



CITY OF MIDDLETON

P O Box 487
1103 W MAIN ST, MIDDLETON, ID 83644
208-585-3133, FAX: 208-585-9601
WWW.MIDDLETON.ID.GOV

Planning & Zoning Department
Master Land Use Application

Fee Paid: \$ 4,500 PP
Application Accepted by: 3/15/21
Date Application Accepted: RIS

Still need \$575 Comp plan + \$3000 Floodplain. Possibly DM + \$1000.

OWNER/APPLICANT:

Epic Development 208-724-6239 jarronlangston@gmail.com
Name Phone Email
1831 E Overland Rd Meridian ID 83642
Mailing Address City State Zip Code

REPRESENTATIVE:

Jarron Langston 208-724-6239 jarronlangston@gmail.com
Name Phone Email
1831 E Overland Rd Meridian ID 83642
Mailing Address City State Zip Code

- PUBLIC HEARINGS*
Annexation and Zoning
Rezone
Vacate Right-of-Way
Comprehensive Plan Map or Text Amendment
PUBLI... HEARINGS*
Development Agreement
Ordinance Amendment
Special Use Permit
Variance
MISC. APPLICATIONS
Design Review***
Preliminary Plat**
Final Plat**
Construction Plans***
MISC. APPLICATIONS
Lot Line Adjustment***
Floodplain***
Time Extension***
Approach Permit***

* Public Hearings: a neighborhood meeting is required before filing an application...
** Public Meetings: Individuals have a right to observe, but not comment...
*** Administratively: reviewed and approved by the City Engineer and Zoning Official.

Subdivision or Project Name: Creekside Terrace Subdivision Phase 1

Site Address: NW Corner of Concord and Hawthorne Total Acres: 34

Tax Parcel No(s): R1795301000,R1795300000,R1795200000,R1795201200,R1795500000,R1795400000,R1795201000,R1795201100

Existing Zoning: R-4 Proposed Zoning: R-4

Floodplain Zone: Hillside (grades exceeding 10%):

Jarron Langston
Printed Name

03/08/2021
Date

Jarron Langston
Signature



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Planning & Zoning Department
Preliminary Plat Checklist



Please submit all items listed below. Applications missing the following items will be deemed incomplete, **and the application will not be processed.**

Applicant	Description	Staff
✓ EPIC	Completed and signed Master Land Use Application	
EPIC	Fee <i>- coming in the mail from out of state</i>	
EPIC	Narrative fully describing the proposed project. Additionally: <ul style="list-style-type: none"> • Please indicate whether a variance or special use permit is being requested along with the preliminary plat. • Describe requirements imposed by any Development Agreement, Covenants or other commitments. • Describe any anticipated adverse impacts on adjoining property. • Describe how the request is consistent with the Middleton Comprehensive Plan. 	
✓ EDM	Vicinity Map	
✓ EDM	Proposed Preliminary Plat (3 full-size paper copies & 1 electronic full-size copy provided on a USB)	
✓ EDM	Drainage Calculations - preliminary	
✓ EPIC	Title Report/Commitment (Schedule B)	
✓ EDM	Preliminary Plat must comply with Middleton City Code 5-4-4 <i>See Attachment</i>	
EPIC	Warranty Deed showing proof of ownership	
EPIC	If owner is not the applicant, then representative must provide a letter showing the owner's authorization for representative to submit the application.	
EPIC	Two sets of adhesive mailing labels containing the names and addresses of property owners within 300 feet of the perimeter boundary of the subject property. Contact Canyon County Plat Room at (208) 455-6016 for a list of landowners.	
EPIC	Copy of neighborhood meeting notice, sign-in sheet, and minutes summarizing discussion	
EPIC	Traffic Impact Study if residential subdivision with more than 25 dwelling units.	
EPIC	Electronic copy of entire application on USB	



Creekside Terrace Sub – Narrative

March 8, 2021

To: City Of Middleton Planning & Zoning

Creekside Terrace will be a Single Family Home development consisting of 121 building lots. The project includes a total of 34 acres and will boast over 15 acres of Open Space with Ponds, Parks, Gazebos, Picnic Areas and will be leaving the beautiful Willowcreek and surrounding natural and mature landscape untouched. It is our goal to deliver to the city an affordable community that offers the Idaho Life Style. With prices on the rise we feel it crucial that there be residential development that offers an affordable solution for those who are just getting into home ownership or maybe want to downsize. We want to offer this solution with a high quality home product and supporting community.

Creekside Terrace was originally approved back in 2006 & 2007 but due to the economy and recession the project was never completed. It's our privilege to be bringing this project back to life!

There is an existing and active Development Agreement that we are working through the details with the city of Middleton Planning and Zoning and that Development Agreement outlines the community presented in this Preliminary Plat submittal. In addition to this Development Agreement we have agreed to pay the city \$500,000 dollars towards the future 9th Street Bridge, along with the future right-of-way required for that extension.

We understand the impact a community like this has on the current streets and schools in the city. As part of this agreement we will be making improvements to both Concord and Hawthorne and building those to city specifications. We will also be building our portion of 9th Street that will serve as an East/West Collector providing improved connectivity in the future.

As a project collectively we have already been annexed into the city and been rezoned to R-4. We are following those parameters as laid out in this Preliminary Plat application and looks forward to providing a very quality community to the city of Middleton.

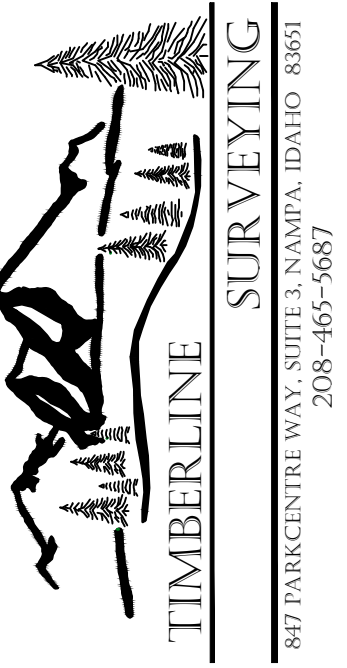
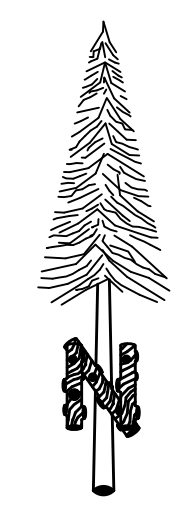
Thank you!

Jarron Langston

Jarron Langston and the Epic Development Team

1831 E Overland Rd – Meridian Idaho 83642

PRELIMINARY PLAT CREEKSIDE TERRACE SUBDIVISION



**PRELIMINARY PLAT
CREEKSIDE TERRACE
SUBDIVISION**

CLIENT: Y STREET CAPITAL
JOB NUMBER: 22008
DATE: 11/8/2022

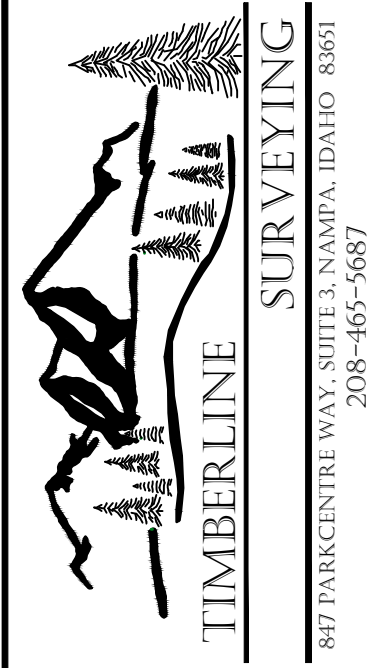
**CREEKSIDE TERRACE SUBDIVISION
MIDDLETON, IDAHO**

OWNER/DEVELOPER:
Y STREET CAPITAL
24 E MAIN STREET
AMERICAN FORK, ID 84003
CONTACT: HECO, JESSE (208) 812-2062

NO.	DATE	BY	DESCRIPTION

SCALE: 1" = 40'
SHEET NUMBER: 2 OF 5

PRELIMINARY PLAT CREEKSIDE TERRACE SUBDIVISION



TIMBERLINE SURVEYING
847 PARK CENTRE WAY, SUITE 113, NAMPA, IDAHO 83601
208-865-5687

**PRELIMINARY PLAT
CREEKSIDE TERRACE SUBDIVISION**

OWNER/DEVELOPER:
Y STREET CAPITAL
24 E MAIN STREET
AMERICAN FORK, ID 84003
CONTACT: HECO, JESSE (208) 842-2062

FOR NUMBER: 22008
DATE: 11/08/2022
DRAWN BY: DAA
CHECKED BY: KHC

CREEKSIDE TERRACE SUBDIVISION
MIDDLETON, IDAHO

OWNER/DEVELOPER:
Y STREET CAPITAL
24 E MAIN STREET
AMERICAN FORK, ID 84003
CONTACT: HECO, JESSE (208) 842-2062

NO.	DATE	BY	DESCRIPTION

SCALE: 1" = 40'
SHEET NUMBER: 3 OF 5

R1851710000
POWDER RIVER SUB HOA
0 N POWDER RIVER DR
MIDDLETON, ID 83644

R1818050000
CRIST KELLY J
835 WILLOW DR
MIDDLETON, ID 83644

R1818050100
HURLMANN JOSEPHINE D
801 WILLOW DR
MIDDLETON, ID 83644

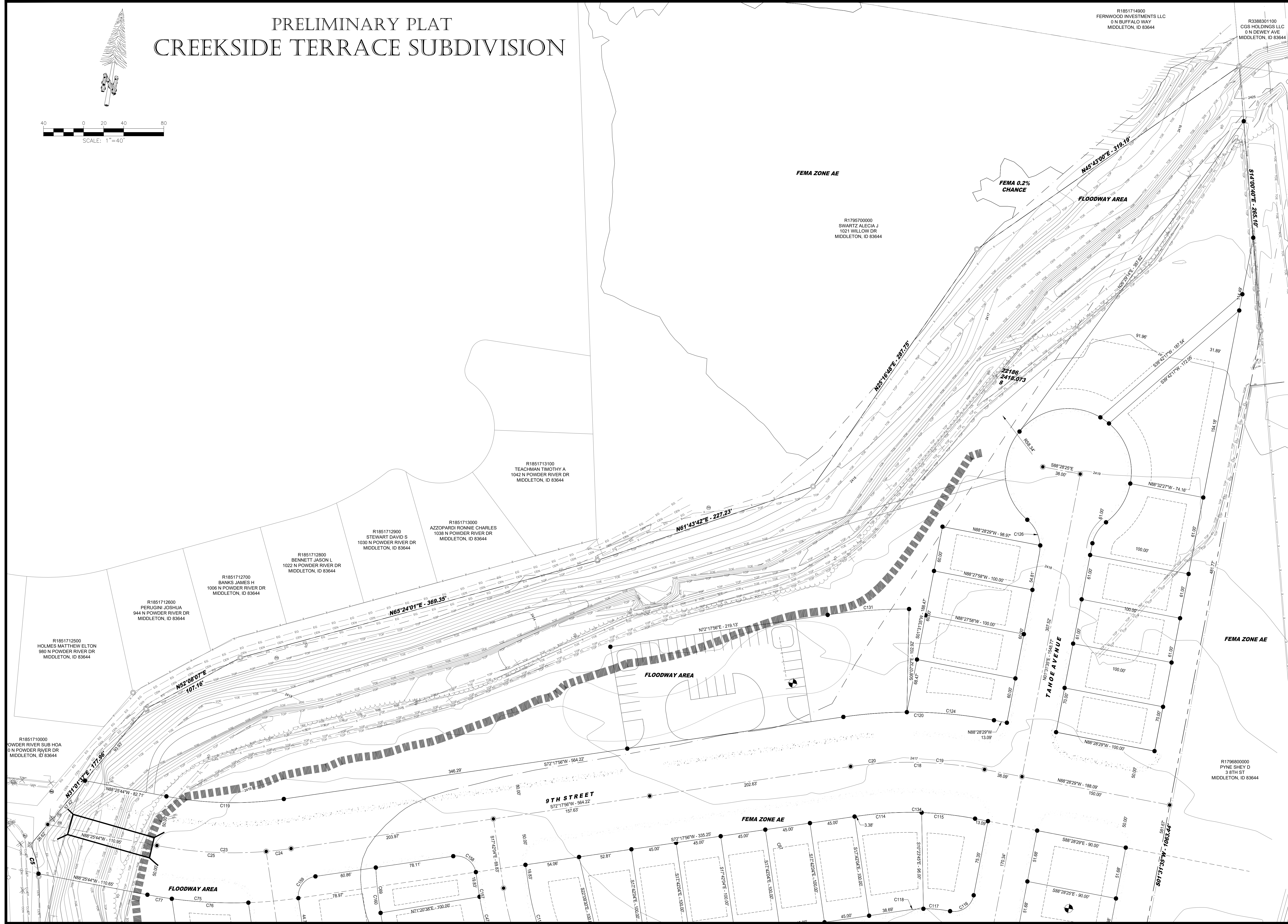
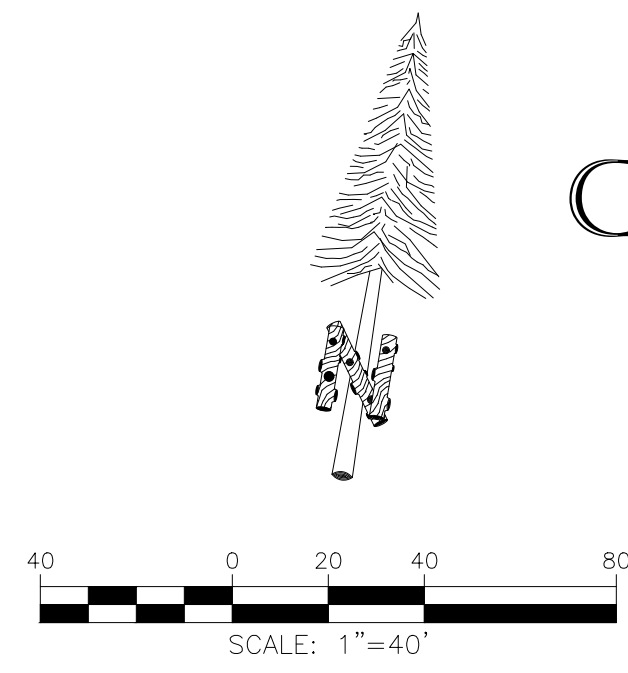
R1652010000
RUIZ SERGIO
735 WILLOW DR
MIDDLETON, ID 83644

R1652010100
COOK STEPHANIE A
693 WILLOW DR
MIDDLETON, ID 83644

R1796800000
HYDE JOHN M
6 8TH ST
MIDDLETON, ID 83644

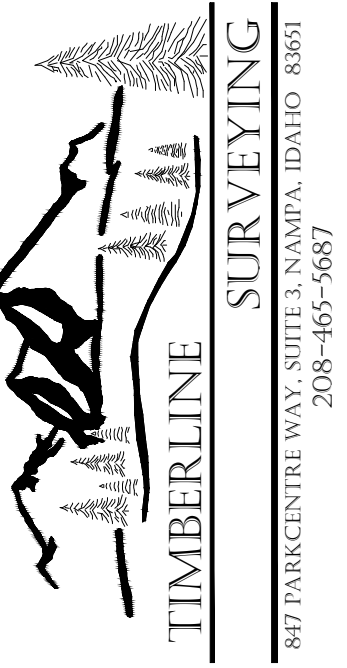
R1796800000
BRUMMETT GLORIA JEAN
717 N TERRY FORENREVE
MIDDLETON, ID 83644

PRELIMINARY PLAT CREEKSIDE TERRACE SUBDIVISION



R1851714900
FERNWOOD INVESTMENTS LLC
0 N BUFFALO WAY
MIDDLETON, ID 83644

R3388901100
CGS HOLDINGS LLC
0 N DEWEY AVE
MIDDLETON, ID 83644



PRELIMINARY PLAT
CREEKSIDE TERRACE SUBDIVISION

CLIENT: Y STREET CAPITAL
JOB NUMBER: 22008
DATE: 11/08/2022

OWNER/DEVELOPER:
Y STREET CAPITAL
24 E MAIN STREET
AMERICAN FORK, ID 84003
CONTACT: HECCO, JESSE 208 812-2062

NO.	DATE	BY	DESCRIPTION
REVISIONS			
SCALE:	1" = 40'		
SHEET NUMBER:	4 OF 5		

R1851710000
POWDER RIVER SUB HOA
0 N POWDER RIVER DR
MIDDLETON, ID 83644

R1851712600
PERUGINI JOSHUA
944 N POWDER RIVER DR
MIDDLETON, ID 83644

R1851712700
BANKS JAMES H
1006 N POWDER RIVER DR
MIDDLETON, ID 83644

R1851712900
BENNETT JASON L
1022 N POWDER RIVER DR
MIDDLETON, ID 83644

R1851712900
STEWART DAVID S
1030 N POWDER RIVER DR
MIDDLETON, ID 83644

R1851713000
AZZOPARDI RONNIE CHARLES
1038 N POWDER RIVER DR
MIDDLETON, ID 83644

R1851713100
TEACHMAN TIMOTHY A
1042 N POWDER RIVER DR
MIDDLETON, ID 83644

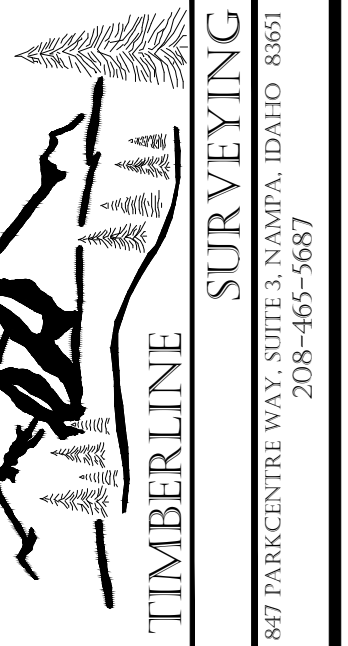
R1755700000
SWARTZ ALECIA J
1021 WILLOW DR
MIDDLETON, ID 83644

R1796800000
PYNE SHEY D
3 8TH ST
MIDDLETON, ID 83644

9TH STREET
S12°17'56"W - 564.22
157.63'

TAHOE AVENUE
N07°31'35"W - 1548.77
307.52'

PRELIMINARY PLAT CREEKSIDE TERRACE SUBDIVISION



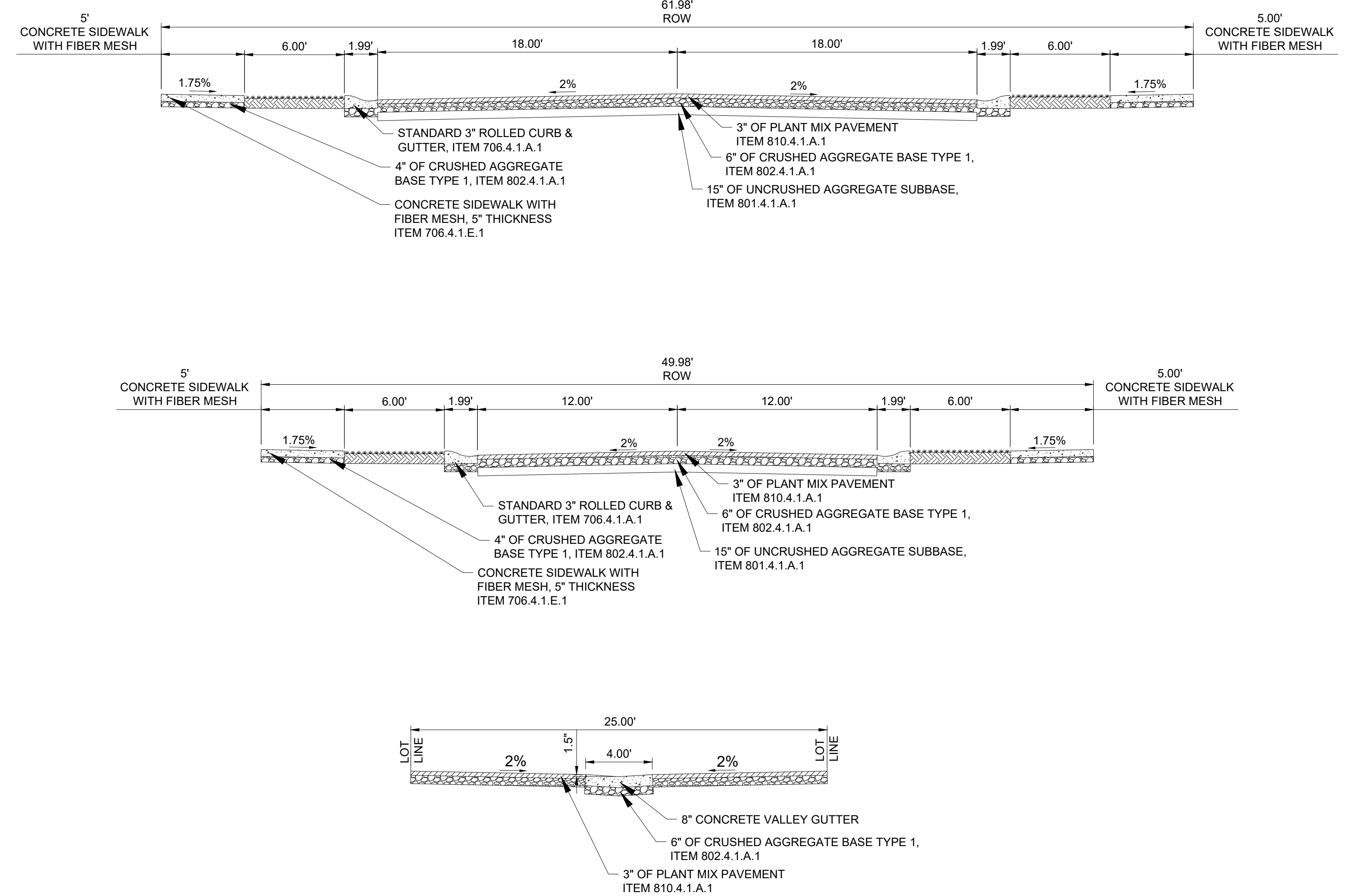
CURVE TABLE						
CURVE	RADIUS	DELTA	LENGTH	TANGENT	BEARING	CHORD
C1	376.05'	15°08'46"	99.41'	50.00'	N02°44'10"E	99.12'
C2	348.20'	22°40'11"	137.77'	69.80'	N16°09'27"W	136.87'
C3	340.00'	2°43'00"	16.12'	8.06'	S26°08'57"E	16.12'
C4	340.00'	13°28'32"	79.97'	40.17'	S18°08'14"E	79.78'
C5	75.99'	24°45'12"	32.83'	16.67'	N23°57'18"W	32.57'
C6	45.00'	91°05'55"	71.55'	45.87'	S42°55'37"E	64.25'
C7	375.00'	16°54'40"	110.70'	55.76'	N06°55'53"W	110.30'
C8	275.00'	38°43'37"	185.88'	96.65'	S03°58'31"W	182.36'
C9	275.00'	24°54'00"	119.51'	60.71'	S02°56'18"E	118.57'
C10	275.00'	13°49'37"	66.36'	33.34'	S16°25'31"W	66.20'
C11	350.00'	62°19'23"	380.71'	211.65'	N07°49'22"W	362.22'
C12	350.00'	60°22'15"	368.78'	203.59'	N06°50'48"W	351.96'
C13	350.00'	1°57'08"	11.93'	5.96'	N38°00'30"W	11.93'
C14	275.00'	21°17'00"	102.15'	51.67'	S28°20'34"E	101.57'
C15	100.00'	16°54'49"	29.52'	14.87'	S83°04'07"W	29.41'
C16	100.00'	19°13'35"	33.56'	16.94'	S81°54'44"W	33.40'
C17	100.00'	19°19'52"	33.74'	17.03'	S82°38'00"W	33.58'
C18	400.00'	19°13'35"	134.23'	67.75'	S81°54'44"W	133.60'
C19	400.00'	12°58'27"	90.58'	45.48'	S85°02'18"W	90.38'
C20	400.00'	6°15'08"	43.65'	21.85'	S75°25'31"W	43.63'
C23	400.00'	19°16'19"	134.54'	67.91'	N81°56'06"E	133.91'
C24	400.00'	3°39'00"	25.02'	12.51'	N74°05'26"E	25.01'
C25	400.00'	15°41'20"	109.53'	55.11'	N83°43'36"E	109.19'
C26	90.00'	18°23'04"	28.88'	14.56'	N08°30'31"W	28.75'
C27	20.00'	89°19'52"	31.18'	19.77'	N43°48'38"W	28.12'
C28	70.00'	17°33'28"	21.45'	10.81'	S79°41'51"E	21.37'
C29	70.00'	34°45'34"	42.47'	21.91'	S53°32'20"E	41.82'
C30	70.00'	37°41'04"	46.04'	23.89'	S17°19'01"E	45.21'
C31	350.00'	7°39'53"	46.82'	23.45'	N02°18'25"W	46.79'
C32	350.00'	9°14'57"	56.50'	28.31'	N10°45'50"W	56.44'
C33	300.00'	9°17'04"	48.61'	24.36'	S10°44'46"E	48.56'
C34	300.00'	4°26'01"	23.21'	11.61'	S03°53'14"E	23.21'
C35	300.00'	8°35'38"	45.00'	22.54'	S02°37'36"W	44.95'
C36	300.00'	8°35'43"	45.00'	22.54'	S11°13'16"W	44.96'
C37	300.00'	7°49'12"	40.95'	20.50'	S19°25'43"W	40.91'
C38	325.00'	1°07'08"	6.35'	3.17'	N22°46'45"E	6.35'
C39	325.00'	10°21'16"	58.73'	29.45'	N17°02'33"E	58.65'
C40	325.00'	10°23'19"	58.93'	29.54'	N06°40'16"E	58.85'
C41	325.00'	11°56'24"	67.73'	33.99'	N04°29'35"W	67.60'
C42	325.00'	8°50'03"	50.11'	25.10'	N14°52'48"W	50.06'
C43	325.00'	8°37'45"	48.95'	24.52'	N23°36'42"W	48.90'
C44	325.00'	8°21'21"	47.40'	23.74'	N32°06'16"W	47.36'
C45	300.78'	3°07'34"	16.41'	8.21'	S37°25'01"E	16.41'
C46	300.00'	8°36'01"	45.03'	22.56'	S31°32'59"E	44.99'
C47	300.00'	8°35'38"	45.00'	22.54'	S22°57'11"E	44.96'
C48	400.00'	8°35'38"	60.00'	30.06'	S22°57'10"E	59.94'
C49	400.00'	8°36'01"	60.04'	30.08'	S31°33'00"E	59.98'
C50	400.00'	3°08'04"	21.88'	10.94'	S37°25'02"E	21.88'
C51	225.00'	2°41'31"	10.57'	5.29'	N37°38'19"W	10.57'
C52	225.00'	16°17'09"	63.95'	32.19'	N28°08'59"W	63.74'
C55	225.00'	9°50'58"	38.68'	19.39'	N16°47'51"E	38.63'
C56	225.00'	0°47'24"	3.10'	1.55'	N22°39'34"E	3.10'
C57	403.25'	8°17'03"	58.30'	29.20'	S19°41'31"W	58.25'
C58	400.00'	8°35'38"	60.00'	30.05'	S11°14'13"W	59.94'
C59	400.00'	8°36'38"	60.11'	30.11'	S02°38'06"W	60.06'
C60	400.00'	9°17'04"	64.82'	32.48'	S10°44'46"E	64.75'
C61	250.00'	9°14'57"	40.36'	20.22'	N10°45'50"W	40.31'
C62	250.00'	7°39'53"	33.44'	16.75'	N02°18'25"W	33.42'
C63	225.00'	9°51'09"	38.69'	19.39'	N18°07'41"E	38.64'
C64	225.00'	8°41'45"	34.15'	17.11'	N02°52'03"W	34.12'

CURVE TABLE						
CURVE	RADIUS	DELTA	LENGTH	TANGENT	BEARING	CHORD
C65	225.00'	14°18'45"	58.20'	28.25'	N27°09'47"W	58.06'
C66	225.00'	0°42'50"	2.80'	1.40'	N38°37'39"W	2.80'
C67	1.00'	356°51'56"	6.23'	0.03'	N37°25'02"W	0.05'
C68	400.00'	7°21'40"	51.39'	25.73'	S32°10'10"E	51.35'
C69	400.00'	6°31'34"	45.56'	22.80'	S15°23'34"E	45.54'
C70	115.00'	9°54'17"	19.88'	9.96'	N12°44'55"W	19.86'
C71	115.00'	8°28'47"	17.02'	8.53'	N03°33'23"W	17.00'
C72	63.00'	283°49'15"	312.08'	49.38'	N87°53'43"E	77.73'
C73	36.00'	49°07'20"	30.86'	16.45'	N25°14'41"E	29.93'
C74	65.00'	18°23'04"	20.86'	10.52'	N08°30'31"W	20.77'
C75	450.00'	12°53'34"	101.26'	50.84'	N85°07'29"E	101.05'
C76	450.00'	9°44'54"	76.56'	38.37'	N83°33'09"E	76.47'
C77	450.00'	3°08'40"	24.70'	12.35'	N89°59'56"E	24.69'
C78	20.00'	90°40'08"	31.65'	20.23'	N46°11'22"E	28.45'
C79	20.00'	90°00'09"	31.42'	20.00'	S43°28'30"E	28.28'
C80	20.00'	91°05'55"	31.80'	20.39'	S42°55'37"E	28.55'
C81	400.00'	5°35'01"	38.98'	19.51'	N01°15'59"W	38.97'
C82	400.31'	3°36'31"	25.21'	12.61'	N05°51'50"W	25.21'
C83	399.74'	7°09'07"	49.90'	24.98'	N11°14'36"W	49.86'
C84	20.00'	96°55'15"	33.83'	22.57'	S33°38'36"W	29.94'
C85	75.00'	9°25'17"	12.33'	6.18'	S86°48'53"W	12.32'
C86	20.00'	90°00'04"	31.42'	20.00'	N43°28'27"W	28.28'
C87	20.00'	89°59'48"	31.41'	20.00'	N46°31'29"E	28.28'
C88	125.00'	14°04'14"	30.70'	15.43'	S84°29'24"W	30.62'
C89	20.00'	87°09'25"	30.42'	19.03'	N58°58'00"W	27.57'
C90	250.00'	15°13'17"	66.42'	33.40'	N07°46'40"W	66.22'
C91	20.00'	91°14'32"	32.01'	20.60'	N45°40'45"E	28.70'
C92	20.00'	90°00'04"	31.42'	20.00'	S43°28'27"E	28.28'
C93	20.00'	89°59'56"	31.42'	20.00'	S46°31'33"W	28.28'
C94	20.00'	111°12'33"	38.82'	29.21'	S32°52'12"E	33.01'
C95	375.00'	4°56'11"	32.31'	16.16'	N20°52'14"E	32.30'
C96	375.00'	8°55'02"	58.36'	29.24'	N13°56'38"E	58.30'
C97	375.00'	6°58'21"	45.64'	22.85'	N05°59'57"E	45.61'
C98	375.00'	6°58'21"	45.63'	22.85'	N07°56'46"W	45.61'
C99	375.00'	7°39'07"	50.08'	25.08'	N15°15'30"W	50.05'
C100	375.00'	11°22'47"	74.48'	37.36'	N24°46'27"W	74.36'
C101	20.00'	88°06'08"	30.75'	19.35'	S13°35'14"W	27.81'
C102	75.00'	14°39'38"	19.19'	9.65'	S64°58'07"W	19.14'
C103	75.00'	20°10'20"	26.41'	13.34'	S82°23'07"W	26.27'
C104	20.00'	89°03'18"	31.09'	19.67'	N43°00'04"W	28.05'
C105	20.00'	89°59'56"	31.42'	20.00'	N46°31'33"E	28.28'
C106	495.00'	27°11'12"	234.88'	119.69'	N00°38'15"E	232.68'
C107	496.71'	4°43'45"	41.00'	20.51'	N11°51'29"E	40.99'
C108	494.96'	6°58'23"	60.24'	30.16'	N05°59'57"E	60.20'
C109	495.00'	8°29'46"	73.40'	36.77'	N08°42'28"W	73.33'
C110	125.00'	16°46'00"	36.58'	18.42'	S63°54'56"W	36.45'
C111	20.00'	90°00'17"	31.42'	20.00'	S79°27'55"E	28.29'
C112	250.00'	16°45'43"	73.14'	36.83'	S26°04'55"E	72.88'
C113	349.88'	19°13'59"	117.45'	59.28'	S81°54'44"W	116.90'
C114	350.00'	7°22'37"	45.06'	22.56'	S75°59'15"W	45.03'
C115	350.00'	11°50'58"	72.38'	36.32'	S85°36'02"W	72.28'
C116	20.00'	90°21'30"	31.54'	20.13'	N46°42'20"E	28.37'
C117	125.00'	15°10'09"	33.09'	16.64'	S84°18'00"W	33.00'
C118	125.00'	4°24'59"	9.64'	4.82'	S74°30'26"W	9.63'
C119	350.00'	19°16'19"	117.73'	59.42'	N81°56'06"E	117.17'
C120	450.00'	19°13'35"	151.00'	76.22'	S81°54'44"W	150.30'
C124	450.00'	11°08'07"	87.46'	43.87'	S85°57'28"W	87.32'
C126	36.00'	46°39'58"	29.32'	15.53'	N35°34'41"W	28.52'
C131	553.00'	8°26'23"	81.46'	40.80'	S76°31'08"W	81.38'
C135	20.00'	88°41'45"	30.96'	19.55'	N45°52'27"E	27.96'

CURVE TABLE						
CURVE	RADIUS	DELTA	LENGTH	TANGENT	BEARING	CHORD
C136	20.00'	91°18'15"	31.87'	20.46'	S44°07'33"E	28.60'
C137	20.00'	88°41'45"	30.96'	19.55'	S45°52'27"W	27.96'
C138	20.00'	91°18'15"	31.87'	20.46'	N44°07'33"W	28.60'

LINE TABLE		
LINE #	DIRECTION	LENGTH
L1	N00°14'10"E	13.00'
L2	N89°43'05"W	67.87'
L3	N10°18'34"E	99.57'
L4	N89°58'22"W	30.01'
L5	S88°42'22"E	30.00'
L6	S01°31'31"W	13.24'
L7	S38°59'04"E	13.26'
L8	S38°59'04"E	13.26'

ROAD CROSS SECTION DETAIL



PRELIMINARY PLAT
CREEKSIDE TERRACE SUBDIVISION
SUBDIVISION

OWNER/DEVELOPER:
 Y STREET CAPITAL
 24 E MAIN STREET
 AMERICAN FORK, ID 84003
 CONTACT: HECO, JESSE (208) 842-2062

CAD FILE: 22008 - CREEKSIDE TERRACE SUBDIVISION
 JOB NUMBER: 22008
 DRAWN BY: DAA
 CHECKED BY: KHC
 PLOT DATE: 11/08/2022

CREEPSIDE TERRACE SUBDIVISION
 MIDDLETON, IDAHO

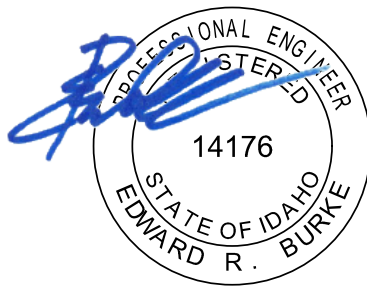
NO.	DATE	BY	DESCRIPTION

REVISIONS
 SCALE: 1" = 40'
 SHEET NUMBER: 5 OF 5

PRELIMINARY
STORM DRAINAGE
REPORT

Creekside Terrace

February 19, 2021



PREPARED FOR:

Epic Development

PREPARED BY:

EDM Partners, LLC

Narrative

Project Description:

Creekside Terrace subdivision is located between Willow Creek, Concord Street and Hawthorne Street in Middleton, Idaho. The project site is approximately 36 acres of which, approximately 21 acres will be developed into single family housing. The site is largely undeveloped and has been used historically for agricultural uses. The remaining area will be located in common lot open space that will largely retain pre-existing drainage characteristics. Stormwater ponds will be constructed in this open space.

Existing System:

There is no existing discrete drainage system in place. The existing site, primarily agricultural fields, has historically absorbed most of the storm water from rainfall events. Any storm water that is not absorbed travels by overland flow to either the Middleton Mill Ditch, which generally bisects the site, or to Willow Creek which runs along the west boundary of the project site.

Hydrology:

Time of concentration was calculated based on the TR-55 method. The rational method was used to calculate the 50-yr and 100-yr peak discharge. Detention requirements have been determined based on the 100-yr storm 1-hr event. This report does not account for a release rate or infiltration rate. This component of the design will be included in the final design. Therefore, the storage volumes calculated in this report represent the highest detention requirement.

Hydraulics:

Hydraulic calculations are included for the pipes based upon the 50-year storm event. The proposed site has been divided into anticipated drainage basins. Pipes were sized for the maximum size pipe required to convey the runoff from the entire drainage basin with pipe slopes set to the minimum slope. Additionally, a calculation was shown to determine the maximum pipe size that would be required to carry the entire project site's runoff.

Drainage Concept:

Lots will be graded such that runoff is directed to the front of the lots. Runoff will be by sheet flow or shallow flow in side yard swales. Stormwater will then be collected in the street in roll-curb and gutter. The curb and gutter will carry the stormwater for a maximum allowed 400-LF where a catchbasin will be placed to collect the runoff. Runoff will then be piped to one of three anticipated stormwater detention ponds. The characteristics of the pond will be determined in final design. It is anticipated that the ponds will be wet detention ponds, but if condition allow, the ponds will be designed to operate as dry detention basins where stormwater runoff is dispersed through infiltration. The detention system will be sized to manage runoff from the 100-yr storm event.

The design team will negotiate with the local irrigation district to determine if pre-existing runoff flow will be allowed to be discharged to irrigation district facilities.

This is consistent with similar installations throughout the Treasure Valley.

Time of Concentration (TR-55 Method)

Site Information

Drainage area =	21.70	Total Site
Condition =		Post-Development

Sheet Flow

L =	100.0	ft	Flow length (typically less than 300')
S =	0.005	ft/ft	Surface slope
P ₂ =	1.06	in	50-yr, 15-min (Nampa IDF)
n =	0.200		Assumed Manning's roughness coefficient
T _{ti} =	37.31	min	Sheet flow travel time

Shallow Concentrated Flow

L =	400.00	ft	Flow length
S =	0.004	ft/ft	Surface slope
V =	1.29	ft/sec	Flow velocity (TR-55 Figure 3-1)
T _{ti} =	5.19	min	Shallow concentrated flow travel time

Pipe Flow

dia. =	15.00	in	Pipe diameter.
n =	0.013		Assumed Manning's roughness coefficient.
S =	0.0250	ft/ft	Pipe slope.
A =	1.23	ft ²	Cross sectional area for given pipe size.
R _h =	0.3125	ft	Hydraulic radius for pipe flowing full.
V =	8.35	ft/sec	Flow velocity
L =	400.00	ft	Flow length
T _{ti} =	0.80	min	Pipe flow travel time

t _c =	43.29	min	Time of concentration
------------------	-------	-----	------------------------------

Peak Discharge

Site Information

Drainage area =	21.70	Total site
Condition =		Post-development

Peak Discharge

Drainage Area	Area	C	
SF Residential	945,161.00	0.74	
Total Area (sf)	945,161.00		
Total Area (ac)	21.70		
BUA	100.00%		Built Upon Area (Impervious Surface C >0.45)
Weighted C=	0.74		
I=	0.91 in/hr		50-yr 45 min rainfall from Boise IDF
I=	1.07 in/hr		100-yr 45 min rainfall from Boise IDF
A=	21.70 acres		Total project area
Q _{peak50} =	14.61 cfs		Rational equation 50-yr
Q _{peak100} =	17.18 cfs		Rational equation 100-yr
Q _{allow} =	0.00 cfs		(T.B.D.)

Peak Volumes

Volume Calculations

Area	Size (ac)	100-yr 1-hr Event (in)	Event Duration	Time of Concentration	Runoff Coefficient	60% Runoff Volume	Peak Runoff Flow Rate (100 yr)	BMP
DA North	4.07	0.96	1 hr	45	0.74	10,407 CF	3.22	#1
DA Mid 1	3.74	0.96	1 hr	45	0.74	9,556 CF	2.96	#2
DA Mid 2	7.88	0.96	1 hr	45	0.74	20,161 CF	6.24	#2
DA South	6.01	0.96	1 hr	45	0.74	15,367 CF	4.76	#3
Total - Post	21.70	0.96	1 hr	45	0.74	55,491 CF	17.18	

Conveyance Calculations

Inlet / Basin	Drainage Area (SF)	Drainage Area (acres)	C	Tc (min)	50 Yr Rainfall (in/hr)	100 yr Rainfall (in/hr)	50 yr flow (cfs)	100 yr flow (cfs)
DA North	177,254	4.07	0.74	45	0.91	1.07	2.74	3.22
DA Mid 1	162,770	3.74	0.74	45	0.91	1.07	2.52	2.96
DA Mid 2	343,393	7.88	0.74	45	0.91	1.07	5.31	6.24
DA South	261,744	6.01	0.74	45	0.91	1.07	4.05	4.76
Total - Post	945,161	21.70	0.74	45	0.91	1.07	14.61	17.18
Total - Pre	945,161	21.70	0.20	45	0.91	1.07	3.95	4.64

Pipe Sizing

Runoff - Full Site Basin - 21.7 acres			
C =	0.74		Weighted C for site
I =	0.91	in/hr	50-yr 45 min rainfall from Boise IDF
A =	21.70	ac	Contributing area
Q _{rainfall} =	14.61	cfs	Flow calculated using Rational Method
Q _{other} =	0.00	cfs	None
Q _{actual} =	14.61	cfs	Total runoff to be contained in pipe
Pipe Sizing - Full Site Basin - 21.7 acres			
dia. =	24.00	in	Pipe diameter
n =	0.013		Assumed Manning's roughness coefficient for PVC ASTM 3034 SDR 35
s =	0.0075	ft/ft	Pipe slope
A =	3.1416	ft ²	Cross sectional area for given pipe size
R _h =	0.5000	ft	Hydraulic radius for pipe flowing full
Q _{allow} =	19.64	cfs	Allowable flow calculated using Manning's Equation
24" pipe @ 0.75% is adequate			

Runoff - DI-North Basin - 4.07 acres			
C =	0.74		Weighted C for site
I =	0.91	in/hr	50-yr 45 min rainfall from Boise IDF
A =	4.07	ac	Contributing area
Q _{rainfall} =	2.74	cfs	Flow calculated using Rational Method
Q _{other} =	0.00	cfs	
Q _{actual} =	2.74	cfs	Total runoff to be contained in pipe
Pipe Sizing - DI-North Basin - 4.07 acres			
dia. =	15.00	in	Pipe diameter
n =	0.013		Assumed Manning's roughness coefficient for PVC ASTM 3034 SDR 35
S =	0.0025	ft/ft	Pipe slope
A =	1.2272	ft ²	Cross sectional area for given pipe size
R _h =	0.3125	ft	Hydraulic radius for pipe flowing full
Q _{allow} =	3.24	cfs	Allowable flow calculated using Manning's Equation
15" pipe @ 0.25% is adequate			

Pipe Sizing

Runoff - DI-Mid 1 Basin - 3.74 acres

C =	0.74		Weighted C for site
I =	0.91	in/hr	50-yr 45 min rainfall from Boise IDF
A =	3.74	ac	Contributing area
Q _{rainfall} =	2.52	cfs	Flow calculated using Rational Method
Q _{other} =		cfs	
Q _{actual} =	2.52	cfs	Total runoff to be contained in pipe

Pipe Sizing - DI-Mid 1 Basin - 3.74 acres

dia. =	15.00	in	Pipe diameter
n =	0.013		Assumed Manning's roughness coefficient for PVC ASTM 3034 SDR 35
S =	0.0025	ft/ft	Pipe slope
A =	1.2272	ft ²	Cross sectional area for given pipe size
R _h =	0.3125	ft	Hydraulic radius for pipe flowing full
Q _{allow} =	3.24	cfs	Allowable flow calculated using Manning's Equation

15" pipe @ 0.25% is adequate

Runoff - DI-Mid 2 Basin - 7.88 acres

C =	0.74		Weighted C for site
I =	0.91	in/hr	50-yr 45 min rainfall from Boise IDF
A =	7.88	ac	Contributing area
Q _{rainfall} =	5.31	cfs	Flow calculated using Rational Method
Q _{other} =		cfs	
Q _{actual} =	5.31	cfs	Total runoff to be contained in pipe

Pipe Sizing - DI-Mid 2 Basin - 7.88 acres

dia. =	24.00	in	Pipe diameter
n =	0.013		Assumed Manning's roughness coefficient for PVC ASTM 3034 SDR 35
S =	0.0025	ft/ft	Pipe slope
A =	3.1416	ft ²	Cross sectional area for given pipe size
R _h =	0.5000	ft	Hydraulic radius for pipe flowing full
Q _{allow} =	11.34	cfs	Allowable flow calculated using Manning's Equation

24" pipe @ 0.25% is adequate

Pipe Sizing

Runoff - DI - South Basin - 6.01 acres

C =	0.74		Weighted C for site
I =	0.91	in/hr	50-yr 45 min rainfall from Boise IDF
A =	6.01	ac	Contributing area
Q _{rainfall} =	4.05	cfs	Flow calculated using Rational Method
Q _{other} =		cfs	
Q _{actual} =	4.05	cfs	Total runoff to be contained in pipe

Pipe Sizing - DI - South Basin - 6.01 acres

dia. =	18.00	in	Pipe diameter
n =	0.013		Assumed Manning's roughness coefficient for PVC ASTM 3034 SDR 35
S =	0.0025	ft/ft	Pipe slope
A =	1.7671	ft ²	Cross sectional area for given pipe size
R _h =	0.3750	ft	Hydraulic radius for pipe flowing full
Q _{allow} =	5.27	cfs	Allowable flow calculated using Manning's Equation

18" pipe @ 0.25% is adequate



COMMITMENT FOR TITLE INSURANCE
Issued by
TITLE RESOURCES GUARANTY COMPANY

Commitment No. 20386165

NOTICE

IMPORTANT—READ CAREFULLY: THIS COMMITMENT IS AN OFFER TO ISSUE ONE OR MORE TITLE INSURANCE POLICIES. ALL CLAIMS OR REMEDIES SOUGHT AGAINST THE COMPANY INVOLVING THE CONTENT OF THIS COMMITMENT OR THE POLICY MUST BE BASED SOLELY IN CONTRACT.

THIS COMMITMENT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACTIONAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

THE COMPANY'S OBLIGATION UNDER THIS COMMITMENT IS TO ISSUE A POLICY TO A PROPOSED INSURED IDENTIFIED IN SCHEDULE A IN ACCORDANCE WITH THE TERMS AND PROVISIONS OF THIS COMMITMENT. THE COMPANY HAS NO LIABILITY OR OBLIGATION INVOLVING THE CONTENT OF THIS COMMITMENT TO ANY OTHER PERSON.

COMMITMENT TO ISSUE POLICY

Subject to the Notice; Schedule B, Part I—Requirements; Schedule B, Part II—Exceptions; and the Commitment Conditions, TITLE RESOURCES GUARANTY COMPANY, a Texas corporation (the "Company"), commits to issue the Policy according to the terms and provisions of this Commitment. This Commitment is effective as of the Commitment Date shown in Schedule A for each Policy described in Schedule A, only when the Company has entered in Schedule A both the specified dollar amount as the Proposed Policy Amount and the name of the Proposed Insured.

If all of the Schedule B, Part I—Requirements have not been met within 180 days after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

This page is only a part of a 2016 ALTA® Commitment for Title Insurance issued by Title Resources Guaranty Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I—Requirements; and Schedule B, Part II—Exceptions; and a counter-signature by the Company or its issuing agent that may be in electronic form.

TRGC Form: Comm16 ALTA Commitment Form Adopted 6-17-2006 Revised 08-01-2016 Technical Corrections 04-02-2018

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COMMITMENT CONDITIONS

1. DEFINITIONS

- (a) "Knowledge" or "Known": Actual or imputed knowledge, but not constructive notice imparted by the Public Records.
- (b) "Land": The land described in Schedule A and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is to be insured by the Policy.
- (c) "Mortgage": A mortgage, deed of trust, or other security instrument, including one evidenced by electronic means authorized by law.
- (d) "Policy": Each contract of title insurance, in a form adopted by the American Land Title Association, issued or to be issued by the Company pursuant to this Commitment.
- (e) "Proposed Insured": Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.
- (f) "Proposed Policy Amount": Each dollar amount specified in Schedule A as the Proposed Policy Amount of each Policy to be issued pursuant to this Commitment.
- (g) "Public Records": Records established under state statutes at the Commitment Date for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge.
- (h) "Title": The estate or interest described in Schedule A.

2. If all of the Schedule B, Part I—Requirements have not been met within the time period specified in the Commitment to Issue Policy, this Commitment terminates and the Company's liability and obligation end.

3. The Company's liability and obligation is limited by and this Commitment is not valid without:

- (a) the Notice;
- (b) the Commitment to Issue Policy;
- (c) the Commitment Conditions;
- (d) Schedule A;
- (e) Schedule B, Part I—Requirements; and
- (f) Schedule B, Part II—Exceptions; and
- (g) a counter-signature by the Company or its issuing agent that may be in electronic form.

4. COMPANY'S RIGHT TO AMEND

The Company may amend this Commitment at any time. If the Company amends this Commitment to add a defect, lien, encumbrance, adverse claim, or other matter recorded in the Public Records prior to the Commitment Date, any liability of the Company is limited by Commitment Condition 5. The Company shall not be liable for any other amendment to this Commitment.

5. LIMITATIONS OF LIABILITY

- (a) The Company's liability under Commitment Condition 4 is limited to the Proposed Insured's actual expense incurred in the interval between the Company's delivery to the Proposed Insured of the Commitment and the delivery of the amended Commitment, resulting from the Proposed Insured's good faith reliance to:
 - (i) comply with the Schedule B, Part I—Requirements;
 - (ii) eliminate, with the Company's written consent, any Schedule B, Part II—Exceptions; or
 - (iii) acquire the Title or create the Mortgage covered by this Commitment.
- (b) The Company shall not be liable under Commitment Condition 5(a) if the Proposed Insured requested the amendment or had Knowledge of the matter and did not notify the Company about it in writing.

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- (c) The Company will only have liability under Commitment Condition 4 if the Proposed Insured would not have incurred the expense had the Commitment included the added matter when the Commitment was first delivered to the Proposed Insured.
- (d) The Company's liability shall not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Conditions 5(a)(i) through 5(a)(iii) or the Proposed Policy Amount.
- (e) The Company shall not be liable for the content of the Transaction Identification Data, if any.
- (f) In no event shall the Company be obligated to issue the Policy referred to in this Commitment unless all of the Schedule B, Part I—Requirements have been met to the satisfaction of the Company.
- (g) In any event, the Company's liability is limited by the terms and provisions of the Policy.

6. LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT

- (a) Only a Proposed Insured identified in Schedule A, and no other person, may make a claim under this Commitment.
- (b) Any claim must be based in contract and must be restricted solely to the terms and provisions of this Commitment.
- (c) Until the Policy is issued, this Commitment, as last revised, is the exclusive and entire agreement between the parties with respect to the subject matter of this Commitment and supersedes all prior commitment negotiations, representations, and proposals of any kind, whether written or oral, express or implied, relating to the subject matter of this Commitment.
- (d) The deletion or modification of any Schedule B, Part II—Exception does not constitute an agreement or obligation to provide coverage beyond the terms and provisions of this Commitment or the Policy.
- (e) Any amendment or endorsement to this Commitment must be in writing and authenticated by a person authorized by the Company.
- (f) When the Policy is issued, all liability and obligation under this Commitment will end and the Company's only liability will be under the Policy.

7. IF THIS COMMITMENT HAS BEEN ISSUED BY AN ISSUING AGENT

The issuing agent is the Company's agent only for the limited purpose of issuing title insurance commitments and policies. The issuing agent is not the Company's agent for the purpose of providing closing or settlement services.

8. PRO-FORMA POLICY

The Company may provide, at the request of a Proposed Insured, a pro-forma policy illustrating the coverage that the Company may provide. A pro-forma policy neither reflects the status of Title at the time that the pro-forma policy is delivered to a Proposed Insured, nor is it a commitment to insure.

9. ARBITRATION

The Policy contains an arbitration clause. All arbitrable matters when the Proposed Policy Amount is \$2,000,000 or less shall be arbitrated at the option of either the Company or the Proposed Insured as the exclusive remedy of the parties. A Proposed Insured may review a copy of the arbitration rules at <<http://www.alta.org/arbitration>>.

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Privacy Policy Notice

Rev. 10-23-2017

FACTS	WHAT DOES TITLEONE DO WITH YOUR PERSONAL INFORMATION?	
Why?	Financial companies choose how they share your personal information. Federal law gives consumers the right to limit some but not all sharing. Federal law also requires us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand what we do.	
What?	<p>The types of personal information we collect and share depend on the product or service you have with us. This information can include:</p> <ul style="list-style-type: none"> • Social Security number and account balances • Payment history and credit card or other debt • Checking account information and wire transfer instructions <p>When you are <i>no longer</i> our customer, we continue to share your information as described in this notice.</p>	
How?	All financial companies need to share customers' personal information to run their everyday business. In the section below, we list the reasons financial companies can share their customers' personal information; the reasons TitleOne chooses to share; and whether you can limit this sharing.	
Reasons we can share your personal information	Does TitleOneshare?	Can you limit this sharing?
For our everyday business purposes – such as to process your transactions, maintain your account(s), respond to court orders and legal investigations, or report to credit bureaus	Yes	No
For our marketing purposes- to offer our products and services to you	No	We don't share
For joint marketing with other financial companies	No	We don't share
For our affiliates' everyday business purposes- information about your transactions and experiences	Yes	No
For our affiliates' everyday business purposes- information about your creditworthiness	No	We don't share
For our affiliates to market to you	No	We don't share
For nonaffiliates to market to you	No	We don't share
Questions?	Go to https://www.titleonecorp.com/company/privacypolicy.aspx	

Who we are	
Who is providing this notice?	TitleOne
What we do	
How does TitleOne protect my personal information?	To protect your personal information from unauthorized access and use, we use security measures that comply with federal law. These measures include computer safeguards and secured files and buildings.
How does TitleOne collect my personal information?	<p>We collect your personal information, for example, when you</p> <ul style="list-style-type: none"> • Apply for insurance or pay insurance premiums • Provide your mortgage information or show your driver's license • Give us your contact information <p>We also collect your personal information from others, such as credit bureaus, affiliates, or other companies.</p>
Why can't I limit all sharing?	<p>Federal law gives you the right to limit only</p> <ul style="list-style-type: none"> • Sharing for affiliates' everyday business purposes – information about your creditworthiness • Affiliates from using your information to market to you • Sharing for nonaffiliates to market to you <p>State laws and individual companies may give you additional rights to limit sharing.</p>
Definitions	
Affiliates	<p>Companies related by common ownership or control. They can be financial and nonfinancial companies.</p> <ul style="list-style-type: none"> • <i>Our affiliates include companies that are owned in whole or in part by Realogy Holdings Corp., such as Better Homes and Gardens® Real Estate, CENTURY 21® , Coldwell Banker®, Coldwell Banker Commercial®, The Corcoran Group®, ERA®, Sotheby's International Realty®, ZipRealty®, NRT LLC, Cartus and Realogy Title Group.</i>
Nonaffiliates	<p>Companies not related by common ownership or control. They can be financial and nonfinancial companies.</p> <ul style="list-style-type: none"> • <i>TitleOne does not share with nonaffiliates so they can market to you.</i>
Joint Marketing	<p>A formal agreement between nonaffiliated financial companies that together market financial products or service to you.</p> <ul style="list-style-type: none"> • <i>TitleOne does not share with nonaffiliated financial companies for joint marketing purposes.</i>
Other Important Information	
For European Union Customers	Please see our Privacy Policy located at https://www.titleonecorp.com/company/privacypolicy.aspx
For our California Customers	Please see our notice about the California Consumer Protection Act located at https://www.titleonecorp.com/company/privacypolicy.aspx

FACTS	WHAT DOES TITLE RESOURCES GUARANTY COMPANY DO WITH YOUR PERSONAL INFORMATION?	
Why?	Financial companies choose how they share your personal information. Federal law gives consumers the right to limit some but not all sharing. Federal law also requires us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand what we do.	
What?	<p>The types of personal information we collect and share depend on the product or service you have with us. This information can include:</p> <ul style="list-style-type: none"> • Social Security number and account balances • Payment history and credit card or other debt • Checking account information and wire transfer instructions <p>When you are <i>no longer</i> our customer, we continue to share your information as described in this notice.</p>	
How?	All financial companies need to share customers' personal information to run their everyday business. In the section below, we list the reasons financial companies can share their customers' personal information; the reasons TITLE RESOURCES GUARANTY COMPANY chooses to share; and whether you can limit this sharing.	
Reasons we can share your personal information	Does TITLE RESOURCES GUARANTY COMPANY share?	Can you limit this sharing?
For our everyday business purposes – such as to process your transactions, maintain your account(s), respond to court orders and legal investigations, or report to credit bureaus	Yes	No
For our marketing purposes- to offer our products and services to you	No	We don't share
For joint marketing with other financial companies	No	We don't share
For our affiliates' everyday business purposes- information about your transactions and experiences	Yes	No
For our affiliates' everyday business purposes- information about your creditworthiness	No	We don't share
For our affiliates to market to you	No	We don't share
For nonaffiliates to market to you	No	We don't share
Questions?	Go to https://www.trgc.com/privacypolicy	

Who we are	
Who is providing this notice?	TITLE RESOURCES GUARANTY COMPANY
What we do	
How does TITLE RESOURCES GUARANTY COMPANY protect my personal information?	To protect your personal information from unauthorized access and use, we use security measures that comply with federal law. These measures include computer safeguards and secured files and buildings.
How does TITLE RESOURCES GUARANTY COMPANY collect my personal information?	We collect your personal information, for example, when you <ul style="list-style-type: none"> • Apply for insurance or pay insurance premiums • Provide your mortgage information or show your driver's license • Give us your contact information We also collect your personal information from others, such as credit bureaus, affiliates, or other companies.
Why can't I limit all sharing?	Federal law gives you the right to limit only <ul style="list-style-type: none"> • Sharing for affiliates' everyday business purposes –information about your creditworthiness • Affiliates from using your information to market to you • Sharing for nonaffiliates to market to you State laws and individual companies may give you additional rights to limit sharing.
Definitions	
Affiliates	Companies related by common ownership or control. They can be financial and nonfinancial companies. <ul style="list-style-type: none"> • <i>Our affiliates include companies that are owned in whole or in part by Realty Holdings Corp., such as Better Homes and Gardens® Real Estate, CENTURY 21®, Coldwell Banker®, Coldwell Banker Commercial®, The Corcoran Group®, ERA®, Sotheby's International Realty®, ZipRealty®, NRT LLC, Cartus and Title Resource Group.</i>
Nonaffiliates	Companies not related by common ownership or control. They can be financial and nonfinancial companies. <ul style="list-style-type: none"> • TITLE RESOURCES GUARANTY COMPANY does not share with nonaffiliates so they can market to you.
Joint Marketing	A formal agreement between nonaffiliated financial companies that together market financial products or service to you. <ul style="list-style-type: none"> • TITLE RESOURCES GUARANTY COMPANY does not share with nonaffiliated financial companies for joint marketing purposes.
Other Important Information	
For European Union Customers	Please see our Privacy Policy located at https://www.trgc.com/privacypolicy
For our California Customers	Please see our notice about the California Consumer Protection Act located at https://www.trgc.com/privacypolicy



COMMITMENT FOR TITLE INSURANCE
Issued by
TITLE RESOURCES GUARANTY COMPANY

Issuing Office: TitleOne
ALTA® Universal ID: 1065022
Commitment Number: 20386165

SCHEDULE A

1. Commitment Date: September 24, 2020 at 07:30 AM

2. Policy or Policies to be issued:

X ALTA Owners Policy (6/17/06)	<i>Standard Coverage</i>	Policy Amount:	\$1,500,000.00
Proposed Insured:		Premium:	\$4,055.00

Robert Nash

Endorsements: None Requested	Charge:	\$0.00
------------------------------	---------	--------

3. The estate or interest in the land described or referred to in this Commitment is:

Fee Simple

4. Title to the estate or interest in the Land is at the Commitment Date vested in:

B & L Company, LLC, an Idaho limited liability company

5. The Land described as follows:

See Attached Schedule C

Title Resources Guaranty Company
TitleOne

By:

Scott Thiel, Authorized Signatory

Title Resources Guaranty Company

By:

President/CEO

Secretary



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**SCHEDULE B, PART I
Requirements**

All of the following Requirements must be met:

1. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.
2. Pay the agreed amount for the estate or interest to be insured.
3. Pay the premiums, fees, and charges for the Policy to the Company.
4. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.
5. The Company will require delivery of and approval by the Company of an Indemnity and Affidavit as to Debts, Liens and Possession, prior to the issuance of the policy.
6. Disclosure of the spouse of Robert Nash, if any. The Company herein reserves the right to make additional requirements and/or exceptions upon disclosure of same.
7. The Company will require a copy of the Operating Agreement, with all amendments and assignments, and a resolution from the members of B & L Company, LLC, an Idaho limited liability company showing the power and authority of the party or parties who plan to execute the forthcoming conveyance or mortgage on behalf of said limited liability company.
8. A Warranty Deed from B & L Company, LLC, an Idaho limited liability company to Robert Nash.
9. Deed of Trust or Mortgage securing the loan.

NOTE: If a Deed of Trust is contemplated as a part of this transaction, the correct name to be entered as the Trustee is: TitleOne

10. NOTE: According to the available records, the purported address of said land is:

Creekside Terrace Subdivision
Middleton, Idaho 83644

11. NOTE: Additional Underlying Documents.

[To view the MAP\(s\) click here.](#)

[To view the VESTING DEED\(s\) click here.](#)

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SCHEDULE B, PART II
Exceptions

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

The Policy will not insure against loss or damage resulting from the terms and provisions of any lease or easement identified in Schedule A, and will include the following Exceptions unless cleared to the satisfaction of the Company. If the Company's requirements are satisfied, Exceptions 1 through 7 will be removed on Enhanced/Extended coverage policies.

1. Any defect, lien, encumbrance, adverse claim, or other matter that appears for the first time in the Public Records or is created, attaches, or is disclosed between the Commitment Date and the date on which all of the Schedule B, Part I—Requirements are met.
2. Rights or claims of parties in possession not shown by the public records.
3. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land, and that is not shown by the Public Records.
4. Easements, or claims of easements, not shown by the public records.
5. Any lien, or right to a lien, for services, labor, or materials heretofore or hereafter furnished, imposed by law and not shown by the public records.
6. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims to title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the public records.
7. Taxes or special assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records. Proceedings by a public agency which may result in taxes or assessments, or notices to such proceedings whether or not shown by the records of such agency, or by the public records.
8. Taxes, including any assessments collected therewith, for the year 2020 which are a lien not yet due and payable.

Taxes for the year 2019 are paid in full.

Parcel Number: R17952000 0
Original Amount: \$194.06

Parcel Number: R17952010 0
Original Amount: \$18.16

Parcel Number: R17952011 0
Original Amount: \$12.00

Parcel Number: R17952012 0
Original Amount: \$16.28

Parcel Number: R17953000 0
Original Amount: \$85.44

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Parcel Number: R17953010 0
Original Amount: \$225.16

Parcel Number: R17954000 0
Original Amount: \$573.02

Parcel Number: R17955000 0
Original Amount: \$651.68

[NOTE: To view said Taxes click here.](#)

9. The land described herein is located within the boundaries of the City of Middleton (208-585-6611) and is subject to any assessments levied thereby.
10. The land described herein is located within the boundaries of Middleton Irrigation Association, and is subject to any assessments levied thereby.
11. The land described herein is located within the boundaries of Middleton Mill Ditch Company, and is subject to any assessments levied thereby.
12. The land described herein is located within the boundaries of Black Canyon Irrigation District (208-459-4141) and is subject to any assessments levied thereby.
13. Provisions, reservations, and restrictions as shown by the several contracts between the United States of America and Black Canyon Irrigation District, and the amendments thereto, or between the present owner or past owners of the real property herein described and the Black Canyon Irrigation District, or the United States of America, whether said contracts be of record in the office of the Recorder of Canyon County, Idaho, or on file with the Secretary of Black Canyon Irrigation District.
14. The land described herein is located within the boundaries of Drainage District No. 2 and is subject to any assessments levied thereby; said assessments are collected with the general taxes.
15. The land described herein is located within the boundaries of Canyon County Water Company and is subject to any assessments levied thereby.
16. Water rights, claims or title to water.
17. Rights-of-way for railroad, switch tracks, spur tracks, railway facilities and other related easements, if any, on and across the Land.
18. An easement for the purpose shown below and rights incidental thereto as set forth in an Easement.
Granted to: United States of America, acting through the Department of Interior, Bureau of Reclamation
Purpose: construction, reconstruction and utilization of Willow Creek wasteway
Recorded: May 5, 1954
Instrument No.: 410174
Book 34 of Miscellaneous Records at Page 492, records of Canyon County, Idaho.

[NOTE: To view said document\(s\) click here.](#)

19. An easement for the purpose shown below and rights incidental thereto as set forth in an Easement.
Granted to: United States of America, acting through the Department of Interior, Bureau of Reclamation
Purpose: construction, reconstruction and utilization of Willow Creek wasteway
Recorded: May 5, 1954
Instrument No.: 410176
Book 34 of Miscellaneous Records at Page 494, records of Canyon County, Idaho.

[NOTE: To view said document\(s\) click here.](#)

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20. An easement for the purpose shown below and rights incidental thereto as set forth in document.
Granted to: City of Middleton
Purpose: Utility Purposes
Recorded: August 3, 1977
Instrument No.: 807082, records of Canyon County, Idaho.

[NOTE: To view said document\(s\) click here.](#)

21. An easement for the purpose shown below and rights incidental thereto as set forth in document.
Granted to: City of Middleton
Purpose: Utility Purposes
Recorded: June 23, 1978
Instrument No.: 834940, records of Canyon County, Idaho.

[NOTE: To view said document\(s\) click here.](#)

22. Terms and provisions contained in a City of Middleton Ordinance No. 398/Development Agreement.
Recorded: April 20, 2006
Instrument No.: 200629278, records of Canyon County, Idaho.

[NOTE: To view said document\(s\) click here.](#)

23. All matters, and any rights, easements, interests or claims as disclosed by Record of Survey recorded June 26, 2006 as Instrument No. 200650017, records of Canyon County, Idaho.

[NOTE: To view said document\(s\) click here.](#)

24. All matters, and any rights, easements, interests or claims as disclosed by Record of Survey recorded June 26, 2006 as Instrument No. 200650018, records of Canyon County, Idaho.

[NOTE: To view said document\(s\) click here.](#)

25. Right-of-way for Hawthorne Drive.

26. Right-of-way for Concord Street.

27. Right-of-way for Willow Creek and the rights of access thereto for maintenance of said Creek.

28. Any rights, interests or easements in favor of the State of Idaho, the United States of America, or the public which exist or are claimed to exist in and over the waters, bed and banks of the Willow Creek.

29. Insurance to any movable and/or non-fixed mobile homes or manufactured housing units located on the land described herein, which do not constitute permanent improvements to the real property, is hereby excepted.

30. Right, title and interest of Charles Dean Teichert and Dorothy Teichert, as to a life estate, as disclosed by an Addendum to the Real Estate Purchase and Sale Agreement, dated December 15, 2005, by and between Will Dilmore and Charles Dean Teichert and Dorothy Teichert, husband and wife.

31. Easements, reservations, restrictions, and dedications as shown on the preliminary plat of Creekside Terrace Subdivision.

(End of Exceptions)

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SCHEDULE C

Legal Description:

This parcel is Block 42, 43 and 45 and a portion of Concord Street, Willow Street and Hawthorn Drive as show on the Hawthorn Plat of Middleton, Idaho, on file in the Office of the Recorder, Canyon County in Book 3 at Page 22 of Plats and situated in the Northeast Quarter of the Southwest Quarter and the Southeast Quarter of the Northwest Quarter of Section 6, Township 4 North, Range 2 West of the Boise Meridian, Canyon County, Idaho, more particularly described as follows:

Beginning at the Northeast corner of said Northeast Quarter of the Southwest Quarter; thence along the North boundary of said Northeast Quarter of the Southwest Quarter
 South 89°28'11" West, 30.01 feet to a point on the West right-of-way of said Hawthorn Drive; thence along said West right-of-way
 South 00°50'30" West, 345.00 feet; thence
 North 89°28'11" East, 30.01 feet to a point on the East boundary of said Northeast Quarter of the Southwest Quarter; thence along said East boundary
 South 00°50'30" West, 471.54 feet to a point on the centerline of said Concord Street as shown on Blacks' Addition to the City of Middleton, on file in Book 19 at Page 33 of Plats; thence along said centerline
 South 89°33'55" West, 709.18 feet; thence
 North 00°26'42" West, 13.00 feet; thence
 South 89°35'42" West, 67.87 feet to a point on the centerline of Willow Street as shown on said Blacks' Addition; thence
 North 09°37'42" East, 99.58 feet to a point of curvature; thence along a curve to the left having an arc length of 99.41 feet, a radius of 376.05 feet, through a central angle of 15°08'49" and a chord bearing and distance of North 02°03'18" East, 99.12 feet; thence
 North 05°31'07" West, 122.67 feet to a point of curvature; thence along a curve to the left having an arc length of 137.67 feet, a radius of 348.20 feet, through a central angle of 22°39'10" and a chord bearing and distance of North 16°50'42" West, 136.77 feet; thence
 North 28°10'17" West, 85.85 feet to a point on the centerline of said Willow Street as shown on Lloyd Bowen Estates on file in Book 22 at Page 15 of Plats; thence along said centerline
 North 28°14'31" West, 184.38 feet to a point of curvature; thence along a curve to the right having an arc length of 16.12 feet, a radius of 340.00 feet, through a central angle of 02°43'00" and having a chord bearing and distance of North 26°53'01" West, 16.12 feet; thence
 North 25°31'30" West, 147.15 feet to a point of curvature; thence along a curve to the right having an arc length of 79.91 feet, a radius of 340.00 feet, through a central angle of 13°28'00" and having a chord bearing and distance of North 18°47'30" West, 79.73 feet; thence
 North 12°03'30" West, 217.89 feet to a point of curvature; thence along a curve to the left having an arc length of 32.90 feet, a radius of 75.99 feet, through a central angle of 24°48'13" and having a chord bearing and distance of North 24°27'36" West, 32.64 feet to a point on the projected North boundary of Tract 45 of said Hawthorn Plat of Middleton, Idaho; thence
 North 30°13'56" East, 33.96 feet to a point on the North boundary of said Tract 45; thence along said North boundary
 North 30°13'56" East, 144.20 feet (of record 140 feet); thence
 North 51°41'16" East, 106.93 feet (of record 113 feet); thence
 North 64°41'16" East, 369.40 feet (of record 376.5 feet); thence
 North 61°04'23" East, 227.16 feet (of record 229 feet); thence
 North 24°38'12" East, 287.74 feet (of record 293.4 feet); thence
 North 44°58'44" East, 319.06 feet (of record 326.6 feet) to a point on the Westerly right-of-way of the Idaho Northern Railroad, said point also being on the North boundary of said Southeast Quarter of the Northwest Quarter; thence along the Easterly boundary of said Tract 45
 South 14°43'19" East, 265.10 feet (of record 270 feet) to a point on the East boundary of said Southeast Quarter of the Northwest Quarter; thence along said East boundary
 South 00°50'37" West, 1063.45 feet to the Point of Beginning.

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TitleOne
a title & escrow co.

TitleOne

Authorized Agent for:

Title Resources Guaranty Company

File Number: 20386165

Contact Information

We would like to thank you for your business and we appreciate the opportunity to serve you. The title commitment has been sent to the parties listed below.

If you have any closing questions, please contact your Escrow team:

Scott Darling
sdarling@titleonecorp.com
(208)287-5300

Carly Reyes
creyes@titleonecorp.com
(208) 287-0945

Jill Zimmerman
jzimmerman@titleonecorp.com
(208) 489-7272

Vicky Hill
vhill@titleonecorp.com
(208) 489-7260

TitleOne State License: 712441

If you have any title questions, please contact your Title Officer:

Scott Thiel
sthier@titleonecorp.com
(208) 287-5314

TitleOne Address:
1101 W. River Street, Suite 201
Boise, ID 83702

Agents / Brokers and Transaction Coordinators

Ryan Cantlon
Idaho Commercial Brokerage
ryan@icbre.com
(208) 867-3751

Jonathan Langston
Coldwell Banker Tomlinson
jonlangstoncre@gmail.com

Creekside Terrace Neighborhood Meeting

Location: 113 W Main St Middleton, ID

Date: 2/26/2021

Time: 6:00 pm

Opening: Meeting started at 6pm. Jarron Langston and Rob Nash with Epic Development presented details on the project that included the following:

- The acreage.
- The number of building lots.
- The size of the building lots.
- The amenities.
- The future bridge.
- The improvements on the roads surrounding the project.
- Information regarding FEMA and the flood plain.

Present: See Sign-in Sheet

Concerns from Neighbors:

- Traffic.
- When will the roads be improved.
- Overcrowded Schools.
- Mosquitos coming from the proposed ponds.
- Who would oversee mosquito abatement.
- Flooding impact on neighboring houses.

Adjournment: Meeting ended at approximately 7pm.

Sign-In Sheet

Creekside Terrace Sub - Neighborhood Meeting

02/26/2021

6:00 pm MST

Location : 113 W Main St Middleton ID

Name - Print	Address	Signature
Coop + Karen Gabelman	169 N. Duval Blvd	
Brian Sincere	1255 N. Penn St. ID	
Shay Pyne	3. 8th St	
Andrew Saylor	1372 Laramie Ave	
Patti Jo Lepele	502 N. Hawthorne Ave	
Jim O'Meara	310 N. Ashhome	
Rick Dickens	215 W Tasper Ave	
Bonnie Hall	314 JASPER AVE	
Jeff + Alicia Swartz	1021 Willow Drive	
Ed & Laraine Pitts	1014 LARAIN ST	
Leroy Gilchrist	511 N. Dewey Ave	
Kelly + Lisa Crust	835 Willow Drive	
Jenny + Todd Hill	16453 Hollowell Highway	
Joe Shuey	103 W. 1st St.	

10/103
Mint

Property Owner Acknowledgement

I, B&L Company, LLC By its manager, the record owner for real property addressed as William J Mulder am aware of, in agreement with, and give my permission to ± 33 Acres at NW corner of Concord and Hawthorne streets to submit the accompanying application(s) pertaining to that Epic Development property.

1. I agree to indemnify and hold the City of Middleton and its employees harmless from any claim or liability resulting from any dispute as to the statement(s) contained herein or as to the ownership of the property which is the subject of the application.
2. I hereby grant permission to City of Middleton staff to enter the subject property for the purpose of site inspection(s) related to processing said application(s).

Dated this Ninth day of March, 20 21

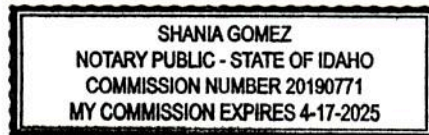
B&L Company, LLC
William J. Mulder
(Signature) William J. Mulder
its Manager

CERTIFICATE OF VERIFICATION

STATE OF IDAHO)
COUNTY OF CANYON) SS.

I, Shania Gomez, a Notary Public, do hereby certify that on this 9 day of March, 20 21, personally appeared before me William Mulder known or identified to me to be the person whose name is subscribed to the foregoing instrument, who, being by me first duly sworn, declared that he/she signed the foregoing document, and that the statements therein contained are true.

Shania Gomez
NOTARY PUBLIC FOR IDAHO
Residing at Canyon County, ID
My Commission Expires 04/17/2025

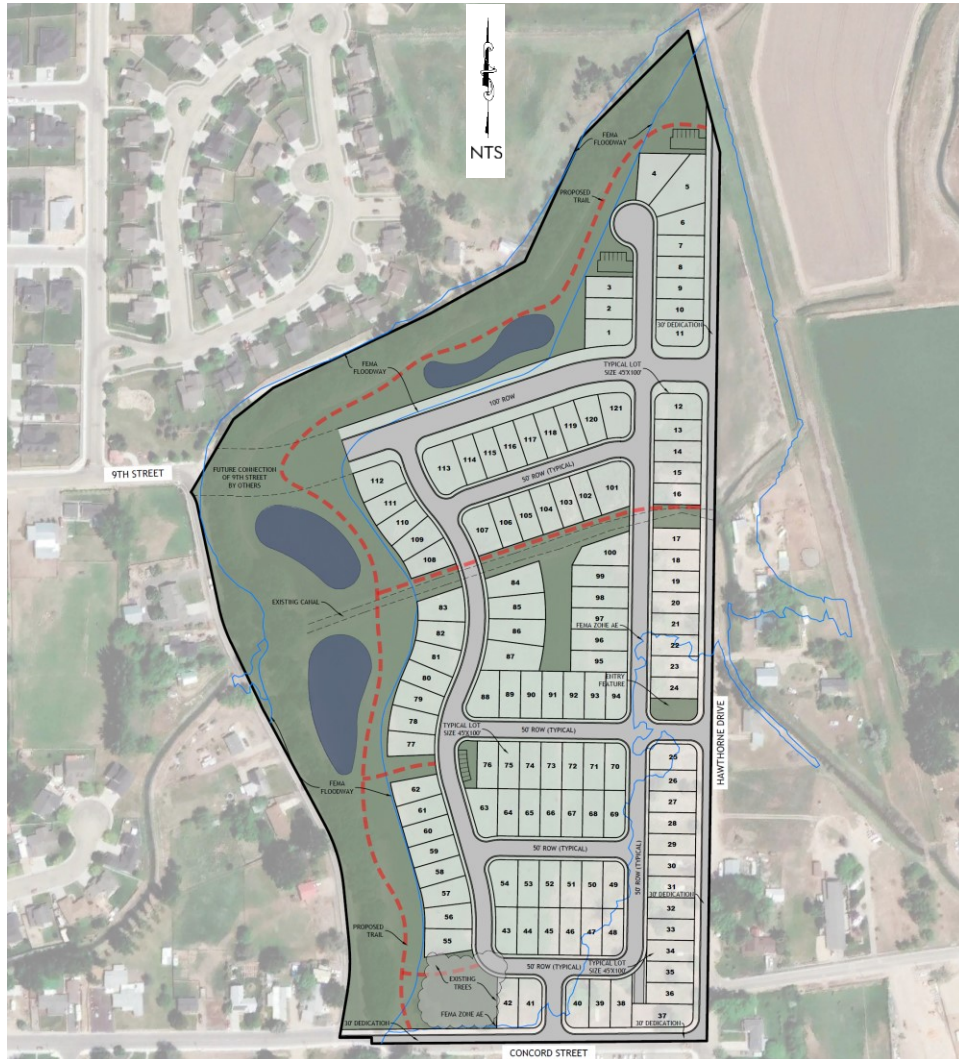


TRAFFIC IMPACT STUDY

CREEKSIDE TERRACE

Middleton, Idaho

March 8, 2021



Prepared For:



Prepared By:



181 East 50th Street
Garden City, ID 83714
(208) 841-4996

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EXECUTIVE SUMMARY

CR Engineering, Inc. has been retained to prepare a traffic impact study (TIS) for the proposed Creekside Terrace development located north of Concord Street between Cemetery Road and Hawthorne Avenue in Middleton, Idaho, as shown in **Figure 1.1**. The scope of the TIS was determined through coordination with the City of Middleton (City) and the Idaho Transportation Department (ITD) and was prepared in accordance with their requirements. The TIS evaluates the potential traffic impacts resulting from background traffic growth, in-process developments within the area, and the proposed development, and makes recommendations for mitigating the impacts. **Table 1** summarizes the improvements needed to mitigate the traffic impacts for the following analysis years traffic conditions:

- 2021 Existing traffic
- 2025 Build-out year background traffic
- 2025 Build-out year total traffic
- 2030 Horizon year background traffic
- 2030 Horizon year total traffic

Table 1 – Intersection Improvements Summary

Intersection		2021 Existing	2025 Build-Out Year		2030 Horizon Year	
			Background	Total	Background	Total
Prior mitigation improvements included in the analysis		NA	2021 Existing	2021 Existing 2025 Background	2021 Existing 2025 Background	2021 Existing 2025 Background 2025 Total 2030 Background
①	Purple Sage Rd and Cemetery Rd	None	None	None	None	None
②	Concord St and Cemetery Rd	None	None	None	None	None
③	Concord St and Hawthorne Ave	None	None	None	None	None
④	Cemetery Rd and SH 44	None	Single-lane roundabout or signal with ITIP lanes	None beyond prior improvements	Multilane roundabout or signal with 2 thru lanes on SH 44	None beyond prior improvements
⑤	Hawthorne Ave and SH 44	EB and WB right-turn lanes	Multilane roundabout or signal with 2 thru lanes on SH 44	None beyond prior improvements	None beyond prior improvements	None beyond prior improvements
⑥	S Middleton Rd and SH 44	None	Unsignalized, remove EBR & restripe TWLTL	None beyond prior improvements	None beyond prior improvements	None beyond prior improvements
⑦	N Middleton Rd and SH 44	None	Multilane roundabout or signal	None beyond prior improvements	Dual lane roundabout or signal with 5 lanes on SH 44 & dual WBL	None beyond prior improvements
⑧	Access A and Hawthorne Ave	NA	NA	Unsignalized site access T-intersection	NA	Unsignalized site access T-intersection
⑨	Access B and Hawthorne Ave	NA	NA	Unsignalized site access T-intersection	NA	Unsignalized site access T-intersection
⑩	Access C and Concord St	NA	NA	Unsignalized site access T-intersection	NA	Unsignalized site access T-intersection

1.0 Proposed Development

- 1.1 Creekside Terrace is a residential development estimate to contain 121 single-family lots with an anticipated 2025 build-out year.
- 1.2 Based on ITE Trip Generation Manual, the development is estimated to generate approximately 1,240 trips per day, 91 trips during the AM peak hour, and 122 trips during the PM peak hour
- The development is not expected to attract pass-by trips or capture trips internally within the site
 - All trips generated by the development are expected to be made by personal and commercial vehicles
 - The estimated general site traffic distribution patterns are:
 - 10% north of the site traveling on Cemetery Road and distributing onto various roadways within the City of Middleton
 - 35% south of the site traveling on Middleton Road
 - 40% east of the site traveling on SH 44
 - 15% west of the site traveling on SH 44
- 1.3 According to the preliminary site plan, the development is proposing two site access points on Hawthorne Avenue and one access point on Concord Street.
- Access A on Hawthorne Avenue
 - Located approximately 760 feet north of Access B
 - Meets minimum spacing on Hawthorne Avenue, a 25-mph local street
 - Not expected to require turn lanes based on NCHRP Report 457 guidelines under 2025 build-out year and 2030 horizon year total traffic conditions
 - Expected to meet minimum operational thresholds under 2025 build-out year and 2030 horizon year total traffic conditions
 - Access B on Hawthorne Avenue
 - Located approximately 660 feet north of Concord Street
 - Meets minimum spacing on Hawthorne Avenue
 - Not expected to require turn lanes based on NCHRP Report 457 guidelines under 2025 build-out year and 2030 horizon year total traffic conditions
 - Expected to meet minimum operational thresholds under 2025 build-out year and 2030 horizon year total traffic conditions
 - Access C on Concord Street
 - Located approximately 350 feet east of 2nd Avenue and approximately 330 feet west of Hawthorne Avenue
 - Meets minimum spacing on Concord Street
 - Not expected to require turn lanes based on NCHRP Report 457 guidelines under 2025 build-out year and 2030 horizon year total traffic conditions
 - Expected to meet minimum operational thresholds under 2025 build-out year and 2030 horizon year total traffic conditions

2.0 Improvements Needed to Mitigate 2021 Existing Traffic

2.1 With 2021 existing traffic, all study area intersection currently exceeds minimum operational thresholds analyzed with the existing intersection control and lane configuration. One study area intersection meets ITD turn-lane guidelines:

■ Hawthorne Avenue and SH 44 intersection

- Eastbound right-turn lane
- Westbound right-turn lane

3.0 Improvements Needed to Mitigate 2025 Build-Out Year Background Traffic

3.1 The City of Middleton is planning to construct the Middleton Road realignment project in the 2022-2023 timeframe but may change depending on funding. The following intersection improvements are anticipated to be constructed with the Middleton Road realignment project and were included in the 2025 background traffic analysis:

■ S Middleton Road and SH 44 intersection

- Remove signal and restripe with a center two-way left-turn lane
 - The center turn lane will allow two-stage gap acceptance for the northbound left-turning traffic and will improve the intersection operations

■ N Middleton Road and SH 44 intersection

- Reconstruct and install a traffic signal

3.2 With 2025 background traffic, three study area intersections are expected to exceed minimum operational thresholds analyzed with the existing intersection control and lane configurations or with the mitigation improvements needed under 2021 existing traffic conditions and planned improvements. The intersections and proposed improvements are:

■ Cemetery Road and SH 44 intersection (two options)

- Option 1 – Roundabout
 - Single-lane roundabout with an additional right-turn lane on the westbound approach
 - The intersection is identified as a future roundabout according to the City's transportation plan
- Option 2 – Signal
 - The signal should have the following lanes as programmed in the *Idaho Transportation Investment Program (ITIP)*:
 - One left-turn lane, one through lane, and one right-turn lane on the eastbound and westbound approaches
 - One left-turn lane and one shared through/right-turn lane on the northbound and southbound approaches

■ Hawthorne Avenue and SH 44 intersection (two options)

- Option 1 – Multilane roundabout
 - The roundabout will need the following lane configurations to mitigate 2025 background traffic operations:
 - One shared lane on the northbound and southbound approaches
 - Two entering and exiting lanes on the eastbound and westbound approaches
- Option 2 – Signal
 - The signal will need the following lanes to mitigate 2025 background traffic operations

- One left-turn lane and one shared through/right-turn lane on the northbound and southbound approaches
- One left-turn lane, one through lane, and one shared through/right-turn lane on the eastbound and westbound approaches

■ **N Middleton Road and SH 44 intersection (two options)**

- Option 1 – Multilane roundabout
 - The intersection is identified as a future roundabout according to the City’s transportation plan
 - The roundabout will need the following lane configurations to mitigate 2025 background traffic operations:
 - Two entering and exiting lanes on the eastbound and westbound approaches
 - One shared through/left-turn lane and one right-turn lane on the Middleton Road approaches
- Option 2 – Signal
 - A signal is the preferred intersection traffic control according to the Middleton Road and SH 44 corridor plans
 - The signal will need one left-turn lane, one through lane, and one right-turn lane on all approaches to mitigate 2025 background traffic operations

3.3 No other study area intersections are anticipated to warrant additional turn lanes based on NCHRP Report 457 turn lane guidelines with 2025 build-out year background traffic conditions.

4.0 Improvements Needed to Mitigate 2025 Build-Out Year Total Traffic

4.1 With 2025 total traffic, all study area intersections are anticipated to meet minimum operational thresholds analyzed with the existing intersection control and lane configurations or with the preceding improvements needed to mitigate 2021 existing and 2025 background traffic operations, with the exception of one intersection:

■ **Cemetery Road and SH 44 intersection**

- No additional improvements are proposed to mitigate 2025 build-out year total traffic operations
 - Meets minimum operational thresholds as a signalized intersection
 - Meets minimum operational thresholds as a single-lane roundabout with the exception of one lane group. The westbound shared through/left-turn lane group is expected to operate with a v/c ratio of 0.91 during the PM peak hour, which slightly exceeds ITD 0.90 threshold

4.2 No other study area intersections are anticipated to warrant additional turn lanes based on NCHRP Report 457 turn lane guidelines with 2025 build-out year total traffic conditions.

5.0 Improvements Needed to Mitigate 2030 Horizon Year Background Traffic

5.1 With 2030 background traffic, two study area intersections are expected to exceed minimum operational thresholds analyzed with the existing intersection control and lane configurations or with the preceding improvements needed to mitigate prior analysis years traffic conditions. The intersections and proposed improvements are:

■ **Cemetery Road and SH 44 intersection**

- Roundabout – Reconstruct to have the following lanes:
 - Two entering and exiting lanes on the eastbound and westbound approaches
 - One shared lane on the northbound and southbound approaches

- Signal – Reconstruct intersection with the following lanes:
 - One left-turn lane, one through lane, and one shared through/right-turn lane on the eastbound and westbound approaches
 - One left-turn lane and one shared through/right-turn lane on the northbound and southbound approaches

■ **N Middleton Road and SH 44 intersection**

- Roundabout – Reconstruct to have the following lanes:
 - Two entering and exiting lanes on all approaches
 - Expected to exceed minimum operational thresholds as a dual lane roundabout
 - No additional improvements are proposed to mitigate the roundabout as a traffic signal is the preferred intersection traffic control according to the SH 44 corridor plan
- Signal – Widen intersection to have the following lanes:
 - One left-turn lane, one through lane, and one shared through/right-turn lane on the eastbound approach
 - Dual left-turn lanes, one through lane, and one shared through/right-turn lane on the westbound approach
 - One left-turn lane, one through lane, and one right-turn lane on the northbound and southbound approaches

5.2 No other study area intersections are anticipated to warrant additional turn lanes based on NCHRP Report 457 turn lane guidelines with 2030 background traffic conditions.

6.0 Improvements Needed to Mitigate 2030 Horizon Year Total Traffic

6.1 With 2030 total traffic, one study area intersection is expected to exceed minimum operational thresholds analyzed with the existing intersection control and lane configurations or with the preceding improvements needed to mitigate the prior analysis years traffic conditions. The intersection and proposed improvements are:

■ **N Middleton Road and SH 44 intersection**

- Roundabout
 - Expected to continue to exceed minimum operational thresholds as a dual-lane roundabout
 - Roundabout is not the preferred intersection traffic control at this intersection according to the SH 44 corridor plan; therefore, no additional improvements are proposed
- Signal
 - No additional improvements beyond the mitigation improvements needed for 2030 background traffic are needed to mitigate 2030 total traffic operations

6.2 No other study area intersections are anticipated to warrant additional turn lanes based on NCHRP Report 457 turn lane guidelines with 2030 total traffic conditions.

7.0 Proportionate Share Contribution

7.1 The estimated site traffic generated by Creekside Terrace as a percentage of the 2025 build-out year total traffic are as follows:

- Purple Sage Road and Cemetery Road intersection
 - AM Peak=1.3% and PM Peak=1.3%, Average=1.3%
- Concord Street and Cemetery Road intersection
 - AM Peak=2.8%, PM Peak=4.9%, Average=3.8%
- Concord Street and Hawthorne Avenue intersection
 - AM Peak=22.1%, PM Peak=34.0%, Average=28.0%
- Cemetery Road and SH 44 intersection
 - AM Peak=0.8% and PM Peak=0.8%, Average=0.8%
- Hawthorne Avenue and SH 44 intersection
 - AM Peak=3.5%, PM Peak=4.4%, Average=3.9%
- S Middleton Road and SH 44 intersection
 - AM Peak=3.5% and PM Peak=4.8%, Average=4.2%
- N Middleton Road and SH 44 intersection
 - AM Peak=2.3% and PM Peak=2.8%, Average=2.5%

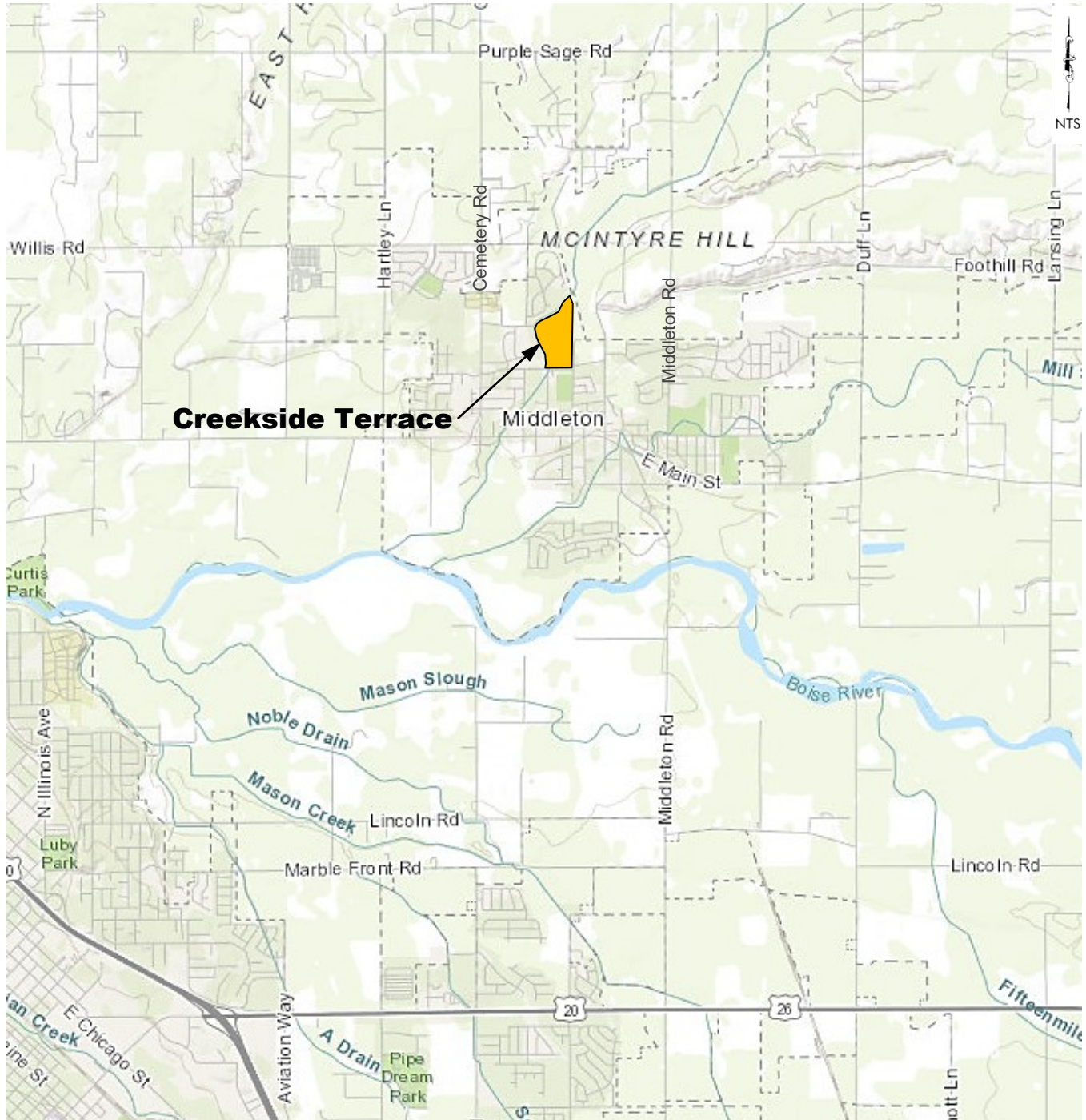
7.2 The estimated site traffic generated by Creekside Terrace as a percentage of the 2030 horizon year total traffic are as follows:

- Purple Sage Road and Cemetery Road intersection
 - AM Peak=0.9% and PM Peak=0.9%, Average=0.9%
- Concord Street and Cemetery Road intersection
 - AM Peak=2.4%, PM Peak=4.1%, Average=3.2%
- Concord Street and Hawthorne Avenue intersection
 - AM Peak=20.9%, PM Peak=32.7%, Average=26.8%
- Cemetery Road and SH 44 intersection
 - AM Peak=0.7%, PM Peak=0.7%, Average=0.7%
- Hawthorne Avenue and SH 44 intersection
 - AM Peak=2.9% and PM Peak=3.7%, Average=3.3%
- S Middleton Road and SH 44 intersection
 - AM Peak=2.9% and PM Peak=3.9%, Average=3.4%
- N Middleton Road and SH 44 intersection
 - AM Peak=1.8% and PM Peak=2.2%, Average=2.0%

1.0 INTRODUCTION

CR Engineering, Inc. has been retained to prepare a traffic impact study (TIS) for the proposed Creekside Terrace development located north of Concord Street between Cemetery Road and Hawthorne Avenue in Middleton, Idaho. **Figure 1.1** shows the site location and its vicinity. The TIS evaluates the potential traffic impacts resulting from background traffic growth, in-process developments within the area, and the proposed development, and identifies improvements to mitigate the impacts if needed.

