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City of Louisville
COLORADO • SINCE 1878

Department of Planning and Building Safety

749 Main Street • Louisville CO 80027 • 303.335.4592 • www.louisvilleco.gov

ELECTRONIC LAND USE HEARING REQUEST CASE NO. _____

APPLICANT INFORMATION

Firm: Sterling Bay
Contact: Rod Richerson
Address: Redtail Ridge
Mailing Address: 100 Bayview, Suite 355
Newport Beach, CA 92660
Telephone: 949-422-0005
Fax: _____
Email: rricherson@sterlingbay.com

OWNER INFORMATION

Firm: Redtail Ridge Portfolio, LLC
Contact: Rod Richerson
Address: 100 Bayview, suite 355
Newport Beach, CA 92660
Mailing Address: 100 Bayview, suite 355
Newport Beach, CA 92660
Telephone: 949-422-0005
Fax: _____
Email: rricherson@sterlingbay.com

REPRESENTATIVE INFORMATION

Firm: Brue Bakol/Sterling Bay
Contact: Jay Hardy/Ryan Amos
Address: 1144 15th st. #2650
Denver, CO 80202
Mailing Address: _____
Telephone: 303-500-8959/540-798-8455
Fax: _____
Email: _____

PROPERTY INFORMATION

Common Address: _____
Legal Description: Lot _____ Blk _____
Subdivision _____
Area: 475 acres Sq. Ft.

TYPE (S) OF APPLICATION

- ☐ Annexation
- ☐ Zoning
- ■ Preliminary Subdivision Plat
- ■ Final Subdivision Plat
- ☐ Minor Subdivision Plat
- ☐ Preliminary Planned Unit Development (PUD)
- ☐ Final PUD
- ☐ Amended PUD
- ☐ Administrative PUD Amendment
- ☐ Special Review Use (SRU)
- ☐ SRU Amendment
- ☐ SRU Administrative Review
- ☐ Temporary Use Permit: _____
- ☐ CMRS Facility: _____
- ☐ Other: (easement / right-of-way; floodplain; variance; vested right; 1041 permit; oil / gas production permit)

I hereby request the public hearing(s) on this application be scheduled to be conducted by Electronic Participation in accordance with the attached Resolution No. 30, Series 2020, as adopted by the City Council on April 7, 2020, and in accordance with Resolution No. 38, Series 2020, as adopted by City Council on June 2, 2020 if such hearing(s) can be scheduled during a time period when in-person meetings are not being held due to a health epidemic or pandemic. I acknowledge that holding a quasi-judicial hearing by Electronic Participation may present certain legal risks and involves an area of legal uncertainty, and that having this application heard at a meeting held by Electronic Participation is optional and undertaken at my own risk. I also understand that in-person meetings are preferred for quasi-judicial hearings, and that even if electronic hearing(s) are scheduled, this application will be heard at an in-person meeting if in-person meetings have resumed by the scheduled hearing date(s). I further agree to defend and indemnify the City of Louisville in any action that may arise out of, or in connection with, conducting the hearing by Electronic Participation.

SIGNATURES & DATE

Applicant: DocuSigned by: _____
7F761989B0224A5...
Print: Rod Richerson
Owner: Redtail Ridge Portfolio, LLC.
Print: _____
Representative: _____
Print: _____

CITY STAFF USE ONLY

- ☐ Electronic Hearing Approved: _____
- ☐ Date(s) of Hearing(s): _____
_____

Sterling Bay | West, LLC
100 Bayview, Suite 355
Newport Beach, California,
92660

November 28, 2023

Mr. Rob Zuccaro
Planning and Building Safety Director
City of Louisville
749 Main St
Louisville, CO 80027
Sent via email to: RZuccaro@LouisvilleCo.gov

RE: Redtail Ridge Preliminary Master Plat and Subdivision Filing No. 1

Dear Mr. Zuccaro,

On behalf of Sterling Bay ("Developer" or "Applicant"), thank you for the opportunity to present our preliminary master plat application for Redtail Ridge. As requested by City staff, we are providing all documents required for a preliminary master plat, as well as certain other relevant documents. This letter also references several prior exchanges with the City on these submittals, including requested comments from the Developer. This letter, the documents that have been submitted, and those prior exchanges are all intended to collectively serve as our written request for preliminary master plat approval in accordance with the Louisville Municipal Code.

Master Preliminary Plat – Intent of Development

The Redtail Ridge master-planned project is intended to be a diverse, unique and innovative environment that will attract new companies that will, in turn, provide many additional jobs for the community. This project is also designed to implement a sustainable and resilient campus that will honor and enhance the natural landscape and habitats currently on this site, including opportunities for long-term community access and enjoyment. In addition to the above community benefits, the proposed master plat is designed to address critical community needs such as secondary and safer access for the Monarch school campus, better local and regional accessibility, a large enough site to accommodate a new and expanded Avista Hospital, and much needed access to roadway, bike and pedestrian path connections to adjacent communities.

Consistent with all submittals provided to date, the proposed preliminary plat divides the entire property into multiple unique development areas to include: (1) the expanded Avista Hospital,

Sterling Bay | West, LLC
100 Bayview, Suite 355
Newport Beach, California,
92660

(2) R&D Life Sciences labs & cGMP facilities, (3) flex industrial, (4) Office, (5) Retail and multiple outdoor amenities to benefit the tenants and community, and (6) the multiple open space dedications constituting the largest non-golf course dedication of open space in Louisville's history.

Description of Submittal Documents

At the request of City staff, in connection with this proposed preliminary plat we have made numerous previous submittals to the City, including submissions on March 24, August 18, and November 15, 2023 to address staff's questions and comments regarding previously submitted documents. In addition to those prior submittals, we are now including the following updated documents:

1. Plat Application;
2. Proposed Redtail Ridge Preliminary Plat;
3. Traffic and Mobility Study;
4. Resolutions and letters of support;
5. Sustainability Plan;
6. Transportation Demand Management Plan;
7. Redtail Ridge Subdivision Improvement Agreement Summary; and
8. Planning Commission Responses.

Redtail Ridge thanks City staff and City officials for your continued efforts towards processing and finalizing the Preliminary Plat for Redtail Ridge. We are confident and excited about the many future benefits Redtail Ridge promises to bring to Louisville and its citizens, and we look forward to presenting to City Council and answering any questions.

Respectfully,
STERLING BAY

Evan Pesonen
Vice President – Asset Management and Acquisitions

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO

COVER

PREPARED BY:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

LEGAL DESCRIPTION AND DEDICATION:

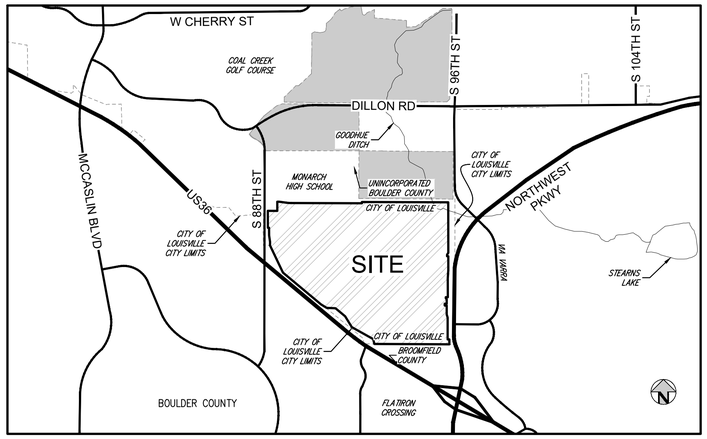
KNOW ALL MEN BY THESE PRESENTS, THAT THE UNDERSIGNED BEING THE OWNERS OF A TRACT OF LAND SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE CENTER QUARTER CORNER OF SAID SECTION 20;
THENCE SOUTH 89°48'50" EAST ALONG THE NORTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 2,625.59 FEET;
THENCE SOUTH 00°02'13" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF THE EAST LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 1,326.76 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF SAID SOUTHEAST QUARTER;
THENCE SOUTH 00°02'35" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF THE EAST LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 85.45 FEET TO THE NORTH CORNER OF PARCEL TK-71-2 DESCRIBED AT RECEPTION NO. 2386686 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) SOUTH 33°27'26" WEST, A DISTANCE OF 60.64 FEET;
2) SOUTH 01°40'28" WEST, A DISTANCE OF 45.12 FEET;
3) SOUTH 88°19'32" EAST, A DISTANCE OF 34.84 FEET TO A POINT 30 FEET WEST OF SAID EAST LINE;
THENCE SOUTH 00°02'35" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF SAID EAST LINE, A DISTANCE OF 404.28 FEET TO A POINT OF NON-TANGENT CURVATURE AT THE NORTH CORNER OF PARCEL TK-71 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) ALONG THE ARC OF SAID CURVE TO THE LEFT AN ARC LENGTH OF 86.28 FEET, SAID CURVE HAVING A RADIUS OF 2,441.83 FEET, A CENTRAL ANGLE OF 02°01'28", AND A CHORD WHICH BEARS SOUTH 04°26'27" WEST A CHORD DISTANCE OF 86.27 FEET;
2) SOUTH 03°25'43" WEST, A DISTANCE OF 124.37 FEET;
3) SOUTH 00°02'35" EAST AND ALONG THE WEST LINE OF PARCEL TK-71-1 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY, A DISTANCE OF 529.71 FEET TO A POINT ON THE SOUTH LINE OF THE SAID SOUTHEAST QUARTER AND A POINT ON THE NORTH LINE OF PARCEL 12 AS DESCRIBED AT RECEPTION NO. 1560711 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL 12 THE FOLLOWING FOUR (4) COURSES:
1) NORTH 89°42'42" WEST, A DISTANCE OF 55.73 FEET;
2) SOUTH 00°00'35" WEST, A DISTANCE OF 30.02 FEET;
3) SOUTH 44°51'26" EAST, A DISTANCE OF 35.44 FEET;
4) SOUTH 00°00'35" WEST, A DISTANCE OF 127.21 FEET TO A POINT ON THE NORTH LINE OF THAT PARCEL DESCRIBED AT RECEPTION NO. 520800 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) NORTH 89°59'25" WEST, A DISTANCE OF 55.00 FEET;
2) SOUTH 00°00'35" WEST, A DISTANCE OF 50.00 FEET;
3) SOUTH 89°59'25" EAST, A DISTANCE OF 55.00 FEET TO THE NORTHWEST CORNER OF PARCEL 10 AS DESCRIBED AT RECEPTION NO. 1560711 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL 10 THE FOLLOWING TWO (2) COURSES:
1) SOUTH 00°00'35" WEST ALONG THE WEST LINE OF SAID PARCEL AND ALONG A LINE PARALLEL WITH AND 75 FEET WEST OF THE SAID EAST LINE, A DISTANCE OF 247.79 FEET;
2) SOUTH 16°40'03" EAST ALONG THE SOUTHEASTERLY LINE OF SAID PARCEL, A DISTANCE OF 93.77 FEET TO THE NORTH CORNER OF PARCEL TK-75 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY;
THENCE SOUTH 00°00'35" WEST ALONG A LINE PARALLEL WITH THE EAST LINE OF SAID SECTION 29 AND ALONG THE WEST LINE OF SAID TK-75, A DISTANCE OF 611.12 FEET;
THENCE SOUTH 89°48'45" EAST ALONG THE SOUTH LINE OF SAID TK-75, A DISTANCE OF 48.09 FEET TO A POINT ON THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 29;
THENCE SOUTH 00°00'35" WEST ALONG SAID EAST LINE, A DISTANCE OF 136.13 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF THE NORTHEAST QUARTER OF SAID SECTION 29;
THENCE NORTH 89°42'42" WEST ALONG SAID SOUTH LINE, A DISTANCE OF 2,308.62 FEET TO A POINT ON THE NORTHEAST LINE OF THE LAND CONVEYED TO THE CITY OF BROOMFIELD BY GIFT DEED RECORDED AT RECEPTION NO. 2013403 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING FIVE (5) COURSES:
1) NORTH 14°13'32" WEST, A DISTANCE OF 140.04 FEET;
2) NORTH 60°44'04" WEST, A DISTANCE OF 682.66 FEET;
3) NORTH 31°43'59" WEST, A DISTANCE OF 355.27 FEET;
4) NORTH 50°04'57" WEST, A DISTANCE OF 351.37 FEET;
5) NORTH 87°28'56" WEST, A DISTANCE OF 246.66 FEET TO THE EASTERN CORNER OF PARCEL 32B AS DESCRIBED BY SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 3411796 IN THE RECORDS OF BOULDER COUNTY;
THENCE NORTH 58°29'24" WEST ALONG THE NORTHEASTERLY LINE OF SAID PARCEL, A DISTANCE OF 186.70 FEET TO A POINT ON THE RIGHT-OF-WAY OF HIGHWAY 36;
THENCE NORTH 50°07'12" WEST ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 356.68 FEET TO A POINT ON THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 20 AND THE SOUTH CORNER OF PARCEL 32A OF SAID SPECIAL WARRANTY DEED;
THENCE CONTINUING NORTH 50°07'12" WEST ALONG THE NORTHEAST LINE OF SAID PARCEL 32A, A DISTANCE OF 1,028.45 FEET TO A POINT ON THE EAST LINE OF THAT PARCEL DESCRIBED AT BOOK 880, PAGE 98 IN THE RECORDS OF BOULDER COUNTY;
THENCE NORTH 25°26'59" WEST ALONG SAID EAST LINE AND ALONG THE EAST LINE OF THAT PARCEL DESCRIBED AT BOOK 878, PAGE 503, A DISTANCE OF 842.57 FEET TO THE SOUTH CORNER OF THAT PARCEL DESCRIBED AT RECEPTION NO. 1989419 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING FOUR (4) COURSES:
1) NORTH 00°54'00" EAST, A DISTANCE OF 95.53 FEET;
2) NORTH 08°22'46" WEST, A DISTANCE OF 184.53 FEET;
3) NORTH 00°09'09" WEST ALONG A LINE PARALLEL WITH THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 20, A DISTANCE OF 213.70 FEET;
4) SOUTH 89°50'51" WEST, A DISTANCE OF 34.06 FEET TO A POINT 25.00 FEET EAST OF THE WEST LINE OF SAID SOUTHWEST QUARTER;
THENCE NORTH 00°09'09" WEST ALONG A LINE PARALLEL WITH AND 25 FEET FROM THE SAID WEST LINE, A DISTANCE OF 473.64 FEET TO A POINT ON THE SOUTH LINE OF THAT PARCEL DESCRIBED AT RECEPTION NO. 1819920 IN THE RECORDS OF BOULDER COUNTY EXTENDED WESTERLY;
THENCE SOUTH 89°48'38" EAST ALONG SAID SOUTH LINE AND SAID SOUTH LINE EXTENDED, A DISTANCE OF 265.23 FEET TO THE SOUTHEAST CORNER OF SAID PARCEL;
THENCE NORTH 00°09'09" WEST ALONG THE EAST LINE OF SAID PARCEL, A DISTANCE OF 256.00 FEET TO A POINT ON THE SOUTH RIGHT-OF-WAY LINE OF CAMPUS DRIVE AS DEDICATED BY LOUISVILLE CAMPUS RECORDED AT RECEPTION NO. 1669751;
THENCE ALONG SAID SOUTH LINE THE FOLLOWING FOUR (4) COURSES:
1) SOUTH 89°48'38" EAST ALONG SAID NORTH LINE, A DISTANCE OF 50.02 FEET;
2) SOUTH 82°25'28" EAST, A DISTANCE OF 202.23 FEET TO A POINT OF NON-TANGENT CURVATURE;
3) ALONG THE ARC OF SAID CURVE TO THE LEFT AN ARC LENGTH OF 139.86 FEET, SAID CURVE HAVING A RADIUS OF 1,085.00 FEET, A CENTRAL ANGLE OF 07°23'09", AND A CHORD WHICH BEARS SOUTH 86°07'04" EAST A CHORD DISTANCE OF 139.77 FEET;
4) SOUTH 89°48'38" EAST, A DISTANCE OF 1,975.05 FEET TO A POINT ON THE EAST LINE SAID SOUTHWEST QUARTER;
THENCE NORTH 00°02'50" EAST ALONG SAID EAST LINE, A DISTANCE OF 35.00 FEET TO THE **POINT OF BEGINNING**;

EXCEPTING THEREFROM THAT PARCEL DESCRIBED BY DEED RECORDED AT RECEPTION NO. 531604 IN THE RECORDS OF BOULDER COUNTY;

SAID PARCEL CONTAINS 16,949,252 SQUARE FEET OR 389.10 ACRES, MORE OR LESS;

HAS LAID OUT, SUBDIVIDED AND PLATTED SAID LAND AS PER DRAWING HEREON CONTAINED UNDER THE NAME AND STYLE OF **REDTAIL RIDGE FILING NO. 1**, A SUBDIVISION OF A PART OF THE CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO, AND BY THESE PRESENTS DO HEREBY DEDICATE TO THE CITY OF LOUISVILLE AND THE PUBLIC, THE ACCESS, INGRESS-EGRESS AND FIRE LANE EASEMENTS, AND DOES FURTHER DEDICATE TO THE CITY THE EXCLUSIVE CITY OF LOUISVILLE UTILITY EASEMENTS AS SHOWN ON THE ACCOMPANYING PLAT FOR THE PROVISION OF CITY UTILITY LINES AND SERVICES, AND DOES FURTHER DEDICATE TO THE CITY OF LOUISVILLE THOSE PORTIONS OF SAID REAL PROPERTY WHICH ARE SO DESIGNATED AS EASEMENTS AND RIGHT-OF-WAYS FOR THE CONSTRUCTION, INSTALLATION, OPERATION, MAINTENANCE, REPAIR AND REPLACEMENT FOR ALL SERVICES, INCLUDING WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, TELEPHONE AND ELECTRIC LINES, WORKS, POLES AND UNDERGROUND CABLES, GAS PIPELINES, WATER PIPELINES, SANITARY SEWER LINES, STREET LIGHTS, CULVERTS, HYDRANTS, DRAINAGE DITCHES AND DRAINS AND ALL APPURTENANCES THERETO, IT BEING EXPRESSLY UNDERSTOOD AND AGREED BY THE UNDERSIGNED THAT ALL EXPENSES AND COSTS INVOLVED IN CONSTRUCTING AND INSTALLING SANITARY SEWER SYSTEM WORKS AND LINES, GAS SERVICE LINES, ELECTRICAL SERVICE WORKS AND LINES, STORM SEWERS AND DRAINS, STREET LIGHTING, GRADING AND LANDSCAPING, CURBS, GUTTERS, STREET PAVEMENT, SIDEWALKS AND OTHER SUCH UTILITIES AND SERVICES SHALL BE GUARANTEED AND PAID FOR BY THE SUBDIVIDER OR ARRANGEMENTS MADE BY THE SUBDIVIDER THEREOF WHICH ARE APPROVED BY THE CITY OF LOUISVILLE, COLORADO, AND SUCH SUMS SHALL NOT BE PAID BY THE CITY OF LOUISVILLE, COLORADO, PROVIDED, HOWEVER, THE SUBDIVIDER MAY BE ENTITLED TO REIMBURSEMENT OR FEE CREDITS AS SUCH ARE APPROVED BY THE CITY OF LOUISVILLE, COLORADO AND THAT ANY ITEM SO CONSTRUCTED OR INSTALLED WHEN ACCEPTED BY THE CITY OF LOUISVILLE, COLORADO, SHALL BECOME THE SOLE PROPERTY OF SAID CITY OF LOUISVILLE, COLORADO, EXCEPT PRIVATE ROADWAY CURBS, GUTTER AND PAVEMENT AND ITEMS OWNED BY MUNICIPALLY FRANCHISED UTILITIES WHICH WHEN CONSTRUCTED OR INSTALLED, SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL NOT BECOME THE PROPERTY OF THE CITY OF LOUISVILLE, COLORADO.



VICINITY MAP
SCALE: 1" = 2,000'

NOTES:

1. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY HARRIS KOCHER SMITH TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS-OF-WAY AND TITLE OF RECORD, HARRIS KOCHER SMITH RELIED UPON COMMITMENT FOR TITLE INSURANCE, ORDER NO. ABD70601971.1-3 ISSUED BY LAND TITLE GUARANTEE COMPANY, AND HAVING AN EFFECTIVE DATE OF DECEMBER 20, 2021 AT 5:00 P.M.
2. NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
3. BASIS OF BEARINGS: BEARINGS ARE BASED ON THE WEST LINE OF THE NORTHEAST QUARTER OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN ASSUMED AS BEARING SOUTH 00°08'41" EAST. SAID LINE BEING MONUMENTED AT THE NORTH QUARTER CORNER OF SAID SECTION BY A #6 REBAR WITH A 3.25" BRASS CAP STAMPED "1998 PLS 16401", AND BEING MONUMENTED AT THE CENTER QUARTER CORNER BY A #6 REBAR WITH A 2.5" ALUMINUM CAP 0.1' ABOVE GROUND STAMPED "DB&CO 2000 PLS 23529".
4. SUBJECT PROPERTY FALLS WITHIN ZONE X OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP, MAP NO. 08013C0584K, DATED AUGUST 15, 2019. ZONE X IS DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2-PERCENT ANNUAL CHANCE FLOODPLAIN.
5. UPON AND AFTER RECORDATION OF THIS PLAT, THIS PLAT SHALL SUPERSEDE AND REPLACE ALL SUBDIVISION PLATS PREVIOUSLY FILED OF RECORD WITH RESPECT TO THE PROPERTY DESCRIBED IN THIS PLAT, INCLUDING BUT NOT LIMITED TO STORAGETEK BUILDING SIX SUBDIVISION RECORDED WITH THE BOULDER COUNTY CLERK AND RECORDER AT RECEPTION NO. 717095, WITH THE LEGAL EFFECT THAT ALL SUCH PREVIOUSLY RECORDED PLATS SHALL BE CONSIDERED VOID AND OF NO FURTHER LEGAL AFFECT AS APPLIED TO THE PROPERTY DESCRIBED IN THIS PLAT, AND THAT THE PROPERTY DESCRIBED IN THIS PLAT SHALL BE CONCLUSIVELY RELEASED FROM THE ENCUMBRANCE OF ALL SUCH RECORDED PLATS UPON AND AFTER RECORDATION OF THIS PLAT.
6. THE LINEAR UNITS FOR THIS SURVEY ARE U.S. SURVEY FEET.
7. THE SURVEYED PROPERTY IS SUBJECT TO THE TERMS, PROVISIONS, COVENANTS, CONDITIONS, RESTRICTIONS, OBLIGATIONS AND RESERVATIONS CONTAINED IN THE RECORDED DOCUMENTS IN THE TITLE COMMITMENT AS REFERENCED IN NOTE 1.
8. EXCLUSIVE CITY UTILITY EASEMENTS ARE HEREBY GRANTED TO THE CITY OF LOUISVILLE, AS SHOWN ON THIS PLAT, SOLELY FOR THE PURPOSE OF CONSTRUCTING, MAINTAINING, REPAIRING, REPLACING, INSPECTING AND OPERATING WATER AND SANITARY SEWER MAINS AND STORM SEWER FACILITIES, TRANSMISSION, DISTRIBUTION AND SERVICE LINES AND APPURTENANCES, TOGETHER WITH A RIGHT OF ACCESS, ON, ALONG AND IN ALL OF THE EASEMENTS, AS MAY BE NECESSARY TO ACCOMPLISH THE INTENDED PURPOSES OF THE EASEMENT. THESE EASEMENTS SHALL BE EXCLUSIVE, HOWEVER UTILITIES MAY CROSS THE EXCLUSIVE EASEMENTS AT SUBSTANTIALLY 90 DEGREES. THE CITY SHALL MAINTAIN ALL WATER AND SANITARY SEWER IMPROVEMENTS INSTALLED IN THE EASEMENT IN GOOD AND WORKING CONDITION. NOTWITHSTANDING THE FOREGOING, THE UNDERLYING PROPERTY OWNER RETAINS THE RIGHT TO USE THE SURFACE OF THE AREAS WITHIN WHICH THE WATER AND SANITARY SEWER EASEMENTS ARE DEPICTED FOR PARKING LOTS, SIDEWALKS, ROADS, DRIVEWAYS AND DRIVE AISLES, CURBS, AND OTHER SIMILAR HARDSCAPE USES PROVIDED SUCH SIMILAR USES DO NOT MATERIALLY INTERFERE WITH THE CITY'S USE OF SUCH AREAS AS WATER AND SANITARY SEWER EASEMENTS.
9. A 2' WIDE SURFACE MAINTENANCE EASEMENT RUNNING PARALLEL TO ALL PUBLIC RIGHT-OF-WAY LINES FOR SORRELL DRIVE, CAMPUS DRIVE AND ROCKCRESS DRIVE AND EXTENDING INTO ANY ADJACENT PARCEL NOT BEING CONVEYED TO THE CITY OF LOUISVILLE ARE HEREBY GRANTED TO THE CITY OF LOUISVILLE. SAID 2' SURFACE MAINTENANCE EASEMENTS ARE INTENDED TO ALLOW THE CITY OF LOUISVILLE ADEQUATE SPACE BEHIND ANY IMPROVEMENTS LOCATED WITHIN THE RIGHT-OF-WAY FOR ROUTINE MAINTENANCE AND REPAIRS BY THE CITY OF LOUISVILLE OR THEIR AUTHORIZED DESIGNEE.
10. THE CITY OF LOUISVILLE IS GRANTED A 10' SURFACE MAINTENANCE EASEMENT WHERE ACCESS IS REASONABLY AVAILABLE BEYOND THE EXCLUSIVE UTILITY EASEMENTS GRANTED TO THE CITY BY THIS PLAT. THE 10' MAINTENANCE ACCESS EASEMENT SHALL BE ALLOWED ON EITHER SIDE OF THE EXCLUSIVE UTILITY EASEMENT, OR 5' ON EACH SIDE OF THE EXCLUSIVE UTILITY EASEMENT, IN EITHER CASE THIS EASEMENT IS NOT MEANT TO RESTRICT BUILDING OR IMPROVEMENTS ALLOWED WITHIN THE PUD, BUT INSTEAD ALLOW ACCESS WHERE REASONABLY AVAILABLE ON SITE. MINIMUM SURFACE DISTURBANCE IS ALLOWED BY THE CITY'S USE WITHIN THIS EASEMENT.
11. THE FIELD WORK FOR THIS SURVEY WAS CONDUCTED ON FEBRUARY 28, 2019.

LEGEND

▲	SET #5 REBAR W/ 1.25" BLUE PLASTIC CAP PLS 38162	**LOT X, BLOCK X** X.XXX SF XX.XX AC	LOT NUMBER, BLOCK & AREA
◎	FOUND MONUMENT AS DESCRIBED	**D.E.** =	DRAINAGE EASEMENT HEREBY GRANTED
◇	FOUND BARE #5 REBAR	E.C.U.E. =	EXCLUSIVE CITY UTILITY EASEMENT
△	FOUND #5 REBAR W/ ALUM. CAP PUNCHED THROUGH TOP	G.D.R.O.W. =	GOODHUE DITCH & RESERVOIR COMPANY R.O.W.
		D.U.E. =	DRY UTILITY EASEMENT HEREBY GRANTED
◎	FOUND ILLEGIBLE 1.5" ALUM. CAP ON #5 REBAR	S.M.E. =	SURFACE MAINTENANCE EASEMENT HEREBY GRANTED
◈	FOUND 2.5" ALUM. CAP PLS 28657 ON #5 REBAR	R.O.W. =	RIGHT-OF-WAY
		CoL =	CITY OF LOUISVILLE
◭	FOUND 3.5" ALUM. CAP CDOT ROW MARKER ON #6 REBAR PLS 24961	CCOB =	CITY AND COUNTY OF BROOMFIELD
▲	FOUND 3.5" ALUM. CAP CDOT ROW MARKER ON #6 REBAR PLS 24942	CDOT =	COLORADO DEPARTMENT OF TRANSPORTATION
		NPPHA =	NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY
●	FOUND #5 REBAR W/ 1.25" BLUE PLASTIC CAP PLS 38162	PSCO =	PUBLIC SERVICE COMPANY OF COLORADO
◆	FOUND MAG NAIL W/ 1" BRASS TAG PLS 38162		PORTION OF EASEMENT TO BE VACATED BY SEPARATE INSTRUMENT
⊕	SECTION CORNER		LOUISVILLE CITY LIMITS

SHEET INDEX

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SHEET 2	KEY MAP/TRACT SUMMARY TABLE
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SHEET 5	PLAT SHEET/EASEMENT DETAILS 'A' & 'B'
SHEET 6	PLAT SHEET
SHEET 7	PLAT SHEET/EASEMENT DETAIL 'C'
SHEET 8	EASEMENT DETAILS 'D' & 'E', LINE & CURVE TABLES

ISSUE DATE: 04-05-2021	PROJECT #: 190108
DATE	COMMENTS
01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

PROJECT NUMBER: 190108

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PLOTTED: MON 11/13/23 2:20:27P BY: KHALED ALSAMAN

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PRELIMINARY PLAT OF

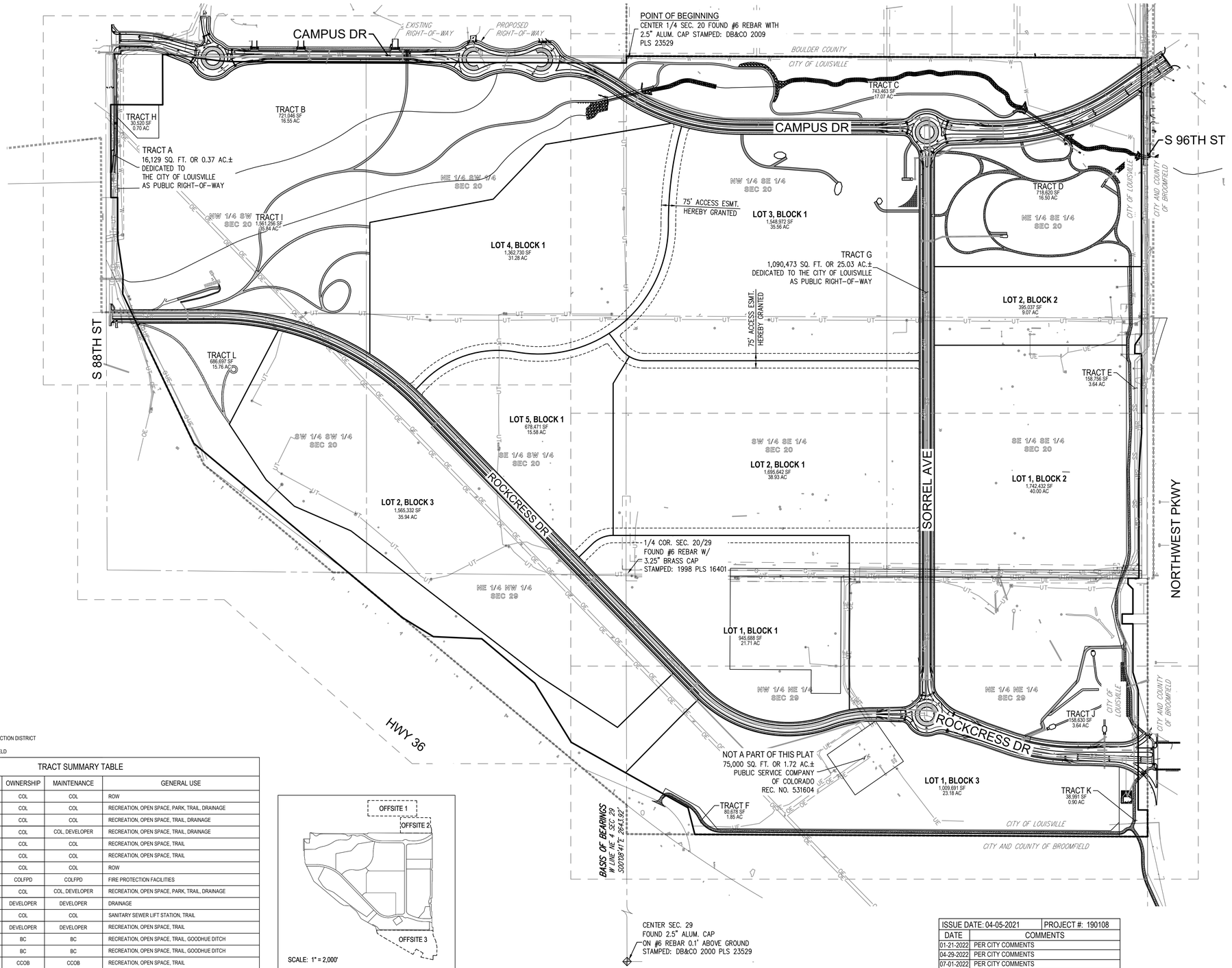
REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
KEY MAP/TRACT SUMMARY TABLE

PREPARED BY:
HARRIS KOCHER SMITH
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Denver, Colorado 80203
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HarrisKocherSmith.com

LEGEND

- SECTION CORNER (DESCRIBED ON FOLLOWING SHEETS)
- LOT X, BLOCK X / X,XXX SF / XX.XX AC — LOT NUMBER & AREA
- LOUISVILLE CITY LIMITS



ABBREVIATION LEGEND

COL	CITY OF LOUISVILLE
COLFPD	CITY OF LOUISVILLE FIRE PROTECTION DISTRICT
BC	BOULDER COUNTY
CCOB	CITY AND COUNTY OF BROOMFIELD

TRACT SUMMARY TABLE

TRACT	AREA (AC)	OWNERSHIP	MAINTENANCE	GENERAL USE
TRACT A	0.37	COL	COL	ROW
TRACT B	16.55	COL	COL	RECREATION, OPEN SPACE, PARK, TRAIL, DRAINAGE
TRACT C	17.07	COL	COL	RECREATION, OPEN SPACE, TRAIL, DRAINAGE
TRACT D	16.50	COL	COL, DEVELOPER	RECREATION, OPEN SPACE, TRAIL, DRAINAGE
TRACT E	3.64	COL	COL	RECREATION, OPEN SPACE, TRAIL
TRACT F	1.85	COL	COL	RECREATION, OPEN SPACE, TRAIL
TRACT G	25.03	COL	COL	ROW
TRACT H	0.70	COLFPD	COLFPD	FIRE PROTECTION FACILITIES
TRACT I	35.84	COL	COL, DEVELOPER	RECREATION, OPEN SPACE, PARK, TRAIL, DRAINAGE
TRACT J	3.64	DEVELOPER	DEVELOPER	DRAINAGE
TRACT K	0.90	COL	COL	SANITARY SEWER LIFT STATION, TRAIL
TRACT L	15.76	DEVELOPER	DEVELOPER	RECREATION, OPEN SPACE, TRAIL
OFFSITE 1	28.86	BC	BC	RECREATION, OPEN SPACE, TRAIL, GOODHUE DITCH
OFFSITE 2	18.00	BC	BC	RECREATION, OPEN SPACE, TRAIL, GOODHUE DITCH
OFFSITE 3	40.10	CCOB	CCOB	RECREATION, OPEN SPACE, TRAIL
TOTAL	224.82			

NOTE: OFFSITE 1 AND 2 OPEN SPACES TO BE DEEDED TO BOULDER COUNTY WITH CONSERVATION EASEMENTS DEDICATED TO COL. AND OFFSITE 3 TO BE DEEDED TO CCOB. SEE DETAIL TO RIGHT FOR OFFSITE LOCATIONS.

ISSUE DATE: 04-05-2021	PROJECT #: 190108
DATE	COMMENTS
01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

250 0 250 500
SCALE: 1" = 250'

PROJECT NUMBER: 190108

FILEPATH: P:\190108\ENGINEERING\CAD\PRELIM PLAT.DWG LAYOUT: SHT 2
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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO

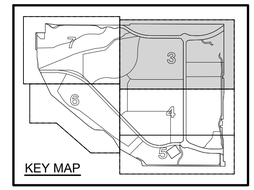
PLAT SHEET

ISSUE DATE: 04-05-2021	PROJECT #: 190108
DATE	COMMENTS
01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

N

100 0 100 200

SCALE: 1" = 100'



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POINT OF BEGINNING
CENTER 1/4 SEC. 20 FOUND #6 REBAR WITH 2.5" ALUM. CAP STAMPED: DB&CO 2009 PLS 23529

N00°02'50"E 35.00'

S LINE SW4 NE4 S89°48'50"E 1327.77'

S89°48'50"E 2625.59'

S LINE SE4 NE4 N89°48'50"W 1327.82'

E 1/4 COR. SEC. 20
2.5" ALUM. CAP ON #6 REBAR
STAMPED: WESTERN STATES 2003 PLS 33200

WITNESS CORNER
E 1/16 COR. SEC. 20
FOUND #6 REBAR WITH 2.5" ALUM. CAP STAMPED: DB&CO 1 FT. WC 2009 PLS 23529

15' UTILITY ESMT. REC. NO. 045853

60' BOULDER COUNTY R.O.W. REC. NO. 45849

OFFSITE 2
18.00 AC

UNPLATTED

BOULDER COUNTY

CITY OF LOUISVILLE

TRACT G
1,090,473 SQ. FT. OR 25.03 AC.±
HEREBY DEDICATED TO THE CITY OF LOUISVILLE

TRACT C
743,463 SF
17.07 AC

CAMPUS DRIVE
(VARIABLE-WIDTH PUBLIC R.O.W.)

736.05' ESMT.

DRAINAGE ESMT. HEREBY GRANTED

TRACT D
718,620 SF
16.50 AC

S 96TH ST
(VARIABLE-WIDTH PUBLIC R.O.W.)

SORREL AVE
(79' PUBLIC R.O.W.)

GOODHUE DITCH

CITY AND COUNTY OF BROOMFIELD

S00°02'13"E 1326.76'

LOT 1, BLOCK 2
1,742,432 SF
40.00 AC

LOT 2, BLOCK 2
396,037 SF
9.07 AC

LOT 3, BLOCK 1
1,548,972 SF
35.56 AC

LOT 4, BLOCK 1
1,362,730 SF
31.28 AC

LOT 5, BLOCK 1
678,471 SF
15.58 AC

LOT 2, BLOCK 1
1,695,642 SF
38.93 AC

TRACT E
158,786 SF
3.64 AC

ACCESS ESMT. HEREBY GRANTED TO THE CITY OF LOUISVILLE FOR PUBLIC SAFETY COMMUNICATIONS TOWER MAINTENANCE ACCESS (SEE DETAIL 'D' SHEET 8)

MULTI-USE ESMT. REC. NO. 2386687

S 1/16 COR. SEC. 20 FOUND 3" ALUM. CAP ON BENT IRON POST; MEASURED AT BEND

SE 1/16 COR. SEC. 20 FOUND 3" ALUM. CAP ON BENT IRON POST; MEASURED AT BEND

S 1/16 COR. SEC. 20/21 FOUND 2" ALUM. CAP ON #6 REBAR STAMPED: 2002 PLS 24305

NPPHA TK-71-2
REC. NO. 2386686

NORTHWEST PKWY
(VARIABLE-WIDTH PUBLIC R.O.W.)

MATCH LINE - SEE SHEET 7

MATCH LINE SEE SHEET 6

MATCH LINE - SEE SHEET 4

(SEE DETAIL 'D' SHEET 8)

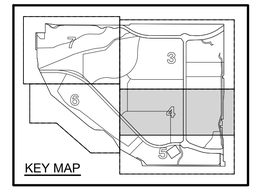
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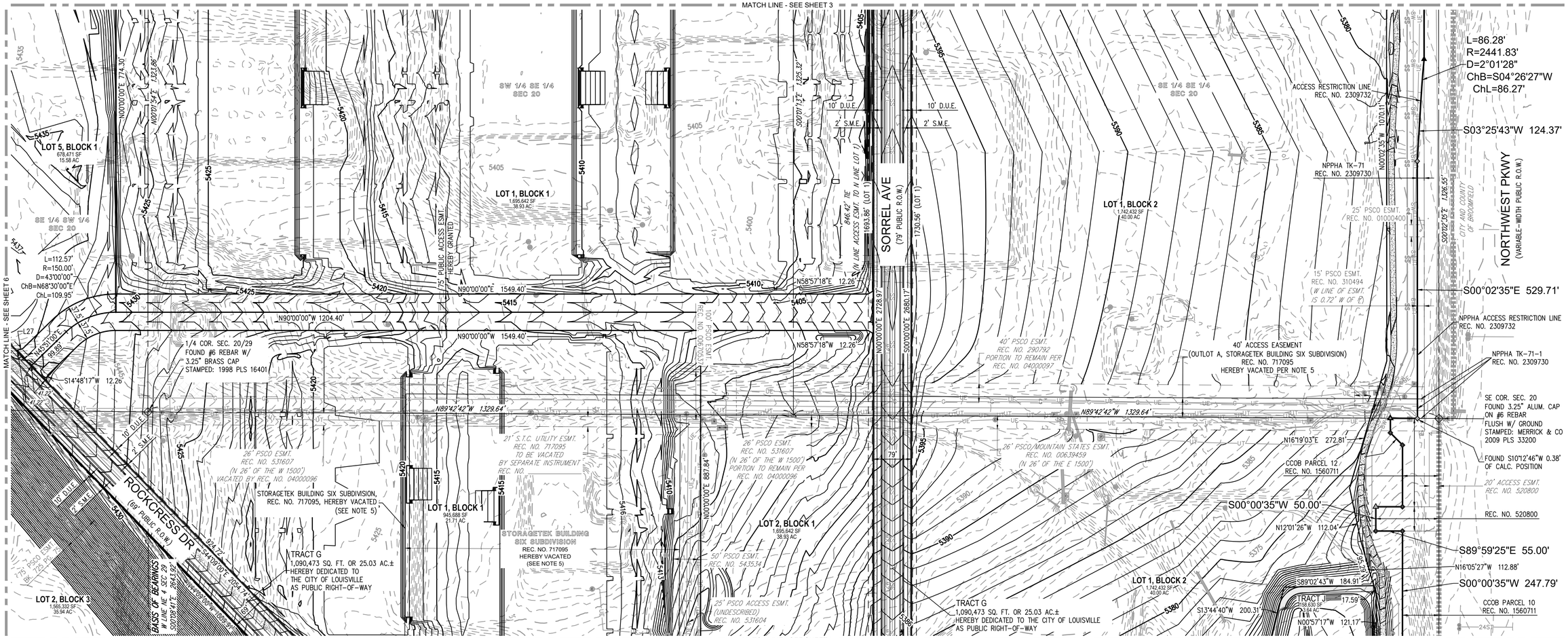
PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET



PREPARED BY:
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HarrisKocherSmith.com



ISSUE DATE: 04-05-2021	PROJECT #: 190108
DATE	COMMENTS
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07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

100 0 100 200
SCALE: 1" = 100'

PRELIMINARY PLAT - SHEET 4 OF 8

PROJECT NUMBER: 190108

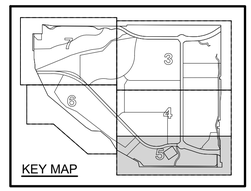
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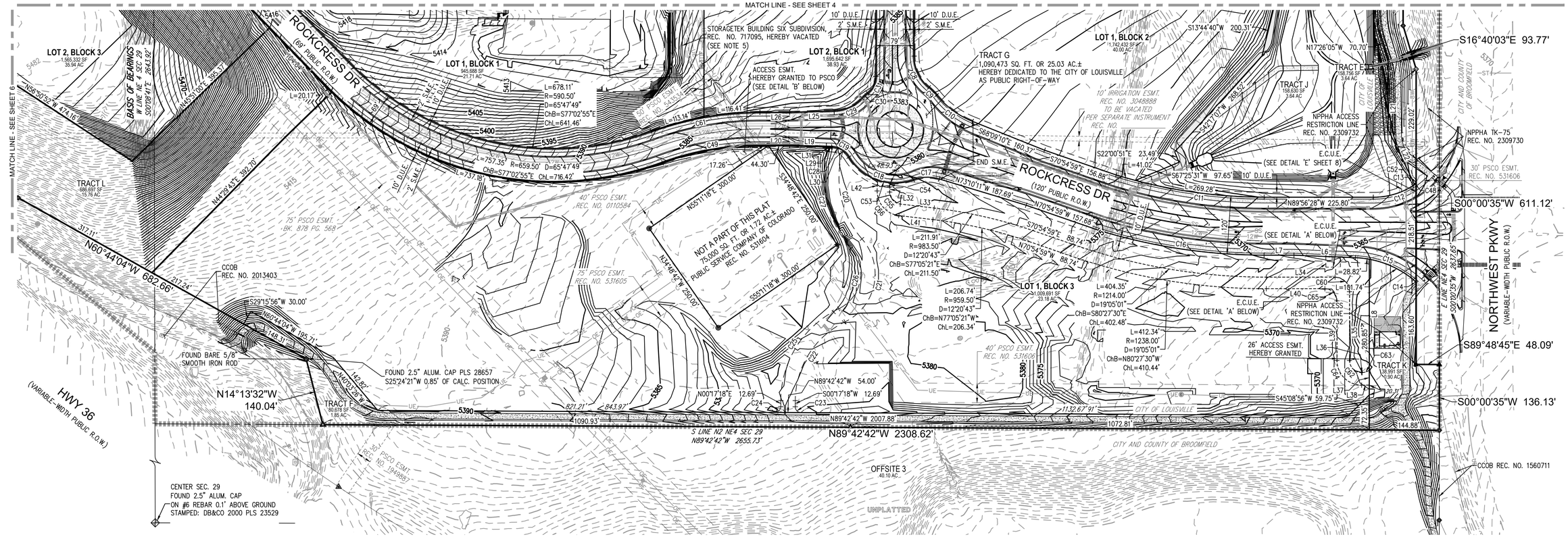
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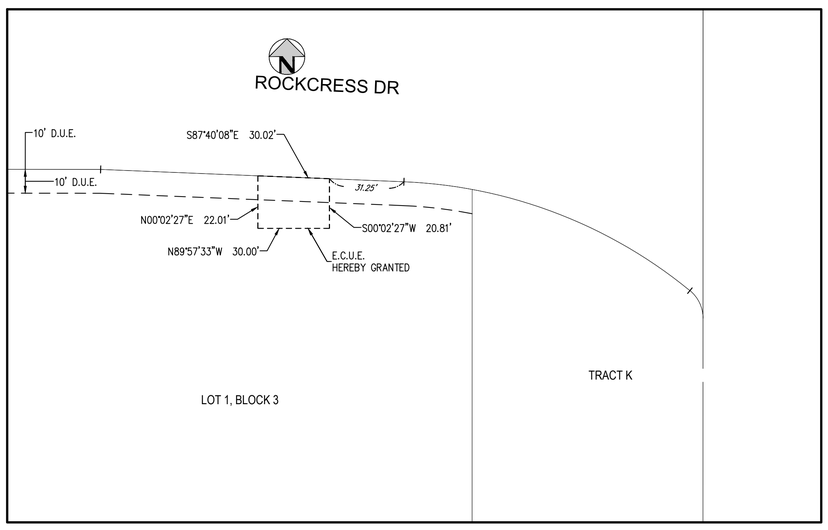
REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET/EASEMENT DETAILS 'A' & 'B'

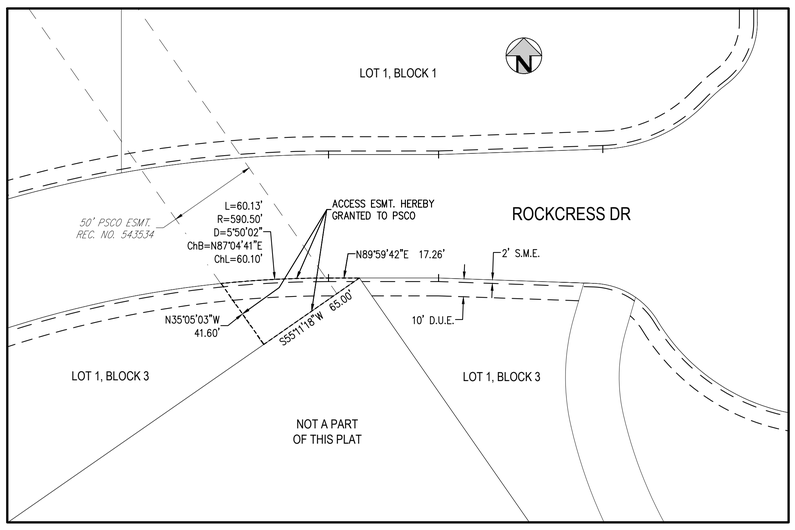


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DETAIL 'A'
SCALE: 1" = 30'



DETAIL 'B'
SCALE: 1" = 40'

ISSUE DATE: 04-05-2021	PROJECT #: 190108
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08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

100 0 100 200
SCALE: 1" = 100'

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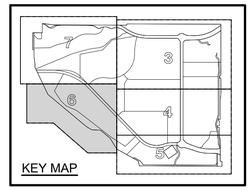
PROJECT NUMBER: 190108

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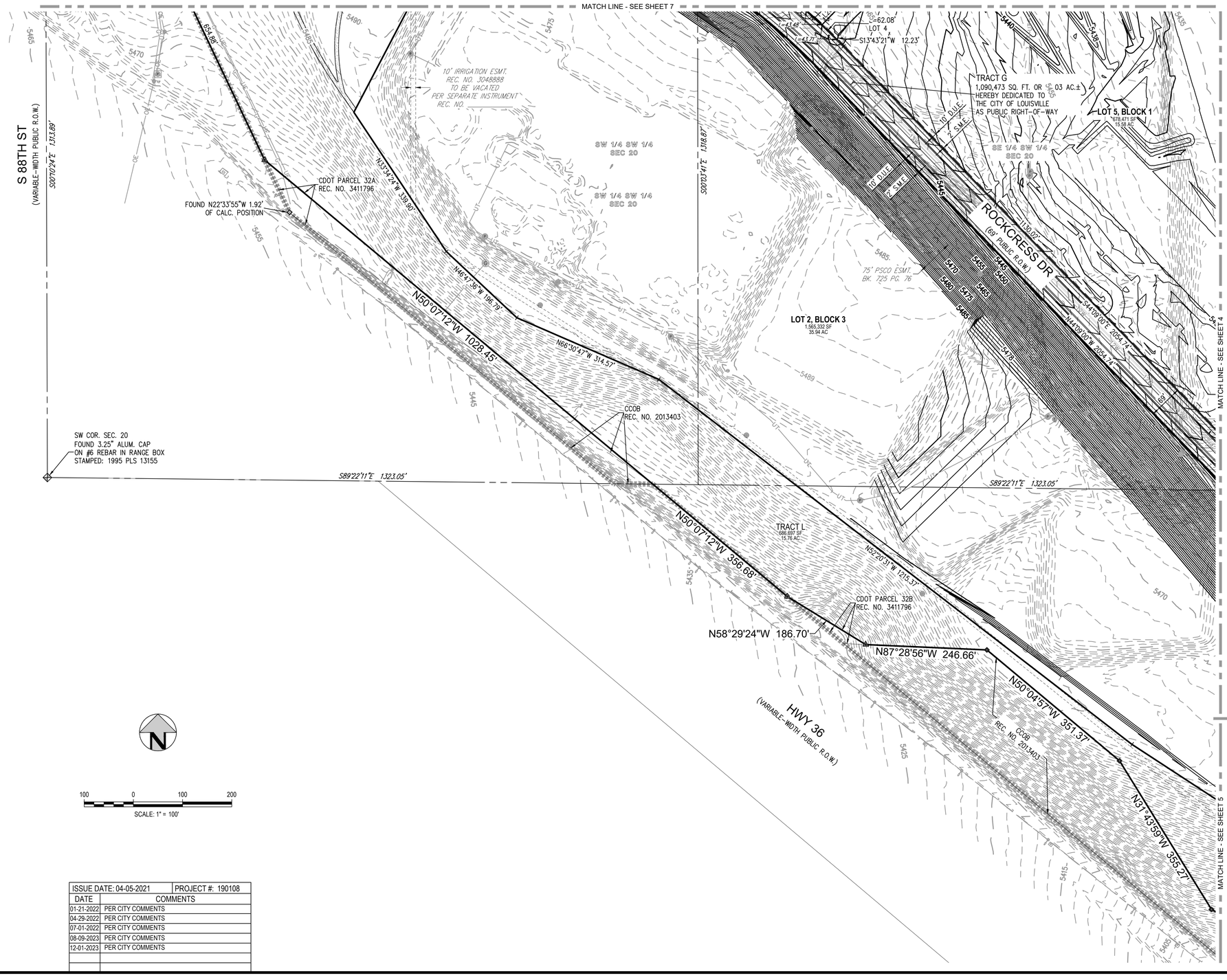
PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET



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100 0 100 200
SCALE: 1" = 100'

ISSUE DATE: 04-05-2021	PROJECT #: 190108
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PROJECT NUMBER: 190108

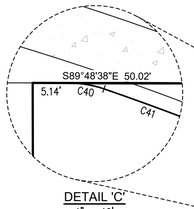
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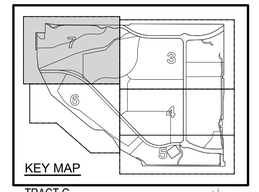
PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET



DETAIL "C"
1" = 10'



KEY MAP

PREPARED BY:
HARRIS KOCHER SMITH
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P: 303-623-6300 F: 303-623-6311
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W 1/4 COR. SEC. 20/19
FOUND 2" ALUM. CAP
ON #6 REBAR
IN RANGE BOX STAMPED:
WESTERN STATES 2001
PLS 35597

S 1/16 COR. SEC. 20/19
FOUND 3.25" ALUM. CAP
ON #6 REBAR IN RANGE BOX
STAMPED: CDOT 2000 PLS 23516

S 88TH ST
(VARIABLE-WIDTH PUBLIC R.O.W.)

CAMPUS DR
(VARIABLE-WIDTH PUBLIC R.O.W.)

ROCKCRESS DR
(69' PUBLIC R.O.W.)

TRACT A
16,129 SQ. FT. OR 0.37 AC.±
HEREBY DEDICATED TO
THE CITY OF LOUISVILLE
AS PUBLIC RIGHT-OF-WAY

TRACT B
721,046 SF
16.55 AC

TRACT G
1,090,473 SQ. FT. OR 25.03 AC.±
HEREBY DEDICATED TO
THE CITY OF LOUISVILLE
AS PUBLIC RIGHT-OF-WAY

TRACT H
30,520 SF
0.70 AC

TRACT L
686,697 SF
15.76 AC

LOT 2, BLOCK 3
1,565,332 SF
35.94 AC

LOT 4, BLOCK 1
1,362,730 SF
31.28 AC

LOT 5, BLOCK 1
678,471 SF
15.58 AC

ISSUE DATE: 04-05-2021	PROJECT #: 190108
DATE	COMMENTS
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08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

PROJECT NUMBER: 190108

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MATCH LINE - SEE SHEET 6

MATCH LINE - SEE SHEET 3

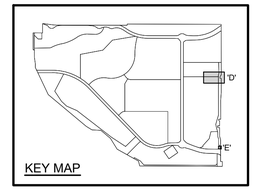
SCALE: 1" = 100'

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
LINE & CURVE TABLES



KEY MAP

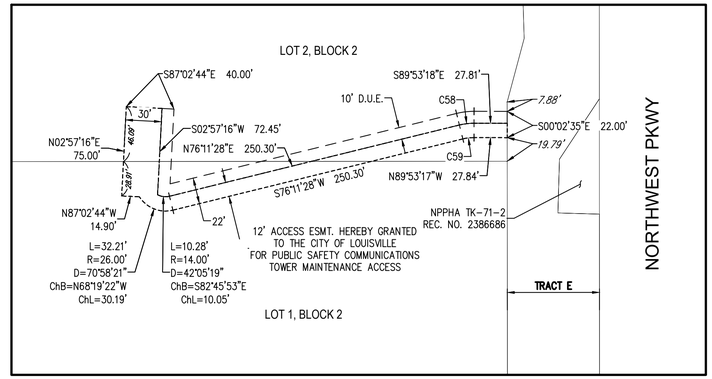
PREPARED BY:
HARRIS KOCHER SMITH
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Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C1	1170.00'	10°53'44"	222.49'	S61°06'53"E	222.15'
C2	1050.00'	34°52'33"	639.13'	N72°44'53"E	629.31'
C3	15.00'	55°20'51"	14.49'	N27°38'12"E	13.93'
C4	15.00'	124°39'10"	32.63'	N62°21'48"W	26.57'
C5	78.00'	39°42'30"	54.06'	S68°04'42"W	52.98'
C6	117.00'	10°56'24"	22.34'	S53°41'39"W	22.31'
C7	42.00'	59°09'51"	43.37'	S29°34'56"W	41.47'
C8	83.50'	50°53'35"	74.17'	S25°26'48"E	71.75'
C9	111.50'	11°36'40"	22.60'	S45°05'15"E	22.56'
C10	184.50'	28°52'15"	92.97'	S53°43'03"E	91.99'
C11	1050.00'	16°55'55"	310.29'	S81°28'31"E	309.16'
C12	152.00'	32°23'48"	85.95'	N73°51'38"E	84.80'
C13	15.00'	18°12'58"	4.77'	N48°33'15"E	4.75'
C14	15.00'	50°38'48"	13.26'	N25°18'48"W	12.83'
C15	202.00'	37°01'56"	130.56'	N69°09'09"W	128.30'
C16	1170.00'	17°02'32"	348.01'	N81°25'12"W	346.72'
C17	83.50'	37°05'08"	54.05'	S88°17'15"W	53.11'
C18	111.50'	78°59'15"	153.71'	N70°45'42"W	141.83'
C19	43.50'	56°44'14"	43.08'	N59°38'11"W	41.34'
C20	192.00'	57°23'04"	192.30'	S12°30'46"E	184.36'
C21	110.00'	105°27'20"	202.46'	S11°31'22"W	175.07'
C22	182.00'	63°57'44"	203.18'	S32°16'10"W	192.79'
C23	12.00'	90°00'00"	18.85'	S44°42'42"E	16.97'
C24	12.00'	90°00'00"	18.85'	N45°17'18"E	16.97'
C25	212.00'	63°57'44"	236.67'	N32°16'10"E	224.57'
C26	80.00'	105°27'20"	147.24'	N11°31'22"E	127.32'
C27	222.00'	57°23'04"	222.34'	N12°30'46"W	213.17'
C28	43.50'	32°57'30"	25.02'	S71°31'33"E	24.68'
C29	83.50'	44°43'21"	65.18'	N65°43'56"E	63.53'
C30	93.50'	9°20'23"	15.24'	N48°02'27"E	15.22'
C31	43.50'	52°42'39"	40.02'	N26°21'19"E	38.62'
C32	83.50'	46°35'42"	67.91'	N23°17'51"W	66.05'
C33	95.50'	21°02'24"	35.07'	N36°04'30"W	34.87'
C34	41.50'	62°23'18"	45.19'	N56°44'58"W	42.99'
C35	1125.00'	34°08'49"	670.47'	N72°44'26"W	660.60'
C36	245.50'	57°13'43"	245.21'	N89°24'17"W	235.15'
C37	181.50'	36°20'19"	115.11'	N66°09'50"W	113.19'
C38	113.50'	101°55'25"	201.91'	N82°10'12"W	176.32'
C39	81.50'	37°38'17"	53.54'	N50°01'38"W	52.58'
C40	15.00'	18°48'26"	4.92'	N80°24'26"W	4.90'
C41	361.50'	2°09'26"	13.61'	N69°55'30"W	13.61'
C44	697.50'	39°13'50"	477.58'	S80°27'32"W	468.31'
C46	1170.00'	34°52'33"	712.18'	S72°44'53"W	701.23'
C48	15.00'	57°39'09"	15.09'	N28°50'10"E	14.46'
C49	590.50'	19°56'31"	205.53'	S80°01'26"W	204.49'
C51	1484.50'	45°51'18"	1188.07'	N67°04'39"W	1156.62'
C52	15.00'	39°26'11"	10.32'	N19°43'41"E	10.12'
C53	111.50'	14°21'58"	27.96'	S77°55'52"E	27.88'
C54	25.00'	18°32'04"	8.09'	S09°33'20"W	8.05'
C55	25.00'	83°33'00"	36.46'	S41°29'13"E	33.31'
C56	1170.00'	3°15'57"	66.69'	N58°21'14"E	66.68'
C57	1050.00'	3°44'50"	68.67'	S61°34'41"W	68.66'
C58	51.00'	13°55'15"	12.39'	N83°09'06"E	12.36'
C59	39.00'	13°55'15"	9.48'	S83°09'06"W	9.45'
C60	30.00'	90°00'00"	47.12'	S45°00'00"E	42.43'
C61	659.50'	19°56'31"	229.54'	S80°01'26"W	228.38'
C62	25.00'	90°00'00"	39.27'	S45°00'00"E	35.36'

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C63	25.00'	36°22'20"	15.87'	N71°48'50"E	15.61'
C64	51.00'	90°00'00"	80.11'	N45°00'00"W	72.12'
C65	25.00'	90°00'00"	39.27'	N45°00'00"W	35.36'
C66	51.00'	83°33'00"	74.37'	N41°29'13"W	67.95'

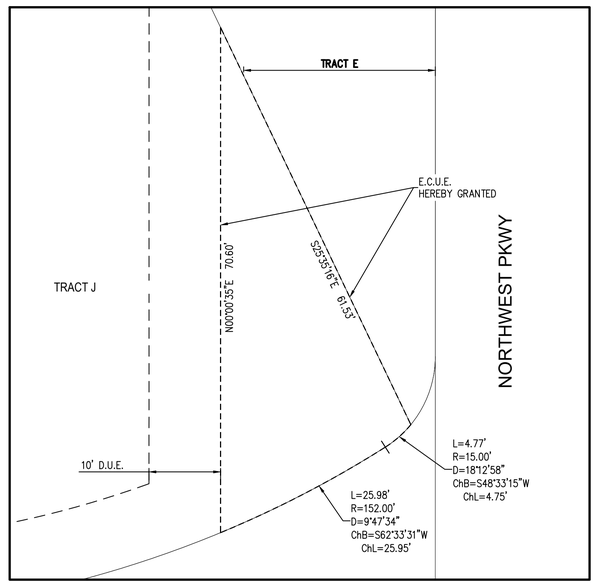
LINE TABLE		
LINE	BEARING	LENGTH
L1	N89°42'42"W	55.73'
L2	S00°00'35"W	30.02'
L3	S44°51'26"E	35.44'
L4	S00°00'35"W	127.21'
L5	N89°59'25"W	55.00'
L6	N87°40'08"W	127.24'
L7	N89°56'28"W	61.81'
L8	N00°00'35"E	353.20'
L11	N68°50'46"W	102.75'
L12	S89°48'38"E	34.06'
L19	N88°00'18"W	86.72'
L20	S89°59'42"W	61.55'
L21	N00°00'35"E	144.24'
L22	N25°35'16"W	126.34'
L23	S57°30'42"E	123.02'
L24	N57°30'42"W	190.37'
L25	N88°05'36"E	91.79'
L26	N89°59'42"E	61.57'
L27	N76°54'28"E	12.25'
L28	N44°14'17"E	51.99'
L29	S88°00'18"E	5.51'
L30	S16°10'45"W	2.39'
L31	N16°10'45"E	2.03'
L32	S00°17'18"W	10.94'
L33	S83°15'43"E	70.23'
L34	N90°00'00"E	142.06'
L35	S00°00'00"E	142.43'
L36	N90°00'00"E	0.97'
L37	S00°00'35"W	30.88'
L38	N90°00'00"W	15.79'
L39	N00°00'00"E	123.44'
L40	N90°00'00"W	121.06'
L41	N83°15'43"W	70.46'
L42	N00°17'18"E	22.57'

DETAIL 'D'
SCALE: 1" = 60'



60 0 60 120
SCALE: 1" = 60'

DETAIL 'E'
SCALE: 1" = 10'



5 0 5 10
SCALE: 1" = 5'

ISSUE DATE: 04-05-2021	PROJECT #: 190108
DATE	COMMENTS
01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

FILEPATH: P:\190108\ENGINEERING\CD\PRELIM PLAT.DWG LAYOUT: Sht 8
XREFS: 4-Xbase 4-Xbase-Alt 4-Xbase-Alt2 4-Xbase-Alt3 4-Xbase-Alt4
PLOTTED: MON 11/13/23 3:22:12P BY: KHALED ALSAMAD

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO

COVER

PREPARED BY:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

LEGAL DESCRIPTION AND DEDICATION:

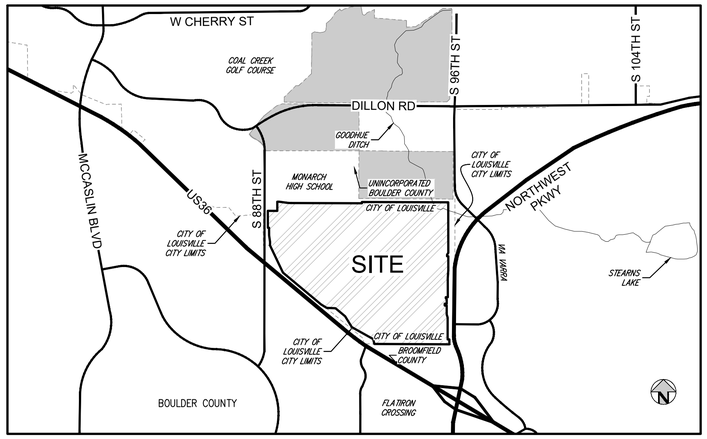
KNOW ALL MEN BY THESE PRESENTS, THAT THE UNDERSIGNED BEING THE OWNERS OF A TRACT OF LAND SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE CENTER QUARTER CORNER OF SAID SECTION 20;
THENCE SOUTH 89°48'50" EAST ALONG THE NORTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 2,625.59 FEET;
THENCE SOUTH 00°02'13" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF THE EAST LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 1,326.76 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF SAID SOUTHEAST QUARTER;
THENCE SOUTH 00°02'35" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF THE EAST LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 85.45 FEET TO THE NORTH CORNER OF PARCEL TK-71-2 DESCRIBED AT RECEPTION NO. 2386686 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) SOUTH 33°27'26" WEST, A DISTANCE OF 60.64 FEET;
2) SOUTH 01°40'28" WEST, A DISTANCE OF 45.12 FEET;
3) SOUTH 88°19'32" EAST, A DISTANCE OF 34.84 FEET TO A POINT 30 FEET WEST OF SAID EAST LINE;
THENCE SOUTH 00°02'35" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF SAID EAST LINE, A DISTANCE OF 404.28 FEET TO A POINT OF NON-TANGENT CURVATURE AT THE NORTH CORNER OF PARCEL TK-71 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) ALONG THE ARC OF SAID CURVE TO THE LEFT AN ARC LENGTH OF 86.28 FEET, SAID CURVE HAVING A RADIUS OF 2,441.83 FEET, A CENTRAL ANGLE OF 02°01'28", AND A CHORD WHICH BEARS SOUTH 04°26'27" WEST A CHORD DISTANCE OF 86.27 FEET;
2) SOUTH 03°25'43" WEST, A DISTANCE OF 124.37 FEET;
3) SOUTH 00°02'35" EAST AND ALONG THE WEST LINE OF PARCEL TK-71-1 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY, A DISTANCE OF 529.71 FEET TO A POINT ON THE SOUTH LINE OF THE SAID SOUTHEAST QUARTER AND A POINT ON THE NORTH LINE OF PARCEL 12 AS DESCRIBED AT RECEPTION NO. 1560711 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL 12 THE FOLLOWING FOUR (4) COURSES:
1) NORTH 89°42'42" WEST, A DISTANCE OF 55.73 FEET;
2) SOUTH 00°00'35" WEST, A DISTANCE OF 30.02 FEET;
3) SOUTH 44°51'26" EAST, A DISTANCE OF 35.44 FEET;
4) SOUTH 00°00'35" WEST, A DISTANCE OF 127.21 FEET TO A POINT ON THE NORTH LINE OF THAT PARCEL DESCRIBED AT RECEPTION NO. 520800 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) NORTH 89°59'25" WEST, A DISTANCE OF 55.00 FEET;
2) SOUTH 00°00'35" WEST, A DISTANCE OF 50.00 FEET;
3) SOUTH 89°59'25" EAST, A DISTANCE OF 55.00 FEET TO THE NORTHWEST CORNER OF PARCEL 10 AS DESCRIBED AT RECEPTION NO. 1560711 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL 10 THE FOLLOWING TWO (2) COURSES:
1) SOUTH 00°00'35" WEST ALONG THE WEST LINE OF SAID PARCEL AND ALONG A LINE PARALLEL WITH AND 75 FEET WEST OF THE SAID EAST LINE, A DISTANCE OF 247.79 FEET;
2) SOUTH 16°40'03" EAST ALONG THE SOUTHEASTERLY LINE OF SAID PARCEL, A DISTANCE OF 93.77 FEET TO THE NORTH CORNER OF PARCEL TK-75 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY;
THENCE SOUTH 00°00'35" WEST ALONG A LINE PARALLEL WITH THE EAST LINE OF SAID SECTION 29 AND ALONG THE WEST LINE OF SAID TK-75, A DISTANCE OF 611.12 FEET;
THENCE SOUTH 89°48'45" EAST ALONG THE SOUTH LINE OF SAID TK-75, A DISTANCE OF 48.09 FEET TO A POINT ON THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 29;
THENCE SOUTH 00°00'35" WEST ALONG SAID EAST LINE, A DISTANCE OF 136.13 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF THE NORTHEAST QUARTER OF SAID SECTION 29;
THENCE NORTH 89°42'42" WEST ALONG SAID SOUTH LINE, A DISTANCE OF 2,308.62 FEET TO A POINT ON THE NORTHEAST LINE OF THE LAND CONVEYED TO THE CITY OF BROOMFIELD BY GIFT DEED RECORDED AT RECEPTION NO. 2013403 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING FIVE (5) COURSES:
1) NORTH 14°13'32" WEST, A DISTANCE OF 140.04 FEET;
2) NORTH 60°44'04" WEST, A DISTANCE OF 682.66 FEET;
3) NORTH 31°43'59" WEST, A DISTANCE OF 355.27 FEET;
4) NORTH 50°04'57" WEST, A DISTANCE OF 351.37 FEET;
5) NORTH 87°28'56" WEST, A DISTANCE OF 246.66 FEET TO THE EASTERN CORNER OF PARCEL 32B AS DESCRIBED BY SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 3411796 IN THE RECORDS OF BOULDER COUNTY;
THENCE NORTH 58°29'24" WEST ALONG THE NORTHEASTERLY LINE OF SAID PARCEL, A DISTANCE OF 186.70 FEET TO A POINT ON THE RIGHT-OF-WAY OF HIGHWAY 36;
THENCE NORTH 50°07'12" WEST ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 356.68 FEET TO A POINT ON THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 20 AND THE SOUTH CORNER OF PARCEL 32A OF SAID SPECIAL WARRANTY DEED;
THENCE CONTINUING NORTH 50°07'12" WEST ALONG THE NORTHEAST LINE OF SAID PARCEL 32A, A DISTANCE OF 1,028.45 FEET TO A POINT ON THE EAST LINE OF THAT PARCEL DESCRIBED AT BOOK 880, PAGE 98 IN THE RECORDS OF BOULDER COUNTY;
THENCE NORTH 25°26'59" WEST ALONG SAID EAST LINE AND ALONG THE EAST LINE OF THAT PARCEL DESCRIBED AT BOOK 878, PAGE 503, A DISTANCE OF 842.57 TO THE SOUTH CORNER OF THAT PARCEL DESCRIBED AT RECEPTION NO. 1989419 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING FOUR (4) COURSES:
1) NORTH 00°54'00" EAST, A DISTANCE OF 95.53 FEET;
2) NORTH 08°22'46" WEST, A DISTANCE OF 184.53 FEET;
3) NORTH 00°09'09" WEST ALONG A LINE PARALLEL WITH THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 20, A DISTANCE OF 213.70 FEET;
4) SOUTH 89°50'51" WEST, A DISTANCE OF 34.06 FEET TO A POINT 25.00 FEET EAST OF THE WEST LINE OF SAID SOUTHWEST QUARTER;
THENCE NORTH 00°09'09" WEST ALONG A LINE PARALLEL WITH AND 25 FEET FROM THE SAID WEST LINE, A DISTANCE OF 473.64 FEET TO A POINT ON THE SOUTH LINE OF THAT PARCEL DESCRIBED AT RECEPTION NO. 1819920 IN THE RECORDS OF BOULDER COUNTY EXTENDED WESTERLY;
THENCE SOUTH 89°48'38" EAST ALONG SAID SOUTH LINE AND SAID SOUTH LINE EXTENDED, A DISTANCE OF 265.23 FEET TO THE SOUTHEAST CORNER OF SAID PARCEL;
THENCE NORTH 00°09'09" WEST ALONG THE EAST LINE OF SAID PARCEL, A DISTANCE OF 256.00 FEET TO A POINT ON THE SOUTH RIGHT-OF-WAY LINE OF CAMPUS DRIVE AS DEDICATED BY LOUISVILLE CAMPUS RECORDED AT RECEPTION NO. 1669751;
THENCE ALONG SAID SOUTH LINE THE FOLLOWING FOUR (4) COURSES:
1) SOUTH 89°48'38" EAST ALONG SAID NORTH LINE, A DISTANCE OF 50.02 FEET;
2) SOUTH 82°25'28" EAST, A DISTANCE OF 202.23 FEET TO A POINT OF NON-TANGENT CURVATURE;
3) ALONG THE ARC OF SAID CURVE TO THE LEFT AN ARC LENGTH OF 139.86 FEET, SAID CURVE HAVING A RADIUS OF 1,085.00 FEET, A CENTRAL ANGLE OF 07°23'09", AND A CHORD WHICH BEARS SOUTH 86°07'04" EAST A CHORD DISTANCE OF 139.77 FEET;
4) SOUTH 89°48'38" EAST, A DISTANCE OF 1,975.05 FEET TO A POINT ON THE EAST LINE SAID SOUTHWEST QUARTER;
THENCE NORTH 00°02'50" EAST ALONG SAID EAST LINE, A DISTANCE OF 35.00 FEET TO THE **POINT OF BEGINNING**;

EXCEPTING THEREFROM THAT PARCEL DESCRIBED BY DEED RECORDED AT RECEPTION NO. 531604 IN THE RECORDS OF BOULDER COUNTY;

SAID PARCEL CONTAINS 16,949,252 SQUARE FEET OR 389.10 ACRES, MORE OR LESS;

HAS LAID OUT, SUBDIVIDED AND PLATTED SAID LAND AS PER DRAWING HEREON CONTAINED UNDER THE NAME AND STYLE OF **REDTAIL RIDGE FILING NO. 1**, A SUBDIVISION OF A PART OF THE CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO, AND BY THESE PRESENTS DO HEREBY DEDICATE TO THE CITY OF LOUISVILLE AND THE PUBLIC, THE ACCESS, INGRESS-EGRESS AND FIRE LANE EASEMENTS, AND DOES FURTHER DEDICATE TO THE CITY THE EXCLUSIVE CITY OF LOUISVILLE UTILITY EASEMENTS AS SHOWN ON THE ACCOMPANYING PLAT FOR THE PROVISION OF CITY UTILITY LINES AND SERVICES, AND DOES FURTHER DEDICATE TO THE CITY OF LOUISVILLE THOSE PORTIONS OF SAID REAL PROPERTY WHICH ARE SO DESIGNATED AS EASEMENTS AND RIGHT-OF-WAYS FOR THE CONSTRUCTION, INSTALLATION, OPERATION, MAINTENANCE, REPAIR AND REPLACEMENT FOR ALL SERVICES, INCLUDING WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, TELEPHONE AND ELECTRIC LINES, WORKS, POLES AND UNDERGROUND CABLES, GAS PIPELINES, WATER PIPELINES, SANITARY SEWER LINES, STREET LIGHTS, CULVERTS, HYDRANTS, DRAINAGE DITCHES AND DRAINS AND ALL APPURTENANCES THERETO, IT BEING EXPRESSLY UNDERSTOOD AND AGREED BY THE UNDERSIGNED THAT ALL EXPENSES AND COSTS INVOLVED IN CONSTRUCTING AND INSTALLING SANITARY SEWER SYSTEM WORKS AND LINES, GAS SERVICE LINES, ELECTRICAL SERVICE WORKS AND LINES, STORM SEWERS AND DRAINS, STREET LIGHTING, GRADING AND LANDSCAPING, CURBS, GUTTERS, STREET PAVEMENT, SIDEWALKS AND OTHER SUCH UTILITIES AND SERVICES SHALL BE GUARANTEED AND PAID FOR BY THE SUBDIVIDER OR ARRANGEMENTS MADE BY THE SUBDIVIDER THEREOF WHICH ARE APPROVED BY THE CITY OF LOUISVILLE, COLORADO, AND SUCH SUMS SHALL NOT BE PAID BY THE CITY OF LOUISVILLE, COLORADO, PROVIDED, HOWEVER, THE SUBDIVIDER MAY BE ENTITLED TO REIMBURSEMENT OR FEE CREDITS AS SUCH ARE APPROVED BY THE CITY OF LOUISVILLE, COLORADO AND THAT ANY ITEM SO CONSTRUCTED OR INSTALLED WHEN ACCEPTED BY THE CITY OF LOUISVILLE, COLORADO, SHALL BECOME THE SOLE PROPERTY OF SAID CITY OF LOUISVILLE, COLORADO, EXCEPT PRIVATE ROADWAY CURBS, GUTTER AND PAVEMENT AND ITEMS OWNED BY MUNICIPALLY FRANCHISED UTILITIES WHICH WHEN CONSTRUCTED OR INSTALLED, SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL NOT BECOME THE PROPERTY OF THE CITY OF LOUISVILLE, COLORADO.



VICINITY MAP
SCALE: 1" = 2,000'

NOTES:

1. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY HARRIS KOCHER SMITH TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS-OF-WAY AND TITLE OF RECORD, HARRIS KOCHER SMITH RELIED UPON COMMITMENT FOR TITLE INSURANCE, ORDER NO. ABD70601971.1-3 ISSUED BY LAND TITLE GUARANTEE COMPANY, AND HAVING AN EFFECTIVE DATE OF DECEMBER 20, 2021 AT 5:00 P.M.
2. NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
3. BASIS OF BEARINGS: BEARINGS ARE BASED ON THE WEST LINE OF THE NORTHEAST QUARTER OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN ASSUMED AS BEARING SOUTH 00°08'41" EAST. SAID LINE BEING MONUMENTED AT THE NORTH QUARTER CORNER OF SAID SECTION BY A #6 REBAR WITH A 3.25" BRASS CAP STAMPED "1998 PLS 16401", AND BEING MONUMENTED AT THE CENTER QUARTER CORNER BY A #6 REBAR WITH A 2.5" ALUMINUM CAP 0.1' ABOVE GROUND STAMPED "DB&CO 2000 PLS 23529".
4. SUBJECT PROPERTY FALLS WITHIN ZONE X OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP, MAP NO. 08013C0584K, DATED AUGUST 15, 2019. ZONE X IS DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2-PERCENT ANNUAL CHANCE FLOODPLAIN.
5. UPON AND AFTER RECORDATION OF THIS PLAT, THIS PLAT SHALL SUPERSEDE AND REPLACE ALL SUBDIVISION PLATS PREVIOUSLY FILED OF RECORD WITH RESPECT TO THE PROPERTY DESCRIBED IN THIS PLAT, INCLUDING BUT NOT LIMITED TO STORAGETEK BUILDING SIX SUBDIVISION RECORDED WITH THE BOULDER COUNTY CLERK AND RECORDER AT RECEPTION NO. 717095, WITH THE LEGAL EFFECT THAT ALL SUCH PREVIOUSLY RECORDED PLATS SHALL BE CONSIDERED VOID AND OF NO FURTHER LEGAL AFFECT AS APPLIED TO THE PROPERTY DESCRIBED IN THIS PLAT, AND THAT THE PROPERTY DESCRIBED IN THIS PLAT SHALL BE CONCLUSIVELY RELEASED FROM THE ENCUMBRANCE OF ALL SUCH RECORDED PLATS UPON AND AFTER RECORDATION OF THIS PLAT.
6. THE LINEAR UNITS FOR THIS SURVEY ARE U.S. SURVEY FEET.
7. THE SURVEYED PROPERTY IS SUBJECT TO THE TERMS, PROVISIONS, COVENANTS, CONDITIONS, RESTRICTIONS, OBLIGATIONS AND RESERVATIONS CONTAINED IN THE RECORDED DOCUMENTS IN THE TITLE COMMITMENT AS REFERENCED IN NOTE 1.
8. EXCLUSIVE CITY UTILITY EASEMENTS ARE HEREBY GRANTED TO THE CITY OF LOUISVILLE, AS SHOWN ON THIS PLAT, SOLELY FOR THE PURPOSE OF CONSTRUCTING, MAINTAINING, REPAIRING, REPLACING, INSPECTING AND OPERATING WATER AND SANITARY SEWER MAINS AND STORM SEWER FACILITIES, TRANSMISSION, DISTRIBUTION AND SERVICE LINES AND APPURTENANCES, TOGETHER WITH A RIGHT OF ACCESS, ON, ALONG AND IN ALL OF THE EASEMENTS, AS MAY BE NECESSARY TO ACCOMPLISH THE INTENDED PURPOSES OF THE EASEMENT. THESE EASEMENTS SHALL BE EXCLUSIVE, HOWEVER UTILITIES MAY CROSS THE EXCLUSIVE EASEMENTS AT SUBSTANTIALLY 90 DEGREES. THE CITY SHALL MAINTAIN ALL WATER AND SANITARY SEWER IMPROVEMENTS INSTALLED IN THE EASEMENT IN GOOD AND WORKING CONDITION. NOTWITHSTANDING THE FOREGOING, THE UNDERLYING PROPERTY OWNER RETAINS THE RIGHT TO USE THE SURFACE OF THE AREAS WITHIN WHICH THE WATER AND SANITARY SEWER EASEMENTS ARE DEPICTED FOR PARKING LOTS, SIDEWALKS, ROADS, DRIVEWAYS AND DRIVE AISLES, CURBS, AND OTHER SIMILAR HARDSCAPE USES PROVIDED SUCH SIMILAR USES DO NOT MATERIALLY INTERFERE WITH THE CITY'S USE OF SUCH AREAS AS WATER AND SANITARY SEWER EASEMENTS.
9. A 2' WIDE SURFACE MAINTENANCE EASEMENT RUNNING PARALLEL TO ALL PUBLIC RIGHT-OF-WAY LINES FOR SORRELL DRIVE, CAMPUS DRIVE AND ROCKCRESS DRIVE AND EXTENDING INTO ANY ADJACENT PARCEL NOT BEING CONVEYED TO THE CITY OF LOUISVILLE ARE HEREBY GRANTED TO THE CITY OF LOUISVILLE. SAID 2' SURFACE MAINTENANCE EASEMENTS ARE INTENDED TO ALLOW THE CITY OF LOUISVILLE ADEQUATE SPACE BEHIND ANY IMPROVEMENTS LOCATED WITHIN THE RIGHT-OF-WAY FOR ROUTINE MAINTENANCE AND REPAIRS BY THE CITY OF LOUISVILLE OR THEIR AUTHORIZED DESIGNEE.
10. THE CITY OF LOUISVILLE IS GRANTED A 10' SURFACE MAINTENANCE EASEMENT WHERE ACCESS IS REASONABLY AVAILABLE BEYOND THE EXCLUSIVE UTILITY EASEMENTS GRANTED TO THE CITY BY THIS PLAT. THE 10' MAINTENANCE ACCESS EASEMENT SHALL BE ALLOWED ON EITHER SIDE OF THE EXCLUSIVE UTILITY EASEMENT, OR 5' ON EACH SIDE OF THE EXCLUSIVE UTILITY EASEMENT, IN EITHER CASE THIS EASEMENT IS NOT MEANT TO RESTRICT BUILDING OR IMPROVEMENTS ALLOWED WITHIN THE PUD, BUT INSTEAD ALLOW ACCESS WHERE REASONABLY AVAILABLE ON SITE. MINIMUM SURFACE DISTURBANCE IS ALLOWED BY THE CITY'S USE WITHIN THIS EASEMENT.
11. THE FIELD WORK FOR THIS SURVEY WAS CONDUCTED ON FEBRUARY 28, 2019.

LEGEND

▲	SET #5 REBAR W/ 1.25" BLUE PLASTIC CAP PLS 38162	**LOT X, BLOCK X** X.XXX SF XX.XX AC	LOT NUMBER, BLOCK & AREA
◎	FOUND MONUMENT AS DESCRIBED	**D.E.** =	DRAINAGE EASEMENT HEREBY GRANTED
◇	FOUND BARE #5 REBAR	E.C.U.E. =	EXCLUSIVE CITY UTILITY EASEMENT
△	FOUND #5 REBAR W/ ALUM. CAP PUNCHED THROUGH TOP	G.D.R.O.W. =	GOODHUE DITCH & RESERVOIR COMPANY R.O.W.
		D.U.E. =	DRY UTILITY EASEMENT HEREBY GRANTED
◎	FOUND ILLEGIBLE 1.5" ALUM. CAP ON #5 REBAR	S.M.E. =	SURFACE MAINTENANCE EASEMENT HEREBY GRANTED
◈	FOUND 2.5" ALUM. CAP PLS 28657 ON #5 REBAR	R.O.W. =	RIGHT-OF-WAY
		CoL =	CITY OF LOUISVILLE
◬	FOUND 3.5" ALUM. CAP CDOT ROW MARKER ON #6 REBAR PLS 24961	CCOB =	CITY AND COUNTY OF BROOMFIELD
▲	FOUND 3.5" ALUM. CAP CDOT ROW MARKER ON #6 REBAR PLS 24942	CDOT =	COLORADO DEPARTMENT OF TRANSPORTATION
		NPPHA =	NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY
●	FOUND #5 REBAR W/ 1.25" BLUE PLASTIC CAP PLS 38162	PSCO =	PUBLIC SERVICE COMPANY OF COLORADO
◆	FOUND MAG NAIL W/ 1" BRASS TAG PLS 38162		PORTION OF EASEMENT TO BE VACATED BY SEPARATE INSTRUMENT
⊕	SECTION CORNER		LOUISVILLE CITY LIMITS

SHEET INDEX

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SHEET 4	PLAT SHEET
SHEET 5	PLAT SHEET/EASEMENT DETAILS 'A' & 'B'
SHEET 6	PLAT SHEET
SHEET 7	PLAT SHEET/EASEMENT DETAIL 'C'
SHEET 8	EASEMENT DETAILS 'D' & 'E', LINE & CURVE TABLES

ISSUE DATE: 04-05-2021 | PROJECT #: 190108

DATE	COMMENTS
01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

PROJECT NUMBER: 190108

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PLOTTED: MON 11/13/23 2:17:12P BY: KHALED ALSAMADI

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PRELIMINARY PLAT OF

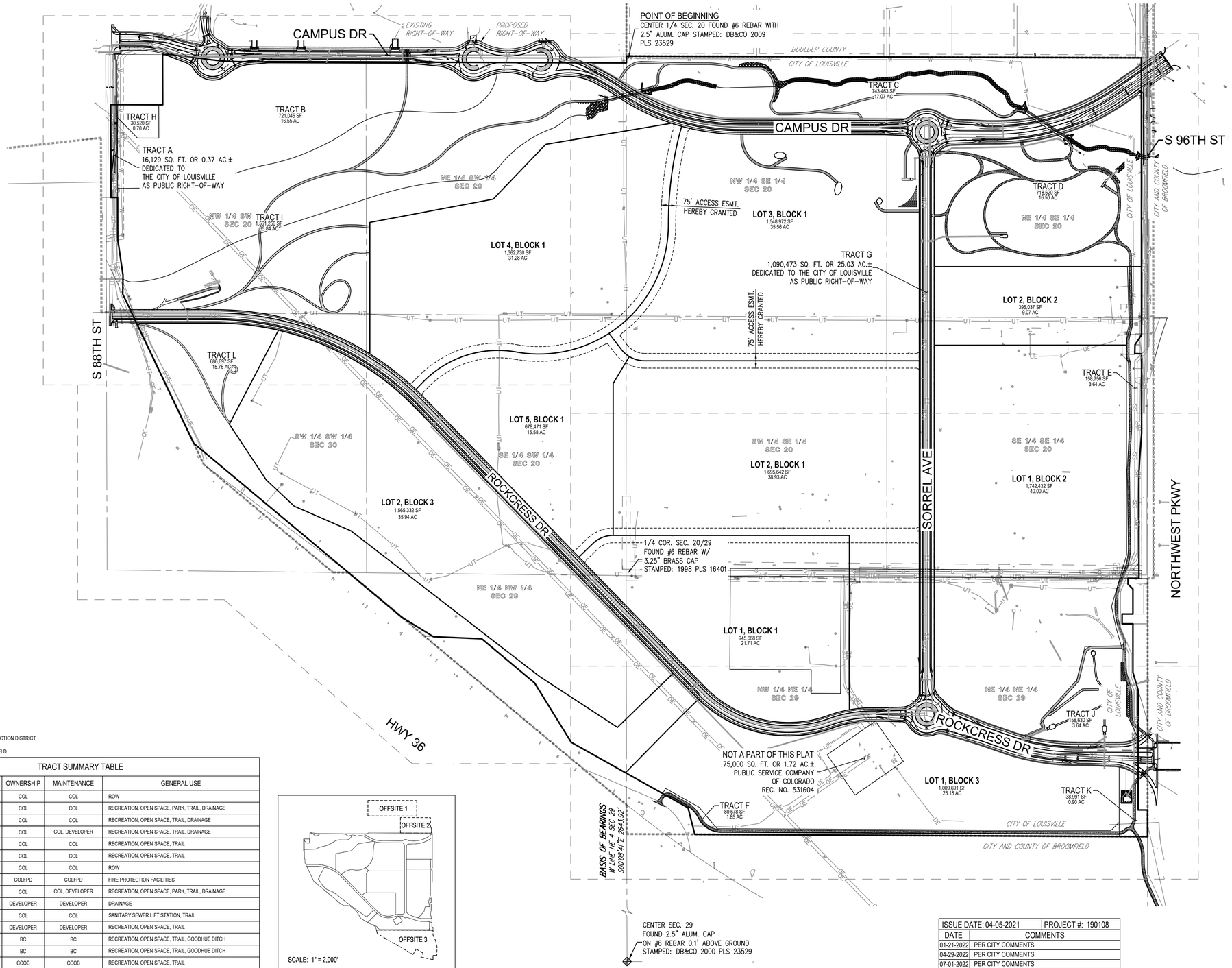
REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
KEY MAP/TRACT SUMMARY TABLE

PREPARED BY:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

LEGEND

- SECTION CORNER (DESCRIBED ON FOLLOWING SHEETS)
- LOT X, BLOCK X / X,XXX SF / XX.XX AC — LOT NUMBER & AREA
- LOUISVILLE CITY LIMITS



ABBREVIATION LEGEND

COL	CITY OF LOUISVILLE
COLFPD	CITY OF LOUISVILLE FIRE PROTECTION DISTRICT
BC	BOULDER COUNTY
CCOB	CITY AND COUNTY OF BROOMFIELD

TRACT SUMMARY TABLE

TRACT	AREA (AC)	OWNERSHIP	MAINTENANCE	GENERAL USE
TRACT A	0.37	COL	COL	ROW
TRACT B	16.55	COL	COL	RECREATION, OPEN SPACE, PARK, TRAIL, DRAINAGE
TRACT C	17.07	COL	COL	RECREATION, OPEN SPACE, TRAIL, DRAINAGE
TRACT D	16.50	COL	COL, DEVELOPER	RECREATION, OPEN SPACE, TRAIL, DRAINAGE
TRACT E	3.64	COL	COL	RECREATION, OPEN SPACE, TRAIL
TRACT F	1.85	COL	COL	RECREATION, OPEN SPACE, TRAIL
TRACT G	25.03	COL	COL	ROW
TRACT H	0.70	COLFPD	COLFPD	FIRE PROTECTION FACILITIES
TRACT I	35.84	COL	COL, DEVELOPER	RECREATION, OPEN SPACE, PARK, TRAIL, DRAINAGE
TRACT J	3.64	DEVELOPER	DEVELOPER	DRAINAGE
TRACT K	0.90	COL	COL	SANITARY SEWER LIFT STATION, TRAIL
TRACT L	15.76	DEVELOPER	DEVELOPER	RECREATION, OPEN SPACE, TRAIL
OFFSITE 1	28.86	BC	BC	RECREATION, OPEN SPACE, TRAIL, GOODHUE DITCH
OFFSITE 2	18.00	BC	BC	RECREATION, OPEN SPACE, TRAIL, GOODHUE DITCH
OFFSITE 3	40.10	CCOB	CCOB	RECREATION, OPEN SPACE, TRAIL
TOTAL	224.82			

NOTE: OFFSITE 1 AND 2 OPEN SPACES TO BE DEEDED TO BOULDER COUNTY WITH CONSERVATION EASEMENTS DEDICATED TO COL. AND OFFSITE 3 TO BE DEEDED TO CCOB. SEE DETAIL TO RIGHT FOR OFFSITE LOCATIONS.

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08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

N

250 0 250 500
SCALE: 1" = 250'

PROJECT NUMBER: 190108

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PLOTTED: MON 11/13/23 1:17:27P BY: ARNALDO ALSINA

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PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO

PLAT SHEET

ISSUE DATE: 04-05-2021	PROJECT #: 190108
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01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

N

100 0 100 200

SCALE: 1" = 100'

KEY MAP

PREPARED BY:
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1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

POINT OF BEGINNING
CENTER 1/4 SEC. 20 FOUND #6 REBAR WITH 2.5" ALUM. CAP STAMPED: DB&CO 2009 PLS 23529

N00°02'50"E 35.00'
205.06'

S LINE SW4 NE4 S89°48'50"E 1327.77'

S89°48'50"E 2625.59'

BOULDER COUNTY

CITY OF LOUISVILLE

UNPLATTED

S LINE SE4 NE4 N89°48'50"W 1327.82'

15' UTILITY ESMT. REC. NO. 045853

OFFSITE 2
18.00 AC

60' BOULDER COUNTY R.O.W. REC. NO. 45849

E 1/4 COR. SEC. 20
2.5" ALUM. CAP ON #6 REBAR STAMPED: WESTERN STATES 2003 PLS 33200

WITNESS CORNER
E 1/16 COR. SEC. 20
FOUND #6 REBAR WITH 2.5" ALUM. CAP STAMPED: DB&CO 1 FT. WC 2009 PLS 23529

TRACT C
743,463 SF
17.07 AC

TRACT G
1,090,473 SQ. FT. OR 25.03 AC.±
HEREBY DEDICATED TO THE CITY OF LOUISVILLE

CAMPUS DRIVE
(VARIABLE-WIDTH PUBLIC R.O.W.)

S89°48'50"E 738.96'

N89°48'50"W 739.03'

736.05'
ESMT.

N88°06'57"E 78.43'

N87°56'37"W 92.59'

S87°03'01"E 149.42'

S89°48'50"E 36.75'

N89°48'50"W 38.03'

S87°55'57"W 179.56'

L=130.58'
R=1095.00'
D=6°49'57"
ChB=N59°05'00"W
ChL=130.50'

L=625.78'
R=1050.00'
D=34°08'49"
ChB=S72°44'26"E
ChL=616.56'

L=314.10'

L=43.59'

L=43.65'

L=300.43'

N80°29'23"E 647.98'

N14°28'16"W 12.30'

L=55.94'

N15°09'20"E 56.04'

S45°15'35"W 12.24'

L=59.61'
R=81.50'
D=41°54'31"
ChB=N67°09'43"E
ChL=58.29'

L=163.08'
R=119.00'
D=78°31'07"
ChB=N85°28'01"E
ChL=150.61'

L=97.61'
R=176.00'
D=31°46'35"
ChB=S71°09'43"E
ChL=96.36'

L=489.93'

496.17'

23.32'

C3

60' G.D.R.O.W.

L=80.53'

172.17'

N55°18'37"E

182.34'

S55°18'37"W 68.44'

108.80'

60' G.D.R.O.W.

30' 30'

GOODHUE DITCH

N00°00'00"E 201.74'

2' S.M.E.

10' D.U.E.

DRAINAGE ESMT. HEREBY GRANTED

N90°00'00"W 280.61'

N42°56'06"W 266.14'

N90°00'00"W 447.93'

NE 1/4 SW 1/4 SEC 20

NW 1/4 SE 1/4 SEC 20

NE 1/4 SE 1/4 SEC 20

TRACT D
718,620 SF
16.50 AC

270.18'
ESMT.

548.73'

CITY OF LOUISVILLE

CITY AND COUNTY OF BROOMFIELD

S00°02'13"E 1326.76'

858.73'

S00°02'13"E 1326.64'

S 96TH ST
(VARIABLE-WIDTH PUBLIC R.O.W.)

MATCH LINE - SEE SHEET 7

N00°02'50"E 1324.58'

L=448.51'
R=1865.00'
D=13°46'45"
ChB=N6°46'21"E
ChL=447.43'

LOT 4, BLOCK 1
1,362,730 SF
31.28 AC

LOT 3, BLOCK 1
1,548,972 SF
35.56 AC

S00°01'07"W 1325.49'

37.5' 37.5'

75' ACCESS ESMT. HEREBY GRANTED

L=1154.12'
R=660.00'
D=100°11'28"
ChB=N49°58'43"E
ChL=1012.59'

L=860.36'

L=648.43'
R=697.50'
D=53°15'52"
ChB=S26°30'55"W
ChL=625.33'

S 1/16 COR. SEC. 20
FOUND 3" ALUM. CAP ON BENT IRON POST; MEASURED AT BEND

SE 1/16 COR. SEC. 20
FOUND 3" ALUM. CAP ON BENT IRON POST; MEASURED AT BEND

S89°46'29"E 1328.44'

1035.11'

SORREL AVE
(79' PUBLIC R.O.W.)

N90°00'00"E 1055.12'
983.54'

71.58'

10' D.U.E.
2' S.M.E.

10' D.U.E.
2' S.M.E.

400.88'

LOT 2, BLOCK 2
396,037 SF
9.07 AC

N00°02'35"W 262.37'

262.37'

S00°02'35"E 85.45'

S33°27'26"W 60.64'

NPPHA TK-71-2
REC. NO. 2386686

S88°19'32"E 34.84'

S01°40'28"W 45.12'

S22°43'14"W 10.20'

S37°27'14"E 56.96'

L=137.57'
R=150.00'
D=52°32'46"
ChB=S63°43'37"E
ChL=132.79'

N37°27'14"W 101.68'

L=493.76'

S82°24'43"W 10.94'

C44

N37°27'14"W 63.84'

L=56.36'

L=81.21'

N31°01'09"E 160.32'

75' ACCESS ESMT. HEREBY GRANTED

37.5' 37.5'

N90°00'00"E 1399.99'

N58°57'31"E 12.25'

43.82'

43.73'

N60°12'45"W 12.54'

N00°00'00"E 2728.97'

N00°00'00"E 2680.17'

10' D.U.E. (SEE DETAIL 'D' SHEET 8)

N14°57'25"E 55.14'

49.66'

N89°57'25"E 978.11'

ACCESS ESMT. HEREBY GRANTED TO THE CITY OF LOUISVILLE FOR PUBLIC SAFETY COMMUNICATIONS TOWER MAINTENANCE ACCESS (SEE DETAIL 'D' SHEET 8)

MULTI-USE ESMT. REC. NO. 2386687

TRACT E
158,756 SF
3.64 ACC

S00°02'35"E 1119.77'

1070.11'

S00°02'35"E 404.28'

NORTHWEST PKWY
(VARIABLE-WIDTH PUBLIC R.O.W.)

LOT 5, BLOCK 1
678,471 SF
15.58 AC

LOT 2, BLOCK 1
1,695,642 SF
38.93 AC

LOT 1, BLOCK 2
1,742,432 SF
40.00 AC

1693.66'

1730.56'

79'

SE 1/4 SW 1/4 SEC 20

SW 1/4 SE 1/4 SEC 20

SE 1/4 SE 1/4 SEC 20

MATCH LINE SEE SHEET 6

MATCH LINE - SEE SHEET 4

FILEPATH: P:\190108\ENGINEERING\GIS\PRELIM PLAT\ENG LAYOUT SHT 3
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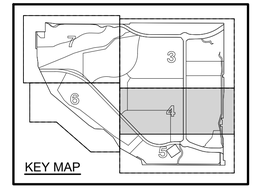
PROJECT NUMBER: 190108

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PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET



PREPARED BY:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

MATCH LINE - SEE SHEET 3

MATCH LINE - SEE SHEET 6

LOT 5, BLOCK 1
678,471 SF
15.58 AC

SE 1/4 SW 1/4
SEC 20

N00°00'00"E 774.30'

N00°01'54"E 1323.86'

SW 1/4 SE 1/4
SEC 20

S00°01'54"E 1325.32'

LOT 1, BLOCK 1
1,695,642 SF
38.93 AC

75' PUBLIC ACCESS ESMT. HEREBY GRANTED

10' D.U.E.
2' S.M.E.

846.42' TIE (N LINE ACCESS ESMT. TO N LINE LOT 1)
1693.86' (LOT 1)

SORREL AVE
(79' PUBLIC R.O.W.)

1730.56' (LOT 1)

N58°57'18"E 12.26'

N90°00'00"E 1549.40'

N90°00'00"W 1204.40'

N90°00'00"W 1549.40'

100' PSCO ESMT. REC. NO. 0067053.7

N00°00'00"E 2728.97'

S00°00'00"E 2680.17'

L=112.57'
R=150.00'
D=43°00'00"
ChB=N68°30'00"E
ChL=109.95'

L27
N45°31'00"E
99.89'

37.5'
37.5'

1/4 COR. SEC. 20/29
FOUND #6 REBAR W/
3.25" BRASS CAP
STAMPED: 1998 PLS 16401

S14°48'17"W 12.26'

41.22'
41.22'

N89°42'42"W 1329.64'

10' D.U.E.
2' S.M.E.

ROCKCRESS DR
(68' PUBLIC R.O.W.)

924.72'
S44°09'00"E 2054.74'
N45°09'00"W 1855.91'

75' PSCO ESMT. BK. 723 PG. 75

26' PSCO ESMT. REC. NO. 531607 (N 26' OF THE W 1500') VACATED BY REC. NO. 04000096

21' S.T.C. UTILITY ESMT. REC. NO. 717095 TO BE VACATED BY SEPARATE INSTRUMENT REC. NO. _____

26' PSCO ESMT. REC. NO. 531607 (N 26' OF THE W 1500') PORTION TO REMAIN PER REC. NO. 04000096

STORAGETEK BUILDING SIX SUBDIVISION, REC. NO. 717095, HEREBY VACATED (SEE NOTE 5)

LOT 1, BLOCK 1
945,688 SF
21.71 AC

STORAGETEK BUILDING SIX SUBDIVISION
REC. NO. 717095
HEREBY VACATED
(SEE NOTE 5)

N00°00'00"E 887.84'

50' PSCO ESMT. REC. NO. 534354

25' PSCO ACCESS ESMT. (UNDESCRIBED) REC. NO. 531604

LOT 2, BLOCK 1
1,695,642 SF
38.93 AC

TRACT G
1,090,473 SQ. FT. OR 25.03 AC.±
HEREBY DEDICATED TO
THE CITY OF LOUISVILLE
AS PUBLIC RIGHT-OF-WAY

LOT 2, BLOCK 3
1,565,332 SF
35.94 AC

BASIS OF BEARINGS
W LINE NE 4 SEC 29
S00°08'41"E
2643.92'

79'

SE 1/4 SE 1/4
SEC 20

40' PSCO ESMT. REC. NO. 290792 PORTION TO REMAIN PER REC. NO. 04000097

26' PSCO/MOUNTAIN STATES ESMT. REC. NO. 00639459 (N 26' OF THE E 1500')

40' ACCESS EASEMENT
(OUTLOT A, STORAGETEK BUILDING SIX SUBDIVISION)
REC. NO. 717095
HEREBY VACATED PER NOTE 5

LOT 1, BLOCK 2
1,742,432 SF
40.00 AC

TRACT G
1,090,473 SQ. FT. OR 25.03 AC.±
HEREBY DEDICATED TO THE CITY OF LOUISVILLE
AS PUBLIC RIGHT-OF-WAY

ACCESS RESTRICTION LINE
REC. NO. 2309732

L=86.28'
R=2441.83'
D=2°01'28"
ChB=S04°26'27"W
ChL=86.27'

S03°25'43"W 124.37'

NPPHA TK-71
REC. NO. 2309730

N00°02'35"W 1070.11'

S00°02'25"E 1326.55'

25' PSCO ESMT.
REC. NO. 01000400

NORTHWEST PKWY
(VARIABLE-WIDTH PUBLIC R.O.W.)
CITY AND COUNTY OF BROOMFIELD

15' PSCO ESMT.
REC. NO. 310494
(W LINE OF ESMT. IS 0.72' W OF ℄)

S00°02'35"E 529.71'

NPPHA ACCESS RESTRICTION LINE
REC. NO. 2309732

NPPHA TK-71-1
REC. NO. 2309730

SE COR. SEC. 20
FOUND 3.25" ALUM. CAP
ON #6 REBAR
FLUSH W/ GROUND
STAMPED: MERRICK & CO
2009 PLS 33200

FOUND S10°12'46"W 0.38'
OF CALC. POSITION

N16°19'03"E 272.81'

CCOB PARCEL 12
REC. NO. 1560711

20' ACCESS ESMT.
REC. NO. 520800

S00°00'35"W 50.00'

N12°01'26"W 112.04'

REC. NO. 520800

S89°59'25"E 55.00'

N16°05'27"W 112.88'

S00°00'35"W 247.79'

S89°02'43"W 184.91'

TRACT J
1158,630 SF
26.64 AC

17.59'

S13°44'40"W 200.31'

N00°57'17"W 121.17'

CCOB PARCEL 10
REC. NO. 1560711

24ST

MATCH LINE - SEE SHEET 5

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SCALE: 1" = 100'

PRELIMINARY PLAT - SHEET 4 OF 8

PROJECT NUMBER: 190108

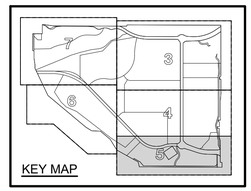
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x-ref 111 x-ref 112 x-ref 113 x-ref 114 x-ref 115 x-ref 116 x-ref 117 x-ref 118 x-ref 119 x-ref 120 x-ref 121 x-ref 122 x-ref 123 x-ref 124 x-ref 125 x-ref 126 x-ref 127 x-ref 128 x-ref 129 x-ref 130 x-ref 131 x-ref 132 x-ref 133 x-ref 134 x-ref 135 x-ref 136 x-ref 137 x-ref 138 x-ref 139 x-ref 140 x-ref 141 x-ref 142 x-ref 143 x-ref 144 x-ref 145 x-ref 146 x-ref 147 x-ref 148 x-ref 149 x-ref 150 x-ref 151 x-ref 152 x-ref 153 x-ref 154 x-ref 155 x-ref 156 x-ref 157 x-ref 158 x-ref 159 x-ref 160 x-ref 161 x-ref 162 x-ref 163 x-ref 164 x-ref 165 x-ref 166 x-ref 167 x-ref 168 x-ref 169 x-ref 170 x-ref 171 x-ref 172 x-ref 173 x-ref 174 x-ref 175 x-ref 176 x-ref 177 x-ref 178 x-ref 179 x-ref 180 x-ref 181 x-ref 182 x-ref 183 x-ref 184 x-ref 185 x-ref 186 x-ref 187 x-ref 188 x-ref 189 x-ref 190 x-ref 191 x-ref 192 x-ref 193 x-ref 194 x-ref 195 x-ref 196 x-ref 197 x-ref 198 x-ref 199 x-ref 200 x-ref 201 x-ref 202 x-ref 203 x-ref 204 x-ref 205 x-ref 206 x-ref 207 x-ref 208 x-ref 209 x-ref 210 x-ref 211 x-ref 212 x-ref 213 x-ref 214 x-ref 215 x-ref 216 x-ref 217 x-ref 218 x-ref 219 x-ref 220 x-ref 221 x-ref 222 x-ref 223 x-ref 224 x-ref 225 x-ref 226 x-ref 227 x-ref 228 x-ref 229 x-ref 230 x-ref 231 x-ref 232 x-ref 233 x-ref 234 x-ref 235 x-ref 236 x-ref 237 x-ref 238 x-ref 239 x-ref 240 x-ref 241 x-ref 242 x-ref 243 x-ref 244 x-ref 245 x-ref 246 x-ref 247 x-ref 248 x-ref 249 x-ref 250 x-ref 251 x-ref 252 x-ref 253 x-ref 254 x-ref 255 x-ref 256 x-ref 257 x-ref 258 x-ref 259 x-ref 260 x-ref 261 x-ref 262 x-ref 263 x-ref 264 x-ref 265 x-ref 266 x-ref 267 x-ref 268 x-ref 269 x-ref 270 x-ref 271 x-ref 272 x-ref 273 x-ref 274 x-ref 275 x-ref 276 x-ref 277 x-ref 278 x-ref 279 x-ref 280 x-ref 281 x-ref 282 x-ref 283 x-ref 284 x-ref 285 x-ref 286 x-ref 287 x-ref 288 x-ref 289 x-ref 290 x-ref 291 x-ref 292 x-ref 293 x-ref 294 x-ref 295 x-ref 296 x-ref 297 x-ref 298 x-ref 299 x-ref 300 x-ref 301 x-ref 302 x-ref 303 x-ref 304 x-ref 305 x-ref 306 x-ref 307 x-ref 308 x-ref 309 x-ref 310 x-ref 311 x-ref 312 x-ref 313 x-ref 314 x-ref 315 x-ref 316 x-ref 317 x-ref 318 x-ref 319 x-ref 320 x-ref 321 x-ref 322 x-ref 323 x-ref 324 x-ref 325 x-ref 326 x-ref 327 x-ref 328 x-ref 329 x-ref 330 x-ref 331 x-ref 332 x-ref 333 x-ref 334 x-ref 335 x-ref 336 x-ref 337 x-ref 338 x-ref 339 x-ref 340 x-ref 341 x-ref 342 x-ref 343 x-ref 344 x-ref 345 x-ref 346 x-ref 347 x-ref 348 x-ref 349 x-ref 350 x-ref 351 x-ref 352 x-ref 353 x-ref 354 x-ref 355 x-ref 356 x-ref 357 x-ref 358 x-ref 359 x-ref 360 x-ref 361 x-ref 362 x-ref 363 x-ref 364 x-ref 365 x-ref 366 x-ref 367 x-ref 368 x-ref 369 x-ref 370 x-ref 371 x-ref 372 x-ref 373 x-ref 374 x-ref 375 x-ref 376 x-ref 377 x-ref 378 x-ref 379 x-ref 380 x-ref 381 x-ref 382 x-ref 383 x-ref 384 x-ref 385 x-ref 386 x-ref 387 x-ref 388 x-ref 389 x-ref 390 x-ref 391 x-ref 392 x-ref 393 x-ref 394 x-ref 395 x-ref 396 x-ref 397 x-ref 398 x-ref 399 x-ref 400 x-ref 401 x-ref 402 x-ref 403 x-ref 404 x-ref 405 x-ref 406 x-ref 407 x-ref 408 x-ref 409 x-ref 410 x-ref 411 x-ref 412 x-ref 413 x-ref 414 x-ref 415 x-ref 416 x-ref 417 x-ref 418 x-ref 419 x-ref 420 x-ref 421 x-ref 422 x-ref 423 x-ref 424 x-ref 425 x-ref 426 x-ref 427 x-ref 428 x-ref 429 x-ref 430 x-ref 431 x-ref 432 x-ref 433 x-ref 434 x-ref 435 x-ref 436 x-ref 437 x-ref 438 x-ref 439 x-ref 440 x-ref 441 x-ref 442 x-ref 443 x-ref 444 x-ref 445 x-ref 446 x-ref 447 x-ref 448 x-ref 449 x-ref 450 x-ref 451 x-ref 452 x-ref 453 x-ref 454 x-ref 455 x-ref 456 x-ref 457 x-ref 458 x-ref 459 x-ref 460 x-ref 461 x-ref 462 x-ref 463 x-ref 464 x-ref 465 x-ref 466 x-ref 467 x-ref 468 x-ref 469 x-ref 470 x-ref 471 x-ref 472 x-ref 473 x-ref 474 x-ref 475 x-ref 476 x-ref 477 x-ref 478 x-ref 479 x-ref 480 x-ref 481 x-ref 482 x-ref 483 x-ref 484 x-ref 485 x-ref 486 x-ref 487 x-ref 488 x-ref 489 x-ref 490 x-ref 491 x-ref 492 x-ref 493 x-ref 494 x-ref 495 x-ref 496 x-ref 497 x-ref 498 x-ref 499 x-ref 500 x-ref 501 x-ref 502 x-ref 503 x-ref 504 x-ref 505 x-ref 506 x-ref 507 x-ref 508 x-ref 509 x-ref 510 x-ref 511 x-ref 512 x-ref 513 x-ref 514 x-ref 515 x-ref 516 x-ref 517 x-ref 518 x-ref 519 x-ref 520 x-ref 521 x-ref 522 x-ref 523 x-ref 524 x-ref 525 x-ref 526 x-ref 527 x-ref 528 x-ref 529 x-ref 530 x-ref 531 x-ref 532 x-ref 533 x-ref 534 x-ref 535 x-ref 536 x-ref 537 x-ref 538 x-ref 539 x-ref 540 x-ref 541 x-ref 542 x-ref 543 x-ref 544 x-ref 545 x-ref 546 x-ref 547 x-ref 548 x-ref 549 x-ref 550 x-ref 551 x-ref 552 x-ref 553 x-ref 554 x-ref 555 x-ref 556 x-ref 557 x-ref 558 x-ref 559 x-ref 560 x-ref 561 x-ref 562 x-ref 563 x-ref 564 x-ref 565 x-ref 566 x-ref 567 x-ref 568 x-ref 569 x-ref 570 x-ref 571 x-ref 572 x-ref 573 x-ref 574 x-ref 575 x-ref 576 x-ref 577 x-ref 578 x-ref 579 x-ref 580 x-ref 581 x-ref 582 x-ref 583 x-ref 584 x-ref 585 x-ref 586 x-ref 587 x-ref 588 x-ref 589 x-ref 590 x-ref 591 x-ref 592 x-ref 593 x-ref 594 x-ref 595 x-ref 596 x-ref 597 x-ref 598 x-ref 599 x-ref 600 x-ref 601 x-ref 602 x-ref 603 x-ref 604 x-ref 605 x-ref 606 x-ref 607 x-ref 608 x-ref 609 x-ref 610 x-ref 611 x-ref 612 x-ref 613 x-ref 614 x-ref 615 x-ref 616 x-ref 617 x-ref 618 x-ref 619 x-ref 620 x-ref 621 x-ref 622 x-ref 623 x-ref 624 x-ref 625 x-ref 626 x-ref 627 x-ref 628 x-ref 629 x-ref 630 x-ref 631 x-ref 632 x-ref 633 x-ref 634 x-ref 635 x-ref 636 x-ref 637 x-ref 638 x-ref 639 x-ref 640 x-ref 641 x-ref 642 x-ref 643 x-ref 644 x-ref 645 x-ref 646 x-ref 647 x-ref 648 x-ref 649 x-ref 650 x-ref 651 x-ref 652 x-ref 653 x-ref 654 x-ref 655 x-ref 656 x-ref 657 x-ref 658 x-ref 659 x-ref 660 x-ref 661 x-ref 662 x-ref 663 x-ref 664 x-ref 665 x-ref 666 x-ref 667 x-ref 668 x-ref 669 x-ref 670 x-ref 671 x-ref 672 x-ref 673 x-ref 674 x-ref 675 x-ref 676 x-ref 677 x-ref 678 x-ref 679 x-ref 680 x-ref 681 x-ref 682 x-ref 683 x-ref 684 x-ref 685 x-ref 686 x-ref 687 x-ref 688 x-ref 689 x-ref 690 x-ref 691 x-ref 692 x-ref 693 x-ref 694 x-ref 695 x-ref 696 x-ref 697 x-ref 698 x-ref 699 x-ref 700 x-ref 701 x-ref 702 x-ref 703 x-ref 704 x-ref 705 x-ref 706 x-ref 707 x-ref 708 x-ref 709 x-ref 710 x-ref 711 x-ref 712 x-ref 713 x-ref 714 x-ref 715 x-ref 716 x-ref 717 x-ref 718 x-ref 719 x-ref 720 x-ref 721 x-ref 722 x-ref 723 x-ref 724 x-ref 725 x-ref 726 x-ref 727 x-ref 728 x-ref 729 x-ref 730 x-ref 731 x-ref 732 x-ref 733 x-ref 734 x-ref 735 x-ref 736 x-ref 737 x-ref 738 x-ref 739 x-ref 740 x-ref 741 x-ref 742 x-ref 743 x-ref 744 x-ref 745 x-ref 746 x-ref 747 x-ref 748 x-ref 749 x-ref 750 x-ref 751 x-ref 752 x-ref 753 x-ref 754 x-ref 755 x-ref 756 x-ref 757 x-ref 758 x-ref 759 x-ref 760 x-ref 761 x-ref 762 x-ref 763 x-ref 764 x-ref 765 x-ref 766 x-ref 767 x-ref 768 x-ref 769 x-ref 770 x-ref 771 x-ref 772 x-ref 773 x-ref 774 x-ref 775 x-ref 776 x-ref 777 x-ref 778 x-ref 779 x-ref 780 x-ref 781 x-ref 782 x-ref 783 x-ref 784 x-ref 785 x-ref 786 x-ref 787 x-ref 788 x-ref 789 x-ref 790 x-ref 791 x-ref 792 x-ref 793 x-ref 794 x-ref 795 x-ref 796 x-ref 797 x-ref 798 x-ref 799 x-ref 800 x-ref 801 x-ref 802 x-ref 803 x-ref 804 x-ref 805 x-ref 806 x-ref 807 x-ref 808 x-ref 809 x-ref 810 x-ref 811 x-ref 812 x-ref 813 x-ref 814 x-ref 815 x-ref 816 x-ref 817 x-ref 818 x-ref 819 x-ref 820 x-ref 821 x-ref 822 x-ref 823 x-ref 824 x-ref 825 x-ref 826 x-ref 827 x-ref 828 x-ref 829 x-ref 830 x-ref 831 x-ref 832 x-ref 833 x-ref 834 x-ref 835 x-ref 836 x-ref 837 x-ref 838 x-ref 839 x-ref 840 x-ref 841 x-ref 842 x-ref 843 x-ref 844 x-ref 845 x-ref 846 x-ref 847 x-ref 848 x-ref 849 x-ref 850 x-ref 851 x-ref 852 x-ref 853 x-ref 854 x-ref 855 x-ref 856 x-ref 857 x-ref 858 x-ref 859 x-ref 860 x-ref 861 x-ref 862 x-ref 863 x-ref 864 x-ref 865 x-ref 866 x-ref 867 x-ref 868 x-ref 869 x-ref 870 x-ref 871 x-ref 872 x-ref 873 x-ref 874 x-ref 875 x-ref 876 x-ref 877 x-ref 878 x-ref 879 x-ref 880 x-ref 881 x-ref 882 x-ref 883 x-ref 884 x-ref 885 x-ref 886 x-ref 887 x-ref 888 x-ref 889 x-ref 890 x-ref 891 x-ref 892 x-ref 893 x-ref 894 x-ref 895 x-ref 896 x-ref 897 x-ref 898 x-ref 899 x-ref 900 x-ref 901 x-ref 902 x-ref 903 x-ref 904 x-ref 905 x-ref 906 x-ref 907 x-ref 908 x-ref 909 x-ref 910 x-ref 911 x-ref 912 x-ref 913 x-ref 914 x-ref 915 x-ref 916 x-ref 917 x-ref 918 x-ref 919 x-ref 920 x-ref 921 x-ref 922 x-ref 923 x-ref 924 x-ref 925 x-ref 926 x-ref 927 x-ref 928 x-ref 929 x-ref 930 x-ref 931 x-ref 932 x-ref 933 x-ref 934 x-ref 935 x-ref 936 x-ref 937 x-ref 938 x-ref 939 x-ref 940 x-ref 941 x-ref 942 x-ref 943 x-ref 944 x-ref 945 x-ref 946 x-ref 947 x-ref 948 x-ref 949 x-ref 950 x-ref 951 x-ref 952 x-ref 953 x-ref 954 x-ref 955 x-ref 956 x-ref 957 x-ref 958 x-ref 959 x-ref 960 x-ref 961 x-ref 962 x-ref 963 x-ref 964 x-ref 965 x-ref 966 x-ref 967 x-ref 968 x-ref 969 x-ref 970 x-ref 971 x-ref 972 x-ref 973 x-ref 974 x-ref 975 x-ref 976 x-ref 977 x-ref 978 x-ref 979 x-ref 980 x-ref 981 x-ref 982 x-ref 983 x-ref 984 x-ref 985 x-ref 986 x-ref 987 x-ref 988 x-ref 989 x-ref 990 x-ref 991 x-ref 992 x-ref 993 x-ref 994 x-ref 995 x-ref 996 x-ref 997 x-ref 998 x-ref 999 x-ref 1000
ADDED: Tue, Jan 11, 2022 2:17:48P BY: KHALED.ASSMAN
PLOTTED: MON 1/17/23 2:17:48P BY: KHALED.ASSMAN

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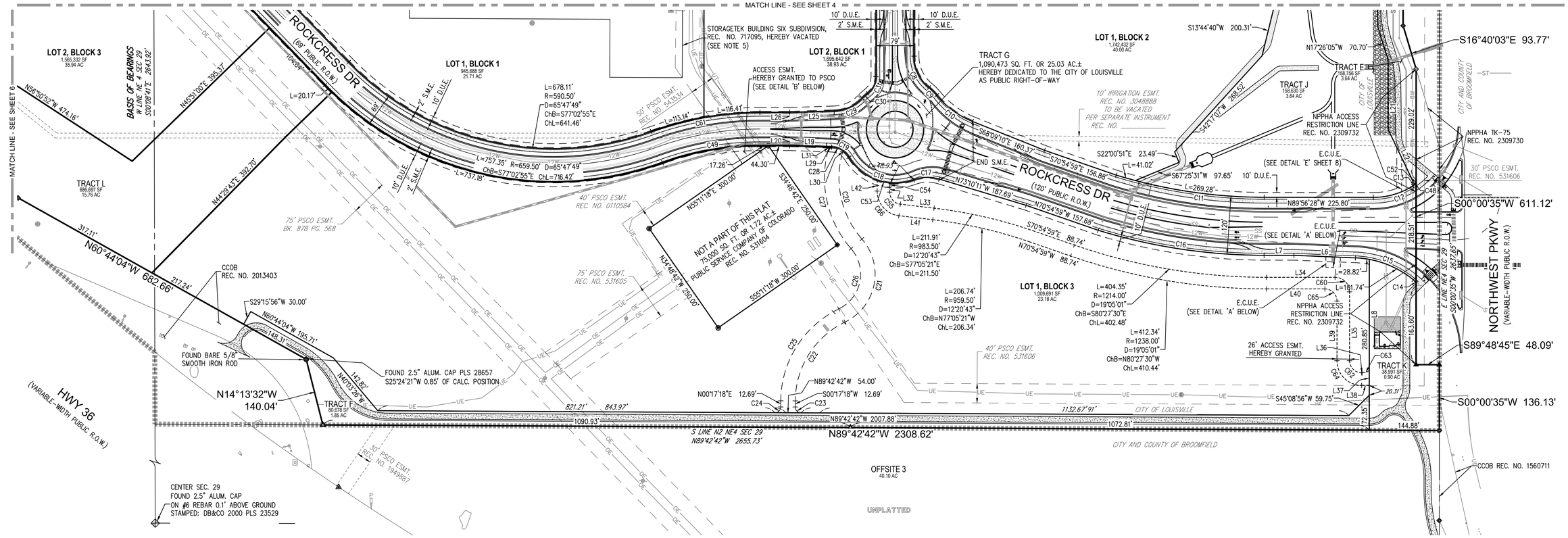
PRELIMINARY PLAT OF

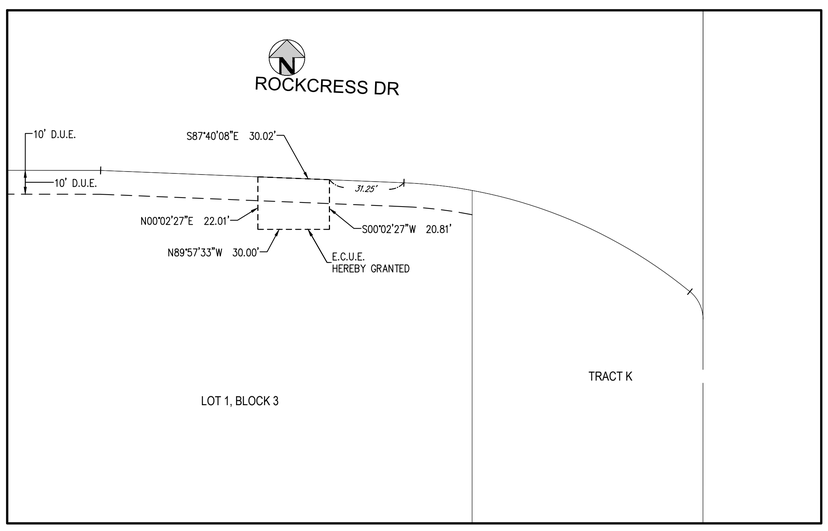
REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET/EASEMENT DETAILS 'A' & 'B'

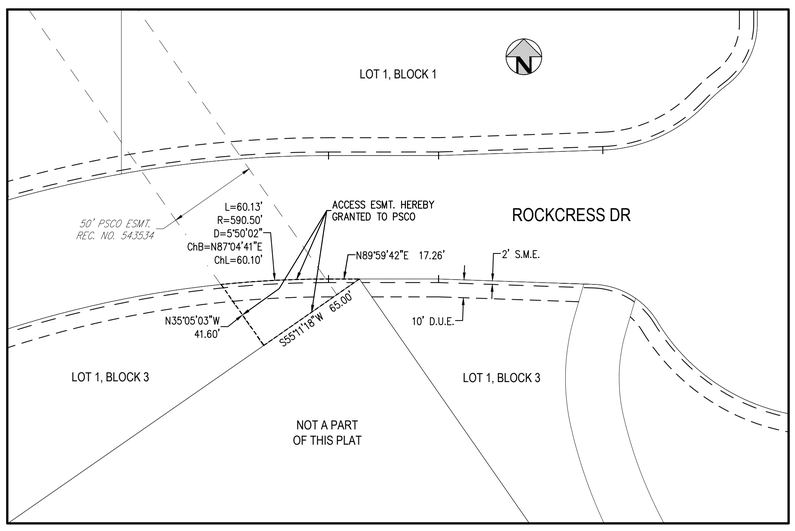


PREPARED BY:
HARRIS KOCHER SMITH
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Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com





DETAIL 'A'
SCALE: 1" = 30'



DETAIL 'B'
SCALE: 1" = 40'

ISSUE DATE: 04-05-2021	PROJECT #: 190108
DATE	COMMENTS
01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

100 0 100 200
SCALE: 1" = 100'

PROJECT NUMBER: 190108

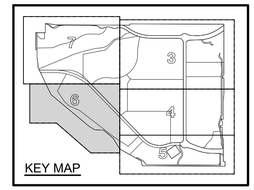
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XREFS: 4-PLAT.DWG, 7-ANNOTATION.DWG, 8-TITLE.DWG
PLOTTED: MON 1/13/23 2:18:05P BY: KHALED ALSSAAH

