-16	1,756vpd	Wednesday	6-22-16	1,581vpd	Thursday	6-23-16	1,717vpd	Friday	6-24-16	-	Saturday	6-25-16	-	Sunday	6-26-16	-	Monday	6-27-16	-	Tuesday	6-28-16	-			
Wednesday	5-11-16	173vpd																																															
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Sunday	6-26-16	-																																															
Monday	6-27-16	-																																															
Tuesday	6-28-16	-																																															
<p>5 Mapleton Avenue west of 4th Street</p> <table border="0"> <tr><td>Wednesday</td><td>5-27-15</td><td>4,002vpd</td></tr> <tr><td>Thursday</td><td>5-28-15</td><td>-</td></tr> <tr><td>Friday</td><td>5-29-15</td><td>-</td></tr> <tr><td>Saturday</td><td>5-30-15</td><td>-</td></tr> <tr><td>Sunday</td><td>5-31-15</td><td>-</td></tr> <tr><td>Monday</td><td>6-1-16</td><td>-</td></tr> <tr><td>Tuesday</td><td>6-2-16</td><td>-</td></tr> </table>	Wednesday	5-27-15	4,002vpd	Thursday	5-28-15	-	Friday	5-29-15	-	Saturday	5-30-15	-	Sunday	5-31-15	-	Monday	6-1-16	-	Tuesday	6-2-16	-	<p>10 4th Street south of Mapleton Avenue</p> <table border="0"> <tr><td>Tuesday</td><td>6-21-16</td><td>1,814vpd</td></tr> <tr><td>Wednesday</td><td>6-22-16</td><td>1,838vpd</td></tr> <tr><td>Thursday</td><td>6-23-16</td><td>2,017vpd</td></tr> <tr><td>Friday</td><td>6-24-16</td><td>-</td></tr> <tr><td>Saturday</td><td>6-25-16</td><td>-</td></tr> <tr><td>Sunday</td><td>6-26-16</td><td>-</td></tr> <tr><td>Monday</td><td>6-27-16</td><td>-</td></tr> <tr><td>Tuesday</td><td>6-28-16</td><td>-</td></tr> </table>	Tuesday	6-21-16	1,814vpd	Wednesday	6-22-16	1,838vpd	Thursday	6-23-16	2,017vpd	Friday	6-24-16	-	Saturday	6-25-16	-	Sunday	6-26-16	-	Monday	6-27-16	-	Tuesday	6-28-16	-			
Wednesday	5-27-15	4,002vpd																																															
Thursday	5-28-15	-																																															
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Sunday	6-26-16	-																																															
Monday	6-27-16	-																																															
Tuesday	6-28-16	-																																															



Figure 3b

Existing Daily Traffic Volumes

The Academy on Mapleton Hill (LSC #150520)



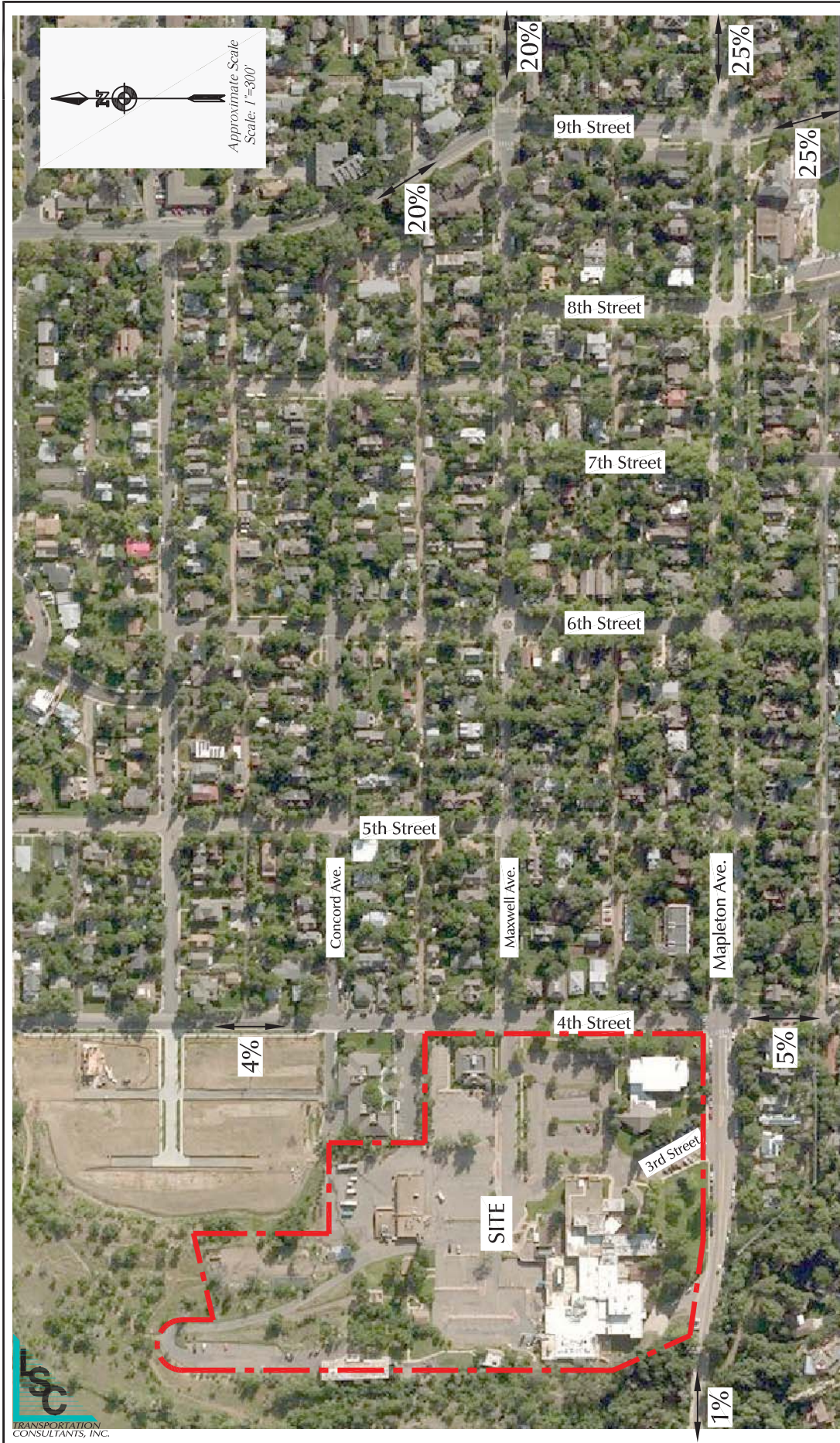
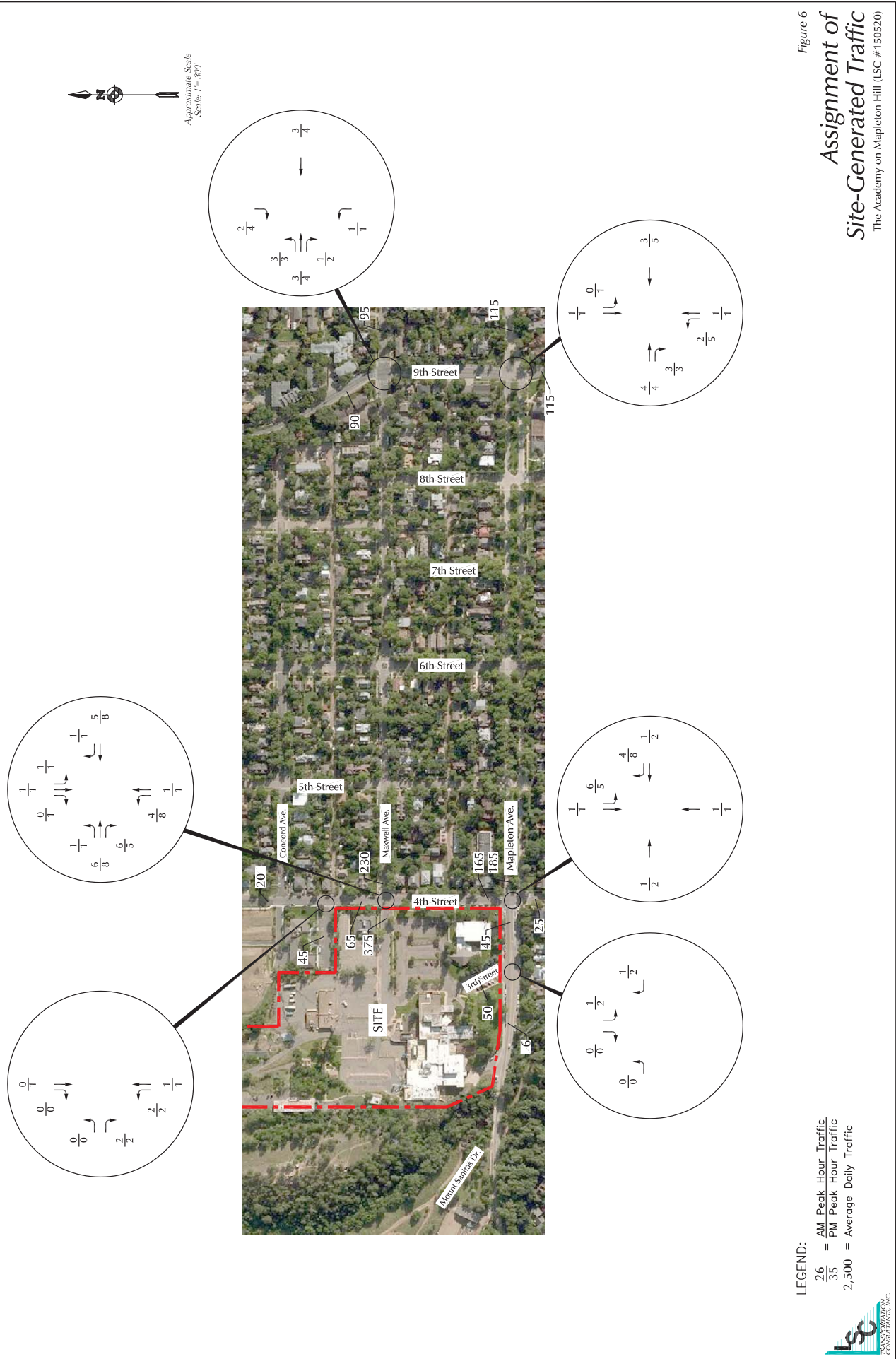


Figure 5
Directional Distribution of Site-Generated Traffic
The Academy on Mapleton Hill (LSC #150520)



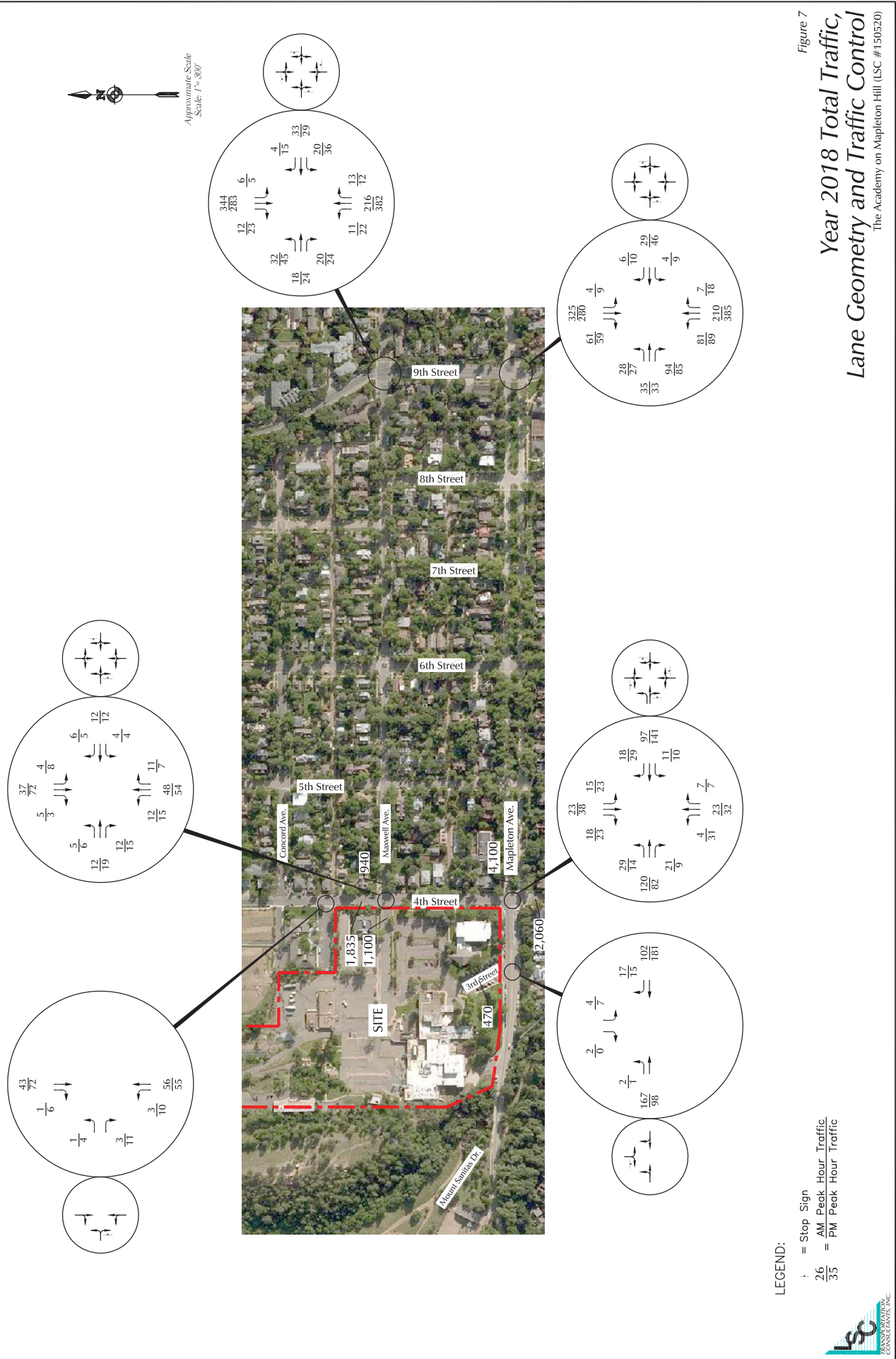
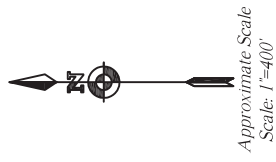


Figure 7
**Year 2018 Total Traffic,
 Lane Geometry and Traffic Control**
 The Academy on Mapleton Hill (LSC #150520)





LEGEND:

720	2015 Existing
415	2016 Existing
420	= 2018 Background
75	2018 Site-Generated
495	2018 Total

NA = Not Available

Figure 8

Daily Traffic Impacts

The Academy on Mapleton Hill (LSC #150520)

Attachment F - Trip Generation and Transportation Demand Management

COUNTER MEASURES INC.