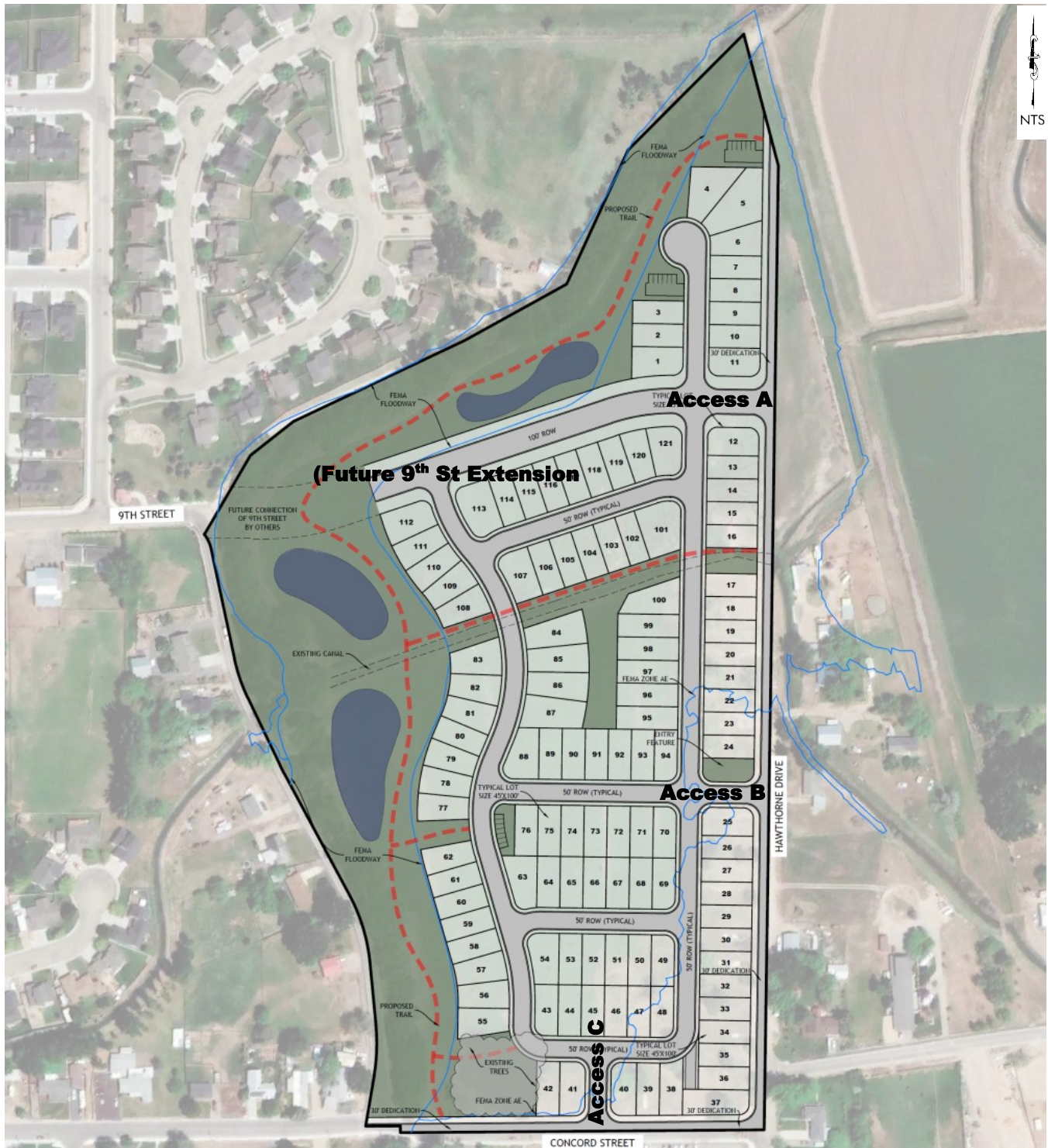
Figure 1.1 – Site Location and Vicinity



1.1 Proposed Development

Figure 1.2 shows the preliminary site plan. Creskide Terrace is a proposed residential development estimate to contain 121 single-family lots. The development is planning to improve Concord Street and Hawthorne Avenue along the site frontages. Two access points are proposed on Hawthorne Avenue. One access point is proposed on Concord Street. The northern access on Hawthorne Avenue corresponds to the future 9th Street extension.

Figure 1.2 – Preliminary Site Plan



1.2 Study Approach

The study follows the City of Middleton (City) and Idaho Transportation Department (ITD) requirements for traffic impact studies. The TIS scope was coordinated with the City and ITD Staff. Scoping documents and correspondences are included in the appendix.

1.3 Study Area

The following study area intersections were identified for the traffic impact analysis:

- Purple Sage Road and Cemetery Road intersection
- Concord Street and Cemetery Road intersection
- Hawthorne Avenue and Concord Street intersection
- Cemetery Road and SH 44 intersection
- Hawthorne Avenue and SH 44 intersection
- S Middleton Road and SH 44 intersection
- N Middleton Road and SH 44 intersection
- Proposed site access intersections

1.4 Study Period

The analysis peak periods are AM and PM peak hours. The analysis years and traffic scenarios are:

- 2021 Existing traffic
- 2025 Build-out year background traffic
- 2025 Build-out year total traffic
- 2030 Horizon year background traffic
- 2030 Horizon year total traffic

1.5 Analysis Methods and Performance Measure Thresholds

Intersection capacity analysis was performed using Synchro 10 (Version 10.3.151.0), which utilizes the Highway Capacity Manual (HCM) 6th Edition methodologies. All parameters used in the analysis were based on existing data when available or Synchro default values, when not available. Level of service (LOS) for intersections is based on the average delay of vehicles traveling through the intersection on a scale of A (best) to F (worst).

The study area roadways and intersections fall under the jurisdiction of the City, Canyon Highway District No. 4 (CHD4), and ITD. The minimum operational threshold is LOS C for the City intersections and LOS D for CHD4 and ITD intersections with a volume to capacity ratio (v/c) of 0.90 for the overall intersection and lane group.

The HCM 6th Edition methodology does not define an overall intersection v/c ratio as a measure of effectiveness (MOE) for signalized intersections. For this study, the overall intersection v/c ratio was estimated using Synchro based on HCM 2000 methodologies.

2.0 EXISTING CONDITIONS

2.1 Roadway Network, Intersection Control, and Lane Configuration

A brief description of the existing roadways within the study area is summarized in **Table 2.1** below. The roadway functional classification is based on the City of Middleton Functional Classification Map and COMPASS 2040 Functional Classification Map. **Figure 2.1** summarizes the intersection control and lane configurations.

Table 2.1 – Existing Roadway Characteristics

Roadway	Functional Classification	Number of Lanes	Posted Speed Limit (mph)	Pedestrian Facilities
Purple Sage Rd	Minor Arterial	2	50	• None
Cemetery Rd	Major Collector	2/3	35	• Sidewalks and bicycle lanes on both sides
Concord St	Local Street	2	25	• Sidewalk along developed frontages
Hawthorne Ave	Local Street	2	25	• Sidewalk along developed frontages
SH 44	Principal Arterial	2/3	25/35	• Sidewalks west of N Middleton Rd
N Middleton Rd	Minor Arterial	2/3	25	• Sidewalk on both sides
S Middleton Rd	Principal Arterial	3	25/35/50	• Sidewalk along developed frontages

2.2 Existing Traffic Volumes

Existing weekday AM and PM peak hour traffic counts at the study area intersections were collected between May 2019 and January 2021. The older traffic counts were obtained from previous studies in the area. The peak hour intersection turning movement counts were collected on a weekday for a 2-hour period at 15-minute intervals between 7:00 and 9:00 during the AM peak travel period hour and between 4:00 and 6:00 during the PM peak travel period. Existing counts are included in the appendix. Older traffic counts were scaled up to 2021 volumes using growth rates as discussed in Section 3.2. 2021 existing AM and PM peak hour traffic volumes are summarized in **Figure 2.2** and **Figure 2.3**, respectively.

The following intersections were counted in January 2021:

- Concord Street and Cemetery Road intersection
- Concord Street and Hawthorne Avenue intersection
- Hawthorne Avenue and SH 44 intersection

These 2021 intersection counts were reviewed and compared to older counts to determine if adjusted are needed to account for the potentially reduced travel demand impacted by the COVID-19. The 2021 counts at the Hawthorne and SH 44 intersection show the volumes on SH 44 are generally higher than the older counts at intersections to the west and east. The 2021 counts on Cemetery Road were also higher than the older counts. As a result, no adjustments were made to the 2021 counts.

Figure 2.1 – 2021 Existing Intersection Control and Lane Configuration

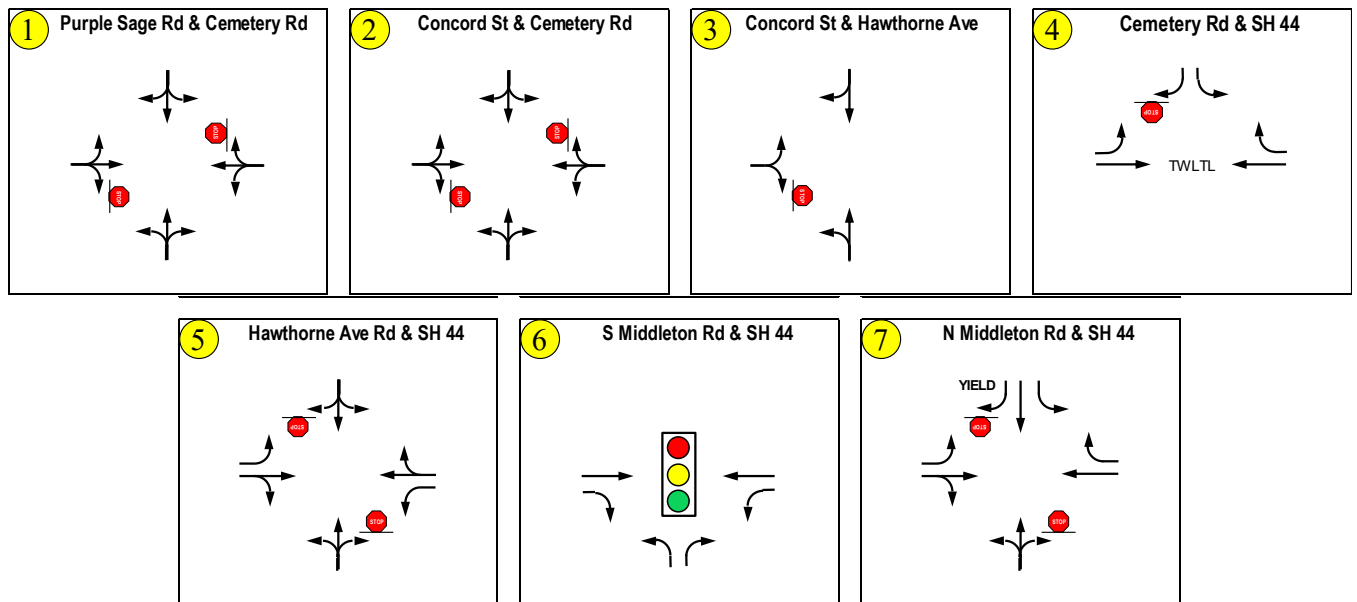
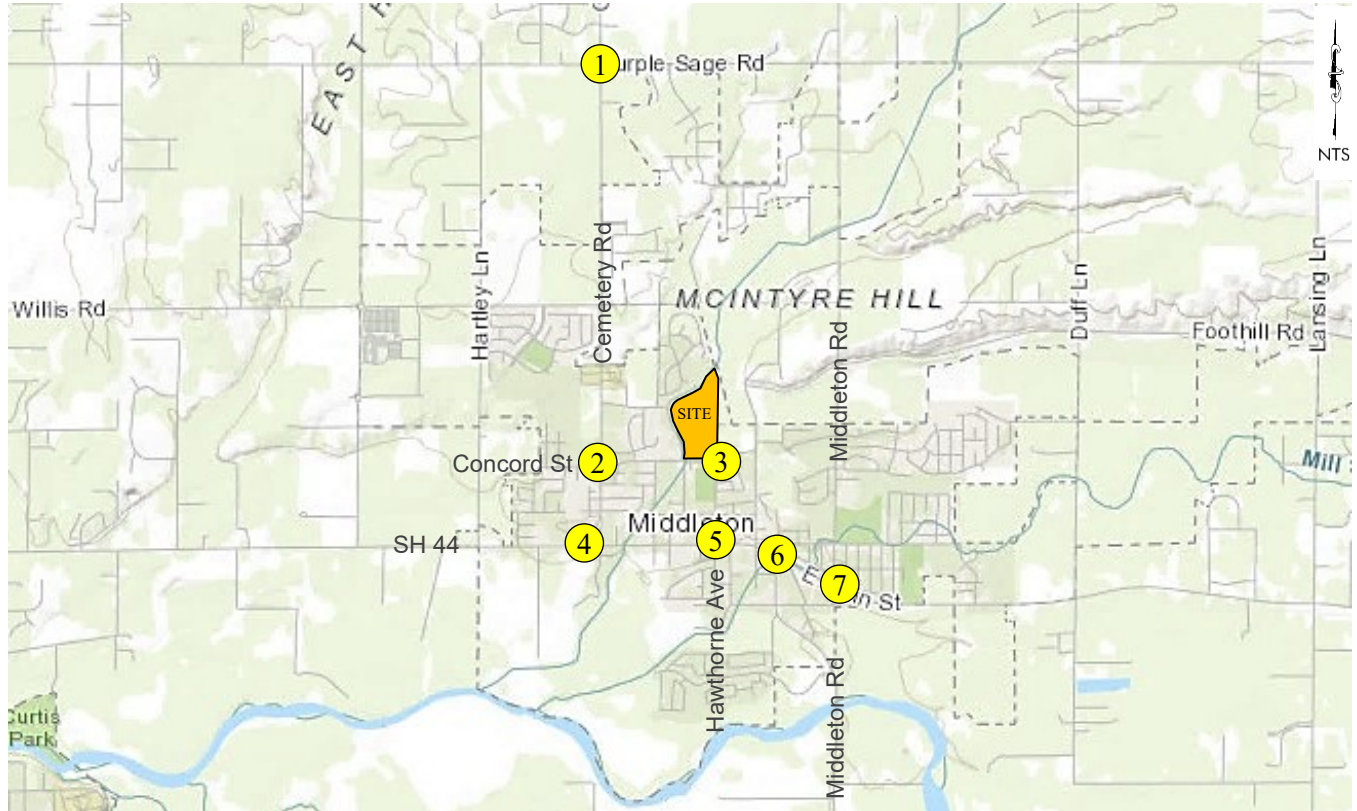


Figure 2.2 – 2021 Existing AM Peak Hour Traffic

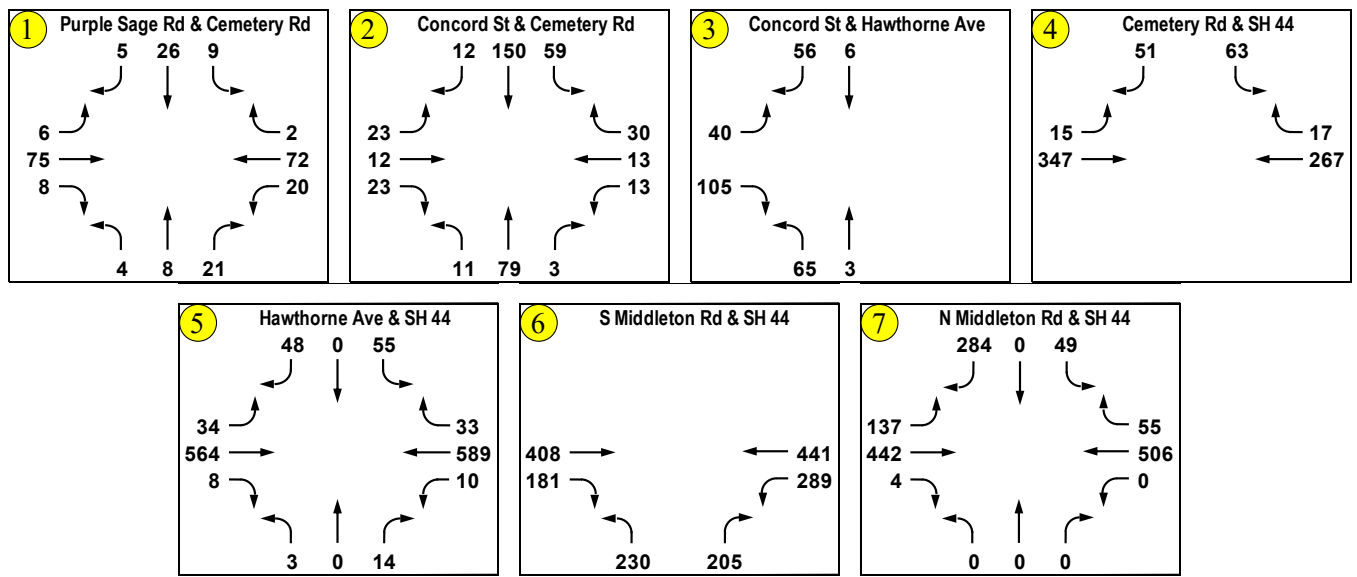
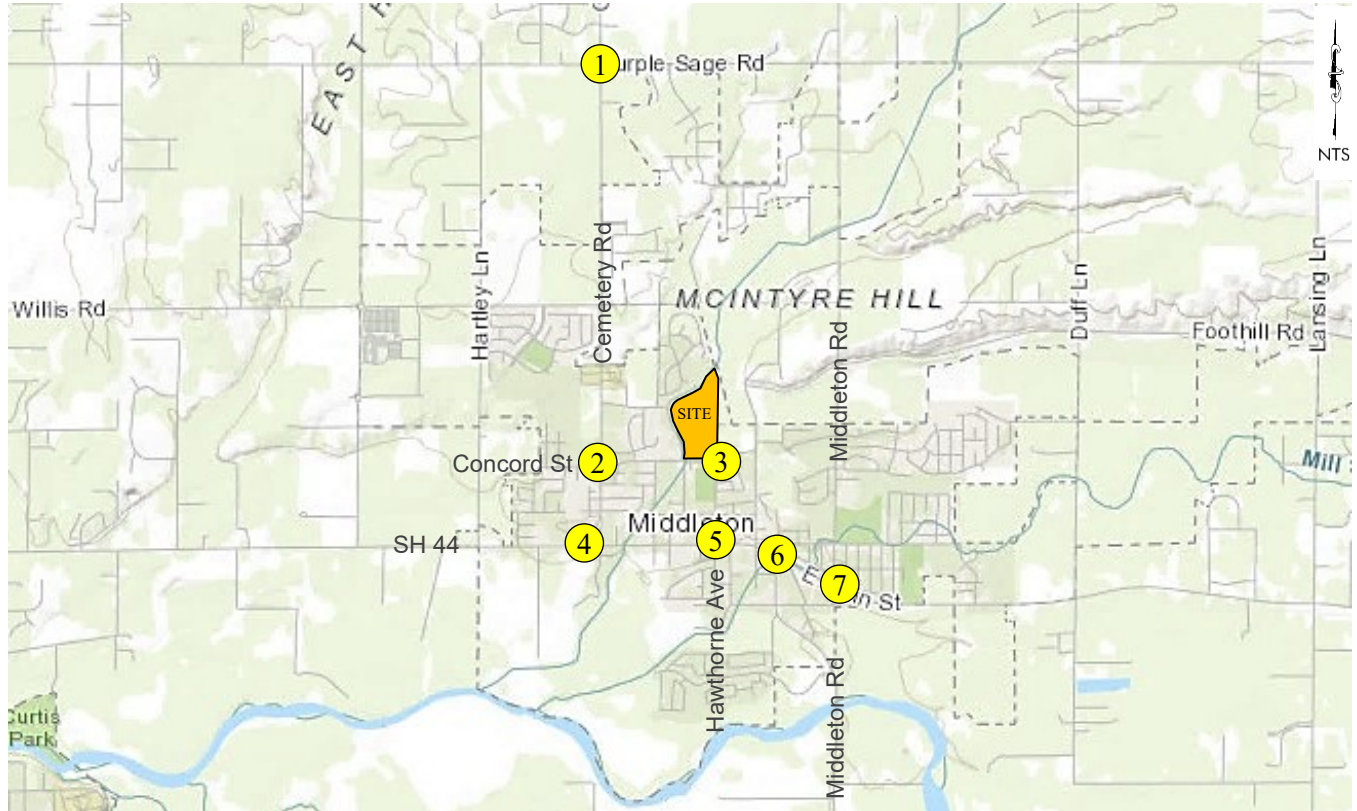
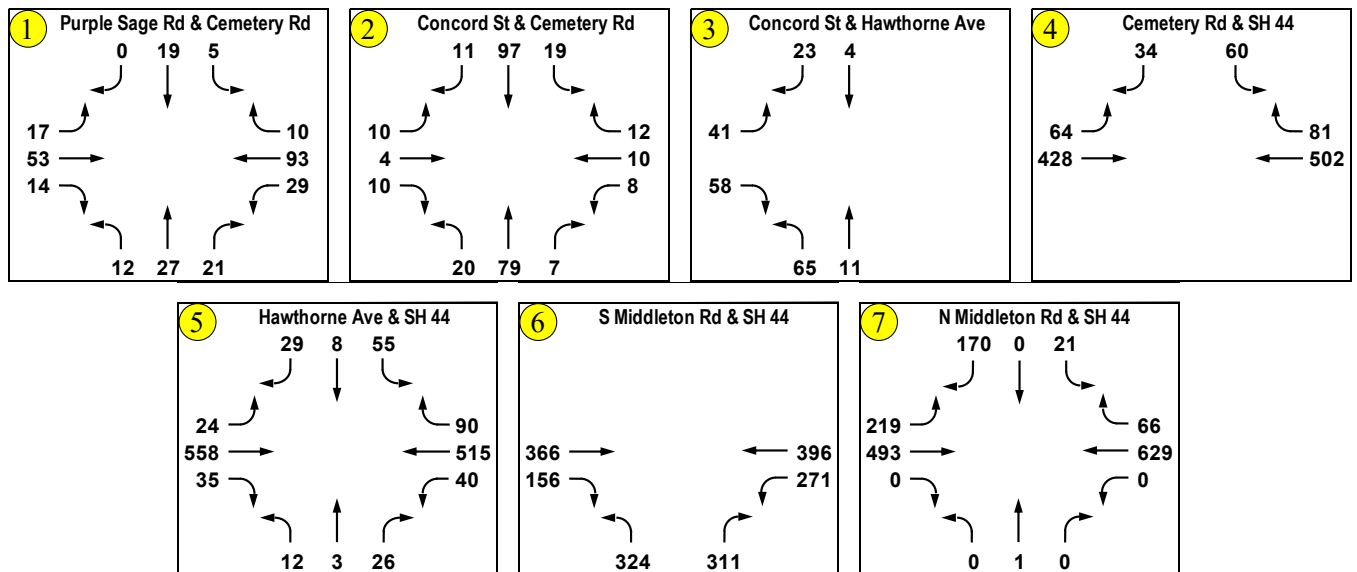
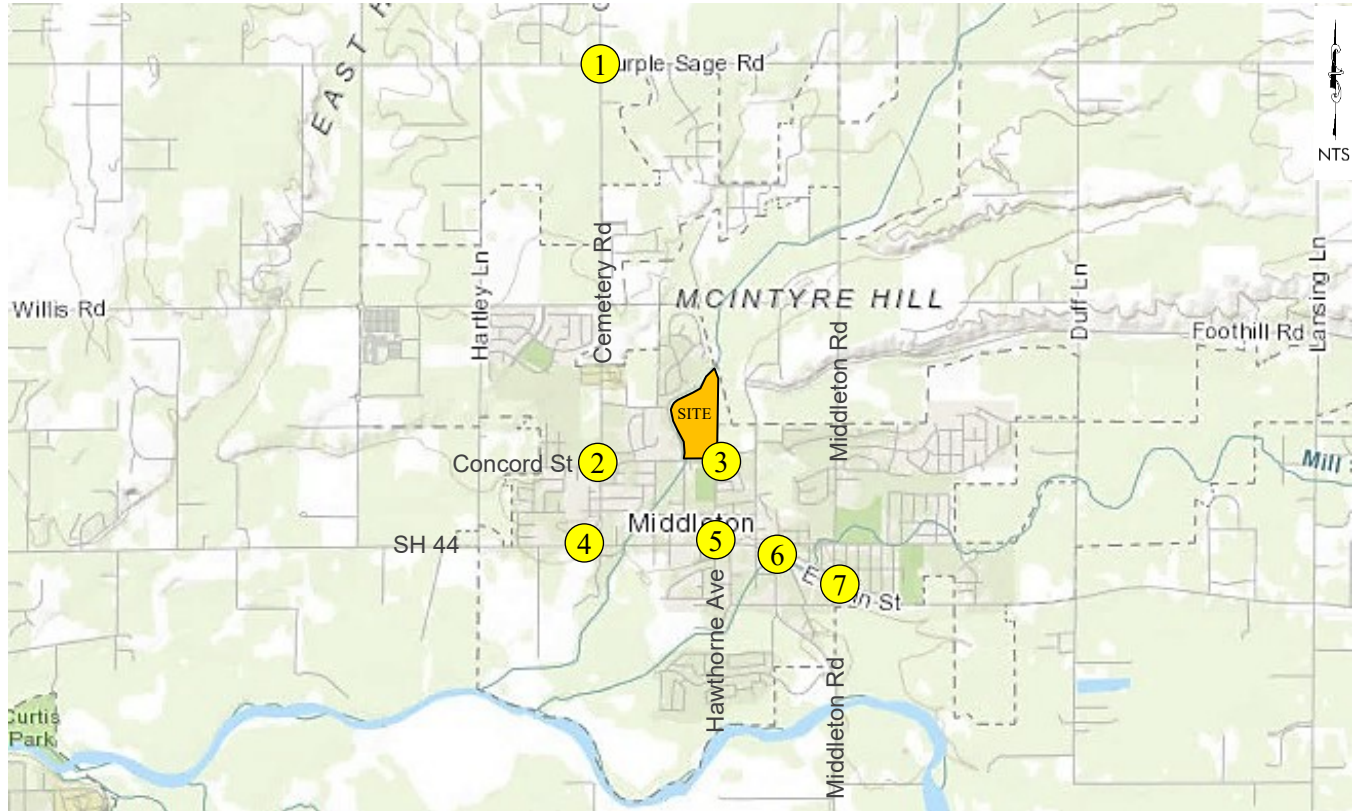


Figure 2.3 – 2021 Existing PM Peak Hour Traffic



2.3 Intersection Crash Data

The most current five-year crash data (2015-2019) was obtained from the Local Highway Technical Assistance Council (LHTAC) website (<http://gis.lhtac.org/safety/>). **Table 2.2** summarizes the crash data for the study area intersections. There were fatal crashes reported at the study area intersections. Review of the intersection historical crash data shows no apparent crash issues to require mitigation improvements.

Table 2.2 – Intersection Crash Data (2015-2019)

Intersection	Total Crashes	Crash Severity			Notes
		PDO	Injury	Fatal	
① Purple Sage Rd and Cemetery Rd	5	4	1	0	• 4 angle crashes
② Concord St and Cemetery Rd	NO REPORTED CRASHES				
③ Concord St and Hawthorne Ave	NO REPORTED CRASHES				
④ Cemetery Rd and SH 44	6	6	0	0	• 3 angle-turning crashes and 3 rear-end crashes • 4 (67%) crashes occurred in the southbound direction
⑤ Hawthorne Ave and SH 44	3	2	1	0	• One crash involving a pedacycle
⑥ S Middleton Rd and SH 44	4	1	3	0	• All rear-end crashes on SH 44 approaches
⑦ N Middleton Rd and SH 44	6	4	2	0	• 3 rear-ends in southbound direction • 1 lane departure hitting a parked car

2.4 Intersection Operations

To determine the existing traffic operations, the study area intersections were analyzed with the existing intersection control and lane configuration and 2021 peak hour traffic. Copies of the analysis reports are included in the appendix. **Table 2.3** summarizes the measures of effectiveness (MOEs) from the intersection capacity analysis results. All study area intersections currently meet minimum operational thresholds with 2021 existing traffic conditions.

2.5 Intersection Mitigation

All study area intersection currently meets minimum operational thresholds with 2021 existing traffic. One study area intersection meets ITD turn-lane guidelines:

- Hawthorne Avenue and SH 44 intersection
 - Eastbound right-turn lane
 - Westbound right-turn lane

Turn lane warrant and mitigation analysis worksheets are included in the appendix. **Table 2.4** summarizes the intersection operations with the additional right-turn lanes. The additional right-turn lanes are not expected to significantly improve the intersection operations. Furthermore, constructing the right-turn lanes may not be feasible as the areas adjacent to the intersections are build-out with commercial uses.

Table 2.3 – Intersection Operations – 2021 Existing Traffic

Intersection		Control / Lane	MOEs	AM Peak Hour	PM Peak Hour
①	Purple Sage Rd and Cemetery Rd		EB / WB LOS	B / B	B / B
			EB / WB Delay [s/veh]	10 / 10	10 / 11
			Worst Movement MOEs	B / 0.14 (WB)	B / 0.20 (WB)
②	Concord St and Cemetery Rd		EB / WB LOS	C / B	B / B
			EB / WB Delay [s/veh]	18 / 15	11 / 11
			Worst Movement MOEs	C / 0.25 (EB)	B / 0.05 (EB)
③	Concord St and Hawthorne Ave		EB LOS	B	A
			EB Delay [s/veh]	10	10
			Worst Lane Group MOEs	B / 0.21 (EB)	A / 0.16 (EB)
④	Cemetery Rd and SH 44		SBL / SBR LOS	B / B	C / B
			SBL / SBR Delay [s/veh]	12 / 10	16 / 12
			Worst Movement MOEs	B / 0.12 (SBL)	C / 0.16 (SBL)
⑤	Hawthorne Ave and SH 44		NB / SB LOS	C / D	C / C
			NB / SB Delay [s/veh]	17 / 32	17 / 24
			Worst Movement MOEs	D / 0.52 (SB)	C / 0.35 (SB)
⑥	S Middleton Rd and SH 44		Intersection LOS	B	B
			Intersection Delay [s/veh]	16	15
			Intersection v/c	0.67	0.58
			Worst Lane Group MOEs	C / 0.76 (NBR)	C / 0.77 (NBR)
⑦	N Middleton Rd and SH 44		NB / SB LOS	- / D	D / D
			NB / SB Delay [s/veh]	- / 31	33 / 33
			Worst Lane Group MOEs	D / 0.29 (SBL)	D / 0.15 (SBL)

- Zero volume

Table 2.4 – Intersection Operations – 2021 Existing Traffic Mitigation

Intersection		Control / Lane Mitigation	MOEs	AM Peak Hour	PM Peak Hour
⑤	Hawthorne Ave and SH 44		NB / SB LOS	C / D	C / C
			NB / SB Delay [s/veh]	17 / 31	16 / 23
			Worst Movement MOEs	D / 0.51 (SB)	C / 0.34 (SB)

3.0 2025 BUILD-OUT YEAR BACKGROUND TRAFFIC CONDITIONS

3.1 Roadway Network

According to the 2021-2027 ITD *Idaho Transportation Investment Program* (ITIP), the intersection of Cemetery Road and SH 44 will be converted to a two-way stop-controlled intersection and Cemetery Road will be extended to the south connecting to Sawtooth Lake Drive in 2021. This will provide an additional route from Middleton Road to SH 44 beyond the existing S Middleton Road and SH 44 intersection.

The City of Middleton is planning to construct the realignment of Middleton Road in 2022-2023 timeframe but may change depending on funding. With the Middleton Road realignment, the signal at S Middleton Road and SH 44 intersection may be removed. A new signal will be installed at the N Middleton Road and SH 44 intersection.

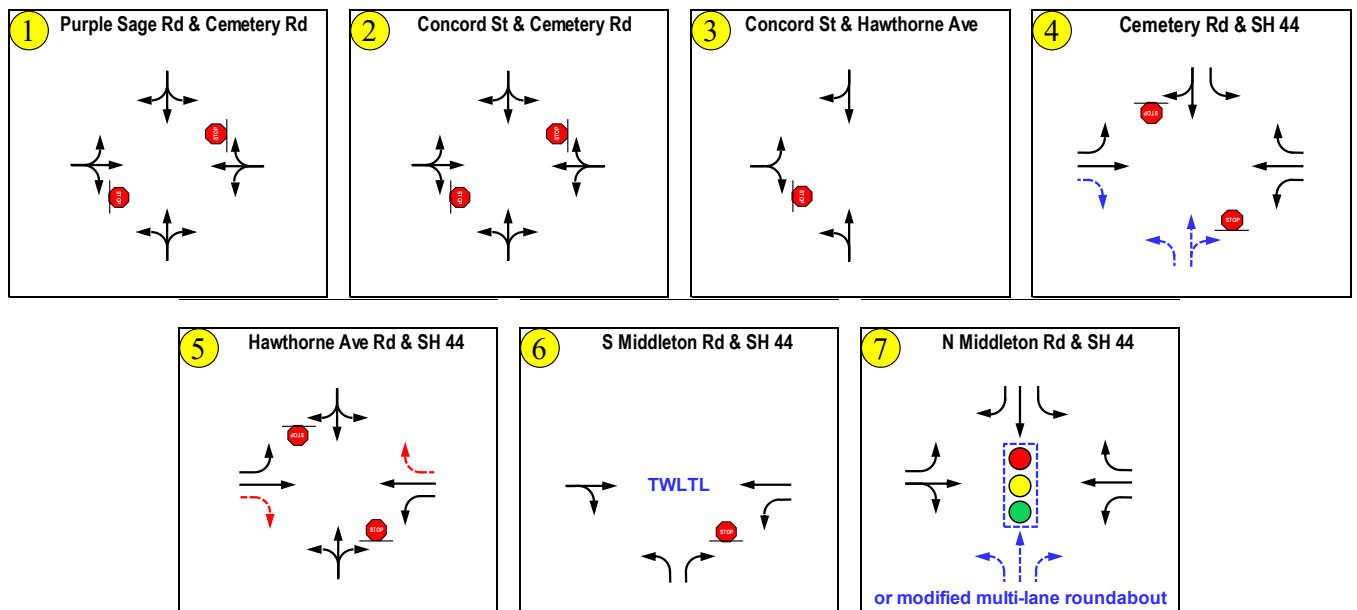
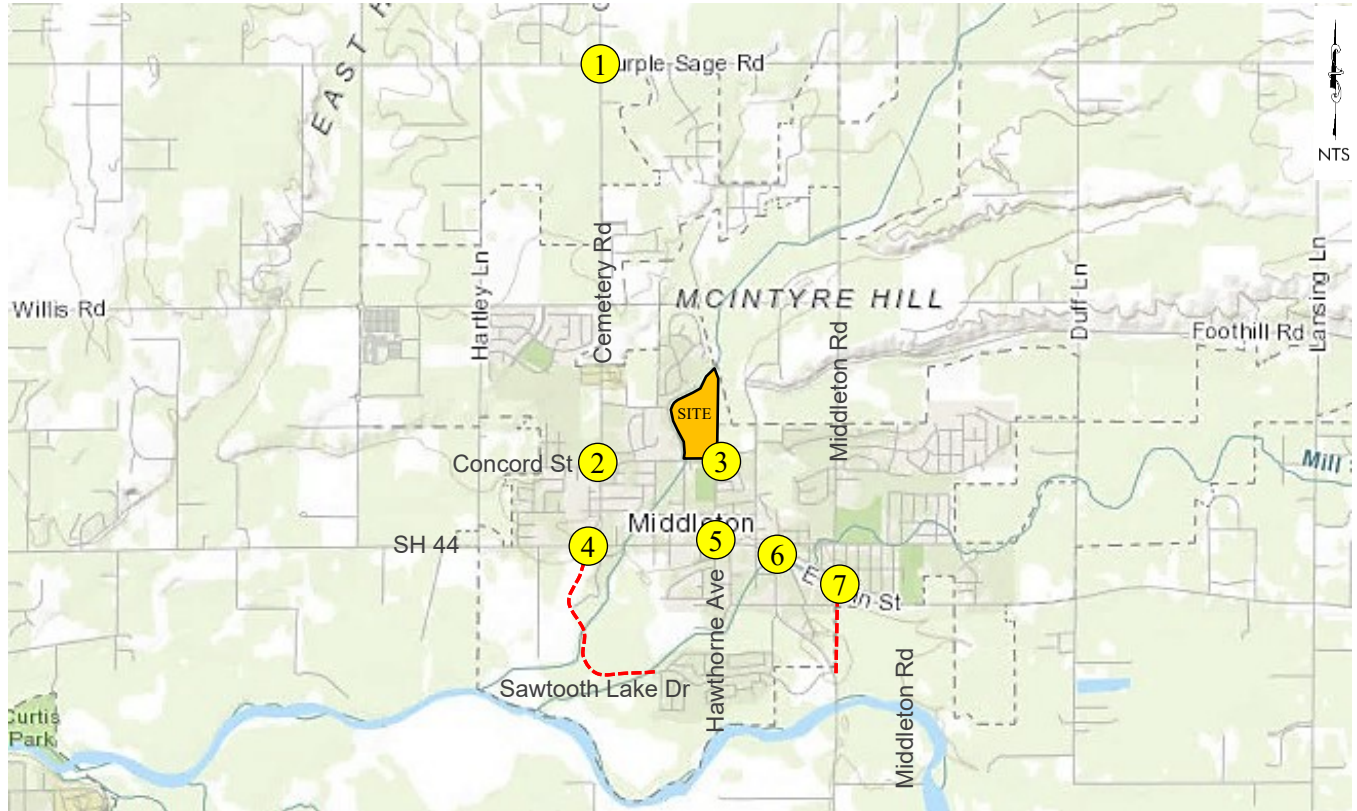
Also included with the Middleton Road realignment project is the widening of Middleton Road between SH 44 and Sawtooth Lake Drive. Off-site developments will be conditioned to construct one-half of the five lanes of the Middleton Road realignment along their site frontages. However, no further details on timing have been available at this time as the City and ITD continue to discuss the SH 44 bypass project.

There are additional roadway and intersection improvements planned within the study area’s vicinity. **Table 3.1** summarizes the planned improvements within the study area based on the City, CHD4, and ITD transportation plans. These planned improvements will be considered for mitigating traffic impacts if needed. **Figure 3.1** summarizes 2025 background intersection control and lane configurations assumed in this TIS.

Table 3.1 – Planned Improvements Summary

Transportation Plan	Project	Project Year	Funding
City of Middleton Comprehensive Plan (Updated maps, July 2019)	Cemetery Road and SH 44 intersection: Roundabout construction	Future	Unfunded
	N Middleton Road and SH 44 intersection: Roundabout construction	Future	Unfunded
	Middleton Road: Part 1 Realignment (New Construction)	2020	Programmed
	Middleton Road: Part 2 Realignment (New Construction)	2022	Unfunded
Middleton Road Corridor Plan	SH 44 and Middleton Road intersection: Signal	Future	Unfunded
SH 44 Corridor Plan	Cemetery Road and SH 44 intersection: Construct roundabout	Future	Unfunded
	S Middleton Road and SH 44 intersection: Conversion to unsignalized intersection	Future	Unfunded
	N Middleton Road and SH 44 intersection: Signal construction	Future	Unfunded
ITD FY2021-2027 ITIP	Cemetery Road from SH 44 to Willow Creek Road Construct a new 0.284-mile roadway segment linking SH-44 and Middleton Road by way of Sawtooth Lake Drive in Middleton	2021	Funded
	N Middleton Road and Cornell Street intersection Construct a mini-roundabout to reduce/eliminate serious injury and fatal crashes	2021	Funded

Figure 3.1 – Intersection Control and Lane Configuration for 2025 Background Traffic Conditions



3.2 Background Traffic

Background traffic growth from 2021 to 2025 was estimated by extrapolating the existing traffic counts with the following annual growth rates:

- Purple Sage Road – 9%
- Concord Street – 2%
- Hawthorne Avenue – 2%
- Cemetery Road – 2%
- SH 44 – 3%
- Middleton Road – 3%

These growth rates are estimated from COMPASS traffic forecasts and historical traffic volumes within the area. According to the COMPASS 2040 Communities in Motion demographic forecasts, the population of the Greater Middleton area is forecasted to be 11,805 with 3,916 households in 2025, a 430-household increase from 2019. However, multiple TISs conducted from 2019 have included a much greater number of household increase in this six-year span, with the accumulative household increase exceeding 1,000 new homes. To account for this additional growth beyond the COMPASS forecasted growth, off-site traffic generated by in-process developments in the area was also included in the background traffic. In-process development description and trip generation data are included in the appendix. Vacant parcels adjacent to the in-process developments east of Middleton Road were also included in the background traffic growth to be consistent with the previous TISs in the area as requested by the City. **Figure 3.2** shows the in-process developments and parcels. **Figure 3.3** and **Figure 3.4** summarize the estimated 2025 background traffic for the AM and PM peak hours at the study area intersections.

Figure 3.2 – 2025 Build-Out Year Background Roadway Network and In-Process Developments



Figure 3.3 – 2025 Build-Out Year AM Peak Hour Background Traffic

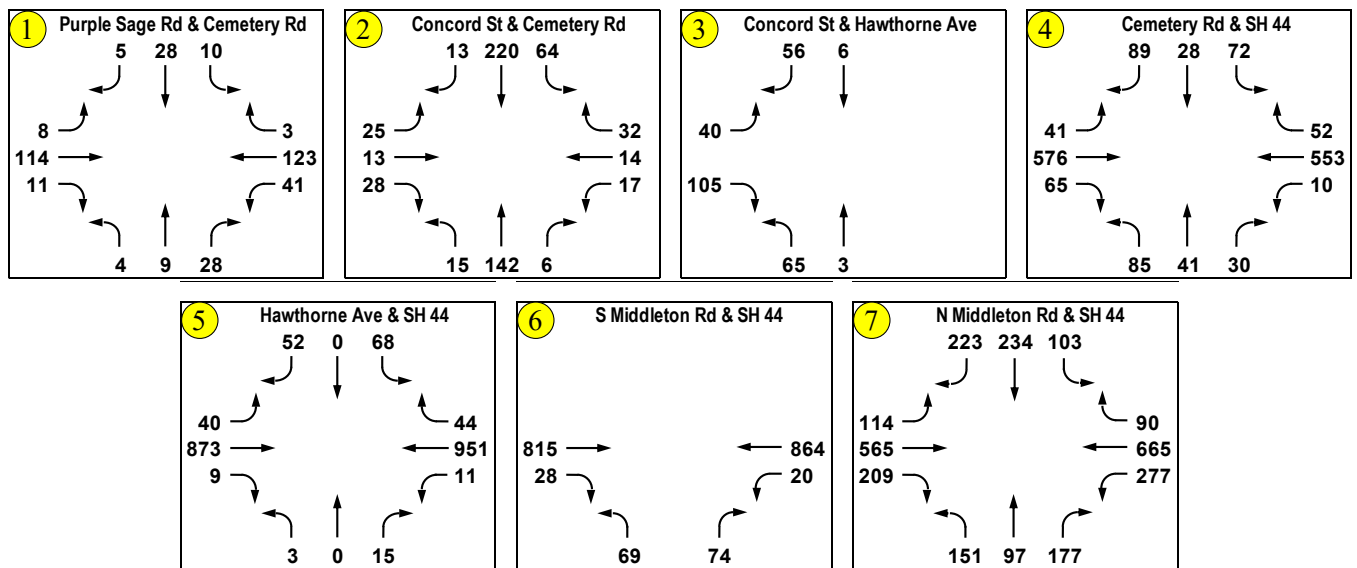
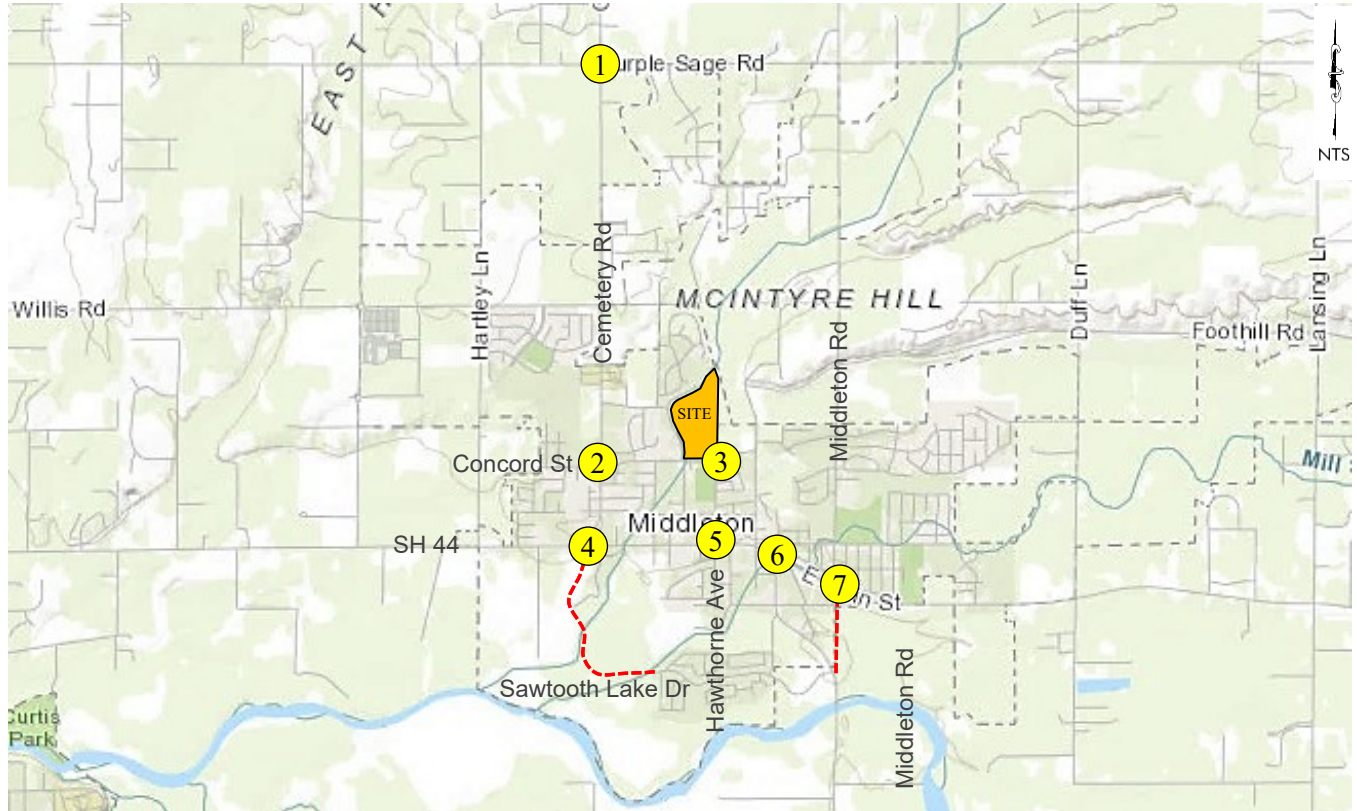
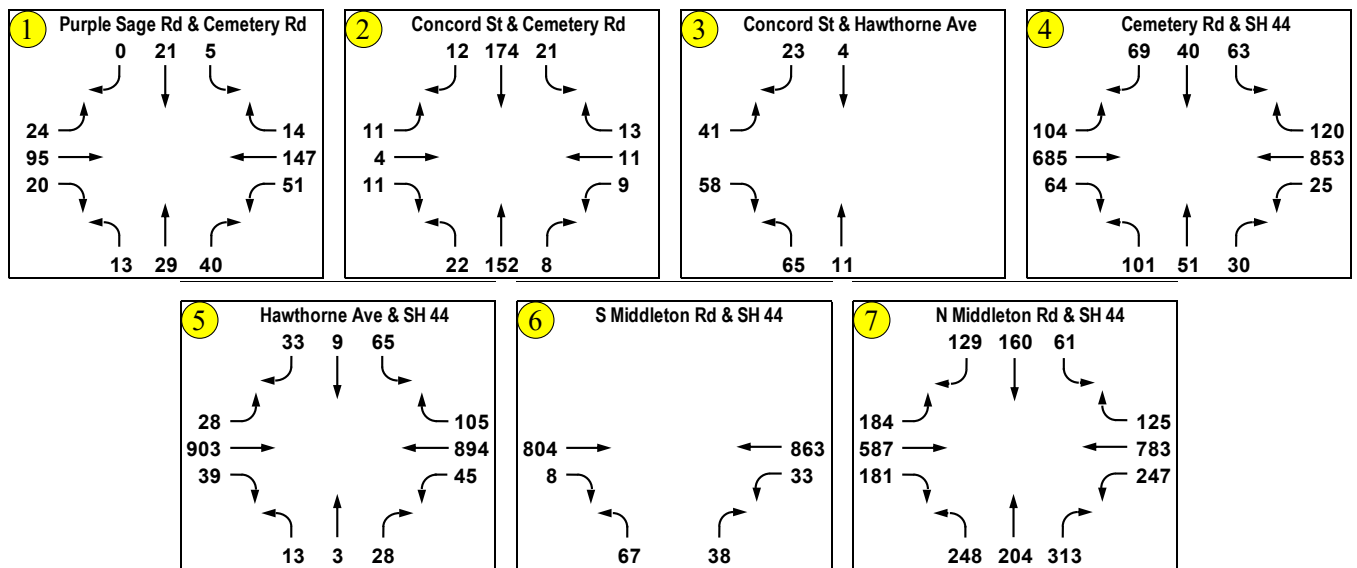
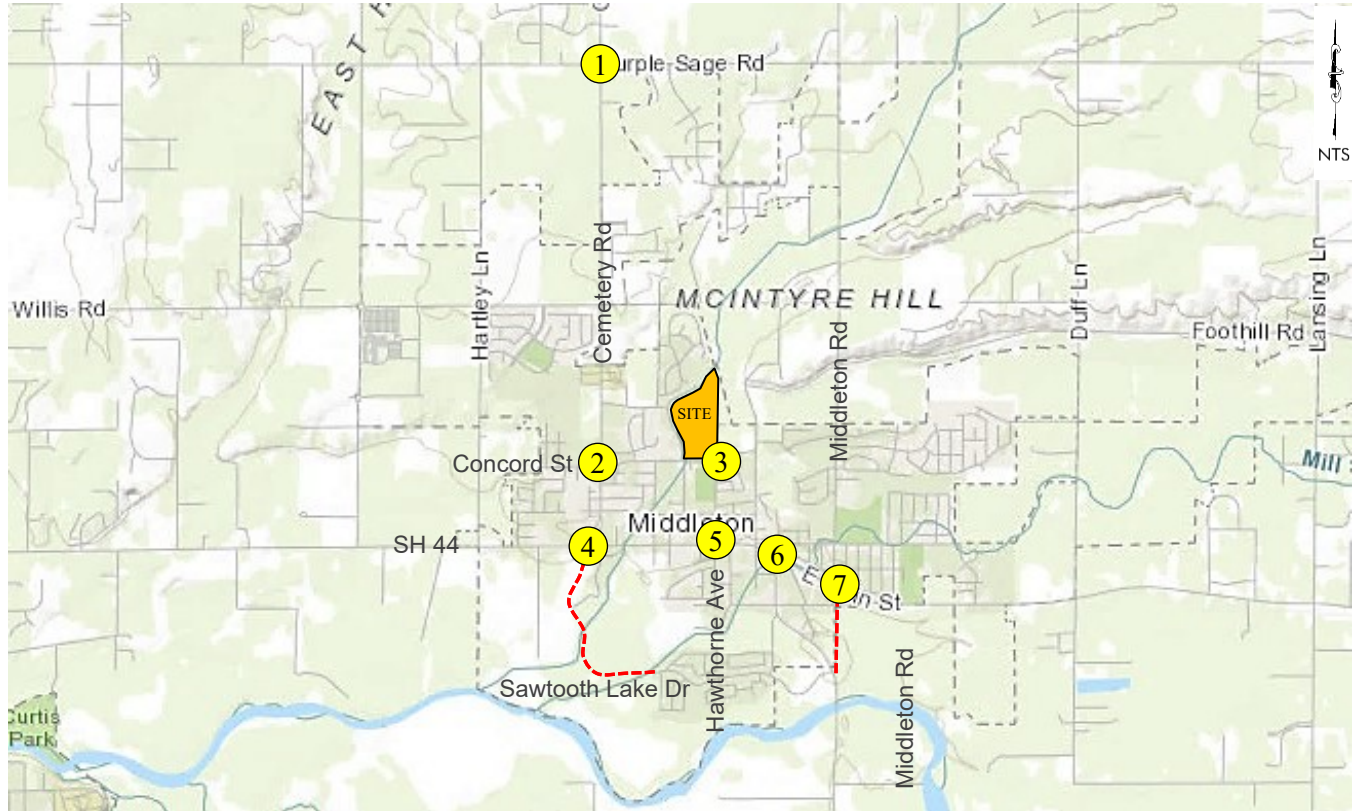


Figure 3.4 – 2025 Build-Out Year PM Peak Hour Background Traffic



3.3 Intersection Operations

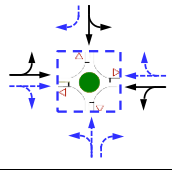
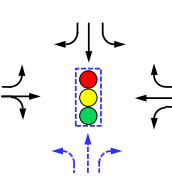
To determine the 2025 background traffic operations, the study area intersections were analyzed with the existing intersection control and lane configuration or with the mitigation improvements needed under 2021 existing traffic conditions and planned improvements. With the Middleton Road realignment, the N Middleton Road and SH 44 intersection was analyzed as a roundabout and signal with the minimum lane configuration needed in previous TIS to meet minimum operational thresholds. Copies of the analysis reports are included in the appendix. **Table 3.2** summarizes the intersection capacity analysis results. Three study area intersections are expected to exceed minimum operational thresholds and will need improvements to mitigate 2025 background traffic operations:

- Cemetery Road and SH 44 intersection
- Hawthorne Avenue and SH 44 intersection
- N Middleton Road and SH 44 intersection with a signal

Table 3.2 – Intersection Operations – 2025 Build-Out Year Background Traffic

Intersection		Control / Lane	MOEs	AM Peak Hour	PM Peak Hour
①	Purple Sage Rd and Cemetery Rd		EB / WB LOS	B / B	B / B
			EB / WB Delay [s/veh]	11 / 11	11 / 12
			Worst Movement MOEs	B / 0.24 (WB)	B / 0.31 (WB)
②	Concord St and Cemetery Rd		EB / WB LOS	C / C	B / B
			EB / WB Delay [s/veh]	19 / 16	12 / 12
			Worst Movement MOEs	C / 0.26 (EB)	B / 0.08 (WB)
③	Concord St and Hawthorne Ave		EB LOS	B	B
			EB Delay [s/veh]	10	10
			Worst Lane Group MOEs	B / 0.22 (EB)	B / 0.17 (EB)
④	Cemetery Rd and SH 44		NBL / SBL LOS	F / F	F / F
			NBL / SBL Delay [s/veh]	>300 / 254	>300 / >300
			Worst Movement MOEs	F / 1.43 (SBL)	F / >2.00 (SBL)
⑤	Hawthorne Ave and SH 44		NB / SB LOS	D / F	D / F
			NB / SB Delay [s/veh]	27 / 125	30 / 85
			Worst Movement MOEs	F / 0.98 (SB)	F / 0.79 (SB)
			NB / SB LOS	D / F	D / F
			NB / SB Delay [s/veh]	26 / 115	29 / 78
			Worst Movement MOEs	F / 0.94 (SB)	F / 0.76 (SB)
⑥	S Middleton Rd and SH 44		NBL / NBR LOS	D / C	C / C
			NBL / NBR Delay [s/veh]	26 / 20	23 / 16
			Worst Lane Group MOEs	D / 0.31 (NBL)	C / 0.26 (NBL)

Table 3.2 – Intersection Operations – 2025 Build-Out Year Background Traffic (Continued)

Intersection		Control / Lane	MOEs	AM Peak Hour	PM Peak Hour
7	N Middleton Rd ¹ and SH 44		Intersection LOS	C	C
			Intersection Delay [s/veh]	19	21
			Worst Lane Group MOEs	F / 0.88 (SBLT)	D / 0.85 (WBTR)
			Intersection LOS	E	D
			Intersection Delay [s/veh]	59	46
			Intersection v/c	0.92	0.86
			Worst Lane Group MOEs	F / 1.05 (WBL)	F / 0.93 (NBR)

¹ Exceeds minimum operational thresholds as an unsignalized intersection

3.4 Intersection Mitigation

Three study area intersections are expected to exceed minimum operational thresholds under the projected 2025 background traffic conditions. The intersections, operational deficiencies, and proposed mitigation improvements are discussed below.

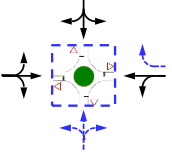
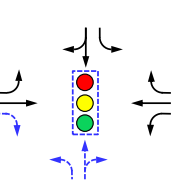
Cemetery Road and SH 44 Intersection

The Cemetery Road and SH 44 intersection is expected to exceed ITD minimum operational thresholds as an unsignalized intersection with the ITIP improvements. The Cemetery Road approaches are expected to operate at LOS F during the peak hours with multiple lane group v/c ratios exceeding 1.00. Two mitigation options are proposed to mitigate 2025 background traffic operations:

- A single-lane roundabout with a westbound right-turn lane
- A traffic signal with the ITIP lane configuration

Table 3.3 summarizes the intersection mitigation analysis results.

Table 3.3 – Cemetery Road and SH 44 Intersection – 2025 Build-Out Year Background Traffic Mitigation

Intersection		Control / Lane Mitigation	MOEs	AM Peak Hour	PM Peak Hour
4	Cemetery Rd and SH 44		Intersection LOS	B	C
			Intersection Delay [s/veh]	10	21
			Worst Lane Group MOEs	B / 0.64 (EB)	D / 0.90 (WBTL)
			Intersection LOS	B	C
			Intersection Delay [s/veh]	17	21
			Intersection v/c	0.50	0.71
			Worst Lane Group MOEs	B / 0.80 (WBT)	C / 0.89 (WBT)

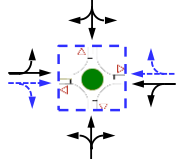
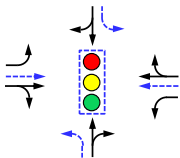
Hawthorne Avenue and SH 44 Intersection

The Hawthorne Avenue and SH 44 intersection is expected to exceed ITD minimum operational thresholds with and without the right-turn lanes as an unsignalized intersection. The critical southbound approach is expected to operate at LOS F with a v/c ratio exceeding 0.90 during the AM peak hour. Two mitigation options are proposed to mitigate 2025 background traffic operations:

- A multilane roundabout with the following lanes
 - One entering and exiting lane on the Hawthorne Avenue approaches
 - Two entering and exiting lanes on the SH 44 approaches
- A traffic signal with the following lanes
 - One left-turn lane and one shared through/right-turn lane on the Hawthorne Avenue approaches
 - One left-turn lane, one through lane, and one shared through/right-turn lane on the SH 44 approaches

Table 3.4 summarizes the intersection mitigation analysis results.

Table 3.4 – Hawthorne Avenue and SH 44 Intersection – 2025 Build-Out Year Background Traffic Mitigation

Intersection		Control / Lane Mitigation	MOEs	AM Peak Hour	PM Peak Hour	
5	Hawthorne Ave and SH 44		Intersection LOS	A	A	
			Intersection Delay [s/veh]	8	8	
			Worst Lane Group MOEs	A / 0.51 (WBTR)	A / 0.47 (WBTR)	
				Intersection LOS	A	A
				Intersection Delay [s/veh]	9	9
				Intersection v/c	0.50	0.46
				Worst Lane Group MOEs	A / 0.66 (WBTR)	A / 0.63 (WBTR)

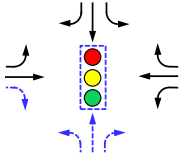
N Middleton Road and SH 44 Intersection

The N Middleton Road and SH 44 intersection is expected to meet minimum operational thresholds as a multilane roundabout. However, the intersection is expected to exceed minimum operational thresholds as a signalized intersection with the minimum lane configuration proposed in prior TIS. The intersection is anticipated to operate at LOS E with an overall v/c ratio exceeding ITD 0.92. Several lane groups also operate with v/c ratios exceeding 0.90. The following is the minimum improvement needed to mitigate the signal operations:

- Eastbound right-turn lane

Table 3.5 summarizes the intersection mitigation analysis results.

Table 3.5 – N Middleton Road and SH 44 Intersection Operations – 2025 Build-Out Year Background Traffic Mitigation

Intersection		Control / Lane Mitigation	MOEs	AM Peak Hour	PM Peak Hour
7	N Middleton Rd and SH 44		Intersection LOS	C	C
			Intersection Delay [s/veh]	31	32
			Intersection v/c	0.76	0.83
			Worst Lane Group MOEs	C / 0.89 (WBL)	C / 0.90 (WBT)

4.0 2025 BUILD-OUT YEAR TOTAL TRAFFIC CONDITIONS

4.1 Roadway Network

Figure 4.1 summarizes the intersection control and lane configuration for 2025 total traffic conditions. The study area roadways and intersections are the same as the existing conditions with the exception of the intersection improvements needed to mitigate 2021 existing and 2025 background traffic as discussed in the previous sections. These proceeding intersection improvements were included in the 2025 total traffic impact analysis.

As shown in the preliminary site plan, the development is planning to improve Concord Street and Hawthorne Avenue along the site frontages. Two access points are proposed on Hawthorne Avenue. One access point is proposed on Concord Street. The northern access on Hawthorne Avenue corresponds to the future 9th Street extension.

4.2 Site Traffic

4.2.1 Trip Generation

Site trip generation is estimated using the procedures recommended in the latest edition of the Trip Generation Manual (10th Edition), published by the Institute of Transportation Engineers (ITE). **Table 4.1** summarizes the site trip generation for the full build-out of the development. The proposed development is estimated to generate 1,240 trips per weekday, 91 trips during the AM peak hour, and 122 trips during the PM peak hour.

Table 4.1 – Site Trip Generation Summary

Land Use	ITE Code	Size	Unit	Period	Total Trips	Entering	Exiting
Single-Family Detached Housing	210	121	DU	Weekday Daily (vpd)	1,240	50%	620
				AM Peak Hour (vph)	91	25%	23
				PM Peak Hour (vph)	122	63%	77

4.2.2 Trip Capture

Based on the proposed land use and ITE methodologies, no trips are expected to be captured internally within the site.

4.2.3 Pass-By Trips

Based on the proposed land use and ITE methodologies, the development is not expected to attract pass-by trips.

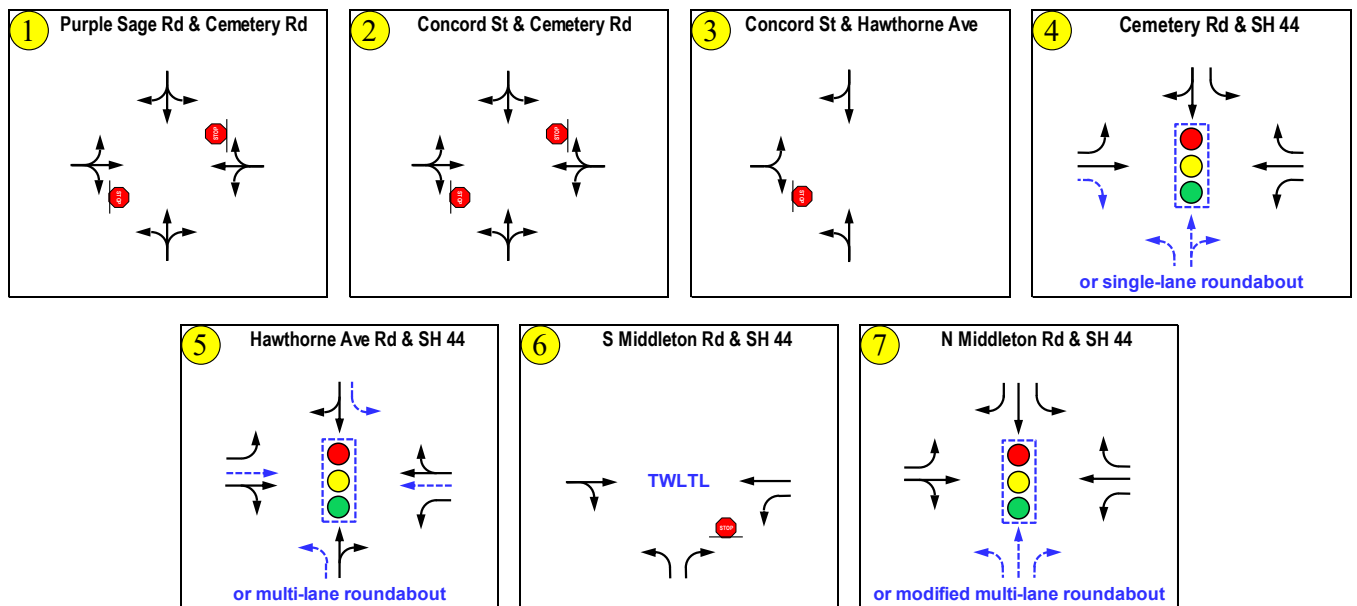
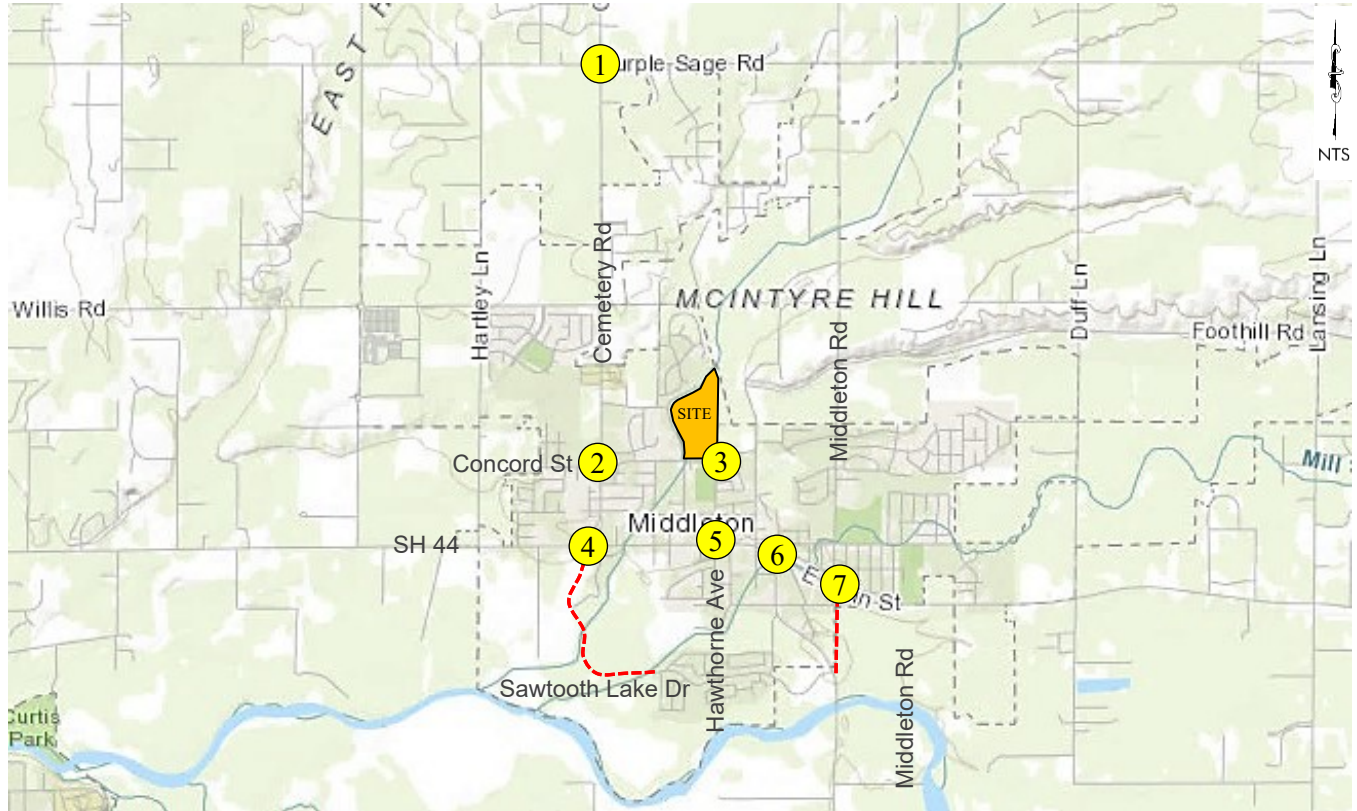
4.2.4 Modal Split

For traffic analysis purposes, all trips generated by the development were assumed to be made by personal or commercial vehicles.

4.2.5 Trip Distribution and Assignment

Site traffic was distributed and assigned to the external roadway system based on the current travel patterns, site layout, future roadway improvements within the area, and general location of the site within the area. **Figure 4.2** shows the estimated site traffic distribution patterns. **Figure 4.3** and **Figure 4.4** summarizes the estimated AM and PM peak hour build-out site traffic.

Figure 4.1 – Intersection Control and Lane Configuration for 2025 Total Traffic Conditions



4.3 Total Traffic

The 2025 peak hour site traffic is then added to the 2025 background traffic as determined above to obtain the 2025 build-out year total traffic. **Figure 4.5** and **Figure 4.6** summarize the estimated 2025 peak hour total traffic at the study area intersections. **Table 4.2** summarizes the build-out year site traffic percentage estimate at each study area intersection.

Table 4.2 – Site Traffic Percentage of 2025 Build-Out Year Total Traffic

Intersection		% Site Traffic of 2025 Build-Out Year Total Traffic		
		AM Peak	PM Peak	Average
①	Purple Sage Rd and Cemetery Rd	1.3%	1.3%	1.3%
②	Concord St and Cemetery Rd	2.8%	4.9%	3.8%
③	Concord Street and Hawthorne Ave	22.1%	34.0%	28.0%
④	Cemetery Rd and SH 44	0.8%	0.8%	0.8%
⑤	Hawthorne Ave and SH 44	3.5%	4.4%	3.9%
⑥	S Middleton Rd and SH 44	3.5%	4.8%	4.2%
⑦	N Middleton Rd and SH 44	2.3%	2.8%	2.5%

Figure 4.2 – Estimated Site Traffic Distribution Patterns

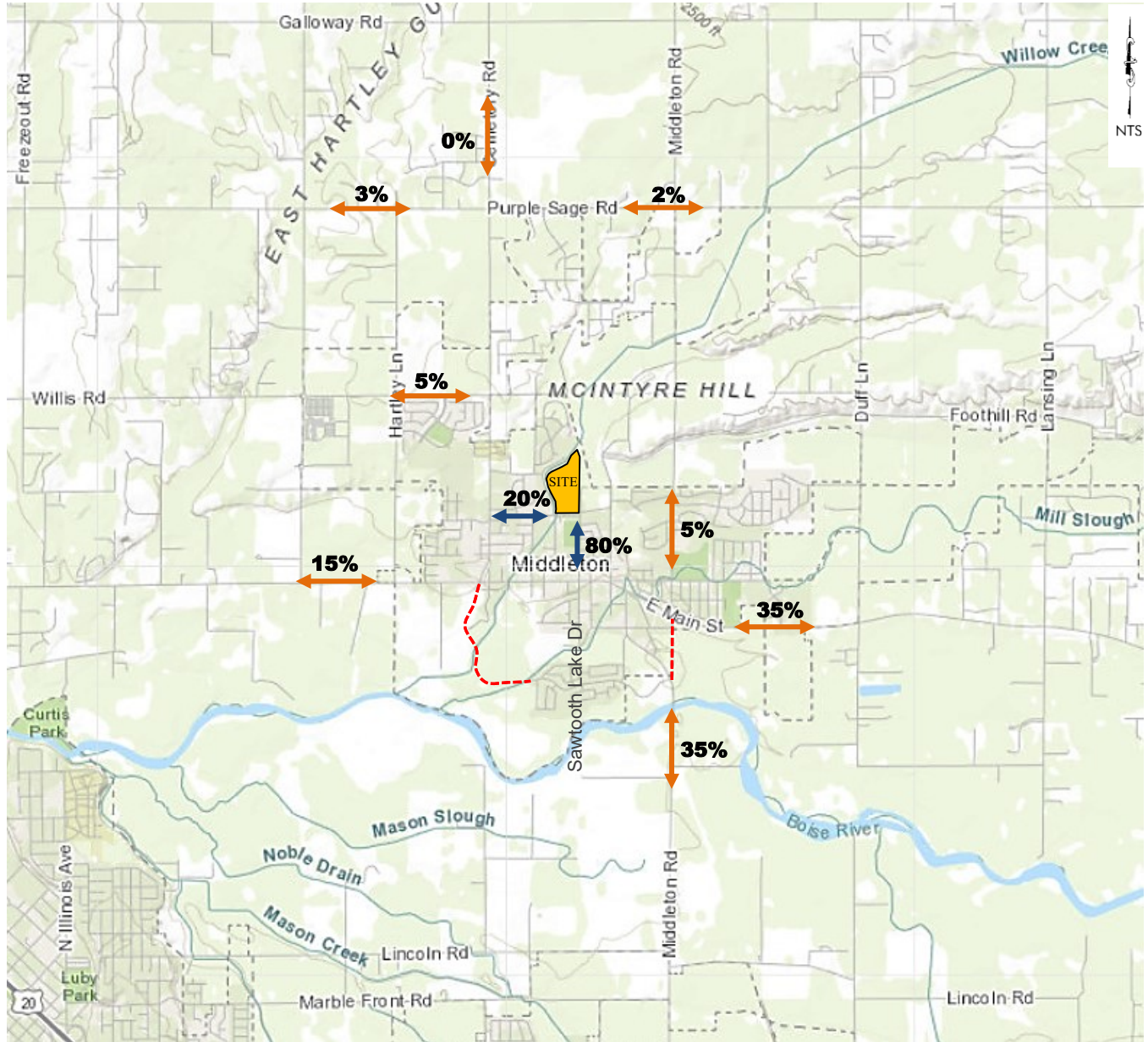


Figure 4.3 – 2025 Build-Out Year AM Peak Hour Site Traffic

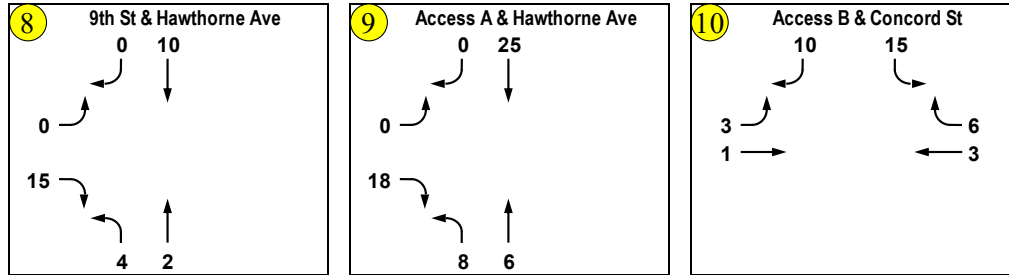
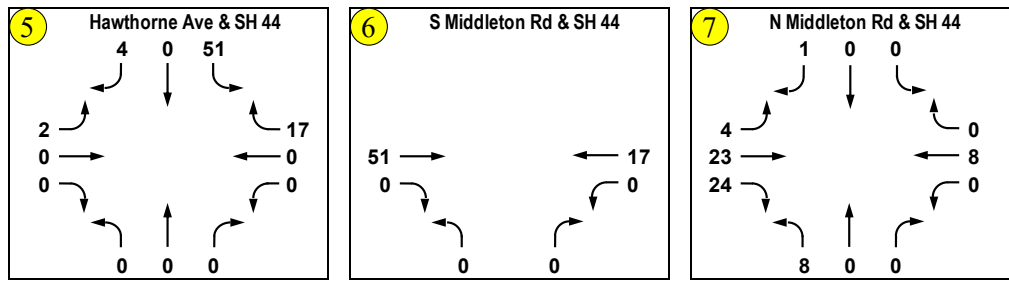
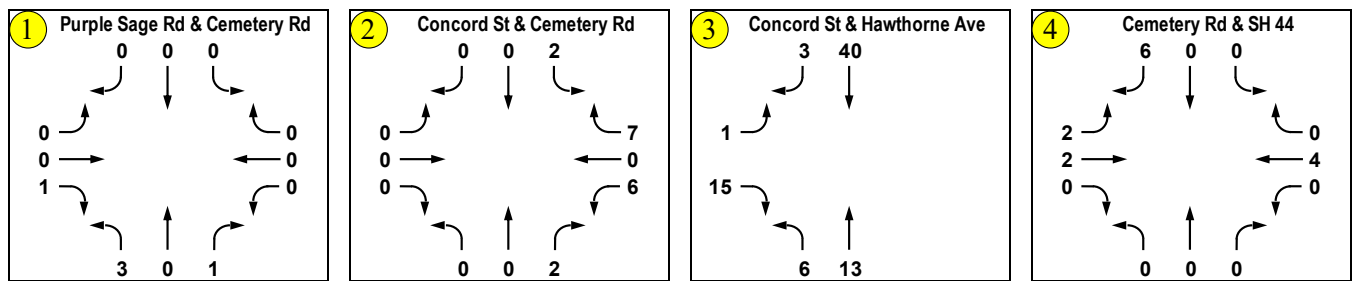
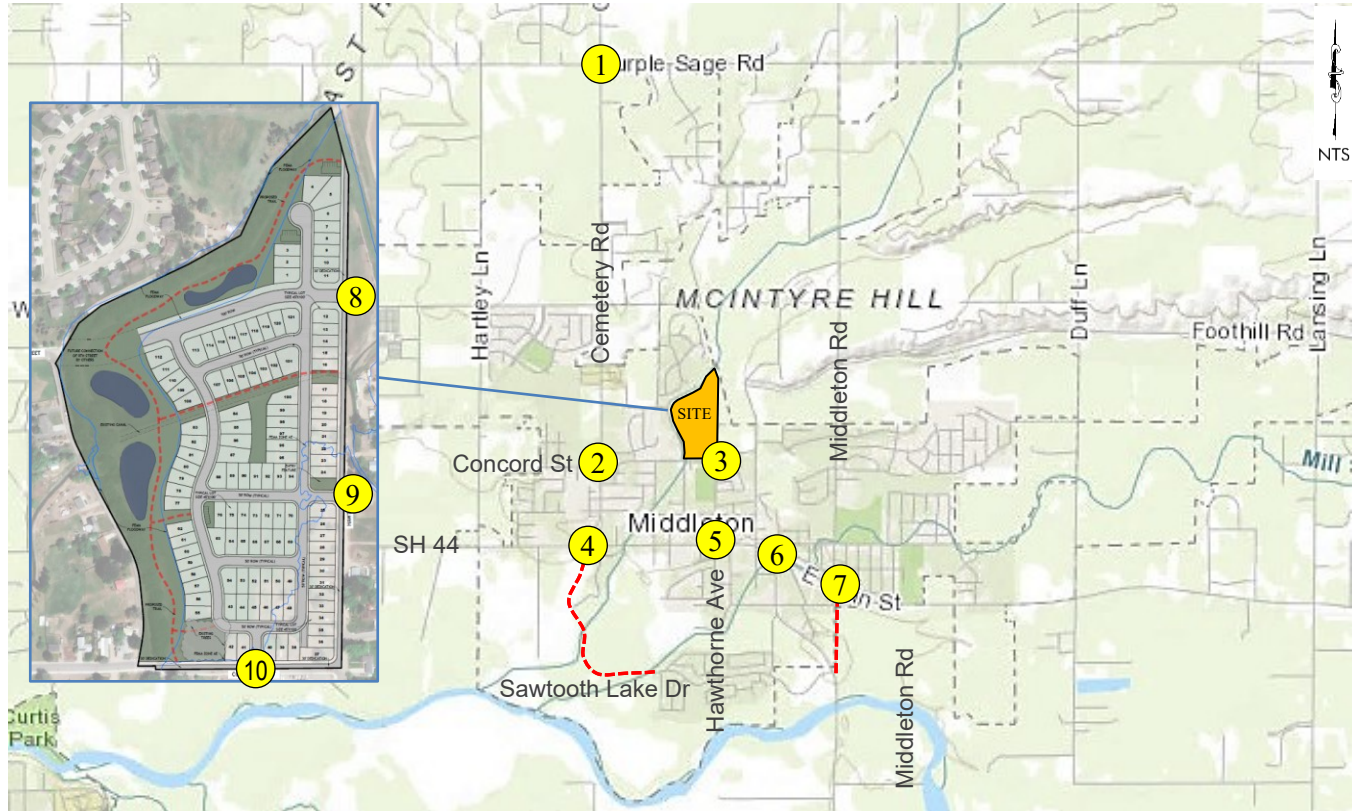


Figure 4.5 – 2025 Build-Out Year AM Peak Hour Total Traffic

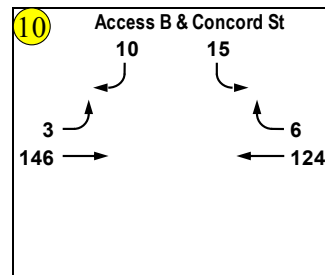
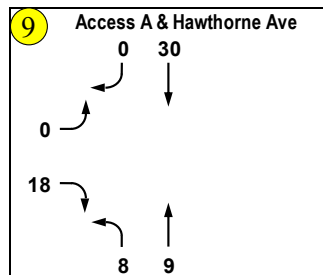
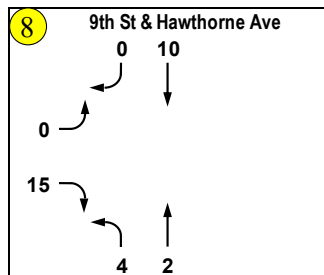
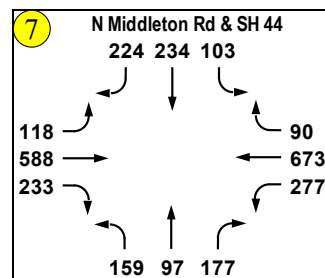
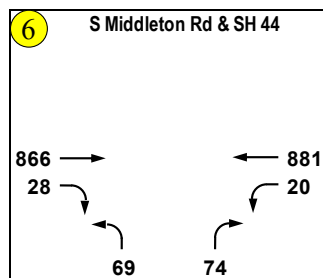
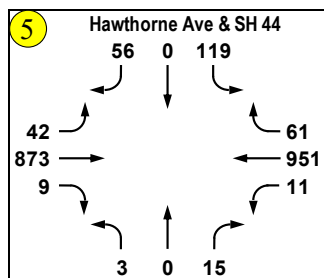
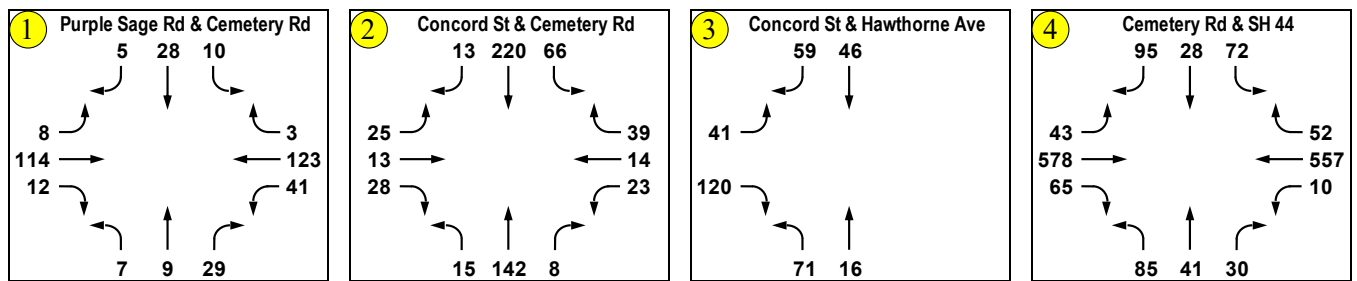
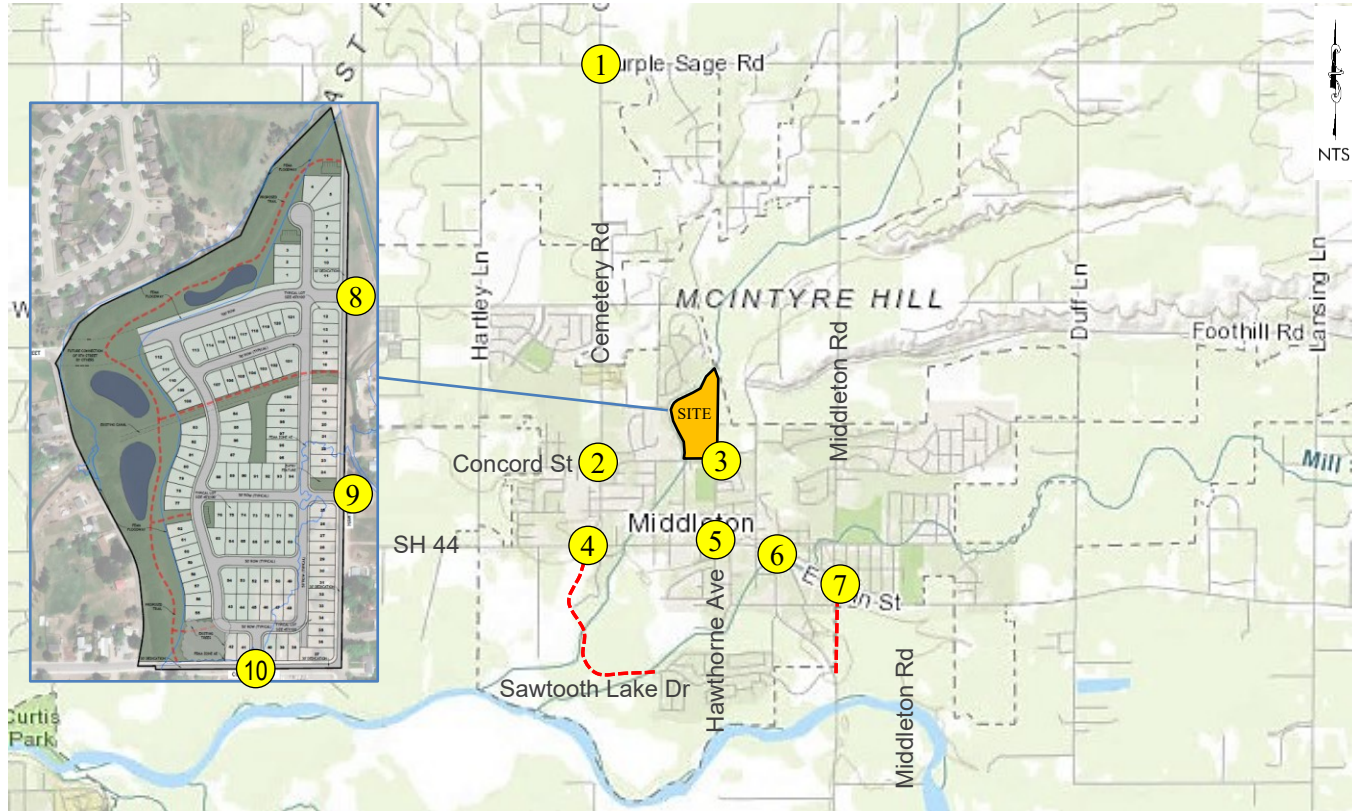
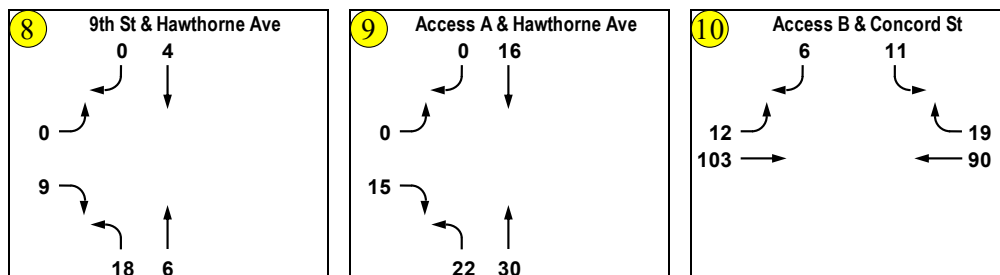
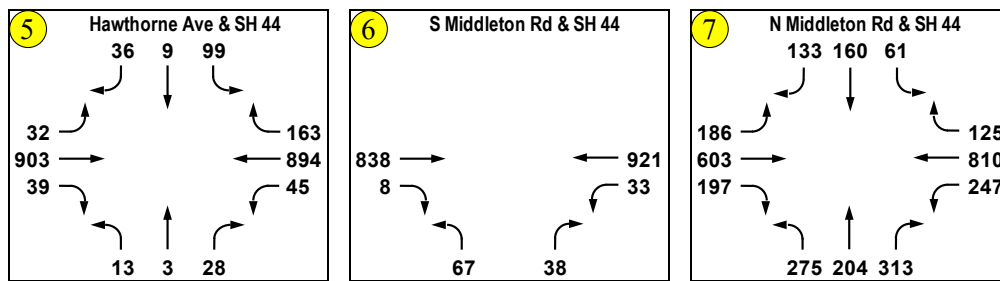
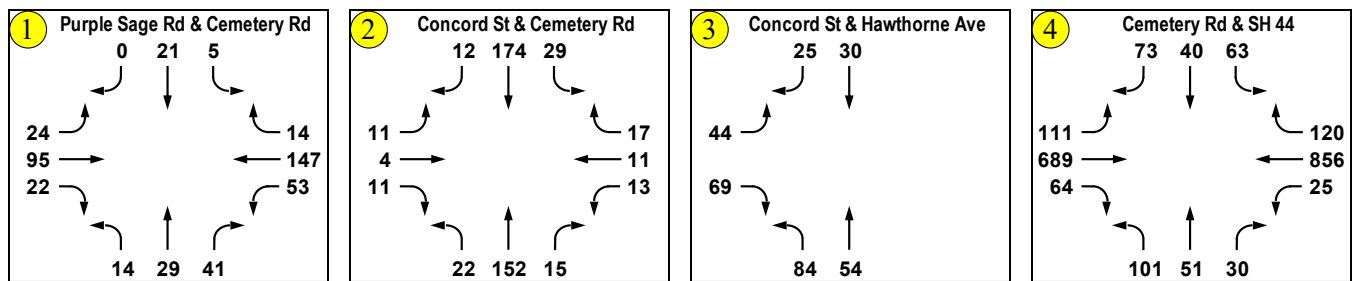
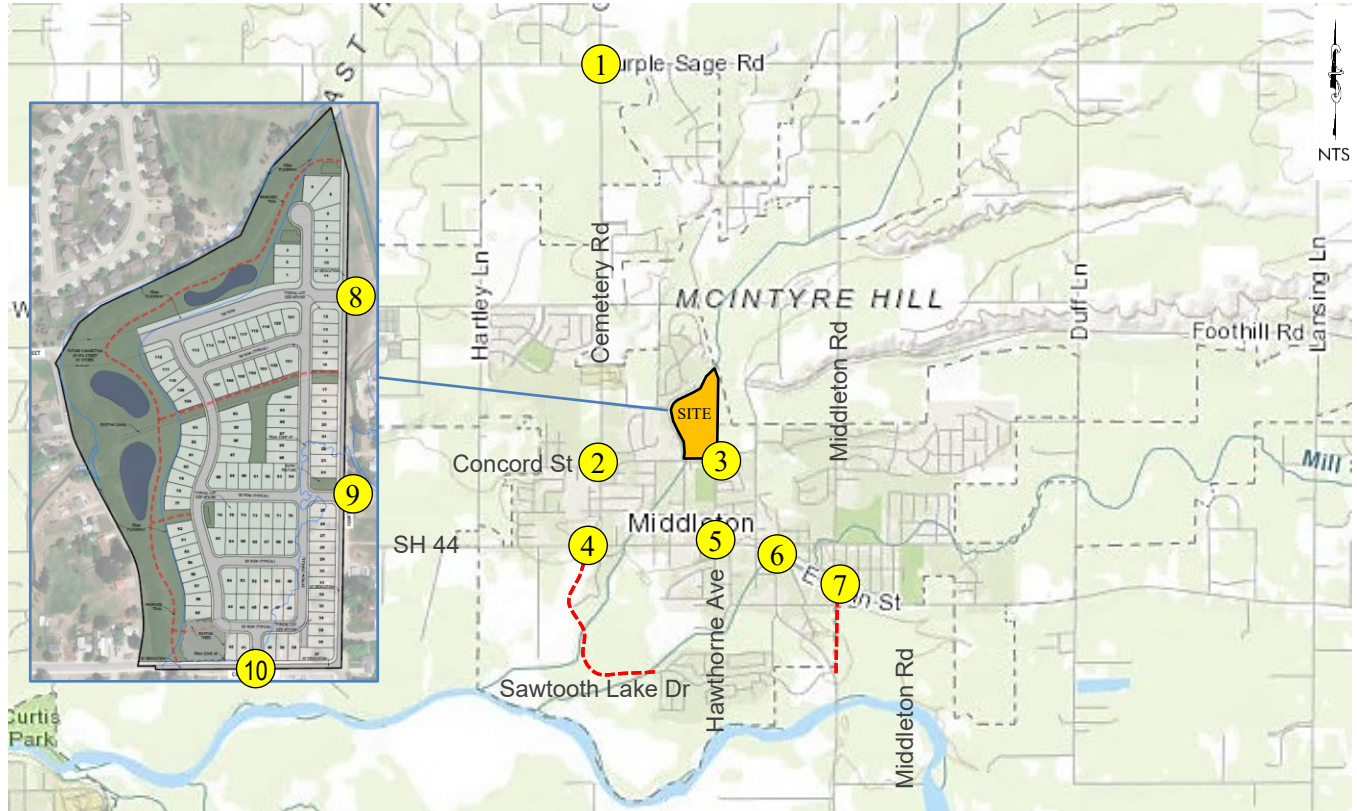


Figure 4.6 – 2025 Build-Out Year PM Peak Hour Total Traffic



4.4 Intersection Operations

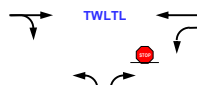
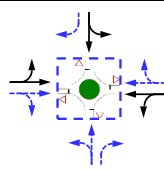
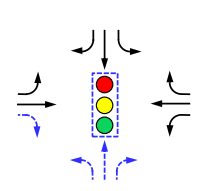
To determine the 2025 total traffic operations, the study area intersections were analyzed with the existing intersection control and lane configuration or with the mitigation improvements needed under 2021 existing and 2025 background traffic conditions. Copies of the analysis reports are included in the appendix. **Table 4.3** summarizes the intersection capacity analysis results. Based on the traffic analysis results, one study area intersection is expected to exceed minimum operational thresholds under 2025 total traffic operations:

- Cemetery Road and SH 44 as a modified single-lane roundabout

Table 4.3 – Intersection Operations – 2025 Build-Out Year Total Traffic

Intersection		Control / Lane	MOEs	AM Peak Hour	PM Peak Hour
①	Purple Sage Rd and Cemetery Rd		EB / WB LOS	B / B	B / B
			EB / WB Delay [s/veh]	11 / 11	11 / 12
			Worst Movement MOEs	B / 0.25 (WB)	B / 0.32 (WB)
②	Concord St and Cemetery Rd		EB / WB LOS	C / C	B / B
			EB / WB Delay [s/veh]	19 / 17	13 / 13
			Worst Movement MOEs	C / 0.27 (EB)	B / 0.07 (EB)
③	Concord St and Hawthorne Ave		EB LOS	B	B
			EB Delay [s/veh]	11	11
			Worst Lane Group MOEs	B / 0.27 (EB)	B / 0.22 (EB)
④	Cemetery Rd and SH 44		Intersection LOS	B	C
			Intersection Delay [s/veh]	10	22
			Worst Lane Group MOEs	B / 0.64 (EB)	D / 0.91 (WBTL)
			Intersection LOS	B	C
			Intersection Delay [s/veh]	17	21
			Intersection v/c	0.51	0.72
			Worst Lane Group MOEs	B / 0.81 (WBT)	C / 0.89 (WBT)
⑤	Hawthorne Ave and SH 44		Intersection LOS	A	A
			Intersection Delay [s/veh]	9	8
			Worst Lane Group MOEs	A / 0.52 (WBTR)	A / 0.50 (WBTR)
			Intersection LOS	B	B
			Intersection Delay [s/veh]	11	10
			Intersection v/c	0.55	0.51
			Worst Lane Group MOEs	B / 0.69 (WBTR)	A / 0.67 (WBTR)

Table 4.3 – Intersection Operations – 2025 Build-Out Year Total Traffic (Continued)

Intersection		Control / Lane	MOEs	AM Peak Hour	PM Peak Hour
6	S Middleton Rd and SH 44		NBL / NBR LOS	D / C	C / C
			NBL / NBR Delay [s/veh]	27 / 21	25 / 17
			Worst Lane Group MOEs	D / 0.32 (NBL)	C / 0.28 (NBL)
7	N Middleton Rd and SH 44		Intersection LOS	C	C
			Intersection Delay [s/veh]	20	24
			Worst Lane Group MOEs	F / 0.90 (SBLT)	E / 0.89 (WBTR)
			Intersection LOS	C	C
			Intersection Delay [s/veh]	33	34
			Intersection v/c	0.80	0.88
			Worst Lane Group MOEs	D / 0.90 (WBL)	C / 0.90 (WBT)

4.5 Intersection Mitigation

Cemetery Road and SH 44 Intersection

The Cemetery Road SH 44 intersection is expected to meet minimum operational thresholds as a signalized intersection but exceed minimum operational thresholds as a single-lane roundabout with a westbound right-turn lane. The westbound shared through/left-turn lane group is expected to operate at LOS D with a v/c ratio of 0.91 during the PM peak hour, slightly exceeding the ITD minimum 0.90 lane group v/c ratio threshold. This operational deficiency is minor and only expected to occur during the peak 15-minute period. Therefore, no additional intersection capacity improvements are recommended to mitigate 2025 build-out year total traffic operations.

4.6 Site Access and Circulation

Figure 4.7 shows the proposed site access and circulation on the internal roadways. Creekside Terrace is proposing two site access points on Hawthorne Avenue and one site access point on Concord Street. Access A corresponds to the future 9th Street which is planned to be extended to the east as development occurs. The proposed accesses on Hawthorne Avenue are located at approximately 760 feet spacing with Access A located approximately 660 feet north of Concord Street. These site access locations meet the City of Middleton minimum spacing on Hawthorne Avenue, a local street. The minimum driveway spacing on a local street is 75 feet.

Access C on Concord Street is located approximately 350 feet east of 2nd Avenue and approximately 330 feet west of Hawthorne Avenue, which meets the City of Middleton minimum spacing on Concord Street, a local street.