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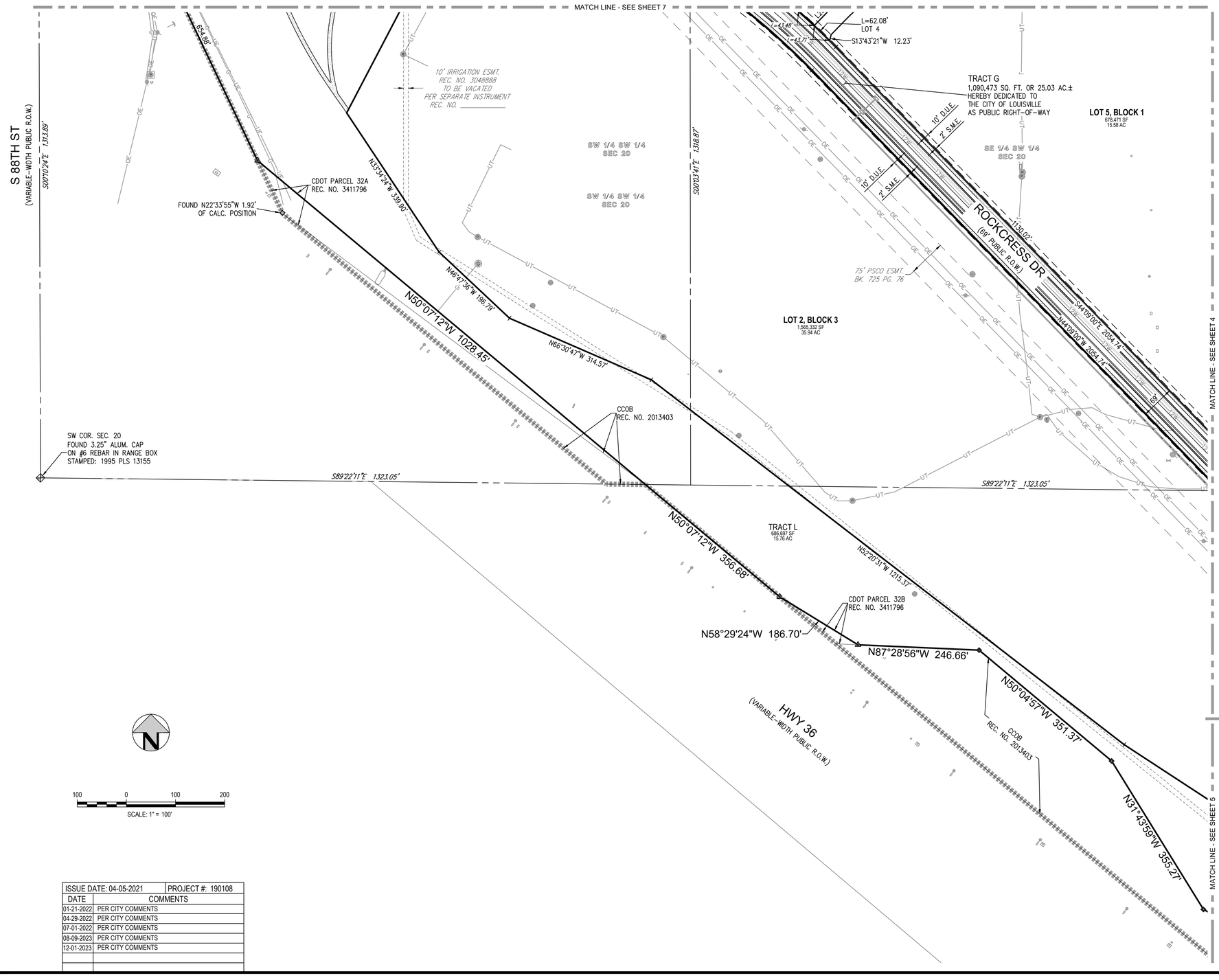
PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET



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HarrisKocherSmith.com



100 0 100 200
SCALE: 1" = 100'

ISSUE DATE: 04-05-2021	PROJECT #: 190108
DATE	COMMENTS
01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

PROJECT NUMBER: 190108

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XREFS: x-xx x-xx x-xx x-xx x-xx x-xx x-xx x-xx x-xx x-xx
PLOTTED: MON 1/13/22 1:18:17 P BY: KHALID ALSAMAN

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PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET

PREPARED BY:
HARRIS KOCHER SMITH
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Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

KEY MAP

DETAIL "C"
1" = 10'

S89°48'38"E 50.02'
5.14' C40 C41

S82°25'28"E 202.23'
S89°48'38"E 50.02'
L=139.86'
R=1085.00'
D=7°23'09"
ChB=S86°07'04"E
ChL=139.77'
FOUND S04°58'17"W 0.30' OF CALC. POSITION
CAMPUS DR
(VARIABLE-WIDTH PUBLIC R.O.W.)
24ST
24ST
UNRECORDED DRAINAGE ESMT. BOULDER VALLEY SCHOOL DIST. TO BE VACATED PER SEPARATE INSTRUMENT REC. NO. _____
TRACT G
1,090,473 SQ. FT. OR 25.03 AC.±
HEREBY DEDICATED TO THE CITY OF LOUISVILLE AS PUBLIC RIGHT-OF-WAY

30' NORTHERN COLORADO WATER CONSERVANCY DISTRICT ESMT. REC. NO. 01606496

W 1/4 COR. SEC. 20/19
FOUND 2" ALUM. CAP ON #6 REBAR IN RANGE BOX STAMPED: WESTERN STATES 2001 PLS 35597

SEE DETAIL"C" ABOVE

30' UNRECORDED DRAINAGE ESMT. BOULDER VALLEY SCHOOL DIST. TO BE VACATED PER SEPARATE INSTRUMENT REC. NO. _____

N89°48'38"W 1327.62'
N89°48'38"W 723.83'
S84°51'26"W 98.05'
L=120.34'
R=181.50'
D=37°59'20"
ChB=S65°51'45"W
ChL=118.15'
TRACT G
L17
C39
C38
70'
76.5'
6.5'
REC. NO. 1658713
20' UNRECORDED DRAINAGE ESMT. BOULDER VALLEY SCHOOL DIST. TO BE VACATED PER SEPARATE INSTRUMENT REC. NO. _____
S89°48'38"E 1975.05'
N84°20'00"W 144.14'
C37
C36
L=174.28'
L=10.93'
.1769.98'
N89°48'38"W 1327.62'

95' R.O.W.
35'
85'
60'
REC. NO. 1819920
N00°09'09"W 256.00'
FOUND 1.5" ALUM. CAP PLS 14108
S89°48'38"E 265.23'
210.93'
20.24'
L12
65.09'
TRACT H
30,920 SF
0.70 AC
S00°09'09"E 170.00'
25' BOULDER COUNTY R.O.W. ROAD BK. B PG. 279
UNRECORDED DRAINAGE ESMT. BOULDER VALLEY SCHOOL DIST. TO BE VACATED PER SEPARATE INSTRUMENT REC. NO. _____
TRACT B
721,046 SF
16.55 AC
L=138.71'
R=113.50'
D=70°01'28"
ChB=N83°00'24"W
ChL=130.24'
L=99.16'
R=113.50'
D=50°03'20"
ChB=N85°49'05"W
ChL=96.03'
L=237.53'
R=281.50'
D=48°20'48"
ChB=N86°40'22"W
ChL=230.55'
L=328.20'
R=230.24'
D=81°40'27"
ChB=S48°50'55"W
ChL=301.11'
N44°07'27"W 146.62'
N89°48'38"W 109.14'
L=336.19'
R=494.76'
D=38°55'56"
ChB=S74°16'19"W
ChL=329.76'
L=202.42'
R=2862.18'
D=4°03'08"
ChB=N88°17'17"W
ChL=202.38'

S 88TH ST
(VARIABLE-WIDTH PUBLIC R.O.W.)
N00°09'09"W 473.64'
S00°09'09"E 1314.22'
N00°09'09"W 473.43'
362.07'
TRACT A
16,129 SQ. FT. OR 0.37 AC.±
HEREBY DEDICATED TO THE CITY OF LOUISVILLE AS PUBLIC RIGHT-OF-WAY
10' MOUNTAIN STATES ESMT. REC. NO. 169083
L=190.28'
R=1005.24'
D=10°50'44"
ChB=S60°13'43"W
ChL=190.00'
S65°39'05"W 37.80'
L=291.59'
R=994.76'
D=16°47'41"
ChB=S70°11'15"W
ChL=290.54'
L=53.48'
R=1883.37'
D=1°37'37"
ChB=S77°46'16"W
ChL=53.48'
L=198.37'
R=1005.24'
D=11°18'23"
ChB=S71°18'16"W
ChL=198.05'
S88°59'06"W 428.16'
L=49.95'
R=105.24'
D=27°11'41"
ChB=S75°23'15"W
ChL=49.48'
NW 1/4 SW 1/4 SEC 20
S00°03'41"E 1319.40'
N4°54'39"E 387.21'
N79°20'18"E 640.22'
46.27'
S89°50'51"W 34.06'
CDOT REC. NO. 1989419
NW 1/4 SW 1/4 SEC 20
N00°09'09"W 213.70'
25'
59.06'
84.06'
75' PSCO ESMT. BK. 729 PG. 77
30' NORTHERN COLORADO WATER CONSERVANCY DISTRICT ESMT. REC. NO. 01566644
NE 1/4 SW 1/4 SEC 20
LOT 4, BLOCK 1
1,362,730 SF
31.28 AC
CDOT REC. NO. 1989419
N08°22'46"W 184.53'
CDOT REC. NO. 1993722
N00°54'00"E 95.53'
FOUND 3.5" ALUM. CAP CDOT ROW MARKER PLS 29752
CDOT BK. 878 PG. 503
FOUND TWO #5 REBARS W/ ALUM. CAP PUNCHED THROUGH TOP; ONE BEING N85°28'12"W 0.77' OF CALC. POSITION
L=16.90'
R=15.00'
D=64°33'19"
ChB=N57°43'38"W
ChL=16.02'
S89°59'42"W 427.06'
N00°00'00"E 668.93'
MATCH LINE - SEE SHEET 3
78.06'
108.84'
ROCKCRESS DR
(69' PUBLIC R.O.W.)
S89°35'11"E 1325.57'
S89°59'42"W 379.95'
S89°35'11"E 1325.15'
S 1/16 COR. SEC. 20/19 FOUND 3.25" ALUM. CAP ON #6 REBAR IN RANGE BOX STAMPED: CDOT 2000 PLS 23516
L=30.22'
R=15.00'
D=115°26'41"
ChB=S32°16'22"W
ChL=25.36'
L=322.84'
L=828.14'
L=1132.85'
R=1415.50'
D=45°51'18"
ChB=N67°04'39"W
ChL=1102.86'
L=519.42'
R=533.00'
D=55°50'10"
ChB=N72°09'22"E
ChL=499.11'
75' ACCESS ESMT. HEREBY GRANTED
L=493.76'
CDOT BK. 880 PG. 98
N25°26'59"W 842.57'
10' D.U.E.
2' S.M.E.
10' D.U.E.
10' D.U.E.
SW 1/4 SW 1/4 SEC 20
TRACT L
686,697 SF
15.76 AC
LOT 2, BLOCK 3
1,565,332 SF
35.94 AC
N27°36'32"E 640.88'
L=810.02'
TRACT G
1,090,473 SQ. FT. OR 25.03 AC.±
HEREBY DEDICATED TO THE CITY OF LOUISVILLE AS PUBLIC RIGHT-OF-WAY
L=297.86'
L=43.48'
L=43.71'
N72°59'05"E 12.40'
37.51'
37.51'
LOT 5, BLOCK 1
678,471 SF
15.58 AC
SE 1/4 SW 1/4 SEC 20
SE 1/4 SW 1/4 SEC 20
L=62.08'
LOT 4
S13°43'21"W 12.23'
655.88'
MATCH LINE - SEE SHEET 6

ISSUE DATE: 04-05-2021	PROJECT #: 190108
DATE	COMMENTS
01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

PROJECT NUMBER: 190108

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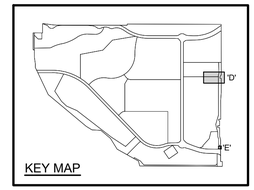
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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
LINE & CURVE TABLES



KEY MAP

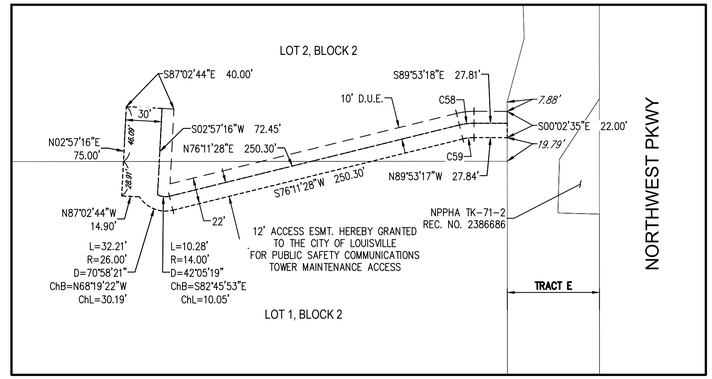
PREPARED BY:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C1	1170.00'	10°53'44"	222.49'	S61°06'53"E	222.15'
C2	1050.00'	34°52'33"	639.13'	N72°44'53"E	629.31'
C3	15.00'	55°20'51"	14.49'	N27°38'12"E	13.93'
C4	15.00'	124°39'10"	32.63'	N62°21'48"W	26.57'
C5	78.00'	39°42'30"	54.06'	S68°04'42"W	52.98'
C6	117.00'	10°56'24"	22.34'	S53°41'39"W	22.31'
C7	42.00'	59°09'51"	43.37'	S29°34'56"W	41.47'
C8	83.50'	50°53'35"	74.17'	S25°26'48"E	71.75'
C9	111.50'	11°36'40"	22.60'	S45°05'15"E	22.56'
C10	184.50'	28°52'15"	92.97'	S53°43'03"E	91.99'
C11	1050.00'	16°55'55"	310.29'	S81°28'31"E	309.16'
C12	152.00'	32°23'48"	85.95'	N73°51'38"E	84.80'
C13	15.00'	18°12'58"	4.77'	N48°33'15"E	4.75'
C14	15.00'	50°38'48"	13.26'	N25°18'48"W	12.83'
C15	202.00'	37°01'56"	130.56'	N69°09'09"W	128.30'
C16	1170.00'	17°02'32"	348.01'	N81°25'12"W	346.72'
C17	83.50'	37°05'08"	54.05'	S88°17'15"W	53.11'
C18	111.50'	78°59'15"	153.71'	N70°45'42"W	141.83'
C19	43.50'	56°44'14"	43.08'	N59°38'11"W	41.34'
C20	192.00'	57°23'04"	192.30'	S12°30'46"E	184.36'
C21	110.00'	105°27'20"	202.46'	S11°31'22"W	175.07'
C22	182.00'	63°57'44"	203.18'	S32°16'10"W	192.79'
C23	12.00'	90°00'00"	18.85'	S44°42'42"E	16.97'
C24	12.00'	90°00'00"	18.85'	N45°17'18"E	16.97'
C25	212.00'	63°57'44"	236.67'	N32°16'10"E	224.57'
C26	80.00'	105°27'20"	147.24'	N11°31'22"E	127.32'
C27	222.00'	57°23'04"	222.34'	N12°30'46"W	213.17'
C28	43.50'	32°57'30"	25.02'	S71°31'33"E	24.68'
C29	83.50'	44°43'21"	65.18'	N65°43'56"E	63.53'
C30	93.50'	9°20'23"	15.24'	N48°02'27"E	15.22'
C31	43.50'	52°42'39"	40.02'	N26°21'19"E	38.62'
C32	83.50'	46°35'42"	67.91'	N23°17'51"W	66.05'
C33	95.50'	21°02'24"	35.07'	N36°04'30"W	34.87'
C34	41.50'	62°23'18"	45.19'	N56°44'58"W	42.99'
C35	1125.00'	34°08'49"	670.47'	N72°44'26"W	660.60'
C36	245.50'	57°13'43"	245.21'	N89°24'17"W	235.15'
C37	181.50'	36°20'19"	115.11'	N66°09'50"W	113.19'
C38	113.50'	101°55'25"	201.91'	N82°10'12"W	176.32'
C39	81.50'	37°38'17"	53.54'	N50°01'38"W	52.58'
C40	15.00'	18°48'26"	4.92'	N80°24'26"W	4.90'
C41	361.50'	2°09'26"	13.61'	N69°55'30"W	13.61'
C44	697.50'	39°13'50"	477.58'	S80°27'32"W	468.31'
C46	1170.00'	34°52'33"	712.18'	S72°44'53"W	701.23'
C48	15.00'	57°39'09"	15.09'	N28°50'10"E	14.46'
C49	590.50'	19°56'31"	205.53'	S80°01'26"W	204.49'
C51	1484.50'	45°51'18"	1188.07'	N67°04'39"W	1156.62'
C52	15.00'	39°26'11"	10.32'	N19°43'41"E	10.12'
C53	111.50'	14°21'58"	27.96'	S77°55'52"E	27.88'
C54	25.00'	18°32'04"	8.09'	S09°33'20"W	8.05'
C55	25.00'	83°33'00"	36.46'	S41°29'13"E	33.31'
C56	1170.00'	3°15'57"	66.69'	N58°21'14"E	66.68'
C57	1050.00'	3°44'50"	68.67'	S61°34'41"W	68.66'
C58	51.00'	13°55'15"	12.39'	N83°09'06"E	12.36'
C59	39.00'	13°55'15"	9.48'	S83°09'06"W	9.45'
C60	30.00'	90°00'00"	47.12'	S45°00'00"E	42.43'
C61	659.50'	19°56'31"	229.54'	S80°01'26"W	228.38'
C62	25.00'	90°00'00"	39.27'	S45°00'00"E	35.36'

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C63	25.00'	36°22'20"	15.87'	N71°48'50"E	15.61'
C64	51.00'	90°00'00"	80.11'	N45°00'00"W	72.12'
C65	25.00'	90°00'00"	39.27'	N45°00'00"W	35.36'
C66	51.00'	83°33'00"	74.37'	N41°29'13"W	67.95'

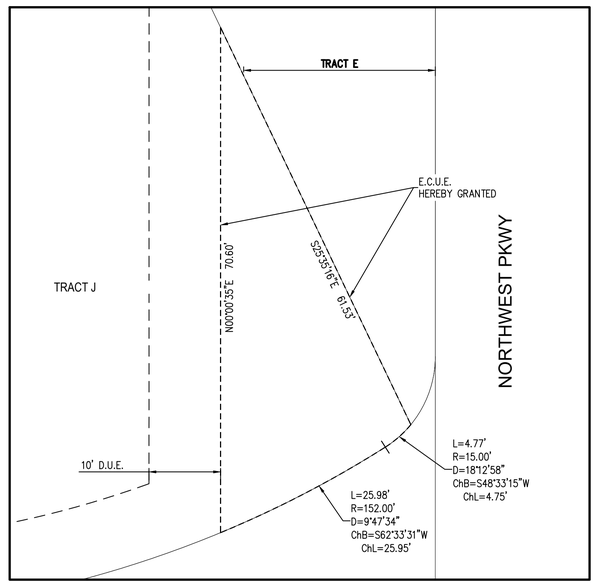
LINE TABLE		
LINE	BEARING	LENGTH
L1	N89°42'42"W	55.73'
L2	S00°00'35"W	30.02'
L3	S44°51'26"E	35.44'
L4	S00°00'35"W	127.21'
L5	N89°59'25"W	55.00'
L6	N87°40'08"W	127.24'
L7	N89°56'28"W	61.81'
L8	N00°00'35"E	353.20'
L11	N68°50'46"W	102.75'
L12	S89°48'38"E	34.06'
L19	N88°00'18"W	86.72'
L20	S89°59'42"W	61.55'
L21	N00°00'35"E	144.24'
L22	N25°35'16"W	126.34'
L23	S57°30'42"E	123.02'
L24	N57°30'42"W	190.37'
L25	N88°05'36"E	91.79'
L26	N89°59'42"E	61.57'
L27	N76°54'28"E	12.25'
L28	N44°14'17"E	51.99'
L29	S88°00'18"E	5.51'
L30	S16°10'45"W	2.39'
L31	N16°10'45"E	2.03'
L32	S00°17'18"W	10.94'
L33	S83°15'43"E	70.23'
L34	N90°00'00"E	142.06'
L35	S00°00'00"E	142.43'
L36	N90°00'00"E	0.97'
L37	S00°00'35"W	30.88'
L38	N90°00'00"W	15.79'
L39	N00°00'00"E	123.44'
L40	N90°00'00"W	121.06'
L41	N83°15'43"W	70.46'
L42	N00°17'18"E	22.57'

DETAIL 'D'
SCALE: 1" = 60'



60 0 60 120
SCALE: 1" = 60'

DETAIL 'E'
SCALE: 1" = 10'



5 0 5 10
SCALE: 1" = 5'

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08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

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Redtail Ridge
Traffic and Mobility Study



Date: October 16, 2023

Submitted To:
Sterling Bay
5910 Pacific Center Blvd, Suite 200
San Diego, CA 92121

Submitted By:
Fox Tuttle Transportation Group, LLC
1580 Logan Street, 6th Floor
Denver, CO 80203

FOX TUTTLE

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Executive Summary

The purpose of this study is to evaluate potential traffic and mobility projects within and around the proposed Redtail Ridge development. The project site is generally bounded by S. 88th Street to the west, Campus Drive to the north, S. 96th Street/Northwest Parkway to the east and US 36 to the south. The proposed development is anticipated to be completed by Year 2035 over multiple phases and includes industrial space, life science space, good manufacturing practice (GMP) space, general office space, research and development space, a hospital, medical office space, and retail. The total square footage of Redtail Ridge will equate to 2,600,000 square feet (sq. ft.). The project plans to extend Campus Drive from the current end point to 96th Street, just north of the existing fire station. Internally, a number of roadways will be constructed for access and circulation. Accounting for anticipated non-single occupancy vehicle (non-SOV) trips and internal capture trip reduction, the full build out of the project site is estimated to generate approximately 21,285 daily, 1,908 AM peak hour, and 2,149 PM peak hour trips. In addition to the vehicular facilities, Redtail Ridge will include several on-street and off-street pedestrian and bicyclist amenities that will circulate the entire site and connect to external sidewalks, multi-use trails, and bike lanes. The purpose of this study is to evaluate the traffic impacts to nearby intersections and roadways, as well as identify any capacity deficiencies and the recommended mitigation measures.

Current Study Area Traffic and Safety Conditions

Current conditions have been evaluated based on traffic counts collected in January 2023, while schools were in session. The analysis can be summarized as follows:

- AM Peak Hour
    - All study intersections operate acceptably overall (LOS D or better).
    - Individual movements operate at LOS E at Dillon Road/McCaslin Boulevard, Dillon Road/S. 96th Street, S. 88th Street/Campus Drive and Northwest Parkway/Rockcress Drive/Via Varra.
    - No queuing or capacity issues are present.
- PM Peak Hour
    - Only the intersection of Northwest Parkway at S. 96th Street/Via Varra operates overall at LOS E due to high delay for the northbound left-turn movement.
    - Some movements operate at LOS E at S. 88th Street/Campus Drive, Northwest Parkway/S. 96th Street/Via Varra, and Northwest Parkway/Rockcress Drive/Via Varra.
- No immediate mitigation measures are required to address current operational deficiencies in the study area.

The roadways around the project site are currently designed to optimize motor vehicle travel during peak times at speeds that present challenges for non-motorized travelers. Based on information provided in the City of Louisville *Transportation Master Plan* (TMP), four (4) existing study intersections near the Redtail Ridge project were identified as high crash locations, with three (3) of these intersections have documented bicycle crashes. The Dillon Road/S. 88th Street intersection has the highest number of bicycle crashes in the City of Louisville.

Background Improvements (without Redtail Ridge)

Previous studies recommended the extension of Campus Drive between S. 88th Street and S. 96th Street to better distribute traffic in the area. Additionally, corridor studies have identified the need to widen S. 88th Street, Dillon Road, and S. 96th Street from two-lane roadways to four-lane roadways. The City of Louisville's *TMP* recommends building more Great/Complete streets citywide, which will include the listed roadways.

Other improvements required by background traffic in the area include:

- **Dillon Road/S. 88th Street** – add 2nd westbound left-turn lane.
- **S. 88th Street/Campus Drive** – add 2nd northbound through lane and extend northbound right-turn lane storage to a minimum of 500 feet.
- **Dillon Road/S. 96th Street** – add eastbound/westbound dual left-turn lanes.
- **Northwest Parkway/S. 96th Street/Via Varra** - add 3rd northbound left-turn lane and modify southbound right-turn lane.
- Optimize signal timing as vehicular traffic increases, multi-modal traffic increases, and travel patterns change.

Long-Term Background Improvements (without Redtail Ridge)

In addition to the improvements listed above, some long-term improvements have been identified as potential needs but have not been defined specifically:

- **Northwest Parkway/US 36 interchange** – the South Ramps are expected to be at capacity with Year 2040 background traffic volumes. Additional capacity is needed to accommodate the projected traffic volumes without and with the project site trips. The additional capacity will likely require that the bridge be widened. A coordinated study among agencies should occur to begin to look at interchange concepts.

Redtail Ridge Project-Triggered Improvements

The improvements listed below are recommended to accommodate the development of Redtail Ridge. In addition to safety and improving traffic operations, these improvements are also designed to reduce crashes and improve operations for the adjacent Monarch school campus.

- **Extend Campus Drive** from where it dead ends east of S. 88th Street to S. 96th Street. Include multi-modal facilities.

- **S. 96th Street/Campus Drive (new intersection)** construct two northbound left-turn lanes, one southbound right-turn lane, two eastbound left-turn lanes, and one eastbound right-turn lane.

    - Provide three (3) northbound through lanes that extend from the Northwest Parkway/S. 96th Street/Via Varra intersection through the Campus Drive intersection. The three northbound through lanes will merge to two through lanes north of Campus Drive.

- **Northwest Parkway/Rockcress Drive/Via Varra** modify the eastbound approach to include one left-turn lane, one through lane, and one right-turn lane.

- **Rockcress Drive** construct as a four-lane roadway between Northwest Parkway and Sorrel Avenue and narrow to two-lane roadway to S. 88th Street. It is planned this roadway will be phased. Include on-street bike lanes and sidewalks.

- **Sorrel Avenue** construct as two-lane roadway with a center left-turn lane. Include on-street bike lanes and sidewalks.

- **Internal Collector Roadways** construct as two-lane roadway. Include on-street bike lanes and sidewalks.

- **Campus Drive/Sorrel Avenue** construct as a multi-lane roundabout.

- **Rockcress Drive/Sorrel Avenue** construct as a multi-lane roundabout.

- **Internal intersections on Sorrel Avenue** construct with left-turn lanes on Sorrel Avenue.

- **Internal intersections on Rockcress Drive and Collector Roadways** construct with shared lanes since auxiliary lanes are not warranted.

The Redtail Ridge project team plans to implement Great/Complete Street design treatments on internal roadways and intersection as consistent with the City's TMP policies. Such streets and intersections will be designed and operated to be safe and accessible for all users, regardless of ability, age, or mode. Most importantly, Great/Complete Streets have been shown to reduce conflicts that lead to crashes.

In addition to the improvements listed above, some long-term improvements have been identified as potential needs but have not been defined specifically:

- **Northwest Parkway between S. 96th Street/Via Varra and US 36** – continue coordination with Northwest Parkway Authority, City of Louisville, and City and County of Broomfield to study the future corridor needs and most appropriate design. The Northwest Parkway intersections at 96th Street/Via Varra and at Rockcress Drive/Via Varra are anticipated to be near/at capacity by Year 2040 with the project trips.

    - One option is to add a third southbound through lane on Northwest Parkway from northeast of the 96th Street/Via Varra intersection to the US 36 interchange. The Denver Regional Council of Governments (DRCOG) has included additional capacity on Northwest Parkway in this area between 2020 and 2029 in the 2050 Metro Vision Regional Transportation Plan, but the exact nature of capacity improvements has not been determined at this time.

    - Additional study is needed to determine the optimal design for this corridor to accommodate the future needs and if/how the corridor will tie into the future US 36 interchange design, Jefferson Parkway, grade separated interchanges, etc. As proposed, Redtail Ridge does not preclude future improvements within Northwest Parkway right-of-way.

A summary of the recommended improvements and estimated year the improvement is needed is illustrated in **Figure E1** and summarized in **Table E.1**.

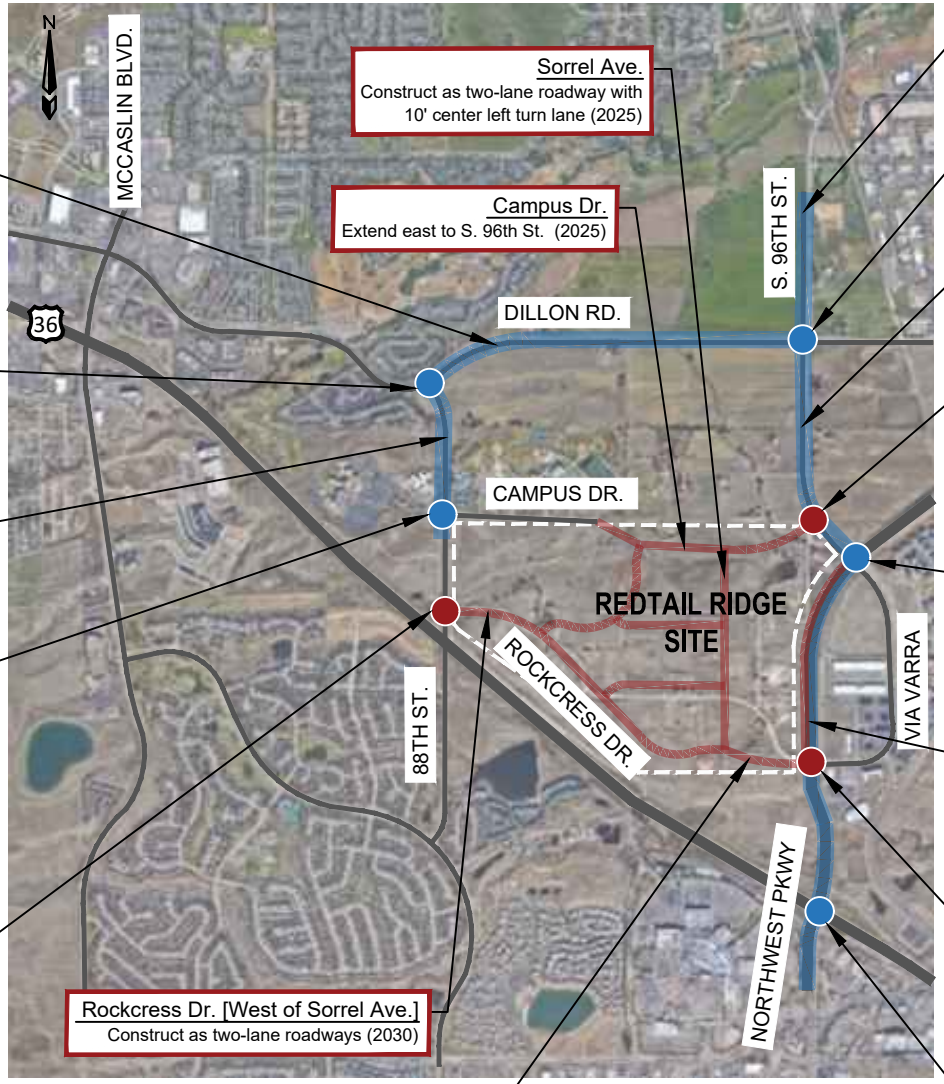
Next Steps

- Additional study and concept development are needed for the Northwest Parkway corridor and at the US 36 interchange with municipal partners.

- After the Filing 1 Plat submittal, vertical developers will be required to submit PUD documents prior to construction, including traffic conformance letters. The PUD documents will identify if/when traffic signals at the internal intersections are projected to be warranted as well as signal timing modifications/adjustments needed to the study intersections. In addition, the vertical developers will be required to submit building specific Travel Demand Management (TDM) Plans. The projected non-single occupancy vehicle (non-SOV) goals will be evaluated and adjusted as needed to reach goals. The Metro District will monitor the plan's effectiveness and make changes as needed to reach goals.

Background (without Redtail Ridge)

Project (with Redtail Ridge)



Sorrel Ave.
Construct as two-lane roadway with 10' center left turn lane (2025)

Campus Dr.
Extend east to S. 96th St. (2025)

Dillon Rd. [S. 88th St. to 96th St.]
Widen to a four-lane roadway (2025)

Dillon Rd. at S. 88th St.
Restripe 2nd WB left-turn lane (2025)

S. 88th St. [Dillon Rd. to Campus Dr.]
Widen to a four-lane roadway (2025)

S. 88th St. at Campus Drive
Construct a second NB thru lane, begin approx. 500 ft. south of Campus Drive (2025)

Extend the NB right-turn lane to provide a minimum of 500 ft. of storage (2025)

S. 88th St. at Rockcress Dr.
Construct a SB Left-turn (2030)

Side-Street Stop-Control (2030)

Rockcress Dr. [West of Sorrel Ave.]
Construct as two-lane roadways (2030)

Rockcress Dr. [West of NWP]
Construct as four-lane roadway (2025)

S. 96th St. [1/2 mile north of Dillon Rd.]
Widen to a four-lane roadway (2040)

S. 96th St. at Dillon Rd.
Construct dual EB and WB left-turn lanes (2025)

S. 96th St. [NWP to Dillon Rd.]
Widen to a four-lane roadway (2025)

S. 96th St. at Campus Dr.
Construct with dual NB left-turn lanes, SB right-turn lane, dual EB left-turn lanes, and one EB right-turn lane (2025)

Signalize (2025)

NWP at S. 96th St.
Construct 3rd NB left-turn lane and adjust SB right-turn lane and receiving lanes (2025)

Capacity improvements on NWP (2040+)

Northwest Parkway (NWP)
Capacity improvements needed (2040)

Construct 3rd SB thru lane approaching and through Rockcress Dr. (2040)

NWP at Rockcress Dr.
Modify EB with one left-turn lane, one thru lane, and one right-turn lane (2025)

Remove the split phasing on EB/WB (2025)

NWP at US 36 Interchange
Further study to determine appropriate interchange design for additional capacity (2040)

FOX TUTTLE TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

RECOMMENDED IMPROVEMENTS

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	E1

Table E.1 – Improvement Phasing Summary

Roadway or Intersection*	Mitigation	Trigger Timeline						Percent of Redtail Ridge Traffic
		Background (Non-Project Related)			Redtail Ridge Project			
		2025	2030	2040	Phase 1 - 2025	Phase 2 - 2030	Phase 3 - 2035	
S. 88th Street	Widen to 4-lanes (Dillon Rd to Campus Dr)	★						9%
S. 96th Street	Widen to 4-lanes (Dillon Rd to NW Pkwy)	★						11%
	Widen to 4-lanes (1/2 mile north of Dillon Rd)			★				14%
Dillon Road	Widen to 4-lanes (S. 88th St to S. 96th St)			★				4%
Northwest Pkwy	Add 3rd Southbound through lane (S. 96th St. to US 36 Interchange)						★	7%
Campus Drive	Extension to S. 96th Street				★			95%
Rockcress Drive	Construct as two-lane road (NWP to N-S Internal Collector)				★			100%
	Extend to S. 88th Street					★		100%
Sorrel Avenue	Construct as a two-lane road with center left-turn lane				★			100%
Internal Collectors	Construct as two-lane roads				★			100%
#10. Dillon Road at S. 88th Street	Restripe 2nd WB left-turn lane	★						0%
#15. Dillon Road at S. 96th Street	Construct dual EB left-turn lanes	★						0%
	Construct dual WB left-turn lanes	★						4%
#20. S. 88th Street at Campus Drive	Construct 2nd NB thru lane (begin xapprox. 500 feet south of Campus Drive)	★						23%
	Extend NB right-turn lane (500 feet)	★						3%
#22. S. 88th Street at Rockcress Drive	Construct as side-street stop-controlled, full movement					★		8%
	Construct one SB left-turn lane					★		100%
#23. S. 96th Street at Campus Drive	Construct dual NB left-turn lanes				★			64%
	Construct SB right-turn lane				★			39%
	Construct dual EB left-turn lanes				★			62%
	Construct one EB right-turn lane				★			100%
	Signalize				★			20%
#25. Northwest Parkway at S. 96th Street / Via Varra	Construct 3rd NB left-turn lane	★						4%
	Capacity improvements on NWP			★				8%

Roadway or Intersection*	Mitigation	Trigger Timeline						Percent of Redtail Ridge Traffic
		Background (Non-Project Related)			Redtail Ridge Project			
		2025	2030	2040	Phase 1 - 2025	Phase 2 - 2030	Phase 3 - 2035	
#30. Northwest Parkway at Rockcress Drive / Via Varra	Modify EB with one left-turn lane, one thru lane, and one right-turn lane				★			100%
	Remove the split phase on EB/WB				★			100%
#35 & #40. Northwest Parkway at US 36 Interchange	New Interchange			★				19%
#101. Campus Drive at N-S Internal Collector	Implement Side-Street Stop-Control				★			100%
	Construct WB left-turn lane				★			100%
#102. Campus Drive at Sorrel Avenue	Construct as Multi-Lane Roundabout				★			65%
#103 & #104. Rockcress Drive at Internal Collectors	Implement Side-Street Stop-Control				★			100%
#105. Rockcress Drive at Sorrel Avenue	Construct as Multi-Lane Roundabout				★			100%
#106 & #107. Sorrel Avenue at E-W Internal Collectors	Implement Side-Street Stop-Control				★			100%
	Implement All-Way Stop					★		100%
	Construct NB left-turn lane				★			100%
	Construct SB left-turn lane					★		100%
#108. N-S Internal Collector at E-W Internal Collector (North)	Implement Side-Street Stop-Control				★			100%
#205. Sorrel Avenue at PUD 2 Access E	Implement Side-Street Stop-Control				★			100%

**Note: numbering denotes intersection locations and match to the intersection numbers within the level-of-service and queue tables, as well as on the figures.*

REDTAIL RIDGE

TRAFFIC AND MOBILITY STUDY

1.0 Introduction

The Fox Tuttle Transportation Group has prepared this traffic and mobility study for the proposed development of the land bounded by S. 88th Street to the west, Campus Drive to the north, S. 96th Street/Northwest Parkway to the east and US 36 to the south (see **Figure 1:** Vicinity Map). The development is known as "Redtail Ridge" and proposes to develop a mix of general office, life science, research and development, industrial, medical facilities, and retail uses.

The project area is currently vacant, but prior to being sold to Sun Microsystems in 2005, Storage Tek headquarters and production plant was located on the project site. Storage Tek consisted of approximately 1,700,000 square feet of building area. In 2008, ConocoPhillips purchased the property and demolished the buildings in 2009. This area has since been vacant but has recently been acquired by Sterling Bay, hence the latest master plan for Redtail Ridge.

When Storage Tek was fully active in the late 1990's, approximately 4,000 employees worked on the campus and the campus generated approximately 12,400 vehicles per day (vpd), 1,600 vehicles per hour (vph) during the AM peak and 1,400 vph during the PM peak. The site was served by two (2) access points along the former privately owned/maintained Tape Drive which intersects with S. 88th Street to the west and Northwest Parkway to the east, and an access on Disc Drive from S. 96th Avenue. Currently there are barricades blocking vehicles from accessing Tape Drive on both the west and east sides of the property. The previous Tape Drive accesses are to be repurposed for a new internal roadway called Rockcress Drive.

The purpose of this study is to assist in identifying traffic and mobility improvements within the study area as a result of each phase of this project. The traffic study evaluates peak hour intersection operations and roadway conditions in the study area with and without the project generated traffic. The information contained in this study is anticipated to be used by the City staff in identifying any intersection or roadway deficiencies and potential improvements for each scenario. This study focuses on the weekday AM and PM peak hours, which represent the periods of highest trip generation for the proposed uses and of adjacent street traffic.



FOX TUTTLE
TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

VICINITY MAP

FT Project #	19055	Original Scale	NTS	Date	02/15/2023	Drawn by	MAR	Figure #	1

2.0 Project Description

A concept showing the preliminary proposed internal roadway network, proposed access to the external network, and the development areas is provided in **Figure 2.**

Figure 2. Proposed Land Use and Internal Roadways



While subject to change, the proposed land use type/size and estimated timeframe for when each phase will be completed and fully occupied is summarized below in **Table 1**:

Table 1. Summary of Land Uses and Sizes by Phase

Land Use Type	Phase 1 By Year 2025	Phase 2 By Year 2030	Phase 3 By Year 2035	Total
Industrial	509,260 sq. ft.	118,800 sq. ft.	-	*628,060 sq. ft.*
Life Science & Amenity Bldg.	300,000 sq. ft.	-	-	*300,000 sq. ft.*
Good Manufacturing Practice (GMP)	598,940 sq. ft.	-	-	*598,940 sq. ft.*
General Office	-	90,000 sq. ft.	270,000 sq. ft.	*360,000 sq. ft.*
Research and Development Center	-	264,000 sq. ft.	-	*264,000 sq. ft.*
Retail Services	-	14,000 sq. ft.	-	*14,000 sq. ft.*
Hospital	-	285,000 sq. ft.	-	*285,000 sq. ft.*
Medical/Dental Office	-	150,000 sq. ft.	-	*150,000 sq. ft.*
Total	**1,408,200 sq. ft.**	**921,800 sq. ft.**	**270,000 sq. ft.**	***2,600,000 sq. ft.***

The Redtail Ridge project will include two (2) new east-west roadway connections between 88th Street and 96th Street/Northwest Parkway. The first phase, prior to Year 2025, will include the extension of Campus Drive from the current dead end near Monarch High School (approximately 2,200 feet east of S. 88th Street) to 96th Street. This new connection will serve traffic generated by the proposed development, as well as existing traffic currently traveling along 88th Street and Dillon Road. The existing intersection of 88th Street/Campus Drive is full-movement and signalized. With the Campus Drive extension, a new full-movement signalized intersection is proposed on S. 96th Street at the northeast corner of the site, which will be near where Old 96th Street/Disc Drive currently intersects as a 3/4 movement access.

The first phase will also include construction of Rockcress Drive from Northwest Parkway to midway in the project site, which will be extended to S. 88th Street within the second phase (prior to Year 2030). This will be an additional east-west connection through the area. The existing intersection on Northwest

Parkway will remain full movement and signalized. The future intersection on S. 88th Street is planned to be full movement and side-street stop-controlled with the appropriate auxiliary lanes.

This study evaluates Year 2025, Year 2030, and Year 2040 with and without the project. A summary of the scenarios that were evaluated in this study are shown in **Table 2.** Note that while detailed traffic analysis was not completed for Year 2035, the development phasing was utilized to estimate the timeline for when improvements would be needed.

Table 2. Evaluation Scenarios Summary

Scenario	Background Traffic	Phase 1 Development Traffic	Phase 2 Development Traffic	Phase 3 (Build Out) Development Traffic	Campus Drive Extension	Rockcress Drive Extension
Existing	✓					
Year 2025 Background	✓					
Year 2025 Background + Project Trips	✓	✓			✓	
Year 2030 Background	✓					
Year 2030 Background + Project Trips	✓	✓	✓		✓	✓
Year 2040 Background	✓					
Year 2040 Background + Project Trips	✓	✓	✓	✓	✓	✓

3.0 Previous Studies

There have been numerous traffic, corridor, and multimodal studies conducted in recent years within or near the study area that were reviewed in preparation of the Redtail Ridge evaluation and included in the future assumptions. An overview of the studies is provided in the **Appendix**. The following studies were reviewed, and pertinent information was included in the Redtail Ridge analysis:

1. *88th Street/Campus Drive Traffic Evaluation.* FHU, May 2018.
2. *Dillon Road Corridor Study*. FHU, June 2018.
3. *96th and Dillon Commercial Development.* LSC, January 2020.

4. *Morgan Ranch – Downtown Superior Traffic Impact Analysis*. November 2019.
5. *Level 1 Traffic and Revenue Study Jefferson Parkway*. SDM Smith, April 2018.
6. *City of Louisville Transportation Master Plan.* Adopted October 2019.
7. *Boulder County Transportation Master Plan*. February 2020.
8. *DRCOG Active Transportation Plan*. 2017.
9. *Mobility Choice Blueprint*. Denver Metro Chamber, DRCOG, CDOT, and RTD, February 2019.
10. *RTD First and Last Mile Strategic Plan*. Spring 2019.
11. *RTD Northwest Area Mobility Study*. 2019.
12. *ConocoPhillips Campus Traffic Impact Study*. 2010.
13. *Parkway Circle South Retail Development Traffic Impact Study*. December 2016.
14. *Louisville Industrial Park Traffic Impact Analysis.* LSC, January 2020.

Each of these studies included forecasts for future vehicular and multimodal demand with recommendations for intersection and roadway improvements to accommodate the anticipated future growth. The key considerations from previous studies are as follows:

- **Extend Campus Drive** east to connect to S. 96th Street as a two-lane roadway to reduce congestion along S. 88th Street and Dillon Road (studies 1, 2, 3).
- Include dual northbound left-turn lanes and a free-flow southbound right-turn deceleration lane at the **S. 96th Street/Campus Drive intersection** (studies 5, 13).
- **Maintain two-lanes on Dillon Road** through Year 2040 and **widen to a four-lane roadway** when capacity is exceeded (studies 2, 3).
- **Include trip volumes from adjacent developments** in background scenarios (studies 4, 13, 14).
- **Possible Northwest Parkway extension** and anticipated improvements, including an interchange at 96th Street and possible future frontage road network (study 5).
- **Widen 96th Street** to a four- or five-lane cross-section since it is a key corridor within Boulder County (study 6, 7).

- **Leverage the transit opportunities** to encourage multimodal travel due to close proximity to local and regional transit services. This includes the possible future Bus Rapid Transit (BRT) service on S. 96th Street (studies 6, 8, 9, 10).

- **Consider including bike share stations** to connect to other stations at McCaslin Station, Avista Hospital, the Colorado Technology Center (CTC), Downtown, DELO, and Kestrel (studies 8, 9).

- **Include local multimodal facilities** that connect to the regional network, transit services, and support active transportation corridors (S. 96th Street/State Highway 42 from Broomfield to Longmont is identified as a regional active transportation corridor) (study 6, 8, 10, 11).

- **Develop incentives** to improve ride hailing and ridesharing operations and encouraging shared use of driverless automated vehicles (study 9).

4.0 Study Considerations

4.1 Data Collection

Intersection turning movement and daily traffic volumes were collected in January 2023 in the study area when school was in session on the Monarch school campus. The existing traffic volumes are illustrated on **Figure 3.** The existing intersection geometry and traffic control are also shown on this figure. Signal-related information for the existing intersections were provided by the City of Louisville and Broomfield and updated based on video observations to reflect current field operations. Count data sheets are provided in the **Appendix**.

4.2 Evaluation Methodology

The traffic operations analysis addressed the signalized and unsignalized intersection operations using the procedures and methodologies set forth by the *Highway Capacity Manual (HCM)*[1]. Existing peak hour factors were applied to the intersections for the existing scenarios. Study intersections were evaluated using Synchro (version 11) software.

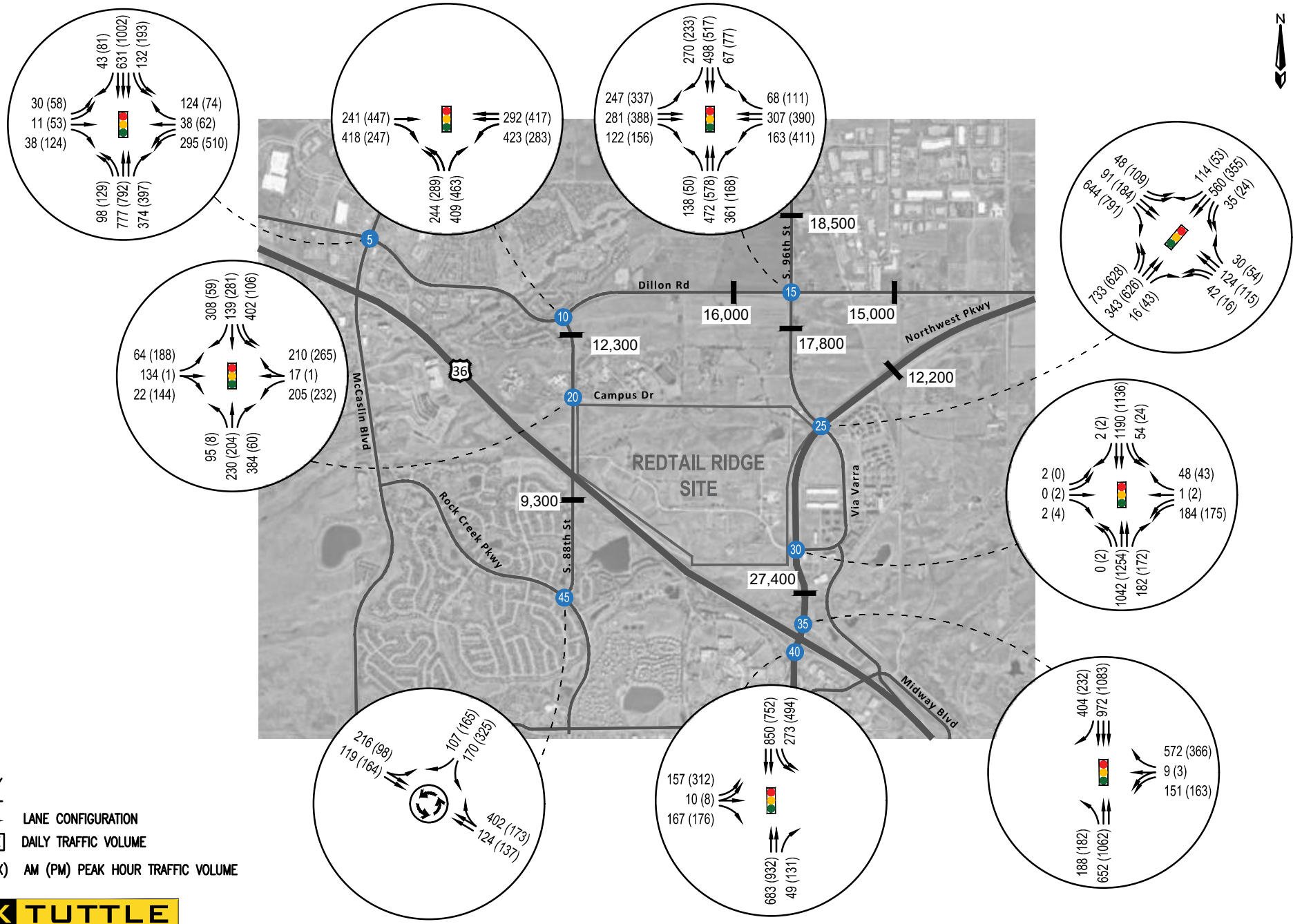
[1] Highway Capacity Manual, Highway Research Board Special Report 209, Transportation Research Board, National Research Council, 2010 and 6th Edition (2016).

4.3 Level of Service Definitions

A Level of Service analysis was conducted to determine the existing and future performance of the study area intersection and to determine the most appropriate traffic control device and need for auxiliary lanes for the study intersections.

To measure and describe the operational status of the study intersections, transportation engineers and planners commonly use a grading system referred to as "Level of Service" (LOS) that is defined by the *HCM*. LOS characterizes the operational conditions of an intersection's traffic flow, ranging from LOS A (indicating very good, free flow operations) and LOS F (indicating congested and sometimes oversaturated conditions). These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with traveling through the intersections. The intersection LOS is represented as a delay in seconds per vehicle for the intersection as a whole and for each turning movement. A more detailed discussion of LOS methodology is contained in the **Appendix** for reference.

Typically, LOS A through C is considered to be good for the overall intersection operations and the desired standard for overall intersection performance is LOS D or better. Individual movements may be allowed to fall to LOS E or F depending on the circumstances, such as a low-volume, side-street approach to an arterial where signal warrants are not met, or a protected-only, signalized left-turn movement where safety is prioritized over operational efficiency.



KEY

- LANE CONFIGURATION
- X,XXX DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

FOX TUTTLE TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2023 EXISTING TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	3

4.4 Safety for all Modes of Travel

Safety is an important factor for transportation planning and infrastructure investments. Intersections are key areas where a significant number of conflicts between people and vehicles can occur. The actual and perceived safety of an intersection or a corridor can greatly impact people's desire to utilize certain routes, particularly for those on foot or on bike. Safety in relation to schools is also a key factor in mobility and health. Monarch K-8 and Monarch High School, while accessible with trails and sidewalks, are located along corridors with higher travel speeds and volumes which pose potential risks. The roadways around the site are currently designed to optimize motor vehicle travel during peak times at speeds that present challenges for non-motorized travelers.

High Crash Locations

Four (4) existing arterial intersections near the Redtail Ridge project were identified as high crash locations in the City of Louisville TMP, including the intersections of:

1. Dillon Road/S. 88th Street
2. Dillon Road/S. 96th Street
3. S. 88th Street/Campus Drive
4. Northwest Parkway/S. 96th Street/Via Varra

These intersections are shown on **Figure 4**. Additionally, three (3) of the locations have documented bicycle crashes. The Dillon Road/S. 88th Street intersection has the highest number of bicycle crashes in the City of Louisville.

The City of Louisville's TMP recommends a series of infrastructure, maintenance and training programs designed to reduce crashes for all roadway users. Likewise, the TMP recommends building more "Great/Complete" streets citywide.

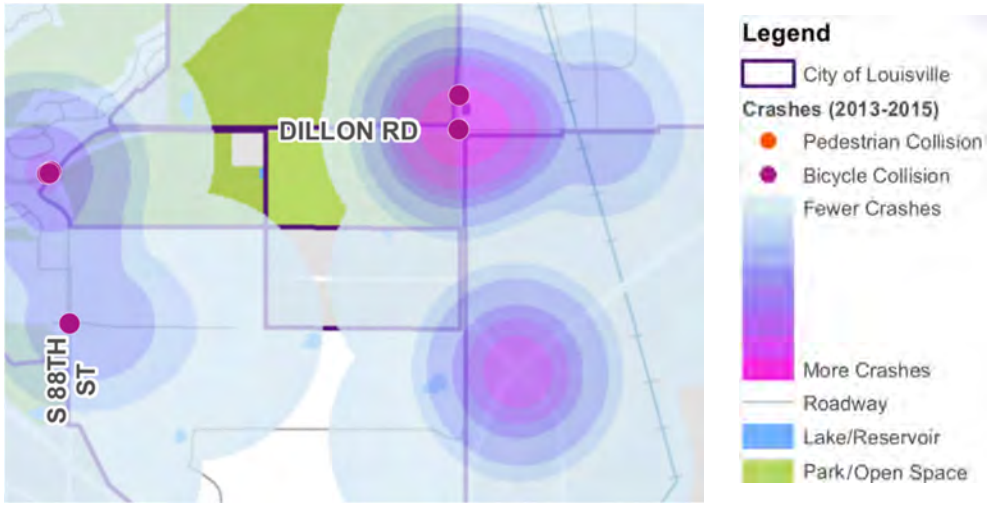


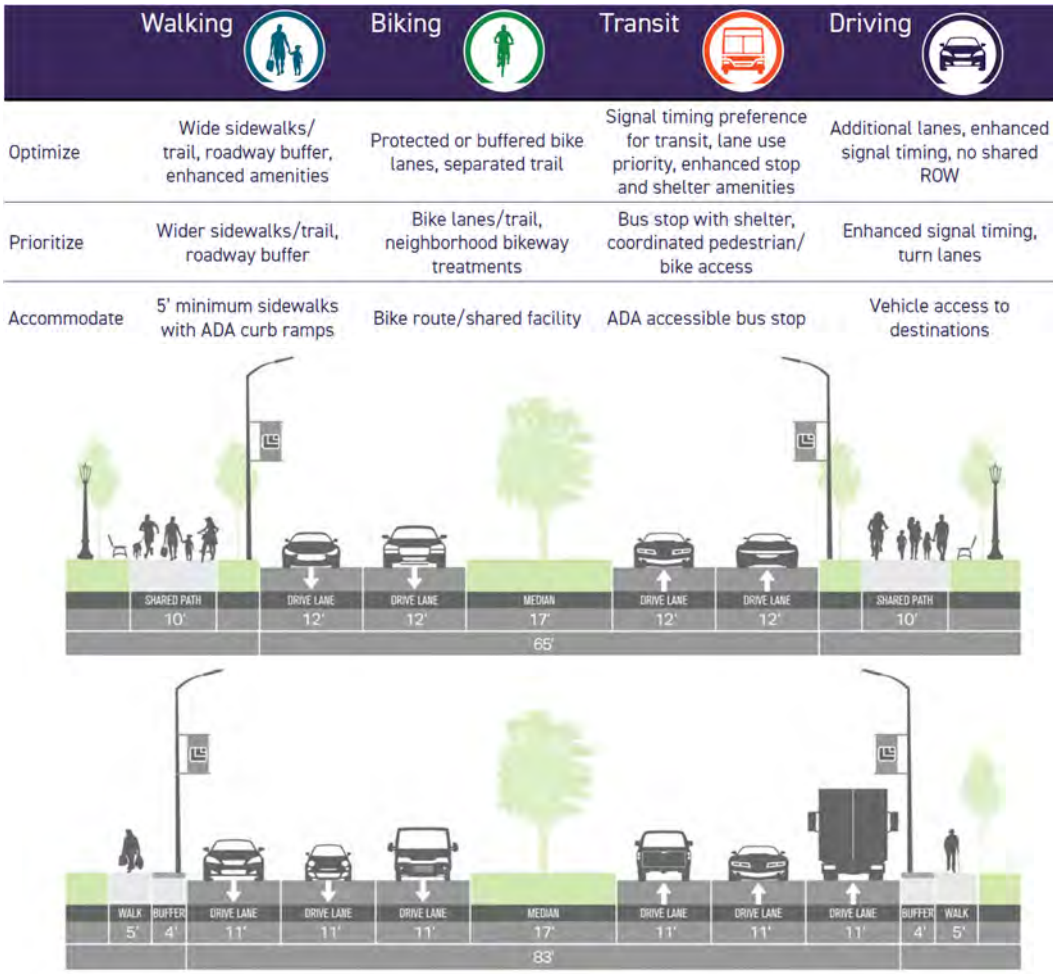
Figure 4. High Crash Locations (Source: City of Louisville Transportation Master Plan)

Great/Complete Street Design

Great/Complete Streets include adding treatment such as detached sidewalks, landscaping, protected bikeways, and travel dimensions that support driving speeds at or below the speed limits (see **Figure 5** below, Figure 4.2 in the TMP). Great/Complete Streets have been shown to reduce conflicts that lead to crashes in research conducted by the Institute of Transportation Engineers (ITE) and the Federal Highway Administration (FHWA).

It is recommended that Great/Complete Street design treatments be implemented on S. 88th Street, Dillon Road, and S. 96th Street corridors and intersections consistent with the TMP's policies. Such streets and intersections will be designed and operated to be safe and accessible for all users, regardless of ability, age, or mode. These corridors and intersections will make Louisville a more livable place, increase comfort and safety for pedestrian and bicyclists, improve first and last mile access to transit, reduce congestion and improve air quality.

Figure 5. Great/Complete Street Graphic from the City of Louisville's TMP



5.0 Existing Conditions

5.1 Roadways

The study area boundaries were established based on conversations with City staff. The existing study area street network consists of arterial and collector roadways as well as a US Highway. The primary public roadways that serve the project site are discussed in the following text.

US 36 is a freeway that connects Denver and Boulder from I-25 in Denver to Table Mesa Drive in Boulder. Near the study area, US 36 has two general purpose lanes in both directions and there is an Express Lane in each direction, alongside the general-purpose lanes. There are three (3) interchange accesses near the project area, at McCaslin Boulevard which was reconstructed to a Diverging Diamond Interchange in Year 2016, at Northwest Parkway/Interlocken Loop, which is diamond interchange, and there are two half diamond interchanges with one on either side of the Northwest Parkway/Interlocken Loop interchange. The RTD's Flatiron Flyer BRT service that connects Denver, Boulder, and other cities operates along the US 36 corridor. US 36 currently serves approximately 89,000 vpd west of the McCaslin Boulevard interchange and approximately 84,000 vpd east of the Northwest Parkway/Interlocken Loop interchange. The posted speed limit along this segment of US 36 is 65 miles per hour (mph).

Northwest Parkway is a four-lane divided highway under the jurisdiction of the City and County of Broomfield south of S. 96th Street. Northeast of S. 96th Street, Northwest Parkway becomes a toll road and freeway section with no at-grade intersection access. The roadway section consists of two travel lanes in each direction with a raised center median. Northwest Parkway currently serves approximately 26,700 vpd north of US 36 and 12,200 vpd northeast of S. 96th Street. The posted speed limit is 45 mph within the study area.

Dillon Road is a four-lane divided arterial roadway west of S. 88th Street and transitions to a two-lane undivided rural roadway east of S. 88th Street. Dillon Road is an east-west street that provides a direct connection between McCaslin Boulevard (to the west) and the Northwest Parkway (to the east) where it makes connections via interchange ramp terminals at US 287. While east of S. 88th Street, Dillon Road is a two-lane roadway, at the S. 88th Street and S. 96th Street intersections a second through lane is added in each direction to increase vehicular capacity through the intersections. The extra through lanes merge to one lane as motorists proceed away from these intersections, except that Dillon Road continues to have a second through lane to the west of S. 88th Street. Dillon Road currently serves approximately 16,000 vpd west of S. 96th Street and approximately 15,000 vpd east of S. 96th Street. There are existing on-street bike lanes striped on Dillon Road. The posted speed limit is 35 mph west of S. 88th Street and 45 mph east of S. 88th Street within the study area.

McCaslin Boulevard is a six-lane divided roadway within the study area, but transitions to a four-lane divided roadway to the north at Via Appia and to the south, south of the US 36 interchange. McCaslin Boulevard provides north-south connectivity between South Boulder Road and 120th Avenue. Between US 36 and Dillon Road, McCaslin Boulevard serves approximately 33,900 vpd whereas north of Dillon Road McCaslin Boulevard serves approximately 22,300 vpd. There are existing on-street bike lanes striped on McCaslin Boulevard. The posted speed limit is 35 mph.

South 88th Street is a two-lane roadway that provides north-south connectivity between Rock Creek Parkway in the Town of Superior and Dillon Road in the City of Louisville. It provides access opportunities for the Monarch K-8 and High Schools via Campus Drive and to medical facilities along Health Park Drive. S. 88th Street has a grade-separated bridge crossing of US 36 to the south of Campus Drive. There are existing on-street bike lanes striped on S. 88th Street north of Campus Drive. S. 88th Street currently serves approximately 12,300 vpd between Dillon Road and St. Andrews Lane. The posted speed limit along S. 88th Street is 35 mph; however, the speed limit is reduced to 20 mph three (3) times per day during school activity hours.

S. 96th Street is a two-lane undivided roadway through most of the study area. S. 96th Street provides direct access to the Northwest Parkway to the south. To the north, S. 96th street continues past South Boulder Road with access to downtown Louisville before transitioning into N. 95th Street and continuing to the City of Longmont. Like the eastbound/westbound directions of Dillon Road, S. 96th Street also widens to two through lanes in each direction at Dillon Road to provide extra capacity through the existing signalized intersection. There are existing on-street bike lanes striped on S. 96th Street within the study area. S. 96th Street currently serves approximately 17,800 vpd south of Dillon Road and approximately 16,500 vpd north of Dillon Road. The posted speed limit is 40 mph within the study area.

5.2 Intersections

The study area includes nine existing intersections that are listed below with the current traffic control. These intersections were analyzed for existing and future years with and without the project trips:

- Dillon Road and McCaslin Boulevard [signalized]
- Dillon Road and S. 88th Street [signalized]
- Dillon Road and S. 96th Street [signalized]
- S. 88th Street and Campus Drive [signalized]
- S. 88th Street and Rock Creek Parkway [multi-lane roundabout]
- Northwest Parkway and S. 96th Street/Via Varra [signalized]
- Northwest Parkway and Rockcress Drive/Via Varra [signalized]

- Northwest Parkway and US 36 Westbound/North Ramps [signalized]
- Northwest Parkway and US 36 Eastbound/South Ramps [signalized]

The existing lane configuration at each of the study locations is illustrated on **Figure 3.** Additional site-access intersections were analyzed for the scenarios with the addition of project-added traffic. It should be noted that the PM peak hour does not coincide with when Monarch schools end (K-8 ends at 3:05 PM and the High School ends at 3:30 PM).

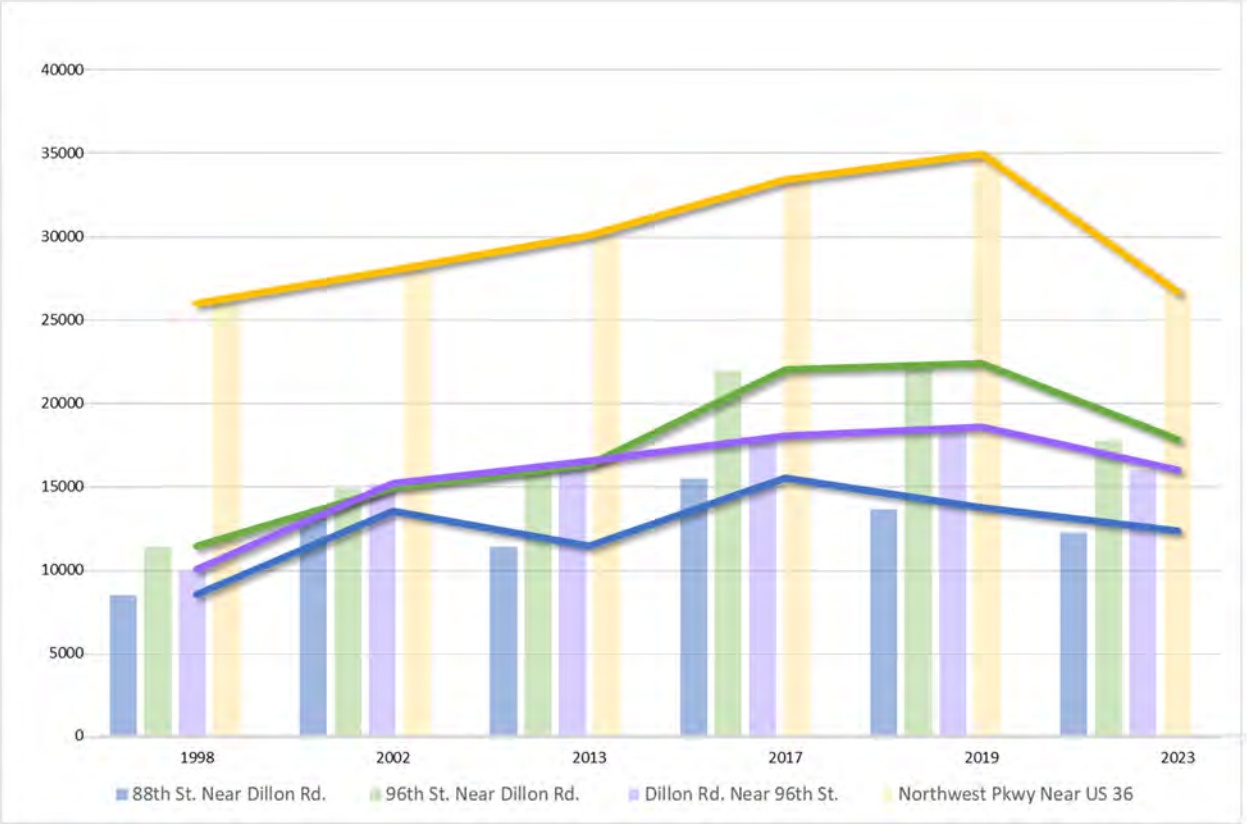
5.3 Traffic Changes Since Storage Tek Closure

Many changes have taken place in the Redtail Ridge project area since Storage Tek was an active campus in the late 1990's. The Town of Superior implemented their Comprehensive Plan that included new single-family residential neighborhoods and a mixed-use town center. The City and County of Broomfield constructed a major regional shopping center at Flatiron Crossing and a mix of uses along the eastern side of what is now the Northwest Parkway and Interlocken Loop. The City of Louisville also added new uses to the Colorado Technology Center. Also, over this timeline the number of open enrollment students attending Monarch K-8 and Monarch High School, who are not provided school bus services, has remained consistent at almost 40% of the student body at Monarch High School (approximately 700 students) and 25% at Monarch K8 (approximately 75 students). All these changes over the past 18 years since the Storage Tek property closed have utilized the vehicle capacity historically used by traffic generated from Storage Tek on the S. 88th Street, Dillon Road, and S. 96th Street corridors.

The historic volumes and trends for each corridor on **Figure 6** show what has occurred in the area since the Storage Tek site was vacated in the early 2000's. The corridors of S. 88th Street, Dillon Road, and S. 96th Street corridors were reaching capacity in Year 2019; however, since the COVID-19 pandemic traffic volumes have been reduced and capacity has become available for future development.

Planning level daily capacity estimates for two-lane roadways with turn lanes range from 16,000 to 18,000 vpd. Increased capacity at the Dillon Road/ S. 96th Street intersection and the limited number of access locations on these corridors are reasons that these segments can accommodate between 22,000 and 24,000 vpd. If additional conflict points are added to the corridors, the capacity will likely decrease.

Figure 6. Volume Trends on Study Roadways



5.4 Traffic Pattern Changes Due to COVID-19

The COVID-19 pandemic shifted traffic patterns as habits and uses have changed in response to disruptions from business as usual. Many companies have permanently adopted greater flexibility for employees even as offices and businesses are reopened. Increased telework and flexible hours have reduced the magnitude of travel demand during peak hours, instead resulting in less traffic more evenly spread travel throughout the day. Nearly three (3) years after the beginning of the pandemic, these changes have persisted and can be expected to represent long-term trends.

Traffic count data collected in January 2023 captures the enduring impact of COVID-19 on travel after patterns have normalized. Compared to count data collected in 2019, AM and PM peak hour traffic volumes have been reduced by an average of 17% overall within the study area.

5.5 Walking in the Project Area

Most of the existing sidewalk and multi-use path network near the Redtail Ridge project is in the S. 88th Street corridor. This is due to the open lands that mostly front Dillon Road and S. 96th Street in the study

area. The S. 88th Street sidewalks and multi-use paths connect the Monarch school campus to neighborhoods in Louisville and Superior. There is an existing underpass under S. 88th Street just south of Dillon Road. This underpass connects the Monarch school campus to the sidewalks on Dillon Road west of S. 88th Street. There are missing sidewalk and trail connections along S. 88th Street, Dillon Road, and S. 96th Street, with an example shown in **Figure 7**.

It is anticipated that the demand to complete the sidewalk and multi-use path network between the CTC Campus, Redtail Ridge, Monarch school campus, residential areas, and retail centers will be increasingly important in the future as the TMP priorities are implemented. Specifically, new sidewalks and pathways will be necessary given future plans for shared ride mobility and BRT near Dillon Road and in the S. 96th Street corridor.



Figure 7. Coal Creek Regional Trail Informal Connection

The southeast corner of the Redtail Ridge site has an existing underpass that connects under Northwest Parkway (a photo of the underpass is shown in **Figure 8**). This connects sidewalks and multi-use pathways on the westside of Northwest Parkway to the new Broomfield sidewalk network on the eastside of Northwest Parkway. This underpass is also a critical part of the future walking connections to the Rock Creek and Broomfield Trails.



Figure 8. Northwest Parkway Multi-Use Path Underpass

5.6 Bicycling in the Project Area

The Redtail Ridge site is located at the confluence of many off-street trails and on-street bicycle lanes. The Coal Creek Trail, Rock Creek Trail and the US 36

Bikeway are located within a short bike ride (5 minutes or less than one mile) of the project site.

S. 88th Street, Dillon Road, and S. 96th Street currently have on-street bicycle lanes that provide connections to the Coal/Rock Creek Regional Trails and the US 36 Bikeway. The City of Boulder is located within a 6-mile bike ride on the US 36 Bikeway and the RTD US 36 and East Flatiron Station is located within a one-mile bike ride of the project site. Each intersection in the study area has approaches and departures that have accommodations for people on bicycles. The S. 88th Street underpass provides access to the Monarch school campus from Dillon Road.

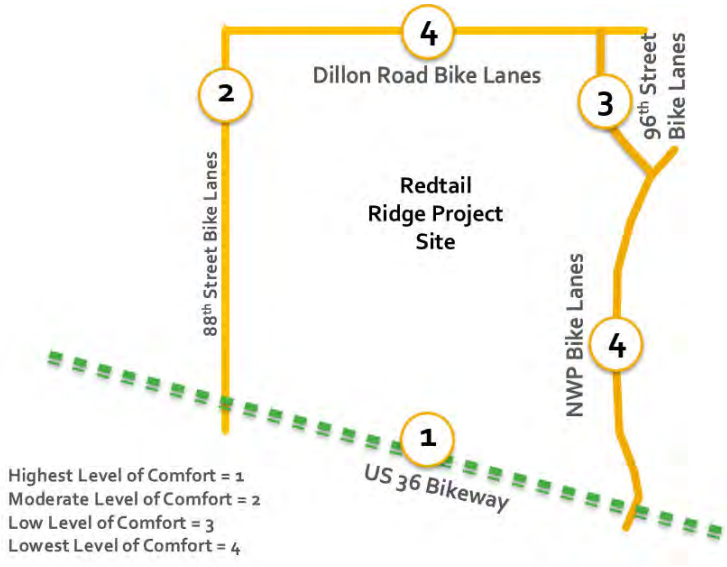


Figure 9. Existing Bicycle Level of Comfort (Source: City of Louisville Transportation Master Plan)

The City of Louisville TMP evaluated the corridors of S. 88th Street, Dillon Road, and S. 96th Street and the critical intersections for the level of bicycling comfort. A map summarizing the results of the bicycle level of comfort results in illustrated in **Figure 9**.

Based on the TMP analysis, the current design of the corridors and intersections have a high level of stress. This appears to be correlated to the high number of crashes that were shown **Section 4.4**. The high posted speed limits in these corridors and significant peak hour traffic volumes also contribute to the low level of comfort people experience.

The City plans for future implementation of Great/Complete Street design treatments for the S. 88th Street, Dillon Road, and S. 96th Street corridors and intersections consistent with the TMP's policies. This includes the installing protected bike lanes, multi-use pathways, and intersection treatments throughout the project site and connect to the adjacent arterial roadways, which will provide greater opportunity and protection for all skill levels. Implementation on the public roadways by the City will be subject to public input, topographic limitations, right of way availability, conflicts with utilities and accesses, and construction costs.

A later section of this study includes additional details on implementing lower stress bicycle networks in the S. 88th Street, Dillon Road, and S. 96th Street corridors that would connect to the US 36 Bikeway and the Coal/Rock Creek Regional Trails.

5.7 Transit Access in the Study Area

The Redtail Ridge site is located within one (1) mile of the RTD US 36 and East Flatiron Station. This station is serviced by the Flatiron Flyer (Routes FF1 and FF2) and the Sky Ride service to DEN (Route AB). The station has an underpass under US 36 and is connected to a network of first and final mile destinations. There are approximately 265 parking spaces and eight (8) bike racks at the station. This station is connected to the project site via the Northwest Parkway underpass described in in the prior sections.

The Flatiron Flyer BRT system provides fast and efficient service between Boulder and Denver. Buses are available at the US 36 and East Flatiron Station every 15 minutes during peak and every 30 minutes off peak (on average). Large air conditioned and air ride over the road coaches can serve approximately 50 passengers per vehicle. There is capacity for six (6) to eight (8) bikes on board depending on luggage and other passenger storage needs. The buses are equipped with charging for mobile devices. The vehicles travel in the High Occupancy Vehicle (HOV) lanes on US 36 and I-25. The trip between the US 36 and East Flatiron Station and Denver Union Station is 28 minutes. The trip between downtown Boulder and the US 36 and East Flatiron Station is 23 minutes. Route AB provides transit services to Denver International Airport (DEN) is available every 30 minutes during most hours of the day. Large air conditioned and air ride over the road coaches can serve approximately 50 passengers per vehicle also service this route. The trip between DEN and the US 36 and East Flatiron Station is 34 minutes via the Northwest Parkway.

Although not public transit, the BVSD operates many school buses in the project area to serve the Monarch school campus. The school buses only have one access point to the Monarch campus via S. 88th Street. The school buses provide transportation to students for school, field trips, and after school activities year-round.

5.8 Transportation Demand Management

A transportation demand management (TDM) plan has been developed for the Redtail Ridge development. The TDM plan includes strategies to reduce mode share of single-occupant vehicles and increase usage of public transportation and active modes such as walking and bicycling. Strategies are described in detail in a separate report, titled *Redtail Ridge Transportation Demand Management Plan.*

5.9 Existing Intersection Capacity Analysis

The existing volumes, lane configuration, and traffic control are illustrated on **Figure 3**. The results of the LOS calculations for the intersections are summarized in **Table 3.** A detailed table with LOS by movement and 95th percentile queues by lane as well as the intersection LOS worksheets are included in **Appendix A (Table A.1 and A.2)**. **Results of the existing intersection capacity analysis indicate that the majority of the study intersections operate at LOS D or better in both peak hours.**

Table 3. Existing Overall Level of Service Summary

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C
10	Dillon Road/S. 88th Street	Signal	B	B
15	Dillon Road/S. 96th Street	Signal	C	D
20	S. 88th Street/Campus Drive	Signal	C	D
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	C	**E**
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	B	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

The following study intersections currently operate overall at LOS E/F or have movements that operate at LOS E/F or having queuing issues during one or both peak hours:

- ***#5. Dillon Road and McCaslin Boulevard:*** During the AM peak hour, the eastbound through, northbound left-turn, and southbound left-turn movements currently operate at LOS E. No significant queuing issues were observed in the field or in the traffic analysis reports.

  Recommendations: No mitigation measures recommended. The northbound/southbound through movements are prioritized over the eastbound/westbound approaches and the left-turn movements. These delays are typical of side-street or left-turn movements on arterial roadways.

- ***#15. Dillon Road and S. 96th Street:*** During the AM peak hour, the southbound right-turn currently operates at LOS E due to the high volume of turning vehicles (nearly 300 vph). The 95th percentile queues were calculated to be maintained with the existing storage lengths.

  Recommendations: No mitigation measures recommended.

- ***#20. S. 88th Street and Campus Drive:*** During the AM peak hour, the eastbound through/right-turn lane currently operates at LOS E. During the PM peak hour, the westbound left-turn movement currently operates at LOS E. This intersection is the only access to the Monarch school campus and the adjacent medical campus. During peak school times, southbound queues on S. 88th Street extend back to Dillon Road, impacting traffic operations at the signal. It was also observed that drivers will turn into the medical campus to then become an eastbound through vehicle to get to the schools.

  Recommendations: No mitigation measures recommended.

- ***#25. Northwest Parkway and S. 96th Street/Via Varra:*** During the PM peak hour, the intersection currently operates overall at LOS E due to the delay experienced on the northbound left-turn movement (LOS F). The 95th percentile queues within the existing turn lanes are currently maintained within the existing storage lengths.

  Recommendations: No mitigation measures recommended. Currently there are dual northbound left-turn lanes on Northwest Parkway. The southbound right-turn is a free movement and turns into a third through lane (acceleration lane) on S. 96th Street. Three (3) lanes merge into one (1) northbound through lane on S. 96th Street approximately 600 feet north of the intersection. This merge will occasional queue back and cause inefficiencies at the Northwest Parkway intersection.

- ***#30. Northwest Parkway and Rockcress Drive/Via Varra:*** Although this intersection operate overall at LOS B in both peak hours, there are several side-street movements that currently operate at LOS E in one peak period. During the AM peak hour, the eastbound left-turn, westbound left-turn, and the westbound right-turn movements operate at LOS E. During the PM peak hour, the eastbound through movement operates at LOS E. No significant queuing issues were observed in the field or in the traffic analysis.

  Recommendations: No mitigation measures recommended. The northbound/southbound through movements are prioritized over the eastbound/westbound approaches and the left-turn movements. The volumes on the eastbound approach are less than 10 vph since Rockcress Drive is closed for public access; therefore, these are likely vehicles turning around or mistakenly turned onto the closed roadway.

As previously mentioned, earlier studies have recommended the extension of Campus Drive to S. 96th Street to address the existing issues. The Campus Drive extension is evaluated as part of the Year 2025 with project scenario. The right-of-way for the Campus Drive extension is located on the Redtail Ridge property. Under background conditions, where the Campus Drive extension is not assumed, mitigation options are provided to address the existing/future background capacity issues without the Campus Drive extension.

6.0 Future Background Conditions (without Redtail Ridge)

6.1 Annual Growth Factor and Future Volume Methodology

In order to forecast the future peak hour traffic volumes, background traffic growth assumptions were estimated based on a review of various resources: historical traffic volumes, DRCOG 2050 regional model projections, and planned development projects in the study area.

A comparison of the DRCOG base-year 2020 vs. 2050 projections show annual growth of approximately one-half percent (0.5%) along the study roadways, except along Northwest Parkway, which is anticipated to have an annual growth rate of approximately 2.0%. A review of the assumed projected socio-economic data within the traffic analysis zones (TAZ) where the project is proposed indicates that DRCOG did anticipate that this area would redevelop. Therefore, the background growth rates from DRCOG data represent project traffic forecast to the study roadway network and the traffic volume generated by Redtail Ridge needs to be factored out of the DRCOG forecasts.

There are three (3) planned development projects (bulleted below) in the study area (see section **3.0 Previous Studies** for additional information). Trips generated by these three (3) developments were added to the study intersections in addition to the general background growth rate:

1. **Parkway Circle:** Majority of the Parkway Circle development has already been built out. This area has a mix of residential, retail, and office type uses that generate a high percent of internal capture and trips that can be made walking/biking or taking transit. Most remaining construction in the area is lower-density residential than already constructed. To estimate future traffic volumes generated by this development, vehicles currently entering/exiting the east approaches at the Northwest Parkway/S. 96th Street/Via Varra and Northwest Parkway/ Rockcress Drive/Via Varra intersections were increased by a factor of 1.25. The traffic volumes were then proportionally distributed to the study roadway network based on existing travel patterns.

2. **St. Louis Parish:** The trip generation estimates from the *Louisville Industrial Park Traffic Impact Analysis* (LSC, January 2020) were included in the background forecasts. The industrial/commercial uses were assumed to be operating in the short-term and were included in the Year 2025 background traffic forecasts. The full buildout of the site including the church and school, was assumed to be completed after Year 2030 and those trips were included in the Year 2040 background traffic forecasts.

3. **Morgan Ranch:** Trips provided in the *Morgan Ranch – Downtown Superior Traffic Impact Analysis*. (November 2019) were included in the background forecasts. This project is anticipated to utilize the new 88th Street / Promenade Boulevard intersection and travel through the study intersections. The development trips were included in the Year 2025 background traffic forecasts. Promenade Boulevard is substantially complete to 88th Street, however, was not open to traffic when data was collected in January 2023.

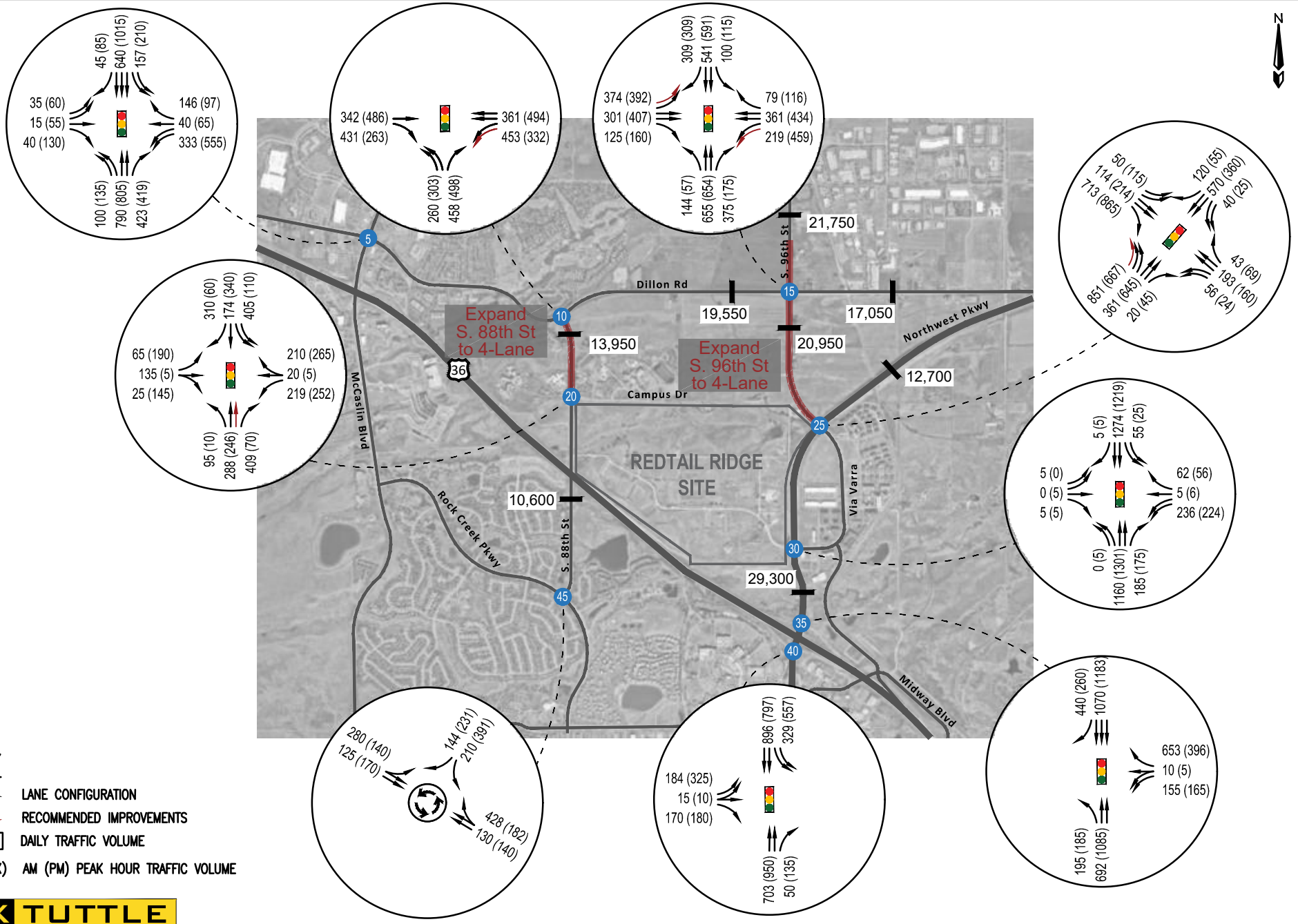
Based on a review of the historical traffic volume trends, the projected future traffic forecasts, and the known planned developments, the projected traffic growth from the DRCOG model was adjusted to account for known developments. The DRCOG model includes the listed planned developments in the vicinity of the project, and therefore accounts for those developments in the predicted growth rate. The known development trips were removed from the DRCOG growth rate for a background growth rate of

0.55% annually. Known development trips were added on top of this background growth rate to obtain background traffic volumes.

Through trips on Northwest Parkway are predicted to increase at a higher rate than other trips in the study area. Northwest Parkway serves more regional trips than other roadways in the study area, with a higher predicted annual growth rate. DRCOG predicts annual growth closer to 2.0% on Northwest Parkway. The background through volumes on Northwest Parkway were increased to achieve a total growth rate of 2.0%.

The resultant background traffic volumes for Year 2025, Year 2030, and Year 2040 are provided in **Figure 10, Figure 11**, and **Figure 12**.

It is important to note that while the Year 2040 background traffic forecasts do not assume the Jefferson Parkway extension, if that project is constructed prior to Year 2040 it would increase traffic volumes along Northwest Parkway at the intersections between S. 96th Street and US 36 from what was projected for this study. As noted in the *Level 1 Traffic and Revenue Study Jefferson Parkway* report, with the Jefferson Parkway extension the project may rebuild the Northwest Parkway/Interlocken Loop corridor between S. 96th Street and SH 128. Under the Northwest Parkway extension scenario, Northwest Parkway may be reconstructed to separate toll and local traffic which would include constructing new interchanges and a frontage road system to accommodate local traffic. The need to increase capacity on Northwest Parkway independent of Redtail Ridge was also identified in the DRCOG Metro Vision Regional Transportation Plan. At this time, no design or concepts have been completed for this segment of Northwest Parkway. Based on preliminary descriptions of possible improvements, Redtail Ridge will not impede future improvements to Northwest Parkway.



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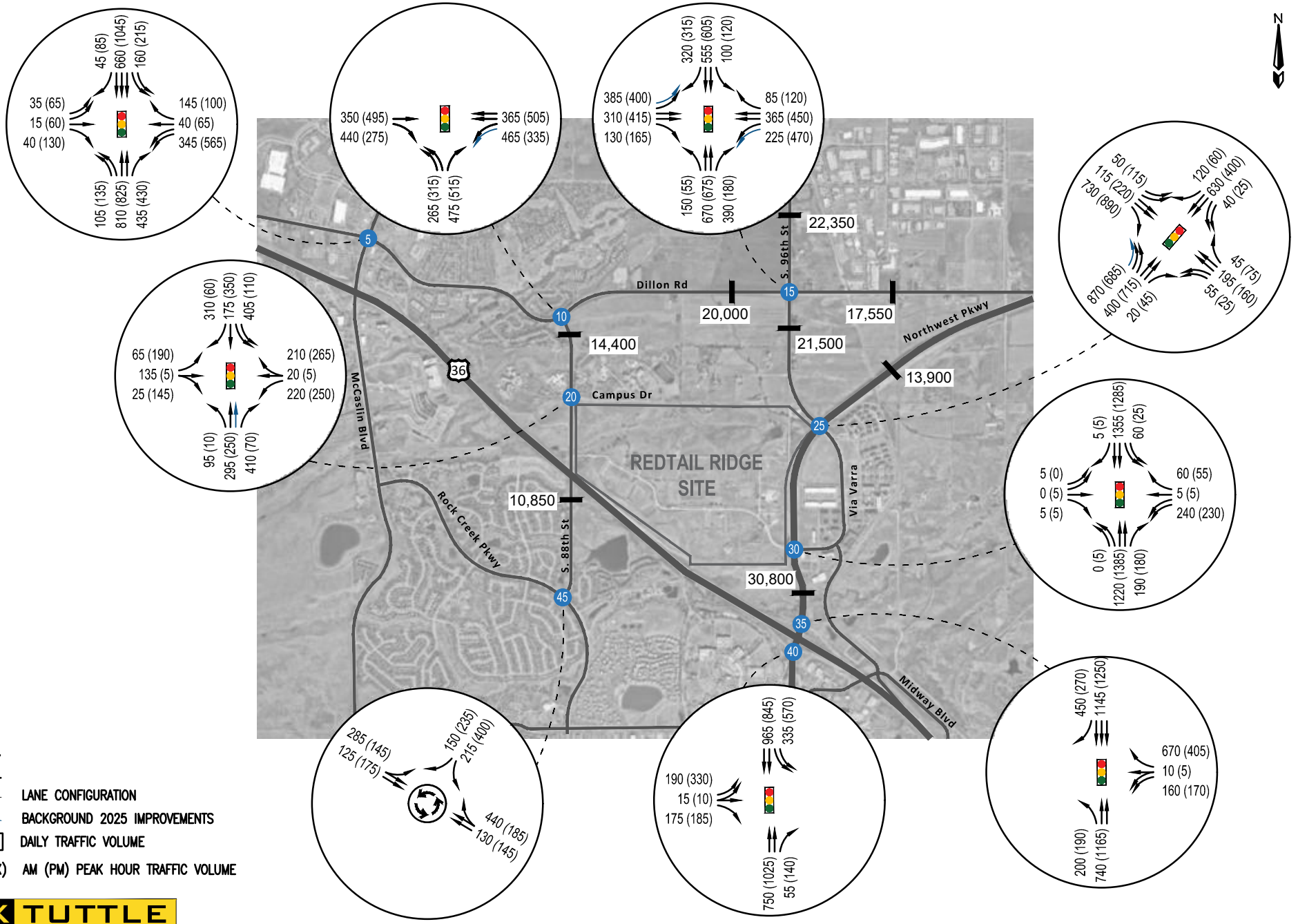
- LANE CONFIGURATION
- RECOMMENDED IMPROVEMENTS
- X,XXX DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

FOX TUTTLE TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2025 BACKGROUND (WITHOUT REDTAIL RIDGE) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	10



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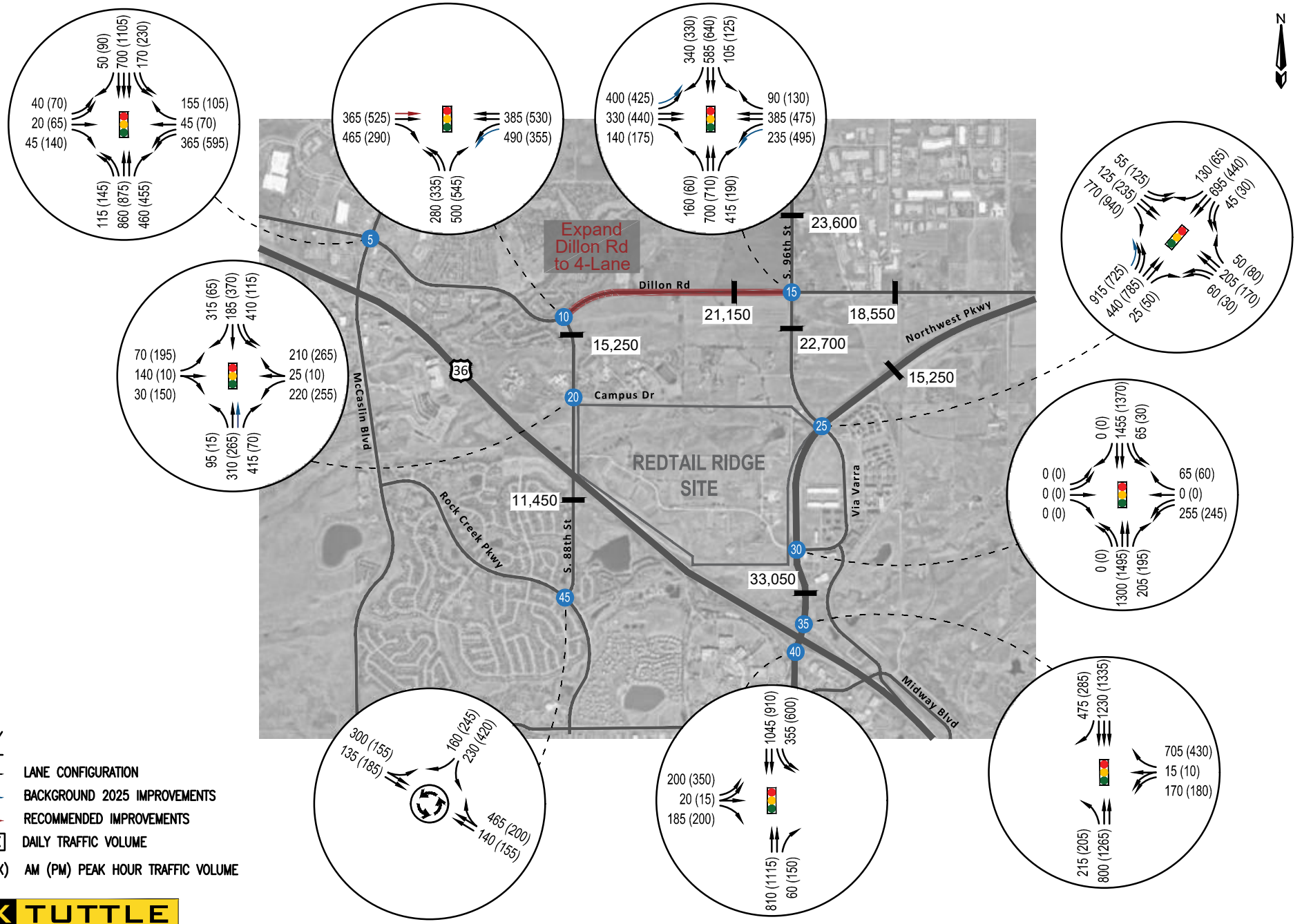
- LANE CONFIGURATION
- BACKGROUND 2025 IMPROVEMENTS
- X,XXX DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

FOX TUTTLE
TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2030 BACKGROUND (WITHOUT REDTAIL RIDGE) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	11



FOX TUTTLE
TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

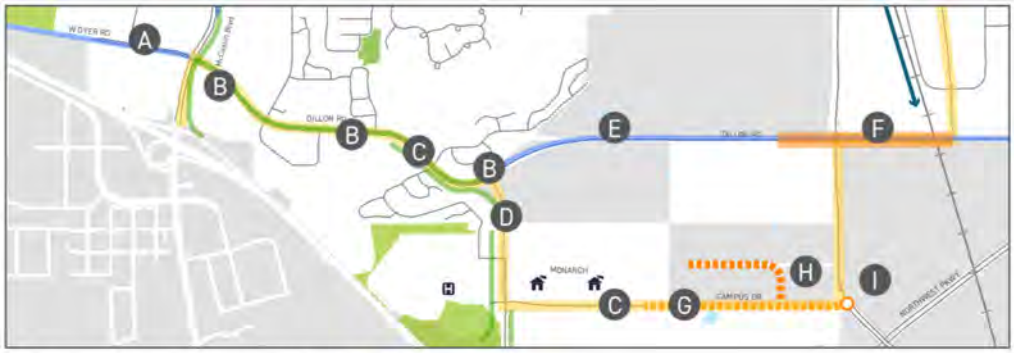
YEAR 2040 BACKGROUND (WITHOUT REDTAIL RIDGE) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	12

6.2 Future Multimodal Network Assumptions

The future multimodal network improvements around Redtail Ridge project were outlined in the *City of Louisville TMP* and shown in **Figure 13.** They include a series of bike lanes, transit stops, underpasses, and multiuse trail connections.

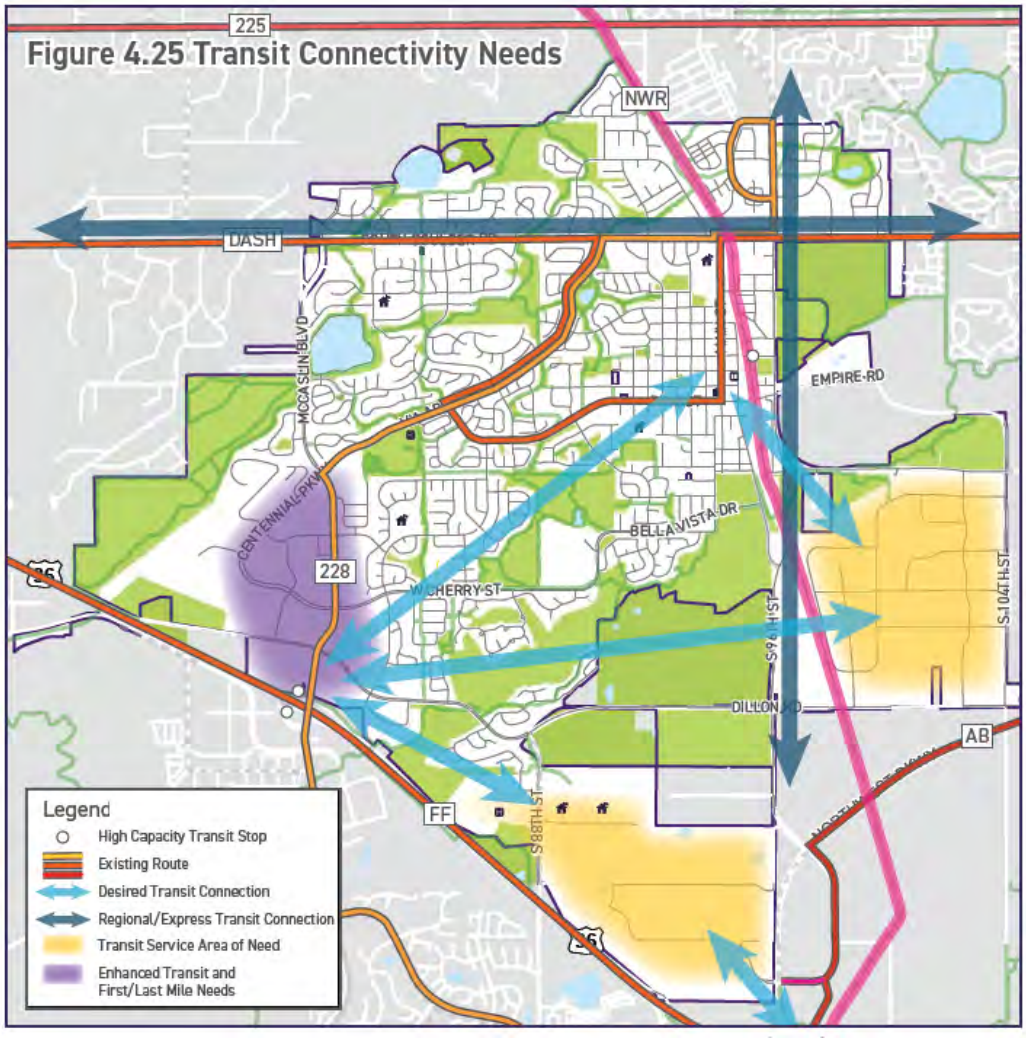
Figure 13. Future Multimodal Network Identified in the City of Louisville TMP



- A Bicycle facility connecting Dillon Rd to the US 36 bikeway
- B New underpasses at proposed locations along Dillon Road
- C Trail connections to provide increased access to the schools and hospital
- D Proposed future transit connecting McCaslin Station to the hospital, schools, and CTC
- E On-street shoulder bikeway improvements
- F Dillon Road capacity improvements to improve intersection operations
- G Campus Drive Extension to improve school circulation and improve emergency access
- H Paradise Lane realignment to eliminate intersection at S 96th Street. (*Note: Paradise Lane is on County property).
- I New signal at Campus Drive and S 96th Street near fire house

The City's TMP also recommends a partnership with the business community to provide a shuttle circulator that connects employment areas to regional transit, retail, and other destinations. CTC, Centennial Valley, and Redtail Ridge were identified as service areas for the route. The transit network also includes BRT service in the S. 96th street corridor and two (2) Northwest Rail station within a mile of Redtail Ridge (see **Figure 14**). The Northwest Rail stations are planned to be located near the CTC and at the Flatiron and US 36 Park-n-Ride.

Figure 14. Future Transit Network Identified in the City of Louisville TMP



The City has been having discussions with RTD about a new local route that would serve the project site. The new route would require approval from RTD and grant funding. This project should support the development of that route and promote connections between Redtail Ridge and Downtown Louisville, McCaslin Station, CTC, and the Flatiron and US 36 Park-n-Ride. In addition, the project should include determining the feasibility of adding a stop for the Flatiron Flyer BRT to the west of Northwest Parkway on the project site.

Table 4 provides a summary of the assumed multimodal network under background conditions. This table only assumes what would occur in the future without additional support from the Redtail Ridge project. The recommendations for an expanded multimodal network and TDM programs with the Redtail Ridge project can be found in **Section 7.0** of this study.

Table 4. Future Multimodal Network Assumption Summary

Corridor	Bike Lanes	Multi-Use Pathways	Sidewalks	Bus Lanes
S. 88th Street (US 36 to Dillon Road)	buffered or protected	westside or eastside	westside and eastside	none
Dillon Road (S. 88th to S. 96th Street)	buffered or protected	northside	northside and southside	none
S. 96th Street (Northwest Parkway to Front Street)	buffered or protected	westside	westside and eastside	yes
Northwest Parkway (S. 96th Street to US 36)	none	eastside	eastside	shoulder running

6.3 Year 2025 Background Intersection Capacity Analysis

The study intersections were evaluated to determine baseline operations for the Year 2025 and to identify any capacity constraints associated with background traffic in the short-term scenario. The background volumes, lane configuration, and traffic control are illustrated on **Figure 10**.

The LOS criteria discussed previously was applied to the study intersections to determine the travel conditions with the Year 2025 background scenario. The results of the LOS calculations for the intersections are summarized in **Table 5**. The detailed results of the LOS calculations for the intersections and all movements are summarized in **Table A.1** in **Appendix A.** The 95th percentile queues by movement are included in **Appendix A (Table A.2).** The intersection LOS and queuing report worksheets are attached in the **Appendix**. Note that signal timing was assumed to be optimized at the study intersections. **Results of the Year 2025 background intersection capacity analysis indicate that the majority of the study intersections operate at LOS D or better in both peak hours.**

Table 5. Year 2025 Background Conditions Level of Service Summary

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C
10	Dillon Road/S. 88th Street	Signal	C	B
15	Dillon Road/S. 96th Street	Signal	D	D
20	S. 88th Street/Campus Drive	Signal	D	D
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	**E**	**F**
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	C	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

The following study intersections currently operate overall at LOS E/F or have movements that operate at LOS E/F or having queuing issues during the one of both peak hours:

- ***#5. Dillon Road and McCaslin Boulevard:*** Similar to the existing conditions, the eastbound through, northbound left-turn, and southbound left-turn movements currently operate at LOS E during the AM peak hour. No significant queuing issues were observed in the field or in the traffic analysis reports.

  Recommendations: No mitigation measures recommended.

- ***#15. Dillon Road and S. 96th Street:*** During the AM peak hour, the southbound right-turn was estimated to begin to operate at LOS F due to the high volume of turning vehicles (over 300 vph). During the PM peak hour, the northbound through movement was estimated to operate at LOS E. The 95th percentile queues were calculated to be maintained with the existing storage lengths.

  Recommendations: No mitigation measures recommended.

- ***#20. S. 88th Street and Campus Drive:*** During the AM peak hour, the eastbound through/right-turn lane was estimated to continue to operate at LOS E. During the PM peak hour, the westbound left-turn movement was estimated to begin to operate at LOS F.

  Recommendations: Based on roadway capacity thresholds being exceeded, it is recommended that S. 88th Street be widened to four-lanes between Campus Drive and Dillon Road. At the intersection of S. 88th Street and Campus Drive, this would include a second northbound through lane. In addition, signal timing should be adjusted to accommodate the additional volumes and capacity. With these

improvements, the intersection was calculated to operate overall at LOS C in both peak hours with all movements operating at LOS D or better.

- ***#25. Northwest Parkway and S. 96th Street/Via Varra:*** During the AM peak hour, this signalized intersection was estimated to begin to operate overall at LOS E due to the additional delay on the northbound left-turn movement. During the PM peak hour, the intersection was estimated to begin to operate overall at LOS F due to increased delay experienced on the northbound left-turn movement (LOS F). The 95th percentile queues within the existing turn lanes are currently maintained within the existing storage lengths.

  Recommendations: Based on roadway capacity thresholds being exceeded, it is recommended that S. 96th Street be widened to four-lanes west of Northwest Parkway. At the intersection of Northwest Parkway and S. 96th Street/Via Varra, it is recommended a third northbound left-turn lane be constructed. This would require the elimination of the existing southbound right-turn acceleration lane; therefore, consider adding an overlap phase for the southbound right-turn. With these recommendations, the intersection was calculated to improve to overall at LOS D in the AM peak hour and LOS C in the PM peak hour with all movements operating at LOS D or better.

- ***#30. Northwest Parkway and Rockcress Drive/Via Varra:*** During the AM peak hour, the westbound left-turn and right-turn movements were estimated to operate at LOS F due to limited green time. During the PM peak hour, the eastbound through and westbound left-turn movements were estimated to operate at LOS E. No significant queuing issues shown in the traffic analysis.

  Recommendations: Adjust the signal timing in both peak hours. In the AM peak period consider adding four (4) seconds to the westbound phases which would be taken from the northbound/southbound through phase. This would improve the side-street movements to LOS D. In the PM peak period consider adding two (2) seconds to the westbound phases which would be taken from the northbound/southbound through phase. This improves the westbound left-turn to LOS D and the eastbound through movement would remain the same (less than five vehicles).

Based on the roadway capacity thresholds, the following improvements are recommended to be implemented in Year 2025 background:

- **Widen S. 88th Street** between Dillon Road and Campus Drive to a four-lane roadway. This provides the opportunity for the following mitigation measures at the impacted intersections:
  - ***#10. Dillon Road/S. 88th Street*** modify the westbound approach to include a 2nd left-turn lane.
  - ***#20. S. 88th Street/Campus Drive*** extend the northbound right-turn lane to provide a minimum of 500 feet of storage. Construct a second northbound through lane that begins approximately 500 feet south of Campus Drive.

- Even with the recommended improvements at the S. 88th Street intersections, it is still anticipated there will be congested during the Monarch school campus arrival/departure peak periods. However, these improvements will significantly reduce queues and delay to non-school related traffic traveling through the study network. Generally, it is considered acceptable for queuing/delay issues to occur near intersections adjacent to a school during a school's arrival/departure peak periods, since the congestion occurs for a relatively short period of time.

- **Widen S. 96th Street** between Dillon Road and Northwest Parkway to a four-lane roadway. This provides the opportunity for the following mitigation measures at the impacted intersections:
  - ***#15. Dillon Road/S. 96th Street*** construct dual eastbound and westbound left-turn lanes.
  - ***#25. Northwest Parkway/S. 96th Street/Via Varra*** construct triple northbound left-turns, modify the southbound free right-turn movement to no longer have an acceleration lane, and modify the northwest approach on S. 96th Street to allow for three receiving lanes.

Previous studies have identified the Campus Drive extension as a future improvement to mitigate traffic operational issues at the Dillon Road/S. 88th Street and S. 88th Street/Campus Drive intersections. However, the Campus Drive extension is located on the project property and based on conversations with City staff, this improvement would only be constructed as part of a development project. Therefore, it was not considered to mitigate background conditions.

The study intersections were evaluated with the recommended improvements listed above. **Table 6** provides the overall intersection level of service with the recommended improvements that indicate all study intersections will operate at LOS D or better. The recommended geometric improvements are shown with red arrows on **Figure 10**. The intersection LOS and queuing report worksheets are attached in the **Appendix**. Detailed tables with LOS and 95th percentile queues by movement are included in the **Appendix A (Tables A.3 and A.4)**.

Table 6. Year 2025 Background Conditions Level of Service Summary (Improvements)

No.	Intersection with Recommended Improvements	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
10	Dillon Road/S. 88th Street	Signal	B	B
15	Dillon Road/S. 96th Street	Signal	C	C
20	S. 88th Street/Campus Drive	Signal	C	C
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	D	C
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	B	B

6.4 Year 2030 Background Intersection Capacity Analysis

The study intersections were evaluated to determine baseline operations for the Year 2030 and to identify any capacity constraints associated with anticipated mid-term background conditions. The background volumes, lane configuration, and traffic control are illustrated on **Figure 11**. Mitigation measures recommended in Year 2025 background were assumed to be implemented by Year 2030 and included in the analysis.

The LOS criteria discussed previously was applied to the study intersections to determine the travel conditions with the Year 2030 background volumes. The results of the LOS calculations for the intersections are summarized in **Table 7**. The intersection LOS and queuing report worksheets are attached in the **Appendix**. Note that signal timing was assumed to be optimized at the study intersections.

Detailed tables with LOS and 95th percentile queues by movement are included in the **Appendix A (Tables A.1 and A.2)**. **Results of the Year 2030 background intersection capacity analysis indicate that all of the study intersections operate at LOS D or better in both peak hours.**

Table 7. Year 2030 Background Conditions Level of Service Summary

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C
10	Dillon Road/S. 88th Street	Signal	B	B
15	Dillon Road/S. 96th Street	Signal	C	C
20	S. 88th Street/Campus Drive	Signal	C	C
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	D	C
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	B	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (B)	A (A)

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

While the **Dillon Road at McCaslin Boulevard (#5)** intersection is expected to operate overall at LOS C in both peak periods, the same movements that operated at LOS E in the in AM peak hour will continue to experience delays (eastbound through, northbound left-turn, and southbound left-turn). The eastbound through movement at **Northwest Parkway and Rockcress Drive/Via Varra (#30)** was estimated to continue to operate at LOS E in the PM peak hour with the intersection operating overall at LOS B.

Further, while congestion is anticipated to continue to occur near the Monarch school campus near the school arrival/departure peaks, the queues/delays were acceptable for the conditions. Further, no other significant queuing issues are anticipated.

6.5 Year 2040 Background Intersection Capacity Analysis

The study intersections were evaluated to determine baseline operations for the Year 2040 background scenario and to identify any capacity constraints associated with background condition in a long-term buildout scenario. The background volumes, lane configuration, and traffic control are illustrated on **Figure 12.** Note that peak hour factors were updated to 0.92 for movements that were not associated with the school traffic or those with an existing value higher than 0.92. This was conducted since the increase in volumes is anticipated to spread the traffic over the hour. Mitigation measures recommended in previous background scenarios was assumed to be implemented by Year 2040 and included in the analysis.

The LOS criteria discussed previously was applied to the study intersections to determine the travel conditions with the long-term background scenario. The results of the LOS calculations for the intersections are summarized in **Table 8.** Detailed tables with LOS and 95th percentile queues by movement are included in the **Appendix A (Tables A.1 and A.2).** The intersection LOS worksheets are attached in the **Appendix**. **Results of the Year 2040 background intersection capacity analysis indicate that all of the study intersections operate at LOS D or better in both peak hours.**

Table 8. Year 2040 Background Conditions Level of Service Summary

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C
10	Dillon Road/S. 88th Street	Signal	B	B
15	Dillon Road/S. 96th Street	Signal	C	C
20	S. 88th Street/Campus Drive	Signal	C	D
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	C	C
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	B	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

Based on the roadway capacity thresholds, the following improvements are recommended to be implemented in Year 2040 background:

- **Widen Dillon Road** between S. 88th Street and S. 96th Street to a four-lane roadway. This will improve the poor lane utilization at the intersection with S. 96th Street. This provides the opportunity for the following mitigation measures at the impacted intersections:
  - ***#10. Dillon Road/S. 88th Street*** modify the eastbound approach to include a 2nd through lane.
- **Widen S. 96th Street** to a four-lane roadway north of Dillon Road. As noted in **Section 3.0 (Previous Studies)**, there are other studies that analyzed the S. 96th Street corridor. Traffic volume projections indicate the need to expand S. 96th Street to a four-lane roadway to the north, through the SH 42 intersection. The Louisville Industrial Park/St. Louis Parish development on the northeast corner of S. 96th Street and Dillon Road has already expanded S. 96th Street to four lanes adjacent to that property.

The study intersections were evaluated with the recommended improvements listed above. **Table 9** provides the overall intersection level of service with the recommended improvements. The recommended geometric improvements are shown with red arrows on **Figure 12**. Detailed tables with LOS and 95th percentile queues by movement are included in the **Appendix A (Tables A.3 and A.4)**.

Table 9. Year 2040 Background Conditions Level of Service Summary (Improvements)

No.	Intersection with Recommended Improvements	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
10	Dillon Road/S. 88th Street	Signal	B	B

7.0 Proposed Development Traffic with Redtail Ridge

7.1 Proposed Internal Roadway Network

Campus Drive Extension

Construction of the Campus Drive extension is proposed to coincide with the opening of the first vertical development of Redtail Ridge. Once extended, Campus Drive will connect from where it dead ends (approximately 2,200 feet east of S. 88th Street) to S. 96th Street. This will provide an alternative route for traffic generated by the Monarch school campus; it will also serve as a primary access to/from the Redtail Ridge development as shown in **Figure 2**.

In addition to serving traffic to/from the Monarch school campus, Campus Drive is anticipated to be utilized by the residents living in the Rock Creek subdivision and as an alternative route to Dillon Road. It should be noted that the Centennial Peaks Hospital/Avista Family Life Center medical facilities are planning to be relocated to a parcel within Redtail Ridge. With the project the hospital traffic will be rerouted from the existing location to the new site.

To estimate the number of drivers that will change their route to use Campus Drive, existing travel patterns were reviewed, and a travel time analysis was performed. The primary movements that are anticipated to most likely shift from their current route to Campus Drive are the northbound right-turn and westbound left-turn movements at the Dillon Road/S. 88th Street intersection.

Vehicles that are traveling from south of the S. 88th Street/Campus Drive intersection to Northwest Parkway are anticipated to use the Campus Drive extension once it is constructed, since this is expected to be a faster route than Dillon Road. When looking at travel time to/from the Dillon Road/S. 96th Street intersection to the Monarch school campus, the travel distance for vehicles using the S. 96th Street/Campus Drive intersection versus the S. 88th Street/Campus Drive intersection is approximately 25% fewer. The travel distance for vehicles destined to/from the hospital is approximately the same.

Based on current travel patterns, it is estimated that approximately 75% of vehicles currently making a northbound right-turn and westbound left-turn movements at the Dillon Road/S. 88th Street intersection would reroute to use Campus Drive during the AM peak hour. During the PM peak hour, it is estimated that 50% of vehicles currently utilizing these movements would reroute to use Campus Drive.

The travel conditions of the Campus Drive extension to the existing traffic volumes during the AM and PM peak hours are illustrated on **Figure 15**.

The Campus Drive concept layout near the Monarch school campus is shown in **Figure 16**. Campus Drive is proposed to be a four-lane roadway with roundabouts at the K-8 access, the High School access (peanut

roundabout), and Street B. The project team has met with BVSD on three (3) occasions to discuss the proposed roundabout and has received positive feedback on the proposed layout. A follow-up study is planned to evaluate the Campus Drive at the K-8 and High School intersection design in more detail.

In addition to studying the AM peak hour which coincides with the school arrival peak period, additional data will need to be collected for the afternoon peak period which coincides with the school departure period. Observations will also be conducted to evaluate the internal operations and current queues so that recommendations can be provided to BVSD to improve the internal operations.

Rockcress Drive

Redtail Ridge is planning to construct Rockcress Drive incrementally and is expected to be fully constructed prior to Year 2030. Like Campus Drive, this two-lane roadway will also be a new connection between S. 88th Street and Northwest Parkway. With the first phase of Redtail Ridge, Rockcress Drive is planned to be constructed from Northwest Parkway to the west to the approximate midpoint of the site. The future connection at S. 88th Street is anticipated to be in the same location as the Tape Drive access.

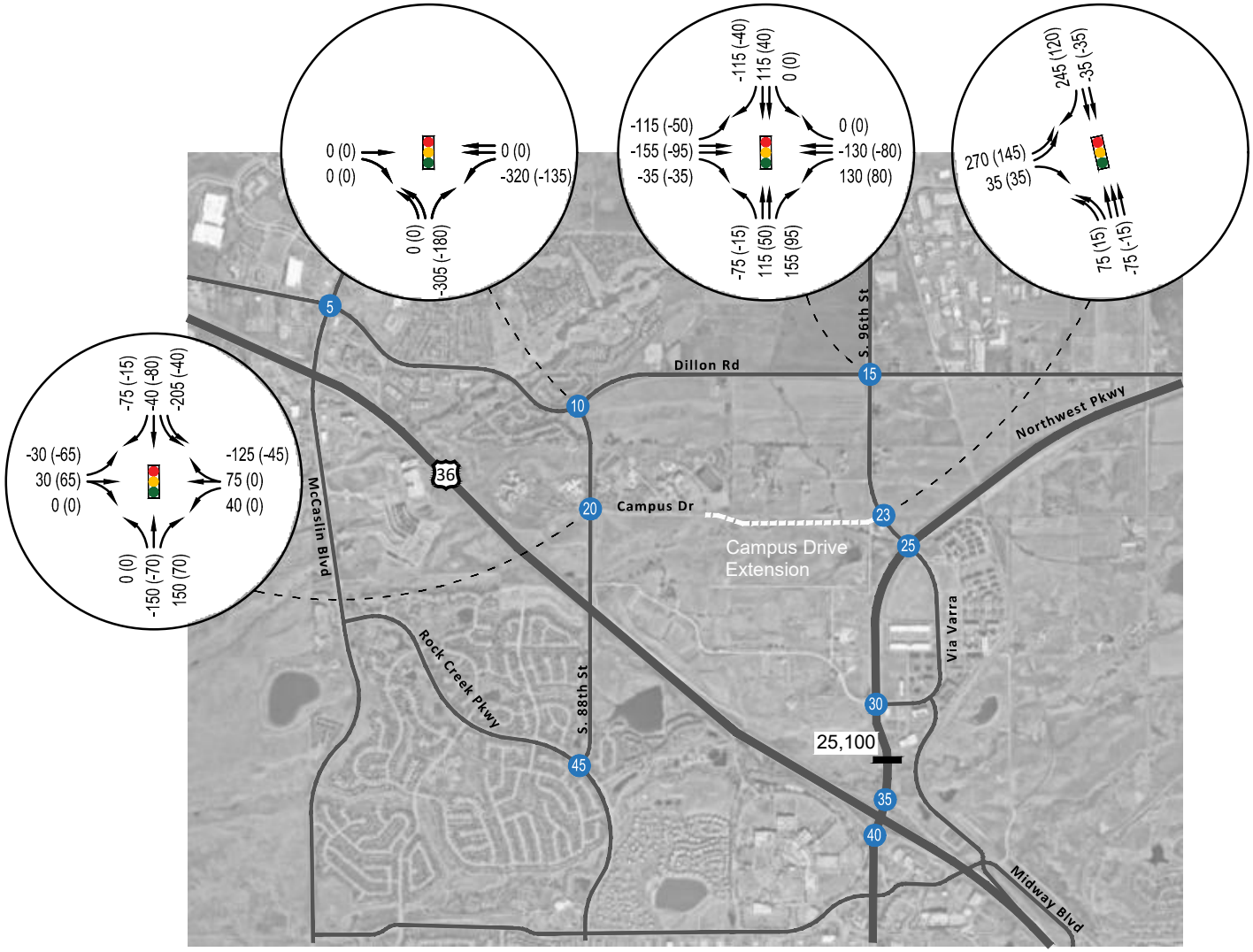
Consideration was given to the likelihood of existing/background vehicles rerouting to use Rockcress Drive from their current route. However, based on this review, few non-project related vehicles are anticipated to use Rockcress Drive to connect between S. 88th Street and Northwest Parkway.

Sorrel Avenue

The primary north-south roadway within Redtail Ridge will connect Campus Drive to Rockcress Drive, approximately 750 feet west of Northwest Parkway, and named Sorrel Avenue. This two-lane roadway will provide access to other internal collectors and driveways. It is proposed that the intersections at either end be constructed as roundabouts.

Internal Collectors

Three (3) internal roadways will be constructed within Redtail Ridge, in addition to those listed above. These two-lane roadways will provide direction access to the driveways, parking lots, loading areas, and circulation through the site. There is planned to be one north-south roadway between Campus Drive and Rockcress Drive at the west end of the site and then two east-west roadways connecting Sorrel Avenue to the north-south collector.



KEY

- LANE CONFIGURATION
- X,XXX DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRIP VOLUME CHANGE FROM EXISTING

**Note: Traffic volume shifts are only shown for the study intersections impacted by the Campus Drive extenion

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CAMPUS DRIVE EXTENSION TRAFFIC PATTERN CHANGES (EXISTING VOLUMES)

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CAMPUS DRIVE LAYOUT FOR MONARCH SCHOOL CAMPUS ACCESSES

FT Project #	19055	Original Scale	NTS	Date	02/15/2023	Drawn by	MAR	Figure #	16

7.2 Proposed Multimodal Network

The Redtail Ridge project will be built over the next 10 years. During this time major shifts in transportation mobility and regional transportation project completion are expected to take place. Transit projects such Northwest Rail, SH 42 BRT, and the RTD local circulator will potentially be operating before Year 2040. In addition, enhancements, and construction of complete streets on S. 88th Street, Dillon Road, and S. 96th Street, as well as the new connections within the project on Campus Drive, Rockcress Drive, and Sorrel Avenue, will be a major part of the multimodal transformation in Louisville. As outlined in the policy documents in the background section of this report, these corridors will serve many more travelers and modes in the future. The transformations will use the current right-of-way to move more people using safe, reliable, connected, and sustainable transportation options.

The enhanced-future multimodal network in the area is shown in **Table 10**. Additional details regarding at-grade signalized crossings, underpasses, trail connections, transit stops, shared ride mobility, and other multimodal infrastructure on the Redtail Ridge site will be detailed as this project continues ahead in the PUD process.

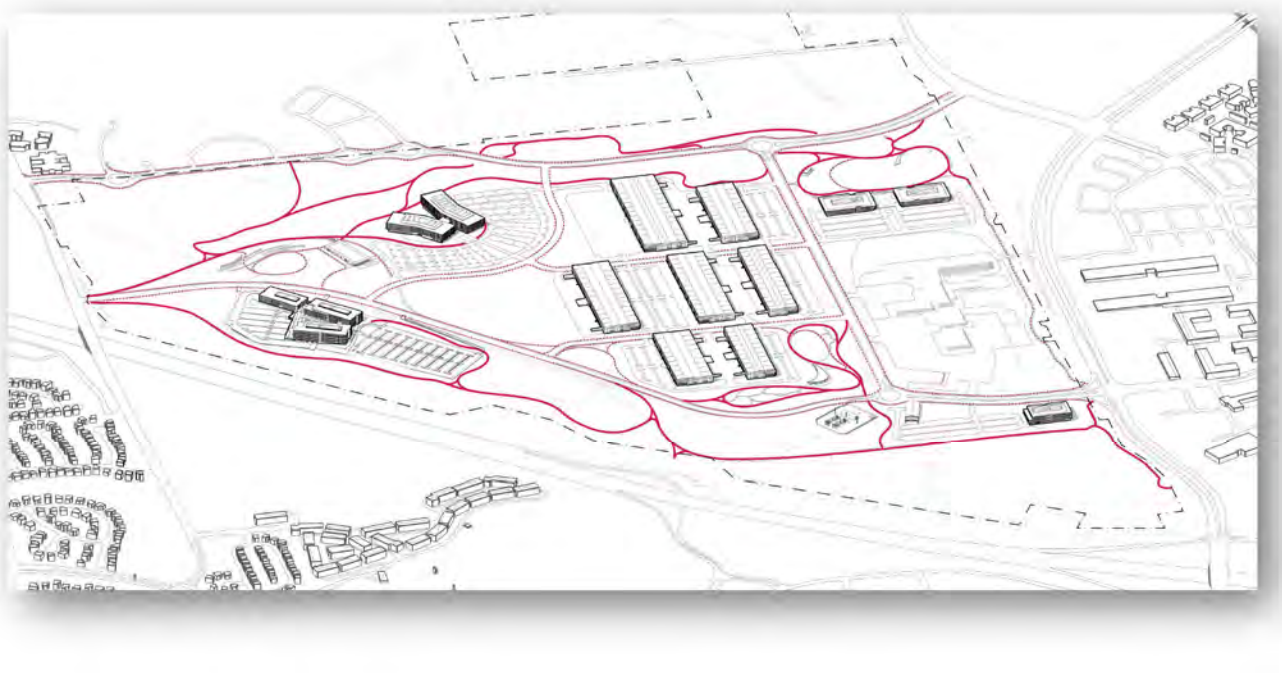
Table 10. Enhanced-Future Multimodal Network Assumptions

Corridor	Bike Lanes	Multi-use pathways	Sidewalks	Bus Lanes
Campus Drive (S. 88th Street to S. 96th Street)	buffered or protected	southside	northside	none
Rockcress Drive (S. 88th Street to Northwest Parkway)	buffered or protected	none	northside and southside	none
Sorrel Avenue (Campus Drive to Rockcress Drive)	buffered or protected	none	eastside and westside	none

** Expanded future multimodal network will include on-site improvements with connections to City multi-modal facilities, existing or future.*

The conceptual multimodal trail network for the Redtail Ridge project area is also illustrated in **Figure 17**. As shown in the graphic, the project proposes to provide multimodal connections through the project site, giving users more route options to travel through the area. Redtail Ridge will install sidewalks on both sides of the internal roadways, along Campus Drive, and along the west side of Northwest Parkway. In addition, the internal roadways will have on-street bike lanes in both directions.