1889 YORK ST
DENVER, COLORADO
303-333-7409

N/S STREET: 4TH ST
E/W STREET: MAPLETON AVE
CITY: BOULDER
COUNTY: BOULDER

File Name : 4THSMAPL3
Site Code : 00000001
Start Date : 5/28/2015
Page No : 1

Groups Printed- VEHICLES

Start Time	4TH ST Southbound				MAPLETON AVE Westbound				4TH ST Northbound				MAPLETON AVE Eastbound				Int. Total	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	3	0	6	0	5	0	5	0	3	0	0	0	5	1	1		29
06:45 AM	3	2	0	3	3	10	4	2	3	1	0	5	5	13	0	6		60
Total	3	5	0	9	3	15	4	7	3	4	0	5	5	18	1	7		89
07:00 AM	2	1	3	5	1	15	3	7	1	5	0	0	2	13	2	3		63
07:15 AM	0	1	1	3	0	6	3	1	1	5	0	3	3	17	3	2		49
07:30 AM	1	9	1	2	2	14	6	3	0	4	0	5	3	16	3	5		74
07:45 AM	4	9	5	3	0	14	7	4	2	6	0	1	3	24	8	1		91
Total	7	20	10	13	3	49	19	15	4	20	0	9	11	70	16	11		277
08:00 AM	3	8	3	5	3	16	7	7	3	9	1	1	10	23	7	7		113
08:15 AM	5	13	3	6	0	22	5	5	4	6	2	2	5	25	5	5		113
Total	8	21	6	11	3	38	12	12	7	15	3	3	15	48	12	12		226
04:00 PM	4	7	6	4	2	22	7	4	6	7	2	0	4	17	1	1		94
04:15 PM	6	10	5	1	3	23	4	1	11	9	2	1	9	21	2	4		112
04:30 PM	5	8	6	3	4	30	4	2	3	6	4	5	3	22	4	2		111
04:45 PM	4	19	6	2	1	18	4	3	5	10	2	1	8	21	3	1		108
Total	19	44	23	10	10	93	19	10	25	32	10	7	24	81	10	8		425
05:00 PM	4	12	2	12	2	35	1	8	6	4	1	1	7	25	3	3		126
05:15 PM	10	4	5	6	0	31	2	4	7	12	1	0	1	21	5	3		112
05:30 PM	1	7	5	3	3	27	2	3	3	8	1	5	3	16	1	8		96
05:45 PM	3	6	3	4	0	24	6	3	8	9	1	1	6	19	3	5		101
Total	18	29	15	25	5	117	11	18	24	33	4	7	17	81	12	19		435
Grand Total	55	119	54	68	24	312	65	62	63	104	17	31	72	298	51	57		1452
Apprch %	18.6	40.2	18.2	23.0	5.2	67.4	14.0	13.4	29.3	48.4	7.9	14.4	15.1	62.3	10.7	11.9		
Total %	3.8	8.2	3.7	4.7	1.7	21.5	4.5	4.3	4.3	7.2	1.2	2.1	5.0	20.5	3.5	3.9		

Attachment F - Trip Generation and Transportation Demand Management

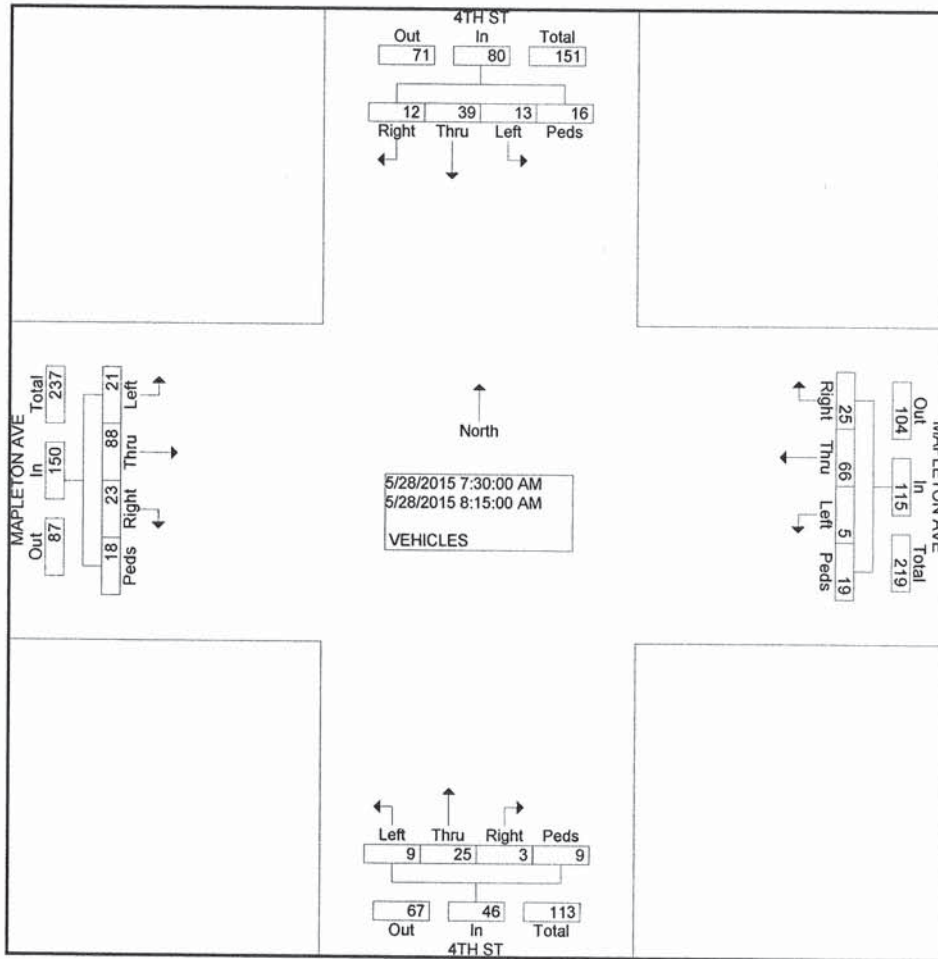
COUNTER MEASURES INC.

1889 YORK ST
DENVER, COLORADO
303-333-7409

N/S STREET: 4TH ST
E/W STREET: MAPLETON AVE
CITY: BOULDER
COUNTY: BOULDER

File Name : 4THSMAPL3
Site Code : 00000001
Start Date : 5/28/2015
Page No : 2

Start Time	4TH ST Southbound					MAPLETON AVE Westbound					4TH ST Northbound					MAPLETON AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 06:30 AM to 08:30 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	13	39	12	16	80	5	66	25	19	115	9	25	3	9	46	21	88	23	18	150	391
Percent	16.3	48.8	15.0	20.0		4.3	57.4	21.7	16.5		19.6	54.3	6.5	19.6		14.0	58.7	15.3	12.0		
08:15 Volume	5	13	3	6	27	0	22	5	5	32	4	6	2	2	14	5	25	5	5	40	113
Peak Factor																					0.865
High Int.	08:15 AM																				
Volume	5	13	3	6	27	08:00 AM					08:00 AM					08:00 AM					
Peak Factor	0.741										0.821					0.798					



Attachment F - Trip Generation and Transportation Demand Management

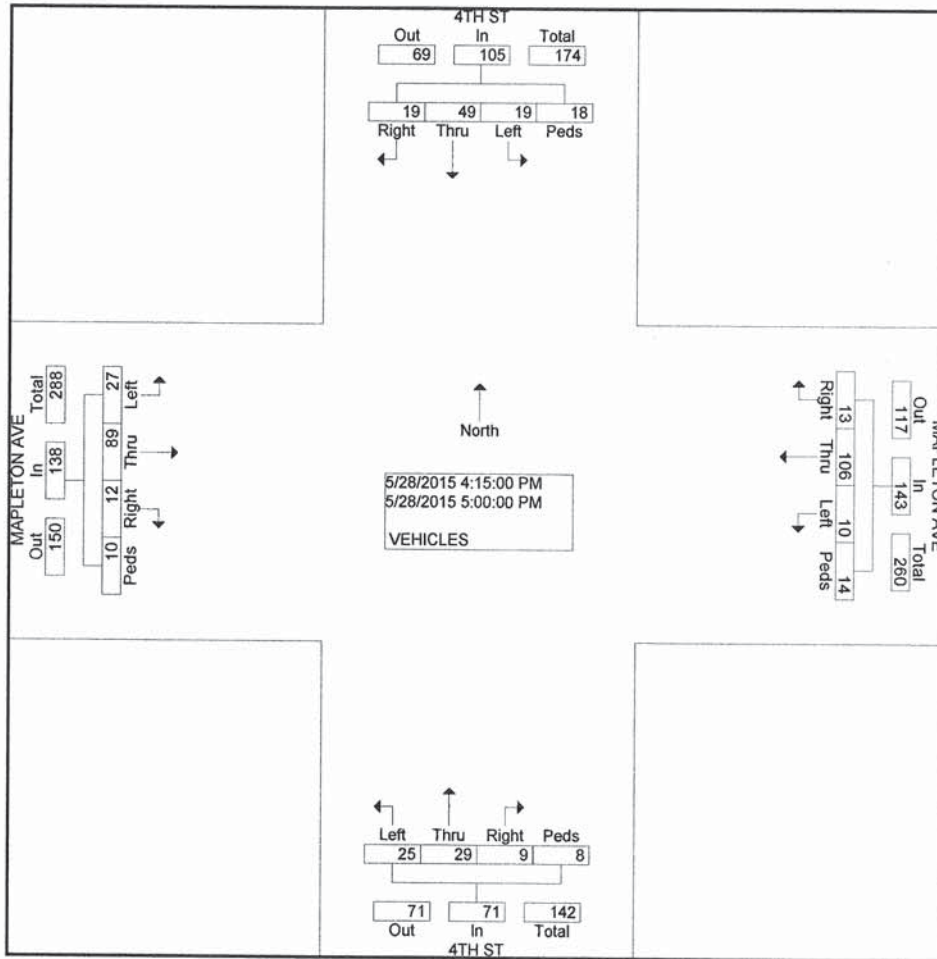
COUNTER MEASURES INC.

1889 YORK ST
DENVER, COLORADO
303-333-7409

N/S STREET: 4TH ST
E/W STREET: MAPLETON AVE
CITY: BOULDER
COUNTY: BOULDER

File Name : 4THSMAPL3
Site Code : 00000001
Start Date : 5/28/2015
Page No : 2

Start Time	4TH ST Southbound					MAPLETON AVE Westbound					4TH ST Northbound					MAPLETON AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	19	49	19	18	105	10	106	13	14	143	25	29	9	8	71	27	89	12	10	138	457
Percent	18.1	46.7	18.1	17.1		7.0	74.1	9.1	9.8		35.2	40.8	12.7	11.3		19.6	64.5	8.7	7.2		
05:00 Volume	4	12	2	12	30	2	35	1	8	46	6	4	1	1	12	7	25	3	3	38	126
Peak Factor																					0.907
High Int.	04:45 PM																				
Volume	4	19	6	2	31	05:00 PM					04:15 PM					05:00 PM					
Peak Factor	0.847										0.777										0.908



Attachment F - Trip Generation and Transportation Demand Management

COUNTER MEASURES INC.

1889 YORK ST
DENVER, COLORADO
303-333-7409

N/S STREET: 4TH ST
E/W STREET: MAXWELL AVE
CITY: BOULDER
COUNTY: BOULDER

File Name : 4THSMAXW3
Site Code : 00000002
Start Date : 5/28/2015
Page No : 1

Groups Printed- VEHICLES

Start Time	4TH ST Southbound				MAXWELL AVE Westbound				4TH ST Northbound				MAXWELL AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	2	1	3	0	6	2	5	1	2	0	1	0	0	0	1	24
06:45 AM	0	2	6	1	1	10	0	2	4	6	2	0	1	0	1	5	41
Total	0	4	7	4	1	16	2	7	5	8	2	1	1	0	1	6	65
07:00 AM	0	6	4	1	0	7	2	3	0	9	1	2	0	0	0	7	42
07:15 AM	0	1	7	4	1	9	1	2	2	8	1	2	0	0	0	5	43
07:30 AM	0	9	4	1	1	10	2	2	6	5	1	1	0	0	1	0	43
07:45 AM	1	13	5	0	4	12	1	3	5	7	5	2	3	6	2	2	71
Total	1	29	20	6	6	38	6	10	13	29	8	7	3	6	3	14	199
08:00 AM	0	16	4	1	0	8	0	6	8	17	2	0	2	3	1	8	76
08:15 AM	0	18	8	0	0	16	0	3	4	7	6	0	1	4	2	6	75
Total	0	34	12	1	0	24	0	9	12	24	8	0	3	7	3	14	151
04:00 PM	1	9	2	1	3	2	0	3	3	14	1	1	6	21	5	1	73
04:15 PM	0	17	2	0	2	7	0	0	3	16	3	0	5	19	2	4	80
04:30 PM	2	16	0	0	2	3	0	4	1	7	5	1	4	13	5	3	66
04:45 PM	2	22	1	4	3	2	2	6	2	16	6	2	7	15	4	2	96
Total	5	64	5	5	10	14	2	13	9	53	15	4	22	68	16	10	315
05:00 PM	3	11	3	1	1	3	1	2	1	10	2	1	6	22	5	0	72
05:15 PM	0	10	1	5	2	2	2	3	1	14	0	0	5	5	9	6	65
05:30 PM	1	11	2	1	1	3	0	4	0	11	1	1	1	10	1	6	54
05:45 PM	0	8	0	0	2	0	1	7	3	15	3	0	0	9	0	4	52
Total	4	40	6	7	6	8	4	16	5	50	6	2	12	46	15	16	243
Grand Total	10	171	50	23	23	100	14	55	44	164	39	14	41	127	38	60	973
Apprch %	3.9	67.3	19.7	9.1	12.0	52.1	7.3	28.6	16.9	62.8	14.9	5.4	15.4	47.7	14.3	22.6	
Total %	1.0	17.6	5.1	2.4	2.4	10.3	1.4	5.7	4.5	16.9	4.0	1.4	4.2	13.1	3.9	6.2	

Attachment F - Trip Generation and Transportation Demand Management

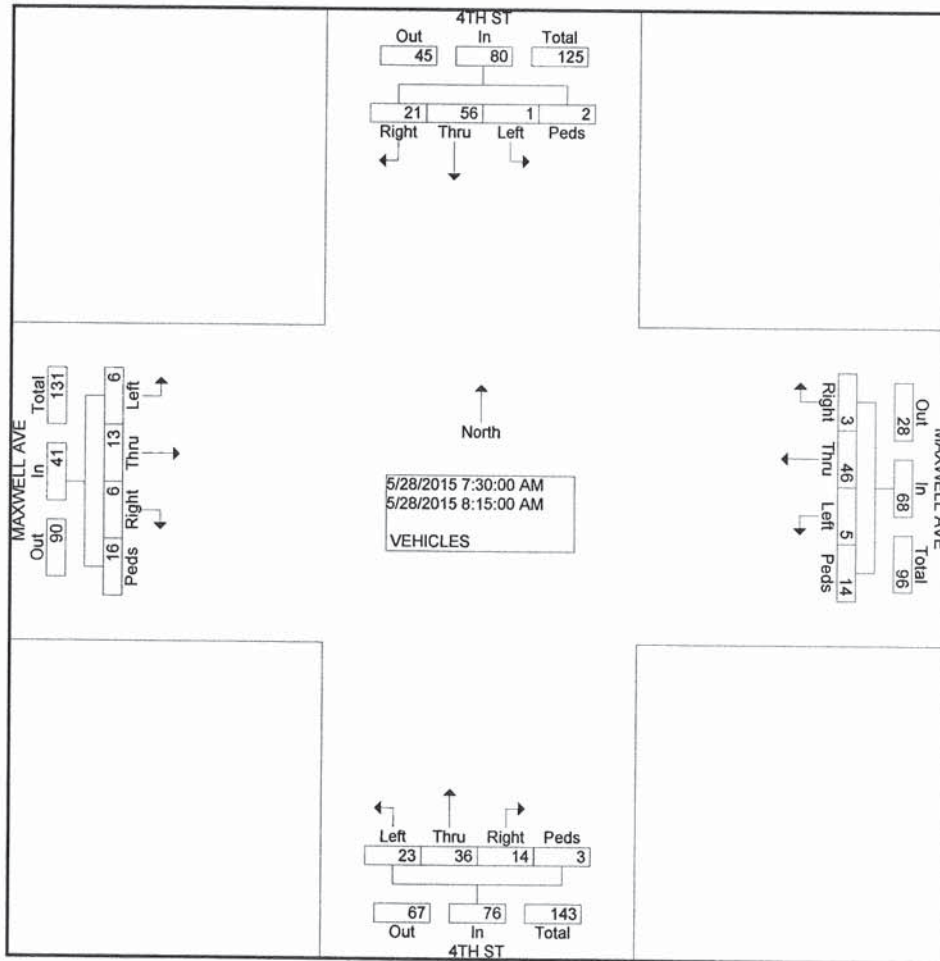
COUNTER MEASURES INC.