Figure 4.7 – Site Access and Circulation

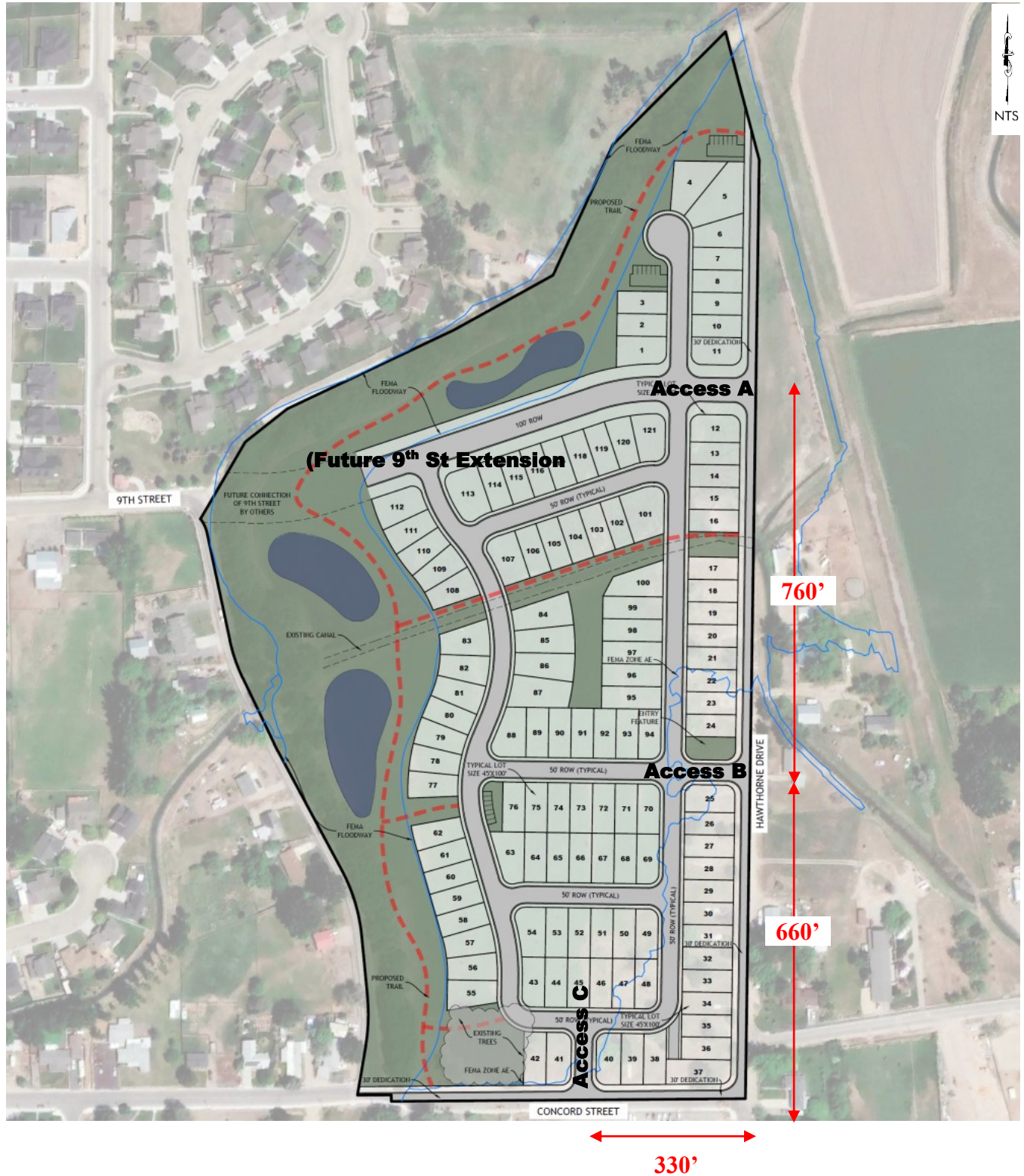


Table 4.4 summarizes the proposed site access intersection operations under 2025 total traffic conditions. The proposed site access intersections are expected to meet minimum operation thresholds as unsignalized intersections with one shared lane on all approaches. No turn lanes are warranted at the proposed site access intersections under 2025 build-out year total traffic conditions.

The minimum intersection sight distance for a 25-mph roadway is 280 feet. Concord Street and Hawthorne Avenue both have vertical curves within the study area; however, sight distance is expected adequate sight distance with preservation of right-of-way and proper landscaping along the public roadways. There is adequate intersection sight distance at the proposed site access intersections. Proposed landscape design and building offset should not obstruct intersection sight distance and verify during site design and construction.

Table 4.4 – Site Access Intersection Operations – 2025 Build-Out Year Total Traffic

Intersection		Control / Lane Site Improvements	MOEs	AM Peak Hour	PM Peak Hour
8	Access A and Hawthorne Ave		EB LOS	A	A
			EB Delay [s/veh]	8	8
			Worst Lane Group MOEs	A / 0.02 (EB)	A / 0.01 (EB)
9	Access B and Hawthorne Ave		EB LOS	A	A
			EB Delay [s/veh]	9	8
			Worst Lane Group MOEs	A / 0.02 (EB)	A / 0.02 (EB)
10	Access C and Concord St		SB LOS	A	A
			SB Delay [s/veh]	10	10
			Worst Lane Group MOEs	A / 0.04 (SB)	A / 0.02 (EB)

5.0 2030 HORIZON YEAR BACKGROUND TRAFFIC CONDITIONS

5.1 Roadway Network

Figure 5.1 summarizes the intersection control and lane configuration for 2030 background traffic conditions. The study area roadways and intersections are expected to remain the same as the mitigated 2025 background traffic conditions as discussed in the previous sections. The preceding intersection improvements needed to mitigate 2021 existing and 2025 background traffic operations were included in the 2030 background traffic impact analysis.

For 2030 horizon year analysis, 9th Street was assumed to be connected to Cemetery Road. This new connectivity is not expected to significantly change the traffic patterns in the area. Some existing traffic within the area having origins/destinations to the west may use this alternate route. 9th Street is planned to be continuously extended to the east as developments occur. At the time of this TIS, there were no known in-process development adjacently east of the site.

5.2 Background Traffic

2030 background traffic included traffic growth and off-site traffic methodologies as discussed in Section 3.2. **Figure 5.2** and **Figure 5.3** summarize the estimated 2030 peak hour background traffic. A list of all off-site traffic included in 2030 background traffic conditions is summarized in the appendix.

Figure 5.1 – Intersection Control and Lane Configuration for 2030 Background Traffic Conditions

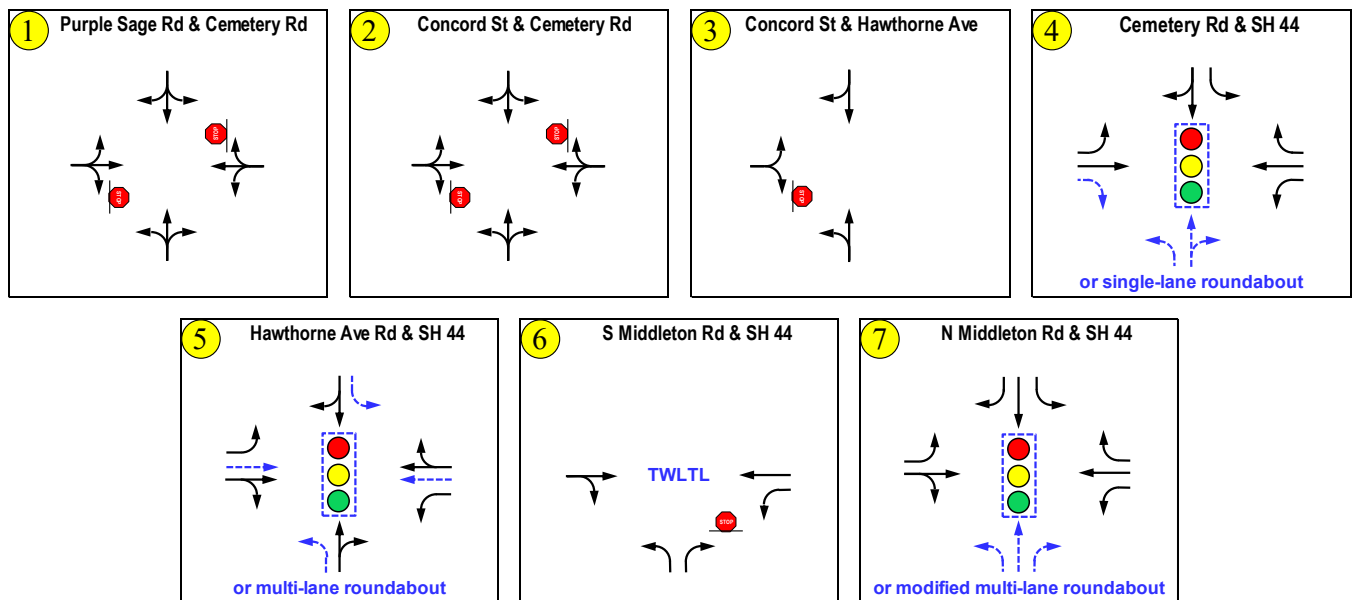
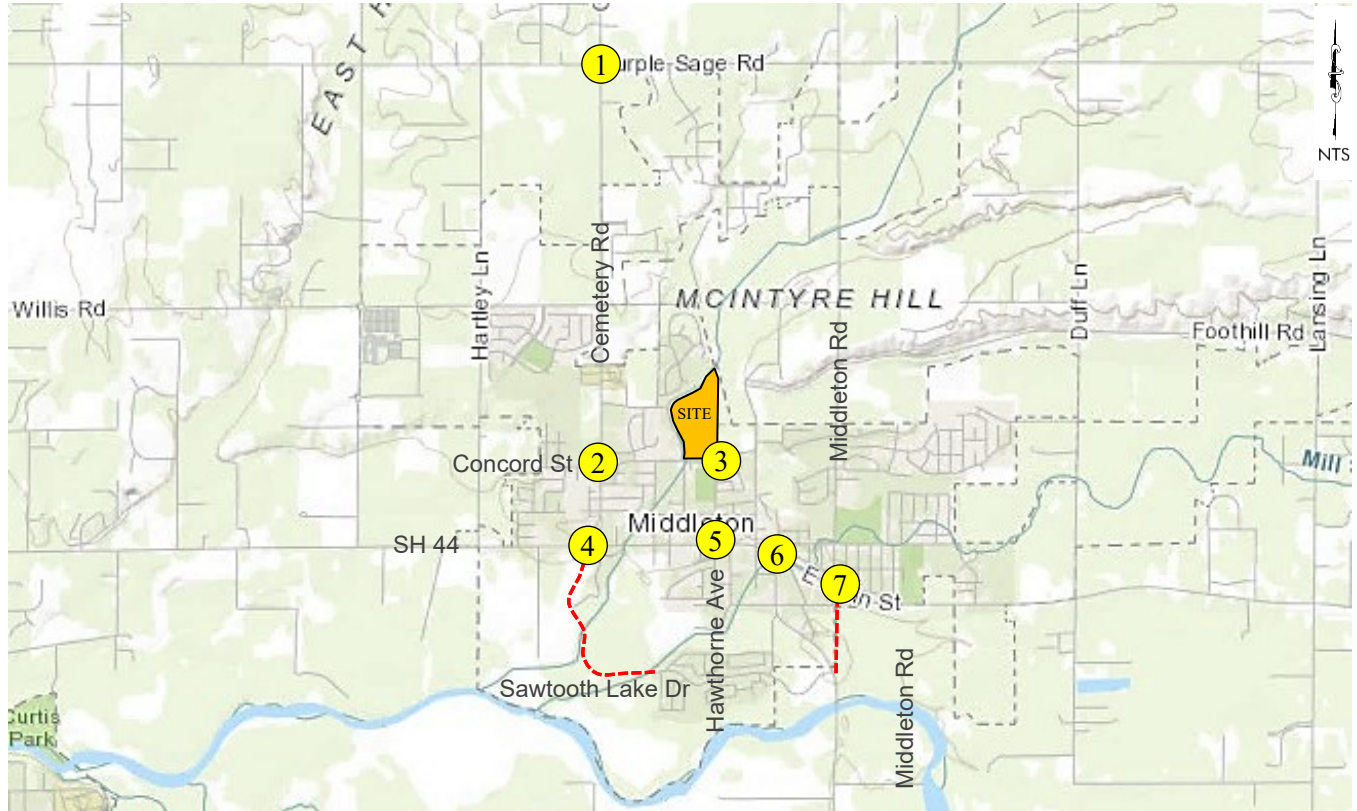


Figure 5.2 – 2030 Horizon Year AM Peak Hour Background Traffic

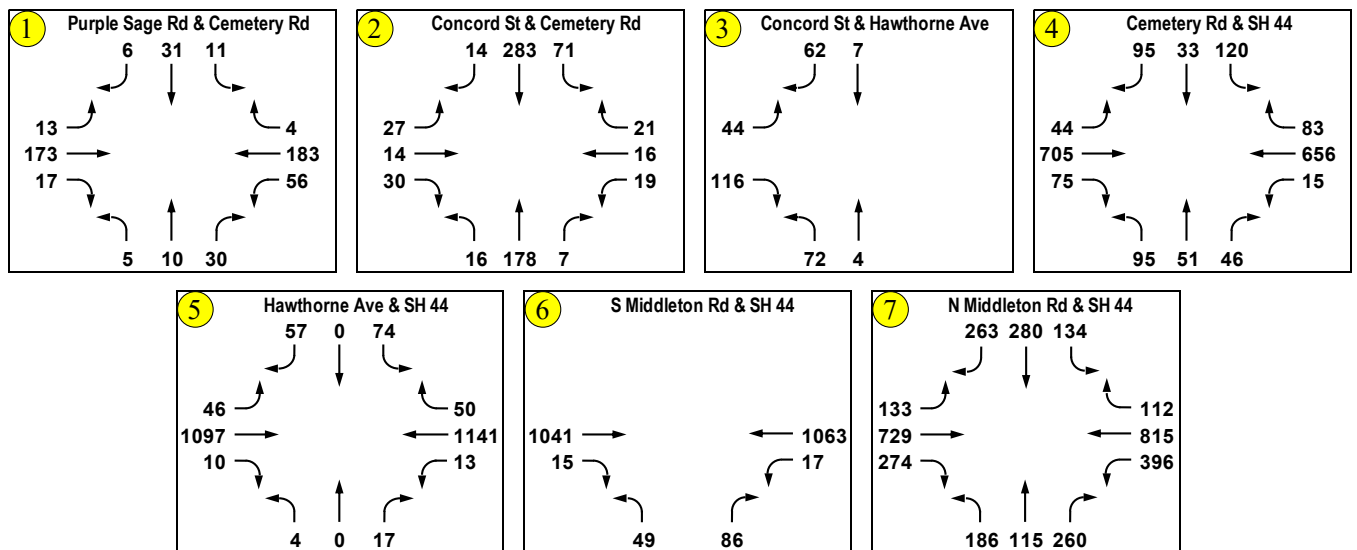
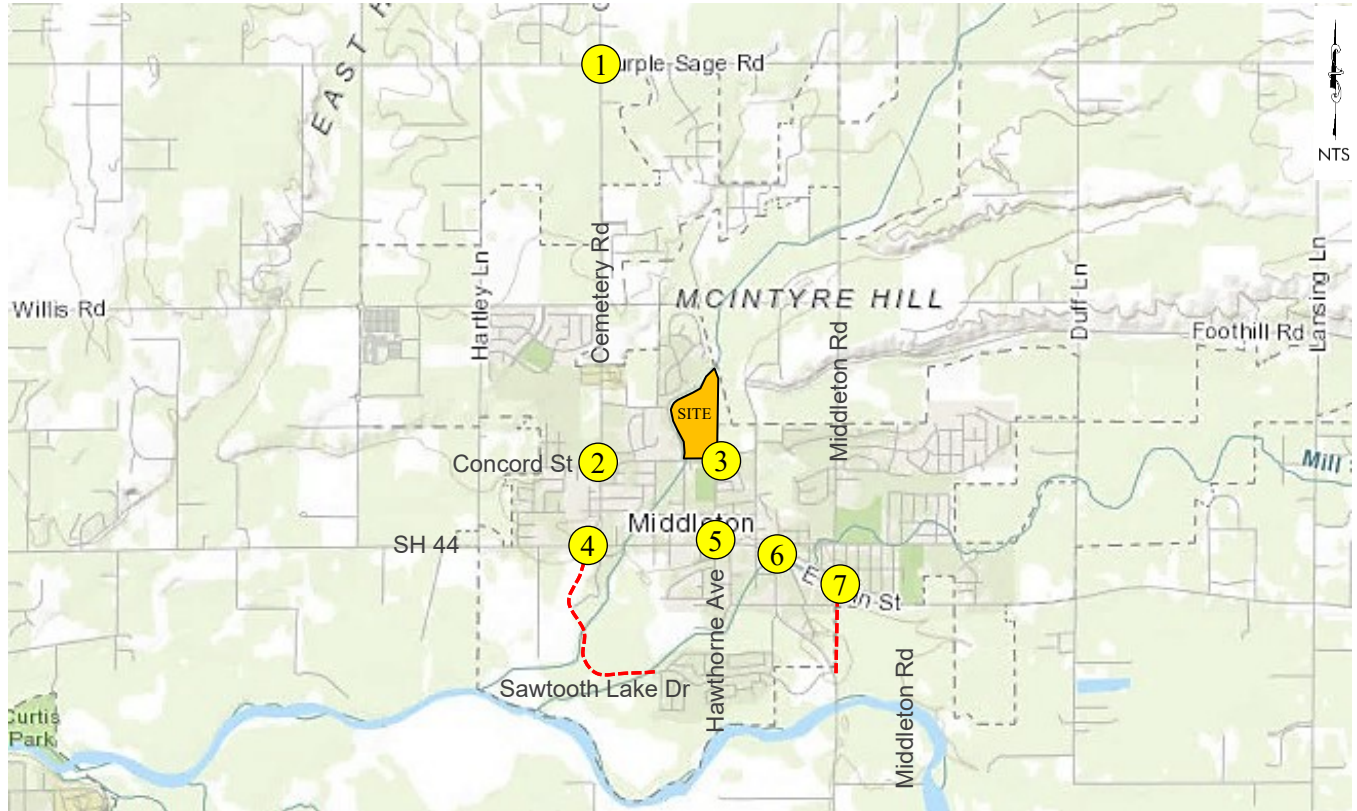
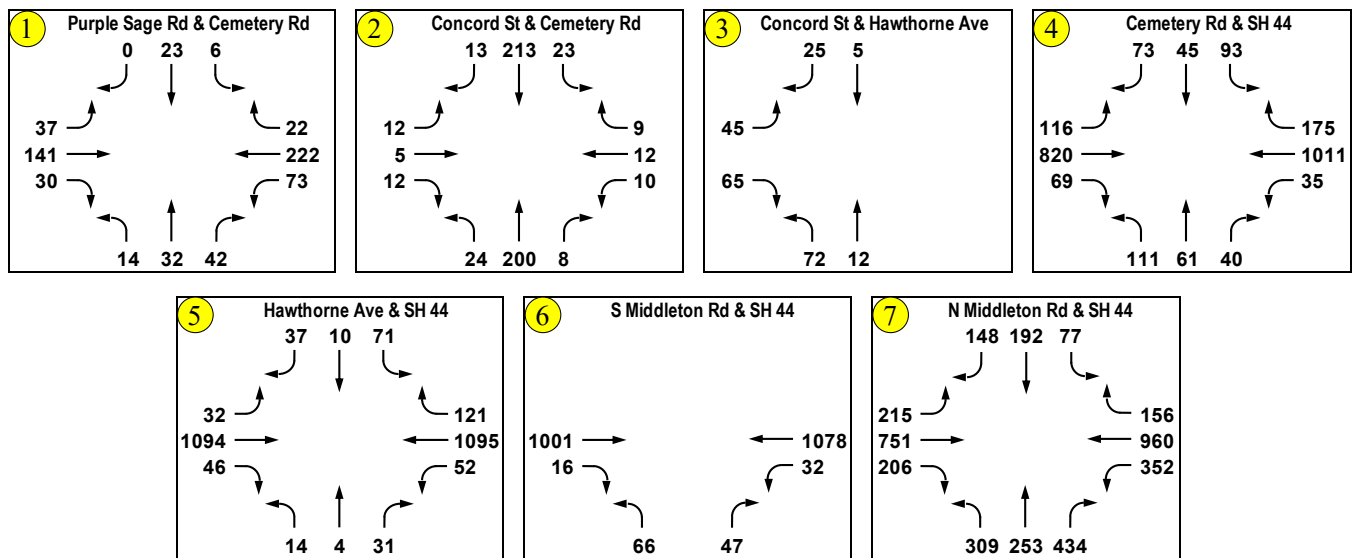
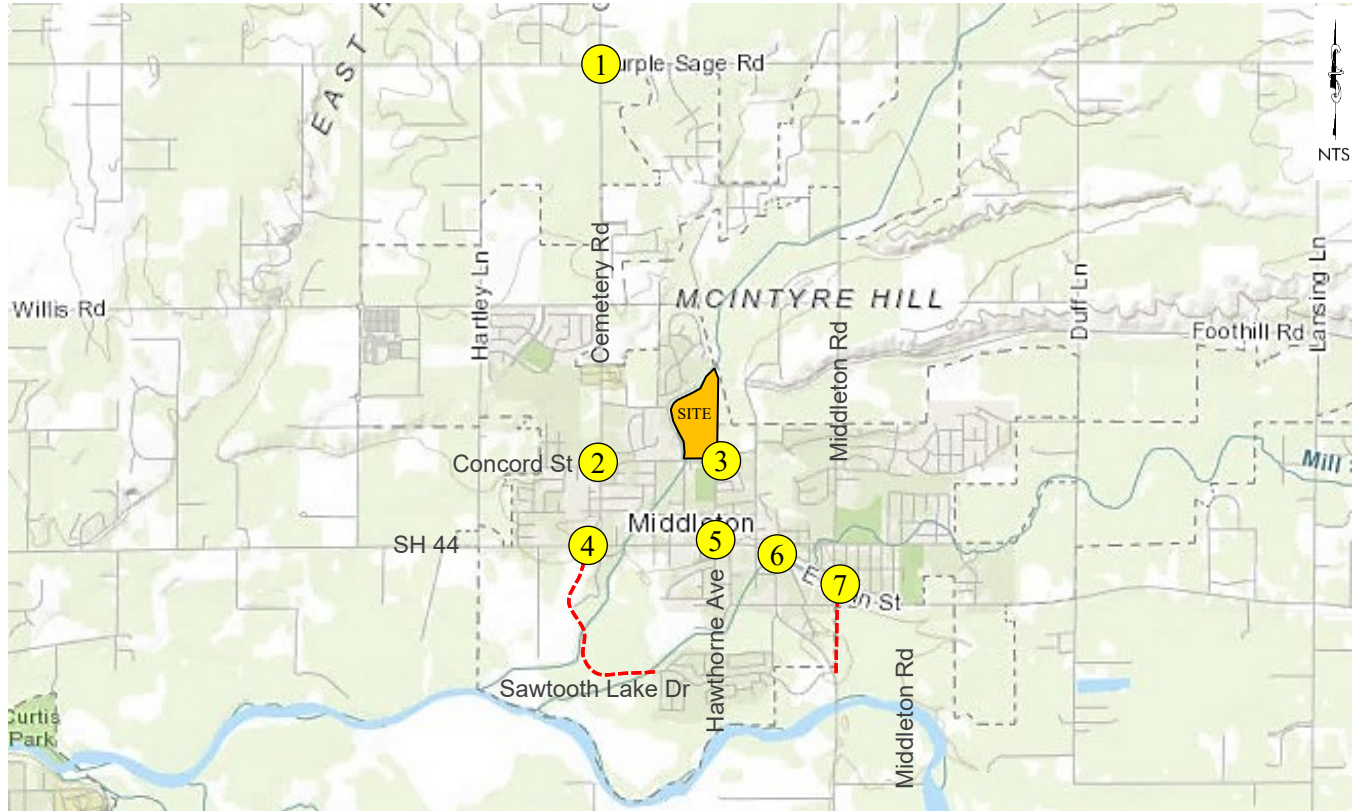


Figure 5.3 – 2030 Horizon Year PM Peak Hour Background Traffic



5.3 Intersection Operations

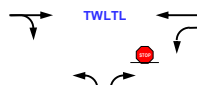
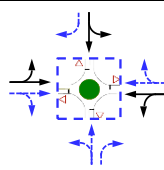
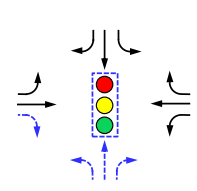
To determine the 2030 background traffic operations, the study area intersections were analyzed with the existing intersection control and lane configuration or with the preceding improvements needed to mitigate 2021 existing and 2025 background traffic conditions. Copies of the analysis reports are included in the appendix. **Table 5.1** summarizes the intersection capacity analysis results. Based on traffic analysis results, two study area intersections are expected to exceed minimum operational thresholds and will need improvements to mitigate 2030 background traffic operations:

- Cemetery Road and SH 44 intersection (signal and roundabout)
- N Middleton Road and SH 44 intersection (signal and roundabout)

Table 5.1 – Intersection Operations – 2030 Horizon Year Background Traffic

Intersection		Control / Lane	MOEs	AM Peak Hour	PM Peak Hour
①	Purple Sage Rd and Cemetery Rd		EB / WB LOS	B / B	B / B
			EB / WB Delay [s/veh]	12 / 13	13 / 15
			Worst Movement MOEs	B / 0.37 (WB)	B / 0.49 (WB)
②	Concord St and Cemetery Rd		EB / WB LOS	C / C	B / B
			EB / WB Delay [s/veh]	23 / 21	14 / 14
			Worst Movement MOEs	C / 0.32 (EB)	B / 0.09 (WB)
③	Concord St and Hawthorne Ave		EB LOS	B	B
			EB Delay [s/veh]	10	10
			Worst Lane Group MOEs	B / 0.24 (EB)	B / 0.18 (EB)
④	Cemetery Rd and SH 44		Intersection LOS	C	F
			Intersection Delay [s/veh]	16	53
			Worst Lane Group MOEs	C / 0.82 (EB)	F / 1.11 (WBTL)
			Intersection LOS	B	C
			Intersection Delay [s/veh]	20	30
			Intersection v/c	0.62	0.82
			Worst Lane Group MOEs	B / 0.85 (EBT)	C / 0.94 (WBT)
⑤	Hawthorne Ave and SH 44		Intersection LOS	A	A
			Intersection Delay [s/veh]	10	9
			Worst Lane Group MOEs	B / 0.61 (WBTR)	A / 0.58 (WBTR)
			Intersection LOS	A	A
			Intersection Delay [s/veh]	10	10
			Intersection v/c	0.58	0.54
			Worst Lane Group MOEs	A / 0.71 (WBTR)	A / 0.69 (WBTR)

Table 5.1 – Intersection Operations – 2030 Horizon Year Background Traffic (Continued)

Intersection		Control / Lane	MOEs	AM Peak Hour	PM Peak Hour
6	S Middleton Rd and SH 44		NBL / NBR LOS	D / D	D / C
			NBL / NBR Delay [s/veh]	32 / 31	31 / 21
			Worst Lane Group MOEs	D / 0.41 (NBR)	D / 0.34 (NBL)
7	N Middleton Rd and SH 44		Intersection LOS	F	F
			Intersection Delay [s/veh]	70	81
			Worst Lane Group MOEs	F / 1.49 (SBTL)	F / 1.23 (WBTR)
			Intersection LOS	E	E
			Intersection Delay [s/veh]	76	72
			Intersection v/c	1.00	1.07
			Worst Lane Group MOEs	F / 1.11 (SBR)	F / 1.14 (NBL)

5.4 Intersection Mitigation

Two study area intersections are expected to exceed minimum operational thresholds under the projected 2030 background traffic conditions. The intersections, operational deficiencies, and proposed mitigation improvements are discussed below.

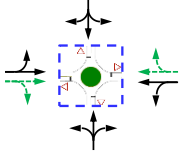
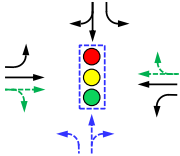
Cemetery Road and SH 44 Intersection

The Cemetery Road and SH 44 intersection is expected to exceed minimum operational thresholds as either a modified single-lane roundabout with a westbound right-turn lane and as a signalized intersection. As a roundabout, the westbound shared through/left-turn lane group is expected to operate at LOS F with a v/c ratio of 1.11 during the PM peak hour, exceeding the ITD minimum 0.90 threshold. With a signal, the westbound through lane group is expected to operate with a v/c ratio of 0.94, exceeding the ITD 0.90 threshold. The following improvements are needed to mitigate 2030 background traffic operations:

- Roundabout – Reconstruct roundabout with the following lanes:
 - Two entering and exiting lanes on the eastbound and westbound approaches
 - One shared lane on the northbound and southbound approaches
- Signal – Reconstruct intersection with the following lanes:
 - One left-turn lane, one through lane, and one shared through/right-turn lane on the eastbound and westbound approaches
 - One left-turn lane and one shared through/right-turn lane on the northbound and southbound approaches

Table 5.2 summarizes the intersection mitigation analysis results.

Table 5.2 – Cemetery Road and SH 44 Intersection Operations – 2030 Horizon Year Background Traffic Mitigation

Intersection		Control / Lane Mitigation	MOEs	AM Peak Hour	PM Peak Hour
④	Cemetery Rd and SH 44		Intersection LOS	A	B
			Intersection Delay [s/veh]	8	12
			Worst Lane Group MOEs	B / 0.42 (SB)	B / 0.68 (WBTR)
			Intersection LOS	B	B
			Intersection Delay [s/veh]	16	18
			Intersection v/c	0.43	0.59
			Worst Lane Group MOEs	B / 0.66 (WBTR)	B / 0.75 (WBTR)

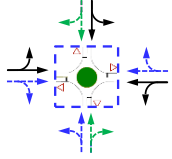
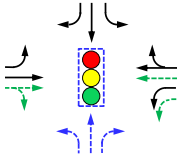
N Middleton Road and SH 44 Intersection

The N Middleton Road and SH 44 intersection is expected to exceed minimum operational thresholds as either a modified multilane roundabout or as a signalized intersection with the lane configuration needed under 2025 background traffic conditions. As a roundabout, the intersection is expected to operate at LOS F during the PM peak hour, with the southbound through/left-turn lane group operating with a v/c ratio of 1.49 during the AM peak hour, and the westbound through/left-turn lane group operating with a v/c ratio of 1.23 during the PM peak hour. With a signal, the intersection is expected to operate with the overall intersection v/c ratio and multiple lane group v/c ratios exceeding 1.00 during the peak hours. The following improvements are needed to mitigate 2030 background traffic operations:

- Roundabout – Reconstruct as a dual-lane roundabout with the following lanes
 - Two entering and exiting lanes on all approaches
- Signal – Reconstruct intersection with the following lanes:
 - One left-turn lane, one through lane, and one shared through/right-turn lane on the eastbound approach
 - Dual left-turn lanes, one through lane, and one shared through/right-turn lane on the westbound approach
 - One left-turn lane, one through lane, and one right-turn lane on the northbound and southbound approaches

Table 5.3 summarizes the intersection mitigation analysis results. The N Middleton Road and SH 44 intersection is expected to exceed minimum operational thresholds as a dual-lane roundabout, consistent with the findings from the SH 44 corridor study. According to the SH 44 corridor study, a traffic signal is ultimately planned at the intersection, as a roundabout is expected to exceed minimum operational thresholds. As a result, no additional improvements are proposed to mitigate the roundabout operations.

Table 5.3 – N Middleton Road and SH 44 Intersection Operations – 2030 Horizon Year Background Traffic Mitigation

Intersection		Control / Lane Mitigation	MOEs	AM Peak Hour	PM Peak Hour
⑦	N Middleton Rd and SH 44		Intersection LOS	F	F
			Intersection Delay [s/veh]	58	71
			Worst Lane Group MOEs	F / 1.15 (SBTL)	F / 1.17 (WBTR)
			Intersection LOS	D	D
			Intersection Delay [s/veh]	36	36
			Intersection v/c	0.78	0.80
			Worst Lane Group MOEs	D / 0.84 (WBL)	C / 0.83 (WBTR)

6.0 2030 HORIZON YEAR TOTAL TRAFFIC CONDITIONS

6.1 Roadway Network

Figure 6.1 summarizes the intersection control and lane configuration for 2030 total traffic conditions. The study area roadways and intersections are the same as the mitigated 2030 background traffic conditions as discussed in the previous sections. The preceding improvements needed to mitigate 2021 existing, 2025 background, and 2030 background traffic operations were included in the 2030 total traffic impact analysis.

6.2 Site Traffic

Site traffic under 2030 horizon year conditions is expected to remain generally the same as discussed in Section 4.1. Minimal site traffic having origins/destinations west of the site is anticipated to use the 9th Street connection to Cemetery Road. **Figure 6.2** and **Figure 6.3** summarizes the estimated AM and PM peak hour build-out site traffic with the 9th Street connection.

6.3 Total Traffic

The 2025 build-out site traffic with the 9th Street connection is added to the 2030 background traffic as determined above to obtain the 2030 horizon year total traffic. **Figure 6.4** and **Figure 6.5** summarize the estimated 2030 peak hour total traffic at the study area intersections during the AM and PM peak hours, respectively. **Table 6.1** summarizes the build-out year site traffic percentage estimate at each study area intersection in the 2030 horizon year.

Table 6.1 – Site Traffic Percentage of 2030 Horizon Year Total Traffic

Intersection		% Site Traffic of 2030 Horizon Year Total Traffic		
		AM Peak	PM Peak	Average
①	Purple Sage Rd and Cemetery Rd	0.9%	0.9%	0.9%
②	Concord St and Cemetery Rd	2.4%	4.1%	3.2%
③	Concord St and Hawthorne Ave	20.9%	32.7%	26.8%
④	Cemetery Rd and SH 44	1.3%	0.9%	1.1%
⑤	Hawthorne Ave and SH 44	0.7%	0.7%	0.7%
⑥	S Middleton Rd and SH 44	2.9%	3.9%	3.4%
⑦	N Middleton Rd and SH 44	1.8%	2.2%	2.0%

Figure 6.1 – Intersection Control and Lane Configuration for 2030 Total Traffic Conditions

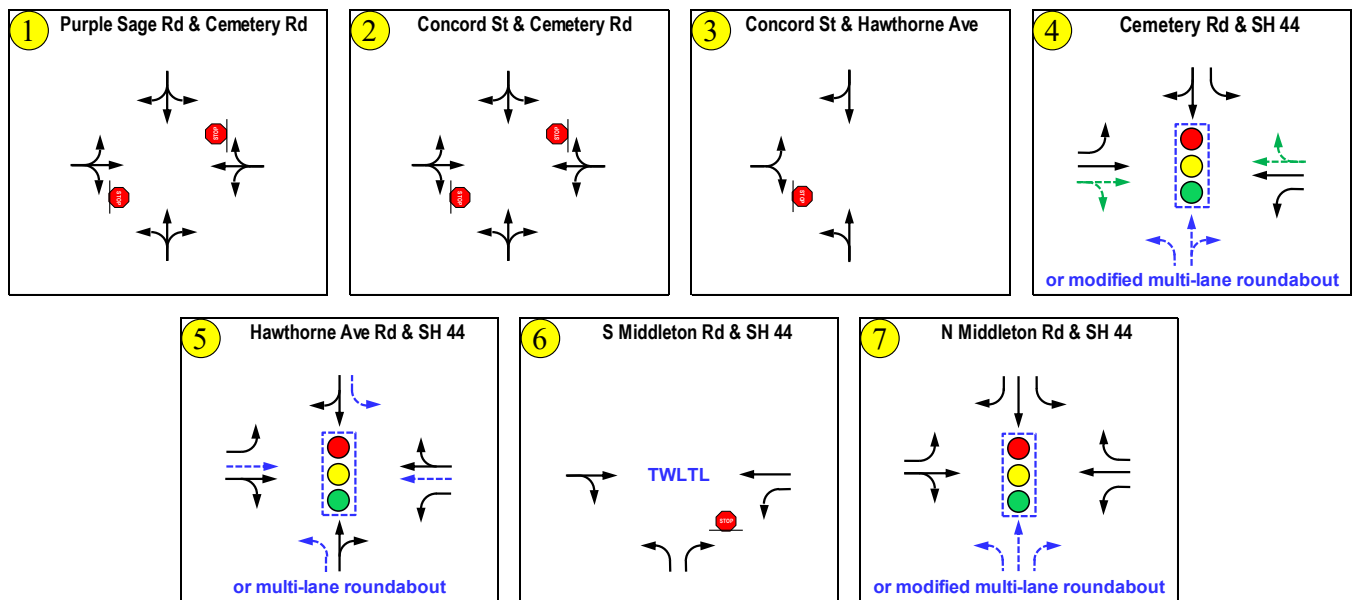
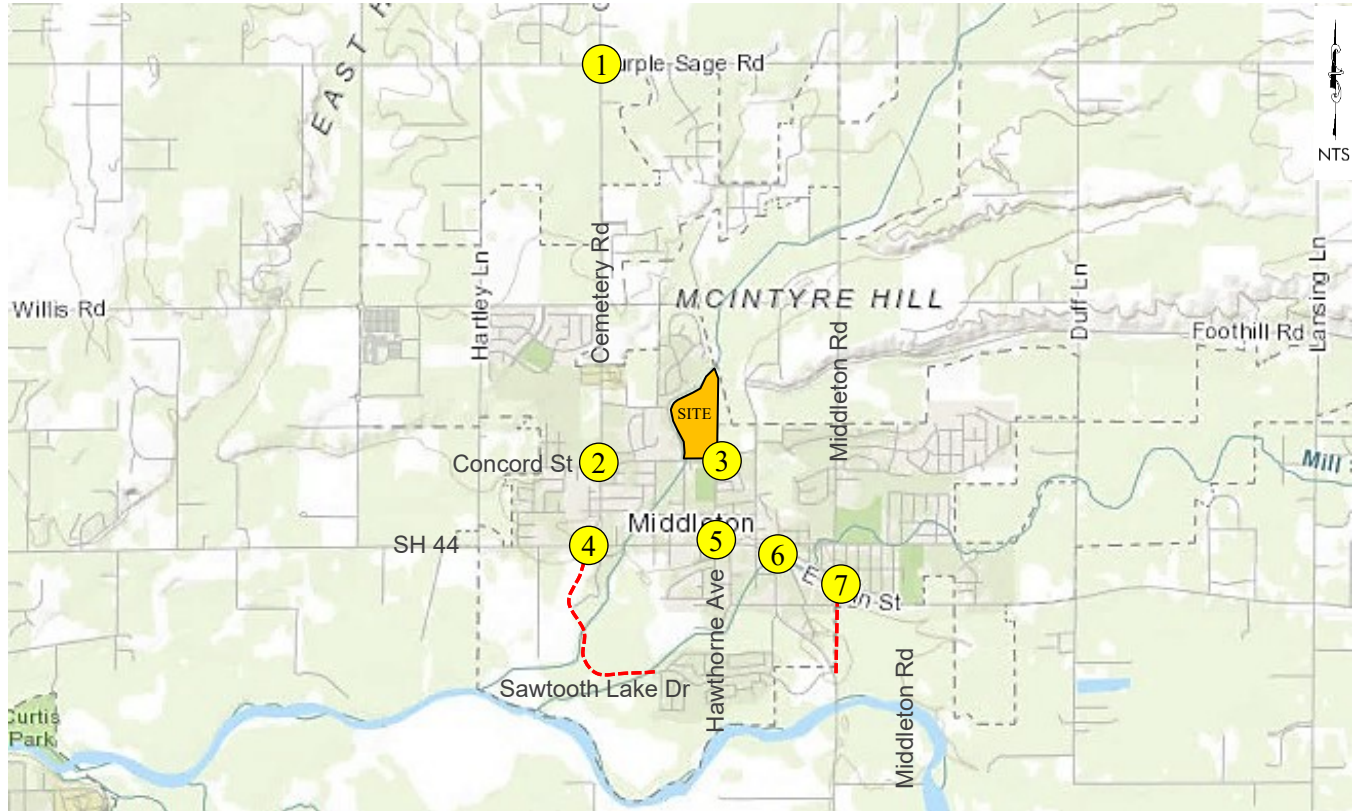


Figure 6.2 – 2030 Horizon Year AM Peak Hour Site Traffic

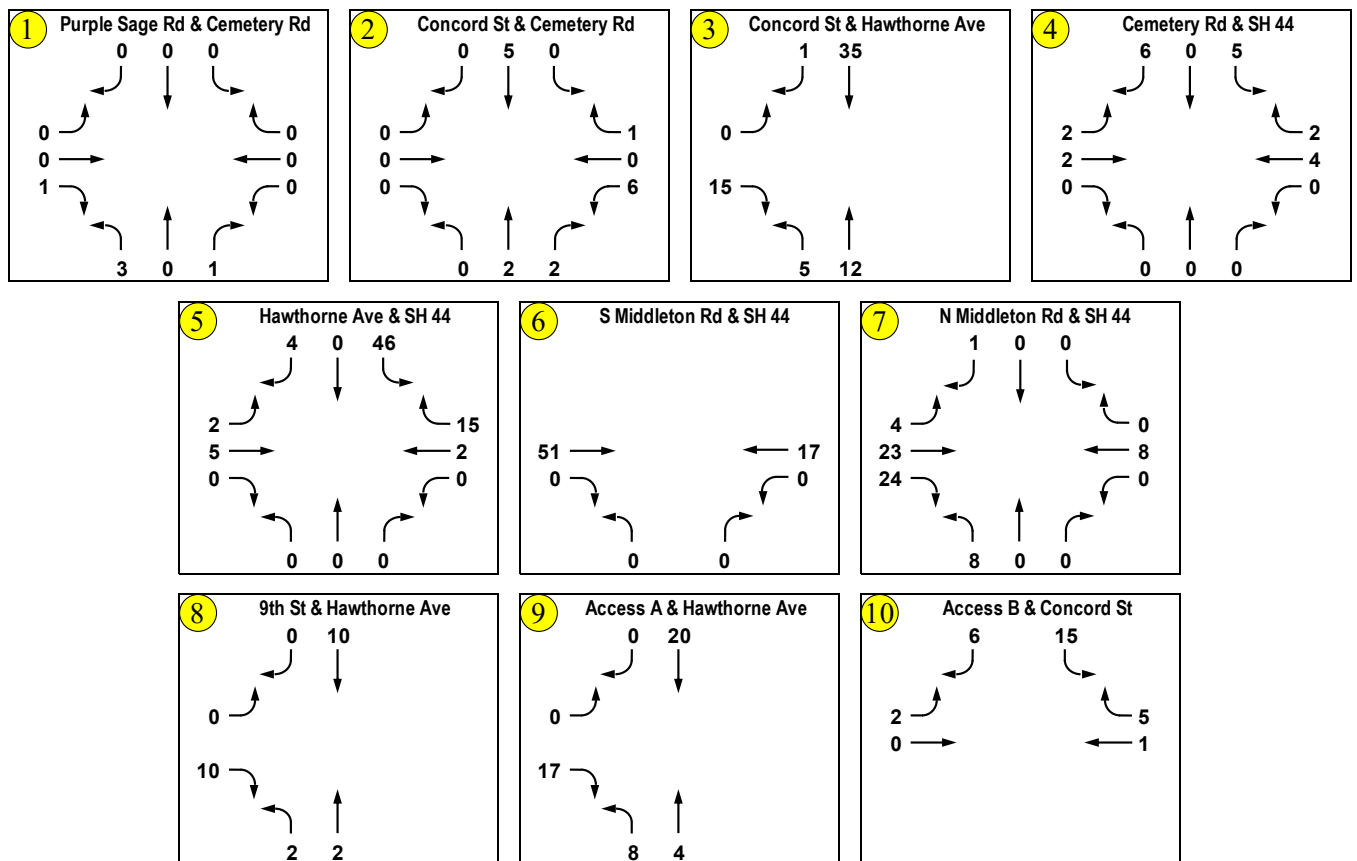
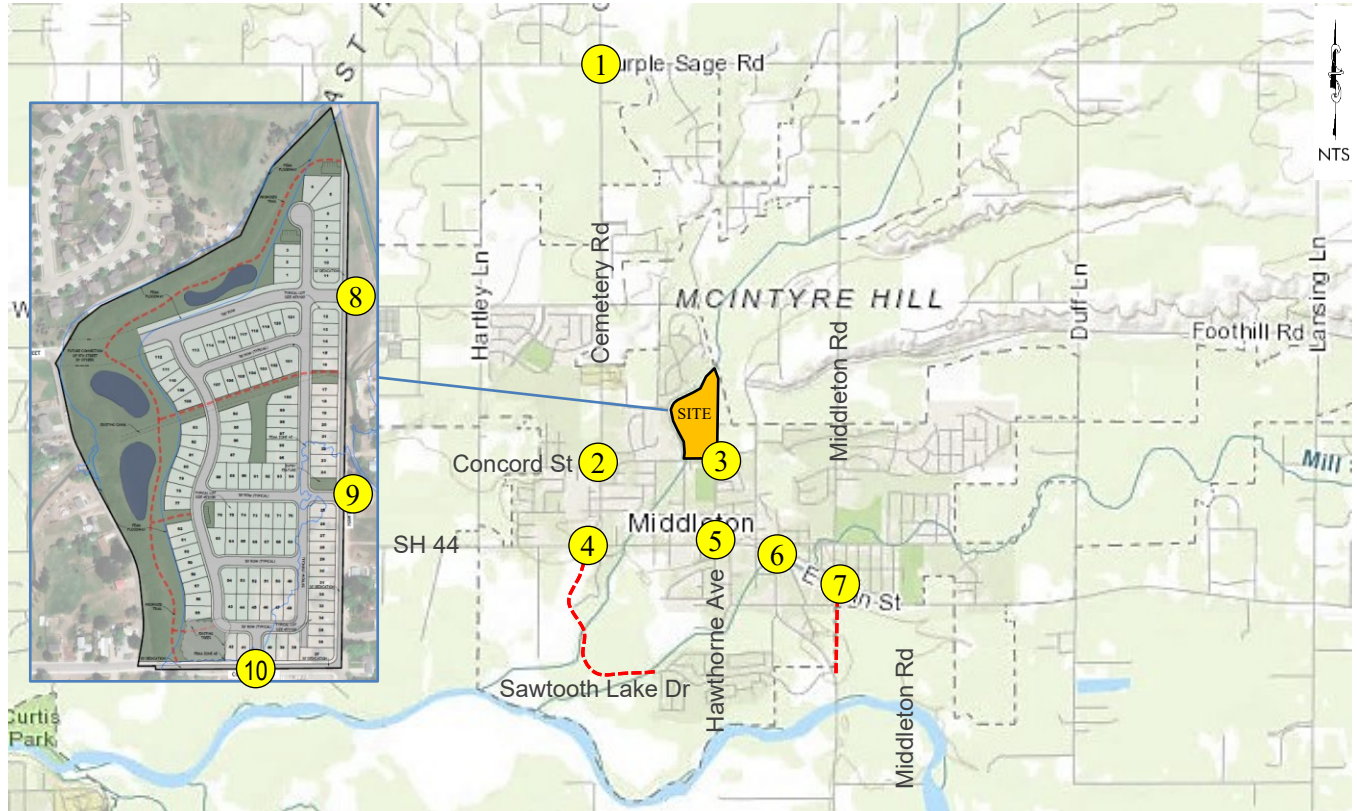


Figure 6.4 – 2030 Horizon Year AM Peak Hour Total Traffic

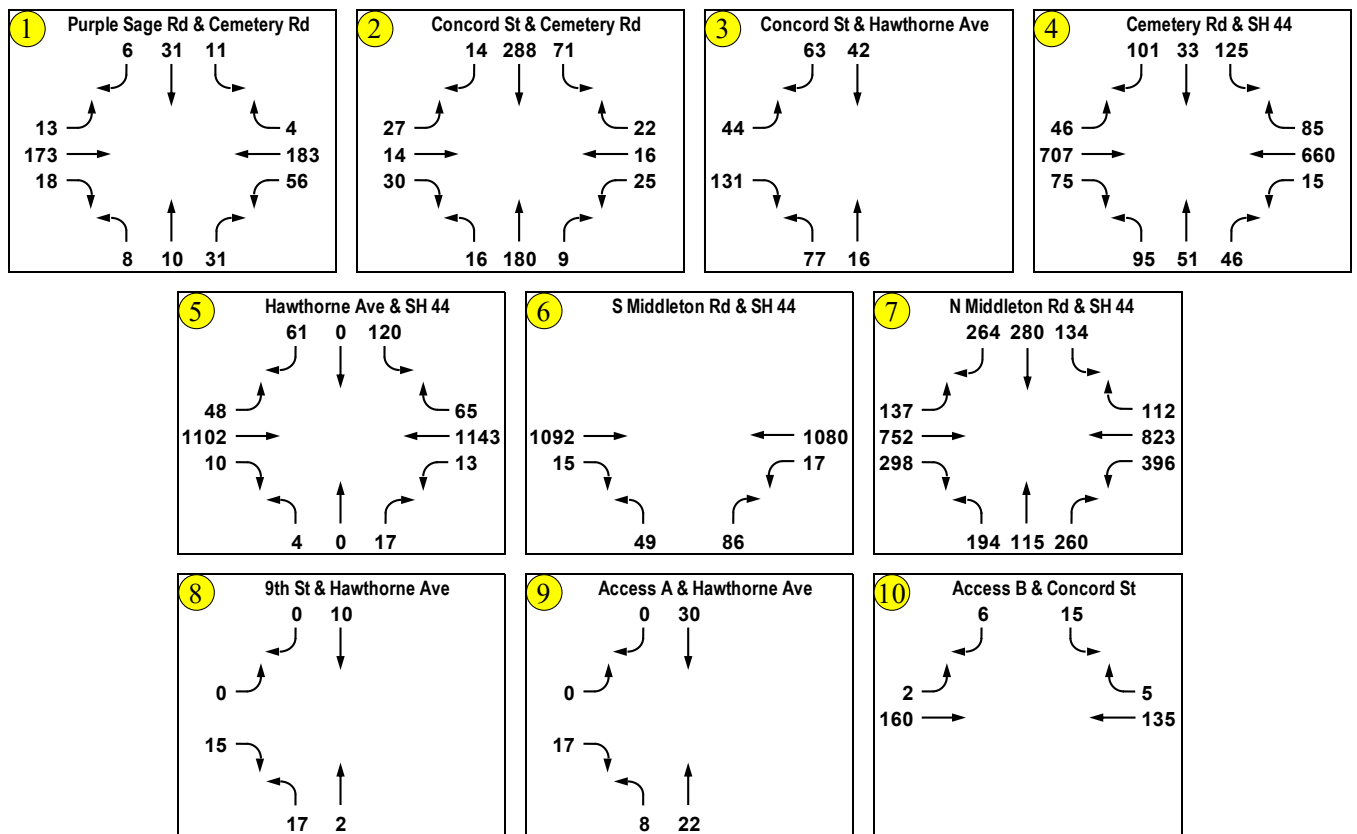
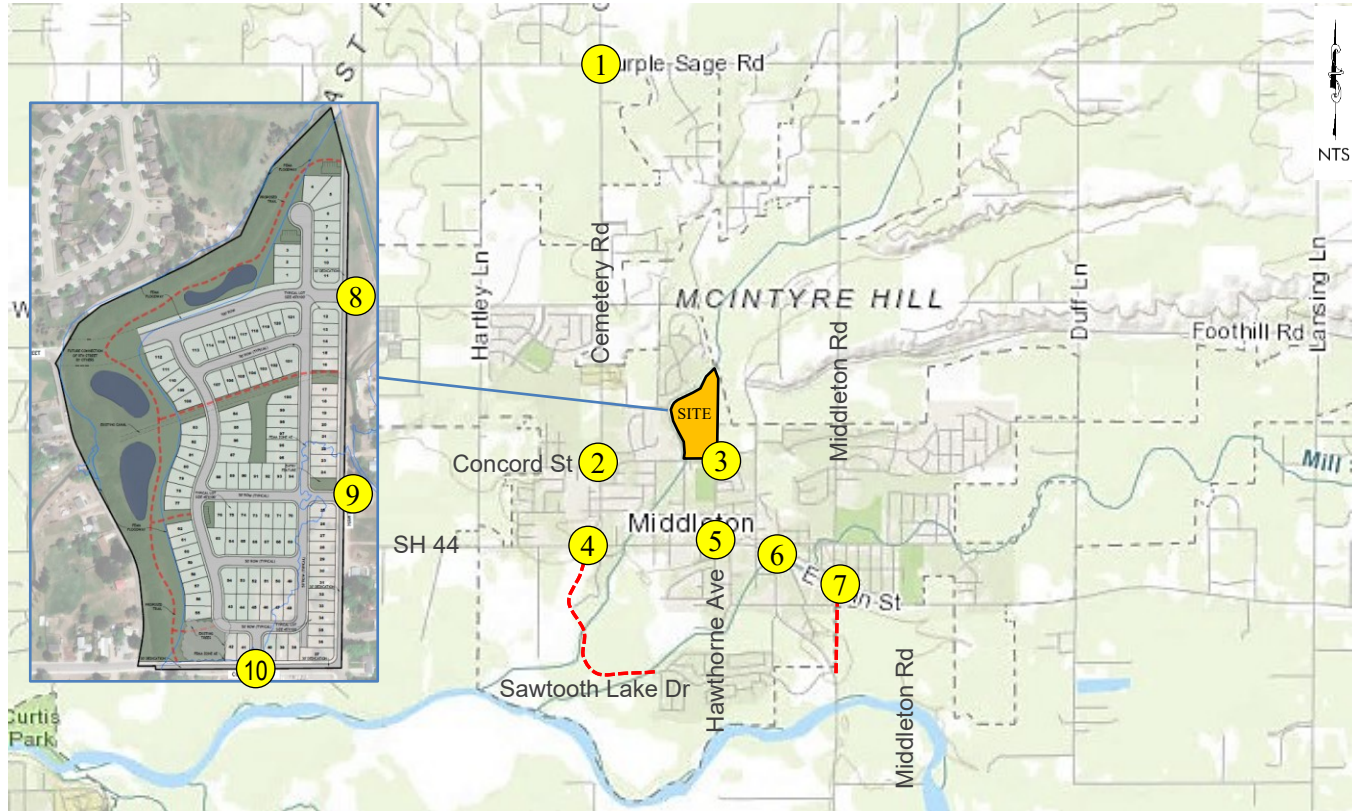
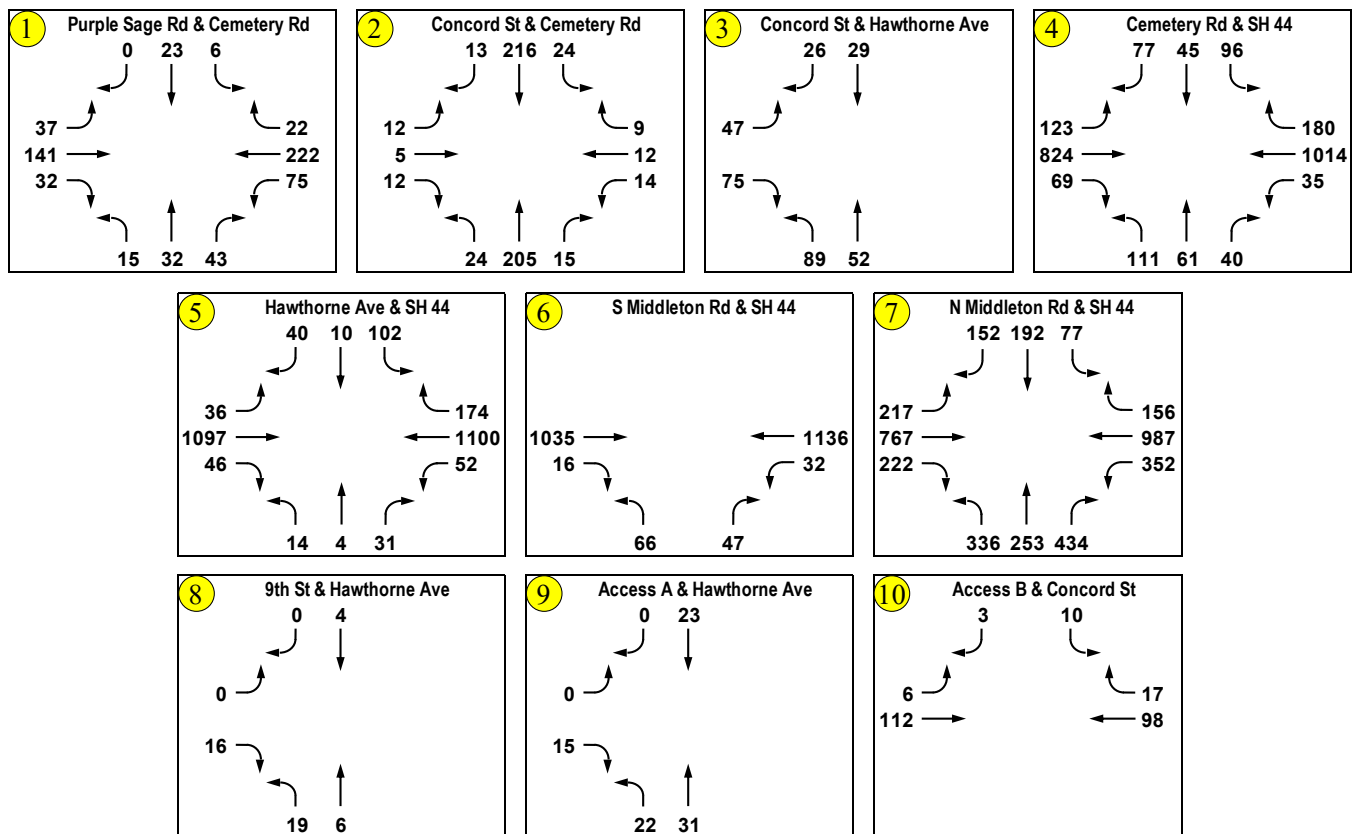
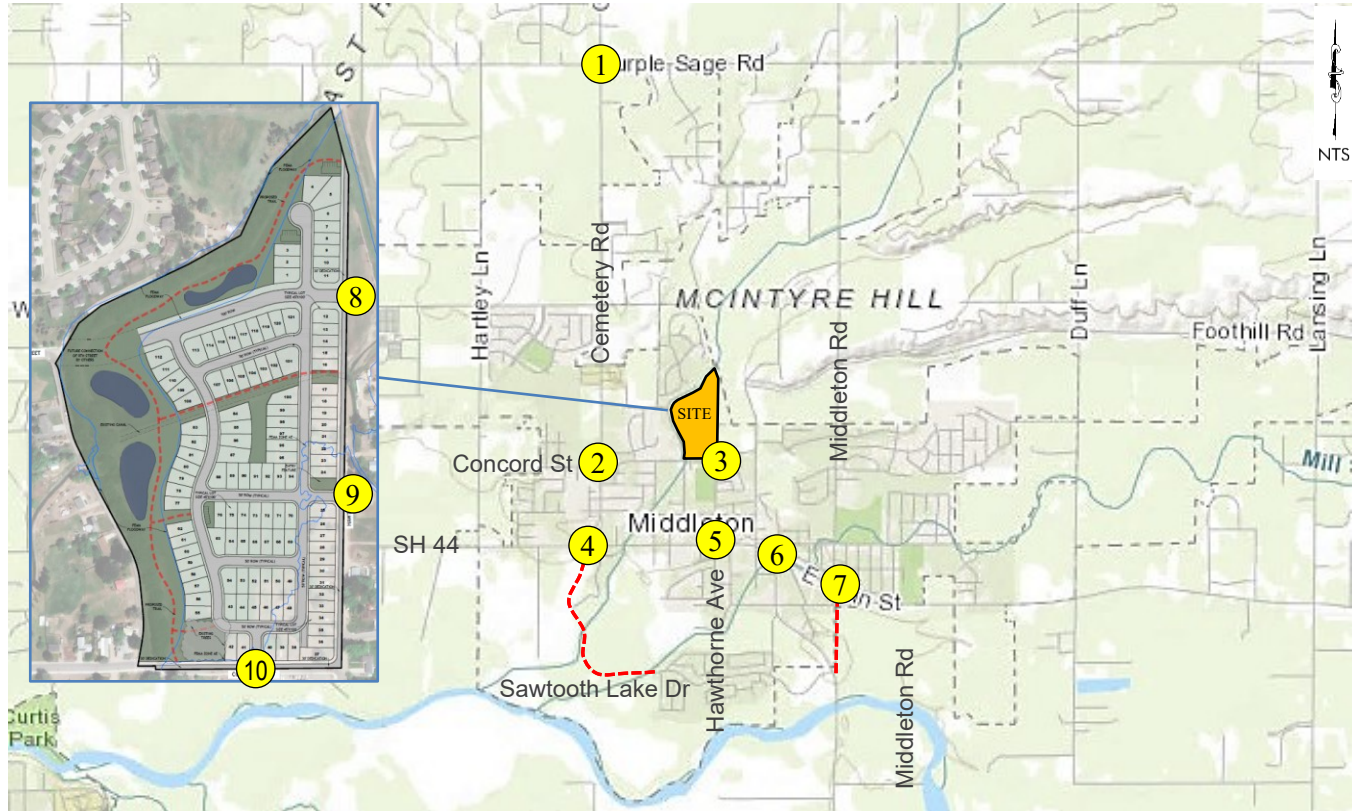


Figure 6.5 – 2030 Horizon Year PM Peak Hour Total Traffic



6.4 Intersection Operations

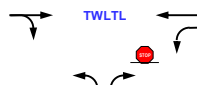
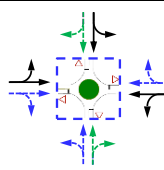
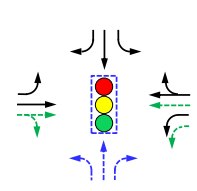
To determine the 2030 total traffic operations, the study area intersections were analyzed with the existing intersection control and lane configuration or with the mitigation improvements needed in prior analysis years traffic conditions. Copies of the analysis reports are included in the appendix. **Table 6.2** summarizes the intersection capacity analysis results. Based on traffic analysis results, one study area intersection is expected to exceed minimum operational thresholds:

- N Middleton Road and SH 44 intersection as a dual-lane roundabout

Table 6.2 – Intersection Operations – 2030 Horizon Year Total Traffic

Intersection		Control / Lane	MOEs	AM Peak Hour	PM Peak Hour
①	Purple Sage Rd and Cemetery Rd		EB / WB LOS	B / B	B / C
			EB / WB Delay [s/veh]	12 / 13	13 / 15
			Worst Movement MOEs	B / 0.38 (WB)	C / 0.50 (WB)
②	Concord St and Cemetery Rd		EB / WB LOS	C / C	B / B
			EB / WB Delay [s/veh]	23 / 23	14 / 15
			Worst Movement MOEs	C / 0.33 (EB)	B / 0.10 (WB)
③	Concord St and Hawthorne Ave		EB LOS	B	B
			EB Delay [s/veh]	11	11
			Worst Lane Group MOEs	B / 0.28 (EB)	B / 0.23 (EB)
④	Cemetery Rd and SH 44		Intersection LOS	A	B
			Intersection Delay [s/veh]	8	12
			Worst Lane Group MOEs	B / 0.44 (SB)	B / 0.69 (WBTR)
			Intersection LOS	B	B
			Intersection Delay [s/veh]	16	18
			Intersection v/c	0.44	0.60
Worst Lane Group MOEs	B / 0.66 (WBTR)	B / 0.76 (WBTR)			
⑤	Hawthorne Ave and SH 44		Intersection LOS	B	B
			Intersection Delay [s/veh]	11	10
			Worst Lane Group MOEs	B / 0.64 (EBTR)	B / 0.61 (WBTR)
			Intersection LOS	B	B
			Intersection Delay [s/veh]	12	11
			Intersection v/c	0.62	0.59
Worst Lane Group MOEs	B / 0.74 (WBTR)	B / 0.72 (WBTR)			

Table 6.2 – Intersection Operations – 2030 Horizon Year Total Traffic (Continued)

Intersection		Control / Lane	MOEs	AM Peak Hour	PM Peak Hour
6	S Middleton Rd and SH 44		NBL / NBR LOS	D / D	D / C
			NBL / NBR Delay [s/veh]	33 / 34	34 / 22
			Worst Lane Group MOEs	D / 0.44 (NBR)	D / 0.36 (NBL)
7	N Middleton Rd and SH 44		Intersection LOS	F	F
			Intersection Delay [s/veh]	65	84
			Worst Lane Group MOEs	F / 1.17 (SBTL)	F / 1.23 (WBTR)
			Intersection LOS	D	D
			Intersection Delay [s/veh]	39	38
			Intersection v/c	0.81	0.84
			Worst Lane Group MOEs	E / 0.89 (NBL)	D / 0.84 (WBTR)

6.5 Intersection Mitigation

N Middleton Road and SH 44 Intersection

The N Middleton Road and SH 44 intersection is expected to meet minimum operational thresholds as a signalized intersection but exceed minimum operational thresholds as a dual-lane roundabout. The roundabout is expected to operate at LOS F during the peak hours. The southbound through/left-turn and westbound through/right-turn lane groups are anticipated to operate over capacity with v/c ratios exceeding 1.00 during the peak hours. According to the SH 44 corridor study, a traffic signal is ultimately planned at the intersection, as a roundabout is expected to exceed minimum operational thresholds. As a result, no additional improvements are proposed to mitigate the roundabout operations.

6.6 Site Access and Circulation

2030 horizon year site access and circulation are expected to remain the same as the 2025 build-out year traffic conditions except for 9th Street connecting to Cemetery Road. No additional site accesses are proposed. **Table 6.3** summarizes the proposed site access intersection operations under 2030 horizon year total traffic conditions. The proposed site access intersections are expected to continue to meet minimum operational thresholds as unsignalized intersections with one shared lane for all movements on all approaches.

Based on NCHRP Report 457 turn lane guidelines, no turn lanes are warranted under 2030 horizon year total traffic conditions.

Table 6.3 – Site Access Intersection Operations – 2030 Horizon Year Total Traffic

Intersection		Control / Lane	MOEs	AM Peak Hour	PM Peak Hour
8	Access A and Hawthorne Ave		EB LOS	A	A
			EB Delay [s/veh]	8	8
			Worst Lane Group MOEs	A / 0.02 (EB)	A / 0.02 (EB)
9	Access B and Hawthorne Ave		EB LOS	A	A
			EB Delay [s/veh]	9	9
			Worst Lane Group MOEs	A / 0.02 (EB)	A / 0.02 (EB)
10	Access C and Concord St		SB LOS	B	A
			SB Delay [s/veh]	10	10
			Worst Lane Group MOEs	A / 0.03 (SB)	A / 0.02 (EB)

APPENDIX A: Scope of Work

Creekside TIS

1 message

Rachel Speer <rspeer@middletoncity.com>

Tue, Dec 22, 2020 at 9:48 AM

To: "chhream@gmail.com" <chhream@gmail.com>

Cc: Becky Crofts <bcrofts@middletoncity.com>, Bruce Bayne <bbayne@middletoncity.com>, Roberta Stewart <rstewart@middletoncity.com>, Tom Blanchard <tblanchard@middletoncity.com>

Hi Chhang,

Please include the following intersections in the TIS:

Hawthorne Ave and Highway 44

Concord St and Cemetery Road

Cemetery Road and Highway 44

Hawthorne Ave and Concord St

Cemetery Road and Purple Sage Road

Future intersection of 9th St and Hawthorne Ave

Thank you,

Rachel E. Speer

City Engineer

(208) 585-3133

City of Middleton

1103 W. Main St.

Middleton, ID 83644



RE: [EXTERNAL] Creekside Subdivision - TIS Scope

1 message

Erika Bowen <Erika.Bowen@itd.idaho.gov>

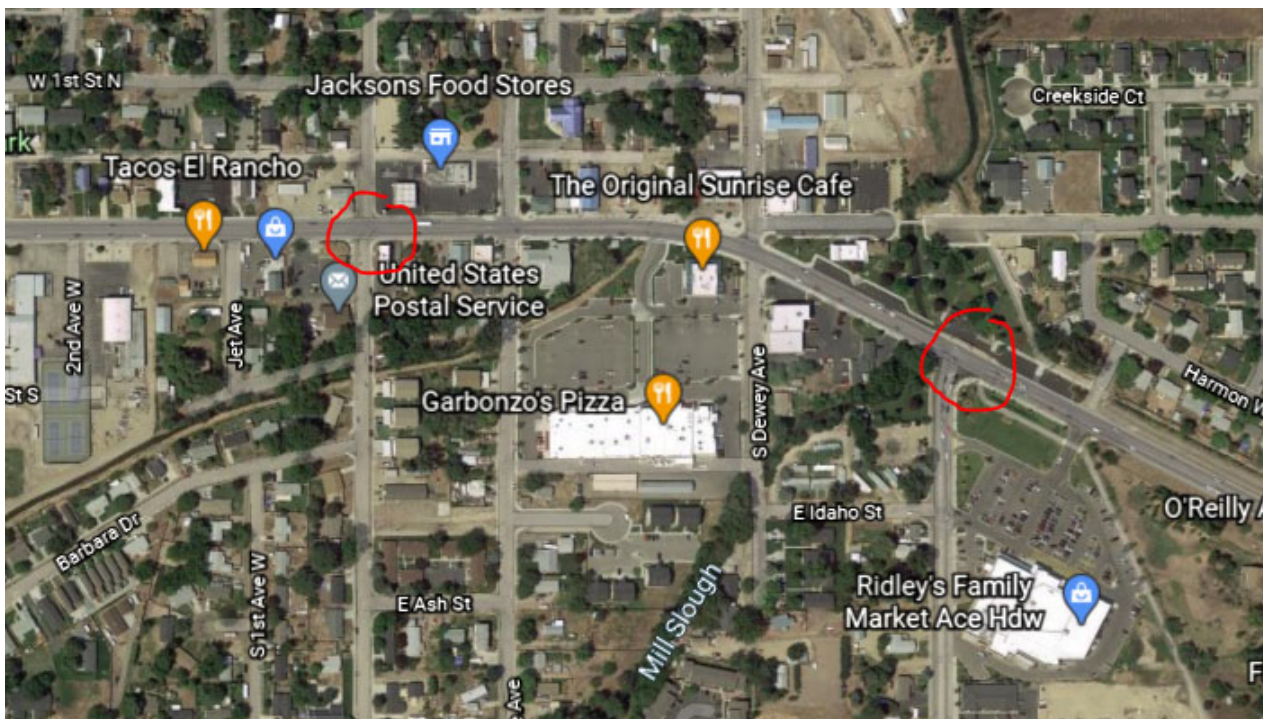
Wed, Dec 16, 2020 at 1:24 PM

To: Chhang Ream <chhream@gmail.com>, Bruce Bayne <bwayne@middletoncity.com>

Cc: Becky Crofts <bcrofts@middletoncity.com>

ITD doesn't have to have a model run.

Please include analysis at Hawthorne Drive / SH-44 and South Middleton Road / SH-44.



Thanks,

Erika R. Bowen, P.E.

ITD District 3 Traffic Technical Engineer

From: Chhang Ream <chhream@gmail.com>

Sent: Monday, December 14, 2020 1:07 PM

To: Bruce Bayne <bwayne@middletoncity.com>; Erika Bowen <Erika.Bowen@itd.idaho.gov>

Cc: Becky Crofts <bcrofts@middletoncity.com>

Subject: [EXTERNAL] Creekside Subdivision - TIS Scope

--- This email is from an external sender. Be cautious and DO NOT open links or attachments if the sender is unknown. ---

Hi Bruce and Erika,

We have another TIS in Middleton and would like confirm the study area intersections. Creekside Subdivision contains 110-140 single-family lots located at the northwest corner of Hawthorne Drive and Concord Street intersection. Please see attached preliminary site plan.

Which intersections should we analyze?

Thank you.

Chhang

APPENDIX B: Traffic Counts

L2 Data Collection

Idaho (208) 860-7554 Utah (801) 413-2993
www.L2DataCollection.com

Study: CR0034
Intersection: Purple Sage / Cemetery Rd
City, State: Middleton, Idaho
Control: Stop Sign

File Name : Purple Sage Rd & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 1

Groups Printed- General Traffic

Start Time	Cemetery Road From North					Purple Sage Road From East					Cemetery Road From South					Purple Sage Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	6	1	0	7	2	9	1	0	12	0	0	1	0	1	5	8	0	0	13	33
07:15 AM	1	13	3	0	17	0	16	1	0	17	5	3	0	0	8	2	14	1	0	17	59
07:30 AM	1	6	4	0	11	1	19	7	0	27	9	2	1	0	12	1	13	3	0	17	67
07:45 AM	2	4	2	0	8	1	21	6	0	28	3	0	2	0	5	3	21	1	0	25	66
Total	4	29	10	0	43	4	65	15	0	84	17	5	4	0	26	11	56	5	0	72	225
08:00 AM	1	2	0	0	3	0	5	3	0	8	3	3	1	0	7	1	15	0	0	16	34
08:15 AM	0	6	1	0	7	0	6	1	0	7	4	3	0	0	7	1	14	1	0	16	37
08:30 AM	1	3	2	0	6	0	15	4	0	19	6	5	1	0	12	7	15	0	0	22	59
08:45 AM	4	9	2	2	17	0	14	4	0	18	2	4	0	0	6	1	10	0	0	11	52
Total	6	20	5	2	33	0	40	12	0	52	15	15	2	0	32	10	54	1	0	65	182

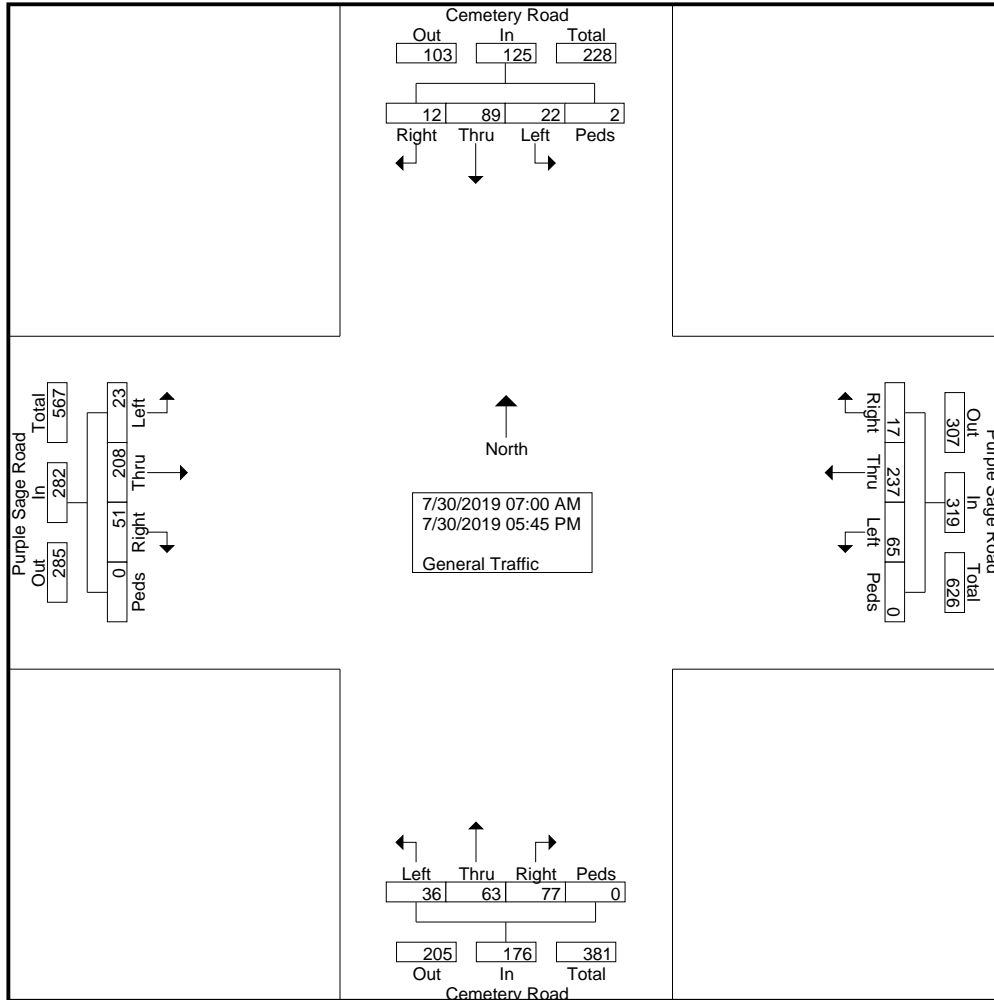
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04:15 PM	1	3	0	0	4	0	9	3	0	12	8	6	3	0	17	6	13	2	0	21	54
04:30 PM	1	2	0	0	3	2	17	6	0	25	6	5	4	0	15	6	12	1	0	19	62
04:45 PM	0	10	1	0	11	1	14	1	0	16	6	5	4	0	15	4	16	0	0	20	62
Total	2	22	2	0	26	5	54	14	0	73	25	17	18	0	60	18	53	3	0	74	233
05:00 PM	0	5	0	0	5	0	15	2	0	17	9	7	2	0	18	0	10	2	0	12	52
05:15 PM	0	6	3	0	9	3	19	7	0	29	2	4	1	0	7	2	15	5	0	22	67
05:30 PM	0	3	2	0	5	2	20	7	0	29	4	6	3	0	13	6	8	3	0	17	64
05:45 PM	0	4	0	0	4	3	24	8	0	35	5	9	6	0	20	4	12	4	0	20	79
Total	0	18	5	0	23	8	78	24	0	110	20	26	12	0	58	12	45	14	0	71	262
Grand Total	12	89	22	2	125	17	237	65	0	319	77	63	36	0	176	51	208	23	0	282	902
Apprch %	9.6	71.2	17.6	1.6		5.3	74.3	20.4	0		43.8	35.8	20.5	0		18.1	73.8	8.2	0		
Total %	1.3	9.9	2.4	0.2	13.9	1.9	26.3	7.2	0	35.4	8.5	7	4	0	19.5	5.7	23.1	2.5	0	31.3	

L2 Data Collection

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www.L2DataCollection.com

Study: CR0034
Intersection: Purple Sage / Cemetery Rd
City, State: Middleton, Idaho
Control: Stop Sign

File Name : Purple Sage Rd & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 2



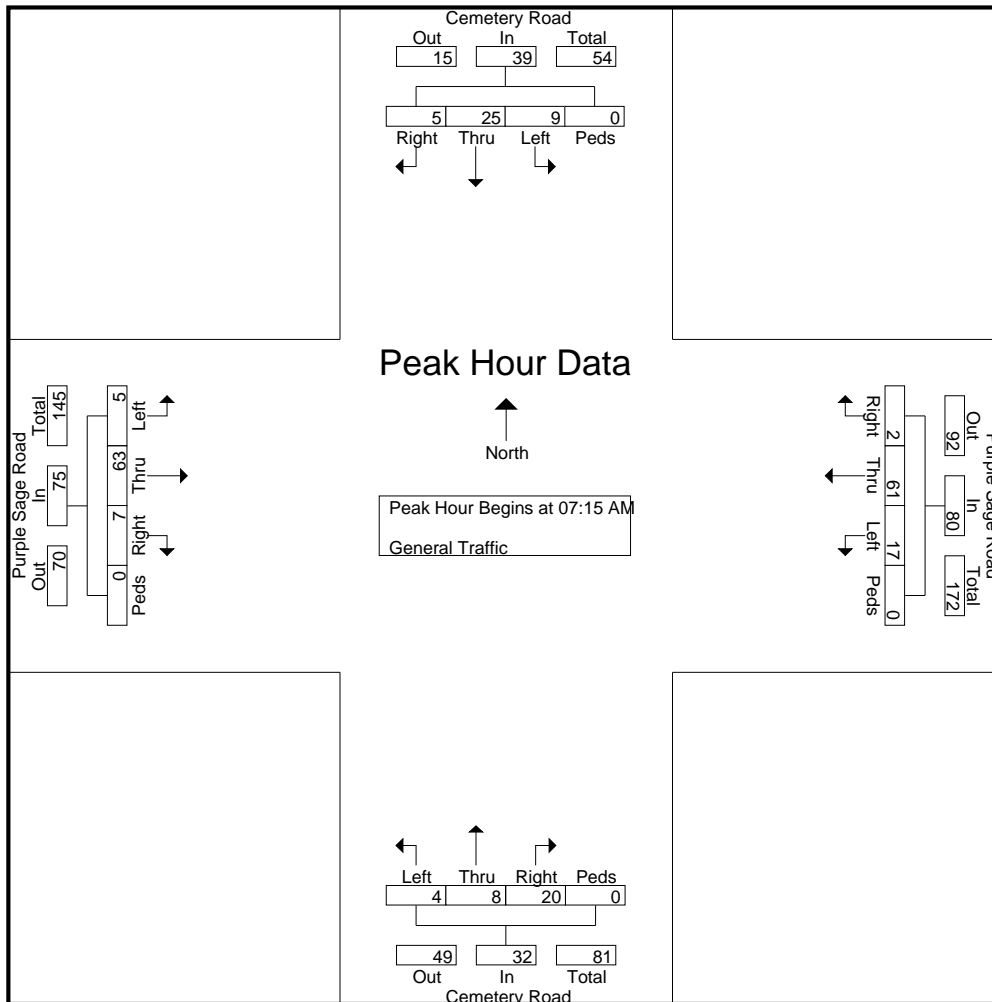
L2 Data Collection

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www.L2DataCollection.com

Study: CR0034
Intersection: Purple Sage / Cemetery Rd
City, State: Middleton, Idaho
Control: Stop Sign

File Name : Purple Sage Rd & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 3

Start Time	Cemetery Road From North					Purple Sage Road From East					Cemetery Road From South					Purple Sage Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 12:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	13	3	0	17	0	16	1	0	17	5	3	0	0	8	2	14	1	0	17	59
07:30 AM	1	6	4	0	11	1	19	7	0	27	9	2	1	0	12	1	13	3	0	17	67
07:45 AM	2	4	2	0	8	1	21	6	0	28	3	0	2	0	5	3	21	1	0	25	66
08:00 AM	1	2	0	0	3	0	5	3	0	8	3	3	1	0	7	1	15	0	0	16	34
Total Volume	5	25	9	0	39	2	61	17	0	80	20	8	4	0	32	7	63	5	0	75	226
% App. Total	12.8	64.1	23.1	0		2.5	76.2	21.2	0		62.5	25	12.5	0		9.3	84	6.7	0		
PHF	.625	.481	.563	.000	.574	.500	.726	.607	.000	.714	.556	.667	.500	.000	.667	.583	.750	.417	.000	.750	.843



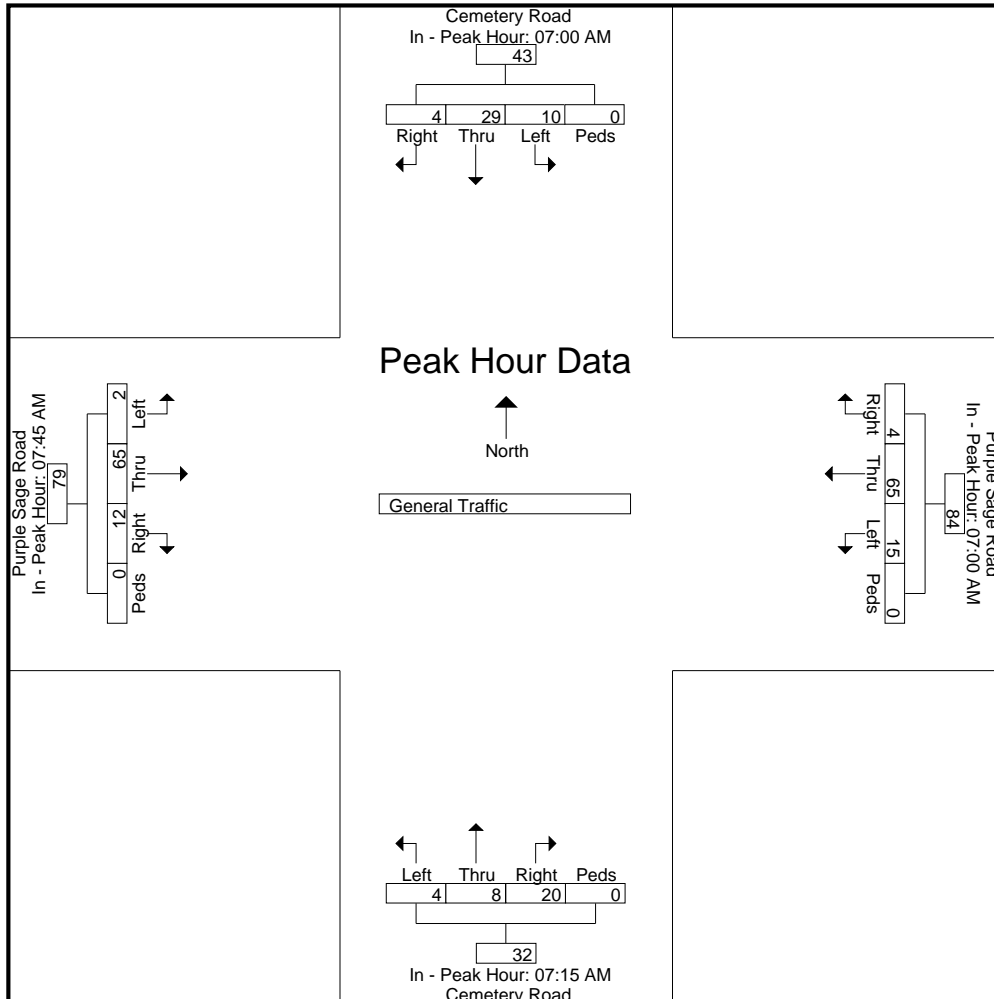
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Study: CR0034
Intersection: Purple Sage / Cemetery Rd
City, State: Middleton, Idaho
Control: Stop Sign

File Name : Purple Sage Rd & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 4

Start Time	Cemetery Road From North					Purple Sage Road From East					Cemetery Road From South					Purple Sage Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 12:30 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	07:00 AM					07:00 AM					07:15 AM					07:45 AM					
+0 mins.	0	6	1	0	7	2	9	1	0	12	5	3	0	0	8	3	21	1	0	25	
+15 mins.	1	13	3	0	17	0	16	1	0	17	9	2	1	0	12	1	15	0	0	16	
+30 mins.	1	6	4	0	11	1	19	7	0	27	3	0	2	0	5	1	14	1	0	16	
+45 mins.	2	4	2	0	8	1	21	6	0	28	3	3	1	0	7	7	15	0	0	22	
Total Volume	4	29	10	0	43	4	65	15	0	84	20	8	4	0	32	12	65	2	0	79	
% App. Total	9.3	67.4	23.3	0		4.8	77.4	17.9	0		62.5	25	12.5	0		15.2	82.3	2.5	0		
PHF	.500	.558	.625	.000	.632	.500	.774	.536	.000	.750	.556	.667	.500	.000	.667	.429	.774	.500	.000	.790	



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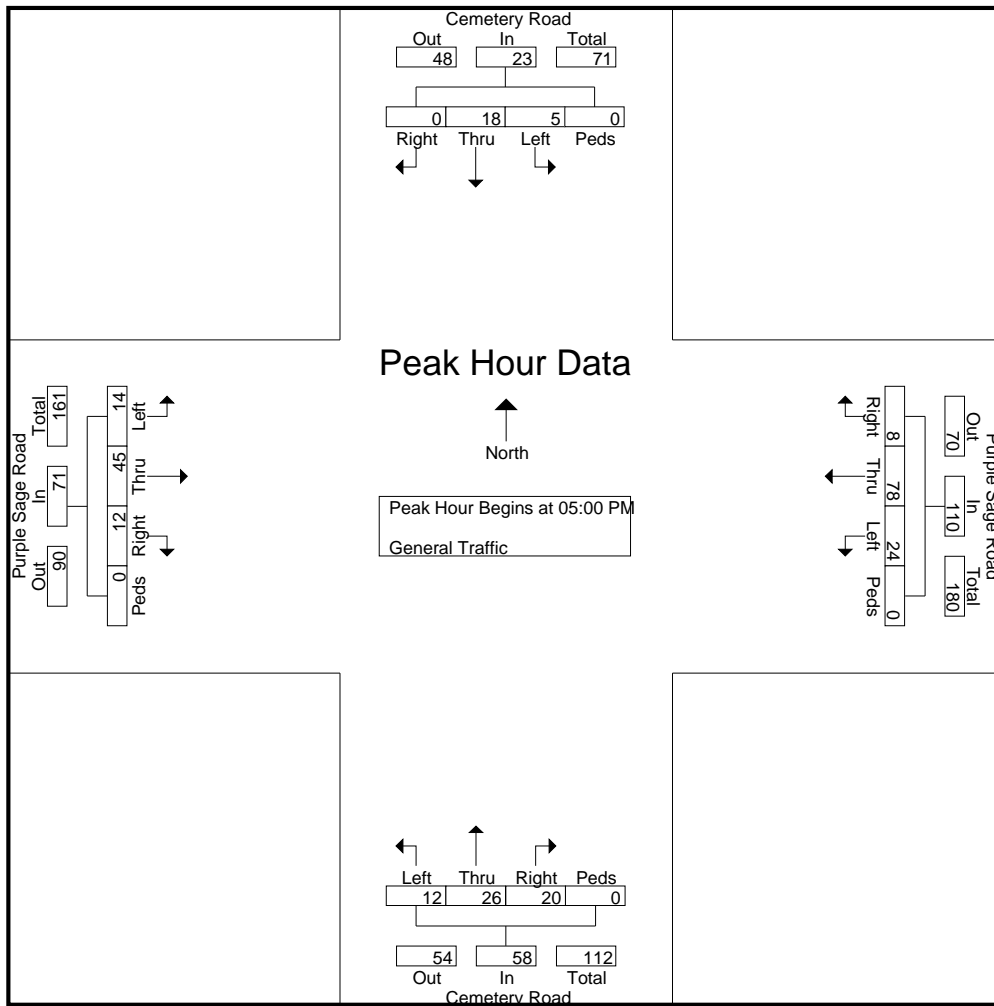
Study: CR0034
Intersection: Purple Sage / Cemetery Rd
City, State: Middleton, Idaho
Control: Stop Sign

File Name : Purple Sage Rd & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 5

Start Time	Cemetery Road From North					Purple Sage Road From East					Cemetery Road From South					Purple Sage Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 12:45 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	0	5	0	0	5	0	15	2	0	17	9	7	2	0	18	0	10	2	0	12	52
05:15 PM	0	6	3	0	9	3	19	7	0	29	2	4	1	0	7	2	15	5	0	22	67
05:30 PM	0	3	2	0	5	2	20	7	0	29	4	6	3	0	13	6	8	3	0	17	64
05:45 PM	0	4	0	0	4	3	24	8	0	35	5	9	6	0	20	4	12	4	0	20	79
Total Volume	0	18	5	0	23	8	78	24	0	110	20	26	12	0	58	12	45	14	0	71	262
% App. Total	0	78.3	21.7	0		7.3	70.9	21.8	0		34.5	44.8	20.7	0		16.9	63.4	19.7	0		
PHF	.000	.750	.417	.000	.639	.667	.813	.750	.000	.786	.556	.722	.500	.000	.725	.500	.750	.700	.000	.807	.829



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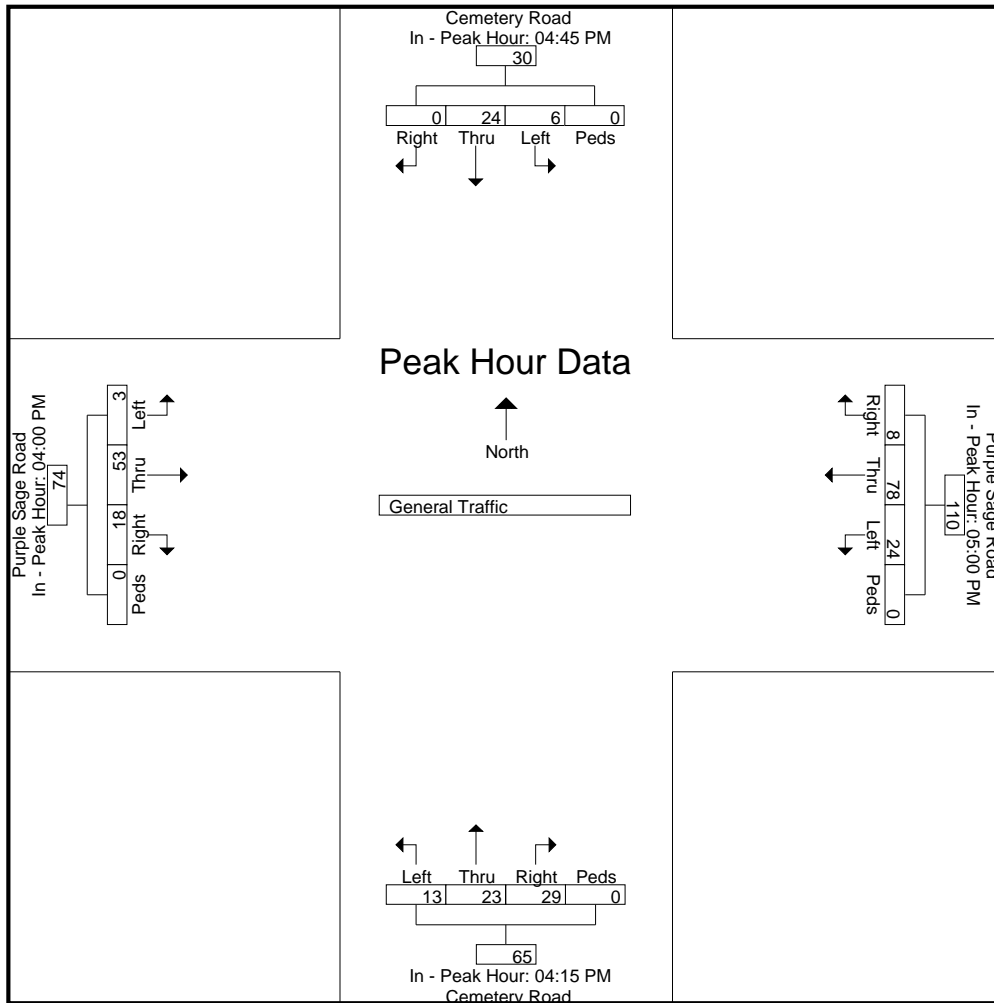
Study: CR0034
Intersection: Purple Sage / Cemetery Rd
City, State: Middleton, Idaho
Control: Stop Sign

File Name : Purple Sage Rd & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 6

Start Time	Cemetery Road From North					Purple Sage Road From East					Cemetery Road From South					Purple Sage Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 12:45 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM					05:00 PM					04:15 PM					04:00 PM				
+0 mins.	0	10	1	0	11	0	15	2	0	17	8	6	3	0	17	2	12	0	0	14
+15 mins.	0	5	0	0	5	3	19	7	0	29	6	5	4	0	15	6	13	2	0	21
+30 mins.	0	6	3	0	9	2	20	7	0	29	6	5	4	0	15	6	12	1	0	19
+45 mins.	0	3	2	0	5	3	24	8	0	35	9	7	2	0	18	4	16	0	0	20
Total Volume	0	24	6	0	30	8	78	24	0	110	29	23	13	0	65	18	53	3	0	74
% App. Total	0	80	20	0		7.3	70.9	21.8	0		44.6	35.4	20	0		24.3	71.6	4.1	0	
PHF	.000	.600	.500	.000	.682	.667	.813	.750	.000	.786	.806	.821	.813	.000	.903	.750	.828	.375	.000	.881



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Study: CR0034
Intersection: Purple Sage / Cemetery Rd
City, State: Middleton, Idaho
Control: Stop Sign

File Name : Purple Sage Rd & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 7

Image 1



**Concord St & Cemetery Rd
Middleton Idaho
Tuesday, January 5, 2021**

Time	Southbound Cemetery Road						Westbound Concord Street						Northbound Cemetery Road						Eastbound Concord Street						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
7:00 AM	0	0	11	0	0	11	0	0	1	2	0	3	0	1	13	1	0	15	0	0	0	6	0	6	35
7:15 AM	0	4	15	1	2	20	0	3	0	4	2	7	0	1	14	0	1	15	0	3	2	8	1	13	55
7:30 AM	0	19	36	3	4	58	0	3	0	12	0	15	0	2	23	0	0	25	0	12	7	9	0	28	126
7:45 AM	0	28	63	6	6	97	0	6	3	14	1	23	0	4	30	3	0	37	0	5	1	5	2	11	168
Hourly Total	0	51	125	10	12	186	0	12	4	32	3	48	0	8	80	4	1	92	0	20	10	28	3	58	384
8:00 AM	0	8	36	2	0	46	0	1	10	0	0	11	0	4	12	0	0	16	0	3	2	1	0	6	79
8:15 AM	0	3	24	1	0	28	0	1	1	1	0	3	0	1	11	2	0	14	0	0	0	1	0	1	46
8:30 AM	0	1	18	0	0	19	0	1	0	1	0	2	0	0	16	0	0	16	0	0	0	1	0	1	38
8:45 AM	0	1	17	0	0	18	0	0	0	0	0	0	0	2	15	0	0	17	0	2	1	6	0	9	44
Hourly Total	0	13	95	3	0	111	0	3	11	2	0	16	0	7	54	2	0	63	0	5	3	9	0	17	207