Figure 17. Enhanced Redtail Ridge Conceptual Trail Network



**Note: conceptual multimodal trail network shown in red.*

7.3 Travel Demand Management Strategies

Transportation Demand Management (TDM) refers to activities that help people use the transportation system more efficiently, while reducing traffic congestion, vehicle emissions and fuel consumption. TDM activities help get the most out of transportation infrastructure and services by making lower-cost, higher-efficiency transportation options easier to use and more readily available.

TDM activities include such options as eliminating or shortening trips, changing the mode of travel, or changing the time of day a trip is made, as well as actions that increase transportation system efficiency through carpooling, vanpooling, transit, bicycling and walking. TDM strategies also include employer-based programs such as alternative work schedules, which can shift demand away from peak travel times, and telework, which can reduce the need for trips entirely.

The Redtail Ridge project has developed a TDM Plan under a separate document. The programs listed in the TDM Plan are provided at this time as possible tools given where the project stands in the GDP process. Future submittals can provide additional information when additional details on land uses, tenants and funding is known. It is recommended that the Metro District partner with a local expert in transportation management solutions to help facilitate these programs.

Note that all vertical developers in the project will be required to submit a customized TDM for their building identifying what programs will be implemented to meet the non-SOV goals of the project. Periodic surveys will be conducted to evaluate the TDM program effectiveness and adjustments will be made, if needed, to reach the project non-SOV goals.

7.4 External Non-Single Occupant Vehicle (Non-SOV) Trips

Non-single occupant vehicles (non-SOV) trips are trips that originate from outside the site or are being made from the site to external destinations. These trips are made by people who bicycle, carpool, vanpool, used shared ride mobility services and/or ride transit. As previously reference, based on the *American Community Survey US Census Data,* the mixed-use development sites in the US 36 corridor currently have 25% to 30% non-SOV trips coming to/from the sites daily. In addition, this project reviewed mode share and trip generation data for other large-scale developments in the Denver Metro area as well as trip generation studies to estimate non-SOV percentages anticipated for this project area. A summary of the findings and references are provided in the **Appendix**.

The non-SOV goals for this project are to have 25% or more non-SOV trips, which is achievable based on the current conditions and proposed TDM programs. However, based on feedback provided by City staff, to provide a more conservative analysis, a lower non-SOV reduction was assumed for the trip generation and traffic analysis for this study.

A non-SOV of 12% was assumed for all of the land uses within the proposed development, including the retail, industrial park, and office space. This accounts for employees/visitors /customers who walk, bicycle, carpool, vanpool, use shared ride mobility services and/or use transit.

It is assumed that some of the planned regional mobility plans for this area will be constructed/implemented by the time this project is built-out and that these projects will further reduce the non-SOV trips for the project and background trips to the study area (such as Northwest Rail, NAMS BRT corridors, complete streets in the 88th Street, Dillon Road, and 96th Street corridor).

7.5 Trip Generation

A trip generation analysis was performed to determine the traffic characteristics for the project. Trip rates contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*[2] were applied to estimate the traffic for the proposed land uses. ITE trip generation rates for "Industrial Park" (#130), "Manufacturing" (#140), "Hospital" (#610), "General Office Building" (#710), "Medical-Dental Office Building" (#720), "Research and Development Center" (#760), and "Shopping Center" (#820) were utilized for the industrial, office, and retail uses, respectively. Specific land uses and tenants for the office and retail spaces are unknown currently. It is anticipated that the retail uses will be designed to support the industrial and office development.

The ITE *Trip Generation Handbook (Volume 3)* provides recommendations for when to use the average rate versus the equation (fitted curve) when estimated trips for land use codes. Based on this review, land use codes where the equation has a R^2 value of at least 0.75 was used to determine what land use codes the equation was utilized versus the average rate to estimate the trip generation estimates before reductions were applied. The proposed project is expected to experience mostly new trips, also known as 'primary trips', as well as pass-by trips, multi-use trips, and non-auto trips which are discussed below:

Primary Trips. These trips are made specifically to visit the site and are considered "new" trips. Primary trips would not have been made if the proposed project did not exist. Therefore, this is the only trip type that increases the total number of trips made on a regional basis.

Multi-Use (Internal) Trips. These internal trips occur from one land use or building to another within the site boundaries. For example, an office patron may also use a retail store or restaurant in one vehicular visit to the site. Multi-use or multi-purpose trips typically do not affect the exterior site access points, nor add any additional traffic volumes to the adjacent street network. For this project it is projected that the small retail uses on the site will be focused on serving the office and industrial employees of the project and most (75% estimated) of the trips accessing them will be on-site or internal trips. The other end of these internal trips were attributed to the office and industrial employees and resulted in a 3% reduction for those uses. Based on this approach, the multi-use factors applied for this project were assumed to be 3% for the industrial and office uses and 75% for the retail uses**.**

Non-SOV Trips. These trips originate from outside the site that may be completed by walking, bicycling, carpooling, shared ride mobility, or riding transit. The 12% non-SOV assumption identified in **Section 7.4** were applied to the trip generation estimates.

[2] Trip Generation 11th Edition, Institute of Transportation Engineers, 2021.

As shown in **Table 11**, with the assumptions listed above, the project site is expected to generate approximately 6,663 daily, 758 AM peak hour, and 803 PM peak hour external trips by Year 2025. At full build out the project site is expected to generate approximately 21,285 daily, 1,908 AM peak hour, and 2,149 PM peak hour external trips.

Table 11. Trip Generation Summary

	Land Use	Size	Unit	Non-SOV	Internal Capture	Net Reduction Factor	Average Weekday Trips Rate	Average Weekday Trips Total	Weekday AM Peak Hour Trips Rate	Weekday AM Peak Hour Trips Total	Weekday AM Peak Hour Trips In	Weekday AM Peak Hour Trips Out	Weekday PM Peak Hour Trips Rate	Weekday PM Peak Hour Trips Total	Weekday PM Peak Hour Trips In	Weekday PM Peak Hour Trips Out
Phase 1 (2025)	#130 Industrial Park	509.26	KSF	**12%**	**3%**	85%	*	1,868	0.4	174	141	33	0.4	174	37	137
	#760 Research and Development Center (Life Science + Amenity)	300.0	KSF	**12%**	**3%**	85%	**	2,695	1.03	264	216	48	0.98	251	40	211
	#140 Manufacturing (GMP)	598.94	KSF	**12%**	**3%**	85%	*****	2,100	******	320	243	77	0.74	378	117	261
		######	**KSF**			**Subtotal**		**6,663**		**758**	**600**	**158**		**803**	**194**	**609**
Phase 2 (2030)	#820 Shopping Center	14.0	KSF	**12%**	**75%**	22%	37.75	116	0.94	3	2	1	3.81	12	6	6
	#130 Industrial Park	118.8	KSF	**12%**	**3%**	85%	*	877	0.4	41	33	8	0.40	41	9	32
	#710 General Office Building	90	KSF	**12%**	**3%**	85%	**	818	***	95	82	13	****	88	14	74
	#760 Research and Development Center	264.00	KSF	**12%**	**3%**	85%	**	2,397	1.03	232	190	42	0.98	221	35	186
	#610 Hospital	160.0	BEDS	**12%**	**3%**	85%	22.32	3,048	1.79	244	176	68	1.69	231	76	155
	#720 Medical-Dental Office Bldg	150.0	KSF	**12%**	**3%**	85%	36.00	4,609	***	296	234	62	3.93	503	151	352
		921.80	**KSF**			**Subtotal**		**12,037**		**911**	**717**	**194**		**1,096**	**291**	**805**
Ph 3 (2040)	#710 General Office Building	270.0	KSF	**12%**	**3%**	85%	**	2,374	***	239	206	33	****	250	40	210
		270.00	**KSF**			**Subtotal**		**2,585**		**239**	**206**	**33**		**250**	**40**	**210**
						Full Buildout Total		**21,285**		**1,908**	**1,523**	**385**		**2,149**	**525**	**1,624**

* ITE Equation: EXP(0.52*LN(X) *** ITE Equation: (0.94*X+ 26.49) ***** ITE Equation 3.77*X+201.98
** ITE Equation: EXP(0.97*LN(X **** ITE Equation EXP(0.95*LN(X) ****** ITE Equation 0.61*X+9.54

7.6 Trip Distribution and Assignment

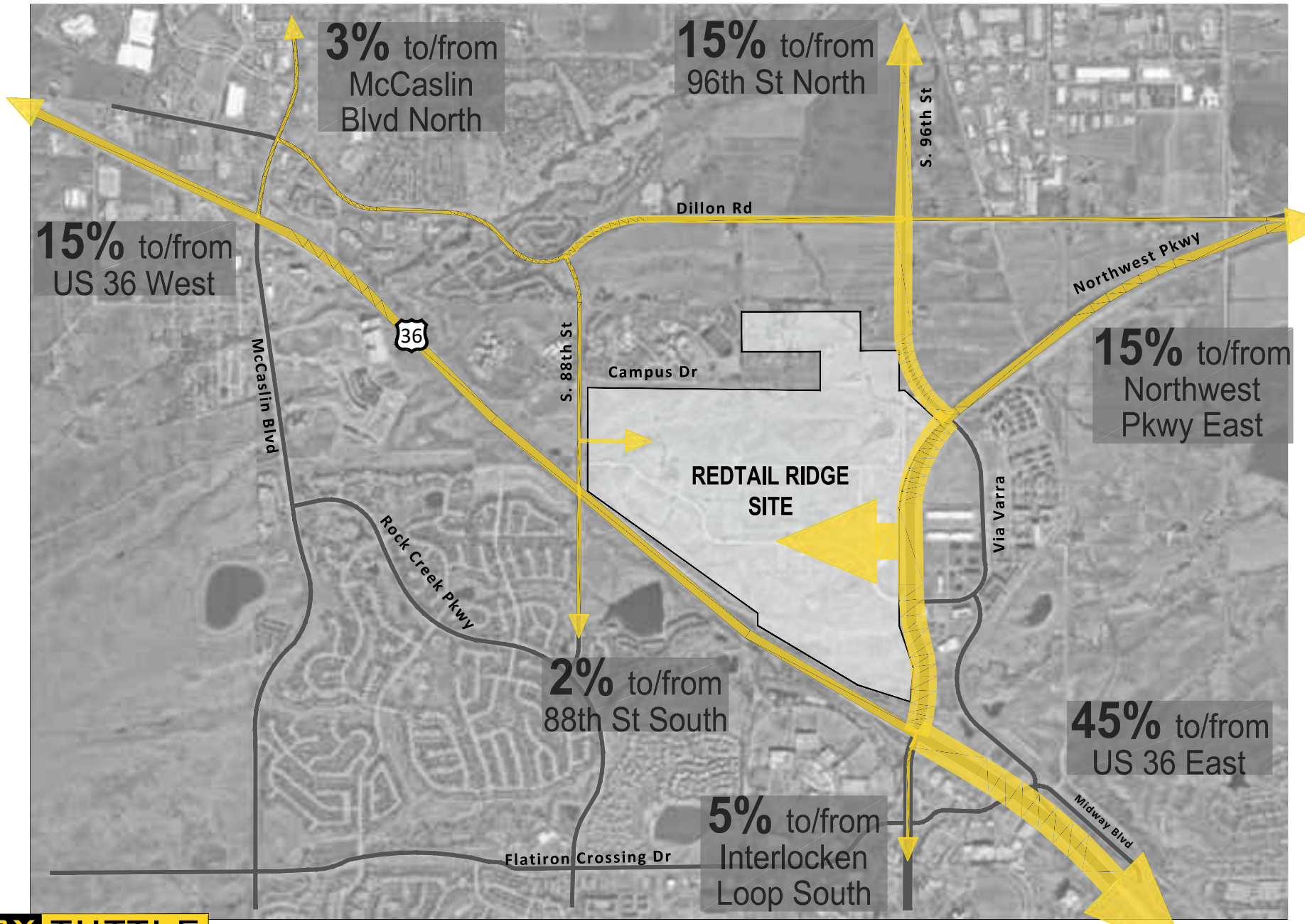
To develop the trip distribution for the proposed development, available traffic count and travel pattern data was reviewed. The proposed land uses for the project site were also taken into consideration which suggests that traffic generated to/from the project site is expected to utilize the regional transportation system, with a smaller percent of the trips generated by the local system. Therefore, most vehicles are expected to use the regional routes (such as US 36, Northwest Parkway, and S. 96th Street to the north) and few vehicles are expected to use local roads. Travel routes/patterns were reviewed to determine how vehicles are expected to access the site and what route is likely to be fastest for vehicles to use to

get to Boulder and Denver, but also communities to the south such as Arvada, Golden, Wheat Ridge, Westminster, etc.

In addition to available traffic/travel pattern information, data available from the StreetLight Data Company was reviewed for the offices in CTC. StreetLight collects mobility data on vehicle trips that can be used to analyze trip origin-destination, trip travel time/route, and trip purpose; this data was used to determine the trip distribution for existing traffic entering/exiting the offices in CTC. This data provided a baseline for where existing office trips in the study area have origins/destinations.

Taking into consideration the factors listed above, the trip distribution was developed for the development traffic entering/exiting the project site and is summarized in **Figure 18**. It is important to note that this trip distribution was evaluated by the City as well as their third-party consultant who used the DRCOG Year 2040/2050 travel demand model for comparison purposes. Based on their review, the trip generation estimates shown in **Figure 18** were found to be acceptable.

Using these distribution assumptions, the projected site traffic was assigned to the study area roadway network for the weekday AM and PM peak hours. The site-generated traffic for Year 2025, Year 2030, and Year 2040 are shown on **Figure 19, Figure 20,** and **Figure 21**, respectively.

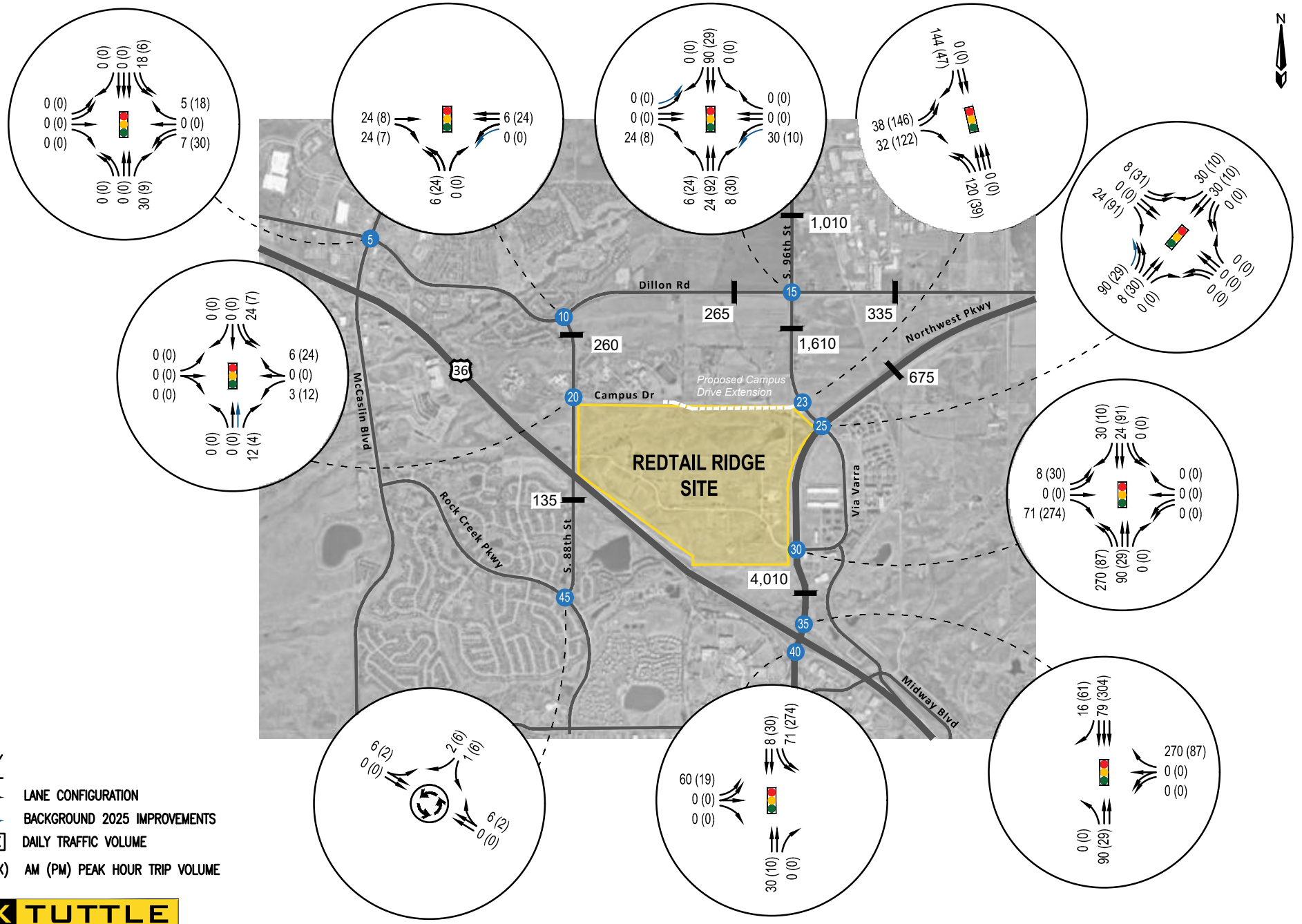


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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

TRIP DISTRIBUTION

FT Project #	19055	Original Scale	NTS	Date	02/15/2023	Drawn by	MAR	Figure #	18

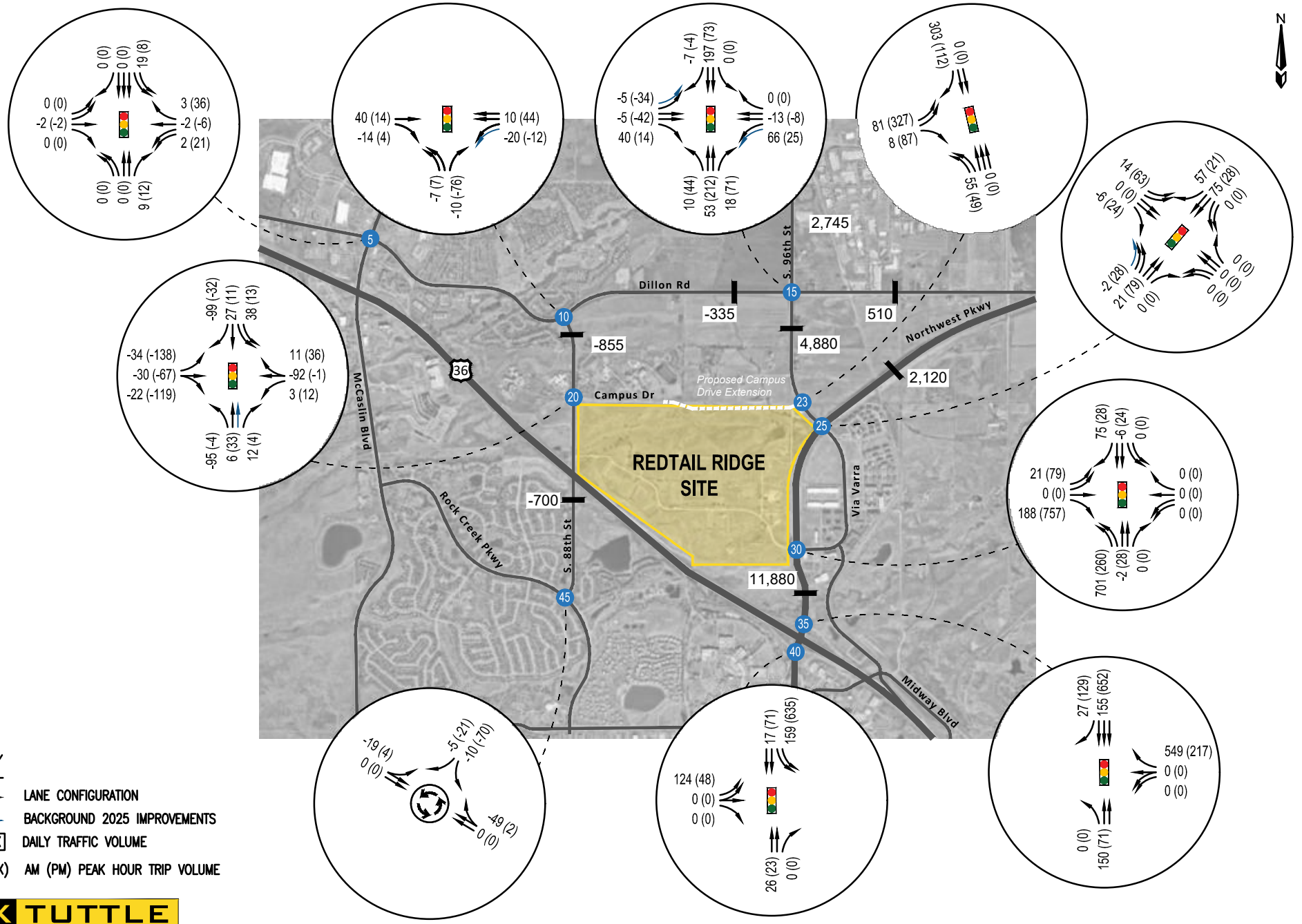


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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

REDTAIL RIDGE SITE-GENERATED TRIP VOLUMES - PRIOR TO YEAR 2025

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	19



KEY

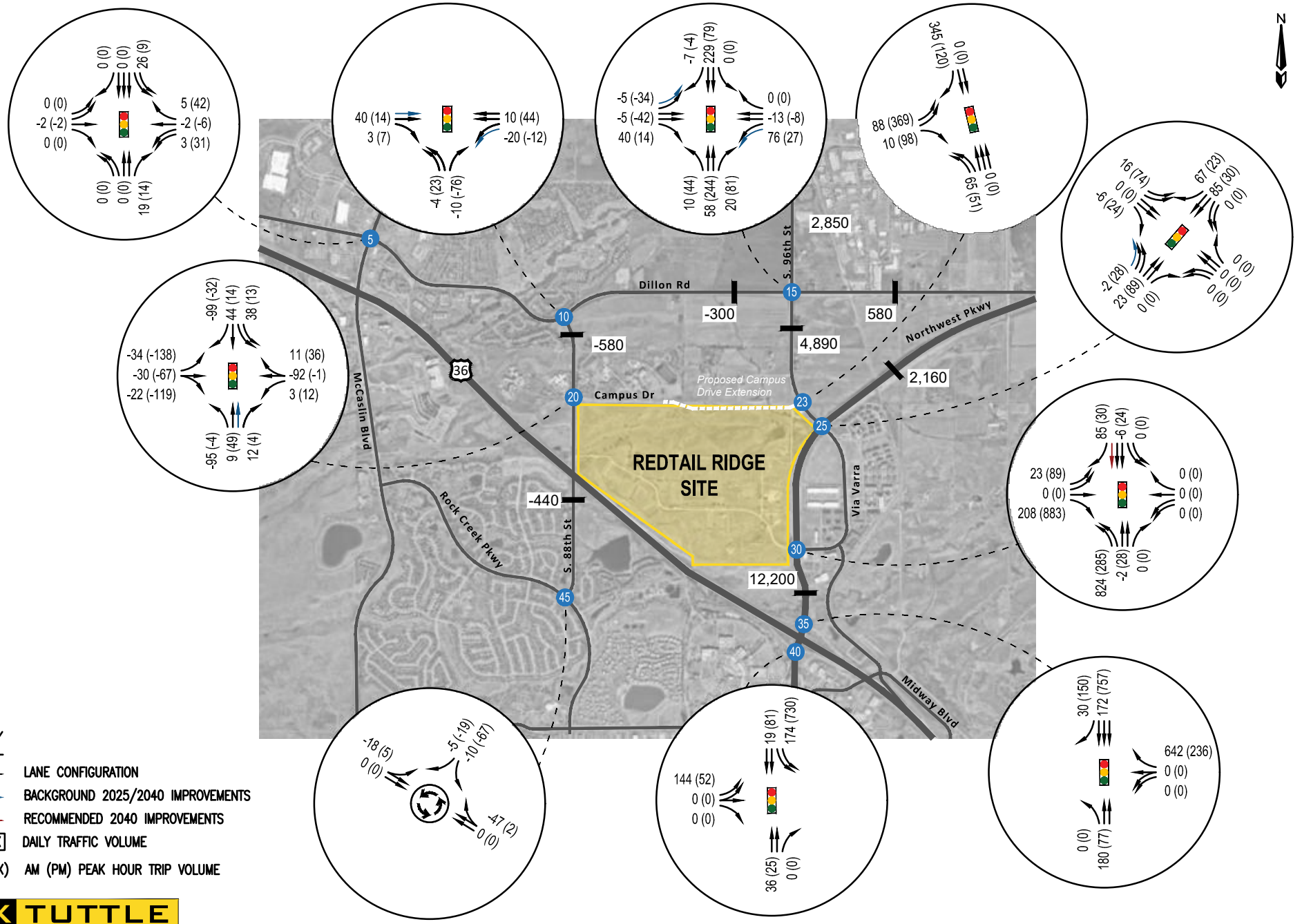
- LANE CONFIGURATION
- BACKGROUND 2025 IMPROVEMENTS
- X,XXX DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRIP VOLUME

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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

REDTAIL RIDGE SITE-GENERATED TRIP VOLUMES - PRIOR TO YEAR 2030

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	20



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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

REDTAIL RIDGE SITE-GENERATED TRIP VOLUMES - PRIOR TO YEAR 2040

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	21

8.0 Future Conditions + Redtail Ridge Traffic

This section evaluates the anticipated future traffic operations with the project trips. This section discusses travel conditions associated with the addition of development trips to the Year 2025 conditions.

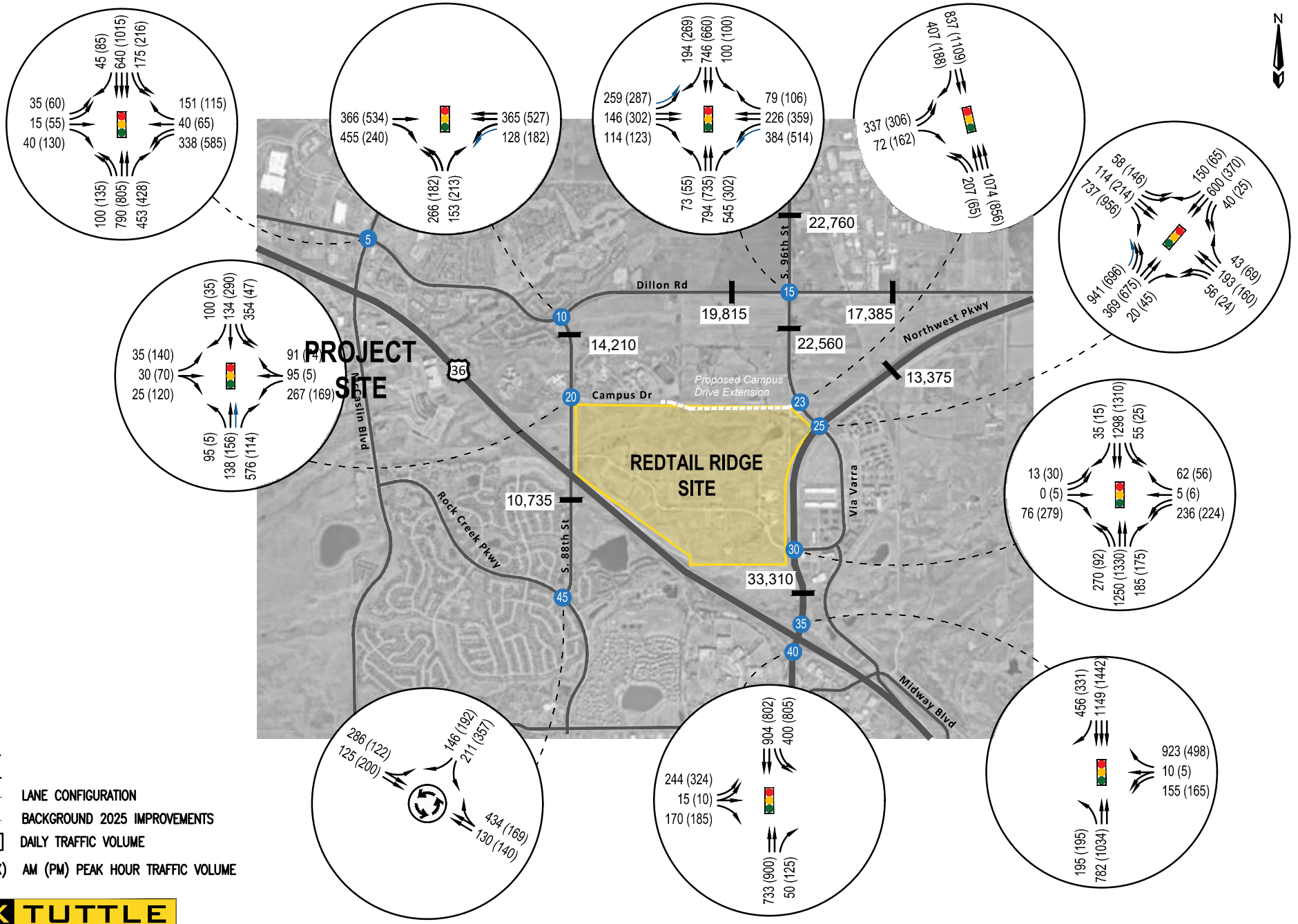
8.1 Year 2025 Background + Project Intersection Capacity Analysis

The improvements identified under Year 2025 background conditions were not assumed, since the Campus Drive extension could potentially reduce the need for some of the improvements. The following assumptions were implemented for Year 2025 Background + Project scenario:

- Extend Campus Drive to S. 96th Street.
- Construct Rockcress Drive from Northwest Parkway to Sorrel Ave.
- Construct Sorrel Avenue and internal collector roads.
- Construct and signalize the new full movement intersection of S. 96th Street/Campus Drive. Include one southbound right-turn lane, dual northbound left-turn lanes, dual eastbound left-turn lanes, and one eastbound right-turn lane (consistent with previous study recommendations).
- Modify the intersection of Northwest Parkway/ Rockcress Drive/Via Varra to replace the existing dual eastbound left-turn lanes with a single eastbound left-turn lane to better align with the proposed Rockcress Drive alignment to the west. Remove the split phasing for eastbound and westbound and replaced with a protected+permitted left-turn phase and through phase.
- Optimize signal timing at all the study intersections.

The projected site-generated traffic was added to the Year 2025 background study area traffic volumes, which assumes travel pattern shifts for existing/background traffic due to the Campus Drive extension. The resultant traffic volumes are illustrated on **Figure 22**.

The results of the LOS calculations for the intersections are summarized in **Table 12**. Detailed tables with LOS and 95th percentile queues by movement and comparison to background are available in **Appendix A (Tables A.5 and A.6).** The intersection LOS worksheets are also included in the **Appendix**. **The project trips will have minimal impacts to the majority of the existing study intersections.** The redirected traffic to Campus Drive reduces delays at several intersections. The Redtail Ridge project has the most significant impacts to the intersections of Northwest Parkway at Rockcress Drive and Northwest Parkway at S. 96th Street/Via Varra. **The internal intersections were found to operate at LOS B or better for both peak periods.**



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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2025 BACKGROUND + REDTAIL RIDGE (PHASE 1) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	22

Table 12. Year 2025 + Project Conditions Level of Service Summary

No.	Intersection	Traffic Control	Background + Project Overall Intersection LOS		Background Intersection Overall LOS	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C	C	C
10	Dillon Road/S. 88th Street	Signal	B	B	C	B
15	Dillon Road/S. 96th Street	Signal	C	C	D	D
20	S. 88th Street/Campus Drive	Signal	C	D	D	D
23	S. 96th Street/Campus Drive	Signal	C	C	-	-
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	F	F	E	F
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	C	C	C	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	B	D	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)	A (A)	A (A)
101	Campus Drive/North-South Collector	Side-Street Stop	A (B)	A (B)	-	-
102	Campus Drive/Sorrel Avenue	Roundabout	A (A)	A (A)	-	-
103	Rockcress Drive/North-South Collector	Side-Street Stop	A (A)	A (A)	-	-
104	Rockcress Drive/East-West Collector (South)	Side-Street Stop	A (A)	A (A)	-	-
105	Rockcress Drive/Sorrel Avenue	Roundabout	A (A)	A (A)	-	-
106	Sorrel Avenue/East-West Collector (South)	All-Way Stop	A (A)	A (A)	-	-
107	Sorrel Avenue/East-West Collector (North)	All-Way Stop	A (A)	A (A)	-	-
108	N-S Collector/ E-W Collector (North)	Side-Street Stop	A (A)	A (A)	-	-
205	Sorrel Avenue/PUD 2 Access E	Side-Street Stop	A (A)	A (A)	-	-

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

Additional lane geometry/traffic control recommendations for internal roadways are included in a later section: **Section 9.0 (Internal Intersection Analysis)**. This scenario was also evaluated with the recommended improvements from the Year 2025 background scenario (illustrated in **Figure 22**), including widening S. 88th Street; widening S. 96th Street; adding a second westbound left-turn lane at Dillon Road/S. 88th Street; adding a second northbound through lane at S. 88th Street/Campus Drive; adding second eastbound and westbound left-turns at S. 96th Street/Dillon Road; and adding third northbound left-turn lane at Northwest Parkway/S. 96th Street.

It is recommended that additional green time be provided to the southbound left-turn at the Northwest Parkway and US 36 South Ramp (Eastbound) during the PM peak period to reduce the delay and queue.

The results of the LOS calculations for the intersections with the recommended improvements are summarized in **Table 13.** Detailed tables with LOS and 95th percentile queue by movement as well as the intersection LOS worksheets are included in the **Appendix A (Tables A.5 and A.6)**.

Table 13. Year 2025 Background + Project Conditions Level of Service Summary (Improvements)

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
10	Dillon Road/S. 88th Street	Signal	B	A
15	Dillon Road/S. 96th Street	Signal	C	C
20	S. 88th Street/Campus Drive	Signal	C	C
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	D	C
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	N/A	C

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

8.2 Year 2030 Background + Project Intersection Capacity Analysis

This section discusses travel conditions associated with the addition of development trips to the Year 2030 background conditions and the resultant traffic volumes are illustrated on **Figure 23**. The following assumptions were implemented for Year 2030 Background + Project scenario:

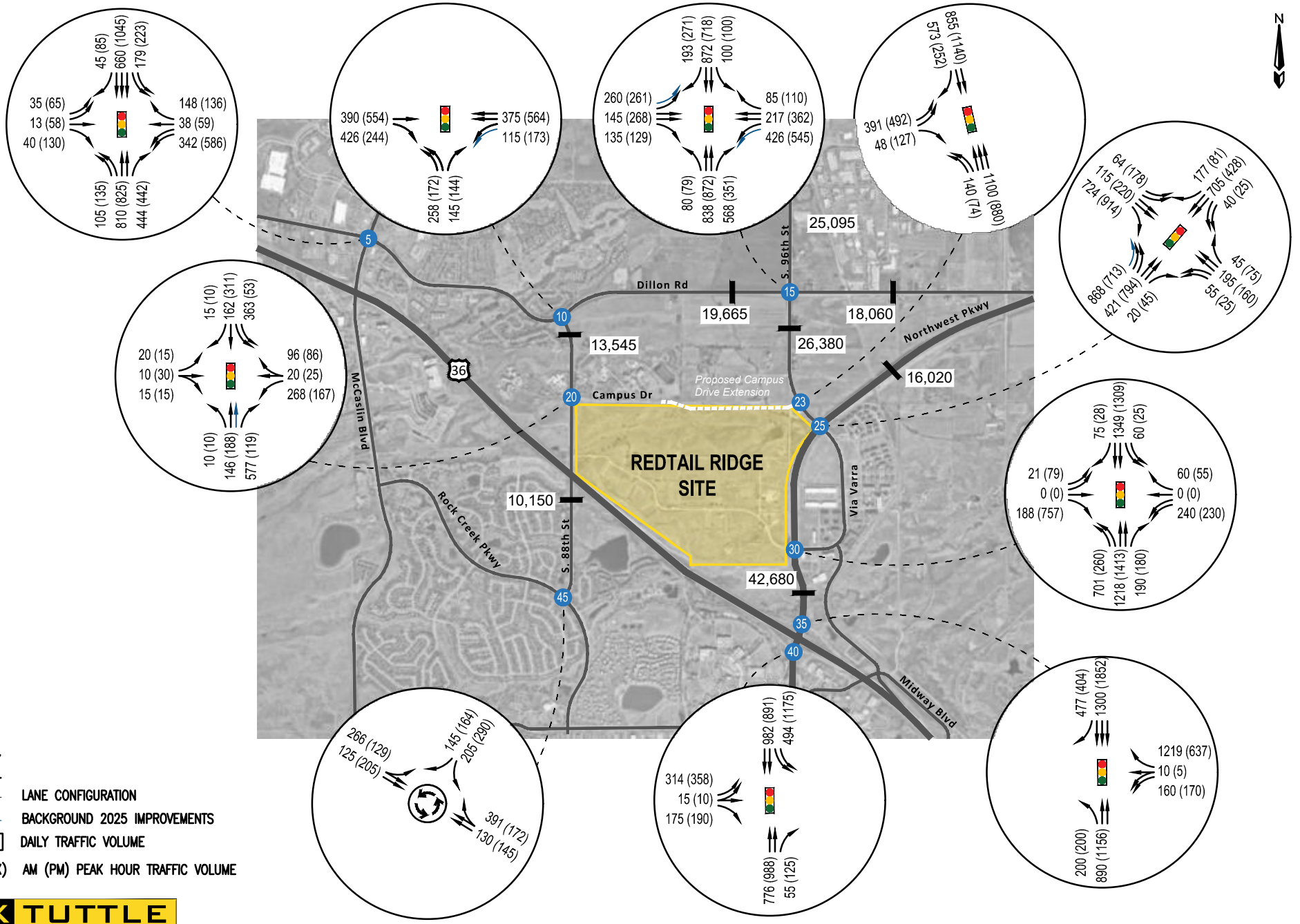
- Improvements identified in Year 2025 background + project, plus:
- Extend Rockcress Drive to S. 88th Street
- Add overlap phase for southbound right-turn at S. 96th Street/Campus Drive
- Optimize signal timing at all the study intersections.

The results of the LOS calculations for the intersections are summarized in **Table 14**. Detailed tables with LOS and 95th percentile queues by movement and compared to eh background scenario is available in **Appendix A (Tables A.5 and A.6).** The intersection LOS worksheets are also included in the **Appendix**. **Majority of the study intersections were estimated to operate similarly to the background scenario at overall LOS D or better.**

Table 14. Year 2030 + Project Conditions Level of Service Summary

No.	Intersection	Traffic Control	Background + Project Overall Intersection LOS		Background Intersection Overall LOS	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C	C	C
10	Dillon Road/S. 88th Street	Signal	B	B	B	B
15	Dillon Road/S. 96th Street	Signal	D	D	C	C
20	S. 88th Street/Campus Drive	Signal	C	C	C	C
22	S. 88th Street/Rockcress Drive	Side-Street Stop	A (C)	A (B)	-	-
23	S. 96th Street/Campus Drive	Signal	B	C	-	-
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	D	D	D	C
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	D	D	B	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	C	**F**	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)	A (B)	A (A)
101	Campus Drive/North-South Collector	Side-Street Stop	A (B)	A (B)	-	-
102	Campus Drive/Sorrel Avenue	Roundabout	A (A)	A (A)	-	-
103	Rockcress Drive/North-South Collector	Side-Street Stop	A (B)	A (B)	-	-
104	Rockcress Drive/East-West Collector (South)	Side-Street Stop	A (A)	A (B)	-	-
105	Rockcress Drive/Sorrel Avenue	Roundabout	A (A)	A (A)	-	-
106	Sorrel Avenue/East-West Collector (South)	All-Way Stop	A (C)	A (C)	-	-
107	Sorrel Avenue/East-West Collector (North)	All-Way Stop	A (B)	A (B)	-	-
108	N-S Collector/ E-W Collector (North)	Side-Street Stop	A (A)	A (A)	-	-
205	Sorrel Avenue/PUD 2 Access E	Side-Street Stop	A (B)	A (B)	-	-

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).



KEY

- LANE CONFIGURATION
- BACKGROUND 2025 IMPROVEMENTS
- X,XXX DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

FOX TUTTLE TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2030 BACKGROUND + REDTAIL RIDGE (PHASE 1 & 2) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	23

Under Year 2030 background + project conditions, the following intersections were calculated to begin to have movements that operate at LOS E/F:

- ***#30. Northwest Parkway and Rockcress Drive/Via Varra:*** During both peak hours, the northbound left-turn movement was estimated to operate at LOS F due to high turning volume and limited green time. No significant queuing issues were shown in the traffic analysis.

  Recommendations: No mitigation measures recommended. The delay is under the cycle length so it is anticipated there will not be cycle failure and the 95th percentile queues were shown to be maintained within the storage length.

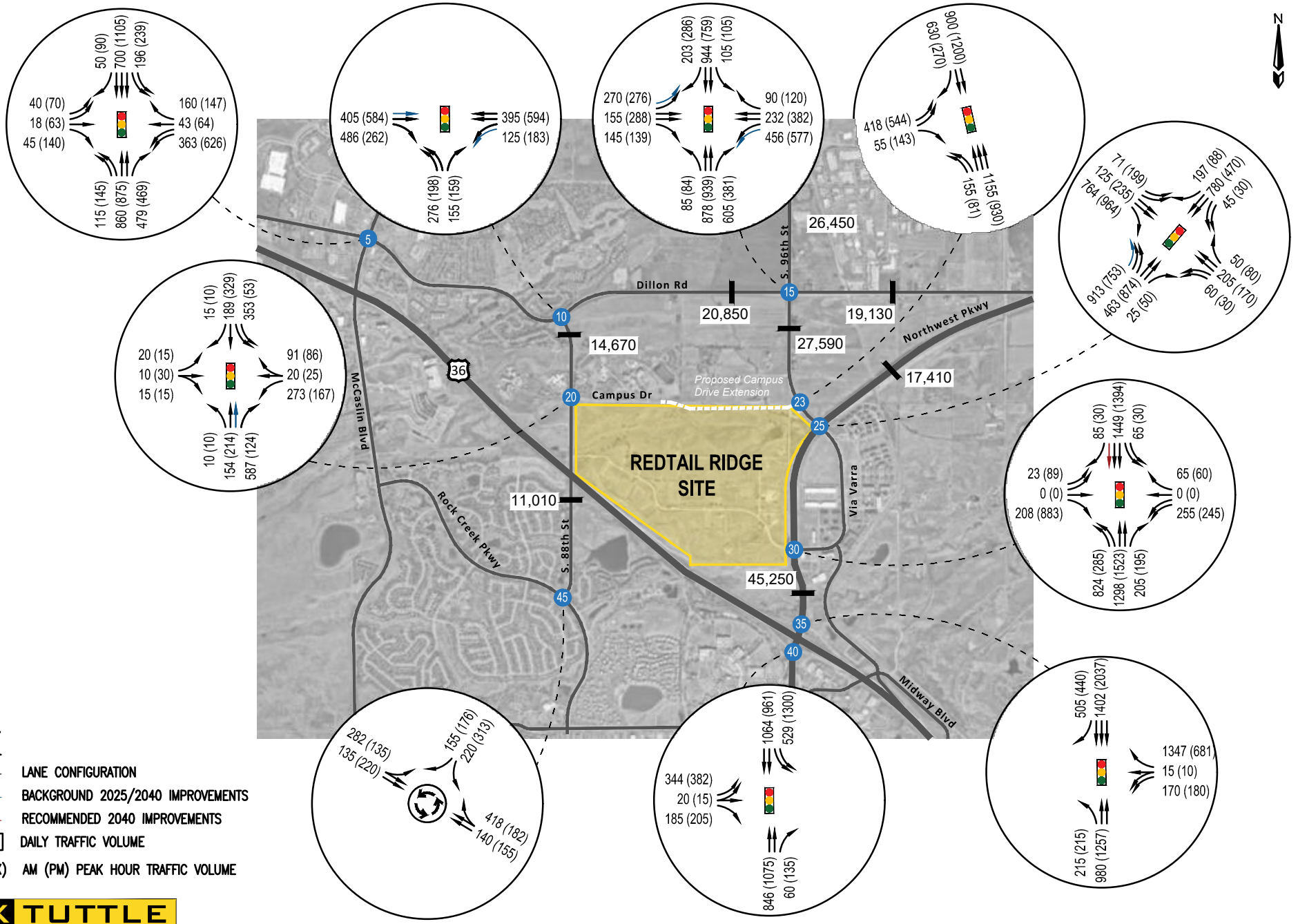
- ***#40. Northwest Parkway and US 36 South Ramps (Eastbound):*** During the PM peak hour, this signalized intersection was estimated to operate at LOS F due to the added volume on the southbound left-turn lane. Delay is estimated to be up to five (5) minutes.

  Recommendations: As noted under the background conditions, due to the unknowns of future roadway plans within this area (including both Northwest Parkway Extension and Jefferson Parkway), no specific mitigation is recommended. Additional capacity is needed to accommodate the forecasted traffic volumes with and without the Redtail Ridge trips, which will likely require the bridge to be widened. Additional study/analysis should be conducted at the interchange to determine the optimal design to meet the future needs. With a new design that increases capacity, this interchange should operate acceptably in the future.

8.3 Year 2040 Background + Project Intersection Capacity Analysis

This section discusses travel conditions associated with the full build out of the proposed development in the long-term scenario (Year 2040). The projected site-generated traffic was added to the Year 2040 background study area traffic volumes and are illustrated on **Figure 24**. The following assumptions were recommended in Year 2040 background (without Redtail Ridge) and assumed to be implemented for Year 2040 Background + Project scenario:

- Improvements identified in Year 2030 background + project, plus:
- Widen Dillon Road and S. 96th Street to be four-lane roadways as presented in Year 2040 background
- Optimize signal timing at all the study intersections.



KEY

- LANE CONFIGURATION
- BACKGROUND 2025/2040 IMPROVEMENTS
- RECOMMENDED 2040 IMPROVEMENTS
- X,XXX DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

FOX TUTTLE TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2040 BACKGROUND + REDTAIL RIDGE (FULL BUILDOUT) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	24

The results of the LOS calculations for the intersections are summarized in **Table 15**. Detailed tables with LOS and 95th percentile queues by movement and compared to the background scenario are available in **Appendix A (Tables A.5 and A.6).** The intersection LOS worksheets are also included in the **Appendix**. **Majority of the study intersections were estimated to operate similarly to the background scenario at overall LOS D or better.**

Table 15. Year 2040 + Project Conditions Level of Service Summary

No.	Intersection	Traffic Control	Background + Project Overall Intersection LOS		Background Intersection Overall LOS	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C	C	C
10	Dillon Road/S. 88th Street	Signal	B	B	B	B
15	Dillon Road/S. 96th Street	Signal	D	D	C	C
20	S. 88th Street/Campus Drive	Signal	C	C	C	D
22	S. 88th Street/Rockcress Drive	Side-Street Stop	A (C)	A (B)	-	-
23	S. 96th Street/Campus Drive	Signal	B	C	-	-
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	C	C	C	C
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	**E**	**E**	B	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	C	**F**	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)	A (A)	A (A)
101	Campus Drive/North-South Collector	Side-Street Stop	A (B)	A (B)	-	-
102	Campus Drive/Sorrel Avenue	Roundabout	A (B)	A (B)	-	-
103	Rockcress Drive/North-South Collector	Side-Street Stop	A (B)	A (B)	-	-
104	Rockcress Drive/East-West Collector (South)	Side-Street Stop	A (B)	A (B)	-	-
105	Rockcress Drive/Sorrel Avenue	Roundabout	A (A)	A (A)	-	-
106	Sorrel Avenue/East-West Collector (South)	All-Way Stop	B (C)	B (C)	-	-
107	Sorrel Avenue/East-West Collector (North)	All-Way Stop	A (B)	A (B)	-	-
108	N-S Collector/ E-W Collector (North)	Side-Street Stop	A (A)	A (A)	-	-
205	Sorrel Avenue/PUD 2 Access E	Side-Street Stop	A (B)	A (B)	-	-

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

With the additional traffic associated with the full buildout of Redtail Ridge, the following intersections were calculated to begin to operate overall at LOS E/F or have movements that operate at LOS E/F:

- ***#15. Dillon Road and S. 96th Street:*** During the PM peak hour, the northbound through movement was estimated to begin to operate at LOS E due to high turning volume and limited green time. No significant queuing issues were shown in the traffic analysis.

  Recommendations: Adjust signal timing as appropriate.

- ***#20. S. 88th Street and Campus Drive:*** During the AM peak hour, the westbound left-turn movement was estimated to begin to operate at LOS E as experienced in the existing conditions due to high turning volume and limited green time.

  Recommendations: Adjust signal timing as appropriate.

- ***#30. Northwest Parkway and Rockcress Drive/Via Varra:*** In both peak hours, this signalized intersection was estimated to being to operate at LOS E due to the added delay on the northbound left-turn lane and opposing southbound through lane. Each of these signal phases impacts the other. During the morning peak hour, the northbound left-turn queue was calculated to exceed the storage length.

  Recommendations: Consider constructing a third southbound through lane on Northwest Parkway to reduce the delay on this movement and to reallocate green time to the northbound left-turn phase. Adjustments to the signal timing alone will not improve the overall intersection delay and northbound already includes two turn lanes. With the additional capacity, it was estimated that this intersection will improve to LOS D overall. The northbound left-turn will continue to operate at LOS F in both peak periods but is not expected to experience cycle failure and queues are not expected to exceed the storage length. Note that Redtail Ridge trips are only seven (7) percent of the total traffic on southbound Northwest Parkway.

- ***#40. Northwest Parkway and US 36 South Ramps (Eastbound):*** During the PM peak hour, this signalized intersection was estimated to operate at LOS F due to the added volume on the eastbound left-turn lane and southbound left-turn lane. Delay on the southbound left-turn was estimated to be just over six (6) minutes.

  Recommendations: As identified and discussed in the background (without project) scenario, additional capacity is needed at the US 36/Northwest Parkway interchange, no specific mitigation is recommended. The future design will likely require that the bridge to be widened. Additional study/analysis should be conducted at the interchange to determine the optimal design to meet the future needs on Northwest Parkway and US 36.

The Year 2040 background + project conditions were evaluated with the improvements to Northwest Parkway. The results of the LOS calculations for the intersections are summarized in **Table 16.** A summary table with LOS and 95th percentile queue by movement in **Appendix A (Tables A.5 and A.6).** The intersection LOS worksheets are also included in the **Appendix**. **Results of the peak hour intersection capacity analysis indicate that with the recommended capacity improvements all study intersections are expected to operate at an overall LOS D or better during the AM and PM peak hours.**

Table 16. Year 2040 + Project Conditions Level of Service Summary (Improvements)

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
10	Dillon Road/S. 88th Street	Signal	B	A
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	D	D

The Jefferson Parkway study has identified the potential need for a grade separated intersection at Northwest Parkway and S. 96th Street/Via Varra, however, there are uncertainties to if/when that project would occur. Additional study should be conducted along the Northwest Parkway corridor between S. 96th Street and US 36 in conjunction with the planned improvements at the US 36 interchange to determine how capacity can be increased under future conditions. Key stakeholders include CDOT, Northwest Parkway, the City of Louisville, City and County of Broomfield, and Jefferson Parkway Public Highway Authority.

9.0 Internal Intersection Analysis

Fox Tuttle Transportation Group has worked with the Redtail Ridge team to design an internal roadway network that can accommodate the full buildout of the project trips safely and efficiently. The internal roadway consists of the Campus Drive extension to S. 96th Street, construction of Rockcress Drive between S. 88th Street and Northwest Parkway, as well as construction of Sorrel Avenue between Campus Drive and Rockcress Drive and other internal collector roadways.

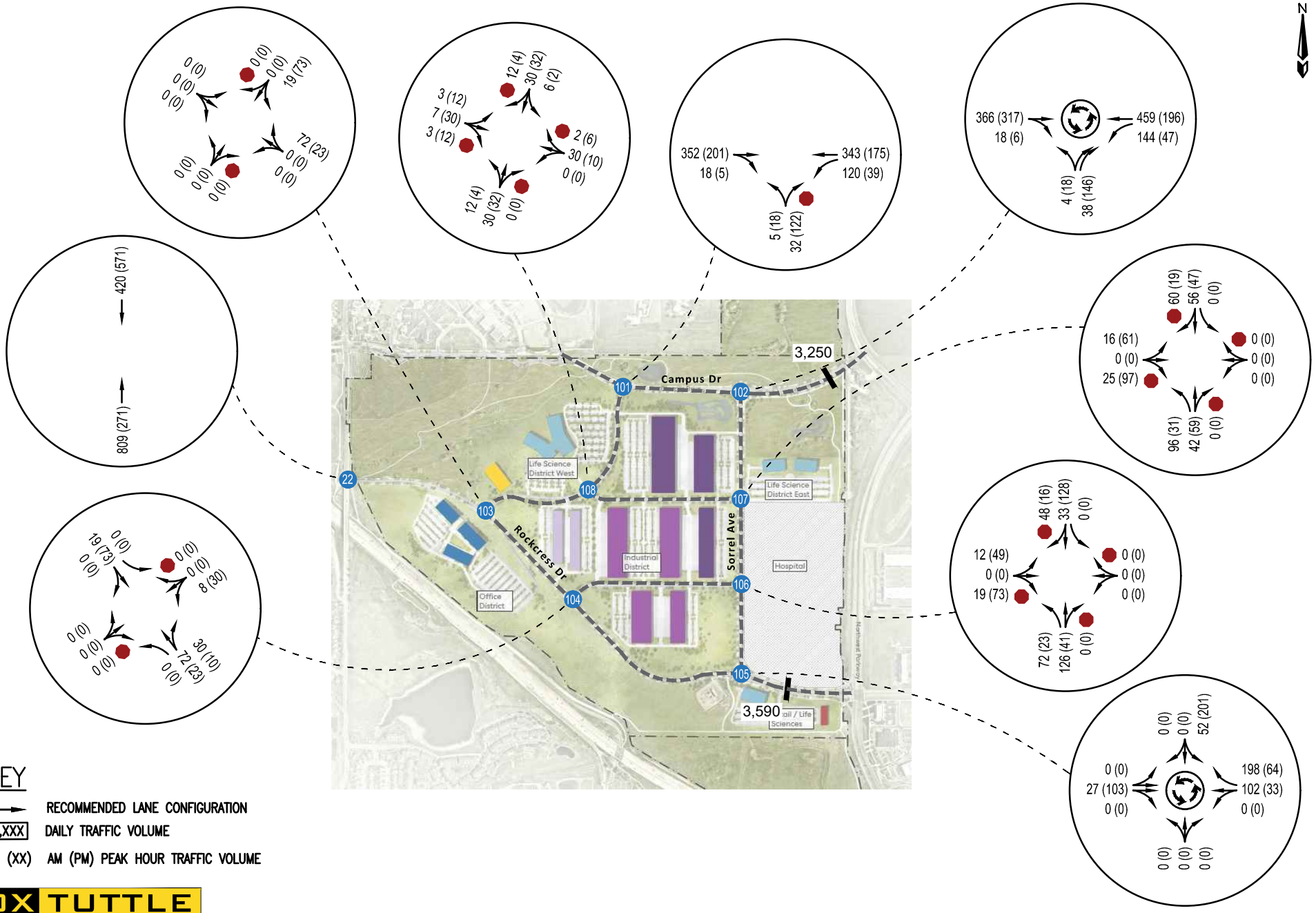
- **Campus Drive**: recommended to be a three-lane roadway between S. 88th Street and the Monarch High School eastern roundabout and a four-lane roadway between Sorrel Avenue and S. 96th Street, the section between the Monarch High School eastern roundabout and Sorrel Avenue is anticipated to operated acceptably as a two-lane roadway. Roundabout access is recommended at the Monarch school campus to the K-8 and High School main accesses as well as at Sorrel Avenue.

- **Rockcress Drive**: recommended to be a four-lane roadway between Sorrel Avenue and Northwest Parkway and to transition to two-lane collector west of Sorrel Avenue. The Sorrel Avenue intersection is recommended to be a roundabout.
- **Sorrel Avenue:** recommended to be a two-lane roadway; the driveway accesses and internal intersections are expected to operate acceptably as unsignalized.
- **Sorrel Avenue at Internal Collector Intersections:** recommended to be all-way stop controlled at the two accesses into the hospital for acceptable operations. Warrants for all-way stop control at these two intersections are included in the **Appendix**.
- **Access intersections on Rockcress Drive, Sorrel Avenue, and Internal Collectors**: there will be several driveways along the internal roadways into the parking areas and loading docks of the development. It is recommended that the access be minimized and cross-access aligned to reduce friction and improve safety for all roadway users.
- **Multi-modal facilities:** recommended to include on-street buffered bike lanes on internal roadways and sidewalks on both sides of the roadways that link to each building within the site and connect to external facilities.

Trips for Phase 1 are shown in **Figure 25** and trips volumes for Phase 2 are shown in **Figure 26**. Projected Year 2040 background + project (full build out) conditions traffic volumes are shown in **Figure 27** for Campus Drive at Sorrel Avenue and the internal roadways. The recommended intersection geometrics and traffic control for full build out conditions are shown on this figure. Recommended turn lane and taper lengths are shown in **Figure 28** and **Figure 29. All internal intersections and access locations are anticipated to operate at LOS C or better during the AM and PM peak hours and there were no queuing issues identified.** The intersection capacity reports are provided in the **Appendix**. Note that access locations will continue to be analyzed and refined through the PUD process.

The proposed cross section for internal local streets was designed to provide a high degree of access and comfortable multimodal travel, as shown in **Figure 30**. Internal local roadways are all proposed to have one travel lane per direction, a buffered bicycle lane in each direction, and detached 5-foot sidewalks on both sides of the street separated from the roadway by an 8-foot landscape buffer. Vehicle volumes on internal roadways are expected to be below 2,500 vpd. Turning volumes and opposing through volume, under the full buildout scenario, do not justify the addition of dedicated turn lanes at access points to individual lots.

The proposed cross section of the two-lane section of Rockcress Drive (west of Sorrel Avenue) is shown in **Figure 31**. The proposed cross section of Sorrel Avenue is shown in **Figure 32**. Both Rockcress Drive and Sorrel Avenue will have buffered bike lanes and detached sidewalks for comfortable multimodal travel.



KEY

→ RECOMMENDED LANE CONFIGURATION

X,XXX DAILY TRAFFIC VOLUME

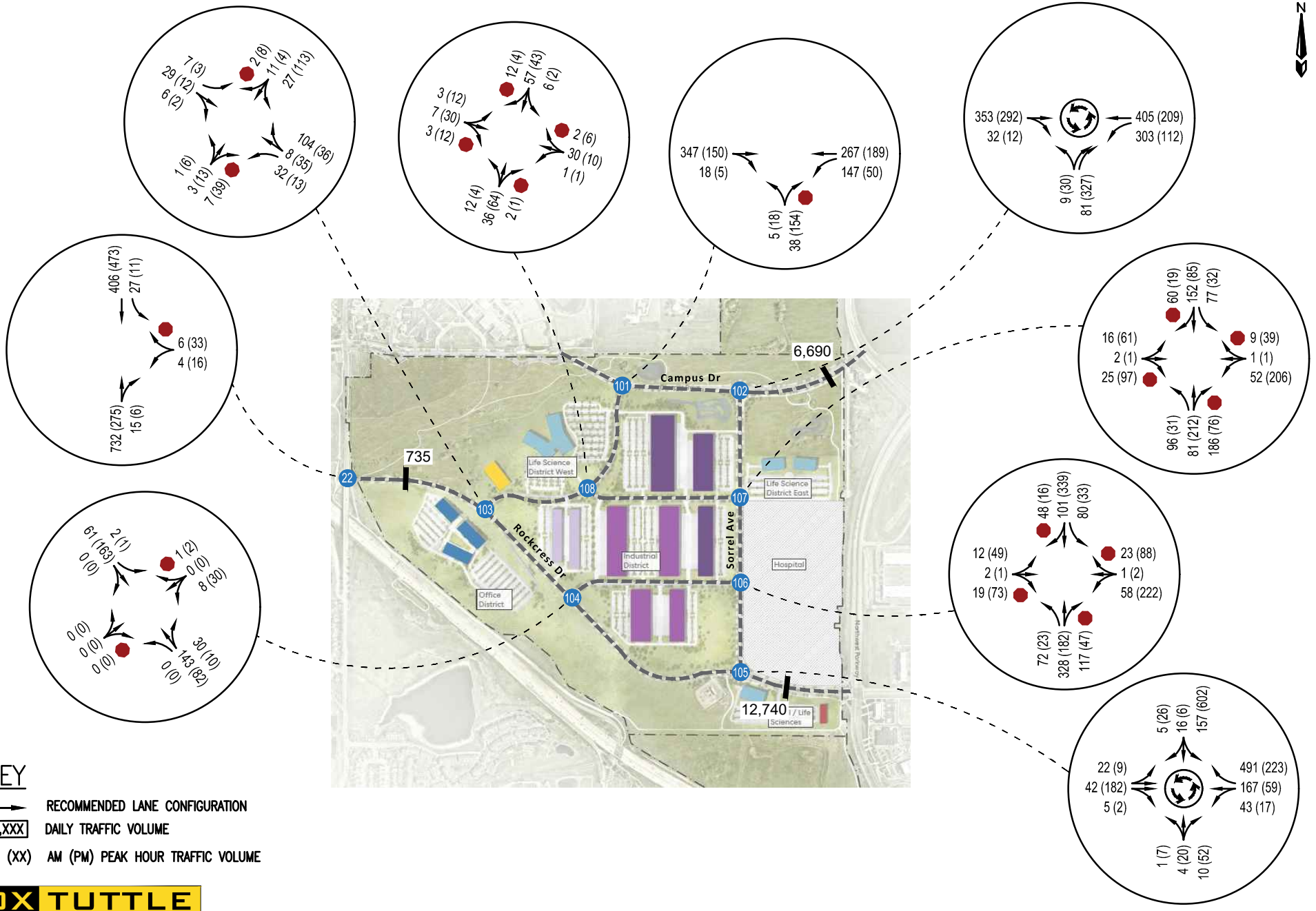
XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

FOX TUTTLE TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2025 BACKGROUND + REDTAIL RIDGE (PHASE 1) TRAFFIC VOLUMES [INTERNAL INTERSECTIONS]

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	25



KEY

→ RECOMMENDED LANE CONFIGURATION

X,XXX DAILY TRAFFIC VOLUME

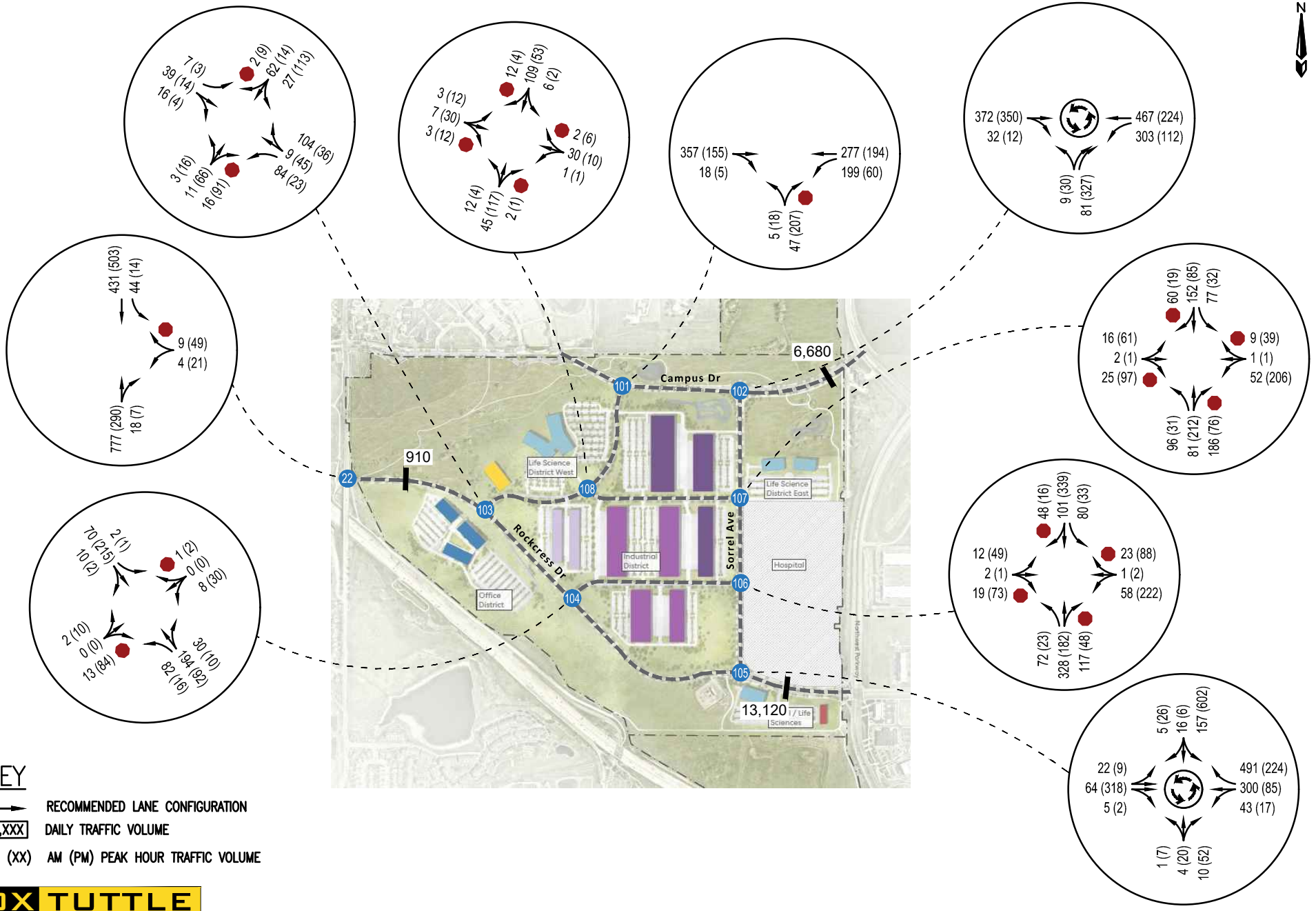
XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2030 BACKGROUND + REDTAIL RIDGE (PHASE 1 & 2) TRAFFIC VOLUMES [INTERNAL INTERSECTIONS]

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	26



KEY

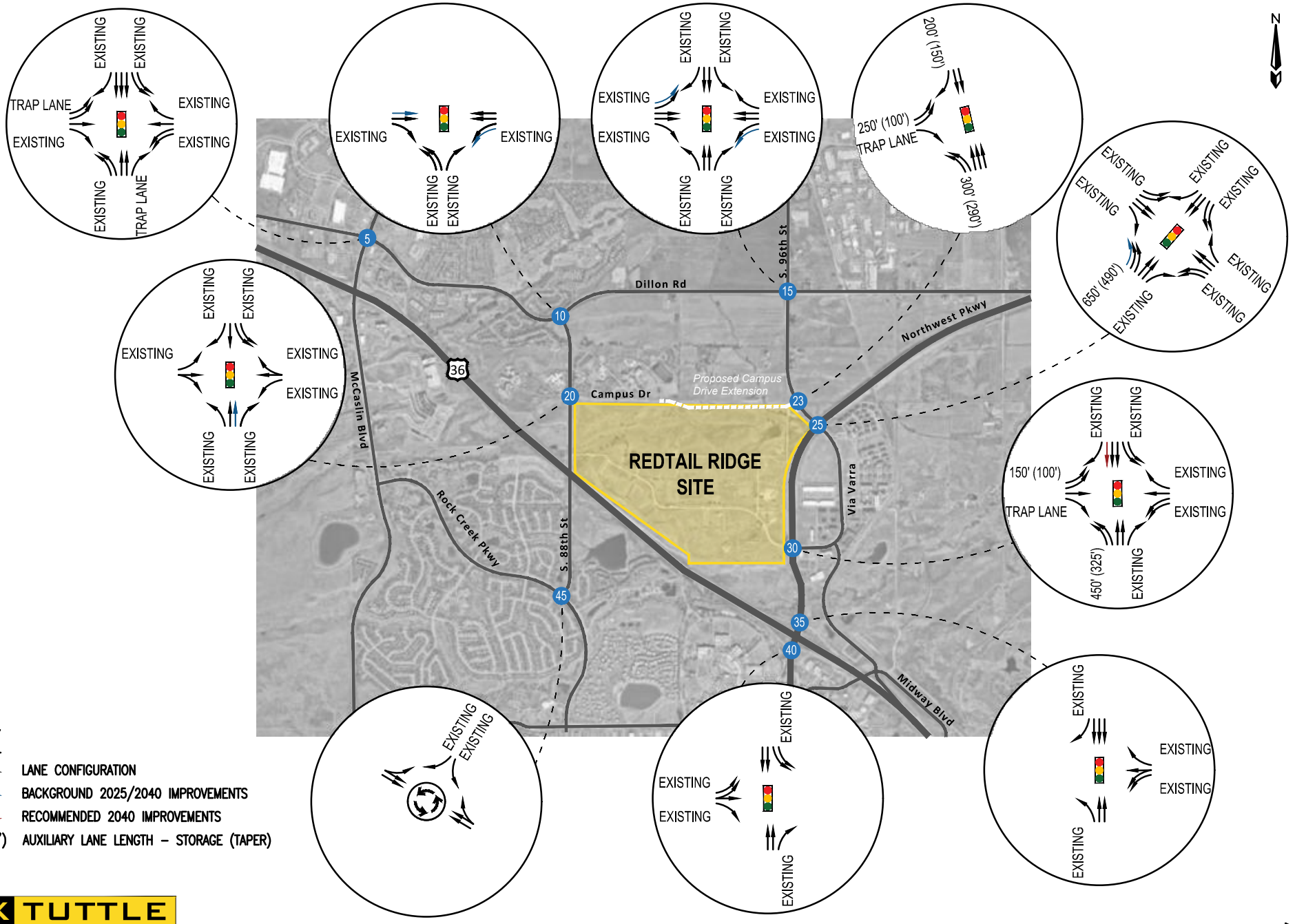
- → RECOMMENDED LANE CONFIGURATION
- [X,XXX] DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

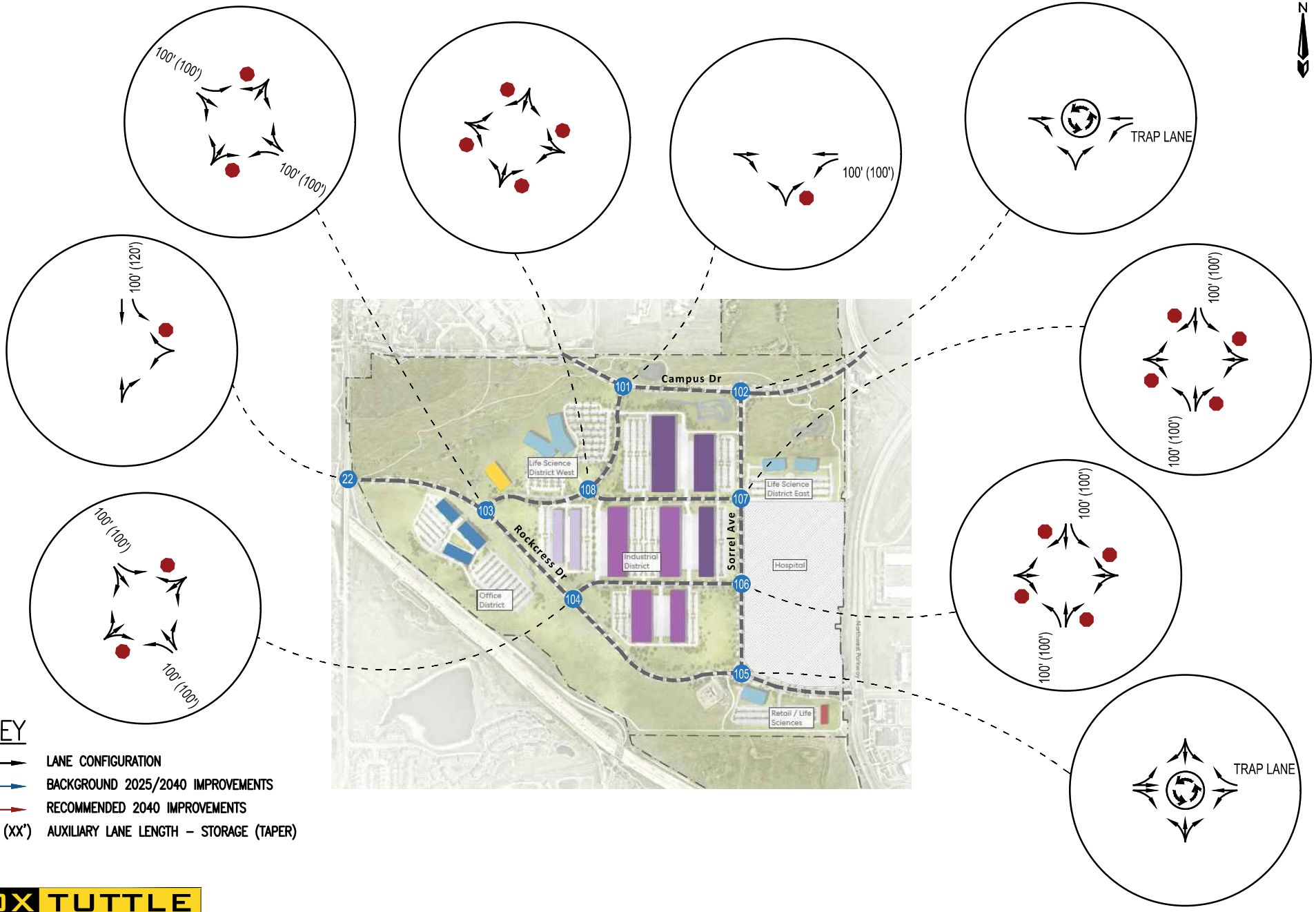
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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2040 BACKGROUND + REDTAIL RIDGE (FULL BUILDOUT) TRAFFIC VOLUMES [INTERNAL INTERSECTIONS]

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	27


N
EXISTING
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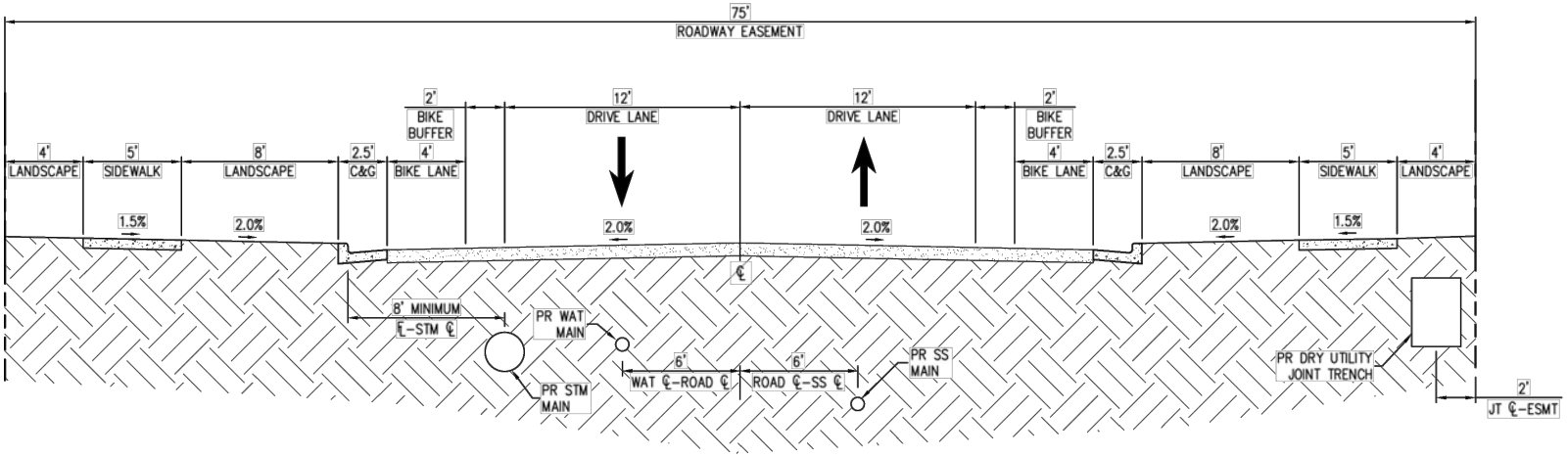


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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

INTERNAL TURN LANE DESIGN

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	29

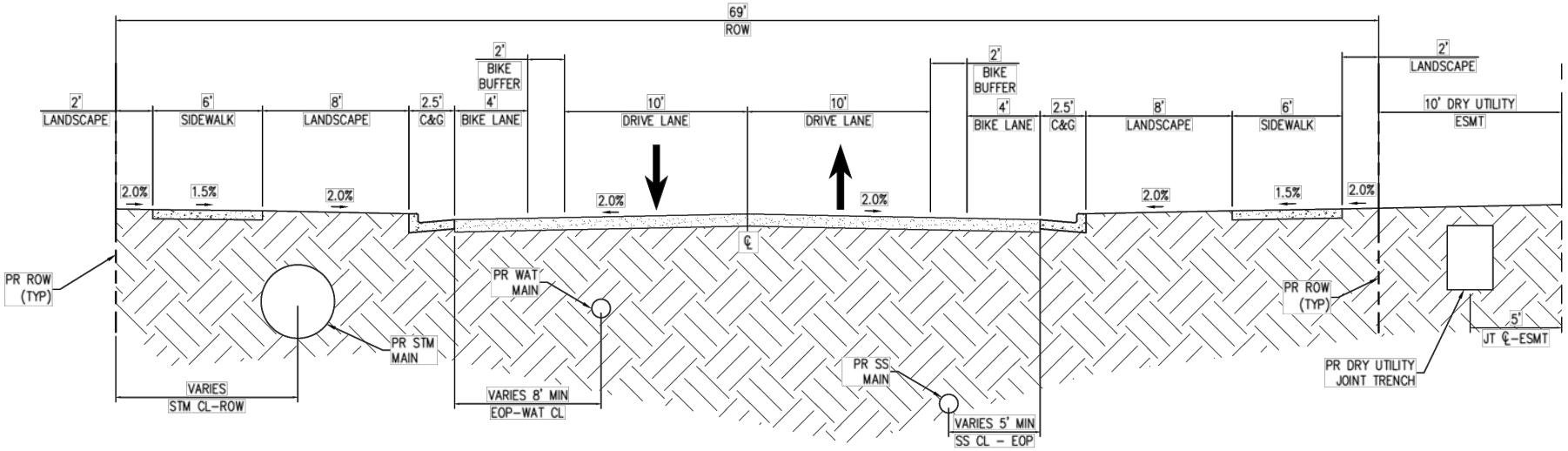


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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

INTERNAL LOCAL ROADWAY CROSS SECTION

FT Project #	19055	Original Scale	NTS	Date	10/12/2023	Drawn by	SKK	Figure #	30



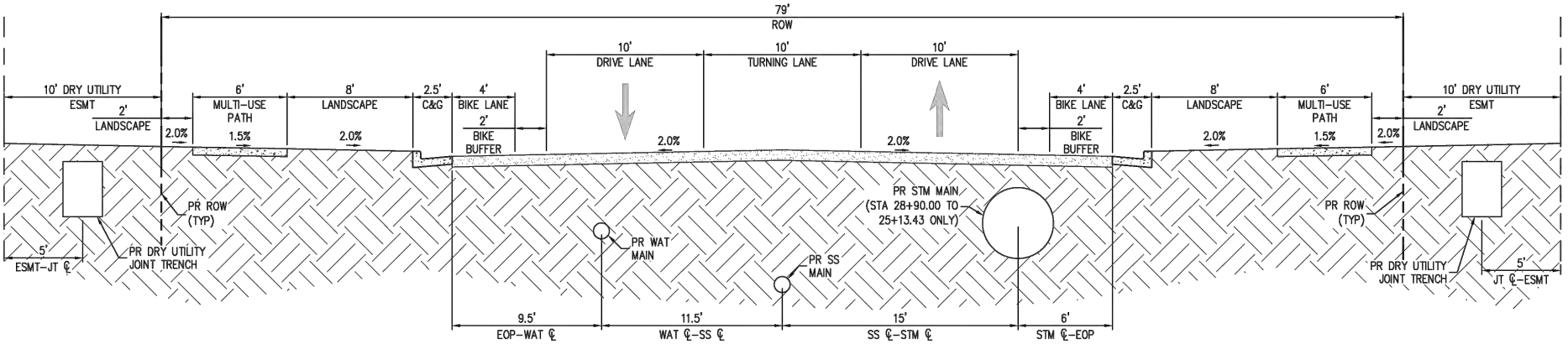
ROCKCRESS DRIVE TYPICAL CROSS SECTION – LOOKING NORTHWEST

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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

ROCKCRESS DRIVE TWO-LANE CROSS SECTION

FT Project #	19055	Original Scale	NTS	Date	10/12/2023	Drawn by	SKK	Figure #	31



SORREL AVE TYPICAL CROSS SECTION – LOOKING NORTH

STATIONS: 3+21.31 TO 28+90.00

FOX TUTTLE
TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

SORREL AVENUE CROSS SECTION

FT Project #	19055	Original Scale	NTS	Date	10/12/2023	Drawn by	SKK	Figure #	32

10.0 Queuing Analysis

A queuing analysis was performed to determine if the 95th percentile queues would be accommodated by the existing and proposed storage lengths and if any of the queues would impact an upstream intersection/access. The 95th percentile queues for each existing and future scenario as calculated by Synchro (assuming each vehicle utilizes 25 feet of space) are detailed in the tables of the **Appendix**.

It should be noted that the 95th percentile queue length is a theoretical queue that is 1.65 standard deviations above the average queue length. In theory, the 95th percentile queue would be exceeded 5% of the time based on the average queue length, but it is also possible that a queue this long may not occur. **The analysis resulted in all queues being maintained within the existing and proposed storage lengths.**

S. 96th Street/Campus Drive Influence on Fire Station Access

Additional analysis was conducted for the fire station access near the future intersection of S. 96th Street/Campus Drive to determine the anticipated queuing, provided storage lengths, and impact of the fire station access. On S. 96th Street there is approximately 730 feet between the northbound stop line at Campus Drive and the southbound stop line at Northwest Parkway. It is proposed that the dual southbound left-turns at Northwest Parkway remain, and one northbound left-turn lane be constructed at Campus Drive.

The **southeast-bound left-turns on S. 96th Street at Northwest Parkway** will have a total of 480 feet of storage (inside lane with 160 feet and outside lane with 320 feet) and taper length of 130 feet. The 95th percentile queue was estimated to be up to 100 feet with full buildout of Redtail Ridge and completion of recommended improvements. **Based on the queuing analysis, the southeast-bound left-turn storage at S. 96th Street and Northwest Parkway is adequate to accommodate the 95th percentile queue at full buildout.**

The **northbound left-turn lane at Campus Drive** is proposed to have a total of 630 feet of storage. The 95th percentile queue was estimated to be up to 100 feet with full buildout of Redtail Ridge and completion of recommended improvements. **Based on the queuing analysis, the northbound left-turn storage at S. 96th Street and Campus Drive is adequate to accommodate the 95th percentile queue at full buildout.**

The existing fire station has one access on S. 96th Street, approximately 165 feet from the northbound stop line at the future Campus Drive intersection. The existing median has a break for exiting emergency vehicles that is approximately 28 feet. There is a second break in the median for entering emergency vehicles with a width of 32 feet. If the access on 96th Street remains, it is proposed that "Do Not Block" pavement markings will be needed for the northbound approach, including in the northbound left-turn

lane. **It is recommended that the "Do Not Block" box on S. 96th Street be no longer than 65 feet to continue to be able to accommodate the estimated 95th percentile queue.** This area is wider than the existing median break, but the design would need to be approved by the fire department.

With the Campus Drive Extension, a new T-intersection will be created on S. 96th Street. The **eastbound approach (Campus Drive)** is proposed to provide two left-turn lanes and one right-turn lane. The inside left-turn lane is proposed to extend 450 feet and the outside left-turn lane will be the striped for 450 feet but is one of the through lanes on Campus Drive that will end at S. 96th Street (total of 950 feet of storage). The right-turn lane is the second through lane that ends at S. 96th Street. The 95th percentile queue for the eastbound left-turn movement was estimated to be up to 250 feet with full buildout of Redtail Ridge and completion of recommended improvements. **Based on the queuing analysis, the eastbound left-turn storage at S. 96th Street and Campus Drive is adequate to accommodate the 95th percentile queue at full buildout.**

There is potential for the fire station will have access on Campus Drive approximately 100 feet west of the eastbound stop line at 96th Street. The proposed break in the median is approximately 100 feet. **It is recommended that the "Do Not Block" box on Campus Drive be no longer than 100 feet to continue to be able to accommodate the estimated 95th percentile queue and match the proposed break in the median.** This area is wider than the existing median break on 96th Street, but the design would need to be approved by the fire department.

11.0 Crash Reduction and Vision Zero

The crash analysis completed in the City of Louisville TMP, also shown in **Section 3.0** of this study, documents the crash trends in the Redtail Ridge study area. As a result of the high crash locations, the TMP outlined priorities to work toward reducing all crashes in the City. The term "Vision Zero" encapsulates the concept of providing safe and complete roadways for all users with a goal of reducing all crashes, specifically fatal and life threating crashes.

The Redtail Ridge design team is proposing to enhance the TMP Vision Zero recommendations with the internal connectivity and roadway design. The intersection and multimodal improvements recommended in this study will accelerate the City's progress toward Vision Zero and provide safe travel as new residents, visitors and employees travel to and from Redtail Ridge. A specific overview of the recommended projects that could work toward Vision Zero are outlined below.

- **Extension of Campus Drive east to S. 96th Street** would provide a secondary route to/from the Monarch school campus and alternative route to Dillon Road. This would provide redundant access for emergency services and redistribute AM peak traffic to new intersections with enhanced safety features outlined below.
- Each of the intersections in the study area was evaluated in this study with **future changes to signal timing and vehicle storage to reduce crashes**. Providing safe clearance times and adequate storage will work toward Vision Zero goals in the S. 88th Street, Dillon Road, and S. 96th Street corridors.
- The intersections in this study utilized **best practices for pedestrian signal timing** at intersections. This includes walk phases that allow adequate time for seniors and children to cross streets. Additional protection is possible if City staff and the community would be willing to accept additional travel time delay during peak AM travel conditions. We look forward to finding the right balance that works toward Vision Zero goals.
- The bicycle network in this study recommends going beyond the TMP recommendations by **building a network of buffered and protected bikeways** in the S. 88th Street, S. 96th Street, and Dillon Road corridors as well as through the currently inaccessible project site. This would include intersection treatments that protect people on bicycles from turning movements when they are waiting for signals.

The design team will continue to apply Vision Zero best practices as additional site plan details are prepared during the PUD process. This includes the use of traffic calming features, properly sized lane widths, roundabouts, speed limits, and signage that works toward the City of Louisville's TMP safety goals.

12.0 Improvement Phasing

A summary of improvements recommended in this report at the study intersections and segments is provided in **Table 17** for both with and without project conditions. The estimated timeline for when the improvement is needed/triggered is also noted in the summary table.

Table 17. Improvement Phasing Summary

Roadway or Intersection	Mitigation	Trigger Timeline						Percent of Redtail Ridge Traffic
		Background (Non-Project Related)			Redtail Ridge Project			
		2025	2030	2040	Phase 1	Phase 2	Phase 3	
S. 88th Street	Widen to 4-lanes (Dillon Rd to Campus Dr)	★						9%
S. 96th Street	Widen to 4-lanes (Dillon Rd to NW Pkwy)	★						11%
	Widen to 4-lanes (1/2 mile north of Dillon Rd)			★				14%
Dillon Road	Widen to 4-lanes (S. 88th St to S. 96th St)			★				4%
Northwest Pkwy	Add 3rd Southbound through lane (S. 96th St. to US 36 Interchange)						★	7%
Campus Drive	Extension to S. 96th Street				★			95%
Rockcress Drive	Construct as two-lane road (NWP to N-S Internal Collector)				★			100%
	Extend to S. 88th Street					★		100%
Sorrel Avenue	Construct as a two-lane road with center left-turn lane				★			100%
Internal Collectors	Construct as two-lane roads				★			100%
#10. Dillon Road at S. 88th Street	Restripe 2nd WB left-turn lane	★						0%
#15. Dillon Road at S. 96th Street	Construct dual EB left-turn lanes	★						0%
	Construct dual WB left-turn lanes	★						4%
#20. S. 88th Street at Campus Drive	Construct 2nd NB thru lane (begin approx. 500 feet south of Campus Drive)	★						23%
	Extend NB right-turn lane (500 feet)	★						3%
#22. S. 88th Street at Rockcress Drive	Construct as side-street stop-controlled, with full movement					★		8%
	Construct one SB left-turn lane					★		100%
#23. S. 96th Street at Campus Drive	Construct dual NB left-turn lanes				★			64%
	Construct SB right-turn lane				★			39%
	Construct dual EB left-turn lanes				★			62%
	Construct one EB right-turn lane				★			100%
	Signalize				★			20%
#25. Northwest Parkway at S. 96th Street / Via Varra	Construct 3rd NB left-turn lane	★						4%
	Capacity improvements on NWP			★				8%

Roadway or Intersection	Mitigation	Trigger Timeline						Percent of Redtail Ridge Traffic
		Background (Non-Project Related)			Redtail Ridge Project			
		2025	2030	2040	Phase 1	Phase 2	Phase 3	
#30. Northwest Parkway at Rockcress Drive / Via Varra	Modify EB with one left-turn lane, one thru lane, and one right-turn lane				★			100%
	Remove the split phase on EB/WB				★			100%
#35 & #40. Northwest Parkway at US 36 Interchange	New Interchange			★				19%
#101. Campus Drive at N-S Internal Collector	Implement Side-Street Stop-Control				★			100%
	Construct WB left-turn lane				★			100%
#102. Campus Drive at Sorrel Avenue	Construct as Multi-Lane Roundabout				★			65%
#103 & #104. Rockcress Drive at Internal Collectors	Implement Side-Street Stop-Control				★			100%
#105. Rockcress Drive at Sorrel Avenue	Construct as Multi-Lane Roundabout				★			100%
#106 & #107. Sorrel Avenue at E-W Internal Collectors	Implement Side-Street Stop-Control				★			100%
	Implement All-Way Stop					★		100%
	Construct NB left-turn lane				★			100%
	Construct SB left-turn lane					★		100%
#108. N-S Internal Collector at E-W Internal Collector (North)	Implement Side-Street Stop-Control				★			100%
#205. Sorrel Avenue at PUD 2 Access E	Implement Side-Street Stop-Control				★			100%

Table 17 includes a number of potential improvements to roadway segments and intersections that the City of Louisville should monitor over time as area traffic increases, including:

- The need to widen Dillon Road to four lanes between S. 88th Street and S. 96th Street
- The need to widen S. 96th Street from south of Dillon Road to SH 42

The City will also want to monitor potential improvements to the Northwest Parkway between 96th Street and US 36, and potential implementation of the Jefferson Parkway.

13.0 Next Steps

After the Filing 1 plat submittal, vertical developers will be required to submit PUD documents prior to construction, including traffic conformance letters. The PUD documents will identify if/when traffic signals at the internal intersections are projected to be warranted as well as signal timing modifications/adjustments needed to the study intersections. In addition, the vertical developers will be required to submit building specific Travel Demand Management (TDM) Plans. The projected non-single occupancy vehicle (non-SOV) goals will be evaluated and adjusted as needed to reach goals. The Metro District will monitor the plans effectiveness and make changes as needed to reach goals.

Appendix:

A - Level of Service by Movement and Queuing Summary Tables

B - Previous Studies

C - Existing Traffic Data

D - Level of Service Definitions

E - Non-SOV References

F - Intersection Capacity Worksheets (Synchro)

G – All-Way Stop Control Warrant Analysis

H – Percent Contribution

Appendix A – Level of Service and Queuing Summary Tables

Table A.1 - Peak Hour Intersection Level of Service Summary (Existing and Background Conditions)

Intersection and Lanes Groups	Existing (Year 2023)				Year 2025 Bkgrd				Year 2025 Bkgrd (With Improvements)					Year 2030 Bkgrd				Year 2040 Bkgrd				Year 2040 Bkgrd (With Improvements)				
	AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
Signalized Control																										
5. Dillon Road and McCaslin Boulevard	**28**	**C**	**31**	**C**	**30**	**C**	**33**	**C**						**30**	**C**	**33**	**C**	**29**	**C**	**34**	**C**					
Eastbound Left	54	D	46	D	55	D	47	D						55	D	48	D	54	D	48	D					
Eastbound Through	56	E	51	D	57	E	52	D						57	E	54	D	57	E	52	D					
Eastbound Right	0	A	0	A	0	A	0	A						0	A	0	A	0	A	0	A					
Westbound Left	55	D	47	D	54	D	49	D						53	D	50	D	54	D	50	D					
Westbound Through	49	D	36	D	48	D	36	D						47	D	35	D	48	D	35	C					
Westbound Right	0	A	0	A	0	A	0	A						0	A	0	A	0	A	0	A					
Northbound Left	58	E	49	D	58	E	50	D						58	E	51	D	58	E	51	D					
Northbound Through	15	B	23	C	17	B	24	C						18	B	25	C	17	B	27	C					
Northbound Right	0	A	0	A	0	A	0	A						0	A	0	A	0	A	0	A					
Southbound Left	59	E	49	D	62	E	50	D						62	E	50	D	59	E	50	D					
Southbound Through	12	B	20	B	13	B	21	C						13	B	22	C	13	B	22	C					
Southbound Right	2	A	0	A	0	A	0	A						0	A	0	A	0	A	0	A					
10. Dillon Road and 88th Street	**18**	**B**	**12**	**B**	**26**	**C**	**16**	**B**		**16**	**B**	**11**	**B**	**16**	**B**	**11**	**B**	**20**	**B**	**13**	**B**		**17**	**B**	**11**	**B**
Eastbound Through	26	C	20	B	53	D	33	C	Widen 88th (4 lanes) n/o Campus Dr & add 2nd WBL	24	C	16	B	25	C	17	B	43	D	19	B	Widen Dillon Rd (4 lanes)	32	C	13	B
Eastbound Right	13	B	8	A	22	C	13	B		10	A	6	A	10	A	6	A	11	B	6	A		10	B	6	A
Westbound Left	15	B	9	A	30	C	13	B		11	B	8	A	12	B	8	A	24	C	9	A		20	B	6	A
Westbound Through	8	A	6	A	12	B	9	A		12	B	9	A	10	A	6	A	18	B	6	A		18	B	6	A
Northbound Left	51	D	44	D	49	D	44	D		49	D	44	D	48	D	44	D	31	C	44	D		31	C	44	D
Northbound Right	1	A	1	A	1	A	1	A		1	A	1	A	1	A	1	A	1	A	1	A		1	A	1	A
15. Dillon Road and 96th Street	**33**	**C**	**37**	**D**	**44**	**D**	**43**	**D**		**31**	**C**	**33**	**C**	**31**	**C**	**33**	**C**	**30**	**C**	**33**	**C**					
Eastbound Left	22	C	26	C	32	C	39	D	Widen 96th (4 lanes) n/o NWP & add 2nd EBL & 2nd WBL; Overlap for SBR	22	C	22	C	22	C	22	C	20	C	22	C					
Eastbound Through	28	C	33	C	30	C	36	D		27	C	30	C	27	C	30	C	25	C	30	C					
Eastbound Right	28	C	34	C	30	C	37	D		27	C	31	C	28	C	31	C	25	C	31	C					
Westbound Left	22	C	26	C	24	C	38	D		22	C	21	C	22	C	21	C	21	C	21	C					
Westbound Through	31	C	33	C	37	D	37	D		31	C	30	C	32	C	31	C	28	C	29	C					
Westbound Right	28	C	32	C	33	C	35	D		28	C	29	C	28	C	29	C	27	C	28	C					
Northbound Left	28	C	35	C	36	D	37	D		29	C	31	C	31	C	32	C	26	C	32	C					
Northbound Through	30	C	48	D	40	D	56	E		34	C	46	D	34	C	47	D	36	D	47	D					
Northbound Right	0	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
Southbound Left	28	C	35	C	32	C	37	D		27	C	32	C	27	C	32	C	27	C	32	C					
Southbound Through	38	D	44	D	45	D	47	D		38	D	39	D	39	D	40	D	37	D	40	D					
Southbound Right	59	E	46	D	112	F	54	D		36	D	45	D	38	D	29	C	31	C	30	C					
20. 88th Street and Campus Drive	**33**	**C**	**36**	**D**	**36**	**D**	**40**	**D**		**33**	**C**	**34**	**C**	**33**	**C**	**35**	**C**	**34**	**C**	**38**	**D**					
Eastbound Left	35	C	44	D	35	C	43	D	Widen 88th (4 lanes) n/o Campus Dr & add 2nd NBT; PM: +2s on WBL & -2 on NBT/SBT	34	C	37	D	34	C	43	D	34	C	48	D					
Eastbound Through+Right	57	E	42	D	60	E	42	D		54	D	42	D	54	D	42	D	53	D	41	D					
Westbound Left	35	C	63	E	40	D	81	F		39	D	48	D	39	D	51	D	44	D	51	D					
Westbound Through+Right	38	D	43	D	41	D	43	D		41	D	43	D	41	D	41	D	47	D	49	D					
Northbound Left	26	C	20	B	26	C	20	B		26	C	21	C	26	C	21	C	26	C	23	C					
Northbound Through	42	D	26	C	51	D	28	C		35	D	25	C	35	D	25	C	34	C	27	C					
Northbound Right	24	C	12	B	25	C	12	B		24	C	12	B	24	C	12	B	25	C	14	B					
Southbound Left	24	C	14	B	29	C	15	B		23	C	16	B	23	C	15	B	22	C	18	B					
Southbound Through	31	C	22	C	32	C	25	C		32	C	28	C	32	C	27	C	31	C	32	C					
Southbound Right	30	C	17	B	30	C	18	B		30	C	20	B	30	C	19	B	30	C	22	C					

Not Applicable (Year 2025 Bkgrd (With Improvements))

Not Applicable (Year 2040 Bkgrd (With Improvements))

Not Applicable (Year 2040 Bkgrd (With Improvements))

Table A.1 - Peak Hour Intersection Level of Service Summary (Existing and Background Conditions)

Intersection and Lanes Groups	Existing (Year 2023)				Year 2025 Bkgrd				Year 2025 Bkgrd (With Improvements)					Year 2030 Bkgrd				Year 2040 Bkgrd				Year 2040 Bkgrd (With Improvements)				
	AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
25. Northwest Parkway and 96th Street/Via Varra	**25**	**C**	**77**	**E**	**73**	**E**	**91**	**F**		**35**	**D**	**27**	**C**	**35**	**D**	**34**	**C**	**31**	**C**	**29**	**C**					
Eastbound Left - 96th Street	45	D	45	D	45	D	44	D	Widen 96th (4 lanes) n/o NWP & add 3rd NBL & no SBR accel but add overlap phase	46	D	44	D	45	D	44	D	46	D	43	D		Not Applicable			
Eastbound Through - 96th Street	47	D	47	D	48	D	46	D		48	D	46	D	48	D	46	D	5	A	46	D					
Eastbound Right - 96th Street	5	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
Westbound Left - Via Varra	42	D	45	D	43	D	44	D		43	D	44	D	43	D	44	D	43	D	44	D					
Westbound Through - Via Varra	44	D	49	D	53	D	49	D		54	D	49	D	53	D	49	D	52	D	49	D					
Westbound Right - Via Varra	0	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
Northbound Left - NWP	34	C	>120	F	>120	F	>120	F		41	D	27	C	40	D	47	D	39	D	41	D					
Northbound Through - NWP	4	A	9	A	9	A	11	B		9	A	11	B	9	A	11	B	9	A	11	B					
Northbound Right - NWP	0	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
Southbound Left - NWP	46	D	51	D	52	D	51	D		52	D	51	D	52	D	51	D	51	D	51	D					
Southbound Through - NWP	51	D	24	C	37	D	26	C		32	C	35	D	35	C	27	C	24	C	19	B					
Southbound Right - NWP	0	A	0	A	0	A	0	A		21	C	24	C	22	C	18	B	16	B	12	B					
30. Northwest Parkway and Via Varra (Rockcress)	**14**	**B**	**13**	**B**	**20**	**C**	**16**	**B**		**15**	**B**	**15**	**B**	**16**	**B**	**16**	**B**	**15**	**B**	**16**	**B**					
Eastbound Left	57	E	0	A	52	D	0	A	AM: +4s on WB, - 4s on NB/SB Thru PM: AM: +2s on WB, - 2s on NB/SB Thru	52	D	0	A	52	D	0	A	52	D	0	A		Not Applicable			
Eastbound Through	0	A	78	E	0	A	64	E		0	A	64	E	0	A	64	E	0	A	64	E					
Eastbound Right	0	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
Westbound Left	66	E	51	D	117	F	55	E		53	D	51	D	53	D	51	D	55	D	52	D					
Westbound Through	44	D	43	D	44	D	42	D		42	D	41	D	42	D	41	D	41	D	41	D					
Westbound Right	63	E	47	D	100	F	46	D		52	D	45	D	50	D	45	D	45	D	45	D					
Northbound Left	0	A	52	D	0	A	50	D		0	A	50	D	0	A	50	D	0	A	50	D					
Northbound Through	9	A	9	A	10	B	11	B		12	B	11	B	13	B	12	B	13	B	13	B					
Northbound Right	7	A	6	A	7	A	7	A		8	A	7	A	8	A	8	A	8	A	7	A					
Southbound Left	49	D	51	D	49	D	51	D		49	D	51	D	49	D	51	D	49	D	51	D					
Southbound Through	6	A	8	A	6	A	10	B		7	A	10	B	8	A	11	B	9	A	12	B					
Southbound Right	0	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
35. Northwest Parkway & US 36 North Ramps (WB)	**8**	**A**	**8**	**A**	**9**	**A**	**8**	**A**						**9**	**A**	**8**	**A**	**8**	**A**	**8**	**A**					
Westbound Left	46	D	45	D	46	D	45	D		Not Applicable				46	D	45	D	46	D	46	D		Not Applicable			
Westbound Through	46	D	45	D	46	D	45	D						46	D	46	D	46	D	45	D					
Westbound Right	1	A	0	A	1	A	0	A						1	A	0	A	1	A	1	A					
Northbound Left	19	B	20	C	28	C	27	C						27	C	24	C	27	C	23	C					
Northbound Through	2	A	4	A	2	A	4	A						3	A	5	A	3	A	6	A					
Southbound Through	6	A	5	A	6	A	5	A						6	A	6	A	6	A	6	A					
Southbound Right	11	B	6	A	12	B	6	A						11	B	6	A	9	A	5	A					

Table A.1 - Peak Hour Intersection Level of Service Summary (Existing and Background Conditions)

Intersection and Lanes Groups	Existing (Year 2023)				Year 2025 Bkgrd				Year 2025 Bkgrd (With Improvements)					Year 2030 Bkgrd				Year 2040 Bkgrd				Year 2040 Bkgrd (With Improvements)				
	AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
40. Northwest Parkway & US 36 South Ramps (EB)	**15**	**B**	**22**	**C**	**16**	**B**	**23**	**C**						**16**	**B**	**23**	**C**	**16**	**B**	**25**	**C**					
Eastbound Left	*46*	*D*	*51*	*D*	*46*	*D*	*52*	*D*	*Not Applicable*					*47*	*D*	*53*	*D*	*47*	*D*	*53*	*D*	*Not Applicable*				
Eastbound Through	*46*	*D*	*51*	*D*	*47*	*D*	*51*	*D*						*47*	*D*	*51*	*D*	*47*	*D*	*53*	*D*					
Eastbound Right	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Northbound Through	*11*	*B*	*19*	*B*	*13*	*B*	*20*	*B*						*13*	*B*	*21*	*C*	*14*	*B*	*23*	*C*					
Northbound Right	*8*	*A*	*14*	*B*	*10*	*A*	*14*	*B*						*10*	*A*	*15*	*B*	*10*	*B*	*15*	*B*					
Southbound Left	*47*	*D*	*46*	*D*	*43*	*D*	*47*	*D*						*47*	*D*	*49*	*D*	*48*	*D*	*49*	*D*					
Southbound Through	*4*	*A*	*6*	*A*	*4*	*A*	*6*	*A*						*4*	*A*	*6*	*A*	*4*	*A*	*6*	*A*					
Roundabout Controlled																										
45. 88th Street and Rock Creek Parkway	**6**	**A**	**5**	**A**	**7**	**A**	**6**	**A**						**7**	**A**	**6**	**A**	**7**	**A**	**6**	**A**					
Eastbound Left	*6*	*A*	*5*	*A*	*8*	*A*	*6*	*A*	*Not Applicable*					*8*	*A*	*6*	*A*	*7*	*A*	*6*	*A*	*Not Applicable*				
Eastbound Through	*4*	*A*	*5*	*A*	*5*	*A*	*6*	*A*						*5*	*A*	*6*	*A*	*4*	*A*	*6*	*A*					
Westbound Through	*5*	*A*	*4*	*A*	*6*	*A*	*4*	*A*						*6*	*A*	*5*	*A*	*5*	*A*	*5*	*A*					
Westbound Right	*8*	*A*	*4*	*A*	*10*	*A*	*4*	*A*						*10*	*B*	*4*	*A*	*9*	*A*	*5*	*A*					
Southbound Left	*5*	*A*	*7*	*A*	*5*	*A*	*7*	*A*						*5*	*A*	*8*	*A*	*5*	*A*	*7*	*A*					
Southbound Right	*4*	*A*	*5*	*A*	*4*	*A*	*5*	*A*						*4*	*A*	*5*	*A*	*4*	*A*	*5*	*A*					

Note: Delay represented in average seconds per vehicle.

Note: Under conditions with improvements, level of service results are only provided for intersections with recommended improvements.

Table A.2 - 95th Percentile Queuing Summary (Existing and Background Conditions)

Intersection and Lane Groups	Storage Length	Existing (Year 2023)		Year 2025 Bkgrd		Year 2025 Bkgrd (With Improvements)			Year 2030 Bkgrd		Year 2040 Bkgrd		Year 2040 Bkgrd (With Improvements)		
		AM Peak	PM Peak	AM Peak	PM Peak	Imprv	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	Imprv	AM Peak	PM Peak
5. Dillon Road and McCaslin Boulevard		*Signalized*		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	425'	26'	46'	29'	47'				29'	50'	36'	54'			
Eastbound Through	-	27'	81'	33'	83'				33'	89'	44'	99'			
Eastbound Right	120'	0'	0'	0'	0'				0'	0'	0'	0'			
Westbound Left	500'	164'	275'	180'	302'				187'	311'	197'	334'			
Westbound Through	-	60'	75'	62'	78'				62'	78'	66'	87'			
Westbound Right	280'	46'	0'	47'	1'				47'	3'	59'	7'			
Northbound Left	540'	68'	89'	69'	93'				72'	93'	78'	97'			
Northbound Through	-	320'	371'	346'	378'				362'	391'	369'	419'			
Northbound Right	190'	34'	59'	36'	60'				36'	60'	64'	76'			
Southbound Left	240'	84'	119'	95'	128'				97'	131'	107'	138'			
Southbound Through	-	142'	275'	151'	280'				158'	291'	165'	309'			
Southbound Right	110'	0'	**0'**	0'	0'				0'	0'	0'	0'			
10. Dillon Road and 88th Street		*Signalized*		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Signalized*		
Eastbound Through	-	286'	399'	492'	521'	*Widen 88th (4 lanes) n/o Campus Dr & add 2nd WBL*	377'	381'	392'	399'	396'	437'	*Widen Dillon Rd (4 lanes)*	168'	167'
Eastbound Right	270'	35'	13'	36'	15'		29'	9'	29'	9'	32'	18'		32'	16'
Westbound Left	400'	305'	125'	455'	195'		135'	65'	138'	67'	150'	71'		150'	71'
Westbound Through	-	88'	83'	244'	245'		244'	245'	110'	104'	121'	112'		121'	112'
Northbound Left	-	142'	132'	151'	137'		151'	137'	157'	142'	189'	148'		189'	148'
Northbound Right	200'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'		0'	0'
15. Dillon Road and 96th Street		*Signalized*		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	415'	174'	257'	328'	333'	*Widen 96th (4 lanes) n/o NWP & add 2nd EBL & 2nd WBL; Overlap for SBR*	119'	136'	122'	139'	126'	147'			
Eastbound Through	-	133'	192'	148'	205'		134'	194'	137'	198'	144'	213'			
Eastbound Right	415'	35'	39'	37'	39'		33'	38'	35'	38'	45'	54'			
Westbound Left	425'	118'	327'	159'	373'		73'	159'	75'	163'	77'	172'			
Westbound Through	-	146'	206'	172'	235'		166'	221'	169'	233'	184'	239'			
Westbound Right	425'	10'	32'	19'	33'		19'	32'	23'	33'	29'	47'			
Northbound Left	350'	113'	58'	117'	64'		113'	60'	118'	59'	135'	67'			
Northbound Through	-	227'	350'	335'	410'		324'	391'	334'	408'	353'	432'			
Northbound Right	325'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Southbound Left	335'	65'	85'	90'	119'		87'	112'	87'	118'	92'	125'			
Southbound Through	-	264'	304'	289'	355'		281'	335'	290'	347'	303'	358'			
Southbound Right	350'	19'	67'	24'	76'		172'	73'	187'	105'	156'	103'			
20. 88th Street and Campus Drive		*Signalized*		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	150'	90'	211'	90'	214'	*Widen 88th (4 lanes) n/o Campus Dr & add 2nd NBT; PM: +2s on WBL & -2 on NBT/SBT*	90'	209'	90'	209'	97'	223'			
Eastbound Through+Right	-	201'	0'	205'	0'		203'	0'	203'	0'	211'	0'			
Westbound Left	240'	306'	292'	346'	275'		345'	308'	349'	318'	369'	316'			
Westbound Through+Right	-	0'	0'	7'	0'		7'	0'	7'	0'	49'	0'			
Northbound Left	190'	110'	15'	112'	17'		112'	18'	112'	18'	112'	23'			
Northbound Through	-	305'	260'	413'	316'		178'	152'	183'	154'	194'	164'			
Northbound Right	190' (Ex); 500' (2025	8'	8'	77'	15'		5'	12'	6'	12'	5'	12'			
Southbound Left	400'	197'	58'	207'	59'		198'	61'	198'	61'	201'	63'			
Southbound Through	-	186'	361'	230'	488'		230'	513'	230'	536'	249'	579'			
Southbound Right	215'	3'	0'	3'	0'		3'	0'	3'	0'	2'	0'			

Table A.2 - 95th Percentile Queuing Summary (Existing and Background Conditions)

Intersection and Lane Groups	Storage Length	Existing (Year 2023)		Year 2025 Bkgrd		Year 2025 Bkgrd (With Improvements)			Year 2030 Bkgrd		Year 2040 Bkgrd		Year 2040 Bkgrd (With Improvements)		
		AM Peak	PM Peak	AM Peak	PM Peak	Imprv	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	Imprv	AM Peak	PM Peak
25. Northwest Parkway and 96th Street/Via Varra		*Signalized*		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left - 96th Street	370'	36'	60'	36'	61'	*Widen 96th (4 lanes) n/o NWP & add 3rd NBL & no SBR accel but add overlap phase*	36'	61'	36'	61'	38'	65'			
Eastbound Through - 96th Street	-	58'	98'	69'	111'		69'	111'	70'	113'	75'	119'			
Eastbound Right - 96th Street	400'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Westbound Left - Via Varra	265'	303'	13'	39'	18'		39'	18'	38'	19'	40'	24'			
Westbound Through - Via Varra	-	71'	68'	105'	88'		105'	88'	106'	89'	111'	93'			
Westbound Right - Via Varra	250'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Northbound Left - NWP	725'	196'	201'	247'	228'		206'	192'	183'	158'	210'	191'			
Northbound Through - NWP	-	29'	88'	34'	92'		96'	240'	38'	100'	30'	56'			
Northbound Right - NWP	320'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Southbound Left - NWP	500'	26'	21'	28'	22'		29'	22'	28'	22'	34'	26'			
Southbound Through - NWP	-	247'	156'	253'	159'		255'	159'	284'	176'	303'	181'			
Southbound Right - NWP	500'	0'	0'	0'	0'		33'	8'	32'	0'	34'	0'			
30. Northwest Parkway and Via Varra (Rockcress)		*Signalized*		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	130'	3'	0'	6'	0'	*AM: +4s on WB, - 4s on NB/SB Thru PM: AM: +2s on WB, - 2s on NB/SB Thru*	6'	0'	6'	0'	6'	0'			
Eastbound Through	-	0'	7'	0'	13'		0'	13'	0'	13'	0'	0'			
Eastbound Right	200'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Westbound Left	520'	107'	96'	157'	124'		120'	119'	124'	121'	138'	126'			
Westbound Through	-	4'	7'	10'	14'		9'	13'	9'	12'	9'	12'			
Westbound Right	520'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Northbound Left	450'	0'	2'	0'	5'		0'	4'	0'	4'	0'	4'			
Northbound Through	-	283'	323'	315'	333'		330'	348'	348'	386'	355'	437'			
Northbound Right	250'	25'	13'	12'	13'		24'	18'	19'	22'	19'	32'			
Southbound Left	660'	27'	19'	39'	20'		39'	20'	28'	20'	43'	20'			
Southbound Through	-	127'	194'	260'	225'		299'	235'	162'	244'	156'	503'			
Southbound Right	600'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
35. Northwest Parkway & US 36 North Ramps (WB)		*Signalized*		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Westbound Left	325'	103'	109'	104'	112'				106'	114'	115'	120'			
Westbound Left+Through	-	93'	44'	96'	45'				98'	46'	116'	117'			
Westbound Right	1700'	0'	0'	0'	0'				0'	0'	0'	0'			
Northbound Left	200'	139'	**139'**	164'	**149'**				176'	157'	192'	166'			
Northbound Through	-	57'	141'	58'	116'				63'	234'	81'	326'			
Southbound Through	-	114'	53'	160'	63'				195'	68'	154'	69'			
Southbound Right	250'	11'	8'	33'	15'				46'	13'	19'	12'			
40. Northwest Parkway & US 36 South Ramps (EB)		*Signalized*		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	370'	108'	186'	124'	185'				127'	200'	131'	204'			
Eastbound Left+Through	-	77'	96'	88'	94'				90'	101'	132'	203'			
Eastbound Right	190'	0'	0'	0'	0'				0'	0'	0'	0'			
Northbound Through	-	194'	**312'**	217'	293'				237'	354'	261'	397'			
Northbound Right	300'	8'	17'	9'	**17'**				11'	17'	15'	36'			
Southbound Left	515'	107'	154'	117'	169'				131'	247'	138'	271'			
Southbound Through	-	74'	77'	76'	78'				77'	80'	78'	83'			
45. 88th Street and Rock Creek Parkway		*Roundabout*		*Roundabout*		*Not Applicable*			*Roundabout*		*Roundabout*		*Not Applicable*		
Eastbound Left+Through	825'	25'	25'	50'	25'				50'	25'	25'	25'			
Eastbound Through	-	25'	25'	25'	25'				25'	25'	0'	25'			
Westbound Through	-	25'	0'	25'	0'				25'	25'	25'	25'			
Westbound Through+Right	400'	50'	25'	75'	25'				75'	25'	75'	25'			
Southbound Left	-	25'	50'	25'	50'				25'	50'	25'	50'			
Southbound Right	60'	0'	25'	0'	25'				25'	25'	0'	25'			

Note: Under conditions with improvements, queues are only provided for intersections with recommended improvements.

Table A.3 - Peak Hour Intersection Level of Service Summary (With Project Conditions)

Intersection and Lanes Groups	Year 2025 Bkgrd+Project				Year 2025 Bkgrd+Project (With Improvements)					Year 2030 Bkgrd+Project				Year 2040 Bkgrd+Project				Year 2040 Bkgrd+Project (With Improvements)				
	AM Peak		PM Peak		Imprv	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
Signalized Control																						
5. Dillon Road and McCaslin Boulevard	**26**	**C**	**34**	**C**						**31**	**C**	**34**	**C**	**29**	**C**	**35**	**C**					
Eastbound Left	*38*	*D*	*48*	*D*		*Not Applicable*				*55*	*D*	*48*	*D*	*54*	*D*	*48*	*D*		*Not Applicable*			
Eastbound Through	*29*	*C*	*53*	*D*						*57*	**E**	*53*	*D*	*57*	**E**	*53*	*D*					
Eastbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Westbound Left	*39*	*D*	*51*	*D*						*53*	*D*	*51*	*D*	*54*	*D*	*52*	*D*					
Westbound Through	*34*	*C*	*35*	*D*						*47*	*D*	*35*	*C*	*48*	*D*	*34*	*C*					
Westbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Northbound Left	*40*	*D*	*51*	*D*						*58*	**E**	*51*	*D*	*58*	**E**	*52*	*D*					
Northbound Through	*21*	*C*	*25*	*C*						*18*	*B*	*26*	*C*	*17*	*B*	*27*	*C*					
Northbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Southbound Left	*41*	*D*	*50*	*D*						*64*	**E**	*51*	*D*	*61*	**E**	*51*	*D*					
Southbound Through	*16*	*B*	*22*	*C*						*13*	*B*	*22*	*C*	*13*	*B*	*23*	*C*					
Southbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
10. Dillon Road and 88th Street	**16**	**B**	**11**	**B**		**15**	**B**	**10**	**A**	**17**	**B**	**10**	**B**	**19**	**B**	**11**	**B**		**17**	**B**	**10**	**A**
Eastbound Through	*21*	*C*	*16*	*B*	*Widen 88th (4 lanes) n/o Campus Dr & add 2nd WBL*	*20*	*C*	*13*	*B*	*18*	*B*	*13*	*B*	*33*	*C*	*14*	*B*	*Widen Dillon Rd (4 lanes)*	*26*	*C*	*10*	*B*
Eastbound Right	*9*	*A*	*6*	*A*		*8*	*A*	*5*	*A*	*6*	*A*	*5*	*A*	*7*	*A*	*5*	*A*		*7*	*A*	*5*	*A*
Westbound Left	*10*	*A*	*8*	*A*		*9*	*A*	*6*	*A*	*9*	*A*	*6*	*A*	*19*	*B*	*7*	*A*		*17*	*B*	*5*	*A*
Westbound Through	*9*	*A*	*5*	*A*		*9*	*A*	*5*	*A*	*9*	*A*	*5*	*A*	*18*	*B*	*5*	*A*		*18*	*B*	*5*	*A*
Northbound Left	*39*	*D*	*43*	*D*		*35*	*C*	*43*	*D*	*49*	*D*	*43*	*D*	*31*	*C*	*43*	*D*		*31*	*C*	*43*	*D*
Northbound Right	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*
15. Dillon Road and 96th Street	**40**	**D**	**44**	**D**		**32**	**C**	**34**	**C**	**36**	**D**	**37**	**D**	**38**	**D**	**36**	**D**					
Eastbound Left	*38*	*D*	*24*	*C*	*Widen 96th (4 lanes) n/o NWP & add 2nd EBL & 2nd WBL; Overlap for SBR*	*32*	*C*	*22*	*C*	*22*	*C*	*25*	*C*	*21*	*C*	*27*	*C*		*Not Applicable*			
Eastbound Through	*49*	*D*	*34*	*C*		*39*	*D*	*28*	*C*	*27*	*C*	*32*	*C*	*26*	*C*	*35*	*D*					
Eastbound Right	*54*	*D*	*35*	*C*		*42*	*D*	*29*	*C*	*30*	*C*	*34*	*C*	*29*	*C*	*33*	*C*					
Westbound Left	*37*	*D*	*38*	*D*		*29*	*C*	*20*	*B*	*19*	*B*	*22*	*C*	*19*	*B*	*22*	*C*					
Westbound Through	*42*	*D*	*31*	*C*		*37*	*D*	*26*	*C*	*25*	*C*	*29*	*C*	*24*	*C*	*30*	*C*					
Westbound Right	*40*	*D*	*30*	*C*		*36*	*D*	*26*	*C*	*25*	*C*	*28*	*C*	*24*	*C*	*27*	*C*					
Northbound Left	*30*	*C*	*37*	*D*		*24*	*C*	*32*	*C*	*30*	*C*	*32*	*C*	*30*	*C*	*31*	*C*					
Northbound Through	*40*	*D*	*63*	**E**		*33*	*C*	*50*	*D*	*44*	*D*	*54*	*D*	*48*	*D*	*58*	**E**					
Northbound Right	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Southbound Left	*30*	*C*	*39*	*D*		*24*	*C*	*33*	*C*	*28*	*C*	*35*	*C*	*29*	*C*	*38*	*D*					
Southbound Through	*40*	*D*	*50*	*D*		*32*	*C*	*42*	*D*	*52*	*D*	*44*	*D*	*54*	*D*	*47*	*D*					
Southbound Right	*37*	*D*	*50*	*D*		*23*	*C*	*31*	*C*	*28*	*C*	*31*	*C*	*26*	*C*	*27*	*C*					
20. 88th Street and Campus Drive	**35**	**C**	**35**	**D**		**29**	**C**	**32**	**C**	**24**	**C**	**25**	**C**	**25**	**C**	**25**	**C**					
Eastbound Left	*56*	**E**	*30*	*C*	*Widen 88th (4 lanes) n/o Campus Dr & add 2nd NBT; PM: +2s on WBL & -2 on NBT/SBT*	*38*	*D*	*28*	*C*	*43*	*D*	*37*	*D*	*42*	*D*	*38*	*D*		*Not Applicable*			
Eastbound Through+Right	*67*	**E**	*67*	**E**		*43*	*D*	*52*	*D*	*46*	*D*	*42*	*D*	*45*	*D*	*43*	*D*					
Westbound Left	*36*	*D*	*33*	*C*		*30*	*C*	*29*	*C*	*54*	*D*	*25*	*C*	*64*	**E**	*24*	*C*					
Westbound Through+Right	*54*	*D*	*33*	*C*		*53*	*D*	*32*	*C*	*37*	*D*	*30*	*C*	*36*	*D*	*29*	*C*					
Northbound Left	*33*	*C*	*24*	*C*		*23*	*C*	*26*	*C*	*20*	*C*	*21*	*C*	*20*	*B*	*21*	*C*					
Northbound Through	*43*	*D*	*29*	*C*		*30*	*C*	*28*	*C*	*22*	*C*	*23*	*C*	*22*	*C*	*24*	*C*					
Northbound Right	*22*	*C*	*16*	*B*		*21*	*C*	*17*	*B*	*16*	*B*	*12*	*B*	*16*	*B*	*12*	*B*					
Southbound Left	*28*	*C*	*19*	*B*		*20*	*C*	*20*	*C*	*13*	*B*	*17*	*B*	*13*	*B*	*17*	*B*					
Southbound Through	*36*	*D*	*30*	*C*		*29*	*C*	*32*	*C*	*17*	*B*	*28*	*C*	*17*	*B*	*28*	*C*					
Southbound Right	*33*	*C*	*22*	*C*		*26*	*C*	*24*	*C*	*14*	*B*	*20*	*B*	*14*	*B*	*20*	*C*					

Table A.3 - Peak Hour Intersection Level of Service Summary (With Project Conditions)

Intersection and Lanes Groups	Year 2025 Bkgrd+Project				Year 2025 Bkgrd+Project (With Improvements)					Year 2030 Bkgrd+Project				Year 2040 Bkgrd+Project				Year 2040 Bkgrd+Project (With Improvements)				
	AM Peak		PM Peak		Imprv	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
23. 96th Street and Campus Drive	**22**	**C**	**21**	**C**						**19**	**B**	**24**	**C**	**20**	**B**	**25**	**C**					
Eastbound Left	*39*	*D*	*39*	*D*		*Not Applicable*				*38*	*D*	*37*	*D*	*38*	*D*	*38*	*D*		*Not Applicable*			
Eastbound Right	*35*	*D*	*20*	*C*						*33*	*C*	*32*	*C*	*32*	*C*	*31*	*C*					
Northbound Left	*26*	*C*	*27*	*C*						*29*	*C*	*32*	*C*	*30*	*C*	*33*	*C*					
Northbound Through	*5*	*A*	*4*	*A*						*5*	*A*	*6*	*A*	*6*	*A*	*7*	*A*					
Southbound Through	*25*	*C*	*27*	*C*						*23*	*C*	*28*	*C*	*24*	*C*	*31*	*C*					
Southbound Right	*33*	*C*	*19*	*B*						*19*	*B*	*21*	*C*	*21*	*C*	*21*	*C*					
25. Northwest Parkway & 96th Street/Via Varra	**>120**	**F**	**102**	**F**		**52**	**D**	**34**	**C**	**36**	**D**	**35**	**D**	**31**	**C**	**29**	**C**					
Eastbound Left - 96th Street	*60*	*E*	*44*	*D*	*Widen 96th (4 lanes) n/o NWP & add 3rd NBL & no SBR accel but add overlap phase*	*60*	*E*	*44*	*D*	*46*	*D*	*45*	*D*	*46*	*D*	*45*	*D*		*Not Applicable*			
Eastbound Through - 96th Street	*62*	*E*	*46*	*D*		*62*	*E*	*46*	*D*	*47*	*D*	*46*	*D*	*47*	*D*	*46*	*D*					
Eastbound Right - 96th Street	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Westbound Left - Via Varra	*56*	*E*	*44*	*D*		*56*	*E*	*44*	*D*	*43*	*D*	*44*	*D*	*43*	*D*	*44*	*D*					
Westbound Through - Via Varra	*71*	*E*	*49*	*D*		*71*	*E*	*49*	*D*	*53*	*D*	*49*	*D*	*52*	*D*	*49*	*D*					
Westbound Right - Via Varra	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Northbound Left - NWP	*265*	*F*	*212*	*F*		*73*	*E*	*48*	*D*	*40*	*D*	*52*	*D*	*39*	*D*	*41*	*D*					
Northbound Through - NWP	*8*	*A*	*11*	*B*		*8*	*A*	*11*	*B*	*9*	*A*	*12*	*B*	*9*	*A*	*11*	*B*					
Northbound Right - NWP	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Southbound Left - NWP	*68*	*E*	*51*	*D*		*68*	*E*	*51*	*D*	*52*	*D*	*51*	*D*	*51*	*D*	*51*	*D*					
Southbound Through - NWP	*33*	*C*	*26*	*C*		*33*	*C*	*26*	*C*	*39*	*D*	*27*	*C*	*25*	*C*	*20*	*B*					
Southbound Right - NWP	*0*	*A*	*0*	*A*		*23*	*C*	*18*	*B*	*23*	*C*	*18*	*B*	*18*	*B*	*13*	*B*					
30. Northwest Parkway and Rockcress Drive/Via Varra	**26**	**C**	**23**	**C**						**42**	**D**	**52**	**D**	**64**	**E**	**69**	**E**		**39**	**D**	**41**	**D**
Eastbound Left	*41*	*D*	*42*	*D*		*Not Applicable*				*41*	*D*	*42*	*D*	*41*	*D*	*42*	*D*	*Add 3rd SBT lane & increase NBL green time*	*41*	*D*	*42*	*D*
Eastbound Through	*41*	*D*	*46*	*D*						*47*	*D*	*46*	*D*	*46*	*D*	*46*	*D*		*46*	*D*	*46*	*D*
Eastbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*
Westbound Left	*50*	*D*	*41*	*D*						*40*	*D*	*41*	*D*	*40*	*D*	*41*	*D*		*40*	*D*	*41*	*D*
Westbound Through	*37*	*D*	*42*	*D*						*42*	*D*	*42*	*D*	*42*	*D*	*42*	*D*		*42*	*D*	*42*	*D*
Westbound Right	*35*	*D*	*47*	*D*						*52*	*D*	*46*	*D*	*46*	*D*	*46*	*D*		*46*	*D*	*46*	*D*
Northbound Left	*50*	*D*	*52*	*D*						*96*	*F*	*117*	*F*	*171*	*F*	*162*	*F*		*89*	*F*	*91*	*F*
Northbound Through	*22*	*C*	*13*	*B*						*15*	*B*	*14*	*B*	*15*	*B*	*15*	*B*		*15*	*B*	*15*	*B*
Northbound Right	*4*	*A*	*9*	*A*						*10*	*A*	*9*	*A*	*10*	*A*	*9*	*A*		*10*	*A*	*9*	*A*
Southbound Left	*41*	*D*	*51*	*D*						*49*	*D*	*51*	*D*	*49*	*D*	*51*	*D*		*49*	*D*	*51*	*D*
Southbound Through	*22*	*C*	*22*	*C*						*41*	*D*	*54*	*D*	*58*	*E*	*74*	*E*		*31*	*C*	*35*	*C*
Southbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*
35. Northwest Parkway and US 36 North Ramps (WB)	**9**	**A**	**8**	**A**						**9**	**A**	**9**	**A**	**10**	**A**	**10**	**A**					
Westbound Left	*46*	*D*	*45*	*D*		*Not Applicable*				*46*	*D*	*45*	*D*	*46*	*D*	*46*	*D*		*To be determined with future interchange study*			
Westbound Through	*46*	*D*	*45*	*D*						*46*	*D*	*46*	*D*	*46*	*D*	*45*	*D*					
Westbound Right	*2*	*A*	*1*	*A*						*7*	*A*	*1*	*A*	*12*	*B*	*1*	*A*					
Northbound Left	*32*	*C*	*27*	*C*						*28*	*C*	*49*	*D*	*31*	*C*	*51*	*D*					
Northbound Through	*0*	*A*	*4*	*A*						*3*	*A*	*5*	*A*	*4*	*A*	*6*	*A*					
Southbound Through	*9*	*A*	*6*	*A*						*7*	*A*	*8*	*A*	*7*	*A*	*8*	*A*					
Southbound Right	*9*	*A*	*4*	*A*						*4*	*A*	*4*	*A*	*4*	*A*	*4*	*A*					

Table A.3 - Peak Hour Intersection Level of Service Summary (With Project Conditions)

Intersection and Lanes Groups	Year 2025 Bkgrd+Project				Year 2025 Bkgrd+Project (With Improvements)					Year 2030 Bkgrd+Project				Year 2040 Bkgrd+Project				Year 2040 Bkgrd+Project (With Improvements)				
	AM Peak		PM Peak		Imprv	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
40. Northwest Parkway and US 36 South Ramps (EB)	**17**	**B**	**35**	**D**				**31**	**C**	**22**	**C**	**100**	**F**	**23**	**C**	**>120**	**F**					
Eastbound Left	*48*	*D*	*52*	*D*	*PM: +6s on SBL & -6s on NBT*	*N/A*		*46*	*D*	*52*	*D*	*54*	*D*	*53*	*D*	*56*	**E**		*To be determined with future interchange study*			
Eastbound Through	*48*	*D*	*51*	*D*				*46*	*D*	*52*	*D*	*55*	*D*	*53*	*D*	*54*	*D*					
Eastbound Right	*0*	*A*	*0*	*A*				*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Northbound Through	*17*	*B*	*23*	*C*				*23*	*C*	*18*	*B*	*24*	*C*	*20*	*B*	*26*	*C*					
Northbound Right	*13*	*B*	*17*	*B*				*0*	*A*	*13*	*B*	*17*	*B*	*14*	*B*	*17*	*B*					
Southbound Left	*30*	*C*	*85*	**F**				*54*	*D*	*50*	*D*	*>120*	**F**	*53*	*D*	*>120*	**F**					
Southbound Through	*4*	*A*	*6*	*A*				*10*	*A*	*5*	*A*	*6*	*A*	*5*	*A*	*6*	*A*					
Roundabout Controlled																						
45. 88th Street and Rock Creek Parkway	**7**	**A**	**6**	**A**						**7**	**A**	**5**	**A**	**6**	**A**	**5**	**A**					
Eastbound Left	*8*	*A*	*6*	*A*	*Not Applicable*					*7*	*A*	*6*	*A*	*6*	*A*	*6*	*A*	*Not Applicable*				
Eastbound Through	*5*	*A*	*6*	*A*						*5*	*A*	*5*	*A*	*4*	*A*	*5*	*A*					
Westbound Through	*6*	*A*	*4*	*A*						*6*	*A*	*4*	*A*	*5*	*A*	*4*	*A*					
Westbound Right	*10*	*A*	*4*	*A*						*9*	*A*	*4*	*A*	*8*	*A*	*4*	*A*					
Southbound Left	*5*	*A*	*7*	*A*						*5*	*A*	*6*	*A*	*5*	*A*	*6*	*A*					
Southbound Right	*4*	*A*	*5*	*A*						*4*	*A*	*5*	*A*	*4*	*A*	*4*	*A*					
Stop-Controlled																						
22. 88th Street and Rockcress Drive										**0**	**A**	**1**	**A**	**1**	**A**	**1**	**A**					
Westbound Left+Right	*Future Intersection*				*Not Applicable*					*21*	*C*	*13*	*B*	*18*	*C*	*13*	*B*	*Not Applicable*				
Northbound Through+Right										*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Southbound Left										*10*	*A*	*8*	*A*	*10*	*B*	*8*	*A*					
Southbound Through										*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					

Note: Delay represented in average seconds per vehicle.