1889 YORK ST
DENVER, COLORADO
303-333-7409

N/S STREET: 4TH ST
E/W STREET: MAXWELL AVE
CITY: BOULDER
COUNTY: BOULDER

File Name : 4THSMAXW3
Site Code : 00000002
Start Date : 5/28/2015
Page No : 2

Start Time	4TH ST Southbound					MAXWELL AVE Westbound					4TH ST Northbound					MAXWELL AVE Eastbound					Int. Total			
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total				
Peak Hour From 06:30 AM to 08:30 AM - Peak 1 of 1																								
Intersection	07:30 AM																							
Volume	1	56	21	2	80	5	46	3	14	68	23	36	14	3	76	6	13	6	16	41	265			
Percent	1.3	70.0	26.3	2.5		7.4	67.6	4.4	20.6		30.3	47.4	18.4	3.9		14.6	31.7	14.6	39.0					
08:00 Volume	0	16	4	1	21	0	8	0	6	14	8	17	2	0	27	2	3	1	8	14	76			
Peak Factor	0.872																							
High Int.	08:15 AM																							
Volume	0	18	8	0	26	07:45 AM	4	12	1	3	20	08:00 AM	8	17	2	0	27	08:00 AM	2	3	1	8	14	
Peak Factor	0.769					0.850					0.704					0.732								



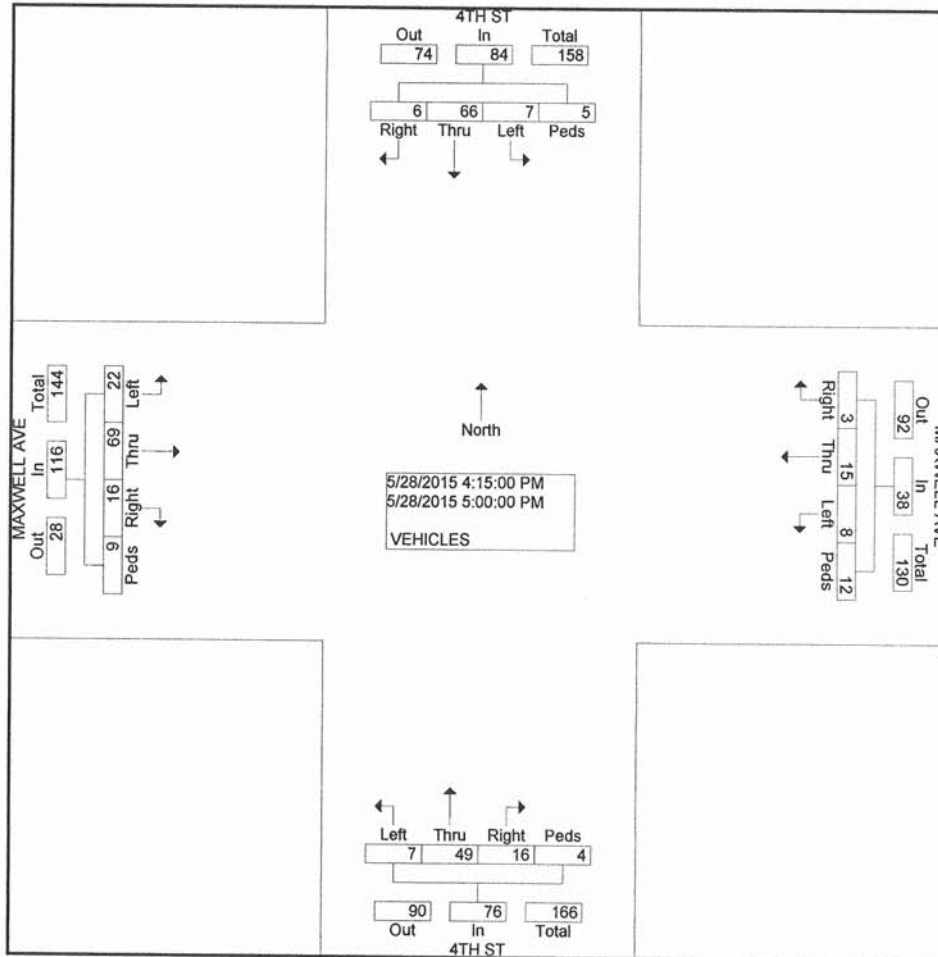
Attachment F - Trip Generation and Transportation Demand Management
COUNTER MEASURES INC.

1889 YORK ST
 DENVER, COLORADO
 303-333-7409

N/S STREET: 4TH ST
 E/W STREET: MAXWELL AVE
 CITY: BOULDER
 COUNTY: BOULDER

File Name : 4THSMAXW3
 Site Code : 00000002
 Start Date : 5/28/2015
 Page No : 2

Start Time	4TH ST Southbound					MAXWELL AVE Westbound					4TH ST Northbound					MAXWELL AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	7	66	6	5	84	8	15	3	12	38	7	49	16	4	76	22	69	16	9	116	314
Percent	8.3	78.6	7.1	6.0		21.1	39.5	7.9	31.6		9.2	64.5	21.1	5.3		19.0	59.5	13.8	7.8		
04:45 Volume	2	22	1	4	29	3	2	2	6	13	2	16	6	2	26	7	15	4	2	28	96
Peak Factor																					0.818
High Int. Volume	04:45 PM																				
Peak Factor	2	22	1	4	29	3	2	2	6	13	2	16	6	2	26	6	22	5	0	33	0.879
	0.724					0.731					0.731										



Attachment F - Trip Generation and Transportation Demand Management

COUNTER MEASURES INC.

1889 YORK ST
DENVER, COLORADO
303-333-7409

N/S STREET: HOSPITAL ACCESS
E/W STREET: MAPLETON AVE
CITY: BOULDER
COUNTY: BOULDER

File Name : HOSPMAPL
Site Code : 00000020
Start Date : 5/28/2015
Page No : 1

Groups Printed- VEHICLES

Start Time	HOSPITAL ACCESS Southbound				MAPLETON AVE Westbound				Northbound				MAPLETON AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	0	7	0	3	1	1	0	0	0	0	0	6	0	0	18
06:45 AM	1	0	0	4	0	8	6	1	0	0	0	2	0	19	0	0	41
Total	1	0	0	11	0	11	7	2	0	0	0	2	0	25	0	0	59
07:00 AM	0	0	2	9	0	15	5	2	0	0	0	1	0	16	0	0	50
07:15 AM	3	0	0	8	0	3	4	1	0	0	0	3	0	20	0	0	42
07:30 AM	0	0	0	1	0	12	5	2	0	0	0	2	2	23	0	0	47
07:45 AM	1	0	1	5	0	17	5	0	0	0	0	1	0	38	0	0	68
Total	4	0	3	23	0	47	19	5	0	0	0	7	2	97	0	0	207
08:00 AM	0	0	0	6	0	14	10	1	0	0	0	3	0	41	0	0	75
08:15 AM	3	0	0	9	0	22	5	0	0	0	0	1	1	33	0	0	74
Total	3	0	0	15	0	36	15	1	0	0	0	4	1	74	0	0	149
04:00 PM	4	0	1	3	0	35	1	0	0	0	0	4	1	21	0	1	71
04:15 PM	3	0	0	5	0	35	3	0	0	0	0	2	0	27	0	0	75
04:30 PM	2	0	1	4	0	36	2	0	0	0	0	6	0	26	0	0	77
04:45 PM	2	0	0	5	0	27	2	0	0	0	0	2	1	27	0	0	66
Total	11	0	2	17	0	133	8	0	0	0	0	14	2	101	0	1	289
05:00 PM	3	0	1	12	0	41	2	0	0	0	0	1	2	33	0	0	95
05:15 PM	2	0	1	7	0	41	2	0	0	0	0	1	0	25	0	0	79
05:30 PM	1	0	1	6	0	34	1	0	0	0	0	4	0	16	0	0	63
05:45 PM	2	0	0	8	0	38	0	0	0	0	0	2	0	25	0	0	75
Total	8	0	3	33	0	154	5	0	0	0	0	8	2	99	0	0	312
Grand Total	27	0	8	99	0	381	54	8	0	0	0	35	7	396	0	1	1016
Apprch %	20.1	0.0	6.0	73.9	0.0	86.0	12.2	1.8	0.0	0.0	0.0	100.0	1.7	98.0	0.0	0.2	
Total %	2.7	0.0	0.8	9.7	0.0	37.5	5.3	0.8	0.0	0.0	0.0	3.4	0.7	39.0	0.0	0.1	

Attachment F - Trip Generation and Transportation Demand Management

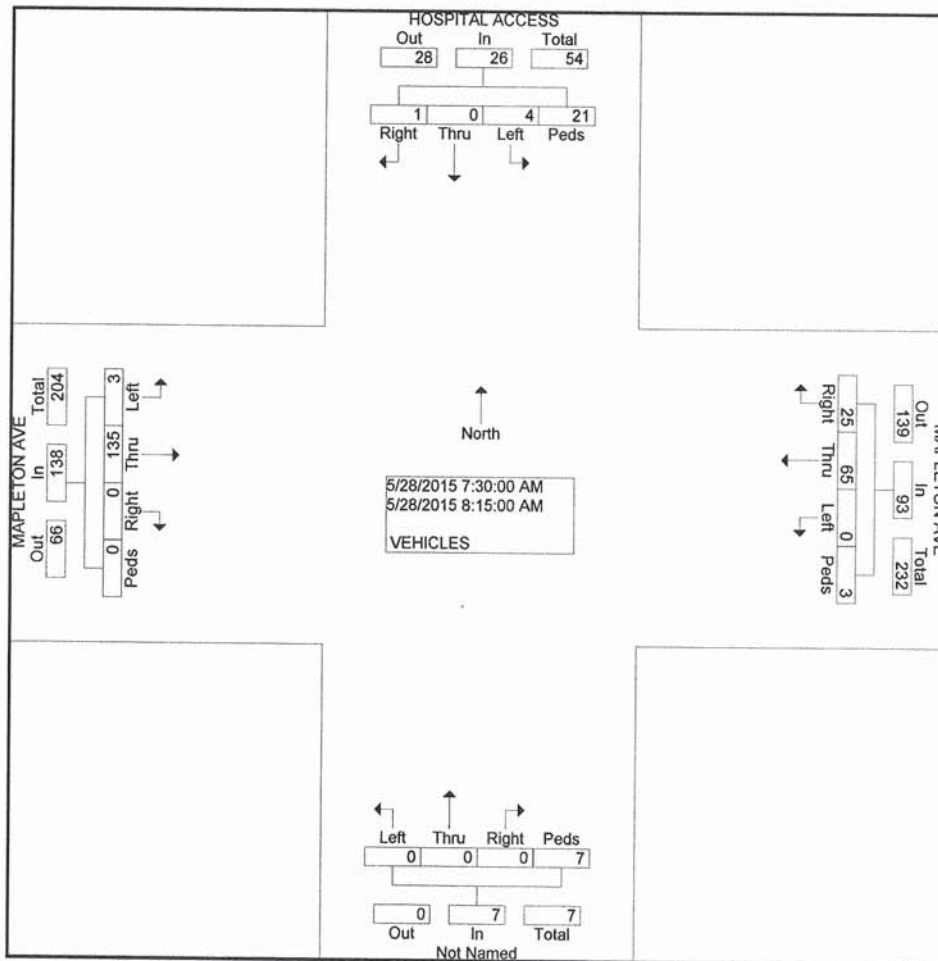
COUNTER MEASURES INC.

1889 YORK ST
DENVER, COLORADO
303-333-7409

N/S STREET: HOSPITAL ACCESS
E/W STREET: MAPLETON AVE
CITY: BOULDER
COUNTY: BOULDER

File Name : HOSPMAPL
Site Code : 0000020
Start Date : 5/28/2015
Page No : 2

Start Time	HOSPITAL ACCESS Southbound					MAPLETON AVE Westbound					Northbound					MAPLETON AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 06:30 AM to 08:30 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	4	0	1	21	26	0	65	25	3	93	0	0	0	7	7	3	135	0	0	138	264
Percent	15.4	0.0	3.8	80.8		0.0	69.9	26.9	3.2		0.0	0.0	0.0	100.0		2.2	97.8	0.0	0.0		
08:00 Volume	0	0	0	6	6	0	14	10	1	25	0	0	0	3	3	0	41	0	0	41	75
Peak Factor	0.880																				
High Int.	08:15 AM																				
Volume	3	0	0	9	12	0	22	5	0	27	0	0	0	3	3	0	41	0	0	41	
Peak Factor	0.542					0.861					0.583					0.841					



Attachment F - Trip Generation and Transportation Demand Management

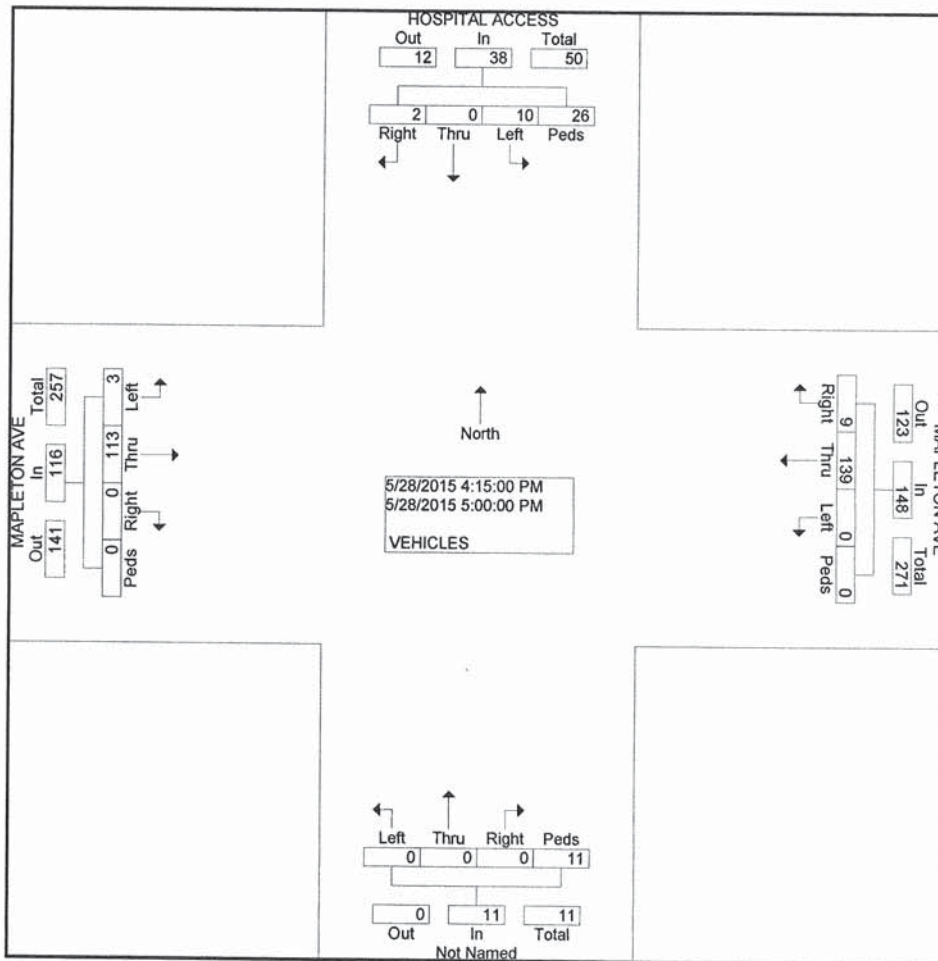
COUNTER MEASURES INC.