**Concord St & Cemetery Rd
Middleton Idaho
Tuesday, January 5, 2021**

Time	Southbound Cemetery Road						Westbound Concord Street						Northbound Cemetery Road						Eastbound Concord Street						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
4:00 PM	0	9	37	7	0	53	0	2	4	6	0	12	1	2	20	2	0	25	0	4	1	5	0	10	100
4:15 PM	0	5	25	1	0	31	0	3	2	3	0	8	0	11	20	3	0	34	0	2	0	1	0	3	76
4:30 PM	0	2	18	2	0	22	0	1	1	1	0	3	0	5	19	1	2	25	0	2	1	2	2	5	55
4:45 PM	0	3	17	1	0	21	0	2	3	2	3	7	0	1	20	1	0	22	0	2	2	2	0	6	56
Hourly Total	0	19	97	11	0	127	0	8	10	12	3	30	1	19	79	7	2	106	0	10	4	10	2	24	287
5:00 PM	0	4	18	1	0	23	0	0	2	1	0	3	0	9	22	4	3	35	0	0	1	4	0	5	66
5:15 PM	0	1	22	2	0	25	0	0	3	1	8	4	0	9	27	1	0	37	0	1	1	7	7	9	75
5:30 PM	0	1	22	2	0	25	0	2	4	2	3	8	0	9	31	2	0	42	0	3	4	0	0	7	82
5:45 PM	0	3	19	1	0	23	0	0	2	2	1	4	0	5	21	1	0	27	0	0	1	6	0	7	61
Hourly Total	0	9	81	6	0	96	0	2	11	6	12	19	0	32	101	8	3	141	0	4	7	17	7	28	284
DAILY TOTAL	0	92	398	30	12	520	0	25	36	52	18	113	1	66	314	21	6	402	0	39	24	64	12	127	1162
Cars	0	91	389	29	12	509	0	24	36	49	18	109	1	65	308	21	6	395	0	37	23	64	12	124	1137
Heavy Vehicles	0	1	9	1	0	11	0	1	0	3	0	4	0	1	6	0	0	7	0	2	1	0	0	3	25
Heavy Vehicle %	0.00%	1.09%	2.26%	3.33%	0.00%	2.12%	0.00%	4.00%	0.00%	5.77%	0.00%	3.54%	0.00%	1.52%	1.91%	0.00%	0.00%	1.74%	0.00%	5.13%	4.17%	0.00%	0.00%	2.36%	2.15%

**Concord St & Cemetery Rd
Middleton Idaho
Tuesday, January 5, 2021**

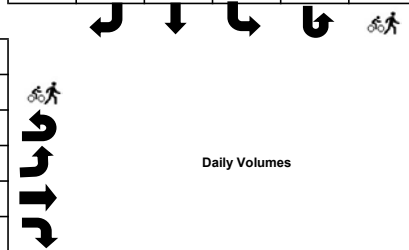
AM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
7:15 AM	0	4	15	1	2	20	0	3	0	4	2	7	0	1	14	0	1	15	0	3	2	8	1	13	55
7:30 AM	0	19	36	3	4	58	0	3	0	12	0	15	0	2	23	0	0	25	0	12	7	9	0	28	126
7:45 AM	0	28	63	6	6	97	0	6	3	14	1	23	0	4	30	3	0	37	0	5	1	5	2	11	168
8:00 AM	0	8	36	2	0	46	0	1	10	0	0	11	0	4	12	0	0	16	0	3	2	1	0	6	79
Peak Hour Total	0	59	150	12	12	221	0	13	13	30	3	56	0	11	79	3	1	93	0	23	12	23	3	58	428
PHF	0.000	0.527	0.595	0.500	0.500	0.570	0.000	0.542	0.325	0.536	0.375	0.609	0.000	0.688	0.658	0.250	0.250	0.628	0.000	0.479	0.429	0.639	0.375	0.518	0.637
Heavy Vehicle %	0.00%	0.00%	3.33%	0.00%	0.00%	2.3%	0.00%	7.69%	0.00%	10.00%	0.00%	7.1%	0.00%	0.00%	2.53%	0.00%	0.00%	2.2%	0.00%	4.35%	0.00%	0.00%	0.00%	1.7%	2.80%

PM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
4:00 PM	0	9	37	7	0	53	0	2	4	6	0	12	1	2	20	2	0	25	0	4	1	5	0	10	100
4:15 PM	0	5	25	1	0	31	0	3	2	3	0	8	0	11	20	3	0	34	0	2	0	1	0	3	76
4:30 PM	0	2	18	2	0	22	0	1	1	1	0	3	0	5	19	1	2	25	0	2	1	2	2	5	55
4:45 PM	0	3	17	1	0	21	0	2	3	2	3	7	0	1	20	1	0	22	0	2	2	2	0	6	56
Peak Hour Total	0	19	97	11	0	127	0	8	10	12	3	30	1	19	79	7	2	106	0	10	4	10	2	24	287
PHF	0.000	0.528	0.655	0.393	0.000	0.599	0.000	0.667	0.625	0.500	0.250	0.625	0.250	0.432	0.988	0.583	0.250	0.779	0.000	0.625	0.500	0.500	0.250	0.600	0.718
Heavy Vehicle %	0.00%	5.26%	1.03%	9.09%	0.00%	2.4%	0.00%	0.00%	0.00%	0.00%	0.00%	0.0%	0.00%	0.00%	1.27%	0.00%	0.00%	0.9%	0.00%	10.00%	0.00%	0.00%	0.00%	4.2%	1.74%

Total Vehicles On Leg		925	
Vehicles Entering Intersection	520	Vehicles Exiting Intersection	405
Southbound			
Cars	29	389	91
Heavy	1	9	0
Total	30	398	92



Total Vehicles on Leg 259	Vehicles Entering Intersection 127	Eastbound	Cars	Heavy	Total
			12	0	12
	0		0	0	
	37		2	39	
	23		1	24	
Vehicles Exiting Intersection 132	64	0	64		

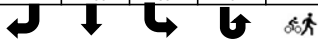
Total Vehicles on Leg 250	Vehicles Entering Intersection 113	Westbound	Cars	Heavy	Total
			49	3	52
	36		0	36	
	24		1	25	
	0		0	0	
Vehicles Exiting Intersection 137	18	0	18		

Total Vehicles On Leg		890	
Vehicles Entering Intersection	402	Vehicles Exiting Intersection	488
Northbound			
Cars	6	1	65
Heavy	0	0	1
Total	6	1	66

**Concord St & Cemetery Rd
Middleton Idaho
Tuesday, January 5, 2021
AM Peak Hour**

Time	Cemetery Road Southbound						Concord Street Westbound						Cemetery Road Northbound						Concord Street Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
7:15 AM	0	4	15	1	2	20	0	3	0	4	2	7	0	1	14	0	1	15	0	3	2	8	1	13	55
7:30 AM	0	19	36	3	4	58	0	3	0	12	0	15	0	2	23	0	0	25	0	12	7	9	0	28	126
7:45 AM	0	28	63	6	6	97	0	6	3	14	1	23	0	4	30	3	0	37	0	5	1	5	2	11	168
8:00 AM	0	8	36	2	0	46	0	1	10	0	0	11	0	4	12	0	0	16	0	3	2	1	0	6	79
Peak Hour Total	0	59	150	12	12	221	0	13	13	30	3	56	0	11	79	3	1	93	0	23	12	23	3	58	428
PHF	0.000	0.527	0.595	0.500	0.500	0.570	0.000	0.542	0.325	0.536	0.375	0.609	0.000	0.688	0.658	0.250	0.250	0.628	0.000	0.479	0.429	0.639	0.375	0.518	0.637
Heavy Vehicle %	0.00%	0.00%	3.33%	0.00%	0.00%	2.26%	0.00%	7.69%	0.00%	10.00%	0.00%	7.14%	0.00%	0.00%	2.53%	0.00%	0.00%	2.15%	0.00%	4.35%	0.00%	0.00%	0.00%	1.72%	2.8%

Total Vehicles On Leg				353			
Vehicles Entering Intersection		221		Vehicles Exiting Intersection		132	
Southbound							
Cars	12	145	59	0	12		
Heavy	0	5	0	0	0		
Total	12	150	59	0	12		

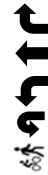


Total Vehicles on Leg 94	Vehicles Entering Intersection 58	Eastbound	Cars	Heavy	Total
			3	0	3
	0		0	0	
	22		1	23	
	Vehicles Exiting Intersection 36		12	0	12
23	0	23			



AM Peak Hour Volumes

Cars	Heavy	Total	Westbound	Vehicles Entering Intersection 56	Total Vehicles on Leg 130
27	3	30			
13	0	13			
12	1	13			
0	0	0			
3	0	3	Vehicles Exiting Intersection 74		



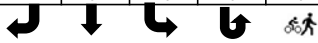
Cars	1	0	11	77	3
Heavy	0	0	0	2	0
Total	1	0	11	79	3
Northbound					
Vehicles Entering Intersection			93		
Vehicles Exiting Intersection			186		
Total Vehicles On Leg			279		



**Concord St & Cemetery Rd
Middleton Idaho
Tuesday, January 5, 2021
PM Peak Hour**

Time	Cemetery Road Southbound						Concord Street Westbound						Cemetery Road Northbound						Concord Street Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
4:00 PM	0	9	37	7	0	53	0	2	4	6	0	12	1	2	20	2	0	25	0	4	1	5	0	10	100
4:15 PM	0	5	25	1	0	31	0	3	2	3	0	8	0	11	20	3	0	34	0	2	0	1	0	3	76
4:30 PM	0	2	18	2	0	22	0	1	1	1	0	3	0	5	19	1	2	25	0	2	1	2	2	5	55
4:45 PM	0	3	17	1	0	21	0	2	3	2	3	7	0	1	20	1	0	22	0	2	2	2	0	6	56
Peak Hour Total	0	19	97	11	0	127	0	8	10	12	3	30	1	19	79	7	2	106	0	10	4	10	2	24	287
PHF	0.000	0.528	0.655	0.393	0.000	0.599	0.000	0.667	0.625	0.500	0.250	0.625	0.250	0.432	0.988	0.583	0.250	0.779	0.000	0.625	0.500	0.500	0.250	0.600	0.718
Heavy Vehicle %	0.00%	5.26%	1.03%	9.09%	0.00%	2.36%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.27%	0.00%	0.00%	0.94%	0.00%	10.00%	0.00%	0.00%	0.00%	4.17%	1.7%

Total Vehicles On Leg		228	
Vehicles Entering Intersection	127	Vehicles Exiting Intersection	101
Southbound			
Cars	10	96	18
Heavy	1	1	1
Total	11	97	19



Total Vehicles on Leg 64	Vehicles Entering Intersection 24	Eastbound	Cars	Heavy	Total	
			2	0	2	
	0		0	0		
	9		1	10		
	Vehicles Exiting Intersection 40		4	0	4	
10	0	10				

PM Peak Hour Volumes

Cars	Heavy	Total	Westbound	Vehicles Entering Intersection 30	Total Vehicles on Leg 60
12	0	12			
10	0	10			
8	0	8			
0	0	0			
3	0	3	Vehicles Exiting Intersection 30		

Cars	2	1	19	78	7
Heavy	0	0	0	1	0
Total	2	1	19	79	7
Northbound					
Vehicles Entering Intersection	106		Vehicles Exiting Intersection	116	
Total Vehicles On Leg			222		



**Concord St & Hawthorne Ave
Middleton Idaho
Tuesday, January 5, 2021**

Time	Southbound Hawthorne Avenue						Westbound Concord Street						Northbound Hawthorne Avenue						Eastbound Concord Street						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
7:00 AM	0	0	0	5	0	5	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0	9	0	11	17
7:15 AM	0	0	0	16	0	16	0	0	0	0	0	0	0	9	1	0	0	10	0	4	0	17	0	21	47
7:30 AM	0	0	2	19	0	21	0	0	0	0	0	0	0	19	1	0	0	20	0	12	0	25	0	37	78
7:45 AM	0	0	4	13	0	17	0	0	0	0	0	0	0	21	0	0	0	21	0	15	0	38	0	53	91
Hourly Total	0	0	6	53	0	59	0	0	0	0	0	0	0	50	2	0	0	52	0	33	0	89	0	122	233
8:00 AM	0	0	0	4	0	4	0	0	0	0	0	0	0	11	1	0	0	12	0	6	0	17	0	23	39
8:15 AM	0	0	0	8	0	8	0	0	0	0	0	0	0	4	0	0	0	4	0	1	0	1	0	2	14
8:30 AM	0	0	0	4	0	4	0	0	0	0	0	0	0	5	0	0	0	5	0	2	0	8	0	10	19
8:45 AM	0	0	1	3	0	4	0	0	0	0	0	0	0	4	0	0	0	4	0	2	0	8	0	10	18
Hourly Total	0	0	1	19	0	20	0	0	0	0	0	0	0	24	1	0	0	25	0	11	0	34	0	45	90

**Concord St & Hawthorne Ave
Middleton Idaho
Tuesday, January 5, 2021**

Time	Southbound Hawthorne Avenue						Westbound Concord Street						Northbound Hawthorne Avenue						Eastbound Concord Street						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
4:00 PM	0	0	1	7	0	8	0	0	0	0	0	0	0	18	3	0	0	21	0	19	0	23	0	42	71
4:15 PM	0	0	0	2	0	2	0	0	0	0	0	0	0	16	1	1	1	18	0	7	0	10	2	17	37
4:30 PM	0	0	1	8	0	9	0	0	0	0	0	0	0	10	2	0	0	12	0	6	0	13	1	19	40
4:45 PM	0	0	2	4	0	6	0	0	0	0	0	0	0	16	4	0	0	20	0	6	0	8	2	14	40
Hourly Total	0	0	4	21	0	25	0	0	0	0	0	0	0	60	10	1	1	71	0	38	0	54	5	92	188
5:00 PM	0	0	1	1	0	2	0	0	0	0	0	0	0	17	4	0	0	21	0	5	0	14	0	19	42
5:15 PM	0	0	2	4	1	6	0	0	0	0	0	0	0	19	2	1	0	22	0	0	0	1	0	1	29
5:30 PM	0	0	1	4	0	5	0	0	0	0	0	0	0	16	2	0	0	18	0	4	0	5	0	9	32
5:45 PM	0	0	1	1	0	2	0	0	0	0	0	0	0	19	3	0	0	22	0	2	0	6	0	8	32
Hourly Total	0	0	5	10	1	15	0	0	0	0	0	0	0	71	11	1	0	83	0	11	0	26	0	37	135
DAILY TOTAL	0	0	16	103	1	119	0	0	0	0	0	0	0	205	24	2	1	231	0	93	0	203	5	296	646
Cars	0	0	16	101	1	117	0	0	0	0	0	0	0	201	24	2	1	227	0	93	0	200	5	293	637
Heavy Vehicles	0	0	0	2	0	2	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	3	0	3	9
Heavy Vehicle %	0.00%	0.00%	0.00%	1.94%	0.00%	1.68%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.95%	0.00%	0.00%	0.00%	1.73%	0.00%	0.00%	0.00%	1.48%	0.00%	1.01%	1.39%

**Concord St & Hawthorne Ave
Middleton Idaho
Tuesday, January 5, 2021**

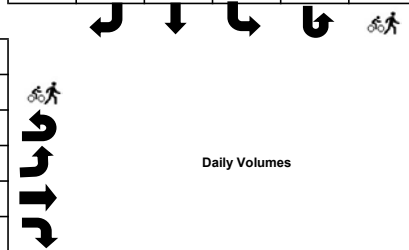
AM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL						
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total							
7:15 AM	0	0	0	16	0	16	0	0	0	0	0	0	0	9	1	0	0	10	0	4	0	17	0	21	0	0	0	0	0	0	47
7:30 AM	0	0	2	19	0	21	0	0	0	0	0	0	0	19	1	0	0	20	0	12	0	25	0	37	0	0	0	0	0	0	78
7:45 AM	0	0	4	13	0	17	0	0	0	0	0	0	0	21	0	0	0	21	0	15	0	38	0	53	0	0	0	0	0	0	91
8:00 AM	0	0	0	4	0	4	0	0	0	0	0	0	0	11	1	0	0	12	0	6	0	17	0	23	0	0	0	0	0	0	39
Peak Hour Total	0	0	6	52	0	58	0	0	0	0	0	0	0	60	3	0	0	63	0	37	0	97	0	134	0	0	0	0	0	0	255
PHF	0.000	0.000	0.375	0.684	0.000	0.690	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.714	0.750	0.000	0.000	0.750	0.000	0.617	0.000	0.638	0.000	0.632	0.000	0.000	0.000	1.03%	0.00%	0.7%	0.701
Heavy Vehicle %	0.00%	0.00%	0.00%	3.85%	0.00%	3.4%	0.00%	0.00%	0.00%	0.00%	0.00%	0.0%	0.00%	5.00%	0.00%	0.00%	0.00%	4.8%	0.00%	0.00%	0.00%	1.03%	0.00%	0.7%	0.00%	0.00%	0.00%	0.00%	0.00%	0.7%	2.35%

PM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL						
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total							
4:00 PM	0	0	1	7	0	8	0	0	0	0	0	0	0	18	3	0	0	21	0	19	0	23	0	42	0	0	0	0	0	0	71
4:15 PM	0	0	0	2	0	2	0	0	0	0	0	0	0	16	1	1	1	18	0	7	0	10	2	17	0	0	0	0	0	0	37
4:30 PM	0	0	1	8	0	9	0	0	0	0	0	0	0	10	2	0	0	12	0	6	0	13	1	19	0	0	0	0	0	0	40
4:45 PM	0	0	2	4	0	6	0	0	0	0	0	0	0	16	4	0	0	20	0	6	0	8	2	14	0	0	0	0	0	0	40
Peak Hour Total	0	0	4	21	0	25	0	0	0	0	0	0	0	60	10	1	1	71	0	38	0	54	5	92	0	0	0	0	0	0	188
PHF	0.000	0.000	0.500	0.656	0.000	0.694	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.833	0.625	0.250	0.250	0.845	0.000	0.500	0.000	0.587	0.625	0.548	0.000	0.000	0.000	3.70%	0.00%	2.2%	0.662
Heavy Vehicle %	0.00%	0.00%	0.00%	0.00%	0.00%	0.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.0%	1.06%

Total Vehicles On Leg		236	
Vehicles Entering Intersection	119	Vehicles Exiting Intersection	117
Southbound			
Cars	101	16	0
Heavy	2	0	0
Total	103	16	0



Total Vehicles on Leg 604	Eastbound	Vehicles Entering Intersection	296
		Cars	5
		Heavy	0
		Total	5
		Vehicles Exiting Intersection	308

Total Vehicles on Leg 2	Westbound	Vehicles Entering Intersection	0
		Cars	0
		Heavy	0
		Total	0
		Vehicles Exiting Intersection	2

Cars	1	0	201	24	2
Heavy	0	0	4	0	0
Total	1	0	205	24	2
Northbound					
Vehicles Entering Intersection	231	Vehicles Exiting Intersection	219		
Total Vehicles On Leg	450				

**Concord St & Hawthorne Ave
Middleton Idaho
Tuesday, January 5, 2021
AM Peak Hour**

Time	Hawthorne Avenue Southbound						Concord Street Westbound						Hawthorne Avenue Northbound						Concord Street Eastbound						VEHICLE TOTAL	
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total		
7:15 AM	0	0	0	16	0	16	0	0	0	0	0	0	0	9	1	0	0	10	0	4	0	17	0	21	0	47
7:30 AM	0	0	2	19	0	21	0	0	0	0	0	0	0	19	1	0	0	20	0	12	0	25	0	37	0	78
7:45 AM	0	0	4	13	0	17	0	0	0	0	0	0	0	21	0	0	0	21	0	15	0	38	0	53	0	91
8:00 AM	0	0	0	4	0	4	0	0	0	0	0	0	0	11	1	0	0	12	0	6	0	17	0	23	0	39
Peak Hour Total	0	0	6	52	0	58	0	0	0	0	0	0	0	60	3	0	0	63	0	37	0	97	0	134	0	255
PHF	0.000	0.000	0.375	0.684	0.000	0.690	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.714	0.750	0.000	0.000	0.750	0.000	0.617	0.000	0.638	0.000	0.632	0.000	0.701
Heavy Vehicle %	0.00%	0.00%	0.00%	3.85%	0.00%	3.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	0.00%	0.00%	0.00%	4.76%	0.00%	0.00%	0.00%	1.03%	0.00%	0.75%	0.00%	2.4%

Total Vehicles On Leg		98	
Vehicles Entering Intersection	58	Vehicles Exiting Intersection	40
Southbound			
Cars	50	6	0
Heavy	2	0	0
Total	52	6	0



Total Vehicles on Leg 246	Vehicles Entering Intersection 134	Eastbound	Cars	Heavy	Total	
	Vehicles Exiting Intersection 112		0	0	0	
			0	0	0	
			37	0	37	
			0	0	0	
96	1	97				

AM Peak Hour Volumes

Cars	Heavy	Total	Westbound		Vehicles Entering Intersection 0	Total Vehicles on Leg 0
0	0	0				
0	0	0				
0	0	0				
0	0	0				
0	0	0				



Cars	0	0	57	3	0
Heavy	0	0	3	0	0
Total	0	0	60	3	0
Northbound					
Vehicles Entering Intersection	63		Vehicles Exiting Intersection	103	
Total Vehicles On Leg			166		

**Concord St & Hawthorne Ave
Middleton Idaho
Tuesday, January 5, 2021
PM Peak Hour**

Time	Hawthorne Avenue Southbound						Concord Street Westbound						Hawthorne Avenue Northbound						Concord Street Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
4:00 PM	0	0	1	7	0	8	0	0	0	0	0	0	0	18	3	0	0	21	0	19	0	23	0	42	71
4:15 PM	0	0	0	2	0	2	0	0	0	0	0	0	0	16	1	1	1	18	0	7	0	10	2	17	37
4:30 PM	0	0	1	8	0	9	0	0	0	0	0	0	0	10	2	0	0	12	0	6	0	13	1	19	40
4:45 PM	0	0	2	4	0	6	0	0	0	0	0	0	0	16	4	0	0	20	0	6	0	8	2	14	40
Peak Hour Total	0	0	4	21	0	25	0	0	0	0	0	0	0	60	10	1	1	71	0	38	0	54	5	92	188
PHF	0.000	0.000	0.500	0.656	0.000	0.694	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.833	0.625	0.250	0.250	0.845	0.000	0.500	0.000	0.587	0.625	0.548	0.662
Heavy Vehicle %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%	0.00%	2.17%	1.1%

Total Vehicles On Leg		73	
Vehicles Entering Intersection	25	Vehicles Exiting Intersection	48
Southbound			
Cars	21	4	0
Heavy	0	0	0
Total	21	4	0



Total Vehicles on Leg 173	Vehicles Entering Intersection 92	Eastbound	Cars	5	0	5
			Heavy	0	0	0
			Total	38	0	38
	Vehicles Exiting Intersection 81		Cars	0	0	0
			Heavy	52	2	54



PM Peak Hour Volumes

Cars	0	0	0
Heavy	0	0	0
Total	0	0	0
Westbound	Vehicles Entering Intersection	0	Total Vehicles on Leg 1
	Vehicles Exiting Intersection	1	



Cars	1	0	60	10	1
Heavy	0	0	0	0	0
Total	1	0	60	10	1
Northbound					
Vehicles Entering Intersection			Vehicles Exiting Intersection		
71			58		
Total Vehicles On Leg			129		



L2 Data Collection

Idaho (208) 860-7554 Utah (801) 413-2993
www.L2DataCollection.com

Study: CR0034
Intersection: SH-44 / Cemetery Road
City, State: Middleton, Idaho
Control: Stop Sign

File Name : SH-44 & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 1

Groups Printed- General Traffic

Start Time	Cemetery Road From North				SH-44 (State Street) From East				SH-44 (State Street) From West				Int. Total
	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	
07:00 AM	12	13	1	26	3	49	0	52	63	3	0	66	144
07:15 AM	8	22	0	30	6	56	0	62	79	2	0	81	173
07:30 AM	16	12	0	28	2	61	0	63	89	5	0	94	185
07:45 AM	12	15	0	27	5	78	0	83	84	3	0	87	197
Total	48	62	1	111	16	244	0	260	315	13	0	328	699
08:00 AM	13	12	1	26	3	52	0	55	69	4	0	73	154
08:15 AM	11	14	0	25	5	62	0	67	65	6	0	71	163
08:30 AM	13	12	0	25	10	69	0	79	59	6	0	65	169
08:45 AM	6	15	0	21	6	53	0	59	53	8	0	61	141
Total	43	53	1	97	24	236	0	260	246	24	0	270	627

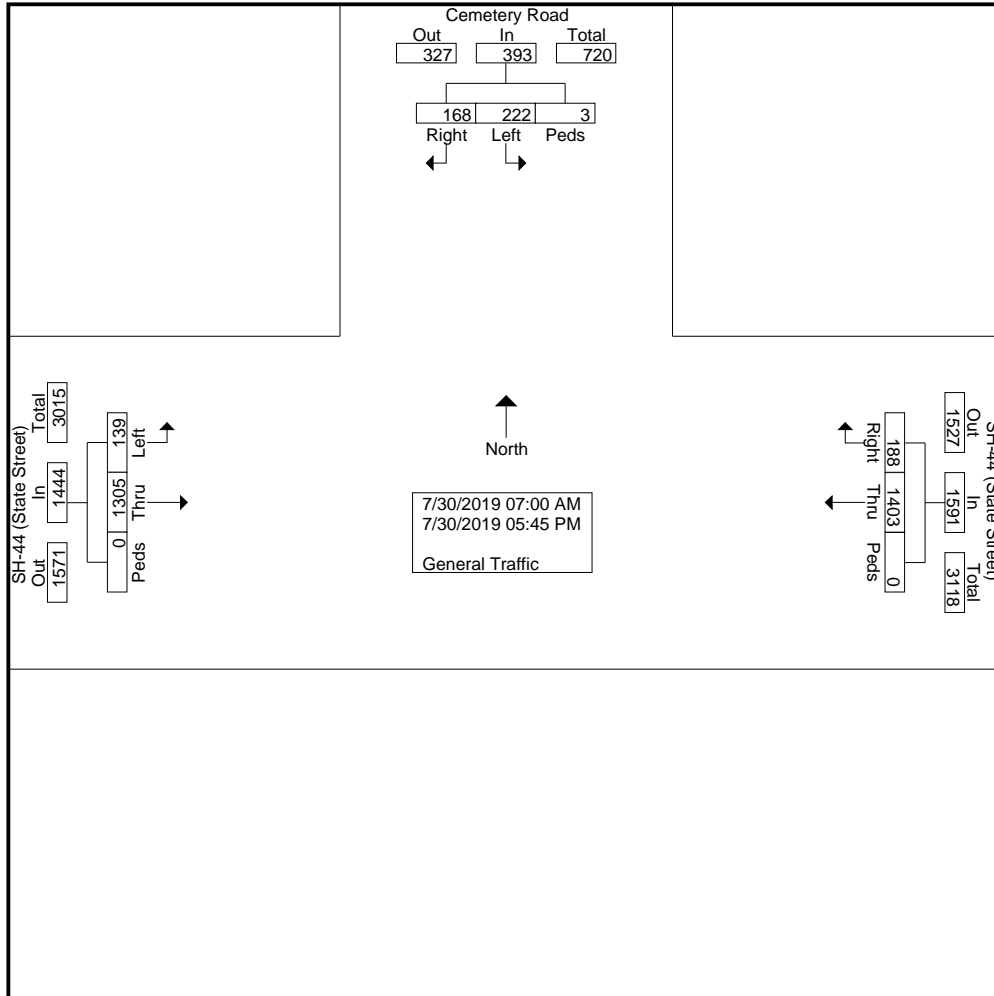
04:00 PM	10	19	1	30	16	107	0	123	82	7	0	89	242
04:15 PM	8	16	0	24	22	101	0	123	108	13	0	121	268
04:30 PM	9	15	0	24	16	113	0	129	82	12	0	94	247
04:45 PM	7	12	0	19	20	112	0	132	102	20	0	122	273
Total	34	62	1	97	74	433	0	507	374	52	0	426	1030
05:00 PM	9	15	0	24	17	138	0	155	104	14	0	118	297
05:15 PM	14	9	0	23	19	112	0	131	97	8	0	105	259
05:30 PM	7	11	0	18	18	117	0	135	86	13	0	99	252
05:45 PM	13	10	0	23	20	123	0	143	83	15	0	98	264
Total	43	45	0	88	74	490	0	564	370	50	0	420	1072
Grand Total	168	222	3	393	188	1403	0	1591	1305	139	0	1444	3428
Apprch %	42.7	56.5	0.8		11.8	88.2	0		90.4	9.6	0		
Total %	4.9	6.5	0.1	11.5	5.5	40.9	0	46.4	38.1	4.1	0	42.1	

L2 Data Collection

Idaho (208) 860-7554 Utah (801) 413-2993
www.L2DataCollection.com

Study: CR0034
Intersection: SH-44 / Cemetery Road
City, State: Middleton, Idaho
Control: Stop Sign

File Name : SH-44 & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 2



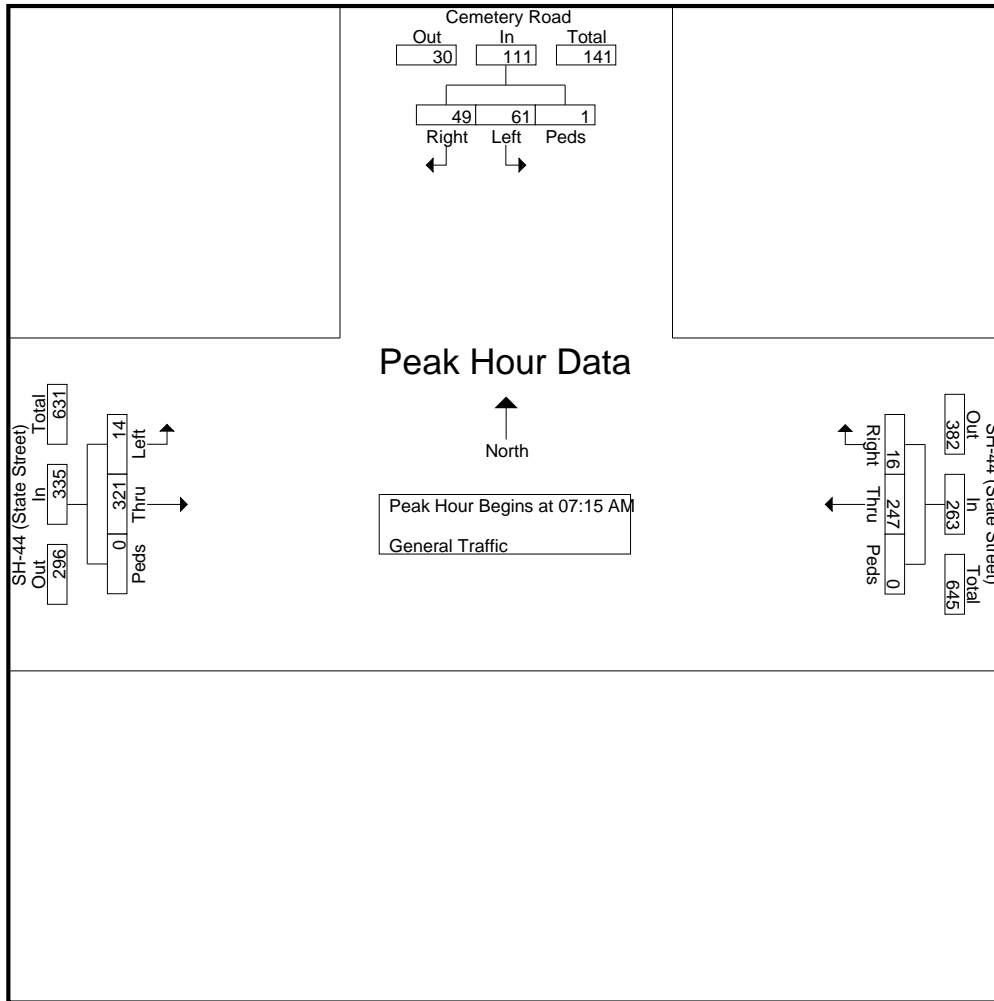
L2 Data Collection

Idaho (208) 860-7554 Utah (801) 413-2993
www.L2DataCollection.com

Study: CR0034
Intersection: SH-44 / Cemetery Road
City, State: Middleton, Idaho
Control: Stop Sign

File Name : SH-44 & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 3

Start Time	Cemetery Road From North				SH-44 (State Street) From East				SH-44 (State Street) From West				Int. Total
	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	8	22	0	30	6	56	0	62	79	2	0	81	173
07:30 AM	16	12	0	28	2	61	0	63	89	5	0	94	185
07:45 AM	12	15	0	27	5	78	0	83	84	3	0	87	197
08:00 AM	13	12	1	26	3	52	0	55	69	4	0	73	154
Total Volume	49	61	1	111	16	247	0	263	321	14	0	335	709
% App. Total	44.1	55	0.9		6.1	93.9	0		95.8	4.2	0		
PHF	.766	.693	.250	.925	.667	.792	.000	.792	.902	.700	.000	.891	.900



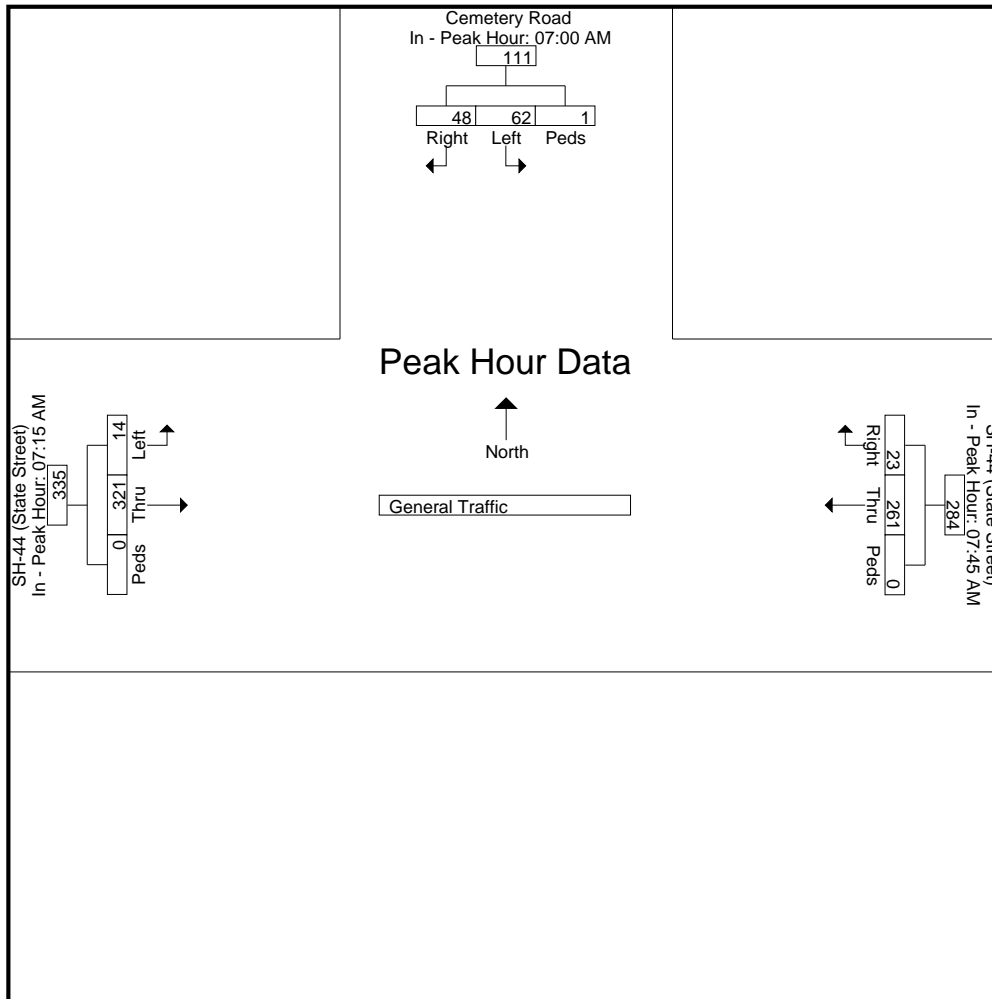
L2 Data Collection

Idaho (208) 860-7554 Utah (801) 413-2993
www.L2DataCollection.com

Study: CR0034
Intersection: SH-44 / Cemetery Road
City, State: Middleton, Idaho
Control: Stop Sign

File Name : SH-44 & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 4

Start Time	Cemetery Road From North				SH-44 (State Street) From East				SH-44 (State Street) From West				Int. Total
	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Each Approach Begins at:													
	07:00 AM				07:45 AM				07:15 AM				
+0 mins.	12	13	1	26	5	78	0	83	79	2	0	81	
+15 mins.	8	22	0	30	3	52	0	55	89	5	0	94	
+30 mins.	16	12	0	28	5	62	0	67	84	3	0	87	
+45 mins.	12	15	0	27	10	69	0	79	69	4	0	73	
Total Volume	48	62	1	111	23	261	0	284	321	14	0	335	
% App. Total	43.2	55.9	0.9		8.1	91.9	0		95.8	4.2	0		
PHF	.750	.705	.250	.925	.575	.837	.000	.855	.902	.700	.000	.891	



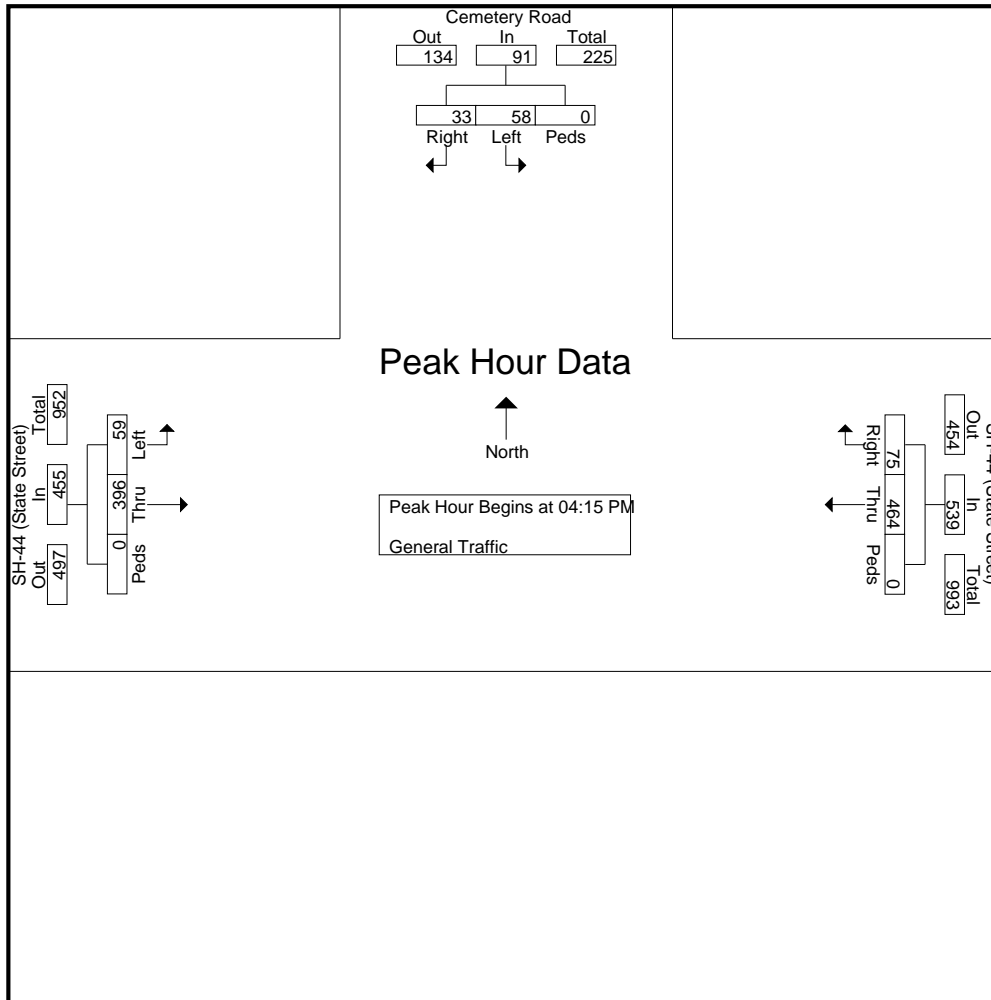
L2 Data Collection

Idaho (208) 860-7554 Utah (801) 413-2993
www.L2DataCollection.com

Study: CR0034
Intersection: SH-44 / Cemetery Road
City, State: Middleton, Idaho
Control: Stop Sign

File Name : SH-44 & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 5

Start Time	Cemetery Road From North				SH-44 (State Street) From East				SH-44 (State Street) From West				Int. Total
	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	8	16	0	24	22	101	0	123	108	13	0	121	268
04:30 PM	9	15	0	24	16	113	0	129	82	12	0	94	247
04:45 PM	7	12	0	19	20	112	0	132	102	20	0	122	273
05:00 PM	9	15	0	24	17	138	0	155	104	14	0	118	297
Total Volume	33	58	0	91	75	464	0	539	396	59	0	455	1085
% App. Total	36.3	63.7	0		13.9	86.1	0		87	13	0		
PHF	.917	.906	.000	.948	.852	.841	.000	.869	.917	.738	.000	.932	.913



L2 Data Collection

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Study: CR0034
Intersection: SH-44 / Cemetery Road
City, State: Middleton, Idaho
Control: Stop Sign

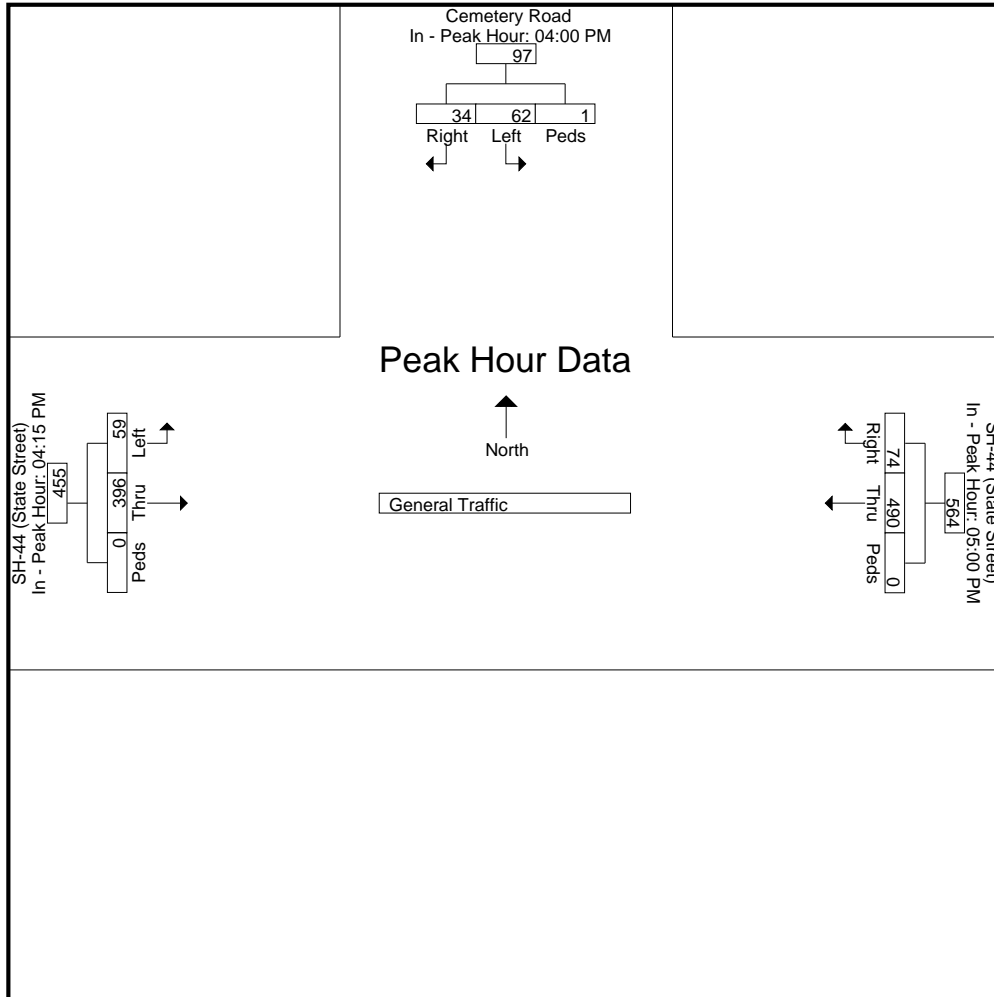
File Name : SH-44 & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 6

Start Time	Cemetery Road From North				SH-44 (State Street) From East				SH-44 (State Street) From West				Int. Total
	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:15 PM			
+0 mins.	10	19	1	30	17	138	0	155	108	13	0	121
+15 mins.	8	16	0	24	19	112	0	131	82	12	0	94
+30 mins.	9	15	0	24	18	117	0	135	102	20	0	122
+45 mins.	7	12	0	19	20	123	0	143	104	14	0	118
Total Volume	34	62	1	97	74	490	0	564	396	59	0	455
% App. Total	35.1	63.9	1		13.1	86.9	0		87	13	0	
PHF	.850	.816	.250	.808	.925	.888	.000	.910	.917	.738	.000	.932



L2 Data Collection

Idaho (208) 860-7554 Utah (801) 413-2993
www.L2DataCollection.com

Study: CR0034
Intersection: SH-44 / Cemetery Road
City, State: Middleton, Idaho
Control: Stop Sign

File Name : SH-44 & Cemetery Rd
Site Code : 00000000
Start Date : 7/30/2019
Page No : 7

Image 1



**Hawthorne Ave & SH 44
Middleton Idaho
Tuesday, January 5, 2021**

Time	Southbound Hawthorne Avenue						Westbound SH 44						Northbound Hawthorne Avenue						Eastbound SH 44						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
7:00 AM	0	8	0	1	0	9	0	3	72	2	0	77	0	2	0	3	0	5	0	3	57	3	0	63	154
7:15 AM	0	16	0	8	0	24	0	4	116	8	0	128	0	1	0	2	0	3	0	3	98	2	0	103	258
7:30 AM	0	13	0	8	5	21	0	2	187	7	0	196	0	0	0	5	0	5	0	5	126	0	0	131	353
7:45 AM	2	10	0	22	0	34	0	1	205	10	0	216	0	1	0	2	0	3	0	21	187	1	0	209	462
Hourly Total	2	47	0	39	5	88	0	10	580	27	0	617	0	4	0	12	0	16	0	32	468	6	0	506	1227
8:00 AM	0	14	0	10	1	24	0	3	81	8	0	92	0	1	0	5	0	6	0	5	153	5	3	163	285
8:15 AM	0	14	0	2	0	16	0	4	73	7	0	84	0	1	0	3	0	4	0	7	82	2	3	91	195
8:30 AM	0	14	0	5	2	19	0	4	65	7	0	76	0	3	0	4	0	7	0	4	76	4	0	84	186
8:45 AM	0	5	0	9	0	14	0	2	74	7	1	83	0	1	1	5	0	7	0	4	89	2	0	95	199
Hourly Total	0	47	0	26	3	73	0	13	293	29	1	335	0	6	1	17	0	24	0	20	400	13	6	433	865

**Hawthorne Ave & SH 44
Middleton Idaho
Tuesday, January 5, 2021**

Time	Southbound Hawthorne Avenue						Westbound SH 44						Northbound Hawthorne Avenue						Eastbound SH 44						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
4:00 PM	0	16	2	12	3	30	0	14	125	25	1	164	0	1	1	10	1	12	0	9	176	7	0	192	398
4:15 PM	0	9	2	4	2	15	0	9	125	13	0	147	0	5	0	4	0	9	0	7	149	11	0	167	338
4:30 PM	0	16	2	7	7	25	0	6	134	23	1	163	0	5	1	9	1	15	0	4	116	5	0	125	328
4:45 PM	0	14	2	6	3	22	0	11	131	29	2	171	0	1	1	3	0	5	0	4	117	12	0	133	331
Hourly Total	0	55	8	29	15	92	0	40	515	90	4	645	0	12	3	26	2	41	0	24	558	35	0	617	1395
5:00 PM	0	16	1	12	5	29	0	7	151	27	1	185	0	1	0	3	1	4	0	6	121	3	0	130	348
5:15 PM	0	17	0	10	1	27	0	7	151	34	0	192	0	0	0	4	1	4	0	7	106	5	0	118	341
5:30 PM	0	7	1	9	5	17	0	4	147	31	0	182	0	1	0	3	0	4	0	9	108	6	0	123	326
5:45 PM	0	13	1	4	6	18	0	2	129	25	0	156	0	0	0	6	0	6	0	7	100	1	0	108	288
Hourly Total	0	53	3	35	17	91	0	20	578	117	1	715	0	2	0	16	2	18	0	29	435	15	0	479	1303
DAILY TOTAL	2	202	11	129	40	344	0	83	1966	263	6	2312	0	24	4	71	4	99	0	105	1861	69	6	2035	4790
Cars	2	198	9	126	40	335	0	80	1894	260	6	2234	0	24	4	69	4	97	0	103	1818	64	6	1985	4651
Heavy Vehicles	0	4	2	3	0	9	0	3	72	3	0	78	0	0	0	2	0	2	0	2	43	5	0	50	139
Heavy Vehicle %	0.00%	1.98%	18.18%	2.33%	0.00%	2.62%	0.00%	3.61%	3.66%	1.14%	0.00%	3.37%	0.00%	0.00%	0.00%	2.82%	0.00%	2.02%	0.00%	1.90%	2.31%	7.25%	0.00%	2.46%	2.90%

Hawthorne Ave & SH 44 Middleton Idaho Tuesday, January 5, 2021

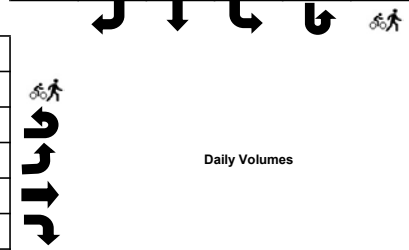
AM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
7:15 AM	0	16	0	8	0	24	0	4	116	8	0	128	0	1	0	2	0	3	0	3	98	2	0	103	258
7:30 AM	0	13	0	8	5	21	0	2	187	7	0	196	0	0	0	5	0	5	0	5	126	0	0	131	353
7:45 AM	2	10	0	22	0	34	0	1	205	10	0	216	0	1	0	2	0	3	0	21	187	1	0	209	462
8:00 AM	0	14	0	10	1	24	0	3	81	8	0	92	0	1	0	5	0	6	0	5	153	5	3	163	285
Peak Hour Total	2	53	0	48	6	103	0	10	589	33	0	632	0	3	0	14	0	17	0	34	564	8	3	606	1358
PHF	0.250	0.828	0.000	0.545	0.300	0.757	0.000	0.625	0.718	0.825	0.000	0.731	0.000	0.750	0.000	0.700	0.000	0.708	0.000	0.405	0.754	0.400	0.250	0.725	0.735
Heavy Vehicle %	0.00%	3.77%	0.00%	2.08%	0.00%	2.9%	0.00%	10.00%	3.40%	3.03%	0.00%	3.5%	0.00%	0.00%	0.00%	7.14%	0.00%	5.9%	0.00%	0.00%	1.06%	12.50%	0.00%	1.2%	2.43%

PM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
4:00 PM	0	16	2	12	3	30	0	14	125	25	1	164	0	1	1	10	1	12	0	9	176	7	0	192	398
4:15 PM	0	9	2	4	2	15	0	9	125	13	0	147	0	5	0	4	0	9	0	7	149	11	0	167	338
4:30 PM	0	16	2	7	7	25	0	6	134	23	1	163	0	5	1	9	1	15	0	4	116	5	0	125	328
4:45 PM	0	14	2	6	3	22	0	11	131	29	2	171	0	1	1	3	0	5	0	4	117	12	0	133	331
Peak Hour Total	0	55	8	29	15	92	0	40	515	90	4	645	0	12	3	26	2	41	0	24	558	35	0	617	1395
PHF	0.000	0.859	1.000	0.604	0.536	0.767	0.000	0.714	0.961	0.776	0.500	0.943	0.000	0.600	0.750	0.650	0.500	0.683	0.000	0.667	0.793	0.729	0.000	0.803	0.876
Heavy Vehicle %	0.00%	1.82%	25.00%	3.45%	0.00%	4.3%	0.00%	2.50%	4.66%	1.11%	0.00%	4.0%	0.00%	0.00%	0.00%	3.85%	0.00%	2.4%	0.00%	4.17%	2.51%	2.86%	0.00%	2.6%	3.37%

Total Vehicles On Leg				718			
Vehicles Entering Intersection				344			
Vehicles Exiting Intersection				374			
Southbound							
Cars	126	9	198	2	40		
Heavy	3	2	4	0	0		
Total	129	11	202	2	40		



Total Vehicles on Leg 4154	Vehicles Entering Intersection 2035	Eastbound	Cars	Heavy	Total	
			6	0	6	
			0	0	0	
	103		2	105		
	1818		43	1861		
Vehicles Exiting Intersection 2119				64	5	69

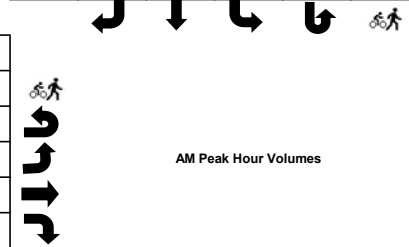
Cars	Heavy	Total	Westbound		Total Vehicles on Leg 4446
260	3	263			
1894	72	1966			
80	3	83			
0	0	0			
			Vehicles Exiting Intersection 2134		
6	0	6			

Cars	4	0	24	4	69
Heavy	0	0	0	0	2
Total	4	0	24	4	71
Northbound					
Vehicles Entering Intersection			99		
Vehicles Exiting Intersection			163		
Total Vehicles On Leg			262		

**Hawthorne Ave & SH 44
Middleton Idaho
Tuesday, January 5, 2021
AM Peak Hour**

Time	Hawthorne Avenue Southbound						SH 44 Westbound						Hawthorne Avenue Northbound						SH 44 Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
7:15 AM	0	16	0	8	0	24	0	4	116	8	0	128	0	1	0	2	0	3	0	3	98	2	0	103	258
7:30 AM	0	13	0	8	5	21	0	2	187	7	0	196	0	0	0	5	0	5	0	5	126	0	0	131	353
7:45 AM	2	10	0	22	0	34	0	1	205	10	0	216	0	1	0	2	0	3	0	21	187	1	0	209	462
8:00 AM	0	14	0	10	1	24	0	3	81	8	0	92	0	1	0	5	0	6	0	5	153	5	3	163	285
Peak Hour Total	2	53	0	48	6	103	0	10	589	33	0	632	0	3	0	14	0	17	0	34	564	8	3	606	1358
PHF	0.250	0.828	0.000	0.545	0.300	0.757	0.000	0.625	0.718	0.825	0.000	0.731	0.000	0.750	0.000	0.700	0.000	0.708	0.000	0.405	0.754	0.400	0.250	0.725	0.735
Heavy Vehicle %	0.00%	3.77%	0.00%	2.08%	0.00%	2.91%	0.00%	10.00%	3.40%	3.03%	0.00%	3.48%	0.00%	0.00%	0.00%	7.14%	0.00%	5.88%	0.00%	0.00%	1.06%	12.50%	0.00%	1.16%	2.4%

Total Vehicles On Leg		172	
Vehicles Entering Intersection	103	Vehicles Exiting Intersection	69
Southbound			
Cars	47		0
Heavy	1		0
Total	48		0



Total Vehicles on Leg 1246	Vehicles Entering Intersection 606	Eastbound	Cars	Heavy	Total
			3	0	3
			0	0	0
	34		0	34	
	Vehicles Exiting Intersection 640		558	6	564
		7	1	8	

Cars	Heavy	Total	Westbound	Vehicles Entering Intersection 632	Total Vehicles on Leg 1263
32	1	33			
569	20	589			
9	1	10			
0	0	0			
0	0	0		Vehicles Exiting Intersection 631	

Cars	0	0	3	0	13
Heavy	0	0	0	0	1
Total	0	0	3	0	14
Northbound					
Vehicles Entering Intersection	17		Vehicles Exiting Intersection	18	
Total Vehicles On Leg	35				

AM Peak Hour Volumes

Hawthorne Ave & SH 44
Middleton Idaho
Tuesday, January 5, 2021
PM Peak Hour

Time	Hawthorne Avenue Southbound						SH 44 Westbound						Hawthorne Avenue Northbound						SH 44 Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	
4:00 PM	0	16	2	12	3	30	0	14	125	25	1	164	0	1	1	10	1	12	0	9	176	7	0	192	398
4:15 PM	0	9	2	4	2	15	0	9	125	13	0	147	0	5	0	4	0	9	0	7	149	11	0	167	338
4:30 PM	0	16	2	7	7	25	0	6	134	23	1	163	0	5	1	9	1	15	0	4	116	5	0	125	328
4:45 PM	0	14	2	6	3	22	0	11	131	29	2	171	0	1	1	3	0	5	0	4	117	12	0	133	331
Peak Hour Total	0	55	8	29	15	92	0	40	515	90	4	645	0	12	3	26	2	41	0	24	558	35	0	617	1395
PHF	0.000	0.859	1.000	0.604	0.536	0.767	0.000	0.714	0.961	0.776	0.500	0.943	0.000	0.600	0.750	0.650	0.500	0.683	0.000	0.667	0.793	0.729	0.000	0.803	0.876
Heavy Vehicle %	0.00%	1.82%	25.00%	3.45%	0.00%	4.35%	0.00%	2.50%	4.66%	1.11%	0.00%	4.03%	0.00%	0.00%	0.00%	3.85%	0.00%	2.44%	0.00%	4.17%	2.51%	2.86%	0.00%	2.59%	3.4%

Total Vehicles On Leg				209			
Vehicles Entering Intersection		92		Vehicles Exiting Intersection		117	
Southbound							
Cars	28	6	54	0	15		
Heavy	1	2	1	0	0		
Total	29	8	55	0	15		



Total Vehicles on Leg 1173	Vehicles Entering Intersection 617	Eastbound	Cars	Heavy	Total	
			0	0	0	
			0	0	0	
	23		1	24		
	Vehicles Exiting Intersection 556		544	14	558	
34	1	35				

PM Peak Hour Volumes

Cars	Heavy	Total	Westbound	Vehicles Entering Intersection 645	Total Vehicles on Leg 1284
89	1	90			
491	24	515			
39	1	40			
Vehicles Exiting Intersection 639	0	0			
4	0	4			



Cars	2	0	12	3	25
Heavy	0	0	0	0	1
Total	2	0	12	3	26
Northbound					
Vehicles Entering Intersection 41			Vehicles Exiting Intersection 83		
Total Vehicles On Leg			124		

L2 Data Collection

L2DataCollection.com
(208) 860-7554 Utah (801) 413-2993

Study: CR0062
Intersection: Middleton Rd / SH-44
City, State: Middleton, Idaho
Control: Signalized

File Name : Middleton Rd (South) & SH-44
Site Code : 00000000
Start Date : 2/12/2020
Page No : 1

Groups Printed- General Traffic

Start Time	SH-44 From East				Middleton Road (South) From South				SH-44 From West				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
07:00 AM	49	66	0	115	29	21	0	50	38	73	0	111	276
07:15 AM	70	71	0	141	41	22	0	63	58	74	0	132	336
07:30 AM	104	83	0	187	47	65	0	112	52	73	2	127	426
07:45 AM	170	74	0	244	59	84	0	143	39	113	0	152	539
Total	393	294	0	687	176	192	0	368	187	333	2	522	1577
08:00 AM	80	61	0	141	53	37	0	90	40	118	0	158	389
08:15 AM	70	60	0	130	40	37	0	77	43	88	2	133	340
08:30 AM	53	54	0	107	33	37	0	70	36	74	0	110	287
08:45 AM	65	36	0	101	45	35	1	81	39	51	0	90	272
Total	268	211	0	479	171	146	1	318	158	331	2	491	1288

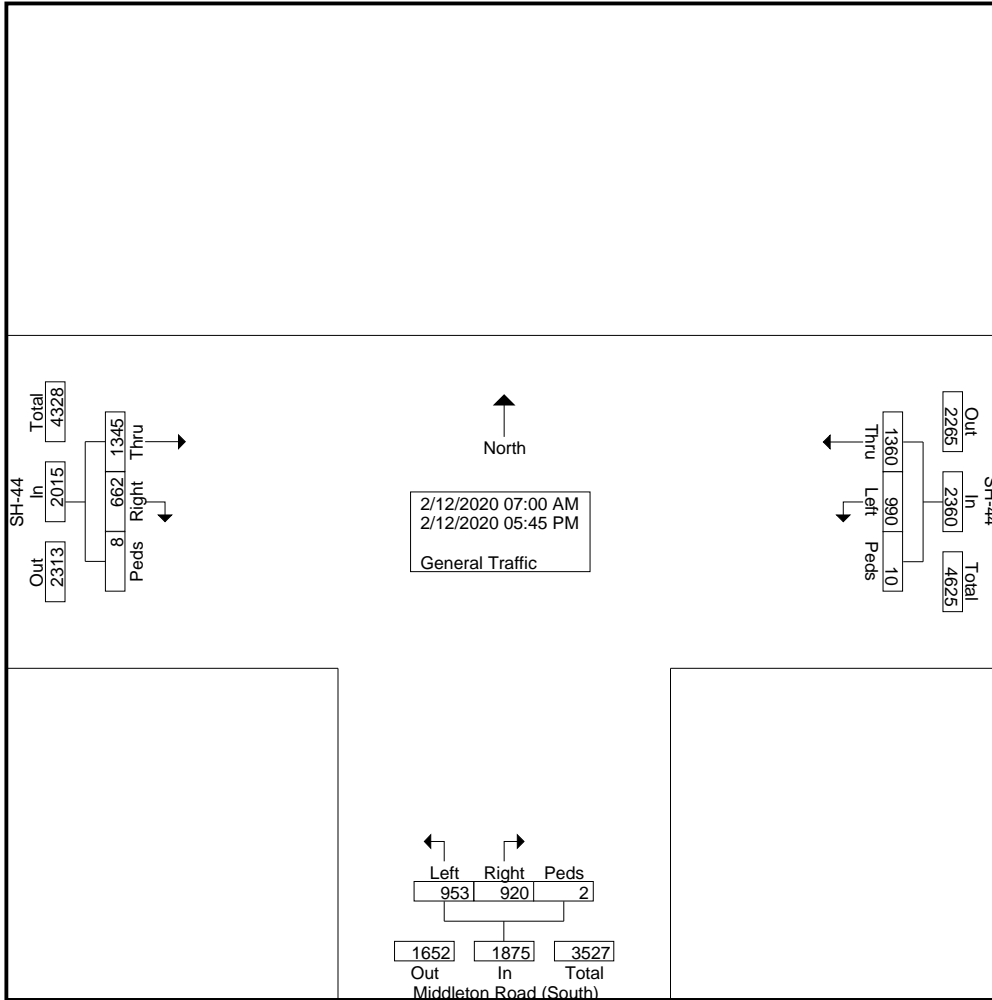
04:00 PM	73	48	1	122	64	69	0	133	38	85	0	123	378
04:15 PM	79	50	3	132	70	78	0	148	52	92	0	144	424
04:30 PM	81	64	2	147	71	76	0	147	38	77	0	115	409
04:45 PM	92	60	2	154	73	86	0	159	37	88	0	125	438
Total	325	222	8	555	278	309	0	587	165	342	0	507	1649
05:00 PM	83	68	1	152	82	93	0	175	34	80	0	114	441
05:15 PM	103	64	0	167	77	72	1	150	43	99	0	142	459
05:30 PM	103	69	1	173	70	64	0	134	36	85	0	121	428
05:45 PM	85	62	0	147	66	77	0	143	39	75	4	118	408
Total	374	263	2	639	295	306	1	602	152	339	4	495	1736
Grand Total	1360	990	10	2360	920	953	2	1875	662	1345	8	2015	6250
Apprch %	57.6	41.9	0.4		49.1	50.8	0.1		32.9	66.7	0.4		
Total %	21.8	15.8	0.2	37.8	14.7	15.2	0	30	10.6	21.5	0.1	32.2	

L2 Data Collection

L2DataCollection.com
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Study: CR0062
 Intersection: Middleton Rd / SH-44
 City, State: Middleton, Idaho
 Control: Signalized

File Name : Middleton Rd (South) & SH-44
 Site Code : 00000000
 Start Date : 2/12/2020
 Page No : 2



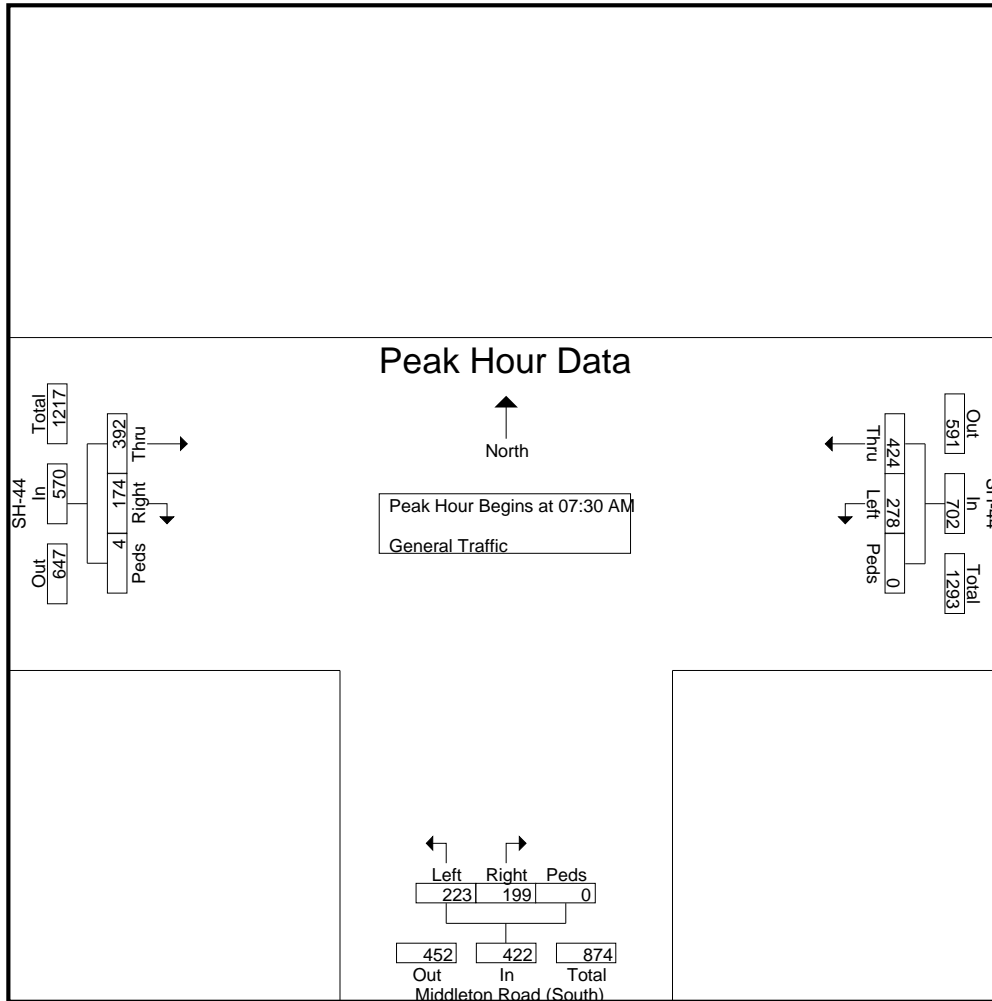
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Study: CR0062
Intersection: Middleton Rd / SH-44
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File Name : Middleton Rd (South) & SH-44
Site Code : 00000000
Start Date : 2/12/2020
Page No : 3

Start Time	SH-44 From East				Middleton Road (South) From South				SH-44 From West				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	104	83	0	187	47	65	0	112	52	73	2	127	426
07:45 AM	170	74	0	244	59	84	0	143	39	113	0	152	539
08:00 AM	80	61	0	141	53	37	0	90	40	118	0	158	389
08:15 AM	70	60	0	130	40	37	0	77	43	88	2	133	340
Total Volume	424	278	0	702	199	223	0	422	174	392	4	570	1694
% App. Total	60.4	39.6	0		47.2	52.8	0		30.5	68.8	0.7		
PHF	.624	.837	.000	.719	.843	.664	.000	.738	.837	.831	.500	.902	.786



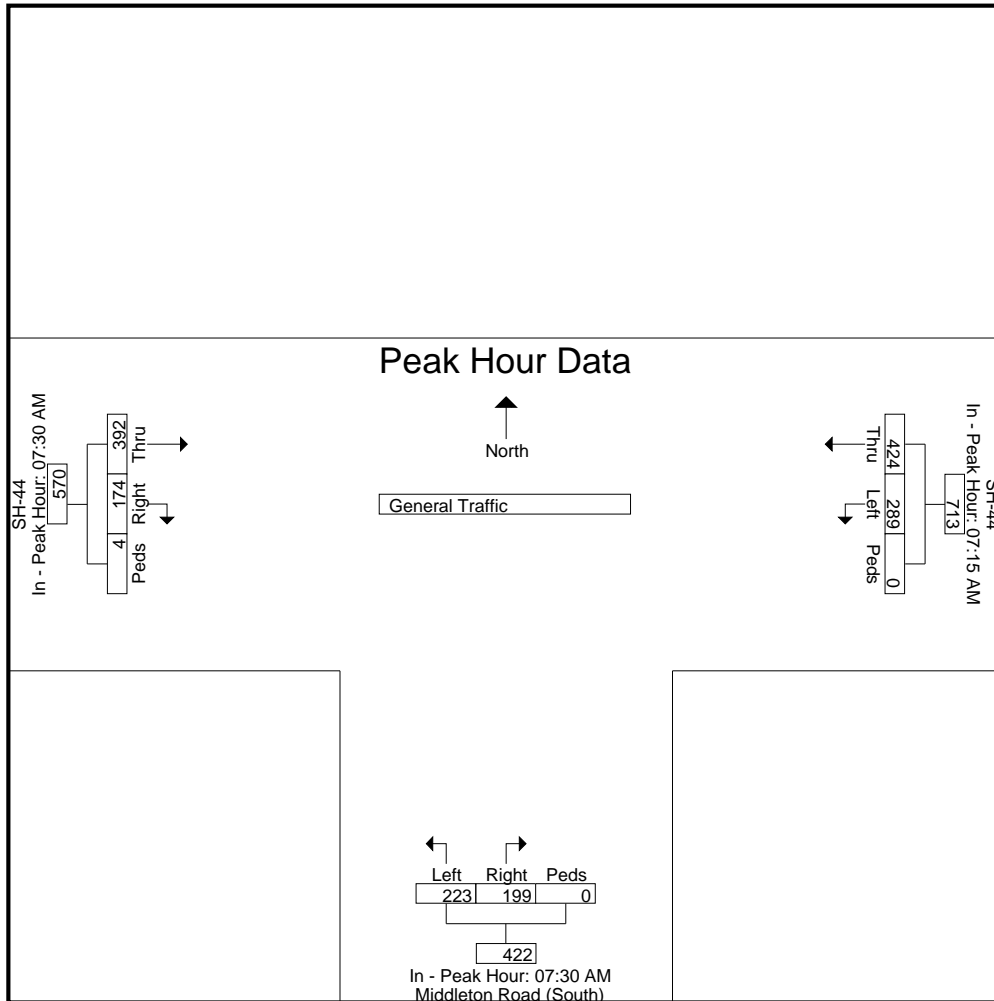
L2 Data Collection

L2DataCollection.com
(208) 860-7554 Utah (801) 413-2993

Study: CR0062
Intersection: Middleton Rd / SH-44
City, State: Middleton, Idaho
Control: Signalized

File Name : Middleton Rd (South) & SH-44
Site Code : 00000000
Start Date : 2/12/2020
Page No : 4

Start Time	SH-44 From East				Middleton Road (South) From South				SH-44 From West				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Each Approach Begins at:													
	07:15 AM				07:30 AM				07:30 AM				
+0 mins.	70	71	0	141	47	65	0	112	52	73	2	127	
+15 mins.	104	83	0	187	59	84	0	143	39	113	0	152	
+30 mins.	170	74	0	244	53	37	0	90	40	118	0	158	
+45 mins.	80	61	0	141	40	37	0	77	43	88	2	133	
Total Volume	424	289	0	713	199	223	0	422	174	392	4	570	
% App. Total	59.5	40.5	0		47.2	52.8	0		30.5	68.8	0.7		
PHF	.624	.870	.000	.731	.843	.664	.000	.738	.837	.831	.500	.902	



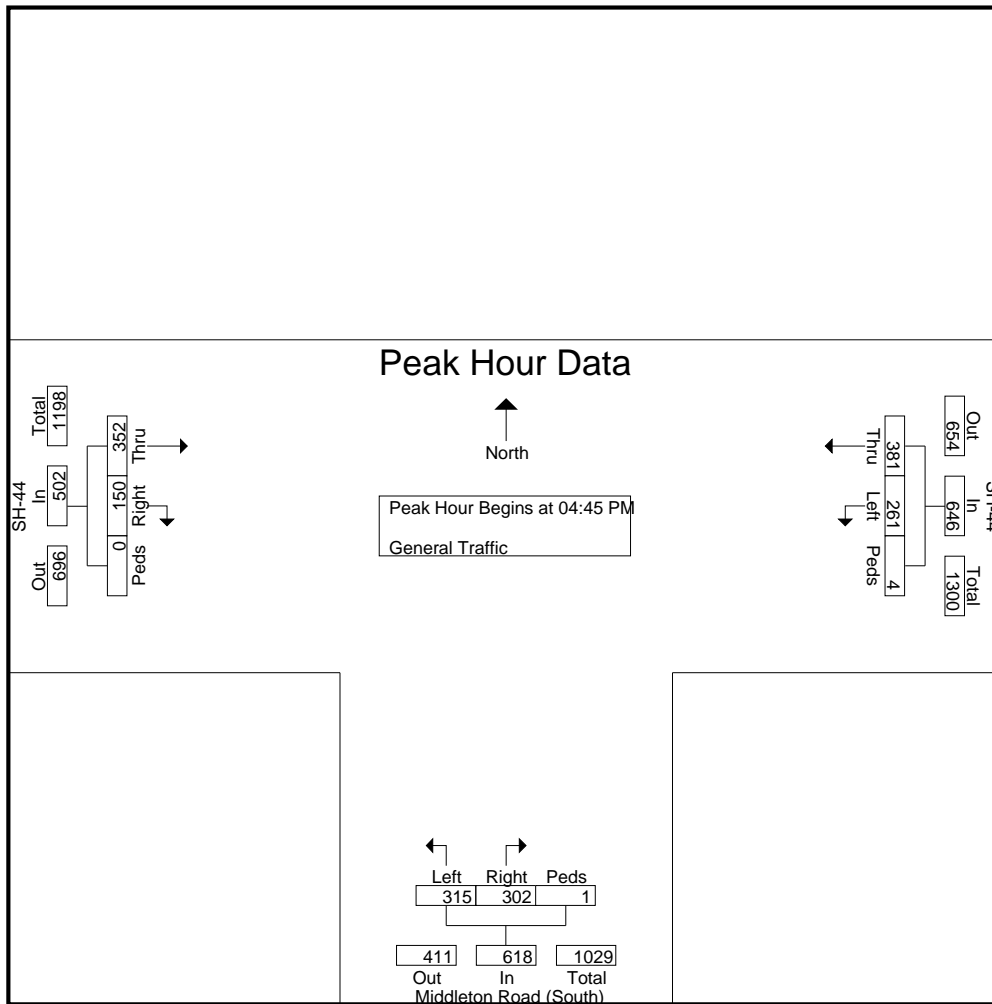
L2 Data Collection

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Study: CR0062
Intersection: Middleton Rd / SH-44
City, State: Middleton, Idaho
Control: Signalized

File Name : Middleton Rd (South) & SH-44
Site Code : 00000000
Start Date : 2/12/2020
Page No : 5

Start Time	SH-44 From East				Middleton Road (South) From South				SH-44 From West				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	92	60	2	154	73	86	0	159	37	88	0	125	438
05:00 PM	83	68	1	152	82	93	0	175	34	80	0	114	441
05:15 PM	103	64	0	167	77	72	1	150	43	99	0	142	459
05:30 PM	103	69	1	173	70	64	0	134	36	85	0	121	428
Total Volume	381	261	4	646	302	315	1	618	150	352	0	502	1766
% App. Total	59	40.4	0.6		48.9	51	0.2		29.9	70.1	0		
PHF	.925	.946	.500	.934	.921	.847	.250	.883	.872	.889	.000	.884	.962



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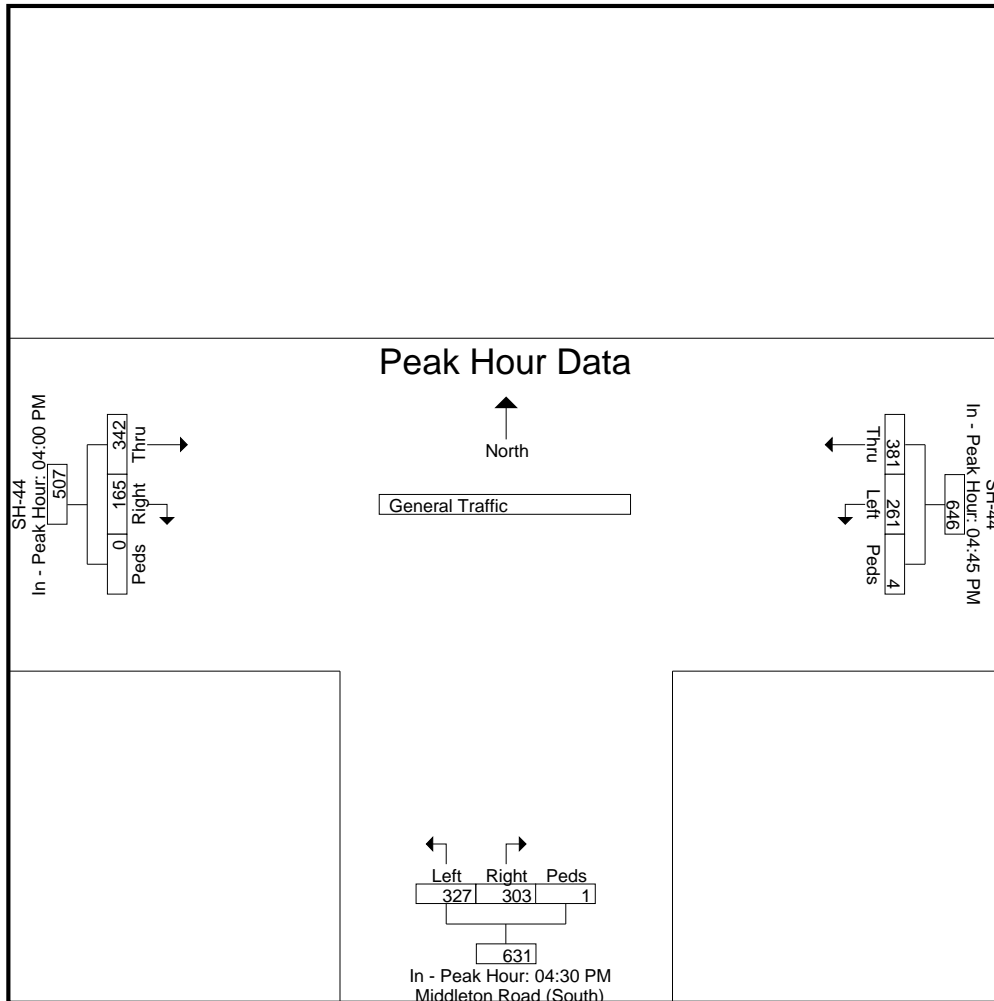
File Name : Middleton Rd (South) & SH-44
Site Code : 00000000
Start Date : 2/12/2020
Page No : 6

Start Time	SH-44 From East				Middleton Road (South) From South				SH-44 From West				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:00 PM			
+0 mins.	92	60	2	154	71	76	0	147	38	85	0	123
+15 mins.	83	68	1	152	73	86	0	159	52	92	0	144
+30 mins.	103	64	0	167	82	93	0	175	38	77	0	115
+45 mins.	103	69	1	173	77	72	1	150	37	88	0	125
Total Volume	381	261	4	646	303	327	1	631	165	342	0	507
% App. Total	59	40.4	0.6		48	51.8	0.2		32.5	67.5	0	
PHF	.925	.946	.500	.934	.924	.879	.250	.901	.793	.929	.000	.880



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File Name : Middleton Rd (South) & SH-44
Site Code : 00000000
Start Date : 2/12/2020
Page No : 7

Image 1



L2 Data Collection

L2DataCollection.com
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Study: CR0062
Intersection: Middleton Rd / SH-44
City, State: Middleton, Idaho
Control: Signalized

File Name : Middleton Rd (North) & SH-44 D1(3)
Site Code : 00000000
Start Date : 2/20/2020
Page No : 1

Groups Printed- General Traffic

Start Time	Middleton Road (North) From North					SH-44 From East					Murphy Street From South					SH-44 From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	45	0	12	0	57	5	79	0	0	84	0	0	0	0	0	0	100	12	0	112	253
07:15 AM	40	0	13	0	53	8	121	0	0	129	0	0	0	0	0	0	103	12	0	115	297
07:30 AM	70	0	6	0	76	13	144	0	0	157	0	0	0	0	0	0	102	18	0	120	353
07:45 AM	97	0	8	0	105	16	147	0	0	163	0	0	0	0	0	1	101	51	0	153	421
Total	252	0	39	0	291	42	491	0	0	533	0	0	0	0	0	1	406	93	0	500	1324
08:00 AM	69	0	21	0	90	16	75	0	0	91	0	0	0	0	0	3	119	51	0	173	354
08:15 AM	33	0	11	0	44	7	62	0	0	69	0	0	0	0	0	0	106	20	0	126	239
08:30 AM	32	0	3	0	35	3	79	0	0	82	0	0	0	0	0	0	72	19	0	91	208
08:45 AM	30	0	5	0	35	5	77	0	0	82	0	0	0	0	0	1	88	20	0	109	226
Total	164	0	40	0	204	31	293	0	0	324	0	0	0	0	0	4	385	110	0	499	1027

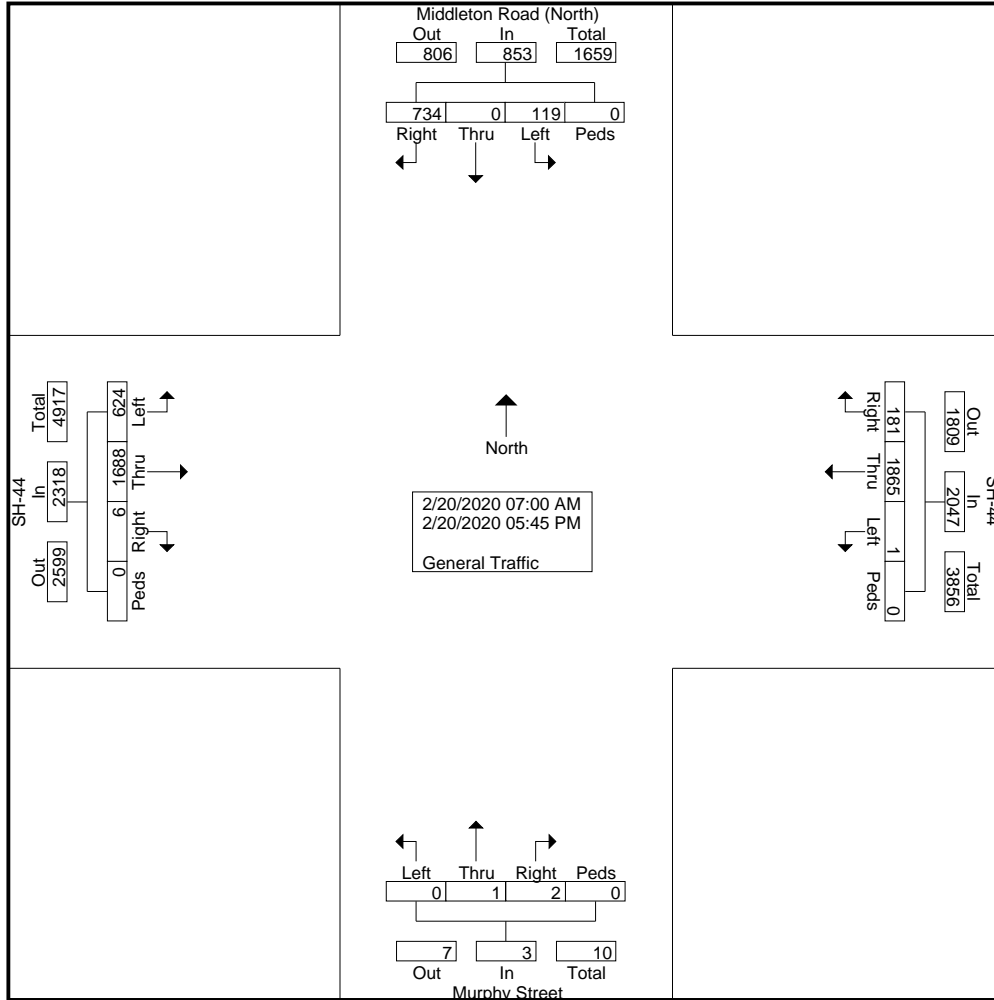
04:00 PM	33	0	3	0	36	9	114	0	0	123	0	0	0	0	0	0	84	48	0	132	291
04:15 PM	33	0	4	0	37	12	102	0	0	114	0	0	0	0	0	0	100	65	0	165	316
04:30 PM	54	0	6	0	60	14	126	1	0	141	0	0	0	0	0	0	114	45	0	159	360
04:45 PM	33	0	7	0	40	10	134	0	0	144	2	0	0	0	2	1	125	52	0	178	364
Total	153	0	20	0	173	45	476	1	0	522	2	0	0	0	2	1	423	210	0	634	1331
05:00 PM	43	0	3	0	46	16	148	0	0	164	0	0	0	0	0	0	116	59	0	175	385
05:15 PM	42	0	7	0	49	19	151	0	0	170	0	0	0	0	0	0	132	48	0	180	399
05:30 PM	43	0	2	0	45	12	148	0	0	160	0	1	0	0	1	0	120	62	0	182	388
05:45 PM	37	0	8	0	45	16	158	0	0	174	0	0	0	0	0	0	106	42	0	148	367
Total	165	0	20	0	185	63	605	0	0	668	0	1	0	0	1	0	474	211	0	685	1539
Grand Total	734	0	119	0	853	181	1865	1	0	2047	2	1	0	0	3	6	1688	624	0	2318	5221
Apprch %	86	0	14	0		8.8	91.1	0	0		66.7	33.3	0	0		0.3	72.8	26.9	0		
Total %	14.1	0	2.3	0	16.3	3.5	35.7	0	0	39.2	0	0	0	0	0.1	0.1	32.3	12	0	44.4	

L2 Data Collection

L2DataCollection.com
 (208) 860-7554 Utah (801) 413-2993

Study: CR0062
 Intersection: Middleton Rd / SH-44
 City, State: Middleton, Idaho
 Control: Signalized

File Name : Middleton Rd (North) & SH-44 D1(3)
 Site Code : 00000000
 Start Date : 2/20/2020
 Page No : 2



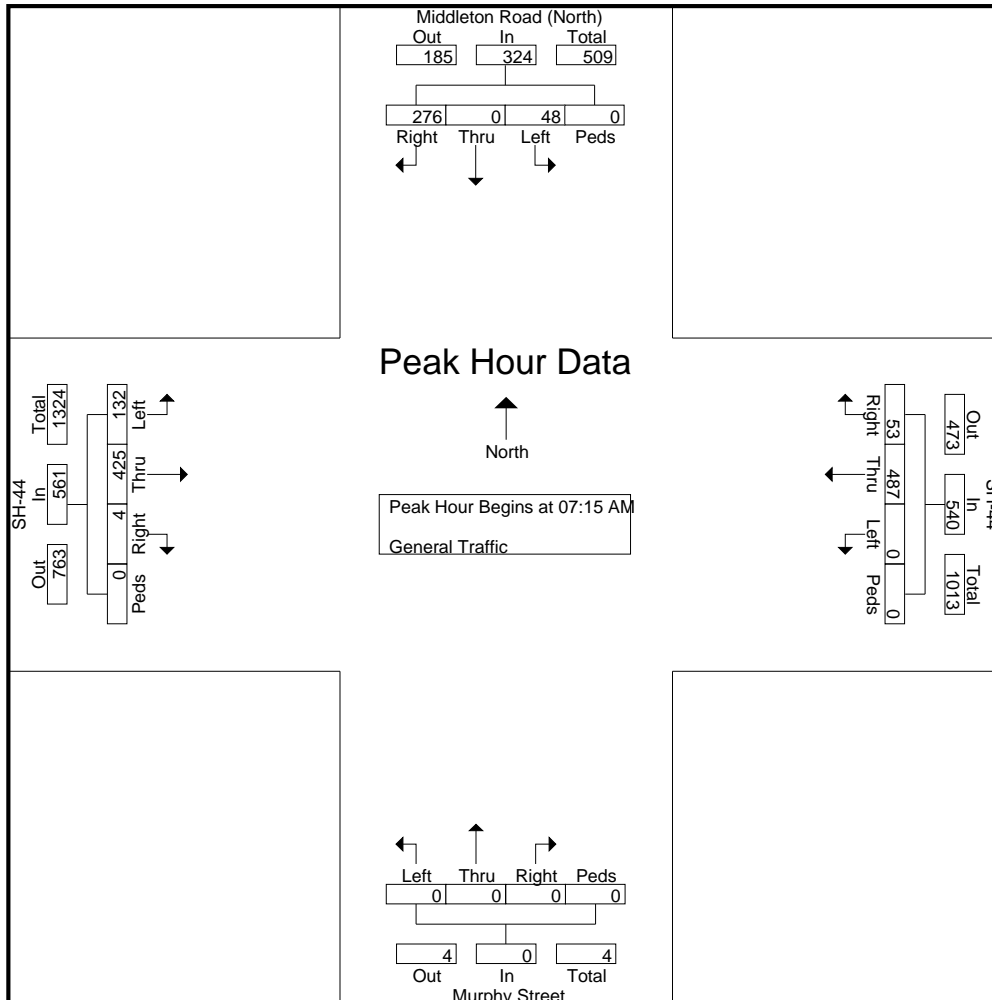
L2 Data Collection

L2DataCollection.com
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Study: CR0062
Intersection: Middleton Rd / SH-44
City, State: Middleton, Idaho
Control: Signalized

File Name : Middleton Rd (North) & SH-44 D1(3)
Site Code : 00000000
Start Date : 2/20/2020
Page No : 3

Start Time	Middleton Road (North) From North					SH-44 From East					Murphy Street From South					SH-44 From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	40	0	13	0	53	8	121	0	0	129	0	0	0	0	0	0	103	12	0	115	297
07:30 AM	70	0	6	0	76	13	144	0	0	157	0	0	0	0	0	0	102	18	0	120	353
07:45 AM	97	0	8	0	105	16	147	0	0	163	0	0	0	0	0	1	101	51	0	153	421
08:00 AM	69	0	21	0	90	16	75	0	0	91	0	0	0	0	0	3	119	51	0	173	354
Total Volume	276	0	48	0	324	53	487	0	0	540	0	0	0	0	0	4	425	132	0	561	1425
% App. Total	85.2	0	14.8	0		9.8	90.2	0	0		0	0	0	0		0.7	75.8	23.5	0		
PHF	.711	.000	.571	.000	.771	.828	.828	.000	.000	.828	.000	.000	.000	.000	.000	.333	.893	.647	.000	.811	.846



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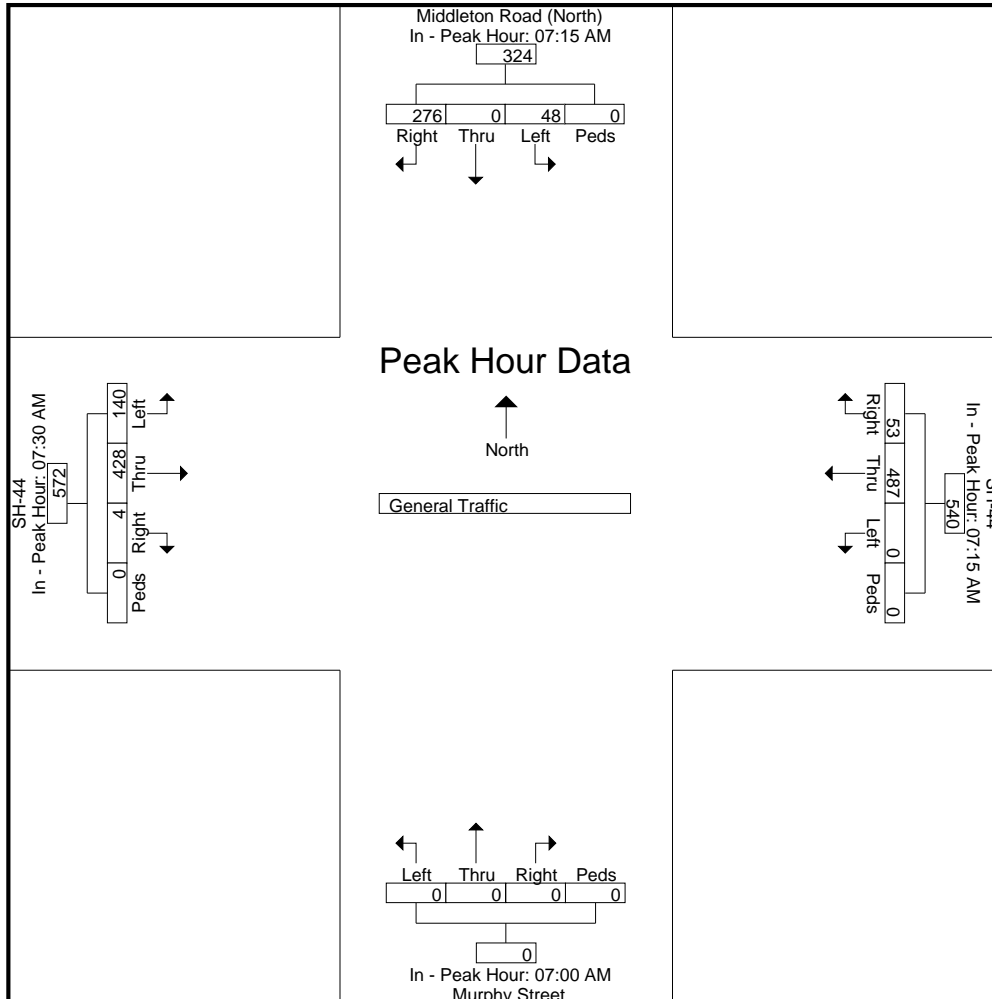
File Name : Middleton Rd (North) & SH-44 D1(3)
Site Code : 00000000
Start Date : 2/20/2020
Page No : 4

Start Time	Middleton Road (North) From North					SH-44 From East					Murphy Street From South					SH-44 From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM					07:15 AM					07:00 AM					07:30 AM				
+0 mins.	40	0	13	0	53	8	121	0	0	129	0	0	0	0	0	0	102	18	0	120
+15 mins.	70	0	6	0	76	13	144	0	0	157	0	0	0	0	0	1	101	51	0	153
+30 mins.	97	0	8	0	105	16	147	0	0	163	0	0	0	0	0	3	119	51	0	173
+45 mins.	69	0	21	0	90	16	75	0	0	91	0	0	0	0	0	0	106	20	0	126
Total Volume	276	0	48	0	324	53	487	0	0	540	0	0	0	0	0	4	428	140	0	572
% App. Total	85.2	0	14.8	0		9.8	90.2	0	0		0	0	0	0		0.7	74.8	24.5	0	
PHF	.711	.000	.571	.000	.771	.828	.828	.000	.000	.828	.000	.000	.000	.000	.000	.333	.899	.686	.000	.827



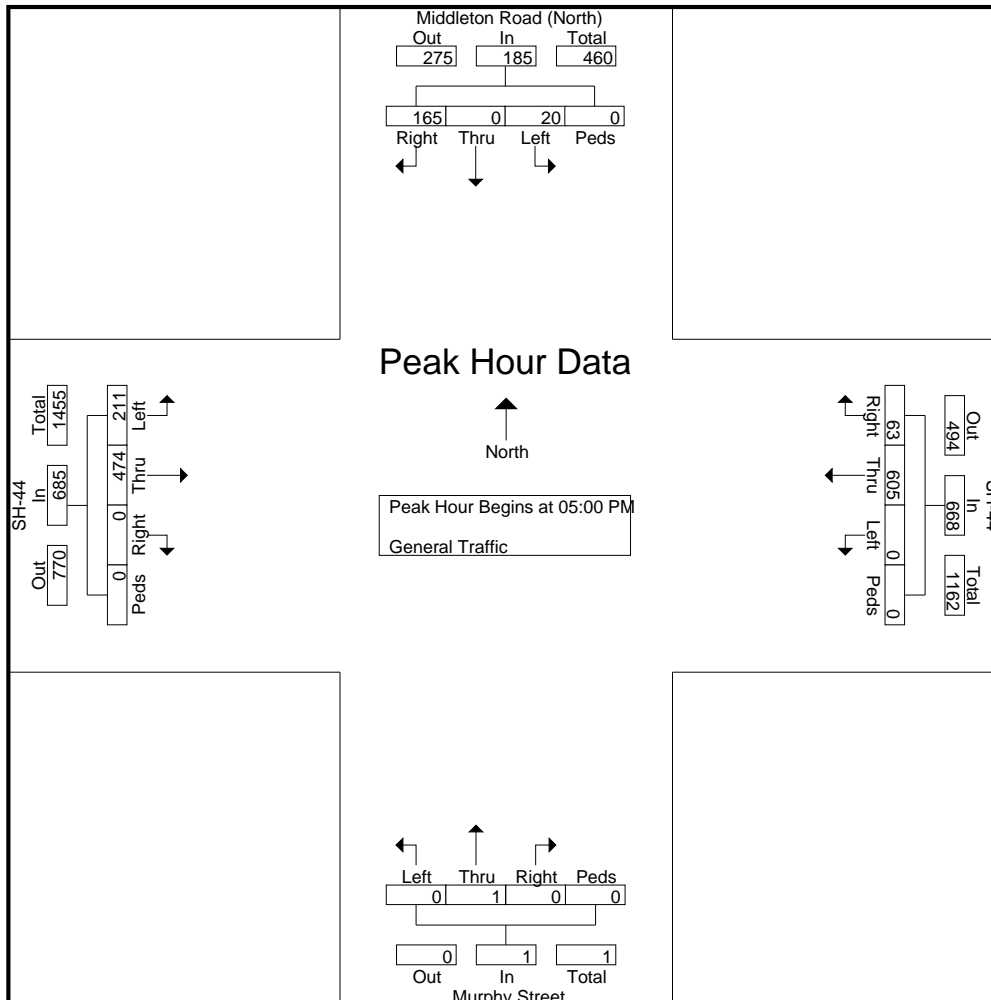
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Start Date : 2/20/2020
Page No : 5