Note: Under conditions with improvements, level of service results are only provided for intersections with recommended improvements.

Table A.4 - 95th Percentile Queuing Summary (With Project Conditions)

Intersection and Lane Groups	Storage Length	Year 2025 Bkgrd+Project AM Peak	Year 2025 Bkgrd+Project PM Peak	Year 2025 Bkgrd+Project (With Improvements) Imprv.	Year 2025 Bkgrd+Project (With Improvements) AM Peak	Year 2025 Bkgrd+Project (With Improvements) PM Peak	Year 2030 Bkgrd+Project AM Peak	Year 2030 Bkgrd+Project PM Peak	Year 2040 Bkgrd+Project AM Peak	Year 2040 Bkgrd+Project PM Peak	Year 2040 Bkgrd+Project (With Improvements) Imprv.	Year 2040 Bkgrd+Project (With Improvements) AM Peak	Year 2040 Bkgrd+Project (With Improvements) PM Peak
5. Dillon Road and McCaslin Boulevard		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	425'	25'	47'				29'	50'	36'	54'			
Eastbound Through	-	29'	83'				30'	87'	41'	96'			
Eastbound Right	120'	0'	0'				0'	0'	0'	0'			
Westbound Left	500'	157'	338'				185'	340'	196'	361'			
Westbound Through	-	54'	78'				58'	72'	64'	81'			
Westbound Right	280'	44'	16'				48'	34'	60'	42'			
Northbound Left	540'	60'	93'				72'	93'	78'	97'			
Northbound Through	-	312'	378'				365'	391'	374'	417'			
Northbound Right	190'	38'	60'				37'	61'	66'	77'			
Southbound Left	240'	92'	131'				106'	136'	120'	**142'**			
Southbound Through	-	138'	280'				157'	291'	164'	308'			
Southbound Right	110'	0'	**0'**				0'	0'	0'	**0'**			
10. Dillon Road and 88th Street		*Signalized*		*Widen 88th (4 lanes) n/o Campus Dr & add 2nd WBL*	*Signalized*		*Signalized*		*Signalized*		*Widen Dillon Rd (4 lanes)*	*Signalized*	
Eastbound Through	-	411'	420'		367'	351'	354'	366'	368'	401'		160'	155'
Eastbound Right	270'	34'	10'		37'	6'	29'	6'	32'	12'		32'	12'
Westbound Left	400'	102'	69'		46'	32'	38'	30'	42'	32'		42'	32'
Westbound Through	-	131'	93'		123'	93'	113'	99'	124'	108'		124'	108'
Northbound Left	1250'	152'	92'		138'	92'	151'	87'	185'	98'		185'	98'
Northbound Right	200'	0'	0'		0'	0'	0'	0'	0'	0'		0'	0'
15. Dillon Road and 96th Street		*Signalized*		*Widen 96th (4 lanes) n/o NWP & add 2nd EBL & 2nd WBL; Overlap for SBR*	*Signalized*		*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	415'	246'	222'		113'	100'	83'	94'	85'	94'			
Eastbound Through	-	104'	153'		96'	148'	76'	137'	78'	144'			
Eastbound Right	415'	20'	37'		20'	36'	37'	38'	50'	50'			
Westbound Left	425'	401'	448'		171'	179'	140'	197'	147'	201'			
Westbound Through	-	137'	193'		128'	172'	95'	176'	103'	175'			
Westbound Right	425'	10'	32'		10'	29'	22'	30'	26'	41'			
Northbound Left	350'	69'	63'		63'	60'	69'	80'	77'	91'			
Northbound Through	-	440'	512'		408'	490'	494'	590'	525'	704'			
Northbound Right	325'	0'	0'		0'	0'	0'	0'	0'	0'			
Southbound Left	335'	97'	105'		88'	102'	90'	105'	93'	111'			
Southbound Through	-	434'	402'		400'	388'	544'	440'	584'	528'			
Southbound Right	350'	16'	71'		12'	53'	16'	88'	45'	82'			

Table A.4 - 95th Percentile Queuing Summary (With Project Conditions)

Intersection and Lane Groups	Storage Length	Year 2025 Bkgrd+Project		Year 2025 Bkgrd+Project (With Improvements)			Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project		Year 2040 Bkgrd+Project (With Improvements)		
		AM Peak	PM Peak	Imprv.	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	Imprv.	AM Peak	PM Peak
20. 88th Street and Campus Drive		*Signalized*			*Signalized*		*Signalized*		*Signalized*			*Not Applicable*	
Eastbound Left	150'	59'	155'	*Widen 88th (4 lanes) n/o Campus Dr & add 2nd NBT; PM: +2s on WBL & -2 on NBT/SBT*	55'	151'	37'	26'	37'	26'			
Eastbound Through+Right	-	76'	169'		60'	165'	24'	55'	24'	55'			
Westbound Left	240'	365'	202'		370'	188'	365'	183'	476'	183'			
Westbound Through+Right	-	190'	0'		173'	0'	26'	36'	25'	36'			
Northbound Left	190'	123'	11'		115'	12'	19'	17'	20'	18'			
Northbound Through	-	210'	197'		93'	98'	91'	112'	99'	129'			
Northbound Right	)' (Ex); 500' (20	26'	8'		13'	8'	0'	8'	0'	7'			
Southbound Left	400'	195'	30'		177'	31'	165'	32'	167'	33'			
Southbound Through	-	188'	377'		183'	410'	187'	445'	227'	480'			
Southbound Right	215'	10'	0'		0'	0'	0'	0'	0'	0'			
22. 88th Street and Rockcress Drive		*Future Intersection*		*Not Applicable*			*Stop-Controlled*		*Stop-Controlled*		*Not Applicable*		
Westbound Left+Right	-						3'	8'	3'	13'			
Northbound Through+Right	-						0'	0'	0'	0'			
Southbound Left	100'						3'	0'	5'	0'			
Southbound Through	-						0'	0'	0'	0'			
23. 96th Street and Campus Drive		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	450'	136'	128'				142'	181'	153'	202'			
Eastbound Right	-	32'	115'				24'	36'	26'	38'			
Northbound Left	650'	101'	41'				73'	44'	80'	48'			
Northbound Through	-	115'	82'				147'	112'	155'	120'			
Southbound Through	-	250'	322'				281'	407'	301'	453'			
Southbound Right	450'	39'	28'				127'	37'	161'	38'			
25. Northwest Parkway & 96th Street/Via Varra		*Signalized*			*Signalized*		*Signalized*		*Signalized*			*Not Applicable*	
Eastbound Left - 96th Street	370'	51'	75'	*Widen 96th (4 lanes) n/o NWP & add 3rd NBL & no SBR accel but add overlap phase*	50'	75'	43'	89'	46'	97'			
Eastbound Through - 96th Street	-	87'	111'		86'	111'	70'	113'	75'	119'			
Eastbound Right - 96th Street	400'	362'	0'		0'	0'	0'	0'	0'	0'			
Westbound Left - Via Varra	265'	47'	18'		47'	18'	38'	19'	40'	24'			
Westbound Through - Via Varra	-	133'	88'		133'	88'	106'	89'	111'	93'			
Westbound Right - Via Varra	250'	0'	0'		0'	0'	0'	0'	0'	0'			
Northbound Left - NWP	725'	568'	232'		313'	151'	184'	159'	212'	185'			
Northbound Through - NWP	-	57'	98'		104'	104'	47'	134'	37'	80'			
Northbound Right - NWP	320'	0'	0'		0'	0'	0'	0'	0'	0'			
Southbound Left - NWP	500'	35'	22'		35'	22'	28'	22'	34'	26'			
Southbound Through - NWP	-	291'	163'		292'	163'	356'	189'	375'	194'			
Southbound Right - NWP	500'	**0'**	0'		69'	0'	68'	6'	73'	9'			

Table A.4 - 95th Percentile Queuing Summary (With Project Conditions)

Intersection and Lane Groups	Storage Length	Year 2025 Bkgrd+Project		Year 2025 Bkgrd+Project (With Improvements)			Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project		Year 2040 Bkgrd+Project (With Improvements)		
		AM Peak	PM Peak	Imprv.	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	Imprv.	AM Peak	PM Peak
30. Northwest Parkway & Rockcress Drive/Via Varra		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Signalized*		
Eastbound Left	130'	26'	39'				13'	40'	14'	45'	Add 3rd SBT lane & increase NBL green time	14'	45'
Eastbound Through	-	14'	13'				10'	13'	4'	13'		4'	13'
Eastbound Right	200'	0'	176'				0'	671'	0'	0'		0'	0'
Westbound Left	520'	125'	102'				104'	104'	110'	110'		110'	110'
Westbound Through	-	13'	14'				9'	13'	9'	13'		9'	13'
Westbound Right	520'	0'	0'				0'	0'	0'	0'		0'	0'
Northbound Left	450'	124'	38'				389'	86'	**467'**	92'		425'	89'
Northbound Through	-	371'	355'				338'	413'	352'	464'		352'	464'
Northbound Right	200'	29'	9'				5'	15'	5'	16'		5'	**16'**
Southbound Left	660'	41'	20'				28'	21'	41'	20'		41'	20'
Southbound Through	-	471'	522'				590'	672'	736'	736'		413'	430'
Southbound Right	600'	0'	0'				0'	0'	0'	0'		0'	0'
35. Northwest Parkway & US 36 North Ramps (WB)		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Westbound Left	325'	104'	112'				106'	114'	115'	120'			
Westbound Left+Through	-	96'	45'				98'	46'	116'	117'			
Westbound Right	1700'	0'	0'				0'	0'	120'	0'			
Northbound Left	200'	**62'**	165'				190'	186'	205'	184'			
Northbound Through	-	108'	121'				92'	198'	115'	306'			
Southbound Through	-	205'	106'				102'	175'	113'	173'			
Southbound Right	250'	28'	13'				1'	11'	5'	4'			
40. Northwest Parkway & US 36 South Ramps (EB)		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	370'	151'	195'	*PM: +6s on SBL & -6s on NBT*		195'	188'	211'	204'	236'			
Eastbound Left+Through	-	105'	100'			100'	130'	109'	203'	233'			
Eastbound Right	190'	0'	0'			0'	0'	0'	0'	0'			
Northbound Through	-	246'	297'			333'	264'	336'	290'	377'			
Northbound Right	300'	5'	17'			19'	12'	17'	16'	34'			
Southbound Left	515'	187'	423'			351'	170'	692'	190'	786'			
Southbound Through	-	77'	76'			76'	80'	80'	78'	83'			
45. 88th Street and Rock Creek Parkway		*Roundabout*		*Not Applicable*			*Roundabout*		*Roundabout*		*Not Applicable*		
Eastbound Left+Through	825'	50'	25'				50'	25'	25'	25'			
Eastbound Through	-	25'	25'				25'	25'	0'	25'			
Westbound Through	-	25'	0'				25'	25'	25'	25'			
Westbound Through+Right	400'	75'	25'				50'	25'	50'	25'			
Southbound Left	-	25'	50'				25'	25'	25'	25'			
Southbound Right	60'	25'	25'				0'	25'	0'	25'			

Note: Under conditions with improvements, queues are only provided for intersections with recommended improvements.

Table A.5 - Peak Hour Intersection Level of Service Summary (With Project Conditions)

Intersection and Lanes Groups	Year 2025 Bkgrd+Project				Year 2030 Bkgrd+Project				Year 2040 Bkgrd+Project			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Roundabout Controlled												
102. Sorrel Avenue and Campus Drive	**7**	**A**	**5**	**A**	**8**	**A**	**6**	**A**	**8**	**A**	**8**	**A**
Eastbound Left+Right	*8*	*A*	*6*	*A*	*12*	*B*	*7*	*A*	*12*	*B*	*12*	*B*
Westbound Left	*4*	*A*	*3*	*A*	*5*	*A*	*3*	*A*	*5*	*A*	*5*	*A*
Westbound Through+ Right	*7*	*A*	*4*	*A*	*7*	*A*	*5*	*A*	*8*	*A*	*8*	*A*
Southbound Left	*4*	*A*	*4*	*A*	*4*	*A*	*4*	*A*	*4*	*A*	*4*	*A*
Southbound Through+Right	*5*	*A*	*6*	*A*	*5*	*A*	*8*	*A*	*5*	*A*	*5*	*A*
105. Sorrel Avenue and Rockcress Drive	**4**	**A**	**4**	**A**	**5**	**A**	**7**	**A**	**6**	**A**	**6**	**A**
Eastbound Left+Through	*3*	*A*	*4*	*A*	*4*	*A*	*7*	*A*	*4*	*A*	*4*	*A*
Eastbound Through+Right	*3*	*A*	*4*	*A*	*4*	*A*	*6*	*A*	*4*	*A*	*4*	*A*
Westbound Left+Through	*3*	*A*	*3*	*A*	*4*	*A*	*3*	*A*	*5*	*A*	*5*	*A*
Westbound Right	*4*	*A*	*3*	*A*	*6*	*A*	*4*	*A*	*6*	*A*	*6*	*A*
Northbound Left+Through+Right	*3*	*A*	*3*	*A*	*3*	*A*	*7*	*A*	*3*	*A*	*3*	*A*
Southbound Left+Through+Right	*3*	*A*	*4*	*A*	*5*	*A*	*9*	*A*	*6*	*A*	*6*	*A*
Stop-Controlled												
101. Campus Drive at N-S Internal Roadway	**2**	**A**	**3**	**A**	**2**	**A**	**4**	**A**	**2**	**A**	**4**	**A**
Eastbound Through+Right	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*
Westbound Left	*9*	*A*	*8*	*A*	*9*	*A*	*8*	*A*	*9*	*A*	*8*	*A*
Westbound Through	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*
Northbound Left+Right	*15*	*B*	*12*	*B*	*14*	*B*	*11*	*B*	*15*	*B*	*12*	*B*
103. Rockress Drive at N-S Internal Roadway / PUD 8 Access A	**2**	**A**	**7**	**A**	**3**	**A**	**7**	**A**	**6**	**A**	**9**	**A**
Eastbound Left+Through+Right	*0*	*A*	*0*	*A*	*8*	*A*	*7*	*A*	*8*	*A*	*7*	*A*
Westbound Left+Through+Right	*0*	*A*	*0*	*A*	*7*	*A*	*7*	*A*	*8*	*A*	*7*	*A*
Northbound Left+Through+Right					*9*	*A*	*9*	*A*	*10*	*B*	*10*	*B*
Southbound Left+Through+Right	*9*	*A*	*9*	*A*	*10*	*B*	*11*	*B*	*13*	*B*	*13*	*B*
104. Rockress Drive at E-W Internal Roadway (South)	**1**	**A**	**2**	**A**	**0**	**A**	**1**	**A**	**2**	**A**	**3**	**A**
Eastbound Left	*7*	*A*	*7*	*A*	*8*	*A*	*7*	*A*	*8*	*A*	*7*	*A*
Eastbound Through+Right	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*
Westbound Left	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*8*	*A*	*8*	*A*
Westbound Through+Right	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*
Northbound Left+Through+Right					*0*	*A*	*0*	*A*	*10*	*A*	*10*	*B*
Southbound Left+Through+Right	*9*	*A*	*9*	*A*	*10*	*A*	*11*	*B*	*13*	*B*	*13*	*B*

Table A.5 - Peak Hour Intersection Level of Service Summary (With Project Conditions)

Intersection and Lanes Groups	Year 2025 Bkgrd+Project				Year 2030 Bkgrd+Project				Year 2040 Bkgrd+Project			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
106. Sorrel Avenue at E-W Internal Roadway (South)	**3**	**A**	**4**	**A**	**14**	**B**	**19**	**C**	**14**	**B**	**14**	**B**
Eastbound Left+Through+Right	*10*	*A*	*10*	*B*	*9*	*A*	*12*	*B*	*9*	*A*	*9*	*A*
Westbound Left+Through+Right					*10*	*A*	*19*	*C*	*10*	*A*	*10*	*A*
Northbound Left	*8*	*A*	*8*	*A*	*9*	*A*	*11*	*B*	*9*	*A*	*9*	*A*
Northbound Through+Right	*0*	*A*	*0*	*A*	*17*	*C*	*16*	*C*	*17*	*C*	*17*	*C*
Southbound Left	*0*	*A*	*0*	*A*	*10*	*A*	*11*	*B*	*10*	*A*	*10*	*A*
Southbound Through+Right	*0*	*A*	*0*	*A*	*10*	*A*	*25*	*C*	*10*	*A*	*10*	*A*
107. Sorrel Avenue at E-W Internal Roadway (North)/PUD 7A/6A Access	**8**	**A**	**8**	**A**	**10**	**A**	**13**	**B**	**10**	**A**	**10**	**A**
Eastbound Left+Through+Right	*8*	*A*	*8*	*A*	*9*	*A*	*11*	*B*	*9*	*A*	*9*	*A*
Westbound Left+Through+Right					*9*	*A*	*13*	*B*	*9*	*A*	*9*	*A*
Northbound Left	*9*	*A*	*9*	*A*	*10*	*A*	*10*	*A*	*10*	*A*	*10*	*A*
Northbound Through+Right	*8*	*A*	*8*	*A*	*10*	*B*	*15*	*B*	*10*	*B*	*10*	*B*
Southbound Left					*9*	*A*	*10*	*B*	*9*	*A*	*9*	*A*
Southbound Through+Right	*8*	*A*	*8*	*A*	*10*	*B*	*11*	*B*	*10*	*B*	*10*	*B*
108. N-S Internal Roadway at E-W Internal Roadway (North)/PUD 3C Access	**7**	**A**	**7**	**A**	**7**	**A**	**8**	**A**	**8**	**A**	**8**	**A**
Eastbound Left+Through+Right	*7*	*A*	*7*	*A*	*7*	*A*	*7*	*A*	*7*	*A*	*8*	*A*
Westbound Left+Through+Right	*7*	*A*	*7*	*A*	*7*	*A*	*7*	*A*	*8*	*A*	*7*	*A*
Northbound Left+Through+Right	*7*	*A*	*7*	*A*	*7*	*A*	*8*	*A*	*8*	*A*	*8*	*A*
Southbound Left+Through+Right	*7*	*A*	*7*	*A*	*7*	*A*	*7*	*A*	*8*	*A*	*8*	*A*
205. Sorrel Ave at PUD 2 Access E	**2**	**A**	**4**	**A**	**1**	**A**	**2**	**A**	**1**	**A**	**2**	**A**
Eastbound Left+Right	*10*	*A*	*10*	*A*	*12*	*B*	*12*	*B*	*12*	*B*	*12*	*B*
Northbound Left	*8*	*A*	*7*	*A*	*8*	*A*	*8*	*A*	*8*	*A*	*8*	*A*
Northbound Through	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*
Southbound Through+Right	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*

Note: Delay represented in average seconds per vehicle.

Note: Under conditions with improvements, level of service results are only provided for intersections with recommended improvements.

Table A.6 - 95th Percentile Queuing Summary (With Project Conditions)

Intersection and Lane Groups	Storage Length	Year 2025 Bkgrd+Project		Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
101. Campus Drive at N-S Internal Roadway		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Through+Right	-	0'	0'	0'	0'	0'	0'
Westbound Left	50'	10'	3'	13'	3'	20'	5'
Westbound Through	-	0'	0'	0'	0'	0'	0'
Northbound Left+Right	-	8'	20'	8'	25'	13'	35'
102. Sorrel Avenue and Campus Drive		*Roundabout*		*Roundabout*		*Roundabout*	
Eastbound Left+Right	-	50'	50'	100'	50'	100'	50'
Westbound Left	75'	0'	0'	25'	0'	25'	0'
Westbound Through+ Right	-	75'	25'	50'	25'	75'	25'
Southbound Left	75'	0'	0'	0'	0'	0'	0'
Southbound Through+Right	-	0'	25'	0'	50'	0'	50'
103. Rockress Drive at N-S Internal Roadway / PUD 8 Access A		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left+Through+Right	-	0'	0'	0'	0'	0'	0'
Westbound Left+Through+Right	-	0'	0'	3'	0'	5'	0'
Northbound Left+Through+Right	-	0'	0'	0'	0'	3'	20'
Southbound Left+Through+Right	-	3'	8'	5'	15'	15'	23'
104. Rockress Drive at E-W Internal Roadway (South)		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left	100'	0'	0'	0'	0'	0'	0'
Eastbound Through+Right	-	0'	0'	0'	0'	0'	0'
Westbound Left	100'	0'	0'	0'	0'	5'	0'
Westbound Through+Right	-	0'	0'	0'	0'	0'	0'
Northbound Left+Through+Right	-	0'	0'	0'	0'	3'	13'
Southbound Left+Through+Right	-	0'	3'	0'	5'	3'	5'
105. Sorrel Avenue and Rockcress Drive		*Roundabout*		*Roundabout*		*Roundabout*	
Eastbound Left+Through	100'	0'	0'	0'	25'	0'	25'
Eastbound Through+Right	-	0'	0'	0'	25'	0'	25'
Westbound Left+Through	-	0'	0'	25'	0'	25'	0'
Westbound Right	150'	25'	0'	50'	25'	50'	25'
Northbound Left+Through+Right	-	0'	0'	0'	0'	0'	25'
Southbound Left+Through+Right	-	0'	25'	25'	75'	25'	100'

Table A.6 - 95th Percentile Queuing Summary (With Project Conditions)

Intersection and Lane Groups	Storage Length	Year 2025 Bkgrd+Project		Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
106. Sorrel Avenue at E-W Internal Roadway (South)		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left+Through+Right	-	3'	15'	5'	25'	5'	25'
Westbound Left+Through+Right	-	0'	0'	13'	100'	13'	103'
Northbound Left	100'	5'	3'	10'	5'	10'	5'
Northbound Through+Right	-	0'	0'	128'	63'	128'	63'
Southbound Left	100'	0'	0'	13'	5'	13'	5'
Southbound Through+Right	-	0'	0'	23'	145'	23'	145'
107. Sorrel Avenue at E-W Internal Roadway (North)/PUD 7A/6A Access		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left+Through+Right	-	5'	18'	5'	28'	5'	28'
Westbound Left+Through+Right	-			10'	53'	10'	53'
Northbound Left	100'	13'	5'	15'	5'	15'	5'
Northbound Through+Right	-	5'	8'	45'	73'	45'	73'
Southbound Left	100'			10'	5'	13'	5'
Southbound Through+Right	-	13'	8'	38'	20'	35'	18'
108. N-S Internal Roadway at E-W Internal Roadway (North)/PUD 3C Access		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left+Through+Right	-	0'	5'	0'	5'	3'	5'
Westbound Left+Through+Right	-	3'	3'	3'	3'	3'	3'
Northbound Left+Through+Right	-	5'	3'	5'	8'	5'	13'
Southbound Left+Through+Right	-	5'	3'	8'	5'	13'	5'
205. Sorrel Ave at PUD 2 Access E		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left+Right	-	3'	10'	3'	13'	3'	13'
Northbound Left	50'	3'	0'	3'	0'	3'	0'
Northbound Through	-	0'	0'	0'	0'	0'	0'
Southbound Through+Right	-	0'	0'	0'	0'	0'	0'

Note: Under conditions with improvements, queues are only provided for intersections with recommended improvements.

Appendix B – Previous Studies

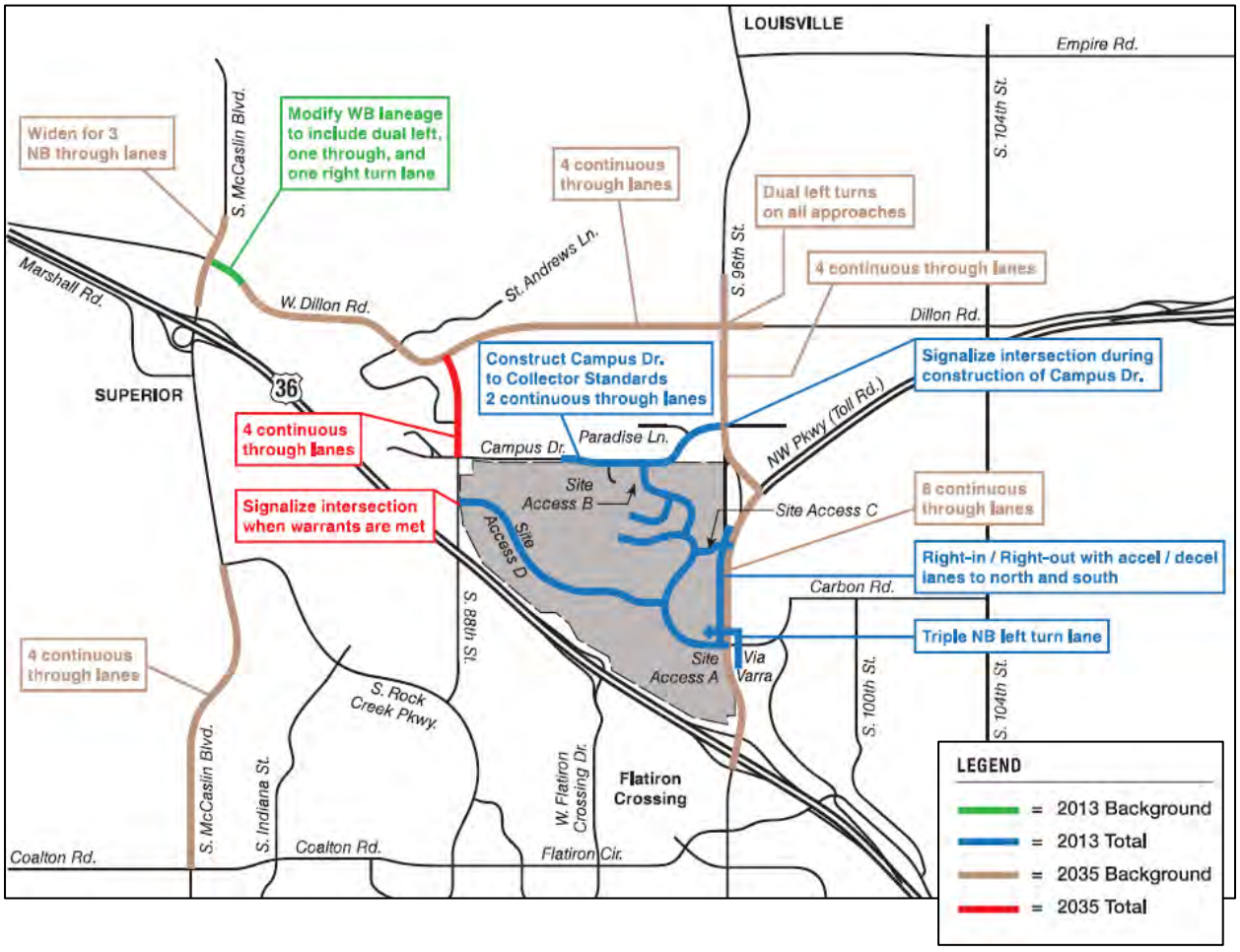
ConocoPhillips Campus Traffic Impact Study

In 2010 ConocoPhillips proposed to build a new research, training, and office development on the former Storage Tek site. At build out, the total development was not to exceed 2,500,000 square feet of building area and was anticipated to generate approximately 17,500 daily, 2,660 AM peak hour, and 2,455 PM peak hour vehicle trips. The site proposed to have four access points, a full movement access at the signalized west approach of the Northwest Parkway/Rockcress Drive/Via Varra intersection; a right-in/right-out access along Northwest Parkway between S. 96th Street and Rockcress Drive/Via Varra; a full-movement access along Campus Drive (Campus Drive was proposed to extend to the east to connect with S. 96th Street where Paradise Lane currently intersects); and an access along S. 88th Street where Rockcress Drive intersects.

The study evaluated Year 2013 and Year 2035 with and without the project site trips. Recommendations were identified under the background and with project trip scenarios. Those improvements were illustrated in Figure ES-1 in the Traffic Impact Study (TIS) and are also shown in **Figure A.1**. Notable recommended improvements include extending Campus Drive to S. 96th Street, expanding Northwest Parkway to a six-lane facility between S. 96th Street and US 36; expanding Dillon Road, S. 96th Street, and S. 88th Street to four-lane facilities, and constructing dual left-turn lanes on all approaches of the Dillon Road/S. 96th Street intersection.

Key Considerations for Redtail Ridge: The ConocoPhillips study evaluated the same project area that is being evaluated for the Redtail Ridge study. Although the project was approved by the City of Louisville in 2010, ConocoPhillips did not move forward with the project and most of the recommended improvements identified in the study have not been built. In addition to infrastructure improvements, Transportation Demand Management strategies, bicycle infrastructure improvements, and transit improvements were also recommended to reduce vehicular traffic to/from the site.

Figure B.1 Summary of Roadway Improvements (ConocoPhillips Campus TIS)



Parkway Circle South Retail Development Traffic Impact Study

The Parkway Circle South Retail Development (Land Rover Dealership) TIS is the most recent TIS to be completed for the Parkway Circle development area and is dated December 2016. A master traffic study for the development was completed in Year 2001. The Parkway Circle development area is located east of Northwest Parkway, west of the railroad tracks, and expands to the north and south of Via Varra in Broomfield, CO.

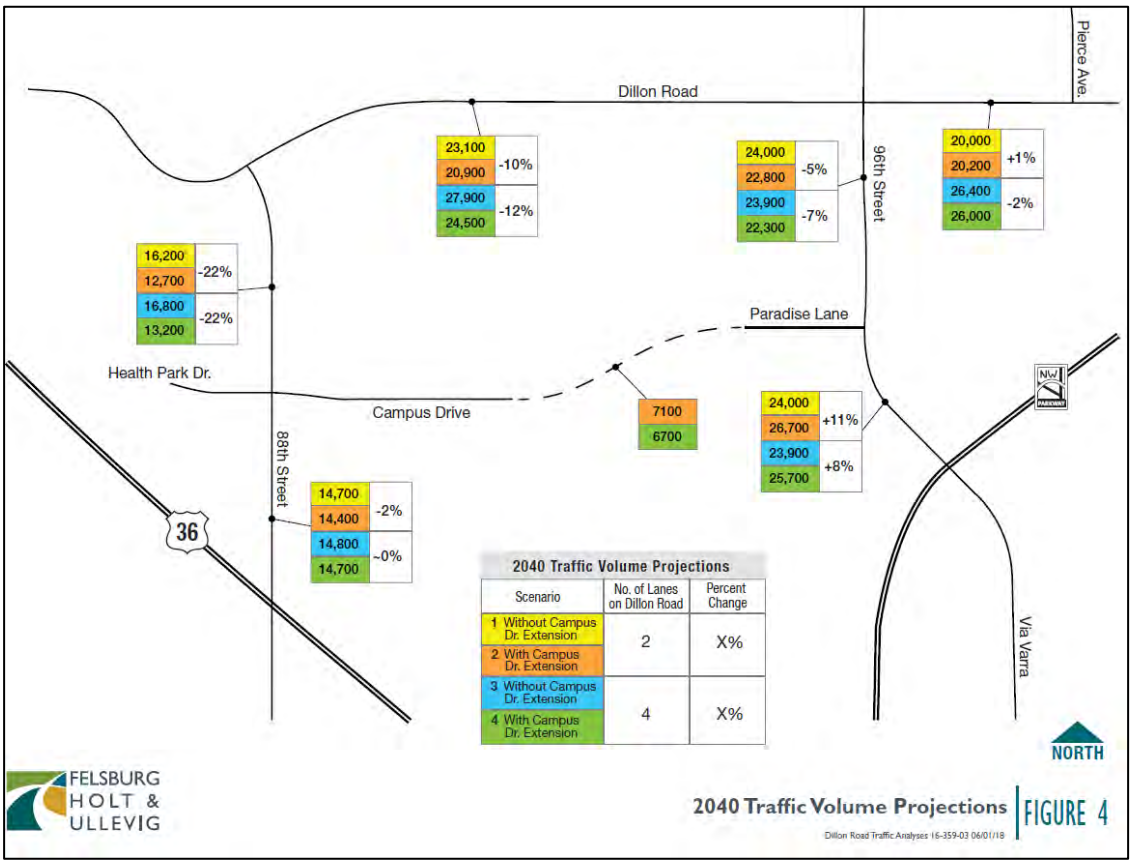
Key Considerations for Redtail Ridge: The Parkway Circle development area is located adjacent to the Redtail Ridge study area. Two of the primary entrances/exits to/from the Parkway Circle development are shared study intersections with the Redtail Ridge traffic study (the accesses located along Northwest Parkway at the S. 96th Street/Via Varra and Rockcress Drive/Via Varra).

88th Street/Campus Drive Traffic Evaluation (May 2018, FHU)

Summary: The Town of Superior conducted a traffic analysis along S. 88th Street and for the potential extension of Campus Drive to S. 96th Street for the. Based on field observations completed for the study, it was noted that there is congestion along S. 88th Street at Campus Drive prior to the Monarch schools starting. While queues entering Monarch school campus (southbound left-turn and northbound right-turn) along S. 88th Street do extend beyond the available turn lane storage consistently near the start of school, the queues were observed to occur for a relatively short amount of time and were slow rolling queues. This is typical for school traffic patterns and flows.

Recommendations from Study: To address the existing congestion issues, the study recommended the extension of Campus Drive to the east to connect at S. 96th Street. This extension is expected to reduce congestion along S. 88th Street for the school. The Campus Drive extension was projected to serve up to 7,100 vpd by Year 2040 as shown in **Figure A.2**; therefore, a two-lane roadway was anticipated to operate acceptably. At the S. 96th Street/Campus Drive intersection, dual northbound left-turn lanes on S. 96th Street and a free-flow right turn deceleration lane on southbound S. 96th Street were recommended.

Figure B.2. 2040 Traffic Volume Projections (88th Street/Campus Drive and Dillon Road Studies)



Key Considerations for Redtail Ridge: Redtail Ridge shares study roadways and intersections with the S. 88th Street/Campus Drive Traffic Evaluation study. The Redtail Ridge project assumes that the Campus Drive extension will be constructed with the first phase of development (by Year 2025). However, the S. 88th Street/Campus Drive Traffic Evaluation did not have the land use forecasts that are outlined in this study for the Redtail Ridge project.

Dillon Road Corridor Study (June 2018, FHU)

Summary: This corridor study was completed for the City of Louisville and evaluated Dillon Road between S. 88th Street and 104th Street. The purpose of this study was to understand existing travel constraints and to plan for improvements as growth occurs along the corridor.

The study included the Campus Drive extension, and it's impacts to Dillon Road and S. 88th Street (see **Figure A.2** above). The analysis estimated that the Campus Drive extension would reduce daily traffic volumes on Dillon Road by 10-12% and on 88th Street by approximately 22%. The findings determined that the projected 20,900 vpd on Dillon Road in Year 2040 was likely to continue to function acceptably as a two-lane roadway and would help restrict the level of motorists it attracts.

Key Considerations for Redtail Ridge: Redtail Ridge shares study roadways and intersections with the Dillon Road Corridor Study. This study also recommends the extension of Campus Drive to S. 96th Street to reduce traffic volumes on S. 88th Street north of Campus Drive and along Dillon Road east of S. 88th Street. It should be noted that the Dillon Road Corridor Study did not have the land use forecasts that are outlined in this study for the Redtail Ridge project.

While this study suggests that Dillon Road will operate acceptably in Year 2040 as a two-lane roadway, it also notes that there is unserved vehicle demand due to the very limited capacity available today during peak periods and is currently using alternative routes. The study also notes the poor lane utilization for through movement at the Dillon Road/S. 96th Street intersection, due to the short segment of expanding from one-through lane to two-through lanes through the intersection. If/when Dillon Road is expanded to a four-lane roadway, this would resolve the poor lane utilization at this intersection.

96th and Dillon Commercial Development (January 2020, LSC)

Summary: In January 2020, LSC Transportation Consultants prepared the *Louisville Industrial Park Traffic Impact Analysis* for the current proposed land uses for the development area north of Dillon Road and east of S. 96th Street. This is an update to the *St. Louis Parish Traffic Impact Analysis* study completed in September 2001. The development has built two accesses on S. 96th Street.

The trip generation for the site build-out in the traffic impact study was added to the background volumes for Redtail Ridge. Per a site visit in February 2023, the gas station and convenience store are already open and much of the industrial use is built out but not operating. The additional traffic volume attributed to

this development was assumed from the traffic impact study, and trips associated with the gas station and convenience store were removed as those trips are already accounted for in the collected count data.

Key Considerations for Redtail Ridge: This development is located near the Dillon Road/S. 96th Street study intersection. The traffic generated by this development was accounted for using the traffic impact study without the gas station and convenience store that is already operating. Traffic associated with all other uses was added to the background for the Redtail Ridge analysis.

Morgan Ranch – Downtown Superior Traffic Impact Analysis

Summary: A traffic impact analysis was prepared for the proposed Morgan Ranch – DTS mixed-use development; the study is dated November 2019. The site is located east of McCaslin Boulevard in the center of Downtown Superior. The project includes approximately 352 apartment units, 64 townhome units, 33,900 square feet of restaurant, 39,430 square feet of retail space and 7,564 square feet of civic center. As part of the development, a new roadway connection is proposed to connect with S. 88th Street just south of the US 36 overpass bridge via Promenade Boulevard. The study found that the S. 88th Street / Promenade Boulevard intersection will likely require a traffic signal or roundabout in the future.

Key Considerations for Redtail Ridge: This development is proposing to construct a new access onto S. 88th Street. The traffic generated by this development was accounted for in the background traffic growth assumed for the Redtail Ridge analysis.

Level 1 Traffic and Revenue Study Jefferson Parkway

This study was completed for the Jefferson Parkway Public Highway Authority (JPPHA) and finalized in April 2018. The purpose of the study was to provide forecasts of traffic and revenue for the proposed Jefferson Parkway. The proposed Jefferson Parkway is a 9.2-mile toll road running along the northwestern perimeter of the Denver Metro area. The future roadway will be a limited access expressway with two lanes of travel in each direction from SH 128 (south of US 36) to SH 93 (south of SH 72).

One of the scenarios considered was the “Northwest Parkway Extension” due to the project’s proximity to the study corridor. The assumed roadway configuration for this scenario was described on page 4-8 in the study and is provided below:

> *The assumed configuration was based on the latest project information provided by the Northwest Parkway Toll Authority. The Northwest Parkway Extension will be a two-lane limited-access facility constructed between S. 96th Street and SH 128. Access to US 36 from S. 96th Street and Flatiron Crossing Drive will be provided via free local frontage roadways. Additional interchanges will be constructed at S. 96th Street, Interlocken Boulevard and El Dorado Boulevard. Local access to Flatiron Boulevard and Environmental Way will be retained. Due to the relative importance of the project, traffic assignments with and without the proposed Northwest Parkway Extension were conducted in order to estimate the potential traffic and revenue impact to the Jefferson Parkway.*

Key Considerations for Redtail Ridge: The Northwest Parkway Extension segment in the Jefferson Parkway study, includes four of the study intersections along Northwest Parkway for the Redtail Ridge traffic Study (S. 96th Street/Via Varra, Rockcress Drive/Via Varra, US 36 North Ramps, and US 36 South Ramps). As noted above, the Northwest Parkway Extension would impact the study corridor with proposed "local frontage roadways" to maintain free local access and an interchange at S. 96th Street. No concepts were provided to illustrate the proposed frontage road or interchange configuration. The *Level 1 Study* indicated that the revenues generated from the Jefferson Parkway project would cover the cost of the frontage road and interchange improvements.

City of Louisville Transportation Master Plan (Adopted October 2019)

The City of Louisville Transportation Master Plan (TMP) is the first effort conducted by the City to look comprehensively at transportation conditions and options throughout Louisville and the region for all modes of transportation. The TMP represents a long-range planning effort that describes baseline conditions of the City's transportation network, establishes eight overarching transportation Goals, and specific transportation Policies, Programs and Projects. The City developed the plan with extensive community outreach, input from the City's advisory boards and commissions, regional partners, and City staff. It is important to note that the plan reflects a moment in time. The TMP provides guidance, but City priorities may change over time and transportation decisions will need to reflect these updated community needs, opportunities, and priorities.

Key Considerations for Redtail Ridge: The TMP acknowledges that the development of the former Storage Tek campus provides additional opportunity to leverage transit (page 4-11, 4-31) with a potential new local route to connect the Redtail Ridge project area with other development areas and regional transportation stations in the study area. The TMP notes future corridor improvements including expanding SH 42/S. 96th Street to a four or five lane cross-section (page 4-14) and increasing capacity at the Dillon Road/S. 96th Street intersection (page 4-16). The City will need to partner with landowners (CTC, BNSF and BVSD) on the planned improvements; and as the former Storage Tek site develops and connects into the existing transportation network. The City will need to evaluate the capacity constraints of the surrounding road and trail network and ensure adequate improvements are made (page 4-16). The TMP recommends transit route connections from the former Storage Tek site to destinations within Louisville (page 4-31) and bike share stations that would be connected to other stations at McCaslin Station, Avista Hospital, the Colorado Technology Center (CTC), Downtown, DELO, and Kestrel (page 4-38).

Boulder County Transportation Master Plan

The Boulder County TMP establishes a vision for a sustainable and inclusive transportation network by working together to prioritize transportation investments, explore new funding options, and plan for the future. The county's TMP provides a blueprint for Boulder County's transportation system for the next 25 years. The TMP provides a clear direction to the Boulder County Transportation Department to secure funding as it becomes available for transportation projects in the coming decades.

Key Considerations for Redtail Ridge: The Boulder County TMP identified the S. 96th Street/ Highway 42 as a key regional corridor (see Figure 2). The key regional corridors will expand and enhance affordable and equitable mobility options for older adults, people with disabilities, individuals with low income, and others living with mobility limitations while also increasing bike-to-transit programs to provide transportation options and make bus travel more accessible. S. 96th Street/Highway 42 is also identified as a conceptual corridor for Bus Rapid Transit (BRT) service in the TMP (see Figure 5). The BRT service would connect to a county-wide system of BRT routes that connect to regional destinations. The BRT system would include infrastructure investments and programs to reduce vehicle miles traveled and provide service to underserved communities. A component of the BRT vision is to expand and supplement existing Boulder County Eco Pass programs with the goal of a countywide community pass for all county residents and employees. See **Section 9** for possible future scenario if this and other mobility plans in this section are completed in the future.

DRCOG Active Transportation Plan

In 2017, the Denver Regional Council of Governments (DRCOG) initiated the development of the Denver region's first active transportation plan. The purpose of the plan is to establish a common vision for bicycling and walking in the region and to provide inspiration and tools for local agencies to implement projects in their respective jurisdictions. The Denver Regional Active Transportation Plan (ATP) supports DRCOG's Metro Vision plan and will foster collaboration among local agencies across boundaries. DRCOG worked with partners throughout the region to develop a regional active transportation vision, tools, and products to support the development of a robust active transportation network in the Denver region. The ATP envisions a safe, comfortable, and connected network and highlights opportunities and implementation strategies to improve active transportation across the Denver region.

Key Considerations for Redtail Ridge: The ATP identified regional active transportation corridors to allow safe and comfortable access to existing and future regional destinations for people of all ages, incomes, and abilities. Development of these corridors supports Metro Vision outcomes related to creating a connected multimodal region and a vibrant regional economy. The regional network can facilitate cross-jurisdictional collaboration toward a common vision for a regional active transportation network. Local facilities that connect to the regional network are critical to connect residents to the regional network and are an important component of the network as well. The S. 96th Street/State Highway 42 corridor from Broomfield to Longmont is identified as a regional active transportation corridor. This plan will be implemented over the next two decades as part of DRCOG's regional Transportation Improvement Plan (TIP). See **Section 9** for possible future scenario if this and other mobility plans in this section are completed in the future.

Mobility Choice Blueprint

The way we travel in the Denver metro area is rapidly changing. Advanced technology and internet connectivity are providing new options every day. To maintain the economic competitiveness and livability of our communities, we must identify and anticipate how technological advances like driverless

vehicles, mobility apps and streamlined fare payment could dramatically change our transportation systems. The region's major multi-modal agencies have agreed to develop a Mobility Choice Blueprint (MCB). This is a coordinated strategy for how we enable more accessible and effective transportation mobility choices to enhance the quality of our social, cultural, and economic life now and in the future. The metropolitan agencies are collaborating, in partnership with community, nonprofit, and private sector leaders, to carefully consider a range of effective and efficient solutions to the challenges and opportunities presented by emerging mobility technologies.

Key Considerations for Redtail Ridge: The MCB recommended implementation of transit priority on all major bus corridors, implementation of smart traffic signal control technology on all major regional arterial corridors, developing incentives to improve ride hailing and ridesharing operations, and encouraging shared use of driverless automated vehicles.

RTD First and Last Mile Strategic Plan

Transit is only effective when riders can access it. First and Last Mile (FLM) is the problem of getting to transit (first mile) and getting to your final destination (last mile). Not all trips are the same, and first mile trips often differ from last mile trips in length, mode of travel, and purpose. Similarly, trips to access transit are not necessarily limited by a one-mile radius but can differ depending on the mode of travel used to access the transit service. RTD First and Last Mile Strategic Plan (FFM Plan) covers FLM strategies for multiple types of transit stations and stops in a variety of settings. This Plan is not intended to be a prescriptive guide to implementing FLM strategies and recommendations. It provides a framework from which to select a tailored set of FLM strategies to improve transit access. The FFM Plan aims to improve transit accessibility by empowering local jurisdictions, transportation management associations (TMAs), and other partners to understand the range of FLM solutions that are available and then apply those solutions to specific station areas. As FLM strategies and recommendations often span across jurisdictional boundaries, partnerships are identified as key toward implementation.

Key Considerations for Redtail Ridge: The FFM Plan identifies strategies for reusing existing infrastructure, building new connections, transportation demand management and new transportation services on the Redtail Ridge project site (Figure 4.1). It also identified how the strategies could be applicable to different transit rider groups who will want to access local and regional transit services in and near Redtail Ridge (Figure 4.1). The strategies in this plan can be implemented over the next two decades as part of the Transportation Demand Management (TDM) program for the project.

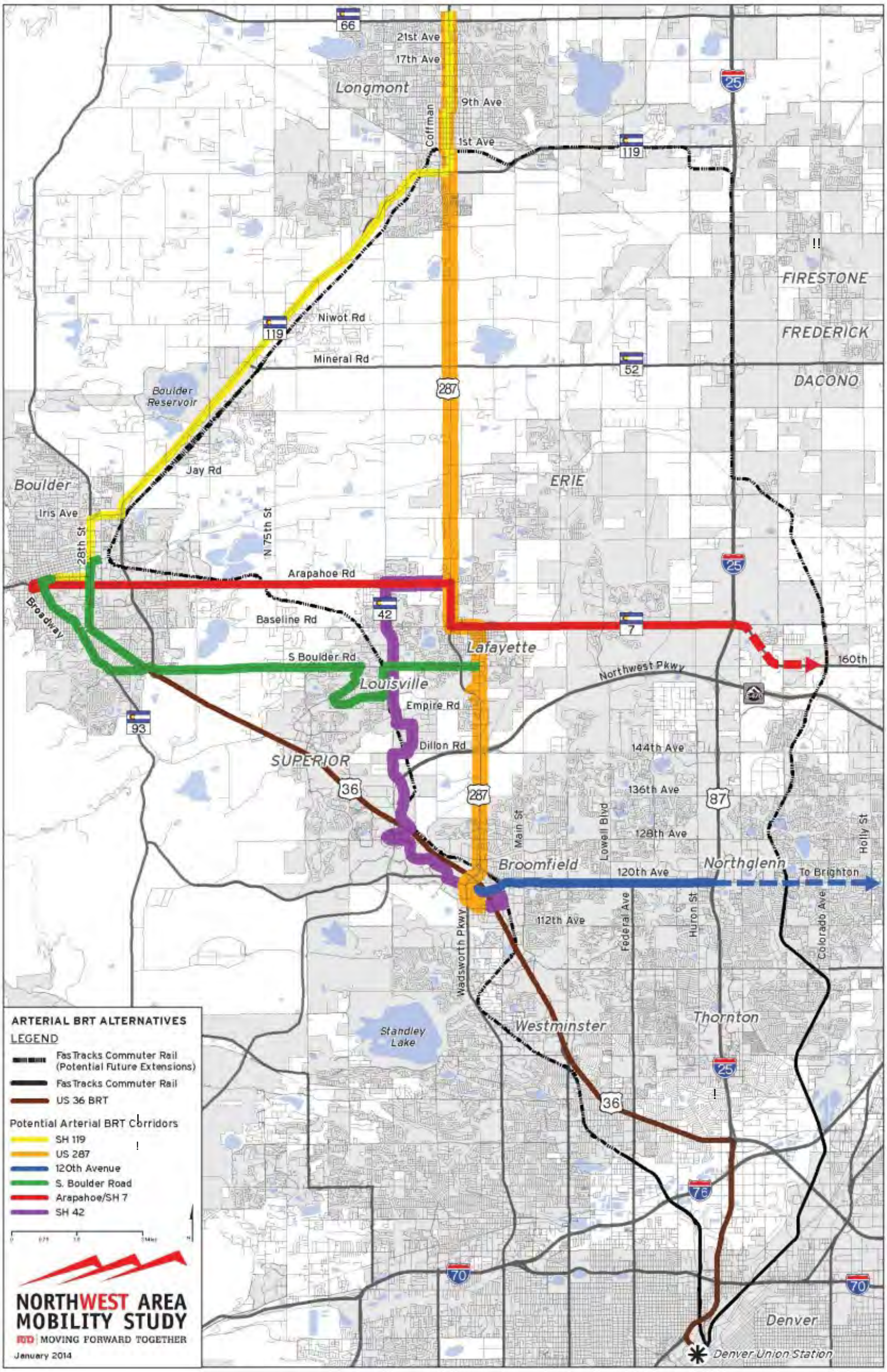
RTD Northwest Area Mobility Study

The Northwest Area Mobility Study (NAMS) was a 13-month effort to develop a prioritized list of mobility improvements for the Northwest area of the Regional Transportation District's (RTD) service area. The study focused on five key areas: Phased Construction of Northwest Rail, Feasibility of Extending North Metro Rail Line to Longmont, Finalizing the US 36 Bus Rapid Transit (BRT) Commitments identified for Year 2035, Feasibility of New Arterial BRT Lines, and Analysis of the Reverse-Commute between Denver Union

Station (DUS) and US 36. RTD staff and Board of Directors initiated the study in response to the significant cost increases associated with building and operating commuter rail in the 41-mile Northwest corridor. The goal of the study was to collaborate with corridor stakeholders to determine if there is a more cost-effective way to approach improving mobility in the area that could be implemented sooner. The result was multi-agency consensus on a prioritized list of agreed-upon mobility improvements for the Northwest RTD region.

The SH 42 corridor was recently identified as a Priority 3 corridor in the RTD Regional Bus Rapid Transit Study, the Metro Mayors Caucus is reviewing a ballot initiative to fund this corridor as part of regional ballot initiative, and the City of Louisville has applied for a grant to further study this service as part of a revised Highway 42 corridor study (see below). A Year 2040 scenario is provided in this study that assumes this service is in place.

Key Considerations for Redtail Ridge: NAMS identified the S. 96th Street/Highway 42 as one of the six candidate Arterial Bus Rapid Transit corridor (see Figure 6.1 in the study and **Figure 5** below). All corridors were evaluated, and recommendations were made for transit priority elements such as transit signal priority, queue jump lanes and headway-based scheduling. Operations and maintenance costs for the corridors were also prepared. The NAMS Policy Advisory Committee (PAC) recommended that all six arterial BRT projects be implemented with system-wide service improvements.



FOX TUTTLE
TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

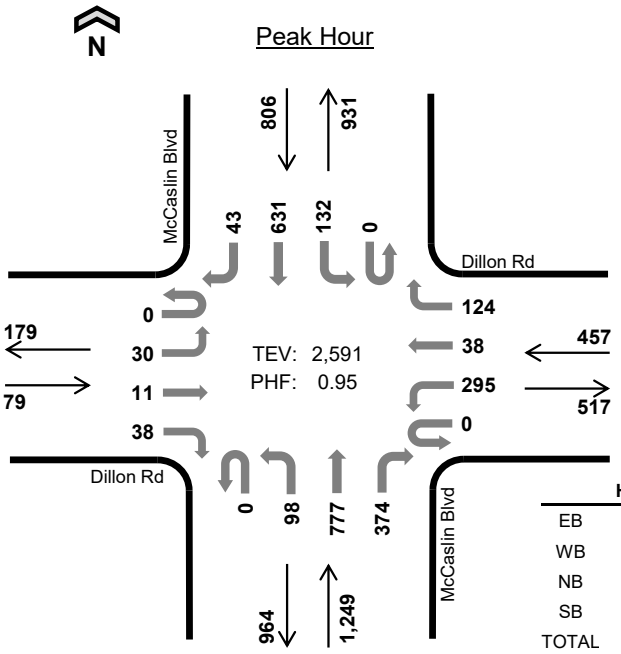
ARTERIAL BRT CORRIDOR CANDIDATES (RTD NAMS)

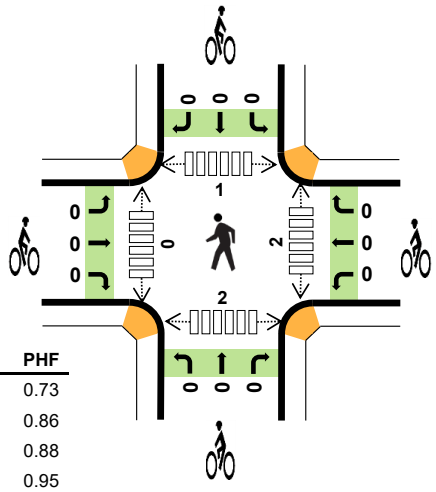
FT Project #	19055	Original Scale	NTS	Date	1/24/20	Drawn by	EJK	Figure #	5

Appendix C - Existing Traffic Data

McCaslin Blvd
Dillon Rd

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	0.0%	0.73
WB	3.1%	0.86
NB	1.8%	0.88
SB	2.4%	0.95
TOTAL	2.1%	0.95

Two-Hour Count Summaries

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				McCaslin Blvd Northbound				McCaslin Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	1	5	0	39	3	18	0	8	83	48	0	7	88	1	302	0
7:15 AM	0	3	3	5	0	66	3	15	0	10	115	80	0	12	92	5	409	0
7:30 AM	0	0	2	6	0	74	7	24	0	14	161	63	0	20	133	6	510	0
7:45 AM	**0**	**6**	**4**	**7**	**0**	**85**	**8**	**32**	**0**	**20**	**222**	**114**	**0**	**22**	**148**	**11**	**679**	1,900
8:00 AM	**0**	**4**	**1**	**12**	**0**	**89**	**9**	**35**	**0**	**22**	**165**	**96**	**0**	**45**	**158**	**10**	**646**	2,244
8:15 AM	**0**	**8**	**4**	**6**	**0**	**57**	**10**	**20**	**0**	**31**	**185**	**81**	**0**	**37**	**160**	**4**	**603**	2,438
8:30 AM	**0**	**12**	**2**	**13**	**0**	**64**	**11**	**37**	**0**	**25**	**205**	**83**	**0**	**28**	**165**	**18**	**663**	**2,591**
8:45 AM	0	3	7	12	1	95	22	47	0	25	181	78	0	18	123	12	624	2,536
Count Total	0	37	24	66	1	569	73	228	0	155	1,317	643	0	189	1,067	67	4,436	0
Peak Hour All	**0**	**30**	**11**	**38**	**0**	**295**	**38**	**124**	**0**	**98**	**777**	**374**	**0**	**132**	**631**	**43**	**2,591**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**9**	**1**	**4**	**0**	**0**	**16**	**6**	**0**	**6**	**12**	**1**	**55**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**0%**	**-**	**3%**	**3%**	**3%**	**-**	**0%**	**2%**	**2%**	**-**	**5%**	**2%**	**2%**	**2%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	4	1	*6*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	1	8	2	*11*	0	0	0	0	*0*	1	1	1	0	*3*
7:30 AM	0	2	1	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**0**	**4**	**8**	**4**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
8:00 AM	**0**	**3**	**3**	**6**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
8:15 AM	**0**	**2**	**2**	**4**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**5**	**9**	**5**	***19***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**1**	***3***
8:45 AM	2	3	8	1	*14*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	2	21	43	25	*91*	0	0	0	0	*0*	3	1	2	2	*8*
Peak Hour	**0**	**14**	**22**	**19**	***55***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**2**	***5***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				McCaslin Blvd Northbound				McCaslin Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	1	0	0	0	0	2	2	0	0	1	0	6	0
7:15 AM	0	0	0	0	0	1	0	0	0	1	6	1	0	0	2	0	11	0
7:30 AM	0	0	0	0	0	1	0	1	0	0	1	0	0	1	1	0	5	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**7**	**1**	**0**	**0**	**4**	**0**	**16**	38
8:00 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**4**	**2**	**0**	**12**	44
8:15 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**1**	**0**	**2**	**2**	**0**	**8**	41
8:30 AM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**2**	**0**	**0**	**5**	**4**	**0**	**0**	**4**	**1**	**19**	**55**
8:45 AM	0	0	1	1	0	2	0	1	0	2	4	2	0	0	1	0	14	53
Count Total	0	0	1	1	0	14	1	6	0	3	29	11	0	7	17	1	91	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**9**	**1**	**4**	**0**	**0**	**16**	**6**	**0**	**6**	**12**	**1**	**55**	**0**

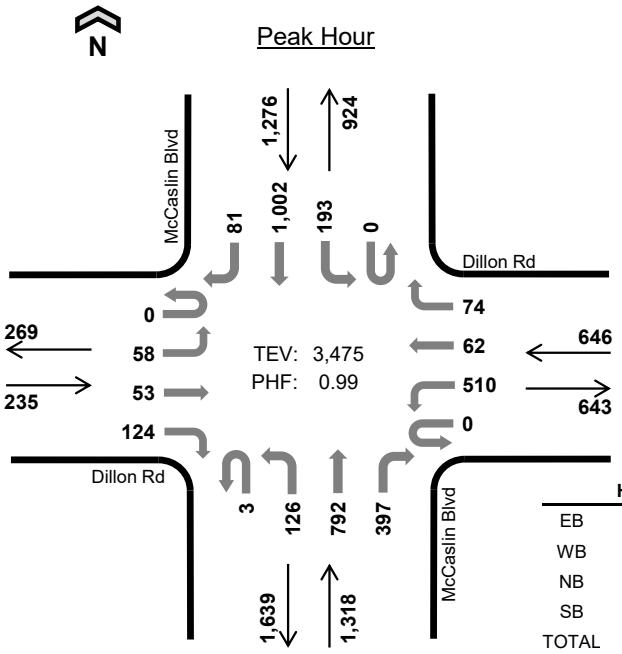
Two-Hour Count Summaries - Bikes

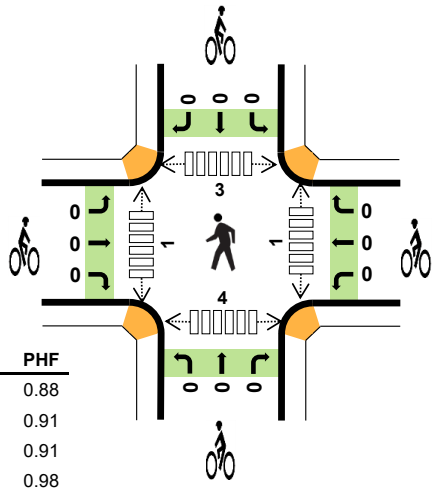
Interval Start	Dillon Rd Eastbound			Dillon Rd Westbound			McCaslin Blvd Northbound			McCaslin Blvd Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

McCaslin Blvd
Dillon Rd

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV %:	PHF
EB	0.4%	0.88
WB	1.1%	0.91
NB	1.1%	0.91
SB	1.1%	0.98
TOTAL	1.0%	0.99

Three-and-a-Half-Hour Count Summaries

Interval Start		Dillon Rd Eastbound				Dillon Rd Westbound				McCaslin Blvd Northbound				McCaslin Blvd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		0	11	8	28	0	115	12	20	1	36	213	114	0	43	253	16	870	0
4:45 PM		0	16	11	30	0	130	22	15	1	30	203	95	0	45	270	12	880	0
5:00 PM		0	13	18	33	0	123	15	17	0	31	200	93	0	52	253	17	865	0
5:15 PM		0	18	16	33	0	142	13	22	1	29	176	95	0	53	226	36	860	3,475
Peak Hour	All	0	58	53	124	0	510	62	74	3	126	792	397	0	193	1,002	81	3,475	0
	HV	0	0	0	1	0	7	0	0	0	1	9	4	0	1	12	1	36	0
	HV%	-	0%	0%	1%	-	1%	0%	0%	0%	1%	1%	1%	-	1%	1%	1%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	3	6	5	*14*	0	0	0	0	*0*	0	0	0	1	*1*
4:45 PM	1	3	2	5	*11*	0	0	0	0	*0*	0	0	0	1	*1*
5:00 PM	0	0	3	1	*4*	0	0	0	0	*0*	1	1	2	2	*6*
5:15 PM	0	1	3	3	*7*	0	0	0	0	*0*	0	0	1	0	*1*
Peak Hour	1	7	14	14	*36*	0	0	0	0	*0*	1	1	3	4	*9*

Three-and-a-Half-Hour Count Summaries

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				McCaslin Blvd Northbound				McCaslin Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	11	13	29	0	109	14	22	2	17	163	90	0	26	140	18	654	0
2:45 PM	0	12	8	16	0	92	13	23	2	26	137	87	0	41	170	14	641	0
3:00 PM	0	16	12	42	1	95	10	40	5	18	150	92	1	31	182	13	708	0
3:15 PM	0	17	4	22	0	127	8	24	1	27	157	86	0	23	177	8	681	2,684
3:30 PM	0	5	12	24	1	97	8	21	1	21	183	97	0	35	211	18	734	2,764
3:45 PM	0	13	12	23	0	107	15	20	0	27	183	114	0	47	172	16	749	2,872
4:00 PM	0	16	14	26	0	131	14	46	0	27	180	91	0	33	185	10	773	2,937
4:15 PM	0	6	14	30	0	121	8	42	0	37	175	102	0	53	196	11	795	3,051
4:30 PM	**0**	**11**	**8**	**28**	**0**	**115**	**12**	**20**	**1**	**36**	**213**	**114**	**0**	**43**	**253**	**16**	**870**	3,187
4:45 PM	**0**	**16**	**11**	**30**	**0**	**130**	**22**	**15**	**1**	**30**	**203**	**95**	**0**	**45**	**270**	**12**	**880**	3,318
5:00 PM	**0**	**13**	**18**	**33**	**0**	**123**	**15**	**17**	**0**	**31**	**200**	**93**	**0**	**52**	**253**	**17**	**865**	3,410
5:15 PM	**0**	**18**	**16**	**33**	**0**	**142**	**13**	**22**	**1**	**29**	**176**	**95**	**0**	**53**	**226**	**36**	**860**	**3,475**
5:30 PM	0	12	9	38	0	105	9	12	0	38	168	97	0	38	215	14	755	3,360
5:45 PM	0	11	14	37	0	97	14	23	2	29	189	76	0	36	208	18	754	3,234
Count Total	0	177	165	411	2	1,591	175	347	16	393	2,477	1,329	1	556	2,858	221	10,719	0
Peak Hour All	**0**	**58**	**53**	**124**	**0**	**510**	**62**	**74**	**3**	**126**	**792**	**397**	**0**	**193**	**1,002**	**81**	**3,475**	**0**
Peak Hour HV	**0**	**0**	**0**	**1**	**0**	**7**	**0**	**0**	**0**	**1**	**9**	**4**	**0**	**1**	**12**	**1**	**36**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**1%**	**-**	**1%**	**0%**	**0%**	**0%**	**1%**	**1%**	**1%**	**-**	**1%**	**1%**	**1%**	**1%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	1	4	6	5	*16*	0	0	0	0	*0*	0	0	1	1	*2*
2:45 PM	1	1	4	7	*13*	0	0	0	0	*0*	1	0	0	0	*1*
3:00 PM	2	2	10	6	*20*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	3	6	2	6	*17*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	1	2	5	8	*16*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	0	1	7	4	*12*	0	0	0	0	*0*	0	1	0	1	*2*
4:00 PM	0	0	6	2	*8*	0	0	0	0	*0*	0	2	0	1	*3*
4:15 PM	0	2	2	6	*10*	0	0	0	0	*0*	1	0	3	0	*4*
4:30 PM	**0**	**3**	**6**	**5**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
4:45 PM	**1**	**3**	**2**	**5**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
5:00 PM	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**2**	**2**	*6*
5:15 PM	**0**	**1**	**3**	**3**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	***1***
5:30 PM	1	1	2	3	*7*	0	0	0	0	*0*	0	0	1	1	*2*
5:45 PM	0	1	0	2	*3*	0	0	0	0	*0*	1	0	0	0	*1*
Count Total	10	27	58	63	*158*	0	0	0	0	*0*	4	4	8	8	*24*
Peak Hour	**1**	**7**	**14**	**14**	***36***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**3**	**4**	***9***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd				Dillon Rd				McCaslin Blvd				McCaslin Blvd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	1	0	0	2	1	1	0	1	2	3	0	2	3	0	16	0
2:45 PM	0	0	0	1	0	1	0	0	0	1	2	1	0	2	5	0	13	0
3:00 PM	0	0	1	1	0	2	0	0	0	3	5	2	0	2	3	1	20	0
3:15 PM	0	1	1	1	0	5	0	1	0	1	1	0	0	1	5	0	17	66
3:30 PM	0	0	1	0	0	1	1	0	0	0	4	1	0	2	6	0	16	66
3:45 PM	0	0	0	0	0	1	0	0	0	0	3	4	0	0	4	0	12	65
4:00 PM	0	0	0	0	0	0	0	0	0	1	2	3	0	0	2	0	8	53
4:15 PM	0	0	0	0	0	0	2	0	0	0	0	2	0	3	3	0	10	46
4:30 PM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**4**	**2**	**0**	**1**	**3**	**1**	**14**	44
4:45 PM	**0**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**5**	**0**	**11**	43
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**1**	**0**	**4**	39
5:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**3**	**0**	**7**	**36**
5:30 PM	0	1	0	0	0	1	0	0	0	0	2	0	0	1	2	0	7	29
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	3	21
Count Total	0	2	4	4	0	21	4	2	0	8	30	20	0	14	47	2	158	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**7**	**0**	**0**	**0**	**1**	**9**	**4**	**0**	**1**	**12**	**1**	**36**	**0**

Three-and-a-Half-Hour Count Summaries - Bikes

Interval Start	Dillon Rd			Dillon Rd			McCaslin Blvd			McCaslin Blvd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

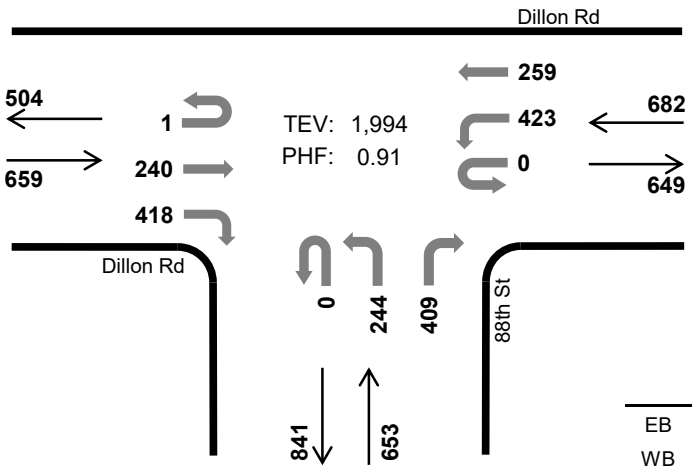
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

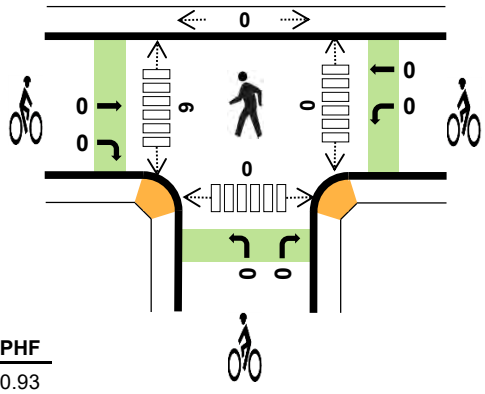
88th St
Dillon Rd

N

Peak Hour

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	2.9%	0.93
WB	2.6%	0.76
NB	2.6%	0.76
SB	-	-
TOTAL	2.7%	0.91

Two-Hour Count Summaries

Interval Start		Dillon Rd Eastbound				Dillon Rd Westbound				88th St Northbound				N/A Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	39	19	0	51	40	0	0	3	0	35	0	0	0	0	187	0
7:15 AM		0	0	61	38	0	66	65	0	0	7	0	69	0	0	0	0	306	0
7:30 AM		0	0	50	51	0	110	81	0	0	25	0	77	0	0	0	0	394	0
7:45 AM		**0**	**0**	**58**	**100**	**0**	**133**	**90**	**0**	**0**	**44**	**0**	**107**	**0**	**0**	**0**	**0**	**532**	1,419
8:00 AM		**0**	**0**	**70**	**107**	**0**	**103**	**55**	**0**	**0**	**98**	**0**	**117**	**0**	**0**	**0**	**0**	**550**	1,782
8:15 AM		**0**	**0**	**60**	**118**	**0**	**81**	**40**	**0**	**0**	**32**	**0**	**100**	**0**	**0**	**0**	**0**	**431**	1,907
8:30 AM		**1**	**0**	**52**	**93**	**0**	**106**	**74**	**0**	**0**	**70**	**0**	**85**	**0**	**0**	**0**	**0**	**481**	**1,994**
8:45 AM		0	0	69	37	0	104	116	0	0	49	0	85	0	0	0	0	460	1,922
Count Total		1	0	459	563	0	754	561	0	0	328	0	675	0	0	0	0	3,341	0
Peak Hour	**All**	**1**	**0**	**240**	**418**	**0**	**423**	**259**	**0**	**0**	**244**	**0**	**409**	**0**	**0**	**0**	**0**	**1,994**	**0**
	HV	**0**	**0**	**6**	**13**	**0**	**6**	**12**	**0**	**0**	**7**	**0**	**10**	**0**	**0**	**0**	**0**	**54**	**0**
	HV%	**0%**	**-**	**3%**	**3%**	**-**	**1%**	**5%**	**-**	**-**	**3%**	**-**	**2%**	**-**	**-**	**-**	**-**	**3%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	0	0	0	*2*	0	0	0	0	*0*	0	1	0	0	*1*
7:30 AM	0	4	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**5**	**7**	**4**	**0**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**4**	**0**	**0**	*4*
8:00 AM	**2**	**3**	**4**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
8:15 AM	**5**	**3**	**1**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**0**	*3*
8:30 AM	**7**	**5**	**8**	**0**	***20***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
8:45 AM	5	5	3	0	*13*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	27	27	20	0	*74*	0	0	0	0	*0*	0	10	0	0	*10*
Peak Hr	**19**	**18**	**17**	**0**	***54***	**0**	**0**	**0**	**0**	***0***	**0**	**9**	**0**	**0**	***9***

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Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				88th St Northbound				N/A Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:30 AM	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	4	0
7:45 AM	**0**	**0**	**0**	**5**	**0**	**2**	**5**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**16**	23
8:00 AM	**0**	**0**	**2**	**0**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**9**	31
8:15 AM	**0**	**0**	**1**	**4**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**9**	38
8:30 AM	**0**	**0**	**3**	**4**	**0**	**2**	**3**	**0**	**0**	**5**	**0**	**3**	**0**	**0**	**0**	**0**	**20**	**54**
8:45 AM	0	0	3	2	0	3	2	0	0	1	0	2	0	0	0	0	13	51
Count Total	0	0	12	15	0	12	15	0	0	8	0	12	0	0	0	0	74	0
Peak Hour	**0**	**0**	**6**	**13**	**0**	**6**	**12**	**0**	**0**	**7**	**0**	**10**	**0**	**0**	**0**	**0**	**54**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Dillon Rd Eastbound			Dillon Rd Westbound			88th St Northbound			N/A Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

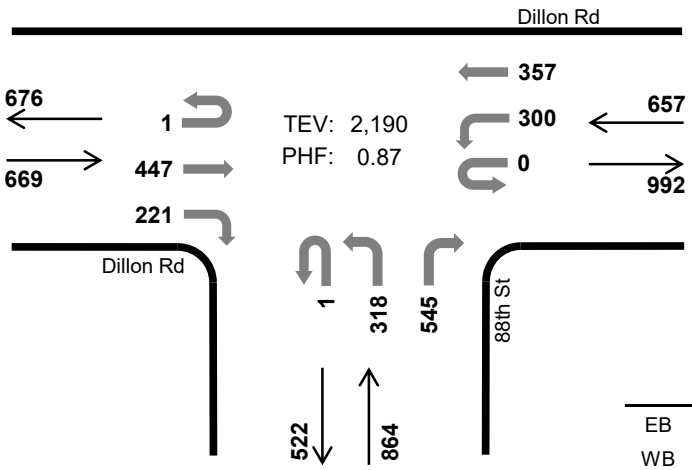
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

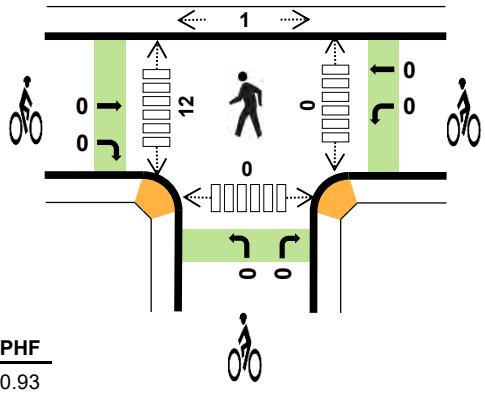
88th St
Dillon Rd

N

Peak Hour

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 3:45 PM to 4:45 PM





	HV %:	PHF
EB	2.7%	0.93
WB	1.4%	0.93
NB	1.4%	0.75
SB	-	-
TOTAL	1.8%	0.87

Three-and-a-Half-Hour Count Summaries

Interval Start		Dillon Rd Eastbound				Dillon Rd Westbound				88th St Northbound				N/A Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:45 PM		1	0	104	73	0	86	74	0	1	67	0	117	0	0	0	0	523	0
4:00 PM		0	0	109	57	0	75	101	0	0	121	0	166	0	0	0	0	629	0
4:15 PM		0	0	101	44	0	63	92	0	0	93	0	129	0	0	0	0	522	0
4:30 PM		0	0	133	47	0	76	90	0	0	37	0	133	0	0	0	0	516	2,190
Peak Hour	All	1	0	447	221	0	300	357	0	1	318	0	545	0	0	0	0	2,190	0
	HV	0	0	14	4	0	2	7	0	0	4	0	8	0	0	0	0	39	0
	HV%	0%	-	3%	2%	-	1%	2%	-	0%	1%	-	1%	-	-	-	-	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:45 PM	4	2	3	0	*9*	0	0	0	0	*0*	0	3	0	0	*3*
4:00 PM	4	1	4	0	*9*	0	0	0	0	*0*	0	5	1	0	*6*
4:15 PM	6	5	3	0	*14*	0	0	0	0	*0*	0	3	0	0	*3*
4:30 PM	4	1	2	0	*7*	0	0	0	0	*0*	0	1	0	0	*1*
Peak Hour	18	9	12	0	*39*	0	0	0	0	*0*	0	12	1	0	*13*

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Three-and-a-Half-Hour Count Summaries

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				88th St Northbound				N/A Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	75	60	0	78	67	0	0	35	0	62	0	0	0	0	377	0
2:45 PM	0	0	75	60	0	92	75	0	0	29	0	76	0	0	0	0	407	0
3:00 PM	0	0	94	60	0	66	62	0	0	87	0	151	0	0	0	0	520	0
3:15 PM	0	0	76	42	0	64	69	0	0	88	0	145	0	0	0	0	484	1,788
3:30 PM	1	0	104	44	0	70	80	0	0	52	0	92	0	0	0	0	443	1,854
3:45 PM	**1**	**0**	**104**	**73**	**0**	**86**	**74**	**0**	**1**	**67**	**0**	**117**	**0**	**0**	**0**	**0**	**523**	1,970
4:00 PM	**0**	**0**	**109**	**57**	**0**	**75**	**101**	**0**	**0**	**121**	**0**	**166**	**0**	**0**	**0**	**0**	**629**	2,079
4:15 PM	**0**	**0**	**101**	**44**	**0**	**63**	**92**	**0**	**0**	**93**	**0**	**129**	**0**	**0**	**0**	**0**	**522**	2,117
4:30 PM	**0**	**0**	**133**	**47**	**0**	**76**	**90**	**0**	**0**	**37**	**0**	**133**	**0**	**0**	**0**	**0**	**516**	**2,190**
4:45 PM	0	0	104	69	0	69	134	0	0	38	0	35	0	0	0	0	449	2,116
5:00 PM	0	0	130	43	0	69	108	0	0	38	0	102	0	0	0	0	490	1,977
5:15 PM	0	0	119	56	0	56	97	0	0	35	0	91	0	0	0	0	454	1,909
5:30 PM	0	0	111	46	0	78	79	0	0	46	0	69	0	0	0	0	429	1,822
5:45 PM	0	0	96	32	0	58	72	0	0	39	0	90	0	0	0	0	387	1,760
Count Total	2	0	1,431	733	0	1,000	1,200	0	1	805	0	1,458	0	0	0	0	6,630	0
Peak Hour All	**1**	**0**	**447**	**221**	**0**	**300**	**357**	**0**	**1**	**318**	**0**	**545**	**0**	**0**	**0**	**0**	**2,190**	**0**
Peak Hour HV	**0**	**0**	**14**	**4**	**0**	**2**	**7**	**0**	**0**	**4**	**0**	**8**	**0**	**0**	**0**	**0**	**39**	**0**
Peak Hour HV%	**0%**	**-**	**3%**	**2%**	**-**	**1%**	**2%**	**-**	**0%**	**1%**	**-**	**1%**	**-**	**-**	**-**	**-**	**2%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	6	6	5	0	*17*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	3	6	1	0	*10*	0	0	0	0	*0*	0	1	0	0	*1*
3:00 PM	9	0	4	0	*13*	0	0	0	0	*0*	0	1	0	0	*1*
3:15 PM	3	6	4	0	*13*	0	0	0	0	*0*	0	10	1	0	*11*
3:30 PM	4	4	2	0	*10*	0	0	0	0	*0*	0	1	0	0	*1*
3:45 PM	**4**	**2**	**3**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**0**	*3*
4:00 PM	**4**	**1**	**4**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**5**	**1**	**0**	*6*
4:15 PM	**6**	**5**	**3**	**0**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**0**	*3*
4:30 PM	**4**	**1**	**2**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
4:45 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	0	1	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	45	35	29	0	*109*	0	0	0	0	*0*	0	25	2	0	*27*
Peak Hr	**18**	**9**	**12**	**0**	***39***	**0**	**0**	**0**	**0**	***0***	**0**	**12**	**1**	**0**	***13***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd				Dillon Rd				88th St				N/A				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	3	3	0	3	3	0	0	1	0	4	0	0	0	0	17	0
2:45 PM	0	0	1	2	0	5	1	0	0	0	0	1	0	0	0	0	10	0
3:00 PM	0	0	4	5	0	0	0	0	0	3	0	1	0	0	0	0	13	0
3:15 PM	0	0	1	2	0	4	2	0	0	3	0	1	0	0	0	0	13	53
3:30 PM	0	0	3	1	0	2	2	0	0	0	0	2	0	0	0	0	10	46
3:45 PM	**0**	**0**	**3**	**1**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**9**	45
4:00 PM	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**9**	41
4:15 PM	**0**	**0**	**5**	**1**	**0**	**2**	**3**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**14**	42
4:30 PM	**0**	**0**	**2**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**7**	**39**
4:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	32
5:00 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	25
5:15 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2	13
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	7
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Count Total	0	0	27	18	0	17	18	0	0	12	0	17	0	0	0	0	109	0
Peak Hour	**0**	**0**	**14**	**4**	**0**	**2**	**7**	**0**	**0**	**4**	**0**	**8**	**0**	**0**	**0**	**0**	**39**	**0**

Three-and-a-Half-Hour Count Summaries - Bikes

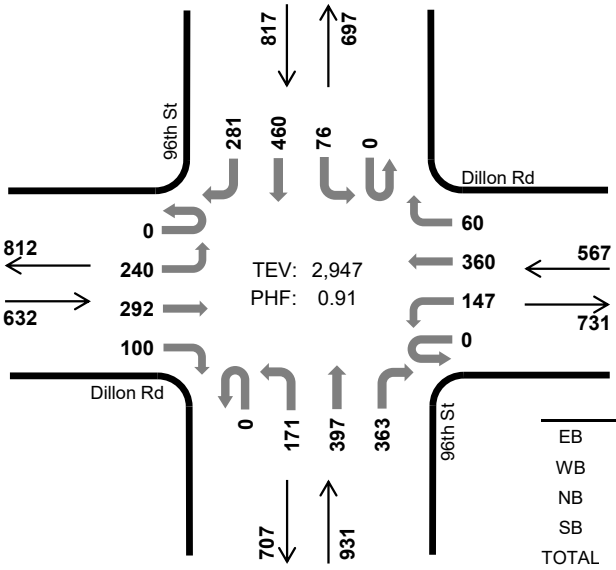
Interval Start	Dillon Rd			Dillon Rd			88th St			N/A			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

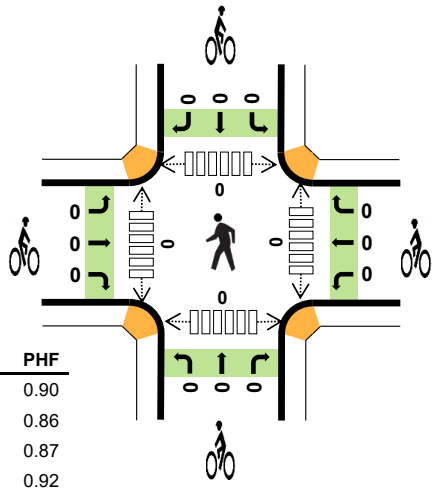
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

96th St
Dillon Rd

Peak Hour

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV %:	PHF
EB	1.4%	0.90
WB	3.5%	0.86
NB	1.5%	0.87
SB	0.9%	0.92
TOTAL	1.7%	0.91

Two-Hour Count Summaries

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				96th St Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	25	36	4	0	21	34	8	0	34	48	74	0	17	86	29	416	0
7:15 AM	0	64	44	7	0	31	71	3	0	31	81	80	0	23	81	40	556	0
7:30 AM	**0**	**48**	**66**	**17**	**0**	**28**	**111**	**13**	**0**	**52**	**70**	**73**	**0**	**26**	**92**	**55**	**651**	0
7:45 AM	**0**	**60**	**72**	**25**	**0**	**37**	**111**	**16**	**0**	**56**	**112**	**99**	**0**	**16**	**115**	**92**	**811**	2,434
8:00 AM	**0**	**66**	**85**	**24**	**0**	**33**	**86**	**10**	**0**	**38**	**107**	**99**	**0**	**14**	**119**	**90**	**771**	2,789
8:15 AM	**0**	**66**	**69**	**34**	**0**	**49**	**52**	**21**	**0**	**25**	**108**	**92**	**0**	**20**	**134**	**44**	**714**	**2,947**
8:30 AM	0	55	55	28	0	44	58	21	1	19	96	71	2	17	108	44	619	2,915
8:45 AM	0	56	79	17	0	38	68	11	0	33	122	92	0	16	106	49	687	2,791
Count Total	0	440	506	156	0	281	591	103	1	288	744	680	2	149	841	443	5,225	0
Peak Hour All	**0**	**240**	**292**	**100**	**0**	**147**	**360**	**60**	**0**	**171**	**397**	**363**	**0**	**76**	**460**	**281**	**2,947**	**0**
Peak Hour HV	**0**	**5**	**3**	**1**	**0**	**7**	**12**	**1**	**0**	**3**	**8**	**3**	**0**	**0**	**5**	**2**	**50**	**0**
Peak Hour HV%	**-**	**2%**	**1%**	**1%**	**-**	**5%**	**3%**	**2%**	**-**	**2%**	**2%**	**1%**	**-**	**0%**	**1%**	**1%**	**2%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	2	1	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	4	1	1	*8*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**1**	**8**	**3**	**3**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**2**	**7**	**1**	**1**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**4**	**1**	**4**	**2**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**2**	**4**	**6**	**1**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	6	12	4	2	*24*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	7	7	8	3	*25*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	27	45	28	13	*113*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**9**	**20**	**14**	**7**	***50***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				96th St Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	0	0	2	0	0	0	0	1	0	0	0	0	0	6	0
7:15 AM	0	2	0	0	0	3	1	0	0	0	1	0	0	0	0	1	8	0
7:30 AM	**0**	**0**	**1**	**0**	**0**	**2**	**6**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**1**	**2**	**15**	0
7:45 AM	**0**	**2**	**0**	**0**	**0**	**3**	**4**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**11**	40
8:00 AM	**0**	**3**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**2**	**0**	**11**	45
8:15 AM	**0**	**0**	**1**	**1**	**0**	**1**	**2**	**1**	**0**	**3**	**2**	**1**	**0**	**0**	**1**	**0**	**13**	**50**
8:30 AM	0	0	5	1	0	7	3	2	0	1	2	1	0	0	1	1	24	59
8:45 AM	0	1	6	0	0	3	2	2	0	0	5	3	0	1	0	2	25	73
Count Total	0	8	17	2	0	22	18	5	0	4	17	7	0	1	6	6	113	0
Peak Hour	**0**	**5**	**3**	**1**	**0**	**7**	**12**	**1**	**0**	**3**	**8**	**3**	**0**	**0**	**5**	**2**	**50**	**0**

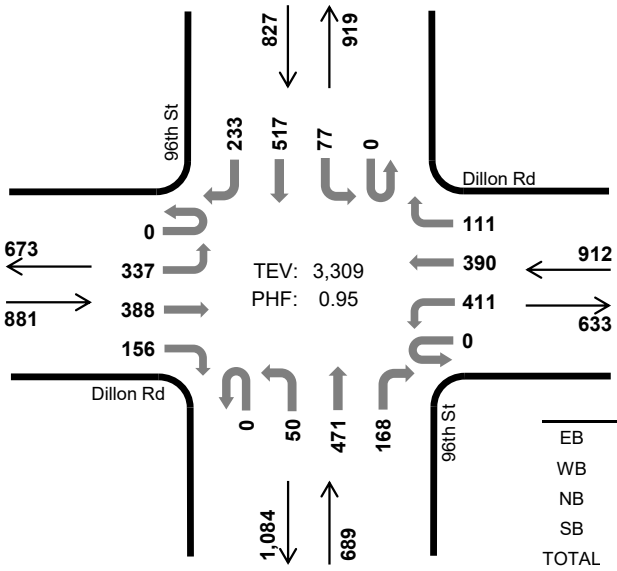
Two-Hour Count Summaries - Bikes

Interval Start	Dillon Rd Eastbound			Dillon Rd Westbound			96th St Northbound			96th St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

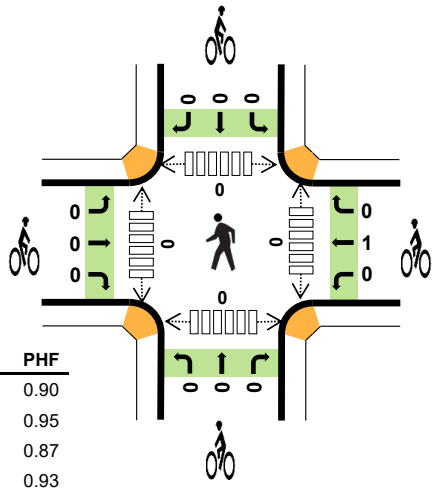
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

96th St
Dillon Rd

Peak Hour



Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	1.6%	0.90
WB	1.6%	0.95
NB	1.0%	0.87
SB	1.6%	0.93
TOTAL	1.5%	0.95

Three-and-a-Half-Hour Count Summaries

Interval Start		Dillon Rd Eastbound				Dillon Rd Westbound				96th St Northbound				96th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	100	99	47	0	110	93	36	0	13	99	51	0	33	126	64	871	0
4:15 PM		0	95	100	43	0	110	95	18	0	12	121	38	0	16	120	52	820	0
4:30 PM		0	88	94	32	0	88	89	32	0	9	106	42	0	15	145	59	799	0
4:45 PM		0	54	95	34	0	103	113	25	0	16	145	37	0	13	126	58	819	3,309
Peak Hour	All	0	337	388	156	0	411	390	111	0	50	471	168	0	77	517	233	3,309	0
	HV	0	4	8	2	0	10	5	0	0	0	2	5	0	1	8	4	49	0
	HV%	-	1%	2%	1%	-	2%	1%	0%	-	0%	0%	3%	-	1%	2%	2%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	2	4	3	*13*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	7	6	3	5	*21*	0	1	0	0	*1*	0	0	0	0	*0*
4:30 PM	3	4	0	2	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	3	0	3	*6*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	14	15	7	13	*49*	0	1	0	0	*1*	0	0	0	0	*0*

Three-and-a-Half-Hour Count Summaries

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				96th St Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	54	48	26	0	45	77	23	0	11	73	41	0	13	78	52	541	0
2:45 PM	0	52	64	30	0	37	66	15	0	28	107	42	0	20	82	70	613	0
3:00 PM	0	89	74	45	0	88	61	27	0	14	69	31	0	15	70	51	634	0
3:15 PM	0	83	85	47	0	53	62	11	0	10	83	36	0	26	130	54	680	2,468
3:30 PM	0	72	73	40	0	97	75	18	0	15	124	38	0	14	84	64	714	2,641
3:45 PM	0	81	98	26	0	67	72	20	0	17	110	45	0	29	112	69	746	2,774
4:00 PM	**0**	**100**	**99**	**47**	**0**	**110**	**93**	**36**	**0**	**13**	**99**	**51**	**0**	**33**	**126**	**64**	**871**	3,011
4:15 PM	**0**	**95**	**100**	**43**	**0**	**110**	**95**	**18**	**0**	**12**	**121**	**38**	**0**	**16**	**120**	**52**	**820**	3,151
4:30 PM	**0**	**88**	**94**	**32**	**0**	**88**	**89**	**32**	**0**	**9**	**106**	**42**	**0**	**15**	**145**	**59**	**799**	3,236
4:45 PM	**0**	**54**	**95**	**34**	**0**	**103**	**113**	**25**	**0**	**16**	**145**	**37**	**0**	**13**	**126**	**58**	**819**	**3,309**
5:00 PM	0	76	92	44	0	99	115	32	0	10	120	46	0	14	116	56	820	3,258
5:15 PM	0	68	98	34	0	89	78	13	0	9	145	42	0	20	131	61	788	3,226
5:30 PM	0	50	95	26	0	57	96	10	0	9	155	32	0	17	131	52	730	3,157
5:45 PM	0	49	73	31	0	52	90	20	1	16	121	29	0	15	139	37	673	3,011
Count Total	0	1,011	1,188	505	0	1,095	1,182	300	1	189	1,578	550	0	260	1,590	799	10,248	0
Peak Hour All	**0**	**337**	**388**	**156**	**0**	**411**	**390**	**111**	**0**	**50**	**471**	**168**	**0**	**77**	**517**	**233**	**3,309**	**0**
Peak Hour HV	**0**	**4**	**8**	**2**	**0**	**10**	**5**	**0**	**0**	**0**	**2**	**5**	**0**	**1**	**8**	**4**	**49**	**0**
Peak Hour HV%	**-**	**1%**	**2%**	**1%**	**-**	**2%**	**1%**	**0%**	**-**	**0%**	**0%**	**3%**	**-**	**1%**	**2%**	**2%**	**1%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	8	9	4	2	*23*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	3	6	5	6	*20*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	5	4	2	1	*12*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	3	6	7	10	*26*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	3	3	3	1	*10*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	6	1	2	3	*12*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	**4**	**2**	**4**	**3**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:15 PM	**7**	**6**	**3**	**5**	***21***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**3**	**4**	**0**	**2**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**3**	**0**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	0	2	1	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	2	1	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	2	0	2	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	1	0	1	2	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	44	50	33	42	*169*	0	1	0	0	*1*	0	0	0	0	*0*
Peak Hour	**14**	**15**	**7**	**13**	***49***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd				Dillon Rd				96th St				96th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	2	3	3	0	2	6	1	0	0	2	2	0	0	2	0	23	0
2:45 PM	0	0	2	1	0	1	5	0	0	2	1	2	0	1	3	2	20	0
3:00 PM	0	2	2	1	0	2	1	1	0	0	0	2	0	0	1	0	12	0
3:15 PM	0	1	0	2	0	3	3	0	0	1	1	5	0	1	7	2	26	81
3:30 PM	0	1	1	1	0	2	1	0	0	2	1	0	0	0	0	1	10	68
3:45 PM	0	1	3	2	0	1	0	0	0	0	0	2	0	0	2	1	12	60
4:00 PM	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**2**	**1**	**13**	61
4:15 PM	**0**	**0**	**6**	**1**	**0**	**2**	**4**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**2**	**2**	**21**	56
4:30 PM	**0**	**2**	**1**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**9**	55
4:45 PM	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**6**	**49**
5:00 PM	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	0	4	40
5:15 PM	0	0	1	0	0	2	0	0	0	0	1	0	0	0	1	0	5	24
5:30 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2	0	4	19
5:45 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	0	4	17
Count Total	0	11	21	12	0	24	23	3	0	5	9	19	0	3	29	10	169	0
Peak Hour	**0**	**4**	**8**	**2**	**0**	**10**	**5**	**0**	**0**	**0**	**2**	**5**	**0**	**1**	**8**	**4**	**49**	**0**

Three-and-a-Half-Hour Count Summaries - Bikes

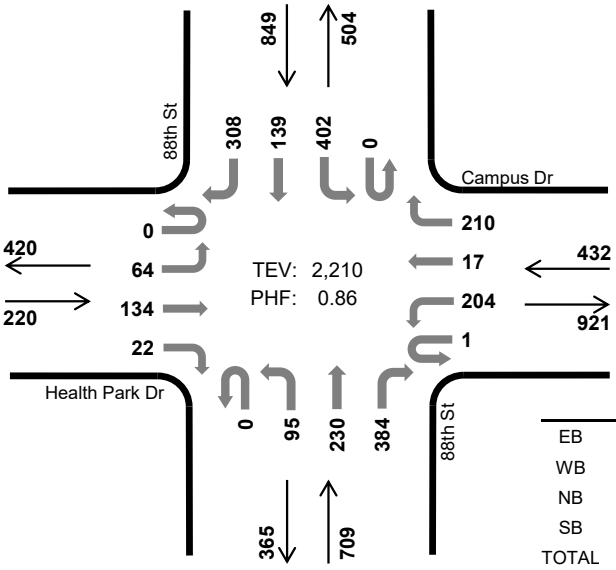
Interval Start	Dillon Rd			Dillon Rd			96th St			96th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

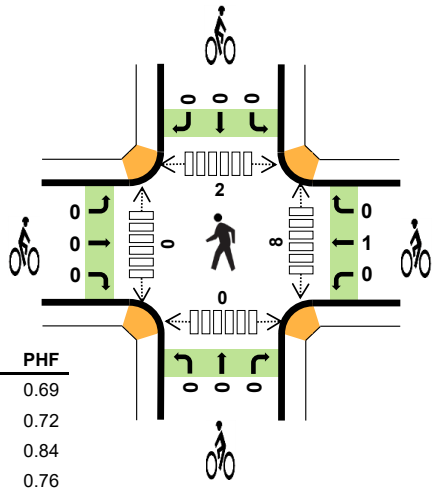
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

88th St
Campus Dr

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM

Peak Hour





	HV %:	PHF
EB	1.4%	0.69
WB	5.6%	0.72
NB	1.7%	0.84
SB	2.4%	0.76
TOTAL	2.7%	0.86

Two-Hour Count Summaries

Interval Start		Health Park Dr Eastbound				Campus Dr Westbound				88th St Northbound				88th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	7	0	8	0	0	0	2	0	12	29	1	0	11	43	40	153	0
7:15 AM		0	18	0	2	0	2	0	8	0	6	62	18	0	37	47	40	240	0
7:30 AM		0	28	0	5	0	5	0	7	0	14	58	41	0	68	48	47	321	0
7:45 AM		**0**	**16**	**4**	**4**	**1**	**39**	**5**	**19**	**0**	**22**	**77**	**63**	**0**	**75**	**44**	**46**	**415**	1,129
8:00 AM		**0**	**17**	**21**	**6**	**0**	**53**	**11**	**51**	**0**	**23**	**50**	**124**	**0**	**94**	**47**	**65**	**562**	1,538
8:15 AM		**0**	**18**	**47**	**7**	**0**	**54**	**0**	**50**	**0**	**28**	**56**	**128**	**0**	**103**	**6**	**90**	**587**	1,885
8:30 AM		**0**	**13**	**62**	**5**	**0**	**58**	**1**	**90**	**0**	**22**	**47**	**69**	**0**	**130**	**42**	**107**	**646**	**2,210**
8:45 AM		0	21	1	9	0	45	2	49	0	17	49	14	0	52	26	73	358	2,153
Count Total		0	138	135	46	1	256	19	276	0	144	428	458	0	570	303	508	3,282	0
Peak Hour	**All**	**0**	**64**	**134**	**22**	**1**	**204**	**17**	**210**	**0**	**95**	**230**	**384**	**0**	**402**	**139**	**308**	**2,210**	**0**
	HV	**0**	**3**	**0**	**0**	**0**	**11**	**0**	**13**	**0**	**1**	**3**	**8**	**0**	**12**	**4**	**4**	**59**	**0**
	HV%	**-**	**5%**	**0%**	**0%**	**0%**	**5%**	**0%**	**6%**	**-**	**1%**	**1%**	**2%**	**-**	**3%**	**3%**	**1%**	**3%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	5	1	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	1	0	2	*3*	0	0	0	0	*0*	1	0	0	0	*1*
7:45 AM	**1**	**6**	**3**	**6**	***16***	**0**	**1**	**0**	**0**	***1***	**2**	**0**	**0**	**0**	*2*
8:00 AM	**1**	**7**	**4**	**0**	***12***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**0**	*3*
8:15 AM	**0**	**1**	**3**	**8**	***12***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**1**	**0**	*4*
8:30 AM	**1**	**10**	**2**	**6**	***19***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	***1***
8:45 AM	1	3	1	6	*11*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	9	30	13	28	*80*	0	1	0	0	*1*	9	0	2	0	*11*
Peak Hour	**3**	**24**	**12**	**20**	***59***	**0**	**1**	**0**	**0**	***1***	**8**	**0**	**2**	**0**	***10***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Health Park Dr				Campus Dr				88th St				88th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	4	0	0	0	1	0	0	0	0	0	0	0	0	6	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	3	0
7:45 AM	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**1**	**2**	**0**	**4**	**0**	**2**	**16**	26
8:00 AM	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**4**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**12**	32
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**3**	**4**	**1**	**12**	43
8:30 AM	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**6**	**0**	**0**	**2**	**0**	**0**	**5**	**0**	**1**	**19**	**59**
8:45 AM	0	1	0	0	0	0	0	3	0	0	1	0	0	1	2	3	11	54
Count Total	0	5	0	4	0	11	0	19	0	1	4	8	0	13	8	7	80	0
Peak Hour	**0**	**3**	**0**	**0**	**0**	**11**	**0**	**13**	**0**	**1**	**3**	**8**	**0**	**12**	**4**	**4**	**59**	**0**

Two-Hour Count Summaries - Bikes

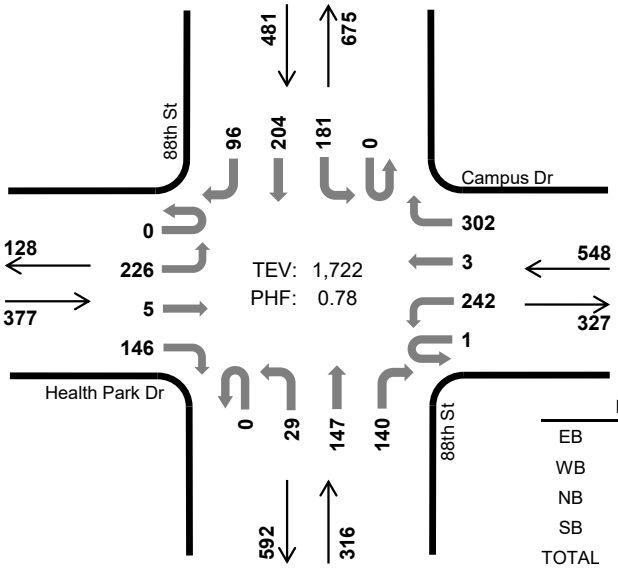
Interval Start	Health Park Dr			Campus Dr			88th St			88th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

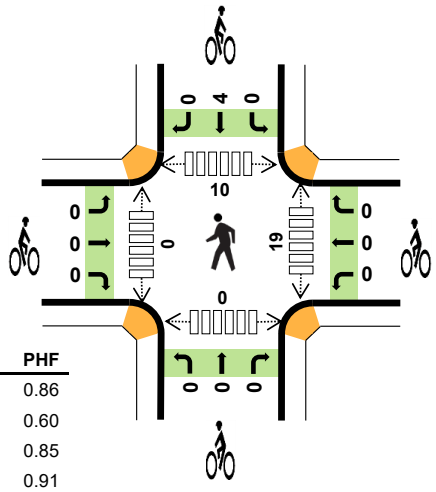
88th St
Campus Dr

Peak Hour

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 3:15 PM to 4:15 PM



	HV %:	PHF
EB	2.1%	0.86
WB	2.9%	0.60
NB	1.6%	0.85
SB	2.7%	0.91
TOTAL	2.4%	0.78



Three-and-a-Half-Hour Count Summaries

Interval Start		Health Park Dr Eastbound				Campus Dr Westbound				88th St Northbound				88th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:15 PM		0	54	4	43	0	61	3	50	0	11	32	24	0	38	48	26	394	0
3:30 PM		0	62	1	47	0	43	0	27	0	9	36	29	0	45	35	27	361	0
3:45 PM		0	49	0	8	0	42	0	92	0	3	35	55	0	58	47	27	416	0
4:00 PM		0	61	0	48	1	96	0	133	0	6	44	32	0	40	74	16	551	1,722
Peak Hour	All	0	226	5	146	1	242	3	302	0	29	147	140	0	181	204	96	1,722	0
	HV	0	4	0	4	0	10	0	6	0	0	2	3	0	6	4	3	42	0
	HV%	-	2%	0%	3%	0%	4%	0%	2%	-	0%	1%	2%	-	3%	2%	3%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:15 PM	2	3	1	8	*14*	0	0	0	0	*0*	2	0	1	0	*3*
3:30 PM	1	0	3	4	*8*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	1	6	0	1	*8*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	4	7	1	0	*12*	0	0	0	4	*4*	17	0	9	0	*26*
Peak Hour	8	16	5	13	*42*	0	0	0	4	*4*	19	0	10	0	*29*

Three-and-a-Half-Hour Count Summaries

Interval Start	Health Park Dr				Campus Dr				88th St				88th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	31	0	9	1	2	1	18	0	5	37	22	0	47	50	34	257	0
2:45 PM	0	39	0	43	0	9	1	19	0	3	42	30	0	51	32	39	308	0
3:00 PM	0	44	2	7	2	96	1	139	0	5	41	17	0	29	44	28	455	0
3:15 PM	**0**	**54**	**4**	**43**	**0**	**61**	**3**	**50**	**0**	**11**	**32**	**24**	**0**	**38**	**48**	**26**	**394**	1,414
3:30 PM	**0**	**62**	**1**	**47**	**0**	**43**	**0**	**27**	**0**	**9**	**36**	**29**	**0**	**45**	**35**	**27**	**361**	1,518
3:45 PM	**0**	**49**	**0**	**8**	**0**	**42**	**0**	**92**	**0**	**3**	**35**	**55**	**0**	**58**	**47**	**27**	**416**	1,626
4:00 PM	**0**	**61**	**0**	**48**	**1**	**96**	**0**	**133**	**0**	**6**	**44**	**32**	**0**	**40**	**74**	**16**	**551**	**1,722**
4:15 PM	0	41	0	44	0	47	0	83	0	0	59	10	0	26	63	13	386	1,714
4:30 PM	0	47	1	43	0	49	1	32	0	1	61	11	0	20	80	15	361	1,714
4:45 PM	0	39	0	9	0	40	0	17	0	1	40	7	0	20	64	15	252	1,550
5:00 PM	0	76	0	25	0	9	0	18	0	2	38	6	0	21	77	13	285	1,284
5:15 PM	0	41	1	42	0	42	0	28	0	0	46	5	0	18	90	4	317	1,215
5:30 PM	0	30	0	7	0	49	0	34	0	4	49	17	0	26	94	10	320	1,174
5:45 PM	0	41	0	7	0	22	0	14	0	3	69	8	0	12	65	11	252	1,174
Count Total	0	655	9	382	4	607	7	704	0	53	629	273	0	451	863	278	4,915	0
Peak Hour All	**0**	**226**	**5**	**146**	**1**	**242**	**3**	**302**	**0**	**29**	**147**	**140**	**0**	**181**	**204**	**96**	**1,722**	**0**
Peak Hour HV	**0**	**4**	**0**	**4**	**0**	**10**	**0**	**6**	**0**	**0**	**2**	**3**	**0**	**6**	**4**	**3**	**42**	**0**
Peak Hour HV%	**-**	**2%**	**0%**	**3%**	**0%**	**4%**	**0%**	**2%**	**-**	**0%**	**1%**	**2%**	**-**	**3%**	**2%**	**3%**	**2%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	1	0	2	8	*11*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	2	1	0	5	*8*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	1	8	1	8	*18*	0	0	0	0	*0*	2	0	1	0	*3*
3:15 PM	**2**	**3**	**1**	**8**	***14***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**0**	*3*
3:30 PM	**1**	**0**	**3**	**4**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:45 PM	**1**	**6**	**0**	**1**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:00 PM	**4**	**7**	**1**	**0**	***12***	**0**	**0**	**0**	**4**	***4***	**17**	**0**	**9**	**0**	***26***
4:15 PM	1	0	3	5	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	1	3	*4*	0	0	0	4	*4*	0	0	0	0	*0*
4:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	12	0	0	0	*12*
5:00 PM	0	0	0	5	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	1	0	*1*
Count Total	14	26	12	47	*99*	0	0	0	8	*8*	33	0	12	0	*45*
Peak Hour	**8**	**16**	**5**	**13**	***42***	**0**	**0**	**0**	**4**	***4***	**19**	**0**	**10**	**0**	***29***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Health Park Dr				Campus Dr				88th St				88th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	1	0	0	0	0	0	0	0	0	2	0	0	3	2	3	11	0
2:45 PM	0	2	0	0	0	0	0	1	0	0	0	0	0	5	0	0	8	0
3:00 PM	0	1	0	0	0	2	0	6	0	0	1	0	0	3	4	1	18	0
3:15 PM	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**3**	**4**	**1**	**14**	51
3:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**2**	**0**	**2**	**8**	48
3:45 PM	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**8**	48
4:00 PM	**0**	**0**	**0**	**4**	**0**	**4**	**0**	**3**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**12**	**42**
4:15 PM	0	1	0	0	0	0	0	0	0	0	3	0	0	0	4	1	9	37
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	4	33
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5	18
5:15 PM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	11
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Count Total	0	9	1	4	0	12	0	14	0	0	9	3	0	18	20	9	99	0
Peak Hour	**0**	**4**	**0**	**4**	**0**	**10**	**0**	**6**	**0**	**0**	**2**	**3**	**0**	**6**	**4**	**3**	**42**	**0**

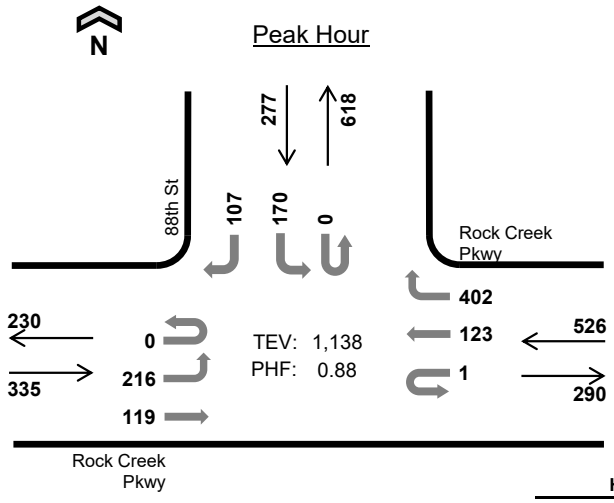
Three-and-a-Half-Hour Count Summaries - Bikes

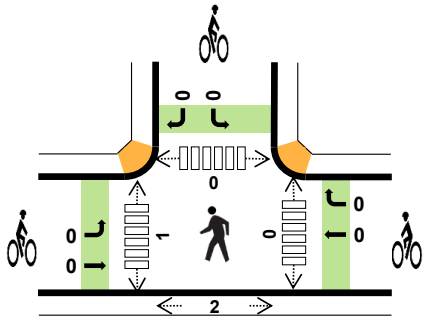
Interval Start	Health Park Dr			Campus Dr			88th St			88th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**4**	**4**
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	0	0	0	0	0	0	0	0	0	0	4	0	4	8
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	8
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	8	0	8	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**4**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

88th St
Rock Creek Pkwy

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	0.6%	0.81
WB	2.3%	0.91
NB	-	-
SB	2.2%	0.90
TOTAL	1.8%	0.88

Two-Hour Count Summaries

Interval Start	Rock Creek Pkwy Eastbound				Rock Creek Pkwy Westbound				N/A Northbound				88th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	1	13	10	0	0	0	22	37	0	0	0	0	0	13	0	9	105	0
7:15 AM	0	19	13	0	0	0	23	63	0	0	0	0	0	13	0	12	143	0
7:30 AM	0	37	20	0	0	0	29	96	0	0	0	0	0	13	0	25	220	0
7:45 AM	**0**	**59**	**45**	**0**	**0**	**0**	**34**	**102**	**0**	**0**	**0**	**0**	**0**	**33**	**0**	**15**	**288**	756
8:00 AM	**0**	**62**	**31**	**0**	**0**	**0**	**21**	**112**	**0**	**0**	**0**	**0**	**0**	**48**	**0**	**28**	**302**	953
8:15 AM	**0**	**82**	**22**	**0**	**0**	**0**	**39**	**105**	**0**	**0**	**0**	**0**	**0**	**44**	**0**	**32**	**324**	1,134
8:30 AM	**0**	**13**	**21**	**0**	**1**	**0**	**29**	**83**	**0**	**0**	**0**	**0**	**0**	**45**	**0**	**32**	**224**	**1,138**
8:45 AM	0	26	24	0	0	0	39	45	0	0	0	0	0	37	0	18	189	1,039
Count Total	1	311	186	0	1	0	236	643	0	0	0	0	0	246	0	171	1,795	0
Peak Hour All	**0**	**216**	**119**	**0**	**1**	**0**	**123**	**402**	**0**	**0**	**0**	**0**	**0**	**170**	**0**	**107**	**1,138**	**0**
Peak Hour HV	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**9**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**4**	**20**	**0**
Peak Hour HV%	**-**	**0%**	**2%**	**-**	**0%**	**-**	**2%**	**2%**	**-**	**-**	**-**	**-**	**-**	**1%**	**-**	**4%**	**2%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	2	0	0	*3*	0	0	0	0	*0*	0	1	0	2	*3*
7:15 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	1	1	0	2	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**0**	**4**	**0**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
8:00 AM	**0**	**2**	**0**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
8:15 AM	**0**	**3**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
8:30 AM	**2**	**3**	**0**	**1**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	1	0	2	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	4	18	0	10	*32*	0	0	0	0	*0*	0	2	0	4	*6*
Peak Hr	**2**	**12**	**0**	**6**	***20***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**2**	***3***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Rock Creek Pkwy				Rock Creek Pkwy				N/A				88th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3	0
7:15 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0
7:30 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	2	0	0	4	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**6**	15
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**5**	17
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	18
8:30 AM	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**6**	**20**
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	3	17
Count Total	0	0	4	0	0	0	7	11	0	0	0	0	0	5	0	5	32	0
Peak Hour	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**9**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**4**	**20**	**0**

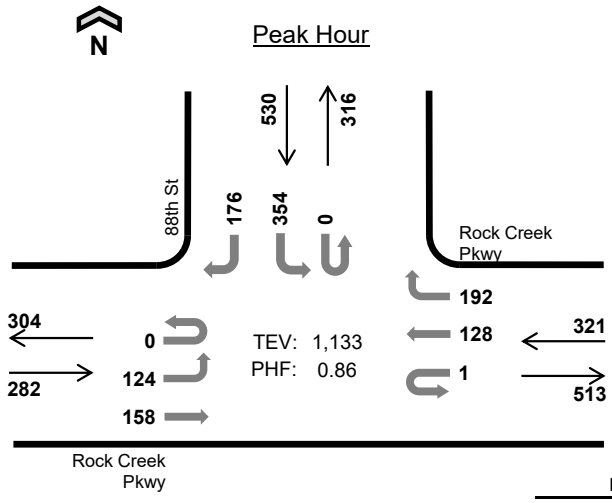
Two-Hour Count Summaries - Bikes

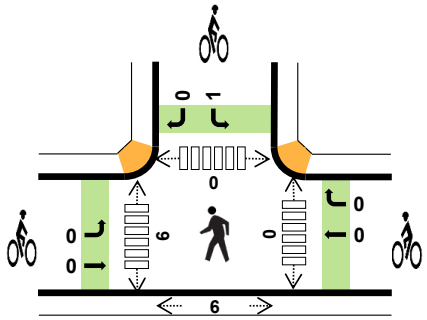
Interval Start	Rock Creek Pkwy			Rock Creek Pkwy			N/A			88th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

88th St
Rock Creek Pkwy

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 3:45 PM to 4:45 PM





	HV %:	PHF
EB	1.8%	0.82
WB	1.6%	0.92
NB	-	-
SB	1.5%	0.78
TOTAL	1.6%	0.86

Three-and-a-Half-Hour Count Summaries

Interval Start		Rock Creek Pkwy Eastbound				Rock Creek Pkwy Westbound				N/A Northbound				88th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:45 PM		0	45	41	0	1	0	28	56	0	0	0	0	0	82	0	39	292	0
4:00 PM		0	30	43	0	0	0	36	51	0	0	0	0	0	112	0	58	330	0
4:15 PM		0	28	34	0	0	0	37	41	0	0	0	0	0	93	0	41	274	0
4:30 PM		0	21	40	0	0	0	27	44	0	0	0	0	0	67	0	38	237	1,133
Peak Hour	All	0	124	158	0	1	0	128	192	0	0	0	0	0	354	0	176	1,133	0
	HV	0	2	3	0	0	0	2	3	0	0	0	0	0	6	0	2	18	0
	HV%	-	2%	2%	-	0%	-	2%	2%	-	-	-	-	-	2%	-	1%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:45 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	1	*1*
4:00 PM	1	1	0	4	*6*	0	0	0	0	*0*	0	3	0	4	*7*
4:15 PM	2	2	0	2	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	1	1	0	2	*4*	0	0	0	1	*1*	0	3	0	1	*4*
Peak Hour	5	5	0	8	*18*	0	0	0	1	*1*	0	6	0	6	*12*

Three-and-a-Half-Hour Count Summaries

Interval Start	Rock Creek Pkwy Eastbound				Rock Creek Pkwy Westbound				N/A Northbound				88th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	16	20	0	0	0	32	48	0	0	0	0	0	35	0	24	175	0
2:45 PM	0	46	35	0	0	0	24	49	0	0	0	0	0	30	0	25	209	0
3:00 PM	0	34	29	0	0	0	30	32	0	0	0	0	0	91	0	45	261	0
3:15 PM	0	9	31	0	0	0	19	44	0	0	0	0	0	70	0	40	213	858
3:30 PM	0	30	28	0	0	0	25	45	0	0	0	0	0	49	0	25	202	885
3:45 PM	**0**	**45**	**41**	**0**	**1**	**0**	**28**	**56**	**0**	**0**	**0**	**0**	**0**	**82**	**0**	**39**	**292**	968
4:00 PM	**0**	**30**	**43**	**0**	**0**	**0**	**36**	**51**	**0**	**0**	**0**	**0**	**0**	**112**	**0**	**58**	**330**	1,037
4:15 PM	**0**	**28**	**34**	**0**	**0**	**0**	**37**	**41**	**0**	**0**	**0**	**0**	**0**	**93**	**0**	**41**	**274**	1,098
4:30 PM	**0**	**21**	**40**	**0**	**0**	**0**	**27**	**44**	**0**	**0**	**0**	**0**	**0**	**67**	**0**	**38**	**237**	**1,133**
4:45 PM	0	19	47	0	0	0	37	37	0	0	0	0	0	53	0	28	221	1,062
5:00 PM	0	19	52	0	0	0	40	34	0	0	0	0	0	81	0	23	249	981
5:15 PM	0	20	54	0	0	0	32	41	0	0	0	0	0	85	0	30	262	969
5:30 PM	0	21	63	0	0	0	40	46	0	0	0	0	0	92	0	31	293	1,025
5:45 PM	0	19	58	0	0	0	42	59	0	0	0	0	0	57	0	35	270	1,074
Count Total	0	357	575	0	1	0	449	627	0	0	0	0	0	997	0	482	3,488	0
Peak Hour All	**0**	**124**	**158**	**0**	**1**	**0**	**128**	**192**	**0**	**0**	**0**	**0**	**0**	**354**	**0**	**176**	**1,133**	**0**
Peak Hour HV	**0**	**2**	**3**	**0**	**0**	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**2**	**18**	**0**
Peak Hour HV%	**-**	**2%**	**2%**	**-**	**0%**	**-**	**2%**	**2%**	**-**	**-**	**-**	**-**	**-**	**2%**	**-**	**1%**	**2%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	2	2	0	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	1	0	0	2	*3*	0	0	0	0	*0*	0	0	0	4	*4*
3:15 PM	0	4	0	4	*8*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	3	1	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
4:00 PM	**1**	**1**	**0**	**4**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**4**	*7*
4:15 PM	**2**	**2**	**0**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**1**	**1**	**0**	**2**	***4***	**0**	**0**	**0**	**1**	***1***	**0**	**3**	**0**	**1**	***4***
4:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	2	1	*3*
5:00 PM	0	1	0	1	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	1	*1*
5:30 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	1	0	1	*2*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	1	*1*
Count Total	12	15	0	16	*43*	0	0	0	1	*1*	0	7	2	14	*23*
Peak Hr	**5**	**5**	**0**	**8**	***18***	**0**	**0**	**0**	**1**	***1***	**0**	**6**	**0**	**6**	***12***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Rock Creek Pkwy Eastbound				Rock Creek Pkwy Westbound				N/A Northbound				88th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	1	5	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	3	0
3:15 PM	0	0	0	0	0	0	3	1	0	0	0	0	0	3	0	1	8	16
3:30 PM	0	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0	4	15
3:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	17
4:00 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**6**	20
4:15 PM	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**6**	18
4:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**4**	**18**
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	12
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	7
5:30 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Count Total	0	5	7	0	0	0	10	5	0	0	0	0	0	12	0	4	43	0
Peak Hour	**0**	**2**	**3**	**0**	**0**	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**2**	**18**	**0**

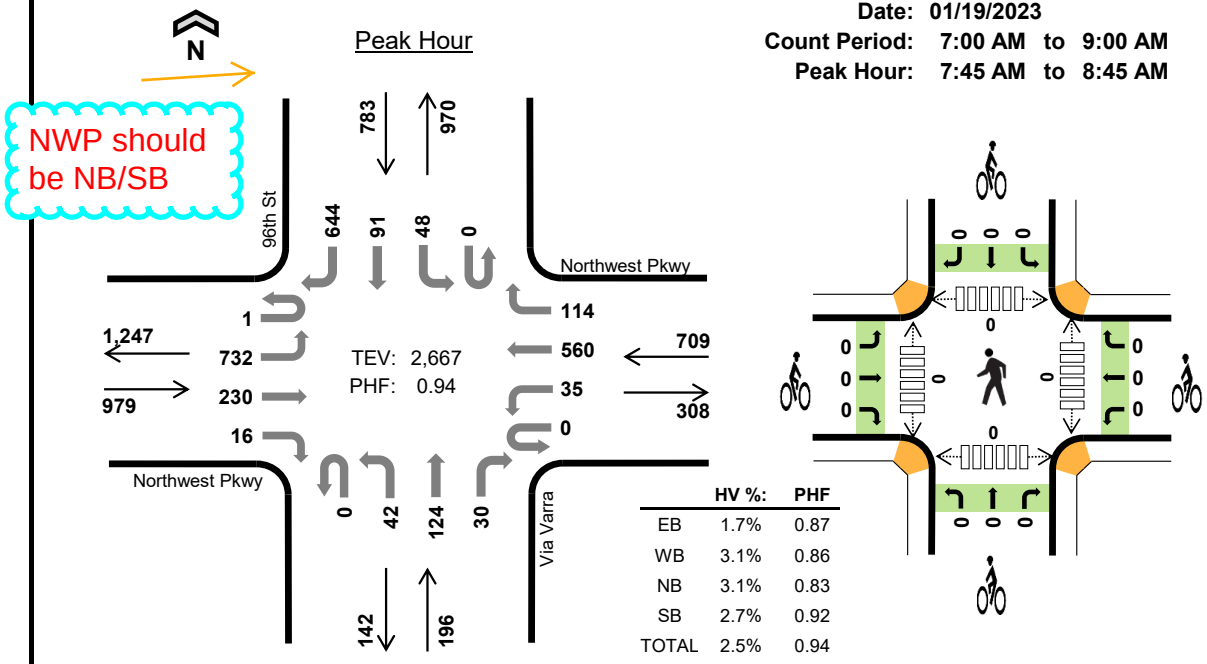
Three-and-a-Half-Hour Count Summaries - Bikes