1889 YORK ST
DENVER, COLORADO
303-333-7409

N/S STREET: HOSPITAL ACCESS
E/W STREET: MAPLETON AVE
CITY: BOULDER
COUNTY: BOULDER

File Name : HOSPMAPL
Site Code : 0000020
Start Date : 5/28/2015
Page No : 2

Start Time	HOSPITAL ACCESS Southbound					MAPLETON AVE Westbound					Northbound					MAPLETON AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	10	0	2	26	38	0	139	9	0	148	0	0	0	11	11	3	113	0	0	116	313
Percent	26.3	0.0	5.3	68.4		0.0	93.9	6.1	0.0		0.0	0.0	0.0	100.0		2.6	97.4	0.0	0.0		
05:00 Volume	3	0	1	12	16	0	41	2	0	43	0	0	0	1	1	2	33	0	0	35	95
Peak Factor	0.824																				
High Int. Volume	05:00 PM																				
Peak Factor	0.594					0.860					0.458					0.829					



COUNTER MEASURES INC.

Location: MAPLETON AVE W/O 4TH ST
 City: BOULDER
 County: BOULDER
 Direction: EASTBOUND-WESTBOUND

1889 YORK ST
 DENVER, COLORADO 80206
 303-333-7409

Site Code: 052612

Start Time	27-May-15 Wed	EB	WB	Total
12:00 AM		2	8	10
01:00		3	5	8
02:00		2	2	4
03:00		1	4	5
04:00		7	6	13
05:00		9	12	21
06:00		52	42	94
07:00		116	68	184
08:00		156	108	264
09:00		153	134	287
10:00		150	148	298
11:00		182	131	313
12:00 PM		136	125	261
01:00		140	136	276
02:00		139	131	270
03:00		134	138	272
04:00		125	150	275
05:00		162	221	383
06:00		110	159	269
07:00		84	116	200
08:00		70	70	140
09:00		37	31	68
10:00		33	34	67
11:00		6	14	20
Total		2009	1993	4002
Percent		50.2%	49.8%	
AM Peak		11:00	10:00	11:00
Vol.		182	148	313
PM Peak		17:00	17:00	17:00
Vol.		162	221	383
Grand Total		2009	1993	4002
Percent		50.2%	49.8%	
ADT		Not Calculated		

COUNTER MEASURES INC.

Location: 3RD ST (HOSPITAL) N/O MAPLETON
 City: BOULDER
 County: BOULDER
 Direction: NORTHBOUND-SOUTHBOUND

1889 YORK ST
 DENVER, COLORADO 80206
 303-333-7409

Site Code: 052616

Start Time	27-May-15 Wed	NB	SB	Total
12:00 AM		1	1	2
01:00		0	0	0
02:00		2	2	4
03:00		0	0	0
04:00		0	0	0
05:00		2	2	4
06:00		8	6	14
07:00		26	24	50
08:00		27	22	49
09:00		30	27	57
10:00		38	32	70
11:00		28	23	51
12:00 PM		32	31	63
01:00		26	25	51
02:00		22	20	42
03:00		20	22	42
04:00		34	33	67
05:00		34	36	70
06:00		17	16	33
07:00		12	12	24
08:00		9	10	19
09:00		4	4	8
10:00		0	0	0
11:00		1	1	2
Total		373	349	722
Percent		51.7%	48.3%	
AM Peak		10:00	10:00	10:00
Vol.		38	32	70
PM Peak		16:00	17:00	17:00
Vol.		34	36	70
Grand Total		373	349	722
Percent		51.7%	48.3%	
ADT		Not Calculated		

COUNTER MEASURES INC.

Location: 4TH ST S/O MAXWELL AVE
 City: BOULDER
 County: BOULDER
 Direction: NORTHBOUND-SOUTHBOUND

1889 YORK ST
 DENVER, COLORADO 80206
 303-333-7409

Site Code: 052618

Start Time	27-May-15 Wed	NB	SB	Total
12:00 AM		7	3	10
01:00		1	1	2
02:00		1	1	2
03:00		0	3	3
04:00		4	4	8
05:00		3	2	5
06:00		16	10	26
07:00		56	41	97
08:00		90	76	166
09:00		92	84	176
10:00		114	109	223
11:00		98	84	182
12:00 PM		92	86	178
01:00		120	98	218
02:00		91	86	177
03:00		87	109	196
04:00		118	111	229
05:00		134	142	276
06:00		66	74	140
07:00		44	44	88
08:00		38	32	70
09:00		28	26	54
10:00		6	8	14
11:00		7	2	9
Total		1313	1236	2549
Percent		51.5%	48.5%	
AM Peak		10:00	10:00	10:00
Vol.		114	109	223
PM Peak		17:00	17:00	17:00
Vol.		134	142	276
Grand Total		1313	1236	2549
Percent		51.5%	48.5%	
ADT		Not Calculated		

COUNTER MEASURES INC.

Location: MAXWELL AVE W/O 4TH ST
 City: BOULDER
 County: BOULDER
 Direction: EASTBOUND-WESTBOUND

1889 YORK ST
 DENVER, COLORADO 80206
 303-333-7409

Site Code: 052613

Start Time	27-May-15 Wed	EB	WB	Total
12:00 AM		3	3	6
01:00		0	0	0
02:00		1	1	2
03:00		0	0	0
04:00		4	4	8
05:00		9	10	19
06:00		31	33	64
07:00		78	78	156
08:00		90	93	183
09:00		110	108	218
10:00		108	112	220
11:00		89	89	178
12:00 PM		106	104	210
01:00		86	84	170
02:00		130	122	252
03:00		112	106	218
04:00		130	124	254
05:00		131	124	255
06:00		46	46	92
07:00		26	26	52
08:00		6	6	12
09:00		15	16	31
10:00		2	4	6
11:00		4	4	8
Total		1317	1297	2614
Percent		50.4%	49.6%	
AM Peak		09:00	10:00	10:00
Vol.		110	112	220
PM Peak		17:00	16:00	17:00
Vol.		131	124	255
Grand Total		1317	1297	2614
Percent		50.4%	49.6%	
ADT		Not Calculated		

COUNTER MEASURES INC.

Location: MAPLETON HILL MED PLZ W/O 4TH
 City: BOULDER
 County: BOULDER
 Direction: EASTBOUND-WESTBOUND

1889 YORK ST
 DENVER, COLORADO 80206
 303-333-7409

Site Code: 052617

Start Time	27-May-15 Wed	EB	WB	Total
12:00 AM		0	0	0
01:00		0	0	0
02:00		0	0	0
03:00		0	0	0
04:00		0	0	0
05:00		0	0	0
06:00		3	4	7
07:00		8	6	14
08:00		15	16	31
09:00		61	54	115
10:00		46	49	95
11:00		39	50	89
12:00 PM		52	55	107
01:00		34	40	74
02:00		30	33	63
03:00		21	22	43
04:00		26	32	58
05:00		18	22	40
06:00		7	8	15
07:00		1	1	2
08:00		3	4	7
09:00		8	8	16
10:00		0	0	0
11:00		0	0	0
Total		372	404	776
Percent		47.9%	52.1%	
AM Peak		09:00	09:00	09:00
Vol.		61	54	115
PM Peak		12:00	12:00	12:00
Vol.		52	55	107
Grand Total		372	404	776
Percent		47.9%	52.1%	
ADT		Not Calculated		

COUNTER MEASURES INC.

Location: CONCORD AVE ACCESS W/O 4TH ST
 City: BOULDER
 County: BOULDER
 Direction: EASTBOUND-WESTBOUND

1889 YORK ST
 DENVER, COLORADO 80206
 303-333-7409

Site Code: 052615

Start Time	27-May-15 Wed	EB	WB	Total
12:00 AM		1	1	2
01:00		0	0	0
02:00		0	0	0
03:00		0	0	0
04:00		0	0	0
05:00		0	0	0
06:00		0	0	0
07:00		6	7	13
08:00		5	6	11
09:00		4	4	8
10:00		6	6	12
11:00		2	2	4
12:00 PM		3	4	7
01:00		4	4	8
02:00		2	2	4
03:00		3	3	6
04:00		6	7	13
05:00		5	6	11
06:00		3	3	6
07:00		1	1	2
08:00		1	1	2
09:00		2	2	4
10:00		0	0	0
11:00		0	0	0
Total		54	59	113
Percent		47.8%	52.2%	
AM Peak		07:00	07:00	07:00
Vol.		6	7	13
PM Peak		16:00	16:00	16:00
Vol.		6	7	13
Grand Total		54	59	113
Percent		47.8%	52.2%	
ADT		Not Calculated		

Station No. 2416 - Mapleton Avenue East of Green Rock Drive Linear Regression Analysis

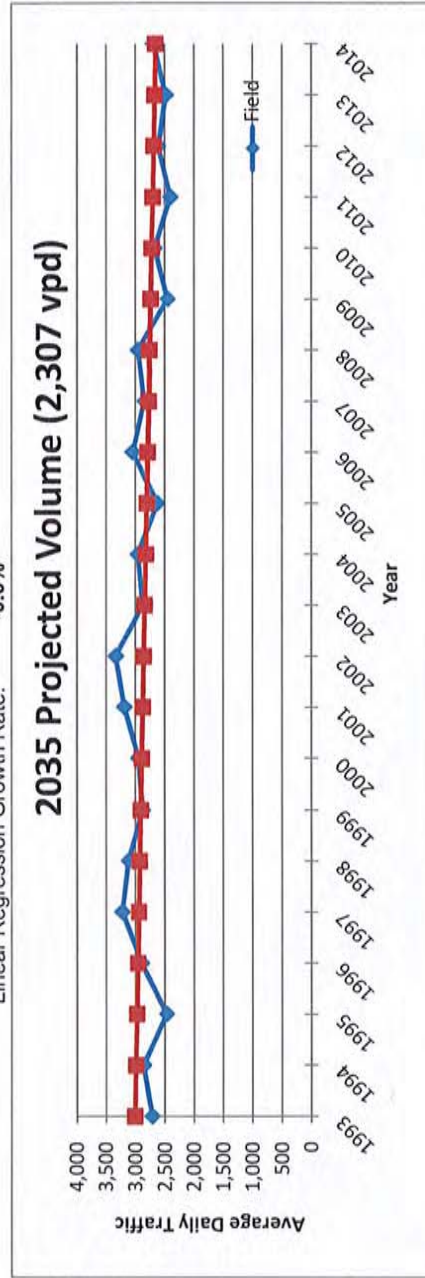
Year	Field	Regression
1993	2,717	3,011
1994	2,863	2,994
1995	2,475	2,977
1996	2,899	2,960
1997	3,229	2,944
1998	3,119	2,927
1999	2,881	2,910
2000	2,956	2,893
2001	3,196	2,877
2002	3,341	2,860
2003	2,879	2,843
2004	2,964	2,827
2005	2,636	2,810
2006	3,050	2,793
2007	2,852	2,776
2008	2,961	2,760
2009	2,459	2,743
2010	2,681	2,726
2011	2,412	2,709
2012	2,618	2,693
2013	2,485	2,676
2014	2,696	2,659
2035		2,307

Regression Statistics	
Multiple R	0.41510587
R Square	0.172312883
Adjusted R	0.130928527
Standard E	244.1871847
Observatio	22

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	248271.7383	248272	4.16372031	0.05472192
Residual	20	1192547.623	59627		
Total	21	1440819.362			

Coefficients						
	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%
Intercept	36382.27472	16440.6926	2.2129	0.03869353	2087.59101	70676.95844
X Variable	-16.74439112	8.205944683	-2.041	0.05472192	-33.861692	0.372909494
						-33.8617
						0.37291

Linear Regression Growth Rate: -0.6%



LEVEL OF SERVICE DEFINITIONS
From *Highway Capacity Manual*, Transportation Research Board, 2010

SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

LOS	<u>Average Vehicle Delay</u> sec/vehicle	<u>Operational Characteristics</u>
A	<10 seconds	Describes operations with low control delay, up to 10 sec/veh. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	10 to 20 seconds	Describes operations with control delay greater than 10 seconds and up to 20 sec/veh. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
C	20 to 35 seconds	Describes operations with control delay greater than 20 and up to 35 sec/veh. These higher delays may result from only fair progression, longer cycle length, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	35 to 55 seconds	Describes operations with control delay greater than 35 and up to 55 sec/veh. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	55 to 80 seconds	Describes operations with control delay greater than 55 and up to 80 sec/veh. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.
F	>80 seconds	Describes operations with control delay in excess of 80 sec/veh. This level, considered unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

HCM 2010 TWSC
3: 4th Street & East Site Access/Maxwell Avenue

Existing
AM Peak

Intersection

Int Delay, s/veh 2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	6	6	4	7	5	8	46	11	2	33	5
Future Vol, veh/h	4	6	6	4	7	5	8	46	11	2	33	5
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	7	7	5	9	6	10	56	13	2	40	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	138	137	43	137	133	63	46	0	0	70	0	0
Stage 1	48	48	-	82	82	-	-	-	-	-	-	-
Stage 2	90	89	-	55	51	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	833	754	1027	834	758	1002	1562	-	-	1531	-	-
Stage 1	965	855	-	926	827	-	-	-	-	-	-	-
Stage 2	917	821	-	957	852	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	816	748	1027	817	752	1002	1562	-	-	1531	-	-
Mov Cap-2 Maneuver	816	748	-	817	752	-	-	-	-	-	-	-
Stage 1	958	854	-	920	821	-	-	-	-	-	-	-
Stage 2	896	815	-	941	851	-	-	-	-	-	-	-





Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	9.4	0.9	0.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1562	-	-	853	834	1531	-	-
HCM Lane V/C Ratio	0.006	-	-	0.023	0.023	0.002	-	-
HCM Control Delay (s)	7.3	0	-	9.3	9.4	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 2010 AWSC
6: 4th Street & Mapleton Avenue

Existing
AM Peak

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	29	118	21	0	11	95	14	0	4	21	7
Future Vol, veh/h	0	29	118	21	0	11	95	14	0	4	21	7
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	34	139	25	0	13	112	16	0	5	25	8
Number of Lanes	0	1	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8.7	8.4	7.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	12%	100%	0%	9%	17%
Vol Thru, %	66%	0%	85%	79%	43%
Vol Right, %	22%	0%	15%	12%	39%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	29	139	120	46
LT Vol	4	29	0	11	8
Through Vol	21	0	118	95	20
RT Vol	7	0	21	14	18
Lane Flow Rate	38	34	164	141	54
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.049	0.051	0.216	0.173	0.069
Departure Headway (Hd)	4.681	5.374	4.766	4.419	4.566
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	766	670	757	813	786
Service Time	2.703	3.074	2.466	2.437	2.587
HCM Lane V/C Ratio	0.05	0.051	0.217	0.173	0.069
HCM Control Delay	7.9	8.4	8.8	8.4	7.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.8	0.6	0.2