Start Time	Middleton Road (North) From North					SH-44 From East					Murphy Street From South					SH-44 From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	43	0	3	0	46	16	148	0	0	164	0	0	0	0	0	0	116	59	0	175	385
05:15 PM	42	0	7	0	49	19	151	0	0	170	0	0	0	0	0	0	132	48	0	180	399
05:30 PM	43	0	2	0	45	12	148	0	0	160	0	1	0	0	1	0	120	62	0	182	388
05:45 PM	37	0	8	0	45	16	158	0	0	174	0	0	0	0	0	0	106	42	0	148	367
Total Volume	165	0	20	0	185	63	605	0	0	668	0	1	0	0	1	0	474	211	0	685	1539
% App. Total	89.2	0	10.8	0		9.4	90.6	0	0		0	100	0	0		0	69.2	30.8	0		
PHF	.959	.000	.625	.000	.944	.829	.957	.000	.000	.960	.000	.250	.000	.000	.250	.000	.898	.851	.000	.941	.964



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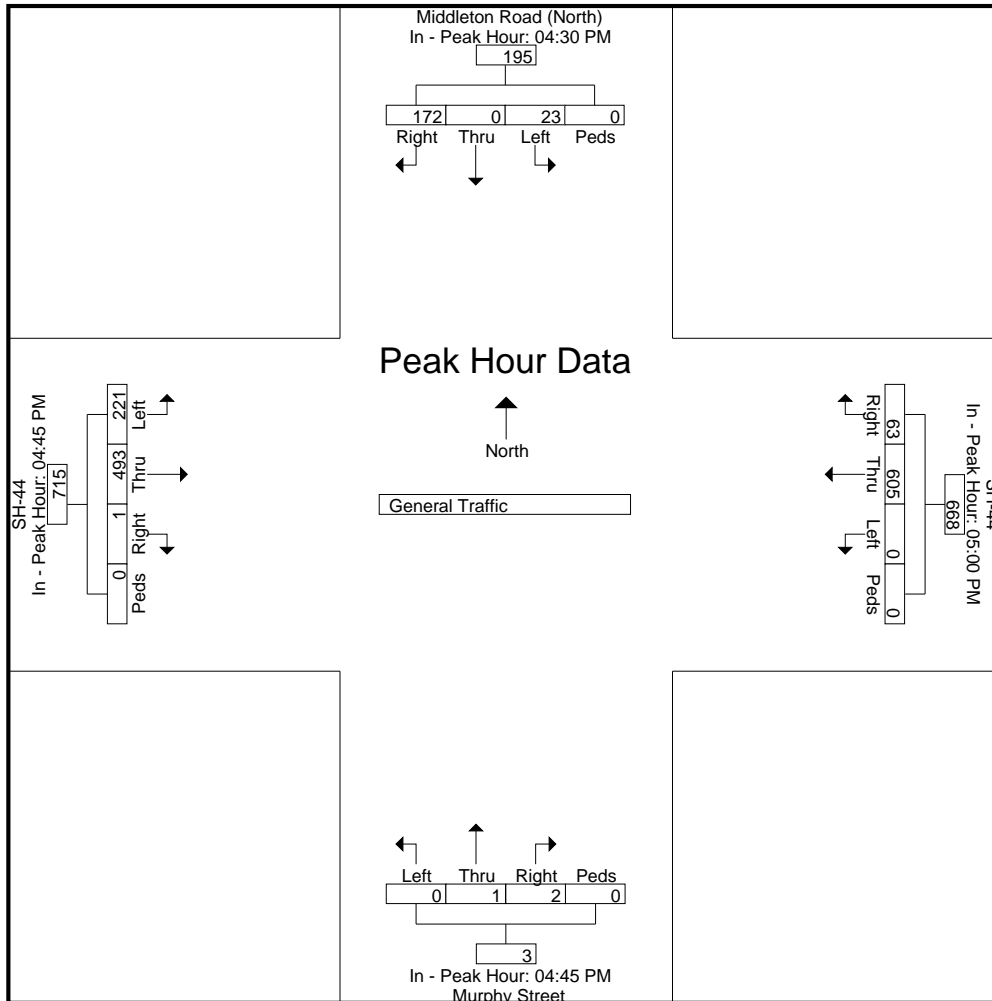
File Name : Middleton Rd (North) & SH-44 D1(3)
Site Code : 00000000
Start Date : 2/20/2020
Page No : 6

Start Time	Middleton Road (North) From North					SH-44 From East					Murphy Street From South					SH-44 From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM					05:00 PM					04:45 PM					04:45 PM				
+0 mins.	54	0	6	0	60	16	148	0	0	164	2	0	0	0	2	1	125	52	0	178
+15 mins.	33	0	7	0	40	19	151	0	0	170	0	0	0	0	0	0	116	59	0	175
+30 mins.	43	0	3	0	46	12	148	0	0	160	0	0	0	0	0	0	132	48	0	180
+45 mins.	42	0	7	0	49	16	158	0	0	174	0	1	0	0	1	0	120	62	0	182
Total Volume	172	0	23	0	195	63	605	0	0	668	2	1	0	0	3	1	493	221	0	715
% App. Total	88.2	0	11.8	0		9.4	90.6	0	0		66.7	33.3	0	0		0.1	69	30.9	0	
PHF	.796	.000	.821	.000	.813	.829	.957	.000	.000	.960	.250	.250	.000	.000	.375	.250	.934	.891	.000	.982



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File Name : Middleton Rd (North) & SH-44 D1(3)
Site Code : 00000000
Start Date : 2/20/2020
Page No : 7

Image 1



APPENDIX C: 2021 Synchro Reports

HCM 6th TWSC
1: Cemetery Rd & Purple Sage Rd

2021 Existing
AM Peak Hour

Intersection												
Int Delay, s/veh	7.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	75	8	20	72	2	4	8	21	9	26	5
Future Vol, veh/h	6	75	8	20	72	2	4	8	21	9	26	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	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	89	10	24	86	2	5	10	25	11	31	6

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	133	101	34	139	92	23	37	0	0	35	0	0
Stage 1	56	56	-	33	33	-	-	-	-	-	-	-
Stage 2	77	45	-	106	59	-	-	-	-	-	-	-
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	839	789	1039	831	798	1054	1574	-	-	1576	-	-
Stage 1	956	848	-	983	868	-	-	-	-	-	-	-
Stage 2	932	857	-	900	846	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	762	781	1039	745	790	1054	1574	-	-	1576	-	-
Mov Cap-2 Maneuver	762	781	-	745	790	-	-	-	-	-	-	-
Stage 1	953	842	-	980	865	-	-	-	-	-	-	-
Stage 2	835	854	-	792	840	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.2		10.4		0.9		1.6	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1574	-	-	797	784	1576	-	-
HCM Lane V/C Ratio	0.003	-	-	0.133	0.143	0.007	-	-
HCM Control Delay (s)	7.3	0	-	10.2	10.4	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.5	0	-	-

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	23	12	23	13	13	30	11	79	3	59	150	12
Future Vol, veh/h	23	12	23	13	13	30	11	79	3	59	150	12
Conflicting Peds, #/hr	3	0	3	3	0	3	12	0	1	1	0	12
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	64	64	64	64	64	64	64	64	64	40	64	64
Heavy Vehicles, %	5	2	2	8	2	10	2	3	2	2	4	2
Mvmt Flow	36	19	36	20	20	47	17	123	5	148	234	19

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	748	715	259	731	722	130	265	0	0	129	0	0
Stage 1	552	552	-	161	161	-	-	-	-	-	-	-
Stage 2	196	163	-	570	561	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.22	7.18	6.52	6.3	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.318	3.572	4.018	3.39	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	325	356	780	330	353	899	1299	-	-	1457	-	-
Stage 1	513	515	-	827	765	-	-	-	-	-	-	-
Stage 2	799	763	-	496	510	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	259	305	769	269	303	896	1284	-	-	1456	-	-
Mov Cap-2 Maneuver	259	305	-	269	303	-	-	-	-	-	-	-
Stage 1	500	449	-	815	754	-	-	-	-	-	-	-
Stage 2	724	752	-	398	444	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18	14.9	0.9	2.9
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1284	-	-	367	449	1456	-	-
HCM Lane V/C Ratio	0.013	-	-	0.247	0.195	0.101	-	-
HCM Control Delay (s)	7.8	0	-	18	14.9	7.8	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1	0.7	0.3	-	-

Intersection						
Int Delay, s/veh	7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	37	97	60	3	6	52
Future Vol, veh/h	37	97	60	3	6	52
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	70	70	70	70	70	70
Heavy Vehicles, %	2	2	5	2	2	4
Mvmt Flow	53	139	86	4	9	74

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	222	46	83	0	0
Stage 1	46	-	-	-	-
Stage 2	176	-	-	-	-
Critical Hdwy	6.42	6.22	4.15	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.245	-	-
Pot Cap-1 Maneuver	766	1023	1495	-	-
Stage 1	976	-	-	-	-
Stage 2	855	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	722	1023	1495	-	-
Mov Cap-2 Maneuver	722	-	-	-	-
Stage 1	919	-	-	-	-
Stage 2	855	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	7.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1495	-	917	-	-
HCM Lane V/C Ratio	0.057	-	0.209	-	-
HCM Control Delay (s)	7.6	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.8	-	-

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	15	347	267	17	63	51
Future Vol, veh/h	15	347	267	17	63	51
Conflicting Peds, #/hr	1	0	0	1	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	100	0
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	386	297	19	70	57

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	317	0	-	0	718 299
Stage 1	-	-	-	-	298 -
Stage 2	-	-	-	-	420 -
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	1243	-	-	-	396 741
Stage 1	-	-	-	-	753 -
Stage 2	-	-	-	-	663 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1242	-	-	-	390 740
Mov Cap-2 Maneuver	-	-	-	-	563 -
Stage 1	-	-	-	-	742 -
Stage 2	-	-	-	-	662 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1242	-	-	-	563	740
HCM Lane V/C Ratio	0.013	-	-	-	0.124	0.077
HCM Control Delay (s)	7.9	-	-	-	12.3	10.3
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0.2

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	34	564	8	10	589	33	3	0	14	55	0	48
Future Vol, veh/h	34	564	8	10	589	33	3	0	14	55	0	48
Conflicting Peds, #/hr	6	0	3	3	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	2	2	13	10	4	3	2	2	7	4	2	2
Mvmt Flow	46	762	11	14	796	45	4	0	19	74	0	65

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	847	0	0	776	0	0	1742	1738	771	1722	1721	825
Stage 1	-	-	-	-	-	-	863	863	-	853	853	-
Stage 2	-	-	-	-	-	-	879	875	-	869	868	-
Critical Hdwy	4.12	-	-	4.2	-	-	7.12	6.52	6.27	7.14	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.14	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.14	5.52	-
Follow-up Hdwy	2.218	-	-	2.29	-	-	3.518	4.018	3.363	3.536	4.018	3.318
Pot Cap-1 Maneuver	790	-	-	806	-	-	68	87	392	~ 69	89	372
Stage 1	-	-	-	-	-	-	349	372	-	351	376	-
Stage 2	-	-	-	-	-	-	342	367	-	344	370	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	785	-	-	804	-	-	53	80	391	~ 62	82	370
Mov Cap-2 Maneuver	-	-	-	-	-	-	185	234	-	216	246	-
Stage 1	-	-	-	-	-	-	328	349	-	329	367	-
Stage 2	-	-	-	-	-	-	277	359	-	308	347	-













Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.2			16.8			32.1		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	327	785	-	-	804	-	-	268
HCM Lane V/C Ratio	0.07	0.059	-	-	0.017	-	-	0.519
HCM Control Delay (s)	16.8	9.9	-	-	9.6	-	-	32.1
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0.1	-	-	2.8

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

HCM2000 Intersection v/c
6: S Middleton Rd & SH 44

2021 Existing
AM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	408	181	289	441	230	205
Future Volume (vph)	408	181	289	441	230	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1539	1769	1863	1770	1583
Flt Permitted	1.00	1.00	0.21	1.00	0.95	1.00
Satd. Flow (perm)	1863	1539	383	1863	1770	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	516	229	366	558	291	259
RTOR Reduction (vph)	0	67	0	0	0	195
Lane Group Flow (vph)	516	162	366	558	291	64
Confl. Peds. (#/hr)		4	4			
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	8	
Permitted Phases		6	2			8
Actuated Green, G (s)	30.0	30.0	53.2	53.2	18.0	18.0
Effective Green, g (s)	32.0	32.0	55.2	55.2	20.0	20.0
Actuated g/C Ratio	0.39	0.39	0.68	0.68	0.25	0.25
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	734	606	605	1266	435	389
v/s Ratio Prot	c0.28		c0.15	0.30	c0.16	
v/s Ratio Perm		0.11	0.26			0.04
v/c Ratio	0.70	0.27	0.60	0.44	0.67	0.16
Uniform Delay, d1	20.6	16.7	9.4	5.9	27.6	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.2	1.7	0.2	3.9	0.2
Delay (s)	23.7	16.9	11.1	6.2	31.5	24.2
Level of Service	C	B	B	A	C	C
Approach Delay (s)	21.6			8.1	28.1	
Approach LOS	C			A	C	
Intersection Summary						
HCM 2000 Control Delay			17.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			81.2		Sum of lost time (s)	9.0
Intersection Capacity Utilization			60.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
6: S Middleton Rd & SH 44

2021 Existing
AM Peak Hour

	→	↘	↙	←	↖	↗	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑	↗	↘	↑	↖	↗	
Traffic Volume (veh/h)	408	181	289	441	230	205	
Future Volume (veh/h)	408	181	289	441	230	205	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No			No	No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	516	229	366	558	291	259	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	
Percent Heavy Veh, %	2	2	2	2	2	2	
Cap, veh/h	679	572	501	1146	383	340	
Arrive On Green	0.36	0.36	0.16	0.61	0.21	0.21	
Sat Flow, veh/h	1870	1576	1781	1870	1781	1585	
Grp Volume(v), veh/h	516	229	366	558	291	259	
Grp Sat Flow(s),veh/h/ln	1870	1576	1781	1870	1781	1585	
Q Serve(g_s), s	14.1	6.3	6.6	9.5	8.9	8.9	
Cycle Q Clear(g_c), s	14.1	6.3	6.6	9.5	8.9	8.9	
Prop In Lane		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	679	572	501	1146	383	340	
V/C Ratio(X)	0.76	0.40	0.73	0.49	0.76	0.76	
Avail Cap(c_a), veh/h	1936	1631	825	2742	768	684	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	16.2	13.8	10.8	6.2	21.4	21.4	
Incr Delay (d2), s/veh	1.8	0.5	2.1	0.3	3.1	3.5	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	9.7	3.8	4.1	5.3	6.6	5.9	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	18.0	14.2	12.9	6.5	24.5	24.9	
LnGrp LOS	B	B	B	A	C	C	
Approach Vol, veh/h	745			924	550		
Approach Delay, s/veh	16.8			9.0	24.7		
Approach LOS	B			A	C		
Timer - Assigned Phs		2			5	6	8
Phs Duration (G+Y+Rc), s		40.5			14.5	26.0	17.4
Change Period (Y+Rc), s		5.0			5.0	5.0	5.0
Max Green Setting (Gmax), s		85.0			20.0	60.0	25.0
Max Q Clear Time (g_c+I1), s		11.5			8.6	16.1	10.9
Green Ext Time (p_c), s		4.6			0.9	5.0	1.6
Intersection Summary							
HCM 6th Ctrl Delay			15.5				
HCM 6th LOS			B				

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	137	442	4	0	506	55	0	0	0	49	0	284
Future Vol, veh/h	137	442	4	0	506	55	0	0	0	49	0	284
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	150	-	-	-	-	50	-	-	-	100	-	0
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	161	520	5	0	595	65	0	0	0	58	0	334

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	660	0	0	-	-	0	1473	1505	523	1440	1442	595
Stage 1	-	-	-	-	-	-	845	845	-	595	595	-
Stage 2	-	-	-	-	-	-	628	660	-	845	847	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	928	-	-	0	-	-	105	121	554	111	132	504
Stage 1	-	-	-	0	-	-	357	379	-	491	492	-
Stage 2	-	-	-	0	-	-	471	460	-	357	378	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	928	-	-	-	-	-	31	100	554	96	109	504
Mov Cap-2 Maneuver	-	-	-	-	-	-	~6	185	-	198	221	-
Stage 1	-	-	-	-	-	-	295	313	-	406	492	-
Stage 2	-	-	-	-	-	-	159	460	-	295	313	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.3	0	0	25.9
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	928	-	-	-	-	198	-	504
HCM Lane V/C Ratio	-	0.174	-	-	-	-	0.291	-	0.663
HCM Control Delay (s)	0	9.7	-	-	-	-	30.5	0	25.1
HCM Lane LOS		A	A	-	-	-	D	A	D
HCM 95th %tile Q(veh)	-	0.6	-	-	-	-	1.2	-	4.8

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

Intersection												
Int Delay, s/veh	8.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	53	14	29	93	10	12	27	21	5	19	0
Future Vol, veh/h	17	53	14	29	93	10	12	27	21	5	19	0
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	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	64	17	35	112	12	14	33	25	6	23	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	171	121	23	150	109	46	23	0	0	58	0	0
Stage 1	35	35	-	74	74	-	-	-	-	-	-	-
Stage 2	136	86	-	76	35	-	-	-	-	-	-	-
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	792	769	1054	818	781	1023	1592	-	-	1546	-	-
Stage 1	981	866	-	935	833	-	-	-	-	-	-	-
Stage 2	867	824	-	933	866	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	689	759	1054	746	771	1023	1592	-	-	1546	-	-
Mov Cap-2 Maneuver	689	759	-	746	771	-	-	-	-	-	-	-
Stage 1	972	863	-	927	826	-	-	-	-	-	-	-
Stage 2	734	817	-	847	863	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.3		10.8		1.5		1.5	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1592	-	-	779	780	1546	-	-
HCM Lane V/C Ratio	0.009	-	-	0.13	0.204	0.004	-	-
HCM Control Delay (s)	7.3	0	-	10.3	10.8	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.8	0	-	-

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	4	10	8	10	12	20	79	7	19	97	11
Future Vol, veh/h	10	4	10	8	10	12	20	79	7	19	97	11
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	2	2	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	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	10	2	2	2	2	2	2	2	2	5	2	9
Mvmt Flow	14	6	14	11	14	17	28	110	10	26	135	15

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	385	373	145	380	375	120	150	0	0	122	0	0
Stage 1	195	195	-	173	173	-	-	-	-	-	-	-
Stage 2	190	178	-	207	202	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.15	-	-
Critical Hdwy Stg 1	6.2	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.245	-	-
Pot Cap-1 Maneuver	559	557	902	578	556	931	1431	-	-	1447	-	-
Stage 1	789	739	-	829	756	-	-	-	-	-	-	-
Stage 2	794	752	-	795	734	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	520	534	900	545	533	927	1431	-	-	1444	-	-
Mov Cap-2 Maneuver	520	534	-	545	533	-	-	-	-	-	-	-
Stage 1	772	724	-	810	739	-	-	-	-	-	-	-
Stage 2	747	735	-	760	719	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11		10.9		1.4		1.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1431	-	-	634	647	1444	-	-
HCM Lane V/C Ratio	0.019	-	-	0.053	0.064	0.018	-	-
HCM Control Delay (s)	7.6	0	-	11	10.9	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.2	0.1	-	-

Intersection						
Int Delay, s/veh	7.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	38	54	60	10	4	21
Future Vol, veh/h	38	54	60	10	4	21
Conflicting Peds, #/hr	0	0	6	0	0	6
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	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	58	82	91	15	6	32

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	225	28	44	0	0
Stage 1	28	-	-	-	-
Stage 2	197	-	-	-	-
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	763	1047	1564	-	-
Stage 1	995	-	-	-	-
Stage 2	836	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	710	1041	1555	-	-
Mov Cap-2 Maneuver	710	-	-	-	-
Stage 1	930	-	-	-	-
Stage 2	831	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	6.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1555	-	873	-	-
HCM Lane V/C Ratio	0.058	-	0.16	-	-
HCM Control Delay (s)	7.5	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	64	428	502	81	60	34
Future Vol, veh/h	64	428	502	81	60	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	100	0
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	470	552	89	66	37

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	641	0	-	0	1162
Stage 1	-	-	-	-	552
Stage 2	-	-	-	-	610
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	943	-	-	-	216
Stage 1	-	-	-	-	577
Stage 2	-	-	-	-	542
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	943	-	-	-	200
Mov Cap-2 Maneuver	-	-	-	-	404
Stage 1	-	-	-	-	534
Stage 2	-	-	-	-	542

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	943	-	-	-	404	533
HCM Lane V/C Ratio	0.075	-	-	-	0.163	0.07
HCM Control Delay (s)	9.1	-	-	-	15.6	12.3
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6	0.2

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	24	558	35	40	515	90	12	3	26	55	8	29
Future Vol, veh/h	24	558	35	40	515	90	12	3	26	55	8	29
Conflicting Peds, #/hr	15	0	2	2	0	15	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	4	3	3	3	5	2	2	2	4	2	25	4
Mvmt Flow	27	634	40	45	585	102	14	3	30	63	9	33







Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	702	0	0	676	0	0	1457	1502	656	1466	1471	651
Stage 1	-	-	-	-	-	-	710	710	-	741	741	-
Stage 2	-	-	-	-	-	-	747	792	-	725	730	-
Critical Hdwy	4.14	-	-	4.13	-	-	7.12	6.52	6.24	7.12	6.75	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.75	-
Follow-up Hdwy	2.236	-	-	2.227	-	-	3.518	4.018	3.336	3.518	4.225	3.336
Pot Cap-1 Maneuver	886	-	-	911	-	-	108	122	462	106	113	465
Stage 1	-	-	-	-	-	-	424	437	-	408	391	-
Stage 2	-	-	-	-	-	-	405	401	-	416	395	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	873	-	-	909	-	-	91	111	461	91	102	458
Mov Cap-2 Maneuver	-	-	-	-	-	-	254	275	-	253	254	-
Stage 1	-	-	-	-	-	-	410	423	-	390	366	-
Stage 2	-	-	-	-	-	-	348	376	-	374	382	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.6			16.6			23.8		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	358	873	-	-	909	-	-	295
HCM Lane V/C Ratio	0.13	0.031	-	-	0.05	-	-	0.354
HCM Control Delay (s)	16.6	9.3	-	-	9.2	-	-	23.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.2	-	-	1.5













HCM2000 Intersection v/c
6: S Middleton Rd & SH 44

2021 Existing
PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	366	156	271	396	324	311
Future Volume (vph)	366	156	271	396	324	311
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1549
Flt Permitted	1.00	1.00	0.27	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	501	1863	1770	1549
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	381	162	282	412	338	324
RTOR Reduction (vph)	0	72	0	0	0	227
Lane Group Flow (vph)	381	91	282	413	338	97
Confl. Peds. (#/hr)						1
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	8	
Permitted Phases		6	2			8
Actuated Green, G (s)	20.9	20.9	41.6	41.6	19.3	19.3
Effective Green, g (s)	22.9	22.9	43.6	43.6	21.3	21.3
Actuated g/C Ratio	0.32	0.32	0.61	0.61	0.30	0.30
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	601	511	624	1145	531	465
v/s Ratio Prot	c0.20		c0.11	0.22	c0.19	
v/s Ratio Perm		0.06	0.16			0.06
v/c Ratio	0.63	0.18	0.45	0.36	0.64	0.21
Uniform Delay, d1	20.4	17.2	7.9	6.8	21.5	18.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.2	0.5	0.2	2.5	0.2
Delay (s)	22.6	17.4	8.4	6.9	24.0	18.7
Level of Service	C	B	A	A	C	B
Approach Delay (s)	21.1			7.5	21.4	
Approach LOS	C			A	C	
Intersection Summary						
HCM 2000 Control Delay			16.2		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			70.9		Sum of lost time (s)	9.0
Intersection Capacity Utilization			62.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
6: S Middleton Rd & SH 44

2021 Existing
PM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	366	156	271	396	324	311	
Future Volume (veh/h)	366	156	271	396	324	311	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No			No	No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	381	162	282	412	338	324	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Percent Heavy Veh, %	2	2	2	2	2	2	
Cap, veh/h	539	457	499	1003	474	422	
Arrive On Green	0.29	0.29	0.15	0.54	0.27	0.27	
Sat Flow, veh/h	1870	1585	1781	1870	1781	1585	
Grp Volume(v), veh/h	381	162	282	412	338	324	
Grp Sat Flow(s),veh/h/ln	1870	1585	1781	1870	1781	1585	
Q Serve(g_s), s	9.2	4.1	5.0	6.6	8.7	9.5	
Cycle Q Clear(g_c), s	9.2	4.1	5.0	6.6	8.7	9.5	
Prop In Lane		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	539	457	499	1003	474	422	
V/C Ratio(X)	0.71	0.35	0.56	0.41	0.71	0.77	
Avail Cap(c_a), veh/h	2221	1882	939	3146	881	784	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	16.1	14.3	10.1	7.0	16.8	17.1	
Incr Delay (d2), s/veh	1.7	0.5	1.0	0.3	2.0	3.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	6.8	2.5	3.1	3.8	5.9	5.9	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	17.8	14.7	11.1	7.2	18.8	20.1	
LnGrp LOS	B	B	B	A	B	C	
Approach Vol, veh/h	543			694	662		
Approach Delay, s/veh	16.9			8.8	19.4		
Approach LOS	B			A	B		
Timer - Assigned Phs		2			5	6	8
Phs Duration (G+Y+Rc), s		32.1			12.5	19.6	18.4
Change Period (Y+Rc), s		5.0			5.0	5.0	5.0
Max Green Setting (Gmax), s		85.0			20.0	60.0	25.0
Max Q Clear Time (g_c+I1), s		8.6			7.0	11.2	11.5
Green Ext Time (p_c), s		3.1			0.7	3.4	1.9
Intersection Summary							
HCM 6th Ctrl Delay			14.8				
HCM 6th LOS			B				

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↘			↑	↗		↔		↙	↑	↗
Traffic Vol, veh/h	219	493	0	0	629	66	0	1	0	21	0	170
Future Vol, veh/h	219	493	0	0	629	66	0	1	0	21	0	170
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	150	-	-	-	-	50	-	-	-	100	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	228	514	0	0	655	69	0	1	0	22	0	177

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	724	0	0	-	-	0	1660	1694	514	1626	1625	655
Stage 1	-	-	-	-	-	-	970	970	-	655	655	-
Stage 2	-	-	-	-	-	-	690	724	-	971	970	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	879	-	-	0	-	-	78	93	560	82	102	466
Stage 1	-	-	-	0	-	-	304	331	-	455	463	-
Stage 2	-	-	-	0	-	-	435	430	-	304	331	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	879	-	-	-	-	-	39	69	560	65	76	466
Mov Cap-2 Maneuver	-	-	-	-	-	-	38	132	-	151	177	-
Stage 1	-	-	-	-	-	-	225	245	-	337	463	-
Stage 2	-	-	-	-	-	-	270	430	-	224	245	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.2			0			32.5			19.1		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	132	879	-	-	-	-	151	-	466
HCM Lane V/C Ratio	0.008	0.26	-	-	-	-	0.145	-	0.38
HCM Control Delay (s)	32.5	10.5	-	-	-	-	32.8	0	17.4
HCM Lane LOS		D	B	-	-	-	D	A	C
HCM 95th %tile Q(veh)	0	1	-	-	-	-	0.5	-	1.8

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↖	↗	↖		↔			↔	
Traffic Vol, veh/h	34	564	8	10	589	33	3	0	14	55	0	48
Future Vol, veh/h	34	564	8	10	589	33	3	0	14	55	0	48
Conflicting Peds, #/hr	6	0	3	3	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	100	50	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	2	2	13	10	4	3	2	2	7	4	2	2
Mvmt Flow	46	762	11	14	796	45	4	0	19	74	0	65

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	847	0	0	776	0	0	1736	1732	765	1699	1698	802
Stage 1	-	-	-	-	-	-	857	857	-	830	830	-
Stage 2	-	-	-	-	-	-	879	875	-	869	868	-
Critical Hdwy	4.12	-	-	4.2	-	-	7.12	6.52	6.27	7.14	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.14	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.14	5.52	-
Follow-up Hdwy	2.218	-	-	2.29	-	-	3.518	4.018	3.363	3.536	4.018	3.318
Pot Cap-1 Maneuver	790	-	-	806	-	-	69	88	395	~ 72	92	384
Stage 1	-	-	-	-	-	-	352	374	-	361	385	-
Stage 2	-	-	-	-	-	-	342	367	-	344	370	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	785	-	-	804	-	-	54	81	394	~ 64	84	382
Mov Cap-2 Maneuver	-	-	-	-	-	-	187	234	-	219	249	-
Stage 1	-	-	-	-	-	-	331	351	-	338	376	-
Stage 2	-	-	-	-	-	-	279	359	-	308	347	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.2			16.7			31.1		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	330	785	-	-	804	-	-	273
HCM Lane V/C Ratio	0.07	0.059	-	-	0.017	-	-	0.51
HCM Control Delay (s)	16.7	9.9	-	-	9.6	-	-	31.1
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0.1	-	-	2.7

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

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↖	↗	↖		↕			↕	
Traffic Vol, veh/h	24	558	35	40	515	90	12	3	26	55	8	29
Future Vol, veh/h	24	558	35	40	515	90	12	3	26	55	8	29
Conflicting Peds, #/hr	15	0	2	2	0	15	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	100	50	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	4	3	3	3	5	2	2	2	4	2	25	4
Mvmt Flow	27	634	40	45	585	102	14	3	30	63	9	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	702	0	0	676	0	0	1437	1482	636	1415	1420	600
Stage 1	-	-	-	-	-	-	690	690	-	690	690	-
Stage 2	-	-	-	-	-	-	747	792	-	725	730	-
Critical Hdwy	4.14	-	-	4.13	-	-	7.12	6.52	6.24	7.12	6.75	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.75	-
Follow-up Hdwy	2.236	-	-	2.227	-	-	3.518	4.018	3.336	3.518	4.225	3.336
Pot Cap-1 Maneuver	886	-	-	911	-	-	111	125	474	115	122	497
Stage 1	-	-	-	-	-	-	435	446	-	435	413	-
Stage 2	-	-	-	-	-	-	405	401	-	416	395	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	873	-	-	909	-	-	95	113	473	99	111	490
Mov Cap-2 Maneuver	-	-	-	-	-	-	259	277	-	261	262	-
Stage 1	-	-	-	-	-	-	421	431	-	415	387	-
Stage 2	-	-	-	-	-	-	351	376	-	375	382	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.6			16.3			22.7		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	366	873	-	-	909	-	-	306
HCM Lane V/C Ratio	0.127	0.031	-	-	0.05	-	-	0.342
HCM Control Delay (s)	16.3	9.3	-	-	9.2	-	-	22.7
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.2	-	-	1.5

APPENDIX D: COMPASS Forecasts

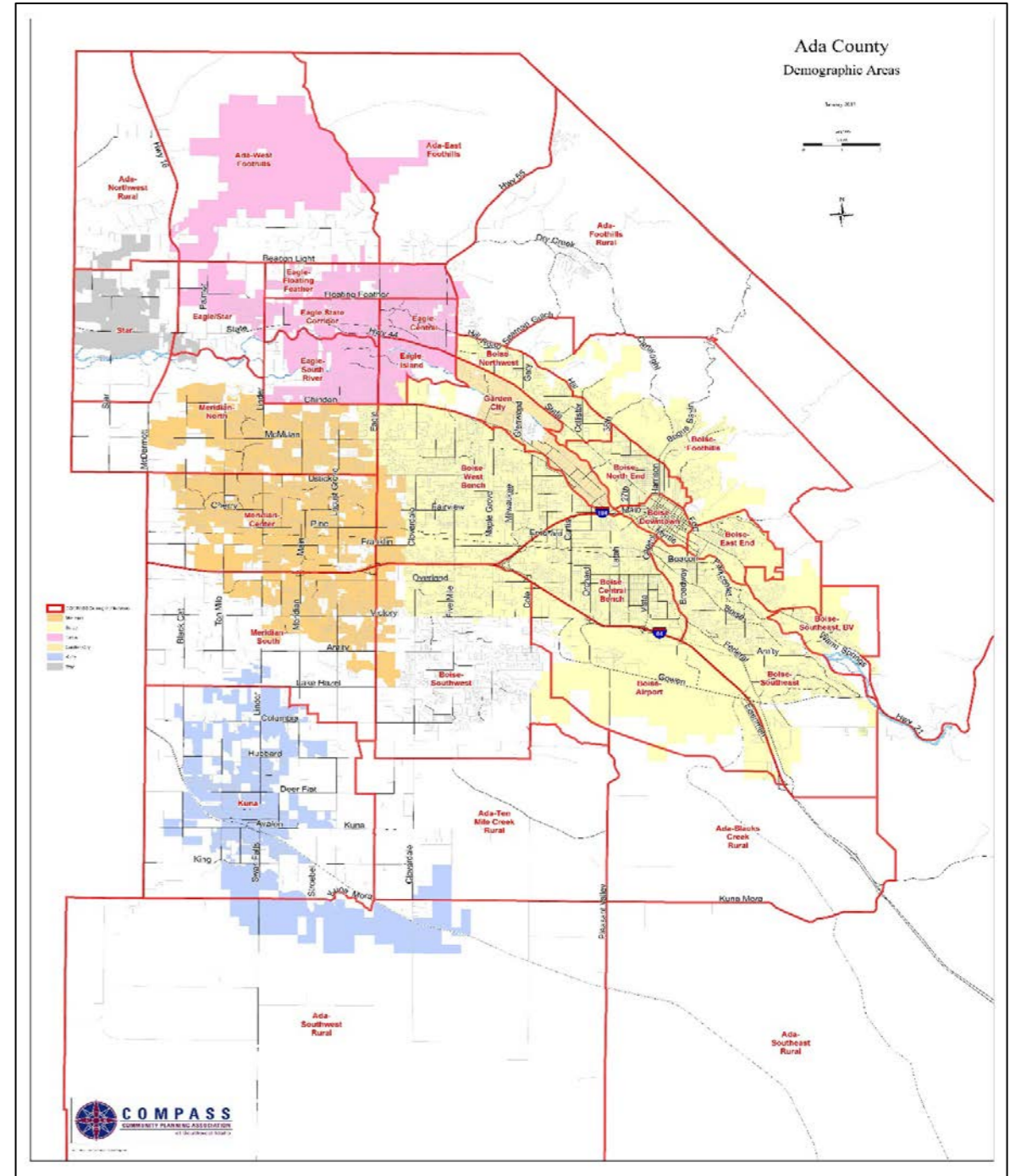
Communities in Motion 2040 2.0 R5 Demographic Forecast

Demographic Area	Population 2010 (Census)	Households 2010 (Census)	Population 2019 (Estimate)	Households 2019 (Estimate)	Population 2025 (R5 Forecast)	Households 2025 (R5 Forecast)	Jobs 2025 (R5 Forecast)	Population 2030 (R5 Forecast)	Households 2030 (R5 Forecast)	Jobs 2030 (R5 Forecast)	Population 2035 (R5 Forecast)
Ada County											
Boise-Airport	890	351	971	382	979	391	14,587	979	397	18,064	985
Boise-Central Bench	39,399	17,017	44,180	18,638	47,287	20,319	27,287	50,698	22,115	30,029	53,402
Boise-Downtown	3,843	2,214	5,069	2,971	6,949	4,176	41,103	8,379	5,137	45,963	9,868
Boise-East End	6,984	3,196	7,468	3,415	7,502	3,489	2,632	7,533	3,555	3,077	7,576
Boise-Foothills	9,669	3,881	10,957	4,369	11,116	4,509	4,176	11,119	4,576	4,501	11,124
Boise-North End	17,576	8,273	18,740	8,766	19,295	9,164	4,309	19,614	9,450	5,149	19,958
Boise-Northwest	14,259	6,198	17,009	7,348	19,148	8,376	3,655	20,369	9,019	4,481	21,636
Boise-Southeast	34,332	14,708	38,473	16,392	40,387	17,504	25,573	41,834	18,433	28,597	43,237
Boise-Southeast, Barber Valley	1,662	637	5,757	2,175	6,889	2,657	771	7,006	2,743	828	7,130
Boise-Southwest	40,662	13,950	50,904	17,529	56,032	19,667	17,890	58,559	21,018	20,320	62,229
Boise-West Bench	69,174	26,477	77,931	30,115	81,082	32,041	48,674	83,315	33,483	54,565	85,599
Greater Boise Subtotal	238,450	96,902	277,459	112,100	296,666	122,293	190,657	309,405	129,926	215,574	322,744
Eagle-Central	7,066	2,766	7,714	3,009	8,282	3,316	4,195	8,680	3,552	4,902	9,092
Eagle-Floating Feather	5,906	1,833	7,043	2,221	7,572	2,432	807	7,799	2,538	1,042	8,036
Eagle-Island	1,064	386	2,467	904	3,489	1,326	2,024	3,658	1,411	2,248	3,831
Eagle-South River	3,357	1,174	5,821	2,027	6,449	2,286	1,104	7,018	2,526	1,338	7,605
Eagle-State Corridor	3,549	1,289	4,485	1,659	5,409	2,044	2,250	5,937	2,260	2,838	6,474
Greater Eagle Subtotal	20,942	7,448	27,530	9,820	31,201	11,404	10,380	33,092	12,287	12,368	35,038
Eagle/Star	357	134	3,860	1,331	8,225	2,975	1,117	11,238	4,118	1,876	14,280
Greater Garden City	11,057	4,923	12,308	5,499	14,026	6,397	10,647	15,317	7,105	12,050	16,654
Greater Kuna	17,850	5,657	24,600	7,742	34,269	11,605	5,505	39,304	13,422	7,716	44,328
Meridian-Center	40,984	14,920	47,396	17,360	52,602	19,755	27,440	56,494	21,568	33,291	57,462
Meridian-North	26,319	7,940	41,848	13,299	50,133	16,362	6,662	55,226	18,399	8,059	58,319
Meridian-South	14,957	4,915	24,036	8,162	29,968	10,369	9,419	36,125	12,746	10,972	39,966
Greater Meridian Subtotal	82,260	27,775	113,280	38,821	132,703	46,486	43,521	147,845	52,713	52,322	155,747
Greater Star	6,222	2,090	10,719	3,672	13,887	4,878	1,924	16,000	5,721	2,629	17,577
Ada-Blacks Creek Rural	3,062	5	3,059	5	3,063	6	1,479	3,063	6	1,490	3,065
Ada-East Foothills	393	141	423	150	977	386	208	1,436	589	340	1,902
Ada-Foothills Rural	3,978	1,299	6,395	2,095	9,652	3,229	601	11,144	3,810	771	12,675
Ada-Northwest Rural	1,190	375	1,586	512	2,822	918	292	3,943	1,297	328	5,090
Ada-Southeast Rural	177	72	189	78	254	105	150	313	130	205	376
Ada-Southwest Rural	946	296	1,087	341	1,111	355	1,053	1,131	367	1,174	1,168
Ada-Ten Mile Creek Rural	3,533	497	3,594	518	5,084	1,066	743	6,704	1,677	858	8,820
Ada-West Foothills	1,320	445	1,481	495	4,297	1,547	650	6,371	2,341	1,035	8,487
Ada Rural Subtotal	14,599	3,130	17,814	4,194	27,260	7,612	5,176	34,105	10,217	6,201	41,583
Ada Subtotal	391,737	148,059	487,570	183,179	558,237	213,650	268,927	606,306	235,508	310,736	647,951

Canyon County	Population 2010	Households 2010	Population 2019	Households 2019	Population 2025	Households 2025	Jobs 2025	Population 2030	Households 2030	Jobs 2030	Population 2035
Caldwell-Central	10,464	3,670	10,974	3,847	12,161	4,350	3,502	13,238	4,815	3,819	14,358
Caldwell-Downtown	4,564	1,366	4,761	1,445	5,837	1,880	4,748	6,825	2,288	5,740	7,817
Caldwell-Northeast	16,082	5,131	21,018	6,641	27,582	8,884	7,964	30,862	10,145	11,112	33,395
Caldwell-South	14,249	4,407	19,328	5,918	26,833	8,624	3,056	33,076	10,976	3,705	39,469
Caldwell-West	6,477	2,352	6,947	2,510	7,772	2,836	4,118	8,514	3,135	4,631	9,282
Greater Caldwell Subtotal	51,836	16,926	63,028	20,361	80,185	26,574	23,388	92,515	31,359	29,007	104,321
Greater Greenleaf	1,119	395	1,184	417	1,575	565	225	1,924	702	259	2,283
Greater Melba	823	270	923	302	1,213	404	345	1,476	499	469	1,748
Greater Middleton	7,227	2,427	10,660	3,486	11,805	3,916	1,443	12,374	4,163	1,616	12,940
Nampa-Downtown	5,027	2,039	5,357	2,179	6,764	2,830	4,727	7,955	3,400	5,766	9,167
Nampa-East	16,077	5,415	18,205	6,189	22,249	7,747	9,038	25,271	8,976	9,971	28,365
Nampa-North	10,084	3,162	12,879	4,237	19,491	6,535	16,309	23,736	8,112	19,968	27,269
Nampa-Southeast	23,509	7,971	26,051	8,866	27,176	9,388	5,629	27,965	9,775	6,330	28,783
Nampa-West	36,994	12,763	42,666	14,745	44,999	15,783	11,948	46,479	16,528	13,669	48,016
Greater Nampa Subtotal	91,691	31,350	105,158	36,216	120,679	42,283	47,651	131,406	46,791	55,704	141,600
Greater Notus	784	265	828	277	1,107	359	306	1,359	435	406	1,618
Greater Parma	2,295	814	2,463	870	3,105	1,122	1,034	3,690	1,358	1,216	4,291
Greater Wilder	1,715	525	1,941	599	2,554	814	392	3,106	1,014	505	3,671
Canyon-Northeast Rural	6,856	2,386	8,181	2,814	10,435	3,632	1,203	11,958	4,214	1,506	13,548
Canyon-Northwest Rural	5,060	1,638	5,447	1,763	5,855	1,943	1,615	6,212	2,105	1,967	6,614
Canyon-South Rural	12,104	4,006	16,202	5,322	17,565	5,878	2,482	18,163	6,174	2,893	18,823
Canyon-West Rural	7,410	2,579	8,494	2,926	8,741	3,061	2,653	8,935	3,175	3,012	9,198
Canyon Rural Subtotal	31,430	10,609	38,324	12,825	42,596	14,514	7,953	45,268	15,668	9,378	48,183
Canyon Subtotal	188,920	63,581	224,509	75,353	264,819	90,551	82,737	293,118	101,989	98,560	320,655
Regional Total	580,657	211,640	712,079	258,532	823,056	304,201	351,664	899,424	337,497	409,296	968,606

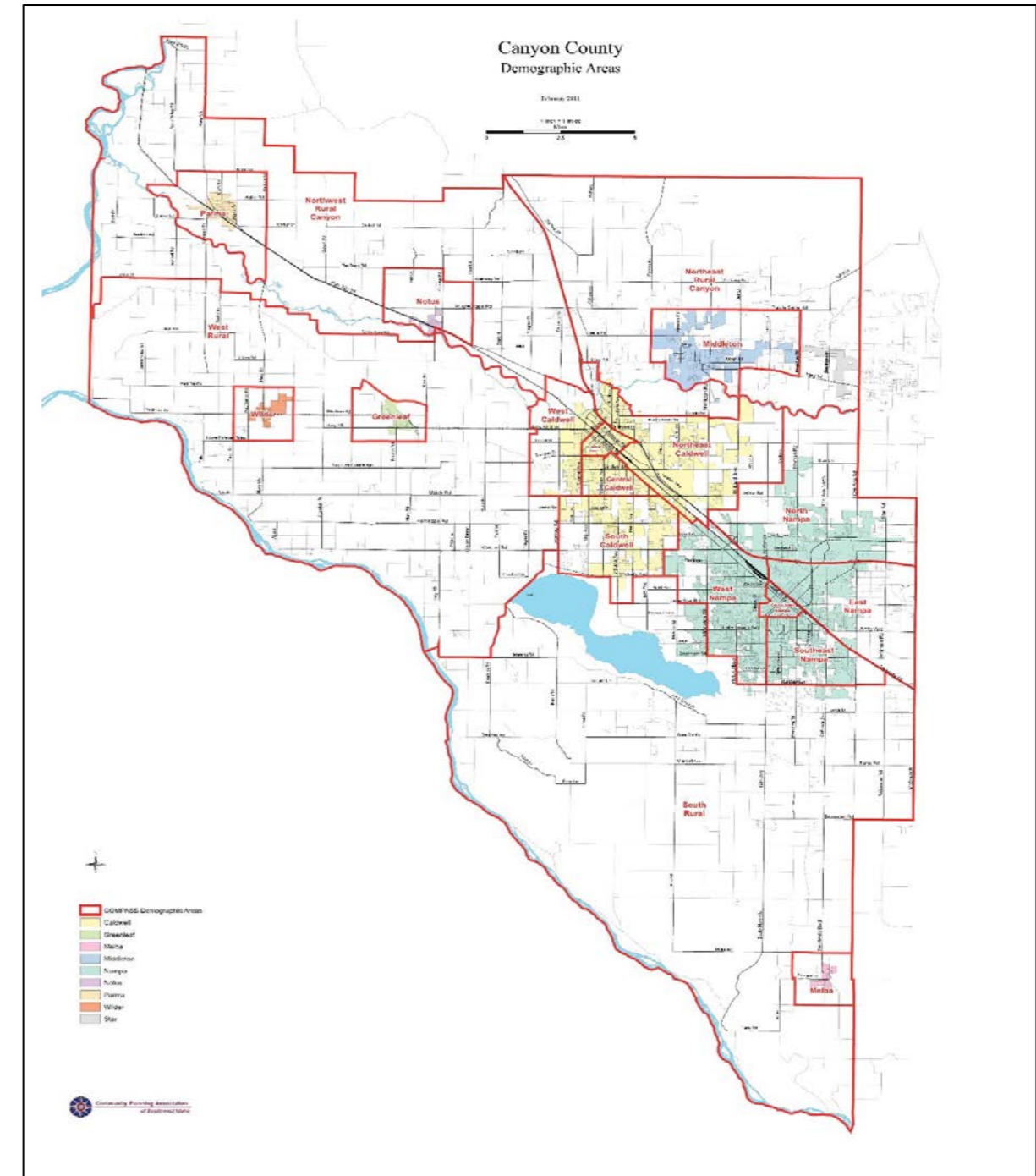
Forecasts based on COMPASS Demographic Areas

Demographic Area	Households 2035 (R5 Forecast)	Jobs 2035 (R5 Forecast)	Population 2040 (R5 Forecast)	Households 2040 (R5 Forecast)	Jobs 2040 (R5 Forecast)
Ada County					
Boise-Airport	405	20,707	833	343	23,264
Boise-Central Bench	23,656	32,245	54,176	24,364	34,280
Boise-Downtown	6,151	49,748	10,567	6,657	53,266
Boise-East End	3,628	3,426	7,528	3,658	3,767
Boise-Foothills	4,647	4,757	11,275	4,784	4,989
Boise-North End	9,758	5,838	20,099	9,962	6,573
Boise-Northwest	9,699	5,161	22,763	10,377	5,792
Boise-Southeast	19,364	30,995	44,965	20,277	33,279
Boise-Southeast, Barber Valley	2,835	954	7,568	3,057	1,070
Boise-Southwest	22,910	22,189	64,046	23,937	23,807
Boise-West Bench	35,004	59,394	86,586	36,002	63,945
Greater Boise Subtotal	138,057	235,414	330,406	143,418	254,032
Eagle-Central	3,800	5,480	9,800	4,157	5,997
Eagle-Floating Feather	2,651	1,232	8,159	2,733	1,423
Eagle-Island	1,500	2,428	5,233	2,108	2,579
Eagle-South River	2,780	1,525	7,784	2,889	1,691
Eagle-State Corridor	2,486	3,344	7,789	3,011	3,792
Greater Eagle Subtotal	13,217	14,009	38,765	14,898	15,482
Eagle/Star	5,320	2,495	18,193	6,996	3,015
Greater Garden City	7,853	13,219	17,968	8,636	14,189
Greater Kuna	15,297	9,546	50,109	17,511	11,159
Meridian-Center	22,293	38,008	57,950	22,805	42,217
Meridian-North	19,832	9,151	59,958	20,793	10,304
Meridian-South	14,327	12,268	49,037	17,685	13,481
Greater Meridian Subtotal	56,452	59,427	166,945	61,283	66,002
Greater Star	6,398	3,228	20,284	7,506	3,727
Ada-Blacks Creek Rural	7	1,499	3,065	7	1,506
Ada-East Foothills	802	451	3,499	1,454	538
Ada-Foothills Rural	4,424	918	14,250	5,038	1,048
Ada-Northwest Rural	1,696	379	5,520	1,866	402
Ada-Southeast Rural	158	246	397	169	287
Ada-Southwest Rural	386	1,269	1,165	391	1,354
Ada-Ten Mile Creek Rural	2,493	946	9,575	2,816	1,023
Ada-West Foothills	3,176	1,370	9,585	3,656	1,692
Ada Rural Subtotal	13,142	7,078	47,056	15,397	7,850
Ada Subtotal	255,736	344,416	689,726	275,645	375,456

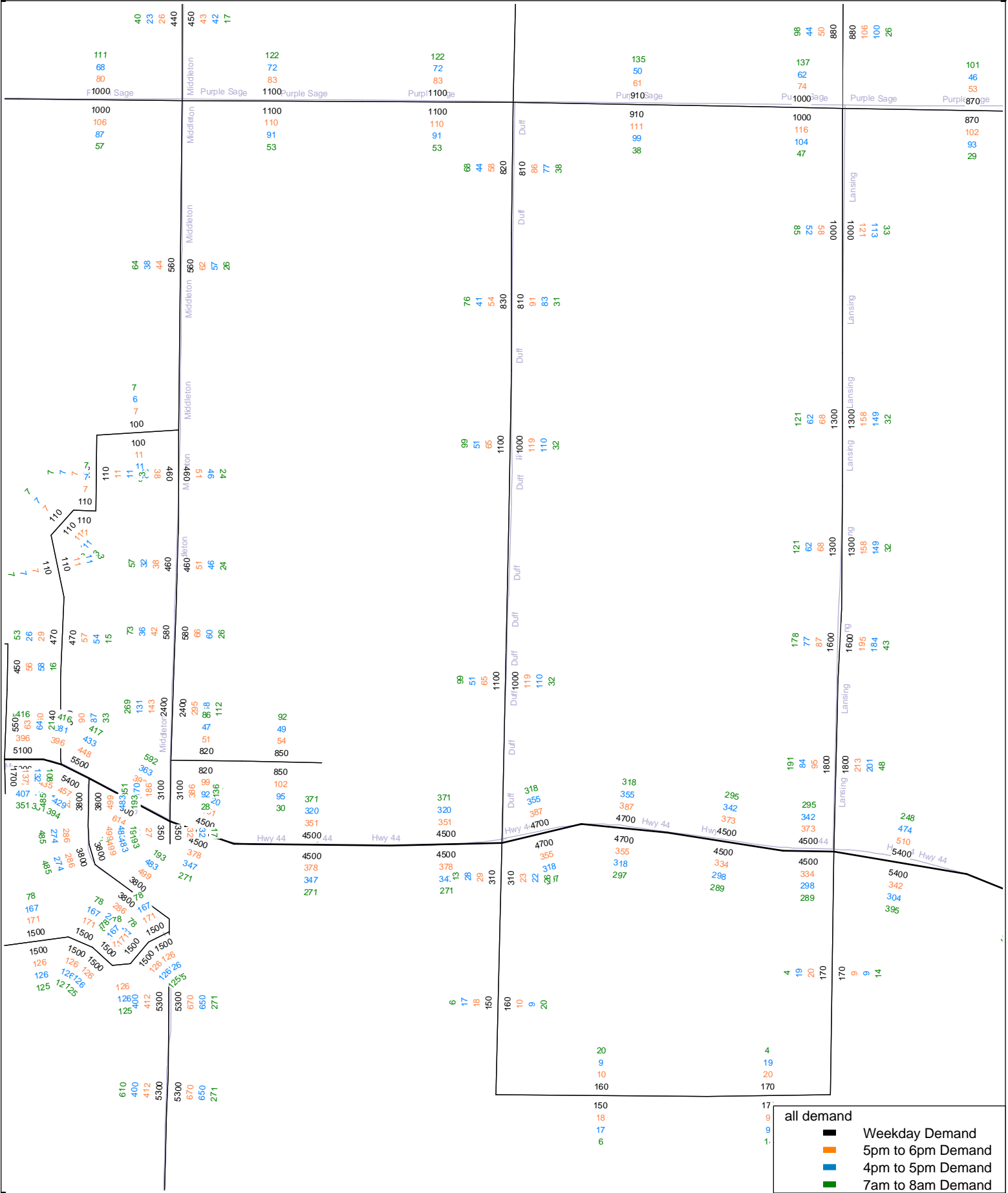


Canyon County	Households 2035	Jobs 2035	Population 2040	Households 2040	Jobs 2040
Caldwell-Central	5,311	4,086	14,692	5,520	4,398
Caldwell-Downtown	2,713	6,547	8,165	2,895	7,289
Caldwell-Northeast	11,182	13,673	40,475	13,724	15,937
Caldwell-South	13,452	4,277	42,743	14,813	4,810
Caldwell-West	3,454	5,045	9,506	3,583	5,415
Greater Caldwell Subtotal	36,112	33,628	115,581	40,535	37,849
Greater Greenleaf	846	292	2,411	907	321
Greater Melba	600	566	1,837	640	662
Greater Middleton	4,420	1,772	14,089	4,903	1,935
Nampa-Downtown	3,997	6,595	9,719	4,304	7,334
Nampa-East	10,272	11,085	29,858	10,986	12,083
Nampa-North	9,528	23,019	32,253	11,532	25,919
Nampa-Southeast	10,186	6,916	29,649	10,646	7,484
Nampa-West	17,321	15,070	49,095	18,000	16,374
Greater Nampa Subtotal	51,304	62,685	150,574	55,468	69,194
Greater Notus	516	494	1,709	550	572
Greater Parma	1,607	1,356	4,499	1,712	1,506
Greater Wilder	1,226	615	3,857	1,313	713
Canyon-Northeast Rural	4,838	1,743	14,223	5,154	1,969
Canyon-Northwest Rural	2,293	2,249	6,678	2,366	2,486
Canyon-South Rural	6,504	3,267	20,635	7,235	3,631
Canyon-West Rural	3,320	3,292	9,203	3,372	3,556
Canyon Rural Subtotal	16,955	10,551	50,739	18,127	11,642
Canyon Subtotal	113,586	111,959	345,296	124,155	124,394
Regional Total	369,322	456,375	1,035,022	399,800	499,850

Forecasts based on COMPASS Demogrph



2019 Build: 2019 Demographics and 2019 Funded Network
3/25/2020

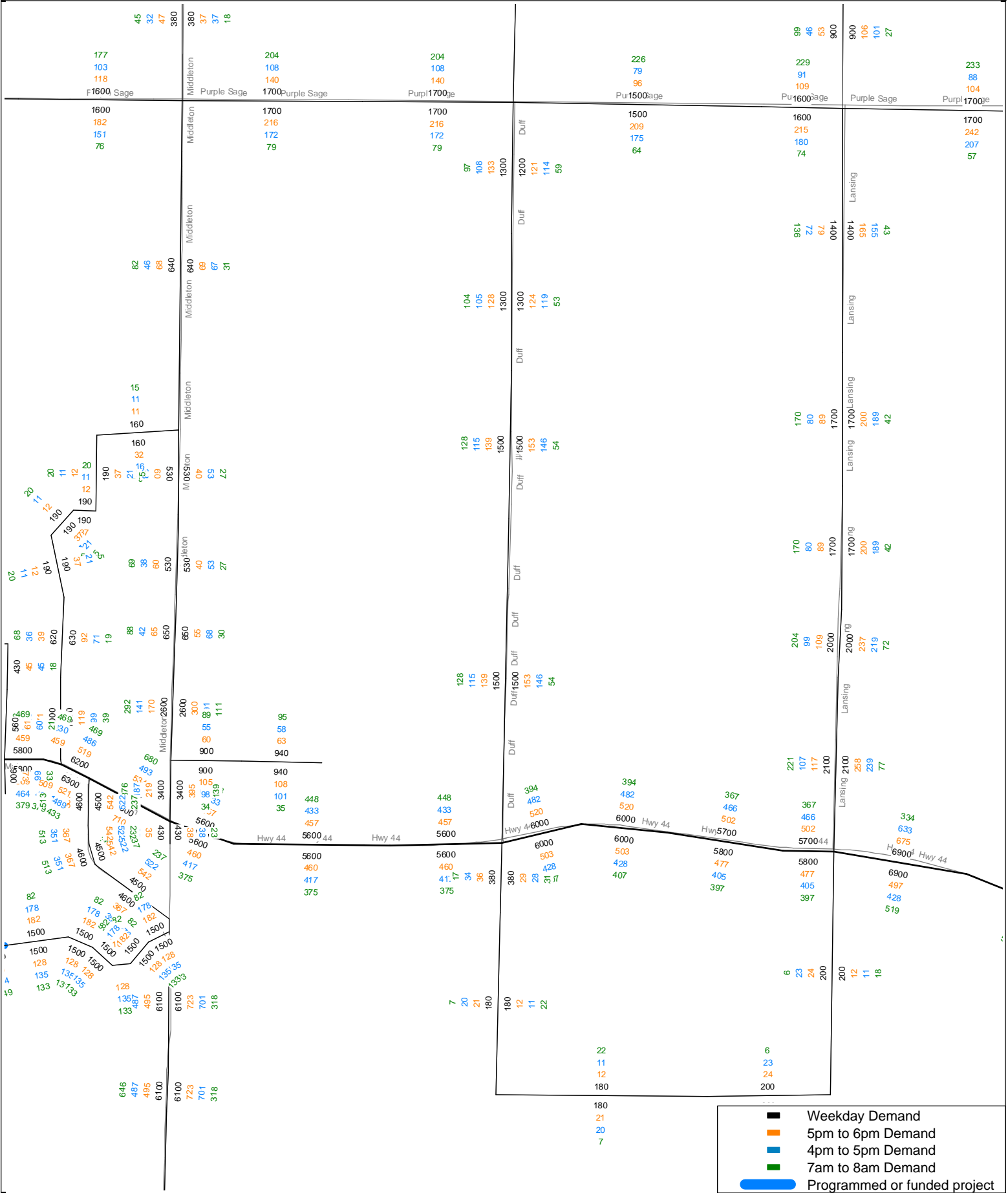


D:\UAG\2011Model\calibration\Base\TIP\FY2024R5\b2019\ALLDEMAND_b2019.NET
New Regional Model calibrated to 2011/12 conditions - completed in January 2015



(Licensed to Community Planning Association)

2025 Build: Daily, 5pm to 6pm Peak, 4pm to 5pm Peak and 7am to 8am Peak Demand
3/25/2020

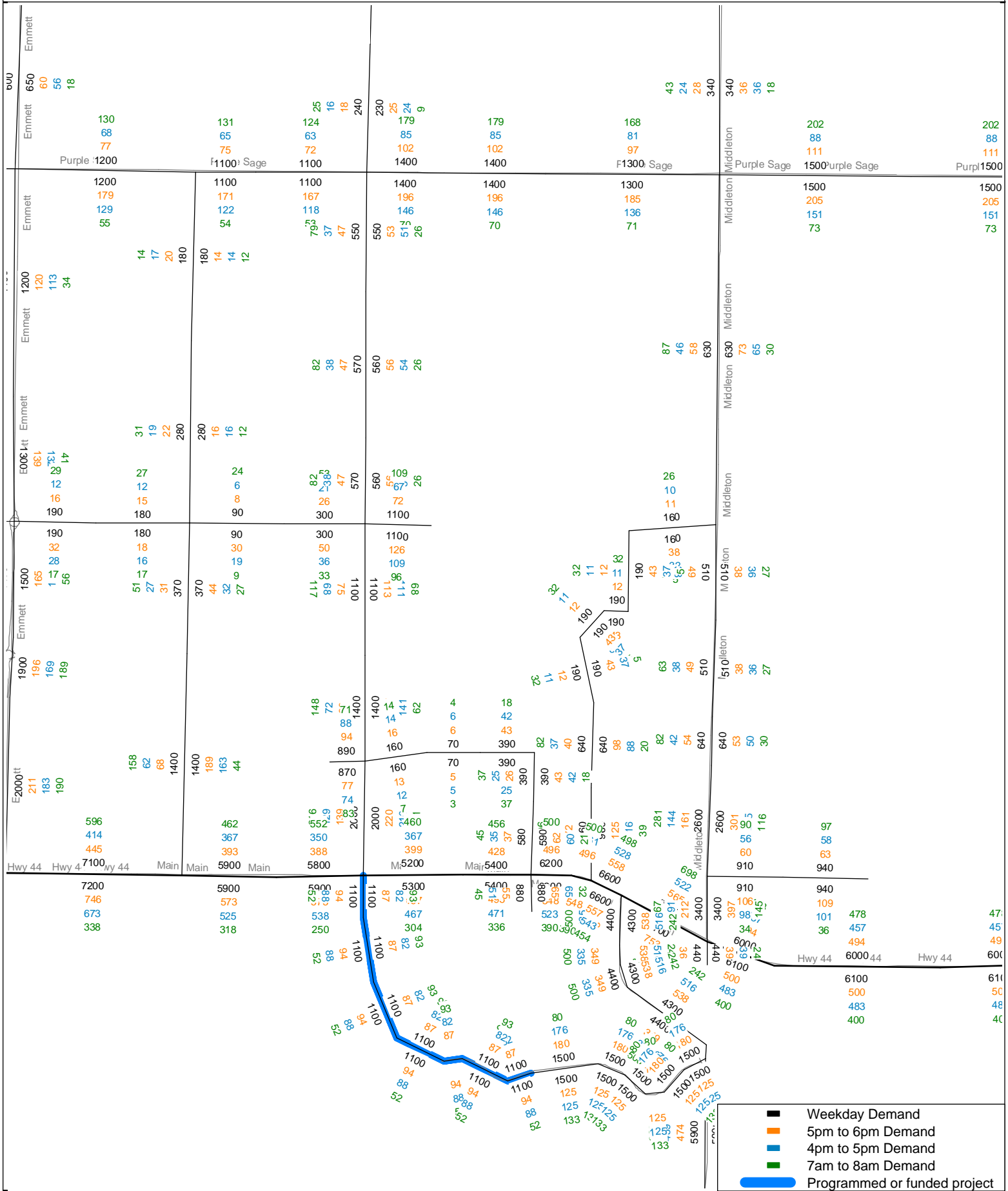


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New Regional Model calibrated to 2011/12 conditions - completed in January 2015



(Licensed to Community Planning Association)

2025 Build: 2025 Demographics and 2025 Funded Network
7/29/2019

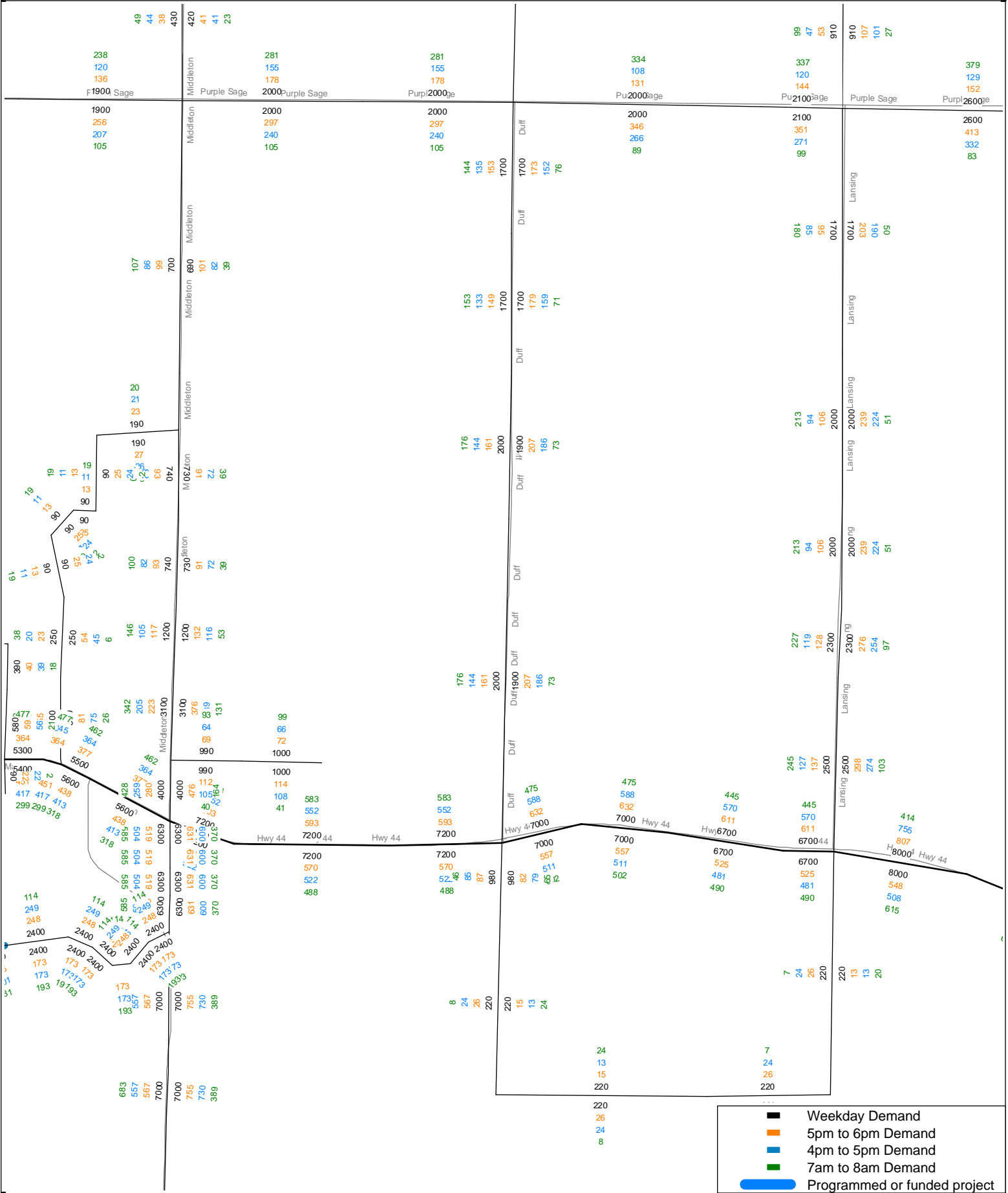


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New Regional Model calibrated to 2011/12 conditions - completed in January 2015



(Licensed to Community Planning Association)

2030 Build: Daily, 5pm to 6pm Peak, 4pm to 5pm Peak and 7am to 8am Peak Demand
3/25/2020



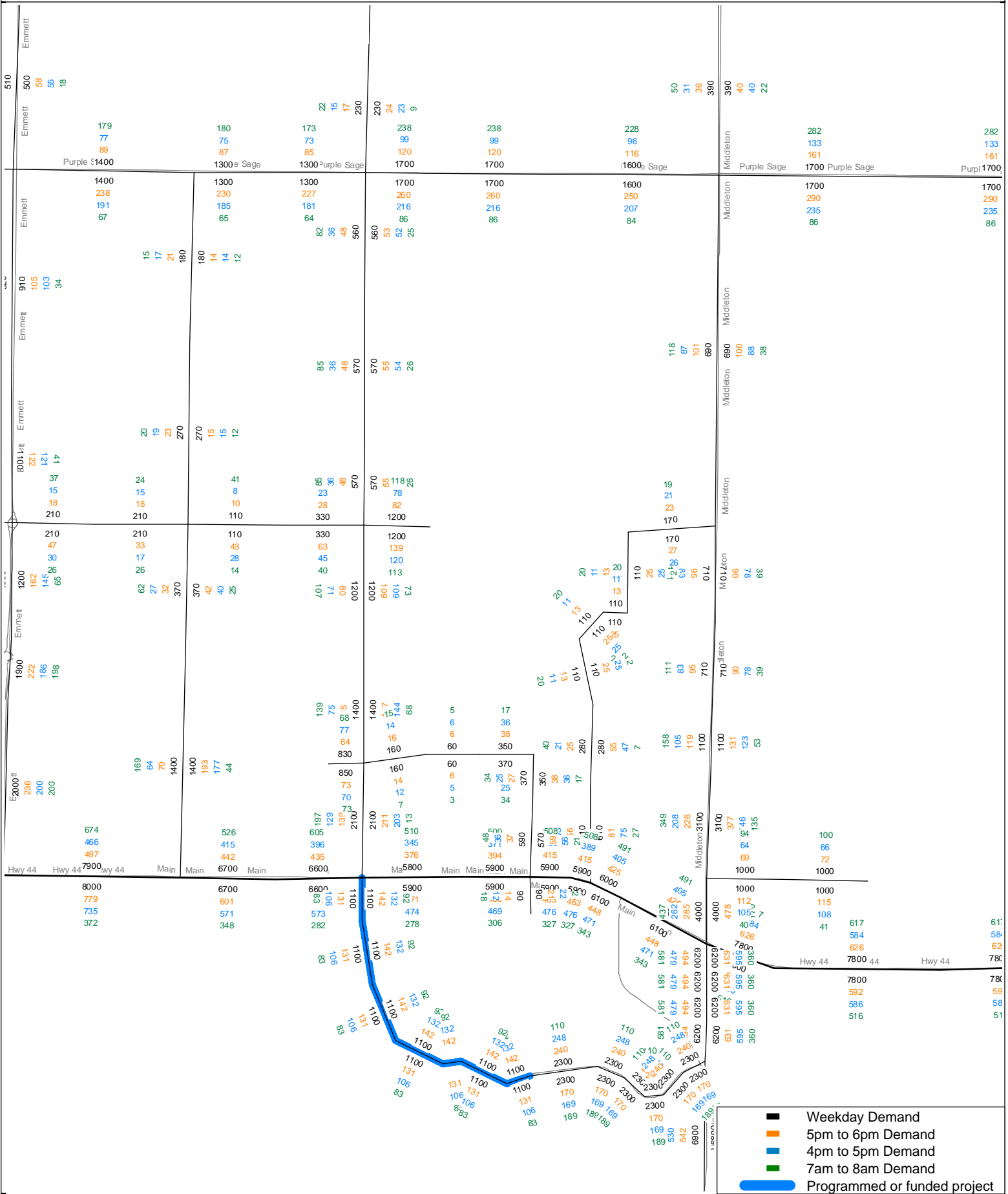
D:\UAG\2011Model\calibration\Base\TIP\FY2024R5\b2030\ALLDEMAND_b2030.NET

Roadway assumptions per CIM 2040 2.0 (Dec 2018) and reconciled demographic data set as of April 2019



(Licensed to Community Planning Association)

2030 Build: 2030 Demographics and 2030 Funded Network
7/29/2019

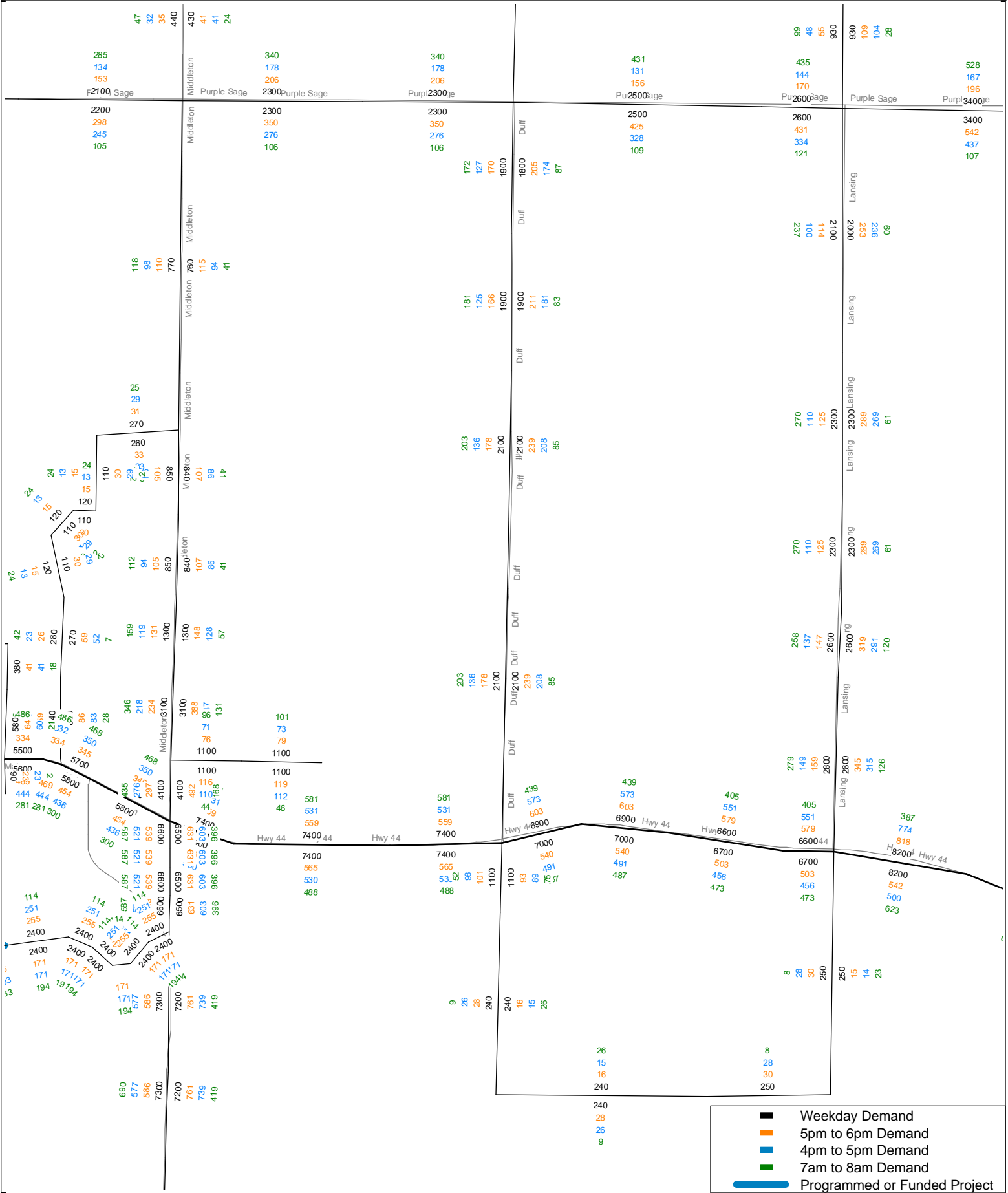


D:\UAG\2011Model\calibration\Base\TIP\FY2024R5\b2030\ALLDEMAND_b2030.NET
Roadway assumptions per CIM 2040 2.0 (Dec 2018) and reconciled demograhic data set as of April 2019



(Licensed to Community Planning Association)

2035 Build: Daily, 5pm to 6pm Peak, 4pm to 5pm Peak and 7am to 8am Peak Demand
3/25/2020

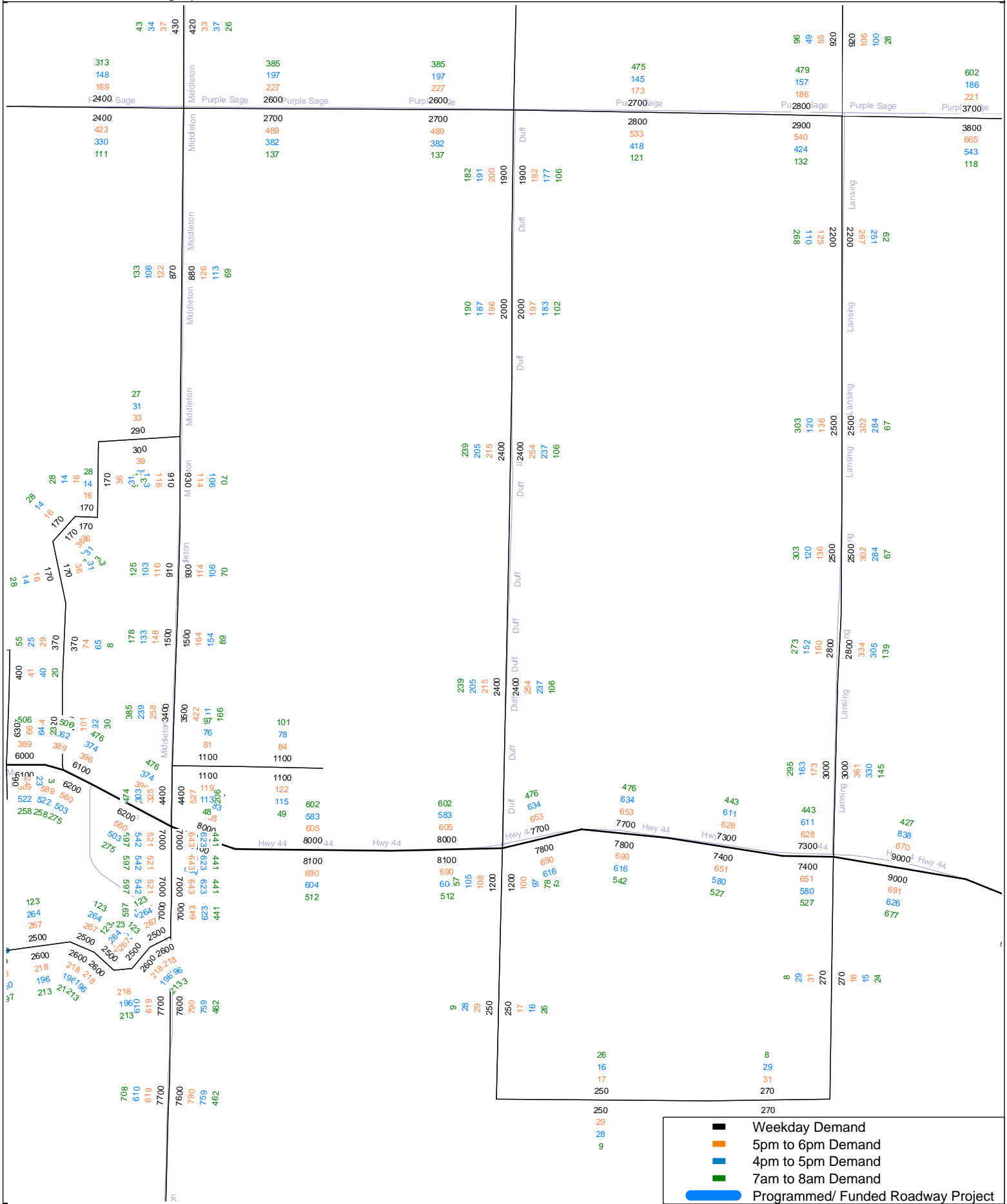


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New Regional Model calibrated to 2011/12 conditions - completed in January 2015



(Licensed to Community Planning Association)

2040 Build: Daily, 5pm to 6pm Peak, 4pm to 5pm Peak and 7am to 8am Peak Demand
 3/25/2020 : R5 Demographic Dataset



D:\UAG\2011Model\calibration\Base\TIP\FY2024R5\b2040\ALLDEMAND_b2040.NET
 New Regional Model calibrated to 2011/12 conditions - completed in January 2015



(Licensed to Community Planning Association)

APPENDIX E: Off-Site Traffic Summary

Waterford is a proposed residential development estimated to contain 262 single-family dwelling units located in the northeast quadrant of the 9th Street and Duff Lane intersection. At the time of this study, Waterford TIS was under review by the corresponding agencies. Waterford is assumed to be built-out by 2025.

Land Use	ITE Code	Size	Unit	Period	Total Trips	Entering	Exiting		
Single-Family Detached Housing	210	262	DU	Weekday Daily (vpd)	2,522	50%	1,261	50%	1,261
				AM Peak Hour (vph)	191	25%	47	75%	144
				PM Peak Hour (vph)	256	63%	161	37%	95

Waverly Park Subdivision is a proposed residential development estimated to contain 431 single-family dwelling units located in the southeast quadrant of the 9th Street and Duff Lane intersection. At the time of this study, Waverly Park Subdivision TIS was under review by the corresponding agencies. Waverly Park Subdivision is assumed to be built-out by 2030. Eighty percent (50%) of the off-site traffic is included in the background traffic.

Land Use	ITE Code	Size	Unit	Period	Total Trips	Entering	Exiting		
Single-Family Detached Housing	210	431	DU	Weekday Daily (vpd)	3,988	50%	1,994	50%	1,994
				AM Peak Hour (vph)	311	25%	77	75%	234
				PM Peak Hour (vph)	413	63%	260	37%	153

Falcon Valley Subdivision currently has constructed its first 6 phases located along 9th Street west of Duff Lane. Approximately 51 acres of the final plat have yet to be constructed. According to the preliminary plat, approximately 167 dwelling units remain to be constructed and occupied within Falcon Valley Subdivision. The remaining Falcon Valley Subdivision dwelling units were assumed to use 9th Street on Duff Lane for site access. Falcon Valley Subdivision is assumed to be built-out by 2025.

Land Use	ITE Code	Size	Unit	Period	Total Trips	Entering	Exiting		
Single-Family Detached Housing	210	167	DU	Weekday Daily (vpd)	1,667	50%	833	50%	834
				AM Peak Hour (vph)	123	25%	30	75%	93
				PM Peak Hour (vph)	166	63%	105	37%	61

Valhalla Country Estates is a residential development with 84 single-family dwelling units located in the southwest quadrant of the Middleton Road and Purple Sage Road intersection. The development has already extended Meadow Park Road to Middleton Road at the time of this TIS. The development has an expected build-out year of 2024.

Land Use	ITE Code	Size	Unit	Period	Trip Rate per Unit	Total Trips	Entering	Exiting		
Single-Family Residential Housing	210	84	DU	Weekday Daily (vpd)	9.44	793	50%	397	50%	396
				AM Peak Hour (vph)	0.74	62	25%	16	75%	46
				PM Peak Hour (vph)	0.99	83	63%	52	37%	31

Crossings at Meadow Park No. 2 & 3 is a residential development with 85 single-family dwelling units located south of the Crossings Avenue and Purple Sage Road intersection. The development has an expected build-out year of 2023 and will utilize the existing roadway network from Crossings at Meadow Park No. 1 as well as Valhalla Country Estates.

Land Use	ITE Code	Size	Unit	Period	Trip Rate per Unit	Total Trips	Entering	Exiting		
Single-Family Residential Housing	210	85	DU	Weekday Daily (vpd)	9.44	803	50%	402	50%	401
				AM Peak Hour (vph)	0.74	63	25%	16	75%	47
				PM Peak Hour (vph)	0.99	84	63%	53	37%	31

Stone Haven Subdivision is an in-process residential development containing 221 single-family dwelling units located southeast of Middleton High School. The development has either started or completed construction of 46 dwelling units in the southeast corner of the development. The development was assumed to be fully constructed by 2025. The remaining eighty percent (80%) of the development is included in the background traffic.

Land Use	ITE Code	Size	Unit	Period	Trip Rate per Unit	Total Trips	Entering	Exiting		
Single-Family Residential Housing	210	221	DU	Weekday Daily (vpd)	9.44	2,087	50%	1,044	50%	1,043
				AM Peak Hour (vph)	0.74	164	25%	41	75%	123
				PM Peak Hour (vph)	0.99	219	63%	138	37%	81

Carlton Meadows Subdivision is a proposed residential development with 71 single-family dwelling units located south of SH 44 between Hartley Road and Whiffin Lane. The development has an expected build-out year of 2023.

Land Use	ITE Code	Size	Unit	Period	Trip Rate per Unit	Total Trips	Entering	Exiting		
Single-Family Residential Housing	210	71	DU	Weekday Daily (vpd)	9.44	670	50%	335	50%	335
				AM Peak Hour (vph)	0.74	53	25%	13	75%	40
				PM Peak Hour (vph)	0.99	70	63%	44	37%	26

Idahome RV Resort is a proposed residential/recreational development with 168 RV campsites located north of SH 44 between Emmett Road and Hartley Road. The development has an expected build-out year of 2021.

Land Use	ITE Code	Size	Unit	Trip Rate per Unit	Primary Trips				
					Total	Entering	Exiting		
Weekday Daily (vpd)									
Mobile Home Park	240	84	DU	5.00	420	50%	210	50%	210
RV Park	416	84	Campsites	---	220	50%	110	50%	110
Weekday Daily Total Trips					640		320		320
Weekday AM Peak Hour (vph)									
Mobile Home Park	240	84	DU	0.26	22	31%	7	69%	15
RV Park	416	84	Campsites	---	16	36%	6	64%	10
Weekday AM Peak Hour Total Trips					38		13		25
Weekday PM Peak Hour (vph)									
Mobile Home Park	240	84	DU	0.46	39	62%	24	38%	15
RV Park	416	84	Campsites	0.44	22	65%	14	35%	8
Weekday PM Peak Hour Total Trips					61		38		23

Bozic Subdivision is a mixed-use office and commercial development located in the southeast quadrant of the Hartley Lane and SH 44 intersection. The development is planning to construct one right-in access on SH 44 and one full access on Hartley Lane south of SH 44. The development has an expected build-out year of 2022.

Land Use	ITE Code	Size	Unit	Total Trips	Caputre Rate	Capture Trips	Pass-by Rate	Pass-by Trips	Primary Trips				
									Total	Entering	Exiting		
Weekday Daily (vpd)													
General Light Industrial	110	4	TSF	73	13%	9	--	--	64	50%	32	50%	32
General Office Building	710	26.16	TSF	289	13%	38	--	--	251	50%	125	50%	126
Shopping Center	820	20.625	TSF	2,055	13%	267	--	--	1,788	50%	894	50%	894
High Turnover Sit-Down Restaurant	932	5.625	TSF	631	13%	82	--	--	549	50%	275	50%	274
Coffee Shop w/ DT	937	2	TSF	1,641	13%	213	60%	857	571	50%	286	50%	285
Weekday Daily Total Trips				4,689		609		857	3,223		1,612		1,611
Weekday AM Peak Hour (vph)													
General Light Industrial	110	4	TSF	4	13%	1	--	--	3	88%	3	12%	0
General Office Building	710	26.16	TSF	51	13%	7	--	--	44	86%	38	14%	6
Shopping Center	820	20.625	TSF	162	13%	21	--	--	141	62%	87	38%	54
High Turnover Sit-Down Restaurant	932	5.625	TSF	56	13%	7	--	--	49	55%	27	45%	22
Coffee Shop w/ DT	937	2	TSF	178	13%	23	60%	94	61	51%	31	49%	30
Weekday AM Peak Hour Total Trips				451		59		94	298		186		112
Weekday PM Peak Hour (vph)													
General Light Industrial	110	4	TSF	4	34%	1	--	--	3	13%	0	87%	3
General Office Building	710	26.16	TSF	32	34%	11	--	--	21	16%	3	84%	18
Shopping Center	820	20.625	TSF	169	34%	57	34%	38	74	48%	36	52%	38
High Turnover Sit-Down Restaurant	932	5.625	TSF	55	34%	19	43%	16	20	62%	12	38%	8
Coffee Shop w/ DT	937	2	TSF	87	34%	30	60%	34	23	50%	12	50%	11
Weekday PM Peak Hour Total Trips				347		118		88	141		63		78

Parcel East of River Pointe Subdivision development, the southeast parcel connecting to Duff Lane was sold to a separate owner. This parcel will be developed in the near future and provide cross-access and connect River Street from Middleton Road realignment to Duff Lane. Trip generation for this parcel was estimated by assuming this parcel will contain 42 dwelling units as shown in the original site plan. Trip generation is summarized below.

Land Use	ITE Code	Size	Unit	Period	Total Trips	Entering		Exiting	
Single-Family Detached Housing	210	42	DU	Weekday Daily (vpd)	468	50%	234	50%	234
				AM Peak Hour (vph)	34	25%	8	75%	26
				PM Peak Hour (vph)	43	63%	27	37%	16

River Ranch Crossing is a mixed-use development located in the southeast quadrant of the N Middleton Road and SH 44 intersection. The development is planning to construct one access on SH 44 to align with Marjorie Avenue to the north and one access on Middleton Road to align with Sawtooth Lake Drive to the west. The development is expected to be constructed in two phases. Phase 1 will consist of 80 single-family dwelling units and has an expected build-out year of 2025. Phase 2 will consist of approximately 44,000 square feet of commercial space, a 120-room hotel, a convenience store with 4 gas pumps (8 fueling positions), and 143,400 square feet of office space. The Phase 2 build-out year is estimated at 2030 but may change based on market conditions. Phase 1 and Phase 2 build-out trip generation is included below.

Phase 1 Build Trip Generation Summary

Land Use	ITE Code	Size	Unit	Period	Total Trips	Entering	Exiting
Single-Family Detached Housing	210	80	DU	Weekday Daily (vpd)	847	50%	424
				AM Peak Hour (vph)	62	25%	16
				PM Peak Hour (vph)	82	63%	52

Phase 2 Build Trip Generation Summary

Land Use	ITE Code	Size	Unit	Total Trips	Internal			Primary Trips					
					Capture Rate	Capture Trips	Pass-by Rate	Pass-by Trips	Total	Entering	Exiting		
Weekday Daily (vpd)													
Senior Adult Housing - Attached	252	140	DU	537	14.5%	78	--	--	459	50%	229	50%	230
Hotel	310	120	Rooms	928	14.5%	135	--	--	793	50%	397	50%	396
General Office	710	139	TSF	1,460	14.5%	212	--	--	1,248	50%	624	50%	624
Medical/Dental Office	720	4.4	TSF	82	14.5%	12	--	--	70	50%	35	50%	35
Commercial	820	44	TSF	3,440	14.5%	499	17%	500	2,441	50%	1,221	50%	1,220
Convenience Market w/ Gas Pumps	853	8	Fueling Positions	2,580	14.5%	374	65%	1,422	784	50%	392	50%	392
Weekday Daily Total Trips				9,027		1,310		1,922	5,795		2,898		2,897
Weekday AM Peak Hour (vph)													
Senior Adult Housing - Attached	252	140	DU	28	7%	2	--	--	26	35%	9	65%	17
Hotel	310	120	Rooms	55	7%	4	--	--	51	59%	30	41%	21
General Office	710	139	TSF	157	7%	11	--	--	146	86%	126	14%	20
Medical/Dental Office	720	4.4	TSF	14	7%	1	--	--	13	78%	10	22%	3
Commercial	820	44	TSF	174	7%	12	--	--	162	62%	100	38%	62
Convenience Market w/ Gas Pumps	853	8	Fueling Positions	166	7%	12	63%	98	56	50%	28	50%	28
Weekday AM Peak Hour Total Trips				594		42		98	454		303		151
Weekday PM Peak Hour (vph)													
Senior Adult Housing - Attached	252	140	DU	36	22%	8	--	--	28	55%	15	45%	13
Hotel	310	120	Rooms	64	22%	14	--	--	50	51%	26	49%	24
General Office	710	139	TSF	156	22%	34	--	--	122	16%	20	84%	102
Medical/Dental Office	720	4.4	TSF	17	22%	4	--	--	13	28%	4	72%	9
Commercial	820	44	TSF	296	22%	65	34%	79	152	48%	73	52%	79
Convenience Market w/ Gas Pumps	853	8	Fueling Positions	184	22%	40	66%	95	49	50%	24	50%	25
Weekday PM Peak Hour Total Trips				753		165		174	414		162		252

River Pointe Subdivision is a proposed mixed-use development with an estimated 2025 build-out year located south of SH 44 between N Middleton Road and Duff Lane. The development is estimated to contain 147 single-family dwelling units, 25 townhomes, 27 senior housing dwelling units, 71,120 square feet of assisted living space, and 37,500 square feet of general commercial space. The SH 44 bypass is planned to pass through the northern portion of the parcel and access is proposed east of the future bypass/SH-44 connection point. According to the TIS, the development is also proposing connectivity to Duff Lane.

Land Use	ITE Code	Size	Unit	Total Trips	Internal				Primary Trips				
					Capture Rate	Capture Trips	Pass-by Rates	Pass-by Trips	Total	Entering	Exiting		
Weekday Daily (vpd)													
Single-Family Detached Housing	210	147	DU	1,482	9%	133	--	--	1,349	50%	674	50%	675
Townhome	220	25	DU	148	9%	13	--	--	135	50%	68	50%	67
Senior Adult Housing - Detached	251	27	DU	178	9%	16	--	--	162	50%	81	50%	81
Assisted Living	254	71.12	TSF	298	9%	27	--	--	271	50%	135	50%	136
Commercial	820	37.50	TSF	3,086	9%	278	--	--	2,808	50%	1,404	50%	1,404
Weekday Daily Total Trips				5,192		467			4,725		2,362		2,363
Weekday AM Peak Hour (vph)													
Single-Family Detached Housing	210	147	DU	109	1%	1	--	--	108	25%	27	75%	81
Townhome	220	25	DU	13	1%	0	--	--	13	23%	3	77%	10
Senior Adult Housing - Detached	251	27	DU	15	1%	0	--	--	15	33%	5	67%	10
Assisted Living	254	71.12	TSF	28	1%	0	--	--	28	78%	22	22%	6
Commercial	820	37.50	TSF	171	1%	2	--	--	169	62%	104	38%	65
Weekday AM Peak Hour Total Trips				336		3			333		161		172
Weekday PM Peak Hour (vph)													
Single-Family Detached Housing	210	147	DU	147	17%	25	--	--	122	63%	77	37%	45
Townhome	220	25	DU	23	17%	4	--	--	19	63%	12	37%	7
Senior Adult Housing - Detached	251	27	DU	17	17%	3	--	--	14	61%	9	39%	5
Assisted Living	254	71.12	TSF	34	17%	6	--	--	28	30%	8	70%	20
Commercial	820	37.50	TSF	263	17%	45	34%	74	144	48%	69	52%	75
Weekday PM Peak Hour Total Trips				484		83		74	327		175		152

Hartley 6.06-Acre MU is a proposed mixed-use development with 64 multifamily dwelling units and 13,100 square feet of office located east of Hartley Lane between 9th Street and SH 44. The development has an expected build-out year of 2025. The TIS is currently under review by the City and ITD. The development is proposing two accesses on Hartley Lane.

Land Use	ITE Code	Size	Unit	Total Trips	Entering		Exiting	
Weekday Daily (vpd)								
Multifamily Housing (Low-Rise)	220	64	DU	443	50%	222	50%	221
General Office	710	13.1	TSF	148	50%	74	50%	74
Weekday Daily Total Trips				591		296		295
Weekday AM Peak Hour (vph)								
Multifamily Housing (Low-Rise)	220	64	DU	31	23%	7	77%	24
General Office	710	13.1	TSF	39	86%	33	14%	6
Weekday AM Peak Hour Total Trips				70		40		30
Weekday PM Peak Hour (vph)								
Multifamily Housing (Low-Rise)	220	64	DU	40	63%	25	37%	15
General Office	710	13.1	TSF	17	16%	3	84%	14
Weekday PM Peak Hour Total Trips				57		28		29

Sawtooth Lake Mixed-Use is a proposed mixed-use development with an estimated 2025 build-out year located in the southwest quadrant of the Sawtooth Lake Drive and Middleton Road intersection. The development is estimated to contain 118 townhomes, 24,064 square feet of general commercial space, and a 850 square-foot drive-thru coffee shop. According to the TIS, the development is proposing three accesses on Sawtooth Lake Drive and no new approaches on Middleton Road. The TIS has not been submitted to the City or ITD for review.

Land Use	ITE Code	Size	Unit	Total Trips	Capture Rate	Capture Trips	Pass-by Rate	Pass-by Trips	Primary Trips				
									Total	Entering	Exiting		
Weekday Daily (vpd)													
Multifamily Housing (Low-Rise)	220	118	DU	851	25%	213	--	--	638	50%	319	50%	319
General Commercial	820	24	TSF	2,282	25%	571	--	--	1,711	50%	856	50%	855
Drive-Thru Coffee Shop w/ DT Window & No Indoor Seating	938	0.85	TSF	1,700	25%	425	89%	1,136	139	50%	69	50%	70
Weekday Daily Total Trips				4,833		1,209		1,136	2,488		1,244		1,244
Weekday AM Peak Hour (vph)													
Multifamily Housing (Low-Rise)	220	118	DU	56	10%	6	--	--	50	23%	12	77%	38
General Commercial	820	24	TSF	164	10%	16	--	--	148	62%	92	38%	56
Drive-Thru Coffee Shop w/ DT Window & No Indoor Seating	938	0.85	TSF	286	10%	29	89%	230	27	50%	13	50%	14
Weekday AM Peak Hour Total Trips				506		51		230	225		117		108
Weekday PM Peak Hour (vph)													
Multifamily Housing (Low-Rise)	220	118	DU	68	40%	27	--	--	41	63%	26	37%	15
General Commercial	820	24	TSF	189	40%	76	34%	38	75	48%	36	52%	39
Drive-Thru Coffee Shop w/ DT Window & No Indoor Seating	938	0.85	TSF	71	40%	28	89%	38	5	50%	2	50%	3
Weekday PM Peak Hour Total Trips				328		131		76	121		64		57

Creekside Subdivision is a proposed residential development with 121 single-family dwelling units located in the northwest quadrant of the Concord Street and Hawthorne Drive intersection. The development has an expected build-out year of 2025. The TIS is currently in-process and has not been submitted to the City or ITD for review. Trip generation is summarized below. The development is proposing accesses on Concord Street and Hawthorne Drive north of Concord Street with connectivity to 9th Street to the west.

Sterling Lakes is a proposed residential development with 121 single-family dwelling units located in the northeast quadrant of the Main Street/Concord Street and Greenlinks Avenue intersection. The development has an expected build-out year of 2025. The TIS is currently in-process and has been submitted to the City and ITD for review. Trip generation is summarized below. The development is proposing to extend Cornell Street through the site.