Interval Start	Rock Creek Pkwy Eastbound			Rock Creek Pkwy Westbound			N/A Northbound			88th St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**1**
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

96th St
Northwest Pkwy

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	1.7%	0.87
WB	3.1%	0.86
NB	3.1%	0.83
SB	2.7%	0.92
TOTAL	2.5%	0.94

Two-Hour Count Summaries

Interval Start	Northwest Pkwy Eastbound				Northwest Pkwy Westbound				Via Varra Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	111	47	2	0	4	61	26	0	9	28	0	0	7	14	93	402	0
7:15 AM	0	153	45	1	0	12	87	23	0	3	22	5	0	8	13	92	464	0
7:30 AM	0	152	70	2	0	5	109	35	0	6	28	6	0	9	17	121	560	0
7:45 AM	**0**	**207**	**69**	**4**	**0**	**10**	**124**	**35**	**0**	**17**	**37**	**5**	**0**	**19**	**13**	**140**	**680**	2,106
8:00 AM	**0**	**192**	**51**	**2**	**0**	**6**	**134**	**33**	**0**	**10**	**32**	**9**	**0**	**11**	**31**	**155**	**666**	2,370
8:15 AM	**0**	**184**	**63**	**2**	**0**	**9**	**171**	**25**	**0**	**4**	**27**	**11**	**0**	**11**	**22**	**179**	**708**	2,614
8:30 AM	**1**	**149**	**47**	**8**	**0**	**10**	**131**	**21**	**0**	**11**	**28**	**5**	**0**	**7**	**25**	**170**	**613**	**2,667**
8:45 AM	0	194	58	3	0	14	111	28	0	7	26	5	0	10	17	124	597	2,584
Count Total	1	1,342	450	24	0	70	928	226	0	67	228	46	0	82	152	1,074	4,690	0
Peak Hour All	**1**	**732**	**230**	**16**	**0**	**35**	**560**	**114**	**0**	**42**	**124**	**30**	**0**	**48**	**91**	**644**	**2,667**	**0**
Peak Hour HV	**0**	**14**	**3**	**0**	**0**	**1**	**16**	**5**	**0**	**1**	**0**	**5**	**0**	**1**	**2**	**18**	**66**	**0**
Peak Hour HV%	**0%**	**2%**	**1%**	**0%**	**-**	**3%**	**3%**	**4%**	**-**	**2%**	**0%**	**17%**	**-**	**2%**	**2%**	**3%**	**2%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	4	1	1	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	1	6	1	4	*12*	0	0	1	0	*1*	0	0	0	0	*0*
7:30 AM	2	4	0	3	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**3**	**6**	**1**	**4**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**7**	**5**	**2**	**3**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**5**	**4**	**3**	**3**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**2**	**7**	**0**	**11**	***20***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	9	7	1	3	*20*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	32	43	9	32	*116*	0	0	1	0	*1*	0	0	0	0	*0*
Peak Hour	**17**	**22**	**6**	**21**	***66***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Northwest Pkwy Eastbound				Northwest Pkwy Westbound				Via Varra Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	2	0	0	1	3	0	0	1	0	0	0	0	0	1	9	0
7:15 AM	0	1	0	0	0	0	6	0	0	0	0	1	0	0	1	3	12	0
7:30 AM	0	2	0	0	0	0	3	1	0	0	0	0	0	0	0	3	9	0
7:45 AM	**0**	**2**	**1**	**0**	**0**	**1**	**4**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**4**	**14**	44
8:00 AM	**0**	**5**	**2**	**0**	**0**	**0**	**2**	**3**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**3**	**17**	52
8:15 AM	**0**	**5**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**2**	**15**	55
8:30 AM	**0**	**2**	**0**	**0**	**0**	**0**	**6**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**9**	**20**	**66**
8:45 AM	0	7	2	0	0	1	6	0	0	0	0	1	0	0	0	3	20	72
Count Total	0	25	7	0	0	3	34	6	0	2	0	7	0	1	3	28	116	0
Peak Hour	**0**	**14**	**3**	**0**	**0**	**1**	**16**	**5**	**0**	**1**	**0**	**5**	**0**	**1**	**2**	**18**	**66**	**0**

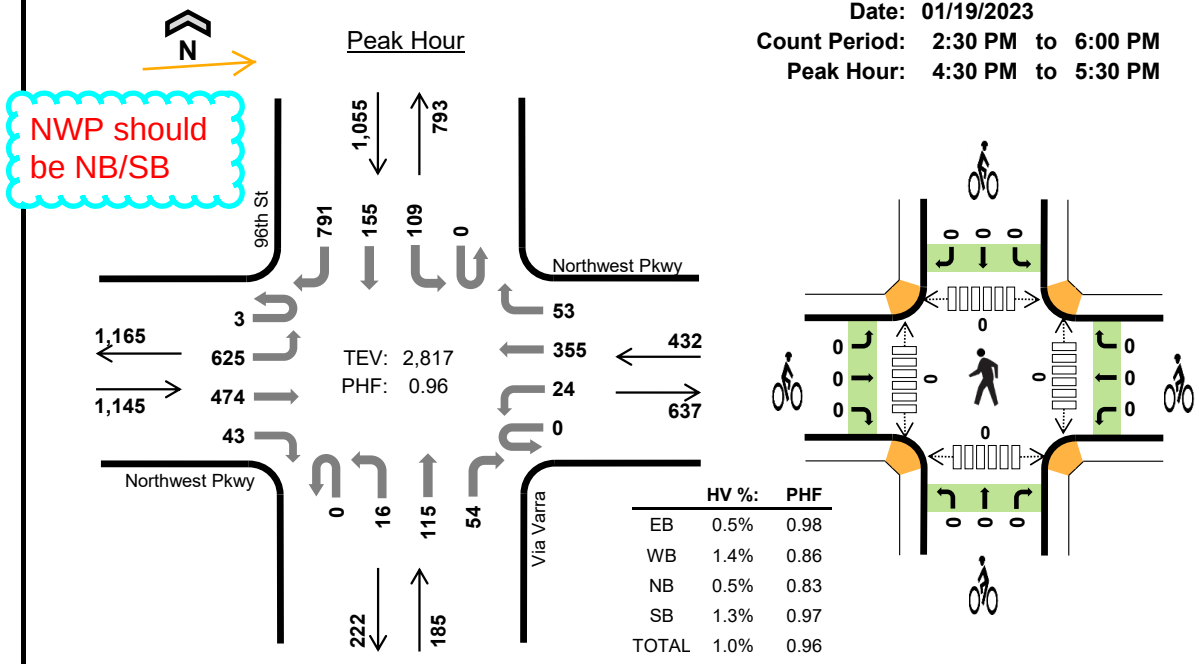
Two-Hour Count Summaries - Bikes

Interval Start	Northwest Pkwy Eastbound			Northwest Pkwy Westbound			Via Varra Northbound			96th St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

96th St
Northwest Pkwy

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



Three-and-a-Half-Hour Count Summaries

Interval Start		Northwest Pkwy Eastbound				Northwest Pkwy Westbound				Via Varra Northbound				96th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		0	158	110	13	0	3	77	7	0	0	24	10	0	22	37	208	669	0
4:45 PM		1	153	119	10	0	6	82	17	0	6	17	20	0	20	47	204	702	0
5:00 PM		2	157	120	11	0	5	95	14	0	8	40	8	0	32	30	188	710	0
5:15 PM		0	157	125	9	0	10	101	15	0	2	34	16	0	35	41	191	736	2,817
Peak Hour	All	3	625	474	43	0	24	355	53	0	16	115	54	0	109	155	791	2,817	0
	HV	0	2	4	0	0	1	5	0	0	0	0	1	0	2	0	12	27	0
	HV%	0%	0%	1%	0%	-	4%	1%	0%	-	0%	0%	2%	-	2%	0%	2%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	2	0	0	7	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	1	3	0	2	*6*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	2	2	0	3	*7*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	1	1	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	6	6	1	14	*27*	0	0	0	0	*0*	0	0	0	0	*0*

Three-and-a-Half-Hour Count Summaries

Interval Start	Northwest Pkwy Eastbound				Northwest Pkwy Westbound				Via Varra Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	110	89	8	0	0	41	7	0	5	19	2	0	16	18	120	435	0
2:45 PM	0	123	64	7	0	3	52	19	0	6	37	8	0	21	18	116	474	0
3:00 PM	0	92	91	6	0	6	53	6	0	0	20	9	0	19	19	162	483	0
3:15 PM	1	127	69	6	0	2	66	11	0	6	14	9	0	29	27	162	529	1,921
3:30 PM	1	135	90	7	0	6	68	12	0	5	21	12	0	21	26	171	575	2,061
3:45 PM	0	154	100	8	0	4	76	12	0	4	27	6	0	17	20	171	599	2,186
4:00 PM	1	139	111	12	0	3	87	7	0	8	27	9	0	30	42	214	690	2,393
4:15 PM	0	160	136	11	1	7	78	14	0	5	21	4	1	27	36	214	715	2,579
4:30 PM	**0**	**158**	**110**	**13**	**0**	**3**	**77**	**7**	**0**	**0**	**24**	**10**	**0**	**22**	**37**	**208**	**669**	2,673
4:45 PM	**1**	**153**	**119**	**10**	**0**	**6**	**82**	**17**	**0**	**6**	**17**	**20**	**0**	**20**	**47**	**204**	**702**	2,776
5:00 PM	**2**	**157**	**120**	**11**	**0**	**5**	**95**	**14**	**0**	**8**	**40**	**8**	**0**	**32**	**30**	**188**	**710**	2,796
5:15 PM	**0**	**157**	**125**	**9**	**0**	**10**	**101**	**15**	**0**	**2**	**34**	**16**	**0**	**35**	**41**	**191**	**736**	**2,817**
5:30 PM	0	161	101	7	0	7	107	10	0	2	27	15	0	26	26	176	665	2,813
5:45 PM	0	143	85	11	0	10	70	21	0	5	18	7	0	29	45	152	596	2,707
Count Total	6	1,969	1,410	126	1	72	1,053	172	0	62	346	135	1	344	432	2,449	8,578	0
Peak Hour All	**3**	**625**	**474**	**43**	**0**	**24**	**355**	**53**	**0**	**16**	**115**	**54**	**0**	**109**	**155**	**791**	**2,817**	**0**
Peak Hour HV	**0**	**2**	**4**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**12**	**27**	**0**
Peak Hour HV%	**0%**	**0%**	**1%**	**0%**	**-**	**4%**	**1%**	**0%**	**-**	**0%**	**0%**	**2%**	**-**	**2%**	**0%**	**2%**	**1%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	4	3	1	8	*16*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	8	4	2	5	*19*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	3	0	1	4	*8*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	11	1	0	9	*21*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	3	2	0	2	*7*	0	0	0	1	*1*	0	0	0	0	*0*
3:45 PM	7	6	0	4	*17*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	8	3	1	6	*18*	0	0	0	0	*0*	0	0	0	1	*1*
4:15 PM	5	0	2	6	*13*	0	0	0	0	*0*	0	0	0	1	*1*
4:30 PM	**2**	**0**	**0**	**7**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**1**	**3**	**0**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**2**	**2**	**0**	**3**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**1**	**1**	**1**	**2**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	1	3	0	3	*7*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	1	1	1	4	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	57	29	9	65	*160*	0	0	0	1	*1*	0	0	0	2	*2*
Peak Hour	**6**	**6**	**1**	**14**	***27***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Northwest Pkwy Eastbound				Northwest Pkwy Westbound				Via Varra Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	3	1	0	0	0	3	0	0	0	1	0	0	2	0	6	16	0
2:45 PM	0	5	3	0	0	1	2	1	0	1	1	0	0	0	0	5	19	0
3:00 PM	0	2	1	0	0	0	0	0	0	0	0	1	0	0	1	3	8	0
3:15 PM	0	8	3	0	0	0	1	0	0	0	0	0	0	4	1	4	21	64
3:30 PM	0	1	2	0	0	0	1	1	0	0	0	0	0	0	0	2	7	55
3:45 PM	0	4	3	0	0	2	4	0	0	0	0	0	0	1	1	2	17	53
4:00 PM	0	4	4	0	0	0	3	0	0	0	0	1	0	1	0	5	18	63
4:15 PM	0	4	1	0	0	0	0	0	0	0	1	1	0	3	0	3	13	55
4:30 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**9**	57
4:45 PM	**0**	**0**	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**6**	46
5:00 PM	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**7**	35
5:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**	**5**	**27**
5:30 PM	0	1	0	0	0	0	3	0	0	0	0	0	0	1	0	2	7	25
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	1	0	1	0	3	7	26
Count Total	0	35	22	0	0	5	22	2	0	1	3	5	0	15	3	47	160	0
Peak Hour	**0**	**2**	**4**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**12**	**27**	**0**

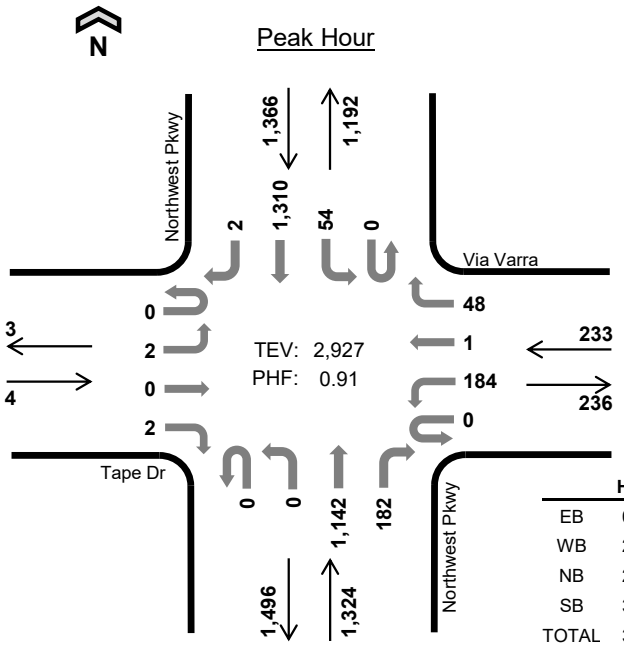
Three-and-a-Half-Hour Count Summaries - Bikes

Interval Start	Northwest Pkwy Eastbound			Northwest Pkwy Westbound			Via Varra Northbound			96th St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

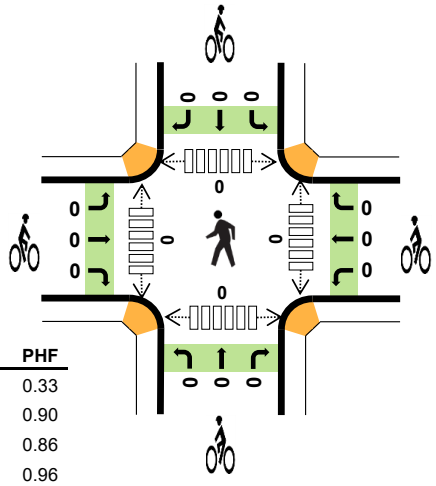
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Northwest Pkwy
Via Varra

Date: 01/24/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	0.0%	0.33
WB	2.6%	0.90
NB	2.6%	0.86
SB	3.4%	0.96
TOTAL	3.0%	0.91



Two-Hour Count Summaries

Interval Start	Tape Dr Eastbound				Via Varra Westbound				Northwest Pkwy Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	19	0	10	0	0	180	15	1	8	172	0	405	0
7:15 AM	0	0	0	0	0	24	0	15	0	0	191	32	0	9	214	0	485	0
7:30 AM	0	0	0	1	0	42	0	13	0	0	249	36	0	15	252	1	609	0
7:45 AM	**0**	**1**	**0**	**0**	**0**	**49**	**0**	**8**	**0**	**0**	**341**	**46**	**0**	**17**	**339**	**1**	**802**	2,301
8:00 AM	**0**	**0**	**0**	**0**	**0**	**46**	**0**	**19**	**0**	**0**	**260**	**43**	**0**	**17**	**320**	**0**	**705**	2,601
8:15 AM	**0**	**1**	**0**	**2**	**0**	**48**	**1**	**12**	**0**	**0**	**288**	**45**	**0**	**11**	**338**	**1**	**747**	2,863
8:30 AM	**0**	**0**	**0**	**0**	**0**	**41**	**0**	**9**	**0**	**0**	**253**	**48**	**0**	**9**	**313**	**0**	**673**	**2,927**
8:45 AM	0	0	0	0	0	47	0	10	0	0	259	42	0	13	257	0	628	2,753
Count Total	0	2	0	3	0	316	1	96	0	0	2,021	307	1	99	2,205	3	5,054	0
Peak Hour All	**0**	**2**	**0**	**2**	**0**	**184**	**1**	**48**	**0**	**0**	**1,142**	**182**	**0**	**54**	**1,310**	**2**	**2,927**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**30**	**5**	**0**	**2**	**45**	**0**	**88**	**0**
Peak Hour HV%	**-**	**0%**	**-**	**0%**	**-**	**2%**	**0%**	**4%**	**-**	**-**	**3%**	**3%**	**-**	**4%**	**3%**	**0%**	**3%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	4	5	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	0	5	6	*11*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	0	10	10	*20*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**0**	**3**	**7**	**10**	***20***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**0**	**10**	**12**	***22***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**0**	**3**	**11**	**11**	***25***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**0**	**7**	**14**	***21***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	1	2	9	*12*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	7	56	77	*140*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**6**	**35**	**47**	***88***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

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Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Tape Dr				Via Varra				Northwest Pkwy				Northwest Pkwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	5	0	9	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	3	2	0	0	6	0	11	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	7	3	0	0	10	0	20	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**5**	**2**	**0**	**1**	**9**	**0**	**20**	60
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**1**	**0**	**1**	**11**	**0**	**22**	73
8:15 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**10**	**1**	**0**	**0**	**11**	**0**	**25**	87
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**1**	**0**	**0**	**14**	**0**	**21**	**88**
8:45 AM	0	0	0	0	0	1	0	0	0	0	2	0	0	1	8	0	12	80
Count Total	0	0	0	0	0	5	0	2	0	0	45	11	0	3	74	0	140	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**30**	**5**	**0**	**2**	**45**	**0**	**88**	**0**

Two-Hour Count Summaries - Bikes

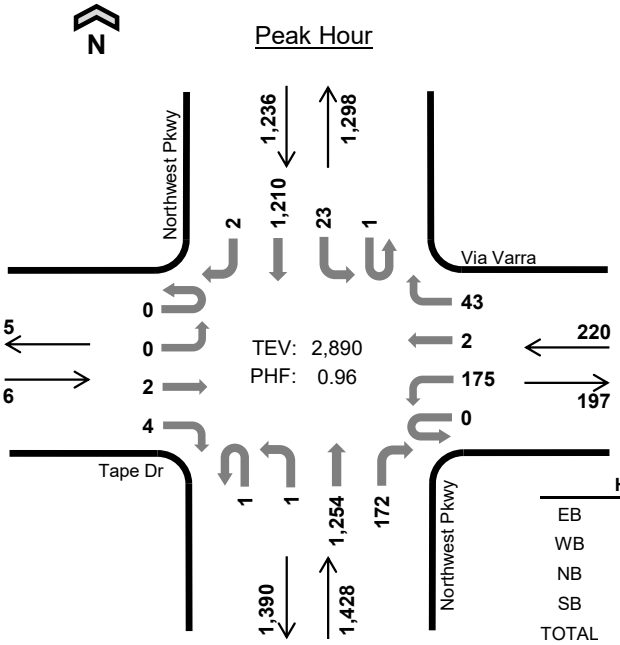
Interval Start	Tape Dr			Via Varra			Northwest Pkwy			Northwest Pkwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

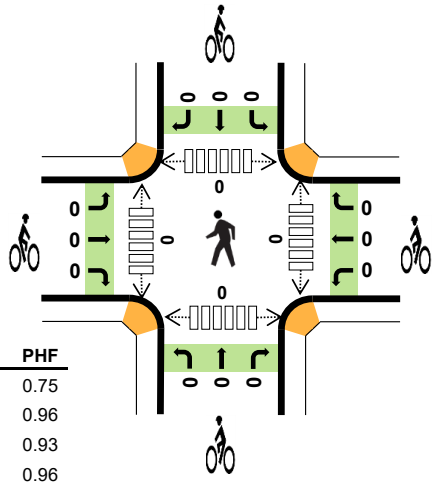
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

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Northwest Pkwy
Via Varra

Date: 01/24/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV %:	PHF
EB	0.0%	0.75
WB	1.4%	0.96
NB	1.4%	0.93
SB	1.6%	0.96
TOTAL	1.5%	0.96

Three-and-a-Half-Hour Count Summaries

Interval Start		Tape Dr Eastbound				Via Varra Westbound				Northwest Pkwy Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		0	0	0	1	0	42	0	11	0	0	289	40	0	10	312	0	705	0
4:45 PM		0	0	0	1	0	42	1	13	0	0	303	37	0	6	290	0	693	0
5:00 PM		0	0	1	1	0	42	1	11	0	1	326	48	1	5	298	1	736	0
5:15 PM		0	0	1	1	0	49	0	8	1	0	336	47	0	2	310	1	756	2,890
Peak Hour	All	0	0	2	4	0	175	2	43	1	1	1,254	172	1	23	1,210	2	2,890	0
	HV	0	0	0	0	0	1	0	2	0	0	18	2	0	1	19	0	43	0
	HV%	-	-	0%	0%	-	1%	0%	5%	0%	0%	1%	1%	0%	4%	2%	0%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	1	7	4	*12*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	2	4	7	*13*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	0	0	6	5	*11*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	0	0	3	4	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	3	20	20	*43*	0	0	0	0	*0*	0	0	0	0	*0*

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Three-and-a-Half-Hour Count Summaries

Interval Start	Tape Dr Eastbound				Via Varra Westbound				Northwest Pkwy Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	0	0	1	27	0	4	0	0	200	33	0	7	183	0	455	0
2:45 PM	0	0	0	1	0	31	0	10	0	0	184	26	0	8	189	0	449	0
3:00 PM	0	0	0	0	0	34	0	10	0	0	197	32	0	5	186	0	464	0
3:15 PM	0	0	1	0	0	23	0	10	0	0	219	35	0	3	229	1	521	1,889
3:30 PM	0	1	0	0	0	27	0	6	0	0	231	31	0	4	265	0	565	1,999
3:45 PM	0	0	0	0	0	25	0	6	0	0	255	35	0	9	236	0	566	2,116
4:00 PM	0	0	0	0	0	28	0	9	0	0	308	33	0	7	270	0	655	2,307
4:15 PM	0	0	0	0	1	34	0	2	0	0	290	47	0	9	275	0	658	2,444
4:30 PM	**0**	**0**	**0**	**1**	**0**	**42**	**0**	**11**	**0**	**0**	**289**	**40**	**0**	**10**	**312**	**0**	**705**	2,584
4:45 PM	**0**	**0**	**0**	**1**	**0**	**42**	**1**	**13**	**0**	**0**	**303**	**37**	**0**	**6**	**290**	**0**	**693**	2,711
5:00 PM	**0**	**0**	**1**	**1**	**0**	**42**	**1**	**11**	**0**	**1**	**326**	**48**	**1**	**5**	**298**	**1**	**736**	2,792
5:15 PM	**0**	**0**	**1**	**1**	**0**	**49**	**0**	**8**	**1**	**0**	**336**	**47**	**0**	**2**	**310**	**1**	**756**	**2,890**
5:30 PM	0	0	0	0	0	27	0	12	0	0	294	44	0	6	245	0	628	2,813
5:45 PM	0	0	0	1	3	30	0	4	0	0	229	52	0	2	218	1	540	2,660
Count Total	0	1	3	6	5	461	2	116	1	1	3,661	540	1	83	3,506	4	8,391	0
Peak Hour All	**0**	**0**	**2**	**4**	**0**	**175**	**2**	**43**	**1**	**1**	**1,254**	**172**	**1**	**23**	**1,210**	**2**	**2,890**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**18**	**2**	**0**	**1**	**19**	**0**	**43**	**0**
Peak Hour HV%	**-**	**-**	**0%**	**0%**	**-**	**1%**	**0%**	**5%**	**0%**	**0%**	**1%**	**1%**	**0%**	**4%**	**2%**	**0%**	**1%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	0	1	10	9	*20*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	4	10	10	*24*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	0	0	9	6	*15*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	0	0	9	5	*14*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	0	2	10	9	*21*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	0	3	7	8	*18*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	0	1	6	8	*15*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	0	14	4	*18*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	**0**	**1**	**7**	**4**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**2**	**4**	**7**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**0**	**0**	**6**	**5**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**0**	**3**	**4**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	0	0	5	2	*7*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	1	2	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	15	102	82	*199*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**3**	**20**	**20**	***43***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

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Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Tape Dr				Via Varra				Northwest Pkwy				Northwest Pkwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	0	0	0	1	0	0	0	0	9	1	0	0	9	0	20	0
2:45 PM	0	0	0	0	0	4	0	0	0	0	10	0	0	1	9	0	24	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	8	1	0	1	5	0	15	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	5	0	14	73
3:30 PM	0	0	0	0	0	1	0	1	0	0	9	1	0	0	9	0	21	74
3:45 PM	0	0	0	0	0	2	0	1	0	0	7	0	0	0	8	0	18	68
4:00 PM	0	0	0	0	0	1	0	0	0	0	5	1	0	1	7	0	15	68
4:15 PM	0	0	0	0	0	0	0	0	0	0	12	2	0	0	4	0	18	72
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**7**	**0**	**0**	**1**	**3**	**0**	**12**	63
4:45 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**4**	**0**	**0**	**0**	**7**	**0**	**13**	58
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**2**	**0**	**0**	**5**	**0**	**11**	54
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**4**	**0**	**7**	**43**
5:30 PM	0	0	0	0	0	0	0	0	0	0	4	1	0	0	2	0	7	38
5:45 PM	0	0	0	0	0	1	0	0	0	0	2	0	0	0	1	0	4	29
Count Total	0	0	0	0	0	11	0	4	0	0	93	9	0	4	78	0	199	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**18**	**2**	**0**	**1**	**19**	**0**	**43**	**0**

Three-and-a-Half-Hour Count Summaries - Bikes

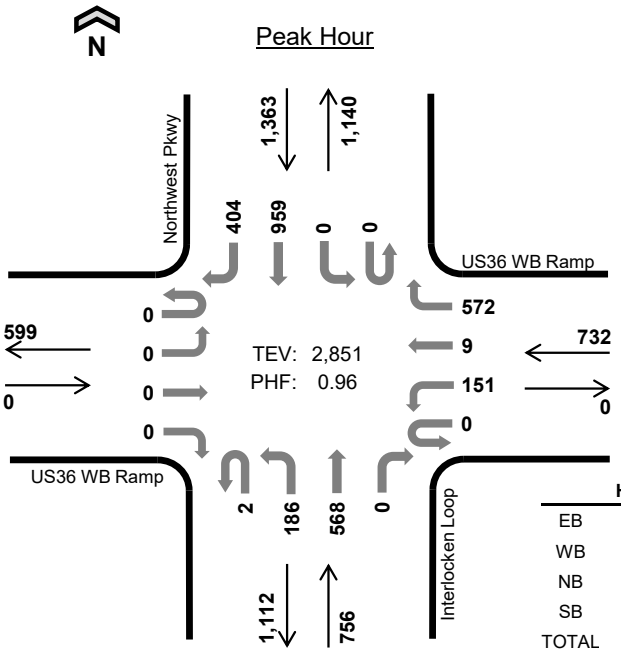
Interval Start	Tape Dr			Via Varra			Northwest Pkwy			Northwest Pkwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

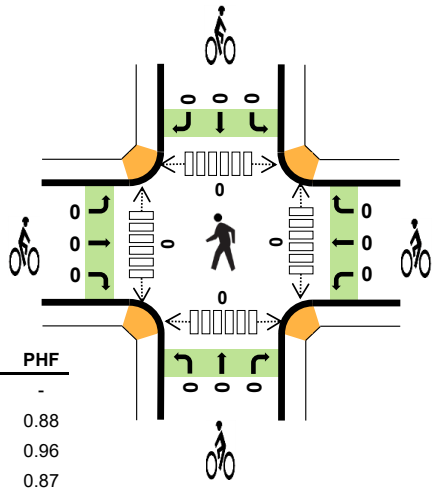
Garrett Strang
720-646-1008
garrett.strang@idax.com

Interlocken Loop
US36 WB Ramp

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	-	-
WB	2.6%	0.88
NB	2.2%	0.96
SB	2.9%	0.87
TOTAL	2.6%	0.96



Two-Hour Count Summaries

Interval Start	US36 WB Ramp Eastbound				US36 WB Ramp Westbound				Interlocken Loop Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	14	0	81	0	17	94	0	0	0	151	35	392	0
7:15 AM	0	0	0	0	0	27	2	109	1	53	126	0	0	0	143	59	520	0
7:30 AM	0	0	0	0	0	22	1	123	0	40	143	0	0	0	208	80	617	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**44**	**3**	**161**	**1**	**50**	**146**	**0**	**0**	**0**	**235**	**90**	**730**	2,259
8:00 AM	**0**	**0**	**0**	**0**	**0**	**46**	**2**	**154**	**0**	**40**	**146**	**0**	**0**	**0**	**223**	**76**	**687**	2,554
8:15 AM	**0**	**0**	**0**	**0**	**0**	**30**	**1**	**127**	**0**	**43**	**153**	**0**	**0**	**0**	**269**	**121**	**744**	2,778
8:30 AM	**0**	**0**	**0**	**0**	**0**	**31**	**3**	**130**	**1**	**53**	**123**	**0**	**0**	**0**	**232**	**117**	**690**	**2,851**
8:45 AM	0	0	0	0	0	36	2	153	0	36	142	0	0	0	219	76	664	2,785
Count Total	0	0	0	0	0	250	14	1,038	3	332	1,073	0	0	0	1,680	654	5,044	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**151**	**9**	**572**	**2**	**186**	**568**	**0**	**0**	**0**	**959**	**404**	**2,851**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**14**	**0**	**7**	**10**	**0**	**0**	**0**	**26**	**13**	**75**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**1%**	**44%**	**2%**	**0%**	**4%**	**2%**	**-**	**-**	**-**	**3%**	**3%**	**3%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	2	4	5	*11*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	4	1	10	*15*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	4	2	6	*12*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**0**	**2**	**6**	**9**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**6**	**5**	**7**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**0**	**5**	**3**	**9**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**6**	**3**	**14**	***23***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	10	9	13	*32*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	39	33	73	*145*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**19**	**17**	**39**	***75***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	US36 WB Ramp				US36 WB Ramp				Interlocken Loop				Northwest Pkwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	2	0	0	4	0	0	0	3	2	11	0
7:15 AM	0	0	0	0	0	0	2	2	0	0	1	0	0	0	8	2	15	0
7:30 AM	0	0	0	0	0	0	1	3	0	1	1	0	0	0	4	2	12	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**3**	**3**	**0**	**0**	**0**	**7**	**2**	**17**	55
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**0**	**1**	**4**	**0**	**0**	**0**	**4**	**3**	**18**	62
8:15 AM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**3**	**0**	**1**	**2**	**0**	**0**	**0**	**5**	**4**	**17**	64
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**0**	**2**	**1**	**0**	**0**	**0**	**10**	**4**	**23**	**75**
8:45 AM	0	0	0	0	0	1	1	8	0	4	5	0	0	0	8	5	32	90
Count Total	0	0	0	0	0	2	8	29	0	12	21	0	0	0	49	24	145	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**14**	**0**	**7**	**10**	**0**	**0**	**0**	**26**	**13**	**75**	**0**

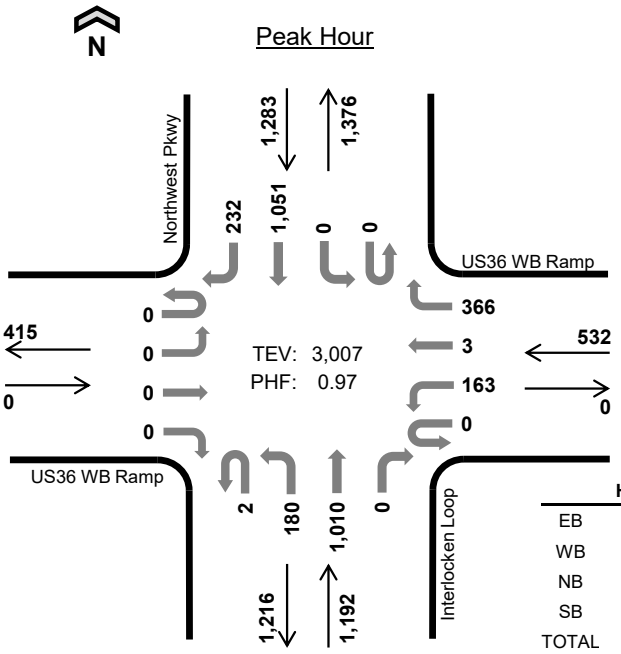
Two-Hour Count Summaries - Bikes

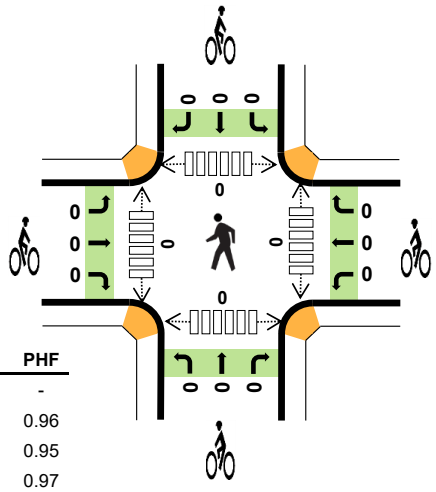
Interval Start	US36 WB Ramp			US36 WB Ramp			Interlocken Loop			Northwest Pkwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Interlocken Loop
US36 WB Ramp

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV %:	PHF
EB	-	-
WB	0.6%	0.96
NB	1.9%	0.95
SB	1.8%	0.97
TOTAL	1.6%	0.97

Three-and-a-Half-Hour Count Summaries

Interval Start		US36 WB Ramp Eastbound				US36 WB Ramp Westbound				Interlocken Loop Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	0	0	0	0	43	2	80	0	42	272	0	0	0	270	49	758	0
4:30 PM		0	0	0	0	0	44	0	94	0	45	224	0	0	0	247	61	715	0
4:45 PM		0	0	0	0	0	45	1	90	1	40	254	0	0	0	260	66	757	0
5:00 PM		0	0	0	0	0	31	0	102	1	53	260	0	0	0	274	56	777	3,007
Peak Hour	All	0	0	0	0	0	163	3	366	2	180	1,010	0	0	0	1,051	232	3,007	0
	HV	0	0	0	0	0	0	2	1	0	2	21	0	0	0	18	5	49	0
	HV%	-	-	-	-	-	0%	67%	0%	0%	1%	2%	-	-	-	2%	2%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	0	2	5	6	*13*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	6	5	*11*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	1	6	5	*12*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	0	0	6	7	*13*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	3	23	23	*49*	0	0	0	0	*0*	0	0	0	0	*0*

Three-and-a-Half-Hour Count Summaries

Interval Start	US36 WB Ramp Eastbound				US36 WB Ramp Westbound				Interlocken Loop Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	0	0	0	31	1	69	0	37	169	0	0	0	139	34	480	0
2:45 PM	0	0	0	0	0	31	1	72	0	35	148	0	0	0	143	48	478	0
3:00 PM	0	0	0	0	0	29	1	58	0	32	153	0	0	0	200	43	516	0
3:15 PM	0	0	0	0	0	28	1	72	1	34	163	0	0	0	204	55	558	2,032
3:30 PM	0	0	0	0	0	29	2	74	0	32	212	0	0	0	203	46	598	2,150
3:45 PM	0	0	0	0	0	39	2	85	0	39	202	0	0	0	224	48	639	2,311
4:00 PM	0	0	0	0	0	37	2	66	0	35	251	0	0	0	279	52	722	2,517
4:15 PM	**0**	**0**	**0**	**0**	**0**	**43**	**2**	**80**	**0**	**42**	**272**	**0**	**0**	**0**	**270**	**49**	**758**	2,717
4:30 PM	**0**	**0**	**0**	**0**	**0**	**44**	**0**	**94**	**0**	**45**	**224**	**0**	**0**	**0**	**247**	**61**	**715**	2,834
4:45 PM	**0**	**0**	**0**	**0**	**0**	**45**	**1**	**90**	**1**	**40**	**254**	**0**	**0**	**0**	**260**	**66**	**757**	2,952
5:00 PM	**0**	**0**	**0**	**0**	**0**	**31**	**0**	**102**	**1**	**53**	**260**	**0**	**0**	**0**	**274**	**56**	**777**	**3,007**
5:15 PM	0	0	0	0	0	40	1	96	2	51	245	0	0	0	256	57	748	2,997
5:30 PM	0	0	0	0	0	0	2	81	0	45	230	0	0	0	238	69	665	2,947
5:45 PM	0	0	0	0	0	35	1	76	0	30	195	0	0	0	203	55	595	2,785
Count Total	0	0	0	0	0	462	17	1,115	5	550	2,978	0	0	0	3,140	739	9,006	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**163**	**3**	**366**	**2**	**180**	**1,010**	**0**	**0**	**0**	**1,051**	**232**	**3,007**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**2**	**21**	**0**	**0**	**0**	**18**	**5**	**49**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**67%**	**0%**	**0%**	**1%**	**2%**	**-**	**-**	**-**	**2%**	**2%**	**2%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
2:30 PM	0	2	4	9	*15*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	4	5	11	*20*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	0	5	3	7	*15*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	0	10	4	7	*21*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	0	4	4	3	*11*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	0	4	5	9	*18*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	0	3	8	11	*22*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	**0**	**2**	**5**	**6**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**0**	**0**	**6**	**5**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**1**	**6**	**5**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**0**	**0**	**6**	**7**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:15 PM	0	2	1	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	2	2	5	*9*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	1	3	3	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	40	62	90	*192*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**3**	**23**	**23**	***49***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	US36 WB Ramp				US36 WB Ramp				Interlocken Loop				Northwest Pkwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	0	0	0	1	1	0	0	0	4	0	0	0	7	2	15	0
2:45 PM	0	0	0	0	0	0	1	3	0	0	5	0	0	0	8	3	20	0
3:00 PM	0	0	0	0	0	1	1	3	0	1	2	0	0	0	7	0	15	0
3:15 PM	0	0	0	0	0	3	1	6	0	0	4	0	0	0	6	1	21	71
3:30 PM	0	0	0	0	0	1	1	2	0	0	4	0	0	0	3	0	11	67
3:45 PM	0	0	0	0	0	0	1	3	0	0	5	0	0	0	7	2	18	65
4:00 PM	0	0	0	0	0	0	1	2	0	1	7	0	0	0	10	1	22	72
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**5**	**0**	**0**	**0**	**6**	**0**	**13**	64
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	**0**	**0**	**0**	**5**	**0**	**11**	64
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**3**	**12**	58
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**5**	**2**	**13**	**49**
5:15 PM	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1	1	5	41
5:30 PM	0	0	0	0	0	0	2	0	0	0	2	0	0	0	5	0	9	39
5:45 PM	0	0	0	0	0	0	1	0	0	0	3	0	0	0	2	1	7	34
Count Total	0	0	0	0	0	6	13	21	0	4	58	0	0	0	74	16	192	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**2**	**21**	**0**	**0**	**0**	**18**	**5**	**49**	**0**

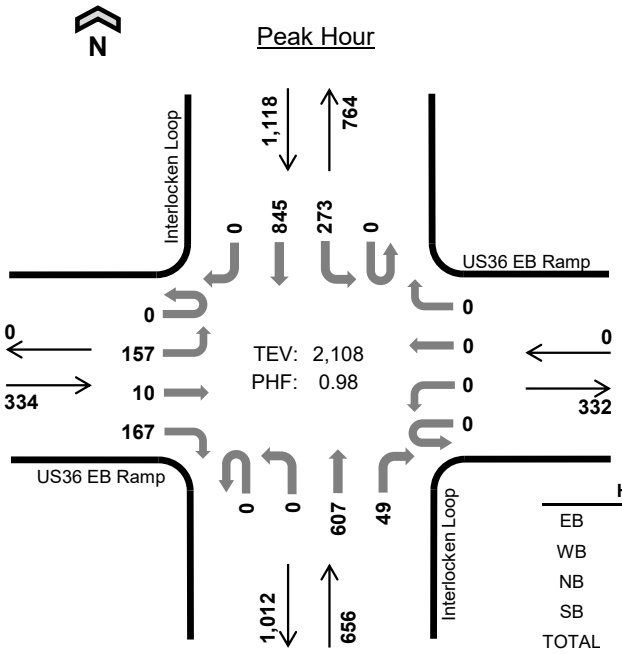
Three-and-a-Half-Hour Count Summaries - Bikes

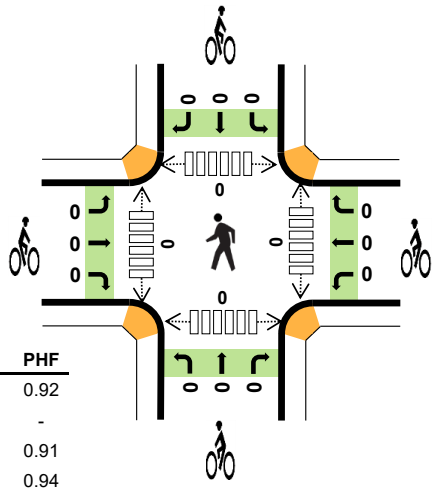
Interval Start	US36 WB Ramp			US36 WB Ramp			Interlocken Loop			Northwest Pkwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Interlocken Loop
US36 EB Ramp

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	3.6%	0.92
WB	-	-
NB	2.3%	0.91
SB	2.6%	0.94
TOTAL	2.7%	0.98

Two-Hour Count Summaries

Interval Start		US36 EB Ramp Eastbound				US36 EB Ramp Westbound				Interlocken Loop Northbound				Interlocken Loop Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	25	2	20	0	0	0	0	0	0	88	9	0	60	100	0	304	0
7:15 AM		0	40	1	17	0	0	0	0	0	0	137	6	0	56	115	0	372	0
7:30 AM		0	32	1	27	0	0	0	0	0	0	141	10	1	71	159	0	442	0
7:45 AM		**0**	**36**	**2**	**34**	**0**	**0**	**0**	**0**	**0**	**0**	**167**	**14**	**0**	**74**	**207**	**0**	**534**	1,652
8:00 AM		**0**	**45**	**4**	**42**	**0**	**0**	**0**	**0**	**0**	**0**	**145**	**15**	**0**	**61**	**214**	**0**	**526**	1,874
8:15 AM		**0**	**39**	**3**	**41**	**0**	**0**	**0**	**0**	**0**	**0**	**148**	**11**	**0**	**68**	**230**	**0**	**540**	2,042
8:30 AM		**0**	**37**	**1**	**50**	**0**	**0**	**0**	**0**	**0**	**0**	**147**	**9**	**0**	**70**	**194**	**0**	**508**	**2,108**
8:45 AM		0	44	1	44	0	0	0	0	0	0	138	10	0	66	189	0	492	2,066
Count Total		0	298	15	275	0	0	0	0	0	0	1,111	84	1	526	1,408	0	3,718	0
Peak Hour	**All**	**0**	**157**	**10**	**167**	**0**	**0**	**0**	**0**	**0**	**0**	**607**	**49**	**0**	**273**	**845**	**0**	**2,108**	**0**
	HV	**0**	**5**	**4**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**4**	**0**	**10**	**19**	**0**	**56**	**0**
	HV%	**-**	**3%**	**40%**	**2%**	**-**	**-**	**-**	**-**	**-**	**-**	**2%**	**8%**	**-**	**4%**	**2%**	**-**	**3%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	4	0	1	2	*7*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	1	0	0	6	*7*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	3	0	1	5	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**2**	**0**	**6**	**7**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**5**	**0**	**3**	**5**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**2**	**0**	**3**	**6**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**3**	**0**	**3**	**11**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	3	0	9	10	*22*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	23	0	26	52	*101*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**12**	**0**	**15**	**29**	***56***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	US36 EB Ramp				US36 EB Ramp				Interlocken Loop				Interlocken Loop				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	3	1	0	0	0	0	0	0	0	1	0	0	0	2	0	7	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	2	4	0	7	0
7:30 AM	0	2	1	0	0	0	0	0	0	0	1	0	0	4	1	0	9	0
7:45 AM	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**2**	**0**	**3**	**4**	**0**	**15**	38
8:00 AM	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**1**	**4**	**0**	**13**	44
8:15 AM	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**4**	**2**	**0**	**11**	48
8:30 AM	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**2**	**9**	**0**	**17**	**56**
8:45 AM	0	2	1	0	0	0	0	0	0	0	9	0	0	2	8	0	22	63
Count Total	0	12	8	3	0	0	0	0	0	0	22	4	0	18	34	0	101	0
Peak Hour	**0**	**5**	**4**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**4**	**0**	**10**	**19**	**0**	**56**	**0**

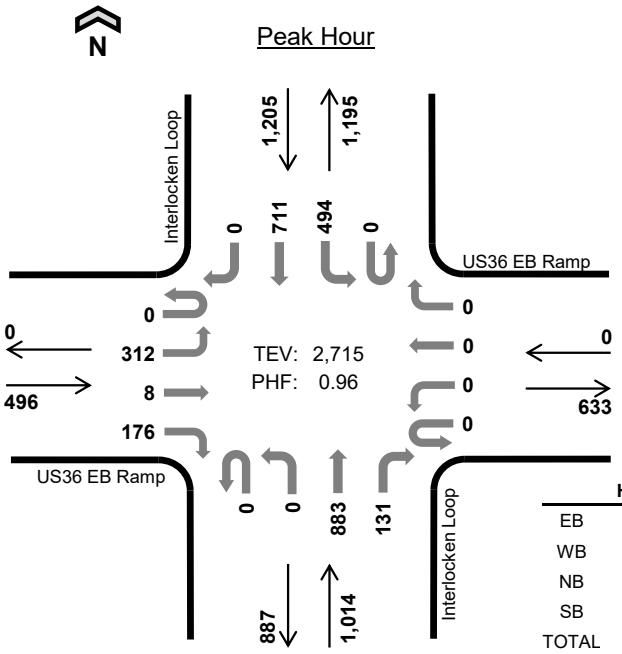
Two-Hour Count Summaries - Bikes

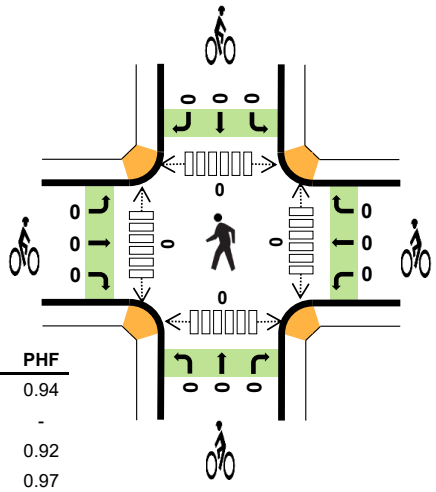
Interval Start	US36 EB Ramp			US36 EB Ramp			Interlocken Loop			Interlocken Loop			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Interlocken Loop
US36 EB Ramp

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV %:	PHF
EB	3.8%	0.94
WB	-	-
NB	1.7%	0.92
SB	1.5%	0.97
TOTAL	2.0%	0.96

Three-and-a-Half-Hour Count Summaries

Interval Start		US36 EB Ramp Eastbound				US36 EB Ramp Westbound				Interlocken Loop Northbound				Interlocken Loop Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	88	4	40	0	0	0	0	0	0	231	32	0	125	185	0	705	0
4:30 PM		0	69	1	45	0	0	0	0	0	0	198	27	0	123	159	0	622	0
4:45 PM		0	74	0	56	0	0	0	0	0	0	223	27	0	126	186	0	692	0
5:00 PM		0	81	3	35	0	0	0	0	0	0	231	45	0	120	181	0	696	2,715
Peak Hour	All	0	312	8	176	0	0	0	0	0	0	883	131	0	494	711	0	2,715	0
	HV	0	8	3	8	0	0	0	0	0	0	14	3	0	13	5	0	54	0
	HV%	-	3%	38%	5%	-	-	-	-	-	-	2%	2%	-	3%	1%	-	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	4	0	6	5	*15*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	3	0	6	6	*15*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	6	0	3	3	*12*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	6	0	2	4	*12*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	19	0	17	18	*54*	0	0	0	0	*0*	0	0	0	0	*0*

Three-and-a-Half-Hour Count Summaries

Interval Start	US36 EB Ramp				US36 EB Ramp				Interlocken Loop				Interlocken Loop				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	59	1	30	0	0	0	0	0	0	150	22	0	71	100	0	433	0
2:45 PM	0	46	4	37	0	0	0	0	0	0	138	25	0	65	102	0	417	0
3:00 PM	0	49	2	31	0	0	0	0	0	0	133	24	0	97	121	0	457	0
3:15 PM	0	59	0	35	0	0	0	0	0	0	138	23	0	91	145	0	491	1,798
3:30 PM	0	59	1	37	0	0	0	0	0	0	183	23	0	105	131	0	539	1,904
3:45 PM	0	71	2	26	0	0	0	0	0	0	169	20	0	101	163	0	552	2,039
4:00 PM	0	83	0	43	0	0	0	0	0	0	212	27	0	124	177	0	666	2,248
4:15 PM	**0**	**88**	**4**	**40**	**0**	**0**	**0**	**0**	**0**	**0**	**231**	**32**	**0**	**125**	**185**	**0**	**705**	2,462
4:30 PM	**0**	**69**	**1**	**45**	**0**	**0**	**0**	**0**	**0**	**0**	**198**	**27**	**0**	**123**	**159**	**0**	**622**	2,545
4:45 PM	**0**	**74**	**0**	**56**	**0**	**0**	**0**	**0**	**0**	**0**	**223**	**27**	**0**	**126**	**186**	**0**	**692**	2,685
5:00 PM	**0**	**81**	**3**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**231**	**45**	**0**	**120**	**181**	**0**	**696**	**2,715**
5:15 PM	0	69	3	46	0	0	0	0	0	0	220	20	0	96	203	0	657	2,667
5:30 PM	0	63	1	58	0	0	0	0	0	0	214	25	0	96	174	0	631	2,676
5:45 PM	0	58	1	39	0	0	0	0	0	0	163	25	0	93	147	0	526	2,510
Count Total	0	928	23	558	0	0	0	0	0	0	2,603	365	0	1,433	2,174	0	8,084	0
Peak Hour All	**0**	**312**	**8**	**176**	**0**	**0**	**0**	**0**	**0**	**0**	**883**	**131**	**0**	**494**	**711**	**0**	**2,715**	**0**
Peak Hour HV	**0**	**8**	**3**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**3**	**0**	**13**	**5**	**0**	**54**	**0**
Peak Hour HV%	**-**	**3%**	**38%**	**5%**	**-**	**-**	**-**	**-**	**-**	**-**	**2%**	**2%**	**-**	**3%**	**1%**	**-**	**2%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	2	0	3	8	*13*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	5	0	7	8	*20*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	4	0	0	6	*10*	0	0	0	0	*0*	0	1	0	1	*2*
3:15 PM	5	0	2	9	*16*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	5	0	3	5	*13*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	6	0	4	7	*17*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	3	0	7	8	*18*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	**4**	**0**	**6**	**5**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**3**	**0**	**6**	**6**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**6**	**0**	**3**	**3**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**6**	**0**	**2**	**4**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:15 PM	2	0	1	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	2	0	1	4	*7*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	3	0	1	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	56	0	46	76	*178*	0	0	0	0	*0*	0	1	0	1	*2*
Peak Hour	**19**	**0**	**17**	**18**	***54***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	US36 EB Ramp				US36 EB Ramp				Interlocken Loop				Interlocken Loop				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	0	2	0	0	0	0	0	0	3	0	0	4	4	0	13	0
2:45 PM	0	2	2	1	0	0	0	0	0	0	6	1	0	6	2	0	20	0
3:00 PM	0	1	1	2	0	0	0	0	0	0	0	0	0	4	2	0	10	0
3:15 PM	0	4	0	1	0	0	0	0	0	0	2	0	0	3	6	0	16	59
3:30 PM	0	2	1	2	0	0	0	0	0	0	3	0	0	2	3	0	13	59
3:45 PM	0	1	2	3	0	0	0	0	0	0	3	1	0	4	3	0	17	56
4:00 PM	0	3	0	0	0	0	0	0	0	0	6	1	0	2	6	0	18	64
4:15 PM	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**1**	**0**	**4**	**1**	**0**	**15**	63
4:30 PM	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**2**	**0**	**4**	**2**	**0**	**15**	65
4:45 PM	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	**0**	**0**	**12**	60
5:00 PM	**0**	**4**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**2**	**0**	**12**	**54**
5:15 PM	0	0	1	1	0	0	0	0	0	0	1	0	0	1	1	0	5	44
5:30 PM	0	1	1	0	0	0	0	0	0	0	1	0	0	1	3	0	7	36
5:45 PM	0	2	1	0	0	0	0	0	0	0	1	0	0	0	1	0	5	29
Count Total	0	24	12	20	0	0	0	0	0	0	40	6	0	40	36	0	178	0
Peak Hour	**0**	**8**	**3**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**3**	**0**	**13**	**5**	**0**	**54**	**0**

Three-and-a-Half-Hour Count Summaries - Bikes

Interval Start	US36 EB Ramp			US36 EB Ramp			Interlocken Loop			Interlocken Loop			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Location: Dillon Rd E/O 96th St
Date: 01/19/2023
Site Code: 1

Time	Thursday, January 19, 2023				
	Light Vehicles		Heavy Vehicles		Total
	Volume		Volume		
	WB	EB	WB	EB	
0:00	4	7	1	0	36
0:15	5	2	0	0	
0:30	5	5	0	0	
0:45	0	6	1	0	
1:00	7	6	0	0	41
1:15	10	4	0	0	
1:30	7	6	0	0	
1:45	0	1	0	0	
2:00	1	2	0	0	22
2:15	4	3	0	0	
2:30	4	1	0	0	
2:45	5	2	0	0	
3:00	5	2	0	0	55
3:15	7	1	0	0	
3:30	9	8	0	0	
3:45	9	14	0	0	
4:00	13	10	0	0	87
4:15	11	7	0	1	
4:30	13	8	0	0	
4:45	8	16	0	0	
5:00	8	26	0	0	241
5:15	11	29	1	0	
5:30	14	50	0	1	
5:45	20	80	1	0	
6:00	31	45	5	0	515
6:15	51	61	3	0	
6:30	49	83	6	0	
6:45	77	104	0	0	
7:00	61	124	2	3	1110
7:15	101	147	4	0	
7:30	144	163	8	2	
7:45	157	186	7	1	
8:00	128	197	1	1	1200
8:15	118	179	4	2	
8:30	111	137	12	6	
8:45	110	177	7	10	
9:00	119	153	4	8	958
9:15	125	118	5	3	
9:30	111	92	5	8	
9:45	95	104	4	4	
10:00	98	81	7	3	759
10:15	97	90	5	0	
10:30	108	70	8	10	
10:45	85	91	3	3	
11:00	110	82	8	2	945
11:15	128	91	6	1	
11:30	132	92	4	8	
11:45	152	123	1	5	
12:00	142	115	4	7	1045
12:15	126	128	5	2	

Time	Thursday, January 19, 2023		
	Bikes on Road		Total
	Volume		
	WB	EB	
0:00	0	0	0
0:15	0	0	
0:30	0	0	
0:45	0	0	
1:00	0	0	0
1:15	0	0	
1:30	0	0	
1:45	0	0	
2:00	0	0	0
2:15	0	0	
2:30	0	0	
2:45	0	0	
3:00	0	0	0
3:15	0	0	
3:30	0	0	
3:45	0	0	
4:00	0	0	0
4:15	0	0	
4:30	0	0	
4:45	0	0	
5:00	0	0	1
5:15	0	0	
5:30	0	1	
5:45	0	0	
6:00	0	0	0
6:15	0	0	
6:30	0	0	
6:45	0	0	
7:00	0	0	0
7:15	0	0	
7:30	0	0	
7:45	0	0	
8:00	0	0	0
8:15	0	0	
8:30	0	0	
8:45	0	0	
9:00	0	0	0
9:15	0	0	
9:30	0	0	
9:45	0	0	
10:00	0	0	0
10:15	0	0	
10:30	0	0	
10:45	0	0	
11:00	0	0	0
11:15	0	0	
11:30	0	0	
11:45	0	0	
12:00	0	0	0
12:15	0	0	

12:30	136	123	4	5	1045
12:45	131	110	2	5	
13:00	111	114	4	11	927
13:15	114	108	9	9	
13:30	99	114	5	4	
13:45	110	108	4	3	
14:00	100	114	5	10	945
14:15	103	108	7	7	
14:30	136	97	9	5	
14:45	112	121	6	5	
15:00	172	116	4	4	1215
15:15	120	141	6	6	
15:30	187	124	3	1	
15:45	158	167	1	5	
16:00	237	180	2	3	1545
16:15	217	144	6	10	
16:30	205	150	4	1	
16:45	238	145	3	0	
17:00	244	151	2	1	1324
17:15	178	159	2	1	
17:30	161	144	2	0	
17:45	162	116	0	1	
18:00	139	95	0	0	771
18:15	112	99	1	2	
18:30	102	73	2	1	
18:45	74	66	1	4	
19:00	64	76	0	0	476
19:15	73	59	2	0	
19:30	43	50	0	0	
19:45	44	64	0	1	
20:00	70	51	1	0	386
20:15	42	60	0	0	
20:30	30	49	0	1	
20:45	34	46	1	1	
21:00	33	32	0	1	251
21:15	31	35	0	1	
21:30	23	33	1	1	
21:45	21	38	0	1	
22:00	21	19	2	1	115
22:15	14	10	0	0	
22:30	14	12	1	0	
22:45	10	11	0	0	
23:00	11	7	0	0	68
23:15	6	8	0	1	
23:30	9	9	0	0	
23:45	11	5	1	0	
24-HOUR TOTAL	**7408**	**7190**	**235**	**204**	**15037**

12:30	0	0	0
12:45	0	0	
13:00	0	0	0
13:15	0	0	
13:30	0	0	
13:45	0	0	
14:00	0	0	0
14:15	0	0	
14:30	0	0	
14:45	0	0	
15:00	0	0	0
15:15	0	0	
15:30	0	0	
15:45	0	0	
16:00	0	0	1
16:15	1	0	
16:30	0	0	
16:45	0	0	
17:00	0	0	0
17:15	0	0	
17:30	0	0	
17:45	0	0	
18:00	0	0	0
18:15	0	0	
18:30	0	0	
18:45	0	0	
19:00	0	0	0
19:15	0	0	
19:30	0	0	
19:45	0	0	
20:00	0	0	0
20:15	0	0	
20:30	0	0	
20:45	0	0	
21:00	0	0	0
21:15	0	0	
21:30	0	0	
21:45	0	0	
22:00	0	0	0
22:15	0	0	
22:30	0	0	
22:45	0	0	
23:00	0	0	0
23:15	0	0	
23:30	0	0	
23:45	0	0	
24-HOUR TOTAL	**1**	**1**	**2**

Location: Dillon Rd W/O 96th St
Date: 01/19/2023
Site Code: 2

Time	Thursday, January 19, 2023				
	Light Vehicles		Heavy Vehicles		Total
	Volume		Volume		
	WB	EB	WB	EB	
0:00	4	14	0	1	48
0:15	4	10	0	0	
0:30	3	5	0	0	
0:45	2	5	0	0	
1:00	2	5	0	0	32
1:15	4	5	0	2	
1:30	5	4	0	0	
1:45	1	4	0	0	
2:00	0	3	0	0	20
2:15	3	4	0	0	
2:30	1	3	0	0	
2:45	5	1	0	0	
3:00	2	3	0	0	38
3:15	5	1	0	0	
3:30	11	7	0	0	
3:45	6	2	1	0	
4:00	3	6	0	0	48
4:15	3	2	0	1	
4:30	11	2	0	0	
4:45	10	9	1	0	
5:00	7	17	0	1	160
5:15	18	15	2	0	
5:30	22	22	0	1	
5:45	32	22	1	0	
6:00	36	13	3	0	397
6:15	50	27	1	0	
6:30	76	31	5	1	
6:45	106	48	0	0	
7:00	97	62	0	3	1184
7:15	140	113	2	2	
7:30	210	130	8	1	
7:45	255	155	4	2	
8:00	214	171	0	4	1240
8:15	116	167	5	2	
8:30	116	132	5	6	
8:45	146	145	4	7	
9:00	144	111	5	2	931
9:15	151	89	6	1	
9:30	122	93	4	6	
9:45	105	88	2	2	
10:00	131	87	5	1	851
10:15	116	100	6	2	
10:30	101	83	9	3	
10:45	100	97	5	5	
11:00	117	112	4	4	1037
11:15	145	124	4	3	
11:30	124	117	4	8	
11:45	141	126	0	4	
12:00	124	118	4	9	1054
12:15	123	139	3	7	

Time	Thursday, January 19, 2023		
	Bikes on Road		Total
	Volume		
	WB	EB	
0:00	0	0	0
0:15	0	0	
0:30	0	0	
0:45	0	0	
1:00	0	0	0
1:15	0	0	
1:30	0	0	
1:45	0	0	
2:00	0	0	0
2:15	0	0	
2:30	0	0	
2:45	0	0	
3:00	0	0	0
3:15	0	0	
3:30	0	0	
3:45	0	0	
4:00	0	0	0
4:15	0	0	
4:30	0	0	
4:45	0	0	
5:00	0	0	1
5:15	0	0	
5:30	0	1	
5:45	0	0	
6:00	0	0	0
6:15	0	0	
6:30	0	0	
6:45	0	0	
7:00	0	0	0
7:15	0	0	
7:30	0	0	
7:45	0	0	
8:00	0	0	0
8:15	0	0	
8:30	0	0	
8:45	0	0	
9:00	0	0	0
9:15	0	0	
9:30	0	0	
9:45	0	0	
10:00	0	0	0
10:15	0	0	
10:30	0	0	
10:45	0	0	
11:00	0	0	0
11:15	0	0	
11:30	0	0	
11:45	0	0	
12:00	0	0	0
12:15	0	0	

12:30	125	133	5	2	1054
12:45	129	129	1	3	
13:00	134	116	3	4	1058
13:15	135	117	7	7	
13:30	127	130	4	2	
13:45	134	131	3	4	
14:00	103	156	3	4	1109
14:15	117	134	6	8	
14:30	134	120	6	8	
14:45	155	143	9	3	
15:00	125	203	1	5	1377
15:15	120	212	6	3	
15:30	150	182	4	3	
15:45	157	199	1	6	
16:00	169	242	1	4	1554
16:15	153	231	6	7	
16:30	157	211	0	3	
16:45	185	183	2	0	
17:00	180	212	1	0	1365
17:15	148	199	0	1	
17:30	156	171	1	0	
17:45	143	152	0	1	
18:00	136	136	0	3	963
18:15	135	137	1	3	
18:30	91	101	0	3	
18:45	109	107	0	1	
19:00	74	102	0	0	539
19:15	60	64	0	0	
19:30	48	74	0	0	
19:45	53	64	0	0	
20:00	77	54	1	0	466
20:15	51	59	0	0	
20:30	44	66	0	1	
20:45	44	69	0	0	
21:00	35	38	0	2	287
21:15	38	43	1	0	
21:30	33	30	1	0	
21:45	25	40	0	1	
22:00	21	25	1	0	139
22:15	18	18	0	1	
22:30	13	20	0	0	
22:45	12	10	0	0	
23:00	14	10	0	0	82
23:15	11	14	0	0	
23:30	7	13	0	0	
23:45	9	4	0	0	
24-HOUR TOTAL	**7764**	**7853**	**178**	**184**	**15979**

12:30	0	0	0
12:45	0	0	
13:00	0	0	1
13:15	0	0	
13:30	0	0	
13:45	0	1	
14:00	0	0	0
14:15	0	0	
14:30	0	0	
14:45	0	0	
15:00	0	0	0
15:15	0	0	
15:30	0	0	
15:45	0	0	
16:00	0	0	1
16:15	1	0	
16:30	0	0	
16:45	0	0	
17:00	0	0	0
17:15	0	0	
17:30	0	0	
17:45	0	0	
18:00	0	0	0
18:15	0	0	
18:30	0	0	
18:45	0	0	
19:00	0	0	0
19:15	0	0	
19:30	0	0	
19:45	0	0	
20:00	0	0	0
20:15	0	0	
20:30	0	0	
20:45	0	0	
21:00	0	0	0
21:15	0	0	
21:30	0	0	
21:45	0	0	
22:00	0	0	0
22:15	0	0	
22:30	0	0	
22:45	0	0	
23:00	0	0	0
23:15	0	0	
23:30	0	0	
23:45	0	0	
24-HOUR TOTAL	**1**	**2**	**3**

Location: 88th St S/O Dillon Rd
Date: 01/19/2023
Site Code: 3

Time	Thursday, January 19, 2023				
	Light Vehicles		Heavy Vehicles		Total
	Volume		Volume		
	SB	NB	SB	NB	
0:00	1	8	0	0	27
0:15	3	6	0	0	
0:30	2	2	0	0	
0:45	3	2	0	0	
1:00	0	4	0	0	20
1:15	3	2	0	0	
1:30	2	3	0	0	
1:45	3	3	0	0	
2:00	0	2	0	0	9
2:15	2	2	0	0	
2:30	0	1	0	0	
2:45	1	1	0	0	
3:00	2	0	0	0	14
3:15	4	0	0	0	
3:30	3	3	0	0	
3:45	0	0	2	0	
4:00	2	3	0	0	25
4:15	5	1	0	2	
4:30	3	2	0	0	
4:45	2	4	1	0	
5:00	4	10	0	1	102
5:15	11	13	1	0	
5:30	17	10	2	2	
5:45	20	11	0	0	
6:00	32	10	2	1	309
6:15	39	17	0	1	
6:30	54	19	3	1	
6:45	103	27	0	0	
7:00	70	38	0	0	935
7:15	104	76	0	0	
7:30	158	102	3	0	
7:45	226	147	7	4	
8:00	209	211	1	4	1385
8:15	194	131	5	1	
8:30	193	147	6	8	
8:45	136	131	5	3	
9:00	104	69	3	2	705
9:15	132	68	4	2	
9:30	80	72	4	1	
9:45	72	84	6	2	
10:00	83	74	2	0	615
10:15	78	68	1	3	
10:30	83	66	2	3	
10:45	78	69	4	1	
11:00	78	85	2	4	733
11:15	84	75	4	2	
11:30	74	142	1	4	
11:45	81	92	2	3	
12:00	93	83	3	3	733
12:15	67	86	1	5	

Time	Thursday, January 19, 2023		
	Bikes on Road		Total
	Volume		
	SB	NB	
0:00	0	0	0
0:15	0	0	
0:30	0	0	
0:45	0	0	
1:00	0	0	0
1:15	0	0	
1:30	0	0	
1:45	0	0	
2:00	0	0	0
2:15	0	0	
2:30	0	0	
2:45	0	0	
3:00	0	0	0
3:15	0	0	
3:30	0	0	
3:45	0	0	
4:00	0	0	0
4:15	0	0	
4:30	0	0	
4:45	0	0	
5:00	0	0	0
5:15	0	0	
5:30	0	0	
5:45	0	0	
6:00	0	0	0
6:15	0	0	
6:30	0	0	
6:45	0	0	
7:00	0	0	0
7:15	0	0	
7:30	0	0	
7:45	0	0	
8:00	0	0	0
8:15	0	0	
8:30	0	0	
8:45	0	0	
9:00	0	0	0
9:15	0	0	
9:30	0	0	
9:45	0	0	
10:00	0	0	0
10:15	0	0	
10:30	0	0	
10:45	0	0	
11:00	0	0	0
11:15	0	0	
11:30	0	0	
11:45	0	0	
12:00	0	0	0
12:15	0	0	

12:30	90	97	1	2	733
12:45	128	73	0	1	
13:00	94	72	1	0	712
13:15	90	67	3	1	
13:30	108	76	1	1	
13:45	112	83	1	2	
14:00	68	123	0	1	877
14:15	86	101	4	2	
14:30	132	92	6	5	
14:45	145	104	7	1	
15:00	121	234	5	4	1306
15:15	100	229	6	4	
15:30	111	142	3	2	
15:45	159	182	1	3	
16:00	132	283	0	4	1252
16:15	104	219	3	3	
16:30	121	168	2	2	
16:45	138	73	0	0	
17:00	110	140	2	0	948
17:15	112	125	0	1	
17:30	124	115	0	0	
17:45	90	129	0	0	
18:00	85	99	0	2	647
18:15	114	78	0	1	
18:30	68	64	0	0	
18:45	78	57	1	0	
19:00	59	49	1	1	347
19:15	43	34	0	0	
19:30	36	45	0	0	
19:45	44	35	0	0	
20:00	53	31	0	0	305
20:15	33	35	0	0	
20:30	35	48	0	0	
20:45	29	41	0	0	
21:00	23	26	0	0	175
21:15	22	33	0	0	
21:30	17	20	1	0	
21:45	16	16	0	1	
22:00	17	12	0	0	92
22:15	8	15	0	1	
22:30	11	16	0	0	
22:45	7	5	0	0	
23:00	6	4	0	0	49
23:15	8	6	0	0	
23:30	7	11	0	0	
23:45	5	2	0	0	
24-HOUR TOTAL	**6097**	**5991**	**126**	**108**	**12322**

12:30	0	0	0
12:45	0	0	
13:00	0	0	0
13:15	0	0	
13:30	0	0	
13:45	0	0	
14:00	0	0	0
14:15	0	0	
14:30	0	0	
14:45	0	0	
15:00	0	0	0
15:15	0	0	
15:30	0	0	
15:45	0	0	
16:00	0	0	0
16:15	0	0	
16:30	0	0	
16:45	0	0	
17:00	0	0	0
17:15	0	0	
17:30	0	0	
17:45	0	0	
18:00	0	0	0
18:15	0	0	
18:30	0	0	
18:45	0	0	
19:00	0	0	0
19:15	0	0	
19:30	0	0	
19:45	0	0	
20:00	0	0	1
20:15	0	0	
20:30	0	0	
20:45	1	0	
21:00	0	0	0
21:15	0	0	
21:30	0	0	
21:45	0	0	
22:00	0	0	0
22:15	0	0	
22:30	0	0	
22:45	0	0	
23:00	0	0	0
23:15	0	0	
23:30	0	0	
23:45	0	0	
24-HOUR TOTAL	**1**	**0**	**1**

Location: 96th St S/O Dillon Rd
Date: 01/19/2023
Site Code: 4

Time	Thursday, January 19, 2023				
	Light Vehicles		Heavy Vehicles		Total
	Volume		Volume		
	SB	NB	SB	NB	
0:00	11	11	0	0	56
0:15	9	5	0	0	
0:30	7	7	0	0	
0:45	3	2	1	0	
1:00	7	4	0	0	38
1:15	8	3	0	0	
1:30	6	5	0	0	
1:45	5	0	0	0	
2:00	5	3	0	0	34
2:15	4	0	0	0	
2:30	9	4	0	1	
2:45	6	2	0	0	
3:00	5	4	1	0	65
3:15	6	4	0	1	
3:30	6	5	0	1	
3:45	18	13	0	1	
4:00	10	8	0	0	95
4:15	13	8	0	0	
4:30	13	12	0	0	
4:45	11	19	1	0	
5:00	20	20	0	0	272
5:15	11	34	0	1	
5:30	25	38	0	2	
5:45	33	86	0	2	
6:00	45	52	2	0	644
6:15	67	68	2	2	
6:30	61	118	4	1	
6:45	88	133	0	1	
7:00	109	155	2	1	1354
7:15	116	191	3	1	
7:30	134	192	3	3	
7:45	173	266	4	1	
8:00	173	240	3	4	1638
8:15	214	219	3	6	
8:30	172	183	9	4	
8:45	158	239	3	8	
9:00	112	166	3	11	1005
9:15	105	154	1	6	
9:30	97	116	1	7	
9:45	108	109	3	6	
10:00	101	105	2	5	850
10:15	96	91	2	4	
10:30	124	78	4	10	
10:45	105	115	4	4	
11:00	107	95	6	3	919
11:15	114	112	5	1	
11:30	120	101	1	5	
11:45	129	114	2	4	
12:00	140	122	4	7	1049
12:15	122	128	5	3	

Time	Thursday, January 19, 2023		
	Bikes on Road		Total
	Volume		
	SB	NB	
0:00	0	0	0
0:15	0	0	
0:30	0	0	
0:45	0	0	
1:00	0	0	0
1:15	0	0	
1:30	0	0	
1:45	0	0	
2:00	0	0	0
2:15	0	0	
2:30	0	0	
2:45	0	0	
3:00	0	0	0
3:15	0	0	
3:30	0	0	
3:45	0	0	
4:00	0	0	0
4:15	0	0	
4:30	0	0	
4:45	0	0	
5:00	0	0	0
5:15	0	0	
5:30	0	0	
5:45	0	0	
6:00	0	0	0
6:15	0	0	
6:30	0	0	
6:45	0	0	
7:00	0	0	0
7:15	0	0	
7:30	0	0	
7:45	0	0	
8:00	0	0	0
8:15	0	0	
8:30	0	0	
8:45	0	0	
9:00	0	0	0
9:15	0	0	
9:30	0	0	
9:45	0	0	
10:00	0	0	0
10:15	0	0	
10:30	0	0	
10:45	0	0	
11:00	0	0	0
11:15	0	0	
11:30	0	0	
11:45	0	0	
12:00	0	0	0
12:15	0	0	

12:30	129	113	6	4	1049
12:45	133	125	4	4	
13:00	113	112	5	8	971
13:15	122	113	5	9	
13:30	101	115	7	6	
13:45	116	133	3	3	
14:00	143	98	8	2	1099
14:15	121	119	5	3	
14:30	142	121	7	4	
14:45	144	172	5	5	
15:00	199	112	4	2	1451
15:15	218	122	12	7	
15:30	218	174	3	3	
15:45	200	170	5	2	
16:00	278	159	5	4	1773
16:15	268	168	5	3	
16:30	259	157	6	0	
16:45	259	198	4	0	
17:00	257	175	2	1	1685
17:15	251	195	3	1	
17:30	212	196	2	0	
17:45	221	166	2	1	
18:00	171	121	1	3	989
18:15	130	130	2	2	
18:30	122	92	4	2	
18:45	98	107	1	3	
19:00	113	93	1	0	677
19:15	82	87	2	0	
19:30	86	75	0	0	
19:45	68	69	0	1	
20:00	77	60	0	0	491
20:15	63	75	0	0	
20:30	49	62	0	0	
20:45	52	51	2	0	
21:00	50	40	0	1	351
21:15	53	37	0	1	
21:30	40	64	0	2	
21:45	32	29	1	1	
22:00	27	38	1	2	182
22:15	20	27	1	0	
22:30	21	12	1	0	
22:45	15	17	0	0	
23:00	12	19	0	1	122
23:15	8	22	0	0	
23:30	21	13	0	1	
23:45	12	13	0	0	
24-HOUR TOTAL	**8867**	**8525**	**209**	**209**	**17810**

12:30	0	0	0
12:45	0	0	
13:00	0	0	0
13:15	0	0	
13:30	0	0	
13:45	0	0	
14:00	0	0	0
14:15	0	0	
14:30	0	0	
14:45	0	0	
15:00	0	0	0
15:15	0	0	
15:30	0	0	
15:45	0	0	
16:00	0	0	0
16:15	0	0	
16:30	0	0	
16:45	0	0	
17:00	0	0	0
17:15	0	0	
17:30	0	0	
17:45	0	0	
18:00	0	0	0
18:15	0	0	
18:30	0	0	
18:45	0	0	
19:00	0	0	0
19:15	0	0	
19:30	0	0	
19:45	0	0	
20:00	0	0	0
20:15	0	0	
20:30	0	0	
20:45	0	0	
21:00	0	0	0
21:15	0	0	
21:30	0	0	
21:45	0	0	
22:00	0	0	0
22:15	0	0	
22:30	0	0	
22:45	0	0	
23:00	0	0	0
23:15	0	0	
23:30	0	0	
23:45	0	0	
24-HOUR TOTAL	**0**	**0**	**0**

Location: Campus Dr E/O 88th St
Date: 01/19/2023
Site Code: 6

Time	Thursday, January 19, 2023				
	Light Vehicles		Heavy Vehicles		Total
	Volume		Volume		
	WB	EB	WB	EB	
0:00	0	6	0	0	18
0:15	0	6	0	0	
0:30	0	4	0	0	
0:45	0	2	0	0	
1:00	0	3	0	0	9
1:15	0	2	0	0	
1:30	0	1	0	0	
1:45	0	3	0	0	
2:00	0	2	0	0	6
2:15	0	2	0	0	
2:30	0	1	0	0	
2:45	0	1	0	0	
3:00	0	0	0	0	3
3:15	0	2	0	0	
3:30	0	1	0	0	
3:45	0	0	0	0	
4:00	0	4	0	1	9
4:15	0	1	0	1	
4:30	0	2	0	0	
4:45	0	0	0	0	
5:00	0	1	0	1	9
5:15	0	4	0	0	
5:30	0	1	0	1	
5:45	0	1	0	0	
6:00	0	2	0	1	19
6:15	0	4	0	1	
6:30	0	1	0	1	
6:45	0	9	0	0	
7:00	1	12	1	0	407
7:15	9	55	1	0	
7:30	11	109	1	0	
7:45	58	137	6	6	
8:00	108	236	7	3	1309
8:15	103	272	1	6	
8:30	139	256	10	5	
8:45	93	66	3	1	
9:00	12	40	0	1	244
9:15	19	98	0	1	
9:30	31	17	0	2	
9:45	4	14	3	2	
10:00	11	17	1	0	147
10:15	10	29	4	2	
10:30	31	9	0	1	
10:45	6	24	0	2	
11:00	24	11	3	1	274
11:15	13	18	1	1	
11:30	118	15	1	0	
11:45	19	47	0	2	
12:00	27	50	1	1	305
12:15	39	17	1	0	

Time	Thursday, January 19, 2023		
	Bikes on Road		Total
	Volume		
	WB	EB	
0:00	0	0	0
0:15	0	0	
0:30	0	0	
0:45	0	0	
1:00	0	0	0
1:15	0	0	
1:30	0	0	
1:45	0	0	
2:00	0	0	0
2:15	0	0	
2:30	0	0	
2:45	0	0	
3:00	0	0	0
3:15	0	0	
3:30	0	0	
3:45	0	0	
4:00	0	0	0
4:15	0	0	
4:30	0	0	
4:45	0	0	
5:00	0	0	0
5:15	0	0	
5:30	0	0	
5:45	0	0	
6:00	0	0	0
6:15	0	0	
6:30	0	0	
6:45	0	0	
7:00	0	0	1
7:15	0	0	
7:30	0	0	
7:45	1	0	
8:00	0	0	0
8:15	0	0	
8:30	0	0	
8:45	0	0	
9:00	0	0	0
9:15	0	0	
9:30	0	0	
9:45	0	0	
10:00	0	0	0
10:15	0	0	
10:30	0	0	
10:45	0	0	
11:00	0	0	0
11:15	0	0	
11:30	0	0	
11:45	0	0	
12:00	0	0	0
12:15	0	0	

12:30	60	19	0	1	303
12:45	12	77	0	0	
13:00	16	43	0	0	159
13:15	7	10	1	1	
13:30	13	16	1	0	
13:45	11	40	0	0	
14:00	53	17	0	0	316
14:15	15	27	1	1	
14:30	22	67	0	3	
14:45	28	76	1	5	
15:00	230	47	8	3	860
15:15	111	62	3	4	
15:30	70	71	0	4	
15:45	128	112	6	1	
16:00	223	73	7	0	667
16:15	130	36	0	0	
16:30	82	31	0	1	
16:45	57	27	0	0	
17:00	27	27	0	0	330
17:15	69	23	1	1	
17:30	83	43	0	0	
17:45	36	20	0	0	
18:00	20	25	1	0	147
18:15	21	43	0	0	
18:30	9	18	0	0	
18:45	7	3	0	0	
19:00	7	3	1	1	42
19:15	2	1	0	0	
19:30	5	3	0	0	
19:45	9	10	0	0	
20:00	21	7	0	0	101
20:15	11	5	0	0	
20:30	35	3	0	0	
20:45	18	1	0	0	
21:00	18	0	0	0	44
21:15	10	1	0	0	
21:30	6	0	0	0	
21:45	9	0	0	0	
22:00	3	3	0	0	7
22:15	1	0	0	0	
22:30	0	0	0	0	
22:45	0	0	0	0	
23:00	0	0	0	0	4
23:15	1	0	0	0	
23:30	3	0	0	0	
23:45	0	0	0	0	
24-HOUR TOTAL	**2585**	**2705**	**76**	**70**	**5436**

12:30	0	0	0
12:45	0	0	
13:00	0	0	0
13:15	0	0	
13:30	0	0	
13:45	0	0	
14:00	0	0	0
14:15	0	0	
14:30	0	0	
14:45	0	0	
15:00	0	0	0
15:15	0	0	
15:30	0	0	
15:45	0	0	
16:00	0	0	0
16:15	0	0	
16:30	0	0	
16:45	0	0	
17:00	0	0	0
17:15	0	0	
17:30	0	0	
17:45	0	0	
18:00	0	0	0
18:15	0	0	
18:30	0	0	
18:45	0	0	
19:00	0	0	1
19:15	0	0	
19:30	1	0	
19:45	0	0	
20:00	0	0	0
20:15	0	0	
20:30	0	0	
20:45	0	0	
21:00	0	0	0
21:15	0	0	
21:30	0	0	
21:45	0	0	
22:00	0	0	0
22:15	0	0	
22:30	0	0	
22:45	0	0	
23:00	0	0	0
23:15	0	0	
23:30	0	0	
23:45	0	0	
24-HOUR TOTAL	**2**	**0**	**2**

Appendix D –
Level of Service Definitions

LEVEL OF SERVICE DEFINITIONS

In rating roadway and intersection operating conditions with existing or future traffic volumes, "Levels of Service" (LOS) A through F are used, with LOS A indicating very good operation and LOS F indicating poor operation. Levels of service at signalized and unsignalized intersections are closely associated with vehicle delays experienced in seconds per vehicle. More complete level of service definitions and delay data for signal and stop sign controlled intersections are contained in the following table for reference.

Level of Service Rating	Delay in seconds per vehicle *(a)*		Definition
	Signalized	Unsignalized	
A	0.0 to 10.0	0.0 to 10.0	Low vehicular traffic volumes; primarily free flow operations. Density is low and vehicles can freely maneuver within the traffic stream. Drivers are able to maintain their desired speeds with little or no delay.
B	10.1 to 20.0	10.1 to 15.0	Stable vehicular traffic volume flow with potential for some restriction of operating speeds due to traffic conditions. Vehicle maneuvering is only slightly restricted. The stopped delays are not bothersome and drivers are not subject to appreciable tension.
C	20.1 to 35.0	15.1 to 25.0	Stable traffic operations, however the ability for vehicles to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail, but adverse signal coordination or longer vehicle queues cause delays along the corridor.
D	35.1 to 55.0	25.1 to 35.0	Approaching unstable vehicular traffic flow where small increases in volume could cause substantial delays. Most drivers are restricted in ability to maneuver and selection of travel speeds due to congestion. Driver comfort and convenience are low, but tolerable.
E	55.1 to 80.0	35.1 to 50.0	Traffic operations characterized by significant approach delays and average travel speeds of one-half to one-third the free flow speed. Vehicular flow is unstable and there is potential for stoppages of brief duration. High signal density, extensive vehicle queuing, or corridor signal progression/timing are the typical causes of vehicle delays at signalized corridors.
F	> 80.0	> 50.0	Forced vehicular traffic flow and operations with high approach delays at critical intersections. Vehicle speeds are reduced substantially, and stoppages may occur for short or long periods of time because of downstream congestion.

(a) Delay ranges based on Highway Capacity Manual (6th Edition, 2016) criteria.

Appendix E –

Non-SOV References

Appendix: Trip Generation and Mode Share Peer Data

Commuter Travel Survey / Trip Rate Examples:

1. City of Louisville Transportation Master Plan (TMP), October 1, 2019
   https://www.louisvilleco.gov/home/showdocument?id=24728

   The TMP documented how commuters in Louisville and nearby communities travel to work. This data is based on US Census American Community Survey (https://www.census.gov/programs-surveys/acs). This data is commonly used by agencies across the Denver region as a baseline for TDM programs. The current data is shown in Figure 3.12 in the TMP on page 3-18 for year 2012 to 2016 estimates. Based on this data, approximately 28% of people who work in Louisville travel to work by non-SOV modes.

2. Trip Generation for Continuing Care Retirement Communities (CCRC); a Comparison of ITE Rates to Erickson Living Communities, 2007

   The Traffic Group, Inc. conducted trip generation studies in 2007 at four continuing care communities owned by Erickson Living. The trip rates were compared to ITE land use codes and found to generate at a consistent trip rate with the land use code #255 "Continuing Care Retirement Community" trip rate. The report also noted that shuttles to public transit and staggered work hours could further reduce the vehicular traffic generated by the site by up to 10-15%.

3. Commuting Solutions, 2016 Northwest Metro Region Mobility Report, July 2018
   https://commutingsolutions.org/wp-content/uploads/2016-Northwest-Region-Mobility-Report.pdf

   The mode share data bulleted on page 14 is based on employee commute survey data for employees who reside in Boulder, Louisville, Superior, Broomfield, and Westminster. The 2011-2015 five-year estimates indicate that approximately 22% of people who work in the US 36 corridor travel to work by non-SOV modes. Note that these statistics reflect data collected prior to the opening of the US 36 Express Lanes and the Flatiron Flyer BRT. Additional mode share on US 36 data for Louisville is provided in Table 2 on page 16, which indicates that approximately 26% of residents travel by non-SOV modes.

4. Environmental Performance Report 2014, National Renewable Energy Lab (NREL)
   https://www.nrel.gov/docs/fy15osti/64208.pdf

   NREL collected a lab-wide commuter survey and summarized the results in Table 8 on page 79 of the report. The 2014 mode survey found that approximately 29% of employees used non-SOV modes to travel to/from work (the telework employees, which make up 9%, were removed from the calculation).

5. Denver Tech Center (DTC) Trip Generation Summary, Fox Tuttle Transportation Group, January 2020 (attachment)

   Driveway count data collected at a mix of apartment, hotel, and office buildings in the South Denver Metro area were compared to the ITE trip generation estimates. As shown in Table 1 on page 2, in general this area generates trips at a lower rate than the ITE trip generation estimates. It should be noted that is unknown what level of TDM strategies (if any) are currently implemented at the buildings where counts were collected.

Trip Generation Analysis Studies:

The studies listed below indicate that baseline ITE trip rates generally overestimate trip generation estimates for mixed-use developments or developments near transit and/or with TDM programs.

1. National Cooperative Highway Research Program (NCHRP) 08-66: Trip-Generation Rates for Transportation Impact Analyses of Infill Developments

- https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=1616

2. National Cooperative Highway Research Program (NCHRP) NCHRP 08-51: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments

- https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=927

3. CDOT Traffic Analysis And Forecasting Guidelines "Locally Calibrated Trip Generation Rates or ITE trip rates"

- https://www.codot.gov/library/traffic/traffic-manuals-and-guidelines/traffic_analysis_forecasting_guidelines/traffic_analysis_forecasting_guidelines

4. Aspen Trip Generation and Methods

- http://www.apacolorado.org/article/nextgen-trip-reduction-mitigating-development-related-trips
- https://www.cityofaspen.com/DocumentCenter/View/2208/TIA-Guidelines

5. Mixed-Use Trip Generation Model, EPA Smart Growth, Fehr and Peers

- https://www.epa.gov/smartgrowth/mixed-use-trip-generation-model
- https://www.epa.gov/sites/production/files/2014-07/mxd_trip_generation_model.xlsx

6. Caltrans Project P359, Trip Generation Rates for Transportation Impact Analyses of Smart Growth Land Use Projects, Texas A&M Transportation Institute The Texas A&M University System, April 2017

- https://static.tti.tamu.edu/tti.tamu.edu/documents/TTI-2017-3.pdf

MEMORANDUM

To: Redtail Ridge Project Team

From: Bill Fox, PE and Emily Kotz, PE

Date: January 10, 2020

Subject: Denver Technology Center (DTC) Trip Generation Summary

Fox Tuttle Transportation Group collected trip generation data in September 2019 at a mix of office, residential, and hotel sites in the South Denver Metro Area. The sites were located within walking distance of the Belleview Station, Arapahoe at Village Center, or Lincoln Station. AM and PM peak period driveway counts were collected at apartments, hotels, and office buildings. This memorandum summarizes the data collected and was prepared for use in the Redtail Ridge project.

Locations where driveway count data was collected are listed below:

- Belleview Station
  - Extended Stay Hotel (158 rooms)
  - One Belleview Office Building (318,000 square feet) –*first floor retail*
  - Camden Belleview Station Apartments (270 dwelling units)
  - Cielo Apartments (201 dwelling units)
- Arapahoe at Village Center
  - Residence Inn (128 rooms)
  - 6312, 6363, 6399, 6501, 6340, 6360, 6380, and 6400 Fiddlers Green Offices (approximately 2,287,000 square feet of office)
- Lincoln Station
  - Camden Lincoln Station Apartments (267 dwelling units)

The actual observed rate was compared to the trip rates contained in the *Institute of Transportation Engineers (ITE) Trip Generation Manual* for land use #221 "Multifamily Housing (Mid-Rise)", #710 "General Office Building" and #312 "Business Hotel". Note that per the recommendations of the *ITE Handbook, 3rd Edition*, the office rate was calculated using the fitted curve for each building (R^2°value greater than 0.75) and the residential and hotel uses were calculated using the average rate (R^2°value less than 0.75).

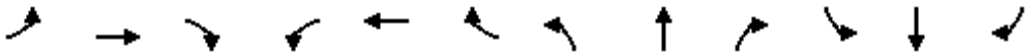
A summary of the driveway counts and ITE trip generation estimates are provided in Table 1. It should be noted that it is unknown what level of Travel Demand Management (TDM) strategies (if any) are implemented at the buildings where driveway counts were collected.

Table 1 – Comparison of Driveway Counts and. ITE Trip Generation Estimates

Location (Land Use)	Size	AM Peak Hour Trips			PM Peak Hour Trips		
		Total (Counts)	Total (ITE)	% Diff.	Total (Counts)	Total (ITE)	% Diff.
Hotel	286 rooms	73	112	-35%	80	92	-13%
Multifamily Apartments	537 DU	182	266	-32%	247	324	-24%
Offices	2,605 KSF	2,650	2,676	-1%	2,443	2,808	-13%

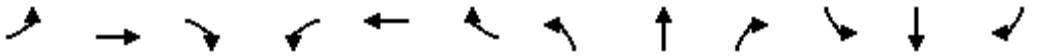
Results of the trip generation comparison in Table 1 indicates that in general this area generates trips at a lower rate than the ITE trip generation estimates. The ITE rates are based primarily on studies that were performed in suburban centers where there is a lack of transit and alternative mode options. Therefore, it was expected that the driveway counts collected near the RTD stations would in general be less than the ITE trip rates, since those areas have access to transit and include a mix of uses within a high-density development.

Appendix F – Intersection Capacity Worksheets (Synchro) Existing



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	48	16	52	355	44	148	124	883	456	181	657	72
v/c Ratio	0.23	0.16	0.03	0.66	0.21	0.48	0.47	0.45	0.42	0.57	0.22	0.07
Control Delay	56.3	56.8	0.0	53.3	48.3	12.2	58.4	18.3	3.1	58.8	14.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	56.8	0.0	53.3	48.3	12.2	58.4	18.3	3.1	58.8	14.2	0.1
Queue Length 50th (ft)	18	12	0	131	33	0	48	186	0	70	79	0
Queue Length 95th (ft)	26	27	0	164	60	46	68	320	34	84	142	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	274	188	1579	864	507	532	357	1984	1074	368	2930	987
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.09	0.03	0.41	0.09	0.28	0.35	0.45	0.42	0.49	0.22	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	11	38	295	38	124	98	777	374	132	631	43
Future Volume (veh/h)	30	11	38	295	38	124	98	777	374	132	631	43
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	1885	1885	1885	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	16	0	355	44	0	124	883	0	181	657	0
Peak Hour Factor	0.63	0.69	0.73	0.83	0.86	0.84	0.79	0.88	0.82	0.73	0.96	0.60
Percent Heavy Veh, %	1	1	1	3	3	3	2	2	2	2	2	2
Cap, veh/h	203	84		427	205		198	2025		239	2971	
Arrive On Green	0.06	0.04	0.00	0.12	0.11	0.00	0.06	0.57	0.00	0.07	0.58	0.00
Sat Flow, veh/h	3483	1885	1598	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	48	16	0	355	44	0	124	883	0	181	657	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.6	1.0	0.0	12.1	2.6	0.0	4.2	17.1	0.0	6.2	7.4	0.0
Cycle Q Clear(g_c), s	1.6	1.0	0.0	12.1	2.6	0.0	4.2	17.1	0.0	6.2	7.4	0.0
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	203	84		427	205		198	2025		239	2971	
V/C Ratio(X)	0.24	0.19		0.83	0.21		0.63	0.44		0.76	0.22	
Avail Cap(c_a), veh/h	276	189		871	510		360	2025		360	2971	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.9	55.3	0.0	51.3	48.6	0.0	55.3	14.8	0.0	54.8	12.0	0.0
Incr Delay (d2), s/veh	0.4	1.1	0.0	3.2	0.5	0.0	2.4	0.7	0.0	3.7	0.2	0.0
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(50%),veh/ln	0.7	0.5	0.0	5.3	1.2	0.0	1.9	6.8	0.0	2.8	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.4	56.3	0.0	54.5	49.1	0.0	57.7	15.4	0.0	58.6	12.2	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		64			399			1007			838	
Approach Delay, s/veh		54.9			53.9			20.7			22.2	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	74.4	20.5	11.3	12.4	75.8	12.5	19.3
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	8.2	19.1	14.1	3.0	6.2	9.4	3.6	4.6
Green Ext Time (p_c), s	0.2	11.0	0.8	0.0	0.1	9.1	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	27.9
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



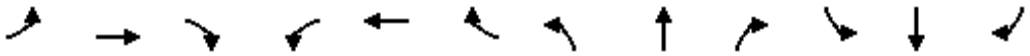
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	280	470	529	406	394	470
v/c Ratio	0.34	0.40	0.69	0.17	0.72	0.30
Control Delay	27.7	2.2	15.0	8.1	56.3	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	2.2	15.0	8.1	56.3	0.5
Queue Length 50th (ft)	127	0	136	44	148	0
Queue Length 95th (ft)	286	35	305	88	142	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	822	1180	839	2406	549	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.40	0.63	0.17	0.72	0.30

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	241	418	423	292	244	409
Future Volume (vph)	241	418	423	292	244	409
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	1752	3505	3400	1568
Flt Permitted	1.00	1.00	0.46	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	846	3505	3400	1568
Peak-hour factor, PHF	0.86	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	280	470	529	406	394	470
RTOR Reduction (vph)	0	200	0	0	0	0
Lane Group Flow (vph)	280	270	529	406	394	470
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	49.5	68.9	78.4	78.4	19.4	120.0
Effective Green, g (s)	49.5	68.9	78.4	78.4	19.4	120.0
Actuated g/C Ratio	0.41	0.57	0.65	0.65	0.16	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	761	900	733	2289	549	1568
v/s Ratio Prot	0.15	0.05	c0.14	0.12	c0.12	
v/s Ratio Perm		0.12	c0.33			c0.30
v/c Ratio	0.37	0.30	0.72	0.18	0.72	0.30
Uniform Delay, d1	24.4	13.1	11.5	8.2	47.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1	3.0	0.2	3.7	0.5
Delay (s)	25.8	13.2	14.5	8.3	51.4	0.5
Level of Service	C	B	B	A	D	A
Approach Delay (s)	17.9			11.8	23.7	
Approach LOS	B			B	C	

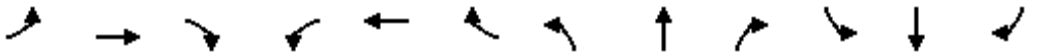
Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	263	339	149	196	445	84	223	502	397	80	560	365
v/c Ratio	0.56	0.29	0.24	0.40	0.43	0.15	0.64	0.44	0.25	0.23	0.61	0.54
Control Delay	22.8	30.0	5.8	20.1	34.2	2.9	30.9	33.1	0.4	22.6	41.3	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	30.0	5.8	20.1	34.2	2.9	30.9	33.1	0.4	22.6	41.3	6.9
Queue Length 50th (ft)	115	97	0	82	139	0	105	155	0	34	193	0
Queue Length 95th (ft)	174	133	35	118	146	10	113	227	0	65	264	19
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	531	1167	622	602	1044	549	370	1153	1583	465	917	681
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.29	0.24	0.33	0.43	0.15	0.60	0.44	0.25	0.17	0.61	0.54

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	247	281	122	163	307	68	138	472	361	67	498	270
Future Volume (veh/h)	247	281	122	163	307	68	138	472	361	67	498	270
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	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	263	339	149	196	445	84	223	502	0	80	560	365
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.74
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	463	1196	533	468	1084	484	333	1153		342	947	422
Arrive On Green	0.12	0.33	0.33	0.09	0.31	0.31	0.11	0.32	0.00	0.05	0.26	0.26
Sat Flow, veh/h	1795	3582	1598	1753	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	263	339	149	196	445	84	223	502	0	80	560	365
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1753	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	10.8	7.6	7.5	8.2	11.0	4.3	9.6	12.2	0.0	3.5	14.9	23.9
Cycle Q Clear(g_c), s	10.8	7.6	7.5	8.2	11.0	4.3	9.6	12.2	0.0	3.5	14.9	23.9
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	463	1196	533	468	1084	484	333	1153		342	947	422
V/C Ratio(X)	0.57	0.28	0.28	0.42	0.41	0.17	0.67	0.44		0.23	0.59	0.86
Avail Cap(c_a), veh/h	578	1196	533	621	1084	484	387	1153		504	947	422
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	26.9	26.8	22.0	29.9	27.6	25.5	29.1	0.0	27.4	35.2	38.4
Incr Delay (d2), s/veh	0.4	0.6	1.3	0.2	1.2	0.8	2.4	1.2	0.0	0.1	2.7	20.3
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(50%),veh/ln	4.4	3.3	3.0	3.3	4.7	1.7	4.1	5.2	0.0	1.5	6.7	11.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	27.5	28.1	22.2	31.1	28.4	27.8	30.3	0.0	27.5	37.9	58.8
LnGrp LOS	C	C	C	C	C	C	C	C		C	D	E
Approach Vol, veh/h		751			725			725			1005	
Approach Delay, s/veh		25.8			28.4			29.6			44.6	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.4	42.6	10.1	41.6	18.0	40.0	16.7	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	10.2	9.6	5.5	14.2	12.8	13.0	11.6	25.9
Green Ext Time (p_c), s	0.2	2.6	0.0	2.7	0.2	3.1	0.1	1.5

Intersection Summary	
HCM 6th Ctrl Delay	33.1
HCM 6th LOS	C

Notes

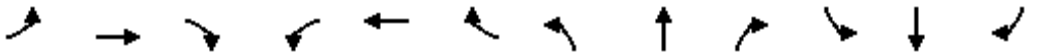
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	72	276	233	406	112	307	512	522	188	428
v/c Ratio	0.31	0.82	0.69	0.69	0.23	0.60	0.53	0.63	0.31	0.53
Control Delay	30.0	63.8	39.5	22.3	21.3	42.2	4.5	25.0	32.9	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	63.8	39.5	22.3	21.3	42.2	4.5	25.0	32.9	6.4
Queue Length 50th (ft)	28	167	101	84	37	166	0	96	85	0
Queue Length 95th (ft)	90	201	#306	0	110	305	8	197	186	3
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	347	336	337	588	589	511	959	842	610	806
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.82	0.69	0.69	0.19	0.60	0.53	0.62	0.31	0.53

Intersection Summary

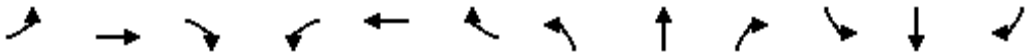
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	134	22	205	17	210	95	230	384	402	139	308
Future Volume (vph)	64	134	22	205	17	210	95	230	384	402	139	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.98		1.00	0.87		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)	1786	1853		1703	1520		1770	1863	1565	3428	1863	1583
Flt Permitted	0.26	1.00		0.23	1.00		0.64	1.00	1.00	0.31	1.00	1.00
Satd. Flow (perm)	494	1853		411	1520		1191	1863	1565	1114	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.85	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	72	248	28	233	44	362	112	307	512	522	188	428
RTOR Reduction (vph)	0	2	0	0	188	0	0	0	307	0	0	293
Lane Group Flow (vph)	72	274	0	233	218	0	112	307	205	522	188	135
Confl. Peds. (#/hr)	2					2			8	8		
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	27.7	20.5		40.8	28.6		38.6	29.6	44.9	49.3	35.3	35.3
Effective Green, g (s)	27.7	20.5		40.8	28.6		38.6	29.6	44.9	49.3	35.3	35.3
Actuated g/C Ratio	0.25	0.18		0.36	0.26		0.34	0.26	0.40	0.44	0.31	0.31
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	205	338		325	387		456	491	626	793	586	498
v/s Ratio Prot	0.02	c0.15		c0.10	0.14		0.02	0.16	0.04	c0.09	0.10	
v/s Ratio Perm	0.06			0.16			0.06		0.09	c0.20		0.09
v/c Ratio	0.35	0.81		0.72	0.56		0.25	0.63	0.33	0.66	0.32	0.27
Uniform Delay, d1	33.6	43.9		27.7	36.3		25.7	36.4	23.2	22.3	29.3	28.8
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	1.0	13.3		7.3	1.9		0.2	5.9	0.3	2.0	1.4	1.3
Delay (s)	34.7	57.2		35.0	38.2		25.9	42.3	23.5	24.3	30.7	30.1
Level of Service	C	E		D	D		C	D	C	C	C	C
Approach Delay (s)		52.6			37.0			30.0			27.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	112.1	Sum of lost time (s)	26.5
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



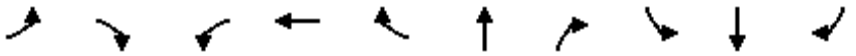
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	55	110	1288	48	151	37	1182	408	24	56	767	127
v/c Ratio	0.28	0.54	0.81	0.15	0.45	0.02	0.91	0.20	0.02	0.25	0.89	0.08
Control Delay	47.9	55.4	4.7	41.6	46.7	0.0	37.0	4.2	0.0	47.3	51.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	55.4	4.7	41.6	46.7	0.0	37.0	4.2	0.0	47.3	51.2	0.1
Queue Length 50th (ft)	17	36	0	14	48	0	231	17	0	17	251	0
Queue Length 95th (ft)	36	58	0	30	71	0	196	29	m0	26	247	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	358	369	1568	1298	2076	1568	225	858	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.31	0.81	0.13	0.41	0.02	0.91	0.20	0.02	0.25	0.89	0.08

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	91	644	42	124	30	733	343	16	35	560	114
Future Volume (vph)	48	91	644	42	124	30	733	343	16	35	560	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.0	6.0	4.0	5.0	6.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	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)	3433	3539	1583	3400	3505	1568	3400	3505	1568	3400	3505	1568
Flt Permitted	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 (perm)	3433	3539	1583	3400	3505	1568	3400	3505	1568	3400	3505	1568
Peak-hour factor, PHF	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Adj. Flow (vph)	55	110	1288	48	151	37	1182	408	24	56	767	127
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	55	110	1288	48	151	37	1182	408	24	56	767	127
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free	Split	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	5.8	5.8	100.0	9.6	9.6	100.0	38.2	58.2	100.0	5.4	24.4	100.0
Effective Green, g (s)	5.8	5.8	100.0	9.6	9.6	100.0	38.2	58.2	100.0	5.4	24.4	100.0
Actuated g/C Ratio	0.06	0.06	1.00	0.10	0.10	1.00	0.38	0.58	1.00	0.05	0.24	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	0.2	0.2		3.0	3.0		2.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	199	205	1583	326	336	1568	1298	2039	1568	183	855	1568
v/s Ratio Prot	0.02	0.03		0.01	0.04		c0.35	0.12		0.02	0.22	
v/s Ratio Perm			c0.81			0.02			0.02			0.08
v/c Ratio	0.28	0.54	0.81	0.15	0.45	0.02	0.91	0.20	0.02	0.31	0.90	0.08
Uniform Delay, d1	45.1	45.8	0.0	41.4	42.7	0.0	29.3	9.9	0.0	45.5	36.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.38	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	1.4	4.7	0.2	1.0	0.0	9.0	0.2	0.0	1.0	14.1	0.1
Delay (s)	45.4	47.1	4.7	41.7	43.7	0.0	33.9	3.9	0.0	46.4	50.7	0.1
Level of Service	D	D	A	D	D	A	C	A	A	D	D	A
Approach Delay (s)		9.5			36.4			25.8			43.7	
Approach LOS		A			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

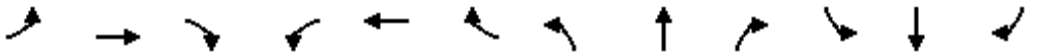


Lane Group	EBL	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	4	8	196	4	76	1240	192	68	1227	4
v/c Ratio	0.02	0.01	0.54	0.02	0.23	0.53	0.17	0.33	0.47	0.00
Control Delay	44.0	0.0	48.3	41.0	1.6	9.4	1.5	50.1	3.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	0.0	48.3	41.0	1.6	9.4	1.5	50.1	3.6	0.0
Queue Length 50th (ft)	1	0	60	2	0	212	10	22	77	0
Queue Length 95th (ft)	3	0	#107	4	0	283	25	m27	m127	m0
Internal Link Dist (ft)				679		647			2055	
Turn Bay Length (ft)	125	125	250		500		250	550		550
Base Capacity (vph)	277	1599	366	198	333	2329	1106	215	2618	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.54	0.02	0.23	0.53	0.17	0.32	0.47	0.00

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	0	2	184	1	48	0	1042	182	54	1190	2
Future Volume (veh/h)	2	0	2	184	1	48	0	1042	182	54	1190	2
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	1885	1885	1885	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	4	0	0	196	4	76	0	1240	192	68	1227	0
Peak Hour Factor	0.50	0.25	0.25	0.94	0.25	0.63	0.25	0.84	0.95	0.79	0.97	0.50
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	10		240	130	110	3	2366	1055	115	2626	
Arrive On Green	0.01	0.00	0.00	0.07	0.07	0.07	0.00	0.67	0.67	0.03	0.74	0.00
Sat Flow, veh/h	3483	1885	1598	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	4	0	0	196	4	76	0	1240	192	68	1227	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.1	0.0	0.0	5.6	0.2	4.7	0.0	17.8	4.6	2.0	13.6	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	5.6	0.2	4.7	0.0	17.8	4.6	2.0	13.6	0.0
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	18	10		240	130	110	3	2366	1055	115	2626	
V/C Ratio(X)	0.22	0.00		0.82	0.03	0.69	0.00	0.52	0.18	0.59	0.47	
Avail Cap(c_a), veh/h	279	151		240	130	110	549	2366	1055	206	2626	
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	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.5	0.0	0.0	45.9	43.3	45.4	0.0	8.3	6.2	47.6	5.0	0.0
Incr Delay (d2), s/veh	7.0	0.0	0.0	19.7	0.1	17.6	0.0	0.8	0.4	1.8	0.6	0.0
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(50%),veh/ln	0.1	0.0	0.0	3.0	0.1	2.4	0.0	5.6	1.3	0.8	3.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.6	0.0	0.0	65.5	43.5	63.0	0.0	9.2	6.5	49.4	5.6	0.0
LnGrp LOS	E	A		E	D	E	A	A	A	D	A	
Approach Vol, veh/h		4			276			1432			1295	
Approach Delay, s/veh		56.6			64.5			8.8			7.9	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	73.1		6.5	0.0	80.5		13.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	57.0		8.0	16.0	47.0		7.0				
Max Q Clear Time (g_c+I1), s	4.0	19.8		2.1	0.0	15.6		7.6				
Green Ext Time (p_c), s	0.0	11.7		0.0	0.0	10.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Notes

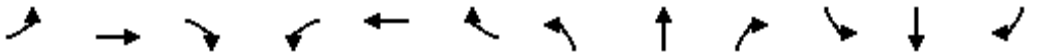
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	98	98	643	214	701	1092	487
v/c Ratio	0.58	0.57	0.41	0.51	0.25	0.33	0.41
Control Delay	55.5	55.1	0.8	20.0	2.6	6.0	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	55.1	0.8	20.0	2.6	6.0	2.2
Queue Length 50th (ft)	64	63	0	36	37	97	12
Queue Length 95th (ft)	103	93	0	139	57	114	11
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	468	2752	3280	1191
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.32	0.41	0.46	0.25	0.33	0.41

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	151	9	572	188	652	0	0	972	404
Future Volume (vph)	0	0	0	151	9	572	188	652	0	0	972	404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1679	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.22	1.00			1.00	1.00
Satd. Flow (perm)				1665	1679	1568	405	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Adj. Flow (vph)	0	0	0	184	12	643	214	701	0	0	1092	487
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	169
Lane Group Flow (vph)	0	0	0	98	98	643	214	701	0	0	1092	318
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.2	10.2	100.0	77.8	77.8			65.2	65.2
Effective Green, g (s)				10.2	10.2	100.0	77.8	77.8			65.2	65.2
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.65	0.65
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				169	171	1568	418	2753			3283	1022
v/s Ratio Prot							0.04	0.20			0.22	
v/s Ratio Perm				0.06	0.06	c0.41	c0.36					0.20
v/c Ratio				0.58	0.57	0.41	0.51	0.25			0.33	0.31
Uniform Delay, d1				42.9	42.8	0.0	3.5	3.1			7.7	7.6
Progression Factor				1.00	1.00	1.00	5.35	0.70			0.69	1.34
Incremental Delay, d2				3.0	2.9	0.8	0.4	0.2			0.3	0.7
Delay (s)				45.8	45.7	0.8	19.4	2.3			5.6	10.9
Level of Service				D	D	A	B	A			A	B
Approach Delay (s)		0.0			11.3			6.3			7.2	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	97	99	199	751	60	297	924
v/c Ratio	0.57	0.58	0.13	0.36	0.06	0.67	0.34
Control Delay	55.1	55.3	0.2	11.9	1.5	51.4	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	55.3	0.2	11.9	1.5	51.4	4.4
Queue Length 50th (ft)	63	64	0	120	0	74	63
Queue Length 95th (ft)	108	77	0	194	8	107	74
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	316	1553	2109	978	680	2722
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.31	0.13	0.36	0.06	0.44	0.34

Intersection Summary

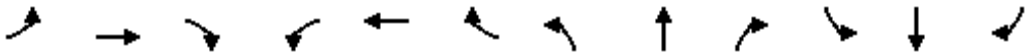
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	10	167	0	0	0	0	683	49	273	850	0
Future Volume (vph)	157	10	167	0	0	0	0	683	49	273	850	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1666	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1666	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.87	0.63	0.84	0.92	0.92	0.92	0.92	0.91	0.82	0.92	0.92	0.92
Adj. Flow (vph)	180	16	199	0	0	0	0	751	60	297	924	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	24	0	0	0
Lane Group Flow (vph)	97	99	199	0	0	0	0	751	36	297	924	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	10.3	10.3	100.0					59.6	59.6	13.1	77.7	
Effective Green, g (s)	10.3	10.3	100.0					59.6	59.6	13.1	77.7	
Actuated g/C Ratio	0.10	0.10	1.00					0.60	0.60	0.13	0.78	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	169	171	1553					2109	943	445	2723	
v/s Ratio Prot								c0.21		c0.09	0.26	
v/s Ratio Perm	0.06	0.06	0.13						0.02			
v/c Ratio	0.57	0.58	0.13					0.36	0.04	0.67	0.34	
Uniform Delay, d1	42.8	42.8	0.0					10.4	8.3	41.4	3.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.07	1.10	
Incremental Delay, d2	2.9	2.9	0.2					0.5	0.1	2.8	0.3	
Delay (s)	45.7	45.7	0.2					10.8	8.4	47.1	4.1	
Level of Service	D	D	A					B	A	D	A	
Approach Delay (s)		22.8			0.0			10.7			14.5	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	6.0
Intersection LOS	A

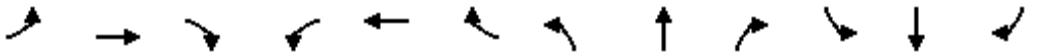
Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	507	604	318
Demand Flow Rate, veh/h	512	616	325
Vehicles Circulating, veh/h	195	330	160
Vehicles Exiting, veh/h	290	377	786
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	5.4	7.3	4.3
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.645	0.355	0.260	0.740	0.600	0.400
Follow-Up Headway, s	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
Entry Flow, veh/h	330	182	160	456	195	130
Cap Entry Lane, veh/h	1128	1203	996	1073	1165	1240
Entry HV Adj Factor	0.991	0.990	0.980	0.980	0.979	0.977
Flow Entry, veh/h	327	180	157	447	191	127
Cap Entry, veh/h	1118	1191	976	1051	1141	1211
V/C Ratio	0.293	0.151	0.161	0.425	0.167	0.105
Control Delay, s/veh	6.0	4.3	5.2	8.1	4.6	3.8
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	2	1	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	72	72	132	567	89	88	147	852	456	212	1077	145
v/c Ratio	0.29	0.43	0.08	0.81	0.22	0.18	0.52	0.57	0.49	0.57	0.48	0.18
Control Delay	54.1	57.5	0.1	52.1	36.5	0.8	57.1	28.8	4.6	53.8	24.0	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	57.5	0.1	52.1	36.5	0.8	57.1	28.8	4.6	53.8	24.0	2.3
Queue Length 50th (ft)	26	50	0	202	52	0	53	250	0	76	204	0
Queue Length 95th (ft)	46	81	0	275	75	0	89	371	59	119	275	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	406	247	1578	862	506	553	309	1485	922	504	2266	794
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.29	0.08	0.66	0.18	0.16	0.48	0.57	0.49	0.42	0.48	0.18

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	53	124	510	62	74	129	792	397	193	1002	81
Future Volume (veh/h)	58	53	124	510	62	74	129	792	397	193	1002	81
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	72	72	0	567	89	0	147	852	0	212	1077	0
Peak Hour Factor	0.81	0.74	0.94	0.90	0.70	0.84	0.88	0.93	0.87	0.91	0.93	0.56
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	236	125		654	351		233	1580		284	2346	
Arrive On Green	0.07	0.07	0.00	0.19	0.19	0.00	0.07	0.44	0.00	0.08	0.46	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	72	72	0	567	89	0	147	852	0	212	1077	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.0	3.8	0.0	16.3	4.2	0.0	4.2	18.0	0.0	6.1	14.8	0.0
Cycle Q Clear(g_c), s	2.0	3.8	0.0	16.3	4.2	0.0	4.2	18.0	0.0	6.1	14.8	0.0
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	236	125		654	351		233	1580		284	2346	
V/C Ratio(X)	0.30	0.58		0.87	0.25		0.63	0.54		0.75	0.46	
Avail Cap(c_a), veh/h	422	256		895	512		321	1580		524	2346	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.7	46.7	0.0	40.6	35.8	0.0	46.9	21.1	0.0	46.3	19.3	0.0
Incr Delay (d2), s/veh	0.5	4.1	0.0	6.2	0.4	0.0	2.1	1.3	0.0	2.9	0.6	0.0
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(50%),veh/ln	0.9	1.9	0.0	7.3	1.9	0.0	1.9	7.5	0.0	2.7	5.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	50.9	0.0	46.8	36.2	0.0	49.0	22.5	0.0	49.2	20.0	0.0
LnGrp LOS	D	D		D	D		D	C		D	B	
Approach Vol, veh/h		144			656			999			1289	
Approach Delay, s/veh		48.6			45.4			26.4			24.8	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	51.5	24.9	12.8	12.4	53.0	12.5	25.2
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	8.1	20.0	18.3	5.8	6.2	16.8	4.0	6.2
Green Ext Time (p_c), s	0.3	10.0	1.1	0.1	0.1	15.4	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	30.8
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	491	317	318	521	298	681
v/c Ratio	0.50	0.28	0.51	0.20	0.65	0.43
Control Delay	20.0	1.4	8.0	5.1	48.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	1.4	8.0	5.1	48.0	0.8
Queue Length 50th (ft)	180	0	48	42	94	0
Queue Length 95th (ft)	399	13	125	83	132	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	981	1322	642	2609	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.24	0.50	0.20	0.31	0.43

Intersection Summary

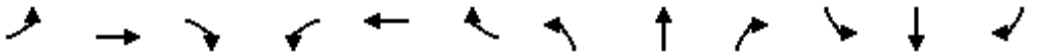
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	447	247	283	417	289	463
Future Volume (vph)	447	247	283	417	289	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	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
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)	1845	1552	1787	3574	3467	1599
Flt Permitted	1.00	1.00	0.32	1.00	0.95	1.00
Satd. Flow (perm)	1845	1552	607	3574	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	491	317	318	521	298	681
RTOR Reduction (vph)	0	119	0	0	0	0
Lane Group Flow (vph)	491	198	318	521	298	681
Confl. Peds. (#/hr)		1			33	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	49.2	62.4	69.0	69.0	13.2	100.0
Effective Green, g (s)	49.2	62.4	69.0	69.0	13.2	100.0
Actuated g/C Ratio	0.49	0.62	0.69	0.69	0.13	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	907	968	593	2466	457	1599
v/s Ratio Prot	0.27	0.03	0.08	0.15	c0.09	
v/s Ratio Perm		0.10	c0.29			c0.43
v/c Ratio	0.54	0.20	0.54	0.21	0.65	0.43
Uniform Delay, d1	17.6	8.1	8.3	5.6	41.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.0	0.5	0.2	2.5	0.8
Delay (s)	19.9	8.1	8.8	5.8	43.8	0.8
Level of Service	B	A	A	A	D	A
Approach Delay (s)	15.3			7.0	13.9	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	416	400	190	447	453	139	72	649	185	99	581	243
v/c Ratio	0.75	0.34	0.29	0.76	0.38	0.22	0.28	0.70	0.12	0.43	0.58	0.39
Control Delay	27.8	34.7	5.6	28.6	34.9	6.1	30.6	49.9	0.1	33.9	44.4	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	34.7	5.6	28.6	34.9	6.1	30.6	49.9	0.1	33.9	44.4	6.6
Queue Length 50th (ft)	202	138	0	222	156	0	41	273	0	57	235	0
Queue Length 95th (ft)	257	192	39	327	206	32	58	350	0	85	304	67
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	597	1182	655	615	1204	623	346	922	1599	296	1010	625
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.34	0.29	0.73	0.38	0.22	0.21	0.70	0.12	0.33	0.58	0.39

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	337	388	156	411	390	111	50	578	168	77	517	233
Future Volume (veh/h)	337	388	156	411	390	111	50	578	168	77	517	233
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	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	416	400	190	447	453	139	72	649	0	99	581	243
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	563	1199	535	583	1237	545	218	934		228	973	434
Arrive On Green	0.17	0.34	0.34	0.18	0.35	0.35	0.04	0.26	0.00	0.05	0.27	0.27
Sat Flow, veh/h	1781	3554	1585	1781	3554	1565	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	416	400	190	447	453	139	72	649	0	99	581	243
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1565	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	19.7	11.0	11.8	21.1	12.4	8.3	3.8	21.3	0.0	5.3	18.5	17.2
Cycle Q Clear(g_c), s	19.7	11.0	11.8	21.1	12.4	8.3	3.8	21.3	0.0	5.3	18.5	17.2
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	563	1199	535	583	1237	545	218	934		228	973	434
V/C Ratio(X)	0.74	0.33	0.36	0.77	0.37	0.26	0.33	0.70		0.43	0.60	0.56
Avail Cap(c_a), veh/h	605	1199	535	606	1237	545	350	934		336	973	434
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	32.3	32.5	21.4	31.8	30.4	34.3	43.5	0.0	34.4	41.1	40.6
Incr Delay (d2), s/veh	3.7	0.8	1.8	5.0	0.8	1.1	0.3	4.3	0.0	0.5	2.7	5.2
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(50%),veh/ln	8.6	4.8	4.7	9.4	5.5	3.3	1.7	9.8	0.0	2.3	8.3	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.5	33.0	34.4	26.4	32.6	31.5	34.6	47.8	0.0	34.9	43.8	45.8
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	D
Approach Vol, veh/h		1006			1039			721			923	
Approach Delay, s/veh		30.2			29.8			46.5			43.4	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.3	50.0	12.1	40.0	26.9	51.4	10.4	41.7
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	23.1	13.8	7.3	23.3	21.7	14.4	5.8	20.5
Green Ext Time (p_c), s	0.2	3.4	0.1	3.0	0.3	3.6	0.0	3.8

Intersection Summary	
HCM 6th Ctrl Delay	36.6
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



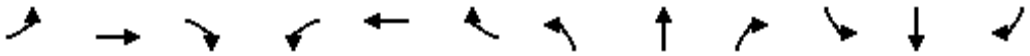
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	281	211	327	362	16	268	91	113	327	76
v/c Ratio	0.71	0.62	0.83	0.78	0.03	0.43	0.11	0.12	0.39	0.10
Control Delay	38.0	15.1	46.6	17.6	19.9	30.8	4.2	17.3	24.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.0	15.1	46.6	17.6	19.9	30.8	4.2	17.3	24.2	0.3
Queue Length 50th (ft)	106	1	128	2	4	95	0	12	88	0
Queue Length 95th (ft)	211	0	#292	0	15	260	8	58	361	0
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	397	511	394	605	632	623	854	1076	842	772
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.41	0.83	0.60	0.03	0.43	0.11	0.11	0.39	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	1	144	232	1	265	8	204	60	106	281	59
Future Volume (vph)	188	1	144	232	1	265	8	204	60	106	281	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.93		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.85		1.00	0.85		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)	1762	1586		1752	1455		1770	1863	1558	3383	1845	1531
Flt Permitted	0.45	1.00		0.45	1.00		0.56	1.00	1.00	0.44	1.00	1.00
Satd. Flow (perm)	843	1586		838	1455		1046	1863	1558	1582	1845	1531
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	281	2	209	327	4	358	16	268	91	113	327	76
RTOR Reduction (vph)	0	190	0	0	326	0	0	0	44	0	0	44
Lane Group Flow (vph)	281	21	0	327	36	0	16	268	47	113	327	32
Confl. Peds. (#/hr)	10					10			19	19		
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	24.5	8.8		24.5	8.8		35.8	34.9	50.6	47.3	41.4	41.4
Effective Green, g (s)	24.5	8.8		24.5	8.8		35.8	34.9	50.6	47.3	41.4	41.4
Actuated g/C Ratio	0.25	0.09		0.25	0.09		0.36	0.36	0.52	0.48	0.42	0.42
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	357	142		355	130		388	662	803	898	778	646
v/s Ratio Prot	0.13	0.01		c0.15	0.02		0.00	0.14	0.01	c0.01	c0.18	
v/s Ratio Perm	0.07			c0.08			0.01		0.02	0.05		0.02
v/c Ratio	0.79	0.15		0.92	0.28		0.04	0.40	0.06	0.13	0.42	0.05
Uniform Delay, d1	33.0	41.2		34.4	41.7		20.0	23.8	11.9	14.2	19.9	16.7
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	10.9	0.5		28.6	1.2		0.0	1.8	0.0	0.1	1.7	0.1
Delay (s)	43.9	41.7		63.0	42.9		20.0	25.6	11.9	14.2	21.6	16.9
Level of Service	D	D		E	D		B	C	B	B	C	B
Approach Delay (s)		42.9			52.4			22.0			19.3	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	98.1	Sum of lost time (s)	26.5
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	110	194	953	27	131	69	1256	869	63	31	433	56
v/c Ratio	0.39	0.67	0.60	0.09	0.41	0.04	0.98	0.41	0.04	0.14	0.51	0.04
Control Delay	47.1	56.0	1.6	41.3	46.4	0.1	53.0	8.6	0.0	45.3	35.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.1	56.0	1.6	41.3	46.4	0.1	53.0	8.6	0.0	45.3	35.3	0.0
Queue Length 50th (ft)	35	64	0	8	42	0	426	116	0	9	126	0
Queue Length 95th (ft)	60	98	0	13	68	0	201	88	0	21	156	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	356	367	1599	1279	2136	1599	226	857	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.36	0.60	0.08	0.36	0.04	0.98	0.41	0.04	0.14	0.51	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	184	791	16	115	54	628	626	43	24	355	53
Future Volume (veh/h)	109	184	791	16	115	54	628	626	43	24	355	53
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	110	194	0	27	131	0	1256	869	0	31	433	0
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	259	267		201	207		1010	2273		80	1281	
Arrive On Green	0.07	0.07	0.00	0.06	0.06	0.00	0.29	0.63	0.00	0.02	0.36	0.00
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	110	194	0	27	131	0	1256	869	0	31	433	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.0	5.3	0.0	0.7	3.6	0.0	29.0	11.7	0.0	0.9	8.8	0.0
Cycle Q Clear(g_c), s	3.0	5.3	0.0	0.7	3.6	0.0	29.0	11.7	0.0	0.9	8.8	0.0
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	259	267		201	207		1010	2273		80	1281	
V/C Ratio(X)	0.42	0.73		0.13	0.63		1.24	0.38		0.39	0.34	
Avail Cap(c_a), veh/h	522	537		348	358		1010	2273		209	1281	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.2	45.3	0.0	44.7	46.1	0.0	35.5	8.8	0.0	48.1	23.5	0.0
Incr Delay (d2), s/veh	0.4	1.4	0.0	0.3	3.2	0.0	118.0	0.5	0.0	3.0	0.7	0.0
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(50%),veh/ln	1.3	2.3	0.0	0.3	1.7	0.0	28.0	3.9	0.0	0.4	3.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.6	46.7	0.0	45.0	49.2	0.0	153.5	9.3	0.0	51.1	24.2	0.0
LnGrp LOS	D	D		D	D		F	A		D	C	
Approach Vol, veh/h		304			158			2125			464	
Approach Delay, s/veh		46.0			48.5			94.5			26.0	
Approach LOS		D			D			F			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	69.5		12.4	35.0	41.8		10.8				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	13.7		7.3	31.0	10.8		5.6				
Green Ext Time (p_c), s	0.0	6.3		0.1	0.0	2.1		0.3				

Intersection Summary		
HCM 6th Ctrl Delay	76.9	
HCM 6th LOS	E	

Notes

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

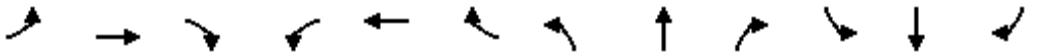
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	4	4	197	4	52	8	1348	191	41	1171	4
v/c Ratio	0.03	0.00	0.53	0.02	0.15	0.04	0.55	0.17	0.21	0.46	0.00
Control Delay	44.5	0.0	47.5	39.5	1.0	52.5	6.0	0.9	50.7	5.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	0.0	47.5	39.5	1.0	52.5	6.0	0.9	50.7	5.3	0.0
Queue Length 50th (ft)	2	0	61	2	0	2	44	0	13	75	0
Queue Length 95th (ft)	7	0	96	7	0	2	323	13	19	194	m0
Internal Link Dist (ft)	697			679			647			2055	
Turn Bay Length (ft)		125	250		500	455		250	550		550
Base Capacity (vph)	152	1615	383	208	341	554	2448	1155	274	2570	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.00	0.51	0.02	0.15	0.01	0.55	0.17	0.15	0.46	0.00