HCM 2010 AWSC
6: 4th Street & Mapleton Avenue

Existing
AM Peak

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	8	20	18
Future Vol, veh/h	0	8	20	18
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	9	24	21
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	7.9
HCM LOS	A

HCM 2010 TWSC

9: Mapleton Avenue & South Site Access

Existing
AM Peak

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Vol, veh/h	2	165	101	16	3	2
Future Vol, veh/h	2	165	101	16	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	181	111	18	3	2

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	129	0	120
Stage 1	-	-	120
Stage 2	-	-	186
Critical Hdwy	4.12	-	6.22
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.318
Pot Cap-1 Maneuver	1457	-	931
Stage 1	-	-	905
Stage 2	-	-	846
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1457	-	931
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	905
Stage 2	-	-	844

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1457	-	-	-	766
HCM Lane V/C Ratio	0.002	-	-	-	0.007
HCM Control Delay (s)	7.5	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 2010 AWSC
13: 9th Street & Maxwell Avenue

Existing
AM Peak

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			↕				↕				↕	
Traffic Vol, veh/h	0	29	15	19	0	20	30	4	0	10	214	13
Future Vol, veh/h	0	29	15	19	0	20	30	4	0	10	214	13
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	39	20	25	0	27	40	5	0	13	285	17
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.9	9.9	11.9
HCM LOS	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	46%	37%	2%
Vol Thru, %	90%	24%	56%	96%
Vol Right, %	5%	30%	7%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	237	63	54	357
LT Vol	10	29	20	6
Through Vol	214	15	30	341
RT Vol	13	19	4	10
Lane Flow Rate	316	84	72	476
Geometry Grp	1	1	1	1
Degree of Util (X)	0.44	0.138	0.121	0.627
Departure Headway (Hd)	5.009	5.913	6.06	4.84
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	724	608	593	752
Service Time	3.009	3.934	4.081	2.84
HCM Lane V/C Ratio	0.436	0.138	0.121	0.633
HCM Control Delay	11.9	9.9	9.9	15.6
HCM Lane LOS	B	A	A	C
HCM 95th-tile Q	2.3	0.5	0.4	4.5

HCM 2010 AWSC
13: 9th Street & Maxwell Avenue

Existing
AM Peak

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	6	341	10
Future Vol, veh/h	0	6	341	10
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	8	455	13
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	15.6
HCM LOS	C

HCM 2010 TWSC
16: 9th Street & Mapleton Avenue

Existing
AM Peak




Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	28	31	90	4	26	6	78	207	7	4	321	60
Future Vol, veh/h	28	31	90	4	26	6	78	207	7	4	321	60
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	40	117	5	34	8	101	269	9	5	417	78
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	963	947	456	1021	981	273	495	0	0	278	0	0
Stage 1	466	466	-	476	476	-	-	-	-	-	-	-
Stage 2	497	481	-	545	505	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	235	261	604	215	249	766	1069	-	-	1285	-	-
Stage 1	577	562	-	570	557	-	-	-	-	-	-	-
Stage 2	555	554	-	523	540	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	187	231	604	137	220	766	1069	-	-	1285	-	-
Mov Cap-2 Maneuver	187	231	-	137	220	-	-	-	-	-	-	-
Stage 1	512	559	-	506	495	-	-	-	-	-	-	-
Stage 2	455	492	-	389	537	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	28.1			24.4			2.3			0.1		
HCM LOS	D			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1069	-	-	344	232	1285	-	-				
HCM Lane V/C Ratio	0.095	-	-	0.563	0.202	0.004	-	-				
HCM Control Delay (s)	8.7	0	-	28.1	24.4	7.8	0	-				
HCM Lane LOS	A	A	-	D	C	A	A	-				
HCM 95th %tile Q(veh)	0.3	-	-	3.3	0.7	0	-	-				

HCM 2010 TWSC
20: 4th Street & Avista Surgery Center

Existing
AM Peak

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	1	54	39	1
Future Vol, veh/h	0	1	1	54	39	1
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	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	1	68	49	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	119	49	50	0	0
Stage 1	49	-	-	-	-
Stage 2	70	-	-	-	-
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	877	1020	1557	-	-
Stage 1	973	-	-	-	-
Stage 2	953	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	876	1020	1557	-	-
Mov Cap-2 Maneuver	876	-	-	-	-
Stage 1	973	-	-	-	-
Stage 2	952	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1557	-	1020	-	-
HCM Lane V/C Ratio	0.001	-	0.001	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 2010 TWSC 3: 4th Street & East Site Access/Maxwell Avenue

Existing
PM Peak

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	11	10	4	4	4	7	49	7	7	68	2
Future Vol, veh/h	5	11	10	4	4	4	7	49	7	7	68	2
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	13	12	5	5	5	8	58	8	8	80	2
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	181	180	81	188	177	62	82	0	0	66	0	0
Stage 1	98	98	-	78	78	-	-	-	-	-	-	-
Stage 2	83	82	-	110	99	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	781	714	979	772	717	1003	1515	-	-	1536	-	-
Stage 1	908	814	-	931	830	-	-	-	-	-	-	-
Stage 2	925	827	-	895	813	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	768	707	979	746	710	1003	1515	-	-	1536	-	-
Mov Cap-2 Maneuver	768	707	-	746	710	-	-	-	-	-	-	-
Stage 1	903	810	-	926	826	-	-	-	-	-	-	-
Stage 2	911	823	-	866	809	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.6			9.6			0.8			0.7		
HCM LOS	A			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1515	-	-	805	801	1536	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.038	0.018	0.005	-	-				
HCM Control Delay (s)	7.4	0	-	9.6	9.6	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 2010 AWSC
6: 4th Street & Mapleton Avenue
Existing
PM Peak

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	14	79	9	0	10	138	20	0	31	28	7
Future Vol, veh/h	0	14	79	9	0	10	138	20	0	31	28	7
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	16	93	11	0	12	162	24	0	36	33	8
Number of Lanes	0	1	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8.6	9.1	8.4
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	47%	100%	0%	6%	24%
Vol Thru, %	42%	0%	90%	82%	46%
Vol Right, %	11%	0%	10%	12%	30%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	66	14	88	168	76
LT Vol	31	14	0	10	18
Through Vol	28	0	79	138	35
RT Vol	7	0	9	20	23
Lane Flow Rate	78	16	104	198	89
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.104	0.026	0.145	0.249	0.116
Departure Headway (Hd)	4.83	5.605	5.03	4.527	4.653
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	741	639	712	793	769
Service Time	2.867	3.337	2.762	2.556	2.688
HCM Lane V/C Ratio	0.105	0.025	0.146	0.25	0.116
HCM Control Delay	8.4	8.5	8.6	9.1	8.3
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0.5	1	0.4

HCM 2010 AWSC
6: 4th Street & Mapleton Avenue

Existing
PM Peak

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	18	35	23
Future Vol, veh/h	0	18	35	23
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	21	41	27
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.3
HCM LOS	A




HCM 2010 TWSC

9: Mapleton Avenue & South Site Access

Existing
PM Peak

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	97	179	13	5	0
Future Vol, veh/h	1	97	179	13	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	111	206	15	6	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	221	0	327
Stage 1	-	-	213
Stage 2	-	-	114
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1348	-	667
Stage 1	-	-	823
Stage 2	-	-	911
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1348	-	666
Mov Cap-2 Maneuver	-	-	666
Stage 1	-	-	823
Stage 2	-	-	910

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1348	-	-	-	666
HCM Lane V/C Ratio	0.001	-	-	-	0.009
HCM Control Delay (s)	7.7	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 2010 AWSC
13: 9th Street & Maxwell Avenue

Existing
PM Peak

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			↕				↕				↕	
Traffic Vol, veh/h	0	42	20	22	0	36	25	15	0	21	378	12
Future Vol, veh/h	0	42	20	22	0	36	25	15	0	21	378	12
Peak Hour Factor	0.92	0.96	0.96	0.96	0.92	0.96	0.96	0.96	0.92	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	44	21	23	0	38	26	16	0	22	394	13
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.8	9.8	14.1
HCM LOS	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	50%	47%	2%
Vol Thru, %	92%	24%	33%	92%
Vol Right, %	3%	26%	20%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	411	84	76	304
LT Vol	21	42	36	5
Through Vol	378	20	25	280
RT Vol	12	22	15	19
Lane Flow Rate	428	88	79	317
Geometry Grp	1	1	1	1
Degree of Util (X)	0.567	0.142	0.13	0.437
Departure Headway (Hd)	4.871	5.85	5.902	4.97
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	745	615	609	728
Service Time	2.871	3.869	3.922	2.97
HCM Lane V/C Ratio	0.574	0.143	0.13	0.435
HCM Control Delay	14.1	9.8	9.8	11.8
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	3.6	0.5	0.4	2.2

HCM 2010 AWSC
13: 9th Street & Maxwell Avenue

Existing
PM Peak

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	5	280	19
Future Vol, veh/h	0	5	280	19
Peak Hour Factor	0.92	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	5	292	20
Number of Lanes	0	0	1	0




Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	11.8
HCM LOS	B

HCM 2010 TWSC
16: 9th Street & Mapleton Avenue
Existing
PM Peak

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	29	81	9	41	10	83	380	18	8	276	58
Future Vol, veh/h	27	29	81	9	41	10	83	380	18	8	276	58
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	31	85	9	43	11	87	400	19	8	291	61
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	949	932	321	980	952	409	352	0	0	419	0	0
Stage 1	338	338	-	584	584	-	-	-	-	-	-	-
Stage 2	611	594	-	396	368	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	240	266	720	229	259	642	1207	-	-	1140	-	-
Stage 1	676	641	-	498	498	-	-	-	-	-	-	-
Stage 2	481	493	-	629	621	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	187	239	720	168	233	642	1207	-	-	1140	-	-
Mov Cap-2 Maneuver	187	239	-	168	233	-	-	-	-	-	-	-
Stage 1	612	635	-	451	451	-	-	-	-	-	-	-
Stage 2	388	447	-	523	615	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	21.4			24.7			1.4			0.2		
HCM LOS	C			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1207	-	-	362	245	1140	-	-				
HCM Lane V/C Ratio	0.072	-	-	0.398	0.258	0.007	-	-				
HCM Control Delay (s)	8.2	0	-	21.4	24.7	8.2	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q(veh)	0.2	-	-	1.9	1	0	-	-				

HCM 2010 TWSC
21: 4th Street & Avista Surgery Center

Existing
PM Peak

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	9	8	50	68	6
Future Vol, veh/h	4	9	8	50	68	6
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	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	11	10	63	85	8
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	172	89	93	0	0	
Stage 1	89	-	-	-	-	
Stage 2	83	-	-	-	-	
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	818	969	1501	-	-	
Stage 1	934	-	-	-	-	
Stage 2	940	-	-	-	-	
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	812	969	1501	-	-	
Mov Cap-2 Maneuver	812	-	-	-	-	
Stage 1	934	-	-	-	-	
Stage 2	933	-	-	-	-	
Approach	EB	NB		SB		
HCM Control Delay, s	9	1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1501	-	915	-	-	
HCM Lane V/C Ratio	0.007	-	0.018	-	-	
HCM Control Delay (s)	7.4	0	9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

HCM 2010 TWSC 3: 4th Street & East Site Access/Maxwell Avenue

2018 Background
AM Peak

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	6	6	4	7	5	8	47	11	3	36	5
Future Vol, veh/h	4	6	6	4	7	5	8	47	11	3	36	5
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	7	7	5	9	6	10	57	13	4	44	6
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	145	144	47	146	141	64	50	0	0	71	0	0
Stage 1	54	54	-	84	84	-	-	-	-	-	-	-
Stage 2	91	90	-	62	57	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	824	747	1022	823	750	1000	1557	-	-	1529	-	-
Stage 1	958	850	-	924	825	-	-	-	-	-	-	-
Stage 2	916	820	-	949	847	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	806	740	1022	805	743	1000	1557	-	-	1529	-	-
Mov Cap-2 Maneuver	806	740	-	805	743	-	-	-	-	-	-	-
Stage 1	951	847	-	918	819	-	-	-	-	-	-	-
Stage 2	895	814	-	931	844	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.4			9.5			0.9			0.5		
HCM LOS	A			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1557	-	-	845	825	1529	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.023	0.024	0.002	-	-				
HCM Control Delay (s)	7.3	0	-	9.4	9.5	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 2010 AWSC
6: 4th Street & Mapleton Avenue

2018 Background
AM Peak

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	29	119	21	0	11	96	14	0	4	22	7
Future Vol, veh/h	0	29	119	21	0	11	96	14	0	4	22	7
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	34	140	25	0	13	113	16	0	5	26	8
Number of Lanes	0	1	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8.7	8.4	8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	12%	100%	0%	9%	18%
Vol Thru, %	67%	0%	85%	79%	45%
Vol Right, %	21%	0%	15%	12%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	29	140	121	49
LT Vol	4	29	0	11	9
Through Vol	22	0	119	96	22
RT Vol	7	0	21	14	18
Lane Flow Rate	39	34	165	142	58
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.051	0.051	0.219	0.175	0.074
Departure Headway (Hd)	4.697	5.39	4.783	4.435	4.592
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	763	668	754	810	781
Service Time	2.72	3.09	2.483	2.455	2.614
HCM Lane V/C Ratio	0.051	0.051	0.219	0.175	0.074
HCM Control Delay	8	8.4	8.8	8.4	8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.8	0.6	0.2

Intersection

Intersection Delay, s/veh

Intersection LOS




Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	9	22	18
Future Vol, veh/h	0	9	22	18
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	11	26	21
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8
HCM LOS	A

HCM 2010 TWSC

9: Mapleton Avenue & South Site Access

2018 Background
AM Peak

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	167	102	16	3	2
Future Vol, veh/h	2	167	102	16	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	184	112	18	3	2
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	130	0	-	0	309	121
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	188	-
Critical Hdwy	4.12	-	-	-	7.12	6.22
Critical Hdwy Stg 1	-	-	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-	6.12	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1455	-	-	-	643	930
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	814	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1455	-	-	-	642	930
Mov Cap-2 Maneuver	-	-	-	-	642	-
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	812	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.1		0		9.9	
HCM LOS					A	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1455	-	-	-	733	
HCM Lane V/C Ratio	0.002	-	-	-	0.007	
HCM Control Delay (s)	7.5	0	-	-	9.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

HCM 2010 AWSC
13: 9th Street & Maxwell Avenue

2018 Background
AM Peak

Intersection	
Intersection Delay, s/veh	13.6
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			↕				↕				↕	
Traffic Vol, veh/h	0	29	15	19	0	20	30	4	0	10	216	13
Future Vol, veh/h	0	29	15	19	0	20	30	4	0	10	216	13
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	39	20	25	0	27	40	5	0	13	288	17
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.9	9.9	12
HCM LOS	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	46%	37%	2%
Vol Thru, %	90%	24%	56%	96%
Vol Right, %	5%	30%	7%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	239	63	54	360
LT Vol	10	29	20	6
Through Vol	216	15	30	344
RT Vol	13	19	4	10
Lane Flow Rate	319	84	72	480
Geometry Grp	1	1	1	1
Degree of Util (X)	0.444	0.138	0.122	0.632
Departure Headway (Hd)	5.016	5.931	6.077	4.846
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	723	606	592	749
Service Time	3.016	3.951	4.097	2.846
HCM Lane V/C Ratio	0.441	0.139	0.122	0.641
HCM Control Delay	12	9.9	9.9	15.8
HCM Lane LOS	B	A	A	C
HCM 95th-tile Q	2.3	0.5	0.4	4.5