Land Use	ITE Code	Size	Unit	Period	Total Trips	Primary Trips			
						Entering	Exiting		
Single-Family Detached Housing	210	121	DU	Weekday Daily (vpd)	1,239	50%	619	50%	620
				AM Peak Hour (vph)	91	25%	23	75%	68
				PM Peak Hour (vph)	122	63%	77	37%	45

Middleton Industrial Park No. 2 is the second phase of an industrial park located in the southwest quadrant of the Bass Lane and Middleton Road intersection. Phase 1, currently under construction, contains 108,000 square feet of industrial space. Phase 2 will contain 140,000 square feet of industrial space. The TIS is currently under review by the City and ITD. Trip generation is summarized below. The development is proposing one new connection to Bass Lane west of Middleton Road and no new approaches on Middleton Road.

Land Use	ITE Code	Size	Unit	Period	Total Trips	Primary Trips			
						Entering	Exiting		
General Light Industrial	110	140	TSF	Weekday Daily (vpd)	589	50%	294	50%	295
				AM Peak Hour (vph)	57	88%	50	12%	7
				PM Peak Hour (vph)	47	13%	6	87%	41

Mortensen Property is a proposed residential development with an estimated 2025 build-out year located in the southwest quadrant of the Willis Road and Emmett Road intersection. The development is estimated to contain 95 single-family and 56 multifamily dwelling units. According to the preliminary plat, the development is proposing two accesses on Emmett Road. At the time of submittal of the Creekside Terrace TIS, the developers of Mortensen property were discussing with the City on potential changes to the site plan. The TIS is currently in-process and has not been submitted to the City or ITD for review.

Land Use	ITE Code	Size	Unit	Total Trips	Primary Trips			
					Entering		Exiting	
Weekday Daily (vpd)								
Single-Family Detached Housing	210	95	DU	992	50%	496	50%	496
Multifamily Housing (Low-Rise)	220	56	DU	383	50%	192	50%	191
Weekday Daily Total Trips				1,375		688		687
Weekday AM Peak Hour (vph)								
Single-Family Detached Housing	210	95	DU	72	25%	18	75%	54
Multifamily Housing (Low-Rise)	220	56	DU	27	23%	6	77%	21
Weekday AM Peak Hour Total Trips				99		24		75
Weekday PM Peak Hour (vph)								
Single-Family Detached Housing	210	95	DU	97	63%	61	37%	36
Multifamily Housing (Low-Rise)	220	56	DU	35	63%	22	37%	13
Weekday PM Peak Hour Total Trips				132		83		49

In previous TIS's, Duff Acreage, comprising of 7 parcels totaling 315 acres were assumed in the background traffic for the area between Marjorie Avenue, Foothill Road, Lansing Lane, and SH 44. This area is anticipated to be developed over the long term and is included for consistency with prior TIS and to account for growth not assumed in the COMPASS TAZ model. Full build-out of this area is not assumed until 2040 and will include mid-mile road connectivity for 9th Street, Cornell Street, and Albright Avenue where acreages are proposed along the future alignments.

2025 Offsite Traffic Summary

Off-Site Development	Land Acreage	Total DU	Expected Build-Out Year	Number of DU Included in 2025 Background	Comments
Waterford	99	262	2025	262	Constructing Albright Ave and 9 th St along frontages
Waverly Park Subdivision	158	431	2030	216	Constructing Albright Ave and 9 th St along frontages
Falcon Valley	49	145	2024	145	Preliminary Plat Includes Magic Park
Valhalla Country Estates	51	84	2023	84	No update on progress
Crossings at Meadow Park No. 2 & 3	33	85	2024	85	TIS Update in process
Stone Haven Subdivision	-	253	2023	253	Site Plan change from TIS
Carlton Meadows	-	71	2023	71	TIS Submitted
Idahome RV Resort	-	168 Campsites	2021	168 Campsites	West of study area
Bozic Subdivision	8	Mixed Use	2022	Build-Out	Right-out only access on SH 44
Parcel East of River Pointe Subdivision	-	42	2023	42	No TIS for parcel; Duff Ln connection for River Pointe
River Ranch Crossing (Phase 1)	-	Mixed Use	2025	80	Restrict Sawtooth Lake Dr to RIRO-LI
River Pointe Subdivision	85 with SH 44 bypass	Mixed Use	2025	Build-Out	TIS Submitted
Hartley 6.06-AC Mixed-Use	6	Mixed-Use	2025	Build-Out	TIS Submitted; west of study area
Sawtooth Lake Mixed-Use	15	Mixed Use	2025	Build-Out	Restrict Sawtooth Lake Dr to RIRO-LI
Sterling Lakes	52	121	2025	121	TIS Submitted
Middleton Industrial Park No. 2	16	Industrial	2025	Build-Out	TIS Submitted
Mortensen Property	46	151	2025	151	In process; northwest of study area
Duff Acreage	315	945	2040	158	7 parcels, no TIS or plats for these parcels

2030 Offsite Traffic Summary

Off-Site Development	Land Acreage	Total DU	Expected Build-Out Year	Number of DU Included in 2030 Background	Comments
Waterford	99	262	2025	262	Constructing Albright Ave and 9 th St along frontages
Waverly Park Subdivision	158	431	2030	431	Constructing Albright Ave and 9 th St along frontages
Falcon Valley	49	145	2024	145	Preliminary Plat Includes Magic Park
Valhalla Country Estates	51	84	2023	84	No update on progress
Crossings at Meadow Park No. 2 & 3	33	85	2024	85	TIS Update in process
Stone Haven Subdivision	-	253	2023	253	Site Plan change from TIS
Carlton Meadows	-	71	2023	71	TIS Submitted
Idahome RV Resort	-	168 Campsites	2021	168 Campsites	West of study area
Bozic Subdivision	8	Mixed Use	2022	Build-Out	Right-out only access on SH 44
Parcel East of River Pointe Subdivision	-	42	2023	42	No TIS for parcel; Duff Ln connection for River Pointe
River Ranch Crossing (Phase 1+2)	-	Mixed Use	2025	Build-Out	Restrict Sawtooth Lake Dr to RIRO-LI
River Pointe Subdivision	85 with SH 44 bypass	Mixed Use	2025	Build-Out	TIS Submitted
Hartley 6.06-AC Mixed-Use	6	Mixed-Use	2025	Build-Out	TIS Submitted; west of study area
Sawtooth Lake Mixed-Use	15	Mixed Use	2025	Build-Out	Restrict Sawtooth Lake Dr to RIRO-LI
Sterling Lakes	52	121	2025	121	TIS Submitted
Middleton Industrial Park No. 2	16	Industrial	2025	Build-Out	TIS Submitted
Mortensen Property	46	151	2025	151	In process; northwest of study area
Duff Acreage	315	945	2040	420	7 parcels, no TIS or plats for these parcels

APPENDIX F: 2025 Background Synchro Reports

Intersection												
Int Delay, s/veh	8.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	114	11	41	123	3	4	9	28	10	28	5
Future Vol, veh/h	8	114	11	41	123	3	4	9	28	10	28	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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	127	12	46	137	3	4	10	31	11	31	6

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	160	105	34	160	93	26	37	0	0	41	0	0
Stage 1	56	56	-	34	34	-	-	-	-	-	-	-
Stage 2	104	49	-	126	59	-	-	-	-	-	-	-
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	806	785	1039	806	797	1050	1574	-	-	1568	-	-
Stage 1	956	848	-	982	867	-	-	-	-	-	-	-
Stage 2	902	854	-	878	846	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	692	777	1039	692	789	1050	1574	-	-	1568	-	-
Mov Cap-2 Maneuver	692	777	-	692	789	-	-	-	-	-	-	-
Stage 1	953	842	-	979	864	-	-	-	-	-	-	-
Stage 2	755	851	-	732	840	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.6		11.2		0.7		1.7	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1574	-	-	788	766	1568	-	-
HCM Lane V/C Ratio	0.003	-	-	0.188	0.242	0.007	-	-
HCM Control Delay (s)	7.3	0	-	10.6	11.2	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.9	0	-	-

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	13	28	17	14	32	15	142	6	64	220	13
Future Vol, veh/h	25	13	28	17	14	32	15	142	6	64	220	13
Conflicting Peds, #/hr	3	0	3	3	0	3	12	0	1	1	0	12
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	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	5	2	2	8	2	10	2	3	2	2	4	2
Mvmt Flow	35	18	39	24	20	45	21	200	8	90	310	18

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	793	762	334	778	767	208	340	0	0	209	0	0
Stage 1	511	511	-	247	247	-	-	-	-	-	-	-
Stage 2	282	251	-	531	520	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.22	7.18	6.52	6.3	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.318	3.572	4.018	3.39	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	303	335	708	306	332	813	1219	-	-	1362	-	-
Stage 1	540	537	-	744	702	-	-	-	-	-	-	-
Stage 2	718	699	-	521	532	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	248	298	698	253	295	810	1205	-	-	1361	-	-
Mov Cap-2 Maneuver	248	298	-	253	295	-	-	-	-	-	-	-
Stage 1	523	488	-	728	687	-	-	-	-	-	-	-
Stage 2	644	684	-	434	484	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.5		16.2		0.7		1.7	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1205	-	-	358	409	1361	-	-
HCM Lane V/C Ratio	0.018	-	-	0.26	0.217	0.066	-	-
HCM Control Delay (s)	8	0	-	18.5	16.2	7.8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1	0.8	0.2	-	-

Intersection						
Int Delay, s/veh	7.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	40	105	65	3	6	56
Future Vol, veh/h	40	105	65	3	6	56
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	5	2	2	4
Mvmt Flow	56	146	90	4	8	78

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	231	47	86	0	0
Stage 1	47	-	-	-	-
Stage 2	184	-	-	-	-
Critical Hdwy	6.42	6.22	4.15	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.245	-	-
Pot Cap-1 Maneuver	757	1022	1492	-	-
Stage 1	975	-	-	-	-
Stage 2	848	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	712	1022	1492	-	-
Mov Cap-2 Maneuver	712	-	-	-	-
Stage 1	917	-	-	-	-
Stage 2	848	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	7.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1492	-	912	-	-
HCM Lane V/C Ratio	0.061	-	0.221	-	-
HCM Control Delay (s)	7.6	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.8	-	-

Intersection												
Int Delay, s/veh	34											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↗		↖	↗	
Traffic Vol, veh/h	41	576	65	10	553	52	85	41	30	72	28	89
Future Vol, veh/h	41	576	65	10	553	52	85	41	30	72	28	89
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	100	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	46	640	72	11	614	58	94	46	33	80	31	99

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	673	0	0	712	0	0	1463	1427	640	1445	1441	616
Stage 1	-	-	-	-	-	-	732	732	-	637	637	-
Stage 2	-	-	-	-	-	-	731	695	-	808	804	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	918	-	-	888	-	-	107	135	475	110	133	491
Stage 1	-	-	-	-	-	-	413	427	-	465	471	-
Stage 2	-	-	-	-	-	-	413	444	-	375	396	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	917	-	-	888	-	-	~ 66	127	475	~ 70	125	490
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 66	127	-	~ 70	125	-
Stage 1	-	-	-	-	-	-	392	406	-	441	465	-
Stage 2	-	-	-	-	-	-	303	438	-	294	376	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.1			217.8			113.8		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	66	184	917	-	-	888	-	-	70	288
HCM Lane V/C Ratio	1.431	0.429	0.05	-	-	0.013	-	-	1.143	0.451
HCM Control Delay (s)	\$ 367.5	38.5	9.1	-	-	9.1	-	-	254.3	27.4
HCM Lane LOS	F	E	A	-	-	A	-	-	F	D
HCM 95th %tile Q(veh)	8	2	0.2	-	-	0	-	-	6.1	2.2

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

Intersection												
Int Delay, s/veh	7.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	40	873	9	11	951	44	3	0	15	68	0	52
Future Vol, veh/h	40	873	9	11	951	44	3	0	15	68	0	52
Conflicting Peds, #/hr	6	0	3	3	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	13	10	4	3	2	2	7	4	2	2
Mvmt Flow	49	1078	11	14	1174	54	4	0	19	84	0	64

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1234	0	0	1092	0	0	2446	2447	1087	2426	2425	1207
Stage 1	-	-	-	-	-	-	1185	1185	-	1235	1235	-
Stage 2	-	-	-	-	-	-	1261	1262	-	1191	1190	-
Critical Hdwy	4.12	-	-	4.2	-	-	7.12	6.52	6.27	7.14	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.14	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.14	5.52	-
Follow-up Hdwy	2.218	-	-	2.29	-	-	3.518	4.018	3.363	3.536	4.018	3.318
Pot Cap-1 Maneuver	565	-	-	610	-	-	21	31	257	~ 22	32	223
Stage 1	-	-	-	-	-	-	230	263	-	214	249	-
Stage 2	-	-	-	-	-	-	209	241	-	227	261	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	562	-	-	608	-	-	14	27	256	~ 19	28	222
Mov Cap-2 Maneuver	-	-	-	-	-	-	82	139	-	123	156	-
Stage 1	-	-	-	-	-	-	209	239	-	194	242	-
Stage 2	-	-	-	-	-	-	145	234	-	192	238	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.1			26.6			125.1		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	189	562	-	-	608	-	-	152
HCM Lane V/C Ratio	0.118	0.088	-	-	0.022	-	-	0.975
HCM Control Delay (s)	26.6	12	-	-	11.1	-	-	125.1
HCM Lane LOS	D	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.4	0.3	-	-	0.1	-	-	7.2

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

HCM 6th TWSC
5: Hawthorne Ave & SH 44

With turn lanes
2025 Background AM Peak Hour

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗		↕			↕	
Traffic Vol, veh/h	40	873	9	11	951	44	3	0	15	68	0	52
Future Vol, veh/h	40	873	9	11	951	44	3	0	15	68	0	52
Conflicting Peds, #/hr	6	0	3	3	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	100	50	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	13	10	4	3	2	2	7	4	2	2
Mvmt Flow	49	1078	11	14	1174	54	4	0	19	84	0	64

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1234	0	0	1092	0	0	2440	2441	1081	2399	2398	1180
Stage 1	-	-	-	-	-	-	1179	1179	-	1208	1208	-
Stage 2	-	-	-	-	-	-	1261	1262	-	1191	1190	-
Critical Hdwy	4.12	-	-	4.2	-	-	7.12	6.52	6.27	7.14	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.14	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.14	5.52	-
Follow-up Hdwy	2.218	-	-	2.29	-	-	3.518	4.018	3.363	3.536	4.018	3.318
Pot Cap-1 Maneuver	565	-	-	610	-	-	22	31	259	~ 23	33	232
Stage 1	-	-	-	-	-	-	232	264	-	222	256	-
Stage 2	-	-	-	-	-	-	209	241	-	227	261	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	562	-	-	608	-	-	15	27	258	~ 19	29	231
Mov Cap-2 Maneuver	-	-	-	-	-	-	84	140	-	126	158	-
Stage 1	-	-	-	-	-	-	211	240	-	202	249	-
Stage 2	-	-	-	-	-	-	147	234	-	192	238	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.1			26.2			114.7		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	192	562	-	-	608	-	-	157
HCM Lane V/C Ratio	0.116	0.088	-	-	0.022	-	-	0.944
HCM Control Delay (s)	26.2	12	-	-	11.1	-	-	114.7
HCM Lane LOS	D	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.4	0.3	-	-	0.1	-	-	6.9

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

Intersection						
Int Delay, s/veh	1.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	815	28	20	864	69	74
Future Vol, veh/h	815	28	20	864	69	74
Conflicting Peds, #/hr	0	4	4	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	906	31	22	960	77	82

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	941	0	1930 926
Stage 1	-	-	-	-	926 -
Stage 2	-	-	-	-	1004 -
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	-	-	729	-	~ 73 326
Stage 1	-	-	-	-	386 -
Stage 2	-	-	-	-	354 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	726	-	~ 71 325
Mov Cap-2 Maneuver	-	-	-	-	251 -
Stage 1	-	-	-	-	384 -
Stage 2	-	-	-	-	343 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	22.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	251	325	-	-	726	-
HCM Lane V/C Ratio	0.305	0.253	-	-	0.031	-
HCM Control Delay (s)	25.5	19.8	-	-	10.1	-
HCM Lane LOS	D	C	-	-	B	-
HCM 95th %tile Q(veh)	1.2	1	-	-	0.1	-

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

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗		↕		↖	↗	↖
Traffic Vol, veh/h	114	565	209	277	665	90	151	97	177	103	234	223
Future Vol, veh/h	114	565	209	277	665	90	151	97	177	103	234	223
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	150	-	-	-	-	50	-	-	-	100	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	127	628	232	308	739	100	168	108	197	114	260	248

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	839	0	0	860	0	0	2533	2453	744	2506	2469	739
Stage 1	-	-	-	-	-	-	998	998	-	1355	1355	-
Stage 2	-	-	-	-	-	-	1535	1455	-	1151	1114	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	796	-	-	781	-	-	~ 18	~ 31	415	~ 19	~ 30	417
Stage 1	-	-	-	-	-	-	294	322	-	184	~ 218	-
Stage 2	-	-	-	-	-	-	~ 145	195	-	241	284	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	796	-	-	781	-	-	~ 6	415	-	~ 6	417	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 6	-	-	~ 6	-	-
Stage 1	-	-	-	-	-	-	247	270	-	155	~ 54	-
Stage 2	-	-	-	-	-	-	~ 48	-	~ 64	~ 239	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	3.4		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	796	-	-	781	-	-	-	6	417
HCM Lane V/C Ratio	-	0.159	-	-	0.394	-	-	-	43.333	0.594
HCM Control Delay (s)	-	10.4	-	-	12.6	-	-	-	20250.6	25.5
HCM Lane LOS	-	B	-	-	B	-	-	-	F	D
HCM 95th %tile Q(veh)	-	0.6	-	-	1.9	-	-	-	34.6	3.7

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

Intersection												
Int Delay, s/veh	9.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	95	20	51	147	14	13	29	40	5	21	0
Future Vol, veh/h	24	95	20	51	147	14	13	29	40	5	21	0
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	106	22	57	163	16	14	32	44	6	23	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	207	139	23	181	117	54	23	0	0	76	0	0
Stage 1	35	35	-	82	82	-	-	-	-	-	-	-
Stage 2	172	104	-	99	35	-	-	-	-	-	-	-
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	751	752	1054	781	773	1013	1592	-	-	1523	-	-
Stage 1	981	866	-	926	827	-	-	-	-	-	-	-
Stage 2	830	809	-	907	866	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	612	742	1054	675	763	1013	1592	-	-	1523	-	-
Mov Cap-2 Maneuver	612	742	-	675	763	-	-	-	-	-	-	-
Stage 1	972	863	-	918	820	-	-	-	-	-	-	-
Stage 2	649	802	-	776	863	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.1		12		1.2		1.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1592	-	-	746	752	1523	-	-
HCM Lane V/C Ratio	0.009	-	-	0.207	0.313	0.004	-	-
HCM Control Delay (s)	7.3	0	-	11.1	12	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.8	1.3	0	-	-

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	4	11	9	11	13	22	152	8	21	174	12
Future Vol, veh/h	11	4	11	9	11	13	22	152	8	21	174	12
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	2	2	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	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	10	2	2	2	2	2	2	2	2	5	2	9
Mvmt Flow	14	5	14	11	14	16	28	190	10	26	218	15

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	547	536	228	542	538	200	233	0	0	202	0	0
Stage 1	278	278	-	253	253	-	-	-	-	-	-	-
Stage 2	269	258	-	289	285	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.15	-	-
Critical Hdwy Stg 1	6.2	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.245	-	-
Pot Cap-1 Maneuver	436	451	811	451	450	841	1335	-	-	1352	-	-
Stage 1	711	680	-	751	698	-	-	-	-	-	-	-
Stage 2	719	694	-	719	676	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	402	430	809	423	429	837	1335	-	-	1349	-	-
Mov Cap-2 Maneuver	402	430	-	423	429	-	-	-	-	-	-	-
Stage 1	694	665	-	731	680	-	-	-	-	-	-	-
Stage 2	672	676	-	685	661	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.4		12.4		0.9		0.8	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1335	-	-	517	528	1349	-	-
HCM Lane V/C Ratio	0.021	-	-	0.063	0.078	0.019	-	-
HCM Control Delay (s)	7.8	0	-	12.4	12.4	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0.1	-	-

Intersection						
Int Delay, s/veh	7.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	41	58	65	11	4	23
Future Vol, veh/h	41	58	65	11	4	23
Conflicting Peds, #/hr	0	0	6	0	0	6
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	68	68	68	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	85	96	16	6	34

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	237	29	46	0	0
Stage 1	29	-	-	-	-
Stage 2	208	-	-	-	-
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	751	1046	1562	-	-
Stage 1	994	-	-	-	-
Stage 2	827	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	696	1040	1553	-	-
Mov Cap-2 Maneuver	696	-	-	-	-
Stage 1	926	-	-	-	-
Stage 2	822	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	6.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1553	-	863	-	-
HCM Lane V/C Ratio	0.062	-	0.169	-	-
HCM Control Delay (s)	7.5	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-

Intersection												
Int Delay, s/veh	125.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↗		↖	↗	
Traffic Vol, veh/h	104	685	64	25	853	120	101	51	30	63	40	69
Future Vol, veh/h	104	685	64	25	853	120	101	51	30	63	40	69
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	100	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	114	753	70	27	937	132	111	56	33	69	44	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1069	0	0	823	0	0	2098	2104	753	2052	2042	937
Stage 1	-	-	-	-	-	-	981	981	-	991	991	-
Stage 2	-	-	-	-	-	-	1117	1123	-	1061	1051	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	652	-	-	807	-	-	~ 38	~ 51	410	~ 41	56	321
Stage 1	-	-	-	-	-	-	300	328	-	296	324	-
Stage 2	-	-	-	-	-	-	252	281	-	271	304	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	652	-	-	807	-	-	~ 20	~ 41	410	-	45	321
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 20	~ 41	-	107	177	-
Stage 1	-	-	-	-	-	-	248	271	-	244	313	-
Stage 2	-	-	-	-	-	-	160	272	-	163	251	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			0.2			\$ 1518.1					
HCM LOS							F			-		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	20	62	652	-	-	807	-	-	-	247
HCM Lane V/C Ratio	5.549	1.436	0.175	-	-	0.034	-	-	-	0.485
HCM Control Delay (s)	\$ 2432.3	\$ 378.2	11.7	-	-	9.6	-	-	-	32.6
HCM Lane LOS	F	F	B	-	-	A	-	-	-	D
HCM 95th %tile Q(veh)	14.3	7.7	0.6	-	-	0.1	-	-	-	2.4

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

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	28	903	39	45	894	105	13	3	28	65	9	33
Future Vol, veh/h	28	903	39	45	894	105	13	3	28	65	9	33
Conflicting Peds, #/hr	15	0	2	2	0	15	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	3	3	3	5	2	2	2	4	2	25	4
Mvmt Flow	31	1003	43	50	993	117	14	3	31	72	10	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1125	0	0	1048	0	0	2264	2314	1027	2271	2277	1067
Stage 1	-	-	-	-	-	-	1089	1089	-	1167	1167	-
Stage 2	-	-	-	-	-	-	1175	1225	-	1104	1110	-
Critical Hdwy	4.14	-	-	4.13	-	-	7.12	6.52	6.24	7.12	6.75	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.75	-
Follow-up Hdwy	2.236	-	-	2.227	-	-	3.518	4.018	3.336	3.518	4.225	3.336
Pot Cap-1 Maneuver	614	-	-	660	-	-	29	38	282	~ 29	34	267
Stage 1	-	-	-	-	-	-	261	291	-	236	243	-
Stage 2	-	-	-	-	-	-	233	251	-	256	259	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	605	-	-	659	-	-	21	33	281	~ 23	29	263
Mov Cap-2 Maneuver	-	-	-	-	-	-	119	154	-	125	140	-
Stage 1	-	-	-	-	-	-	247	276	-	221	221	-
Stage 2	-	-	-	-	-	-	177	229	-	213	245	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.5			29.9			84.6		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	193	605	-	-	659	-	-	151
HCM Lane V/C Ratio	0.253	0.051	-	-	0.076	-	-	0.787
HCM Control Delay (s)	29.9	11.3	-	-	10.9	-	-	84.6
HCM Lane LOS	D	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1	0.2	-	-	0.2	-	-	5

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

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗		↕			↕	
Traffic Vol, veh/h	28	903	39	45	894	105	13	3	28	65	9	33
Future Vol, veh/h	28	903	39	45	894	105	13	3	28	65	9	33
Conflicting Peds, #/hr	15	0	2	2	0	15	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	100	50	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	3	3	3	5	2	2	2	4	2	25	4
Mvmt Flow	31	1003	43	50	993	117	14	3	31	72	10	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1125	0	0	1048	0	0	2242	2292	1005	2212	2218	1008
Stage 1	-	-	-	-	-	-	1067	1067	-	1108	1108	-
Stage 2	-	-	-	-	-	-	1175	1225	-	1104	1110	-
Critical Hdwy	4.14	-	-	4.13	-	-	7.12	6.52	6.24	7.12	6.75	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.75	-
Follow-up Hdwy	2.236	-	-	2.227	-	-	3.518	4.018	3.336	3.518	4.225	3.336
Pot Cap-1 Maneuver	614	-	-	660	-	-	30	39	291	~ 31	37	289
Stage 1	-	-	-	-	-	-	269	299	-	255	259	-
Stage 2	-	-	-	-	-	-	233	251	-	256	259	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	605	-	-	659	-	-	22	34	290	~ 24	32	285
Mov Cap-2 Maneuver	-	-	-	-	-	-	122	156	-	128	145	-
Stage 1	-	-	-	-	-	-	255	283	-	238	236	-
Stage 2	-	-	-	-	-	-	180	229	-	214	245	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.5			29			78.4		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	198	605	-	-	659	-	-	156
HCM Lane V/C Ratio	0.247	0.051	-	-	0.076	-	-	0.762
HCM Control Delay (s)	29	11.3	-	-	10.9	-	-	78.4
HCM Lane LOS	D	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.9	0.2	-	-	0.2	-	-	4.7

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

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↑	↻	↻
Traffic Vol, veh/h	804	8	33	863	67	38
Future Vol, veh/h	804	8	33	863	67	38
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	838	8	34	899	70	40

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	846	0	1809 843
Stage 1	-	-	-	-	842 -
Stage 2	-	-	-	-	967 -
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	-	-	791	-	87 364
Stage 1	-	-	-	-	423 -
Stage 2	-	-	-	-	369 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	791	-	83 364
Mov Cap-2 Maneuver	-	-	-	-	268 -
Stage 1	-	-	-	-	423 -
Stage 2	-	-	-	-	353 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	20.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	268	364	-	-	791	-
HCM Lane V/C Ratio	0.26	0.109	-	-	0.043	-
HCM Control Delay (s)	23.1	16.1	-	-	9.8	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	1	0.4	-	-	0.1	-

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗		↔		↖	↗	↖
Traffic Vol, veh/h	184	587	181	247	783	125	248	204	313	61	160	129
Future Vol, veh/h	184	587	181	247	783	125	248	204	313	61	160	129
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	150	-	-	-	-	50	-	-	-	100	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	192	611	189	257	816	130	258	213	326	64	167	134

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	946	0	0	800	0	0	2569	2550	706	2689	2514	816
Stage 1	-	-	-	-	-	-	1090	1090	-	1330	1330	-
Stage 2	-	-	-	-	-	-	1479	1460	-	1359	1184	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	725	-	-	823	-	-	~ 17	~ 27	436	~ 14	~ 28	377
Stage 1	-	-	-	-	-	-	261	291	-	191	224	-
Stage 2	-	-	-	-	-	-	~ 157	~ 194	-	183	263	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	725	-	-	823	-	-	~ 6	436	-	~ 7	377	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 6	-	-	~ 7	-	-
Stage 1	-	-	-	-	-	-	~ 192	214	-	140	~ 72	-
Stage 2	-	-	-	-	-	-	~ 62	-	0	193	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.3	2.4		
HCM LOS			-	-























Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	725	-	-	823	-	-	-	7	377
HCM Lane V/C Ratio	-	0.264	-	-	0.313	-	-	-	23.81	0.356
HCM Control Delay (s)	-	11.7	-	-	11.4	-	-	\$ 11294.9	19.7	
HCM Lane LOS	-	B	-	-	B	-	-	-	F	C
HCM 95th %tile Q(veh)	-	1.1	-	-	1.3	-	-	-	22.7	1.6

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

Intersection					
Intersection Delay, s/veh	10.0				
Intersection LOS	B				
Approach	EB	WB		NB	SB
Entry Lanes	1	2		1	1
Conflicting Circle Lanes	1	1		1	1
Adj Approach Flow, veh/h	758	683		173	210
Demand Flow Rate, veh/h	773	696		177	215
Vehicles Circulating, veh/h	125	190		782	733
Vehicles Exiting, veh/h	823	769		116	153
Ped Vol Crossing Leg, #/h	1	0		0	1
Ped Cap Adj	1.000	1.000		1.000	1.000
Approach Delay, s/veh	11.3	8.7		9.7	10.0
Approach LOS	B	A		A	B
Lane	Left	Left	Right	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized					
Lane Util	1.000	0.915	0.085	1.000	1.000
Follow-Up Headway, s	2.609	2.535	2.535	2.609	2.609
Critical Headway, s	4.976	4.544	4.544	4.976	4.976
Entry Flow, veh/h	773	637	59	177	215
Cap Entry Lane, veh/h	1215	1195	1195	622	653
Entry HV Adj Factor	0.981	0.981	0.983	0.978	0.978
Flow Entry, veh/h	758	625	58	173	210
Cap Entry, veh/h	1191	1172	1174	608	639
V/C Ratio	0.636	0.533	0.049	0.285	0.329
Control Delay, s/veh	11.3	9.2	3.5	9.7	10.0
LOS	B	A	A	A	B
95th %tile Queue, veh	5	3	0	1	1























HCM2000 Intersection v/c
4: SH 44 & Cemetery Rd

Mitigation
2025 Background AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	41	576	65	10	553	52	85	41	30	72	28	89	
Future Volume (vph)	41	576	65	10	553	52	85	41	30	72	28	89	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00		1.00	0.98		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.89		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1769	1863	1583	1770	1863	1549	1770	1746		1770	1623		
Flt Permitted	0.23	1.00	1.00	0.27	1.00	1.00	0.57	1.00		0.69	1.00		
Satd. Flow (perm)	429	1863	1583	504	1863	1549	1056	1746		1290	1623		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	46	640	72	11	614	58	94	46	33	80	31	99	
RTOR Reduction (vph)	0	0	33	0	0	29	0	24	0	0	85	0	
Lane Group Flow (vph)	46	640	39	11	614	29	94	55	0	80	45	0	
Confl. Peds. (#/hr)	1					1						1	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		
Protected Phases	1	6		5	2		3	8		7	4		
Permitted Phases	6		6	2		2	8			4			
Actuated Green, G (s)	40.7	37.3	37.3	35.7	34.8	34.8	14.8	8.5		15.2	8.7		
Effective Green, g (s)	44.7	39.3	39.3	39.7	36.8	36.8	18.8	10.5		19.2	10.7		
Actuated g/C Ratio	0.61	0.54	0.54	0.54	0.50	0.50	0.26	0.14		0.26	0.15		
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	360	1000	849	323	936	778	352	250		394	237		
v/s Ratio Prot	c0.01	c0.34		0.00	0.33		c0.03	0.03		0.02	0.03		
v/s Ratio Perm	0.07		0.02	0.02		0.02	c0.04			0.03			
v/c Ratio	0.13	0.64	0.05	0.03	0.66	0.04	0.27	0.22		0.20	0.19		
Uniform Delay, d1	8.1	12.0	8.0	8.9	13.5	9.2	21.4	27.7		20.9	27.5		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.2	1.4	0.0	0.0	1.7	0.0	0.4	0.4		0.3	0.4		
Delay (s)	8.3	13.4	8.1	9.0	15.2	9.2	21.8	28.2		21.1	27.8		
Level of Service	A	B	A	A	B	A	C	C		C	C		
Approach Delay (s)		12.6			14.6			24.7			25.3		
Approach LOS		B			B			C			C		
Intersection Summary													
HCM 2000 Control Delay			15.9		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.50										
Actuated Cycle Length (s)			73.2		Sum of lost time (s)					12.0			
Intersection Capacity Utilization			52.1%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th Signalized Intersection Summary
4: SH 44 & Cemetery Rd























Mitigation
2025 Background AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	576	65	10	553	52	85	41	30	72	28	89
Future Volume (veh/h)	41	576	65	10	553	52	85	41	30	72	28	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	640	72	11	614	58	94	46	33	80	31	99
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	823	696	262	764	646	309	129	93	354	48	153
Arrive On Green	0.05	0.44	0.44	0.01	0.41	0.41	0.07	0.13	0.13	0.06	0.12	0.12
Sat Flow, veh/h	1781	1870	1583	1781	1870	1583	1781	1013	727	1781	391	1250
Grp Volume(v), veh/h	46	640	72	11	614	58	94	0	79	80	0	130
Grp Sat Flow(s),veh/h/ln	1781	1870	1583	1781	1870	1583	1781	0	1740	1781	0	1642
Q Serve(g_s), s	0.8	16.4	1.5	0.2	16.3	1.3	2.5	0.0	2.3	2.2	0.0	4.2
Cycle Q Clear(g_c), s	0.8	16.4	1.5	0.2	16.3	1.3	2.5	0.0	2.3	2.2	0.0	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.42	1.00		0.76
Lane Grp Cap(c), veh/h	300	823	696	262	764	646	309	0	222	354	0	201
V/C Ratio(X)	0.15	0.78	0.10	0.04	0.80	0.09	0.30	0.00	0.36	0.23	0.00	0.65
Avail Cap(c_a), veh/h	536	1828	1547	554	1828	1547	503	0	773	558	0	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.1	13.4	9.3	11.4	14.7	10.2	19.6	0.0	22.5	19.6	0.0	23.5
Incr Delay (d2), s/veh	0.2	1.6	0.1	0.1	2.0	0.1	0.6	0.0	1.0	0.3	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	9.9	0.8	0.1	10.1	0.7	1.8	0.0	1.7	1.5	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.4	15.1	9.3	11.4	16.7	10.3	20.2	0.0	23.4	19.9	0.0	27.0
LnGrp LOS	B	B	A	B	B	B	C	A	C	B	A	C
Approach Vol, veh/h		758			683			173			210	
Approach Delay, s/veh		14.3			16.1			21.7			24.3	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	28.0	8.9	11.9	5.8	29.8	8.6	12.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	55.0	10.0	25.0	10.0	55.0	10.0	25.0				
Max Q Clear Time (g_c+I1), s	2.8	18.3	4.5	6.2	2.2	18.4	4.2	4.3				
Green Ext Time (p_c), s	0.0	4.7	0.1	0.6	0.0	5.0	0.1	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			16.8									
HCM 6th LOS			B									

Intersection					
Intersection Delay, s/veh	20.9				
Intersection LOS	C				
Approach	EB	WB		NB	SB
Entry Lanes	1	2		1	1
Conflicting Circle Lanes	1	1		1	1
Adj Approach Flow, veh/h	937	1096		200	189
Demand Flow Rate, veh/h	955	1119		204	193
Vehicles Circulating, veh/h	143	286		954	1097
Vehicles Exiting, veh/h	1147	872		144	308
Ped Vol Crossing Leg, #/h	0	0		0	0
Ped Cap Adj	1.000	1.000		1.000	1.000
Approach Delay, s/veh	18.1	25.5		13.5	16.3
Approach LOS	C	D		B	C
Lane	Left	Left	Right	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized					
Lane Util	1.000	0.879	0.121	1.000	1.000
Follow-Up Headway, s	2.609	2.535	2.535	2.609	2.609
Critical Headway, s	4.976	4.544	4.544	4.976	4.976
Entry Flow, veh/h	955	984	135	204	193
Cap Entry Lane, veh/h	1193	1095	1095	522	451
Entry HV Adj Factor	0.981	0.980	0.978	0.980	0.980
Flow Entry, veh/h	937	964	132	200	189
Cap Entry, veh/h	1170	1073	1070	511	442
V/C Ratio	0.801	0.899	0.123	0.391	0.428
Control Delay, s/veh	18.1	28.4	4.5	13.5	16.3
LOS	C	D	A	B	C
95th %tile Queue, veh	9	13	0	2	2

HCM2000 Intersection v/c
4: SH 44 & Cemetery Rd

Mitigation
2025 Background PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	685	64	25	853	120	101	51	30	63	40	69
Future Volume (vph)	104	685	64	25	853	120	101	51	30	63	40	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1759		1770	1686	
Flt Permitted	0.08	1.00	1.00	0.25	1.00	1.00	0.41	1.00		0.70	1.00	
Satd. Flow (perm)	152	1863	1583	460	1863	1583	763	1759		1303	1686	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	114	753	70	27	937	132	111	56	33	69	44	76
RTOR Reduction (vph)	0	0	26	0	0	36	0	15	0	0	43	0
Lane Group Flow (vph)	114	753	44	27	937	96	111	74	0	69	77	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8			4		
Actuated Green, G (s)	77.3	69.2	69.2	67.9	64.5	64.5	24.1	14.7		19.1	12.2	
Effective Green, g (s)	79.6	71.2	71.2	71.9	66.5	66.5	28.1	16.7		23.1	14.2	
Actuated g/C Ratio	0.70	0.62	0.62	0.63	0.58	0.58	0.25	0.15		0.20	0.12	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	249	1161	986	351	1084	921	288	257		299	209	
v/s Ratio Prot	c0.04	0.40		0.00	c0.50		c0.04	0.04		0.02	0.05	
v/s Ratio Perm	0.28		0.03	0.04		0.06	c0.06			0.03		
v/c Ratio	0.46	0.65	0.04	0.08	0.86	0.10	0.39	0.29		0.23	0.37	
Uniform Delay, d1	20.1	13.6	8.3	10.4	20.1	10.6	34.8	43.5		37.8	45.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	1.3	0.0	0.1	7.3	0.0	0.9	0.6		0.4	1.1	
Delay (s)	21.5	14.9	8.3	10.5	27.4	10.7	35.7	44.1		38.2	47.0	
Level of Service	C	B	A	B	C	B	D	D		D	D	
Approach Delay (s)		15.2			25.0			39.4			43.8	
Approach LOS		B			C			D			D	

Intersection Summary























HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	114.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary

4: SH 44 & Cemetery Rd

Mitigation
2025 Background PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	685	64	25	853	120	101	51	30	63	40	69
Future Volume (veh/h)	104	685	64	25	853	120	101	51	30	63	40	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	753	70	27	937	132	111	56	33	69	44	76
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	236	1102	934	333	1057	896	240	134	79	259	59	101
Arrive On Green	0.05	0.59	0.59	0.03	0.57	0.57	0.07	0.12	0.12	0.05	0.10	0.10
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1103	650	1781	616	1063
Grp Volume(v), veh/h	114	753	70	27	937	132	111	0	89	69	0	120
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1753	1781	0	1679
Q Serve(g_s), s	2.4	25.7	1.8	0.6	40.5	3.7	5.1	0.0	4.4	3.2	0.0	6.5
Cycle Q Clear(g_c), s	2.4	25.7	1.8	0.6	40.5	3.7	5.1	0.0	4.4	3.2	0.0	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		0.63
Lane Grp Cap(c), veh/h	236	1102	934	333	1057	896	240	0	213	259	0	160
V/C Ratio(X)	0.48	0.68	0.07	0.08	0.89	0.15	0.46	0.00	0.42	0.27	0.00	0.75
Avail Cap(c_a), veh/h	337	1813	1536	477	1813	1536	302	0	378	367	0	362
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.6	13.1	8.2	10.9	17.6	9.6	34.5	0.0	37.8	35.5	0.0	40.9
Incr Delay (d2), s/veh	1.5	0.8	0.0	0.1	3.0	0.1	1.4	0.0	1.3	0.5	0.0	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.3	14.8	1.0	0.4	22.7	2.1	4.1	0.0	3.4	2.5	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.1	13.9	8.2	11.0	20.6	9.7	35.9	0.0	39.1	36.1	0.0	47.7
LnGrp LOS	C	B	A	B	C	A	D	A	D	D	A	D
Approach Vol, veh/h		937			1096			200				189
Approach Delay, s/veh		14.2			19.1			37.3				43.5
Approach LOS		B			B			D				D
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	57.5	11.8	13.9	7.5	59.7	9.4	16.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	90.0	10.0	20.0	10.0	90.0	10.0	20.0				
Max Q Clear Time (g_c+I1), s	4.4	42.5	7.1	8.5	2.6	27.7	5.2	6.4				
Green Ext Time (p_c), s	0.1	9.9	0.1	0.4	0.0	6.6	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			20.6									
HCM 6th LOS			C									

Intersection							
Intersection Delay, s/veh	7.8						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	1138		1242		23		148
Demand Flow Rate, veh/h	1162		1292		24		152
Vehicles Circulating, veh/h	102		54		1237		1240
Vehicles Exiting, veh/h	1290		1207		27		106
Ped Vol Crossing Leg, #/h	0		0		3		6
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	7.4		7.7		8.2		12.3
Approach LOS	A		A		A		B
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	546	616	607	685	24	152	
Cap Entry Lane, veh/h	1294	1294	1352	1352	496	495	
Entry HV Adj Factor	0.980	0.979	0.962	0.961	0.958	0.974	
Flow Entry, veh/h	535	603	584	658	23	148	
Cap Entry, veh/h	1268	1268	1300	1299	475	482	
V/C Ratio	0.422	0.476	0.449	0.507	0.048	0.307	
Control Delay, s/veh	7.0	7.8	7.2	8.1	8.2	12.3	
LOS	A	A	A	A	A	B	
95th %tile Queue, veh	2	3	2	3	0	1	

HCM2000 Intersection v/c
5: Hawthorne Ave & SH 44

Mitigation
2025 Background AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	40	873	9	11	951	44	3	0	15	68	0	52
Future Volume (vph)	40	873	9	11	951	44	3	0	15	68	0	52
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1769	3529		1641	3445		1770	1509		1736	1583	
Flt Permitted	0.16	1.00		0.23	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	299	3529		400	3445		1332	1509		1361	1583	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	49	1078	11	14	1174	54	4	0	19	84	0	64
RTOR Reduction (vph)	0	0	0	0	3	0	0	16	0	0	54	0
Lane Group Flow (vph)	49	1089	0	14	1225	0	4	3	0	84	10	0
Confl. Peds. (#/hr)	6		3	3		6						
Heavy Vehicles (%)	2%	2%	13%	10%	4%	3%	2%	2%	7%	4%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	45.3	42.0		40.5	39.6		8.0	8.0		8.0	8.0	
Effective Green, g (s)	49.3	44.0		44.5	41.6		10.0	10.0		10.0	10.0	
Actuated g/C Ratio	0.75	0.67		0.68	0.63		0.15	0.15		0.15	0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	341	2356		324	2174		202	228		206	240	
v/s Ratio Prot	c0.01	0.31		0.00	c0.36			0.00			0.01	
v/s Ratio Perm	0.10			0.03			0.00			c0.06		
v/c Ratio	0.14	0.46		0.04	0.56		0.02	0.01		0.41	0.04	
Uniform Delay, d1	3.6	5.3		3.7	7.0		23.8	23.8		25.3	23.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		0.1	0.3		0.0	0.0		1.3	0.1	
Delay (s)	3.8	5.4		3.7	7.3		23.8	23.8		26.6	23.9	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		5.3			7.3			23.8			25.4	
Approach LOS		A			A			C			C	





















Intersection Summary

HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
5: Hawthorne Ave & SH 44

Mitigation
2025 Background AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	873	9	11	951	44	3	0	15	68	0	52
Future Volume (veh/h)	40	873	9	11	951	44	3	0	15	68	0	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1841	1841	1870	1870	1870	1841	1870	1870
Adj Flow Rate, veh/h	49	1078	11	14	1174	54	4	0	19	84	0	64
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	10	4	4	2	2	2	4	2	2
Cap, veh/h	365	2007	20	359	1786	82	248	0	174	287	0	174
Arrive On Green	0.05	0.56	0.56	0.02	0.52	0.52	0.11	0.00	0.11	0.11	0.00	0.11
Sat Flow, veh/h	1781	3604	37	1668	3404	156	1338	0	1585	1371	0	1585
Grp Volume(v), veh/h	49	532	557	14	603	625	4	0	19	84	0	64
Grp Sat Flow(s),veh/h/ln	1781	1777	1864	1668	1749	1811	1338	0	1585	1371	0	1585
Q Serve(g_s), s	0.6	9.0	9.0	0.2	11.9	11.9	0.1	0.0	0.5	2.8	0.0	1.8
Cycle Q Clear(g_c), s	0.6	9.0	9.0	0.2	11.9	11.9	1.9	0.0	0.5	3.3	0.0	1.8
Prop In Lane	1.00		0.02	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	365	990	1038	359	918	951	248	0	174	287	0	174
V/C Ratio(X)	0.13	0.54	0.54	0.04	0.66	0.66	0.02	0.00	0.11	0.29	0.00	0.37
Avail Cap(c_a), veh/h	651	2617	2745	681	2576	2668	805	0	834	858	0	834
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.1	6.7	6.7	5.6	8.2	8.2	20.5	0.0	19.1	20.6	0.0	19.6
Incr Delay (d2), s/veh	0.2	0.5	0.4	0.0	0.8	0.8	0.0	0.0	0.3	0.6	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	4.0	4.2	0.1	5.6	5.8	0.1	0.0	0.3	1.5	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.3	7.1	7.1	5.7	9.0	9.0	20.5	0.0	19.3	21.1	0.0	20.9
LnGrp LOS	A	A	A	A	A	A	C	A	B	C	A	C
Approach Vol, veh/h		1138			1242			23				148
Approach Delay, s/veh		7.1			9.0			19.6				21.0
Approach LOS		A			A			B				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	29.9		10.2	5.8	31.5		10.2				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	70.0		25.0	10.0	70.0		25.0				
Max Q Clear Time (g_c+I1), s	2.6	13.9		5.3	2.2	11.0		3.9				
Green Ext Time (p_c), s	0.0	11.0		0.5	0.0	9.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				8.9								
HCM 6th LOS				A								

Intersection							
Intersection Delay, s/veh	7.5						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	1077		1160		48		119
Demand Flow Rate, veh/h	1109		1214		49		123
Vehicles Circulating, veh/h	137		49		1138		1109
Vehicles Exiting, veh/h	1095		1138		108		154
Ped Vol Crossing Leg, #/h	0		0		2		15
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	7.5		7.3		8.0		9.8
Approach LOS	A		A		A		A
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	521	588	571	643	49	123	
Cap Entry Lane, veh/h	1254	1254	1358	1358	540	553	
Entry HV Adj Factor	0.971	0.971	0.955	0.956	0.978	0.964	
Flow Entry, veh/h	506	571	545	615	48	119	
Cap Entry, veh/h	1218	1217	1297	1299	528	533	
V/C Ratio	0.416	0.469	0.420	0.473	0.091	0.222	
Control Delay, s/veh	7.1	7.9	6.9	7.6	8.0	9.8	
LOS	A	A	A	A	A	A	
95th %tile Queue, veh	2	3	2	3	0	1	

HCM2000 Intersection v/c
5: Hawthorne Ave & SH 44

Mitigation
2025 Background PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	903	39	45	894	105	13	3	28	65	9	33
Future Volume (vph)	28	903	39	45	894	105	13	3	28	65	9	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1734	3480		1752	3379		1770	1580		1770	1545	
Flt Permitted	0.21	1.00		0.21	1.00		0.73	1.00		0.73	1.00	
Satd. Flow (perm)	385	3480		380	3379		1353	1580		1369	1545	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	31	1003	43	50	993	117	14	3	31	72	10	37
RTOR Reduction (vph)	0	2	0	0	7	0	0	26	0	0	31	0
Lane Group Flow (vph)	31	1044	0	50	1103	0	14	8	0	72	16	0
Confl. Peds. (#/hr)	15		2	2		15						
Heavy Vehicles (%)	4%	3%	3%	3%	5%	2%	2%	2%	4%	2%	25%	4%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8				4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	34.4	32.4		37.4	33.9		7.1	7.1		7.1	7.1	
Effective Green, g (s)	38.4	34.4		41.4	35.9		9.1	9.1		9.1	9.1	
Actuated g/C Ratio	0.66	0.59		0.71	0.62		0.16	0.16		0.16	0.16	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	347	2064		401	2091		212	247		214	242	
v/s Ratio Prot	0.01	0.30		c0.01	c0.33			0.00			0.01	
v/s Ratio Perm	0.05			0.08			0.01			c0.05		
v/c Ratio	0.09	0.51		0.12	0.53		0.07	0.03		0.34	0.07	
Uniform Delay, d1	3.7	6.9		3.2	6.3		20.8	20.7		21.8	20.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.1	0.2		0.1	0.1		0.9	0.1	
Delay (s)	3.8	7.1		3.3	6.5		21.0	20.8		22.7	20.9	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		7.0			6.4			20.8			22.0	
Approach LOS		A			A			C			C	

Intersection Summary

HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary

5: Hawthorne Ave & SH 44

Mitigation
2025 Background PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	28	903	39	45	894	105	13	3	28	65	9	33
Future Volume (veh/h)	28	903	39	45	894	105	13	3	28	65	9	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1856	1856	1856	1826	1826	1870	1870	1870	1870	1530	1530
Adj Flow Rate, veh/h	31	1003	43	50	993	117	14	3	31	72	10	37
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	3	3	3	5	5	2	2	2	2	25	25
Cap, veh/h	367	1672	72	409	1567	185	272	15	158	292	31	114
Arrive On Green	0.04	0.49	0.49	0.05	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1753	3441	148	1767	3120	367	1359	142	1465	1375	285	1055
Grp Volume(v), veh/h	31	514	532	50	552	558	14	0	34	72	0	47
Grp Sat Flow(s),veh/h/ln	1753	1763	1826	1767	1735	1753	1359	0	1607	1375	0	1340
Q Serve(g_s), s	0.4	9.0	9.0	0.6	9.9	9.9	0.4	0.0	0.8	2.1	0.0	1.4
Cycle Q Clear(g_c), s	0.4	9.0	9.0	0.6	9.9	9.9	1.8	0.0	0.8	3.0	0.0	1.4
Prop In Lane	1.00		0.08	1.00		0.21	1.00		0.91	1.00		0.79
Lane Grp Cap(c), veh/h	367	857	887	409	871	881	272	0	174	292	0	145
V/C Ratio(X)	0.08	0.60	0.60	0.12	0.63	0.63	0.05	0.00	0.20	0.25	0.00	0.32
Avail Cap(c_a), veh/h	717	2908	3013	733	2862	2892	926	0	947	953	0	789
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.0	7.9	7.9	5.7	7.7	7.7	18.3	0.0	17.2	18.6	0.0	17.5
Incr Delay (d2), s/veh	0.1	0.7	0.7	0.1	0.8	0.8	0.1	0.0	0.5	0.4	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	4.2	4.3	0.2	4.4	4.4	0.2	0.0	0.5	1.1	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	8.6	8.6	5.8	8.5	8.5	18.4	0.0	17.8	19.0	0.0	18.8
LnGrp LOS	A	A	A	A	A	A	B	A	B	B	A	B
Approach Vol, veh/h		1077			1160			48				119
Approach Delay, s/veh		8.5			8.4			18.0				18.9
Approach LOS		A			A			B				B
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	26.3		9.6	7.2	25.6		9.6				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	70.0		25.0	10.0	70.0		25.0				
Max Q Clear Time (g_c+I1), s	2.4	11.9		5.0	2.6	11.0		3.8				
Green Ext Time (p_c), s	0.0	9.4		0.4	0.0	8.5		0.1				

Intersection Summary

























HCM 6th Ctrl Delay	9.1
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

HCM2000 Intersection v/c
7: SH 44 & N Middleton Rd

Mitigation
2025 Background AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	565	209	277	665	90	151	97	177	103	234	223
Future Volume (vph)	114	565	209	277	665	90	151	97	177	103	234	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.15	1.00	1.00	0.14	1.00	1.00	0.28	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	279	1863	1583	255	1863	1583	515	1863	1583	1154	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	127	628	232	308	739	100	168	108	197	114	260	248
RTOR Reduction (vph)	0	0	71	0	0	44	0	0	124	0	0	116
Lane Group Flow (vph)	127	628	161	308	739	56	168	108	73	114	260	132
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	56.5	47.5	47.5	69.2	55.2	55.2	32.3	22.3	39.0	31.3	21.8	21.8
Effective Green, g (s)	60.5	49.5	49.5	71.2	57.2	57.2	36.3	24.3	43.0	35.3	23.8	23.8
Actuated g/C Ratio	0.52	0.43	0.43	0.61	0.49	0.49	0.31	0.21	0.37	0.30	0.21	0.21
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	286	794	675	400	918	780	290	390	627	412	382	324
v/s Ratio Prot	0.04	0.34		c0.12	c0.40		c0.06	0.06	0.02	0.03	c0.14	
v/s Ratio Perm	0.19		0.10	0.35		0.04	0.12		0.03	0.06		0.08
v/c Ratio	0.44	0.79	0.24	0.77	0.81	0.07	0.58	0.28	0.12	0.28	0.68	0.41
Uniform Delay, d1	19.1	28.8	21.2	23.5	24.7	15.4	31.1	38.5	24.0	30.0	42.6	40.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	5.4	0.2	8.9	5.2	0.0	2.8	0.4	0.1	0.4	4.9	0.8
Delay (s)	20.2	34.2	21.4	32.3	29.9	15.5	33.9	38.9	24.1	30.4	47.5	40.8
Level of Service	C	C	C	C	C	B	C	D	C	C	D	D
Approach Delay (s)		29.4			29.3			31.0			41.7	
Approach LOS		C			C			C			D	

























Intersection Summary

HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

























HCM 6th Signalized Intersection Summary
7: SH 44 & N Middleton Rd

Mitigation
2025 Background AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	565	209	277	665	90	151	97	177	103	234	223
Future Volume (veh/h)	114	565	209	277	665	90	151	97	177	103	234	223
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	628	232	308	739	100	168	108	197	114	260	248
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	731	619	346	848	719	293	403	538	374	355	301
Arrive On Green	0.06	0.39	0.39	0.12	0.45	0.45	0.09	0.22	0.22	0.07	0.19	0.19
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	127	628	232	308	739	100	168	108	197	114	260	248
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.2	30.6	10.4	9.7	35.5	3.7	7.4	4.8	9.3	5.0	13.0	14.9
Cycle Q Clear(g_c), s	4.2	30.6	10.4	9.7	35.5	3.7	7.4	4.8	9.3	5.0	13.0	14.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	245	731	619	346	848	719	293	403	538	374	355	301
V/C Ratio(X)	0.52	0.86	0.37	0.89	0.87	0.14	0.57	0.27	0.37	0.30	0.73	0.82
Avail Cap(c_a), veh/h	315	1319	1117	485	1507	1277	305	565	675	432	565	479
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	27.7	21.6	20.8	24.5	15.8	29.2	32.4	24.7	29.2	37.8	38.6
Incr Delay (d2), s/veh	1.7	3.1	0.4	13.9	3.0	0.1	2.4	0.4	0.4	0.5	2.9	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.3	20.1	6.8	8.6	21.7	2.3	5.9	3.9	6.2	3.9	10.1	10.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.1	30.8	22.0	34.8	27.5	15.9	31.6	32.8	25.2	29.7	40.8	45.0
LnGrp LOS	C	C	C	C	C	B	C	C	C	C	D	D
Approach Vol, veh/h		987			1147			473			622	
Approach Delay, s/veh		27.8			28.4			29.2			40.4	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	50.0	14.3	23.9	17.3	43.8	11.8	26.4				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	80.0	10.0	30.0	20.0	70.0	10.0	30.0				
Max Q Clear Time (g_c+I1), s	6.2	37.5	9.4	16.9	11.7	32.6	7.0	11.3				
Green Ext Time (p_c), s	0.1	6.4	0.0	1.9	0.6	6.2	0.1	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			30.6									
HCM 6th LOS			C									

HCM2000 Intersection v/c
7: SH 44 & N Middleton Rd

Mitigation
2025 Background PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	587	181	247	783	125	248	204	313	61	160	129
Future Volume (vph)	184	587	181	247	783	125	248	204	313	61	160	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.08	1.00	1.00	0.20	1.00	1.00	0.36	1.00	1.00	0.57	1.00	1.00
Satd. Flow (perm)	158	1863	1583	365	1863	1583	669	1863	1583	1064	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	192	611	189	257	816	130	258	212	326	64	167	134
RTOR Reduction (vph)	0	0	46	0	0	43	0	0	181	0	0	98
Lane Group Flow (vph)	192	611	143	257	816	87	258	213	145	64	167	36
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	64.8	55.0	55.0	72.0	58.6	58.6	37.6	25.8	39.2	24.8	18.0	18.0
Effective Green, g (s)	68.8	57.0	57.0	75.4	60.6	60.6	39.6	27.8	43.2	28.8	20.0	20.0
Actuated g/C Ratio	0.57	0.47	0.47	0.62	0.50	0.50	0.33	0.23	0.36	0.24	0.17	0.17
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	247	877	745	406	933	792	369	428	604	304	307	261
v/s Ratio Prot	c0.08	0.33		c0.08	c0.44		c0.10	0.11	0.03	0.02	0.09	
v/s Ratio Perm	0.37		0.09	0.31		0.05	c0.13		0.06	0.03		0.02
v/c Ratio	0.78	0.70	0.19	0.63	0.87	0.11	0.70	0.50	0.24	0.21	0.54	0.14
Uniform Delay, d1	28.4	25.2	18.6	16.6	26.8	15.9	32.6	40.5	27.4	36.5	46.3	43.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.2	2.4	0.1	3.2	9.2	0.1	5.7	0.9	0.2	0.3	2.0	0.2
Delay (s)	42.6	27.6	18.7	19.8	36.0	16.0	38.3	41.4	27.6	36.8	48.3	43.4
Level of Service	D	C	B	B	D	B	D	D	C	D	D	D
Approach Delay (s)		28.8			30.4			34.8			44.5	
Approach LOS		C			C			C			D	

























Intersection Summary

HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	121.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
7: SH 44 & N Middleton Rd

Mitigation
2025 Background PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	587	181	247	783	125	248	204	313	61	160	129
Future Volume (veh/h)	184	587	181	247	783	125	248	204	313	61	160	129
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	192	611	189	257	816	130	258	212	326	64	167	134
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	251	869	737	376	908	769	346	397	488	240	218	185
Arrive On Green	0.07	0.46	0.46	0.10	0.49	0.49	0.14	0.21	0.21	0.04	0.12	0.12
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	192	611	189	257	816	130	258	212	326	64	167	134
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.0	28.1	7.9	8.0	43.1	5.0	13.3	10.9	19.4	3.4	9.4	8.8
Cycle Q Clear(g_c), s	6.0	28.1	7.9	8.0	43.1	5.0	13.3	10.9	19.4	3.4	9.4	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	251	869	737	376	908	769	346	397	488	240	218	185
V/C Ratio(X)	0.76	0.70	0.26	0.68	0.90	0.17	0.75	0.53	0.67	0.27	0.77	0.72
Avail Cap(c_a), veh/h	283	1295	1097	452	1381	1171	346	518	590	328	432	366
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	23.1	17.6	18.1	25.4	15.6	34.2	37.9	32.7	39.7	46.4	46.2
Incr Delay (d2), s/veh	10.5	1.1	0.2	3.3	5.6	0.1	8.6	1.1	2.2	0.6	5.5	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.6	18.2	5.1	6.1	26.6	3.2	10.6	8.7	12.1	2.7	8.2	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.8	24.1	17.8	21.4	31.1	15.7	42.8	39.0	34.8	40.3	51.9	51.5
LnGrp LOS	C	C	B	C	C	B	D	D	C	D	D	D
Approach Vol, veh/h		992			1203			796			365	
Approach Delay, s/veh		24.8			27.3			38.5			49.7	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.1	57.6	20.0	17.6	15.4	55.3	9.6	28.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	80.0	15.0	25.0	15.0	75.0	10.0	30.0				
Max Q Clear Time (g_c+I1), s	8.0	45.1	15.3	11.4	10.0	30.1	5.4	21.4				
Green Ext Time (p_c), s	0.1	7.4	0.0	1.1	0.3	5.9	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay			31.7									
HCM 6th LOS			C									

APPENDIX G: 2025 Total Synchro Reports

HCM 6th TWSC
1: Cemetery Rd & Purple Sage Rd

2025 Total
AM Peak Hour

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	114	12	41	123	3	7	9	29	10	28	5
Future Vol, veh/h	8	114	12	41	123	3	7	9	29	10	28	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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	127	13	46	137	3	8	10	32	11	31	6

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	168	114	34	168	101	26	37	0	0	42	0	0
Stage 1	56	56	-	42	42	-	-	-	-	-	-	-
Stage 2	112	58	-	126	59	-	-	-	-	-	-	-
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	796	776	1039	796	789	1050	1574	-	-	1567	-	-
Stage 1	956	848	-	972	860	-	-	-	-	-	-	-
Stage 2	893	847	-	878	846	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	681	767	1039	680	780	1050	1574	-	-	1567	-	-
Mov Cap-2 Maneuver	681	767	-	680	780	-	-	-	-	-	-	-
Stage 1	951	842	-	967	856	-	-	-	-	-	-	-
Stage 2	744	843	-	731	840	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.7		11.3		1.1		1.7	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1574	-	-	779	756	1567	-	-
HCM Lane V/C Ratio	0.005	-	-	0.191	0.245	0.007	-	-
HCM Control Delay (s)	7.3	0	-	10.7	11.3	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	1	0	-	-

HCM 6th TWSC
2: Cemetery Rd & Concord St

2025 Total
AM Peak Hour

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	13	28	23	14	39	15	142	8	66	220	13
Future Vol, veh/h	25	13	28	23	14	39	15	142	8	66	220	13
Conflicting Peds, #/hr	3	0	3	3	0	3	12	0	1	1	0	12
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	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	5	2	2	8	2	10	2	3	2	2	4	2
Mvmt Flow	35	18	39	32	20	55	21	200	11	93	310	18

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	805	771	334	786	775	210	340	0	0	212	0	0
Stage 1	517	517	-	249	249	-	-	-	-	-	-	-
Stage 2	288	254	-	537	526	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.22	7.18	6.52	6.3	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.318	3.572	4.018	3.39	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	297	331	708	303	329	810	1219	-	-	1358	-	-
Stage 1	536	534	-	742	701	-	-	-	-	-	-	-
Stage 2	713	697	-	517	529	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	239	294	698	250	292	807	1205	-	-	1357	-	-
Mov Cap-2 Maneuver	239	294	-	250	292	-	-	-	-	-	-	-
Stage 1	519	484	-	726	686	-	-	-	-	-	-	-
Stage 2	631	682	-	429	479	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19	17.1	0.7	1.7
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1205	-	-	349	404	1357	-	-
HCM Lane V/C Ratio	0.018	-	-	0.266	0.265	0.069	-	-
HCM Control Delay (s)	8	0	-	19	17.1	7.8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	1.1	0.2	-	-

Intersection						
Int Delay, s/veh	6.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	41	120	71	16	46	59
Future Vol, veh/h	41	120	71	16	46	59
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	72	72	72	72	72	72
Heavy Vehicles, %	2	2	5	2	2	4
Mvmt Flow	57	167	99	22	64	82

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	325	105	146	0	-	0
Stage 1	105	-	-	-	-	-
Stage 2	220	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.15	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.245	-	-	-
Pot Cap-1 Maneuver	669	949	1418	-	-	-
Stage 1	919	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	622	949	1418	-	-	-
Mov Cap-2 Maneuver	622	-	-	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	817	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	6.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1418	-	837	-	-
HCM Lane V/C Ratio	0.07	-	0.267	-	-
HCM Control Delay (s)	7.7	0	10.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-	-

HCM 6th Roundabout
4: SH 44 & Cemetery Rd

2025 Total
AM Peak Hour

Intersection					
Intersection Delay, s/veh	10.2				
Intersection LOS	B				
Approach	EB	WB		NB	SB
Entry Lanes	1	2		1	1
Conflicting Circle Lanes	1	1		1	1
Adj Approach Flow, veh/h	762	688		173	217
Demand Flow Rate, veh/h	777	701		177	222
Vehicles Circulating, veh/h	125	192		786	738
Vehicles Exiting, veh/h	835	771		116	155
Ped Vol Crossing Leg, #/h	1	0		0	1
Ped Cap Adj	1.000	1.000		1.000	1.000
Approach Delay, s/veh	11.4	8.8		9.7	10.3
Approach LOS	B	A		A	B
Lane	Left	Left	Right	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized					
Lane Util	1.000	0.916	0.084	1.000	1.000
Follow-Up Headway, s	2.609	2.535	2.535	2.609	2.609
Critical Headway, s	4.976	4.544	4.544	4.976	4.976
Entry Flow, veh/h	777	642	59	177	222
Cap Entry Lane, veh/h	1215	1192	1192	619	650
Entry HV Adj Factor	0.981	0.981	0.983	0.978	0.979
Flow Entry, veh/h	762	630	58	173	217
Cap Entry, veh/h	1191	1169	1172	605	636
V/C Ratio	0.640	0.538	0.049	0.286	0.342
Control Delay, s/veh	11.4	9.3	3.5	9.7	10.3
LOS	B	A	A	A	B
95th %tile Queue, veh	5	3	0	1	2























HCM2000 Intersection v-c
4: SH 44 & Cemetery Rd

2025 Total
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	43	578	65	10	557	52	85	41	30	72	28	95	
Future Volume (vph)	43	578	65	10	557	52	85	41	30	72	28	95	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00		1.00	0.98		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.88		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1769	1863	1583	1770	1863	1549	1770	1746		1770	1619		
Flt Permitted	0.23	1.00	1.00	0.27	1.00	1.00	0.55	1.00		0.69	1.00		
Satd. Flow (perm)	423	1863	1583	501	1863	1549	1016	1746		1290	1619		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	48	642	72	11	619	58	94	46	33	80	31	106	
RTOR Reduction (vph)	0	0	33	0	0	29	0	24	0	0	90	0	
Lane Group Flow (vph)	48	642	39	11	619	29	94	55	0	80	47	0	
Confl. Peds. (#/hr)	1					1						1	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		
Protected Phases	1	6		5	2		3	8		7	4		
Permitted Phases	6		6	2		2	8			4			
Actuated Green, G (s)	40.9	37.5	37.5	35.9	35.0	35.0	14.9	8.6		15.3	8.8		
Effective Green, g (s)	44.9	39.5	39.5	39.9	37.0	37.0	18.9	10.6		19.3	10.8		
Actuated g/C Ratio	0.61	0.54	0.54	0.54	0.50	0.50	0.26	0.14		0.26	0.15		
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	357	1001	850	322	937	779	346	251		394	237		
v/s Ratio Prot	c0.01	c0.34		0.00	0.33		c0.03	0.03		0.02	0.03		
v/s Ratio Perm	0.07		0.02	0.02		0.02	c0.04			0.03			
v/c Ratio	0.13	0.64	0.05	0.03	0.66	0.04	0.27	0.22		0.20	0.20		
Uniform Delay, d1	8.2	12.0	8.1	9.0	13.6	9.2	21.4	27.8		20.9	27.5		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.2	1.4	0.0	0.0	1.8	0.0	0.4	0.4		0.3	0.4		
Delay (s)	8.4	13.4	8.1	9.0	15.3	9.3	21.9	28.2		21.2	27.9		
Level of Service	A	B	A	A	B	A	C	C		C	C		
Approach Delay (s)		12.6			14.7			24.8			25.5		
Approach LOS		B			B			C			C		
Intersection Summary													
HCM 2000 Control Delay			16.1		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.51										
Actuated Cycle Length (s)			73.5		Sum of lost time (s)					12.0			
Intersection Capacity Utilization			58.2%		ICU Level of Service					B			
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th Signalized Intersection Summary
4: SH 44 & Cemetery Rd

2025 Total
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	578	65	10	557	52	85	41	30	72	28	95
Future Volume (veh/h)	43	578	65	10	557	52	85	41	30	72	28	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	642	72	11	619	58	94	46	33	80	31	106
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	828	701	262	767	649	305	133	96	357	47	160
Arrive On Green	0.05	0.44	0.44	0.01	0.41	0.41	0.07	0.13	0.13	0.06	0.13	0.13
Sat Flow, veh/h	1781	1870	1583	1781	1870	1583	1781	1013	727	1781	371	1268
Grp Volume(v), veh/h	48	642	72	11	619	58	94	0	79	80	0	137
Grp Sat Flow(s),veh/h/ln	1781	1870	1583	1781	1870	1583	1781	0	1740	1781	0	1639
Q Serve(g_s), s	0.9	16.7	1.5	0.2	16.7	1.3	2.6	0.0	2.4	2.2	0.0	4.6
Cycle Q Clear(g_c), s	0.9	16.7	1.5	0.2	16.7	1.3	2.6	0.0	2.4	2.2	0.0	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.42	1.00		0.77
Lane Grp Cap(c), veh/h	299	828	701	262	767	649	305	0	229	357	0	207
V/C Ratio(X)	0.16	0.78	0.10	0.04	0.81	0.09	0.31	0.00	0.35	0.22	0.00	0.66
Avail Cap(c_a), veh/h	527	1796	1520	548	1796	1520	495	0	759	556	0	715
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	13.6	9.3	11.5	14.9	10.4	19.8	0.0	22.6	19.7	0.0	23.8
Incr Delay (d2), s/veh	0.2	1.6	0.1	0.1	2.1	0.1	0.6	0.0	0.9	0.3	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	10.0	0.8	0.1	10.3	0.7	1.8	0.0	1.7	1.5	0.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	15.2	9.4	11.6	17.0	10.4	20.4	0.0	23.5	20.1	0.0	27.4
LnGrp LOS	B	B	A	B	B	B	C	A	C	C	A	C
Approach Vol, veh/h		762			688			173			217	
Approach Delay, s/veh		14.4			16.3			21.8			24.7	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	28.5	8.9	12.3	5.8	30.3	8.6	12.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	55.0	10.0	25.0	10.0	55.0	10.0	25.0				
Max Q Clear Time (g_c+I1), s	2.9	18.7	4.6	6.6	2.2	18.7	4.2	4.4				
Green Ext Time (p_c), s	0.0	4.8	0.1	0.6	0.0	5.1	0.1	0.3				
Intersection Summary												
HCM 6th Ctrl Delay				17.0								
HCM 6th LOS				B								

HCM 6th Roundabout
5: Hawthorne Ave & SH 44

2025 Total
AM Peak Hour

Intersection							
Intersection Delay, s/veh	8.6						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	1141		1263		23		216
Demand Flow Rate, veh/h	1165		1313		24		223
Vehicles Circulating, veh/h	168		57		1306		1240
Vehicles Exiting, veh/h	1295		1273		27		130
Ped Vol Crossing Leg, #/h	0		0		3		6
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	8.2		7.9		8.7		15.8
Approach LOS	A		A		A		C
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	548	617	617	696	24	223	
Cap Entry Lane, veh/h	1219	1219	1348	1348	468	495	
Entry HV Adj Factor	0.979	0.980	0.962	0.962	0.958	0.969	
Flow Entry, veh/h	536	605	594	669	23	216	
Cap Entry, veh/h	1193	1195	1297	1297	448	479	
V/C Ratio	0.450	0.506	0.458	0.516	0.051	0.451	
Control Delay, s/veh	7.7	8.6	7.4	8.3	8.7	15.8	
LOS	A	A	A	A	A	C	
95th %tile Queue, veh	2	3	2	3	0	2	

HCM2000 Intersection v-c
5: Hawthorne Ave & SH 44

2025 Total
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	42	873	9	11	951	61	3	0	15	119	0	56
Future Volume (vph)	42	873	9	11	951	61	3	0	15	119	0	56
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1769	3529		1641	3435		1770	1509		1736	1583	
Flt Permitted	0.14	1.00		0.22	1.00		0.71	1.00		0.75	1.00	
Satd. Flow (perm)	262	3529		376	3435		1326	1509		1361	1583	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	52	1078	11	14	1174	75	4	0	19	147	0	69
RTOR Reduction (vph)	0	0	0	0	4	0	0	15	0	0	54	0
Lane Group Flow (vph)	52	1089	0	14	1245	0	4	4	0	147	15	0
Confl. Peds. (#/hr)	6		3	3		6						
Heavy Vehicles (%)	2%	2%	13%	10%	4%	3%	2%	2%	7%	4%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8				4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	47.7	44.2		42.5	41.6		13.9	13.9		13.9	13.9	
Effective Green, g (s)	51.7	46.2		46.5	43.6		15.9	15.9		15.9	15.9	
Actuated g/C Ratio	0.70	0.62		0.63	0.59		0.21	0.21		0.21	0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	295	2203		285	2023		284	324		292	340	
v/s Ratio Prot	c0.01	0.31		0.00	c0.36			0.00			0.01	
v/s Ratio Perm	0.11			0.03			0.00			c0.11		
v/c Ratio	0.18	0.49		0.05	0.62		0.01	0.01		0.50	0.04	
Uniform Delay, d1	5.7	7.6		5.5	9.8		22.9	22.9		25.6	23.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2		0.1	0.6		0.0	0.0		1.4	0.1	
Delay (s)	6.0	7.7		5.6	10.4		22.9	22.9		26.9	23.1	
Level of Service	A	A		A	B		C	C		C	C	
Approach Delay (s)		7.6			10.3			22.9			25.7	
Approach LOS		A			B			C			C	

Intersection Summary

HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
5: Hawthorne Ave & SH 44

2025 Total
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	42	873	9	11	951	61	3	0	15	119	0	56
Future Volume (veh/h)	42	873	9	11	951	61	3	0	15	119	0	56
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1841	1841	1870	1870	1870	1841	1870	1870
Adj Flow Rate, veh/h	52	1078	11	14	1174	75	4	0	19	147	0	69
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	10	4	4	2	2	2	4	2	2
Cap, veh/h	334	1966	20	334	1711	109	293	0	251	337	0	251
Arrive On Green	0.05	0.55	0.55	0.02	0.51	0.51	0.16	0.00	0.16	0.16	0.00	0.16
Sat Flow, veh/h	1781	3604	37	1668	3337	213	1332	0	1585	1371	0	1585
Grp Volume(v), veh/h	52	532	557	14	615	634	4	0	19	147	0	69
Grp Sat Flow(s),veh/h/ln	1781	1777	1864	1668	1749	1801	1332	0	1585	1371	0	1585
Q Serve(g_s), s	0.7	10.4	10.4	0.2	14.2	14.2	0.1	0.0	0.5	5.5	0.0	2.1
Cycle Q Clear(g_c), s	0.7	10.4	10.4	0.2	14.2	14.2	2.2	0.0	0.5	6.1	0.0	2.1
Prop In Lane	1.00		0.02	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	334	969	1017	334	897	924	293	0	251	337	0	251
V/C Ratio(X)	0.16	0.55	0.55	0.04	0.69	0.69	0.01	0.00	0.08	0.44	0.00	0.28
Avail Cap(c_a), veh/h	575	2312	2425	614	2275	2343	702	0	737	757	0	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.4	7.9	7.9	6.7	9.8	9.9	20.9	0.0	19.3	21.9	0.0	19.9
Incr Delay (d2), s/veh	0.2	0.5	0.5	0.1	0.9	0.9	0.0	0.0	0.1	0.9	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	5.3	5.5	0.1	7.6	7.8	0.1	0.0	0.3	3.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	8.4	8.4	6.8	10.8	10.8	20.9	0.0	19.4	22.8	0.0	20.5
LnGrp LOS	A	A	A	A	B	B	C	A	B	C	A	C
Approach Vol, veh/h		1141			1263			23			216	
Approach Delay, s/veh		8.4			10.7			19.7			22.1	
Approach LOS		A			B			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	32.6		13.5	5.9	34.4		13.5				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	70.0		25.0	10.0	70.0		25.0				
Max Q Clear Time (g_c+1/2), s	10.0	16.2		8.1	2.2	12.4		4.2				
Green Ext Time (p_c), s	0.0	11.4		0.7	0.0	8.9		0.1				

Intersection Summary

HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	↷
Traffic Vol, veh/h	866	28	20	881	69	74
Future Vol, veh/h	866	28	20	881	69	74
Conflicting Peds, #/hr	0	4	4	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	962	31	22	979	77	82

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	997	0	2005 982
Stage 1	-	-	-	-	982 -
Stage 2	-	-	-	-	1023 -
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	-	-	694	-	~ 65 302
Stage 1	-	-	-	-	363 -
Stage 2	-	-	-	-	347 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	691	-	~ 63 301
Mov Cap-2 Maneuver	-	-	-	-	240 -
Stage 1	-	-	-	-	362 -
Stage 2	-	-	-	-	336 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	24.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	240	301	-	-	691	-
HCM Lane V/C Ratio	0.319	0.273	-	-	0.032	-
HCM Control Delay (s)	26.9	21.4	-	-	10.4	-
HCM Lane LOS	D	C	-	-	B	-
HCM 95th %tile Q(veh)	1.3	1.1	-	-	0.1	-

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

























HCM 6th Roundabout
7: SH 44 & N Middleton Rd

2025 Total
AM Peak Hour

Intersection									
Intersection Delay, s/veh	19.9								
Intersection LOS	C								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		2		2		
Adj Approach Flow, veh/h	1043		1156		482		623		
Demand Flow Rate, veh/h	1064		1179		492		635		
Vehicles Circulating, veh/h	695		425		916		1258		
Vehicles Exiting, veh/h	1198		983		843		346		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	19.5		12.8		12.8		39.4		
Approach LOS	C		B		B		E		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	R	LT	R	
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.591	0.409	0.600	0.400	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.645	4.328	4.645	4.328	
Entry Flow, veh/h	500	564	554	625	291	201	381	254	
Cap Entry Lane, veh/h	754	754	965	965	581	652	424	487	
Entry HV Adj Factor	0.980	0.980	0.981	0.980	0.979	0.980	0.981	0.980	
Flow Entry, veh/h	490	553	543	613	285	197	374	249	
Cap Entry, veh/h	740	739	946	946	569	639	416	478	
V/C Ratio	0.663	0.748	0.574	0.648	0.501	0.308	0.898	0.521	
Control Delay, s/veh	17.2	21.6	11.7	13.8	15.0	9.7	53.6	18.1	
LOS	C	C	B	B	C	A	F	C	
95th %tile Queue, veh	5	7	4	5	3	1	9	3	

HCM2000 Intersection v-c
7: SH 44 & N Middleton Rd

2025 Total
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	588	233	277	673	90	159	97	177	103	234	224
Future Volume (vph)	118	588	233	277	673	90	159	97	177	103	234	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.15	1.00	1.00	0.13	1.00	1.00	0.27	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	279	1863	1583	233	1863	1583	508	1863	1583	1148	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	131	653	259	308	748	100	177	108	197	114	260	249
RTOR Reduction (vph)	0	0	70	0	0	43	0	0	123	0	0	116
Lane Group Flow (vph)	131	653	189	308	748	57	177	108	74	114	260	133
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pt+ov	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8	8.5	7	4	
Permitted Phases	6		6	2		2	8			4		4
Actuated Green, G (s)	58.6	49.6	49.6	71.4	57.4	57.4	32.8	22.7	44.5	31.8	22.2	22.2
Effective Green, g (s)	62.6	51.6	51.6	73.4	59.4	59.4	36.8	24.7	44.5	35.8	24.2	24.2
Actuated g/C Ratio	0.53	0.43	0.43	0.62	0.50	0.50	0.31	0.21	0.37	0.30	0.20	0.20
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	285	809	688	387	932	792	286	387	593	407	379	322
v/s Ratio Prot	0.04	0.35		c0.13	c0.40		c0.06	0.06	0.05	0.03	c0.14	
v/s Ratio Perm	0.20		0.12	0.37		0.04	0.13			0.06		0.08
v/c Ratio	0.46	0.81	0.27	0.80	0.80	0.07	0.62	0.28	0.12	0.28	0.69	0.41
Uniform Delay, d1	19.4	29.2	21.5	26.5	24.8	15.4	32.3	39.5	24.3	31.0	43.7	41.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	5.9	0.2	10.8	5.1	0.0	4.0	0.4	0.1	0.4	5.1	0.9
Delay (s)	20.6	35.1	21.8	37.3	29.8	15.4	36.3	39.9	24.4	31.3	48.8	41.9
Level of Service	C	D	C	D	C	B	D	D	C	C	D	D
Approach Delay (s)		30.0			30.5			32.2			42.9	
Approach LOS		C			C			C			D	

























Intersection Summary

HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	118.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
7: SH 44 & N Middleton Rd

2025 Total
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	588	233	277	673	90	159	97	177	103	234	224
Future Volume (veh/h)	118	588	233	277	673	90	159	97	177	103	234	224
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	131	653	259	308	748	100	177	108	197	114	260	249
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	250	752	637	343	874	741	287	401	541	368	351	298
Arrive On Green	0.06	0.40	0.40	0.13	0.47	0.47	0.09	0.21	0.21	0.07	0.19	0.19
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	131	653	259	308	748	100	177	108	197	114	260	249
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.5	33.9	12.4	10.9	37.5	3.8	8.4	5.1	9.9	5.4	13.9	16.0
Cycle Q Clear(g_c), s	4.5	33.9	12.4	10.9	37.5	3.8	8.4	5.1	9.9	5.4	13.9	16.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	250	752	637	343	874	741	287	401	541	368	351	298
V/C Ratio(X)	0.52	0.87	0.41	0.90	0.86	0.13	0.62	0.27	0.36	0.31	0.74	0.84
Avail Cap(c_a), veh/h	310	1237	1049	454	1414	1198	287	530	650	415	530	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.0	29.1	22.6	24.0	25.0	16.0	31.4	34.6	26.2	31.3	40.5	41.4
Incr Delay (d2), s/veh	1.7	3.9	0.4	16.6	3.0	0.1	3.9	0.4	0.4	0.5	3.1	8.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.5	22.3	8.0	9.8	23.0	2.4	6.9	4.2	6.7	4.2	10.8	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.7	32.9	23.0	40.6	28.0	16.1	35.3	35.0	26.6	31.8	43.6	49.8
LnGrp LOS	C	C	C	D	C	B	D	D	C	C	D	D
Approach Vol, veh/h		1043			1156			482			623	
Approach Delay, s/veh		29.3			30.4			31.7			43.9	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.5	54.5	15.0	24.9	18.4	47.5	12.2	27.7				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	80.0	10.0	30.0	20.0	70.0	10.0	30.0				
Max Q Clear Time (g_c+I1), s	6.5	39.5	10.4	18.0	12.9	35.9	7.4	11.9				
Green Ext Time (p_c), s	0.1	6.5	0.0	1.9	0.5	6.6	0.1	1.1				
Intersection Summary												
HCM 6th Ctrl Delay				32.8								
HCM 6th LOS				C								

HCM 6th TWSC
1: Cemetery Rd & Purple Sage Rd

2025 Total
PM Peak Hour

Intersection												
Int Delay, s/veh	9.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	95	22	53	147	14	14	29	41	5	21	0
Future Vol, veh/h	24	95	22	53	147	14	14	29	41	5	21	0
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	106	24	59	163	16	16	32	46	6	23	0

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	212	145	23	187	122	55	23	0	0	78	0	0
Stage 1	35	35	-	87	87	-	-	-	-	-	-	-
Stage 2	177	110	-	100	35	-	-	-	-	-	-	-
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	745	746	1054	774	768	1012	1592	-	-	1520	-	-
Stage 1	981	866	-	921	823	-	-	-	-	-	-	-
Stage 2	825	804	-	906	866	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	605	735	1054	666	756	1012	1592	-	-	1520	-	-
Mov Cap-2 Maneuver	605	735	-	666	756	-	-	-	-	-	-	-
Stage 1	970	863	-	911	814	-	-	-	-	-	-	-
Stage 2	642	795	-	774	863	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.1		12.1		1.2		1.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1592	-	-	743	743	1520	-	-
HCM Lane V/C Ratio	0.01	-	-	0.211	0.32	0.004	-	-
HCM Control Delay (s)	7.3	0	-	11.1	12.1	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.8	1.4	0	-	-

HCM 6th TWSC
2: Cemetery Rd & Concord St

2025 Total
PM Peak Hour

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	11	4	11	13	11	17	22	152	15	29	174	12
Future Vol, veh/h	11	4	11	13	11	17	22	152	15	29	174	12
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	2	2	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	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	10	2	2	2	2	2	2	2	2	5	2	9
Mvmt Flow	14	5	14	16	14	21	28	190	19	36	218	15

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	574	565	228	567	563	205	233	0	0	211	0	0
Stage 1	298	298	-	258	258	-	-	-	-	-	-	-
Stage 2	276	267	-	309	305	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.15	-	-
Critical Hdwy Stg 1	6.2	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.245	-	-
Pot Cap-1 Maneuver	418	434	811	434	435	836	1335	-	-	1342	-	-
Stage 1	694	667	-	747	694	-	-	-	-	-	-	-
Stage 2	713	688	-	701	662	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	380	410	809	404	411	832	1335	-	-	1339	-	-
Mov Cap-2 Maneuver	380	410	-	404	411	-	-	-	-	-	-	-
Stage 1	677	646	-	728	676	-	-	-	-	-	-	-
Stage 2	662	670	-	661	641	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.8		12.7		0.9		1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1335	-	-	497	517	1339	-	-
HCM Lane V/C Ratio	0.021	-	-	0.065	0.099	0.027	-	-
HCM Control Delay (s)	7.8	0	-	12.8	12.7	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0.1	-	-

Intersection						
Int Delay, s/veh	6.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	44	69	84	54	30	25
Future Vol, veh/h	44	69	84	54	30	25
Conflicting Peds, #/hr	0	0	6	0	0	6
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	68	68	68	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	101	124	79	44	37

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	396	69	87	0	0
Stage 1	69	-	-	-	-
Stage 2	327	-	-	-	-
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	609	994	1509	-	-
Stage 1	954	-	-	-	-
Stage 2	731	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	550	988	1500	-	-
Mov Cap-2 Maneuver	550	-	-	-	-
Stage 1	867	-	-	-	-
Stage 2	727	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	4.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1500	-	754	-	-
HCM Lane V/C Ratio	0.082	-	0.22	-	-
HCM Control Delay (s)	7.6	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.8	-	-

Intersection					
Intersection Delay, s/veh	21.8				
Intersection LOS	C				
Approach	EB	WB		NB	SB
Entry Lanes	1	2		1	1
Conflicting Circle Lanes	1	1		1	1
Adj Approach Flow, veh/h	949	1100		200	193
Demand Flow Rate, veh/h	967	1123		204	197
Vehicles Circulating, veh/h	143	294		966	1101
Vehicles Exiting, veh/h	1155	876		144	316
Ped Vol Crossing Leg, #/h	0	0		0	0
Ped Cap Adj	1.000	1.000		1.000	1.000
Approach Delay, s/veh	18.7	26.9		13.7	16.6
Approach LOS	C	D		B	C
Lane	Left	Left	Right	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized					
Lane Util	1.000	0.880	0.120	1.000	1.000
Follow-Up Headway, s	2.609	2.535	2.535	2.609	2.609
Critical Headway, s	4.976	4.544	4.544	4.976	4.976
Entry Flow, veh/h	967	988	135	204	197
Cap Entry Lane, veh/h	1193	1087	1087	515	449
Entry HV Adj Factor	0.981	0.980	0.978	0.980	0.980
Flow Entry, veh/h	949	968	132	200	193
Cap Entry, veh/h	1170	1065	1063	505	440
V/C Ratio	0.811	0.909	0.124	0.396	0.439
Control Delay, s/veh	18.7	29.9	4.5	13.7	16.6
LOS	C	D	A	B	C
95th %tile Queue, veh	10	14	0	2	2

HCM2000 Intersection v/c
4: SH 44 & Cemetery Rd























2025 Total
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	111	689	64	25	856	120	101	51	30	63	40	73	
Future Volume (vph)	111	689	64	25	856	120	101	51	30	63	40	73	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.90		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1759		1770	1682		
Flt Permitted	0.08	1.00	1.00	0.25	1.00	1.00	0.40	1.00		0.70	1.00		
Satd. Flow (perm)	148	1863	1583	457	1863	1583	745	1759		1303	1682		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Adj. Flow (vph)	122	757	70	27	941	132	111	56	33	69	44	80	
RTOR Reduction (vph)	0	0	26	0	0	36	0	14	0	0	45	0	
Lane Group Flow (vph)	122	757	44	27	941	96	111	75	0	69	79	0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		
Protected Phases	1	6		5	2		3	8		7	4		
Permitted Phases	6		6	2		2	8			4			
Actuated Green, G (s)	78.2	70.0	70.0	68.6	65.2	65.2	24.4	15.0		19.4	12.5		
Effective Green, g (s)	80.4	72.0	72.0	72.6	67.2	67.2	28.4	17.0		23.4	14.5		
Actuated g/C Ratio	0.70	0.62	0.62	0.63	0.58	0.58	0.25	0.15		0.20	0.13		
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	246	1163	988	349	1085	922	284	259		300	211		
v/s Ratio Prot	c0.04	0.41		0.00	c0.51		c0.04	0.04		0.02	0.05		
v/s Ratio Perm	0.30		0.03	0.05		0.06	c0.06			0.03			
v/c Ratio	0.50	0.65	0.04	0.08	0.87	0.10	0.39	0.29		0.23	0.38		
Uniform Delay, d1	20.8	13.7	8.4	10.5	20.3	10.7	35.2	43.8		38.1	46.3		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	1.6	1.3	0.0	0.1	7.5	0.0	0.9	0.6		0.4	1.1		
Delay (s)	22.4	15.0	8.4	10.6	27.8	10.7	36.1	44.4		38.5	47.4		
Level of Service	C	B	A	B	C	B	D	D		D	D		
Approach Delay (s)		15.5			25.3			39.8			44.2		
Approach LOS		B			C			D			D		
Intersection Summary													
HCM 2000 Control Delay			24.2	HCM 2000 Level of Service						C			
HCM 2000 Volume to Capacity ratio			0.72										
Actuated Cycle Length (s)			115.3	Sum of lost time (s)							12.0		
Intersection Capacity Utilization			73.5%	ICU Level of Service						D			
Analysis Period (min)			15										

c Critical Lane Group

HCM 6th Signalized Intersection Summary
4: SH 44 & Cemetery Rd

2025 Total
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	689	64	25	856	120	101	51	30	63	40	73
Future Volume (veh/h)	111	689	64	25	856	120	101	51	30	63	40	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	122	757	70	27	941	132	111	56	33	69	44	80
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	1104	936	331	1059	898	238	136	80	260	58	106
Arrive On Green	0.05	0.59	0.59	0.03	0.57	0.57	0.07	0.12	0.12	0.05	0.10	0.10
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1103	650	1781	595	1081
Grp Volume(v), veh/h	122	757	70	27	941	132	111	0	89	69	0	124
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1753	1781	0	1676
Q Serve(g_s), s	2.7	26.2	1.8	0.6	41.4	3.7	5.2	0.0	4.4	3.2	0.0	6.8
Cycle Q Clear(g_c), s	2.7	26.2	1.8	0.6	41.4	3.7	5.2	0.0	4.4	3.2	0.0	6.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		0.65
Lane Grp Cap(c), veh/h	234	1104	936	331	1059	898	238	0	217	260	0	164
V/C Ratio(X)	0.52	0.69	0.07	0.08	0.89	0.15	0.47	0.00	0.41	0.27	0.00	0.76
Avail Cap(c_a), veh/h	332	1787	1514	472	1787	1514	298	0	372	366	0	356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.2	13.3	8.3	11.1	17.8	9.7	34.8	0.0	38.1	35.9	0.0	41.4
Incr Delay (d2), s/veh	1.8	0.8	0.0	0.1	3.3	0.1	1.4	0.0	1.2	0.5	0.0	7.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	15.1	1.0	0.4	23.2	2.2	4.1	0.0	3.5	2.6	0.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	14.0	8.3	11.2	21.1	9.7	36.3	0.0	39.4	36.4	0.0	48.4
LnGrp LOS	C	B	A	B	C	A	D	A	D	D	A	D
Approach Vol, veh/h		949			1100			200			193	
Approach Delay, s/veh		14.5			19.5			37.6			44.1	
Approach LOS		B			B			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.8	58.4	11.9	14.2	7.5	60.6	9.4	16.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	90.0	10.0	20.0	10.0	90.0	10.0	20.0				
Max Q Clear Time (g_c+I1), s	4.7	43.4	7.2	8.8	2.6	28.2	5.2	6.4				
Green Ext Time (p_c), s	0.1	10.0	0.1	0.4	0.0	6.7	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			21.0									
HCM 6th LOS			C									

Intersection							
Intersection Delay, s/veh	8.0						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	1082		1224		48		160
Demand Flow Rate, veh/h	1114		1280		49		166
Vehicles Circulating, veh/h	176		54		1182		1109
Vehicles Exiting, veh/h	1099		1177		108		225
Ped Vol Crossing Leg, #/h	0		0		2		15
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	8.0		7.7		8.3		11.1
Approach LOS	A		A		A		B
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	524	590	602	678	49	166	
Cap Entry Lane, veh/h	1210	1210	1352	1352	520	553	
Entry HV Adj Factor	0.970	0.972	0.956	0.957	0.978	0.961	
Flow Entry, veh/h	508	573	575	649	48	160	
Cap Entry, veh/h	1174	1176	1292	1294	509	532	
V/C Ratio	0.433	0.488	0.445	0.501	0.094	0.300	
Control Delay, s/veh	7.6	8.4	7.2	8.1	8.3	11.1	
LOS	A	A	A	A	A	B	
95th %tile Queue, veh	2	3	2	3	0	1	

HCM2000 Intersection v/c
5: Hawthorne Ave & SH 44

2025 Total
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	32	903	39	45	894	163	13	3	28	99	9	36
Future Volume (vph)	32	903	39	45	894	163	13	3	28	99	9	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1735	3480		1752	3350		1770	1580		1770	1545	
Flt Permitted	0.19	1.00		0.20	1.00		0.72	1.00		0.73	1.00	
Satd. Flow (perm)	345	3480		378	3350		1349	1580		1369	1545	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	36	1003	43	50	993	181	14	3	31	110	10	40
RTOR Reduction (vph)	0	2	0	0	12	0	0	26	0	0	33	0
Lane Group Flow (vph)	36	1044	0	50	1162	0	14	8	0	110	17	0
Confl. Peds. (#/hr)	15		2	2		15						
Heavy Vehicles (%)	4%	3%	3%	3%	5%	2%	2%	2%	4%	2%	25%	4%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	37.4	35.4		40.4	36.9		9.1	9.1		9.1	9.1	
Effective Green, g (s)	41.4	37.4		44.4	38.9		11.1	11.1		11.1	11.1	
Actuated g/C Ratio	0.66	0.59		0.70	0.62		0.18	0.18		0.18	0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	314	2065		386	2068		237	278		241	272	
v/s Ratio Prot	0.01	0.30		c0.01	c0.35			0.01			0.01	
v/s Ratio Perm	0.07			0.08			0.01			c0.08		
v/c Ratio	0.11	0.51		0.13	0.56		0.06	0.03		0.46	0.06	
Uniform Delay, d1	4.3	7.4		3.7	7.1		21.6	21.5		23.2	21.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.2	0.4		0.1	0.0		1.4	0.1	
Delay (s)	4.5	7.6		3.8	7.4		21.7	21.5		24.6	21.7	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		7.5			7.3			21.6			23.7	
Approach LOS		A			A			C			C	

Intersection Summary		
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.51	A
Actuated Cycle Length (s)	63.0	Sum of lost time (s)
Intersection Capacity Utilization	56.2%	9.0
Analysis Period (min)	15	ICU Level of Service
		B

c Critical Lane Group

HCM 6th Signalized Intersection Summary
5: Hawthorne Ave & SH 44

2025 Total
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	32	903	39	45	894	163	13	3	28	99	9	36
Future Volume (veh/h)	32	903	39	45	894	163	13	3	28	99	9	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1841	1856	1856	1856	1826	1826	1870	1870	1870	1870	1530	1530
Adj Flow Rate, veh/h	36	1003	43	50	993	181	14	3	31	110	10	40
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	3	3	3	5	5	2	2	2	2	25	25
Cap, veh/h	341	1720	74	396	1493	272	291	20	202	314	37	148
Arrive On Green	0.04	0.50	0.50	0.05	0.51	0.51	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1753	3442	148	1767	2923	532	1355	142	1465	1375	267	1070
Grp Volume(v), veh/h	36	514	532	50	589	585	14	0	34	110	0	50
Grp Sat Flow(s),veh/h/ln	1753	1763	1826	1767	1735	1721	1355	0	1607	1375	0	1337
Q Serve(g_s), s	0.5	9.9	9.9	0.6	12.1	12.1	0.5	0.0	0.9	3.7	0.0	1.6
Cycle Q Clear(g_c), s	0.5	9.9	9.9	0.6	12.1	12.1	2.1	0.0	0.9	4.6	0.0	1.6
Prop In Lane	1.00		0.08	1.00		0.31	1.00		0.91	1.00		0.80
Lane Grp Cap(c), veh/h	341	881	913	396	886	879	291	0	222	314	0	184
V/C Ratio(X)	0.11	0.58	0.58	0.13	0.66	0.67	0.05	0.00	0.15	0.35	0.00	0.27
Avail Cap(c_a), veh/h	635	2563	2656	674	2522	2502	808	0	834	838	0	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.7	8.5	8.5	6.1	8.7	8.7	19.5	0.0	18.3	20.3	0.0	18.6
Incr Delay (d2), s/veh	0.1	0.6	0.6	0.1	0.9	0.9	0.1	0.0	0.3	0.7	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	4.9	5.1	0.3	5.9	5.9	0.2	0.0	0.6	2.0	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.9	9.1	9.1	6.3	9.6	9.6	19.6	0.0	18.6	21.0	0.0	19.4
LnGrp LOS	A	A	A	A	A	A	B	A	B	C	A	B
Approach Vol, veh/h		1082			1224			48			160	
Approach Delay, s/veh		9.0			9.5			18.9			20.5	
Approach LOS		A			A			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	29.6		11.6	7.4	29.1		11.6				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	70.0		25.0	10.0	70.0		25.0				
Max Q Clear Time (g_c+1/2), s	10.5	14.1		6.6	2.6	11.9		4.1				
Green Ext Time (p_c), s	0.0	10.4		0.5	0.0	8.5		0.1				