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2	4	175	2	43	2	1254	172	24	1136	2
Future Volume (veh/h)	0	2	4	175	2	43	2	1254	172	24	1136	2
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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	0	4	0	197	4	52	8	1348	191	41	1171	0
Peak Hour Factor	0.25	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	18	10		271	147	124	35	2419	1079	75	2441	
Arrive On Green	0.00	0.01	0.00	0.08	0.08	0.08	0.01	0.68	0.68	0.02	0.69	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	0	4	0	197	4	52	8	1348	191	41	1171	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	0.0	0.2	0.0	5.5	0.2	3.1	0.2	19.6	4.4	1.2	15.4	0.0
Cycle Q Clear(g_c), s	0.0	0.2	0.0	5.5	0.2	3.1	0.2	19.6	4.4	1.2	15.4	0.0
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	18	10		271	147	124	35	2419	1079	75	2441	
V/C Ratio(X)	0.00	0.40		0.73	0.03	0.42	0.23	0.56	0.18	0.55	0.48	
Avail Cap(c_a), veh/h	281	152		348	189	160	557	2419	1079	276	2441	
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)	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	49.6	0.0	45.1	42.6	44.0	49.1	8.5	6.0	48.4	7.3	0.0
Incr Delay (d2), s/veh	0.0	28.4	0.0	6.0	0.1	2.7	3.3	0.9	0.4	2.3	0.7	0.0
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(50%),veh/ln	0.0	0.2	0.0	2.6	0.1	1.3	0.1	6.2	1.3	0.5	4.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	78.0	0.0	51.1	42.7	46.6	52.4	9.4	6.3	50.7	8.0	0.0
LnGrp LOS	A	E		D	D	D	D	A	A	D	A	
Approach Vol, veh/h		4			253			1547			1212	
Approach Delay, s/veh		78.0			50.1			9.2			9.4	
Approach LOS		E			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	73.5		6.5	5.0	74.7		13.8				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	8.0	52.0		8.0	16.0	44.0		10.0				
Max Q Clear Time (g_c+I1), s	3.2	21.6		2.2	2.2	17.4		7.5				
Green Ext Time (p_c), s	0.0	12.2		0.0	0.0	8.9		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		12.8
HCM 6th LOS		B

Notes

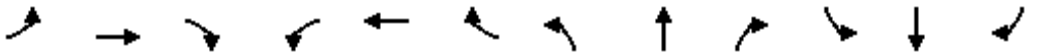
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	93	94	407	214	1142	1128	264
v/c Ratio	0.56	0.56	0.25	0.51	0.41	0.34	0.24
Control Delay	54.8	54.9	0.4	19.8	4.3	5.7	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	54.9	0.4	19.8	4.3	5.7	1.6
Queue Length 50th (ft)	61	61	0	63	57	106	6
Queue Length 95th (ft)	109	44	0	139	141	53	8
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	324	1599	651	2764	3309	1122
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.29	0.25	0.33	0.41	0.34	0.24

Intersection Summary



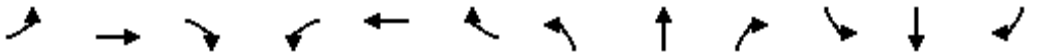
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	163	3	366	182	1062	0	0	1083	232
Future Volume (vph)	0	0	0	163	3	366	182	1062	0	0	1083	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1709	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.21	1.00			1.00	1.00
Satd. Flow (perm)				1698	1709	1599	387	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.38	0.90	0.85	0.93	0.92	0.92	0.96	0.88
Adj. Flow (vph)	0	0	0	179	8	407	214	1142	0	0	1128	264
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	92
Lane Group Flow (vph)	0	0	0	93	94	407	214	1142	0	0	1128	172
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				9.9	9.9	100.0	78.1	78.1			65.1	65.1
Effective Green, g (s)				9.9	9.9	100.0	78.1	78.1			65.1	65.1
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.65	0.65
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				168	169	1599	412	2763			3310	1030
v/s Ratio Prot							c0.04	0.32			0.22	
v/s Ratio Perm				0.05	0.06	0.25	c0.36					0.11
v/c Ratio				0.55	0.56	0.25	0.52	0.41			0.34	0.17
Uniform Delay, d1				42.9	43.0	0.0	3.6	3.5			7.8	6.8
Progression Factor				1.00	1.00	1.00	5.54	1.01			0.63	0.88
Incremental Delay, d2				2.2	2.2	0.4	0.4	0.4			0.3	0.3
Delay (s)				45.2	45.2	0.4	20.2	4.0			5.2	6.4
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			14.5			6.5			5.4	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	183	184	223	971	179	504	783
v/c Ratio	0.75	0.75	0.14	0.55	0.20	0.81	0.30
Control Delay	59.0	58.9	0.2	19.8	3.2	49.6	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.0	58.9	0.2	19.8	3.2	49.6	6.9
Queue Length 50th (ft)	117	118	0	221	0	118	63
Queue Length 95th (ft)	186	96	0	312	17	154	77
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1770	881	692	2588
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.58	0.14	0.55	0.20	0.73	0.30

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	312	8	176	0	0	0	0	932	131	494	752	0
Future Volume (vph)	312	8	176	0	0	0	0	932	131	494	752	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1660	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1660	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.89	0.50	0.79	0.92	0.92	0.92	0.92	0.96	0.73	0.98	0.96	0.92
Adj. Flow (vph)	351	16	223	0	0	0	0	971	179	504	783	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	90	0	0	0
Lane Group Flow (vph)	183	184	223	0	0	0	0	971	90	504	783	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	5%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	14.9	14.9	100.0					50.0	50.0	18.1	73.1	
Effective Green, g (s)	14.9	14.9	100.0					50.0	50.0	18.1	73.1	
Actuated g/C Ratio	0.15	0.15	1.00					0.50	0.50	0.18	0.73	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	245	247	1553					1769	791	621	2587	
v/s Ratio Prot								c0.27		c0.15	0.22	
v/s Ratio Perm	c0.11	0.11	0.14						0.06			
v/c Ratio	0.75	0.74	0.14					0.55	0.11	0.81	0.30	
Uniform Delay, d1	40.7	40.7	0.0					17.2	13.2	39.3	4.6	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.31	
Incremental Delay, d2	10.3	10.2	0.2					1.2	0.3	7.2	0.3	
Delay (s)	51.1	50.9	0.2					18.5	13.5	46.4	6.4	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s)		31.8			0.0			17.7			22.1	
Approach LOS		C			A			B			C	

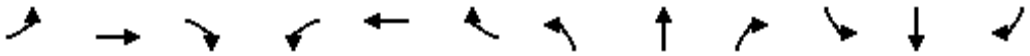
Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	288	355	599
Demand Flow Rate, veh/h	294	362	611
Vehicles Circulating, veh/h	395	106	164
Vehicles Exiting, veh/h	380	583	304
Ped Vol Crossing Leg, #/h	6	0	0
Ped Cap Adj	0.995	1.000	1.000
Approach Delay, s/veh	5.2	4.1	5.8
Approach LOS	A	A	A

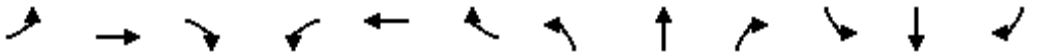
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.469	0.531	0.453	0.547	0.646	0.354
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	138	156	164	198	395	216
Cap Entry Lane, veh/h	939	1015	1224	1298	1161	1235
Entry HV Adj Factor	0.982	0.980	0.980	0.980	0.980	0.981
Flow Entry, veh/h	136	153	161	194	387	212
Cap Entry, veh/h	917	990	1200	1272	1137	1212
V/C Ratio	0.148	0.154	0.134	0.153	0.340	0.175
Control Delay, s/veh	5.3	5.1	4.1	4.1	6.5	4.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	2	1

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2025 Background



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	56	22	55	401	47	174	127	898	516	215	667	75
v/c Ratio	0.26	0.20	0.03	0.72	0.18	0.48	0.47	0.48	0.49	0.61	0.24	0.08
Control Delay	56.5	57.5	0.1	55.3	44.8	10.6	58.5	21.6	3.6	58.9	16.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	57.5	0.1	55.3	44.8	10.6	58.5	21.6	3.6	58.9	16.1	0.2
Queue Length 50th (ft)	21	17	0	155	32	0	49	240	0	83	100	0
Queue Length 95th (ft)	29	33	0	180	62	47	69	346	36	95	151	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	277	190	1595	864	507	551	357	1855	1062	383	2789	948
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.12	0.03	0.46	0.09	0.32	0.36	0.48	0.49	0.56	0.24	0.08

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	15	40	333	40	146	100	790	423	157	640	45
Future Volume (veh/h)	35	15	40	333	40	146	100	790	423	157	640	45
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	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	22	0	401	47	0	127	898	0	215	667	0
Peak Hour Factor	0.63	0.69	0.73	0.83	0.86	0.84	0.79	0.88	0.82	0.73	0.96	0.60
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	205	85		475	232		199	1940		273	2898	
Arrive On Green	0.06	0.04	0.00	0.14	0.13	0.00	0.06	0.55	0.00	0.08	0.57	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	56	22	0	401	47	0	127	898	0	215	667	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.8	1.3	0.0	13.7	2.7	0.0	4.3	18.4	0.0	7.3	7.8	0.0
Cycle Q Clear(g_c), s	1.8	1.3	0.0	13.7	2.7	0.0	4.3	18.4	0.0	7.3	7.8	0.0
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	205	85		475	232		199	1940		273	2898	
V/C Ratio(X)	0.27	0.26		0.84	0.20		0.64	0.46		0.79	0.23	
Avail Cap(c_a), veh/h	278	190		871	510		360	1940		360	2898	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.1	55.4	0.0	50.4	47.1	0.0	55.3	16.6	0.0	54.3	12.9	0.0
Incr Delay (d2), s/veh	0.5	1.6	0.0	3.2	0.4	0.0	2.5	0.8	0.0	7.3	0.2	0.0
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(50%),veh/ln	0.8	0.7	0.0	6.0	1.3	0.0	1.9	7.4	0.0	3.4	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.6	57.0	0.0	53.6	47.6	0.0	57.9	17.4	0.0	61.6	13.1	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		78			448			1025			882	
Approach Delay, s/veh		55.3			53.0			22.4			24.9	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	71.5	22.1	11.4	12.4	74.1	12.5	21.0
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	9.3	20.4	15.7	3.3	6.3	9.8	3.8	4.7
Green Ext Time (p_c), s	0.2	10.8	0.9	0.0	0.1	9.3	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	30.0
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	384	484	566	501	419	526
v/c Ratio	0.70	0.46	0.80	0.40	0.70	0.34
Control Delay	46.1	2.9	29.4	11.5	54.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	2.9	29.4	11.5	54.0	0.6
Queue Length 50th (ft)	252	0	248	135	157	0
Queue Length 95th (ft)	#492	36	#455	244	151	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	549	1041	710	1238	601	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.46	0.80	0.40	0.70	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	342	431	453	361	260	458
Future Volume (vph)	342	431	453	361	260	458
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	1752	1845	3400	1568
Flt Permitted	1.00	1.00	0.20	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	372	1845	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	384	484	566	501	419	526
RTOR Reduction (vph)	0	270	0	0	0	0
Lane Group Flow (vph)	384	214	566	501	419	526
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	31.8	53.0	76.6	76.6	21.2	120.0
Effective Green, g (s)	31.8	53.0	76.6	76.6	21.2	120.0
Actuated g/C Ratio	0.27	0.44	0.64	0.64	0.18	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	488	692	695	1177	600	1568
v/s Ratio Prot	0.21	0.05	c0.27	0.27	c0.12	
v/s Ratio Perm		0.08	c0.25			c0.34
v/c Ratio	0.79	0.31	0.81	0.43	0.70	0.34
Uniform Delay, d1	41.0	21.7	22.9	10.8	46.4	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.1	0.1	6.9	1.1	2.9	0.6
Delay (s)	53.0	21.8	29.8	11.9	49.3	0.6
Level of Service	D	C	C	B	D	A
Approach Delay (s)	35.6			21.4	22.2	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	398	363	152	264	523	98	232	697	412	119	608	423
v/c Ratio	0.84	0.31	0.24	0.52	0.52	0.18	0.74	0.70	0.26	0.47	0.69	0.61
Control Delay	37.3	31.9	6.1	21.9	37.8	4.5	39.2	42.8	0.4	28.7	45.6	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	31.9	6.1	21.9	37.8	4.5	39.2	42.8	0.4	28.7	45.6	8.6
Queue Length 50th (ft)	192	111	0	117	180	0	119	251	0	57	227	11
Queue Length 95th (ft)	#328	148	37	159	172	19	117	335	0	90	289	24
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	482	1159	621	585	1002	532	329	998	1583	339	879	698
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.31	0.24	0.45	0.52	0.18	0.71	0.70	0.26	0.35	0.69	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	374	301	125	219	361	79	144	655	375	100	541	309
Future Volume (veh/h)	374	301	125	219	361	79	144	655	375	100	541	309
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	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	398	363	152	264	523	98	232	697	0	119	608	423
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	494	1193	532	501	1009	450	310	1038		268	882	393
Arrive On Green	0.17	0.33	0.33	0.12	0.29	0.29	0.11	0.29	0.00	0.07	0.25	0.25
Sat Flow, veh/h	1795	3582	1598	1753	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	398	363	152	264	523	98	232	697	0	119	608	423
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1753	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	17.7	8.9	8.3	12.3	14.7	5.6	11.0	20.3	0.0	5.8	18.2	29.0
Cycle Q Clear(g_c), s	17.7	8.9	8.3	12.3	14.7	5.6	11.0	20.3	0.0	5.8	18.2	29.0
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	494	1193	532	501	1009	450	310	1038		268	882	393
V/C Ratio(X)	0.81	0.30	0.29	0.53	0.52	0.22	0.75	0.67		0.44	0.69	1.08
Avail Cap(c_a), veh/h	498	1193	532	583	1009	450	338	1038		380	882	393
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	29.2	29.0	24.1	35.1	31.8	29.4	36.7	0.0	31.0	40.3	44.4
Incr Delay (d2), s/veh	8.7	0.7	1.3	0.3	1.9	1.1	6.9	3.5	0.0	0.4	4.4	67.1
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(50%),veh/ln	8.4	3.9	3.3	5.0	6.5	2.2	5.2	9.1	0.0	2.5	8.3	18.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	29.8	30.3	24.4	37.0	32.9	36.3	40.2	0.0	31.5	44.7	111.5
LnGrp LOS	C	C	C	C	D	C	D	D		C	D	F
Approach Vol, veh/h		913			885			929			1150	
Approach Delay, s/veh		30.9			32.8			39.2			67.9	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.5	45.2	12.7	40.4	24.7	40.0	18.1	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	14.3	10.9	7.8	22.3	19.7	16.7	13.0	31.0
Green Ext Time (p_c), s	0.2	2.8	0.1	2.4	0.0	3.5	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	44.3
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



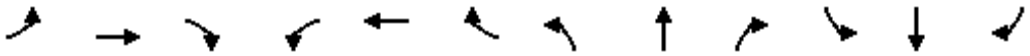
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	73	282	249	413	108	384	545	526	235	431
v/c Ratio	0.32	0.85	0.76	0.73	0.23	0.75	0.60	0.73	0.38	0.53
Control Delay	30.4	66.5	43.8	27.7	21.3	48.2	8.2	28.1	33.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	66.5	43.8	27.7	21.3	48.2	8.2	28.1	33.9	6.3
Queue Length 50th (ft)	29	171	109	114	35	219	35	97	109	0
Queue Length 95th (ft)	90	205	#346	7	112	#413	77	#207	230	3
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	337	333	329	562	572	509	915	718	618	813
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.85	0.76	0.73	0.19	0.75	0.60	0.73	0.38	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	135	25	219	20	210	95	288	409	405	174	310
Future Volume (vph)	65	135	25	219	20	210	95	288	409	405	174	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.98		1.00	0.87		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)	1787	1844		1702	1527		1770	1863	1565	3431	1863	1583
Flt Permitted	0.24	1.00		0.22	1.00		0.61	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	452	1844		387	1527		1141	1863	1565	725	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	73	250	32	249	51	362	108	384	545	526	235	431
RTOR Reduction (vph)	0	3	0	0	163	0	0	0	264	0	0	294
Lane Group Flow (vph)	73	279	0	249	250	0	108	384	281	526	235	137
Confl. Peds. (#/hr)			2	2					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	27.8	20.5		40.8	28.5		38.4	29.5	44.8	49.8	35.9	35.9
Effective Green, g (s)	27.8	20.5		40.8	28.5		38.4	29.5	44.8	49.8	35.9	35.9
Actuated g/C Ratio	0.25	0.18		0.36	0.25		0.34	0.26	0.40	0.44	0.32	0.32
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	198	335		318	386		438	488	622	688	593	504
v/s Ratio Prot	0.02	0.15		c0.11	0.16		0.02	0.21	0.06	c0.10	0.13	
v/s Ratio Perm	0.07			c0.18			0.06		0.12	c0.23		0.09
v/c Ratio	0.37	0.83		0.78	0.65		0.25	0.79	0.45	0.76	0.40	0.27
Uniform Delay, d1	33.9	44.4		28.3	37.6		26.0	38.6	24.9	23.5	29.9	28.6
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	1.2	16.0		11.9	3.7		0.2	12.1	0.5	5.1	2.0	1.3
Delay (s)	35.0	60.4		40.2	41.3		26.3	50.7	25.4	28.6	31.9	29.9
Level of Service	D	E		D	D		C	D	C	C	C	C
Approach Delay (s)		55.2			40.9			34.9			29.7	
Approach LOS		E			D			C			C	

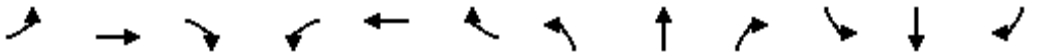
Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	112.6	Sum of lost time (s)	26.5
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	57	137	1426	64	235	53	1373	430	29	63	781	133
v/c Ratio	0.25	0.59	0.90	0.17	0.62	0.03	1.11	0.21	0.02	0.30	0.93	0.08
Control Delay	46.3	55.7	9.8	41.2	49.8	0.0	87.0	4.8	0.0	48.6	55.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	55.7	9.8	41.2	49.8	0.0	87.0	4.8	0.0	48.6	55.9	0.1
Queue Length 50th (ft)	18	45	0	19	75	0	~531	21	0	20	256	0
Queue Length 95th (ft)	36	69	0	39	105	0	247	34	m0	28	253	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	380	391	1568	1242	2011	1568	215	841	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.39	0.90	0.17	0.60	0.03	1.11	0.21	0.02	0.29	0.93	0.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	114	713	56	193	43	851	361	20	40	570	120
Future Volume (veh/h)	50	114	713	56	193	43	851	361	20	40	570	120
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	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	57	137	0	64	235	0	1373	430	0	63	781	0
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	201	206		300	309		1166	2155		113	1038	
Arrive On Green	0.06	0.06	0.00	0.09	0.09	0.00	0.34	0.61	0.00	0.03	0.29	0.00
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	57	137	0	64	235	0	1373	430	0	63	781	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.6	3.8	0.0	1.7	6.5	0.0	34.0	5.4	0.0	1.8	20.1	0.0
Cycle Q Clear(g_c), s	1.6	3.8	0.0	1.7	6.5	0.0	34.0	5.4	0.0	1.8	20.1	0.0
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	201	206		300	309		1166	2155		113	1038	
V/C Ratio(X)	0.28	0.66		0.21	0.76		1.18	0.20		0.56	0.75	
Avail Cap(c_a), veh/h	346	355		343	353		1166	2155		206	1038	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.1	46.1	0.0	42.4	44.6	0.0	33.0	8.6	0.0	47.6	32.0	0.0
Incr Delay (d2), s/veh	0.3	1.4	0.0	0.4	8.2	0.0	89.2	0.2	0.0	4.2	5.1	0.0
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(50%),veh/ln	0.7	1.7	0.0	0.7	3.2	0.0	27.5	1.8	0.0	0.8	8.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.4	47.5	0.0	42.8	52.8	0.0	122.2	8.8	0.0	51.8	37.0	0.0
LnGrp LOS	D	D		D	D		F	A		D	D	
Approach Vol, veh/h		194			299			1803			844	
Approach Delay, s/veh		46.9			50.7			95.2			38.1	
Approach LOS		D			D			F			D	

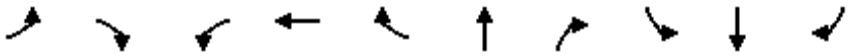
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	67.1		10.8	40.0	35.4		13.8				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		10.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.8	7.4		5.8	36.0	22.1		8.5				
Green Ext Time (p_c), s	0.0	2.8		0.1	0.0	0.9		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		72.6	
HCM 6th LOS		E	

Notes

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

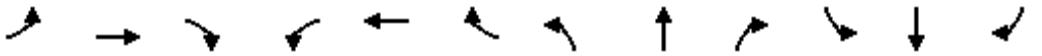
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	20	251	20	98	1381	195	70	1313	10
v/c Ratio	0.05	0.01	0.54	0.08	0.26	0.62	0.18	0.34	0.52	0.01
Control Delay	44.2	0.0	46.2	40.2	1.7	11.1	1.2	49.7	7.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	0.0	46.2	40.2	1.7	11.1	1.2	49.7	7.6	0.0
Queue Length 50th (ft)	3	0	76	11	0	262	11	22	161	0
Queue Length 95th (ft)	6	0	#157	10	0	315	12	39	260	0
Internal Link Dist (ft)				679		647			2055	
Turn Bay Length (ft)	125	125	250		500		250	550		550
Base Capacity (vph)	280	1615	467	253	375	2221	1065	215	2511	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.01	0.54	0.08	0.26	0.62	0.18	0.33	0.52	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	236	5	62	0	1160	185	55	1274	5
Future Volume (veh/h)	5	0	5	236	5	62	0	1160	185	55	1274	5
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	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	0	0	251	20	98	0	1381	195	70	1313	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.63	0.86	0.84	0.95	0.79	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	43	23		240	130	110	3	2339	1043	118	2601	
Arrive On Green	0.01	0.00	0.00	0.07	0.07	0.07	0.00	0.66	0.66	0.03	0.74	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	10	0	0	251	20	98	0	1381	195	70	1313	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.3	0.0	0.0	7.0	1.0	6.2	0.0	21.7	4.8	2.0	15.6	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	7.0	1.0	6.2	0.0	21.7	4.8	2.0	15.6	0.0
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	43	23		240	130	110	3	2339	1043	118	2601	
V/C Ratio(X)	0.23	0.00		1.05	0.15	0.89	0.00	0.59	0.19	0.59	0.50	
Avail Cap(c_a), veh/h	281	152		240	130	110	549	2339	1043	206	2601	
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	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.9	0.0	0.0	46.5	43.7	46.1	0.0	9.3	6.5	47.6	5.5	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	70.6	0.7	53.4	0.0	1.1	0.4	1.8	0.7	0.0
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(50%),veh/ln	0.1	0.0	0.0	5.3	0.5	4.0	0.0	6.9	1.4	0.9	4.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.3	0.0	0.0	117.1	44.4	99.5	0.0	10.4	6.9	49.3	6.2	0.0
LnGrp LOS	D	A		F	D	F	A	B	A	D	A	
Approach Vol, veh/h		10			369			1576			1383	
Approach Delay, s/veh		52.3			108.5			10.0			8.4	
Approach LOS		D			F			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	72.3		7.2	0.0	79.8		13.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	57.0		8.0	16.0	47.0		7.0				
Max Q Clear Time (g_c+I1), s	4.0	23.7		2.3	0.0	17.6		9.0				
Green Ext Time (p_c), s	0.0	13.2		0.0	0.0	10.8		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		20.3
HCM 6th LOS		C

Notes

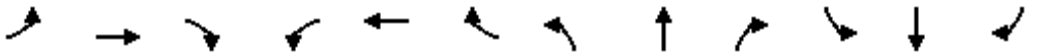
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	100	102	734	222	744	1202	530
v/c Ratio	0.58	0.58	0.47	0.57	0.27	0.37	0.44
Control Delay	55.1	55.3	1.0	25.5	2.6	6.5	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	55.3	1.0	25.5	2.6	6.5	2.4
Queue Length 50th (ft)	65	66	0	64	38	110	5
Queue Length 95th (ft)	104	96	0	164	58	155	33
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	433	2744	3254	1200
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.34	0.47	0.51	0.27	0.37	0.44

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	155	10	653	195	692	0	0	1070	440
Future Volume (veh/h)	0	0	0	155	10	653	195	692	0	0	1070	440
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1856	1856	1856	1870	1870	0	0	1856	1856
Adj Flow Rate, veh/h				198	0	0	222	744	0	0	1202	0
Peak Hour Factor				0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Percent Heavy Veh, %				3	3	3	2	2	0	0	3	3
Cap, veh/h				272	0		453	2854	0	0	3527	
Arrive On Green				0.08	0.00	0.00	0.11	1.00	0.00	0.00	0.70	0.00
Sat Flow, veh/h				3534	0	1572	1781	3647	0	0	5233	1572
Grp Volume(v), veh/h				198	0	0	222	744	0	0	1202	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1781	1777	0	0	1689	1572
Q Serve(g_s), s				5.5	0.0	0.0	3.5	0.0	0.0	0.0	9.5	0.0
Cycle Q Clear(g_c), s				5.5	0.0	0.0	3.5	0.0	0.0	0.0	9.5	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				272	0		453	2854	0	0	3527	
V/C Ratio(X)				0.73	0.00		0.49	0.26	0.00	0.00	0.34	
Avail Cap(c_a), veh/h				636	0		548	2854	0	0	3527	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.91	0.91	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				45.1	0.0	0.0	3.9	0.0	0.0	0.0	6.0	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.0	0.3	0.2	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.4	0.0	0.0	0.7	0.1	0.0	0.0	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.5	0.0	0.0	4.2	0.2	0.0	0.0	6.3	0.0
LnGrp LOS				D	A		A	A	A	A	A	
Approach Vol, veh/h					198			966			1202	
Approach Delay, s/veh					46.5			1.1			6.3	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	86.3		10.7	75.6		13.7						
Change Period (Y+Rc), s	6.0		5.0	6.0		6.0						
Max Green Setting (Gmax), s	70.0		11.0	54.0		18.0						
Max Q Clear Time (g_c+I1), s	2.0		5.5	11.5		7.5						
Green Ext Time (p_c), s	5.4		0.1	10.1		0.3						

Intersection Summary	
HCM 6th Ctrl Delay	7.6
HCM 6th LOS	A

Notes

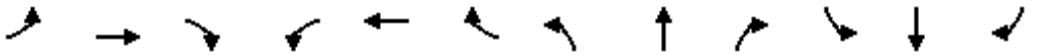
User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	116	119	202	773	61	358	974
v/c Ratio	0.61	0.62	0.13	0.39	0.07	0.71	0.36
Control Delay	55.4	55.7	0.2	13.8	1.7	46.7	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.4	55.7	0.2	13.8	1.7	46.7	4.6
Queue Length 50th (ft)	75	76	0	134	0	78	64
Queue Length 95th (ft)	124	88	0	217	9	117	76
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	317	1553	2006	935	680	2682
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.38	0.13	0.39	0.07	0.53	0.36

Intersection Summary



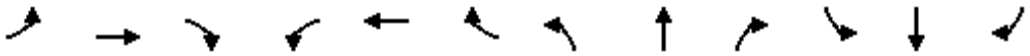
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	15	170	0	0	0	0	703	50	329	896	0
Future Volume (vph)	184	15	170	0	0	0	0	703	50	329	896	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1669	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1669	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.87	0.63	0.84	0.92	0.92	0.92	0.92	0.91	0.82	0.92	0.92	0.92
Adj. Flow (vph)	211	24	202	0	0	0	0	773	61	358	974	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	26	0	0	0
Lane Group Flow (vph)	116	119	202	0	0	0	0	773	35	358	974	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	11.5	11.5	100.0					56.7	56.7	14.8	76.5	
Effective Green, g (s)	11.5	11.5	100.0					56.7	56.7	14.8	76.5	
Actuated g/C Ratio	0.12	0.12	1.00					0.57	0.57	0.15	0.76	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	189	191	1553					2006	897	503	2681	
v/s Ratio Prot								c0.22		c0.11	0.28	
v/s Ratio Perm	0.07	0.07	0.13						0.02			
v/c Ratio	0.61	0.62	0.13					0.39	0.04	0.71	0.36	
Uniform Delay, d1	42.1	42.2	0.0					12.0	9.6	40.6	3.8	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.97	1.00	
Incremental Delay, d2	4.1	4.5	0.2					0.6	0.1	3.7	0.4	
Delay (s)	46.2	46.7	0.2					12.6	9.7	43.1	4.2	
Level of Service	D	D	A					B	A	D	A	
Approach Delay (s)		25.1			0.0			12.3			14.6	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	7.0
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	613	641	407
Demand Flow Rate, veh/h	619	654	415
Vehicles Circulating, veh/h	241	428	168
Vehicles Exiting, veh/h	342	432	914
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	6.6	8.8	4.7
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.691	0.309	0.257	0.743	0.581	0.419
Follow-Up Headway, s	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
Entry Flow, veh/h	428	191	168	486	241	174
Cap Entry Lane, veh/h	1081	1157	911	987	1157	1231
Entry HV Adj Factor	0.991	0.990	0.980	0.979	0.979	0.983
Flow Entry, veh/h	424	189	165	476	236	171
Cap Entry, veh/h	1071	1146	892	966	1133	1210
V/C Ratio	0.396	0.165	0.185	0.493	0.208	0.141
Control Delay, s/veh	7.5	4.6	5.9	9.8	5.1	4.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	2	1	1	3	1	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	74	74	138	617	93	115	153	866	482	231	1091	152
v/c Ratio	0.30	0.44	0.09	0.85	0.22	0.23	0.55	0.60	0.52	0.60	0.49	0.19
Control Delay	54.6	58.1	0.1	54.1	36.3	1.9	58.5	30.2	4.7	54.8	24.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.6	58.1	0.1	54.1	36.3	1.9	58.5	30.2	4.7	54.8	24.8	2.8
Queue Length 50th (ft)	27	53	0	224	55	0	56	269	0	85	216	0
Queue Length 95th (ft)	47	83	0	302	78	1	93	378	60	128	280	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	401	243	1578	850	502	549	304	1448	925	497	2234	786
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.30	0.09	0.73	0.19	0.21	0.50	0.60	0.52	0.46	0.49	0.19

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	55	130	555	65	97	135	805	419	210	1015	85
Future Volume (veh/h)	60	55	130	555	65	97	135	805	419	210	1015	85
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	74	74	0	617	93	0	153	866	0	231	1091	0
Peak Hour Factor	0.81	0.74	0.94	0.90	0.70	0.84	0.88	0.93	0.87	0.91	0.93	0.56
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	232	126		700	379		229	1527		302	2302	
Arrive On Green	0.07	0.07	0.00	0.20	0.20	0.00	0.07	0.43	0.00	0.09	0.45	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	74	74	0	617	93	0	153	866	0	231	1091	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.1	4.0	0.0	18.1	4.4	0.0	4.5	19.2	0.0	6.8	15.6	0.0
Cycle Q Clear(g_c), s	2.1	4.0	0.0	18.1	4.4	0.0	4.5	19.2	0.0	6.8	15.6	0.0
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	232	126		700	379		229	1527		302	2302	
V/C Ratio(X)	0.32	0.59		0.88	0.25		0.67	0.57		0.76	0.47	
Avail Cap(c_a), veh/h	414	251		879	502		315	1527		514	2302	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.8	47.6	0.0	40.7	35.3	0.0	47.9	22.8	0.0	46.9	20.4	0.0
Incr Delay (d2), s/veh	0.6	4.3	0.0	8.2	0.3	0.0	2.5	1.5	0.0	3.0	0.7	0.0
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(50%),veh/ln	0.9	2.0	0.0	8.3	2.0	0.0	2.0	8.1	0.0	3.0	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.3	51.9	0.0	49.0	35.6	0.0	50.4	24.3	0.0	49.9	21.1	0.0
LnGrp LOS	D	D		D	D		D	C		D	C	
Approach Vol, veh/h		148			710			1019			1322	
Approach Delay, s/veh		49.6			47.2			28.2			26.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	50.8	26.6	13.0	12.4	53.0	12.5	27.1
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	8.8	21.2	20.1	6.0	6.5	17.6	4.1	6.4
Green Ext Time (p_c), s	0.3	9.8	1.1	0.1	0.1	15.4	0.1	0.4

Intersection Summary	
HCM 6th Ctrl Delay	32.6
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	534	337	373	618	312	732
v/c Ratio	0.67	0.31	0.59	0.45	0.67	0.46
Control Delay	29.8	1.7	12.3	7.9	48.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	1.7	12.3	7.9	48.0	0.9
Queue Length 50th (ft)	249	1	60	124	98	0
Queue Length 95th (ft)	#521	15	195	245	137	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	794	1269	629	1367	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.27	0.59	0.45	0.32	0.46

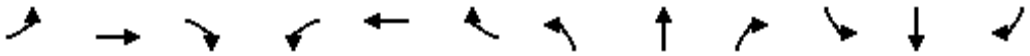
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	486	263	332	494	303	498
Future Volume (vph)	486	263	332	494	303	498
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	1787	1881	3467	1599
Flt Permitted	1.00	1.00	0.20	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	385	1881	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	534	337	373	618	312	732
RTOR Reduction (vph)	0	158	0	0	0	0
Lane Group Flow (vph)	534	179	373	618	312	732
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	39.1	52.6	68.7	68.7	13.5	100.0
Effective Green, g (s)	39.1	52.6	68.7	68.7	13.5	100.0
Actuated g/C Ratio	0.39	0.53	0.69	0.69	0.14	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	721	824	609	1292	468	1599
v/s Ratio Prot	c0.29	0.03	c0.15	0.33	c0.09	
v/s Ratio Perm		0.08	0.27			c0.46
v/c Ratio	0.74	0.22	0.61	0.48	0.67	0.46
Uniform Delay, d1	26.1	12.7	11.5	7.3	41.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.7	0.0	1.3	1.3	2.8	0.9
Delay (s)	32.8	12.7	12.8	8.6	43.9	0.9
Level of Service	C	B	B	A	D	A
Approach Delay (s)	25.1			10.2	13.8	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	484	420	195	499	505	145	83	735	189	147	664	322
v/c Ratio	0.90	0.36	0.30	0.86	0.44	0.24	0.37	0.82	0.12	0.68	0.69	0.48
Control Delay	42.4	36.9	5.8	37.8	38.4	6.2	32.8	57.6	0.2	45.6	49.1	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.4	36.9	5.8	37.8	38.4	6.2	32.8	57.6	0.2	45.6	49.1	6.7
Queue Length 50th (ft)	260	151	0	271	187	0	48	328	0	88	279	0
Queue Length 95th (ft)	#333	205	39	#373	235	33	64	410	0	119	355	76
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	546	1151	646	589	1142	602	304	891	1599	254	965	665
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.36	0.30	0.85	0.44	0.24	0.27	0.82	0.12	0.58	0.69	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	392	407	160	459	434	116	57	654	172	115	591	309
Future Volume (veh/h)	392	407	160	459	434	116	57	654	172	115	591	309
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	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	484	420	195	499	505	145	83	735	0	147	664	322
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	550	1157	516	573	1157	510	203	901		229	994	443
Arrive On Green	0.18	0.33	0.33	0.18	0.33	0.33	0.05	0.25	0.00	0.08	0.28	0.28
Sat Flow, veh/h	1781	3554	1585	1781	3554	1565	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	484	420	195	499	505	145	83	735	0	147	664	322
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1565	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	24.7	12.2	12.8	25.0	15.1	9.3	4.6	26.1	0.0	8.1	22.4	24.8
Cycle Q Clear(g_c), s	24.7	12.2	12.8	25.0	15.1	9.3	4.6	26.1	0.0	8.1	22.4	24.8
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	550	1157	516	573	1157	510	203	901		229	994	443
V/C Ratio(X)	0.88	0.36	0.38	0.87	0.44	0.28	0.41	0.82		0.64	0.67	0.73
Avail Cap(c_a), veh/h	550	1157	516	573	1157	510	318	901		293	994	443
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	34.9	35.0	24.4	35.8	33.9	36.4	47.6	0.0	36.2	43.1	44.0
Incr Delay (d2), s/veh	14.7	0.9	2.1	13.2	1.2	1.4	0.5	8.1	0.0	1.2	3.6	10.0
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(50%),veh/ln	12.4	5.4	5.2	12.7	6.7	3.7	2.0	12.5	0.0	3.5	10.2	10.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.2	35.7	37.2	37.6	37.0	35.3	36.8	55.7	0.0	37.3	46.7	54.0
LnGrp LOS	D	D	D	D	D	D	D	E		D	D	D
Approach Vol, veh/h		1099			1149			818			1133	
Approach Delay, s/veh		37.5			37.1			53.8			47.5	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	50.0	15.1	40.0	30.0	50.0	11.3	43.8
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	27.0	14.8	10.1	28.1	26.7	17.1	6.6	26.8
Green Ext Time (p_c), s	0.0	3.5	0.1	2.3	0.0	4.0	0.0	3.1

Intersection Summary	
HCM 6th Ctrl Delay	43.3
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



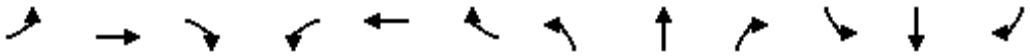
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	284	220	355	378	20	324	106	117	395	77
v/c Ratio	0.72	0.63	0.91	0.79	0.05	0.52	0.12	0.15	0.50	0.11
Control Delay	38.5	16.1	56.4	19.3	19.9	32.6	5.1	17.6	27.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	16.1	56.4	19.3	19.9	32.6	5.1	17.6	27.8	0.3
Queue Length 50th (ft)	108	5	142	9	4	122	1	13	115	0
Queue Length 95th (ft)	214	0	#275	0	17	316	15	59	#488	0
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	395	512	391	616	563	620	856	1001	790	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.43	0.91	0.61	0.04	0.52	0.12	0.12	0.50	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	5	145	252	5	265	10	246	70	110	340	60
Future Volume (vph)	190	5	145	252	5	265	10	246	70	110	340	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.99	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	0.86		1.00	0.86		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)	1768	1596		1752	1537		1770	1863	1565	3394	1845	1531
Flt Permitted	0.43	1.00		0.43	1.00		0.45	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	809	1596		802	1537		833	1863	1565	1344	1845	1531
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	284	10	210	355	20	358	20	324	106	117	395	77
RTOR Reduction (vph)	0	190	0	0	324	0	0	0	50	0	0	46
Lane Group Flow (vph)	284	30	0	355	54	0	20	324	56	117	395	31
Confl. Peds. (#/hr)	2					2			8	8		
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	24.9	9.2		24.9	9.2		36.2	33.9	49.6	46.4	39.1	39.1
Effective Green, g (s)	24.9	9.2		24.9	9.2		36.2	33.9	49.6	46.4	39.1	39.1
Actuated g/C Ratio	0.26	0.09		0.26	0.09		0.37	0.35	0.51	0.48	0.40	0.40
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	360	150		357	144		331	647	795	796	739	613
v/s Ratio Prot	0.13	0.02		c0.16	0.03		0.00	0.17	0.01	c0.01	c0.21	
v/s Ratio Perm	0.07			c0.09			0.02		0.02	0.06		0.02
v/c Ratio	0.79	0.20		0.99	0.37		0.06	0.50	0.07	0.15	0.53	0.05
Uniform Delay, d1	32.4	40.8		34.8	41.5		19.7	25.2	12.2	14.8	22.3	17.9
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	10.9	0.7		45.9	1.6		0.1	2.8	0.0	0.1	2.8	0.2
Delay (s)	43.3	41.5		80.7	43.1		19.7	27.9	12.3	14.9	25.1	18.0
Level of Service	D	D		F	D		B	C	B	B	C	B
Approach Delay (s)		42.5			61.3			23.9			22.1	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	39.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	97.6	Sum of lost time (s)	26.5
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	116	225	1042	40	182	88	1334	896	66	32	439	58
v/c Ratio	0.37	0.70	0.65	0.11	0.49	0.06	1.11	0.43	0.04	0.15	0.51	0.04
Control Delay	45.6	56.0	2.1	40.4	46.7	0.1	92.8	9.6	0.0	46.2	35.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	56.0	2.1	40.4	46.7	0.1	92.8	9.6	0.0	46.2	35.4	0.0
Queue Length 50th (ft)	36	74	0	12	58	0	~515	136	0	10	127	0
Queue Length 95th (ft)	61	111	0	18	88	0	228	92	0	22	159	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	379	391	1599	1203	2069	1599	215	857	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.42	0.65	0.11	0.47	0.06	1.11	0.43	0.04	0.15	0.51	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	214	865	24	160	69	667	645	45	25	360	55
Future Volume (veh/h)	115	214	865	24	160	69	667	645	45	25	360	55
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	116	225	0	40	182	0	1334	896	0	32	439	0
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	289	298		253	260		1010	2187		82	1197	
Arrive On Green	0.08	0.08	0.00	0.07	0.07	0.00	0.29	0.61	0.00	0.02	0.33	0.00
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	116	225	0	40	182	0	1334	896	0	32	439	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.2	6.1	0.0	1.1	5.0	0.0	29.0	13.0	0.0	0.9	9.3	0.0
Cycle Q Clear(g_c), s	3.2	6.1	0.0	1.1	5.0	0.0	29.0	13.0	0.0	0.9	9.3	0.0
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	289	298		253	260		1010	2187		82	1197	
V/C Ratio(X)	0.40	0.76		0.16	0.70		1.32	0.41		0.39	0.37	
Avail Cap(c_a), veh/h	522	537		348	358		1010	2187		209	1197	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.5	44.9	0.0	43.5	45.3	0.0	35.5	10.1	0.0	48.1	25.3	0.0
Incr Delay (d2), s/veh	0.3	1.5	0.0	0.3	3.6	0.0	151.3	0.6	0.0	3.0	0.9	0.0
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(50%),veh/ln	1.3	2.7	0.0	0.5	2.3	0.0	32.7	4.5	0.0	0.4	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.8	46.3	0.0	43.8	48.9	0.0	186.8	10.7	0.0	51.1	26.1	0.0
LnGrp LOS	D	D		D	D		F	B		D	C	
Approach Vol, veh/h		341			222			2230			471	
Approach Delay, s/veh		45.5			48.0			116.0			27.8	
Approach LOS		D			D			F			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	67.1		13.3	35.0	39.4		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	15.0		8.1	31.0	11.3		7.0				
Green Ext Time (p_c), s	0.0	6.6		0.2	0.0	2.1		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		91.3
HCM 6th LOS		F

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

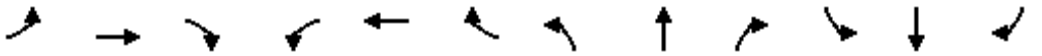


Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	5	252	12	67	20	1399	194	43	1257	10
v/c Ratio	0.08	0.00	0.61	0.05	0.19	0.09	0.58	0.17	0.22	0.51	0.01
Control Delay	44.8	0.0	48.8	39.7	1.2	52.2	7.0	0.8	50.4	7.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	0.0	48.8	39.7	1.2	52.2	7.0	0.8	50.4	7.2	0.0
Queue Length 50th (ft)	6	0	78	7	0	6	96	0	13	96	0
Queue Length 95th (ft)	13	0	#124	14	0	5	333	13	20	225	m0
Internal Link Dist (ft)	697			679			647			2055	
Turn Bay Length (ft)		125	250		500	455		250	550		550
Base Capacity (vph)	152	1615	414	224	354	554	2398	1136	274	2444	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.00	0.61	0.05	0.19	0.04	0.58	0.17	0.16	0.51	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	5	224	6	56	5	1301	175	25	1219	5
Future Volume (veh/h)	0	5	5	224	6	56	5	1301	175	25	1219	5
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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	0	10	0	252	12	67	20	1399	194	43	1257	0
Peak Hour Factor	0.75	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	43	23		321	174	147	74	2339	1043	78	2325	
Arrive On Green	0.00	0.01	0.00	0.09	0.09	0.09	0.02	0.65	0.65	0.02	0.65	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	0	10	0	252	12	67	20	1399	194	43	1257	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	0.0	0.5	0.0	7.1	0.6	4.0	0.6	22.2	4.8	1.2	18.9	0.0
Cycle Q Clear(g_c), s	0.0	0.5	0.0	7.1	0.6	4.0	0.6	22.2	4.8	1.2	18.9	0.0
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	43	23		321	174	147	74	2339	1043	78	2325	
V/C Ratio(X)	0.00	0.43		0.78	0.07	0.45	0.27	0.60	0.19	0.55	0.54	
Avail Cap(c_a), veh/h	281	152		348	189	160	557	2339	1043	276	2325	
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)	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	49.1	0.0	44.4	41.5	43.0	48.2	9.9	6.9	48.4	9.2	0.0
Incr Delay (d2), s/veh	0.0	14.8	0.0	10.8	0.2	2.6	1.9	1.1	0.4	2.2	0.9	0.0
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(50%),veh/ln	0.0	0.3	0.0	3.5	0.3	1.7	0.3	7.4	1.5	0.5	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	63.8	0.0	55.2	41.7	45.6	50.1	11.0	7.2	50.6	10.2	0.0
LnGrp LOS	A	E		E	D	D	D	B	A	D	B	
Approach Vol, veh/h		10			331			1613			1300	
Approach Delay, s/veh		63.8			52.8			11.0			11.5	
Approach LOS		E			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	71.3		7.2	6.1	71.4		15.2				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	8.0	52.0		8.0	16.0	44.0		10.0				
Max Q Clear Time (g_c+I1), s	3.2	24.2		2.5	2.6	20.9		9.1				
Green Ext Time (p_c), s	0.0	12.4		0.0	0.0	9.2		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		15.6
HCM 6th LOS		B

Notes

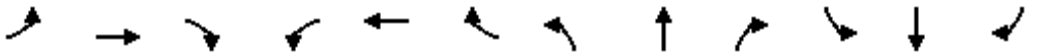
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	96	98	440	218	1167	1232	295
v/c Ratio	0.56	0.57	0.28	0.55	0.42	0.38	0.26
Control Delay	54.7	55.0	0.4	23.1	4.5	5.9	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	55.0	0.4	23.1	4.5	5.9	1.5
Queue Length 50th (ft)	62	64	0	87	59	127	4
Queue Length 95th (ft)	112	45	0	150	165	66	14
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	325	1599	624	2756	3250	1118
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.30	0.28	0.35	0.42	0.38	0.26

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	165	5	396	185	1085	0	0	1183	260
Future Volume (vph)	0	0	0	165	5	396	185	1085	0	0	1183	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1713	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.18	1.00			1.00	1.00
Satd. Flow (perm)				1698	1713	1599	336	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.38	0.90	0.85	0.93	0.92	0.92	0.96	0.88
Adj. Flow (vph)	0	0	0	181	13	440	218	1167	0	0	1232	295
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	106
Lane Group Flow (vph)	0	0	0	96	98	440	218	1167	0	0	1232	189
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.1	10.1	100.0	77.9	77.9			63.9	63.9
Effective Green, g (s)				10.1	10.1	100.0	77.9	77.9			63.9	63.9
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.64	0.64
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				171	173	1599	390	2756			3249	1011
v/s Ratio Prot							c0.05	0.33			0.24	
v/s Ratio Perm				0.06	0.06	0.28	c0.38					0.12
v/c Ratio				0.56	0.57	0.28	0.56	0.42			0.38	0.19
Uniform Delay, d1				42.8	42.9	0.0	4.1	3.6			8.6	7.4
Progression Factor				1.00	1.00	1.00	6.27	1.04			0.59	0.73
Incremental Delay, d2				2.5	2.5	0.4	0.8	0.4			0.3	0.4
Delay (s)				45.3	45.4	0.4	26.8	4.2			5.4	5.7
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			14.2			7.7			5.4	
Approach LOS		A			B			A			A	

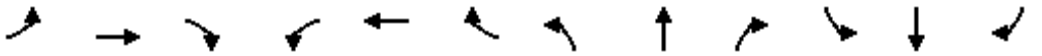
Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	193	192	228	990	185	568	830
v/c Ratio	0.77	0.76	0.15	0.58	0.21	0.86	0.32
Control Delay	59.9	58.9	0.2	21.1	3.2	50.4	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	58.9	0.2	21.1	3.2	50.4	6.7
Queue Length 50th (ft)	124	124	0	242	0	142	64
Queue Length 95th (ft)	195	100	0	320	17	#186	78
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1712	861	697	2572
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.61	0.15	0.58	0.21	0.81	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	325	10	180	0	0	0	0	950	135	557	797	0
Future Volume (vph)	325	10	180	0	0	0	0	950	135	557	797	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1661	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1661	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.89	0.50	0.79	0.92	0.92	0.92	0.92	0.96	0.73	0.98	0.96	0.92
Adj. Flow (vph)	365	20	228	0	0	0	0	990	185	568	830	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	95	0	0	0
Lane Group Flow (vph)	193	192	228	0	0	0	0	990	90	568	830	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.3	15.3	100.0					48.4	48.4	19.3	72.7	
Effective Green, g (s)	15.3	15.3	100.0					48.4	48.4	19.3	72.7	
Actuated g/C Ratio	0.15	0.15	1.00					0.48	0.48	0.19	0.73	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	252	254	1553					1712	766	662	2572	
v/s Ratio Prot								c0.28		c0.17	0.23	
v/s Ratio Perm	c0.12	0.12	0.15						0.06			
v/c Ratio	0.77	0.76	0.15					0.58	0.12	0.86	0.32	
Uniform Delay, d1	40.6	40.6	0.0					18.5	14.1	39.0	4.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.96	1.21	
Incremental Delay, d2	11.8	10.8	0.2					1.4	0.3	9.8	0.3	
Delay (s)	52.4	51.4	0.2					19.9	14.4	47.1	6.2	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s)		32.7			0.0			19.1			22.8	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	5.5
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	353	353	656
Demand Flow Rate, veh/h	361	360	669
Vehicles Circulating, veh/h	426	131	168
Vehicles Exiting, veh/h	411	655	323
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	5.7	4.2	6.1
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.471	0.529	0.467	0.533	0.637	0.363
Follow-Up Headway, s	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
Entry Flow, veh/h	170	191	168	192	426	243
Cap Entry Lane, veh/h	912	989	1197	1270	1157	1231
Entry HV Adj Factor	0.977	0.981	0.980	0.979	0.981	0.979
Flow Entry, veh/h	166	187	165	188	418	238
Cap Entry, veh/h	892	970	1166	1236	1135	1206
V/C Ratio	0.186	0.193	0.141	0.152	0.368	0.197
Control Delay, s/veh	5.9	5.6	4.3	4.2	6.9	4.7
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	2	1



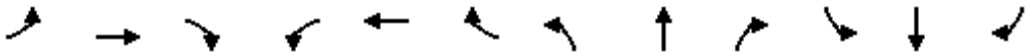
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	384	484	566	501	419	526
v/c Ratio	0.42	0.39	0.47	0.40	0.70	0.34
Control Delay	24.3	1.8	9.8	11.5	54.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	1.8	9.8	11.5	54.0	0.6
Queue Length 50th (ft)	164	0	66	135	157	0
Queue Length 95th (ft)	377	29	135	244	151	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	915	1257	1504	1238	601	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.39	0.38	0.40	0.70	0.34

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	342	431	453	361	260	458
Future Volume (vph)	342	431	453	361	260	458
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3400	1845	3400	1568
Flt Permitted	1.00	1.00	0.39	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1393	1845	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	384	484	566	501	419	526
RTOR Reduction (vph)	0	174	0	0	0	0
Lane Group Flow (vph)	384	310	566	501	419	526
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	55.6	76.8	76.6	76.6	21.2	120.0
Effective Green, g (s)	55.6	76.8	76.6	76.6	21.2	120.0
Actuated g/C Ratio	0.46	0.64	0.64	0.64	0.18	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	854	1003	1156	1177	600	1568
v/s Ratio Prot	0.21	0.05	c0.07	0.27	c0.12	
v/s Ratio Perm		0.14	c0.25			c0.34
v/c Ratio	0.45	0.31	0.49	0.43	0.70	0.34
Uniform Delay, d1	21.8	9.7	11.0	10.8	46.4	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.1	0.1	1.1	2.9	0.6
Delay (s)	23.5	9.8	11.1	11.9	49.3	0.6
Level of Service	C	A	B	B	D	A
Approach Delay (s)	15.9			11.5	22.2	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	398	363	152	264	523	98	232	697	412	119	608	423
v/c Ratio	0.50	0.30	0.24	0.30	0.49	0.18	0.69	0.66	0.26	0.43	0.65	0.56
Control Delay	19.8	28.6	5.4	18.2	34.1	4.4	32.4	38.2	0.4	25.1	41.1	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	28.6	5.4	18.2	34.1	4.4	32.4	38.2	0.4	25.1	41.1	19.3
Queue Length 50th (ft)	86	102	0	55	163	0	105	226	0	50	207	156
Queue Length 95th (ft)	119	134	33	73	166	19	113	324	0	87	281	172
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	969	1199	637	1157	1063	557	359	1062	1583	372	934	858
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.30	0.24	0.23	0.49	0.18	0.65	0.66	0.26	0.32	0.65	0.49

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	374	301	125	219	361	79	144	655	375	100	541	309
Future Volume (veh/h)	374	301	125	219	361	79	144	655	375	100	541	309
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	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	398	363	152	264	523	98	232	697	0	119	608	423
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	788	1226	547	837	1106	493	329	1119		295	966	590
Arrive On Green	0.10	0.34	0.34	0.07	0.32	0.32	0.11	0.31	0.00	0.06	0.27	0.27
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	398	363	152	264	523	98	232	697	0	119	608	423
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	8.1	8.0	7.4	5.5	12.9	4.9	9.7	18.0	0.0	5.1	16.0	24.4
Cycle Q Clear(g_c), s	8.1	8.0	7.4	5.5	12.9	4.9	9.7	18.0	0.0	5.1	16.0	24.4
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	788	1226	547	837	1106	493	329	1119		295	966	590
V/C Ratio(X)	0.51	0.30	0.28	0.32	0.47	0.20	0.71	0.62		0.40	0.63	0.72
Avail Cap(c_a), veh/h	1090	1226	547	1220	1106	493	382	1119		429	966	590
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	25.9	25.7	21.8	29.5	26.8	25.1	31.4	0.0	26.4	34.5	29.1
Incr Delay (d2), s/veh	0.2	0.6	1.3	0.1	1.5	0.9	3.6	2.6	0.0	0.3	3.1	7.3
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(50%),veh/ln	3.2	3.4	2.9	2.2	5.5	1.9	4.2	7.8	0.0	2.1	7.2	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	26.5	27.0	21.9	31.0	27.7	28.6	34.0	0.0	26.8	37.6	36.4
LnGrp LOS	C	C	C	C	C	C	C	C		C	D	D
Approach Vol, veh/h		913			885			929			1150	
Approach Delay, s/veh		24.6			27.9			32.7			36.0	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.9	42.8	12.0	39.9	15.7	40.0	16.8	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	7.5	10.0	7.1	20.0	10.1	14.9	11.7	26.4
Green Ext Time (p_c), s	0.4	2.8	0.1	3.0	0.6	3.6	0.1	1.4

Intersection Summary	
HCM 6th Ctrl Delay	30.7
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



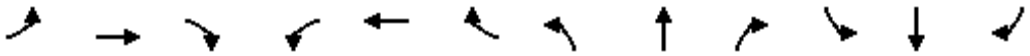
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	73	282	249	413	108	384	545	526	235	431
v/c Ratio	0.31	0.80	0.75	0.73	0.23	0.39	0.56	0.58	0.39	0.54
Control Delay	29.9	59.5	43.4	27.2	21.3	35.2	4.7	24.2	34.2	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	59.5	43.4	27.2	21.3	35.2	4.7	24.2	34.2	6.4
Queue Length 50th (ft)	28	167	108	113	35	101	0	97	109	0
Queue Length 95th (ft)	90	203	#345	7	112	178	5	198	230	3
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	346	354	330	567	574	979	971	924	604	804
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.80	0.75	0.73	0.19	0.39	0.56	0.57	0.39	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

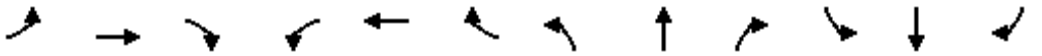
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	135	25	219	20	210	95	288	409	405	174	310
Future Volume (vph)	65	135	25	219	20	210	95	288	409	405	174	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.98		1.00	0.87		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)	1787	1844		1702	1528		1770	3539	1564	3427	1863	1583
Flt Permitted	0.24	1.00		0.24	1.00		0.60	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	451	1844		428	1528		1124	3539	1564	1380	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	73	250	32	249	51	362	108	384	545	526	235	431
RTOR Reduction (vph)	0	3	0	0	162	0	0	0	330	0	0	297
Lane Group Flow (vph)	73	279	0	249	251	0	108	384	215	526	235	134
Confl. Peds. (#/hr)			2	2					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	28.7	21.5		40.8	28.6		38.6	29.6	43.9	48.7	34.7	34.7
Effective Green, g (s)	28.7	21.5		40.8	28.6		38.6	29.6	43.9	48.7	34.7	34.7
Actuated g/C Ratio	0.26	0.19		0.37	0.26		0.35	0.27	0.39	0.44	0.31	0.31
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	202	355		320	391		441	939	615	861	579	492
v/s Ratio Prot	0.02	0.15		c0.10	0.16		0.02	0.11	0.04	c0.08	0.13	
v/s Ratio Perm	0.07			c0.19			0.06		0.09	c0.19		0.08
v/c Ratio	0.36	0.79		0.78	0.64		0.24	0.41	0.35	0.61	0.41	0.27
Uniform Delay, d1	32.7	42.8		27.7	36.9		25.4	33.7	23.8	21.4	30.3	28.9
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	1.1	10.9		11.3	3.6		0.2	1.3	0.3	1.3	2.1	1.4
Delay (s)	33.8	53.7		39.0	40.5		25.6	35.1	24.1	22.7	32.4	30.3
Level of Service	C	D		D	D		C	D	C	C	C	C
Approach Delay (s)		49.6			39.9			28.3			27.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	26.5
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	57	137	1426	64	235	53	1373	430	29	63	781	133
v/c Ratio	0.26	0.60	0.90	0.17	0.60	0.03	0.88	0.21	0.02	0.30	0.77	0.18
Control Delay	46.9	56.5	9.8	41.1	49.1	0.0	40.2	11.9	0.0	49.2	40.5	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.9	56.5	9.8	41.1	49.1	0.0	40.2	11.9	0.0	49.2	40.5	3.9
Queue Length 50th (ft)	18	46	0	19	76	0	290	73	0	20	247	0
Queue Length 95th (ft)	36	69	0	39	105	0	206	96	0	29	255	33
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	373	385	1583	390	402	1568	1663	2010	1568	213	1013	793
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.36	0.90	0.16	0.58	0.03	0.83	0.21	0.02	0.30	0.77	0.17

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	114	713	56	193	43	851	361	20	40	570	120
Future Volume (veh/h)	50	114	713	56	193	43	851	361	20	40	570	120
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	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	57	137	0	64	235	0	1373	430	0	63	781	133
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	200	206		299	308		1509	2164		113	1178	616
Arrive On Green	0.06	0.06	0.00	0.09	0.09	0.00	0.30	0.61	0.00	0.03	0.33	0.33
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	57	137	0	64	235	0	1373	430	0	63	781	133
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.6	3.8	0.0	1.8	6.6	0.0	26.8	5.4	0.0	1.8	19.1	5.7
Cycle Q Clear(g_c), s	1.6	3.8	0.0	1.8	6.6	0.0	26.8	5.4	0.0	1.8	19.1	5.7
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	200	206		299	308		1509	2164		113	1178	616
V/C Ratio(X)	0.28	0.66		0.21	0.76		0.91	0.20		0.56	0.66	0.22
Avail Cap(c_a), veh/h	376	387		339	349		1678	2164		204	1178	616
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	46.6	0.0	42.9	45.1	0.0	33.9	8.6	0.0	48.1	28.8	20.4
Incr Delay (d2), s/veh	0.3	1.4	0.0	0.4	8.5	0.0	6.9	0.2	0.0	4.3	3.0	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(50%),veh/ln	0.7	1.7	0.0	0.8	3.2	0.0	11.1	1.8	0.0	0.8	8.1	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.8	48.0	0.0	43.2	53.6	0.0	40.7	8.8	0.0	52.4	31.7	21.2
LnGrp LOS	D	D		D	D		D	A		D	C	C
Approach Vol, veh/h		194			299			1803			977	
Approach Delay, s/veh		47.4			51.4			33.1			31.6	
Approach LOS		D			D			C			C	

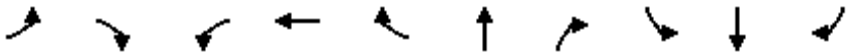
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	68.0		10.9	36.6	39.7		13.8				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		11.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.8	7.4		5.8	28.8	21.1		8.6				
Green Ext Time (p_c), s	0.0	2.8		0.1	1.8	1.5		0.2				

Intersection Summary		
HCM 6th Ctrl Delay	35.2	
HCM 6th LOS	D	

Notes

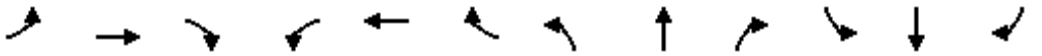
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	20	251	20	98	1381	195	70	1313	10
v/c Ratio	0.05	0.01	0.60	0.09	0.28	0.61	0.18	0.34	0.51	0.01
Control Delay	44.2	0.0	47.6	39.2	1.9	10.7	1.3	49.7	7.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	0.0	47.6	39.2	1.9	10.7	1.3	49.7	7.5	0.0
Queue Length 50th (ft)	3	0	78	11	0	250	10	22	147	0
Queue Length 95th (ft)	6	0	120	9	0	330	24	39	299	0
Internal Link Dist (ft)				679		647			2055	
Turn Bay Length (ft)	125	125	250		500		250	550		550
Base Capacity (vph)	280	1615	430	233	360	2269	1084	215	2560	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.01	0.58	0.09	0.27	0.61	0.18	0.33	0.51	0.01

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	236	5	62	0	1160	185	55	1274	5
Future Volume (veh/h)	5	0	5	236	5	62	0	1160	185	55	1274	5
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	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	0	0	251	20	98	0	1381	195	70	1313	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.63	0.86	0.84	0.95	0.79	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	43	23		325	176	149	3	2251	1004	118	2514	
Arrive On Green	0.01	0.00	0.00	0.09	0.09	0.09	0.00	0.64	0.64	0.03	0.71	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	10	0	0	251	20	98	0	1381	195	70	1313	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.3	0.0	0.0	7.2	1.0	6.0	0.0	23.3	5.1	2.0	17.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	7.2	1.0	6.0	0.0	23.3	5.1	2.0	17.0	0.0
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	43	23		325	176	149	3	2251	1004	118	2514	
V/C Ratio(X)	0.23	0.00		0.77	0.11	0.66	0.00	0.61	0.19	0.59	0.52	
Avail Cap(c_a), veh/h	281	152		377	204	173	549	2251	1004	206	2514	
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	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.9	0.0	0.0	44.2	41.4	43.7	0.0	10.7	7.5	47.6	6.6	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	8.8	0.3	7.9	0.0	1.3	0.4	1.8	0.8	0.0
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(50%),veh/ln	0.1	0.0	0.0	3.4	0.5	2.7	0.0	7.7	1.6	0.9	4.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.3	0.0	0.0	53.0	41.8	51.6	0.0	12.0	7.9	49.3	7.3	0.0
LnGrp LOS	D	A		D	D	D	A	B	A	D	A	
Approach Vol, veh/h		10			369			1576			1383	
Approach Delay, s/veh		52.3			52.0			11.5			9.5	
Approach LOS		D			D			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	69.9		7.2	0.0	77.3		15.5				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	53.0		8.0	16.0	43.0		11.0				
Max Q Clear Time (g_c+I1), s	4.0	25.3		2.3	0.0	19.0		9.2				
Green Ext Time (p_c), s	0.0	12.2		0.0	0.0	9.9		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		15.2
HCM 6th LOS		B

Notes

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

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



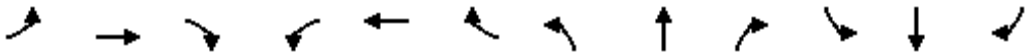
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	534	337	373	618	312	732
v/c Ratio	0.49	0.26	0.35	0.45	0.67	0.46
Control Delay	16.0	1.0	5.5	7.9	48.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	1.0	5.5	7.9	48.0	0.9
Queue Length 50th (ft)	173	0	27	124	98	0
Queue Length 95th (ft)	381	9	65	245	137	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1083	1461	1192	1367	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.23	0.31	0.45	0.32	0.46

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	486	263	332	494	303	498
Future Volume (vph)	486	263	332	494	303	498
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3467	1881	3467	1599
Flt Permitted	1.00	1.00	0.32	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1185	1881	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	534	337	373	618	312	732
RTOR Reduction (vph)	0	107	0	0	0	0
Lane Group Flow (vph)	534	230	373	618	312	732
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	54.8	68.3	68.7	68.7	13.5	100.0
Effective Green, g (s)	54.8	68.3	68.7	68.7	13.5	100.0
Actuated g/C Ratio	0.55	0.68	0.69	0.69	0.14	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1011	1070	1017	1292	468	1599
v/s Ratio Prot	c0.29	0.03	0.03	0.33	c0.09	
v/s Ratio Perm		0.12	0.22			c0.46
v/c Ratio	0.53	0.22	0.37	0.48	0.67	0.46
Uniform Delay, d1	14.4	5.9	7.6	7.3	41.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.0	0.1	1.3	2.8	0.9
Delay (s)	16.4	5.9	7.7	8.6	43.9	0.9
Level of Service	B	A	A	A	D	A
Approach Delay (s)	12.3			8.2	13.8	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	484	420	195	499	505	145	83	735	189	147	664	322
v/c Ratio	0.54	0.34	0.29	0.51	0.41	0.23	0.34	0.76	0.12	0.62	0.64	0.47
Control Delay	20.1	32.1	5.4	19.7	33.0	5.7	28.1	49.2	0.2	36.3	42.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	32.1	5.4	19.7	33.0	5.7	28.1	49.2	0.2	36.3	42.8	6.2
Queue Length 50th (ft)	111	132	0	115	163	0	42	291	0	77	247	0
Queue Length 95th (ft)	136	194	38	159	221	32	60	391	0	112	335	73
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1119	1235	679	1184	1243	643	341	963	1599	289	1037	691
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.34	0.29	0.42	0.41	0.23	0.24	0.76	0.12	0.51	0.64	0.47

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	392	407	160	459	434	116	57	654	172	115	591	309
Future Volume (veh/h)	392	407	160	459	434	116	57	654	172	115	591	309
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	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	484	420	195	499	505	145	83	735	0	147	664	322
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	882	1271	567	931	1282	564	225	990		256	1082	483
Arrive On Green	0.11	0.36	0.36	0.11	0.36	0.36	0.05	0.28	0.00	0.07	0.30	0.30
Sat Flow, veh/h	3456	3554	1585	3456	3554	1565	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	484	420	195	499	505	145	83	735	0	147	664	322
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1565	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	10.7	10.6	11.1	11.0	13.0	8.0	4.0	23.0	0.0	7.1	19.7	21.8
Cycle Q Clear(g_c), s	10.7	10.6	11.1	11.0	13.0	8.0	4.0	23.0	0.0	7.1	19.7	21.8
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	882	1271	567	931	1282	564	225	990		256	1082	483
V/C Ratio(X)	0.55	0.33	0.34	0.54	0.39	0.26	0.37	0.74		0.57	0.61	0.67
Avail Cap(c_a), veh/h	1206	1271	567	1245	1282	564	361	990		341	1082	483
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	28.8	28.9	20.8	29.3	27.7	30.8	40.5	0.0	30.7	36.6	37.3
Incr Delay (d2), s/veh	0.2	0.7	1.7	0.2	0.9	1.1	0.4	5.0	0.0	0.8	2.6	7.1
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(50%),veh/ln	4.3	4.6	4.4	4.4	5.7	3.1	1.7	10.6	0.0	3.0	8.7	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.5	29.5	30.6	21.0	30.2	28.8	31.2	45.5	0.0	31.5	39.2	44.5
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	D
Approach Vol, veh/h		1099			1149			818			1133	
Approach Delay, s/veh		26.1			26.0			44.1			39.7	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.8	50.0	14.2	40.0	18.5	50.3	10.7	43.4
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	13.0	13.1	9.1	25.0	12.7	15.0	6.0	23.8
Green Ext Time (p_c), s	0.8	3.5	0.1	3.1	0.8	4.0	0.0	3.9

Intersection Summary	
HCM 6th Ctrl Delay	33.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



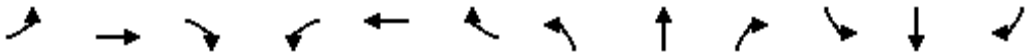
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	284	220	355	378	20	324	106	117	395	77
v/c Ratio	0.66	0.65	0.79	0.78	0.05	0.30	0.12	0.13	0.53	0.11
Control Delay	33.7	17.0	40.5	18.6	21.2	29.0	4.5	18.7	29.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	17.0	40.5	18.6	21.2	29.0	4.5	18.7	29.7	0.3
Queue Length 50th (ft)	103	5	136	9	5	61	0	14	122	0
Queue Length 95th (ft)	209	0	#308	0	18	152	12	61	#513	0
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	433	494	448	614	532	1088	870	1057	743	698
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.45	0.79	0.62	0.04	0.30	0.12	0.11	0.53	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

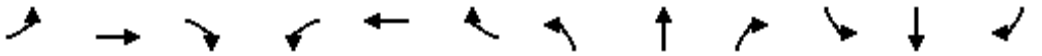
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	5	145	252	5	265	10	246	70	110	340	60
Future Volume (vph)	190	5	145	252	5	265	10	246	70	110	340	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.99	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	0.86		1.00	0.86		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)	1768	1596		1752	1538		1770	3539	1567	3392	1845	1530
Flt Permitted	0.46	1.00		0.41	1.00		0.43	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	856	1596		761	1538		803	3539	1567	1663	1845	1530
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	284	10	210	355	20	358	20	324	106	117	395	77
RTOR Reduction (vph)	0	191	0	0	323	0	0	0	51	0	0	48
Lane Group Flow (vph)	284	29	0	355	55	0	20	324	55	117	395	29
Confl. Peds. (#/hr)	2					2			8	8		
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	26.5	8.7		28.5	9.7		34.0	31.7	50.5	44.3	37.0	37.0
Effective Green, g (s)	26.5	8.7		28.5	9.7		34.0	31.7	50.5	44.3	37.0	37.0
Actuated g/C Ratio	0.27	0.09		0.29	0.10		0.35	0.32	0.51	0.45	0.38	0.38
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	396	141		411	152		300	1143	806	884	695	577
v/s Ratio Prot	0.13	0.02		c0.17	0.04		0.00	0.09	0.01	c0.01	c0.21	
v/s Ratio Perm	0.06			c0.09			0.02		0.02	0.05		0.02
v/c Ratio	0.72	0.20		0.86	0.36		0.07	0.28	0.07	0.13	0.57	0.05
Uniform Delay, d1	31.3	41.5		31.2	41.3		21.4	24.7	12.0	15.5	24.2	19.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.1	0.7		16.9	1.5		0.1	0.6	0.0	0.1	3.4	0.2
Delay (s)	37.4	42.2		48.1	42.8		21.4	25.4	12.0	15.5	27.6	19.6
Level of Service	D	D		D	D		C	C	B	B	C	B
Approach Delay (s)		39.5			45.3			22.0			24.1	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	98.1	Sum of lost time (s)	26.5
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	116	225	1042	40	182	88	1334	896	66	32	439	58
v/c Ratio	0.37	0.70	0.65	0.11	0.49	0.06	0.91	0.43	0.04	0.15	0.41	0.08
Control Delay	45.6	56.0	2.1	40.4	46.7	0.1	49.6	17.2	0.0	46.2	30.6	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	56.0	2.1	40.4	46.7	0.1	49.6	17.2	0.0	46.2	30.6	1.4
Queue Length 50th (ft)	36	74	0	12	58	0	316	221	0	10	117	0
Queue Length 95th (ft)	61	111	0	18	88	0	192	240	0	22	159	8
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	379	391	1599	1461	2069	1599	215	1062	778
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.42	0.65	0.11	0.47	0.06	0.91	0.43	0.04	0.15	0.41	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	214	865	24	160	69	667	645	45	25	360	55
Future Volume (veh/h)	115	214	865	24	160	69	667	645	45	25	360	55
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	116	225	0	40	182	0	1334	896	0	32	439	58
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	289	298		253	260		1945	2187		82	860	516
Arrive On Green	0.08	0.08	0.00	0.07	0.07	0.00	0.38	0.61	0.00	0.02	0.24	0.24
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	116	225	0	40	182	0	1334	896	0	32	439	58
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.2	6.1	0.0	1.1	5.0	0.0	22.0	13.0	0.0	0.9	10.6	2.6
Cycle Q Clear(g_c), s	3.2	6.1	0.0	1.1	5.0	0.0	22.0	13.0	0.0	0.9	10.6	2.6
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	289	298		253	260		1945	2187		82	860	516
V/C Ratio(X)	0.40	0.76		0.16	0.70		0.69	0.41		0.39	0.51	0.11
Avail Cap(c_a), veh/h	522	537		348	358		1945	2187		209	860	516
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.5	44.9	0.0	43.5	45.3	0.0	25.7	10.1	0.0	48.1	32.9	23.8
Incr Delay (d2), s/veh	0.3	1.5	0.0	0.3	3.6	0.0	0.8	0.6	0.0	3.0	2.2	0.4
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(50%),veh/ln	1.3	2.7	0.0	0.5	2.3	0.0	8.3	4.5	0.0	0.4	4.6	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.8	46.3	0.0	43.8	48.9	0.0	26.6	10.7	0.0	51.1	35.1	24.2
LnGrp LOS	D	D		D	D		C	B		D	D	C
Approach Vol, veh/h		341			222			2230			529	
Approach Delay, s/veh		45.5			48.0			20.2			34.9	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	67.1		13.3	44.4	30.0		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	15.0		8.1	24.0	12.6		7.0				
Green Ext Time (p_c), s	0.0	6.6		0.2	1.7	2.1		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		27.0
HCM 6th LOS		C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	5	252	12	67	20	1399	194	43	1257	10
v/c Ratio	0.08	0.00	0.60	0.05	0.19	0.09	0.59	0.17	0.22	0.52	0.01
Control Delay	44.8	0.0	47.8	38.8	1.2	51.4	7.0	1.2	53.2	6.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	0.0	47.8	38.8	1.2	51.4	7.0	1.2	53.2	6.9	0.0
Queue Length 50th (ft)	6	0	78	7	0	6	51	0	13	78	0
Queue Length 95th (ft)	13	0	119	13	0	4	348	18	20	235	m0
Internal Link Dist (ft)	697			679			647			2055	
Turn Bay Length (ft)		125	250		500	455		250	550		550
Base Capacity (vph)	152	1615	441	239	364	554	2390	1133	274	2435	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.00	0.57	0.05	0.18	0.04	0.59	0.17	0.16	0.52	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	5	224	6	56	5	1301	175	25	1219	5
Future Volume (veh/h)	0	5	5	224	6	56	5	1301	175	25	1219	5
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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	0	10	0	252	12	67	20	1399	194	43	1257	0
Peak Hour Factor	0.75	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	43	23		330	179	152	74	2330	1039	78	2316	
Arrive On Green	0.00	0.01	0.00	0.09	0.09	0.09	0.02	0.65	0.65	0.02	0.65	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	0	10	0	252	12	67	20	1399	194	43	1257	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	0.0	0.5	0.0	7.1	0.6	4.0	0.6	22.4	4.8	1.2	19.1	0.0
Cycle Q Clear(g_c), s	0.0	0.5	0.0	7.1	0.6	4.0	0.6	22.4	4.8	1.2	19.1	0.0
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	43	23		330	179	152	74	2330	1039	78	2316	
V/C Ratio(X)	0.00	0.43		0.76	0.07	0.44	0.27	0.60	0.19	0.55	0.54	
Avail Cap(c_a), veh/h	281	152		418	226	192	557	2330	1039	276	2316	
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)	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	49.1	0.0	44.2	41.2	42.8	48.2	10.0	7.0	48.4	9.4	0.0
Incr Delay (d2), s/veh	0.0	14.8	0.0	6.8	0.2	2.4	1.9	1.2	0.4	2.2	0.9	0.0
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(50%),veh/ln	0.0	0.3	0.0	3.3	0.3	1.7	0.3	7.4	1.5	0.5	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	63.8	0.0	51.0	41.4	45.2	50.1	11.2	7.4	50.6	10.3	0.0
LnGrp LOS	A	E		D	D	D	D	B	A	D	B	
Approach Vol, veh/h		10			331			1613			1300	
Approach Delay, s/veh		63.8			49.5			11.2			11.6	
Approach LOS		E			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	71.0		7.2	6.1	71.2		15.5				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	8.0	50.0		8.0	16.0	42.0		12.0				
Max Q Clear Time (g_c+I1), s	3.2	24.4		2.5	2.6	21.1		9.1				
Green Ext Time (p_c), s	0.0	11.9		0.0	0.0	8.8		0.4				

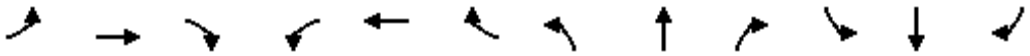
Intersection Summary			
HCM 6th Ctrl Delay		15.4	
HCM 6th LOS		B	

Notes

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

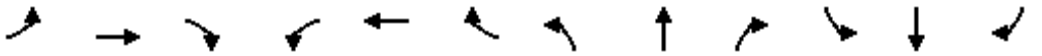
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2030 Background



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	56	22	55	416	47	173	133	920	530	219	688	75
v/c Ratio	0.26	0.20	0.03	0.73	0.18	0.47	0.49	0.50	0.50	0.62	0.25	0.08
Control Delay	56.5	57.5	0.1	55.4	44.2	10.3	58.6	22.3	3.7	58.8	16.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	57.5	0.1	55.4	44.2	10.3	58.6	22.3	3.7	58.8	16.5	0.2
Queue Length 50th (ft)	21	17	0	160	32	0	51	251	0	85	106	0
Queue Length 95th (ft)	29	33	0	187	62	47	72	362	36	97	158	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	277	190	1595	864	507	550	357	1837	1064	385	2763	941
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.12	0.03	0.48	0.09	0.31	0.37	0.50	0.50	0.57	0.25	0.08

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	15	40	345	40	145	105	810	435	160	660	45
Future Volume (veh/h)	35	15	40	345	40	145	105	810	435	160	660	45
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	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	22	0	416	47	0	133	920	0	219	688	0
Peak Hour Factor	0.63	0.69	0.73	0.83	0.86	0.84	0.79	0.88	0.82	0.73	0.96	0.60
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	205	85		490	240		199	1920		277	2874	
Arrive On Green	0.06	0.04	0.00	0.14	0.13	0.00	0.06	0.54	0.00	0.08	0.56	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	56	22	0	416	47	0	133	920	0	219	688	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.8	1.3	0.0	14.2	2.7	0.0	4.5	19.3	0.0	7.5	8.2	0.0
Cycle Q Clear(g_c), s	1.8	1.3	0.0	14.2	2.7	0.0	4.5	19.3	0.0	7.5	8.2	0.0
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	205	85		490	240		199	1920		277	2874	
V/C Ratio(X)	0.27	0.26		0.85	0.20		0.67	0.48		0.79	0.24	
Avail Cap(c_a), veh/h	278	190		871	510		360	1920		360	2874	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.1	55.4	0.0	50.2	46.6	0.0	55.4	17.1	0.0	54.2	13.3	0.0
Incr Delay (d2), s/veh	0.5	1.6	0.0	3.2	0.4	0.0	2.9	0.9	0.0	7.8	0.2	0.0
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(50%),veh/ln	0.8	0.7	0.0	6.2	1.3	0.0	2.0	7.8	0.0	3.5	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.6	57.0	0.0	53.3	47.0	0.0	58.3	18.0	0.0	61.9	13.4	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		78			463			1053			907	
Approach Delay, s/veh		55.3			52.7			23.1			25.2	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	70.8	22.7	11.4	12.4	73.5	12.5	21.5
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	9.5	21.3	16.2	3.3	6.5	10.2	3.8	4.7
Green Ext Time (p_c), s	0.2	10.8	1.0	0.0	0.1	9.5	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	30.3
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	393	494	581	507	427	546
v/c Ratio	0.44	0.39	0.49	0.22	0.69	0.35
Control Delay	25.3	1.8	10.2	9.1	53.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	1.8	10.2	9.1	53.0	0.6
Queue Length 50th (ft)	172	0	69	62	159	0
Queue Length 95th (ft)	392	29	138	110	#157	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	896	1255	1476	2331	621	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.39	0.39	0.22	0.69	0.35

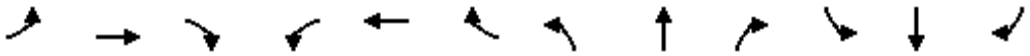
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	350	440	465	365	265	475
Future Volume (vph)	350	440	465	365	265	475
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.38	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1343	3505	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	393	494	581	507	427	546
RTOR Reduction (vph)	0	180	0	0	0	0
Lane Group Flow (vph)	393	314	581	507	427	546
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	54.4	76.3	75.9	75.9	21.9	120.0
Effective Green, g (s)	54.4	76.3	75.9	75.9	21.9	120.0
Actuated g/C Ratio	0.45	0.64	0.63	0.63	0.18	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	836	996	1132	2216	620	1568
v/s Ratio Prot	0.21	0.06	c0.07	0.14	c0.13	
v/s Ratio Perm		0.14	c0.25			c0.35
v/c Ratio	0.47	0.32	0.51	0.23	0.69	0.35
Uniform Delay, d1	22.8	10.0	11.6	9.5	45.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.1	0.2	0.2	2.5	0.6
Delay (s)	24.7	10.0	11.7	9.7	48.4	0.6
Level of Service	C	B	B	A	D	A
Approach Delay (s)	16.5			10.8	21.6	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	410	373	159	271	529	105	242	713	429	119	624	438
v/c Ratio	0.52	0.31	0.25	0.31	0.50	0.19	0.73	0.67	0.27	0.44	0.67	0.58
Control Delay	20.1	28.9	5.3	18.3	34.5	5.3	35.2	38.7	0.4	25.5	42.0	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	28.9	5.3	18.3	34.5	5.3	35.2	38.7	0.4	25.5	42.0	20.7
Queue Length 50th (ft)	89	106	0	57	166	0	111	234	0	50	215	173
Queue Length 95th (ft)	122	137	35	75	169	23	118	334	0	87	290	187
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	959	1197	641	1149	1057	554	350	1066	1583	367	928	848
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.31	0.25	0.24	0.50	0.19	0.69	0.67	0.27	0.32	0.67	0.52

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	385	310	130	225	365	85	150	670	390	100	555	320
Future Volume (veh/h)	385	310	130	225	365	85	150	670	390	100	555	320
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	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	410	373	159	271	529	105	242	713	0	119	624	438
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	785	1220	544	828	1097	489	329	1125		290	959	590
Arrive On Green	0.10	0.34	0.34	0.08	0.31	0.31	0.11	0.32	0.00	0.06	0.27	0.27
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	410	373	159	271	529	105	242	713	0	119	624	438
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	8.4	8.3	7.9	5.7	13.3	5.4	10.2	18.6	0.0	5.1	16.7	25.8
Cycle Q Clear(g_c), s	8.4	8.3	7.9	5.7	13.3	5.4	10.2	18.6	0.0	5.1	16.7	25.8
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	785	1220	544	828	1097	489	329	1125		290	959	590
V/C Ratio(X)	0.52	0.31	0.29	0.33	0.48	0.21	0.74	0.63		0.41	0.65	0.74
Avail Cap(c_a), veh/h	1073	1220	544	1200	1097	489	373	1125		423	959	590
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	26.3	26.2	22.2	30.1	27.4	25.5	31.7	0.0	26.8	35.2	29.7
Incr Delay (d2), s/veh	0.2	0.6	1.4	0.1	1.5	1.0	5.2	2.7	0.0	0.3	3.4	8.2
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(50%),veh/ln	3.4	3.6	3.1	2.3	5.7	2.1	4.6	8.1	0.0	2.2	7.5	10.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	26.9	27.5	22.2	31.6	28.4	30.7	34.4	0.0	27.2	38.6	37.9
LnGrp LOS	C	C	C	C	C	C	C	C		C	D	D
Approach Vol, veh/h		942			905			955			1181	
Approach Delay, s/veh		25.0			28.4			33.4			37.2	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	42.9	12.0	40.3	16.0	40.0	17.3	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	7.7	10.3	7.1	20.6	10.4	15.3	12.2	27.8
Green Ext Time (p_c), s	0.4	2.9	0.1	2.9	0.6	3.6	0.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	31.4
HCM 6th LOS	C

Notes

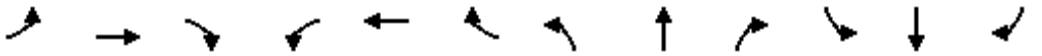
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	73	282	250	413	108	393	547	526	236	431
v/c Ratio	0.31	0.80	0.76	0.73	0.23	0.40	0.56	0.59	0.39	0.54
Control Delay	29.9	59.5	43.6	27.2	21.3	35.4	4.7	24.3	34.3	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	59.5	43.6	27.2	21.3	35.4	4.7	24.3	34.3	6.4
Queue Length 50th (ft)	28	167	109	113	35	104	0	97	109	0
Queue Length 95th (ft)	90	203	#349	7	112	183	6	198	230	3
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	346	354	330	567	573	979	973	915	604	804
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.80	0.76	0.73	0.19	0.40	0.56	0.57	0.39	0.54

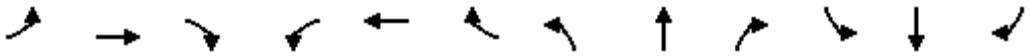
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	135	25	220	20	210	95	295	410	405	175	310
Future Volume (vph)	65	135	25	220	20	210	95	295	410	405	175	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.98		1.00	0.87		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)	1787	1844		1702	1528		1770	3539	1564	3427	1863	1583
Flt Permitted	0.24	1.00		0.24	1.00		0.60	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	451	1844		428	1528		1121	3539	1564	1353	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	73	250	32	250	51	362	108	393	547	526	236	431
RTOR Reduction (vph)	0	3	0	0	162	0	0	0	332	0	0	297
Lane Group Flow (vph)	73	279	0	250	251	0	108	393	215	526	236	134
Confl. Peds. (#/hr)			2	2					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	28.7	21.5		40.8	28.6		38.6	29.6	43.9	48.7	34.7	34.7
Effective Green, g (s)	28.7	21.5		40.8	28.6		38.6	29.6	43.9	48.7	34.7	34.7
Actuated g/C Ratio	0.26	0.19		0.37	0.26		0.35	0.27	0.39	0.44	0.31	0.31
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	202	355		320	391		440	939	615	853	579	492
v/s Ratio Prot	0.02	0.15		c0.10	0.16		0.02	0.11	0.04	c0.08	0.13	
v/s Ratio Perm	0.07			c0.19			0.07		0.09	c0.19		0.08
v/c Ratio	0.36	0.79		0.78	0.64		0.25	0.42	0.35	0.62	0.41	0.27
Uniform Delay, d1	32.7	42.8		27.7	36.9		25.4	33.8	23.8	21.5	30.3	28.9
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	1.1	10.9		11.7	3.6		0.2	1.4	0.3	1.3	2.1	1.4
Delay (s)	33.8	53.7		39.4	40.5		25.6	35.2	24.1	22.8	32.4	30.3
Level of Service	C	D		D	D		C	D	C	C	C	C
Approach Delay (s)		49.6			40.1			28.4			27.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	26.5
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

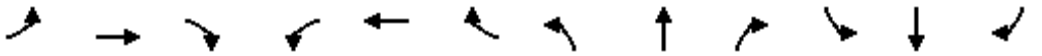


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	57	139	1460	63	238	56	1403	476	29	63	863	133
v/c Ratio	0.25	0.60	0.92	0.17	0.62	0.04	0.89	0.24	0.02	0.30	0.87	0.18
Control Delay	46.3	56.0	11.8	41.2	49.9	0.0	35.8	5.0	0.0	48.6	46.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	56.0	11.8	41.2	49.9	0.0	35.8	5.0	0.0	48.6	46.2	3.7
Queue Length 50th (ft)	18	46	0	19	76	0	175	24	0	20	284	0
Queue Length 95th (ft)	36	70	0	38	106	0	183	38	m0	28	#284	32
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	381	393	1568	1680	2009	1568	215	995	775
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.39	0.92	0.17	0.61	0.04	0.84	0.24	0.02	0.29	0.87	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	115	730	55	195	45	870	400	20	40	630	120
Future Volume (veh/h)	50	115	730	55	195	45	870	400	20	40	630	120
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	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	57	139	0	62	238	0	1403	476	0	63	863	133
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	203	208		303	311		1538	2150		113	1143	602
Arrive On Green	0.06	0.06	0.00	0.09	0.09	0.00	0.31	0.61	0.00	0.03	0.32	0.32
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	57	139	0	62	238	0	1403	476	0	63	863	133
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.6	3.8	0.0	1.7	6.6	0.0	27.1	6.1	0.0	1.8	21.9	5.7
Cycle Q Clear(g_c), s	1.6	3.8	0.0	1.7	6.6	0.0	27.1	6.1	0.0	1.8	21.9	5.7
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	203	208		303	311		1538	2150		113	1143	602
V/C Ratio(X)	0.28	0.67		0.20	0.76		0.91	0.22		0.56	0.75	0.22
Avail Cap(c_a), veh/h	346	355		343	353		1694	2150		206	1143	602
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	46.1	0.0	42.3	44.6	0.0	33.3	8.8	0.0	47.6	30.2	20.8
Incr Delay (d2), s/veh	0.3	1.4	0.0	0.3	8.5	0.0	7.0	0.2	0.0	4.2	4.6	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(50%),veh/ln	0.7	1.7	0.0	0.7	3.2	0.0	11.2	2.1	0.0	0.8	9.4	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.3	47.5	0.0	42.7	53.1	0.0	40.3	9.0	0.0	51.8	34.9	21.6
LnGrp LOS	D	D		D	D		D	A		D	C	C
Approach Vol, veh/h		196			300			1879			1059	
Approach Delay, s/veh		46.9			50.9			32.4			34.2	
Approach LOS		D			D			C			C	

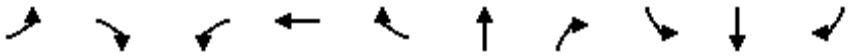
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	67.0		10.9	36.9	38.4		13.8				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		10.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.8	8.1		5.8	29.1	23.9		8.6				
Green Ext Time (p_c), s	0.0	3.1		0.1	1.8	0.1		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		35.4
HCM 6th LOS		D

Notes

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

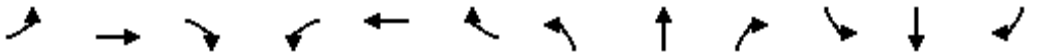
Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	20	255	20	95	1452	200	76	1397	10
v/c Ratio	0.05	0.01	0.61	0.09	0.27	0.64	0.18	0.37	0.54	0.01
Control Delay	44.2	0.0	48.3	39.6	1.9	11.0	1.2	50.8	4.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	0.0	48.3	39.6	1.9	11.0	1.2	50.8	4.3	0.0
Queue Length 50th (ft)	3	0	79	11	0	272	9	25	97	0
Queue Length 95th (ft)	6	0	124	9	0	348	19	m28	m162	m0
Internal Link Dist (ft)				679		647			2055	
Turn Bay Length (ft)	125	125	250		500		250	550		550
Base Capacity (vph)	245	1615	425	230	358	2270	1086	217	2564	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.01	0.60	0.09	0.27	0.64	0.18	0.35	0.54	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	240	5	60	0	1220	190	60	1355	5
Future Volume (veh/h)	5	0	5	240	5	60	0	1220	190	60	1355	5
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	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	0	0	255	20	95	0	1452	200	76	1397	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.63	0.86	0.84	0.95	0.79	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	43	23		328	178	151	3	2240	999	126	2511	
Arrive On Green	0.01	0.00	0.00	0.10	0.10	0.10	0.00	0.64	0.64	0.04	0.71	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	10	0	0	255	20	95	0	1452	200	76	1397	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.3	0.0	0.0	7.3	1.0	5.8	0.0	25.5	5.3	2.2	18.9	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	7.3	1.0	5.8	0.0	25.5	5.3	2.2	18.9	0.0
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	43	23		328	178	151	3	2240	999	126	2511	
V/C Ratio(X)	0.23	0.00		0.78	0.11	0.63	0.00	0.65	0.20	0.60	0.56	
Avail Cap(c_a), veh/h	246	133		377	204	173	549	2240	999	206	2511	
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	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.9	0.0	0.0	44.2	41.3	43.5	0.0	11.3	7.6	47.4	6.9	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	9.1	0.3	6.6	0.0	1.5	0.5	1.7	0.9	0.0
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(50%),veh/ln	0.1	0.0	0.0	3.5	0.5	2.5	0.0	8.5	1.6	0.9	5.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.3	0.0	0.0	53.3	41.7	50.1	0.0	12.8	8.1	49.1	7.8	0.0
LnGrp LOS	D	A		D	D	D	A	B	A	D	A	
Approach Vol, veh/h		10			370			1652			1473	
Approach Delay, s/veh		52.3			51.8			12.2			9.9	
Approach LOS		D			D			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	69.5		7.2	0.0	77.2		15.6				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	54.0		7.0	16.0	44.0		11.0				
Max Q Clear Time (g_c+I1), s	4.2	27.5		2.3	0.0	20.9		9.3				
Green Ext Time (p_c), s	0.0	12.8		0.0	0.0	10.6		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		15.5
HCM 6th LOS		B

Notes

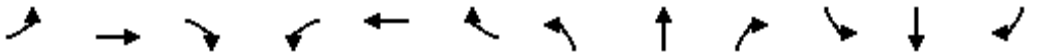
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	103	105	753	227	796	1287	542
v/c Ratio	0.59	0.59	0.48	0.62	0.29	0.40	0.45
Control Delay	55.2	55.5	1.1	29.1	2.7	6.9	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	55.5	1.1	29.1	2.7	6.9	2.3
Queue Length 50th (ft)	67	68	0	82	42	124	11
Queue Length 95th (ft)	106	98	0	176	63	155	15
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	413	2739	3220	1198
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.35	0.48	0.55	0.29	0.40	0.45

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	160	10	670	200	740	0	0	1145	450
Future Volume (vph)	0	0	0	160	10	670	200	740	0	0	1145	450
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1679	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.17	1.00			1.00	1.00
Satd. Flow (perm)				1665	1679	1568	314	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Adj. Flow (vph)	0	0	0	195	13	753	227	796	0	0	1287	542
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	196
Lane Group Flow (vph)	0	0	0	103	105	753	227	796	0	0	1287	346
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.6	10.6	100.0	77.4	77.4			63.9	63.9
Effective Green, g (s)				10.6	10.6	100.0	77.4	77.4			63.9	63.9
Actuated g/C Ratio				0.11	0.11	1.00	0.77	0.77			0.64	0.64
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				176	177	1568	366	2739			3218	1001
v/s Ratio Prot							0.05	0.22			0.26	
v/s Ratio Perm				0.06	0.06	c0.48	c0.43					0.22
v/c Ratio				0.59	0.59	0.48	0.62	0.29			0.40	0.35
Uniform Delay, d1				42.6	42.6	0.0	4.7	3.3			8.8	8.4
Progression Factor				1.00	1.00	1.00	5.38	0.67			0.68	1.17
Incremental Delay, d2				3.2	3.5	1.1	2.2	0.3			0.3	0.8
Delay (s)				45.8	46.2	1.1	27.3	2.5			6.3	10.6
Level of Service				D	D	A	C	A			A	B
Approach Delay (s)		0.0			10.8			8.0			7.6	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	120	122	208	824	67	364	1049
v/c Ratio	0.62	0.63	0.13	0.41	0.07	0.72	0.39
Control Delay	55.7	55.7	0.2	14.3	2.2	50.5	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	55.7	0.2	14.3	2.2	50.5	4.4
Queue Length 50th (ft)	77	78	0	147	0	82	66
Queue Length 95th (ft)	127	90	0	237	11	131	77
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	316	1553	1994	930	680	2675
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.39	0.13	0.41	0.07	0.54	0.39

Intersection Summary

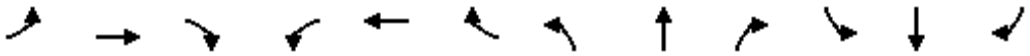
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	15	175	0	0	0	0	750	55	335	965	0
Future Volume (vph)	190	15	175	0	0	0	0	750	55	335	965	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1669	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1669	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.87	0.63	0.84	0.92	0.92	0.92	0.92	0.91	0.82	0.92	0.92	0.92
Adj. Flow (vph)	218	24	208	0	0	0	0	824	67	364	1049	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	29	0	0	0
Lane Group Flow (vph)	120	122	208	0	0	0	0	824	38	364	1049	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	11.7	11.7	100.0					56.3	56.3	15.0	76.3	
Effective Green, g (s)	11.7	11.7	100.0					56.3	56.3	15.0	76.3	
Actuated g/C Ratio	0.12	0.12	1.00					0.56	0.56	0.15	0.76	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	192	195	1553					1992	891	510	2674	
v/s Ratio Prot								c0.23		c0.11	0.30	
v/s Ratio Perm	0.07	0.07	0.13						0.02			
v/c Ratio	0.62	0.63	0.13					0.41	0.04	0.71	0.39	
Uniform Delay, d1	42.1	42.1	0.0					12.4	9.8	40.5	4.0	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.06	0.92	
Incremental Delay, d2	4.5	4.4	0.2					0.6	0.1	3.7	0.4	
Delay (s)	46.6	46.5	0.2					13.1	9.9	46.7	4.1	
Level of Service	D	D	A					B	A	D	A	
Approach Delay (s)		25.1			0.0			12.8			15.1	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	621	654	421
Demand Flow Rate, veh/h	627	667	430
Vehicles Circulating, veh/h	247	436	168
Vehicles Exiting, veh/h	351	438	935
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	6.8	9.1	4.7
Approach LOS	A	A	A

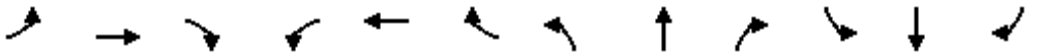
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.695	0.305	0.252	0.748	0.574	0.426
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	436	191	168	499	247	183
Cap Entry Lane, veh/h	1075	1151	904	980	1157	1231
Entry HV Adj Factor	0.991	0.990	0.980	0.980	0.980	0.978
Flow Entry, veh/h	432	189	165	489	242	179
Cap Entry, veh/h	1066	1140	886	960	1133	1204
V/C Ratio	0.405	0.166	0.186	0.509	0.214	0.149
Control Delay, s/veh	7.7	4.6	5.9	10.1	5.1	4.3
LOS	A	A	A	B	A	A
95th %tile Queue, veh	2	1	1	3	1	1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	81	138	628	93	119	153	887	494	236	1124	152
v/c Ratio	0.32	0.47	0.09	0.85	0.21	0.24	0.55	0.62	0.53	0.61	0.51	0.19
Control Delay	54.9	58.9	0.1	54.7	36.3	2.2	59.0	31.0	4.8	55.3	25.4	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	58.9	0.1	54.7	36.3	2.2	59.0	31.0	4.8	55.3	25.4	2.8
Queue Length 50th (ft)	29	58	0	229	55	0	57	283	0	88	229	0
Queue Length 95th (ft)	50	89	0	#311	78	3	93	391	60	131	291	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	398	242	1578	845	501	549	302	1435	929	494	2221	782
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.33	0.09	0.74	0.19	0.22	0.51	0.62	0.53	0.48	0.51	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	60	130	565	65	100	135	825	430	215	1045	85
Future Volume (veh/h)	65	60	130	565	65	100	135	825	430	215	1045	85
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	80	81	0	628	93	0	153	887	0	236	1124	0
Peak Hour Factor	0.81	0.74	0.94	0.90	0.70	0.84	0.88	0.93	0.87	0.91	0.93	0.56
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	230	132		710	391		228	1508		307	2284	
Arrive On Green	0.07	0.07	0.00	0.20	0.21	0.00	0.07	0.42	0.00	0.09	0.44	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	80	81	0	628	93	0	153	887	0	236	1124	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.3	4.4	0.0	18.5	4.4	0.0	4.5	20.2	0.0	7.0	16.5	0.0
Cycle Q Clear(g_c), s	2.3	4.4	0.0	18.5	4.4	0.0	4.5	20.2	0.0	7.0	16.5	0.0
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	230	132		710	391		228	1508		307	2284	
V/C Ratio(X)	0.35	0.61		0.88	0.24		0.67	0.59		0.77	0.49	
Avail Cap(c_a), veh/h	411	249		872	498		312	1508		510	2284	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.3	47.9	0.0	41.0	35.0	0.0	48.4	23.6	0.0	47.2	21.0	0.0
Incr Delay (d2), s/veh	0.7	4.6	0.0	8.8	0.3	0.0	2.6	1.7	0.0	3.0	0.8	0.0
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(50%),veh/ln	1.0	2.2	0.0	8.6	2.0	0.0	2.0	8.6	0.0	3.1	6.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	52.4	0.0	49.8	35.3	0.0	50.9	25.3	0.0	50.3	21.7	0.0
LnGrp LOS	D	D		D	D		D	C		D	C	
Approach Vol, veh/h		161			721			1040			1360	
Approach Delay, s/veh		50.2			47.9			29.1			26.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	50.6	27.1	13.4	12.4	53.0	12.5	28.0
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	9.0	22.2	20.5	6.4	6.5	18.5	4.3	6.4
Green Ext Time (p_c), s	0.3	9.8	1.0	0.1	0.1	15.6	0.1	0.4

Intersection Summary	
HCM 6th Ctrl Delay	33.3
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

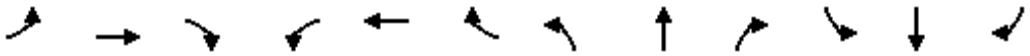
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	544	353	376	631	325	757
v/c Ratio	0.51	0.28	0.36	0.24	0.68	0.47
Control Delay	16.8	1.0	5.7	5.6	48.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	1.0	5.7	5.6	48.1	1.0
Queue Length 50th (ft)	182	0	28	55	103	0
Queue Length 95th (ft)	399	9	67	104	142	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1069	1467	1163	2586	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.24	0.32	0.24	0.34	0.47

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	495	275	335	505	315	515
Future Volume (vph)	495	275	335	505	315	515
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.31	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1143	3574	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	544	353	376	631	325	757
RTOR Reduction (vph)	0	114	0	0	0	0
Lane Group Flow (vph)	544	239	376	631	325	757
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	54.0	67.8	68.4	68.4	13.8	100.0
Effective Green, g (s)	54.0	67.8	68.4	68.4	13.8	100.0
Actuated g/C Ratio	0.54	0.68	0.68	0.68	0.14	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	996	1063	1000	2444	478	1599
v/s Ratio Prot	c0.29	0.03	0.04	0.18	c0.09	
v/s Ratio Perm		0.12	0.22			c0.47
v/c Ratio	0.55	0.23	0.38	0.26	0.68	0.47
Uniform Delay, d1	15.0	6.1	7.9	6.1	41.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.0	0.1	0.3	3.0	1.0
Delay (s)	17.2	6.2	8.0	6.3	44.0	1.0
Level of Service	B	A	A	A	D	A
Approach Delay (s)	12.8			6.9	13.9	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	494	428	201	511	523	150	80	758	198	154	680	328
v/c Ratio	0.56	0.35	0.30	0.52	0.42	0.23	0.33	0.79	0.12	0.66	0.65	0.38
Control Delay	20.4	32.5	5.3	19.9	33.7	5.8	28.4	50.9	0.2	39.1	43.3	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	32.5	5.3	19.9	33.7	5.8	28.4	50.9	0.2	39.1	43.3	7.2
Queue Length 50th (ft)	114	136	0	119	171	0	40	305	0	81	256	39
Queue Length 95th (ft)	139	198	38	163	233	33	59	408	0	118	347	105
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1100	1230	681	1175	1234	643	335	958	1599	280	1041	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.35	0.30	0.43	0.42	0.23	0.24	0.79	0.12	0.55	0.65	0.34

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	415	165	470	450	120	55	675	180	120	605	315
Future Volume (veh/h)	400	415	165	470	450	120	55	675	180	120	605	315
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	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	494	428	201	511	523	150	80	758	0	154	680	328
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	870	1264	564	926	1275	562	220	984		252	1090	663
Arrive On Green	0.11	0.36	0.36	0.11	0.36	0.36	0.05	0.27	0.00	0.08	0.31	0.31
Sat Flow, veh/h	3456	3554	1585	3456	3554	1565	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	494	428	201	511	523	150	80	758	0	154	680	328
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1565	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	11.0	10.9	11.6	11.4	13.7	8.4	3.9	24.1	0.0	7.5	20.3	18.8
Cycle Q Clear(g_c), s	11.0	10.9	11.6	11.4	13.7	8.4	3.9	24.1	0.0	7.5	20.3	18.8
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	870	1264	564	926	1275	562	220	984		252	1090	663
V/C Ratio(X)	0.57	0.34	0.36	0.55	0.41	0.27	0.36	0.77		0.61	0.62	0.49
Avail Cap(c_a), veh/h	1183	1264	564	1228	1275	562	356	984		331	1090	663
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.6	29.2	29.4	21.1	29.8	28.1	31.2	41.3	0.0	31.0	36.8	26.4
Incr Delay (d2), s/veh	0.2	0.7	1.8	0.2	1.0	1.2	0.4	5.8	0.0	0.9	2.7	2.6
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(50%),veh/ln	4.4	4.8	4.6	4.5	6.0	3.3	1.7	11.2	0.0	3.2	9.0	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.8	29.9	31.2	21.3	30.8	29.3	31.6	47.1	0.0	31.9	39.5	29.0
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	C
Approach Vol, veh/h		1123			1184			838			1162	
Approach Delay, s/veh		26.6			26.5			45.6			35.5	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.2	50.0	14.5	40.0	18.8	50.4	10.6	43.9
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	13.4	13.6	9.5	26.1	13.0	15.7	5.9	22.3
Green Ext Time (p_c), s	0.8	3.6	0.1	3.0	0.8	4.2	0.0	4.3

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



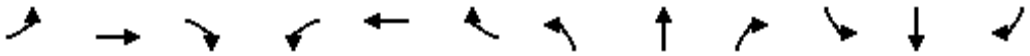
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	284	220	352	378	20	329	106	117	407	77
v/c Ratio	0.71	0.65	0.81	0.76	0.05	0.30	0.12	0.13	0.54	0.11
Control Delay	37.2	17.0	42.6	16.9	20.7	28.5	4.6	18.3	29.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	17.0	42.6	16.9	20.7	28.5	4.6	18.3	29.3	0.3
Queue Length 50th (ft)	103	5	134	9	5	61	0	14	123	0
Queue Length 95th (ft)	209	0	#318	0	18	154	12	61	#536	0
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	398	514	433	645	534	1104	864	1070	753	705
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.43	0.81	0.59	0.04	0.30	0.12	0.11	0.54	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

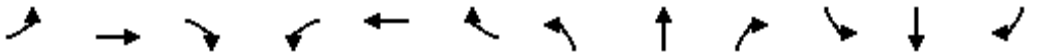
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	5	145	250	5	265	10	250	70	110	350	60
Future Volume (vph)	190	5	145	250	5	265	10	250	70	110	350	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.99	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	0.86		1.00	0.86		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)	1768	1596		1752	1539		1770	3539	1566	3392	1845	1531
Flt Permitted	0.47	1.00		0.37	1.00		0.42	1.00	1.00	0.46	1.00	1.00
Satd. Flow (perm)	866	1596		690	1539		784	3539	1566	1655	1845	1531
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	284	10	210	352	20	358	20	329	106	117	407	77
RTOR Reduction (vph)	0	191	0	0	319	0	0	0	52	0	0	48
Lane Group Flow (vph)	284	29	0	352	59	0	20	329	54	117	407	29
Confl. Peds. (#/hr)	2					2			8	8		
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	24.3	8.6		28.5	10.7		34.1	31.8	49.6	44.4	37.1	37.1
Effective Green, g (s)	24.3	8.6		28.5	10.7		34.1	31.8	49.6	44.4	37.1	37.1
Actuated g/C Ratio	0.25	0.09		0.29	0.11		0.35	0.33	0.51	0.46	0.38	0.38
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	362	141		397	169		298	1159	799	892	704	584
v/s Ratio Prot	0.13	0.02		c0.16	0.04		0.00	0.09	0.01	c0.01	c0.22	
v/s Ratio Perm	0.07			c0.10			0.02		0.02	0.05		0.02
v/c Ratio	0.78	0.20		0.89	0.35		0.07	0.28	0.07	0.13	0.58	0.05
Uniform Delay, d1	32.6	41.1		30.6	40.0		20.9	24.2	12.0	15.0	23.8	18.9
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	10.6	0.7		20.5	1.3		0.1	0.6	0.0	0.1	3.4	0.2
Delay (s)	43.3	41.8		51.1	41.3		20.9	24.8	12.1	15.1	27.2	19.1
Level of Service	D	D		D	D		C	C	B	B	C	B
Approach Delay (s)		42.6			46.0			21.7			23.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	97.1	Sum of lost time (s)	26.5
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	116	232	1072	42	182	96	1370	993	66	32	488	63
v/c Ratio	0.37	0.71	0.67	0.12	0.50	0.06	0.89	0.48	0.04	0.15	0.49	0.08
Control Delay	45.2	56.0	2.3	40.6	46.8	0.1	39.9	10.0	0.0	46.2	33.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.2	56.0	2.3	40.6	46.8	0.1	39.9	10.0	0.0	46.2	33.0	0.2
Queue Length 50th (ft)	36	76	0	12	58	0	238	159	0	10	141	0
Queue Length 95th (ft)	61	113	0	19	89	0	158	100	0	22	176	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	377	389	1599	1547	2063	1599	215	1003	857
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.43	0.67	0.11	0.47	0.06	0.89	0.48	0.04	0.15	0.49	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	220	890	25	160	75	685	715	45	25	400	60
Future Volume (veh/h)	115	220	890	25	160	75	685	715	45	25	400	60
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	116	232	0	42	182	0	1370	993	0	32	488	63
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	296	305		253	260		1454	2180		82	1200	671
Arrive On Green	0.09	0.09	0.00	0.07	0.07	0.00	0.29	0.61	0.00	0.02	0.34	0.34
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	116	232	0	42	182	0	1370	993	0	32	488	63
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.2	6.3	0.0	1.1	5.0	0.0	26.4	15.0	0.0	0.9	10.5	2.4
Cycle Q Clear(g_c), s	3.2	6.3	0.0	1.1	5.0	0.0	26.4	15.0	0.0	0.9	10.5	2.4
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	296	305		253	260		1454	2180		82	1200	671
V/C Ratio(X)	0.39	0.76		0.17	0.70		0.94	0.46		0.39	0.41	0.09
Avail Cap(c_a), veh/h	522	537		348	358		1468	2180		209	1200	671
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.3	44.8	0.0	43.5	45.3	0.0	34.8	10.6	0.0	48.1	25.6	17.5
Incr Delay (d2), s/veh	0.3	1.5	0.0	0.3	3.6	0.0	12.1	0.7	0.0	3.0	1.0	0.3
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(50%),veh/ln	1.3	2.8	0.0	0.5	2.3	0.0	11.8	5.2	0.0	0.4	4.4	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.6	46.2	0.0	43.8	48.9	0.0	46.9	11.3	0.0	51.1	26.6	17.8
LnGrp LOS	D	D		D	D		D	B		D	C	B
Approach Vol, veh/h		348			224			2363			583	
Approach Delay, s/veh		45.4			47.9			31.9			27.0	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	66.9		13.5	34.7	39.5		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	17.0		8.3	28.4	12.5		7.0				
Green Ext Time (p_c), s	0.0	7.4		0.2	0.3	2.4		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		33.5
HCM 6th LOS		C

Notes

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

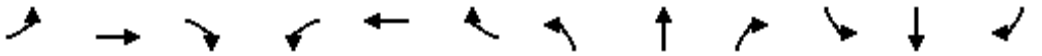
Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	5	258	10	66	20	1489	200	43	1325	10
v/c Ratio	0.08	0.00	0.61	0.04	0.18	0.09	0.62	0.18	0.22	0.54	0.01
Control Delay	44.8	0.0	47.9	38.6	1.1	50.4	8.2	1.6	50.8	7.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	0.0	47.9	38.6	1.1	50.4	8.2	1.6	50.8	7.7	0.0
Queue Length 50th (ft)	6	0	80	6	0	6	54	0	14	100	0
Queue Length 95th (ft)	13	0	121	12	0	4	386	22	20	244	m0
Internal Link Dist (ft)	697			679			647			2055	
Turn Bay Length (ft)		125	250		500	455		250	550		550
Base Capacity (vph)	152	1615	443	240	365	554	2386	1134	274	2432	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.00	0.58	0.04	0.18	0.04	0.62	0.18	0.16	0.54	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	5	230	5	55	5	1385	180	25	1285	5
Future Volume (veh/h)	0	5	5	230	5	55	5	1385	180	25	1285	5
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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	0	10	0	258	10	66	20	1489	200	43	1325	0
Peak Hour Factor	0.75	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	43	23		336	182	154	74	2324	1037	78	2311	
Arrive On Green	0.00	0.01	0.00	0.10	0.10	0.10	0.02	0.65	0.65	0.02	0.65	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	0	10	0	258	10	66	20	1489	200	43	1325	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	0.0	0.5	0.0	7.2	0.5	3.9	0.6	25.0	5.0	1.2	20.8	0.0
Cycle Q Clear(g_c), s	0.0	0.5	0.0	7.2	0.5	3.9	0.6	25.0	5.0	1.2	20.8	0.0
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	43	23		336	182	154	74	2324	1037	78	2311	
V/C Ratio(X)	0.00	0.43		0.77	0.06	0.43	0.27	0.64	0.19	0.55	0.57	
Avail Cap(c_a), veh/h	281	152		418	226	192	557	2324	1037	276	2311	
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)	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	49.1	0.0	44.1	41.0	42.6	48.2	10.5	7.0	48.4	9.8	0.0
Incr Delay (d2), s/veh	0.0	14.8	0.0	7.2	0.2	2.3	1.9	1.4	0.4	2.2	1.0	0.0
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(50%),veh/ln	0.0	0.3	0.0	3.4	0.2	1.6	0.3	8.4	1.5	0.5	6.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	63.8	0.0	51.3	41.2	44.9	50.1	11.9	7.5	50.6	10.8	0.0
LnGrp LOS	A	E		D	D	D	D	B	A	D	B	
Approach Vol, veh/h		10			334			1709			1368	
Approach Delay, s/veh		63.8			49.7			11.8			12.0	
Approach LOS		E			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	70.9		7.2	6.1	71.0		15.6				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	8.0	50.0		8.0	16.0	42.0		12.0				
Max Q Clear Time (g_c+I1), s	3.2	27.0		2.5	2.6	22.8		9.2				
Green Ext Time (p_c), s	0.0	12.2		0.0	0.0	9.0		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		15.8
HCM 6th LOS		B

Notes

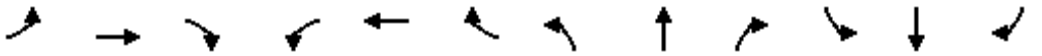
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	99	101	450	224	1253	1302	307
v/c Ratio	0.57	0.58	0.28	0.58	0.46	0.41	0.28
Control Delay	54.8	55.1	0.4	24.5	5.6	6.3	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	54.8	55.1	0.4	24.5	5.8	6.3	1.5
Queue Length 50th (ft)	64	65	0	101	92	136	10
Queue Length 95th (ft)	114	46	0	157	234	68	13
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	325	1599	605	2751	3192	1108
Starvation Cap Reductn	0	0	0	0	611	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.31	0.28	0.37	0.59	0.41	0.28

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	5	405	190	1165	0	0	1250	270
Future Volume (vph)	0	0	0	170	5	405	190	1165	0	0	1250	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1713	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.16	1.00			1.00	1.00
Satd. Flow (perm)				1698	1713	1599	304	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.38	0.90	0.85	0.93	0.92	0.92	0.96	0.88
Adj. Flow (vph)	0	0	0	187	13	450	224	1253	0	0	1302	307
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	115
Lane Group Flow (vph)	0	0	0	99	101	450	224	1253	0	0	1302	192
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.3	10.3	100.0	77.7	77.7			62.7	62.7
Effective Green, g (s)				10.3	10.3	100.0	77.7	77.7			62.7	62.7
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.63	0.63
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				174	176	1599	382	2749			3188	992
v/s Ratio Prot							c0.06	0.35			0.26	
v/s Ratio Perm				0.06	0.06	0.28	c0.40					0.12
v/c Ratio				0.57	0.57	0.28	0.59	0.46			0.41	0.19
Uniform Delay, d1				42.7	42.8	0.0	4.8	3.8			9.4	7.9
Progression Factor				1.00	1.00	1.00	4.74	1.22			0.57	0.65
Incremental Delay, d2				2.5	2.8	0.4	1.2	0.4			0.3	0.4
Delay (s)				45.3	45.6	0.4	23.9	5.1			5.7	5.5
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			14.3			8.0			5.7	
Approach LOS		A			B			A			A	

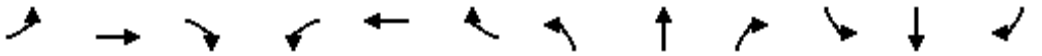
Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	197	194	234	1068	192	582	880
v/c Ratio	0.77	0.75	0.15	0.63	0.22	0.87	0.34
Control Delay	60.2	58.6	0.2	22.3	3.2	52.5	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.2	58.6	0.2	22.3	3.2	52.5	6.4
Queue Length 50th (ft)	127	125	0	272	0	113	66
Queue Length 95th (ft)	200	101	0	354	17	#247	80
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1698	859	698	2566
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.62	0.15	0.63	0.22	0.83	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	330	10	185	0	0	0	0	1025	140	570	845	0
Future Volume (vph)	330	10	185	0	0	0	0	1025	140	570	845	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1661	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1661	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.89	0.50	0.79	0.92	0.92	0.92	0.92	0.96	0.73	0.98	0.96	0.92
Adj. Flow (vph)	371	20	234	0	0	0	0	1068	192	582	880	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	100	0	0	0
Lane Group Flow (vph)	197	194	234	0	0	0	0	1068	92	582	880	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.5	15.5	100.0					48.0	48.0	19.5	72.5	
Effective Green, g (s)	15.5	15.5	100.0					48.0	48.0	19.5	72.5	
Actuated g/C Ratio	0.16	0.16	1.00					0.48	0.48	0.20	0.72	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	255	257	1553					1698	759	669	2565	
v/s Ratio Prot								c0.30		c0.17	0.25	
v/s Ratio Perm	c0.12	0.12	0.15						0.06			
v/c Ratio	0.77	0.75	0.15					0.63	0.12	0.87	0.34	
Uniform Delay, d1	40.6	40.4	0.0					19.4	14.4	39.0	5.0	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.99	1.11	
Incremental Delay, d2	12.4	10.6	0.2					1.8	0.3	10.6	0.3	
Delay (s)	53.0	51.1	0.2					21.1	14.7	49.3	5.9	
Level of Service	D	D	A					C	B	D	A	
Approach Delay (s)		32.6			0.0			20.2			23.2	
Approach LOS		C			A			C			C	

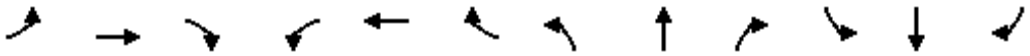
Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	6.0
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	351	379	777
Demand Flow Rate, veh/h	358	386	793
Vehicles Circulating, veh/h	486	157	174
Vehicles Exiting, veh/h	481	687	369
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	6.1	4.5	6.7
Approach LOS	A	A	A

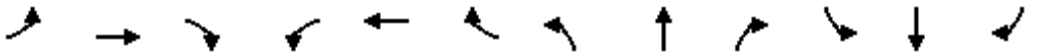
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.469	0.531	0.451	0.549	0.613	0.387
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	168	190	174	212	486	307
Cap Entry Lane, veh/h	863	939	1168	1243	1150	1225
Entry HV Adj Factor	0.982	0.979	0.980	0.981	0.979	0.980
Flow Entry, veh/h	165	186	171	208	476	301
Cap Entry, veh/h	848	920	1139	1212	1127	1201
V/C Ratio	0.195	0.202	0.150	0.172	0.423	0.251
Control Delay, s/veh	6.2	5.9	4.5	4.4	7.6	5.3
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	2	1

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2040 Background



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	43	22	49	397	49	168	125	935	500	185	729	54
v/c Ratio	0.21	0.20	0.03	0.72	0.19	0.46	0.47	0.50	0.47	0.57	0.26	0.06
Control Delay	56.0	57.5	0.0	55.3	44.6	10.4	58.5	21.1	3.5	58.8	16.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	57.5	0.0	55.3	44.6	10.4	58.5	21.1	3.5	58.8	16.2	0.1
Queue Length 50th (ft)	16	17	0	153	33	0	48	248	0	71	111	0
Queue Length 95th (ft)	36	44	0	197	66	59	78	369	64	107	165	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	277	190	1595	864	507	547	357	1887	1064	370	2796	950
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.12	0.03	0.46	0.10	0.31	0.35	0.50	0.47	0.50	0.26	0.06

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	20	45	365	45	155	115	860	460	170	700	50
Future Volume (veh/h)	40	20	45	365	45	155	115	860	460	170	700	50
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	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	22	0	397	49	0	125	935	0	185	729	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.92
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	205	85		471	229		198	1976		243	2905	
Arrive On Green	0.06	0.04	0.00	0.14	0.12	0.00	0.06	0.56	0.00	0.07	0.57	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	43	22	0	397	49	0	125	935	0	185	729	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.4	1.3	0.0	13.6	2.9	0.0	4.2	19.0	0.0	6.3	8.6	0.0
Cycle Q Clear(g_c), s	1.4	1.3	0.0	13.6	2.9	0.0	4.2	19.0	0.0	6.3	8.6	0.0
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	205	85		471	229		198	1976		243	2905	
V/C Ratio(X)	0.21	0.26		0.84	0.21		0.63	0.47		0.76	0.25	
Avail Cap(c_a), veh/h	278	190		871	510		360	1976		360	2905	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.9	55.4	0.0	50.5	47.3	0.0	55.3	16.1	0.0	54.8	13.0	0.0
Incr Delay (d2), s/veh	0.4	1.6	0.0	3.2	0.5	0.0	2.4	0.8	0.0	4.1	0.2	0.0
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(50%),veh/ln	0.6	0.7	0.0	5.9	1.3	0.0	1.9	7.6	0.0	2.9	3.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.2	57.0	0.0	53.7	47.8	0.0	57.7	16.9	0.0	58.9	13.2	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		65			446			1060			914	
Approach Delay, s/veh		55.2			53.0			21.7			22.5	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	72.7	22.0	11.4	12.4	74.3	12.5	20.8
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	8.3	21.0	15.6	3.3	6.2	10.6	3.4	4.9
Green Ext Time (p_c), s	0.2	11.0	0.9	0.0	0.1	10.1	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	397	505	533	418	304	543
v/c Ratio	0.63	0.40	0.66	0.23	0.27	0.35
Control Delay	39.4	1.8	20.2	16.1	33.9	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	1.8	20.2	16.1	33.9	0.6
Queue Length 50th (ft)	254	0	114	89	81	0
Queue Length 95th (ft)	396	32	150	121	#189	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	632	1258	1166	1822	1108	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.40	0.46	0.23	0.27	0.35

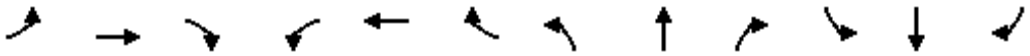
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	365	465	490	385	280	500
Future Volume (vph)	365	465	490	385	280	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.25	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	881	3505	3400	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	397	505	533	418	304	543
RTOR Reduction (vph)	0	184	0	0	0	0
Lane Group Flow (vph)	397	321	533	418	304	543
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	37.1	76.2	58.4	58.4	39.1	120.0
Effective Green, g (s)	37.1	76.2	58.4	58.4	39.1	120.0
Actuated g/C Ratio	0.31	0.64	0.49	0.49	0.33	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	570	995	770	1705	1107	1568
v/s Ratio Prot	0.22	0.10	c0.09	0.12	0.09	
v/s Ratio Perm		0.10	c0.24			c0.35
v/c Ratio	0.70	0.32	0.69	0.25	0.27	0.35
Uniform Delay, d1	36.5	10.1	21.7	18.0	29.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.9	0.9	2.2	0.3	0.6	0.6
Delay (s)	43.4	10.9	23.9	18.3	30.6	0.6
Level of Service	D	B	C	B	C	A
Approach Delay (s)	25.2			21.4	11.4	
Approach LOS	C			C	B	

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)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	426	359	152	255	418	98	174	745	451	114	636	370
v/c Ratio	0.46	0.29	0.23	0.29	0.39	0.17	0.58	0.73	0.28	0.46	0.67	0.45
Control Delay	18.6	27.3	5.2	17.4	31.9	4.4	28.8	41.0	0.5	26.7	41.1	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	27.3	5.2	17.4	31.9	4.4	28.8	41.0	0.5	26.7	41.1	11.1
Queue Length 50th (ft)	88	95	0	50	120	0	76	246	0	48	210	72
Queue Length 95th (ft)	126	144	45	77	184	29	135	353	0	92	303	156
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1067	1241	654	1180	1077	563	355	1019	1583	346	946	905
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.29	0.23	0.22	0.39	0.17	0.49	0.73	0.28	0.33	0.67	0.41

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	330	140	235	385	90	160	700	415	105	585	340
Future Volume (veh/h)	400	330	140	235	385	90	160	700	415	105	585	340
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	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	426	359	152	255	418	98	174	745	0	114	636	370
Peak Hour Factor	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	900	1274	568	862	1130	504	292	1072		264	987	607
Arrive On Green	0.10	0.36	0.36	0.07	0.32	0.32	0.09	0.30	0.00	0.06	0.28	0.28
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	426	359	152	255	418	98	174	745	0	114	636	370
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	8.3	7.6	7.1	5.2	9.7	4.8	7.2	19.5	0.0	4.7	16.5	19.7
Cycle Q Clear(g_c), s	8.3	7.6	7.1	5.2	9.7	4.8	7.2	19.5	0.0	4.7	16.5	19.7
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	900	1274	568	862	1130	504	292	1072		264	987	607
V/C Ratio(X)	0.47	0.28	0.27	0.30	0.37	0.19	0.59	0.70		0.43	0.64	0.61
Avail Cap(c_a), veh/h	1198	1274	568	1265	1130	504	389	1072		408	987	607
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	24.3	24.2	20.9	27.4	25.7	25.5	32.5	0.0	26.2	33.6	26.4
Incr Delay (d2), s/veh	0.1	0.6	1.2	0.1	0.9	0.9	0.7	3.7	0.0	0.4	3.2	4.5
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(50%),veh/ln	3.3	3.2	2.8	2.0	4.1	1.8	3.0	8.6	0.0	2.0	7.3	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	24.8	25.3	21.0	28.3	26.6	26.2	36.2	0.0	26.6	36.8	30.9
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	C
Approach Vol, veh/h		937			771			919			1120	
Approach Delay, s/veh		22.8			25.7			34.3			33.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.5	43.4	11.6	37.7	16.0	40.0	14.3	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	7.2	9.6	6.7	21.5	10.3	11.7	9.2	21.7
Green Ext Time (p_c), s	0.4	2.8	0.1	2.8	0.6	3.0	0.1	3.2