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	6	344	10
Future Vol, veh/h	0	6	344	10
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	8	459	13
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	15.8
HCM LOS	C

HCM 2010 TWSC
16: 9th Street & Mapleton Avenue

2018 Background
AM Peak




Intersection												
Int Delay, s/veh	6.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	28	31	91	4	26	6	79	209	7	4	324	61
Future Vol, veh/h	28	31	91	4	26	6	79	209	7	4	324	61
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	40	118	5	34	8	103	271	9	5	421	79
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	973	957	460	1031	991	276	500	0	0	281	0	0
Stage 1	471	471	-	481	481	-	-	-	-	-	-	-
Stage 2	502	486	-	550	510	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	231	258	601	211	246	763	1064	-	-	1282	-	-
Stage 1	573	560	-	566	554	-	-	-	-	-	-	-
Stage 2	552	551	-	519	538	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	183	227	601	133	217	763	1064	-	-	1282	-	-
Mov Cap-2 Maneuver	183	227	-	133	217	-	-	-	-	-	-	-
Stage 1	507	557	-	501	490	-	-	-	-	-	-	-
Stage 2	450	488	-	385	535	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	28.9			24.8			2.3			0.1		
HCM LOS	D			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1064	-	-	340	228	1282	-	-				
HCM Lane V/C Ratio	0.096	-	-	0.573	0.205	0.004	-	-				
HCM Control Delay (s)	8.7	0	-	28.9	24.8	7.8	0	-				
HCM Lane LOS	A	A	-	D	C	A	A	-				
HCM 95th %tile Q(veh)	0.3	-	-	3.4	0.7	0	-	-				

HCM 2010 TWSC
21: 4th Street & Avista Surgery Center

2018 Background
AM Peak

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	1	55	43	1
Future Vol, veh/h	1	1	1	55	43	1
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	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	1	69	54	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	125	54	55	0	0
Stage 1	54	-	-	-	-
Stage 2	71	-	-	-	-
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	870	1013	1550	-	-
Stage 1	969	-	-	-	-
Stage 2	952	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	869	1013	1550	-	-
Mov Cap-2 Maneuver	869	-	-	-	-
Stage 1	969	-	-	-	-
Stage 2	951	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1550	-	935	-	-
HCM Lane V/C Ratio	0.001	-	0.003	-	-
HCM Control Delay (s)	7.3	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 2010 TWSC 3: 4th Street & East Site Access/Maxwell Avenue

2018 Background
PM Peak

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	11	10	4	4	4	7	53	7	7	71	2
Future Vol, veh/h	5	11	10	4	4	4	7	53	7	7	71	2
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	13	12	5	5	5	8	62	8	8	84	2
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	189	188	85	197	185	66	86	0	0	71	0	0
Stage 1	101	101	-	83	83	-	-	-	-	-	-	-
Stage 2	88	87	-	114	102	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	771	707	974	762	709	998	1510	-	-	1529	-	-
Stage 1	905	811	-	925	826	-	-	-	-	-	-	-
Stage 2	920	823	-	891	811	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	757	699	974	736	701	998	1510	-	-	1529	-	-
Mov Cap-2 Maneuver	757	699	-	736	701	-	-	-	-	-	-	-
Stage 1	900	807	-	919	821	-	-	-	-	-	-	-
Stage 2	905	818	-	862	807	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.7			9.6			0.8			0.6		
HCM LOS	A			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1510	-	-	797	792	1529	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.038	0.018	0.005	-	-				
HCM Control Delay (s)	7.4	0	-	9.7	9.6	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 2010 AWSC
6: 4th Street & Mapleton Avenue

2018 Background
PM Peak

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	14	80	9	0	10	139	21	0	31	31	7
Future Vol, veh/h	0	14	80	9	0	10	139	21	0	31	31	7
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	16	94	11	0	12	164	25	0	36	36	8
Number of Lanes	0	1	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8.7	9.1	8.5
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	45%	100%	0%	6%	23%
Vol Thru, %	45%	0%	90%	82%	47%
Vol Right, %	10%	0%	10%	12%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	14	89	170	78
LT Vol	31	14	0	10	18
Through Vol	31	0	80	139	37
RT Vol	7	0	9	21	23
Lane Flow Rate	81	16	105	200	92
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.109	0.026	0.147	0.252	0.119
Departure Headway (Hd)	4.843	5.623	5.048	4.54	4.672
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	740	637	710	790	766
Service Time	2.878	3.356	2.782	2.571	2.706
HCM Lane V/C Ratio	0.109	0.025	0.148	0.253	0.12
HCM Control Delay	8.5	8.5	8.7	9.1	8.3
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.5	1	0.4

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	18	37	23
Future Vol, veh/h	0	18	37	23
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	21	44	27
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.3
HCM LOS	A

HCM 2010 TWSC

9: Mapleton Avenue & South Site Access

2018 Background
PM Peak

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↖	↗
Traffic Vol, veh/h	1	98	181	13	5	0
Future Vol, veh/h	1	98	181	13	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	113	208	15	6	0
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	223	0	-	0	331	216
Stage 1	-	-	-	-	216	-
Stage 2	-	-	-	-	115	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1346	-	-	-	664	824
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	910	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1346	-	-	-	663	824
Mov Cap-2 Maneuver	-	-	-	-	663	-
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	909	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.1		0		10.5	
HCM LOS					B	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1346	-	-	-	663	
HCM Lane V/C Ratio	0.001	-	-	-	0.009	
HCM Control Delay (s)	7.7	0	-	-	10.5	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0	

HCM 2010 AWSC
13: 9th Street & Maxwell Avenue

2018 Background
PM Peak

Intersection

Intersection Delay, s/veh	12.6
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			↕				↕				↕	
Traffic Vol, veh/h	0	42	20	22	0	36	25	15	0	21	382	12
Future Vol, veh/h	0	42	20	22	0	36	25	15	0	21	382	12
Peak Hour Factor	0.92	0.96	0.96	0.96	0.92	0.96	0.96	0.96	0.92	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	44	21	23	0	38	26	16	0	22	398	13
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.9	9.8	14.2
HCM LOS	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	50%	47%	2%
Vol Thru, %	92%	24%	33%	92%
Vol Right, %	3%	26%	20%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	415	84	76	307
LT Vol	21	42	36	5
Through Vol	382	20	25	283
RT Vol	12	22	15	19
Lane Flow Rate	432	88	79	320
Geometry Grp	1	1	1	1
Degree of Util (X)	0.573	0.143	0.13	0.442
Departure Headway (Hd)	4.878	5.869	5.921	4.978
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	744	613	607	729
Service Time	2.878	3.888	3.942	2.978
HCM Lane V/C Ratio	0.581	0.144	0.13	0.439
HCM Control Delay	14.2	9.9	9.8	11.9
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	3.7	0.5	0.4	2.3

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	5	283	19
Future Vol, veh/h	0	5	283	19
Peak Hour Factor	0.92	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	5	295	20
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	11.9
HCM LOS	B

HCM 2010 TWSC
16: 9th Street & Mapleton Avenue

2018 Background
PM Peak




Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	29	82	9	41	10	84	384	18	8	279	59
Future Vol, veh/h	27	29	82	9	41	10	84	384	18	8	279	59
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	31	86	9	43	11	88	404	19	8	294	62
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	959	942	325	991	964	414	356	0	0	423	0	0
Stage 1	342	342	-	591	591	-	-	-	-	-	-	-
Stage 2	617	600	-	400	373	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	237	263	716	225	255	638	1203	-	-	1136	-	-
Stage 1	673	638	-	493	494	-	-	-	-	-	-	-
Stage 2	477	490	-	626	618	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	184	236	716	164	228	638	1203	-	-	1136	-	-
Mov Cap-2 Maneuver	184	236	-	164	228	-	-	-	-	-	-	-
Stage 1	608	632	-	446	447	-	-	-	-	-	-	-
Stage 2	383	443	-	519	612	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	21.7			25.3			1.4			0.2		
HCM LOS	C			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1203	-	-	359	240	1136	-	-				
HCM Lane V/C Ratio	0.074	-	-	0.405	0.263	0.007	-	-				
HCM Control Delay (s)	8.2	0	-	21.7	25.3	8.2	0	-				
HCM Lane LOS	A	A	-	C	D	A	A	-				
HCM 95th %tile Q(veh)	0.2	-	-	1.9	1	0	-	-				

HCM 2010 TWSC
21: 4th Street & Avista Surgery Center

2018 Background
PM Peak

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	9	8	54	71	6
Future Vol, veh/h	4	9	8	54	71	6
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	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	11	10	68	89	8

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	181	93	96	0	0
Stage 1	93	-	-	-	-
Stage 2	88	-	-	-	-
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	808	964	1498	-	-
Stage 1	931	-	-	-	-
Stage 2	935	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	802	964	1498	-	-
Mov Cap-2 Maneuver	802	-	-	-	-
Stage 1	931	-	-	-	-
Stage 2	928	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1498	-	908	-	-
HCM Lane V/C Ratio	0.007	-	0.018	-	-
HCM Control Delay (s)	7.4	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC 3: 4th Street & East Site Access/Maxwell Avenue

2018 Total
AM Peak

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	12	12	4	12	6	12	48	11	4	37	5
Future Vol, veh/h	5	12	12	4	12	6	12	48	11	4	37	5
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	15	15	5	15	7	15	59	13	5	45	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	165	160	48	169	157	66	51	0	0	72	0	0
Stage 1	58	58	-	96	96	-	-	-	-	-	-	-
Stage 2	107	102	-	73	61	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	800	732	1021	795	735	998	1555	-	-	1528	-	-
Stage 1	954	847	-	911	815	-	-	-	-	-	-	-
Stage 2	898	811	-	937	844	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	774	722	1021	764	725	998	1555	-	-	1528	-	-
Mov Cap-2 Maneuver	774	722	-	764	725	-	-	-	-	-	-	-
Stage 1	944	844	-	902	807	-	-	-	-	-	-	-
Stage 2	866	803	-	905	841	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.5		9.7		1.2		0.6	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1555	-	-	833	791	1528	-	-
HCM Lane V/C Ratio	0.009	-	-	0.042	0.034	0.003	-	-
HCM Control Delay (s)	7.3	0	-	9.5	9.7	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 2010 AWSC
6: 4th Street & Mapleton Avenue

2018 Total
AM Peak

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	120	21	11	97	18	4	23	7	15	23	18
Future Vol, veh/h	29	120	21	11	97	18	4	23	7	15	23	18
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	141	25	13	114	21	5	27	8	18	27	21
Number of Lanes	1	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	8.8	8.5	8	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	12%	100%	0%	9%	27%
Vol Thru, %	68%	0%	85%	77%	41%
Vol Right, %	21%	0%	15%	14%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	34	29	141	126	56
LT Vol	4	29	0	11	15
Through Vol	23	0	120	97	23
RT Vol	7	0	21	18	18
Lane Flow Rate	40	34	166	148	66
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.053	0.051	0.221	0.183	0.085
Departure Headway (Hd)	4.728	5.404	4.797	4.447	4.655
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	758	665	750	808	770
Service Time	2.753	3.122	2.515	2.466	2.679
HCM Lane V/C Ratio	0.053	0.051	0.221	0.183	0.086
HCM Control Delay	8	8.4	8.9	8.5	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.8	0.7	0.3

HCM 2010 TWSC

9: Mapleton Avenue & South Site Access

2018 Total
AM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	167	102	17	4	2
Future Vol, veh/h	2	167	102	17	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	184	112	19	4	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	131	0	-	0	310 122
Stage 1	-	-	-	-	122 -
Stage 2	-	-	-	-	188 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1454	-	-	-	682 929
Stage 1	-	-	-	-	903 -
Stage 2	-	-	-	-	844 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1454	-	-	-	681 929
Mov Cap-2 Maneuver	-	-	-	-	681 -
Stage 1	-	-	-	-	901 -
Stage 2	-	-	-	-	844 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1454	-	-	-	748
HCM Lane V/C Ratio	0.002	-	-	-	0.009
HCM Control Delay (s)	7.5	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 2010 AWSC
13: 9th Street & Maxwell Avenue

2018 Total
AM Peak

Intersection

Intersection Delay, s/veh	14.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	18	20	20	33	4	11	216	13	6	344	12
Future Vol, veh/h	32	18	20	20	33	4	11	216	13	6	344	12
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	24	27	27	44	5	15	288	17	8	459	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.1	10.1	12.2	16.8
HCM LOS	B	B	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %		5%	46%	35%
Vol Thru, %		90%	26%	58%
Vol Right, %		5%	29%	7%
Sign Control		Stop	Stop	Stop
Traffic Vol by Lane		240	70	57
LT Vol		11	32	20
Through Vol		216	18	33
RT Vol		13	20	4
Lane Flow Rate		320	93	76
Geometry Grp		1	1	1
Degree of Util (X)		0.45	0.155	0.129
Departure Headway (Hd)		5.064	5.979	6.129
Convergence, Y/N		Yes	Yes	Yes
Cap		710	599	584
Service Time		3.095	4.025	4.177
HCM Lane V/C Ratio		0.451	0.155	0.13
HCM Control Delay		12.2	10.1	10.1
HCM Lane LOS		B	B	B
HCM 95th-tile Q		2.3	0.5	0.4

HCM 2010 TWSC
16: 9th Street & Mapleton Avenue

2018 Total
AM Peak

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	28	35	94	4	29	6	81	210	7	4	325	61
Future Vol, veh/h	28	35	94	4	29	6	81	210	7	4	325	61
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	45	122	5	38	8	105	273	9	5	422	79

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	983	964	462	1043	999	278	501	0	0	282	0	0
Stage 1	472	472	-	488	488	-	-	-	-	-	-	-
Stage 2	511	492	-	555	511	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	228	255	600	207	243	761	1063	-	-	1280	-	-
Stage 1	573	559	-	561	550	-	-	-	-	-	-	-
Stage 2	545	548	-	516	537	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	178	224	600	127	214	761	1063	-	-	1280	-	-
Mov Cap-2 Maneuver	178	224	-	127	214	-	-	-	-	-	-	-
Stage 1	506	556	-	495	486	-	-	-	-	-	-	-
Stage 2	439	484	-	376	534	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	31.3		25.8		2.4		0.1	
HCM LOS	D		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1063	-	-	334	223	1280	-
HCM Lane V/C Ratio	0.099	-	-	0.61	0.227	0.004	-
HCM Control Delay (s)	8.8	0	-	31.3	25.8	7.8	0
HCM Lane LOS	A	A	-	D	D	A	A
HCM 95th %tile Q(veh)	0.3	-	-	3.8	0.8	0	-

HCM 2010 TWSC
21: 4th Street & Avista Surgery Center

2018 Total
AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	1	3	3	56	43	1
Future Vol, veh/h	1	3	3	56	43	1
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	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	4	4	70	54	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	133	55	55	0	-	0
Stage 1	55	-	-	-	-	-
Stage 2	78	-	-	-	-	-
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	861	1012	1550	-	-	-
Stage 1	968	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	858	1012	1550	-	-	-
Mov Cap-2 Maneuver	858	-	-	-	-	-
Stage 1	965	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1550	-	969	-	-
HCM Lane V/C Ratio	0.002	-	0.005	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 2010 TWSC 3: 4th Street & East Site Access/Maxwell Avenue