Intersection Summary

HCM 6th Ctrl Delay	10.2
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	↷
Traffic Vol, veh/h	838	8	33	921	67	38
Future Vol, veh/h	838	8	33	921	67	38
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	873	8	34	959	70	40

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	881	0	1904 878
Stage 1	-	-	-	-	877 -
Stage 2	-	-	-	-	1027 -
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	-	-	767	-	76 347
Stage 1	-	-	-	-	407 -
Stage 2	-	-	-	-	345 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	767	-	73 347
Mov Cap-2 Maneuver	-	-	-	-	252 -
Stage 1	-	-	-	-	407 -
Stage 2	-	-	-	-	330 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	21.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	252	347	-	-	767	-
HCM Lane V/C Ratio	0.277	0.114	-	-	0.045	-
HCM Control Delay (s)	24.7	16.7	-	-	9.9	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	1.1	0.4	-	-	0.1	-

























HCM 6th Roundabout
7: SH 44 & N Middleton Rd

2025 Total
PM Peak Hour

Intersection									
Intersection Delay, s/veh	24.0								
Intersection LOS	C								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		2		2		
Adj Approach Flow, veh/h	1027		1231		825		370		
Demand Flow Rate, veh/h	1048		1256		842		377		
Vehicles Circulating, veh/h	497		707		904		1415		
Vehicles Exiting, veh/h	1295		1039		641		548		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	12.5		30.6		28.6		23.8		
Approach LOS	B		D		D		C		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	R	LT	R	
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.605	0.395	0.623	0.377	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.645	4.328	4.645	4.328	
Entry Flow, veh/h	493	555	590	666	509	333	235	142	
Cap Entry Lane, veh/h	903	903	746	746	588	659	367	426	
Entry HV Adj Factor	0.979	0.981	0.981	0.980	0.980	0.979	0.982	0.979	
Flow Entry, veh/h	483	545	579	652	499	326	231	139	
Cap Entry, veh/h	885	886	732	731	576	645	361	417	
V/C Ratio	0.546	0.614	0.791	0.892	0.866	0.506	0.640	0.333	
Control Delay, s/veh	11.6	13.4	24.8	35.8	38.3	13.7	29.3	14.5	
LOS	B	B	C	E	E	B	D	B	
95th %tile Queue, veh	3	4	8	11	10	3	4	1	

HCM2000 Intersection v/c
7: SH 44 & N Middleton Rd

2025 Total
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	603	197	247	810	125	275	204	313	61	160	133
Future Volume (vph)	186	603	197	247	810	125	275	204	313	61	160	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.07	1.00	1.00	0.19	1.00	1.00	0.35	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	135	1863	1583	359	1863	1583	655	1863	1583	1029	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	194	628	205	257	844	130	286	212	326	64	167	139
RTOR Reduction (vph)	0	0	45	0	0	43	0	0	174	0	0	102
Lane Group Flow (vph)	194	628	160	257	844	87	286	213	152	64	167	37
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	68.4	58.4	58.4	75.2	61.8	61.8	38.4	26.0	39.4	25.7	18.3	18.3
Effective Green, g (s)	72.4	60.4	60.4	78.8	63.8	63.8	40.4	28.0	43.4	29.7	20.3	20.3
Actuated g/C Ratio	0.58	0.48	0.48	0.63	0.51	0.51	0.32	0.22	0.35	0.24	0.16	0.16
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	234	898	763	399	949	806	363	416	586	299	302	256
v/s Ratio Prot	c0.08	0.34		c0.08	c0.45		c0.11	0.11	0.03	0.02	0.09	
v/s Ratio Perm	0.40		0.10	0.33		0.06	c0.15		0.06	0.03		0.02
v/c Ratio	0.83	0.70	0.21	0.64	0.89	0.11	0.79	0.51	0.26	0.21	0.55	0.14
Uniform Delay, d1	33.8	25.3	18.7	17.2	27.5	15.9	34.9	42.6	29.4	37.8	48.3	45.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	20.9	2.4	0.1	3.5	10.2	0.1	10.8	1.1	0.2	0.4	2.2	0.3
Delay (s)	54.6	27.7	18.8	20.7	37.8	16.0	45.6	43.7	29.6	38.2	50.5	45.3
Level of Service	D	C	B	C	D	B	D	D	C	D	D	D
Approach Delay (s)		31.0			31.9			38.8			46.4	
Approach LOS		C			C			D			D	

























Intersection Summary

HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	125.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
7: SH 44 & N Middleton Rd

2025 Total
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	603	197	247	810	125	275	204	313	61	160	133
Future Volume (veh/h)	186	603	197	247	810	125	275	204	313	61	160	133
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	194	628	205	257	844	130	286	212	326	64	167	139
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	897	760	372	933	791	333	385	473	231	214	181
Arrive On Green	0.07	0.48	0.48	0.09	0.50	0.50	0.13	0.21	0.21	0.04	0.11	0.11
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	194	628	205	257	844	130	286	212	326	64	167	139
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.1	29.4	8.6	8.1	46.0	5.0	15.0	11.3	20.3	3.5	9.7	9.5
Cycle Q Clear(g_c), s	6.1	29.4	8.6	8.1	46.0	5.0	15.0	11.3	20.3	3.5	9.7	9.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	245	897	760	372	933	791	333	385	473	231	214	181
V/C Ratio(X)	0.79	0.70	0.27	0.69	0.90	0.16	0.86	0.55	0.69	0.28	0.78	0.77
Avail Cap(c_a), veh/h	274	1256	1064	446	1339	1135	333	419	502	394	419	355
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	22.8	17.4	18.3	25.6	15.3	37.1	39.8	34.6	41.1	48.1	48.0
Incr Delay (d2), s/veh	13.2	1.0	0.2	3.5	6.6	0.1	19.5	1.3	3.7	0.6	6.1	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.0	18.9	5.6	6.1	28.3	3.2	13.3	9.1	12.8	2.8	8.4	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.3	23.8	17.6	21.8	32.2	15.4	56.5	41.1	38.3	41.8	54.2	54.6
LnGrp LOS	D	C	B	C	C	B	E	D	D	D	D	D
Approach Vol, veh/h		1027			1231			824			370	
Approach Delay, s/veh		25.1			28.2			45.3			52.2	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.2	60.7	20.0	17.8	15.4	58.6	9.8	28.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	80.0	15.0	25.0	15.0	75.0	15.0	25.0				
Max Q Clear Time (g_c+I1), s	8.1	48.0	17.0	11.7	10.1	31.4	5.5	22.3				
Green Ext Time (p_c), s	0.1	7.7	0.0	1.1	0.3	6.2	0.1	0.7				
Intersection Summary												
HCM 6th Ctrl Delay			34.0									
HCM 6th LOS			C									

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	4	2	10	0
Future Vol, veh/h	0	15	4	2	10	0
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	4	2	11	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	21	11	11	0	0
Stage 1	11	-	-	-	-
Stage 2	10	-	-	-	-
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	996	1070	1608	-	-
Stage 1	1012	-	-	-	-
Stage 2	1013	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	994	1070	1608	-	-
Mov Cap-2 Maneuver	994	-	-	-	-
Stage 1	1010	-	-	-	-
Stage 2	1013	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	4.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1608	-	1070	-	-
HCM Lane V/C Ratio	0.003	-	0.016	-	-
HCM Control Delay (s)	7.2	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
9: Hawthorne Ave & East Access

2025 Total
AM Peak Hour

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	18	8	9	30	0
Future Vol, veh/h	0	18	8	9	30	0
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	20	9	10	33	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	61	33	33	0	0
Stage 1	33	-	-	-	-
Stage 2	28	-	-	-	-
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	945	1041	1579	-	-
Stage 1	989	-	-	-	-
Stage 2	995	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	939	1041	1579	-	-
Mov Cap-2 Maneuver	939	-	-	-	-
Stage 1	983	-	-	-	-
Stage 2	995	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	3.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1579	-	1041	-	-
HCM Lane V/C Ratio	0.006	-	0.019	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
10: Concord St & South Access

2025 Total
AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	3	146	124	6	15	10
Future Vol, veh/h	3	146	124	6	15	10
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	162	138	7	17	11

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	145	0	0	310	142
Stage 1	-	-	-	142	-
Stage 2	-	-	-	168	-
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	1437	-	-	682	906
Stage 1	-	-	-	885	-
Stage 2	-	-	-	862	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1437	-	-	681	906
Mov Cap-2 Maneuver	-	-	-	681	-
Stage 1	-	-	-	883	-
Stage 2	-	-	-	862	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1437	-	-	-	756
HCM Lane V/C Ratio	0.002	-	-	-	0.037
HCM Control Delay (s)	7.5	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	5.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	0	9	18	6	4	0
Future Vol, veh/h	0	9	18	6	4	0
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	20	7	4	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	51	4	4	0	-	0
Stage 1	4	-	-	-	-	-
Stage 2	47	-	-	-	-	-
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	958	1080	1618	-	-	-
Stage 1	1019	-	-	-	-	-
Stage 2	975	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	947	1080	1618	-	-	-
Mov Cap-2 Maneuver	947	-	-	-	-	-
Stage 1	1007	-	-	-	-	-
Stage 2	975	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	5.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1618	-	1080	-	-
HCM Lane V/C Ratio	0.012	-	0.009	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
9: Hawthorne Ave & East Access

2025 Total
PM Peak Hour

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	22	30	16	0
Future Vol, veh/h	0	15	22	30	16	0
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	24	33	18	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	99	18	18	0	0
Stage 1	18	-	-	-	-
Stage 2	81	-	-	-	-
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	900	1061	1599	-	-
Stage 1	1005	-	-	-	-
Stage 2	942	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	887	1061	1599	-	-
Mov Cap-2 Maneuver	887	-	-	-	-
Stage 1	990	-	-	-	-
Stage 2	942	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	3.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1599	-	1061	-	-
HCM Lane V/C Ratio	0.015	-	0.016	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	12	103	90	19	11	6
Future Vol, veh/h	12	103	90	19	11	6
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	114	100	21	12	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	121	0	-	0	251 111
Stage 1	-	-	-	-	111 -
Stage 2	-	-	-	-	140 -
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	1467	-	-	-	738 942
Stage 1	-	-	-	-	914 -
Stage 2	-	-	-	-	887 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1467	-	-	-	731 942
Mov Cap-2 Maneuver	-	-	-	-	731 -
Stage 1	-	-	-	-	906 -
Stage 2	-	-	-	-	887 -

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1467	-	-	-	794
HCM Lane V/C Ratio	0.009	-	-	-	0.024
HCM Control Delay (s)	7.5	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

APPENDIX H: 2030 Background Synchro Reports

Intersection												
Int Delay, s/veh	10.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	173	17	56	183	4	5	10	30	11	31	6
Future Vol, veh/h	13	173	17	56	183	4	5	10	30	11	31	6
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	192	19	62	203	4	6	11	33	12	34	7

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	205	118	38	207	105	28	41	0	0	44	0	0
Stage 1	62	62	-	40	40	-	-	-	-	-	-	-
Stage 2	143	56	-	167	65	-	-	-	-	-	-	-
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	753	772	1034	751	785	1047	1568	-	-	1564	-	-
Stage 1	949	843	-	975	862	-	-	-	-	-	-	-
Stage 2	860	848	-	835	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	593	763	1034	589	776	1047	1568	-	-	1564	-	-
Mov Cap-2 Maneuver	593	763	-	589	776	-	-	-	-	-	-	-
Stage 1	945	836	-	971	859	-	-	-	-	-	-	-
Stage 2	651	845	-	626	834	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.6		12.9		0.8		1.7	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1568	-	-	766	726	1564	-	-
HCM Lane V/C Ratio	0.004	-	-	0.294	0.372	0.008	-	-
HCM Control Delay (s)	7.3	0	-	11.6	12.9	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.2	1.7	0	-	-

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	14	30	19	16	21	16	178	7	71	283	14
Future Vol, veh/h	27	14	30	19	16	21	16	178	7	71	283	14
Conflicting Peds, #/hr	3	0	3	3	0	3	12	0	1	1	0	12
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	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	5	2	2	8	2	10	2	3	2	2	4	2
Mvmt Flow	36	19	41	26	22	28	22	241	9	96	382	19

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	914	891	407	908	896	250	413	0	0	251	0	0
Stage 1	596	596	-	291	291	-	-	-	-	-	-	-
Stage 2	318	295	-	617	605	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.22	7.18	6.52	6.3	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.318	3.572	4.018	3.39	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	251	282	644	250	280	770	1146	-	-	1314	-	-
Stage 1	485	492	-	704	672	-	-	-	-	-	-	-
Stage 2	687	669	-	467	487	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	203	247	635	201	245	767	1133	-	-	1313	-	-
Mov Cap-2 Maneuver	203	247	-	201	245	-	-	-	-	-	-	-
Stage 1	469	441	-	687	656	-	-	-	-	-	-	-
Stage 2	623	653	-	378	436	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	22.5		21.1		0.7		1.5	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1133	-	-	300	299	1313	-	-
HCM Lane V/C Ratio	0.019	-	-	0.32	0.253	0.073	-	-
HCM Control Delay (s)	8.2	0	-	22.5	21.1	8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	1	0.2	-	-

Intersection						
Int Delay, s/veh	7.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	44	116	72	4	7	62
Future Vol, veh/h	44	116	72	4	7	62
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	74	74	74	74	74	74
Heavy Vehicles, %	2	2	5	2	2	4
Mvmt Flow	59	157	97	5	9	84

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	250	51	93	0	0
Stage 1	51	-	-	-	-
Stage 2	199	-	-	-	-
Critical Hdwy	6.42	6.22	4.15	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.245	-	-
Pot Cap-1 Maneuver	739	1017	1483	-	-
Stage 1	971	-	-	-	-
Stage 2	835	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	690	1017	1483	-	-
Mov Cap-2 Maneuver	690	-	-	-	-
Stage 1	907	-	-	-	-
Stage 2	835	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	7.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1483	-	900	-	-
HCM Lane V/C Ratio	0.066	-	0.24	-	-
HCM Control Delay (s)	7.6	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Intersection					
Intersection Delay, s/veh	15.5				
Intersection LOS	C				
Approach	EB	WB		NB	SB
Entry Lanes	1	2		1	1
Conflicting Circle Lanes	1	1		1	1
Adj Approach Flow, veh/h	909	838		214	276
Demand Flow Rate, veh/h	928	855		218	282
Vehicles Circulating, veh/h	191	216		979	869
Vehicles Exiting, veh/h	960	981		140	202
Ped Vol Crossing Leg, #/h	1	0		0	1
Ped Cap Adj	1.000	1.000		1.000	1.000
Approach Delay, s/veh	19.9	11.2		14.7	15.1
Approach LOS	C	B		B	C
Lane	Left	Left	Right	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized					
Lane Util	1.000	0.890	0.110	1.000	1.000
Follow-Up Headway, s	2.609	2.535	2.535	2.609	2.609
Critical Headway, s	4.976	4.544	4.544	4.976	4.976
Entry Flow, veh/h	928	761	94	218	282
Cap Entry Lane, veh/h	1136	1167	1167	508	569
Entry HV Adj Factor	0.980	0.981	0.979	0.981	0.980
Flow Entry, veh/h	909	746	92	214	276
Cap Entry, veh/h	1113	1144	1142	499	557
V/C Ratio	0.817	0.652	0.081	0.429	0.496
Control Delay, s/veh	19.9	12.1	3.8	14.7	15.1
LOS	C	B	A	B	C
95th %tile Queue, veh	10	5	0	2	3























HCM2000 Intersection v-c
4: SH 44 & Cemetery Rd

2030 Background
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	44	699	75	15	656	83	95	51	46	120	33	95	
Future Volume (vph)	44	699	75	15	656	83	95	51	46	120	33	95	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00		1.00	0.98		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.89		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1549	1770	1731		1770	1629		
Flt Permitted	0.18	1.00	1.00	0.17	1.00	1.00	0.67	1.00		0.43	1.00		
Satd. Flow (perm)	328	1863	1583	317	1863	1549	1240	1731		803	1629		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	49	777	83	17	729	92	106	57	51	133	37	106	
RTOR Reduction (vph)	0	0	37	0	0	43	0	31	0	0	89	0	
Lane Group Flow (vph)	49	777	46	17	729	49	106	77	0	133	54	0	
Confl. Peds. (#/hr)	1					1						1	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		
Protected Phases	1	6		5	2		3	8		7	4		
Permitted Phases	6		6	2		2	8			4			
Actuated Green, G (s)	47.5	44.1	44.1	44.5	42.6	42.6	14.3	7.7		21.3	11.2		
Effective Green, g (s)	51.5	46.1	46.1	48.5	44.6	44.6	18.3	9.7		24.8	13.2		
Actuated g/C Ratio	0.61	0.55	0.55	0.58	0.53	0.53	0.22	0.12		0.30	0.16		
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	294	1024	870	251	991	824	325	200		377	256		
v/s Ratio Prot	c0.01	c0.42		0.00	0.39		0.03	0.04		c0.05	0.03		
v/s Ratio Perm	0.09		0.03	0.04		0.03	0.04			c0.05			
v/c Ratio	0.17	0.76	0.05	0.07	0.74	0.06	0.33	0.39		0.35	0.21		
Uniform Delay, d1	10.5	14.6	8.7	11.1	15.1	9.5	27.2	34.3		22.6	30.8		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.3	3.3	0.0	0.1	2.9	0.0	0.6	1.2		0.6	0.4		
Delay (s)	10.7	17.8	8.8	11.2	17.9	9.5	27.8	35.5		23.2	31.2		
Level of Service	B	B	A	B	B	A	C	D		C	C		
Approach Delay (s)		16.6			16.9			31.7			27.3		
Approach LOS		B			B			C			C		
Intersection Summary													
HCM 2000 Control Delay			19.5	HCM 2000 Level of Service						B			
HCM 2000 Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			83.8	Sum of lost time (s)						12.0			
Intersection Capacity Utilization			60.0%	ICU Level of Service						B			
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th Signalized Intersection Summary
4: SH 44 & Cemetery Rd

2030 Background
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	699	75	15	656	83	95	51	46	120	33	95
Future Volume (veh/h)	44	699	75	15	656	83	95	51	46	120	33	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	777	83	17	729	92	106	57	51	133	37	106
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	267	913	773	223	868	735	285	98	88	325	53	152
Arrive On Green	0.04	0.49	0.49	0.02	0.46	0.46	0.07	0.11	0.11	0.09	0.12	0.12
Sat Flow, veh/h	1781	1870	1583	1781	1870	1583	1781	910	814	1781	426	1221
Grp Volume(v), veh/h	49	777	83	17	729	92	106	0	108	133	0	143
Grp Sat Flow(s),veh/h/ln	1781	1870	1583	1781	1870	1583	1781	0	1724	1781	0	1647
Q Serve(g_s), s	0.9	24.6	1.9	0.3	23.1	2.2	3.5	0.0	4.0	4.4	0.0	5.6
Cycle Q Clear(g_c), s	0.9	24.6	1.9	0.3	23.1	2.2	3.5	0.0	4.0	4.4	0.0	5.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.47	1.00		0.74
Lane Grp Cap(c), veh/h	267	913	773	223	868	735	285	0	185	325	0	205
V/C Ratio(X)	0.18	0.85	0.11	0.08	0.84	0.13	0.37	0.00	0.58	0.41	0.00	0.70
Avail Cap(c_a), veh/h	451	1522	1288	450	1522	1288	421	0	638	432	0	609
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	15.1	9.3	13.1	15.9	10.3	24.4	0.0	28.7	23.8	0.0	28.4
Incr Delay (d2), s/veh	0.3	2.5	0.1	0.1	2.3	0.1	0.8	0.0	2.9	0.8	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	14.3	1.0	0.2	13.8	1.2	2.6	0.0	3.1	3.2	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.0	17.7	9.4	13.2	18.2	10.4	25.2	0.0	31.6	24.6	0.0	32.7
LnGrp LOS	B	B	A	B	B	B	C	A	C	C	A	C
Approach Vol, veh/h		909			838			214				276
Approach Delay, s/veh		16.7			17.2			28.4				28.8
Approach LOS		B			B			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	36.4	9.8	13.4	6.4	38.0	11.0	12.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	55.0	10.0	25.0	10.0	55.0	10.0	25.0				
Max Q Clear Time (g_c+I1), s	2.9	25.1	5.5	7.6	2.3	26.6	6.4	6.0				
Green Ext Time (p_c), s	0.0	6.0	0.1	0.7	0.0	6.4	0.1	0.5				
Intersection Summary												
HCM 6th Ctrl Delay			19.5									
HCM 6th LOS			B									

Intersection							
Intersection Delay, s/veh	9.9						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	1423		1487		26		161
Demand Flow Rate, veh/h	1453		1547		27		166
Vehicles Circulating, veh/h	113		63		1534		1488
Vehicles Exiting, veh/h	1541		1498		32		122
Ped Vol Crossing Leg, #/h	0		0		3		6
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	9.5		9.5		10.8		17.7
Approach LOS	A		A		B		C
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	683	770	727	820	27	166	
Cap Entry Lane, veh/h	1281	1281	1341	1341	385	401	
Entry HV Adj Factor	0.979	0.979	0.961	0.961	0.963	0.970	
Flow Entry, veh/h	669	754	699	788	26	161	
Cap Entry, veh/h	1255	1255	1289	1289	371	389	
V/C Ratio	0.533	0.601	0.542	0.611	0.070	0.414	
Control Delay, s/veh	8.8	10.1	8.8	10.1	10.8	17.7	
LOS	A	B	A	B	B	C	
95th %tile Queue, veh	3	4	3	4	0	2	

HCM2000 Intersection v-c
5: Hawthorne Ave & SH 44

2030 Background
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	1097	10	13	1141	50	4	0	17	74	0	57
Future Volume (vph)	46	1097	10	13	1141	50	4	0	17	74	0	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3530		1641	3446		1770	1509		1736	1583	
Flt Permitted	0.11	1.00		0.16	1.00		0.71	1.00		0.74	1.00	
Satd. Flow (perm)	209	3530		273	3446		1325	1509		1359	1583	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	57	1354	12	16	1409	62	5	0	21	91	0	70
RTOR Reduction (vph)	0	0	0	0	2	0	0	18	0	0	60	0
Lane Group Flow (vph)	57	1366	0	16	1469	0	5	3	0	91	10	0
Confl. Peds. (#/hr)	6		3	3		6						
Heavy Vehicles (%)	2%	2%	13%	10%	4%	3%	2%	2%	7%	4%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	56.6	51.9		51.2	49.2		9.2	9.2		9.2	9.2	
Effective Green, g (s)	60.6	53.9		55.2	51.2		11.2	11.2		11.2	11.2	
Actuated g/C Ratio	0.78	0.69		0.71	0.66		0.14	0.14		0.14	0.14	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	296	2436		263	2259		190	216		194	227	
v/s Ratio Prot	c0.02	0.39		0.00	c0.43			0.00			0.01	
v/s Ratio Perm	0.13			0.04			0.00			c0.07		
v/c Ratio	0.19	0.56		0.06	0.65		0.03	0.01		0.47	0.04	
Uniform Delay, d1	5.1	6.1		4.1	8.1		28.8	28.7		30.7	28.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.3		0.1	0.7		0.1	0.0		1.8	0.1	
Delay (s)	5.4	6.4		4.2	8.8		28.8	28.7		32.5	28.9	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		6.4			8.7			28.8			30.9	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			9.0	HCM 2000 Level of Service				A				
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			78.1	Sum of lost time (s)				9.0				
Intersection Capacity Utilization			55.7%	ICU Level of Service				B				
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary
5: Hawthorne Ave & SH 44

2030 Background
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	46	1097	10	13	1141	50	4	0	17	74	0	57
Future Volume (veh/h)	46	1097	10	13	1141	50	4	0	17	74	0	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1841	1841	1870	1870	1870	1841	1870	1870
Adj Flow Rate, veh/h	57	1354	12	16	1409	62	5	0	21	91	0	70
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	10	4	4	2	2	2	4	2	2
Cap, veh/h	316	2219	20	297	1989	87	217	0	180	260	0	180
Arrive On Green	0.05	0.61	0.61	0.02	0.58	0.58	0.11	0.00	0.11	0.11	0.00	0.11
Sat Flow, veh/h	1781	3609	32	1668	3412	150	1331	0	1585	1369	0	1585
Grp Volume(v), veh/h	57	666	700	16	721	750	5	0	21	91	0	70
Grp Sat Flow(s),veh/h/ln	1781	1777	1864	1668	1749	1813	1331	0	1585	1369	0	1585
Q Serve(g_s), s	0.7	13.7	13.8	0.2	17.4	17.5	0.2	0.0	0.7	3.8	0.0	2.4
Cycle Q Clear(g_c), s	0.7	13.7	13.8	0.2	17.4	17.5	2.6	0.0	0.7	4.5	0.0	2.4
Prop In Lane	1.00		0.02	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	316	1092	1146	297	1019	1057	217	0	180	260	0	180
V/C Ratio(X)	0.18	0.61	0.61	0.05	0.71	0.71	0.02	0.00	0.12	0.35	0.00	0.39
Avail Cap(c_a), veh/h	525	2093	2196	545	2060	2135	626	0	667	681	0	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.2	7.1	7.1	6.0	8.8	8.8	25.7	0.0	23.7	25.7	0.0	24.4
Incr Delay (d2), s/veh	0.3	0.6	0.5	0.1	0.9	0.9	0.0	0.0	0.3	0.8	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	6.5	6.8	0.1	8.5	8.8	0.1	0.0	0.5	2.2	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	7.6	7.6	6.1	9.7	9.7	25.7	0.0	24.0	26.5	0.0	25.8
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		1423			1487			26			161	
Approach Delay, s/veh		7.6			9.7			24.3			26.2	
Approach LOS		A			A			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	39.6		11.7	6.2	41.5		11.7				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	70.0	70.0		25.0	10.0	70.0		25.0				
Max Q Clear Time (g_c+1/2), s	19.5	19.5		6.5	2.2	15.8		4.6				
Green Ext Time (p_c), s	0.0	15.1		0.5	0.0	13.2		0.1				

Intersection Summary

HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	1041	15	17	1063	49	86
Future Vol, veh/h	1041	15	17	1063	49	86
Conflicting Peds, #/hr	0	4	4	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1157	17	19	1181	54	96

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1178	0	2389 1170
Stage 1	-	-	-	-	1170 -
Stage 2	-	-	-	-	1219 -
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	-	-	593	-	~ 37 235
Stage 1	-	-	-	-	295 -
Stage 2	-	-	-	-	279 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	591	-	~ 36 234
Mov Cap-2 Maneuver	-	-	-	-	189 -
Stage 1	-	-	-	-	294 -
Stage 2	-	-	-	-	270 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	31
HCM LOS			D

























Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	189	234	-	-	591	-
HCM Lane V/C Ratio	0.288	0.408	-	-	0.032	-
HCM Control Delay (s)	31.6	30.6	-	-	11.3	-
HCM Lane LOS	D	D	-	-	B	-
HCM 95th %tile Q(veh)	1.1	1.9	-	-	0.1	-

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

Intersection									
Intersection Delay, s/veh	69.7								
Intersection LOS	F								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		2		2		
Adj Approach Flow, veh/h	1262		1470		624		752		
Demand Flow Rate, veh/h	1287		1499		637		767		
Vehicles Circulating, veh/h	918		493		1129		1584		
Vehicles Exiting, veh/h	1433		1273		1076		408		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	77.7		25.1		23.2		181.9		
Approach LOS	F		D		C		F		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	R	LT	R	
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.537	0.463	0.611	0.389	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.645	4.328	4.645	4.328	
Entry Flow, veh/h	605	682	705	794	342	295	469	298	
Cap Entry Lane, veh/h	616	616	907	907	478	544	314	369	
Entry HV Adj Factor	0.980	0.981	0.980	0.981	0.981	0.980	0.980	0.980	
Flow Entry, veh/h	593	669	691	779	335	289	460	292	
Cap Entry, veh/h	604	604	888	890	469	533	308	362	
V/C Ratio	0.982	1.107	0.778	0.876	0.716	0.542	1.492	0.807	
Control Delay, s/veh	58.4	94.8	20.5	29.2	28.3	17.2	269.0	44.7	
LOS	F	F	C	D	D	C	F	E	
95th %tile Queue, veh	14	20	8	12	6	3	26	7	

HCM2000 Intersection v-c
7: SH 44 & N Middleton Rd

2030 Background
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	729	274	396	815	112	186	115	260	134	280	263
Future Volume (vph)	133	729	274	396	815	112	186	115	260	134	280	263
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.09	1.00	1.00	0.06	1.00	1.00	0.14	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	170	1863	1583	115	1863	1583	264	1863	1583	1024	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	148	810	304	440	906	124	207	128	289	149	311	292
RTOR Reduction (vph)	0	0	73	0	0	39	0	0	92	0	0	112
Lane Group Flow (vph)	148	810	231	440	906	85	207	128	197	149	311	180
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	69.6	60.0	60.0	95.0	80.4	80.4	41.0	26.2	56.2	38.4	24.9	24.9
Effective Green, g (s)	73.6	62.0	62.0	97.0	82.4	82.4	45.0	28.2	60.2	42.4	26.9	26.9
Actuated g/C Ratio	0.49	0.41	0.41	0.65	0.55	0.55	0.30	0.19	0.40	0.28	0.18	0.18
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	207	771	655	428	1025	871	248	350	668	367	334	284
v/s Ratio Prot	0.06	0.43		c0.22	0.49		c0.09	0.07	0.06	0.04	c0.17	
v/s Ratio Perm	0.30		0.15	c0.45		0.05	0.16		0.06	0.07		0.11
v/c Ratio	0.71	1.05	0.35	1.03	0.88	0.10	0.83	0.37	0.29	0.41	0.93	0.63
Uniform Delay, d1	29.9	43.8	30.1	50.6	29.5	16.0	43.6	53.0	30.4	42.1	60.5	56.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.1	46.5	0.3	50.9	9.2	0.0	20.8	0.7	0.2	0.7	31.9	4.5
Delay (s)	41.1	90.3	30.4	101.5	38.6	16.0	64.5	53.6	30.6	42.8	92.4	61.4
Level of Service	D	F	C	F	D	B	E	D	C	D	F	E
Approach Delay (s)		70.1			55.6			46.6			70.5	
Approach LOS		E			E			D			E	

























Intersection Summary

HCM 2000 Control Delay	61.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	149.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
7: SH 44 & N Middleton Rd

2030 Background
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	729	274	396	815	112	186	115	260	134	280	263
Future Volume (veh/h)	133	729	274	396	815	112	186	115	260	134	280	263
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	810	304	440	906	124	207	128	289	149	311	292
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	748	634	404	1006	853	227	345	609	315	312	264
Arrive On Green	0.06	0.40	0.40	0.20	0.54	0.54	0.10	0.18	0.18	0.08	0.17	0.17
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	148	810	304	440	906	124	207	128	289	149	311	292
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.3	60.0	21.4	30.0	65.1	5.9	14.5	9.0	20.6	10.3	24.9	25.0
Cycle Q Clear(g_c), s	7.3	60.0	21.4	30.0	65.1	5.9	14.5	9.0	20.6	10.3	24.9	25.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	215	748	634	404	1006	853	227	345	609	315	312	264
V/C Ratio(X)	0.69	1.08	0.48	1.09	0.90	0.15	0.91	0.37	0.47	0.47	1.00	1.11
Avail Cap(c_a), veh/h	224	748	634	404	1006	853	227	345	609	347	312	264
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.7	45.0	33.4	51.3	31.1	17.4	47.7	53.6	34.8	46.3	62.5	62.5
Incr Delay (d2), s/veh	8.1	57.6	0.6	70.7	11.0	0.1	37.2	0.7	0.6	1.1	50.3	86.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.6	53.2	13.1	31.8	40.7	3.9	13.6	7.7	12.7	8.2	22.7	24.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.8	102.6	34.0	122.0	42.0	17.5	84.9	54.2	35.3	47.4	112.8	149.1
LnGrp LOS	D	F	C	F	D	B	F	D	D	D	F	F
Approach Vol, veh/h		1262			1470			624			752	
Approach Delay, s/veh		78.8			63.9			55.7			113.9	
Approach LOS		E			E			E			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.3	85.7	20.0	30.0	35.0	65.0	17.3	32.7				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	80.0	15.0	25.0	30.0	60.0	15.0	25.0				
Max Q Clear Time (g_c+I1), s	9.3	67.1	16.5	27.0	32.0	62.0	12.3	22.6				
Green Ext Time (p_c), s	0.0	5.8	0.0	0.0	0.0	0.0	0.1	0.4				
Intersection Summary												
HCM 6th Ctrl Delay			76.4									
HCM 6th LOS			E									

Intersection												
Int Delay, s/veh	11.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	37	141	30	73	222	22	14	32	42	6	23	0
Future Vol, veh/h	37	141	30	73	222	22	14	32	42	6	23	0
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	41	157	33	81	247	24	16	36	47	7	26	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	267	155	26	227	132	60	26	0	0	83	0	0
Stage 1	40	40	-	92	92	-	-	-	-	-	-	-
Stage 2	227	115	-	135	40	-	-	-	-	-	-	-
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	686	737	1050	728	759	1005	1588	-	-	1514	-	-
Stage 1	975	862	-	915	819	-	-	-	-	-	-	-
Stage 2	776	800	-	868	862	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	493	725	1050	581	747	1005	1588	-	-	1514	-	-
Mov Cap-2 Maneuver	493	725	-	581	747	-	-	-	-	-	-	-
Stage 1	964	858	-	905	810	-	-	-	-	-	-	-
Stage 2	521	791	-	684	858	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.7		14.9		1.2		1.5	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1588	-	-	698	713	1514	-	-
HCM Lane V/C Ratio	0.01	-	-	0.331	0.494	0.004	-	-
HCM Control Delay (s)	7.3	0	-	12.7	14.9	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.4	2.8	0	-	-

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	5	12	10	12	9	24	200	8	23	213	13
Future Vol, veh/h	12	5	12	10	12	9	24	200	8	23	213	13
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	2	2	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	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	10	2	2	2	2	2	2	2	2	5	2	9
Mvmt Flow	14	6	14	12	14	11	29	241	10	28	257	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	641	632	267	639	635	251	273	0	0	253	0	0
Stage 1	321	321	-	306	306	-	-	-	-	-	-	-
Stage 2	320	311	-	333	329	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.15	-	-
Critical Hdwy Stg 1	6.2	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.245	-	-
Pot Cap-1 Maneuver	377	398	772	389	396	788	1290	-	-	1295	-	-
Stage 1	674	652	-	704	662	-	-	-	-	-	-	-
Stage 2	675	658	-	681	646	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	346	377	771	361	375	784	1290	-	-	1293	-	-
Mov Cap-2 Maneuver	346	377	-	361	375	-	-	-	-	-	-	-
Stage 1	656	635	-	684	643	-	-	-	-	-	-	-
Stage 2	632	640	-	643	629	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.5	14	0.8	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1290	-	-	457	436	1293	-	-
HCM Lane V/C Ratio	0.022	-	-	0.076	0.086	0.021	-	-
HCM Control Delay (s)	7.9	0	-	13.5	14	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0.1	-	-

Intersection						
Int Delay, s/veh	7.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	45	65	72	12	5	25
Future Vol, veh/h	45	65	72	12	5	25
Conflicting Peds, #/hr	0	0	6	0	0	6
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	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	93	103	17	7	36

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	254	31	49	0	0
Stage 1	31	-	-	-	-
Stage 2	223	-	-	-	-
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	735	1043	1558	-	-
Stage 1	992	-	-	-	-
Stage 2	814	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	678	1037	1549	-	-
Mov Cap-2 Maneuver	678	-	-	-	-
Stage 1	920	-	-	-	-
Stage 2	809	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	6.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1549	-	852	-	-
HCM Lane V/C Ratio	0.066	-	0.184	-	-
HCM Control Delay (s)	7.5	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-

Intersection					
Intersection Delay, s/veh	53.3				
Intersection LOS	F				
Approach	EB	WB		NB	SB
Entry Lanes	1	2		1	1
Conflicting Circle Lanes	1	1		1	1
Adj Approach Flow, veh/h	1104	1341		233	231
Demand Flow Rate, veh/h	1127	1368		237	236
Vehicles Circulating, veh/h	193	322		1153	1296
Vehicles Exiting, veh/h	1339	1068		167	394
Ped Vol Crossing Leg, #/h	0	0		0	0
Ped Cap Adj	1.000	1.000		1.000	1.000
Approach Delay, s/veh	45.1	69.6		21.7	29.4
Approach LOS	E	F		C	D
Lane	Left	Left	Right	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized					
Lane Util	1.000	0.857	0.143	1.000	1.000
Follow-Up Headway, s	2.609	2.535	2.535	2.609	2.609
Critical Headway, s	4.976	4.544	4.544	4.976	4.976
Entry Flow, veh/h	1127	1172	196	237	236
Cap Entry Lane, veh/h	1133	1059	1059	426	368
Entry HV Adj Factor	0.980	0.980	0.980	0.982	0.979
Flow Entry, veh/h	1104	1149	192	233	231
Cap Entry, veh/h	1110	1038	1038	418	360
V/C Ratio	0.994	1.106	0.185	0.557	0.641
Control Delay, s/veh	45.1	80.3	5.2	21.7	29.4
LOS	E	F	A	C	D
95th %tile Queue, veh	20	29	1	3	4

HCM2000 Intersection v-c
4: SH 44 & Cemetery Rd

























2030 Background
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	820	69	35	1011	175	111	61	40	93	45	73
Future Volume (vph)	116	820	69	35	1011	175	111	61	40	93	45	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1752		1770	1689	
Flt Permitted	0.04	1.00	1.00	0.19	1.00	1.00	0.37	1.00		0.45	1.00	
Satd. Flow (perm)	81	1863	1583	348	1863	1583	697	1752		845	1689	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	127	901	76	38	1111	192	122	67	44	102	49	80
RTOR Reduction (vph)	0	0	25	0	0	31	0	16	0	0	41	0
Lane Group Flow (vph)	127	901	51	38	1111	161	122	95	0	102	88	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8			4		
Actuated Green, G (s)	99.8	90.8	90.8	91.8	86.8	86.8	22.6	12.9		22.4	12.8	
Effective Green, g (s)	102.8	92.8	92.8	95.8	88.8	88.8	26.6	14.9		26.4	14.8	
Actuated g/C Ratio	0.74	0.67	0.67	0.69	0.64	0.64	0.19	0.11		0.19	0.11	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	1250	1062	313	1196	1016	224	188		238	180	
v/s Ratio Prot	c0.05	0.48		0.01	c0.60		c0.05	0.05		0.04	0.05	
v/s Ratio Perm	0.43		0.03	0.08		0.10	c0.06			0.05		
v/c Ratio	0.65	0.72	0.05	0.12	0.93	0.16	0.54	0.50		0.43	0.49	
Uniform Delay, d1	42.3	14.5	7.7	12.4	22.0	9.9	48.6	58.2		48.1	58.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.7	2.1	0.0	0.2	12.4	0.1	2.7	2.1		1.2	2.1	
Delay (s)	50.0	16.6	7.8	12.6	34.3	9.9	51.3	60.3		49.4	60.3	
Level of Service	D	B	A	B	C	A	D	E		D	E	
Approach Delay (s)		19.8			30.2			55.6			55.5	
Approach LOS		B			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			30.3			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			138.3			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			82.5%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary
4: SH 44 & Cemetery Rd

2030 Background
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	820	69	35	1011	175	111	61	40	93	45	73
Future Volume (veh/h)	116	820	69	35	1011	175	111	61	40	93	45	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	901	76	38	1111	192	122	67	44	102	49	80
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	170	1206	1022	289	1183	1002	215	110	72	228	60	98
Arrive On Green	0.04	0.64	0.64	0.03	0.63	0.63	0.08	0.10	0.10	0.07	0.09	0.09
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1054	692	1781	639	1043
Grp Volume(v), veh/h	127	901	76	38	1111	192	122	0	111	102	0	129
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1746	1781	0	1683
Q Serve(g_s), s	3.2	42.1	2.3	0.9	68.5	6.5	7.8	0.0	7.8	6.5	0.0	9.6
Cycle Q Clear(g_c), s	3.2	42.1	2.3	0.9	68.5	6.5	7.8	0.0	7.8	6.5	0.0	9.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.40	1.00		0.62
Lane Grp Cap(c), veh/h	170	1206	1022	289	1183	1002	215	0	182	228	0	158
V/C Ratio(X)	0.75	0.75	0.07	0.13	0.94	0.19	0.57	0.00	0.61	0.45	0.00	0.82
Avail Cap(c_a), veh/h	236	1321	1119	377	1321	1119	220	0	274	252	0	264
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.9	15.5	8.5	14.4	21.2	9.8	47.6	0.0	54.6	48.0	0.0	56.7
Incr Delay (d2), s/veh	8.1	2.2	0.0	0.2	12.2	0.1	3.3	0.0	3.3	1.4	0.0	9.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.1	24.0	1.4	0.6	40.3	3.9	6.5	0.0	6.4	5.3	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.0	17.7	8.5	14.6	33.4	9.9	50.9	0.0	57.9	49.4	0.0	66.6
LnGrp LOS	D	B	A	B	C	A	D	A	E	D	A	E
Approach Vol, veh/h		1104			1341			233				231
Approach Delay, s/veh		19.5			29.5			54.2				59.0
Approach LOS		B			C			D				E
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.2	85.6	14.7	16.9	8.7	87.1	13.3	18.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	90.0	10.0	20.0	10.0	90.0	10.0	20.0				
Max Q Clear Time (g_c+I1), s	5.2	70.5	9.8	11.6	2.9	44.1	8.5	9.8				
Green Ext Time (p_c), s	0.1	10.0	0.0	0.4	0.0	8.9	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			30.0									
HCM 6th LOS			C									

Intersection							
Intersection Delay, s/veh	9.3						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	1303		1409		54		131
Demand Flow Rate, veh/h	1342		1475		55		138
Vehicles Circulating, veh/h	155		57		1370		1354
Vehicles Exiting, veh/h	1337		1368		127		178
Ped Vol Crossing Leg, #/h	0		0		2		15
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	9.3		8.9		10.1		13.7
Approach LOS	A		A		B		B
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	631	711	693	782	55	138	
Cap Entry Lane, veh/h	1233	1233	1348	1348	443	449	
Entry HV Adj Factor	0.970	0.971	0.956	0.955	0.980	0.951	
Flow Entry, veh/h	612	690	662	747	54	131	
Cap Entry, veh/h	1197	1197	1289	1288	434	427	
V/C Ratio	0.512	0.577	0.514	0.580	0.124	0.307	
Control Delay, s/veh	8.7	9.9	8.3	9.5	10.1	13.7	
LOS	A	A	A	A	B	B	
95th %tile Queue, veh	3	4	3	4	0	1	

HCM2000 Intersection v-c
5: Hawthorne Ave & SH 44

2030 Background
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1094	46	52	1095	121	14	4	31	71	10	37
Future Volume (vph)	32	1094	46	52	1095	121	14	4	31	71	10	37
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1735	3480		1752	3381		1770	1585		1770	1545	
Flt Permitted	0.14	1.00		0.16	1.00		0.72	1.00		0.73	1.00	
Satd. Flow (perm)	261	3480		292	3381		1347	1585		1364	1545	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	36	1216	51	58	1217	134	16	4	34	79	11	41
RTOR Reduction (vph)	0	2	0	0	6	0	0	29	0	0	35	0
Lane Group Flow (vph)	36	1265	0	58	1345	0	16	9	0	79	17	0
Confl. Peds. (#/hr)	15		2	2		15						
Heavy Vehicles (%)	4%	3%	3%	3%	5%	2%	2%	2%	4%	2%	25%	4%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8				4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	43.5	40.4		44.3	40.8		8.1	8.1		8.1	8.1	
Effective Green, g (s)	47.5	42.4		48.3	42.8		10.1	10.1		10.1	10.1	
Actuated g/C Ratio	0.71	0.63		0.72	0.64		0.15	0.15		0.15	0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	297	2202		330	2159		203	238		205	232	
v/s Ratio Prot	0.01	0.36		c0.01	c0.40			0.01			0.01	
v/s Ratio Perm	0.08			0.11			0.01			c0.06		
v/c Ratio	0.12	0.57		0.18	0.62		0.08	0.04		0.39	0.07	
Uniform Delay, d1	4.2	7.1		3.9	7.3		24.5	24.3		25.7	24.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4		0.3	0.6		0.2	0.1		1.2	0.1	
Delay (s)	4.4	7.5		4.2	7.8		24.6	24.4		26.9	24.6	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		7.4			7.7			24.4			25.9	
Approach LOS		A			A			C			C	

Intersection Summary

HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
5: Hawthorne Ave & SH 44

2030 Background
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	32	1094	46	52	1095	121	14	4	31	71	10	37
Future Volume (veh/h)	32	1094	46	52	1095	121	14	4	31	71	10	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1841	1856	1856	1856	1826	1826	1870	1870	1870	1870	1530	1530
Adj Flow Rate, veh/h	36	1216	51	58	1217	134	16	4	34	79	11	41
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	3	3	3	5	5	2	2	2	2	25	25
Cap, veh/h	318	1889	79	362	1774	195	242	19	165	263	32	121
Arrive On Green	0.04	0.55	0.55	0.05	0.56	0.56	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1753	3446	144	1767	3147	345	1352	170	1441	1370	283	1056
Grp Volume(v), veh/h	36	622	645	58	669	682	16	0	38	79	0	52
Grp Sat Flow(s),veh/h/ln	1753	1763	1827	1767	1735	1758	1352	0	1611	1370	0	1339
Q Serve(g_s), s	0.5	13.0	13.1	0.7	14.5	14.6	0.6	0.0	1.1	2.9	0.0	1.9
Cycle Q Clear(g_c), s	0.5	13.0	13.1	0.7	14.5	14.6	2.5	0.0	1.1	4.1	0.0	1.9
Prop In Lane	1.00		0.08	1.00		0.20	1.00		0.89	1.00		0.79
Lane Grp Cap(c), veh/h	318	966	1002	362	977	991	242	0	184	263	0	153
V/C Ratio(X)	0.11	0.64	0.64	0.16	0.68	0.69	0.07	0.00	0.21	0.30	0.00	0.34
Avail Cap(c_a), veh/h	581	2330	2415	600	2293	2324	726	0	760	753	0	632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.6	8.4	8.4	6.2	8.2	8.2	22.7	0.0	21.3	23.1	0.0	21.6
Incr Delay (d2), s/veh	0.2	0.7	0.7	0.2	0.9	0.9	0.1	0.0	0.5	0.6	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	6.5	6.7	0.3	6.9	7.1	0.3	0.0	0.7	1.6	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.8	9.1	9.1	6.4	9.1	9.1	22.9	0.0	21.8	23.7	0.0	22.9
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		1303			1409			54			131	
Approach Delay, s/veh		9.0			9.0			22.1			23.4	
Approach LOS		A			A			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	34.8		11.1	7.9	34.0		11.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	70.0		25.0	10.0	70.0		25.0				
Max Q Clear Time (g_c+1/2), s	12.5	16.6		6.1	2.7	15.1		4.5				
Green Ext Time (p_c), s	0.0	13.2		0.4	0.0	11.6		0.2				

Intersection Summary

HCM 6th Ctrl Delay	9.9
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↑	↻	↻
Traffic Vol, veh/h	1001	16	32	1078	66	47
Future Vol, veh/h	1001	16	32	1078	66	47
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1043	17	33	1123	69	49

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1060	0	2241 1053
Stage 1	-	-	-	-	1052 -
Stage 2	-	-	-	-	1189 -
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	-	-	657	-	~ 46 275
Stage 1	-	-	-	-	336 -
Stage 2	-	-	-	-	289 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	657	-	~ 44 275
Mov Cap-2 Maneuver	-	-	-	-	204 -
Stage 1	-	-	-	-	336 -
Stage 2	-	-	-	-	275 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	27
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	204	275	-	-	657	-
HCM Lane V/C Ratio	0.337	0.178	-	-	0.051	-
HCM Control Delay (s)	31.4	20.9	-	-	10.8	-
HCM Lane LOS	D	C	-	-	B	-
HCM 95th %tile Q(veh)	1.4	0.6	-	-	0.2	-

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

Intersection									
Intersection Delay, s/veh	80.8								
Intersection LOS	F								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		2		2		
Adj Approach Flow, veh/h	1221		1530		1038		434		
Demand Flow Rate, veh/h	1245		1560		1058		443		
Vehicles Circulating, veh/h	660		825		1108		1722		
Vehicles Exiting, veh/h	1505		1341		797		663		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	25.4		115.0		97.5		75.8		
Approach LOS	D		F		F		F		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	R	LT	R	
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.564	0.436	0.646	0.354	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.645	4.328	4.645	4.328	
Entry Flow, veh/h	585	660	733	827	597	461	286	157	
Cap Entry Lane, veh/h	779	779	670	670	487	554	277	329	
Entry HV Adj Factor	0.981	0.981	0.981	0.981	0.981	0.980	0.979	0.981	
Flow Entry, veh/h	574	647	719	811	586	452	280	154	
Cap Entry, veh/h	764	764	658	657	478	543	271	322	
V/C Ratio	0.751	0.847	1.094	1.234	1.226	0.833	1.033	0.478	
Control Delay, s/veh	21.2	29.2	87.6	139.3	145.3	35.6	104.6	23.4	
LOS	C	D	F	F	F	E	F	C	
95th %tile Queue, veh	7	10	21	30	23	9	11	2	

HCM2000 Intersection v-c
7: SH 44 & N Middleton Rd

2030 Background
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	751	206	352	960	156	309	253	434	77	192	148
Future Volume (vph)	215	751	206	352	960	156	309	253	434	77	192	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.06	1.00	1.00	0.06	1.00	1.00	0.25	1.00	1.00	0.30	1.00	1.00
Satd. Flow (perm)	112	1863	1583	107	1863	1583	460	1863	1583	551	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	224	782	215	367	1000	162	322	264	452	80	200	154
RTOR Reduction (vph)	0	0	67	0	0	41	0	0	100	0	0	105
Lane Group Flow (vph)	224	782	148	367	1000	122	322	264	352	80	200	49
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Actuated Green, G (s)	79.5	64.8	64.8	94.8	75.1	75.1	40.2	26.1	51.1	29.3	20.2	20.2
Effective Green, g (s)	83.5	66.8	66.8	96.8	77.1	77.1	42.2	28.1	55.1	33.3	22.2	22.2
Actuated g/C Ratio	0.58	0.46	0.46	0.67	0.53	0.53	0.29	0.19	0.38	0.23	0.15	0.15
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	255	858	729	381	990	841	287	361	634	219	285	242
v/s Ratio Prot	0.10	0.42		c0.18	c0.54		c0.13	0.14	0.10	0.03	0.11	
v/s Ratio Perm	0.41		0.09	0.46		0.08	c0.19		0.12	0.06		0.03
v/c Ratio	0.88	0.91	0.20	0.96	1.01	0.15	1.12	0.73	0.56	0.37	0.70	0.20
Uniform Delay, d1	46.7	36.3	23.3	49.2	34.0	17.2	46.8	54.9	35.3	45.5	58.3	53.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.0	13.7	0.1	36.3	31.1	0.1	90.0	7.4	1.1	1.0	7.6	0.4
Delay (s)	73.7	50.1	23.4	85.5	65.1	17.3	136.8	62.3	36.4	46.6	65.9	54.1
Level of Service	E	D	C	F	E	B	F	E	D	D	E	D
Approach Delay (s)		49.7			64.9			74.1			58.1	
Approach LOS		D			E			E			E	

























Intersection Summary

HCM 2000 Control Delay	62.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
7: SH 44 & N Middleton Rd

2030 Background
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	751	206	352	960	156	309	253	434	77	192	148
Future Volume (veh/h)	215	751	206	352	960	156	309	253	434	77	192	148
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	224	782	215	367	1000	162	322	264	452	80	200	154
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	825	700	374	952	807	281	381	592	190	283	240
Arrive On Green	0.10	0.44	0.44	0.17	0.51	0.51	0.10	0.20	0.20	0.05	0.15	0.15
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	224	782	215	367	1000	162	322	264	452	80	200	154
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	14.4	59.1	12.9	24.3	75.0	8.2	15.0	19.3	30.0	5.5	15.0	13.5
Cycle Q Clear(g_c), s	14.4	59.1	12.9	24.3	75.0	8.2	15.0	19.3	30.0	5.5	15.0	13.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	825	700	374	952	807	281	381	592	190	283	240
V/C Ratio(X)	0.97	0.95	0.31	0.98	1.05	0.20	1.14	0.69	0.76	0.42	0.71	0.64
Avail Cap(c_a), veh/h	230	825	700	374	952	807	281	381	592	223	317	269
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	39.5	26.6	47.5	36.1	19.8	52.5	54.4	40.4	49.8	59.4	58.8
Incr Delay (d2), s/veh	51.4	19.7	0.2	41.5	43.2	0.1	98.5	5.3	5.9	1.5	6.2	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.9	40.9	8.6	24.1	57.5	5.6	17.2	14.7	21.6	4.6	12.1	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	101.0	59.2	26.8	89.1	79.3	19.9	151.0	59.7	46.3	51.2	65.5	63.1
LnGrp LOS	F	E	C	F	F	B	F	E	D	D	E	E
Approach Vol, veh/h		1221			1529			1038			434	
Approach Delay, s/veh		61.1			75.3			82.2			62.0	
Approach LOS		E			E			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	80.0	20.0	27.3	30.0	70.0	12.3	35.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	75.0	15.0	25.0	25.0	65.0	10.0	30.0				
Max Q Clear Time (g_c+I1), s	16.4	77.0	17.0	17.0	26.3	61.1	7.5	32.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0	0.0	2.2	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay				71.6								
HCM 6th LOS				E								

Intersection							
Intersection Delay, s/veh	7.8						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	909		838		214		276
Demand Flow Rate, veh/h	928		855		218		282
Vehicles Circulating, veh/h	191		216		979		869
Vehicles Exiting, veh/h	960		981		140		202
Ped Vol Crossing Leg, #/h	1		0		0		1
Ped Cap Adj	0.999		1.000		1.000		1.000
Approach Delay, s/veh	7.0		6.8		10.9		11.3
Approach LOS	A		A		B		B
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	436	492	402	453	218	282	
Cap Entry Lane, veh/h	1194	1194	1167	1167	618	678	
Entry HV Adj Factor	0.980	0.980	0.980	0.981	0.981	0.980	
Flow Entry, veh/h	427	482	394	444	214	276	
Cap Entry, veh/h	1169	1168	1144	1144	606	664	
V/C Ratio	0.366	0.413	0.345	0.388	0.353	0.416	
Control Delay, s/veh	6.7	7.3	6.5	7.1	10.9	11.3	
LOS	A	A	A	A	B	B	
95th %tile Queue, veh	2	2	2	2	2	2	

HCM2000 Intersection v-c
4: SH 44 & Cemetery Rd






















Mitigation
2030 Background AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	699	75	15	656	83	95	51	46	120	33	95
Future Volume (vph)	44	699	75	15	656	83	95	51	46	120	33	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.93		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3488		1770	3471		1770	1731		1770	1640	
Flt Permitted	0.21	1.00		0.25	1.00		0.62	1.00		0.62	1.00	
Satd. Flow (perm)	393	3488		468	3471		1160	1731		1152	1640	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	49	777	83	17	729	92	106	57	51	133	37	106
RTOR Reduction (vph)	0	7	0	0	8	0	0	31	0	0	86	0
Lane Group Flow (vph)	49	853	0	17	813	0	106	77	0	133	57	0
Confl. Peds. (#/hr)	1					1						1
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	30.7	27.3		25.9	24.9		15.2	9.1		16.8	9.9	
Effective Green, g (s)	34.7	29.3		29.9	26.9		19.2	11.1		20.8	11.9	
Actuated g/C Ratio	0.54	0.46		0.47	0.42		0.30	0.17		0.32	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	327	1589		278	1452		423	298		458	303	
v/s Ratio Prot	c0.01	c0.24		0.00	0.23		0.03	0.04		c0.04	0.03	
v/s Ratio Perm	0.07			0.03			0.04			c0.05		
v/c Ratio	0.15	0.54		0.06	0.56		0.25	0.26		0.29	0.19	
Uniform Delay, d1	8.1	12.6		9.6	14.2		16.8	23.0		15.9	22.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4		0.1	0.5		0.3	0.5		0.4	0.3	
Delay (s)	8.3	13.0		9.7	14.7		17.1	23.5		16.3	22.4	
Level of Service	A	B		A	B		B	C		B	C	
Approach Delay (s)		12.7			14.6			20.4			19.5	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay			15.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			64.3			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			52.6%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

4: SH 44 & Cemetery Rd

Mitigation
2030 Background AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	699	75	15	656	83	95	51	46	120	33	95
Future Volume (veh/h)	44	699	75	15	656	83	95	51	46	120	33	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	777	83	17	729	92	106	57	51	133	37	106
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	330	1217	130	292	1104	139	345	113	102	384	59	168
Arrive On Green	0.05	0.38	0.38	0.02	0.35	0.35	0.08	0.12	0.12	0.09	0.14	0.14
Sat Flow, veh/h	1781	3239	346	1781	3174	400	1781	910	814	1781	426	1221
Grp Volume(v), veh/h	49	426	434	17	408	413	106	0	108	133	0	143
Grp Sat Flow(s),veh/h/ln	1781	1777	1808	1781	1777	1798	1781	0	1724	1781	0	1647
Q Serve(g_s), s	0.9	10.1	10.1	0.3	10.0	10.0	2.6	0.0	3.0	3.3	0.0	4.2
Cycle Q Clear(g_c), s	0.9	10.1	10.1	0.3	10.0	10.0	2.6	0.0	3.0	3.3	0.0	4.2
Prop In Lane	1.00		0.19	1.00		0.22	1.00		0.47	1.00		0.74
Lane Grp Cap(c), veh/h	330	668	680	292	618	625	345	0	215	384	0	227
V/C Ratio(X)	0.15	0.64	0.64	0.06	0.66	0.66	0.31	0.00	0.50	0.35	0.00	0.63
Avail Cap(c_a), veh/h	589	1730	1759	602	1730	1750	556	0	1007	572	0	962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.7	13.2	13.2	11.1	14.2	14.2	17.6	0.0	21.0	17.3	0.0	20.9
Incr Delay (d2), s/veh	0.2	1.0	1.0	0.1	1.2	1.2	0.5	0.0	1.8	0.5	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	6.2	6.3	0.2	6.3	6.3	1.8	0.0	2.1	2.2	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.9	14.2	14.2	11.2	15.4	15.4	18.1	0.0	22.8	17.8	0.0	23.8
LnGrp LOS	B	B	B	B	B	B	B	A	C	B	A	C
Approach Vol, veh/h		909			838			214			276	
Approach Delay, s/veh		14.0			15.3			20.5			20.9	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	22.9	8.9	12.1	6.1	24.3	9.6	11.4				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	50.0	10.0	30.0	10.0	50.0	10.0	30.0				
Max Q Clear Time (g_c+I1), s	2.9	12.0	4.6	6.2	2.3	12.1	5.3	5.0				
Green Ext Time (p_c), s	0.0	5.8	0.1	0.8	0.0	6.2	0.1	0.5				
Intersection Summary												
HCM 6th Ctrl Delay			16.0									
HCM 6th LOS			B									

Intersection							
Intersection Delay, s/veh	11.7						
Intersection LOS	B						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	1104		1341		233		231
Demand Flow Rate, veh/h	1127		1368		237		236
Vehicles Circulating, veh/h	193		322		1153		1296
Vehicles Exiting, veh/h	1339		1068		167		394
Ped Vol Crossing Leg, #/h	0		0		0		0
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	8.2		12.9		14.5		17.8
Approach LOS	A		B		B		C
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	530	597	643	725	237	236	
Cap Entry Lane, veh/h	1191	1191	1059	1059	533	472	
Entry HV Adj Factor	0.979	0.980	0.980	0.980	0.982	0.979	
Flow Entry, veh/h	519	585	630	711	233	231	
Cap Entry, veh/h	1166	1168	1038	1038	523	462	
V/C Ratio	0.445	0.501	0.607	0.684	0.445	0.500	
Control Delay, s/veh	7.8	8.6	11.7	14.0	14.5	17.8	
LOS	A	A	B	B	B	C	
95th %tile Queue, veh	2	3	4	6	2	3	

HCM2000 Intersection v-c
4: SH 44 & Cemetery Rd

Mitigation
2030 Background PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	820	69	35	1011	175	111	61	40	93	45	73
Future Volume (vph)	116	820	69	35	1011	175	111	61	40	93	45	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3498		1770	3461		1770	1752		1770	1689	
Flt Permitted	0.10	1.00		0.24	1.00		0.50	1.00		0.56	1.00	
Satd. Flow (perm)	178	3498		441	3461		931	1752		1040	1689	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	127	901	76	38	1111	192	122	67	44	102	49	80
RTOR Reduction (vph)	0	4	0	0	10	0	0	17	0	0	43	0
Lane Group Flow (vph)	127	973	0	38	1293	0	122	94	0	102	86	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	59.6	51.4		50.8	47.0		20.2	11.0		20.2	11.0	
Effective Green, g (s)	62.2	53.4		54.8	49.0		24.2	13.0		24.2	13.0	
Actuated g/C Ratio	0.65	0.56		0.57	0.51		0.25	0.14		0.25	0.14	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	286	1958		334	1777		334	238		349	230	
v/s Ratio Prot	c0.05	0.28		0.01	c0.37		c0.04	c0.05		0.03	0.05	
v/s Ratio Perm	0.24			0.06			0.05			0.04		
v/c Ratio	0.44	0.50		0.11	0.73		0.37	0.39		0.29	0.37	
Uniform Delay, d1	12.5	12.8		9.3	18.0		28.6	37.6		28.2	37.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.2		0.2	1.5		0.7	1.1		0.5	1.0	
Delay (s)	13.6	13.0		9.5	19.5		29.3	38.7		28.7	38.5	
Level of Service	B	B		A	B		C	D		C	D	
Approach Delay (s)		13.1			19.2			33.8			34.2	
Approach LOS		B			B			C			C	

Intersection Summary





















HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	95.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary

4: SH 44 & Cemetery Rd























Mitigation
2030 Background PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	820	69	35	1011	175	111	61	40	93	45	73
Future Volume (veh/h)	116	820	69	35	1011	175	111	61	40	93	45	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	901	76	38	1111	192	122	67	44	102	49	80
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	1699	143	349	1477	254	281	127	84	294	69	113
Arrive On Green	0.06	0.51	0.51	0.04	0.49	0.49	0.08	0.12	0.12	0.07	0.11	0.11
Sat Flow, veh/h	1781	3317	280	1781	3031	522	1781	1054	692	1781	639	1043
Grp Volume(v), veh/h	127	483	494	38	650	653	122	0	111	102	0	129
Grp Sat Flow(s),veh/h/ln	1781	1777	1820	1781	1777	1776	1781	0	1746	1781	0	1683
Q Serve(g_s), s	2.6	13.9	13.9	0.8	22.5	22.7	4.5	0.0	4.5	3.8	0.0	5.6
Cycle Q Clear(g_c), s	2.6	13.9	13.9	0.8	22.5	22.7	4.5	0.0	4.5	3.8	0.0	5.6
Prop In Lane	1.00		0.15	1.00		0.29	1.00		0.40	1.00		0.62
Lane Grp Cap(c), veh/h	283	910	932	349	866	866	281	0	211	294	0	183
V/C Ratio(X)	0.45	0.53	0.53	0.11	0.75	0.75	0.43	0.00	0.53	0.35	0.00	0.71
Avail Cap(c_a), veh/h	408	1865	1911	518	1865	1865	372	0	687	406	0	662
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.2	12.4	12.4	9.8	15.8	15.8	27.1	0.0	31.5	27.5	0.0	32.8
Incr Delay (d2), s/veh	1.1	0.5	0.5	0.1	1.3	1.4	1.1	0.0	2.0	0.7	0.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	8.5	8.7	0.5	13.0	13.1	3.5	0.0	3.5	2.9	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	12.9	12.9	10.0	17.1	17.2	28.2	0.0	33.5	28.2	0.0	37.7
LnGrp LOS	B	B	B	A	B	B	C	A	C	C	A	D
Approach Vol, veh/h		1104			1341			233			231	
Approach Delay, s/veh		13.1			17.0			30.7			33.5	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	42.1	11.1	13.3	7.8	44.0	10.2	14.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	80.0	10.0	30.0	10.0	80.0	10.0	30.0				
Max Q Clear Time (g_c+I1), s	4.6	24.7	6.5	7.6	2.8	15.9	5.8	6.5				
Green Ext Time (p_c), s	0.1	12.4	0.1	0.6	0.0	7.7	0.1	0.5				
Intersection Summary												
HCM 6th Ctrl Delay				17.9								
HCM 6th LOS				B								

Intersection									
Intersection Delay, s/veh	57.7								
Intersection LOS	F								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	1262		1470		624		752		
Demand Flow Rate, veh/h	1287		1499		637		767		
Vehicles Circulating, veh/h	918		493		1129		1584		
Vehicles Exiting, veh/h	1433		1273		1076		408		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	75.2		25.4		21.5		121.9		
Approach LOS	F		D		C		F		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.469	0.531	0.469	0.531	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
Entry Flow, veh/h	605	682	705	794	299	338	360	407	
Cap Entry Lane, veh/h	580	651	858	934	478	544	314	369	
Entry HV Adj Factor	0.980	0.981	0.980	0.981	0.982	0.979	0.981	0.979	
Flow Entry, veh/h	593	669	691	779	293	331	353	398	
Cap Entry, veh/h	569	638	840	916	469	533	309	362	
V/C Ratio	1.043	1.048	0.822	0.850	0.626	0.621	1.145	1.102	
Control Delay, s/veh	76.3	74.2	24.8	25.8	22.8	20.3	133.4	111.8	
LOS	F	F	C	D	C	C	F	F	
95th %tile Queue, veh	17	18	9	11	4	4	15	15	

HCM2000 Intersection v-c
7: SH 44 & N Middleton Rd

Mitigation
2030 Background AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	729	274	396	815	112	186	115	260	134	280	263
Future Volume (vph)	133	729	274	396	815	112	186	115	260	134	280	263
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3394		3433	3475		1770	1863	1583	1770	1863	1583
Flt Permitted	0.21	1.00		0.95	1.00		0.22	1.00	1.00	0.58	1.00	1.00
Satd. Flow (perm)	390	3394		3433	3475		401	1863	1583	1075	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	148	810	304	440	906	124	207	128	289	149	311	292
RTOR Reduction (vph)	0	26	0	0	8	0	0	0	80	0	0	76
Lane Group Flow (vph)	148	1088	0	440	1022	0	207	128	209	149	311	216
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		3	8	5	7	4	1
Permitted Phases	6						8		8	4		4
Actuated Green, G (s)	59.1	49.8		21.2	61.7		37.4	27.1	48.3	36.6	26.7	36.0
Effective Green, g (s)	63.1	51.8		23.2	63.7		41.4	29.1	52.3	40.6	28.7	40.0
Actuated g/C Ratio	0.49	0.40		0.18	0.50		0.32	0.23	0.41	0.32	0.22	0.31
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	314	1373		622	1729		261	423	683	405	417	531
v/s Ratio Prot	0.04	c0.32		c0.13	0.29		c0.08	0.07	0.06	0.03	0.17	0.04
v/s Ratio Perm	0.19						c0.18		0.08	0.08		0.10
v/c Ratio	0.47	0.79		0.71	0.59		0.79	0.30	0.31	0.37	0.75	0.41
Uniform Delay, d1	18.9	33.4		49.2	22.9		34.8	41.0	25.6	32.7	46.3	34.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	3.2		3.7	0.5		15.1	0.4	0.3	0.6	7.1	0.5
Delay (s)	20.0	36.6		52.9	23.4		49.9	41.4	25.8	33.2	53.4	35.2
Level of Service	B	D		D	C		D	D	C	C	D	D
Approach Delay (s)		34.7			32.2			37.0			42.3	
Approach LOS		C			C			D			D	























Intersection Summary

HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	128.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
7: SH 44 & N Middleton Rd

Mitigation
2030 Background AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	729	274	396	815	112	186	115	260	134	280	263
Future Volume (veh/h)	133	729	274	396	815	112	186	115	260	134	280	263
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	810	304	440	906	124	207	128	289	149	311	292
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	321	975	366	521	1474	202	253	389	569	354	380	428
Arrive On Green	0.07	0.39	0.39	0.15	0.47	0.47	0.09	0.21	0.21	0.08	0.20	0.20
Sat Flow, veh/h	1781	2529	948	3456	3140	430	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	148	569	545	440	513	517	207	128	289	149	311	292
Grp Sat Flow(s),veh/h/ln	1781	1777	1700	1728	1777	1793	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	5.7	33.3	33.4	14.3	24.8	24.8	10.0	6.7	16.5	7.5	18.3	19.0
Cycle Q Clear(g_c), s	5.7	33.3	33.4	14.3	24.8	24.8	10.0	6.7	16.5	7.5	18.3	19.0
Prop In Lane	1.00		0.56	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	321	685	656	521	834	842	253	389	569	354	380	428
V/C Ratio(X)	0.46	0.83	0.83	0.84	0.61	0.61	0.82	0.33	0.51	0.42	0.82	0.68
Avail Cap(c_a), veh/h	356	925	885	750	1157	1167	253	568	720	362	568	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	32.0	32.0	47.6	22.8	22.8	35.9	38.8	29.0	32.3	43.9	37.6
Incr Delay (d2), s/veh	1.0	4.8	5.1	6.1	0.7	0.7	18.5	0.5	0.7	0.8	5.8	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.5	21.5	20.8	10.7	15.4	15.5	9.9	5.6	10.4	5.9	13.9	12.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.2	36.8	37.1	53.7	23.5	23.5	54.4	39.3	29.7	33.1	49.6	39.5
LnGrp LOS	C	D	D	D	C	C	D	D	C	C	D	D
Approach Vol, veh/h		1262			1470			624			752	
Approach Delay, s/veh		35.1			32.6			39.9			42.4	
Approach LOS		D			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.7	59.1	15.0	28.4	22.4	49.4	14.5	29.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	75.0	10.0	35.0	25.0	60.0	10.0	35.0				
Max Q Clear Time (g_c+I1), s	7.7	26.8	12.0	21.0	16.3	35.4	9.5	18.5				
Green Ext Time (p_c), s	0.1	8.2	0.0	2.4	1.1	9.0	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay				36.3								
HCM 6th LOS				D								

Intersection									
Intersection Delay, s/veh	70.8								
Intersection LOS	F								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	1221		1530		1038		434		
Demand Flow Rate, veh/h	1245		1560		1058		443		
Vehicles Circulating, veh/h	660		825		1108		1722		
Vehicles Exiting, veh/h	1505		1341		797		663		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	25.3		113.8		72.7		43.1		
Approach LOS	D		F		F		E		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.470	0.530	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
Entry Flow, veh/h	585	660	733	827	497	561	208	235	
Cap Entry Lane, veh/h	736	810	632	704	487	554	277	329	
Entry HV Adj Factor	0.981	0.981	0.981	0.981	0.981	0.980	0.981	0.979	
Flow Entry, veh/h	574	647	719	811	488	550	204	230	
Cap Entry, veh/h	722	795	620	691	478	543	272	322	
V/C Ratio	0.795	0.815	1.160	1.174	1.020	1.013	0.751	0.715	
Control Delay, s/veh	25.4	25.2	112.5	115.0	76.1	69.7	48.3	38.5	
LOS	D	D	F	F	F	F	E	E	
95th %tile Queue, veh	8	9	24	27	14	15	5	5	

HCM2000 Intersection v-c
7: SH 44 & N Middleton Rd

Mitigation
2030 Background PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	751	206	352	960	156	309	253	434	77	192	148
Future Volume (vph)	215	751	206	352	960	156	309	253	434	77	192	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3425		3433	3465		1770	1863	1583	1770	1863	1583
Flt Permitted	0.09	1.00		0.95	1.00		0.33	1.00	1.00	0.58	1.00	1.00
Satd. Flow (perm)	176	3425		3433	3465		607	1863	1583	1085	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	224	782	215	367	1000	162	322	264	452	80	200	154
RTOR Reduction (vph)	0	17	0	0	9	0	0	0	89	0	0	125
Lane Group Flow (vph)	224	980	0	367	1154	0	322	264	363	80	200	29
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases	6						8		8	4		4
Actuated Green, G (s)	56.9	43.4		19.0	48.9		44.0	32.0	51.0	27.5	20.5	20.5
Effective Green, g (s)	60.9	45.4		21.0	50.9		46.0	34.0	55.0	31.5	22.5	22.5
Actuated g/C Ratio	0.50	0.37		0.17	0.42		0.38	0.28	0.45	0.26	0.19	0.19
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	291	1280		593	1452		426	521	756	332	345	293
v/s Ratio Prot	c0.10	0.29		c0.11	c0.33		c0.13	0.14	0.08	0.02	0.11	
v/s Ratio Perm	0.29						c0.16		0.15	0.04		0.02
v/c Ratio	0.77	0.77		0.62	0.79		0.76	0.51	0.48	0.24	0.58	0.10
Uniform Delay, d1	28.8	33.3		46.5	30.7		29.5	36.7	23.2	34.9	45.1	41.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.6	2.8		1.9	3.1		7.5	0.8	0.5	0.4	2.4	0.1
Delay (s)	40.4	36.1		48.4	33.8		37.0	37.4	23.7	35.2	47.5	41.2
Level of Service	D	D		D	C		D	D	C	D	D	D
Approach Delay (s)		36.9			37.3			31.3			43.0	
Approach LOS		D			D			C			D	























Intersection Summary

HCM 2000 Control Delay	36.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	121.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
7: SH 44 & N Middleton Rd

Mitigation
2030 Background PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	751	206	352	960	156	309	253	434	77	192	148
Future Volume (veh/h)	215	751	206	352	960	156	309	253	434	77	192	148
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	224	782	215	367	1000	162	322	264	452	80	200	154
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	287	996	274	450	1207	195	423	519	646	272	307	260
Arrive On Green	0.10	0.36	0.36	0.13	0.39	0.39	0.16	0.28	0.28	0.05	0.16	0.16
Sat Flow, veh/h	1781	2754	757	3456	3062	496	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	224	505	492	367	580	582	322	264	452	80	200	154
Grp Sat Flow(s),veh/h/ln	1781	1777	1734	1728	1777	1781	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.6	28.1	28.1	11.5	32.6	32.7	16.0	13.2	26.3	4.1	11.1	10.0
Cycle Q Clear(g_c), s	8.6	28.1	28.1	11.5	32.6	32.7	16.0	13.2	26.3	4.1	11.1	10.0
Prop In Lane	1.00		0.44	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	287	643	627	450	700	702	423	519	646	272	307	260
V/C Ratio(X)	0.78	0.79	0.79	0.81	0.83	0.83	0.76	0.51	0.70	0.29	0.65	0.59
Avail Cap(c_a), veh/h	353	879	858	777	1039	1041	451	673	777	342	505	428
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	31.6	31.6	47.0	30.3	30.3	30.2	33.8	27.3	35.9	43.5	43.0
Incr Delay (d2), s/veh	8.7	3.3	3.4	3.6	3.6	3.7	7.1	0.8	2.2	0.6	2.3	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.7	18.4	18.1	8.8	20.3	20.4	12.0	10.0	15.2	3.3	9.1	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.3	34.9	35.0	50.7	33.9	34.0	37.2	34.6	29.5	36.5	45.9	45.2
LnGrp LOS	C	C	D	D	C	C	D	C	C	D	D	D
Approach Vol, veh/h		1221			1529			1038			434	
Approach Delay, s/veh		34.7			38.0			33.2			43.9	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.9	48.8	23.3	23.2	19.5	45.2	10.6	35.8				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	65.0	20.0	30.0	25.0	55.0	10.0	40.0				
Max Q Clear Time (g_c+I1), s	10.6	34.7	18.0	13.1	13.5	30.1	6.1	28.3				
Green Ext Time (p_c), s	0.3	9.1	0.2	1.4	1.0	7.8	0.0	2.6				
Intersection Summary												
HCM 6th Ctrl Delay			36.4									
HCM 6th LOS			D									

APPENDIX I: 2030 Total Synchro Reports

HCM 6th TWSC
1: Cemetery Rd & Purple Sage Rd

2030 Total
AM Peak Hour

Intersection												
Int Delay, s/veh	10.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	173	18	56	183	4	8	10	31	11	31	6
Future Vol, veh/h	13	173	18	56	183	4	8	10	31	11	31	6
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	192	20	62	203	4	9	11	34	12	34	7

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	212	125	38	214	111	28	41	0	0	45	0	0
Stage 1	62	62	-	46	46	-	-	-	-	-	-	-
Stage 2	150	63	-	168	65	-	-	-	-	-	-	-
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	745	765	1034	743	779	1047	1568	-	-	1563	-	-
Stage 1	949	843	-	968	857	-	-	-	-	-	-	-
Stage 2	853	842	-	834	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	584	754	1034	580	768	1047	1568	-	-	1563	-	-
Mov Cap-2 Maneuver	584	754	-	580	768	-	-	-	-	-	-	-
Stage 1	943	836	-	962	852	-	-	-	-	-	-	-
Stage 2	643	837	-	625	834	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.8		13		1.2		1.7	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1568	-	-	758	718	1563	-	-
HCM Lane V/C Ratio	0.006	-	-	0.299	0.376	0.008	-	-
HCM Control Delay (s)	7.3	0	-	11.8	13	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.3	1.8	0	-	-

HCM 6th TWSC
2: Cemetery Rd & Concord St

2030 Total
AM Peak Hour

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	14	30	25	16	22	16	180	9	71	288	14
Future Vol, veh/h	27	14	30	25	16	22	16	180	9	71	288	14
Conflicting Peds, #/hr	3	0	3	3	0	3	12	0	1	1	0	12
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	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	5	2	2	8	2	10	2	3	2	2	4	2
Mvmt Flow	36	19	41	34	22	30	22	243	12	96	389	19

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	925	903	414	918	906	253	420	0	0	256	0	0
Stage 1	603	603	-	294	294	-	-	-	-	-	-	-
Stage 2	322	300	-	624	612	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.22	7.18	6.52	6.3	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.318	3.572	4.018	3.39	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	246	277	638	246	276	767	1139	-	-	1309	-	-
Stage 1	481	488	-	701	670	-	-	-	-	-	-	-
Stage 2	684	666	-	463	484	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	198	242	629	197	241	764	1126	-	-	1308	-	-
Mov Cap-2 Maneuver	198	242	-	197	241	-	-	-	-	-	-	-
Stage 1	465	437	-	684	654	-	-	-	-	-	-	-
Stage 2	619	650	-	374	433	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.2		23		0.6		1.5	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1126	-	-	293	284	1308	-	-
HCM Lane V/C Ratio	0.019	-	-	0.327	0.3	0.073	-	-
HCM Control Delay (s)	8.3	0	-	23.2	23	8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	1.2	0.2	-	-

HCM 6th TWSC
3: Hawthorne Ave & Concord St

2030 Total
AM Peak Hour

Intersection						
Int Delay, s/veh	6.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	44	131	77	16	42	63
Future Vol, veh/h	44	131	77	16	42	63
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	74	74	74	74	74	74
Heavy Vehicles, %	2	2	5	2	2	4
Mvmt Flow	59	177	104	22	57	85

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	330	100	142	0	0
Stage 1	100	-	-	-	-
Stage 2	230	-	-	-	-
Critical Hdwy	6.42	6.22	4.15	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.245	-	-
Pot Cap-1 Maneuver	665	956	1423	-	-
Stage 1	924	-	-	-	-
Stage 2	808	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	616	956	1423	-	-
Mov Cap-2 Maneuver	616	-	-	-	-
Stage 1	856	-	-	-	-
Stage 2	808	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	6.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1423	-	839	-	-
HCM Lane V/C Ratio	0.073	-	0.282	-	-
HCM Control Delay (s)	7.7	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.2	-	-























HCM 6th Roundabout
4: SH 44 & Cemetery Rd

2030 Total
AM Peak Hour

Intersection							
Intersection Delay, s/veh	8.0						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	913		844		214		288
Demand Flow Rate, veh/h	932		861		218		294
Vehicles Circulating, veh/h	197		218		989		873
Vehicles Exiting, veh/h	970		989		140		206
Ped Vol Crossing Leg, #/h	1		0		0		1
Ped Cap Adj	0.999		1.000		1.000		1.000
Approach Delay, s/veh	7.1		6.9		11.0		11.7
Approach LOS	A		A		B		B
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	438	494	405	456	218	294	
Cap Entry Lane, veh/h	1187	1187	1165	1165	613	676	
Entry HV Adj Factor	0.980	0.980	0.980	0.981	0.981	0.980	
Flow Entry, veh/h	429	484	397	447	214	288	
Cap Entry, veh/h	1162	1162	1141	1143	601	663	
V/C Ratio	0.369	0.417	0.348	0.392	0.356	0.435	
Control Delay, s/veh	6.7	7.4	6.6	7.1	11.0	11.7	
LOS	A	A	A	A	B	B	
95th %tile Queue, veh	2	2	2	2	2	2	

HCM2000 Intersection v-c
4: SH 44 & Cemetery Rd






















2030 Total
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (vph)	46	701	75	15	660	85	95	51	46	125	33	101
Future Volume (vph)	46	701	75	15	660	85	95	51	46	125	33	101
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.93		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3488		1770	3470		1770	1731		1770	1637	
Flt Permitted	0.21	1.00		0.25	1.00		0.61	1.00		0.61	1.00	
Satd. Flow (perm)	390	3488		467	3470		1138	1731		1139	1637	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	51	779	83	17	733	94	106	57	51	139	37	112
RTOR Reduction (vph)	0	7	0	0	9	0	0	31	0	0	91	0
Lane Group Flow (vph)	51	855	0	17	818	0	106	77	0	139	58	0
Confl. Peds. (#/hr)	1					1						1
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	31.0	27.6		26.2	25.2		15.2	9.1		17.0	10.0	
Effective Green, g (s)	35.0	29.6		30.2	27.2		19.2	11.1		21.0	12.0	
Actuated g/C Ratio	0.54	0.46		0.47	0.42		0.30	0.17		0.32	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	326	1595		278	1458		416	296		457	303	
v/s Ratio Prot	c0.01	c0.25		0.00	0.24		0.03	0.04		c0.04	0.04	
v/s Ratio Perm	0.07			0.03			0.04			c0.06		
v/c Ratio	0.16	0.54		0.06	0.56		0.25	0.26		0.30	0.19	
Uniform Delay, d1	8.1	12.6		9.6	14.2		17.0	23.2		16.0	22.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		0.1	0.5		0.3	0.5		0.4	0.3	
Delay (s)	8.3	13.0		9.7	14.7		17.3	23.7		16.4	22.6	
Level of Service	A	B		A	B		B	C		B	C	
Approach Delay (s)		12.7			14.6			20.6			19.6	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay			15.0				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			64.7				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			53.0%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

4: SH 44 & Cemetery Rd





















2030 Total
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	701	75	15	660	85	95	51	46	125	33	101
Future Volume (veh/h)	46	701	75	15	660	85	95	51	46	125	33	101
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	779	83	17	733	94	106	57	51	139	37	112
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	329	1224	130	292	1104	142	342	113	101	388	58	175
Arrive On Green	0.05	0.38	0.38	0.02	0.35	0.35	0.08	0.12	0.12	0.09	0.14	0.14
Sat Flow, veh/h	1781	3239	345	1781	3167	406	1781	910	814	1781	408	1236
Grp Volume(v), veh/h	51	427	435	17	411	416	106	0	108	139	0	149
Grp Sat Flow(s),veh/h/ln	1781	1777	1808	1781	1777	1797	1781	0	1724	1781	0	1645
Q Serve(g_s), s	0.9	10.2	10.3	0.3	10.2	10.2	2.6	0.0	3.0	3.4	0.0	4.4
Cycle Q Clear(g_c), s	0.9	10.2	10.3	0.3	10.2	10.2	2.6	0.0	3.0	3.4	0.0	4.4
Prop In Lane	1.00		0.19	1.00		0.23	1.00		0.47	1.00		0.75
Lane Grp Cap(c), veh/h	329	671	683	292	620	626	342	0	214	388	0	233
V/C Ratio(X)	0.16	0.64	0.64	0.06	0.66	0.66	0.31	0.00	0.50	0.36	0.00	0.64
Avail Cap(c_a), veh/h	582	1707	1737	597	1707	1726	550	0	994	565	0	948
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.8	13.3	13.3	11.2	14.4	14.4	17.9	0.0	21.3	17.4	0.0	21.1
Incr Delay (d2), s/veh	0.2	1.0	1.0	0.1	1.2	1.2	0.5	0.0	1.8	0.6	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	6.3	6.4	0.2	6.4	6.5	1.8	0.0	2.2	2.3	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.0	14.3	14.3	11.3	15.6	15.6	18.4	0.0	23.1	18.0	0.0	24.0
LnGrp LOS	B	B	B	B	B	B	B	A	C	B	A	C
Approach Vol, veh/h		913			844			214			288	
Approach Delay, s/veh		14.1			15.5			20.8			21.1	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	23.1	8.9	12.4	6.1	24.7	9.8	11.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	50.0	10.0	30.0	10.0	50.0	10.0	30.0				
Max Q Clear Time (g_c+I1), s	2.9	12.2	4.6	6.4	2.3	12.3	5.4	5.0				
Green Ext Time (p_c), s	0.0	5.9	0.1	0.8	0.0	6.2	0.1	0.5				
Intersection Summary												
HCM 6th Ctrl Delay			16.1									
HCM 6th LOS			B									

Intersection							
Intersection Delay, s/veh	11.1						
Intersection LOS	B						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	1431		1507		26		223
Demand Flow Rate, veh/h	1461		1567		27		230
Vehicles Circulating, veh/h	172		65		1601		1490
Vehicles Exiting, veh/h	1548		1563		32		142
Ped Vol Crossing Leg, #/h	0		0		3		6
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	10.6		9.7		11.5		24.0
Approach LOS	B		A		B		C
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	687	774	736	831	27	230	
Cap Entry Lane, veh/h	1214	1214	1339	1339	364	400	
Entry HV Adj Factor	0.979	0.980	0.962	0.961	0.963	0.970	
Flow Entry, veh/h	672	758	708	798	26	223	
Cap Entry, veh/h	1189	1190	1288	1286	351	388	
V/C Ratio	0.566	0.637	0.550	0.621	0.074	0.575	
Control Delay, s/veh	9.7	11.4	8.9	10.4	11.5	24.0	
LOS	A	B	A	B	B	C	
95th %tile Queue, veh	4	5	3	5	0	3	

HCM2000 Intersection v-c
5: Hawthorne Ave & SH 44

2030 Total
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	1102	10	13	1143	65	4	0	17	120	0	61
Future Volume (vph)	48	1102	10	13	1143	65	4	0	17	120	0	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3530		1641	3439		1770	1509		1736	1583	
Flt Permitted	0.10	1.00		0.15	1.00		0.71	1.00		0.74	1.00	
Satd. Flow (perm)	179	3530		251	3439		1314	1509		1359	1583	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	59	1360	12	16	1411	80	5	0	21	148	0	75
RTOR Reduction (vph)	0	0	0	0	3	0	0	17	0	0	60	0
Lane Group Flow (vph)	59	1372	0	16	1488	0	5	4	0	148	15	0
Confl. Peds. (#/hr)	6		3	3		6						
Heavy Vehicles (%)	2%	2%	13%	10%	4%	3%	2%	2%	7%	4%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8				4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	60.6	55.6		54.6	52.6		15.5	15.5		15.5	15.5	
Effective Green, g (s)	64.6	57.6		58.6	54.6		17.5	17.5		17.5	17.5	
Actuated g/C Ratio	0.73	0.65		0.67	0.62		0.20	0.20		0.20	0.20	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	257	2307		230	2131		261	299		269	314	
v/s Ratio Prot	c0.02	0.39		0.00	c0.43			0.00			0.01	
v/s Ratio Perm	0.15			0.04			0.00			c0.11		
v/c Ratio	0.23	0.59		0.07	0.70		0.02	0.01		0.55	0.05	
Uniform Delay, d1	7.9	8.6		6.2	11.2		28.4	28.4		31.8	28.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.4		0.1	1.0		0.0	0.0		2.4	0.1	
Delay (s)	8.3	9.1		6.4	12.2		28.4	28.4		34.2	28.6	
Level of Service	A	A		A	B		C	C		C	C	
Approach Delay (s)		9.0			12.2			28.4			32.3	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			12.3	HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			88.1	Sum of lost time (s)						9.0		
Intersection Capacity Utilization			59.9%	ICU Level of Service						B		
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary
5: Hawthorne Ave & SH 44

2030 Total
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	48	1102	10	13	1143	65	4	0	17	120	0	61
Future Volume (veh/h)	48	1102	10	13	1143	65	4	0	17	120	0	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1841	1841	1870	1870	1870	1841	1870	1870
Adj Flow Rate, veh/h	59	1360	12	16	1411	80	5	0	21	148	0	75
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	10	4	4	2	2	2	4	2	2
Cap, veh/h	288	2172	19	274	1921	109	257	0	244	303	0	244
Arrive On Green	0.05	0.60	0.60	0.02	0.57	0.57	0.15	0.00	0.15	0.15	0.00	0.15
Sat Flow, veh/h	1781	3609	32	1668	3364	190	1325	0	1585	1369	0	1585
Grp Volume(v), veh/h	59	669	703	16	732	759	5	0	21	148	0	75
Grp Sat Flow(s),veh/h/ln	1781	1777	1864	1668	1749	1805	1325	0	1585	1369	0	1585
Q Serve(g_s), s	0.9	16.1	16.1	0.3	20.6	20.8	0.2	0.0	0.8	6.9	0.0	2.8
Cycle Q Clear(g_c), s	0.9	16.1	16.1	0.3	20.6	20.8	3.0	0.0	0.8	7.7	0.0	2.8
Prop In Lane	1.00		0.02	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	1069	1122	274	999	1031	257	0	244	303	0	244
V/C Ratio(X)	0.20	0.63	0.63	0.06	0.73	0.74	0.02	0.00	0.09	0.49	0.00	0.31
Avail Cap(c_a), veh/h	467	1864	1956	492	1835	1894	549	0	594	605	0	594
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.8	8.5	8.5	7.2	10.5	10.6	26.4	0.0	24.2	27.5	0.0	25.0
Incr Delay (d2), s/veh	0.3	0.6	0.6	0.1	1.1	1.0	0.0	0.0	0.1	1.2	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	8.4	8.7	0.1	10.5	10.9	0.1	0.0	0.5	4.0	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.2	9.1	9.1	7.3	11.6	11.6	26.4	0.0	24.3	28.7	0.0	25.7
LnGrp LOS	A	A	A	A	B	B	C	A	C	C	A	C
Approach Vol, veh/h		1431			1507			26			223	
Approach Delay, s/veh		9.1			11.6			24.7			27.7	
Approach LOS		A			B			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.3	43.1		15.3	6.3	45.1		15.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	70.0	70.0		25.0	10.0	70.0		25.0				
Max Q Clear Time (g_c+1/2g), s	22.8	22.8		9.7	2.3	18.1		5.0				
Green Ext Time (p_c), s	0.0	15.3		0.7	0.0	13.2		0.1				

Intersection Summary

HCM 6th Ctrl Delay	11.7
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	↷
Traffic Vol, veh/h	1092	15	17	1080	49	86
Future Vol, veh/h	1092	15	17	1080	49	86
Conflicting Peds, #/hr	0	4	4	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1213	17	19	1200	54	96

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	1234	0	2464	1226
Stage 1	-	-	-	-	1226	-
Stage 2	-	-	-	-	1238	-
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	-	-	565	-	~ 33	218
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	274	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	563	-	~ 32	217
Mov Cap-2 Maneuver	-	-	-	-	181	-
Stage 1	-	-	-	-	276	-
Stage 2	-	-	-	-	265	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	33.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	181	217	-	-	563	-
HCM Lane V/C Ratio	0.301	0.44	-	-	0.034	-
HCM Control Delay (s)	33.2	34	-	-	11.6	-
HCM Lane LOS	D	D	-	-	B	-
HCM 95th %tile Q(veh)	1.2	2.1	-	-	0.1	-

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

Intersection									
Intersection Delay, s/veh	64.7								
Intersection LOS	F								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	1319		1478		633		753		
Demand Flow Rate, veh/h	1346		1507		646		768		
Vehicles Circulating, veh/h	918		506		1160		1601		
Vehicles Exiting, veh/h	1451		1300		1104		412		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	90.1		27.0		23.3		128.9		
Approach LOS	F		D		C		F		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.471	0.529	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
Entry Flow, veh/h	633	713	708	799	304	342	361	407	
Cap Entry Lane, veh/h	580	651	847	924	464	530	310	364	
Entry HV Adj Factor	0.980	0.981	0.981	0.980	0.979	0.982	0.980	0.980	
Flow Entry, veh/h	620	699	695	783	298	336	354	399	
Cap Entry, veh/h	568	638	831	905	455	520	303	357	
V/C Ratio	1.091	1.096	0.835	0.865	0.655	0.646	1.166	1.118	
Control Delay, s/veh	91.2	89.1	26.2	27.6	25.0	21.9	141.6	117.6	
LOS	F	F	D	D	C	C	F	F	
95th %tile Queue, veh	19	20	10	11	5	5	15	15	

HCM2000 Intersection v-c
7: SH 44 & N Middleton Rd

2030 Total
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	752	298	396	823	112	194	115	260	134	280	264
Future Volume (vph)	137	752	298	396	823	112	194	115	260	134	280	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3389		3433	3476		1770	1863	1583	1770	1863	1583
Flt Permitted	0.21	1.00		0.95	1.00		0.21	1.00	1.00	0.57	1.00	1.00
Satd. Flow (perm)	389	3389		3433	3476		391	1863	1583	1069	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	152	836	331	440	914	124	216	128	289	149	311	293
RTOR Reduction (vph)	0	28	0	0	7	0	0	0	77	0	0	74
Lane Group Flow (vph)	152	1139	0	440	1031	0	216	128	212	149	311	219
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		3	8	5	7	4	1
Permitted Phases	6						8		8	4		4
Actuated Green, G (s)	61.1	51.8		21.4	63.9		37.7	27.4	48.8	36.9	27.0	36.3
Effective Green, g (s)	65.1	53.8		23.4	65.9		41.7	29.4	52.8	40.9	29.0	40.3
Actuated g/C Ratio	0.50	0.41		0.18	0.50		0.32	0.23	0.40	0.31	0.22	0.31
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	313	1397		615	1755		254	419	676	398	414	525
v/s Ratio Prot	0.04	c0.34		c0.13	0.30		c0.08	0.07	0.06	0.03	0.17	0.04
v/s Ratio Perm	0.20						c0.19		0.08	0.08		0.10
v/c Ratio	0.49	0.82		0.72	0.59		0.85	0.31	0.31	0.37	0.75	0.42
Uniform Delay, d1	18.9	33.9		50.4	22.7		36.1	42.1	26.5	33.7	47.4	35.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	3.8		4.0	0.5		22.9	0.4	0.3	0.6	7.5	0.5
Delay (s)	20.0	37.7		54.4	23.2		59.0	42.5	26.8	34.3	54.9	36.3
Level of Service	C	D		D	C		E	D	C	C	D	D
Approach Delay (s)		35.7			32.5			40.9			43.6	
Approach LOS		D			C			D			D	























Intersection Summary

HCM 2000 Control Delay	36.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	130.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
7: SH 44 & N Middleton Rd

2030 Total
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	752	298	396	823	112	194	115	260	134	280	264
Future Volume (veh/h)	137	752	298	396	823	112	194	115	260	134	280	264
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	152	836	331	440	914	124	216	128	289	149	311	293
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	325	990	391	517	1511	205	244	382	561	347	378	426
Arrive On Green	0.07	0.40	0.40	0.15	0.48	0.48	0.08	0.20	0.20	0.08	0.20	0.20
Sat Flow, veh/h	1781	2488	982	3456	3144	426	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	152	596	571	440	517	521	216	128	289	149	311	293
Grp Sat Flow(s),veh/h/ln	1781	1777	1694	1728	1777	1794	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.0	36.4	36.7	14.9	25.5	25.5	10.0	7.0	17.3	7.8	19.1	19.9
Cycle Q Clear(g_c), s	6.0	36.4	36.7	14.9	25.5	25.5	10.0	7.0	17.3	7.8	19.1	19.9
Prop In Lane	1.00		0.58	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	325	707	674	517	854	862	244	382	561	347	378	426
V/C Ratio(X)	0.47	0.84	0.85	0.85	0.61	0.61	0.89	0.34	0.52	0.43	0.82	0.69
Avail Cap(c_a), veh/h	354	890	848	721	1113	1123	244	547	700	350	547	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	32.7	32.8	49.6	22.8	22.8	39.4	40.7	30.6	33.8	45.7	39.3
Incr Delay (d2), s/veh	1.1	6.1	6.6	7.0	0.7	0.7	29.6	0.5	0.7	0.8	6.6	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.7	23.5	22.8	11.1	15.8	15.9	6.4	5.9	10.8	6.2	14.5	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.2	38.8	39.3	56.7	23.5	23.5	69.0	41.2	31.3	34.6	52.3	41.4
LnGrp LOS	C	D	D	E	C	C	E	D	C	C	D	D
Approach Vol, veh/h		1319			1478			633			753	
Approach Delay, s/veh		37.0			33.4			46.2			44.6	
Approach LOS		D			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	62.6	15.0	29.2	22.9	52.7	14.8	29.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	75.0	10.0	35.0	25.0	60.0	10.0	35.0				
Max Q Clear Time (g_c+I1), s	8.0	27.5	12.0	21.9	16.9	38.7	9.8	19.3				
Green Ext Time (p_c), s	0.1	8.3	0.0	2.4	1.0	9.0	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			38.5									
HCM 6th LOS			D									