Intersection Summary	
HCM 6th Ctrl Delay	29.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



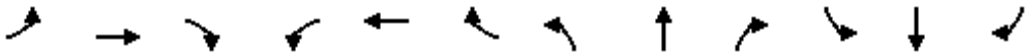
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	79	297	250	426	108	337	553	532	201	438
v/c Ratio	0.35	0.80	0.80	0.80	0.22	0.34	0.57	0.56	0.33	0.54
Control Delay	30.6	58.4	48.1	35.9	21.3	34.6	4.9	23.8	33.3	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	58.4	48.1	35.9	21.3	34.6	4.9	23.8	33.3	6.4
Queue Length 50th (ft)	31	175	109	154	35	87	0	98	91	0
Queue Length 95th (ft)	97	211	#369	49	112	194	5	201	249	2
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	333	372	312	534	589	978	966	970	604	809
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.80	0.80	0.80	0.18	0.34	0.57	0.55	0.33	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	140	30	220	25	210	95	310	415	410	185	315
Future Volume (vph)	70	140	30	220	25	210	95	310	415	410	185	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.98		1.00	0.87		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)	1787	1839		1702	1535		1770	3539	1564	3426	1863	1583
Flt Permitted	0.20	1.00		0.23	1.00		0.63	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)	370	1839		411	1535		1177	3539	1564	1526	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.92	0.75	0.77	0.92	0.72
Adj. Flow (vph)	79	259	38	250	64	362	108	337	553	532	201	438
RTOR Reduction (vph)	0	4	0	0	130	0	0	0	340	0	0	301
Lane Group Flow (vph)	79	293	0	250	296	0	108	337	213	532	201	137
Confl. Peds. (#/hr)			2	2					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	29.9	22.5		40.8	28.4		38.7	29.7	43.0	48.8	34.8	34.8
Effective Green, g (s)	29.9	22.5		40.8	28.4		38.7	29.7	43.0	48.8	34.8	34.8
Actuated g/C Ratio	0.27	0.20		0.37	0.25		0.35	0.27	0.39	0.44	0.31	0.31
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	193	370		304	390		455	941	602	907	580	493
v/s Ratio Prot	0.03	0.16		c0.10	0.19		0.02	0.10	0.04	c0.07	0.11	
v/s Ratio Perm	0.08			c0.20			0.06		0.09	c0.18		0.09
v/c Ratio	0.41	0.79		0.82	0.76		0.24	0.36	0.35	0.59	0.35	0.28
Uniform Delay, d1	32.2	42.3		28.0	38.4		25.4	33.2	24.4	21.3	29.6	28.9
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	1.4	11.0		16.2	8.3		0.2	1.1	0.4	1.0	1.6	1.4
Delay (s)	33.6	53.4		44.2	46.7		25.6	34.3	24.8	22.3	31.3	30.3
Level of Service	C	D		D	D		C	C	C	C	C	C
Approach Delay (s)		49.2			45.8			28.1			26.8	
Approach LOS		D			D			C			C	

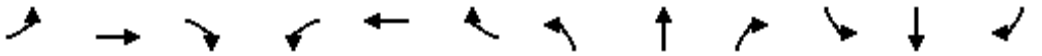
Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	111.6	Sum of lost time (s)	26.5
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	136	837	65	223	54	995	478	27	49	755	141
v/c Ratio	0.27	0.60	0.53	0.18	0.59	0.03	0.80	0.24	0.02	0.24	0.60	0.17
Control Delay	46.7	56.0	1.3	41.4	49.2	0.0	41.5	3.5	0.0	47.7	30.3	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	56.0	1.3	41.4	49.2	0.0	41.5	3.5	0.0	47.7	30.3	3.5
Queue Length 50th (ft)	19	45	0	19	71	0	151	10	0	15	207	0
Queue Length 95th (ft)	38	75	0	40	111	0	210	30	m0	34	303	34
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	377	388	1568	1680	2025	1568	211	1252	879
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.39	0.53	0.17	0.57	0.03	0.59	0.24	0.02	0.23	0.60	0.16

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	125	770	60	205	50	915	440	25	45	695	130
Future Volume (veh/h)	55	125	770	60	205	50	915	440	25	45	695	130
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	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	60	136	0	65	223	0	995	478	0	49	755	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	200	206		290	298		1150	2178		102	1434	731
Arrive On Green	0.06	0.06	0.00	0.08	0.08	0.00	0.23	0.62	0.00	0.03	0.41	0.41
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	60	136	0	65	223	0	995	478	0	49	755	141
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.7	3.7	0.0	1.8	6.2	0.0	19.2	6.0	0.0	1.4	16.2	5.3
Cycle Q Clear(g_c), s	1.7	3.7	0.0	1.8	6.2	0.0	19.2	6.0	0.0	1.4	16.2	5.3
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	200	206		290	298		1150	2178		102	1434	731
V/C Ratio(X)	0.30	0.66		0.22	0.75		0.87	0.22		0.48	0.53	0.19
Avail Cap(c_a), veh/h	346	355		343	353		1694	2178		206	1434	731
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	46.1	0.0	42.7	44.7	0.0	37.0	8.4	0.0	47.8	22.4	15.7
Incr Delay (d2), s/veh	0.3	1.4	0.0	0.4	7.1	0.0	2.3	0.2	0.0	3.5	1.4	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(50%),veh/ln	0.7	1.7	0.0	0.8	3.0	0.0	7.6	2.0	0.0	0.6	6.5	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.5	47.5	0.0	43.1	51.9	0.0	39.3	8.7	0.0	51.2	23.8	16.3
LnGrp LOS	D	D		D	D		D	A		D	C	B
Approach Vol, veh/h		196			288			1473			945	
Approach Delay, s/veh		46.9			49.9			29.4			24.1	
Approach LOS		D			D			C			C	

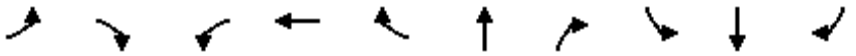
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	67.8		10.8	29.1	46.7		13.5				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		10.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.4	8.0		5.7	21.2	18.2		8.2				
Green Ext Time (p_c), s	0.0	3.1		0.1	1.9	2.6		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		30.9
HCM 6th LOS		C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

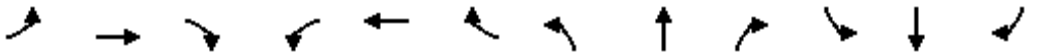


Lane Group	EBL	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	20	271	20	71	1413	216	71	1500	10
v/c Ratio	0.05	0.01	0.63	0.09	0.20	0.63	0.20	0.35	0.59	0.01
Control Delay	44.2	0.0	48.4	39.2	1.2	10.5	1.2	56.1	5.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	0.0	48.4	39.2	1.2	10.5	1.2	56.1	5.1	0.0
Queue Length 50th (ft)	3	0	84	11	0	270	11	24	97	0
Queue Length 95th (ft)	6	0	#138	9	0	355	19	m43	156	m0
Internal Link Dist (ft)				679		647			2055	
Turn Bay Length (ft)	125	125	250		500		250	550		550
Base Capacity (vph)	245	1615	438	237	363	2257	1086	216	2548	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.01	0.62	0.08	0.20	0.63	0.20	0.33	0.59	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	255	5	65	0	1300	205	65	1455	5
Future Volume (veh/h)	5	0	5	255	5	65	0	1300	205	65	1455	5
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	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	0	0	271	20	71	0	1413	216	71	1500	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.92	0.86	0.92	0.95	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	43	23		341	185	157	3	2233	996	120	2497	
Arrive On Green	0.01	0.00	0.00	0.10	0.10	0.10	0.00	0.63	0.63	0.03	0.71	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	10	0	0	271	20	71	0	1413	216	71	1500	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.3	0.0	0.0	7.7	1.0	4.3	0.0	24.5	5.8	2.0	21.6	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	7.7	1.0	4.3	0.0	24.5	5.8	2.0	21.6	0.0
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	43	23		341	185	157	3	2233	996	120	2497	
V/C Ratio(X)	0.23	0.00		0.79	0.11	0.45	0.00	0.63	0.22	0.59	0.60	
Avail Cap(c_a), veh/h	246	133		377	204	173	549	2233	996	206	2497	
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	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.9	0.0	0.0	44.0	41.0	42.5	0.0	11.2	7.8	47.6	7.4	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	10.7	0.3	2.5	0.0	1.4	0.5	1.7	1.1	0.0
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(50%),veh/ln	0.1	0.0	0.0	3.8	0.5	1.8	0.0	8.2	1.8	0.9	6.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.3	0.0	0.0	54.7	41.3	44.9	0.0	12.6	8.3	49.3	8.5	0.0
LnGrp LOS	D	A		D	D	D	A	B	A	D	A	
Approach Vol, veh/h		10			362			1629			1571	
Approach Delay, s/veh		52.3			52.0			12.0			10.3	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	69.3		7.2	0.0	76.8		16.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	54.0		7.0	16.0	44.0		11.0				
Max Q Clear Time (g_c+I1), s	4.0	26.5		2.3	0.0	23.6		9.7				
Green Ext Time (p_c), s	0.0	12.6		0.0	0.0	10.8		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		15.4
HCM 6th LOS		B

Notes

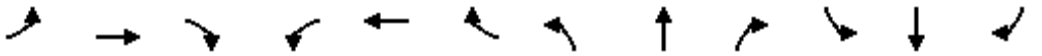
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	100	101	766	234	860	1337	516
v/c Ratio	0.58	0.58	0.49	0.65	0.31	0.42	0.43
Control Delay	55.3	55.3	1.1	31.2	3.0	6.3	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.3	55.3	1.1	31.2	3.0	6.3	2.1
Queue Length 50th (ft)	65	65	0	96	47	119	7
Queue Length 95th (ft)	115	116	0	192	81	154	19
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	402	2747	3212	1187
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.33	0.49	0.58	0.31	0.42	0.43

Intersection Summary



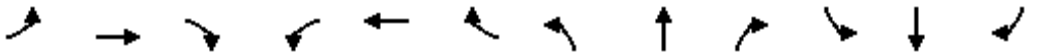
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	15	705	215	800	0	0	1230	475
Future Volume (vph)	0	0	0	170	15	705	215	800	0	0	1230	475
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1682	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.16	1.00			1.00	1.00
Satd. Flow (perm)				1665	1682	1568	294	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	185	16	766	234	860	0	0	1337	516
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	187
Lane Group Flow (vph)	0	0	0	100	101	766	234	860	0	0	1337	329
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.4	10.4	100.0	77.6	77.6			63.8	63.8
Effective Green, g (s)				10.4	10.4	100.0	77.6	77.6			63.8	63.8
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.64	0.64
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				173	174	1568	358	2746			3212	1000
v/s Ratio Prot							0.06	0.24			0.27	
v/s Ratio Perm				0.06	0.06	c0.49	c0.45					0.21
v/c Ratio				0.58	0.58	0.49	0.65	0.31			0.42	0.33
Uniform Delay, d1				42.7	42.7	0.0	5.1	3.3			8.9	8.3
Progression Factor				1.00	1.00	1.00	4.70	0.76			0.61	1.00
Incremental Delay, d2				2.9	3.2	1.1	3.0	0.3			0.3	0.7
Delay (s)				45.6	45.9	1.1	27.2	2.8			5.8	9.1
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			10.4			8.0			6.7	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	119	120	201	880	65	386	1136
v/c Ratio	0.63	0.62	0.13	0.45	0.07	0.73	0.42
Control Delay	55.8	55.5	0.2	15.1	2.1	51.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	55.5	0.2	15.1	2.1	51.2	4.3
Queue Length 50th (ft)	76	77	0	163	0	86	67
Queue Length 95th (ft)	131	132	0	261	15	138	78
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	316	1553	1974	921	680	2678
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.38	0.13	0.45	0.07	0.57	0.42

Intersection Summary



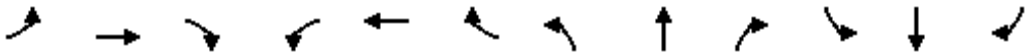
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	20	185	0	0	0	0	810	60	355	1045	0
Future Volume (vph)	200	20	185	0	0	0	0	810	60	355	1045	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1667	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1667	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	22	201	0	0	0	0	880	65	386	1136	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	29	0	0	0
Lane Group Flow (vph)	119	120	201	0	0	0	0	880	36	386	1136	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	11.6	11.6	100.0					55.8	55.8	15.6	76.4	
Effective Green, g (s)	11.6	11.6	100.0					55.8	55.8	15.6	76.4	
Actuated g/C Ratio	0.12	0.12	1.00					0.56	0.56	0.16	0.76	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	191	193	1553					1974	883	530	2677	
v/s Ratio Prot								c0.25		c0.11	0.32	
v/s Ratio Perm	c0.07	0.07	0.13						0.02			
v/c Ratio	0.62	0.62	0.13					0.45	0.04	0.73	0.42	
Uniform Delay, d1	42.1	42.1	0.0					13.0	10.0	40.2	4.1	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.09	0.84	
Incremental Delay, d2	4.5	4.4	0.2					0.7	0.1	3.9	0.5	
Delay (s)	46.6	46.5	0.2					13.7	10.1	47.8	3.9	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s)		25.4			0.0			13.5			15.0	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	6.5
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	473	657	424
Demand Flow Rate, veh/h	477	670	432
Vehicles Circulating, veh/h	255	329	155
Vehicles Exiting, veh/h	332	403	844
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	5.8	8.1	4.7
Approach LOS	A	A	A

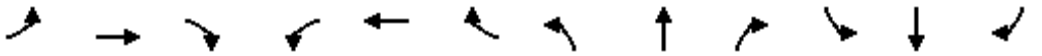
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.690	0.310	0.231	0.769	0.590	0.410
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	329	148	155	515	255	177
Cap Entry Lane, veh/h	1068	1143	997	1074	1170	1245
Entry HV Adj Factor	0.991	0.990	0.980	0.981	0.980	0.983
Flow Entry, veh/h	326	147	152	505	250	174
Cap Entry, veh/h	1058	1132	977	1052	1148	1224
V/C Ratio	0.308	0.129	0.156	0.480	0.218	0.142
Control Delay, s/veh	6.5	4.3	5.1	8.9	5.1	4.1
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	0	1	3	1	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	76	71	149	647	76	114	158	941	495	250	1188	98
v/c Ratio	0.31	0.44	0.09	0.86	0.17	0.23	0.57	0.66	0.53	0.64	0.54	0.13
Control Delay	54.8	58.4	0.1	55.0	35.7	1.8	59.3	32.2	4.8	55.6	25.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	58.4	0.1	55.0	35.7	1.8	59.3	32.2	4.8	55.6	25.8	0.3
Queue Length 50th (ft)	28	51	0	236	45	0	59	309	0	93	246	0
Queue Length 95th (ft)	54	99	0	#334	87	7	97	419	76	138	309	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	398	241	1578	844	498	547	302	1424	926	493	2218	781
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.29	0.09	0.77	0.15	0.21	0.52	0.66	0.53	0.51	0.54	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	65	140	595	70	105	145	875	455	230	1105	90
Future Volume (veh/h)	70	65	140	595	70	105	145	875	455	230	1105	90
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	76	71	0	647	76	0	158	941	0	250	1188	0
Peak Hour Factor	0.92	0.92	0.94	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.93	0.92
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	230	123		727	392		228	1493		321	2283	
Arrive On Green	0.07	0.07	0.00	0.21	0.21	0.00	0.07	0.42	0.00	0.09	0.44	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	76	71	0	647	76	0	158	941	0	250	1188	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.2	3.9	0.0	19.1	3.5	0.0	4.7	22.0	0.0	7.4	17.7	0.0
Cycle Q Clear(g_c), s	2.2	3.9	0.0	19.1	3.5	0.0	4.7	22.0	0.0	7.4	17.7	0.0
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	230	123		727	392		228	1493		321	2283	
V/C Ratio(X)	0.33	0.58		0.89	0.19		0.69	0.63		0.78	0.52	
Avail Cap(c_a), veh/h	411	249		871	498		312	1493		510	2283	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.2	48.1	0.0	40.7	34.6	0.0	48.5	24.4	0.0	47.0	21.3	0.0
Incr Delay (d2), s/veh	0.6	4.2	0.0	9.5	0.2	0.0	3.0	2.0	0.0	3.1	0.9	0.0
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(50%),veh/ln	1.0	1.9	0.0	8.9	1.6	0.0	2.1	9.4	0.0	3.3	7.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	52.4	0.0	50.2	34.9	0.0	51.4	26.5	0.0	50.1	22.2	0.0
LnGrp LOS	D	D		D	C		D	C		D	C	
Approach Vol, veh/h		147			723			1099			1438	
Approach Delay, s/veh		50.0			48.6			30.1			27.0	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	50.2	27.6	12.9	12.4	53.0	12.5	28.0
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	9.4	24.0	21.1	5.9	6.7	19.7	4.2	5.5
Green Ext Time (p_c), s	0.3	9.6	1.0	0.1	0.1	16.1	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

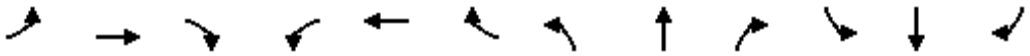
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	571	315	386	576	345	592
v/c Ratio	0.54	0.25	0.39	0.22	0.69	0.37
Control Delay	18.1	1.0	6.1	5.7	48.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.1	1.0	6.1	5.7	48.0	0.7
Queue Length 50th (ft)	201	0	30	51	109	0
Queue Length 95th (ft)	437	18	71	112	148	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1053	1439	1105	2566	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.22	0.35	0.22	0.36	0.37

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	525	290	355	530	335	545
Future Volume (vph)	525	290	355	530	335	545
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.29	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1054	3574	3467	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.92
Adj. Flow (vph)	571	315	386	576	345	592
RTOR Reduction (vph)	0	102	0	0	0	0
Lane Group Flow (vph)	571	213	386	576	345	592
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	53.1	67.5	67.8	67.8	14.4	100.0
Effective Green, g (s)	53.1	67.5	67.8	67.8	14.4	100.0
Actuated g/C Ratio	0.53	0.68	0.68	0.68	0.14	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	979	1058	948	2423	499	1599
v/s Ratio Prot	c0.31	0.03	0.04	0.16	c0.10	
v/s Ratio Perm		0.11	0.24			c0.37
v/c Ratio	0.58	0.20	0.41	0.24	0.69	0.37
Uniform Delay, d1	15.9	6.1	8.7	6.2	40.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	0.0	0.1	0.2	3.3	0.7
Delay (s)	18.5	6.1	8.8	6.4	44.0	0.7
Level of Service	B	A	A	A	D	A
Approach Delay (s)	14.1			7.4	16.6	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

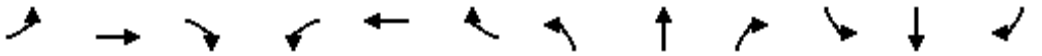
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	462	454	190	538	516	141	65	772	207	136	696	344
v/c Ratio	0.52	0.37	0.28	0.56	0.41	0.22	0.28	0.81	0.13	0.61	0.63	0.39
Control Delay	19.7	32.9	5.4	20.1	32.4	5.6	27.7	51.5	0.2	37.1	41.7	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	32.9	5.4	20.1	32.4	5.6	27.7	51.5	0.2	37.1	41.7	6.7
Queue Length 50th (ft)	104	145	0	125	165	0	33	311	0	71	262	36
Queue Length 95th (ft)	147	213	54	172	239	47	67	#432	0	125	358	103
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1128	1229	674	1143	1274	652	340	959	1599	276	1105	999
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.37	0.28	0.47	0.41	0.22	0.19	0.81	0.13	0.49	0.63	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	425	440	175	495	475	130	60	710	190	125	640	330
Future Volume (veh/h)	425	440	175	495	475	130	60	710	190	125	640	330
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	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	462	454	190	538	516	141	65	772	0	136	696	344
Peak Hour Factor	0.92	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	879	1267	565	931	1319	581	202	987		236	1093	655
Arrive On Green	0.11	0.36	0.36	0.12	0.37	0.37	0.04	0.28	0.00	0.07	0.31	0.31
Sat Flow, veh/h	3456	3554	1585	3456	3554	1565	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	462	454	190	538	516	141	65	772	0	136	696	344
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1565	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	10.2	11.6	10.8	11.9	13.2	7.7	3.2	24.6	0.0	6.6	20.8	20.1
Cycle Q Clear(g_c), s	10.2	11.6	10.8	11.9	13.2	7.7	3.2	24.6	0.0	6.6	20.8	20.1
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	879	1267	565	931	1319	581	202	987		236	1093	655
V/C Ratio(X)	0.53	0.36	0.34	0.58	0.39	0.24	0.32	0.78		0.58	0.64	0.53
Avail Cap(c_a), veh/h	1215	1267	565	1217	1319	581	353	987		328	1093	655
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	29.3	29.0	20.9	28.6	26.8	31.5	41.3	0.0	31.2	36.8	27.2
Incr Delay (d2), s/veh	0.2	0.8	1.6	0.2	0.9	1.0	0.3	6.2	0.0	0.8	2.8	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(50%),veh/ln	4.1	5.1	4.3	4.7	5.7	3.0	1.4	11.4	0.0	2.8	9.3	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.6	30.1	30.6	21.1	29.4	27.8	31.8	47.4	0.0	32.1	39.6	30.2
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	C
Approach Vol, veh/h		1106			1195			837			1176	
Approach Delay, s/veh		26.6			25.5			46.2			36.0	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.8	50.0	13.6	40.0	18.0	51.8	9.7	43.9
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	13.9	13.6	8.6	26.6	12.2	15.2	5.2	22.8
Green Ext Time (p_c), s	0.9	3.8	0.1	2.9	0.8	4.1	0.0	4.3

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

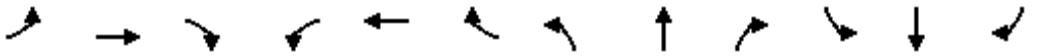
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	291	237	359	398	30	288	106	122	402	83
v/c Ratio	0.77	0.61	0.84	0.83	0.09	0.27	0.13	0.14	0.60	0.13
Control Delay	40.7	15.5	43.9	28.7	22.1	30.4	4.7	20.0	34.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	15.5	43.9	28.7	22.1	30.4	4.7	20.0	34.5	0.7
Queue Length 50th (ft)	107	10	139	58	8	61	0	18	184	0
Queue Length 95th (ft)	#223	0	#316	0	23	164	12	63	#579	0
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	376	491	429	574	484	1048	842	1058	670	643
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.48	0.84	0.69	0.06	0.27	0.13	0.12	0.60	0.13

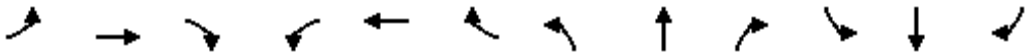
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	10	150	255	10	265	15	265	70	115	370	65
Future Volume (vph)	195	10	150	255	10	265	15	265	70	115	370	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	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	0.86		1.00	0.87		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)	1769	1607		1752	1558		1770	3539	1567	3390	1845	1530
Flt Permitted	0.34	1.00		0.27	1.00		0.37	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)	637	1607		499	1558		694	3539	1567	1791	1845	1530
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.92	0.66	0.94	0.92	0.78
Adj. Flow (vph)	291	20	217	359	40	358	30	288	106	122	402	83
RTOR Reduction (vph)	0	192	0	0	239	0	0	0	54	0	0	54
Lane Group Flow (vph)	291	45	0	359	159	0	30	288	52	122	402	29
Confl. Peds. (#/hr)	2					2			8	8		
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	27.3	11.7		33.5	14.8		34.3	30.5	49.2	42.3	34.5	34.5
Effective Green, g (s)	27.3	11.7		33.5	14.8		34.3	30.5	49.2	42.3	34.5	34.5
Actuated g/C Ratio	0.27	0.12		0.33	0.15		0.34	0.30	0.49	0.42	0.34	0.34
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	349	187		400	230		278	1077	769	880	635	526
v/s Ratio Prot	0.13	0.03		c0.17	0.10		0.00	0.08	0.01	c0.01	c0.22	
v/s Ratio Perm	0.10			c0.13			0.03		0.02	0.05		0.02
v/c Ratio	0.83	0.24		0.90	0.69		0.11	0.27	0.07	0.14	0.63	0.05
Uniform Delay, d1	32.1	40.2		28.6	40.5		22.5	26.4	13.4	17.5	27.5	21.9
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	15.6	0.7		22.0	8.7		0.1	0.6	0.0	0.1	4.8	0.2
Delay (s)	47.7	40.9		50.6	49.2		22.6	27.0	13.5	17.5	32.3	22.1
Level of Service	D	D		D	D		C	C	B	B	C	C
Approach Delay (s)		44.6			49.9			23.3			27.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.2	Sum of lost time (s)	26.5
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	126	247	1022	33	185	87	788	853	54	33	478	68
v/c Ratio	0.38	0.72	0.64	0.09	0.51	0.05	0.78	0.42	0.03	0.16	0.35	0.07
Control Delay	45.0	55.8	2.0	40.4	47.3	0.1	45.1	7.1	0.0	46.1	24.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	55.8	2.0	40.4	47.3	0.1	45.1	7.1	0.0	46.1	24.6	0.2
Queue Length 50th (ft)	39	82	0	9	59	0	132	103	0	10	113	0
Queue Length 95th (ft)	65	119	0	24	93	0	191	56	m0	26	181	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	375	386	1599	1461	2049	1599	217	1362	1003
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.46	0.64	0.09	0.48	0.05	0.54	0.42	0.03	0.15	0.35	0.07

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	235	940	30	170	80	725	785	50	30	440	65
Future Volume (veh/h)	125	235	940	30	170	80	725	785	50	30	440	65
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	126	247	0	33	185	0	788	853	0	33	478	68
Peak Hour Factor	0.99	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	311	320		256	263		934	2161		84	1551	834
Arrive On Green	0.09	0.09	0.00	0.07	0.07	0.00	0.18	0.60	0.00	0.02	0.43	0.43
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	126	247	0	33	185	0	788	853	0	33	478	68
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.4	6.7	0.0	0.9	5.0	0.0	15.0	12.4	0.0	0.9	8.7	2.1
Cycle Q Clear(g_c), s	3.4	6.7	0.0	0.9	5.0	0.0	15.0	12.4	0.0	0.9	8.7	2.1
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	311	320		256	263		934	2161		84	1551	834
V/C Ratio(X)	0.41	0.77		0.13	0.70		0.84	0.39		0.39	0.31	0.08
Avail Cap(c_a), veh/h	522	537		348	358		1468	2161		209	1551	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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.0	44.5	0.0	43.3	45.3	0.0	39.4	10.3	0.0	48.1	18.5	11.9
Incr Delay (d2), s/veh	0.3	1.5	0.0	0.2	3.8	0.0	1.5	0.5	0.0	3.0	0.5	0.2
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(50%),veh/ln	1.4	3.0	0.0	0.4	2.4	0.0	6.1	4.3	0.0	0.4	3.5	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.3	46.1	0.0	43.6	49.1	0.0	40.9	10.9	0.0	51.1	19.1	12.1
LnGrp LOS	D	D		D	D		D	B		D	B	B
Approach Vol, veh/h		373			218			1641			579	
Approach Delay, s/veh		45.1			48.3			25.3			20.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	66.3		13.9	24.4	49.3		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	14.4		8.7	17.0	10.7		7.0				
Green Ext Time (p_c), s	0.0	6.2		0.2	1.4	2.5		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		28.6
HCM 6th LOS		C

Notes

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

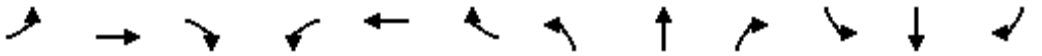
Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	5	266	10	65	20	1608	212	33	1412	10
v/c Ratio	0.08	0.00	0.62	0.04	0.18	0.09	0.67	0.19	0.18	0.58	0.01
Control Delay	44.8	0.0	48.1	38.6	1.1	49.6	10.0	2.4	53.5	8.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	0.0	48.1	38.6	1.1	49.6	10.0	2.4	53.5	8.5	0.0
Queue Length 50th (ft)	6	0	83	6	0	6	57	0	10	106	0
Queue Length 95th (ft)	13	0	126	12	0	4	437	32	m20	503	m0
Internal Link Dist (ft)	697			679			647			2055	
Turn Bay Length (ft)		125	250		500	455		250	550		550
Base Capacity (vph)	152	1615	446	241	366	554	2388	1134	274	2426	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.00	0.60	0.04	0.18	0.04	0.67	0.19	0.12	0.58	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	5	245	5	60	5	1495	195	30	1370	5
Future Volume (veh/h)	0	5	5	245	5	60	5	1495	195	30	1370	5
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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	0	10	0	266	10	65	20	1608	212	33	1412	0
Peak Hour Factor	0.75	0.50	1.00	0.92	0.50	0.92	0.25	0.93	0.92	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	43	23		343	186	157	74	2333	1041	62	2303	
Arrive On Green	0.00	0.01	0.00	0.10	0.10	0.10	0.02	0.65	0.65	0.02	0.65	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	0	10	0	266	10	65	20	1608	212	33	1412	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	0.0	0.5	0.0	7.5	0.5	3.8	0.6	28.4	5.3	0.9	23.2	0.0
Cycle Q Clear(g_c), s	0.0	0.5	0.0	7.5	0.5	3.8	0.6	28.4	5.3	0.9	23.2	0.0
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	43	23		343	186	157	74	2333	1041	62	2303	
V/C Ratio(X)	0.00	0.43		0.78	0.05	0.41	0.27	0.69	0.20	0.53	0.61	
Avail Cap(c_a), veh/h	281	152		418	226	192	557	2333	1041	276	2303	
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)	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	49.1	0.0	44.0	40.9	42.4	48.2	11.0	7.0	48.7	10.3	0.0
Incr Delay (d2), s/veh	0.0	14.8	0.0	7.8	0.1	2.1	1.9	1.7	0.4	2.6	1.2	0.0
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(50%),veh/ln	0.0	0.3	0.0	3.6	0.2	1.6	0.3	9.5	1.6	0.4	7.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	63.8	0.0	51.8	41.0	44.5	50.1	12.7	7.4	51.3	11.5	0.0
LnGrp LOS	A	E		D	D	D	D	B	A	D	B	
Approach Vol, veh/h		10			341			1840			1445	
Approach Delay, s/veh		63.8			50.1			12.5			12.4	
Approach LOS		E			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	71.1		7.2	6.1	70.8		15.8				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	8.0	50.0		8.0	16.0	42.0		12.0				
Max Q Clear Time (g_c+I1), s	2.9	30.4		2.5	2.6	25.2		9.5				
Green Ext Time (p_c), s	0.0	12.1		0.0	0.0	8.9		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		16.1
HCM 6th LOS		B

Notes

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

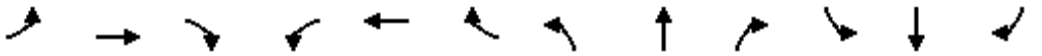
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	104	103	467	223	1360	1391	280
v/c Ratio	0.58	0.58	0.29	0.60	0.50	0.44	0.26
Control Delay	55.2	54.5	0.5	25.4	7.0	6.6	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	55.2	54.5	0.5	25.4	7.3	6.6	1.4
Queue Length 50th (ft)	67	67	0	108	136	147	11
Queue Length 95th (ft)	120	117	0	m166	326	69	12
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	324	1599	585	2742	3145	1086
Starvation Cap Reductn	0	0	0	0	613	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.32	0.29	0.38	0.64	0.44	0.26

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	180	10	430	205	1265	0	0	1335	258
Future Volume (vph)	0	0	0	180	10	430	205	1265	0	0	1335	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1711	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.14	1.00			1.00	1.00
Satd. Flow (perm)				1698	1711	1599	268	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.96	0.92
Adj. Flow (vph)	0	0	0	196	11	467	223	1360	0	0	1391	280
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	107
Lane Group Flow (vph)	0	0	0	104	103	467	223	1360	0	0	1391	173
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.5	10.5	100.0	77.5	77.5			61.9	61.9
Effective Green, g (s)				10.5	10.5	100.0	77.5	77.5			61.9	61.9
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.62	0.62
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				178	179	1599	366	2742			3147	979
v/s Ratio Prot							c0.06	0.38			0.27	
v/s Ratio Perm				c0.06	0.06	0.29	c0.41					0.11
v/c Ratio				0.58	0.58	0.29	0.61	0.50			0.44	0.18
Uniform Delay, d1				42.7	42.6	0.0	5.8	4.1			10.0	8.2
Progression Factor				1.00	1.00	1.00	3.77	1.44			0.55	0.56
Incremental Delay, d2				3.1	2.8	0.5	1.5	0.5			0.4	0.3
Delay (s)				45.8	45.4	0.5	23.3	6.4			5.9	4.9
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			14.3			8.8			5.7	
Approach LOS		A			B			A			A	

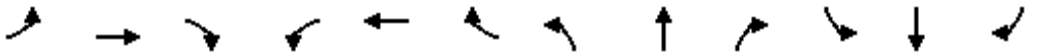
Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	198	198	217	1161	163	612	948
v/c Ratio	0.78	0.77	0.14	0.70	0.20	0.88	0.37
Control Delay	60.4	59.8	0.2	24.3	3.3	52.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	59.8	0.2	24.3	3.3	52.8	6.2
Queue Length 50th (ft)	128	127	0	315	0	98	70
Queue Length 95th (ft)	204	203	0	397	36	#271	83
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1670	833	712	2564
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.63	0.14	0.70	0.20	0.86	0.37

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	350	15	200	0	0	0	0	1115	150	600	910	0
Future Volume (vph)	350	15	200	0	0	0	0	1115	150	600	910	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1659	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1659	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.92	0.98	0.96	0.92
Adj. Flow (vph)	380	16	217	0	0	0	0	1161	163	612	948	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	86	0	0	0
Lane Group Flow (vph)	198	198	217	0	0	0	0	1161	77	612	948	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.5	15.5	100.0					47.2	47.2	20.3	72.5	
Effective Green, g (s)	15.5	15.5	100.0					47.2	47.2	20.3	72.5	
Actuated g/C Ratio	0.16	0.16	1.00					0.47	0.47	0.20	0.72	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	255	257	1553					1670	747	696	2565	
v/s Ratio Prot								c0.33		c0.18	0.27	
v/s Ratio Perm	c0.12	0.12	0.14						0.05			
v/c Ratio	0.78	0.77	0.14					0.70	0.10	0.88	0.37	
Uniform Delay, d1	40.6	40.5	0.0					20.7	14.7	38.7	5.2	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.99	1.04	
Incremental Delay, d2	12.6	12.2	0.2					2.4	0.3	11.0	0.4	
Delay (s)	53.2	52.7	0.2					23.2	14.9	49.4	5.8	
Level of Service	D	D	A					C	B	D	A	
Approach Delay (s)		34.3			0.0			22.1			22.9	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	5.8
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	366	385	723
Demand Flow Rate, veh/h	373	392	737
Vehicles Circulating, veh/h	466	168	171
Vehicles Exiting, veh/h	442	671	389
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	6.0	4.5	6.5
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.469	0.531	0.436	0.564	0.632	0.368
Follow-Up Headway, s	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
Entry Flow, veh/h	175	198	171	221	466	271
Cap Entry Lane, veh/h	879	956	1157	1231	1153	1228
Entry HV Adj Factor	0.983	0.980	0.980	0.982	0.981	0.982
Flow Entry, veh/h	172	194	168	217	457	266
Cap Entry, veh/h	864	936	1127	1202	1131	1205
V/C Ratio	0.199	0.207	0.149	0.181	0.404	0.221
Control Delay, s/veh	6.2	5.9	4.5	4.6	7.3	4.9
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	2	1



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	397	505	533	418	304	543
v/c Ratio	0.32	0.40	0.53	0.23	0.27	0.35
Control Delay	29.8	1.7	18.0	16.1	33.9	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	1.7	18.0	16.1	33.9	0.6
Queue Length 50th (ft)	117	0	114	89	81	0
Queue Length 95th (ft)	168	32	150	121	#189	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1235	1268	1306	1822	1108	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.40	0.41	0.23	0.27	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	365	465	490	385	280	500
Future Volume (vph)	365	465	490	385	280	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	3505	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.40	1.00	0.95	1.00
Satd. Flow (perm)	3505	1568	1437	3505	3400	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	397	505	533	418	304	543
RTOR Reduction (vph)	0	179	0	0	0	0
Lane Group Flow (vph)	397	326	533	418	304	543
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	38.3	77.4	58.4	58.4	39.1	120.0
Effective Green, g (s)	38.3	77.4	58.4	58.4	39.1	120.0
Actuated g/C Ratio	0.32	0.65	0.49	0.49	0.33	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1118	1011	946	1705	1107	1568
v/s Ratio Prot	0.11	0.10	c0.07	0.12	0.09	
v/s Ratio Perm		0.10	c0.20			c0.35
v/c Ratio	0.36	0.32	0.56	0.25	0.27	0.35
Uniform Delay, d1	31.4	9.5	19.3	18.0	29.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.8	0.5	0.3	0.6	0.6
Delay (s)	32.3	10.4	19.8	18.3	30.6	0.6
Level of Service	C	B	B	B	C	A
Approach Delay (s)	20.0			19.1	11.4	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	571	315	386	576	345	592
v/c Ratio	0.28	0.24	0.33	0.22	0.69	0.37
Control Delay	12.0	0.9	5.7	5.7	48.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	0.9	5.7	5.7	48.0	0.7
Queue Length 50th (ft)	82	0	30	51	109	0
Queue Length 95th (ft)	167	16	71	112	148	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	2058	1459	1297	2566	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.22	0.30	0.22	0.36	0.37

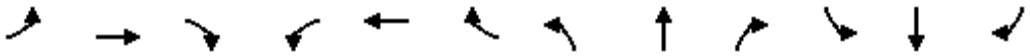
Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	525	290	355	530	335	545
Future Volume (vph)	525	290	355	530	335	545
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	3505	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.38	1.00	0.95	1.00
Satd. Flow (perm)	3505	1568	1380	3574	3467	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.92
Adj. Flow (vph)	571	315	386	576	345	592
RTOR Reduction (vph)	0	97	0	0	0	0
Lane Group Flow (vph)	571	218	386	576	345	592
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	54.7	69.1	67.8	67.8	14.4	100.0
Effective Green, g (s)	54.7	69.1	67.8	67.8	14.4	100.0
Actuated g/C Ratio	0.55	0.69	0.68	0.68	0.14	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1917	1083	1104	2423	499	1599
v/s Ratio Prot	0.16	0.03	0.03	0.16	c0.10	
v/s Ratio Perm		0.11	0.21			c0.37
v/c Ratio	0.30	0.20	0.35	0.24	0.69	0.37
Uniform Delay, d1	12.3	5.5	6.3	6.2	40.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	0.1	0.2	3.3	0.7
Delay (s)	12.7	5.6	6.3	6.4	44.0	0.7
Level of Service	B	A	A	A	D	A
Approach Delay (s)	10.1			6.4	16.6	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

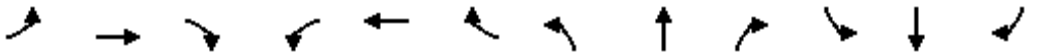
c Critical Lane Group

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2025 + Project



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	56	22	55	407	47	180	127	898	552	240	667	75
v/c Ratio	0.19	0.15	0.03	0.60	0.18	0.49	0.39	0.60	0.56	0.57	0.29	0.10
Control Delay	42.7	44.0	0.1	37.0	36.0	10.0	43.5	23.2	4.5	44.0	17.0	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	44.0	0.1	37.0	36.0	10.0	43.5	23.2	4.5	44.0	17.0	1.0
Queue Length 50th (ft)	14	11	0	97	24	0	33	186	0	63	77	0
Queue Length 95th (ft)	25	29	0	157	54	44	60	312	38	92	138	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	683	611	1595	781	652	665	390	1508	981	477	2310	788
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.04	0.03	0.52	0.07	0.27	0.33	0.60	0.56	0.50	0.29	0.10

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	15	40	338	40	151	100	790	453	175	640	45
Future Volume (veh/h)	35	15	40	338	40	151	100	790	453	175	640	45
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	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	22	0	407	47	0	127	898	0	240	667	0
Peak Hour Factor	0.63	0.69	0.73	0.83	0.86	0.84	0.79	0.88	0.82	0.73	0.96	0.60
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	280	128		500	247		263	1504		330	2289	
Arrive On Green	0.08	0.07	0.00	0.15	0.13	0.00	0.08	0.42	0.00	0.10	0.45	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	56	22	0	407	47	0	127	898	0	240	667	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.3	1.0	0.0	10.1	2.0	0.0	3.1	17.1	0.0	5.9	7.3	0.0
Cycle Q Clear(g_c), s	1.3	1.0	0.0	10.1	2.0	0.0	3.1	17.1	0.0	5.9	7.3	0.0
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	280	128		500	247		263	1504		330	2289	
V/C Ratio(X)	0.20	0.17		0.81	0.19		0.48	0.60		0.73	0.29	
Avail Cap(c_a), veh/h	681	607		774	652		390	1504		477	2289	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.7	38.6	0.0	36.3	33.8	0.0	38.8	19.5	0.0	38.5	15.3	0.0
Incr Delay (d2), s/veh	0.3	0.6	0.0	3.1	0.4	0.0	1.0	1.8	0.0	2.3	0.3	0.0
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(50%),veh/ln	0.6	0.5	0.0	4.2	0.9	0.0	1.3	6.9	0.0	2.5	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	39.2	0.0	39.4	34.2	0.0	39.8	21.3	0.0	40.9	15.7	0.0
LnGrp LOS	D	D		D	C		D	C		D	B	
Approach Vol, veh/h		78			454			1025			907	
Approach Delay, s/veh		38.3			38.8			23.6			22.3	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	43.1	18.3	11.9	12.2	45.3	12.5	17.7
Change Period (Y+Rc), s	6.0	* 6	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.1	* 37	19.8	28.0	9.9	39.3	17.0	30.8
Max Q Clear Time (g_c+I1), s	7.9	19.1	12.1	3.0	5.1	9.3	3.3	4.0
Green Ext Time (p_c), s	0.2	9.6	0.7	0.1	0.1	9.0	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	26.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	411	511	160	507	434	176
v/c Ratio	0.50	0.41	0.31	0.24	0.71	0.11
Control Delay	23.4	1.8	11.4	10.2	41.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	1.8	11.4	10.2	41.2	0.1
Queue Length 50th (ft)	122	0	24	45	96	0
Queue Length 95th (ft)	411	34	102	131	152	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	828	1291	654	2577	762	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.40	0.24	0.20	0.57	0.11

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	366	455	128	365	269	153
Future Volume (vph)	366	455	128	365	269	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	1752	3505	3400	1568
Flt Permitted	1.00	1.00	0.35	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	654	3505	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	411	511	160	507	434	176
RTOR Reduction (vph)	0	202	0	0	0	0
Lane Group Flow (vph)	411	309	160	507	434	176
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	37.8	52.9	51.1	51.1	15.1	87.4
Effective Green, g (s)	37.8	52.9	51.1	51.1	15.1	87.4
Actuated g/C Ratio	0.43	0.61	0.58	0.58	0.17	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	797	949	486	2049	587	1568
v/s Ratio Prot	c0.22	0.06	c0.03	0.14	c0.13	
v/s Ratio Perm		0.14	0.16			c0.11
v/c Ratio	0.52	0.33	0.33	0.25	0.74	0.11
Uniform Delay, d1	18.1	8.5	9.6	8.8	34.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	0.1	0.1	4.2	0.1
Delay (s)	20.5	8.6	9.7	8.9	38.5	0.1
Level of Service	C	A	A	A	D	A
Approach Delay (s)	13.9			9.1	27.4	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	22.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	276	176	139	463	328	98	118	845	599	119	838	266
v/c Ratio	0.61	0.24	0.30	0.77	0.33	0.18	0.46	0.64	0.38	0.47	0.63	0.35
Control Delay	33.8	49.9	5.1	40.4	43.2	3.2	27.8	40.9	0.7	28.2	41.0	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	49.9	5.1	40.4	43.2	3.2	27.8	40.9	0.7	28.2	41.0	4.9
Queue Length 50th (ft)	168	75	0	324	131	0	63	356	0	64	352	0
Queue Length 95th (ft)	246	104	20	401	137	10	69	440	0	97	434	16
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	494	742	464	612	982	533	354	1319	1583	281	1323	759
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.24	0.30	0.76	0.33	0.18	0.33	0.64	0.38	0.42	0.63	0.35

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	259	146	114	384	226	79	73	794	545	100	746	194
Future Volume (veh/h)	259	146	114	384	226	79	73	794	545	100	746	194
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	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	276	176	139	463	328	98	118	845	0	119	838	266
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	491	739	330	602	1009	450	238	1320		262	1330	593
Arrive On Green	0.13	0.21	0.21	0.22	0.29	0.29	0.05	0.37	0.00	0.05	0.37	0.37
Sat Flow, veh/h	1795	3582	1598	1753	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	276	176	139	463	328	98	118	845	0	119	838	266
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1753	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	17.4	6.0	11.0	29.4	10.7	6.9	5.9	28.5	0.0	5.9	27.9	18.3
Cycle Q Clear(g_c), s	17.4	6.0	11.0	29.4	10.7	6.9	5.9	28.5	0.0	5.9	27.9	18.3
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	491	739	330	602	1009	450	238	1320		262	1330	593
V/C Ratio(X)	0.56	0.24	0.42	0.77	0.33	0.22	0.49	0.64		0.45	0.63	0.45
Avail Cap(c_a), veh/h	521	739	330	609	1009	450	374	1320		313	1330	593
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.3	48.1	50.1	31.7	40.6	39.3	29.1	37.7	0.0	29.1	37.5	34.5
Incr Delay (d2), s/veh	0.6	0.8	3.9	5.3	0.9	1.1	0.6	2.4	0.0	0.5	2.3	2.4
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(50%),veh/ln	7.7	2.8	4.7	13.2	4.8	2.8	2.5	12.7	0.0	2.6	12.5	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	48.9	54.1	37.0	41.5	40.4	29.7	40.1	0.0	29.5	39.8	36.9
LnGrp LOS	D	D	D	D	D	D	C	D		C	D	D
Approach Vol, veh/h		591			889			963			1223	
Approach Delay, s/veh		45.0			39.0			38.8			38.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	36.5	36.0	12.9	60.0	24.5	47.9	12.9	60.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	32.0	30.0	12.0	54.0	22.0	40.0	19.0	47.0
Max Q Clear Time (g_c+I1), s	31.4	13.0	7.9	30.5	19.4	12.7	7.9	29.9
Green Ext Time (p_c), s	0.1	1.3	0.0	5.8	0.1	2.4	0.1	6.0

Intersection Summary	
HCM 6th Ctrl Delay	39.7
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



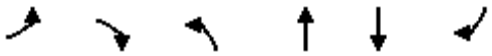
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	39	88	303	401	108	184	768	460	181	139
v/c Ratio	0.22	0.62	0.56	0.78	0.23	0.35	0.65	0.47	0.29	0.22
Control Delay	39.7	75.3	40.4	56.4	29.6	46.8	6.2	29.3	39.7	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	75.3	40.4	56.4	29.6	46.8	6.2	29.3	39.7	5.6
Queue Length 50th (ft)	18	57	165	269	44	109	20	105	99	0
Queue Length 95th (ft)	59	76	365	190	123	210	26	195	188	10
Internal Link Dist (ft)		538		1917		2380			851	
Turn Bay Length (ft)	125				170		170	400		200
Base Capacity (vph)	213	170	542	516	482	531	1178	1033	627	634
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.52	0.56	0.78	0.22	0.35	0.65	0.45	0.29	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	30	25	267	95	91	95	138	576	354	134	100
Future Volume (vph)	35	30	25	267	95	91	95	138	576	354	134	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.95		1.00	0.94		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)	1787	1758		1701	1687		1770	1863	1570	3423	1863	1583
Flt Permitted	0.53	1.00		0.46	1.00		0.64	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	990	1758		816	1687		1198	1863	1570	1757	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	39	56	32	303	244	157	108	184	768	460	181	139
RTOR Reduction (vph)	0	13	0	0	13	0	0	0	323	0	0	93
Lane Group Flow (vph)	39	75	0	303	388	0	108	184	445	460	181	46
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.4	11.2		52.1	40.9		48.0	39.1	75.0	60.1	46.2	46.2
Effective Green, g (s)	17.4	11.2		52.1	40.9		48.0	39.1	75.0	60.1	46.2	46.2
Actuated g/C Ratio	0.12	0.08		0.37	0.29		0.34	0.28	0.53	0.43	0.33	0.33
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	157	139		527	490		444	517	836	939	611	519
v/s Ratio Prot	0.01	0.04		c0.15	c0.23		0.02	0.10	c0.14	c0.06	0.10	
v/s Ratio Perm	0.02			0.07			0.07		0.15	0.15		0.03
v/c Ratio	0.25	0.54		0.57	0.79		0.24	0.36	0.53	0.49	0.30	0.09
Uniform Delay, d1	55.2	62.3		34.1	46.0		32.5	40.7	21.4	27.2	35.2	32.7
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	0.8	4.2		1.5	8.5		0.2	1.9	0.7	0.4	1.2	0.3
Delay (s)	56.1	66.5		35.6	54.4		32.7	42.6	22.1	27.6	36.4	33.0
Level of Service	E	E		D	D		C	D	C	C	D	C
Approach Delay (s)		63.3			46.3			26.7			30.6	
Approach LOS		E			D			C			C	

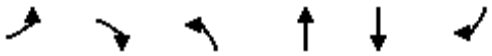
Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.7	Sum of lost time (s)	26.5
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	396	85	225	1074	910	479
v/c Ratio	0.66	0.24	0.59	0.31	0.50	0.46
Control Delay	39.5	8.8	45.0	6.1	16.2	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	8.8	45.0	6.1	16.2	3.0
Queue Length 50th (ft)	109	0	63	75	168	0
Queue Length 95th (ft)	136	32	101	115	250	39
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	534	381	3510	1814	1044
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.16	0.59	0.31	0.50	0.46

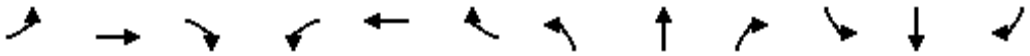
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	337	72	207	1074	837	407
Future Volume (veh/h)	337	72	207	1074	837	407
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	396	85	225	1074	910	479
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	516	237	905	3663	1382	616
Arrive On Green	0.15	0.15	0.26	0.72	0.39	0.39
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	396	85	225	1074	910	479
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	9.9	4.3	4.6	6.8	18.9	23.8
Cycle Q Clear(g_c), s	9.9	4.3	4.6	6.8	18.9	23.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	516	237	905	3663	1382	616
V/C Ratio(X)	0.77	0.36	0.25	0.29	0.66	0.78
Avail Cap(c_a), veh/h	1037	476	905	3663	1382	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	36.8	34.4	26.2	4.6	22.6	24.1
Incr Delay (d2), s/veh	2.4	0.9	0.0	0.0	2.5	9.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	4.0	1.8	1.7	7.8	9.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.2	35.3	26.2	4.6	25.1	33.4
LnGrp LOS	D	D	C	A	C	C
Approach Vol, veh/h	481			1299	1389	
Approach Delay, s/veh	38.5			8.3	27.9	
Approach LOS	D			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		70.6		19.4	29.6	41.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	10.0	35.0
Max Q Clear Time (g_c+I1), s		8.8		11.9	6.6	25.8
Green Ext Time (p_c), s		8.9		1.5	0.2	5.1

Intersection Summary		
HCM 6th Ctrl Delay		21.5
HCM 6th LOS		C



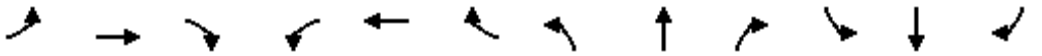
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	66	137	1474	64	235	53	1518	439	29	63	822	167
v/c Ratio	0.33	0.66	0.93	0.18	0.66	0.03	1.17	0.20	0.02	0.33	0.82	0.11
Control Delay	52.3	64.5	29.0	54.2	65.2	0.0	113.0	5.4	0.0	63.8	50.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	64.5	29.0	54.2	65.2	0.0	113.0	5.4	0.0	63.8	50.1	0.1
Queue Length 50th (ft)	27	60	1119	25	101	0	~807	67	0	26	339	0
Queue Length 95th (ft)	51	87	362	47	133	0	#568	57	m0	35	291	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	290	299	1583	356	367	1568	1299	2259	1568	195	1240	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.46	0.93	0.18	0.64	0.03	1.17	0.19	0.02	0.32	0.66	0.11

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	114	737	56	193	43	941	369	20	40	600	150
Future Volume (veh/h)	58	114	737	56	193	43	941	369	20	40	600	150
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	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	66	137	0	64	235	0	1518	439	0	63	822	0
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	186	191		283	291		1028	2368		104	1390	
Arrive On Green	0.05	0.05	0.00	0.08	0.08	0.00	0.30	0.67	0.00	0.03	0.39	0.00
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	66	137	0	64	235	0	1518	439	0	63	822	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	2.4	4.9	0.0	2.3	8.5	0.0	39.0	6.1	0.0	2.4	23.9	0.0
Cycle Q Clear(g_c), s	2.4	4.9	0.0	2.3	8.5	0.0	39.0	6.1	0.0	2.4	23.9	0.0
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	186	191		283	291		1028	2368		104	1390	
V/C Ratio(X)	0.36	0.72		0.23	0.81		1.48	0.19		0.61	0.59	
Avail Cap(c_a), veh/h	292	301		316	325		1028	2368		185	1390	
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)	0.90	0.90	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	59.3	60.5	0.0	55.7	58.6	0.0	45.5	8.0	0.0	62.3	31.1	0.0
Incr Delay (d2), s/veh	0.4	1.7	0.0	0.4	12.7	0.0	219.5	0.2	0.0	5.6	1.9	0.0
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(50%),veh/ln	1.0	2.2	0.0	1.0	4.3	0.0	47.3	2.1	0.0	1.1	10.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.7	62.2	0.0	56.1	71.3	0.0	265.0	8.2	0.0	67.9	32.9	0.0
LnGrp LOS	E	E		E	E		F	A		E	C	
Approach Vol, veh/h		203			299			1957			885	
Approach Delay, s/veh		61.4			68.0			207.4			35.4	
Approach LOS		E			E			F			D	

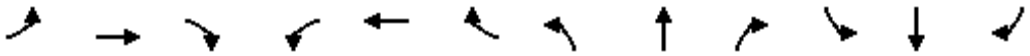
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	93.3		12.0	45.0	57.3		15.7				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	79.0		11.0	39.0	46.0		12.0				
Max Q Clear Time (g_c+I1), s	4.4	8.1		6.9	41.0	25.9		10.5				
Green Ext Time (p_c), s	0.0	2.9		0.1	0.0	5.2		0.2				

Intersection Summary		
HCM 6th Ctrl Delay	140.5	
HCM 6th LOS	F	

Notes

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

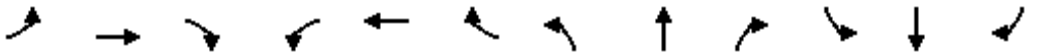
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	14	5	83	251	5	98	314	1488	195	70	1338	38
v/c Ratio	0.10	0.04	0.05	0.74	0.03	0.27	0.65	0.63	0.17	0.62	0.69	0.02
Control Delay	40.0	39.4	0.1	53.6	37.6	1.9	43.0	11.1	1.7	67.2	18.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	39.4	0.1	53.6	37.6	1.9	43.0	11.1	1.7	67.2	18.6	0.0
Queue Length 50th (ft)	8	3	0	72	3	0	87	207	0	20	258	0
Queue Length 95th (ft)	26	14	0	#125	13	0	124	371	29	#41	#471	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125			250		500	455		250	550		550
Base Capacity (vph)	180	190	1615	340	184	363	492	2367	1122	113	1929	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.03	0.05	0.74	0.03	0.27	0.64	0.63	0.17	0.62	0.69	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	5	76	236	5	62	270	1250	185	55	1298	35
Future Volume (veh/h)	13	5	76	236	5	62	270	1250	185	55	1298	35
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	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	14	5	0	251	5	98	314	1488	195	70	1338	0
Peak Hour Factor	0.92	0.92	0.92	0.94	0.92	0.63	0.86	0.84	0.95	0.79	0.97	0.92
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	100	101		324	170	144	387	1841	821	219	1746	
Arrive On Green	0.06	0.05	0.00	0.09	0.09	0.09	0.11	0.52	0.52	0.06	0.50	0.00
Sat Flow, veh/h	1810	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	14	5	0	251	5	98	314	1488	195	70	1338	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.7	0.2	0.0	6.4	0.2	4.3	8.0	31.4	3.2	1.8	27.8	0.0
Cycle Q Clear(g_c), s	0.7	0.2	0.0	6.4	0.2	4.3	8.0	31.4	3.2	1.8	27.8	0.0
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	100	101		324	170	144	387	1841	821	219	1746	
V/C Ratio(X)	0.14	0.05		0.78	0.03	0.68	0.81	0.81	0.24	0.32	0.77	
Avail Cap(c_a), veh/h	181	190		343	186	157	419	1841	821	219	1746	
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.5	40.5	0.0	39.8	37.2	24.3	39.0	17.8	3.2	40.3	18.5	0.0
Incr Delay (d2), s/veh	0.8	0.2	0.0	10.5	0.1	10.8	10.8	3.9	0.7	0.3	3.3	0.0
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(50%),veh/ln	0.3	0.1	0.0	3.1	0.1	2.5	3.8	11.8	2.0	0.7	10.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.2	40.7	0.0	50.3	37.3	35.1	49.8	21.7	3.9	40.6	21.8	0.0
LnGrp LOS	D	D		D	D	D	D	C	A	D	C	
Approach Vol, veh/h		19			354			1997			1408	
Approach Delay, s/veh		41.1			45.9			24.4			22.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	53.0	14.5	10.8	14.2	50.6	11.0	14.3
Change Period (Y+Rc), s	6.0	* 6	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	3.0	* 47	9.0	9.0	11.0	39.0	9.0	9.0
Max Q Clear Time (g_c+I1), s	3.8	33.4	8.4	2.2	10.0	29.8	2.7	6.3
Green Ext Time (p_c), s	0.0	8.7	0.1	0.0	0.1	5.6	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	25.9
HCM 6th LOS	C

Notes

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

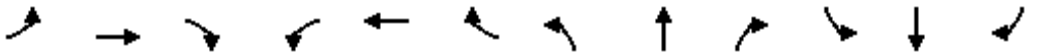
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



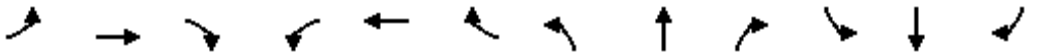
Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	100	102	1037	222	841	1291	549
v/c Ratio	0.58	0.58	0.66	0.61	0.31	0.40	0.46
Control Delay	55.1	55.3	2.2	32.6	0.3	9.8	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	55.3	2.2	32.6	0.3	9.8	2.3
Queue Length 50th (ft)	65	66	0	65	0	127	0
Queue Length 95th (ft)	104	96	0	128	0	205	28
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	412	2744	3238	1204
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.34	0.66	0.54	0.31	0.40	0.46

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	155	10	923	195	782	0	0	1149	456
Future Volume (vph)	0	0	0	155	10	923	195	782	0	0	1149	456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1679	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.17	1.00			1.00	1.00
Satd. Flow (perm)				1665	1679	1568	313	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Adj. Flow (vph)	0	0	0	189	13	1037	222	841	0	0	1291	549
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	196
Lane Group Flow (vph)	0	0	0	100	102	1037	222	841	0	0	1291	353
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.4	10.4	100.0	77.6	77.6			64.3	64.3
Effective Green, g (s)				10.4	10.4	100.0	77.6	77.6			64.3	64.3
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.64	0.64
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				173	174	1568	363	2746			3238	1008
v/s Ratio Prot							0.05	0.24			0.26	
v/s Ratio Perm				0.06	0.06	c0.66	0.42					0.23
v/c Ratio				0.58	0.59	0.66	0.61	0.31			0.40	0.35
Uniform Delay, d1				42.7	42.7	0.0	4.5	3.3			8.6	8.2
Progression Factor				1.00	1.00	1.00	6.70	0.02			1.00	1.00
Incremental Delay, d2				2.9	3.2	2.2	1.9	0.3			0.4	1.0
Delay (s)				45.6	46.0	2.2	32.4	0.3			8.9	9.2
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			9.3			7.0			9.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	155	10	923	195	782	0	0	1149	456
Future Volume (veh/h)	0	0	0	155	10	923	195	782	0	0	1149	456
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1856	1856	1856	1870	1870	0	0	1856	1856
Adj Flow Rate, veh/h				198	0	0	222	841	0	0	1291	0
Peak Hour Factor				0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Percent Heavy Veh, %				3	3	3	2	2	0	0	3	3
Cap, veh/h				272	0		426	2854	0	0	3527	
Arrive On Green				0.08	0.00	0.00	0.11	1.00	0.00	0.00	0.70	0.00
Sat Flow, veh/h				3534	0	1572	1781	3647	0	0	5233	1572
Grp Volume(v), veh/h				198	0	0	222	841	0	0	1291	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1781	1777	0	0	1689	1572
Q Serve(g_s), s				5.5	0.0	0.0	3.5	0.0	0.0	0.0	10.4	0.0
Cycle Q Clear(g_c), s				5.5	0.0	0.0	3.5	0.0	0.0	0.0	10.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				272	0		426	2854	0	0	3527	
V/C Ratio(X)				0.73	0.00		0.52	0.29	0.00	0.00	0.37	
Avail Cap(c_a), veh/h				636	0		521	2854	0	0	3527	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.86	0.86	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				45.1	0.0	0.0	4.2	0.0	0.0	0.0	6.2	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.0	0.3	0.2	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.4	0.0	0.0	0.7	0.1	0.0	0.0	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.5	0.0	0.0	4.5	0.2	0.0	0.0	6.5	0.0
LnGrp LOS				D	A		A	A	A	A	A	
Approach Vol, veh/h					198			1063			1291	
Approach Delay, s/veh					46.5			1.1			6.5	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	86.3		10.7	75.6		13.7						
Change Period (Y+Rc), s	6.0		5.0	6.0		6.0						
Max Green Setting (Gmax), s	70.0		11.0	54.0		18.0						
Max Q Clear Time (g_c+I1), s	2.0		5.5	12.4		7.5						
Green Ext Time (p_c), s	6.4		0.1	11.1		0.3						

Intersection Summary	
HCM 6th Ctrl Delay	7.4
HCM 6th LOS	A

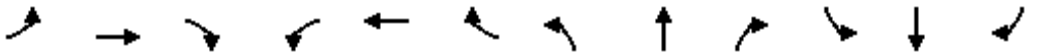
Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

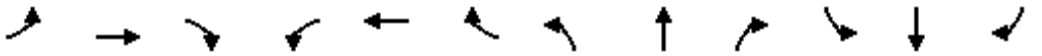
Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	151	153	202	805	61	435	983
v/c Ratio	0.68	0.68	0.13	0.46	0.07	0.64	0.38
Control Delay	56.0	56.0	0.2	18.3	1.4	33.3	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	56.0	0.2	18.3	1.4	33.3	4.1
Queue Length 50th (ft)	97	98	0	169	0	135	65
Queue Length 95th (ft)	151	105	0	246	5	187	77
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	316	1553	1752	833	680	2611
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.48	0.13	0.46	0.07	0.64	0.38

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	244	15	170	0	0	0	0	733	50	400	904	0
Future Volume (vph)	244	15	170	0	0	0	0	733	50	400	904	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1665	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1665	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.87	0.63	0.84	0.92	0.92	0.92	0.92	0.91	0.82	0.92	0.92	0.92
Adj. Flow (vph)	280	24	202	0	0	0	0	805	61	435	983	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	31	0	0	0
Lane Group Flow (vph)	151	153	202	0	0	0	0	805	30	435	983	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	13.5	13.5	100.0					49.5	49.5	20.0	74.5	
Effective Green, g (s)	13.5	13.5	100.0					49.5	49.5	20.0	74.5	
Actuated g/C Ratio	0.14	0.14	1.00					0.50	0.50	0.20	0.74	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	222	224	1553					1751	783	680	2611	
v/s Ratio Prot								c0.23		c0.13	0.28	
v/s Ratio Perm	0.09	0.09	0.13						0.02			
v/c Ratio	0.68	0.68	0.13					0.46	0.04	0.64	0.38	
Uniform Delay, d1	41.2	41.2	0.0					16.5	13.0	36.7	4.5	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.78	0.74	
Incremental Delay, d2	6.7	6.7	0.2					0.9	0.1	1.4	0.4	
Delay (s)	47.9	47.9	0.2					17.4	13.1	30.1	3.7	
Level of Service	D	D	A					B	B	C	A	
Approach Delay (s)		28.8			0.0			17.1			11.8	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	15	170	0	0	0	0	733	50	400	904	0
Future Volume (veh/h)	244	15	170	0	0	0	0	733	50	400	904	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1841	1841	1841				0	1870	1870	1856	1856	0
Adj Flow Rate, veh/h	297	0	0				0	805	0	435	983	0
Peak Hour Factor	0.87	0.63	0.84				0.92	0.91	0.82	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4				0	2	2	3	3	0
Cap, veh/h	374	0					0	1564		937	2727	0
Arrive On Green	0.11	0.00	0.00				0.00	0.44	0.00	0.55	1.00	0.00
Sat Flow, veh/h	3506	0	1560				0	3647	1585	3428	3618	0
Grp Volume(v), veh/h	297	0	0				0	805	0	435	983	0
Grp Sat Flow(s),veh/h/ln	1753	0	1560				0	1777	1585	1714	1763	0
Q Serve(g_s), s	8.3	0.0	0.0				0.0	16.4	0.0	7.7	0.0	0.0
Cycle Q Clear(g_c), s	8.3	0.0	0.0				0.0	16.4	0.0	7.7	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	374	0					0	1564		937	2727	0
V/C Ratio(X)	0.79	0.00					0.00	0.51		0.46	0.36	0.00
Avail Cap(c_a), veh/h	666	0					0	1564		937	2727	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.92	0.92	0.00
Uniform Delay (d), s/veh	43.6	0.0	0.0				0.0	20.3	0.0	18.2	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0				0.0	1.2	0.0	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0				0.0	6.5	0.0	2.5	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.1	0.0	0.0				0.0	21.5	0.0	18.3	0.3	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h		297						805			1418	
Approach Delay, s/veh		45.1						21.5			5.9	
Approach LOS		D						C			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	33.3	50.0		16.7		83.3
Change Period (Y+Rc), s	6.0	* 6		6.0		6.0
Max Green Setting (Gmax), s	20.0	* 44		19.0		69.0
Max Q Clear Time (g_c+I1), s	9.7	18.4		10.3		2.0
Green Ext Time (p_c), s	0.6	5.4		0.4		8.0

Intersection Summary		
HCM 6th Ctrl Delay		15.5
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	622	647	411
Demand Flow Rate, veh/h	628	660	419
Vehicles Circulating, veh/h	242	437	168
Vehicles Exiting, veh/h	345	433	929
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	6.7	9.0	4.7
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.696	0.304	0.255	0.745	0.578	0.422
Follow-Up Headway, s	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
Entry Flow, veh/h	437	191	168	492	242	177
Cap Entry Lane, veh/h	1080	1156	903	979	1157	1231
Entry HV Adj Factor	0.991	0.990	0.980	0.980	0.979	0.983
Flow Entry, veh/h	433	189	165	482	237	174
Cap Entry, veh/h	1071	1145	885	959	1133	1210
V/C Ratio	0.404	0.165	0.186	0.503	0.209	0.144
Control Delay, s/veh	7.6	4.6	5.9	10.0	5.1	4.2
LOS	A	A	A	B	A	A
95th %tile Queue, veh	2	1	1	3	1	1

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	352	18	120	343	5	32
Future Vol, veh/h	352	18	120	343	5	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	503	20	130	490	5	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	523	0	1263	513
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	750	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1038	-	186	559
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	465	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1038	-	163	559
Mov Cap-2 Maneuver	-	-	-	-	163	-
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	407	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	421	-	-	1038	-
HCM Lane V/C Ratio	0.096	-	-	0.126	-
HCM Control Delay (s)	14.5	-	-	9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.4	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	523	813	40
Demand Flow Rate, veh/h	539	838	41
Vehicles Circulating, veh/h	162	5	518
Vehicles Exiting, veh/h	681	554	183
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	8.2	6.6	4.5
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.193	0.807	0.122	0.878
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	539	162	676	5	36
Cap Entry Lane, veh/h	1170	1414	1414	886	886
Entry HV Adj Factor	0.970	0.969	0.971	1.000	0.972
Flow Entry, veh/h	523	157	656	5	35
Cap Entry, veh/h	1135	1370	1372	886	862
V/C Ratio	0.461	0.115	0.478	0.006	0.041
Control Delay, s/veh	8.2	3.5	7.4	4.1	4.6
LOS	A	A	A	A	A
95th %tile Queue, veh	2	0	3	0	0

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	72	0	0	0	19	0	0
Future Vol, veh/h	0	0	0	0	0	72	0	0	0	19	0	0
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	0	0	0	78	0	0	0	21	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	1	0	0	40	79	1	40	40	39
Stage 1	-	-	-	-	-	-	1	1	-	39	39	-
Stage 2	-	-	-	-	-	-	39	78	-	1	1	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1514	-	-	1615	-	-	962	809	1081	962	850	1030
Stage 1	-	-	-	-	-	-	1019	893	-	973	860	-
Stage 2	-	-	-	-	-	-	973	828	-	1019	893	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1514	-	-	1615	-	-	962	809	1081	962	850	1030
Mov Cap-2 Maneuver	-	-	-	-	-	-	962	809	-	962	850	-
Stage 1	-	-	-	-	-	-	1019	893	-	973	860	-
Stage 2	-	-	-	-	-	-	973	828	-	1019	893	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	8.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1514	-	-	1615	-	-	962
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.021
HCM Control Delay (s)	0	0	-	-	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	19	0	0	72	30	0	0	0	8	0	1
Future Vol, veh/h	1	19	0	0	72	30	0	0	0	8	0	1
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	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	1	21	0	0	78	33	0	0	0	9	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	111	0	0	21	0	0	118	134	21	118	118	95
Stage 1	-	-	-	-	-	-	23	23	-	95	95	-
Stage 2	-	-	-	-	-	-	95	111	-	23	23	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1479	-	-	1588	-	-	856	757	1054	858	772	962
Stage 1	-	-	-	-	-	-	993	876	-	912	816	-
Stage 2	-	-	-	-	-	-	909	804	-	995	876	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1479	-	-	1588	-	-	854	756	1054	857	771	962
Mov Cap-2 Maneuver	-	-	-	-	-	-	854	756	-	857	771	-
Stage 1	-	-	-	-	-	-	992	875	-	911	816	-
Stage 2	-	-	-	-	-	-	908	804	-	994	875	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	0	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1479	-	-	1588	-	-	868
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.011
HCM Control Delay (s)	0	7.4	-	-	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

Intersection	
Intersection Delay, s/veh	3.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	30	326	0	58
Demand Flow Rate, veh/h	31	335	0	60
Vehicles Circulating, veh/h	59	1	90	114
Vehicles Exiting, veh/h	115	89	0	222
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	2.9	3.7	0.0	3.3
Approach LOS	A	A	-	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.484	0.516	0.340	0.660	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	15	16	114	221	0	60
Cap Entry Lane, veh/h	1279	1351	1349	1419	1316	1289
Entry HV Adj Factor	0.944	0.998	0.971	0.973	1.000	0.967
Flow Entry, veh/h	14	16	111	215	0	58
Cap Entry, veh/h	1207	1348	1309	1380	1316	1246
V/C Ratio	0.012	0.012	0.085	0.156	0.000	0.047
Control Delay, s/veh	3.1	2.8	3.4	3.9	2.7	3.3
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	1	0	0

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↱			↱	
Traffic Vol, veh/h	12	0	19	0	0	0	72	126	0	0	33	48
Future Vol, veh/h	12	0	19	0	0	0	72	126	0	0	33	48
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	-	-	-	-	-	-	300	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	13	0	21	0	0	0	78	137	0	0	36	52

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	355	355	62	366	381	137	88	0	0	137	0	0
Stage 1	62	62	-	293	293	-	-	-	-	-	-	-
Stage 2	293	293	-	73	88	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	598	569	1000	588	550	909	1501	-	-	1441	-	-
Stage 1	947	841	-	713	668	-	-	-	-	-	-	-
Stage 2	713	668	-	934	820	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	574	539	1000	553	521	909	1501	-	-	1441	-	-
Mov Cap-2 Maneuver	574	539	-	553	521	-	-	-	-	-	-	-
Stage 1	898	841	-	676	633	-	-	-	-	-	-	-
Stage 2	676	633	-	915	820	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	0	2.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1501	-	-	777	-	1441	-	-
HCM Lane V/C Ratio	0.052	-	-	0.043	-	-	-	-
HCM Control Delay (s)	7.5	-	-	9.8	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	0	-	-

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	25	0	0	0	96	42	0	0	56	60
Future Vol, veh/h	16	0	25	0	0	0	96	42	0	0	56	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	0	27	0	0	0	104	46	0	0	61	65
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	0	8.2	7.5
HCM LOS	A	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	70%	39%	0%	0%
Vol Thru, %	30%	0%	100%	48%
Vol Right, %	0%	61%	0%	52%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	138	41	0	116
LT Vol	96	16	0	0
Through Vol	42	0	0	56
RT Vol	0	25	0	60
Lane Flow Rate	150	45	0	126
Geometry Grp	1	1	1	1
Degree of Util (X)	0.178	0.053	0	0.134
Departure Headway (Hd)	4.264	4.255	4.597	3.832
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	837	847	0	925
Service Time	2.31	2.255	2.599	1.897
HCM Lane V/C Ratio	0.179	0.053	0	0.136
HCM Control Delay	8.2	7.5	7.6	7.5
HCM Lane LOS	A	A	N	A
HCM 95th-tile Q	0.6	0.2	0	0.5

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	7	3	1	30	2	12	30	1	6	30	12
Future Vol, veh/h	3	7	3	1	30	2	12	30	1	6	30	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	3	8	3	1	33	2	13	33	1	7	33	13
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7.3	7.4	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	28%	23%	3%	12%
Vol Thru, %	70%	54%	91%	62%
Vol Right, %	2%	23%	6%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	43	13	33	48
LT Vol	12	3	1	6
Through Vol	30	7	30	30
RT Vol	1	3	2	12
Lane Flow Rate	47	14	36	52
Geometry Grp	1	1	1	1
Degree of Util (X)	0.053	0.016	0.041	0.057
Departure Headway (Hd)	4.103	4.041	4.103	3.95
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	871	880	868	905
Service Time	2.136	2.091	2.148	1.983
HCM Lane V/C Ratio	0.054	0.016	0.041	0.057
HCM Control Delay	7.4	7.2	7.3	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0	0.1	0.2

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	8	30	28	108	54
Future Vol, veh/h	14	8	30	28	108	54
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	9	33	30	117	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	243	147	176	0	-	0
Stage 1	147	-	-	-	-	-
Stage 2	96	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	743	897	1394	-	-	-
Stage 1	878	-	-	-	-	-
Stage 2	925	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	725	897	1394	-	-	-
Mov Cap-2 Maneuver	725	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	925	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1394	-	779	-	-
HCM Lane V/C Ratio	0.023	-	0.031	-	-
HCM Control Delay (s)	7.6	-	9.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	411	511	160	507	434	176
v/c Ratio	0.52	0.41	0.18	0.25	0.70	0.11
Control Delay	22.0	1.9	9.5	10.2	38.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	1.9	9.5	10.2	38.0	0.1
Queue Length 50th (ft)	109	0	10	41	84	0
Queue Length 95th (ft)	#367	37	46	123	138	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	793	1235	1739	3094	622	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.41	0.09	0.16	0.70	0.11

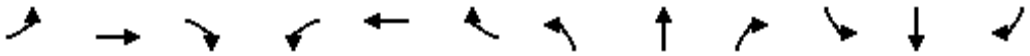
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	366	455	128	365	269	153
Future Volume (vph)	366	455	128	365	269	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.34	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1232	3505	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	411	511	160	507	434	176
RTOR Reduction (vph)	0	212	0	0	0	0
Lane Group Flow (vph)	411	299	160	507	434	176
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	32.3	46.0	43.5	43.5	13.7	78.5
Effective Green, g (s)	32.3	46.0	43.5	43.5	13.7	78.5
Actuated g/C Ratio	0.41	0.59	0.55	0.55	0.17	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	759	918	853	1942	593	1568
v/s Ratio Prot	c0.22	0.06	0.01	c0.14	c0.13	
v/s Ratio Perm		0.13	0.09			c0.11
v/c Ratio	0.54	0.33	0.19	0.26	0.73	0.11
Uniform Delay, d1	17.5	8.3	9.3	9.1	30.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.1	0.0	0.1	4.0	0.1
Delay (s)	20.3	8.4	9.3	9.2	34.7	0.1
Level of Service	C	A	A	A	C	A
Approach Delay (s)	13.7			9.2	24.7	
Approach LOS	B			A	C	

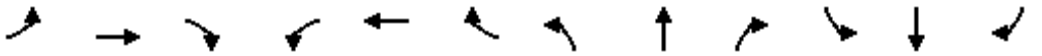
Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	22.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	276	176	139	463	328	98	118	845	599	119	838	266
v/c Ratio	0.34	0.20	0.26	0.46	0.32	0.18	0.43	0.61	0.38	0.44	0.60	0.28
Control Delay	26.8	42.1	4.4	28.4	39.6	3.1	23.5	35.7	0.7	23.6	35.6	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	42.1	4.4	28.4	39.6	3.1	23.5	35.7	0.7	23.6	35.6	2.7
Queue Length 50th (ft)	78	65	0	140	120	0	54	312	0	55	308	0
Queue Length 95th (ft)	113	96	20	171	128	10	63	408	0	88	400	12
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1063	900	527	1159	1014	546	385	1396	1583	309	1406	1063
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.20	0.26	0.40	0.32	0.18	0.31	0.61	0.38	0.39	0.60	0.25

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	259	146	114	384	226	79	73	794	545	100	746	194
Future Volume (veh/h)	259	146	114	384	226	79	73	794	545	100	746	194
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	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	276	176	139	463	328	98	118	845	0	119	838	266
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	800	926	413	955	1051	469	264	1442		294	1452	768
Arrive On Green	0.08	0.26	0.26	0.12	0.30	0.30	0.05	0.41	0.00	0.05	0.41	0.41
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	276	176	139	463	328	98	118	845	0	119	838	266
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	7.6	5.1	9.4	12.8	9.6	6.2	5.1	24.7	0.0	5.1	24.2	13.8
Cycle Q Clear(g_c), s	7.6	5.1	9.4	12.8	9.6	6.2	5.1	24.7	0.0	5.1	24.2	13.8
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	800	926	413	955	1051	469	264	1442		294	1452	768
V/C Ratio(X)	0.35	0.19	0.34	0.48	0.31	0.21	0.45	0.59		0.40	0.58	0.35
Avail Cap(c_a), veh/h	1113	926	413	1374	1051	469	423	1442		361	1452	768
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.1	38.5	40.1	28.8	35.9	34.8	23.7	30.8	0.0	23.7	30.7	21.5
Incr Delay (d2), s/veh	0.1	0.5	2.2	0.1	0.8	1.0	0.4	1.8	0.0	0.3	1.7	1.2
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(50%),veh/ln	3.2	2.3	3.9	5.2	4.2	2.5	2.1	10.7	0.0	2.1	10.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	38.9	42.3	29.0	36.7	35.8	24.2	32.6	0.0	24.0	32.4	22.8
LnGrp LOS	C	D	D	C	D	D	C	C		C	C	C
Approach Vol, veh/h		591			889			963			1223	
Approach Delay, s/veh		36.6			32.6			31.6			29.5	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.6	40.4	12.1	60.0	15.0	46.0	12.1	60.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	32.0	30.0	12.0	54.0	22.0	40.0	19.0	47.0
Max Q Clear Time (g_c+I1), s	14.8	11.4	7.1	26.7	9.6	11.6	7.1	26.2
Green Ext Time (p_c), s	0.8	1.4	0.1	6.1	0.4	2.5	0.1	6.6

Intersection Summary	
HCM 6th Ctrl Delay	31.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	39	88	303	401	108	184	768	460	181	139
v/c Ratio	0.16	0.35	0.63	0.83	0.21	0.18	0.68	0.41	0.30	0.22
Control Delay	27.3	38.5	34.4	50.2	21.1	32.3	6.3	20.8	32.8	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	38.5	34.4	50.2	21.1	32.3	6.3	20.8	32.8	3.3
Queue Length 50th (ft)	14	37	128	217	34	44	11	81	80	0
Queue Length 95th (ft)	55	60	#370	173	115	93	13	177	183	0
Internal Link Dist (ft)		538		1917		2380			851	
Turn Bay Length (ft)	125				170		170	400		200
Base Capacity (vph)	301	383	481	485	627	1001	1137	1163	601	633
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.23	0.63	0.83	0.17	0.18	0.68	0.40	0.30	0.22

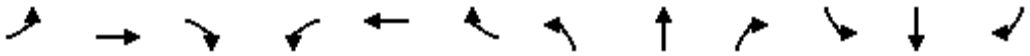
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	30	25	267	95	91	95	138	576	354	134	100
Future Volume (vph)	35	30	25	267	95	91	95	138	576	354	134	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.95		1.00	0.94		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)	1787	1760		1701	1687		1770	3539	1567	3420	1863	1583
Flt Permitted	0.48	1.00		0.50	1.00		0.64	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	904	1760		899	1687		1198	3539	1567	2011	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	39	56	32	303	244	157	108	184	768	460	181	139
RTOR Reduction (vph)	0	16	0	0	15	0	0	0	397	0	0	96
Lane Group Flow (vph)	39	72	0	303	386	0	108	184	371	460	181	43
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.1	12.7		37.1	27.7		37.2	28.2	47.6	45.0	32.1	32.1
Effective Green, g (s)	17.1	12.7		37.1	27.7		37.2	28.2	47.6	45.0	32.1	32.1
Actuated g/C Ratio	0.16	0.12		0.35	0.26		0.35	0.27	0.45	0.43	0.31	0.31
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	184	213		466	445		474	952	711	1036	570	484
v/s Ratio Prot	0.01	0.04		c0.12	c0.23		0.02	0.05	c0.10	c0.05	0.10	
v/s Ratio Perm	0.03			0.11			0.06		0.14	0.14		0.03
v/c Ratio	0.21	0.34		0.65	0.87		0.23	0.19	0.52	0.44	0.32	0.09
Uniform Delay, d1	37.5	42.2		26.8	36.8		23.2	29.5	20.5	19.8	27.9	25.9
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	0.6	0.9		3.2	16.1		0.2	0.5	0.7	0.3	1.5	0.4
Delay (s)	38.1	43.2		30.0	52.8		23.4	30.0	21.1	20.1	29.4	26.3
Level of Service	D	D		C	D		C	C	C	C	C	C
Approach Delay (s)		41.6			43.0			22.9			23.4	
Approach LOS		D			D			C			C	

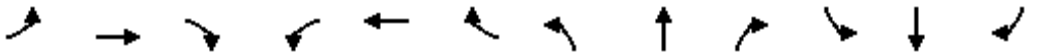
Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	104.8	Sum of lost time (s)	26.5
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	66	137	1474	64	235	53	1518	439	29	63	822	167
v/c Ratio	0.33	0.66	0.93	0.18	0.65	0.03	0.90	0.20	0.02	0.33	0.72	0.23
Control Delay	62.1	74.4	12.5	54.1	65.1	0.0	48.8	11.0	0.0	63.8	43.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	74.4	12.5	54.1	65.1	0.0	48.8	11.0	0.0	63.8	43.0	9.0
Queue Length 50th (ft)	27	60	0	25	101	0	416	81	0	26	332	30
Queue Length 95th (ft)	50	86	0	47	133	0	313	104	0	35	292	69
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	316	326	1583	356	367	1568	1694	2249	1568	195	1216	786
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.42	0.93	0.18	0.64	0.03	0.90	0.20	0.02	0.32	0.68	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	114	737	56	193	43	941	369	20	40	600	150
Future Volume (veh/h)	58	114	737	56	193	43	941	369	20	40	600	150
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	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	66	137	0	64	235	0	1518	439	0	63	822	167
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	186	191		283	291		1495	2368		104	1390	705
Arrive On Green	0.05	0.05	0.00	0.08	0.08	0.00	0.30	0.67	0.00	0.03	0.39	0.39
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	66	137	0	64	235	0	1518	439	0	63	822	167
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	2.4	4.9	0.0	2.3	8.5	0.0	39.0	6.1	0.0	2.4	23.9	8.5
Cycle Q Clear(g_c), s	2.4	4.9	0.0	2.3	8.5	0.0	39.0	6.1	0.0	2.4	23.9	8.5
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	186	191		283	291		1495	2368		104	1390	705
V/C Ratio(X)	0.35	0.72		0.23	0.81		1.02	0.19		0.61	0.59	0.24
Avail Cap(c_a), veh/h	319	328		316	325		1495	2368		185	1390	705
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)	0.87	0.87	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.3	60.5	0.0	55.7	58.6	0.0	45.5	8.0	0.0	62.3	31.1	22.2
Incr Delay (d2), s/veh	0.4	1.6	0.0	0.4	12.7	0.0	27.2	0.2	0.0	5.6	1.9	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(50%),veh/ln	1.0	2.2	0.0	1.0	4.3	0.0	19.2	2.1	0.0	1.1	10.2	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.7	62.2	0.0	56.1	71.3	0.0	72.7	8.2	0.0	67.9	33.0	22.9
LnGrp LOS	E	E		E	E		F	A		E	C	C
Approach Vol, veh/h		203			299			1957			1052	
Approach Delay, s/veh		61.4			68.0			58.2			33.5	
Approach LOS		E			E			E			C	

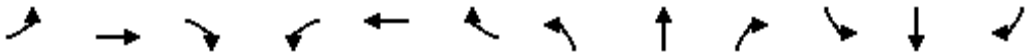
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	93.3		12.0	45.0	57.3		15.7				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		12.0	39.0	45.0		12.0				
Max Q Clear Time (g_c+I1), s	4.4	8.1		6.9	41.0	25.9		10.5				
Green Ext Time (p_c), s	0.0	2.9		0.1	0.0	5.6		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		51.8
HCM 6th LOS		D

Notes

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

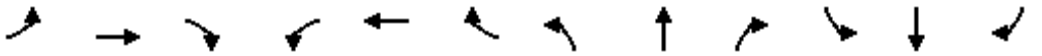
Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	74	74	138	650	93	137	153	866	492	237	1091	152
v/c Ratio	0.30	0.45	0.09	0.87	0.21	0.27	0.55	0.61	0.53	0.62	0.49	0.19
Control Delay	54.9	58.5	0.1	55.5	36.1	3.5	59.0	30.8	4.8	55.5	25.2	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	58.5	0.1	55.5	36.1	3.5	59.0	30.8	4.8	55.5	25.2	2.8
Queue Length 50th (ft)	27	54	0	238	55	0	57	276	0	88	221	0
Queue Length 95th (ft)	47	83	0	#338	78	16	93	378	60	131	280	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	397	241	1578	842	501	549	302	1431	926	493	2214	781
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.31	0.09	0.77	0.19	0.25	0.51	0.61	0.53	0.48	0.49	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	55	130	585	65	115	135	805	428	216	1015	85
Future Volume (veh/h)	60	55	130	585	65	115	135	805	428	216	1015	85
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	74	74	0	650	93	0	153	866	0	237	1091	0
Peak Hour Factor	0.81	0.74	0.94	0.90	0.70	0.84	0.88	0.93	0.87	0.91	0.93	0.56
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	229	125		730	396		227	1502		308	2277	
Arrive On Green	0.07	0.07	0.00	0.21	0.21	0.00	0.07	0.42	0.00	0.09	0.44	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	74	74	0	650	93	0	153	866	0	237	1091	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.2	4.1	0.0	19.3	4.4	0.0	4.6	19.7	0.0	7.1	15.9	0.0
Cycle Q Clear(g_c), s	2.2	4.1	0.0	19.3	4.4	0.0	4.6	19.7	0.0	7.1	15.9	0.0
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	229	125		730	396		227	1502		308	2277	
V/C Ratio(X)	0.32	0.59		0.89	0.23		0.67	0.58		0.77	0.48	
Avail Cap(c_a), veh/h	410	248		869	497		311	1502		508	2277	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.4	48.2	0.0	40.8	34.9	0.0	48.6	23.6	0.0	47.4	21.0	0.0
Incr Delay (d2), s/veh	0.6	4.4	0.0	9.7	0.3	0.0	2.6	1.6	0.0	3.1	0.7	0.0
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(50%),veh/ln	0.9	2.0	0.0	9.0	2.0	0.0	2.0	8.4	0.0	3.2	6.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.0	52.5	0.0	50.5	35.2	0.0	51.1	25.3	0.0	50.4	21.7	0.0
LnGrp LOS	D	D		D	D		D	C		D	C	
Approach Vol, veh/h		148			743			1019			1328	
Approach Delay, s/veh		50.3			48.6			29.1			26.8	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	50.5	27.8	13.1	12.4	53.0	12.5	28.3
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	9.1	21.7	21.3	6.1	6.6	17.9	4.2	6.4
Green Ext Time (p_c), s	0.3	9.7	1.0	0.1	0.1	15.3	0.1	0.4

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



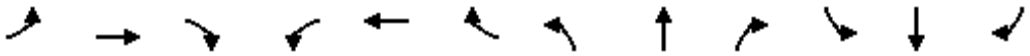
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	587	308	204	659	188	313
v/c Ratio	0.53	0.24	0.37	0.24	0.50	0.20
Control Delay	15.7	1.0	5.7	4.4	46.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	1.0	5.7	4.4	46.8	0.3
Queue Length 50th (ft)	184	0	24	47	59	0
Queue Length 95th (ft)	420	10	69	93	92	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1111	1477	603	2694	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.21	0.34	0.24	0.19	0.20

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	534	240	182	527	182	213
Future Volume (vph)	534	240	182	527	182	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	1787	3574	3467	1599
Flt Permitted	1.00	1.00	0.30	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	560	3574	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	587	308	204	659	188	313
RTOR Reduction (vph)	0	101	0	0	0	0
Lane Group Flow (vph)	587	207	204	659	188	313
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	56.3	67.1	71.4	71.4	10.8	100.0
Effective Green, g (s)	56.3	67.1	71.4	71.4	10.8	100.0
Actuated g/C Ratio	0.56	0.67	0.71	0.71	0.11	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1038	1052	523	2551	374	1599
v/s Ratio Prot	c0.32	0.02	c0.04	0.18	c0.05	
v/s Ratio Perm		0.11	0.24			c0.20
v/c Ratio	0.57	0.20	0.39	0.26	0.50	0.20
Uniform Delay, d1	14.0	6.2	7.3	5.0	42.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.0	0.2	0.2	0.4	0.3
Delay (s)	16.2	6.3	7.5	5.3	42.5	0.3
Level of Service	B	A	A	A	D	A
Approach Delay (s)	12.8			5.8	16.1	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	354	311	150	559	417	133	80	826	332	128	742	280
v/c Ratio	0.63	0.27	0.24	0.88	0.32	0.20	0.42	0.92	0.21	0.64	0.78	0.44
Control Delay	23.7	35.3	6.1	39.4	33.3	6.1	34.9	66.5	0.3	44.1	52.8	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	35.3	6.1	39.4	33.3	6.1	34.9	66.5	0.3	44.1	52.8	6.7
Queue Length 50th (ft)	169	107	0	313	139	0	46	377	0	76	320	0
Queue Length 95th (ft)	222	153	37	#448	193	32	63	#512	0	105	402	71
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	634	1146	614	636	1286	660	275	894	1599	248	952	630
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.27	0.24	0.88	0.32	0.20	0.29	0.92	0.21	0.52	0.78	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	287	302	123	514	359	106	55	735	302	100	660	269
Future Volume (veh/h)	287	302	123	514	359	106	55	735	302	100	660	269
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	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	354	311	150	559	417	132	80	826	0	128	742	280
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	559	1167	520	632	1306	583	182	909		194	979	437
Arrive On Green	0.15	0.33	0.33	0.19	0.37	0.37	0.05	0.25	0.00	0.07	0.28	0.28
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	354	311	150	559	417	132	80	826	0	128	742	280
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	17.4	8.6	9.4	25.0	11.3	7.7	4.4	30.0	0.0	7.0	25.6	20.8
Cycle Q Clear(g_c), s	17.4	8.6	9.4	25.0	11.3	7.7	4.4	30.0	0.0	7.0	25.6	20.8
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	559	1167	520	632	1306	583	182	909		194	979	437
V/C Ratio(X)	0.63	0.27	0.29	0.89	0.32	0.23	0.44	0.91		0.66	0.76	0.64
Avail Cap(c_a), veh/h	629	1167	520	632	1306	583	302	909		273	979	437
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	33.1	33.4	24.6	30.4	29.2	36.7	48.5	0.0	37.3	44.5	42.7
Incr Delay (d2), s/veh	1.1	0.6	1.4	13.7	0.6	0.9	0.6	14.6	0.0	1.4	5.5	7.1
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(50%),veh/ln	7.4	3.8	3.8	14.1	4.9	3.1	1.9	15.0	0.0	3.1	11.8	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	33.7	34.8	38.3	31.0	30.1	37.3	63.1	0.0	38.7	49.9	49.8
LnGrp LOS	C	C	C	D	C	C	D	E		D	D	D
Approach Vol, veh/h		815			1108			906			1150	
Approach Delay, s/veh		29.8			34.6			60.8			48.6	
Approach LOS		C			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	50.0	14.0	40.0	24.7	55.3	11.1	42.9
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	27.0	11.4	9.0	32.0	19.4	13.3	6.4	27.6
Green Ext Time (p_c), s	0.0	2.6	0.1	1.0	0.3	3.3	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	43.6
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	209	314	238	120	10	205	173	50	337	45
v/c Ratio	0.43	0.84	0.66	0.27	0.03	0.36	0.21	0.06	0.48	0.07
Control Delay	26.3	55.6	33.7	13.6	23.0	32.6	4.0	21.0	29.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	55.6	33.7	13.6	23.0	32.6	4.0	21.0	29.5	0.2
Queue Length 50th (ft)	74	154	87	9	3	90	0	8	129	0
Queue Length 95th (ft)	155	169	#202	0	11	197	8	30	#377	0
Internal Link Dist (ft)		538		1917		2380			851	
Turn Bay Length (ft)	125				170		170	400		200
Base Capacity (vph)	547	373	361	447	499	571	834	989	705	686
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.84	0.66	0.27	0.02	0.36	0.21	0.05	0.48	0.07

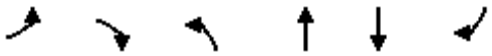
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	70	120	169	5	74	5	156	114	47	290	35
Future Volume (vph)	140	70	120	169	5	74	5	156	114	47	290	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.92		1.00	0.88		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)	1766	1708		1752	1581		1770	1863	1565	3389	1845	1568
Flt Permitted	0.68	1.00		0.19	1.00		0.47	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)	1264	1708		345	1581		868	1863	1565	1795	1845	1568
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	209	140	174	238	20	100	10	205	173	50	337	45
RTOR Reduction (vph)	0	31	0	0	78	0	0	0	93	0	0	29
Lane Group Flow (vph)	209	283	0	238	42	0	10	205	80	50	337	16
Confl. Peds. (#/hr)	2					2			8	8		
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	31.8	19.6		38.4	22.9		34.1	33.1	48.6	42.5	37.3	37.3
Effective Green, g (s)	31.8	19.6		38.4	22.9		34.1	33.1	48.6	42.5	37.3	37.3
Actuated g/C Ratio	0.30	0.19		0.37	0.22		0.32	0.31	0.46	0.40	0.35	0.35
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	440	318		333	344		289	586	722	803	654	555
v/s Ratio Prot	0.06	c0.17		c0.11	0.03		0.00	0.11	0.02	c0.00	c0.18	
v/s Ratio Perm	0.09			0.16			0.01		0.03	0.02		0.01
v/c Ratio	0.47	0.89		0.71	0.12		0.03	0.35	0.11	0.06	0.52	0.03
Uniform Delay, d1	29.0	41.8		26.0	33.1		24.3	27.8	16.0	19.2	26.8	22.1
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	0.8	25.1		7.1	0.2		0.0	1.6	0.1	0.0	2.9	0.1
Delay (s)	29.9	66.8		33.1	33.2		24.3	29.4	16.1	19.3	29.7	22.2
Level of Service	C	E		C	C		C	C	B	B	C	C
Approach Delay (s)		52.1			33.1			23.3			27.7	
Approach LOS		D			C			C			C	

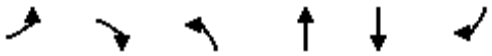
Intersection Summary			
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	105.2	Sum of lost time (s)	26.5
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	360	191	71	856	1205	221
v/c Ratio	0.64	0.38	0.27	0.24	0.61	0.23
Control Delay	40.3	23.1	41.8	5.2	15.5	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	23.1	41.8	5.2	15.5	2.2
Queue Length 50th (ft)	99	74	20	54	226	0
Queue Length 95th (ft)	128	115	41	82	322	28
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	503	267	3574	1976	981
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.38	0.27	0.24	0.61	0.23

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	306	162	65	856	1109	188
Future Volume (veh/h)	306	162	65	856	1109	188
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	360	191	71	856	1205	221
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	491	599	815	3700	1500	669
Arrive On Green	0.14	0.14	0.24	0.72	0.42	0.42
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	360	191	71	856	1205	221
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	9.0	0.0	1.4	5.0	26.7	8.4
Cycle Q Clear(g_c), s	9.0	0.0	1.4	5.0	26.7	8.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	491	599	815	3700	1500	669
V/C Ratio(X)	0.73	0.32	0.09	0.23	0.80	0.33
Avail Cap(c_a), veh/h	1037	849	815	3700	1500	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	37.0	19.8	26.8	4.1	22.7	17.5
Incr Delay (d2), s/veh	2.1	0.3	0.0	0.0	4.6	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	4.8	0.6	1.2	11.1	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.1	20.1	26.8	4.1	27.4	18.8
LnGrp LOS	D	C	C	A	C	B
Approach Vol, veh/h	551			927	1426	
Approach Delay, s/veh	32.5			5.9	26.0	
Approach LOS	C			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		71.2		18.8	27.2	44.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	7.0	38.0
Max Q Clear Time (g_c+I1), s		7.0		11.0	3.4	28.7
Green Ext Time (p_c), s		6.7		1.8	0.0	5.7

Intersection Summary		
HCM 6th Ctrl Delay		20.8
HCM 6th LOS		C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	147	225	1152	40	182	88	1392	938	66	32	451	68
v/c Ratio	0.47	0.70	0.72	0.11	0.49	0.06	1.16	0.45	0.04	0.15	0.53	0.04
Control Delay	47.8	56.0	2.8	40.4	46.7	0.1	111.9	9.0	0.0	46.2	35.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	56.0	2.8	40.4	46.7	0.1	111.9	9.0	0.0	46.2	35.7	0.0
Queue Length 50th (ft)	46	74	0	12	58	0	~530	89	0	10	132	0
Queue Length 95th (ft)	75	111	0	18	88	0	232	98	0	22	163	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	379	391	1599	1203	2069	1599	215	857	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.42	0.72	0.11	0.47	0.06	1.16	0.45	0.04	0.15	0.53	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	214	956	24	160	69	696	675	45	25	370	65
Future Volume (veh/h)	146	214	956	24	160	69	696	675	45	25	370	65
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	147	225	0	40	182	0	1392	938	0	32	451	0
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	290	298		253	260		1010	2188		82	1198	
Arrive On Green	0.08	0.08	0.00	0.07	0.07	0.00	0.29	0.61	0.00	0.02	0.33	0.00
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	147	225	0	40	182	0	1392	938	0	32	451	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	4.0	6.1	0.0	1.1	5.0	0.0	29.0	13.8	0.0	0.9	9.6	0.0
Cycle Q Clear(g_c), s	4.0	6.1	0.0	1.1	5.0	0.0	29.0	13.8	0.0	0.9	9.6	0.0
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	290	298		253	260		1010	2188		82	1198	
V/C Ratio(X)	0.51	0.76		0.16	0.70		1.38	0.43		0.39	0.38	
Avail Cap(c_a), veh/h	522	537		348	358		1010	2188		209	1198	
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)	0.82	0.82	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.9	44.9	0.0	43.5	45.3	0.0	35.5	10.3	0.0	48.1	25.3	0.0
Incr Delay (d2), s/veh	0.4	1.2	0.0	0.3	3.6	0.0	176.4	0.6	0.0	3.0	0.9	0.0
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(50%),veh/ln	1.7	2.7	0.0	0.5	2.3	0.0	36.2	4.8	0.0	0.4	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.3	46.1	0.0	43.8	48.9	0.0	211.9	10.9	0.0	51.1	26.2	0.0
LnGrp LOS	D	D		D	D		F	B		D	C	
Approach Vol, veh/h		372			222			2330			483	
Approach Delay, s/veh		45.4			48.0			131.0			27.9	
Approach LOS		D			D			F			C	

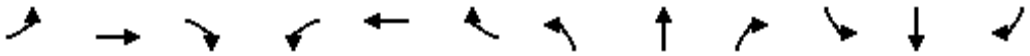
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	67.1		13.3	35.0	39.4		12.2				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	15.8		8.1	31.0	11.6		7.0				
Green Ext Time (p_c), s	0.0	6.9		0.2	0.0	2.1		0.3				

Intersection Summary		
HCM 6th Ctrl Delay	101.6	
HCM 6th LOS	F	

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

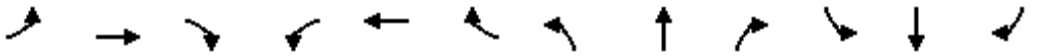


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	40	10	279	252	12	67	368	1430	194	43	1351	30
v/c Ratio	0.16	0.06	0.85	0.47	0.04	0.17	0.75	0.68	0.19	0.23	0.82	0.02
Control Delay	31.5	42.6	36.0	34.8	41.8	0.9	49.8	11.4	1.2	52.7	22.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	42.6	36.0	34.8	41.8	0.9	49.8	11.4	1.2	52.7	22.4	0.0
Queue Length 50th (ft)	20	6	41	68	7	0	101	291	4	14	420	0
Queue Length 95th (ft)	39	13	#176	102	14	0	38	355	9	m20	522	m0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125			250		500	455		250	550		550
Base Capacity (vph)	282	171	338	537	277	393	520	2094	1017	205	1642	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.06	0.83	0.47	0.04	0.17	0.71	0.68	0.19	0.21	0.82	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	5	279	224	6	56	92	1330	175	25	1310	15
Future Volume (veh/h)	30	5	279	224	6	56	92	1330	175	25	1310	15
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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	40	10	0	252	12	67	368	1430	194	43	1351	0
Peak Hour Factor	0.75	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	228	92		569	163	138	442	2225	992	78	1837	
Arrive On Green	0.05	0.05	0.00	0.09	0.09	0.09	0.13	0.62	0.62	0.02	0.52	0.00
Sat Flow, veh/h	1810	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	40	10	0	252	12	67	368	1430	194	43	1351	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	2.0	0.5	0.0	6.7	0.6	4.0	10.3	25.2	5.2	1.2	29.6	0.0
Cycle Q Clear(g_c), s	2.0	0.5	0.0	6.7	0.6	4.0	10.3	25.2	5.2	1.2	29.6	0.0
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	228	92		569	163	138	442	2225	992	78	1837	
V/C Ratio(X)	0.18	0.11		0.44	0.07	0.49	0.83	0.64	0.20	0.55	0.74	
Avail Cap(c_a), veh/h	300	171		577	170	144	522	2225	992	207	1837	
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.5	45.5	0.0	40.2	42.0	43.6	42.6	11.9	8.2	48.4	18.8	0.0
Incr Delay (d2), s/veh	0.4	0.6	0.0	0.7	0.2	3.2	9.7	1.4	0.4	2.2	2.7	0.0
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(50%),veh/ln	0.9	0.3	0.0	2.9	0.3	1.7	4.9	8.7	1.8	0.5	11.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.0	46.1	0.0	40.9	42.2	46.7	52.3	13.4	8.6	50.6	21.5	0.0
LnGrp LOS	D	D		D	D	D	D	B	A	D	C	
Approach Vol, veh/h		50			331			1992			1394	
Approach Delay, s/veh		42.8			42.1			20.1			22.4	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	68.1	14.8	10.9	16.7	57.7	11.0	14.6
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	9.0	9.0	15.0	45.0	9.0	9.0
Max Q Clear Time (g_c+I1), s	3.2	27.2	8.7	2.5	12.3	31.6	4.0	6.0
Green Ext Time (p_c), s	0.0	12.5	0.0	0.0	0.4	7.4	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	96	98	553	229	1112	1502	376
v/c Ratio	0.56	0.57	0.35	0.65	0.40	0.48	0.33
Control Delay	54.7	55.0	0.6	31.5	4.0	6.7	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	55.0	0.6	31.5	4.0	6.7	1.0
Queue Length 50th (ft)	62	64	0	115	57	85	0
Queue Length 95th (ft)	112	45	0	165	121	117	m6
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	325	1599	567	2756	3151	1124
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.30	0.35	0.40	0.40	0.48	0.33

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	165	5	498	195	1034	0	0	1442	331
Future Volume (vph)	0	0	0	165	5	498	195	1034	0	0	1442	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1713	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.12	1.00			1.00	1.00
Satd. Flow (perm)				1698	1713	1599	231	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.38	0.90	0.85	0.93	0.92	0.92	0.96	0.88
Adj. Flow (vph)	0	0	0	181	13	553	229	1112	0	0	1502	376
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	143
Lane Group Flow (vph)	0	0	0	96	98	553	229	1112	0	0	1502	233
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.1	10.1	100.0	77.9	77.9			62.0	62.0
Effective Green, g (s)				10.1	10.1	100.0	77.9	77.9			62.0	62.0
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.62	0.62
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				171	173	1599	347	2756			3152	981
v/s Ratio Prot							c0.07	0.31			0.30	
v/s Ratio Perm				0.06	0.06	0.35	c0.44					0.15
v/c Ratio				0.56	0.57	0.35	0.66	0.40			0.48	0.24
Uniform Delay, d1				42.8	42.9	0.0	8.0	3.6			10.2	8.5
Progression Factor				1.00	1.00	1.00	2.96	0.93			0.55	0.39
Incremental Delay, d2				2.5	2.5	0.6	2.9	0.4			0.3	0.3
Delay (s)				45.3	45.4	0.6	26.5	3.7			6.0	3.6
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			12.2			7.6			5.5	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

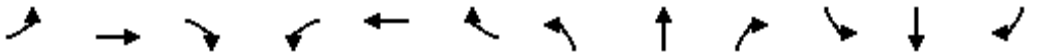


Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	193	191	234	938	171	821	835
v/c Ratio	0.77	0.75	0.15	0.60	0.22	1.01	0.32
Control Delay	59.9	58.6	0.2	23.4	3.4	83.8	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	58.6	0.2	23.4	3.4	83.8	6.1
Queue Length 50th (ft)	124	123	0	233	0	~302	63
Queue Length 95th (ft)	195	100	0	297	17	#423	76
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1557	792	813	2572
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.61	0.15	0.60	0.22	1.01	0.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	324	10	185	0	0	0	0	900	125	805	802	0
Future Volume (vph)	324	10	185	0	0	0	0	900	125	805	802	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1661	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1661	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.89	0.50	0.79	0.92	0.92	0.92	0.92	0.96	0.73	0.98	0.96	0.92
Adj. Flow (vph)	364	20	234	0	0	0	0	938	171	821	835	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	96	0	0	0
Lane Group Flow (vph)	193	191	234	0	0	0	0	938	75	821	835	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.3	15.3	100.0					44.0	44.0	23.7	72.7	
Effective Green, g (s)	15.3	15.3	100.0					44.0	44.0	23.7	72.7	
Actuated g/C Ratio	0.15	0.15	1.00					0.44	0.44	0.24	0.73	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	252	254	1553					1557	696	813	2572	
v/s Ratio Prot								c0.27		c0.24	0.24	
v/s Ratio Perm	c0.12	0.11	0.15						0.05			
v/c Ratio	0.77	0.75	0.15					0.60	0.11	1.01	0.32	
Uniform Delay, d1	40.6	40.5	0.0					21.3	16.5	38.1	4.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.37	1.09	
Incremental Delay, d2	11.8	10.6	0.2					1.7	0.3	32.3	0.3	
Delay (s)	52.4	51.1	0.2					23.1	16.8	84.6	5.6	
Level of Service	D	D	A					C	B	F	A	
Approach Delay (s)		32.2			0.0			22.1			44.8	
Approach LOS		C			A			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	5.6
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	355	355	671
Demand Flow Rate, veh/h	363	362	685
Vehicles Circulating, veh/h	433	133	168
Vehicles Exiting, veh/h	419	662	327
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	5.8	4.3	6.1
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.471	0.529	0.464	0.536	0.634	0.366
Follow-Up Headway, s	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
Entry Flow, veh/h	171	192	168	194	434	251
Cap Entry Lane, veh/h	906	983	1194	1268	1157	1231
Entry HV Adj Factor	0.977	0.981	0.980	0.979	0.979	0.980
Flow Entry, veh/h	167	188	165	190	425	246
Cap Entry, veh/h	886	964	1164	1234	1133	1207
V/C Ratio	0.189	0.195	0.142	0.154	0.375	0.204
Control Delay, s/veh	6.0	5.6	4.3	4.2	7.0	4.8
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	2	1

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	201	5	39	175	18	122
Future Vol, veh/h	201	5	39	175	18	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	287	5	42	250	20	133

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	292	0	624	290
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1264	-	448	747
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1264	-	433	747
Mov Cap-2 Maneuver	-	-	-	-	433	-
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	699	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	683	-	-	1264	-
HCM Lane V/C Ratio	0.223	-	-	0.034	-
HCM Control Delay (s)	11.8	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	460	331	179
Demand Flow Rate, veh/h	474	341	185
Vehicles Circulating, veh/h	53	21	467
Vehicles Exiting, veh/h	309	631	60
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.3	4.2	5.6
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.155	0.845	0.114	0.886
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	474	53	288	21	164
Cap Entry Lane, veh/h	1307	1393	1393	928	928
Entry HV Adj Factor	0.971	0.962	0.971	0.952	0.970
Flow Entry, veh/h	460	51	280	20	159
Cap Entry, veh/h	1270	1341	1353	884	900
V/C Ratio	0.363	0.038	0.207	0.023	0.177
Control Delay, s/veh	6.3	3.0	4.4	4.3	5.7
LOS	A	A	A	A	A
95th %tile Queue, veh	2	0	1	0	1

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	0	0	0	0	0	23	0	0	0	73	0	0
Future Vol, veh/h	0	0	0	0	0	23	0	0	0	73	0	0
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	0	0	0	25	0	0	0	79	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	25	0	0	1	0	0	14	26	1	14	14	13
Stage 1	-	-	-	-	-	-	1	1	-	13	13	-
Stage 2	-	-	-	-	-	-	13	25	-	1	1	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1583	-	-	1615	-	-	1000	865	1081	1000	878	1064
Stage 1	-	-	-	-	-	-	1019	893	-	1005	883	-
Stage 2	-	-	-	-	-	-	1005	872	-	1019	893	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1583	-	-	1615	-	-	1000	865	1081	1000	878	1064
Mov Cap-2 Maneuver	-	-	-	-	-	-	1000	865	-	1000	878	-
Stage 1	-	-	-	-	-	-	1019	893	-	1005	883	-
Stage 2	-	-	-	-	-	-	1005	872	-	1019	893	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1583	-	-	1615	-	-	1000
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.079
HCM Control Delay (s)	0	0	-	-	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	73	0	0	23	10	0	0	0	30	0	1
Future Vol, veh/h	1	73	0	0	23	10	0	0	0	30	0	1
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	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	1	79	0	0	25	11	0	0	0	33	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	36	0	0	79	0	0	112	117	79	112	112	31
Stage 1	-	-	-	-	-	-	81	81	-	31	31	-
Stage 2	-	-	-	-	-	-	31	36	-	81	81	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1575	-	-	1513	-	-	863	773	979	866	778	1043
Stage 1	-	-	-	-	-	-	925	828	-	986	869	-
Stage 2	-	-	-	-	-	-	983	865	-	927	828	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1575	-	-	1513	-	-	861	772	979	866	777	1043
Mov Cap-2 Maneuver	-	-	-	-	-	-	861	772	-	866	777	-
Stage 1	-	-	-	-	-	-	924	827	-	985	869	-
Stage 2	-	-	-	-	-	-	982	865	-	926	827	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1575	-	-	1513	-	-	871
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.039
HCM Control Delay (s)	0	7.3	-	-	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection	
Intersection Delay, s/veh	3.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	113	106	0	219
Demand Flow Rate, veh/h	116	109	0	226
Vehicles Circulating, veh/h	225	1	341	37
Vehicles Exiting, veh/h	38	340	0	73
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	3.0	0.0	4.1
Approach LOS	A	A	-	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.474	0.526	0.339	0.661	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	55	61	37	72	0	226
Cap Entry Lane, veh/h	1097	1173	1349	1419	1063	1376
Entry HV Adj Factor	0.963	0.979	0.971	0.972	1.000	0.969
Flow Entry, veh/h	53	60	36	70	0	219
Cap Entry, veh/h	1056	1148	1309	1379	1063	1334
V/C Ratio	0.050	0.052	0.027	0.051	0.000	0.164
Control Delay, s/veh	3.8	3.6	3.0	3.0	3.4	4.1
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	0	0	1

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	49	0	73	0	0	0	23	41	0	0	128	16
Future Vol, veh/h	49	0	73	0	0	0	23	41	0	0	128	16
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	-	-	-	-	-	-	300	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	53	0	79	0	0	0	25	45	0	0	139	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	243	243	148	282	251	45	156	0	0	45	0	0
Stage 1	148	148	-	95	95	-	-	-	-	-	-	-
Stage 2	95	95	-	187	156	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	709	657	896	668	650	1022	1418	-	-	1557	-	-
Stage 1	852	773	-	909	814	-	-	-	-	-	-	-
Stage 2	909	814	-	812	767	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	700	645	896	601	638	1022	1418	-	-	1557	-	-
Mov Cap-2 Maneuver	700	645	-	601	638	-	-	-	-	-	-	-
Stage 1	837	773	-	893	799	-	-	-	-	-	-	-
Stage 2	893	799	-	740	767	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	0	2.7	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1418	-	-	805	-	1557	-	-
HCM Lane V/C Ratio	0.018	-	-	0.165	-	-	-	-
HCM Control Delay (s)	7.6	-	-	10.4	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	-	0	-	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	0	97	0	0	0	31	59	0	0	47	19
Future Vol, veh/h	61	0	97	0	0	0	31	59	0	0	47	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	66	0	105	0	0	0	34	64	0	0	51	21
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.1	0	8.3	8
HCM LOS	A	-	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	39%	0%	0%	0%
Vol Thru, %	0%	100%	0%	100%	100%	71%
Vol Right, %	0%	0%	61%	0%	0%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	59	158	0	0	66
LT Vol	31	0	61	0	0	0
Through Vol	0	59	0	0	0	47
RT Vol	0	0	97	0	0	19
Lane Flow Rate	34	64	172	0	0	72
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.052	0.089	0.195	0	0	0.096
Departure Headway (Hd)	5.506	5.003	4.09	4.562	5.02	4.818
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	654	721	881	0	0	746
Service Time	3.206	2.703	2.099	2.578	2.737	2.534
HCM Lane V/C Ratio	0.052	0.089	0.195	0	0	0.097
HCM Control Delay	8.5	8.2	8.1	7.6	7.7	8
HCM Lane LOS	A	A	A	N	N	A
HCM 95th-tile Q	0.2	0.3	0.7	0	0	0.3

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	30	12	1	10	6	4	32	1	2	32	4
Future Vol, veh/h	12	30	12	1	10	6	4	32	1	2	32	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	13	33	13	1	11	7	4	35	1	2	35	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.1	7.3	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	22%	6%	5%
Vol Thru, %	86%	56%	59%	84%
Vol Right, %	3%	22%	35%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	54	17	38
LT Vol	4	12	1	2
Through Vol	32	30	10	32
RT Vol	1	12	6	4
Lane Flow Rate	40	59	18	41
Geometry Grp	1	1	1	1
Degree of Util (X)	0.046	0.065	0.02	0.047
Departure Headway (Hd)	4.104	4.001	3.938	4.062
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	869	892	903	878
Service Time	2.146	2.043	1.988	2.104
HCM Lane V/C Ratio	0.046	0.066	0.02	0.047
HCM Control Delay	7.3	7.3	7.1	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.1	0.1

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	54	31	10	110	35	18
Future Vol, veh/h	54	31	10	110	35	18
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	59	34	11	120	38	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	190	48	58	0	-	0
Stage 1	48	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	797	1018	1540	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	883	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	791	1018	1540	-	-	-
Mov Cap-2 Maneuver	791	-	-	-	-	-
Stage 1	965	-	-	-	-	-
Stage 2	883	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1540	-	861	-	-
HCM Lane V/C Ratio	0.007	-	0.107	-	-
HCM Control Delay (s)	7.4	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	587	308	204	659	188	313
v/c Ratio	0.49	0.23	0.20	0.24	0.50	0.20
Control Delay	12.2	0.8	3.9	4.4	46.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	0.8	3.9	4.4	46.8	0.3
Queue Length 50th (ft)	160	0	11	47	59	0
Queue Length 95th (ft)	351	6	32	93	92	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1187	1520	1214	2694	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.20	0.17	0.24	0.19	0.20

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	534	240	182	527	182	213
Future Volume (vph)	534	240	182	527	182	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.32	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1168	3574	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	587	308	204	659	188	313
RTOR Reduction (vph)	0	89	0	0	0	0
Lane Group Flow (vph)	587	219	204	659	188	313
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	60.4	71.2	71.4	71.4	10.8	100.0
Effective Green, g (s)	60.4	71.2	71.4	71.4	10.8	100.0
Actuated g/C Ratio	0.60	0.71	0.71	0.71	0.11	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1114	1116	971	2551	374	1599
v/s Ratio Prot	c0.32	0.02	0.01	c0.18	c0.05	
v/s Ratio Perm		0.12	0.14			c0.20
v/c Ratio	0.53	0.20	0.21	0.26	0.50	0.20
Uniform Delay, d1	11.5	4.8	6.2	5.0	42.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.0	0.0	0.2	0.4	0.3
Delay (s)	13.3	4.9	6.3	5.3	42.5	0.3
Level of Service	B	A	A	A	D	A
Approach Delay (s)	10.4			5.5	16.1	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	354	311	150	559	417	133	80	826	332	128	742	280
v/c Ratio	0.37	0.25	0.23	0.50	0.31	0.19	0.38	0.86	0.21	0.62	0.73	0.34
Control Delay	18.0	31.3	5.8	19.2	28.6	5.2	30.3	55.3	0.3	39.2	46.5	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	31.3	5.8	19.2	28.6	5.2	30.3	55.3	0.3	39.2	46.5	3.7
Queue Length 50th (ft)	76	95	0	130	124	0	41	340	0	67	289	0
Queue Length 95th (ft)	100	148	36	179	172	29	60	#490	0	102	388	53
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1270	1228	647	1243	1361	691	307	958	1599	266	1015	972
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.25	0.23	0.45	0.31	0.19	0.26	0.86	0.21	0.48	0.73	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	287	302	123	514	359	106	55	735	302	100	660	269
Future Volume (veh/h)	287	302	123	514	359	106	55	735	302	100	660	269
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	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	354	311	150	559	417	132	80	826	0	128	742	280
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	932	1269	566	1071	1400	625	202	988		217	1058	606
Arrive On Green	0.08	0.36	0.36	0.12	0.39	0.39	0.05	0.28	0.00	0.07	0.30	0.30
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	354	311	150	559	417	132	80	826	0	128	742	280
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	7.9	7.6	8.3	12.1	9.9	6.8	3.9	26.8	0.0	6.3	22.8	16.3
Cycle Q Clear(g_c), s	7.9	7.6	8.3	12.1	9.9	6.8	3.9	26.8	0.0	6.3	22.8	16.3
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	932	1269	566	1071	1400	625	202	988		217	1058	606
V/C Ratio(X)	0.38	0.25	0.27	0.52	0.30	0.21	0.40	0.84		0.59	0.70	0.46
Avail Cap(c_a), veh/h	1340	1269	566	1351	1400	625	339	988		314	1058	606
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	27.9	28.1	19.5	25.6	24.7	31.7	42.0	0.0	32.3	38.4	28.6
Incr Delay (d2), s/veh	0.1	0.5	1.1	0.1	0.5	0.8	0.5	8.3	0.0	1.0	3.9	2.5
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(50%),veh/ln	3.2	3.3	3.3	4.8	4.3	2.6	1.7	12.7	0.0	2.7	10.3	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.6	28.4	29.3	19.7	26.2	25.5	32.1	50.3	0.0	33.2	42.3	31.1
LnGrp LOS	C	C	C	B	C	C	C	D		C	D	C
Approach Vol, veh/h		815			1108			906			1150	
Approach Delay, s/veh		25.6			22.8			48.7			38.6	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	50.0	13.2	40.0	15.4	54.6	10.6	42.7
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	14.1	10.3	8.3	28.8	9.9	11.9	5.9	24.8
Green Ext Time (p_c), s	0.9	2.6	0.1	2.4	0.6	3.3	0.0	3.9

Intersection Summary	
HCM 6th Ctrl Delay	33.8
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	209	314	238	120	10	205	173	50	337	45
v/c Ratio	0.41	0.77	0.61	0.25	0.03	0.20	0.21	0.06	0.51	0.07
Control Delay	24.3	47.0	30.3	13.2	24.2	30.8	4.2	22.2	31.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	47.0	30.3	13.2	24.2	30.8	4.2	22.2	31.4	0.2
Queue Length 50th (ft)	71	148	83	9	3	46	0	8	135	0
Queue Length 95th (ft)	151	165	#188	0	12	98	8	31	#410	0
Internal Link Dist (ft)		538		1917		2380			851	
Turn Bay Length (ft)	125				170		170	400		200
Base Capacity (vph)	611	409	387	477	475	1010	805	988	667	656
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.77	0.61	0.25	0.02	0.20	0.21	0.05	0.51	0.07

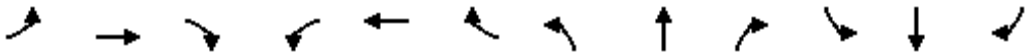
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	70	120	169	5	74	5	156	114	47	290	35
Future Volume (vph)	140	70	120	169	5	74	5	156	114	47	290	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.92		1.00	0.88		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)	1767	1708		1752	1582		1770	3539	1565	3386	1845	1568
Flt Permitted	0.68	1.00		0.23	1.00		0.45	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	1264	1708		421	1582		842	3539	1565	1956	1845	1568
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	209	140	174	238	20	100	10	205	173	50	337	45
RTOR Reduction (vph)	0	31	0	0	76	0	0	0	96	0	0	30
Lane Group Flow (vph)	209	283	0	238	44	0	10	205	77	50	337	15
Confl. Peds. (#/hr)	2					2			8	8		
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	33.8	21.6		40.4	24.9		32.0	31.0	46.5	40.4	35.2	35.2
Effective Green, g (s)	33.8	21.6		40.4	24.9		32.0	31.0	46.5	40.4	35.2	35.2
Actuated g/C Ratio	0.32	0.21		0.38	0.24		0.30	0.30	0.44	0.38	0.34	0.34
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	465	351		358	375		265	1044	693	823	618	525
v/s Ratio Prot	0.05	c0.17		c0.10	0.03		0.00	0.06	0.02	c0.00	c0.18	
v/s Ratio Perm	0.09			0.16			0.01		0.03	0.02		0.01
v/c Ratio	0.45	0.81		0.66	0.12		0.04	0.20	0.11	0.06	0.55	0.03
Uniform Delay, d1	27.4	39.7		24.4	31.4		25.7	27.7	17.1	20.3	28.4	23.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	12.7		4.6	0.1		0.0	0.4	0.1	0.0	3.4	0.1
Delay (s)	28.1	52.4		29.0	31.6		25.7	28.1	17.2	20.3	31.8	23.5
Level of Service	C	D		C	C		C	C	B	C	C	C
Approach Delay (s)		42.7			29.8			23.2			29.6	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	147	225	1152	40	182	88	1392	938	66	32	451	68
v/c Ratio	0.47	0.70	0.72	0.11	0.49	0.06	0.89	0.45	0.04	0.15	0.46	0.09
Control Delay	47.8	56.0	2.8	40.4	46.7	0.1	40.2	9.2	0.0	46.2	32.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	56.0	2.8	40.4	46.7	0.1	40.2	9.2	0.0	46.2	32.8	0.2
Queue Length 50th (ft)	46	74	0	12	58	0	230	92	0	10	130	0
Queue Length 95th (ft)	75	111	0	18	88	0	151	104	m0	22	163	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	379	391	1599	1566	2069	1599	215	989	851
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.42	0.72	0.11	0.47	0.06	0.89	0.45	0.04	0.15	0.46	0.08