2018 Total
PM Peak

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	19	15	4	12	5	15	54	7	8	72	3
Future Vol, veh/h	6	19	15	4	12	5	15	54	7	8	72	3
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	22	18	5	14	6	18	64	8	9	85	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	219	213	87	229	211	68	89	0	0	72	0	0
Stage 1	105	105	-	104	104	-	-	-	-	-	-	-
Stage 2	114	108	-	125	107	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	737	684	971	726	686	995	1506	-	-	1528	-	-
Stage 1	901	808	-	902	809	-	-	-	-	-	-	-
Stage 2	891	806	-	879	807	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	711	672	971	685	674	995	1506	-	-	1528	-	-
Mov Cap-2 Maneuver	711	672	-	685	674	-	-	-	-	-	-	-
Stage 1	890	803	-	891	799	-	-	-	-	-	-	-
Stage 2	860	796	-	834	802	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10		10.1		1.5		0.7	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1506	-	-	767	733	1528	-
HCM Lane V/C Ratio	0.012	-	-	0.061	0.034	0.006	-
HCM Control Delay (s)	7.4	0	-	10	10.1	7.4	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-

HCM 2010 AWSC
6: 4th Street & Mapleton Avenue

2018 Total
PM Peak

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	82	9	10	141	29	31	32	7	23	38	23
Future Vol, veh/h	14	82	9	10	141	29	31	32	7	23	38	23
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	96	11	12	166	34	36	38	8	27	45	27
Number of Lanes	1	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	8.7	9.2	8.5	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	44%	100%	0%	6%	27%
Vol Thru, %	46%	0%	90%	78%	45%
Vol Right, %	10%	0%	10%	16%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	70	14	91	180	84
LT Vol	31	14	0	10	23
Through Vol	32	0	82	141	38
RT Vol	7	0	9	29	23
Lane Flow Rate	82	16	107	212	99
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.112	0.026	0.151	0.267	0.13
Departure Headway (Hd)	4.885	5.657	5.084	4.544	4.728
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	732	632	704	790	757
Service Time	2.925	3.396	2.823	2.579	2.766
HCM Lane V/C Ratio	0.112	0.025	0.152	0.268	0.131
HCM Control Delay	8.5	8.5	8.7	9.2	8.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.5	1.1	0.4

HCM 2010 TWSC

9: Mapleton Avenue & South Site Access

2018 Total
PM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	98	181	15	7	0
Future Vol, veh/h	1	98	181	15	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	113	208	17	8	0
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	225	0	-	0	332	217
Stage 1	-	-	-	-	217	-
Stage 2	-	-	-	-	115	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1344	-	-	-	663	823
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	910	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1344	-	-	-	662	823
Mov Cap-2 Maneuver	-	-	-	-	662	-
Stage 1	-	-	-	-	818	-
Stage 2	-	-	-	-	910	-
Approach	EB	WB	SB			
HCM Control Delay, s	0.1	0	10.5			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1344	-	-	-	662	
HCM Lane V/C Ratio	0.001	-	-	-	0.012	
HCM Control Delay (s)	7.7	0	-	-	10.5	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0	

HCM 2010 AWSC
13: 9th Street & Maxwell Avenue

2018 Total
PM Peak

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	45	24	24	36	29	15	22	382	12	5	283	23
Future Vol, veh/h	45	24	24	36	29	15	22	382	12	5	283	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	47	25	25	38	30	16	23	398	13	5	295	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.1	10	14.9	12.2
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %		5%	48%	45%
Vol Thru, %		92%	26%	36%
Vol Right, %		3%	26%	19%
Sign Control		Stop	Stop	Stop
Traffic Vol by Lane		416	93	80
LT Vol		22	45	36
Through Vol		382	24	29
RT Vol		12	24	15
Lane Flow Rate		433	97	83
Geometry Grp		1	1	1
Degree of Util (X)		0.593	0.159	0.138
Departure Headway (Hd)		4.929	5.909	5.976
Convergence, Y/N		Yes	Yes	Yes
Cap		737	606	599
Service Time		2.94	3.954	4.022
HCM Lane V/C Ratio		0.588	0.16	0.139
HCM Control Delay		14.9	10.1	10
HCM Lane LOS		B	B	A
HCM 95th-tile Q		4	0.6	0.5

HCM 2010 TWSC
16: 9th Street & Mapleton Avenue
2018 Total
 PM Peak

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	33	85	9	46	10	89	385	18	9	280	59
Future Vol, veh/h	27	33	85	9	46	10	89	385	18	9	280	59
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	35	89	9	48	11	94	405	19	9	295	62

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	976	956	326	1009	978	415	357	0	0	424	0	0
Stage 1	344	344	-	603	603	-	-	-	-	-	-	-
Stage 2	632	612	-	406	375	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	230	258	715	219	250	637	1202	-	-	1135	-	-
Stage 1	671	637	-	486	488	-	-	-	-	-	-	-
Stage 2	468	484	-	622	617	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	173	229	715	155	222	637	1202	-	-	1135	-	-
Mov Cap-2 Maneuver	173	229	-	155	222	-	-	-	-	-	-	-
Stage 1	602	631	-	436	438	-	-	-	-	-	-	-
Stage 2	367	434	-	509	611	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.4		27		1.5		0.2	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1202	-	-	346	231	1135	-
HCM Lane V/C Ratio	0.078	-	-	0.441	0.296	0.008	-
HCM Control Delay (s)	8.2	0	-	23.4	27	8.2	0
HCM Lane LOS	A	A	-	C	D	A	A
HCM 95th %tile Q(veh)	0.3	-	-	2.2	1.2	0	-

HCM 2010 TWSC
21: 4th Street & Avista Surgery Center

2018 Total
PM Peak

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	4	11	10	55	72	6
Future Vol, veh/h	4	11	10	55	72	6
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	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	14	13	69	90	8

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	189	94	98	0	0
Stage 1	94	-	-	-	-
Stage 2	95	-	-	-	-
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	800	963	1495	-	-
Stage 1	930	-	-	-	-
Stage 2	929	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	793	963	1495	-	-
Mov Cap-2 Maneuver	793	-	-	-	-
Stage 1	922	-	-	-	-
Stage 2	929	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1495	-	911	-	-
HCM Lane V/C Ratio	0.008	-	0.021	-	-
HCM Control Delay (s)	7.4	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Travel Demand Management Plan

The Academy on Mapleton Hill

Boulder, Colorado

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Revised: March 21, 2018
(LSC #150520)



Introduction

This Travel Demand Management (TDM) Plan has been prepared for the Academy on Mapleton Hill redevelopment in Boulder, Colorado. The site is located north of Mapleton Avenue and west of 4th Street. The site is proposed to include Congregate Care consisting of about 93 independent senior living units, about ten memory care and 42 subacute rehab/skilled nursing rooms located in the proposed wellness center. The existing use and current structures on the site are approximately 184,355 square feet and were previously used as hospital/medical/dental office space. Vehicular access to the site is proposed from existing accesses to Mapleton Avenue and 4th Street. The location of the site with respect to the surrounding land uses and roadway system is shown in Figure 1. The conceptual site plan is shown in Figure 2. This TDM Plan supports a 10 to 15 percent alternative mode share.

Existing Alternate Modes Description

The following existing conditions contribute to the transportation demand management goals of the City of Boulder. The site is positioned to take advantage of some of these opportunities and to provide enhancements to take advantage of others.

Existing Transit Service

The Regional Transportation District (RTD) is the governing body responsible for fixed-route transit (public transportation) service throughout the Denver metropolitan area, including Boulder. Figure 3 shows the existing bus stops and transit routes within the vicinity of the site, including the following routes:

- 205
- 208
- N
- SKIP
- Y

These routes are a considerable distance from the site so the applicant is proposing a shuttle van or bus to transport employees to/from these routes. This is described in more detail later in this report.

Demand-responsive services are available to both seniors and persons with disabilities through Via (formerly Special Transit). Established in 1979, this non-profit provides safe and affordable rides in accessible buses to people with limited mobility. Rides are scheduled in advance, and have a 30-minute pick-up window. There will be an opportunity to share trips with VIA.

Existing Bicycle and Pedestrian Network

The City of Boulder maintains an extensive bicycle and pedestrian network throughout the City. Figure 4 shows bicycle and pedestrian routes within the vicinity of the site. In addition, many of the streets in the project vicinity have attached or detached sidewalks.

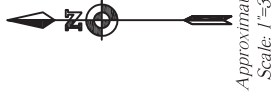


Figure 1
**Vicinity
Map**

The Academy on Mapleton Hill TDM Plan (LSC #150520)



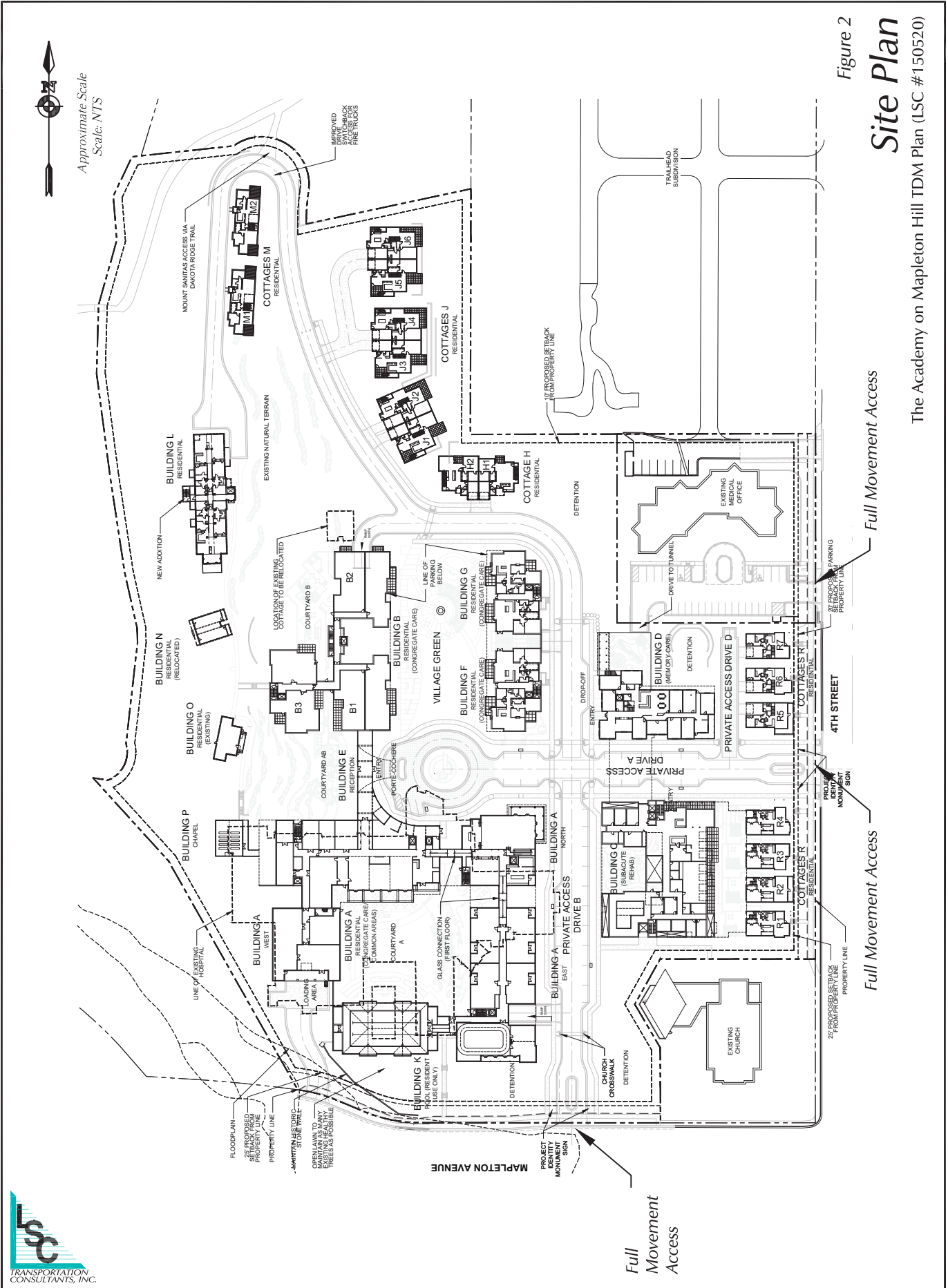
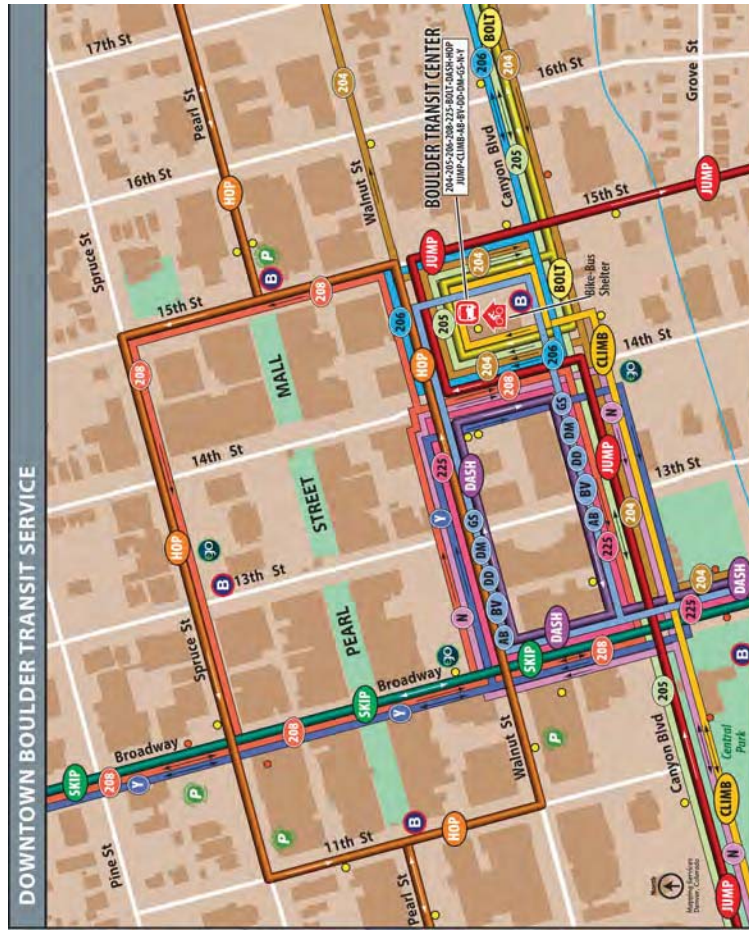
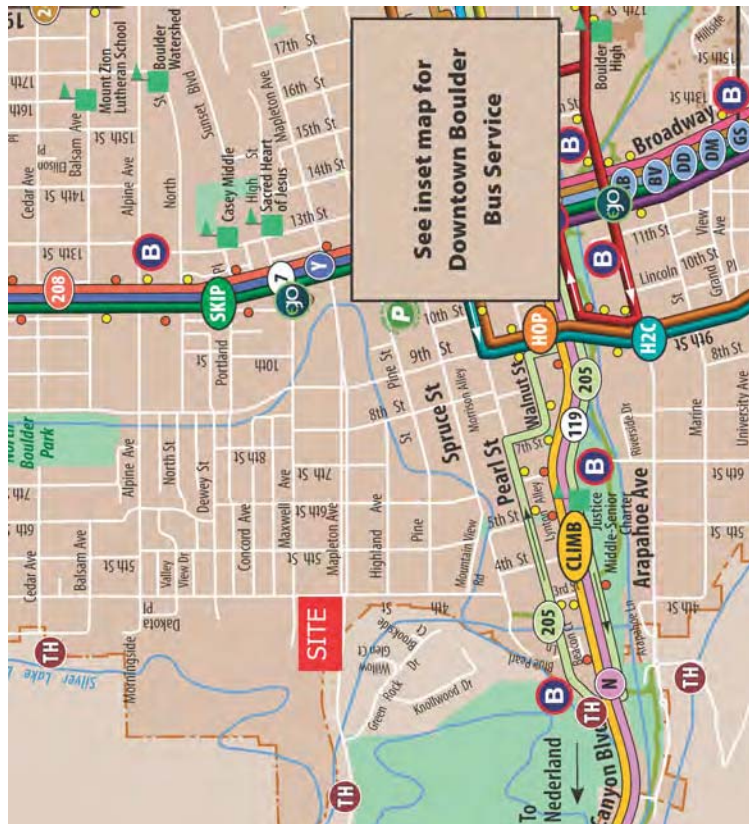