HCM 6th TWSC
1: Cemetery Rd & Purple Sage Rd

2030 Total
PM Peak Hour

Intersection												
Int Delay, s/veh	11.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	37	141	32	75	222	22	15	32	43	6	23	0
Future Vol, veh/h	37	141	32	75	222	22	15	32	43	6	23	0
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	41	157	36	83	247	24	17	36	48	7	26	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	270	158	26	231	134	60	26	0	0	84	0	0
Stage 1	40	40	-	94	94	-	-	-	-	-	-	-
Stage 2	230	118	-	137	40	-	-	-	-	-	-	-
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	683	734	1050	724	757	1005	1588	-	-	1513	-	-
Stage 1	975	862	-	913	817	-	-	-	-	-	-	-
Stage 2	773	798	-	866	862	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	490	722	1050	576	745	1005	1588	-	-	1513	-	-
Mov Cap-2 Maneuver	490	722	-	576	745	-	-	-	-	-	-	-
Stage 1	964	858	-	903	808	-	-	-	-	-	-	-
Stage 2	518	789	-	680	858	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.7		15		1.2		1.5	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1588	-	-	697	709	1513	-	-
HCM Lane V/C Ratio	0.01	-	-	0.335	0.5	0.004	-	-
HCM Control Delay (s)	7.3	0	-	12.7	15	7.4	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.5	2.8	0	-	-

HCM 6th TWSC
2: Cemetery Rd & Concord St

2030 Total
PM Peak Hour

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	5	12	14	12	9	24	205	15	24	216	13
Future Vol, veh/h	12	5	12	14	12	9	24	205	15	24	216	13
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	2	2	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	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	10	2	2	2	2	2	2	2	2	5	2	9
Mvmt Flow	14	6	14	17	14	11	29	247	18	29	260	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	656	651	270	654	650	261	276	0	0	267	0	0
Stage 1	326	326	-	316	316	-	-	-	-	-	-	-
Stage 2	330	325	-	338	334	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.15	-	-
Critical Hdwy Stg 1	6.2	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.245	-	-
Pot Cap-1 Maneuver	368	388	769	380	388	778	1287	-	-	1280	-	-
Stage 1	670	648	-	695	655	-	-	-	-	-	-	-
Stage 2	667	649	-	676	643	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	337	367	768	352	367	774	1287	-	-	1278	-	-
Mov Cap-2 Maneuver	337	367	-	352	367	-	-	-	-	-	-	-
Stage 1	653	631	-	676	637	-	-	-	-	-	-	-
Stage 2	624	631	-	638	626	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.7		14.6		0.8		0.7	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1287	-	-	447	416	1278	-	-
HCM Lane V/C Ratio	0.022	-	-	0.078	0.101	0.023	-	-
HCM Control Delay (s)	7.9	0	-	13.7	14.6	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.3	0.1	-	-

Intersection						
Int Delay, s/veh	6.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	75	89	52	29	26
Future Vol, veh/h	47	75	89	52	29	26
Conflicting Peds, #/hr	0	0	6	0	0	6
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	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	107	127	74	41	37

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	394	66	84	0	0
Stage 1	66	-	-	-	-
Stage 2	328	-	-	-	-
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	611	998	1513	-	-
Stage 1	957	-	-	-	-
Stage 2	730	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	551	992	1504	-	-
Mov Cap-2 Maneuver	551	-	-	-	-
Stage 1	868	-	-	-	-
Stage 2	726	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	4.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1504	-	758	-	-
HCM Lane V/C Ratio	0.085	-	0.23	-	-
HCM Control Delay (s)	7.6	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.9	-	-





















HCM 6th Roundabout
4: SH 44 & Cemetery Rd

2030 Total
PM Peak Hour

Intersection							
Intersection Delay, s/veh	12.0						
Intersection LOS	B						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	1116		1350		233		239
Demand Flow Rate, veh/h	1139		1377		237		244
Vehicles Circulating, veh/h	196		330		1168		1299
Vehicles Exiting, veh/h	1347		1075		167		408
Ped Vol Crossing Leg, #/h	0		0		0		0
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	8.3		13.3		14.8		18.5
Approach LOS	A		B		B		C
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	535	604	647	730	237	244	
Cap Entry Lane, veh/h	1188	1188	1052	1052	526	471	
Entry HV Adj Factor	0.980	0.979	0.980	0.980	0.982	0.980	
Flow Entry, veh/h	524	591	634	715	233	239	
Cap Entry, veh/h	1165	1163	1031	1031	517	461	
V/C Ratio	0.450	0.508	0.615	0.694	0.450	0.518	
Control Delay, s/veh	7.8	8.8	12.0	14.5	14.8	18.5	
LOS	A	A	B	B	B	C	
95th %tile Queue, veh	2	3	4	6	2	3	

HCM2000 Intersection v-c
4: SH 44 & Cemetery Rd

2030 Total
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	824	69	35	1014	180	111	61	40	96	45	77
Future Volume (vph)	123	824	69	35	1014	180	111	61	40	96	45	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3498		1770	3459		1770	1752		1770	1686	
Flt Permitted	0.09	1.00		0.24	1.00		0.48	1.00		0.56	1.00	
Satd. Flow (perm)	174	3498		441	3459		898	1752		1036	1686	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	135	905	76	38	1114	198	122	67	44	105	49	85
RTOR Reduction (vph)	0	4	0	0	10	0	0	17	0	0	46	0
Lane Group Flow (vph)	135	977	0	38	1302	0	122	94	0	105	88	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	60.5	52.1		51.3	47.5		20.4	11.1		20.4	11.1	
Effective Green, g (s)	62.9	54.1		55.3	49.5		24.4	13.1		24.4	13.1	
Actuated g/C Ratio	0.65	0.56		0.57	0.51		0.25	0.14		0.25	0.14	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	286	1965		333	1777		329	238		348	229	
v/s Ratio Prot	c0.05	0.28		0.01	c0.38		c0.04	c0.05		0.04	0.05	
v/s Ratio Perm	0.26			0.06			0.05			0.04		
v/c Ratio	0.47	0.50		0.11	0.73		0.37	0.39		0.30	0.39	
Uniform Delay, d1	13.0	12.8		9.4	18.2		28.9	38.0		28.6	37.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.2		0.2	1.6		0.7	1.1		0.5	1.1	
Delay (s)	14.2	13.0		9.6	19.8		29.6	39.1		29.1	39.0	
Level of Service	B	B		A	B		C	D		C	D	
Approach Delay (s)		13.2			19.5			34.1			34.6	
Approach LOS		B			B			C			C	

Intersection Summary

HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	96.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary

4: SH 44 & Cemetery Rd

2030 Total
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	123	824	69	35	1014	180	111	61	40	96	45	77
Future Volume (veh/h)	123	824	69	35	1014	180	111	61	40	96	45	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	135	905	76	38	1114	198	122	67	44	105	49	85
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	281	1706	143	348	1475	261	279	128	84	297	68	119
Arrive On Green	0.06	0.51	0.51	0.04	0.49	0.49	0.08	0.12	0.12	0.07	0.11	0.11
Sat Flow, veh/h	1781	3318	279	1781	3017	534	1781	1054	692	1781	614	1065
Grp Volume(v), veh/h	135	485	496	38	654	658	122	0	111	105	0	134
Grp Sat Flow(s),veh/h/ln	1781	1777	1820	1781	1777	1774	1781	0	1746	1781	0	1679
Q Serve(g_s), s	2.9	14.1	14.1	0.8	23.1	23.3	4.6	0.0	4.6	4.0	0.0	6.0
Cycle Q Clear(g_c), s	2.9	14.1	14.1	0.8	23.1	23.3	4.6	0.0	4.6	4.0	0.0	6.0
Prop In Lane	1.00		0.15	1.00		0.30	1.00		0.40	1.00		0.63
Lane Grp Cap(c), veh/h	281	913	936	348	869	868	279	0	212	297	0	187
V/C Ratio(X)	0.48	0.53	0.53	0.11	0.75	0.76	0.44	0.00	0.52	0.35	0.00	0.72
Avail Cap(c_a), veh/h	402	1836	1881	513	1836	1833	366	0	676	403	0	650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	12.6	12.6	9.9	16.0	16.1	27.4	0.0	31.9	27.7	0.0	33.2
Incr Delay (d2), s/veh	1.3	0.5	0.5	0.1	1.3	1.4	1.1	0.0	2.0	0.7	0.0	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	8.7	8.9	0.5	13.3	13.4	3.5	0.0	3.6	3.0	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	13.0	13.0	10.1	17.3	17.4	28.5	0.0	33.9	28.4	0.0	38.2
LnGrp LOS	B	B	B	B	B	B	C	A	C	C	A	D
Approach Vol, veh/h		1116			1350			233				239
Approach Delay, s/veh		13.3			17.2			31.1				33.9
Approach LOS		B			B			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	42.9	11.2	13.6	7.8	44.8	10.4	14.4				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	80.0	10.0	30.0	10.0	80.0	10.0	30.0				
Max Q Clear Time (g_c+I1), s	4.9	25.3	6.6	8.0	2.8	16.1	6.0	6.6				
Green Ext Time (p_c), s	0.1	12.6	0.1	0.7	0.0	7.7	0.1	0.5				
Intersection Summary												
HCM 6th Ctrl Delay				18.2								
HCM 6th LOS				B								

Intersection							
Intersection Delay, s/veh	10.0						
Intersection LOS	B						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	1		1		2		2
Adj Approach Flow, veh/h	1310		1473		54		168
Demand Flow Rate, veh/h	1351		1540		55		175
Vehicles Circulating, veh/h	189		62		1413		1359
Vehicles Exiting, veh/h	1345		1406		127		243
Ped Vol Crossing Leg, #/h	0		0		2		15
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	10.0		9.5		10.5		15.6
Approach LOS	A		A		B		C
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.328	4.328	
Entry Flow, veh/h	635	716	724	816	55	175	
Cap Entry Lane, veh/h	1196	1196	1342	1342	427	447	
Entry HV Adj Factor	0.970	0.970	0.956	0.957	0.980	0.961	
Flow Entry, veh/h	616	695	692	781	54	168	
Cap Entry, veh/h	1160	1160	1283	1284	419	430	
V/C Ratio	0.531	0.599	0.539	0.608	0.129	0.391	
Control Delay, s/veh	9.2	10.6	8.7	10.1	10.5	15.6	
LOS	A	B	A	B	B	C	
95th %tile Queue, veh	3	4	3	4	0	2	

HCM2000 Intersection v-c
5: Hawthorne Ave & SH 44

2030 Total
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	1097	46	52	1100	174	14	4	31	102	10	40
Future Volume (vph)	36	1097	46	52	1100	174	14	4	31	102	10	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1735	3480		1752	3358		1770	1585		1770	1545	
Flt Permitted	0.12	1.00		0.15	1.00		0.72	1.00		0.73	1.00	
Satd. Flow (perm)	218	3480		276	3358		1343	1585		1364	1545	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	40	1219	51	58	1222	193	16	4	34	113	11	44
RTOR Reduction (vph)	0	2	0	0	10	0	0	27	0	0	35	0
Lane Group Flow (vph)	40	1268	0	58	1405	0	16	11	0	113	20	0
Confl. Peds. (#/hr)	15		2	2		15						
Heavy Vehicles (%)	4%	3%	3%	3%	5%	2%	2%	2%	4%	2%	25%	4%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	47.4	44.2		48.2	44.6		12.7	12.7		12.7	12.7	
Effective Green, g (s)	51.4	46.2		52.2	46.6		14.7	14.7		14.7	14.7	
Actuated g/C Ratio	0.68	0.61		0.69	0.62		0.19	0.19		0.19	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	252	2129		300	2072		261	308		265	300	
v/s Ratio Prot	0.01	0.36		c0.01	c0.42			0.01			0.01	
v/s Ratio Perm	0.10			0.12			0.01			c0.08		
v/c Ratio	0.16	0.60		0.19	0.68		0.06	0.03		0.43	0.07	
Uniform Delay, d1	6.1	8.9		5.4	9.5		24.8	24.6		26.7	24.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.5		0.3	0.9		0.1	0.0		1.1	0.1	
Delay (s)	6.4	9.4		5.7	10.4		24.9	24.7		27.8	24.9	
Level of Service	A	A		A	B		C	C		C	C	
Approach Delay (s)		9.3			10.2			24.7			26.8	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			11.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			75.5			Sum of lost time (s)				9.0		
Intersection Capacity Utilization			62.2%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary
5: Hawthorne Ave & SH 44

2030 Total
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	
Traffic Volume (veh/h)	36	1097	46	52	1100	174	14	4	31	102	10	40
Future Volume (veh/h)	36	1097	46	52	1100	174	14	4	31	102	10	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1841	1856	1856	1856	1826	1826	1870	1870	1870	1870	1530	1530
Adj Flow Rate, veh/h	40	1219	51	58	1222	193	16	4	34	113	11	44
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	3	3	3	5	5	2	2	2	2	25	25
Cap, veh/h	293	1928	81	349	1711	269	257	23	200	281	37	148
Arrive On Green	0.04	0.56	0.56	0.05	0.57	0.57	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1753	3446	144	1767	2998	471	1349	170	1441	1370	267	1070
Grp Volume(v), veh/h	40	623	647	58	704	711	16	0	38	113	0	55
Grp Sat Flow(s),veh/h/ln	1753	1763	1827	1767	1735	1734	1349	0	1611	1370	0	1337
Q Serve(g_s), s	0.6	14.4	14.5	0.8	17.6	17.9	0.6	0.0	1.2	4.8	0.0	2.2
Cycle Q Clear(g_c), s	0.6	14.4	14.5	0.8	17.6	17.9	2.9	0.0	1.2	6.0	0.0	2.2
Prop In Lane	1.00		0.08	1.00		0.27	1.00		0.89	1.00		0.80
Lane Grp Cap(c), veh/h	293	986	1023	349	990	990	257	0	223	281	0	185
V/C Ratio(X)	0.14	0.63	0.63	0.17	0.71	0.72	0.06	0.00	0.17	0.40	0.00	0.30
Avail Cap(c_a), veh/h	514	2058	2133	552	2025	2024	633	0	672	663	0	557
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.7	9.0	9.0	6.7	9.3	9.4	24.5	0.0	22.8	25.4	0.0	23.2
Incr Delay (d2), s/veh	0.2	0.7	0.7	0.2	1.0	1.0	0.1	0.0	0.4	0.9	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	7.7	7.9	0.4	8.7	8.9	0.4	0.0	0.8	2.7	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	9.7	9.7	6.9	10.3	10.4	24.6	0.0	23.1	26.4	0.0	24.1
LnGrp LOS	A	A	A	A	B	B	C	A	C	C	A	C
Approach Vol, veh/h		1310			1473			54			168	
Approach Delay, s/veh		9.6			10.2			23.6			25.6	
Approach LOS		A			B			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	39.2		13.3	8.1	38.6		13.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	70.0		25.0	10.0	70.0		25.0				
Max Q Clear Time (g_c+1/2), s	10.0	19.9		8.0	2.8	16.5		4.9				
Green Ext Time (p_c), s	0.0	14.3		0.5	0.0	11.6		0.2				

Intersection Summary

HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	1035	16	32	1136	66	47
Future Vol, veh/h	1035	16	32	1136	66	47
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1078	17	33	1183	69	49

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1095	0	2336 1088
Stage 1	-	-	-	-	1087 -
Stage 2	-	-	-	-	1249 -
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	-	-	637	-	~ 40 262
Stage 1	-	-	-	-	323 -
Stage 2	-	-	-	-	270 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	637	-	~ 38 262
Mov Cap-2 Maneuver	-	-	-	-	191 -
Stage 1	-	-	-	-	323 -
Stage 2	-	-	-	-	256 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	29
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	262	-	-	637	-
HCM Lane V/C Ratio	0.36	0.187	-	-	0.052	-
HCM Control Delay (s)	34.1	21.9	-	-	11	-
HCM Lane LOS	D	C	-	-	B	-
HCM 95th %tile Q(veh)	1.5	0.7	-	-	0.2	-

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

Intersection									
Intersection Delay, s/veh	83.6								
Intersection LOS	F								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	1256		1558		1066		438		
Demand Flow Rate, veh/h	1282		1589		1087		447		
Vehicles Circulating, veh/h	660		857		1128		1780		
Vehicles Exiting, veh/h	1567		1358		814		666		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	27.5		136.0		86.7		50.4		
Approach LOS	D		F		F		F		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.470	0.530	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
Entry Flow, veh/h	603	679	747	842	511	576	210	237	
Cap Entry Lane, veh/h	736	810	614	685	478	544	263	313	
Entry HV Adj Factor	0.979	0.980	0.981	0.981	0.980	0.981	0.980	0.979	
Flow Entry, veh/h	590	666	732	826	501	565	206	232	
Cap Entry, veh/h	720	794	602	672	469	534	257	306	
V/C Ratio	0.820	0.838	1.217	1.229	1.068	1.058	0.800	0.758	
Control Delay, s/veh	27.6	27.4	135.2	136.7	90.8	83.0	57.0	44.6	
LOS	D	D	F	F	F	F	F	E	
95th %tile Queue, veh	9	10	27	30	16	17	6	6	

HCM2000 Intersection v-c
7: SH 44 & N Middleton Rd























2030 Total
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	217	767	222	352	987	156	336	253	434	77	192	152
Future Volume (vph)	217	767	222	352	987	156	336	253	434	77	192	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3420		3433	3467		1770	1863	1583	1770	1863	1583
Flt Permitted	0.09	1.00		0.95	1.00		0.32	1.00	1.00	0.59	1.00	1.00
Satd. Flow (perm)	165	3420		3433	3467		592	1863	1583	1098	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	226	799	231	367	1028	162	350	264	452	80	200	158
RTOR Reduction (vph)	0	18	0	0	9	0	0	0	88	0	0	129
Lane Group Flow (vph)	226	1012	0	367	1182	0	350	264	364	80	200	29
Turn Type	pm+pt	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases	6						8		8	4		4
Actuated Green, G (s)	59.4	45.7		19.2	51.2		45.0	32.9	52.1	27.8	20.7	20.7
Effective Green, g (s)	63.4	47.7		21.2	53.2		47.0	34.9	56.1	31.8	22.7	22.7
Actuated g/C Ratio	0.51	0.38		0.17	0.43		0.38	0.28	0.45	0.25	0.18	0.18
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	285	1306		582	1476		423	520	749	328	338	287
v/s Ratio Prot	c0.10	0.30		c0.11	c0.34		c0.14	0.14	0.08	0.02	0.11	
v/s Ratio Perm	0.30						c0.17		0.15	0.04		0.02
v/c Ratio	0.79	0.77		0.63	0.80		0.83	0.51	0.49	0.24	0.59	0.10
Uniform Delay, d1	31.3	33.9		48.2	31.2		31.2	37.8	24.2	36.3	46.9	42.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.0	2.9		2.2	3.2		12.5	0.8	0.5	0.4	2.8	0.2
Delay (s)	45.3	36.8		50.4	34.5		43.7	38.6	24.7	36.7	49.6	42.7
Level of Service	D	D		D	C		D	D	C	D	D	D
Approach Delay (s)		38.4			38.2			34.4			44.8	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			38.0				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			124.9			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			86.3%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary
7: SH 44 & N Middleton Rd

2030 Total
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	767	222	352	987	156	336	253	434	77	192	152
Future Volume (veh/h)	217	767	222	352	987	156	336	253	434	77	192	152
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	226	799	231	367	1028	162	350	264	452	80	200	158
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	1001	289	448	1231	194	427	517	643	266	285	241
Arrive On Green	0.10	0.37	0.37	0.13	0.40	0.40	0.18	0.28	0.28	0.05	0.15	0.15
Sat Flow, veh/h	1781	2720	786	3456	3076	484	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	226	522	508	367	593	597	350	264	452	80	200	158
Grp Sat Flow(s),veh/h/ln	1781	1777	1729	1728	1777	1783	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.9	30.0	30.0	11.8	34.3	34.4	18.3	13.6	27.1	4.3	11.6	10.7
Cycle Q Clear(g_c), s	8.9	30.0	30.0	11.8	34.3	34.4	18.3	13.6	27.1	4.3	11.6	10.7
Prop In Lane	1.00		0.45	1.00		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	283	654	636	448	711	714	427	517	643	266	285	241
V/C Ratio(X)	0.80	0.80	0.80	0.82	0.83	0.84	0.82	0.51	0.70	0.30	0.70	0.65
Avail Cap(c_a), veh/h	343	856	833	757	1011	1015	427	655	761	331	491	416
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	32.3	32.3	48.4	30.8	30.9	31.7	34.8	28.2	38.0	46.0	45.6
Incr Delay (d2), s/veh	10.5	4.1	4.2	3.8	4.2	4.3	12.0	0.8	2.4	0.6	3.2	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.0	19.6	19.2	9.0	21.4	21.5	14.1	10.3	15.6	3.4	9.5	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.8	36.4	36.5	52.2	35.1	35.2	43.7	35.6	30.6	38.6	49.1	48.6
LnGrp LOS	D	D	D	D	D	D	D	D	C	D	D	D
Approach Vol, veh/h		1256			1557			1066			438	
Approach Delay, s/veh		36.3			39.1			36.1			47.0	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.1	50.7	25.0	22.4	19.8	47.0	10.8	36.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	65.0	20.0	30.0	25.0	55.0	10.0	40.0				
Max Q Clear Time (g_c+I1), s	10.9	36.4	20.3	13.6	13.8	32.0	6.3	29.1				
Green Ext Time (p_c), s	0.2	9.3	0.0	1.4	1.0	7.9	0.0	2.5				
Intersection Summary												
HCM 6th Ctrl Delay				38.4								
HCM 6th LOS				D								

HCM 6th TWSC
8: Hawthorne Ave & 9th St

2030 Total
AM Peak Hour

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	15	17	2	10	0
Future Vol, veh/h	0	15	17	2	10	0
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	19	2	11	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	51	11	11	0	0
Stage 1	11	-	-	-	-
Stage 2	40	-	-	-	-
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	958	1070	1608	-	-
Stage 1	1012	-	-	-	-
Stage 2	982	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	947	1070	1608	-	-
Mov Cap-2 Maneuver	947	-	-	-	-
Stage 1	1000	-	-	-	-
Stage 2	982	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	6.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1608	-	1070	-	-
HCM Lane V/C Ratio	0.012	-	0.016	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
9: Hawthorne Ave & East Access

2030 Total
AM Peak Hour

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	17	8	22	30	0
Future Vol, veh/h	0	17	8	22	30	0
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	19	9	24	33	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	75	33	33	0	0
Stage 1	33	-	-	-	-
Stage 2	42	-	-	-	-
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	928	1041	1579	-	-
Stage 1	989	-	-	-	-
Stage 2	980	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	922	1041	1579	-	-
Mov Cap-2 Maneuver	922	-	-	-	-
Stage 1	983	-	-	-	-
Stage 2	980	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	1.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1579	-	1041	-	-
HCM Lane V/C Ratio	0.006	-	0.018	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
10: Concord St & South Access

2030 Total
AM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	160	135	5	15	6
Future Vol, veh/h	2	160	135	5	15	6
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	178	150	6	17	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	156	0	0	335	153
Stage 1	-	-	-	153	-
Stage 2	-	-	-	182	-
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	1424	-	-	660	893
Stage 1	-	-	-	875	-
Stage 2	-	-	-	849	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1424	-	-	659	893
Mov Cap-2 Maneuver	-	-	-	659	-
Stage 1	-	-	-	873	-
Stage 2	-	-	-	849	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1424	-	-	-	712
HCM Lane V/C Ratio	0.002	-	-	-	0.033
HCM Control Delay (s)	7.5	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	16	19	6	4	0
Future Vol, veh/h	0	16	19	6	4	0
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	21	7	4	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	53	4	4	0	0
Stage 1	4	-	-	-	-
Stage 2	49	-	-	-	-
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	955	1080	1618	-	-
Stage 1	1019	-	-	-	-
Stage 2	973	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	943	1080	1618	-	-
Mov Cap-2 Maneuver	943	-	-	-	-
Stage 1	1006	-	-	-	-
Stage 2	973	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	5.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1618	-	1080	-	-
HCM Lane V/C Ratio	0.013	-	0.016	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
9: Hawthorne Ave & East Access

2030 Total
PM Peak Hour

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	15	22	31	23	0
Future Vol, veh/h	0	15	22	31	23	0
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	24	34	26	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	108	26	26	0	0
Stage 1	26	-	-	-	-
Stage 2	82	-	-	-	-
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	889	1050	1588	-	-
Stage 1	997	-	-	-	-
Stage 2	941	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	876	1050	1588	-	-
Mov Cap-2 Maneuver	876	-	-	-	-
Stage 1	982	-	-	-	-
Stage 2	941	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1588	-	1050	-	-
HCM Lane V/C Ratio	0.015	-	0.016	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
10: Concord St & South Access

2030 Total
PM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	6	112	98	17	10	3
Future Vol, veh/h	6	112	98	17	10	3
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	124	109	19	11	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	128	0	-	0	257 119
Stage 1	-	-	-	-	119 -
Stage 2	-	-	-	-	138 -
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	1458	-	-	-	732 933
Stage 1	-	-	-	-	906 -
Stage 2	-	-	-	-	889 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1458	-	-	-	728 933
Mov Cap-2 Maneuver	-	-	-	-	728 -
Stage 1	-	-	-	-	901 -
Stage 2	-	-	-	-	889 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1458	-	-	-	767
HCM Lane V/C Ratio	0.005	-	-	-	0.019
HCM Control Delay (s)	7.5	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

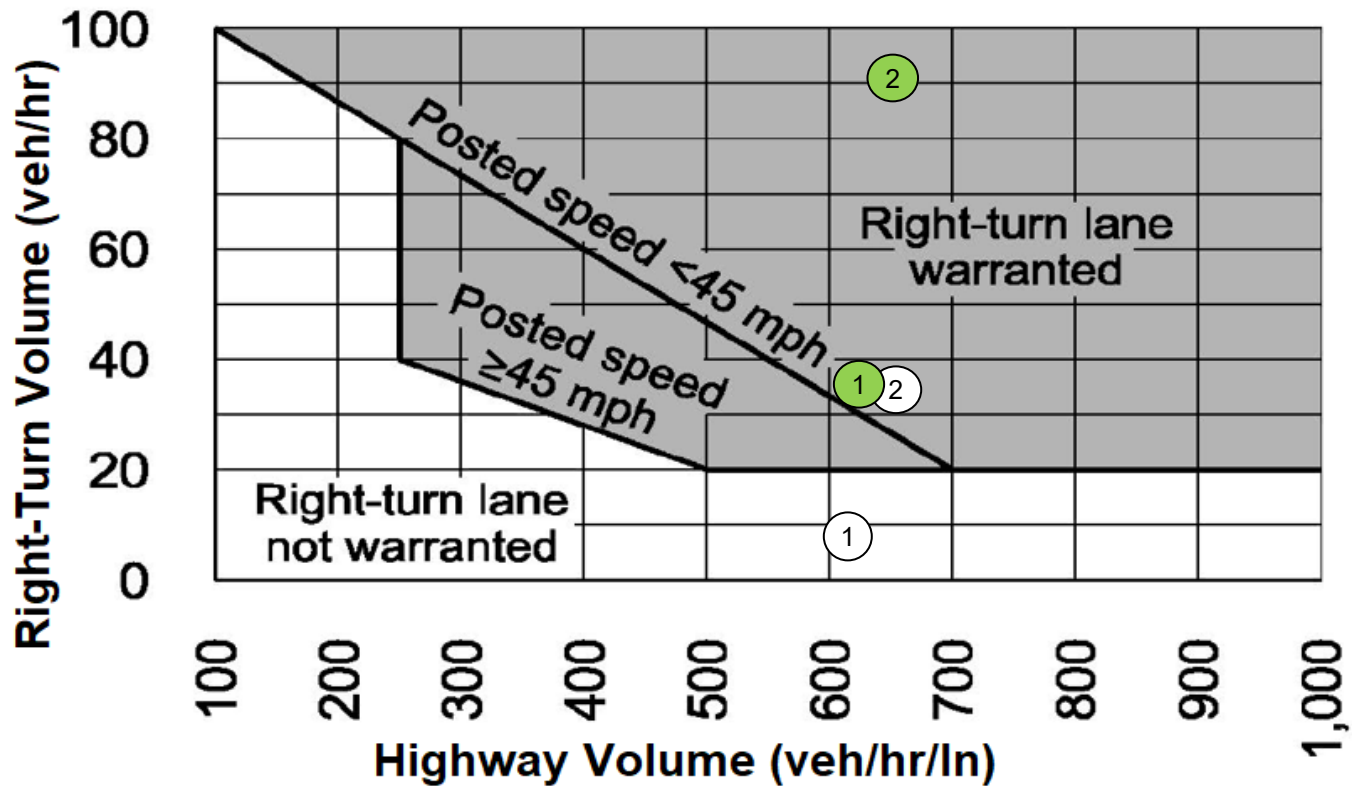
APPENDIX J: Turn Lane Warrant Worksheets

Creekside Terrace
Middleton, Idaho

ITD Right-Turn Lane Analysis
2021 Existing Traffic

Intersection	Approach	Speed Limit (mph)	Peak Hour	Right-Turn Volume (vph)	Major Road Volume (vphpl)	Meet Warrant?
① Hawthorne Avenue & SH 44	EB	25	AM	8	606	No*
			PM	35	617	Yes
② Hawthorne Avenue & SH 44	WB	25	AM	33	632	Yes
			PM	90	645	Yes

*Total approach volume less than 100 vph or right-turn volume < 20 vph = Not Warranted



AM Peak ①

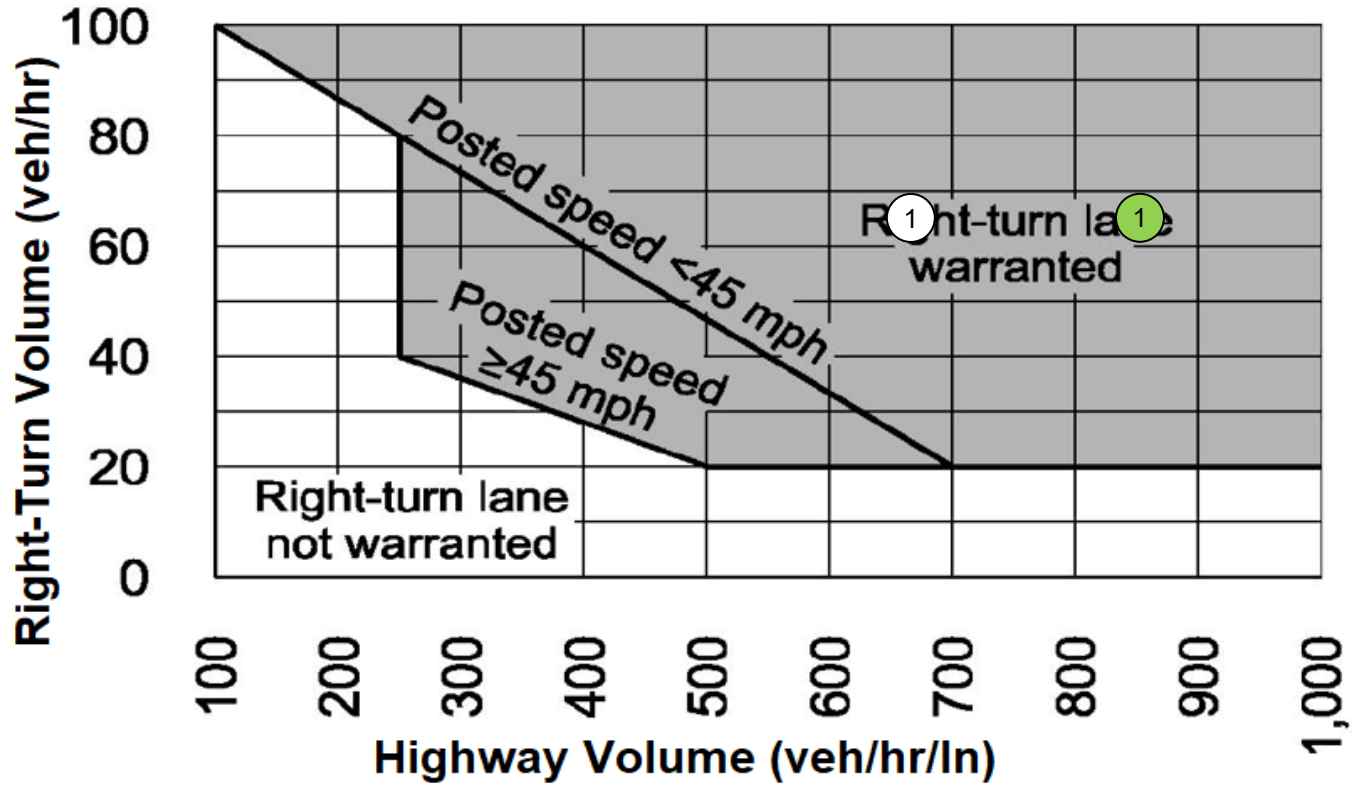
PM Peak ①

Creekside Terrace
Middleton, Idaho

ITD Right-Turn Lane Analysis
2025 Background Traffic

Intersection	Approach	Speed Limit (mph)	Peak Hour	Right-Turn Volume (vph)	Major Road Volume (vphpl)	Meet Warrant?
① Cemetery Road & SH 44	EB	40	AM	65	682	Yes
			PM	64	853	Yes

*Total approach volume less than 100 vph or right-turn volume < 20 vph = Not Warranted



AM Peak ①

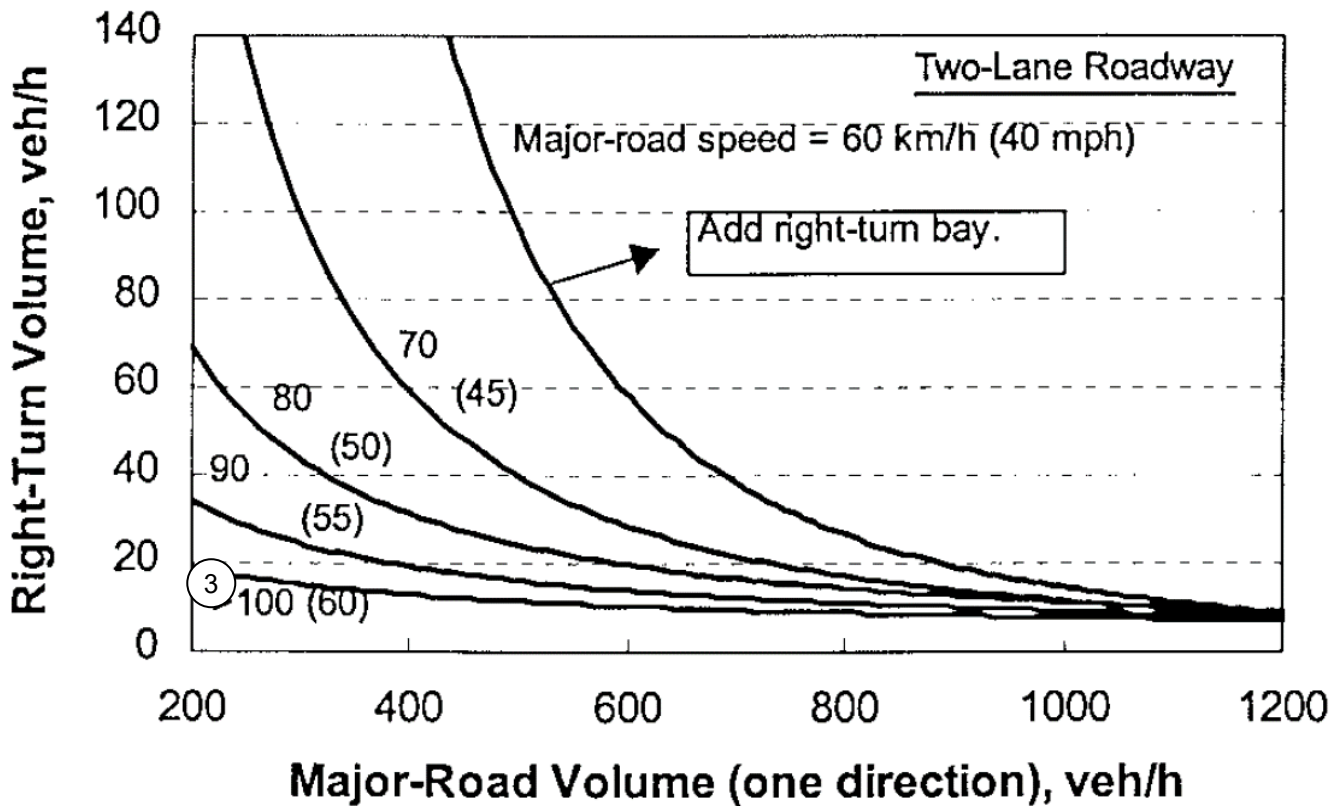
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Right-Turn Lane Analysis
2021 Existing Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Right-Turn Volume [vph]	Major Road Volume [vph]	Meet Warrant?
①	Purple Sage Road & Cemetery Road	SB	45	AM	5	40	No*
				PM	0	24	No*
②	Purple Sage Road & Cemetery Road	NB	45	AM	21	33	No*
				PM	21	60	No*
③	Concord Street & Cemetery Road	SB	25	AM	12	221	No
				PM	11	127	No*
④	Concord Street & Cemetery Road	NB	25	AM	3	93	No*
				PM	7	106	No*
⑤	Concord Street & Hawthorne Avenue	NB	25	AM	0	63	No*
				PM	0	70	No*

*Major approach volume < 200 vph or right-turn volume < 10 vph (off chart) = Not Warranted



AM Peak ①

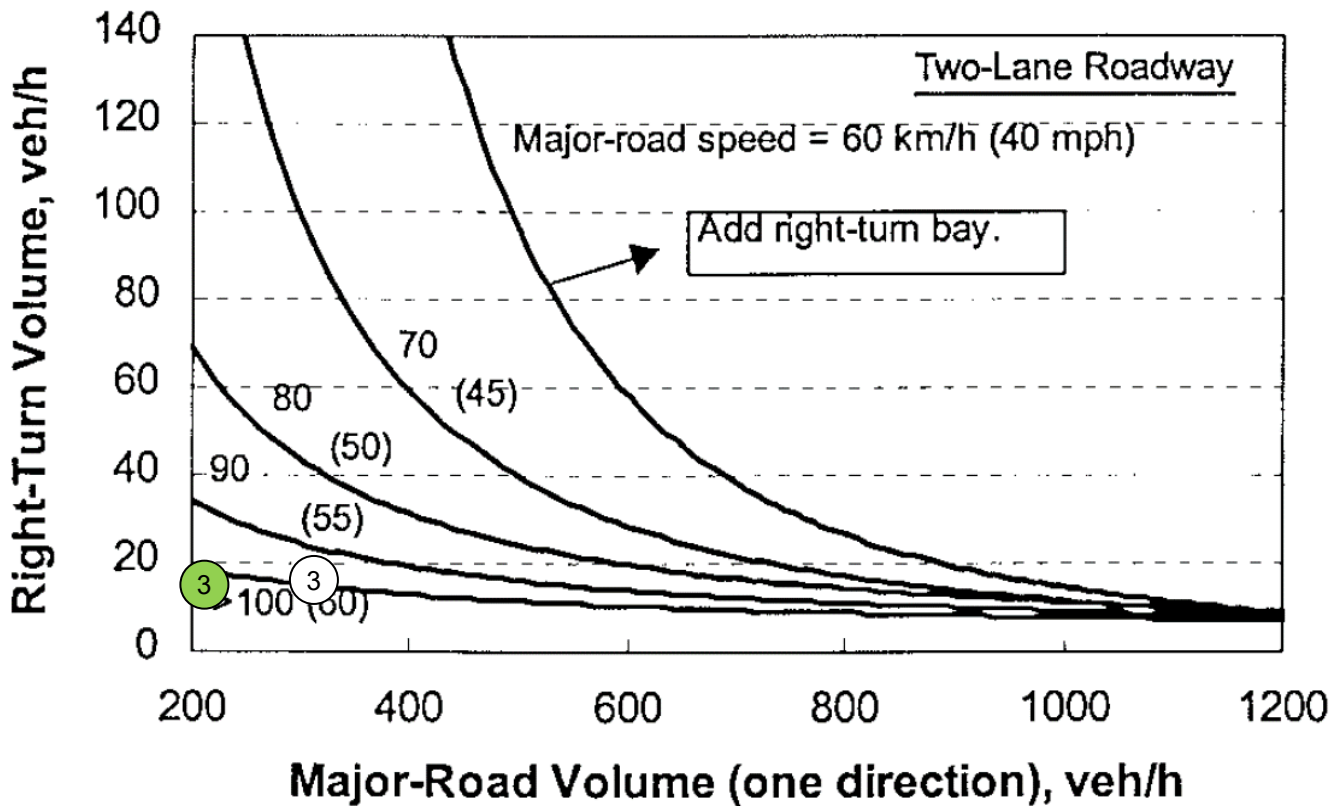
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Right-Turn Lane Analysis
2025 Background Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Right-Turn Volume [vph]	Major Road Volume [vph]	Meet Warrant?
①	Purple Sage Road & Cemetery Road	SB	45	AM	5	43	No*
				PM	0	26	No*
②	Purple Sage Road & Cemetery Road	NB	45	AM	28	41	No*
				PM	40	82	No*
③	Concord Street & Cemetery Road	SB	25	AM	13	297	No
				PM	12	207	No
④	Concord Street & Cemetery Road	NB	25	AM	6	163	No*
				PM	8	182	No*
⑤	Concord Street & Hawthorne Avenue	NB	25	AM	0	68	No*
				PM	0	76	No*

*Major approach volume < 200 vph or right-turn volume < 10 vph (off chart) = Not Warranted



AM Peak ①

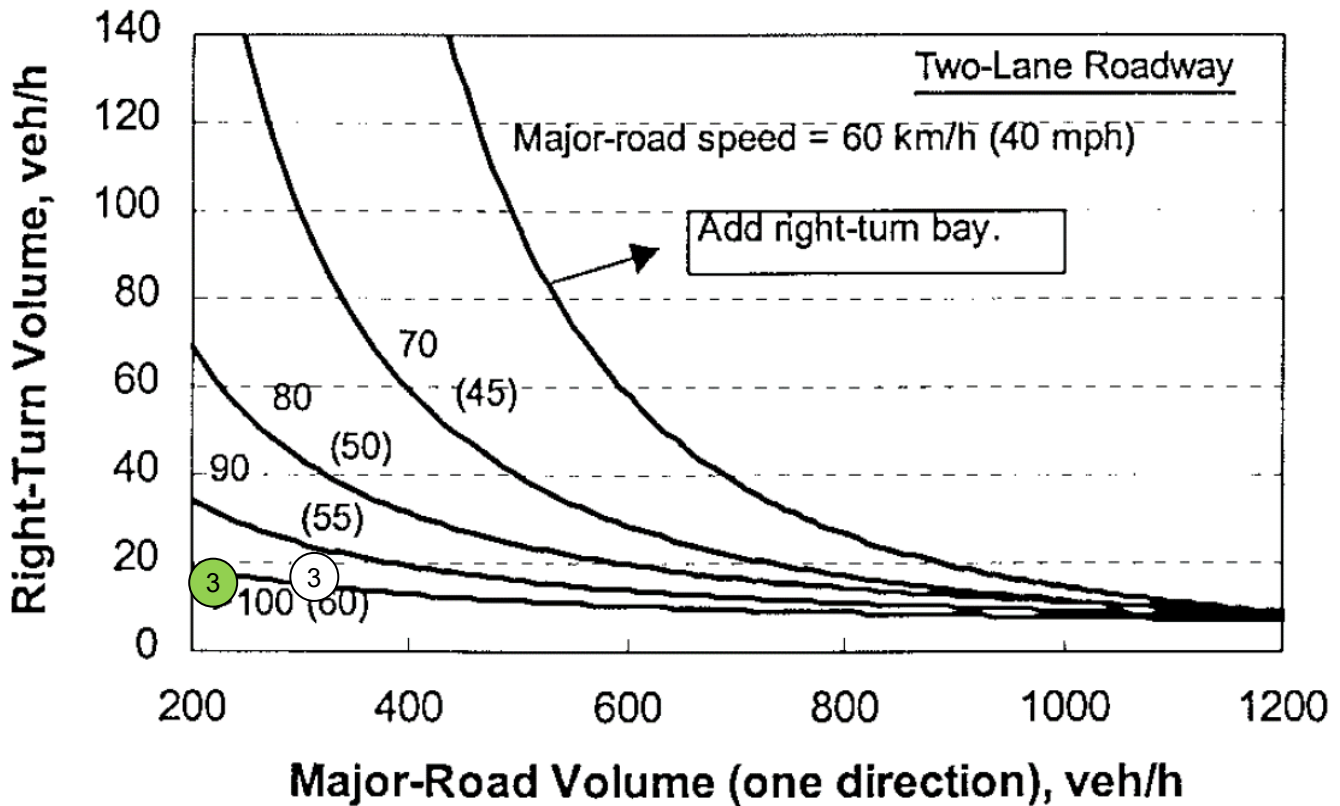
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Right-Turn Lane Analysis
2025 Total Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Right-Turn Volume [vph]	Major Road Volume [vph]	Meet Warrant?
①	Purple Sage Road & Cemetery Road	SB	45	AM	5	43	No*
				PM	0	26	No*
②	Purple Sage Road & Cemetery Road	NB	45	AM	29	45	No*
				PM	41	84	No*
③	Concord Street & Cemetery Road	SB	25	AM	13	299	No
				PM	12	215	No
④	Concord Street & Cemetery Road	NB	25	AM	8	165	No*
				PM	15	189	No*
⑤	Concord Street & Hawthorne Avenue	NB	25	AM	0	87	No*
				PM	0	138	No*
⑥	South Access & Concord Street	WB	25	AM	6	130	No*
				PM	19	109	No*

*Major approach volume < 200 vph or right-turn volume < 10 vph (off chart) = Not Warranted



AM Peak ①

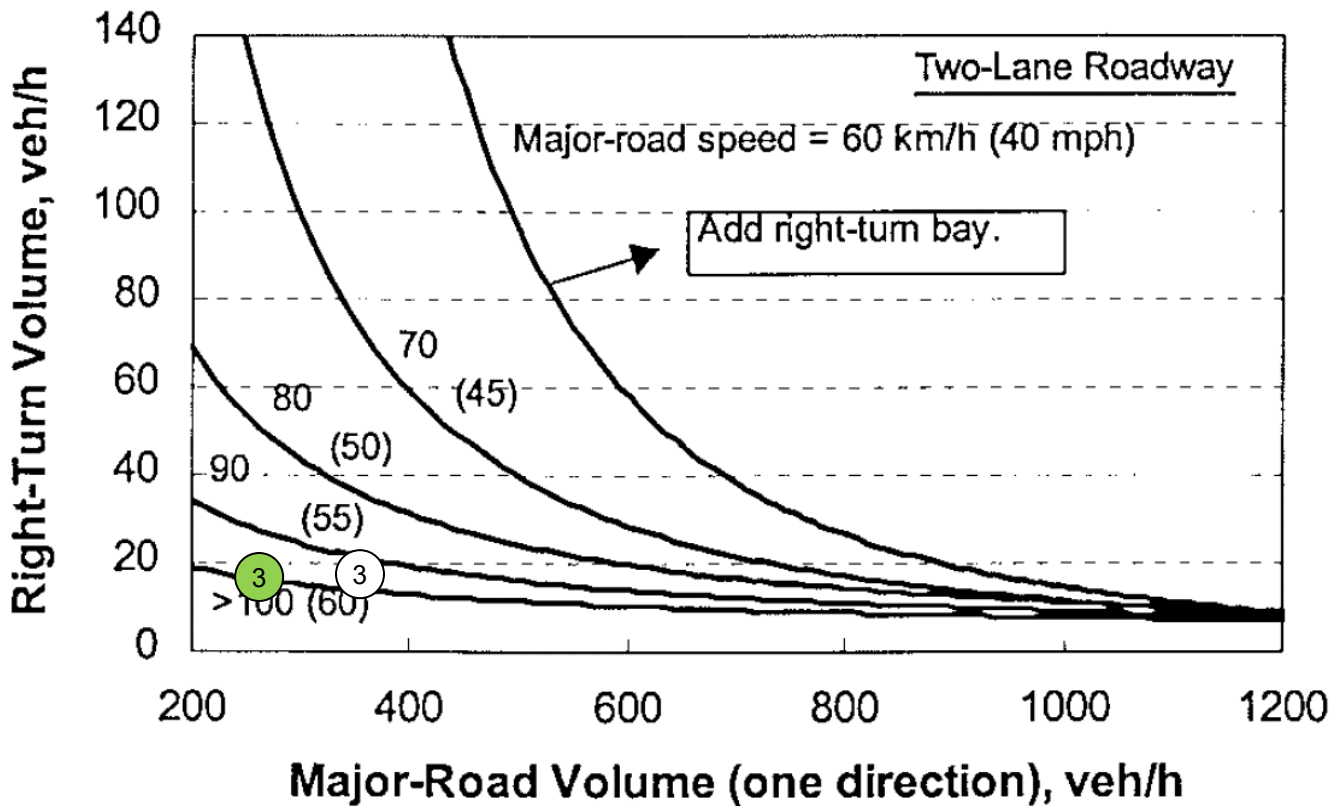
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Right-Turn Lane Analysis
2030 Background Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Right-Turn Volume [vph]	Major Road Volume [vph]	Meet Warrant?
①	Purple Sage Road & Cemetery Road	SB	45	AM	6	48	No*
				PM	0	29	No*
②	Purple Sage Road & Cemetery Road	NB	45	AM	30	45	No*
				PM	42	88	No*
③	Concord Street & Cemetery Road	SB	25	AM	14	368	No
				PM	13	249	No
④	Concord Street & Cemetery Road	NB	25	AM	7	201	No*
				PM	8	232	No*
⑤	Concord Street & Hawthorne Avenue	NB	25	AM	0	76	No*
				PM	0	84	No*

*Major approach volume < 200 vph or right-turn volume < 10 vph (off chart) = Not Warranted



AM Peak ①

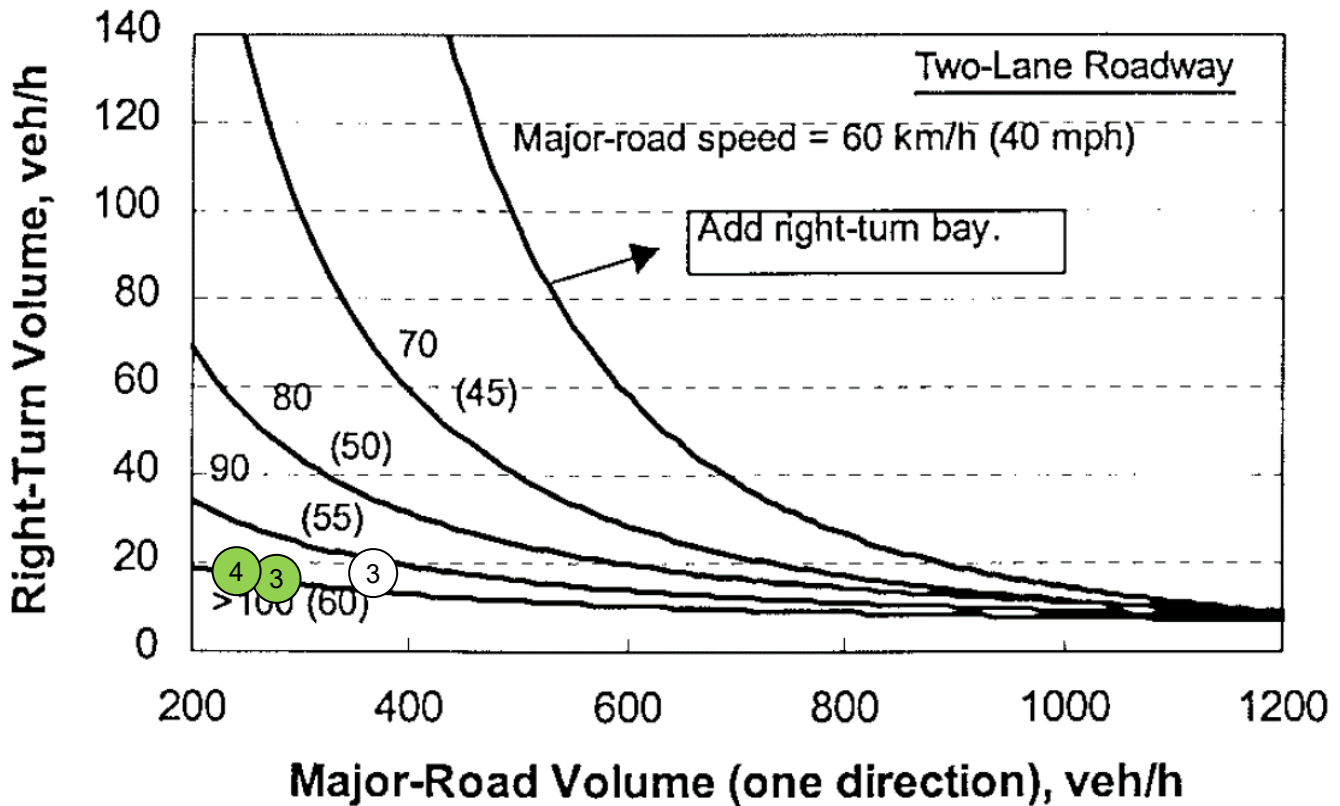
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Right-Turn Lane Analysis
2030 Total Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Right-Turn Volume [vph]	Major Road Volume [vph]	Meet Warrant?
①	Purple Sage Road & Cemetery Road	SB	45	AM	6	48	No*
				PM	0	29	No*
②	Purple Sage Road & Cemetery Road	NB	45	AM	31	49	No*
				PM	43	90	No*
③	Concord Street & Cemetery Road	SB	25	AM	14	373	No
				PM	13	253	No
④	Concord Street & Cemetery Road	NB	25	AM	9	205	No*
				PM	15	244	No
⑤	Concord Street & Hawthorne Avenue	NB	25	AM	0	93	No*
				PM	0	141	No*
⑥	South Access & Concord Street	WB	25	AM	5	140	No*
				PM	17	115	No*

*Major approach volume < 200 vph or right-turn volume < 10 vph (off chart) = Not Warranted



AM Peak ①

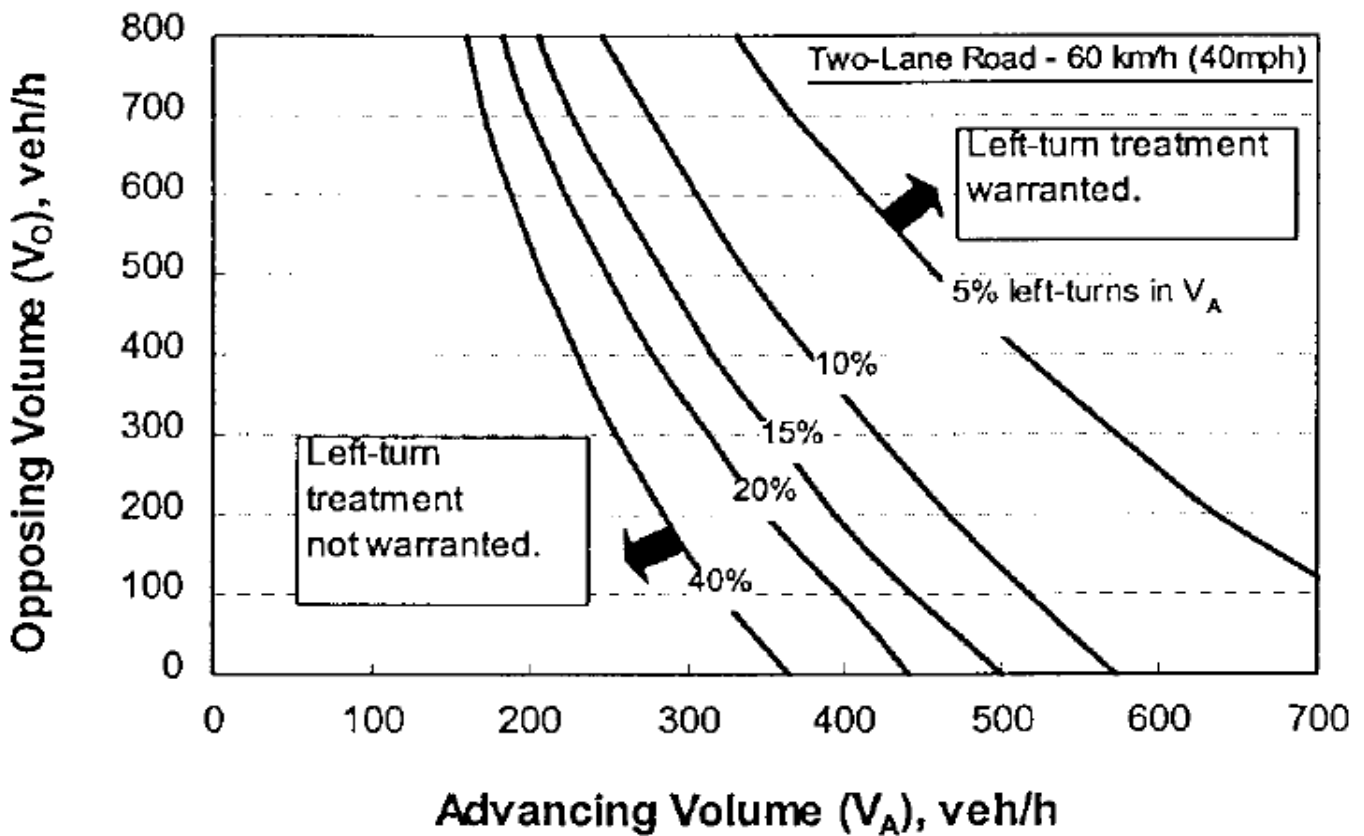
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Left-Turn Lane Analysis for 40 mph Roadways
2021 Existing Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Advancing Volume [vph]	Opposing Volume [vph]	Left-Turn Volume (%)	Meet Warrant?
①	Concord Street & Cemetery Road	SB	35	AM	221	82	26.7%	No*
				PM	127	86	15.0%	No*
②	Concord Street & Cemetery Road	NB	25	AM	93	162	11.8%	No*
				PM	106	108	18.9%	No*
③	Concord Street & Hawthorne Avenue	NB	25	AM	63	58	95.2%	No*
				PM	70	25	85.7%	No*

*Advancing and Opposing Volume < 250 vph (left of trendline) = Not Warranted



AM Peak ①

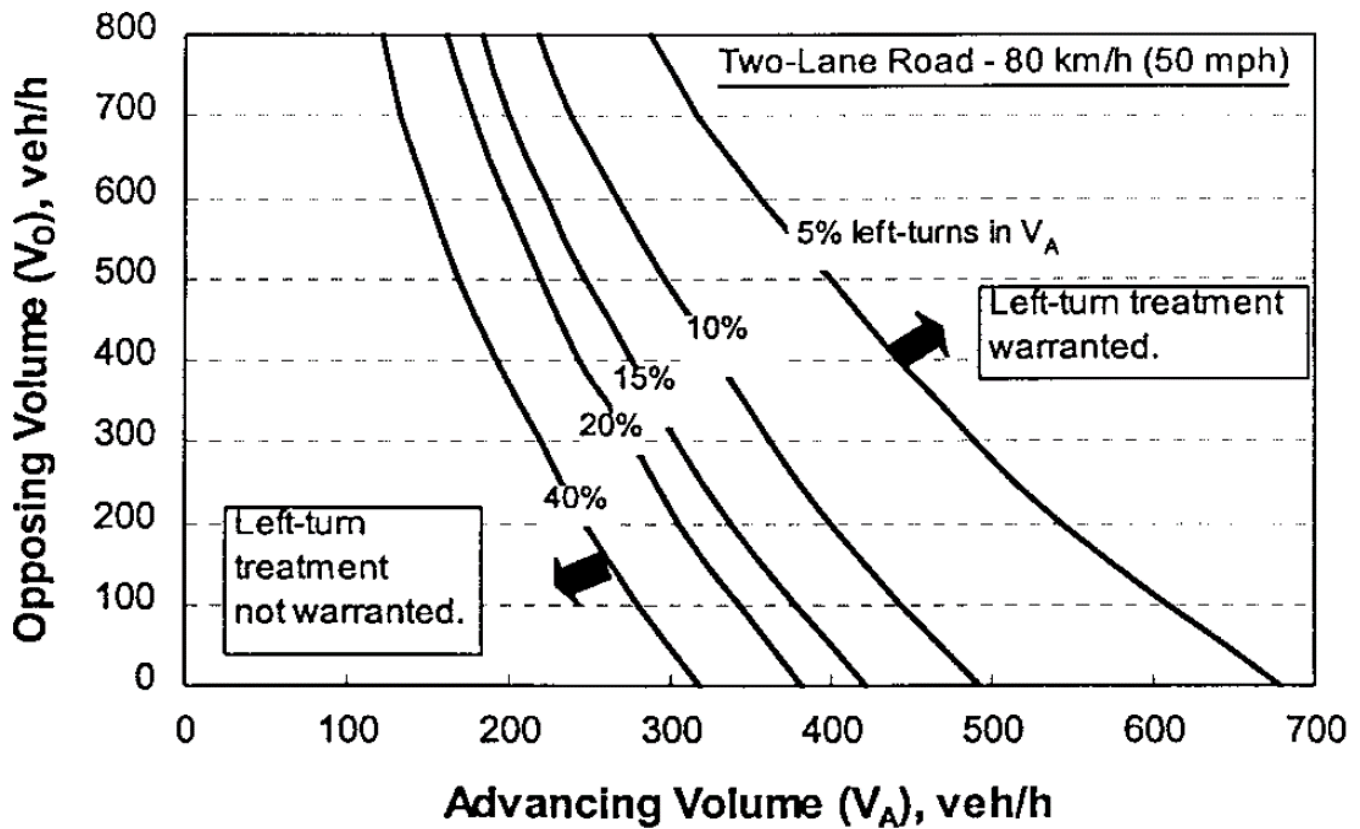
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Left-Turn Lane Analysis for 50 mph Roadways
2021 Existing Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Advancing Volume [vph]	Opposing Volume [vph]	Left-Turn Volume (%)	Meet Warrant?
①	Purple Sage Road & Cemetery Road	SB	45	AM	40	29	22.5%	No*
				PM	24	48	20.8%	No*
②	Purple Sage Road & Cemetery Road	NB	45	AM	33	31	12.1%	No*
				PM	60	19	20.0%	No*

*Advancing and Opposing Volume < 250 vph (left of trendline) = Not Warranted



AM Peak ①

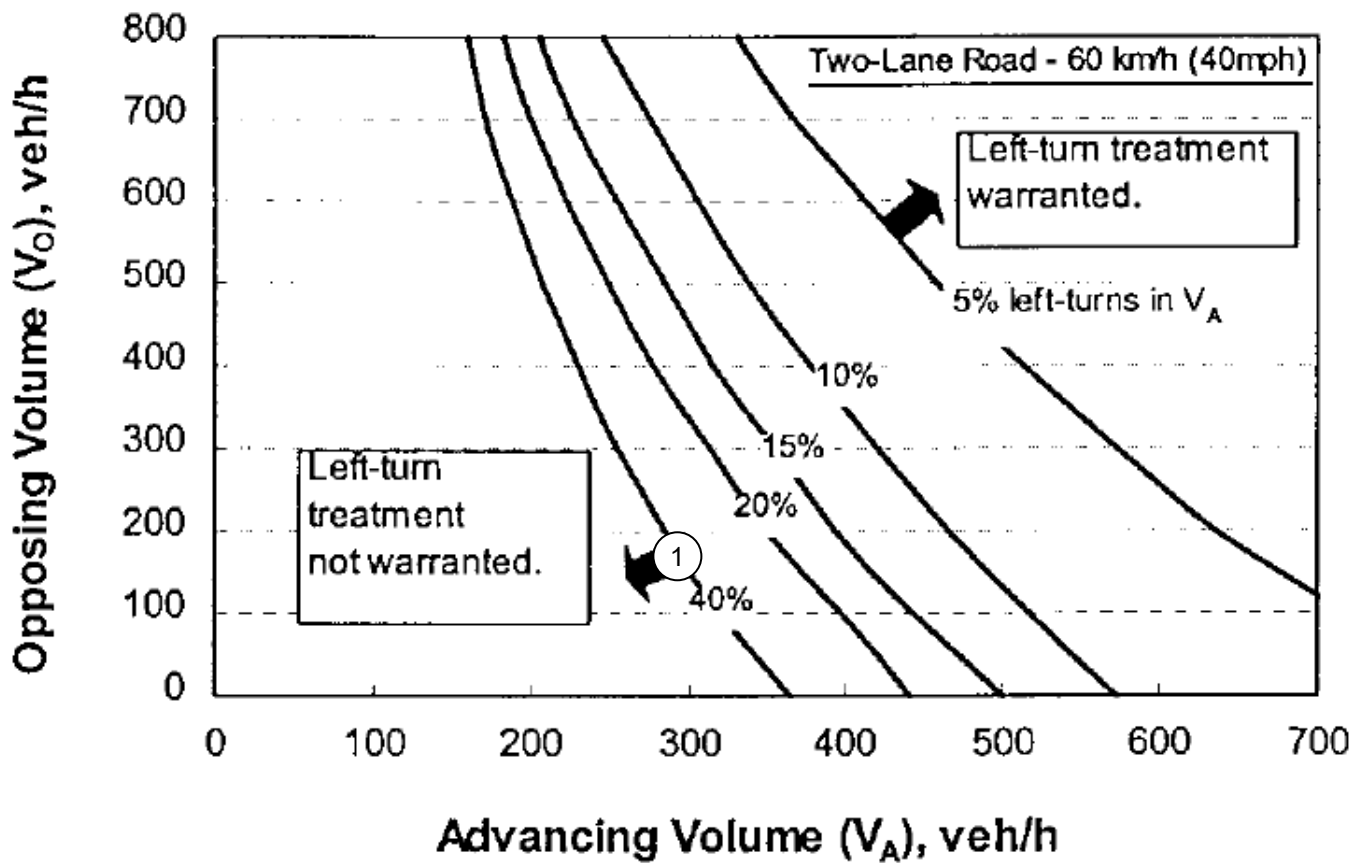
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Left-Turn Lane Analysis for 40 mph Roadways
2025 Background Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Advancing Volume [vph]	Opposing Volume [vph]	Left-Turn Volume (%)	Meet Warrant?
①	Concord Street & Cemetery Road	SB	35	AM	297	148	21.6%	No
				PM	207	160	10.2%	No*
②	Concord Street & Cemetery Road	NB	25	AM	163	233	9.2%	No*
				PM	182	186	12.1%	No*
③	Concord Street & Hawthorne Avenue	NB	25	AM	68	62	95.6%	No*
				PM	76	27	85.5%	No*

*Advancing and Opposing Volume < 250 vph (left of trendline) = Not Warranted



AM Peak ①

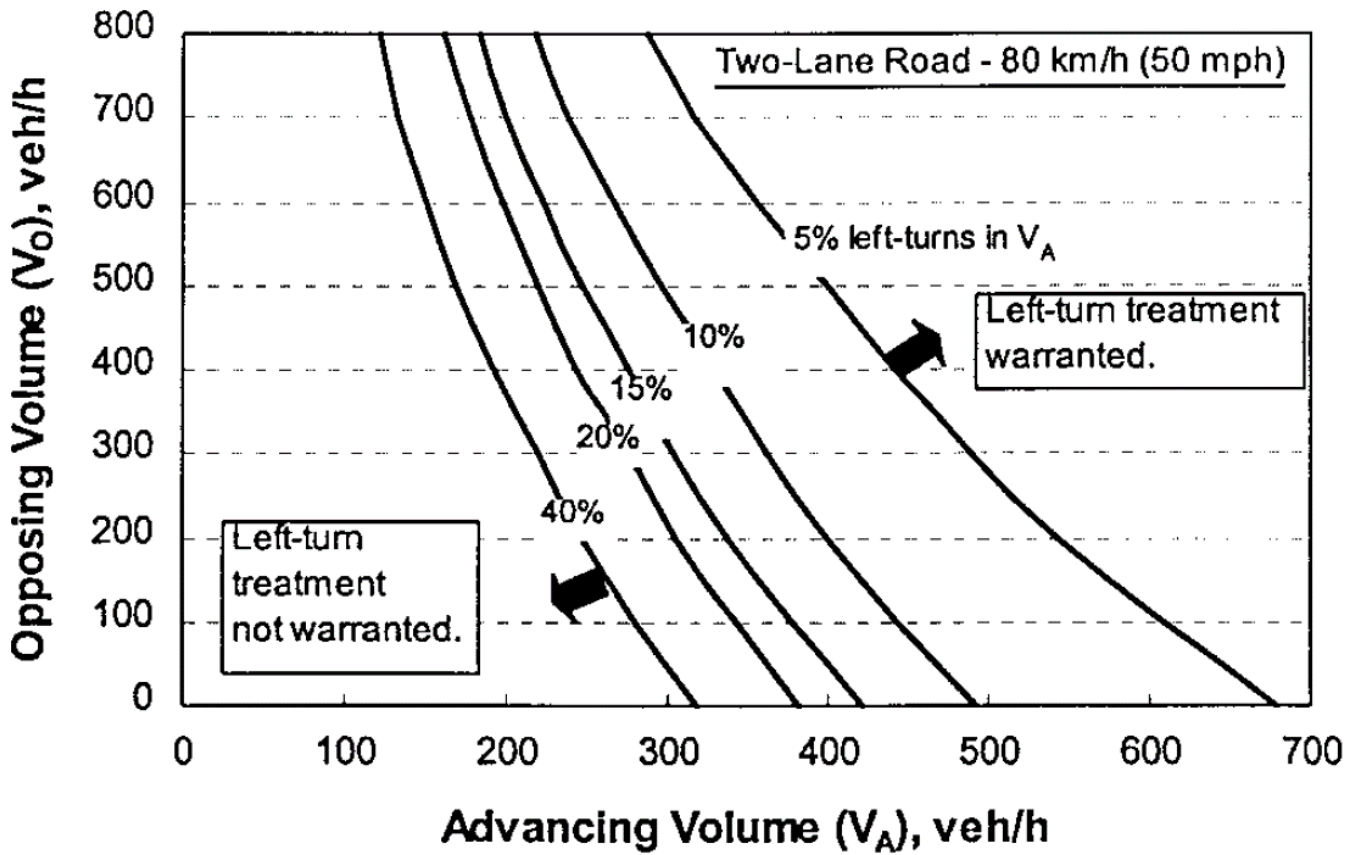
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Left-Turn Lane Analysis for 50 mph Roadways
2025 Background Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Advancing Volume [vph]	Opposing Volume [vph]	Left-Turn Volume (%)	Meet Warrant?
①	Purple Sage Road & Cemetery Road	SB	45	AM	43	37	23.3%	No*
				PM	26	69	19.2%	No*
②	Purple Sage Road & Cemetery Road	NB	45	AM	41	33	9.8%	No*
				PM	82	21	15.9%	No*

*Advancing and Opposing Volume < 250 vph (left of trendline) = Not Warranted



AM Peak ①

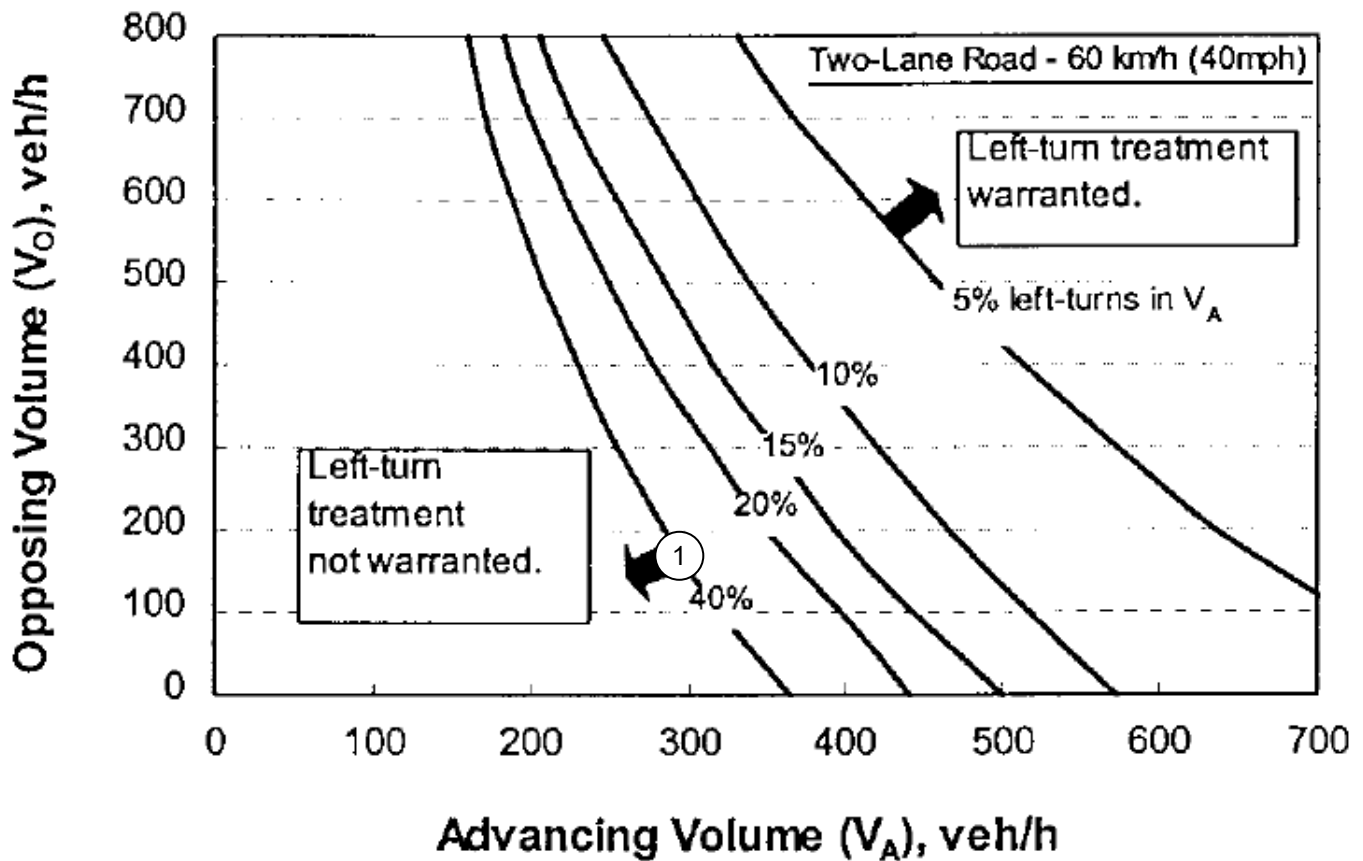
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Left-Turn Lane Analysis for 40 mph Roadways
2025 Total Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Advancing Volume [vph]	Opposing Volume [vph]	Left-Turn Volume (%)	Meet Warrant?
①	Concord Street & Cemetery Road	SB	35	AM	299	150	22.1%	No
				PM	215	167	13.5%	No*
②	Concord Street & Cemetery Road	NB	25	AM	165	233	9.1%	No*
				PM	189	186	11.7%	No*
③	Concord Street & Hawthorne Avenue	NB	25	AM	87	105	81.6%	No*
				PM	138	55	60.9%	No*
④	East Access & Hawthorne Avenue	NB	25	AM	17	30	47.1%	No*
				PM	52	16	42.3%	No*
⑤	South Access & Concord Street	EB	25	AM	149	130	2.0%	No*
				PM	115	109	10.4%	No*

*Advancing and Opposing Volume < 250 vph (left of trendline) = Not Warranted



AM Peak ①

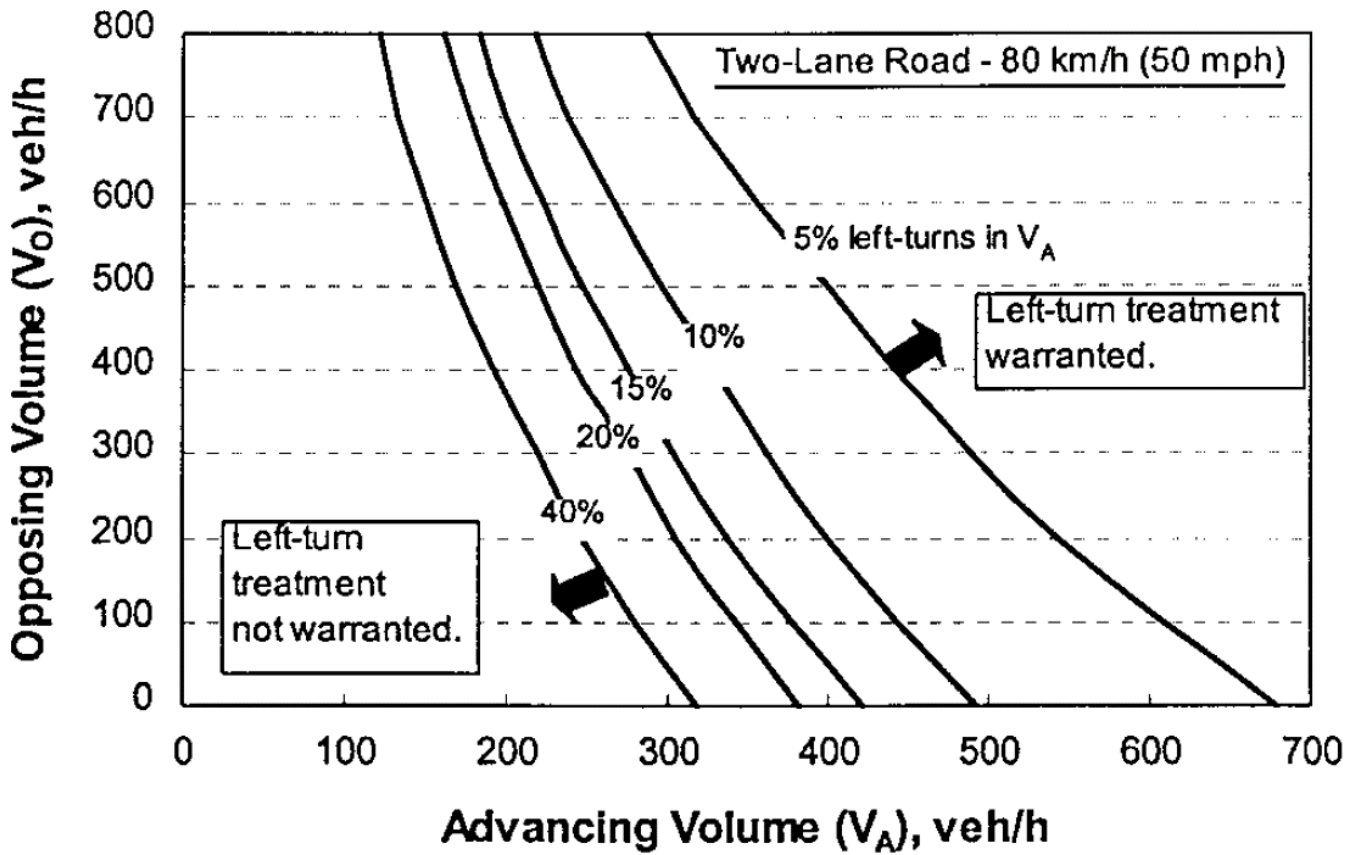
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Left-Turn Lane Analysis for 50 mph Roadways
2025 Total Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Advancing Volume [vph]	Opposing Volume [vph]	Left-Turn Volume (%)	Meet Warrant?
①	Purple Sage Road & Cemetery Road	SB	45	AM	43	38	23.3%	No*
				PM	26	70	19.2%	No*
②	Purple Sage Road & Cemetery Road	NB	45	AM	45	33	15.6%	No*
				PM	84	21	16.7%	No*

*Advancing and Opposing Volume < 250 vph (left of trendline) = Not Warranted



AM Peak ①

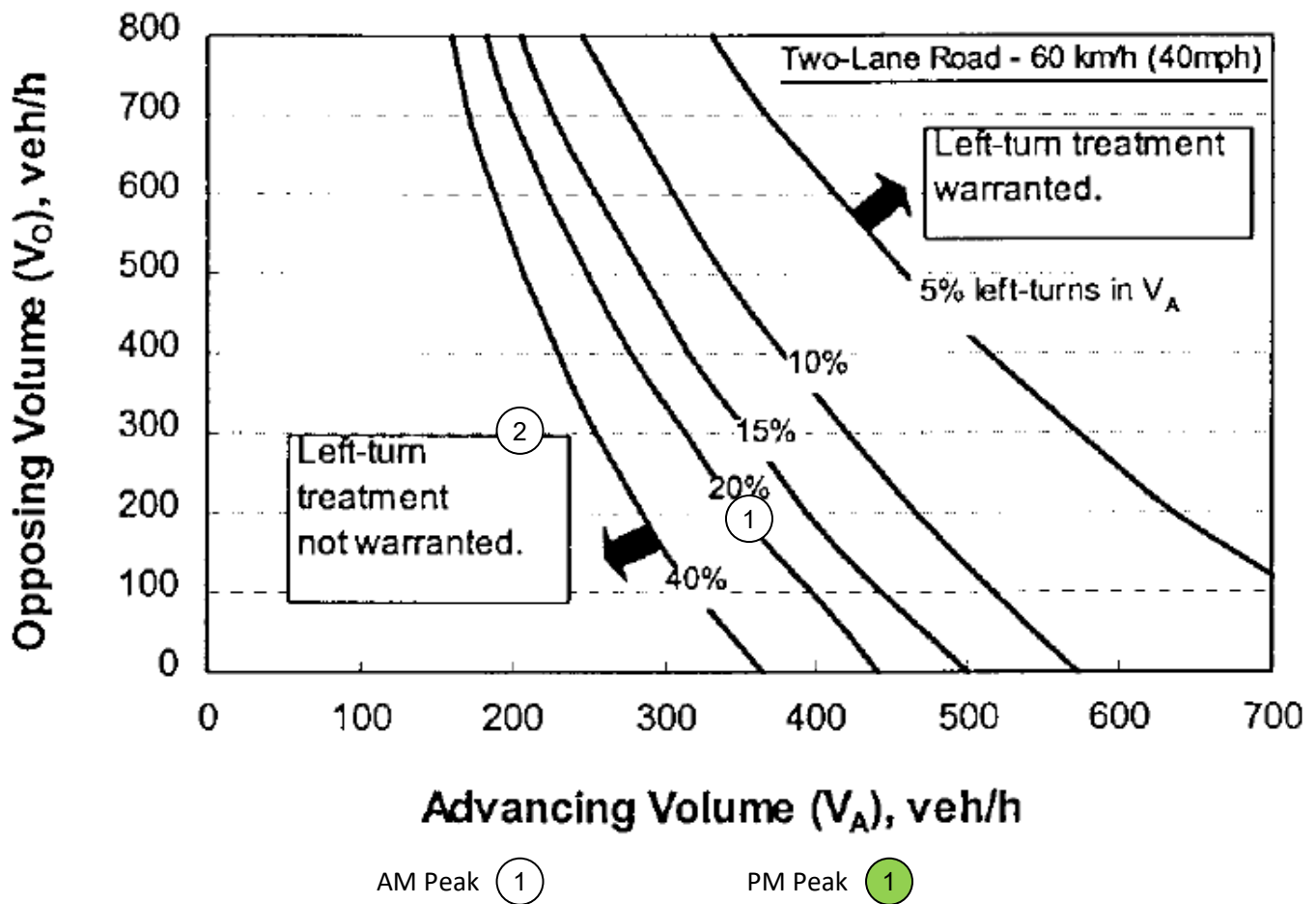
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Left-Turn Lane Analysis for 40 mph Roadways
2030 Background Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Advancing Volume [vph]	Opposing Volume [vph]	Left-Turn Volume (%)	Meet Warrant?
①	Concord Street & Cemetery Road	SB	35	AM	368	185	19.3%	No
				PM	249	208	9.3%	No*
②	Concord Street & Cemetery Road	NB	25	AM	201	297	8.0%	No
				PM	232	226	10.3%	No*
③	Concord Street & Hawthorne Avenue	NB	25	AM	76	69	94.7%	No*
				PM	84	30	85.7%	No*

*Advancing and Opposing Volume < 250 vph (left of trendline) = Not Warranted

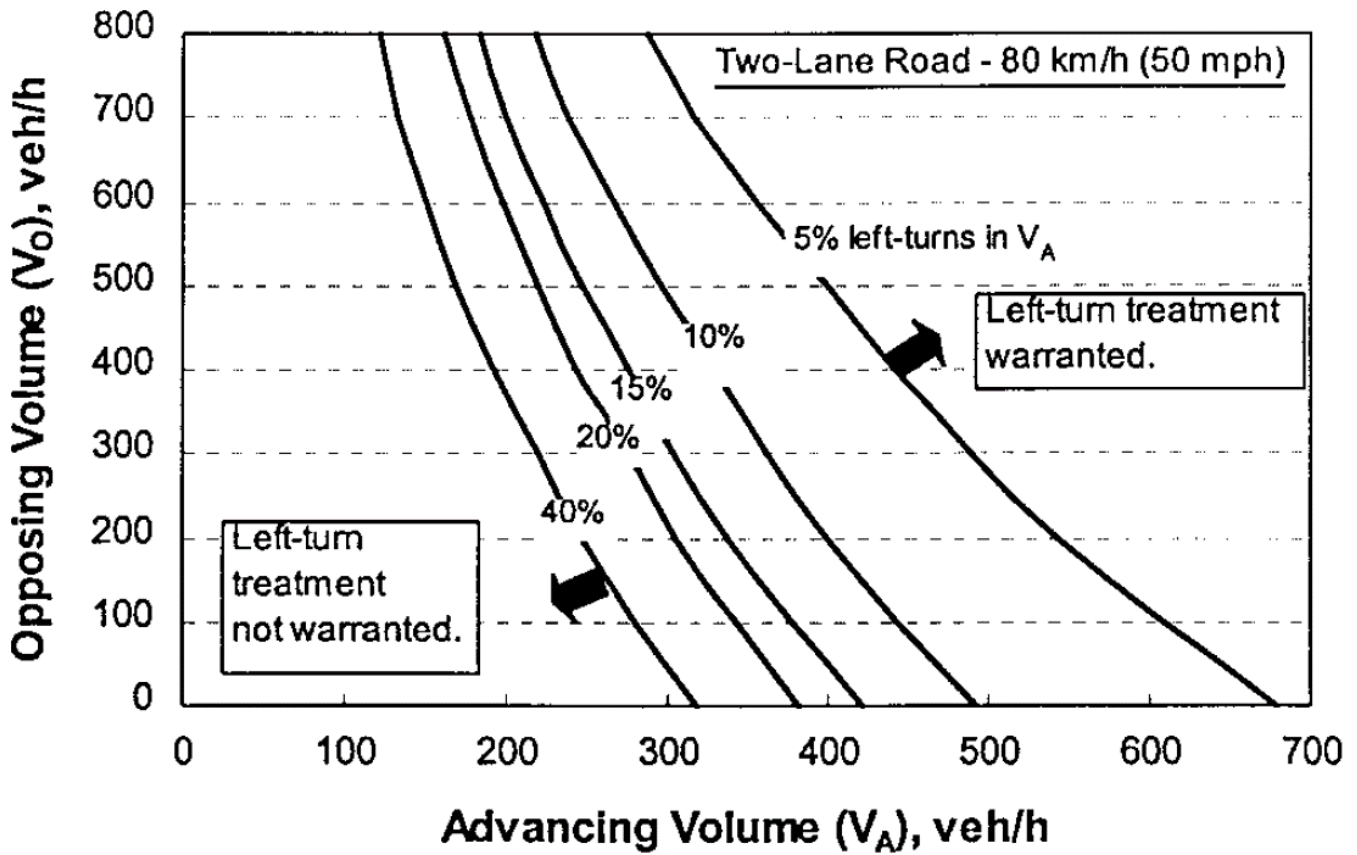


**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Left-Turn Lane Analysis for 50 mph Roadways
2030 Background Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Advancing Volume [vph]	Opposing Volume [vph]	Left-Turn Volume (%)	Meet Warrant?
①	Purple Sage Road & Cemetery Road	SB	45	AM	48	40	22.9%	No*
				PM	29	74	20.7%	No*
②	Purple Sage Road & Cemetery Road	NB	45	AM	45	37	11.1%	No*
				PM	88	23	15.9%	No*

*Advancing and Opposing Volume < 250 vph (left of trendline) = Not Warranted



AM Peak ①

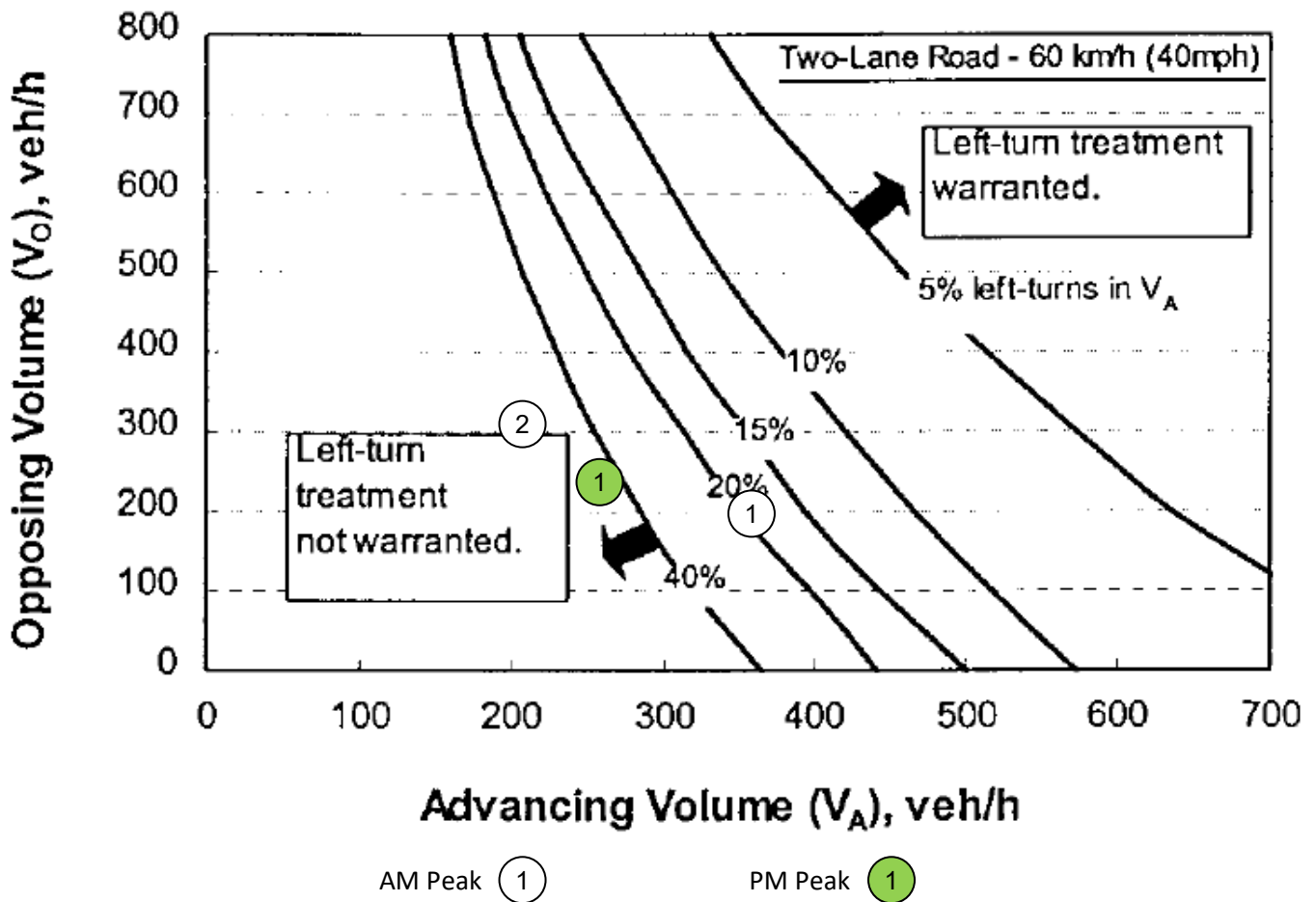
PM Peak ①

**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Left-Turn Lane Analysis for 40 mph Roadways
2030 Total Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Advancing Volume [vph]	Opposing Volume [vph]	Left-Turn Volume (%)	Meet Warrant?
①	Concord Street & Cemetery Road	SB	35	AM	373	189	19.0%	No
				PM	253	220	9.5%	No
②	Concord Street & Cemetery Road	NB	25	AM	205	302	7.8%	No
				PM	244	229	9.8%	No*
③	Concord Street & Hawthorne Avenue	NB	25	AM	93	105	82.8%	No*
				PM	141	55	63.1%	No*
④	East Access & Hawthorne Avenue	NB	25	AM	30	30	26.7%	No*
				PM	53	23	41.5%	No*
⑤	South Access & Concord Street	EB	25	AM	162	140	1.2%	No*
				PM	118	115	5.1%	No*

*Advancing and Opposing Volume < 250 vph (left of trendline) = Not Warranted

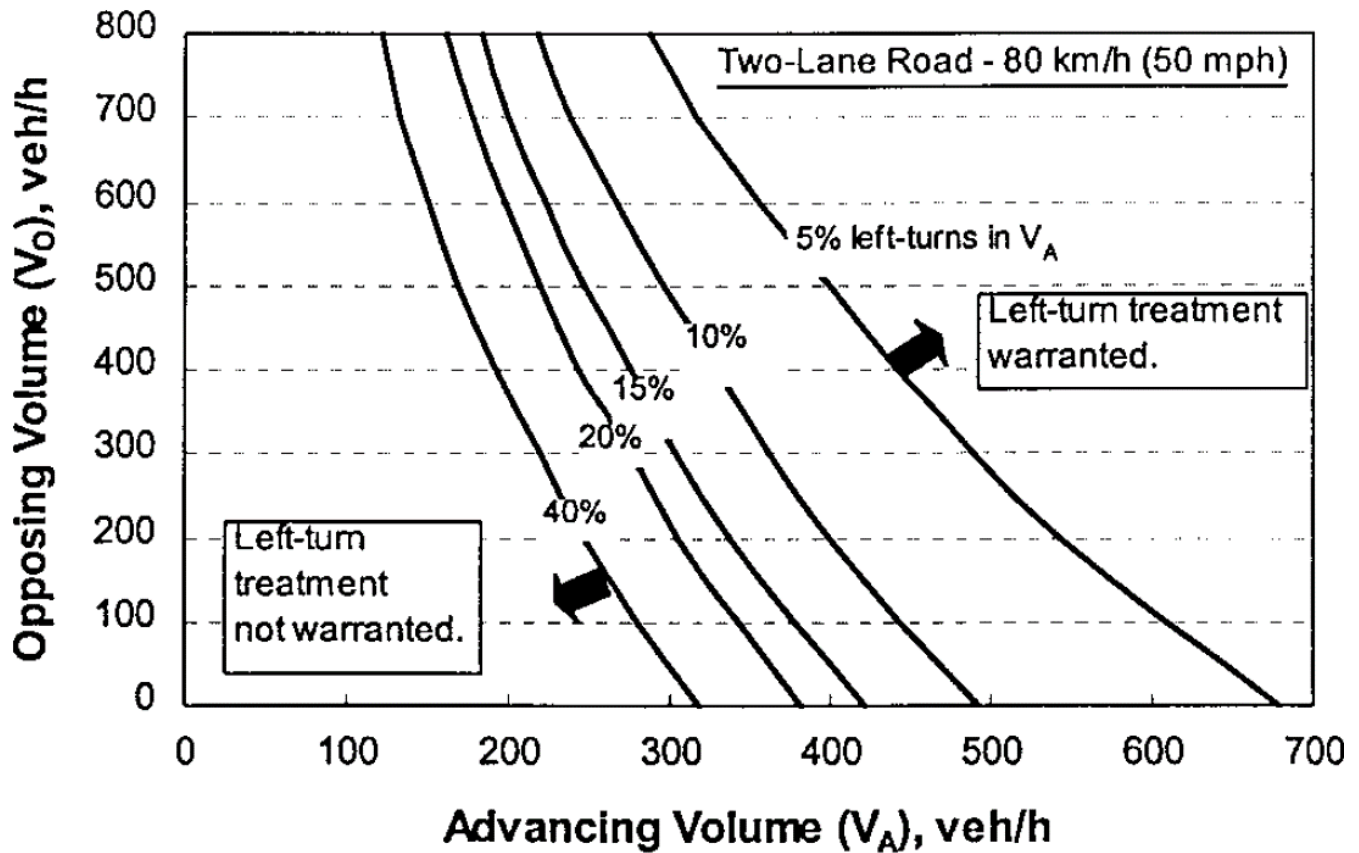


**Creekside Terrace
Middleton, Idaho**

**NCHRP 457 Left-Turn Lane Analysis for 50 mph Roadways
2030 Total Traffic**

	Intersection	Approach	Speed Limit [mph]	Peak Hour	Advancing Volume [vph]	Opposing Volume [vph]	Left-Turn Volume (%)	Meet Warrant?
①	Purple Sage Road & Cemetery Road	SB	45	AM	48	41	22.9%	No*
				PM	29	75	20.7%	No*
②	Purple Sage Road & Cemetery Road	NB	45	AM	49	37	16.3%	No*
				PM	90	23	16.7%	No*

*Advancing and Opposing Volume < 250 vph (left of trendline) = Not Warranted



AM Peak ①

PM Peak ①