Figure 2

Site Plan

The Academy on Mapleton Hill TDM Plan (LSC #150520)








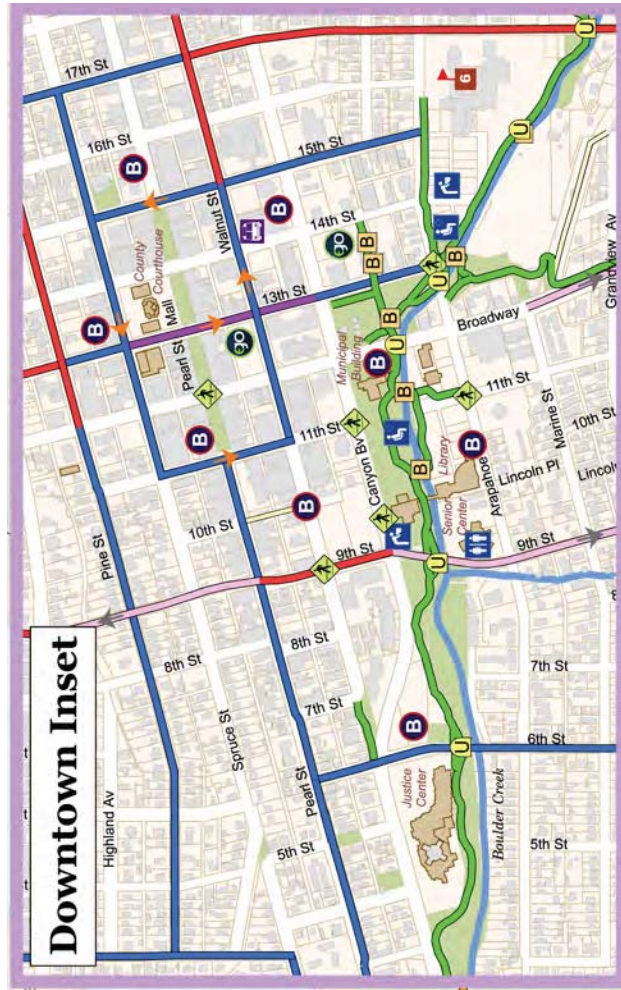
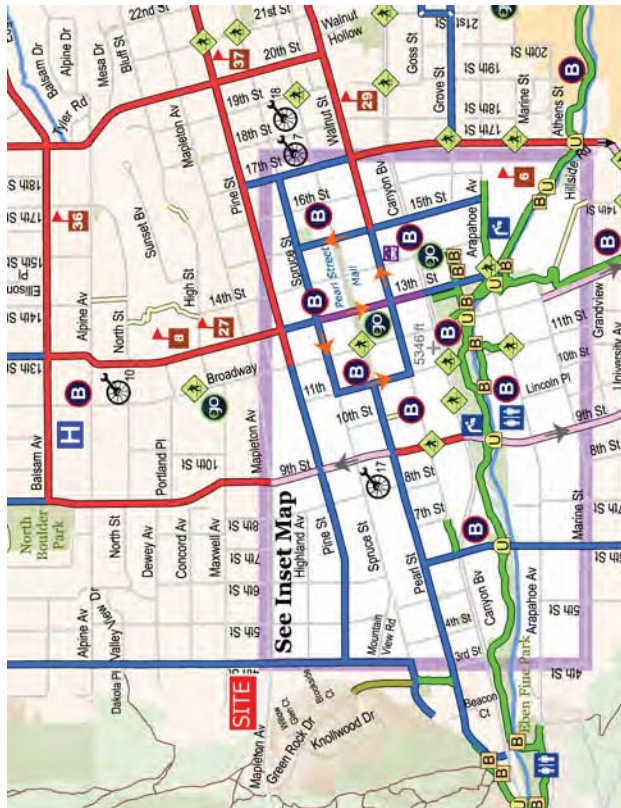
-  = Trail Head
-  = B-cycle Location
-  = eGo Car Share Location

Figure 3

Existing Bus Stops and Transit Routes

The Academy on Mapleton Hill TDM Plan (LSC #150520)



- LEGEND:**
- On-Street Bike Lane
 - Designated Bike Route
 - Multi-Use Path

- = Bridge
- = Underpass
- = Enhanced Pedestrian Crossing

- = B-cycle Location
- = eGo Car Share Location
- = Bike Shop

- = B-cycle Location
- = eGo Car Share Location
- = Bike Shop
- = The Academy on Mapleton Hill TDM Plan (LSC #150520)

Figure 4

Existing Bike and Pedestrian Routes

Transportation Demand Management (TDM) Strategy for Multi-Family Residential Units

The City of Boulder's draft residential development toolkit packages are shown below in Table 1. The site includes 93 independent senior living units. The site is located within the CTN Buffer. The "core elements" section of the table shows elements required of all new residential developments, including orientation packets, participation in TDM evaluation programs, and pedestrian, bike, and transit enhancements.

Two "package elements" are available under City of Boulder standards, Package A and Package B. Package B appears to be the most advantageous for the site, requiring the creation of an alternative transportation subsidy fund, a car share subsidy, a bike share subsidy, meeting or exceeding the short-term and long-term bicycle parking requirement, and the consideration of managing of on-street parking and unbundled parking.

Table 2 shows the actions that the Academy on Mapleton Hill developer intends to take to increase the percentage of alternative travel modes utilized by the site. An alternative travel mode reduction of 10 to 15 percent is expected due to the site's proposed land use and location.

Transportation Demand Management (TDM) Strategy for Commercial Space

The City of Boulder's draft commercial development toolkit packages are shown below in Table 3. The site includes about ten memory care and 42 subacute rehab/skilled nursing rooms located in the proposed wellness center. The site is expected to have about 80 full-time equivalent employees working two 12-hour shifts. The site is located within a half mile of the CTN Buffer. The "core elements" section of the table shows elements required of all new commercial developments, including meeting the short- and long-term bicycle parking code; pedestrian and bicycle enhancements; consideration of showers and changing facilities; and establishing a transportation information center.

Three "package elements" are available under City of Boulder standards, Packages A, B, and C. Based on the existing alternate modes available around the site, Package A is the most advantageous for the site, requiring the establishment of a BECO bus pass participation program for employees of the site and the existing Avista Surgery Center.

Table 4 shows the actions that the Academy on Mapleton Hill developer intends to take to fulfill the intent of the Site Review and TDM Plan processes.

Table 1 City of Boulder Residential Development Toolkit Packages									
TDM Toolkit Element		Residential Toolkit Packages							
		Single Family ≤10 Units		Single Family 11 or More Units		Multi-Family ≤10 Units		Multi-Family 11 or More Units	
		Pkg A	Pkg B	Pkg A	Pkg B	Pkg A	Pkg B	Pkg A	Pkg B
CORE ELEMENTS	Orientation Packets	✓	✓	✓	✓	✓	✓	✓	✓
	Evaluation	✓	✓	✓	✓	✓	✓	✓	✓
	Pedestrian Enhancements	✓	✓	✓	✓	✓	✓	✓	✓
	Bike Enhancements	✓	✓	✓	✓	✓	✓	✓	✓
	Transit Enhancements	✓	✓	✓	✓	✓	✓	✓	✓
PACKAGE ELEMENTS	Alternative Transportation Subsidy Fund	✓			✓	✓			✓
	Carshare Subsidy		✓		✓		✓		✓
	Bikeshare Subsidy		✓		✓		✓		✓
	NECO Pass Program Participation			✓				✓	
MULTI-FAMILY ELEMENTS	Meet Short-Term Bicycle Parking Code					✓	✓	✓	✓
	Exceed Short-Term Bicycle Parking Code						✓		✓
	Meet Long-Term Bicycle Parking Code					✓	✓	✓	✓
	Exceed Long-Term Bicycle Parking Code						✓		✓
	Managed On-Street Parking					✓	✓	✓	✓
	Unbundled Parking						✓		✓

Table 2
The Academy on Mapleton Hill TDM Plan - Residential

TDM Toolkit Element		Actions for Package B
CORE ELEMENTS	Orientation Packets	An orientation packet will be provided to each new resident which includes brochures, maps, and other resources to inform residents of their transportation options. This packet will include RTD bus information, the City of Boulder bicycle and pedestrian map (or similar), and information on special events. This packet will be provided initially by the developer at the time of sale or by a lessor thereafter.
	Evaluation	Through sales or lease agreement, the site's residents will agree to participate in annual on-line or paper surveys regarding their use and satisfaction with transportation demand management programs. The evaluation is expected to be administered by the City of Boulder using Survey Monkey or similar on-line tools. The developer will secure agreement to participate, with the expectation that 10-20% of residents will actually participate based on typical survey return rates. The City of Boulder will be responsible for data analysis and summarization.
	Pedestrian Enhancements	The site currently has connectivity to the existing sidewalks on 4th Street, Mapleton Avenue, and Maxwell Avenue.
	Bike Enhancements	4th Street is a designated bike route adjacent to the site.
	Transit Enhancements	Information about transit service will be provided in the orientation packets, also described above. The applicant will provide a private on-call shuttle bus for residents with regularly scheduled trips to various destinations and will establish an electric vehicle car-sharing program for residents, including charging stations on-site.
PACKAGE ELEMENTS	Alternative Transportation Subsidy Fund	The applicant proposes to create an alternative transportation subsidy fund, provide a private on-call shuttle bus for residents with regular scheduled trips to various destinations, and plans to establish an electric vehicle car-sharing program and charging stations on-site. The alternative transportation subsidy fund will be based on \$250 per resident per year for a total of three years or \$68,250.
	Carshare Subsidy	The alternative transportation subsidy fund being proposed by the applicant is detailed above.
	Bikeshare Subsidy	The alternative transportation subsidy fund being proposed by the applicant is detailed above.
MULTI-FAMILY ELEMENTS	Meet Short-Term Bicycle Parking	The applicant is providing 36 short-term bicycle parking spaces compared to 23 being required by Code. Eight of these spaces will be available to the commercial use/employees.
	Meet Long-Term Bicycle Parking	The applicant is providing 76 long-term secured bicycle parking spaces compared to 69 being required by Code. Thirty of these spaces will be available to the commercial use/employees.
	Vehicle Parking	The applicant has prepared a parking management plan. Parking is proposed to be unbundled.

Table 3
Commercial Development Toolkit Matrix of Packages
Business Development - Developer

TDM Toolkit Element		Commercial Toolkit Packages - Multiple Business/Developer									
		Within CTN Buffer			Outside CTN Buffer			CAGID	Uni-Hill		
		Pkg A	Pkg B	Pkg C	Pkg A	Pkg B	Pkg C	Pkg A	Pkg A	Pkg B	Pkg C
CORE ELEMENTS	Meet Short-Term Bicycle Parking Code	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Meet Long-Term Bicycle Parking Code	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Ratio of MOV Mode Share	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Pedestrian Enhancements	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Bike Enhancements	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Showers - Conditional	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Changing Facilities - Conditional	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Transportation Information Center/ Access/Employee Transportation Coordinator (ETC) Network	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PACKAGE ELEMENTS	Transit Enhancements - Conditional		✓	✓		✓	✓			✓	✓
	Business Eco Pass Program (BECO Pass) - 3 years	✓			✓			✓*	✓		
	Alternative Transportation Subsidy Fund		✓			✓				✓	
	Lease Requirements for BECO Pass - 3 years			✓			✓				✓
	Managed Off-Street Parking - Conditional	✓	✓	✓	✓	✓	✓				

CTN = community transportation network, and refers to a set of high-frequency bus routes defined by the City of Boulder.

*Note: Business Eco Pass already provided by RTD for Uni-Hill.

Source: City of Boulder, 2011.

Table 4
The Academy on Mapleton Hill TDM Plan - Commercial

TDM Toolkit Element		Outside of CTN Buffer (located just over one-half mile from Buffer) Package A
CORE ELEMENTS	Evaluation	Through sales or lease agreement, the site's residents will agree to participate in annual on-line or paper surveys regarding their use and satisfaction with transportation demand management programs. The evaluation is expected to be administered by the City of Boulder using Survey Monkey or similar on-line tools. The developer will secure agreement to participate, with the expectation that 10-20% of residents will actually participate based on typical survey return rates. The City of Boulder will be responsible for data analysis and summarization.
	Meet Short-Term Bicycle Parking Code	The applicant is providing 36 short-term bicycle parking spaces compared to 23 being required by Code. Eight of these spaces will be available to the commercial use/employees.
	Meet Long-Term Bicycle Parking Code	The applicant is providing 76 long-term secured bicycle parking spaces compared to 69 being required by Code. Thirty of these spaces will be available to the commercial use/ employees.
	Ratio of MOV Mode Share	The site will include ridesharing information in its employee orientation packets. This may include eGo Car sharing, B-Cycle bike sharing, and/or DRCOG's RideArrangers. The nearest existing eGO car share site is east of the site at Broadway/Maxwell Avenue. The nearest B-Cycle location is south of the site at 6th/Canyon Boulevard. The applicant proposes to establish an electric vehicle car-sharing program for residents and employees, including charging stations on-site, and provide a private on-call shuttle bus for residents and employees with regularly scheduled trips to various destinations, including nearby bus stops.
	Pedestrian Enhancements	The site currently has connectivity to the existing sidewalks on 4th Street, Mapleton Avenue, and Maxwell Avenue.
	Bike Enhancements	4th Street is a designated bike route adjacent to the site.
	Showers - Conditional	The existing buildings have showers/changing facilities which will be available to employees.
	Changing Facilities - Conditional	The existing buildings have showers/changing facilities which will be available to employees.
	Transportation Information Center/ Access/Employee Transportation Coordinator (ETC) Network	The site will include transportation information in its employee packets/employee orientation process. The information will also be available in interior brochure racks within the building. The developer proposes to provide an on-site employee transportation coordinator (ETC).
PACKAGE ELEMENTS	BECO Pass Participation	The project proposes to participate in the BECO Pass Program for employees of the site and of the existing Avista Surgery Center. A shuttle bus will be provided at shift changes to transfer employees between the site and nearby bus stops. Coordination will be needed with City staff to determine the appropriate contribution level.
	Managed Off-Street Parking - Conditional	The applicant has prepared a parking management plan for the site.