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	214	956	24	160	69	696	675	45	25	370	65
Future Volume (veh/h)	146	214	956	24	160	69	696	675	45	25	370	65
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	147	225	0	40	182	0	1392	938	0	32	451	68
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	290	298		253	260		1467	2188		82	1199	668
Arrive On Green	0.08	0.08	0.00	0.07	0.07	0.00	0.29	0.61	0.00	0.02	0.33	0.33
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	147	225	0	40	182	0	1392	938	0	32	451	68
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	4.0	6.1	0.0	1.1	5.0	0.0	26.9	13.8	0.0	0.9	9.6	2.6
Cycle Q Clear(g_c), s	4.0	6.1	0.0	1.1	5.0	0.0	26.9	13.8	0.0	0.9	9.6	2.6
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	290	298		253	260		1467	2188		82	1199	668
V/C Ratio(X)	0.51	0.76		0.16	0.70		0.95	0.43		0.39	0.38	0.10
Avail Cap(c_a), veh/h	522	537		348	358		1468	2188		209	1199	668
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)	0.79	0.79	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.9	44.9	0.0	43.5	45.3	0.0	34.8	10.3	0.0	48.1	25.3	17.7
Incr Delay (d2), s/veh	0.4	1.2	0.0	0.3	3.6	0.0	13.1	0.6	0.0	3.0	0.9	0.3
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(50%),veh/ln	1.7	2.7	0.0	0.5	2.3	0.0	12.1	4.8	0.0	0.4	4.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.3	46.0	0.0	43.8	48.9	0.0	47.9	10.9	0.0	51.1	26.2	18.0
LnGrp LOS	D	D		D	D		D	B		D	C	B
Approach Vol, veh/h		372			222			2330			551	
Approach Delay, s/veh		45.3			48.0			33.0			26.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	67.1		13.3	35.0	39.5		12.2				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	15.8		8.1	28.9	11.6		7.0				
Green Ext Time (p_c), s	0.0	6.9		0.2	0.0	2.3		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		34.3
HCM 6th LOS		C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	193	191	234	938	171	821	835
v/c Ratio	0.77	0.75	0.15	0.64	0.23	0.91	0.32
Control Delay	59.9	58.6	0.2	26.8	4.1	59.0	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	58.6	0.2	26.8	4.1	59.0	6.1
Queue Length 50th (ft)	124	123	0	261	0	257	63
Queue Length 95th (ft)	195	100	0	333	19	#351	76
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1462	754	922	2572
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.61	0.15	0.64	0.23	0.89	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	324	10	185	0	0	0	0	900	125	805	802	0
Future Volume (veh/h)	324	10	185	0	0	0	0	900	125	805	802	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1841	1841	1841				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	378	0	0				0	938	0	821	835	0
Peak Hour Factor	0.89	0.50	0.79				0.92	0.96	0.73	0.98	0.96	0.92
Percent Heavy Veh, %	4	4	4				0	2	2	2	2	0
Cap, veh/h	455	0					0	1580		884	2666	0
Arrive On Green	0.13	0.00	0.00				0.00	0.44	0.00	0.17	0.50	0.00
Sat Flow, veh/h	3506	0	1560				0	3647	1585	3456	3647	0
Grp Volume(v), veh/h	378	0	0				0	938	0	821	835	0
Grp Sat Flow(s),veh/h/ln	1753	0	1560				0	1777	1585	1728	1777	0
Q Serve(g_s), s	10.5	0.0	0.0				0.0	19.9	0.0	23.4	13.9	0.0
Cycle Q Clear(g_c), s	10.5	0.0	0.0				0.0	19.9	0.0	23.4	13.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	455	0					0	1580		884	2666	0
V/C Ratio(X)	0.83	0.00					0.00	0.59		0.93	0.31	0.00
Avail Cap(c_a), veh/h	666	0					0	1580		898	2666	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.87	0.87	0.00
Uniform Delay (d), s/veh	42.4	0.0	0.0				0.0	21.0	0.0	40.5	9.7	0.0
Incr Delay (d2), s/veh	3.8	0.0	0.0				0.0	1.7	0.0	13.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	0.0				0.0	7.9	0.0	11.8	5.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.2	0.0	0.0				0.0	22.6	0.0	54.2	9.9	0.0
LnGrp LOS	D	A					A	C		D	A	A
Approach Vol, veh/h		378						938			1656	
Approach Delay, s/veh		46.2						22.6			31.9	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	30.6	50.5		19.0		81.0
Change Period (Y+Rc), s	5.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	26.0	38.0		19.0		69.0
Max Q Clear Time (g_c+I1), s	25.4	21.9		12.5		15.9
Green Ext Time (p_c), s	0.2	5.5		0.5		6.3

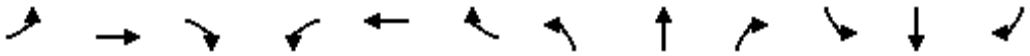
Intersection Summary	
HCM 6th Ctrl Delay	30.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

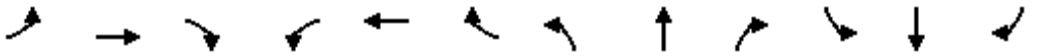
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2030 + Project



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	56	19	55	412	44	176	133	920	541	245	688	75
v/c Ratio	0.26	0.18	0.03	0.72	0.19	0.51	0.49	0.49	0.50	0.64	0.24	0.08
Control Delay	56.5	57.2	0.1	54.3	46.7	11.4	58.6	21.3	3.7	58.8	15.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	57.2	0.1	54.3	46.7	11.4	58.6	21.3	3.7	58.8	15.3	0.2
Queue Length 50th (ft)	21	14	0	155	33	0	51	207	0	95	84	0
Queue Length 95th (ft)	29	30	0	185	58	48	72	365	37	106	157	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	277	190	1595	864	507	553	357	1881	1082	401	2862	968
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.10	0.03	0.48	0.09	0.32	0.37	0.49	0.50	0.61	0.24	0.08

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	13	40	342	38	148	105	810	444	179	660	45
Future Volume (veh/h)	35	13	40	342	38	148	105	810	444	179	660	45
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	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	19	0	412	44	0	133	920	0	245	688	0
Peak Hour Factor	0.63	0.69	0.73	0.83	0.86	0.84	0.79	0.88	0.82	0.73	0.96	0.60
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	205	85		486	238		199	1899		302	2881	
Arrive On Green	0.06	0.04	0.00	0.14	0.13	0.00	0.06	0.53	0.00	0.09	0.56	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	56	19	0	412	44	0	133	920	0	245	688	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.8	1.2	0.0	14.1	2.5	0.0	4.5	19.5	0.0	8.4	8.1	0.0
Cycle Q Clear(g_c), s	1.8	1.2	0.0	14.1	2.5	0.0	4.5	19.5	0.0	8.4	8.1	0.0
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	205	85		486	238		199	1899		302	2881	
V/C Ratio(X)	0.27	0.22		0.85	0.18		0.67	0.48		0.81	0.24	
Avail Cap(c_a), veh/h	278	190		871	510		360	1899		360	2881	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.1	55.3	0.0	50.2	46.7	0.0	55.4	17.6	0.0	53.8	13.2	0.0
Incr Delay (d2), s/veh	0.5	1.3	0.0	3.2	0.4	0.0	2.9	0.9	0.0	10.5	0.2	0.0
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(50%),veh/ln	0.8	0.6	0.0	6.1	1.2	0.0	2.0	7.9	0.0	4.0	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.6	56.6	0.0	53.4	47.1	0.0	58.3	18.4	0.0	64.3	13.4	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		75			456			1053			933	
Approach Delay, s/veh		55.1			52.8			23.5			26.7	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	70.1	22.5	11.4	12.4	73.7	12.5	21.4
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	10.4	21.5	16.1	3.2	6.5	10.1	3.8	4.5
Green Ext Time (p_c), s	0.1	10.7	0.9	0.0	0.1	9.6	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	30.9
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



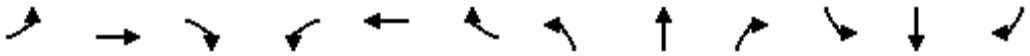
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	438	479	144	521	416	167
v/c Ratio	0.41	0.36	0.14	0.22	0.70	0.11
Control Delay	17.3	1.3	7.9	8.8	54.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	1.3	7.9	8.8	54.3	0.1
Queue Length 50th (ft)	156	0	14	63	156	0
Queue Length 95th (ft)	354	29	38	113	151	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1068	1343	1507	2359	594	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.36	0.10	0.22	0.70	0.11

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	390	426	115	375	258	145
Future Volume (vph)	390	426	115	375	258	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.39	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1393	3505	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	438	479	144	521	416	167
RTOR Reduction (vph)	0	134	0	0	0	0
Lane Group Flow (vph)	438	345	144	521	416	167
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	65.5	86.5	76.8	76.8	21.0	120.0
Effective Green, g (s)	65.5	86.5	76.8	76.8	21.0	120.0
Actuated g/C Ratio	0.55	0.72	0.64	0.64	0.18	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1007	1130	996	2243	595	1568
v/s Ratio Prot	c0.24	0.05	0.01	c0.15	c0.12	
v/s Ratio Perm		0.17	0.08			c0.11
v/c Ratio	0.43	0.31	0.14	0.23	0.70	0.11
Uniform Delay, d1	16.2	6.0	9.4	9.1	46.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1	0.0	0.2	2.9	0.1
Delay (s)	17.6	6.1	9.4	9.4	49.4	0.1
Level of Service	B	A	A	A	D	A
Approach Delay (s)	11.6			9.4	35.3	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	277	175	165	513	314	105	129	891	624	119	980	264
v/c Ratio	0.30	0.16	0.28	0.45	0.26	0.17	0.59	0.87	0.39	0.56	0.96	0.32
Control Delay	17.7	30.3	6.1	18.9	27.3	4.4	33.5	49.6	0.7	31.2	61.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	30.3	6.1	18.9	27.3	4.4	33.5	49.6	0.7	31.2	61.2	3.7
Queue Length 50th (ft)	56	48	0	112	85	0	57	321	0	52	368	0
Queue Length 95th (ft)	83	76	37	140	95	22	69	#494	0	90	#544	16
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1230	1081	598	1213	1215	620	256	1019	1583	305	1017	953
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.16	0.28	0.42	0.26	0.17	0.50	0.87	0.39	0.39	0.96	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	145	135	426	217	85	80	838	568	100	872	193
Future Volume (veh/h)	260	145	135	426	217	85	80	838	568	100	872	193
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	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	277	175	165	513	314	105	129	891	0	119	980	264
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	956	1122	500	1100	1260	562	199	1063		220	1056	591
Arrive On Green	0.08	0.31	0.31	0.12	0.36	0.36	0.07	0.30	0.00	0.06	0.29	0.29
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	277	175	165	513	314	105	129	891	0	119	980	264
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	5.7	3.8	8.6	10.5	6.9	5.0	5.4	25.5	0.0	4.9	28.8	13.5
Cycle Q Clear(g_c), s	5.7	3.8	8.6	10.5	6.9	5.0	5.4	25.5	0.0	4.9	28.8	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	956	1122	500	1100	1260	562	199	1063		220	1056	591
V/C Ratio(X)	0.29	0.16	0.33	0.47	0.25	0.19	0.65	0.84		0.54	0.93	0.45
Avail Cap(c_a), veh/h	1336	1122	500	1311	1260	562	276	1063		355	1056	591
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	26.9	28.5	19.3	24.4	23.8	28.4	35.6	0.0	27.5	37.2	25.8
Incr Delay (d2), s/veh	0.1	0.3	1.8	0.1	0.5	0.7	1.3	7.9	0.0	0.8	15.0	2.4
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(50%),veh/ln	2.3	1.7	3.4	4.0	2.9	1.9	2.3	11.7	0.0	2.1	14.3	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.1	27.2	30.3	19.4	24.9	24.6	29.7	43.5	0.0	28.3	52.2	28.3
LnGrp LOS	C	C	C	B	C	C	C	D		C	D	C
Approach Vol, veh/h		617			932			1020			1363	
Approach Delay, s/veh		25.8			21.8			41.7			45.5	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.2	40.0	11.8	38.5	13.1	45.1	12.3	38.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	12.0	32.0
Max Q Clear Time (g_c+I1), s	12.5	10.6	6.9	27.5	7.7	8.9	7.4	30.8
Green Ext Time (p_c), s	0.7	1.6	0.1	0.9	0.4	2.3	0.1	0.8

Intersection Summary	
HCM 6th Ctrl Delay	35.8
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	38	305	217	11	195	769	471	219	21
v/c Ratio	0.10	0.23	0.82	0.53	0.02	0.16	0.65	0.37	0.23	0.02
Control Delay	29.9	32.2	49.3	25.4	18.7	26.4	4.6	15.5	19.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	32.2	49.3	25.4	18.7	26.4	4.6	15.5	19.4	0.1
Queue Length 50th (ft)	8	9	128	44	2	36	0	61	56	0
Queue Length 95th (ft)	37	24	#365	26	19	91	0	165	187	0
Internal Link Dist (ft)		538		1917		1338			851	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	432	430	372	468	721	1200	1192	1342	965	887
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.09	0.82	0.46	0.02	0.16	0.65	0.35	0.23	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	10	15	268	20	96	10	146	577	363	162	15
Future Volume (vph)	20	10	15	268	20	96	10	146	577	363	162	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.93		1.00	0.89		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)	1787	1706		1701	1587		1770	3539	1565	3423	1863	1583
Flt Permitted	0.80	1.00		0.40	1.00		0.62	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	1505	1706		716	1587		1157	3539	1565	1979	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	22	19	19	305	51	166	11	195	769	471	219	21
RTOR Reduction (vph)	0	18	0	0	81	0	0	0	376	0	0	11
Lane Group Flow (vph)	22	20	0	305	136	0	11	195	393	471	219	10
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	7.5	5.0		25.9	18.4		35.3	34.4	50.3	51.3	45.4	45.4
Effective Green, g (s)	7.5	5.0		25.9	18.4		35.3	34.4	50.3	51.3	45.4	45.4
Actuated g/C Ratio	0.08	0.05		0.26	0.19		0.36	0.35	0.51	0.52	0.46	0.46
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	121	86		347	296		420	1237	799	1206	859	730
v/s Ratio Prot	0.00	0.01		c0.14	0.09		0.00	0.06	c0.08	c0.05	0.12	
v/s Ratio Perm	0.01			c0.09			0.01		0.17	0.16		0.01
v/c Ratio	0.18	0.23		0.88	0.46		0.03	0.16	0.49	0.39	0.25	0.01
Uniform Delay, d1	42.5	44.9		32.7	35.6		20.4	22.0	15.7	13.2	16.2	14.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	1.4		21.4	1.1		0.0	0.3	0.5	0.2	0.7	0.0
Delay (s)	43.2	46.2		54.1	36.7		20.4	22.3	16.2	13.4	16.9	14.4
Level of Service	D	D		D	D		C	C	B	B	B	B
Approach Delay (s)		45.1			46.9			17.5			14.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	26.5
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

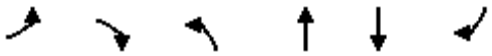
Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	6	732	15	27	406
Future Vol, veh/h	4	6	732	15	27	406
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	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	7	832	17	31	461

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1364	841	0	0	849	0
Stage 1	841	-	-	-	-	-
Stage 2	523	-	-	-	-	-
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	163	365	-	-	789	-
Stage 1	423	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	157	365	-	-	789	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	572	-	-	-	-	-

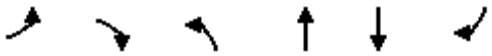
Approach	WB	NB	SB
HCM Control Delay, s	20.8	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	239	789	-
HCM Lane V/C Ratio	-	-	0.045	0.039	-
HCM Control Delay (s)	-	-	20.8	9.7	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	460	56	152	1100	929	674
v/c Ratio	0.59	0.14	0.50	0.34	0.54	0.54
Control Delay	33.7	7.8	45.1	8.4	18.7	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	7.8	45.1	8.4	18.7	4.8
Queue Length 50th (ft)	122	0	43	92	183	87
Queue Length 95th (ft)	142	24	73	147	281	127
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	514	305	3256	1716	1246
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.11	0.50	0.34	0.54	0.54

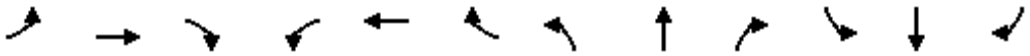
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	391	48	140	1100	855	573
Future Volume (veh/h)	391	48	140	1100	855	573
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	460	56	152	1100	929	674
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	580	266	764	3568	1461	918
Arrive On Green	0.17	0.17	0.22	0.70	0.41	0.41
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	460	56	152	1100	929	674
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	11.5	2.7	3.2	7.4	18.8	28.0
Cycle Q Clear(g_c), s	11.5	2.7	3.2	7.4	18.8	28.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	580	266	764	3568	1461	918
V/C Ratio(X)	0.79	0.21	0.20	0.31	0.64	0.73
Avail Cap(c_a), veh/h	1037	476	764	3568	1461	918
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.53	0.53	1.00	1.00
Uniform Delay (d), s/veh	35.9	32.3	28.6	5.2	21.1	13.9
Incr Delay (d2), s/veh	2.5	0.4	0.1	0.1	2.1	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	2.6	1.3	2.0	7.6	14.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.4	32.7	28.6	5.3	23.3	19.1
LnGrp LOS	D	C	C	A	C	B
Approach Vol, veh/h	516			1252	1603	
Approach Delay, s/veh	37.8			8.2	21.5	
Approach LOS	D			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		68.9		21.1	25.9	43.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	8.0	37.0
Max Q Clear Time (g_c+I1), s		9.4		13.5	5.2	30.0
Green Ext Time (p_c), s		9.2		1.6	0.1	4.6

Intersection Summary	
HCM 6th Ctrl Delay	19.0
HCM 6th LOS	B



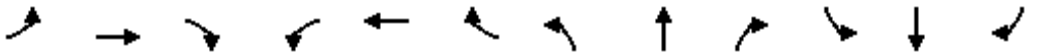
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	73	139	1448	63	238	56	1400	501	29	63	966	197
v/c Ratio	0.32	0.60	0.91	0.17	0.62	0.04	0.88	0.25	0.02	0.30	0.97	0.27
Control Delay	47.7	56.0	11.0	41.2	49.9	0.0	42.6	6.4	0.0	48.6	59.6	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	56.0	11.0	41.2	49.9	0.0	42.6	6.4	0.0	48.6	59.6	7.8
Queue Length 50th (ft)	23	46	0	19	76	0	235	35	0	20	~355	22
Queue Length 95th (ft)	43	70	0	38	106	0	184	47	m0	28	#356	68
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	381	393	1568	1680	2009	1568	215	997	775
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.39	0.91	0.17	0.61	0.04	0.83	0.25	0.02	0.29	0.97	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	115	724	55	195	45	868	421	20	40	705	177
Future Volume (veh/h)	64	115	724	55	195	45	868	421	20	40	705	177
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	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	73	139	0	62	238	0	1400	501	0	63	966	197
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	203	209		303	311		1536	2150		113	1145	603
Arrive On Green	0.06	0.06	0.00	0.09	0.09	0.00	0.31	0.61	0.00	0.03	0.32	0.32
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	73	139	0	62	238	0	1400	501	0	63	966	197
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	2.0	3.8	0.0	1.7	6.6	0.0	27.0	6.5	0.0	1.8	25.5	8.8
Cycle Q Clear(g_c), s	2.0	3.8	0.0	1.7	6.6	0.0	27.0	6.5	0.0	1.8	25.5	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	203	209		303	311		1536	2150		113	1145	603
V/C Ratio(X)	0.36	0.67		0.20	0.76		0.91	0.23		0.56	0.84	0.33
Avail Cap(c_a), veh/h	346	355		343	353		1694	2150		206	1145	603
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)	0.87	0.87	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.3	46.1	0.0	42.3	44.6	0.0	33.3	8.9	0.0	47.6	31.4	21.7
Incr Delay (d2), s/veh	0.3	1.2	0.0	0.3	8.5	0.0	7.0	0.3	0.0	4.2	7.7	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(50%),veh/ln	0.9	1.7	0.0	0.7	3.2	0.0	11.2	2.2	0.0	0.8	11.3	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.6	47.3	0.0	42.7	53.1	0.0	40.3	9.1	0.0	51.8	39.1	23.2
LnGrp LOS	D	D		D	D		D	A		D	D	C
Approach Vol, veh/h		212			300			1901			1226	
Approach Delay, s/veh		46.7			50.9			32.1			37.2	
Approach LOS		D			D			C			D	

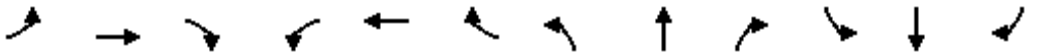
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	67.0		10.9	36.8	38.5		13.8				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		10.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.8	8.5		5.8	29.0	27.5		8.6				
Green Ext Time (p_c), s	0.0	3.3		0.1	1.8	0.0		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		36.2
HCM 6th LOS		D

Notes

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

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



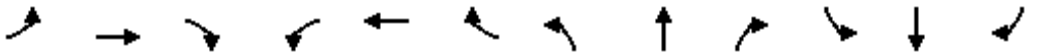
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	42	15	752	255	20	95	815	1450	200	76	1391	150
v/c Ratio	0.10	0.11	1.77	0.45	0.07	0.23	1.09	0.74	0.21	0.39	1.05	0.10
Control Delay	30.4	45.4	372.3	34.1	40.2	1.3	92.8	15.3	1.2	54.2	53.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	45.4	372.3	34.1	40.2	1.3	92.8	15.3	1.2	54.2	53.0	0.0
Queue Length 50th (ft)	10	9	~518	69	12	0	~307	308	6	25	~518	0
Queue Length 95th (ft)	13	10	0	104	9	0	m#389	338	m5	m28	m#590	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	449	141	426	570	298	409	748	1963	966	204	1331	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.11	1.77	0.45	0.07	0.23	1.09	0.74	0.21	0.37	1.05	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	5	188	240	5	60	701	1218	190	60	1349	75
Future Volume (veh/h)	21	5	188	240	5	60	701	1218	190	60	1349	75
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	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	42	15	0	255	20	95	815	1450	200	76	1391	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.63	0.86	0.84	0.95	0.79	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	444	94		570	168	143	754	2124	947	126	1478	
Arrive On Green	0.05	0.05	0.00	0.09	0.09	0.09	0.22	0.60	0.60	0.04	0.42	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	42	15	0	255	20	95	815	1450	200	76	1391	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.1	0.8	0.0	6.9	1.0	5.8	22.0	27.8	5.8	2.2	37.8	0.0
Cycle Q Clear(g_c), s	1.1	0.8	0.0	6.9	1.0	5.8	22.0	27.8	5.8	2.2	37.8	0.0
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	444	94		570	168	143	754	2124	947	126	1478	
V/C Ratio(X)	0.09	0.16		0.45	0.12	0.67	1.08	0.68	0.21	0.60	0.94	
Avail Cap(c_a), veh/h	515	133		634	204	173	754	2124	947	206	1478	
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.0	45.5	0.0	39.8	41.8	44.0	39.0	13.4	9.1	47.4	27.9	0.0
Incr Delay (d2), s/veh	0.1	0.9	0.0	0.7	0.4	7.9	56.7	1.8	0.5	1.7	13.0	0.0
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(50%),veh/ln	0.5	0.4	0.0	2.9	0.5	2.6	14.7	9.8	2.0	0.9	17.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.1	46.5	0.0	40.4	42.2	51.9	95.7	15.2	9.6	49.1	40.9	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	D	
Approach Vol, veh/h		57			370			2465			1467	
Approach Delay, s/veh		42.5			43.5			41.4			41.3	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	66.2	15.1	11.0	26.0	47.9	11.0	15.1
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	11.0	7.0	22.0	38.0	7.0	11.0
Max Q Clear Time (g_c+I1), s	4.2	29.8	8.9	2.8	24.0	39.8	3.1	7.8
Green Ext Time (p_c), s	0.0	12.2	0.2	0.0	0.0	0.0	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	41.6
HCM 6th LOS	D

Notes

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

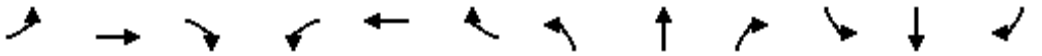
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	103	105	1370	227	957	1461	575
v/c Ratio	0.59	0.59	0.87	0.67	0.35	0.46	0.48
Control Delay	55.2	55.5	7.8	34.7	3.2	7.4	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	55.5	7.8	34.7	3.2	7.4	0.6
Queue Length 50th (ft)	67	68	0	116	44	112	1
Queue Length 95th (ft)	106	98	0	190	92	m102	m1
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	372	2739	3173	1200
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.35	0.87	0.61	0.35	0.46	0.48

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	160	10	1219	200	890	0	0	1300	477
Future Volume (vph)	0	0	0	160	10	1219	200	890	0	0	1300	477
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1679	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.13	1.00			1.00	1.00
Satd. Flow (perm)				1665	1679	1568	247	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Adj. Flow (vph)	0	0	0	195	13	1370	227	957	0	0	1461	575
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	213
Lane Group Flow (vph)	0	0	0	103	105	1370	227	957	0	0	1461	362
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.6	10.6	100.0	77.4	77.4			63.0	63.0
Effective Green, g (s)				10.6	10.6	100.0	77.4	77.4			63.0	63.0
Actuated g/C Ratio				0.11	0.11	1.00	0.77	0.77			0.63	0.63
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				176	177	1568	334	2739			3172	987
v/s Ratio Prot							0.06	0.27			0.29	
v/s Ratio Perm				0.06	0.06	c0.87	0.46					0.23
v/c Ratio				0.59	0.59	0.87	0.68	0.35			0.46	0.37
Uniform Delay, d1				42.6	42.6	0.0	6.8	3.5			9.6	8.9
Progression Factor				1.00	1.00	1.00	3.51	0.74			0.69	0.49
Incremental Delay, d2				3.2	3.5	7.1	3.8	0.3			0.0	0.1
Delay (s)				45.8	46.2	7.1	27.6	2.9			6.7	4.4
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			12.2			7.6			6.1	
Approach LOS		A			B			A			A	

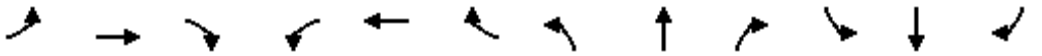
Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	191	194	208	853	67	537	1067
v/c Ratio	0.76	0.77	0.13	0.49	0.08	0.84	0.42
Control Delay	59.3	59.7	0.2	19.4	2.5	53.1	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	59.7	0.2	19.4	2.5	53.1	5.5
Queue Length 50th (ft)	123	125	0	193	0	155	68
Queue Length 95th (ft)	188	130	0	264	12	#170	80
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1732	819	685	2548
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.62	0.13	0.49	0.08	0.78	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	314	15	175	0	0	0	0	776	55	494	982	0
Future Volume (vph)	314	15	175	0	0	0	0	776	55	494	982	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1663	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1663	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.87	0.63	0.84	0.92	0.92	0.92	0.92	0.91	0.82	0.92	0.92	0.92
Adj. Flow (vph)	361	24	208	0	0	0	0	853	67	537	1067	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	34	0	0	0
Lane Group Flow (vph)	191	194	208	0	0	0	0	853	33	537	1067	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.3	15.3	100.0					48.9	48.9	18.8	72.7	
Effective Green, g (s)	15.3	15.3	100.0					48.9	48.9	18.8	72.7	
Actuated g/C Ratio	0.15	0.15	1.00					0.49	0.49	0.19	0.73	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	252	254	1553					1730	774	639	2548	
v/s Ratio Prot								c0.24		c0.16	0.30	
v/s Ratio Perm	0.12	0.12	0.13						0.02			
v/c Ratio	0.76	0.76	0.13					0.49	0.04	0.84	0.42	
Uniform Delay, d1	40.6	40.6	0.0					17.2	13.3	39.2	5.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.06	0.87	
Incremental Delay, d2	11.0	11.6	0.2					1.0	0.1	8.5	0.5	
Delay (s)	51.5	52.2	0.2					18.2	13.4	49.9	5.1	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s)		33.7			0.0			17.9			20.1	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	6.5
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	592	599	403
Demand Flow Rate, veh/h	598	611	411
Vehicles Circulating, veh/h	235	407	168
Vehicles Exiting, veh/h	344	426	850
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	6.4	7.9	4.7
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.681	0.319	0.275	0.725	0.572	0.428
Follow-Up Headway, s	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
Entry Flow, veh/h	407	191	168	443	235	176
Cap Entry Lane, veh/h	1087	1163	928	1005	1157	1231
Entry HV Adj Factor	0.990	0.990	0.980	0.980	0.979	0.983
Flow Entry, veh/h	403	189	165	434	230	173
Cap Entry, veh/h	1077	1151	909	984	1132	1210
V/C Ratio	0.374	0.164	0.181	0.441	0.203	0.143
Control Delay, s/veh	7.2	4.6	5.7	8.7	5.0	4.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	2	1	1	2	1	0

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	347	18	147	267	5	38
Future Vol, veh/h	347	18	147	267	5	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	496	20	160	381	5	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	516	0	1207	506
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	701	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1045	-	202	564
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	490	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1045	-	171	564
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	415	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	14
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	445	-	-	1045	-
HCM Lane V/C Ratio	0.105	-	-	0.153	-
HCM Control Delay (s)	14	-	-	9.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.5	-

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	539	908	98
Demand Flow Rate, veh/h	555	935	101
Vehicles Circulating, veh/h	339	10	519
Vehicles Exiting, veh/h	606	610	375
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.5	5.9	5.1
Approach LOS	B	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.363	0.637	0.099	0.901
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	555	339	596	10	91
Cap Entry Lane, veh/h	977	1407	1407	885	885
Entry HV Adj Factor	0.971	0.971	0.971	1.000	0.967
Flow Entry, veh/h	539	329	579	10	88
Cap Entry, veh/h	948	1366	1366	885	856
V/C Ratio	0.568	0.241	0.424	0.011	0.103
Control Delay, s/veh	11.5	4.7	6.7	4.2	5.2
LOS	B	A	A	A	A
95th %tile Queue, veh	4	1	2	0	0

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	29	6	32	8	104	1	3	7	27	11	2
Future Vol, veh/h	7	29	6	32	8	104	1	3	7	27	11	2
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	32	7	35	9	113	1	3	8	29	12	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	122	0	0	39	0	0	195	244	36	193	191	66
Stage 1	-	-	-	-	-	-	52	52	-	136	136	-
Stage 2	-	-	-	-	-	-	143	192	-	57	55	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1459	-	-	1565	-	-	762	656	1034	764	702	995
Stage 1	-	-	-	-	-	-	958	850	-	865	782	-
Stage 2	-	-	-	-	-	-	857	740	-	952	847	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1459	-	-	1565	-	-	733	636	1034	738	681	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	733	636	-	738	681	-
Stage 1	-	-	-	-	-	-	952	845	-	860	763	-
Stage 2	-	-	-	-	-	-	822	722	-	936	842	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	1.6	9.3	10.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	856	1459	-	-	1565	-	-	731
HCM Lane V/C Ratio	0.014	0.005	-	-	0.022	-	-	0.059
HCM Control Delay (s)	9.3	7.5	0	-	7.4	0	-	10.2
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	0.2

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	61	0	0	143	30	0	0	0	8	0	1
Future Vol, veh/h	2	61	0	0	143	30	0	0	0	8	0	1
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	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	2	66	0	0	155	33	0	0	0	9	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	188	0	0	66	0	0	242	258	66	242	242	172
Stage 1	-	-	-	-	-	-	70	70	-	172	172	-
Stage 2	-	-	-	-	-	-	172	188	-	70	70	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1386	-	-	1529	-	-	710	646	995	712	660	872
Stage 1	-	-	-	-	-	-	937	837	-	830	756	-
Stage 2	-	-	-	-	-	-	828	745	-	940	837	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1386	-	-	1529	-	-	709	645	995	711	659	872
Mov Cap-2 Maneuver	-	-	-	-	-	-	709	645	-	711	659	-
Stage 1	-	-	-	-	-	-	936	836	-	829	756	-
Stage 2	-	-	-	-	-	-	827	745	-	939	836	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	10
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1386	-	-	1529	-	-	726
HCM Lane V/C Ratio	-	0.002	-	-	-	-	-	0.013
HCM Control Delay (s)	0	7.6	-	-	0	-	-	10
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	75	763	16	193
Demand Flow Rate, veh/h	77	785	16	199
Vehicles Circulating, veh/h	242	30	248	236
Vehicles Exiting, veh/h	193	234	71	579
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.6	5.8	3.3	4.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.468	0.532	0.299	0.701	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	36	41	235	550	16	199
Cap Entry Lane, veh/h	1080	1156	1313	1384	1150	1162
Entry HV Adj Factor	0.974	0.965	0.973	0.971	0.993	0.972
Flow Entry, veh/h	35	40	229	534	16	193
Cap Entry, veh/h	1053	1115	1277	1344	1142	1130
V/C Ratio	0.033	0.035	0.179	0.397	0.014	0.171
Control Delay, s/veh	3.7	3.5	4.3	6.4	3.3	4.7
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	2	0	1

Intersection	
Intersection Delay, s/veh	13.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	2	19	58	1	23	72	328	117	80	101	48
Future Vol, veh/h	12	2	19	58	1	23	72	328	117	80	101	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	13	2	21	63	1	25	78	357	127	87	110	52
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	9.1	9.9	16.1	9.6
HCM LOS	A	A	C	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	36%	71%	100%	0%
Vol Thru, %	0%	74%	6%	1%	0%	68%
Vol Right, %	0%	26%	58%	28%	0%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	445	33	82	80	149
LT Vol	72	0	12	58	80	0
Through Vol	0	328	2	1	0	101
RT Vol	0	117	19	23	0	48
Lane Flow Rate	78	484	36	89	87	162
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.123	0.667	0.057	0.143	0.143	0.234
Departure Headway (Hd)	5.649	4.961	5.757	5.781	5.931	5.199
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	632	726	626	614	601	685
Service Time	3.412	2.723	3.757	3.874	3.708	2.976
HCM Lane V/C Ratio	0.123	0.667	0.058	0.145	0.145	0.236
HCM Control Delay	9.2	17.2	9.1	9.9	9.7	9.6
HCM Lane LOS	A	C	A	A	A	A
HCM 95th-tile Q	0.4	5.1	0.2	0.5	0.5	0.9

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	2	25	52	1	9	96	81	186	77	152	60
Future Vol, veh/h	16	2	25	52	1	9	96	81	186	77	152	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	2	27	57	1	10	104	88	202	84	165	65
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.8	9.4	10	10
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	37%	84%	100%	0%
Vol Thru, %	0%	30%	5%	2%	0%	72%
Vol Right, %	0%	70%	58%	15%	0%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	96	267	43	62	77	212
LT Vol	96	0	16	52	77	0
Through Vol	0	81	2	1	0	152
RT Vol	0	186	25	9	0	60
Lane Flow Rate	104	290	47	67	84	230
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.164	0.376	0.069	0.106	0.133	0.321
Departure Headway (Hd)	5.662	4.669	5.329	5.641	5.723	5.02
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	632	766	667	631	624	714
Service Time	3.411	2.417	3.405	3.712	3.475	2.772
HCM Lane V/C Ratio	0.165	0.379	0.07	0.106	0.135	0.322
HCM Control Delay	9.5	10.2	8.8	9.4	9.4	10.2
HCM Lane LOS	A	B	A	A	A	B
HCM 95th-tile Q	0.6	1.8	0.2	0.4	0.5	1.4

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	7	3	1	30	2	12	36	2	6	57	12
Future Vol, veh/h	3	7	3	1	30	2	12	36	2	6	57	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	3	8	3	1	33	2	13	39	2	7	62	13
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7.4	7.4	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	23%	3%	8%
Vol Thru, %	72%	54%	91%	76%
Vol Right, %	4%	23%	6%	16%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	13	33	75
LT Vol	12	3	1	6
Through Vol	36	7	30	57
RT Vol	2	3	2	12
Lane Flow Rate	54	14	36	82
Geometry Grp	1	1	1	1
Degree of Util (X)	0.062	0.016	0.041	0.091
Departure Headway (Hd)	4.107	4.103	4.165	4
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	869	863	852	893
Service Time	2.147	2.175	2.231	2.035
HCM Lane V/C Ratio	0.062	0.016	0.042	0.092
HCM Control Delay	7.4	7.2	7.4	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0	0.1	0.3

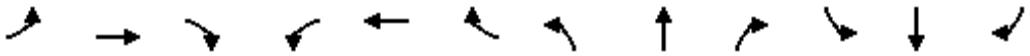
Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	8	30	76	281	54
Future Vol, veh/h	14	8	30	76	281	54
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	9	33	83	305	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	484	335	364	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	540	705	1189	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	525	705	1189	-	-	-
Mov Cap-2 Maneuver	525	-	-	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	2.3	0
HCM LOS	B		

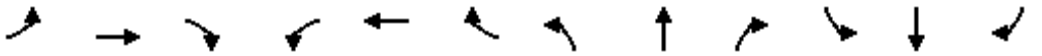
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1189	-	579	-	-
HCM Lane V/C Ratio	0.027	-	0.041	-	-
HCM Control Delay (s)	8.1	-	11.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	78	138	651	84	162	153	887	508	245	1124	152
v/c Ratio	0.32	0.46	0.09	0.87	0.19	0.32	0.55	0.62	0.54	0.63	0.51	0.19
Control Delay	55.0	58.9	0.1	55.7	35.9	5.9	59.1	31.4	4.9	55.7	25.5	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	58.9	0.1	55.7	35.9	5.9	59.1	31.4	4.9	55.7	25.5	2.8
Queue Length 50th (ft)	29	57	0	239	50	0	57	286	0	91	230	0
Queue Length 95th (ft)	50	87	0	#340	72	34	93	391	61	136	291	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	397	241	1578	841	499	548	301	1422	933	492	2211	780
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.32	0.09	0.77	0.17	0.30	0.51	0.62	0.54	0.50	0.51	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	58	130	586	59	136	135	825	442	223	1045	85
Future Volume (veh/h)	65	58	130	586	59	136	135	825	442	223	1045	85
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	80	78	0	651	84	0	153	887	0	245	1124	0
Peak Hour Factor	0.81	0.74	0.94	0.90	0.70	0.84	0.88	0.93	0.87	0.91	0.93	0.56
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	229	129		730	400		226	1489		315	2270	
Arrive On Green	0.07	0.07	0.00	0.21	0.21	0.00	0.06	0.42	0.00	0.09	0.44	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	80	78	0	651	84	0	153	887	0	245	1124	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.3	4.3	0.0	19.4	3.9	0.0	4.6	20.5	0.0	7.3	16.6	0.0
Cycle Q Clear(g_c), s	2.3	4.3	0.0	19.4	3.9	0.0	4.6	20.5	0.0	7.3	16.6	0.0
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	229	129		730	400		226	1489		315	2270	
V/C Ratio(X)	0.35	0.61		0.89	0.21		0.68	0.60		0.78	0.50	
Avail Cap(c_a), veh/h	409	248		866	495		311	1489		507	2270	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.6	48.2	0.0	40.9	34.6	0.0	48.7	24.2	0.0	47.4	21.3	0.0
Incr Delay (d2), s/veh	0.7	4.5	0.0	9.8	0.3	0.0	2.6	1.8	0.0	3.1	0.8	0.0
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(50%),veh/ln	1.0	2.1	0.0	9.0	1.8	0.0	2.0	8.7	0.0	3.3	6.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.3	52.7	0.0	50.8	34.9	0.0	51.3	25.9	0.0	50.5	22.1	0.0
LnGrp LOS	D	D		D	C		D	C		D	C	
Approach Vol, veh/h		158			735			1040			1369	
Approach Delay, s/veh		50.5			48.9			29.7			27.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	50.3	27.8	13.3	12.4	53.0	12.5	28.6
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	9.3	22.5	21.4	6.3	6.6	18.6	4.3	5.9
Green Ext Time (p_c), s	0.3	9.7	1.0	0.1	0.1	15.6	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	33.9
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



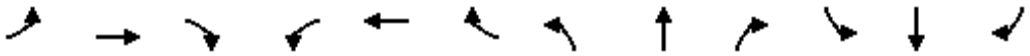
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	609	313	194	705	177	212
v/c Ratio	0.51	0.24	0.19	0.26	0.48	0.13
Control Delay	12.3	0.8	3.9	4.4	46.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	0.8	3.9	4.4	46.6	0.2
Queue Length 50th (ft)	169	0	11	51	56	0
Queue Length 95th (ft)	366	6	30	99	87	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1192	1523	1188	2700	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.21	0.16	0.26	0.18	0.13

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	554	244	173	564	172	144
Future Volume (vph)	554	244	173	564	172	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.31	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1124	3574	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	609	313	194	705	177	212
RTOR Reduction (vph)	0	90	0	0	0	0
Lane Group Flow (vph)	609	223	194	705	177	212
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	60.7	71.3	71.6	71.6	10.6	100.0
Effective Green, g (s)	60.7	71.3	71.6	71.6	10.6	100.0
Actuated g/C Ratio	0.61	0.71	0.72	0.72	0.11	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1119	1117	943	2558	367	1599
v/s Ratio Prot	c0.33	0.02	0.01	c0.20	c0.05	
v/s Ratio Perm		0.12	0.14			c0.13
v/c Ratio	0.54	0.20	0.21	0.28	0.48	0.13
Uniform Delay, d1	11.5	4.8	6.3	5.0	42.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.0	0.0	0.3	0.4	0.2
Delay (s)	13.4	4.8	6.4	5.3	42.5	0.2
Level of Service	B	A	A	A	D	A
Approach Delay (s)	10.5			5.5	19.4	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	322	276	157	592	421	138	114	980	386	128	807	282
v/c Ratio	0.36	0.24	0.26	0.52	0.32	0.20	0.52	0.92	0.24	0.67	0.76	0.35
Control Delay	19.8	34.4	6.2	21.4	30.5	5.2	33.3	59.3	0.4	44.6	48.2	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	34.4	6.2	21.4	30.5	5.2	33.3	59.3	0.4	44.6	48.2	6.5
Queue Length 50th (ft)	75	91	0	152	134	0	59	427	0	67	327	24
Queue Length 95th (ft)	94	137	38	197	176	30	80	#590	0	105	440	88
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1219	1135	614	1219	1320	676	312	1064	1599	220	1056	956
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.24	0.26	0.49	0.32	0.20	0.37	0.92	0.24	0.58	0.76	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	268	129	545	362	110	79	872	351	100	718	271
Future Volume (veh/h)	261	268	129	545	362	110	79	872	351	100	718	271
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	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	322	276	157	592	421	138	114	980	0	128	807	282
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	878	1166	520	1069	1346	600	217	1091		195	1103	620
Arrive On Green	0.08	0.33	0.33	0.13	0.38	0.38	0.06	0.30	0.00	0.06	0.31	0.31
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	322	276	157	592	421	138	114	980	0	128	807	282
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	7.8	7.2	9.5	13.9	10.7	7.6	5.5	33.5	0.0	6.3	25.9	16.9
Cycle Q Clear(g_c), s	7.8	7.2	9.5	13.9	10.7	7.6	5.5	33.5	0.0	6.3	25.9	16.9
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	878	1166	520	1069	1346	600	217	1091		195	1103	620
V/C Ratio(X)	0.37	0.24	0.30	0.55	0.31	0.23	0.52	0.90		0.66	0.73	0.46
Avail Cap(c_a), veh/h	1275	1166	520	1290	1346	600	351	1091		248	1103	620
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	31.3	32.1	21.8	28.0	27.1	30.9	42.6	0.0	32.9	39.4	28.9
Incr Delay (d2), s/veh	0.1	0.5	1.5	0.2	0.6	0.9	0.7	11.6	0.0	1.9	4.3	2.4
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(50%),veh/ln	3.2	3.2	3.8	5.6	4.6	3.0	2.4	16.2	0.0	2.7	11.7	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.9	31.8	33.6	22.0	28.6	27.9	31.6	54.2	0.0	34.8	43.7	31.3
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	C
Approach Vol, veh/h		755			1151			1094			1217	
Approach Delay, s/veh		29.2			25.1			51.9			39.9	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.8	48.0	13.2	45.0	15.3	54.5	12.5	45.7
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	42.0	12.0	39.0	25.0	42.0	17.0	34.0
Max Q Clear Time (g_c+I1), s	15.9	11.5	8.3	35.5	9.8	12.7	7.5	27.9
Green Ext Time (p_c), s	0.9	2.3	0.0	2.0	0.5	3.3	0.1	3.1

Intersection Summary	
HCM 6th Ctrl Delay	37.0
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	82	235	216	20	247	180	56	362	13
v/c Ratio	0.09	0.40	0.48	0.42	0.05	0.21	0.19	0.06	0.49	0.02
Control Delay	25.4	43.0	27.6	28.4	20.5	26.6	3.6	19.0	28.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	43.0	27.6	28.4	20.5	26.6	3.6	19.0	28.8	0.0
Queue Length 50th (ft)	7	34	82	62	5	46	0	7	115	0
Queue Length 95th (ft)	26	55	183	36	17	112	8	32	#445	0
Internal Link Dist (ft)		538		1917		1338			851	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	445	436	493	549	549	1204	965	1163	735	709
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.19	0.48	0.39	0.04	0.21	0.19	0.05	0.49	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	30	15	167	25	86	10	188	119	53	311	10
Future Volume (vph)	15	30	15	167	25	86	10	188	119	53	311	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.96		1.00	0.92		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)	1763	1788		1752	1674		1770	3539	1567	3388	1845	1568
Flt Permitted	0.62	1.00		0.46	1.00		0.43	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	1156	1788		841	1674		803	3539	1567	1959	1845	1568
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	22	60	22	235	100	116	20	247	180	56	362	13
RTOR Reduction (vph)	0	10	0	0	26	0	0	0	86	0	0	8
Lane Group Flow (vph)	22	72	0	235	190	0	20	247	94	56	362	5
Confl. Peds. (#/hr)	2					2			8	8		
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	11.6	9.2		32.5	25.1		33.4	31.2	49.5	39.0	34.0	34.0
Effective Green, g (s)	11.6	9.2		32.5	25.1		33.4	31.2	49.5	39.0	34.0	34.0
Actuated g/C Ratio	0.12	0.10		0.34	0.26		0.35	0.33	0.52	0.41	0.36	0.36
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	156	173		463	442		305	1163	817	880	661	561
v/s Ratio Prot	0.00	0.04		c0.10	0.11		0.00	0.07	0.02	c0.00	c0.20	
v/s Ratio Perm	0.01			c0.08			0.02		0.04	0.02		0.00
v/c Ratio	0.14	0.42		0.51	0.43		0.07	0.21	0.11	0.06	0.55	0.01
Uniform Delay, d1	37.0	40.3		23.9	29.0		20.4	23.0	11.6	16.8	24.3	19.6
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	0.4	1.6		0.9	0.7		0.1	0.4	0.1	0.0	3.2	0.0
Delay (s)	37.4	41.9		24.7	29.6		20.5	23.4	11.6	16.8	27.6	19.6
Level of Service	D	D		C	C		C	C	B	B	C	B
Approach Delay (s)		41.0			27.1			18.5			25.9	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	26.5
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

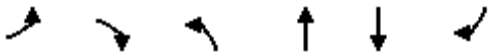
Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	33	275	6	11	473
Future Vol, veh/h	16	33	275	6	11	473
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	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	36	299	7	12	514

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	841	303	0	0	306	0
Stage 1	303	-	-	-	-	-
Stage 2	538	-	-	-	-	-
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	335	737	-	-	1255	-
Stage 1	749	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	332	737	-	-	1255	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	579	-	-	-	-	-

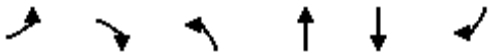
Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	527	1255	-
HCM Lane V/C Ratio	-	-	0.101	0.01	-
HCM Control Delay (s)	-	-	12.6	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	579	149	80	880	1239	296
v/c Ratio	0.72	0.31	0.30	0.27	0.68	0.31
Control Delay	37.0	6.2	42.4	8.1	20.3	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	6.2	42.4	8.1	20.3	2.9
Queue Length 50th (ft)	156	0	22	73	280	0
Queue Length 95th (ft)	181	36	44	112	407	37
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	579	267	3221	1833	962
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.26	0.30	0.27	0.68	0.31

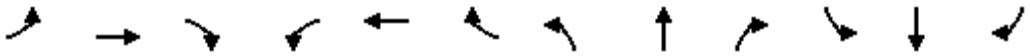
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	492	127	74	880	1140	252
Future Volume (veh/h)	492	127	74	880	1140	252
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	579	149	80	880	1239	296
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	711	326	594	3374	1500	669
Arrive On Green	0.21	0.21	0.17	0.66	0.42	0.42
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	579	149	80	880	1239	296
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	14.4	7.4	1.8	6.4	27.8	11.9
Cycle Q Clear(g_c), s	14.4	7.4	1.8	6.4	27.8	11.9
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	711	326	594	3374	1500	669
V/C Ratio(X)	0.81	0.46	0.13	0.26	0.83	0.44
Avail Cap(c_a), veh/h	1037	476	594	3374	1500	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.48	0.48	1.00	1.00
Uniform Delay (d), s/veh	34.1	31.3	31.6	6.3	23.1	18.5
Incr Delay (d2), s/veh	3.3	1.0	0.0	0.1	5.3	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	6.8	0.7	1.9	11.7	4.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.4	32.3	31.6	6.3	28.4	20.6
LnGrp LOS	D	C	C	A	C	C
Approach Vol, veh/h	728			960	1535	
Approach Delay, s/veh	36.3			8.5	26.9	
Approach LOS	D			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		65.5		24.5	21.5	44.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	7.0	38.0
Max Q Clear Time (g_c+I1), s		8.4		16.4	3.8	29.8
Green Ext Time (p_c), s		6.9		2.1	0.0	5.4

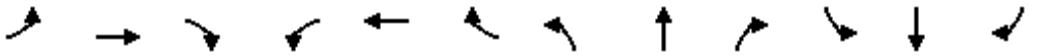
Intersection Summary		
HCM 6th Ctrl Delay		23.5
HCM 6th LOS		C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	180	232	1101	42	182	96	1426	1103	66	32	522	85
v/c Ratio	0.57	0.71	0.69	0.12	0.50	0.06	0.89	0.53	0.04	0.15	0.54	0.11
Control Delay	50.2	56.0	2.4	40.6	46.8	0.1	40.8	10.2	0.0	46.2	34.7	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	56.0	2.4	40.6	46.8	0.1	40.8	10.2	0.0	46.2	34.7	0.9
Queue Length 50th (ft)	57	76	0	12	58	0	238	115	0	10	156	0
Queue Length 95th (ft)	89	113	0	19	89	0	159	134	m0	22	189	6
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	377	389	1599	1598	2063	1599	215	959	838
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.43	0.69	0.11	0.47	0.06	0.89	0.53	0.04	0.15	0.54	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	220	914	25	160	75	713	794	45	25	428	81
Future Volume (veh/h)	178	220	914	25	160	75	713	794	45	25	428	81
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	180	232	0	42	182	0	1426	1103	0	32	522	85
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	296	305		253	260		1468	2180		82	1190	667
Arrive On Green	0.09	0.09	0.00	0.07	0.07	0.00	0.29	0.61	0.00	0.02	0.33	0.33
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	180	232	0	42	182	0	1426	1103	0	32	522	85
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	5.0	6.3	0.0	1.1	5.0	0.0	27.8	17.4	0.0	0.9	11.4	3.3
Cycle Q Clear(g_c), s	5.0	6.3	0.0	1.1	5.0	0.0	27.8	17.4	0.0	0.9	11.4	3.3
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	296	305		253	260		1468	2180		82	1190	667
V/C Ratio(X)	0.61	0.76		0.17	0.70		0.97	0.51		0.39	0.44	0.13
Avail Cap(c_a), veh/h	522	537		348	358		1468	2180		209	1190	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)	0.73	0.73	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	44.7	0.0	43.5	45.3	0.0	35.1	11.1	0.0	48.1	26.1	17.9
Incr Delay (d2), s/veh	0.5	1.1	0.0	0.3	3.6	0.0	17.0	0.8	0.0	3.0	1.2	0.4
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(50%),veh/ln	2.1	2.8	0.0	0.5	2.3	0.0	13.0	6.1	0.0	0.4	4.8	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.7	45.8	0.0	43.8	48.9	0.0	52.0	11.9	0.0	51.1	27.3	18.3
LnGrp LOS	D	D		D	D		D	B		D	C	B
Approach Vol, veh/h		412			224			2529			639	
Approach Delay, s/veh		45.3			47.9			34.5			27.3	
Approach LOS		D			D			C			C	

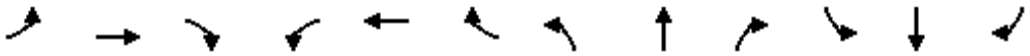
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	66.9		13.5	35.0	39.2		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	19.4		8.3	29.8	13.4		7.0				
Green Ext Time (p_c), s	0.0	8.4		0.2	0.0	2.5		0.3				

Intersection Summary		
HCM 6th Ctrl Delay	35.3	
HCM 6th LOS	D	

Notes

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

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



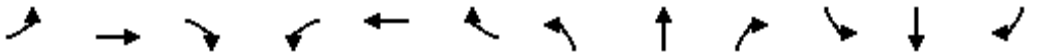
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	105	10	757	258	10	66	1040	1519	200	43	1349	56
v/c Ratio	0.20	0.06	1.52	0.47	0.04	0.18	1.15	0.73	0.20	0.23	1.12	0.04
Control Delay	31.1	42.6	263.4	34.6	42.2	1.1	115.6	14.2	1.7	53.2	91.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	42.6	263.4	34.6	42.2	1.1	115.6	14.2	1.7	53.2	91.7	0.0
Queue Length 50th (ft)	27	6	~441	70	6	0	~414	311	3	14	~534	0
Queue Length 95th (ft)	40	13	#671	104	13	0	86	413	15	m21	#672	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	564	171	497	551	233	360	901	2074	1012	205	1203	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.06	1.52	0.47	0.04	0.18	1.15	0.73	0.20	0.21	1.12	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	5	757	230	5	55	260	1413	180	25	1309	28
Future Volume (veh/h)	79	5	757	230	5	55	260	1413	180	25	1309	28
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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	105	10	0	258	10	66	1040	1519	200	43	1349	0
Peak Hour Factor	0.75	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	449	95		577	167	142	906	2216	988	78	1355	
Arrive On Green	0.05	0.05	0.00	0.09	0.09	0.09	0.26	0.62	0.62	0.02	0.38	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	105	10	0	258	10	66	1040	1519	200	43	1349	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	2.8	0.5	0.0	6.9	0.5	3.9	26.0	28.1	5.5	1.2	37.9	0.0
Cycle Q Clear(g_c), s	2.8	0.5	0.0	6.9	0.5	3.9	26.0	28.1	5.5	1.2	37.9	0.0
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	449	95		577	167	142	906	2216	988	78	1355	
V/C Ratio(X)	0.23	0.11		0.45	0.06	0.47	1.15	0.69	0.20	0.55	1.00	
Avail Cap(c_a), veh/h	590	171		580	170	144	906	2216	988	207	1355	
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.8	45.4	0.0	40.1	41.7	43.3	37.0	12.6	8.3	48.4	30.9	0.0
Incr Delay (d2), s/veh	0.3	0.6	0.0	0.7	0.2	2.8	79.7	1.7	0.5	2.2	23.5	0.0
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(50%),veh/ln	1.2	0.3	0.0	3.0	0.2	1.7	20.4	9.8	1.9	0.5	19.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.1	46.0	0.0	40.7	41.9	46.2	116.7	14.4	8.8	50.6	54.3	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	D	
Approach Vol, veh/h		115			334			2759			1392	
Approach Delay, s/veh		42.4			41.8			52.5			54.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	67.9	14.9	11.0	30.0	44.1	11.0	14.9
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	9.0	9.0	26.0	34.0	9.0	9.0
Max Q Clear Time (g_c+I1), s	3.2	30.1	8.9	2.5	28.0	39.9	4.8	5.9
Green Ext Time (p_c), s	0.0	12.7	0.0	0.0	0.0	0.0	0.1	0.1

Intersection Summary	
HCM 6th Ctrl Delay	52.0
HCM 6th LOS	D

Notes

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

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	99	101	708	235	1243	1929	459
v/c Ratio	0.57	0.58	0.44	0.84	0.45	0.62	0.40
Control Delay	54.8	55.1	0.9	48.4	5.2	9.1	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	54.8	55.1	0.9	48.4	5.4	9.1	0.7
Queue Length 50th (ft)	64	65	0	135	92	161	2
Queue Length 95th (ft)	114	46	0	186	198	m147	m1
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	325	1599	507	2751	3126	1149
Starvation Cap Reductn	0	0	0	0	644	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.31	0.44	0.46	0.59	0.62	0.40

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	5	637	200	1156	0	0	1852	404
Future Volume (vph)	0	0	0	170	5	637	200	1156	0	0	1852	404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1713	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.07	1.00			1.00	1.00
Satd. Flow (perm)				1698	1713	1599	122	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.38	0.90	0.85	0.93	0.92	0.92	0.96	0.88
Adj. Flow (vph)	0	0	0	187	13	708	235	1243	0	0	1929	459
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	177
Lane Group Flow (vph)	0	0	0	99	101	708	235	1243	0	0	1929	282
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.3	10.3	100.0	77.7	77.7			61.4	61.4
Effective Green, g (s)				10.3	10.3	100.0	77.7	77.7			61.4	61.4
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.61	0.61
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				174	176	1599	281	2749			3122	971
v/s Ratio Prot							c0.09	0.35			0.38	
v/s Ratio Perm				0.06	0.06	c0.44	c0.56					0.18
v/c Ratio				0.57	0.57	0.44	0.84	0.45			0.62	0.29
Uniform Delay, d1				42.7	42.8	0.0	26.6	3.8			12.0	9.1
Progression Factor				1.00	1.00	1.00	1.26	1.13			0.67	0.48
Incremental Delay, d2				2.5	2.8	0.9	15.1	0.4			0.1	0.1
Delay (s)				45.3	45.6	0.9	48.6	4.8			8.1	4.4
Level of Service				D	D	A	D	A			A	A
Approach Delay (s)		0.0			10.7			11.7			7.4	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

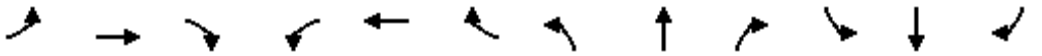


Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	209	213	241	1029	171	1199	928
v/c Ratio	0.79	0.80	0.16	0.66	0.22	1.52	0.36
Control Delay	61.1	62.0	0.2	24.7	3.4	273.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	62.0	0.2	24.7	3.4	273.4	6.1
Queue Length 50th (ft)	134	136	0	265	0	~581	67
Queue Length 95th (ft)	211	109	0	336	17	#692	80
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1557	792	787	2545
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.68	0.16	0.66	0.22	1.52	0.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	358	10	190	0	0	0	0	988	125	1175	891	0
Future Volume (vph)	358	10	190	0	0	0	0	988	125	1175	891	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1660	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1660	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.89	0.50	0.79	0.92	0.92	0.92	0.92	0.96	0.73	0.98	0.96	0.92
Adj. Flow (vph)	402	20	241	0	0	0	0	1029	171	1199	928	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	96	0	0	0
Lane Group Flow (vph)	209	213	241	0	0	0	0	1029	75	1199	928	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	16.1	16.1	100.0					44.0	44.0	22.9	71.9	
Effective Green, g (s)	16.1	16.1	100.0					44.0	44.0	22.9	71.9	
Actuated g/C Ratio	0.16	0.16	1.00					0.44	0.44	0.23	0.72	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	265	267	1553					1557	696	786	2544	
v/s Ratio Prot								c0.29		c0.35	0.26	
v/s Ratio Perm	0.13	0.13	0.16						0.05			
v/c Ratio	0.79	0.80	0.16					0.66	0.11	1.53	0.36	
Uniform Delay, d1	40.3	40.4	0.0					22.1	16.5	38.5	5.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.16	1.00	
Incremental Delay, d2	13.3	14.3	0.2					2.2	0.3	241.6	0.3	
Delay (s)	53.7	54.6	0.2					24.3	16.8	286.3	5.7	
Level of Service	D	D	A					C	B	F	A	
Approach Delay (s)		34.5			0.0			23.3			163.9	
Approach LOS		C			A			C			F	

Intersection Summary			
HCM 2000 Control Delay	100.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	5.1
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	367	364	555
Demand Flow Rate, veh/h	375	371	566
Vehicles Circulating, veh/h	352	140	174
Vehicles Exiting, veh/h	388	587	337
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	5.4	4.3	5.5
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.469	0.531	0.469	0.531	0.622	0.378
Follow-Up Headway, s	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
Entry Flow, veh/h	176	199	174	197	352	214
Cap Entry Lane, veh/h	976	1053	1187	1261	1150	1225
Entry HV Adj Factor	0.981	0.978	0.980	0.980	0.980	0.981
Flow Entry, veh/h	173	195	171	193	345	210
Cap Entry, veh/h	958	1030	1156	1228	1127	1202
V/C Ratio	0.180	0.189	0.148	0.157	0.306	0.175
Control Delay, s/veh	5.5	5.3	4.4	4.3	6.1	4.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	1

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	150	5	50	189	18	154
Future Vol, veh/h	150	5	50	189	18	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	214	5	54	270	20	167

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	219	0	595	217
Stage 1	-	-	-	-	217	-
Stage 2	-	-	-	-	378	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1344	-	465	820
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	691	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1344	-	446	820
Mov Cap-2 Maneuver	-	-	-	-	446	-
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	663	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	754	-	-	1344	-
HCM Lane V/C Ratio	0.248	-	-	0.04	-
HCM Control Delay (s)	11.3	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	6.2
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	430	421	388
Demand Flow Rate, veh/h	443	434	400
Vehicles Circulating, veh/h	126	34	430
Vehicles Exiting, veh/h	342	796	139
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.6	4.3	7.8
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.290	0.710	0.085	0.915
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	443	126	308	34	366
Cap Entry Lane, veh/h	1213	1377	1377	960	960
Entry HV Adj Factor	0.972	0.968	0.971	0.971	0.970
Flow Entry, veh/h	430	122	299	33	355
Cap Entry, veh/h	1179	1333	1337	932	931
V/C Ratio	0.365	0.092	0.224	0.035	0.381
Control Delay, s/veh	6.6	3.4	4.6	4.2	8.1
LOS	A	A	A	A	A
95th %tile Queue, veh	2	0	1	0	2

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	12	2	13	35	36	6	13	39	113	4	8
Future Vol, veh/h	3	12	2	13	35	36	6	13	39	113	4	8
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	13	2	14	38	39	7	14	42	123	4	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	15	0	0	112	125	14	134	107	58
Stage 1	-	-	-	-	-	-	20	20	-	86	86	-
Stage 2	-	-	-	-	-	-	92	105	-	48	21	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1515	-	-	1596	-	-	863	764	1063	835	781	1005
Stage 1	-	-	-	-	-	-	996	877	-	919	822	-
Stage 2	-	-	-	-	-	-	913	806	-	963	876	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1515	-	-	1596	-	-	845	756	1063	784	772	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	845	756	-	784	772	-
Stage 1	-	-	-	-	-	-	994	875	-	917	815	-
Stage 2	-	-	-	-	-	-	892	799	-	908	874	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	1.1	9.1	10.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	951	1515	-	-	1596	-	-	795
HCM Lane V/C Ratio	0.066	0.002	-	-	0.009	-	-	0.171
HCM Control Delay (s)	9.1	7.4	0	-	7.3	0	-	10.5
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	163	0	0	82	10	0	0	0	30	0	2
Future Vol, veh/h	1	163	0	0	82	10	0	0	0	30	0	2
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	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	1	177	0	0	89	11	0	0	0	33	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	100	0	0	177	0	0	275	279	177	274	274	95
Stage 1	-	-	-	-	-	-	179	179	-	95	95	-
Stage 2	-	-	-	-	-	-	96	100	-	179	179	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1493	-	-	1393	-	-	675	629	863	678	633	962
Stage 1	-	-	-	-	-	-	820	751	-	912	816	-
Stage 2	-	-	-	-	-	-	908	812	-	823	751	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1493	-	-	1393	-	-	673	628	863	677	632	962
Mov Cap-2 Maneuver	-	-	-	-	-	-	673	628	-	677	632	-
Stage 1	-	-	-	-	-	-	819	750	-	911	816	-
Stage 2	-	-	-	-	-	-	906	812	-	822	750	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1493	-	-	1393	-	-	690
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.05
HCM Control Delay (s)	0	7.4	-	-	0	-	-	10.5
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	210	324	87	689
Demand Flow Rate, veh/h	216	334	90	710
Vehicles Circulating, veh/h	700	41	888	93
Vehicles Exiting, veh/h	103	937	28	282
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.5	4.0	7.1	8.8
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.472	0.528	0.254	0.746	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	102	114	85	249	90	710
Cap Entry Lane, veh/h	709	783	1300	1371	668	1312
Entry HV Adj Factor	0.968	0.977	0.966	0.972	0.970	0.970
Flow Entry, veh/h	99	111	82	242	87	689
Cap Entry, veh/h	686	765	1255	1333	648	1273
V/C Ratio	0.144	0.146	0.065	0.182	0.135	0.541
Control Delay, s/veh	6.8	6.2	3.4	4.2	7.1	8.8
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	0	3

Intersection	
Intersection Delay, s/veh	18.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	1	73	222	2	88	23	182	47	33	339	16
Future Vol, veh/h	49	1	73	222	2	88	23	182	47	33	339	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	53	1	79	241	2	96	25	198	51	36	368	17
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	12.2	19.1	15.2	23.4
HCM LOS	B	C	C	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	40%	71%	100%	0%
Vol Thru, %	0%	79%	1%	1%	0%	95%
Vol Right, %	0%	21%	59%	28%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	229	123	312	33	355
LT Vol	23	0	49	222	33	0
Through Vol	0	182	1	2	0	339
RT Vol	0	47	73	88	0	16
Lane Flow Rate	25	249	134	339	36	386
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.052	0.474	0.253	0.608	0.072	0.716
Departure Headway (Hd)	7.516	6.855	6.806	6.456	7.226	6.682
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	476	525	525	560	495	540
Service Time	5.275	4.614	4.875	4.509	4.979	4.435
HCM Lane V/C Ratio	0.053	0.474	0.255	0.605	0.073	0.715
HCM Control Delay	10.7	15.7	12.2	19.1	10.5	24.6
HCM Lane LOS	B	C	B	C	B	C
HCM 95th-tile Q	0.2	2.5	1	4	0.2	5.8

Intersection	
Intersection Delay, s/veh	12.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	1	97	206	1	39	31	211	76	32	85	19
Future Vol, veh/h	61	1	97	206	1	39	31	211	76	32	85	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	66	1	105	224	1	42	34	229	83	35	92	21
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	10.7	13.1	14.2	10.5
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	38%	84%	100%	0%
Vol Thru, %	0%	74%	1%	0%	0%	82%
Vol Right, %	0%	26%	61%	16%	0%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	287	159	246	32	104
LT Vol	31	0	61	206	32	0
Through Vol	0	211	1	1	0	85
RT Vol	0	76	97	39	0	19
Lane Flow Rate	34	312	173	267	35	113
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.062	0.51	0.268	0.427	0.067	0.196
Departure Headway (Hd)	6.585	5.889	5.591	5.754	6.895	6.255
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	543	611	639	623	518	572
Service Time	4.335	3.638	3.652	3.808	4.658	4.017
HCM Lane V/C Ratio	0.063	0.511	0.271	0.429	0.068	0.198
HCM Control Delay	9.8	14.7	10.7	13.1	10.2	10.6
HCM Lane LOS	A	B	B	B	B	B
HCM 95th-tile Q	0.2	2.9	1.1	2.1	0.2	0.7

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	30	12	1	10	6	4	64	1	2	43	4
Future Vol, veh/h	12	30	12	1	10	6	4	64	1	2	43	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	13	33	13	1	11	7	4	70	1	2	47	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.2	7.6	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	22%	6%	4%
Vol Thru, %	93%	56%	59%	88%
Vol Right, %	1%	22%	35%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	54	17	49
LT Vol	4	12	1	2
Through Vol	64	30	10	43
RT Vol	1	12	6	4
Lane Flow Rate	75	59	18	53
Geometry Grp	1	1	1	1
Degree of Util (X)	0.086	0.067	0.021	0.061
Departure Headway (Hd)	4.11	4.08	4.018	4.101
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	866	869	879	867
Service Time	2.162	2.148	2.095	2.157
HCM Lane V/C Ratio	0.087	0.068	0.02	0.061
HCM Control Delay	7.6	7.4	7.2	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.2	0.1	0.2

Intersection	
Int Delay, s/veh	2

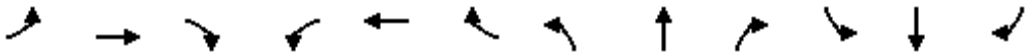
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	30	10	302	106	18
Future Vol, veh/h	55	30	10	302	106	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	60	33	11	328	115	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	475	125	135	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	546	923	1443	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	542	923	1443	-	-	-
Mov Cap-2 Maneuver	542	-	-	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	711	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.2	0
HCM LOS	B		

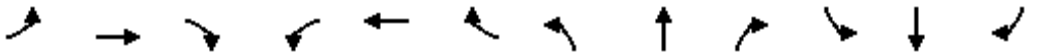
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1443	-	634	-	-
HCM Lane V/C Ratio	0.008	-	0.146	-	-
HCM Control Delay (s)	7.5	-	11.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2040 + Project



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	43	20	49	395	47	174	125	935	521	213	729	54
v/c Ratio	0.21	0.19	0.03	0.70	0.21	0.50	0.47	0.49	0.48	0.61	0.25	0.06
Control Delay	56.0	57.3	0.0	53.8	46.9	11.4	58.5	20.4	3.5	58.9	15.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	57.3	0.0	53.8	46.9	11.4	58.5	20.4	3.5	58.9	15.1	0.1
Queue Length 50th (ft)	16	15	0	147	35	0	48	207	0	82	90	0
Queue Length 95th (ft)	36	41	0	196	64	60	78	374	66	120	164	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	277	190	1595	864	507	551	357	1921	1084	382	2884	974
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.11	0.03	0.46	0.09	0.32	0.35	0.49	0.48	0.56	0.25	0.06

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	18	45	363	43	160	115	860	479	196	700	50
Future Volume (veh/h)	40	18	45	363	43	160	115	860	479	196	700	50
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	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	20	0	395	47	0	125	935	0	213	729	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.92
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	205	85		469	228		198	1950		271	2909	
Arrive On Green	0.06	0.04	0.00	0.14	0.12	0.00	0.06	0.55	0.00	0.08	0.57	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	43	20	0	395	47	0	125	935	0	213	729	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.4	1.2	0.0	13.5	2.7	0.0	4.2	19.3	0.0	7.3	8.6	0.0
Cycle Q Clear(g_c), s	1.4	1.2	0.0	13.5	2.7	0.0	4.2	19.3	0.0	7.3	8.6	0.0
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	205	85		469	228		198	1950		271	2909	
V/C Ratio(X)	0.21	0.24		0.84	0.21		0.63	0.48		0.79	0.25	
Avail Cap(c_a), veh/h	278	190		871	510		360	1950		360	2909	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.9	55.4	0.0	50.5	47.4	0.0	55.3	16.6	0.0	54.3	13.0	0.0
Incr Delay (d2), s/veh	0.4	1.4	0.0	3.2	0.4	0.0	2.4	0.8	0.0	7.1	0.2	0.0
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(50%),veh/ln	0.6	0.6	0.0	5.9	1.3	0.0	1.9	7.8	0.0	3.4	3.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.2	56.8	0.0	53.7	47.8	0.0	57.7	17.4	0.0	61.4	13.2	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		63			442			1060			942	
Approach Delay, s/veh		55.0			53.1			22.2			24.1	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	71.8	21.9	11.3	12.4	74.4	12.5	20.7
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	9.3	21.3	15.5	3.2	6.2	10.6	3.4	4.7
Green Ext Time (p_c), s	0.2	10.9	0.9	0.0	0.1	10.1	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	29.2
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	440	509	136	429	300	168
v/c Ratio	0.57	0.38	0.20	0.24	0.27	0.11
Control Delay	30.1	1.4	14.7	16.2	33.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	1.4	14.7	16.2	33.9	0.1
Queue Length 50th (ft)	254	0	25	92	80	0
Queue Length 95th (ft)	368	32	42	124	#185	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	777	1342	1200	1822	1108	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.38	0.11	0.24	0.27	0.11

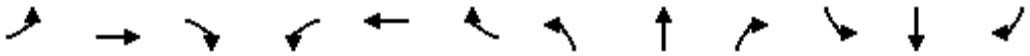
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	405	468	125	395	276	155
Future Volume (vph)	405	468	125	395	276	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.28	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1015	3505	3400	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	440	509	136	429	300	168
RTOR Reduction (vph)	0	145	0	0	0	0
Lane Group Flow (vph)	440	364	136	429	300	168
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	46.6	85.7	58.4	58.4	39.1	120.0
Effective Green, g (s)	46.6	85.7	58.4	58.4	39.1	120.0
Actuated g/C Ratio	0.39	0.71	0.49	0.49	0.33	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	716	1119	629	1705	1107	1568
v/s Ratio Prot	c0.24	c0.11	0.01	c0.12	0.09	
v/s Ratio Perm		0.13	0.09			c0.11
v/c Ratio	0.61	0.32	0.22	0.25	0.27	0.11
Uniform Delay, d1	29.5	6.4	18.8	18.0	29.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.9	0.8	0.1	0.4	0.6	0.1
Delay (s)	33.4	7.2	18.9	18.4	30.5	0.1
Level of Service	C	A	B	B	C	A
Approach Delay (s)	19.3			18.5	19.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	287	168	158	496	252	98	92	934	658	114	1026	221
v/c Ratio	0.29	0.15	0.26	0.43	0.21	0.16	0.46	0.93	0.42	0.53	0.99	0.27
Control Delay	17.1	29.3	6.0	18.2	26.3	3.7	28.3	55.8	0.8	30.2	65.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	29.3	6.0	18.2	26.3	3.7	28.3	55.8	0.8	30.2	65.8	3.6
Queue Length 50th (ft)	56	45	0	104	65	0	39	337	0	49	379	0
Queue Length 95th (ft)	85	78	50	147	103	26	77	#525	0	93	#584	45
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1285	1101	602	1235	1214	620	261	1002	1583	308	1036	945
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.15	0.26	0.40	0.21	0.16	0.35	0.93	0.42	0.37	0.99	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	155	145	456	232	90	85	878	605	105	944	203
Future Volume (veh/h)	270	155	145	456	232	90	85	878	605	105	944	203
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	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	287	168	158	496	252	98	92	934	0	114	1026	221
Peak Hour Factor	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	1035	1148	512	1118	1268	565	169	1037		202	1081	605
Arrive On Green	0.08	0.32	0.32	0.12	0.36	0.36	0.05	0.29	0.00	0.06	0.30	0.30
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	287	168	158	496	252	98	92	934	0	114	1026	221
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	5.7	3.5	7.9	9.9	5.2	4.5	3.8	26.8	0.0	4.7	29.7	10.6
Cycle Q Clear(g_c), s	5.7	3.5	7.9	9.9	5.2	4.5	3.8	26.8	0.0	4.7	29.7	10.6
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	1035	1148	512	1118	1268	565	169	1037		202	1081	605
V/C Ratio(X)	0.28	0.15	0.31	0.44	0.20	0.17	0.54	0.90		0.57	0.95	0.37
Avail Cap(c_a), veh/h	1424	1148	512	1355	1268	565	279	1037		346	1081	605
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	25.7	27.2	18.7	23.2	23.0	28.5	36.1	0.0	27.8	36.2	23.8
Incr Delay (d2), s/veh	0.1	0.3	1.6	0.1	0.4	0.7	1.0	12.3	0.0	0.9	17.6	1.7
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(50%),veh/ln	2.3	1.5	3.1	3.8	2.2	1.7	1.6	12.9	0.0	2.0	15.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	25.9	28.7	18.8	23.6	23.7	29.5	48.4	0.0	28.7	53.8	25.5
LnGrp LOS	C	C	C	B	C	C	C	D		C	D	C
Approach Vol, veh/h		613			846			1026			1361	
Approach Delay, s/veh		24.4			20.8			46.7			47.1	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	40.0	11.5	37.0	13.2	44.4	10.4	38.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	12.0	32.0
Max Q Clear Time (g_c+I1), s	11.9	9.9	6.7	28.8	7.7	7.2	5.8	31.7
Green Ext Time (p_c), s	0.7	1.5	0.1	0.1	0.4	1.9	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	37.6
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	38	310	208	11	167	783	458	205	21
v/c Ratio	0.10	0.21	0.86	0.51	0.02	0.14	0.65	0.35	0.21	0.02
Control Delay	29.4	31.0	54.4	24.9	19.2	26.5	4.8	15.6	19.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	31.0	54.4	24.9	19.2	26.5	4.8	15.6	19.6	0.1
Queue Length 50th (ft)	8	9	130	42	2	30	0	57	50	0
Queue Length 95th (ft)	37	24	#476	25	20	99	0	167	227	0
Internal Link Dist (ft)		538		1917		1338			851	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	373	458	359	514	734	1222	1196	1371	968	890
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.08	0.86	0.40	0.01	0.14	0.65	0.33	0.21	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	10	15	273	20	91	10	154	587	353	189	15
Future Volume (vph)	20	10	15	273	20	91	10	154	587	353	189	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.93		1.00	0.89		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)	1787	1708		1701	1590		1770	3539	1565	3422	1863	1583
Flt Permitted	0.73	1.00		0.38	1.00		0.63	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	1368	1708		687	1590		1172	3539	1565	2035	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.92	0.75	0.77	0.92	0.72
Adj. Flow (vph)	22	19	19	310	51	157	11	167	783	458	205	21
RTOR Reduction (vph)	0	18	0	0	79	0	0	0	384	0	0	11
Lane Group Flow (vph)	22	20	0	310	129	0	11	167	399	458	205	10
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	8.0	5.5		25.5	18.0		35.5	34.7	49.7	51.0	45.2	45.2
Effective Green, g (s)	8.0	5.5		25.5	18.0		35.5	34.7	49.7	51.0	45.2	45.2
Actuated g/C Ratio	0.08	0.06		0.26	0.18		0.36	0.36	0.51	0.52	0.46	0.46
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	122	96		335	293		431	1258	796	1223	862	733
v/s Ratio Prot	0.00	0.01		c0.14	0.08		0.00	0.05	c0.08	c0.04	0.11	
v/s Ratio Perm	0.01			c0.10			0.01		0.18	0.15		0.01
v/c Ratio	0.18	0.21		0.93	0.44		0.03	0.13	0.50	0.37	0.24	0.01
Uniform Delay, d1	41.6	44.0		33.1	35.3		19.9	21.3	15.8	13.0	15.8	14.2
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	0.7	1.1		30.5	1.1		0.0	0.2	0.5	0.2	0.7	0.0
Delay (s)	42.4	45.1		63.5	36.4		19.9	21.5	16.3	13.2	16.5	14.2
Level of Service	D	D		E	D		B	C	B	B	B	B
Approach Delay (s)		44.1			52.6			17.2			14.2	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	97.6	Sum of lost time (s)	26.5
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

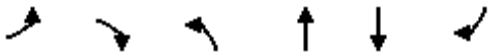
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	9	777	18	44	31
Future Vol, veh/h	4	9	777	18	44	31
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	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	10	883	20	50	35

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1028	893	0	0	903	0
Stage 1	893	-	-	-	-	-
Stage 2	135	-	-	-	-	-
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	259	340	-	-	753	-
Stage 1	400	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	340	-	-	753	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	832	-	-	-	-	-

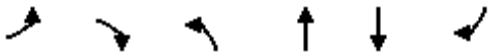
Approach	WB	NB	SB
HCM Control Delay, s	17.5	0	5.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	302	753	-
HCM Lane V/C Ratio	-	-	0.047	0.066	-
HCM Control Delay (s)	-	-	17.5	10.1	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.1	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	492	65	168	1155	978	741
v/c Ratio	0.58	0.15	0.55	0.37	0.60	0.59
Control Delay	31.8	7.2	46.6	9.5	20.9	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.8	7.2	46.6	9.5	20.9	5.8
Queue Length 50th (ft)	123	0	47	114	217	113
Queue Length 95th (ft)	153	26	80	155	301	161
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	520	305	3140	1634	1240
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.13	0.55	0.37	0.60	0.60

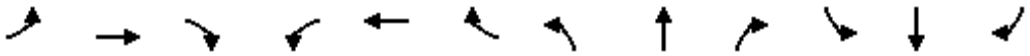
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	418	55	155	1155	900	630
Future Volume (veh/h)	418	55	155	1155	900	630
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	492	65	168	1155	978	741
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	614	282	729	3517	1461	933
Arrive On Green	0.18	0.18	0.21	0.69	0.41	0.41
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	492	65	168	1155	978	741
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	12.3	3.2	3.6	8.2	20.1	32.5
Cycle Q Clear(g_c), s	12.3	3.2	3.6	8.2	20.1	32.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	614	282	729	3517	1461	933
V/C Ratio(X)	0.80	0.23	0.23	0.33	0.67	0.79
Avail Cap(c_a), veh/h	1037	476	729	3517	1461	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.66	0.66	1.00	1.00
Uniform Delay (d), s/veh	35.5	31.7	29.4	5.6	21.5	14.3
Incr Delay (d2), s/veh	2.5	0.4	0.1	0.2	2.5	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	3.0	1.5	2.3	8.2	17.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.9	32.1	29.5	5.8	24.0	21.2
LnGrp LOS	D	C	C	A	C	C
Approach Vol, veh/h	557			1323	1719	
Approach Delay, s/veh	37.3			8.8	22.8	
Approach LOS	D			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		68.0		22.0	25.0	43.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	8.0	37.0
Max Q Clear Time (g_c+I1), s		10.2		14.3	5.6	34.5
Green Ext Time (p_c), s		9.8		1.7	0.1	2.0

Intersection Summary	
HCM 6th Ctrl Delay	19.9
HCM 6th LOS	B

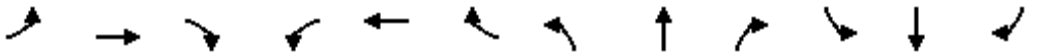


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	77	136	830	65	223	54	992	503	27	49	848	214
v/c Ratio	0.35	0.60	0.52	0.18	0.59	0.03	0.80	0.25	0.02	0.24	0.68	0.26
Control Delay	48.4	56.0	1.2	41.4	49.2	0.0	44.5	5.5	0.0	47.7	32.2	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	56.0	1.2	41.4	49.2	0.0	44.5	5.5	0.0	47.7	32.2	7.1
Queue Length 50th (ft)	24	45	0	19	71	0	189	25	0	15	240	24
Queue Length 95th (ft)	46	75	0	40	111	0	212	37	m0	34	#375	73
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	377	388	1568	1680	2025	1568	211	1255	880
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.39	0.52	0.17	0.57	0.03	0.59	0.25	0.02	0.23	0.68	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	125	764	60	205	50	913	463	25	45	780	197
Future Volume (veh/h)	71	125	764	60	205	50	913	463	25	45	780	197
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	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	77	136	0	65	223	0	992	503	0	49	848	214
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	200	206		290	298		1147	2178		102	1436	732
Arrive On Green	0.06	0.06	0.00	0.08	0.08	0.00	0.23	0.62	0.00	0.03	0.41	0.41
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	77	136	0	65	223	0	992	503	0	49	848	214
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	2.1	3.7	0.0	1.8	6.2	0.0	19.1	6.4	0.0	1.4	18.8	8.4
Cycle Q Clear(g_c), s	2.1	3.7	0.0	1.8	6.2	0.0	19.1	6.4	0.0	1.4	18.8	8.4
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	200	206		290	298		1147	2178		102	1436	732
V/C Ratio(X)	0.38	0.66		0.22	0.75		0.87	0.23		0.48	0.59	0.29
Avail Cap(c_a), veh/h	346	355		343	353		1694	2178		206	1436	732
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)	0.80	0.80	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.4	46.1	0.0	42.7	44.7	0.0	37.0	8.5	0.0	47.8	23.1	16.5
Incr Delay (d2), s/veh	0.4	1.1	0.0	0.4	7.1	0.0	2.3	0.2	0.0	3.5	1.8	1.0
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(50%),veh/ln	0.9	1.6	0.0	0.8	3.0	0.0	7.6	2.1	0.0	0.6	7.6	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	47.2	0.0	43.1	51.9	0.0	39.3	8.8	0.0	51.2	24.9	17.6
LnGrp LOS	D	D		D	D		D	A		D	C	B
Approach Vol, veh/h		213			288			1495			1111	
Approach Delay, s/veh		46.7			49.9			29.0			24.7	
Approach LOS		D			D			C			C	

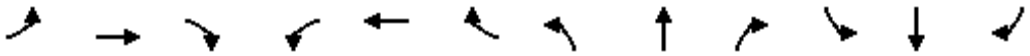
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	67.8		10.8	29.0	46.7		13.5				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		10.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.4	8.4		5.7	21.1	20.8		8.2				
Green Ext Time (p_c), s	0.0	3.3		0.1	1.9	1.8		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		30.6
HCM 6th LOS		C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



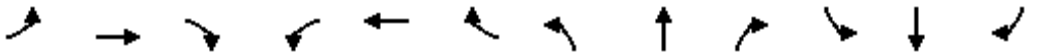
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	46	3	832	271	20	71	958	1411	216	71	1494	170
v/c Ratio	0.16	0.03	0.52	0.51	0.12	0.23	0.98	0.64	0.20	0.34	1.12	0.11
Control Delay	39.5	44.0	1.2	39.6	43.4	1.7	54.5	11.1	1.2	57.3	89.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	44.0	1.2	39.6	43.4	1.7	54.5	11.1	1.2	57.3	89.2	0.1
Queue Length 50th (ft)	14	2	0	77	12	0	~358	284	1	24	~595	0
Queue Length 95th (ft)	14	4	0	110	9	0	m#467	m352	m5	m41	#736	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	295	133	1615	543	202	337	982	2192	1061	217	1331	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.02	0.52	0.50	0.10	0.21	0.98	0.64	0.20	0.33	1.12	0.11

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	1	208	255	5	65	824	1298	205	65	1449	85
Future Volume (veh/h)	23	1	208	255	5	65	824	1298	205	65	1449	85
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	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	46	3	0	271	20	71	958	1411	216	71	1494	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.92	0.86	0.92	0.95	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	446	93		599	174	148	754	2119	945	120	1467	
Arrive On Green	0.05	0.05	0.00	0.10	0.09	0.09	0.22	0.60	0.60	0.03	0.42	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	46	3	0	271	20	71	958	1411	216	71	1494	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.2	0.2	0.0	7.3	1.0	4.3	22.0	26.6	6.4	2.0	41.6	0.0
Cycle Q Clear(g_c), s	1.2	0.2	0.0	7.3	1.0	4.3	22.0	26.6	6.4	2.0	41.6	0.0
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	446	93		599	174	148	754	2119	945	120	1467	
V/C Ratio(X)	0.10	0.03		0.45	0.11	0.48	1.27	0.67	0.23	0.59	1.02	
Avail Cap(c_a), veh/h	516	133		650	204	173	754	2119	945	206	1467	
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.1	45.3	0.0	39.3	41.5	43.0	39.0	13.3	9.2	47.6	29.2	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.6	0.3	2.9	131.9	1.7	0.6	1.7	28.3	0.0
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(50%),veh/ln	0.5	0.1	0.0	3.1	0.5	1.8	22.6	9.3	2.2	0.9	21.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.3	45.5	0.0	40.0	41.8	45.9	170.9	14.9	9.8	49.3	57.5	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	F	
Approach Vol, veh/h		49			362			2585			1565	
Approach Delay, s/veh		41.5			41.2			72.3			57.1	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	66.1	15.5	10.9	26.0	47.6	11.0	15.4
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	11.0	7.0	22.0	38.0	7.0	11.0
Max Q Clear Time (g_c+I1), s	4.0	28.6	9.3	2.2	24.0	43.6	3.2	6.3
Green Ext Time (p_c), s	0.0	12.1	0.2	0.0	0.0	0.0	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	64.3
HCM 6th LOS	E

Notes

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

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	100	101	1464	234	1054	1524	549
v/c Ratio	0.58	0.58	0.93	0.70	0.38	0.49	0.46
Control Delay	55.3	55.3	13.3	36.3	3.8	7.6	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.3	55.3	13.3	36.3	3.8	7.6	1.1
Queue Length 50th (ft)	65	65	0	127	51	102	3
Queue Length 95th (ft)	115	116	#120	205	115	m113	m5
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	363	2747	3142	1184
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.33	0.93	0.64	0.38	0.49	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	15	1347	215	980	0	0	1402	505
Future Volume (vph)	0	0	0	170	15	1347	215	980	0	0	1402	505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1682	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.12	1.00			1.00	1.00
Satd. Flow (perm)				1665	1682	1568	225	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	185	16	1464	234	1054	0	0	1524	549
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	206
Lane Group Flow (vph)	0	0	0	100	101	1464	234	1054	0	0	1524	343
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.4	10.4	100.0	77.6	77.6			62.4	62.4
Effective Green, g (s)				10.4	10.4	100.0	77.6	77.6			62.4	62.4
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.62	0.62
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				173	174	1568	332	2746			3142	978
v/s Ratio Prot							0.07	0.30			0.30	
v/s Ratio Perm				0.06	0.06	c0.93	0.47					0.22
v/c Ratio				0.58	0.58	0.93	0.70	0.38			0.49	0.35
Uniform Delay, d1				42.7	42.7	0.0	9.6	3.6			10.1	9.0
Progression Factor				1.00	1.00	1.00	2.78	0.88			0.66	0.40
Incremental Delay, d2				2.9	3.2	11.6	4.7	0.3			0.3	0.5
Delay (s)				45.6	45.9	11.6	31.4	3.5			6.9	4.1
Level of Service				D	D	B	C	A			A	A
Approach Delay (s)		0.0			15.7			8.6			6.2	
Approach LOS		A			B			A			A	

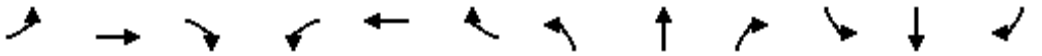
Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	198	198	201	920	65	575	1157
v/c Ratio	0.78	0.77	0.13	0.54	0.08	0.87	0.46
Control Delay	60.4	59.8	0.2	20.7	2.3	56.2	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	59.8	0.2	20.7	2.3	56.2	5.2
Queue Length 50th (ft)	128	127	0	222	0	168	68
Queue Length 95th (ft)	204	203	0	290	16	#190	78
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1697	804	692	2540
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.63	0.13	0.54	0.08	0.83	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	344	20	185	0	0	0	0	846	60	529	1064	0
Future Volume (vph)	344	20	185	0	0	0	0	846	60	529	1064	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1662	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1662	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	374	22	201	0	0	0	0	920	65	575	1157	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	34	0	0	0
Lane Group Flow (vph)	198	198	201	0	0	0	0	920	31	575	1157	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.5	15.5	100.0					48.0	48.0	19.5	72.5	
Effective Green, g (s)	15.5	15.5	100.0					48.0	48.0	19.5	72.5	
Actuated g/C Ratio	0.16	0.16	1.00					0.48	0.48	0.20	0.72	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	255	257	1553					1698	759	663	2541	
v/s Ratio Prot								c0.26		c0.17	0.33	
v/s Ratio Perm	c0.12	0.12	0.13						0.02			
v/c Ratio	0.78	0.77	0.13					0.54	0.04	0.87	0.46	
Uniform Delay, d1	40.6	40.5	0.0					18.3	13.8	39.0	5.6	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.10	0.77	
Incremental Delay, d2	12.6	12.2	0.2					1.2	0.1	10.2	0.5	
Delay (s)	53.2	52.7	0.2					19.5	13.9	53.2	4.9	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s)		35.2			0.0			19.1			20.9	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	6.0
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	454	606	407
Demand Flow Rate, veh/h	458	618	415
Vehicles Circulating, veh/h	244	310	155
Vehicles Exiting, veh/h	326	392	773
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	5.5	7.2	4.6
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.677	0.323	0.251	0.749	0.588	0.412
Follow-Up Headway, s	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
Entry Flow, veh/h	310	148	155	463	244	171
Cap Entry Lane, veh/h	1078	1154	1015	1091	1170	1245
Entry HV Adj Factor	0.990	0.990	0.980	0.981	0.980	0.982
Flow Entry, veh/h	307	147	152	454	239	168
Cap Entry, veh/h	1068	1143	994	1069	1146	1223
V/C Ratio	0.287	0.128	0.153	0.425	0.208	0.137
Control Delay, s/veh	6.2	4.3	5.0	8.0	5.0	4.1
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	0	1	2	1	0

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	357	18	199	277	5	47
Future Vol, veh/h	357	18	199	277	5	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	510	20	216	396	5	51

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	530	0	1348	520
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	828	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1032	-	166	554
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	427	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1032	-	131	554
Mov Cap-2 Maneuver	-	-	-	-	131	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	338	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.3	14.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	423	-	-	1032	-
HCM Lane V/C Ratio	0.134	-	-	0.21	-
HCM Control Delay (s)	14.8	-	-	9.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.8	-

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	566	996	98
Demand Flow Rate, veh/h	583	1026	101
Vehicles Circulating, veh/h	339	10	547
Vehicles Exiting, veh/h	697	638	375
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	12.2	6.6	5.2
Approach LOS	B	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.330	0.670	0.099	0.901
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	583	339	687	10	91
Cap Entry Lane, veh/h	977	1407	1407	863	863
Entry HV Adj Factor	0.971	0.971	0.971	1.000	0.967
Flow Entry, veh/h	566	329	667	10	88
Cap Entry, veh/h	948	1366	1366	863	835
V/C Ratio	0.597	0.241	0.488	0.012	0.105
Control Delay, s/veh	12.2	4.7	7.6	4.3	5.3
LOS	B	A	A	A	A
95th %tile Queue, veh	4	1	3	0	0

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	39	16	84	9	104	3	11	16	27	62	2
Future Vol, veh/h	7	39	16	84	9	104	3	11	16	27	62	2
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	42	17	91	10	113	3	12	17	29	67	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	123	0	0	59	0	0	350	372	51	330	324	67
Stage 1	-	-	-	-	-	-	67	67	-	249	249	-
Stage 2	-	-	-	-	-	-	283	305	-	81	75	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1458	-	-	1538	-	-	603	557	1014	621	592	994
Stage 1	-	-	-	-	-	-	941	837	-	753	699	-
Stage 2	-	-	-	-	-	-	722	660	-	925	831	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1458	-	-	1538	-	-	517	518	1014	568	551	994
Mov Cap-2 Maneuver	-	-	-	-	-	-	517	518	-	568	551	-
Stage 1	-	-	-	-	-	-	935	832	-	748	654	-
Stage 2	-	-	-	-	-	-	605	618	-	891	826	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	3.2	10.4	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	701	1458	-	-	1538	-	-	561
HCM Lane V/C Ratio	0.047	0.005	-	-	0.059	-	-	0.176
HCM Control Delay (s)	10.4	7.5	0	-	7.5	0	-	12.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.2	-	-	0.6

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	2	70	10	82	194	30	2	1	13	8	1	1
Future Vol, veh/h	2	70	10	82	194	30	2	1	13	8	1	1
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	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	2	76	11	89	211	33	2	1	14	9	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	244	0	0	87	0	0	493	508	82	499	497	228
Stage 1	-	-	-	-	-	-	86	86	-	406	406	-
Stage 2	-	-	-	-	-	-	407	422	-	93	91	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1322	-	-	1503	-	-	485	468	975	482	475	811
Stage 1	-	-	-	-	-	-	919	824	-	622	598	-
Stage 2	-	-	-	-	-	-	619	588	-	914	820	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1322	-	-	1503	-	-	461	439	975	452	446	811
Mov Cap-2 Maneuver	-	-	-	-	-	-	461	439	-	452	446	-
Stage 1	-	-	-	-	-	-	917	822	-	621	563	-
Stage 2	-	-	-	-	-	-	580	553	-	898	818	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	2	9.6	12.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	802	1322	-	-	1503	-	-	472
HCM Lane V/C Ratio	0.022	0.002	-	-	0.059	-	-	0.023
HCM Control Delay (s)	9.6	7.7	-	-	7.5	-	-	12.8
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.2	-	-	0.1

Intersection	
Intersection Delay, s/veh	5.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	99	907	16	193
Demand Flow Rate, veh/h	102	934	16	199
Vehicles Circulating, veh/h	242	30	273	385
Vehicles Exiting, veh/h	342	259	71	579
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	6.0	3.3	5.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.471	0.529	0.411	0.589	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	48	54	384	550	16	199
Cap Entry Lane, veh/h	1080	1156	1313	1384	1126	1024
Entry HV Adj Factor	0.968	0.971	0.972	0.971	0.993	0.972
Flow Entry, veh/h	46	52	373	534	16	193
Cap Entry, veh/h	1046	1122	1276	1344	1118	995
V/C Ratio	0.044	0.047	0.292	0.397	0.014	0.194
Control Delay, s/veh	3.8	3.6	5.4	6.4	3.3	5.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	2	0	1

Intersection	
Intersection Delay, s/veh	13.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	2	19	58	1	23	72	328	117	80	101	48
Future Vol, veh/h	12	2	19	58	1	23	72	328	117	80	101	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	13	2	21	63	1	25	78	357	127	87	110	52
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	9.1	9.9	16.1	9.6
HCM LOS	A	A	C	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	36%	71%	100%	0%
Vol Thru, %	0%	74%	6%	1%	0%	68%
Vol Right, %	0%	26%	58%	28%	0%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	445	33	82	80	149
LT Vol	72	0	12	58	80	0
Through Vol	0	328	2	1	0	101
RT Vol	0	117	19	23	0	48
Lane Flow Rate	78	484	36	89	87	162
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.123	0.667	0.057	0.143	0.143	0.234
Departure Headway (Hd)	5.649	4.961	5.757	5.781	5.931	5.199
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	632	726	626	614	601	685
Service Time	3.412	2.723	3.757	3.874	3.708	2.976
HCM Lane V/C Ratio	0.123	0.667	0.058	0.145	0.145	0.236
HCM Control Delay	9.2	17.2	9.1	9.9	9.7	9.6
HCM Lane LOS	A	C	A	A	A	A
HCM 95th-tile Q	0.4	5.1	0.2	0.5	0.5	0.9

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	2	25	52	1	9	96	81	186	77	152	60
Future Vol, veh/h	16	2	25	52	1	9	96	81	186	77	152	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	2	27	57	1	10	104	88	202	84	165	65
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.8	9.4	10	10
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	37%	84%	100%	0%
Vol Thru, %	0%	30%	5%	2%	0%	72%
Vol Right, %	0%	70%	58%	15%	0%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	96	267	43	62	77	212
LT Vol	96	0	16	52	77	0
Through Vol	0	81	2	1	0	152
RT Vol	0	186	25	9	0	60
Lane Flow Rate	104	290	47	67	84	230
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.164	0.376	0.069	0.106	0.133	0.321
Departure Headway (Hd)	5.662	4.669	5.329	5.641	5.723	5.02
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	632	766	667	631	624	714
Service Time	3.411	2.417	3.405	3.712	3.475	2.772
HCM Lane V/C Ratio	0.165	0.379	0.07	0.106	0.135	0.322
HCM Control Delay	9.5	10.2	8.8	9.4	9.4	10.2
HCM Lane LOS	A	B	A	A	A	B
HCM 95th-tile Q	0.6	1.8	0.2	0.4	0.5	1.4

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	7	3	1	30	2	12	45	2	6	109	12
Future Vol, veh/h	3	7	3	1	30	2	12	45	2	6	109	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	3	8	3	1	33	2	13	49	2	7	118	13
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.6	7.5	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	23%	3%	5%
Vol Thru, %	76%	54%	91%	86%
Vol Right, %	3%	23%	6%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	59	13	33	127
LT Vol	12	3	1	6
Through Vol	45	7	30	109
RT Vol	2	3	2	12
Lane Flow Rate	64	14	36	138
Geometry Grp	1	1	1	1
Degree of Util (X)	0.074	0.017	0.043	0.155
Departure Headway (Hd)	4.147	4.323	4.281	4.04
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	857	833	823	883
Service Time	2.205	2.323	2.378	2.084
HCM Lane V/C Ratio	0.075	0.017	0.044	0.156
HCM Control Delay	7.5	7.4	7.6	7.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1	0.5

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	8	30	76	281	54
Future Vol, veh/h	14	8	30	76	281	54
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	9	33	83	305	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	484	335	364	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	540	705	1189	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	525	705	1189	-	-	-
Mov Cap-2 Maneuver	525	-	-	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	2.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1189	-	579	-	-
HCM Lane V/C Ratio	0.027	-	0.041	-	-
HCM Control Delay (s)	8.1	-	11.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	440	509	136	429	300	168
v/c Ratio	0.30	0.38	0.16	0.24	0.27	0.11
Control Delay	23.8	1.4	14.4	16.2	33.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	1.4	14.4	16.2	33.9	0.1
Queue Length 50th (ft)	116	0	25	92	80	0
Queue Length 95th (ft)	160	32	42	124	#185	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1477	1342	1306	1822	1108	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.38	0.10	0.24	0.27	0.11

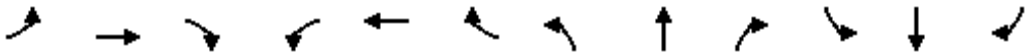
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	405	468	125	395	276	155
Future Volume (vph)	405	468	125	395	276	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	3505	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.40	1.00	0.95	1.00
Satd. Flow (perm)	3505	1568	1439	3505	3400	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	440	509	136	429	300	168
RTOR Reduction (vph)	0	145	0	0	0	0
Lane Group Flow (vph)	440	364	136	429	300	168
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	46.6	85.7	58.4	58.4	39.1	120.0
Effective Green, g (s)	46.6	85.7	58.4	58.4	39.1	120.0
Actuated g/C Ratio	0.39	0.71	0.49	0.49	0.33	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1361	1119	811	1705	1107	1568
v/s Ratio Prot	0.13	c0.11	0.01	c0.12	0.09	
v/s Ratio Perm		0.13	0.07			c0.11
v/c Ratio	0.32	0.32	0.17	0.25	0.27	0.11
Uniform Delay, d1	25.7	6.4	16.9	18.0	29.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.8	0.0	0.4	0.6	0.1
Delay (s)	26.3	7.2	16.9	18.4	30.5	0.1
Level of Service	C	A	B	B	C	A
Approach Delay (s)	16.0			18.0	19.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

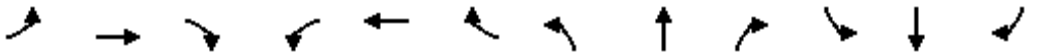


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	46	3	832	271	20	71	958	1411	216	71	1494	170
v/c Ratio	0.16	0.03	0.52	0.51	0.12	0.23	0.86	0.64	0.20	0.34	0.87	0.11
Control Delay	39.5	44.0	1.2	39.6	43.4	1.7	38.8	11.1	1.2	57.3	29.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	44.0	1.2	39.6	43.4	1.7	38.8	11.1	1.2	57.3	29.7	0.1
Queue Length 50th (ft)	14	2	0	77	12	0	309	284	1	24	356	0
Queue Length 95th (ft)	14	4	0	110	9	0	m#425	m352	m5	m41	413	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	295	133	1615	543	202	337	1118	2192	1061	217	1712	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.02	0.52	0.50	0.10	0.21	0.86	0.64	0.20	0.33	0.87	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	1	208	255	5	65	824	1298	205	65	1449	85
Future Volume (veh/h)	23	1	208	255	5	65	824	1298	205	65	1449	85
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	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	46	3	0	271	20	71	958	1411	216	71	1494	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.92	0.86	0.92	0.95	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	446	93		599	174	148	891	2119	945	120	1905	
Arrive On Green	0.05	0.05	0.00	0.10	0.09	0.09	0.26	0.60	0.60	0.03	0.38	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	5066	1572
Grp Volume(v), veh/h	46	3	0	271	20	71	958	1411	216	71	1494	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1689	1572
Q Serve(g_s), s	1.2	0.2	0.0	7.3	1.0	4.3	26.0	26.6	6.4	2.0	26.1	0.0
Cycle Q Clear(g_c), s	1.2	0.2	0.0	7.3	1.0	4.3	26.0	26.6	6.4	2.0	26.1	0.0
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	446	93		599	174	148	891	2119	945	120	1905	
V/C Ratio(X)	0.10	0.03		0.45	0.11	0.48	1.07	0.67	0.23	0.59	0.78	
Avail Cap(c_a), veh/h	516	133		650	204	173	891	2119	945	206	1905	
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.1	45.3	0.0	39.3	41.5	43.0	37.0	13.3	9.2	47.6	27.6	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.6	0.3	2.9	52.3	1.7	0.6	1.7	3.3	0.0
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(50%),veh/ln	0.5	0.1	0.0	3.1	0.5	1.8	16.7	9.3	2.2	0.9	10.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.3	45.5	0.0	40.0	41.8	45.9	89.3	14.9	9.8	49.3	30.9	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	C	
Approach Vol, veh/h		49			362			2585			1565	
Approach Delay, s/veh		41.5			41.2			42.1			31.8	
Approach LOS		D			D			D			C	

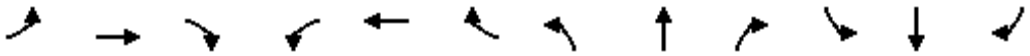
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	66.1	15.5	10.9	30.0	43.6	11.0	15.4
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	11.0	7.0	26.0	34.0	7.0	11.0
Max Q Clear Time (g_c+I1), s	4.0	28.6	9.3	2.2	28.0	28.1	3.2	6.3
Green Ext Time (p_c), s	0.0	12.1	0.2	0.0	0.0	4.2	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	38.5
HCM 6th LOS	D

Notes

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

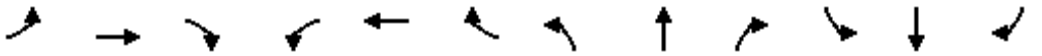
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	76	68	149	680	70	160	158	941	510	260	1188	98
v/c Ratio	0.31	0.43	0.09	0.89	0.16	0.32	0.57	0.67	0.55	0.65	0.54	0.13
Control Delay	54.8	58.5	0.1	56.9	35.5	5.7	59.4	32.6	4.9	55.9	26.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	58.5	0.1	56.9	35.5	5.7	59.4	32.6	4.9	55.9	26.0	0.3
Queue Length 50th (ft)	28	49	0	251	41	0	59	310	0	96	245	0
Queue Length 95th (ft)	54	96	0	#361	81	42	97	417	77	142	308	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	396	240	1578	839	493	543	301	1408	930	491	2206	778
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.28	0.09	0.81	0.14	0.29	0.52	0.67	0.55	0.53	0.54	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	63	140	626	64	147	145	875	469	239	1105	90
Future Volume (veh/h)	70	63	140	626	64	147	145	875	469	239	1105	90
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	76	68	0	680	70	0	158	941	0	260	1188	0
Peak Hour Factor	0.92	0.92	0.94	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.93	0.92
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	228	120		756	405		226	1467		330	2262	
Arrive On Green	0.07	0.06	0.00	0.22	0.22	0.00	0.06	0.41	0.00	0.09	0.44	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	76	68	0	680	70	0	158	941	0	260	1188	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.2	3.7	0.0	20.3	3.2	0.0	4.8	22.5	0.0	7.8	18.0	0.0
Cycle Q Clear(g_c), s	2.2	3.7	0.0	20.3	3.2	0.0	4.8	22.5	0.0	7.8	18.0	0.0
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	228	120		756	405		226	1467		330	2262	
V/C Ratio(X)	0.33	0.57		0.90	0.17		0.70	0.64		0.79	0.53	
Avail Cap(c_a), veh/h	407	247		863	494		309	1467		505	2262	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.7	48.6	0.0	40.7	34.2	0.0	49.0	25.3	0.0	47.3	21.8	0.0
Incr Delay (d2), s/veh	0.6	4.2	0.0	11.0	0.2	0.0	3.2	2.2	0.0	3.6	0.9	0.0
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(50%),veh/ln	1.0	1.9	0.0	9.6	1.5	0.0	2.1	9.7	0.0	3.5	7.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.4	52.8	0.0	51.8	34.4	0.0	52.2	27.4	0.0	51.0	22.7	0.0
LnGrp LOS	D	D		D	C		D	C		D	C	
Approach Vol, veh/h		144			750			1099			1448	
Approach Delay, s/veh		50.5			50.1			31.0			27.8	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	49.8	28.7	12.8	12.4	53.0	12.5	29.0
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	9.8	24.5	22.3	5.7	6.8	20.0	4.2	5.2
Green Ext Time (p_c), s	0.3	9.5	0.9	0.1	0.1	16.0	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	34.6
HCM 6th LOS	C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



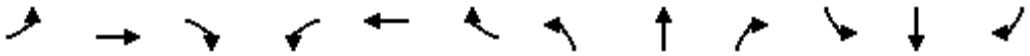
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	635	285	199	646	204	173
v/c Ratio	0.54	0.22	0.21	0.24	0.53	0.11
Control Delay	13.1	0.7	4.1	4.5	47.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	0.7	4.1	4.5	47.2	0.1
Queue Length 50th (ft)	181	0	11	46	64	0
Queue Length 95th (ft)	401	12	32	108	98	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1183	1516	1141	2685	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.19	0.17	0.24	0.21	0.11

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	584	262	183	594	198	159
Future Volume (vph)	584	262	183	594	198	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	1845	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.29	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1054	3574	3467	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.92
Adj. Flow (vph)	635	285	199	646	204	173
RTOR Reduction (vph)	0	82	0	0	0	0
Lane Group Flow (vph)	635	203	199	646	204	173
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	60.1	71.2	71.1	71.1	11.1	100.0
Effective Green, g (s)	60.1	71.2	71.1	71.1	11.1	100.0
Actuated g/C Ratio	0.60	0.71	0.71	0.71	0.11	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1108	1116	894	2541	384	1599
v/s Ratio Prot	c0.34	0.02	0.01	c0.18	c0.06	
v/s Ratio Perm		0.11	0.14			c0.11
v/c Ratio	0.57	0.18	0.22	0.25	0.53	0.11
Uniform Delay, d1	12.1	4.8	6.9	5.1	42.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.0	0.0	0.2	0.7	0.1
Delay (s)	14.3	4.8	6.9	5.3	42.7	0.1
Level of Service	B	A	A	A	D	A
Approach Delay (s)	11.4			5.7	23.2	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

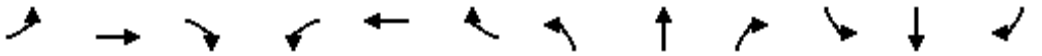
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	300	297	151	627	415	130	91	1021	414	114	864	298
v/c Ratio	0.35	0.27	0.25	0.57	0.31	0.19	0.46	0.92	0.26	0.64	0.78	0.35
Control Delay	20.3	36.2	6.5	22.5	30.7	4.4	32.0	58.9	0.4	42.7	47.9	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	36.2	6.5	22.5	30.7	4.4	32.0	58.9	0.4	42.7	47.9	5.6
Queue Length 50th (ft)	71	102	0	167	133	0	47	450	0	60	355	18
Queue Length 95th (ft)	100	151	53	213	185	37	89	#630	0	117	477	81
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1204	1095	594	1183	1322	679	315	1105	1599	204	1109	984
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.27	0.25	0.53	0.31	0.19	0.29	0.92	0.26	0.56	0.78	0.30

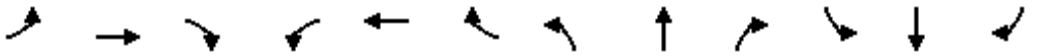
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	276	288	139	577	382	120	84	939	381	105	795	286
Future Volume (vph)	276	288	139	577	382	120	84	939	381	105	795	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	4.0	5.0	6.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	3433	3539	1583	3433	3539	1583	1787	3574	1599	1770	3539	1583
Flt Permitted	0.51	1.00	1.00	0.47	1.00	1.00	0.13	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	1839	3539	1583	1716	3539	1583	254	3574	1599	179	3539	1583
Peak-hour factor, PHF	0.92	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96
Adj. Flow (vph)	300	297	151	627	415	130	91	1021	414	114	864	298
RTOR Reduction (vph)	0	0	104	0	0	81	0	0	0	0	0	157
Lane Group Flow (vph)	300	297	47	627	415	49	91	1021	414	114	864	141
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		7	4		3	8	5
Permitted Phases	2		2	6		6	4		Free	8		8
Actuated Green, G (s)	51.9	41.1	41.1	65.5	49.7	49.7	49.7	41.1	132.8	50.9	41.7	52.5
Effective Green, g (s)	51.9	41.1	41.1	65.5	49.7	49.7	49.7	41.1	132.8	50.9	41.7	52.5
Actuated g/C Ratio	0.39	0.31	0.31	0.49	0.37	0.37	0.37	0.31	1.00	0.38	0.31	0.40
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0		5.0	6.0	5.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0		2.0	3.0	2.0
Lane Grp Cap (vph)	848	1095	489	1097	1324	592	194	1106	1599	178	1111	625
v/s Ratio Prot	0.03	0.08		c0.08	0.12		0.03	c0.29		c0.04	0.24	0.02
v/s Ratio Perm	0.11		0.03	c0.20		0.03	0.15		c0.26	0.20		0.07
v/c Ratio	0.35	0.27	0.10	0.57	0.31	0.08	0.47	0.92	0.26	0.64	0.78	0.23
Uniform Delay, d1	27.0	34.6	32.6	21.2	29.5	26.8	30.0	44.3	0.0	31.9	41.3	26.7
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	0.1	0.6	0.4	0.4	0.6	0.3	0.7	13.9	0.4	5.8	5.4	0.1
Delay (s)	27.1	35.2	33.0	21.6	30.1	27.1	30.6	58.3	0.4	37.6	46.7	26.7
Level of Service	C	D	C	C	C	C	C	E	A	D	D	C
Approach Delay (s)		31.5			25.2			40.9			41.2	
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	0.73		
Actuated Cycle Length (s)	132.8	Sum of lost time (s)	22.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	276	288	139	577	382	120	84	939	381	105	795	286
Future Volume (veh/h)	276	288	139	577	382	120	84	939	381	105	795	286
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	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	300	297	151	627	415	130	91	1021	0	114	864	298
Peak Hour Factor	0.92	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	873	1125	502	1058	1348	601	195	1134		182	1159	639
Arrive On Green	0.08	0.32	0.32	0.14	0.38	0.38	0.05	0.32	0.00	0.06	0.33	0.33
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	300	297	151	627	415	130	91	1021	0	114	864	298
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	7.5	8.1	9.3	15.2	10.6	7.2	4.4	35.3	0.0	5.5	28.0	17.9
Cycle Q Clear(g_c), s	7.5	8.1	9.3	15.2	10.6	7.2	4.4	35.3	0.0	5.5	28.0	17.9
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	873	1125	502	1058	1348	601	195	1134		182	1159	639
V/C Ratio(X)	0.34	0.26	0.30	0.59	0.31	0.22	0.47	0.90		0.62	0.75	0.47
Avail Cap(c_a), veh/h	1275	1125	502	1243	1348	601	358	1134		231	1159	639
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.1	33.0	33.4	22.7	28.3	27.2	31.0	42.3	0.0	33.0	38.9	28.4
Incr Delay (d2), s/veh	0.1	0.6	1.5	0.2	0.6	0.8	0.6	11.5	0.0	1.3	4.4	2.4
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(50%),veh/ln	3.1	3.6	3.8	6.1	4.6	2.8	1.9	17.0	0.0	2.4	12.6	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.2	33.6	35.0	22.9	28.9	28.0	31.6	53.8	0.0	34.3	43.3	30.9
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	C
Approach Vol, veh/h		748			1172			1112			1276	
Approach Delay, s/veh		30.9			25.6			52.0			39.6	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.1	47.0	12.5	47.0	15.0	55.1	11.2	48.2
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	41.0	11.0	41.0	25.0	41.0	18.0	34.0
Max Q Clear Time (g_c+I1), s	17.2	11.3	7.5	37.3	9.5	12.6	6.4	30.0
Green Ext Time (p_c), s	0.9	2.4	0.0	2.2	0.5	3.2	0.1	2.3

Intersection Summary	
HCM 6th Ctrl Delay	37.5
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	82	235	216	20	233	188	56	358	13
v/c Ratio	0.09	0.41	0.46	0.41	0.05	0.20	0.19	0.06	0.49	0.02
Control Delay	25.3	43.5	26.9	28.0	21.1	27.1	3.5	19.4	29.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	43.5	26.9	28.0	21.1	27.1	3.5	19.4	29.3	0.0
Queue Length 50th (ft)	7	35	82	62	5	44	0	7	116	0
Queue Length 95th (ft)	26	55	183	36	18	129	7	33	#480	0
Internal Link Dist (ft)		538		1917		1338			851	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	439	408	509	554	542	1188	975	1155	725	701
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.20	0.46	0.39	0.04	0.20	0.19	0.05	0.49	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	30	15	167	25	86	10	214	124	53	329	10
Future Volume (vph)	15	30	15	167	25	86	10	214	124	53	329	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.96		1.00	0.92		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)	1763	1788		1752	1675		1770	3539	1567	3387	1845	1568
Flt Permitted	0.62	1.00		0.46	1.00		0.43	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	1156	1788		844	1675		803	3539	1567	1985	1845	1568
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.92	0.66	0.94	0.92	0.78
Adj. Flow (vph)	22	60	22	235	100	116	20	233	188	56	358	13
RTOR Reduction (vph)	0	10	0	0	26	0	0	0	89	0	0	8
Lane Group Flow (vph)	22	72	0	235	190	0	20	233	99	56	358	5
Confl. Peds. (#/hr)	2					2			8	8		
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	11.7	9.3		33.6	26.2		33.4	31.2	50.5	39.0	34.0	34.0
Effective Green, g (s)	11.7	9.3		33.6	26.2		33.4	31.2	50.5	39.0	34.0	34.0
Actuated g/C Ratio	0.12	0.10		0.35	0.27		0.35	0.32	0.53	0.41	0.35	0.35
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	155	173		477	456		301	1148	823	878	652	554
v/s Ratio Prot	0.00	0.04		c0.10	0.11		0.00	0.07	0.02	c0.00	c0.19	
v/s Ratio Perm	0.01			c0.07			0.02		0.04	0.02		0.00
v/c Ratio	0.14	0.42		0.49	0.42		0.07	0.20	0.12	0.06	0.55	0.01
Uniform Delay, d1	37.5	40.8		23.6	28.7		20.9	23.5	11.5	17.3	24.9	20.1
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	0.4	1.6		0.8	0.6		0.1	0.4	0.1	0.0	3.3	0.0
Delay (s)	38.0	42.5		24.4	29.3		21.0	23.9	11.6	17.3	28.2	20.2
Level of Service	D	D		C	C		C	C	B	B	C	C
Approach Delay (s)		41.5			26.8			18.5			26.5	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	26.5
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

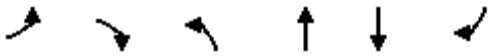
Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	49	290	7	14	503
Future Vol, veh/h	21	49	290	7	14	503
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	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	53	315	8	15	547

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	896	319	0	0	323	0
Stage 1	319	-	-	-	-	-
Stage 2	577	-	-	-	-	-
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	311	722	-	-	1237	-
Stage 1	737	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	307	722	-	-	1237	-
Mov Cap-2 Maneuver	307	-	-	-	-	-
Stage 1	737	-	-	-	-	-
Stage 2	555	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0.2
HCM LOS	B		

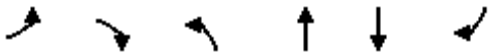
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	514	1237	-
HCM Lane V/C Ratio	-	-	0.148	0.012	-
HCM Control Delay (s)	-	-	13.2	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	640	168	88	930	1304	318
v/c Ratio	0.76	0.33	0.33	0.30	0.73	0.33
Control Delay	37.2	5.9	42.9	8.7	22.6	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	5.9	42.9	8.7	22.6	3.0
Queue Length 50th (ft)	172	0	24	83	315	0
Queue Length 95th (ft)	202	38	48	120	#453	38
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	592	267	3152	1785	956
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.28	0.33	0.30	0.73	0.33

Intersection Summary

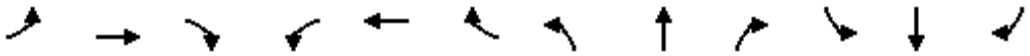
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	544	143	81	930	1200	270
Future Volume (veh/h)	544	143	81	930	1200	270
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	640	168	88	930	1304	318
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	772	354	533	3284	1500	669
Arrive On Green	0.22	0.22	0.15	0.64	0.42	0.42
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	640	168	88	930	1304	318
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	15.9	8.3	2.0	7.2	30.1	13.1
Cycle Q Clear(g_c), s	15.9	8.3	2.0	7.2	30.1	13.1
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	772	354	533	3284	1500	669
V/C Ratio(X)	0.83	0.47	0.17	0.28	0.87	0.48
Avail Cap(c_a), veh/h	1037	476	533	3284	1500	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.68	0.68	1.00	1.00
Uniform Delay (d), s/veh	33.3	30.3	33.0	7.0	23.7	18.8
Incr Delay (d2), s/veh	4.3	1.0	0.1	0.1	7.1	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	7.6	0.8	2.2	12.9	4.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.6	31.3	33.1	7.2	30.8	21.2
LnGrp LOS	D	C	C	A	C	C
Approach Vol, veh/h	808			1018	1622	
Approach Delay, s/veh	36.3			9.4	28.9	
Approach LOS	D			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		63.9		26.1	19.9	44.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	7.0	38.0
Max Q Clear Time (g_c+I1), s		9.2		17.9	4.0	32.1
Green Ext Time (p_c), s		7.4		2.2	0.1	4.3

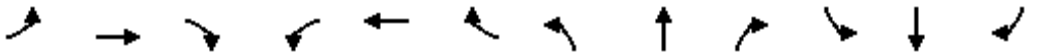
Intersection Summary		
HCM 6th Ctrl Delay		24.9
HCM 6th LOS		C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	201	247	1048	33	185	87	799	950	54	33	511	93
v/c Ratio	0.61	0.72	0.66	0.09	0.51	0.05	0.78	0.46	0.03	0.16	0.38	0.10
Control Delay	50.8	55.8	2.1	40.4	47.3	0.1	50.7	7.6	0.0	46.1	25.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	55.8	2.1	40.4	47.3	0.1	50.7	7.6	0.0	46.1	25.1	1.0
Queue Length 50th (ft)	64	82	0	9	59	0	170	63	0	10	123	0
Queue Length 95th (ft)	97	119	0	24	93	0	185	80	m0	26	194	9
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	375	386	1599	1461	2049	1599	217	1354	1000
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.46	0.66	0.09	0.48	0.05	0.55	0.46	0.03	0.15	0.38	0.09

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	199	235	964	30	170	80	735	874	50	30	470	88
Future Volume (veh/h)	199	235	964	30	170	80	735	874	50	30	470	88
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	201	247	0	33	185	0	799	950	0	33	511	93
Peak Hour Factor	0.99	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	311	320		256	263		945	2161		84	1543	831
Arrive On Green	0.09	0.09	0.00	0.07	0.07	0.00	0.19	0.60	0.00	0.02	0.43	0.43
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	201	247	0	33	185	0	799	950	0	33	511	93
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	5.6	6.7	0.0	0.9	5.0	0.0	15.2	14.3	0.0	0.9	9.5	3.0
Cycle Q Clear(g_c), s	5.6	6.7	0.0	0.9	5.0	0.0	15.2	14.3	0.0	0.9	9.5	3.0
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	311	320		256	263		945	2161		84	1543	831
V/C Ratio(X)	0.65	0.77		0.13	0.70		0.85	0.44		0.39	0.33	0.11
Avail Cap(c_a), veh/h	522	537		348	358		1468	2161		209	1543	831
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)	0.65	0.65	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	44.5	0.0	43.3	45.3	0.0	39.3	10.7	0.0	48.1	18.9	12.2
Incr Delay (d2), s/veh	0.5	1.0	0.0	0.2	3.8	0.0	1.6	0.7	0.0	3.0	0.6	0.3
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(50%),veh/ln	2.4	3.0	0.0	0.4	2.4	0.0	6.2	5.0	0.0	0.4	3.8	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.6	45.5	0.0	43.6	49.1	0.0	40.9	11.4	0.0	51.1	19.5	12.5
LnGrp LOS	D	D		D	D		D	B		D	B	B
Approach Vol, veh/h		448			218			1749			637	
Approach Delay, s/veh		45.1			48.3			24.9			20.1	
Approach LOS		D			D			C			C	

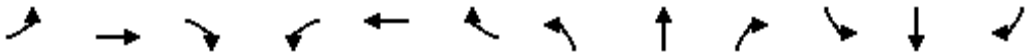
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	66.3		13.9	24.7	49.1		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	16.3		8.7	17.2	11.5		7.0				
Green Ext Time (p_c), s	0.0	7.0		0.2	1.4	2.7		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		28.5
HCM 6th LOS		C

Notes

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

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



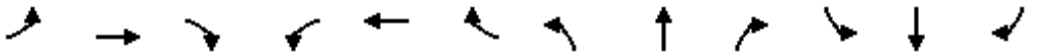
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	119	10	883	266	10	65	1140	1638	212	33	1437	60
v/c Ratio	0.32	0.08	0.55	0.45	0.08	0.23	1.06	0.73	0.20	0.18	1.19	0.04
Control Delay	41.5	44.8	1.3	37.2	44.8	2.0	80.3	13.6	1.9	54.1	123.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	44.8	1.3	37.2	44.8	2.0	80.3	13.6	1.9	54.1	123.9	0.0
Queue Length 50th (ft)	37	6	0	74	6	0	~453	322	0	11	~598	0
Queue Length 95th (ft)	45	13	0	110	13	0	92	464	16	m20	#736	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	372	171	1615	597	169	312	1071	2248	1084	209	1203	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.06	0.55	0.45	0.06	0.21	1.06	0.73	0.20	0.16	1.19	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	5	883	245	5	60	285	1523	195	30	1394	30
Future Volume (veh/h)	89	5	883	245	5	60	285	1523	195	30	1394	30
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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	119	10	0	266	10	65	1140	1638	212	33	1437	0
Peak Hour Factor	0.75	0.50	1.00	0.92	0.50	0.92	0.25	0.93	0.92	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	459	95		581	164	139	906	2229	994	62	1351	
Arrive On Green	0.05	0.05	0.00	0.09	0.09	0.09	0.26	0.62	0.62	0.02	0.38	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	119	10	0	266	10	65	1140	1638	212	33	1437	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	3.1	0.5	0.0	7.1	0.5	3.9	26.0	31.8	5.8	0.9	38.0	0.0
Cycle Q Clear(g_c), s	3.1	0.5	0.0	7.1	0.5	3.9	26.0	31.8	5.8	0.9	38.0	0.0
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	459	95		581	164	139	906	2229	994	62	1351	
V/C Ratio(X)	0.26	0.11		0.46	0.06	0.47	1.26	0.74	0.21	0.53	1.06	
Avail Cap(c_a), veh/h	590	171		581	170	144	906	2229	994	207	1351	
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.7	45.4	0.0	40.1	41.9	43.4	37.0	13.2	8.2	48.7	31.0	0.0
Incr Delay (d2), s/veh	0.4	0.6	0.0	0.7	0.2	2.9	125.4	2.2	0.5	2.6	43.4	0.0
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(50%),veh/ln	1.4	0.3	0.0	3.1	0.2	1.6	26.2	11.1	2.0	0.4	23.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.0	46.0	0.0	40.7	42.1	46.4	162.4	15.4	8.7	51.3	74.3	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	F	
Approach Vol, veh/h		129			341			2990			1470	
Approach Delay, s/veh		42.3			41.8			71.0			73.8	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	68.2	15.0	11.0	30.0	44.0	11.3	14.7
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	9.0	9.0	26.0	34.0	9.0	9.0
Max Q Clear Time (g_c+I1), s	2.9	33.8	9.1	2.5	28.0	40.0	5.1	5.9
Green Ext Time (p_c), s	0.0	12.5	0.0	0.0	0.0	0.0	0.1	0.1

Intersection Summary		
HCM 6th Ctrl Delay		69.1
HCM 6th LOS		E

Notes

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

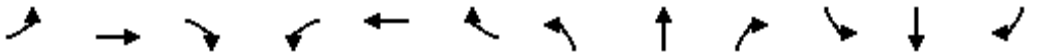
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	104	103	740	234	1352	2122	478
v/c Ratio	0.58	0.58	0.46	0.85	0.49	0.68	0.41
Control Delay	55.2	54.5	1.0	49.1	6.6	9.2	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	55.2	54.5	1.0	49.1	6.9	9.2	1.0
Queue Length 50th (ft)	67	67	0	134	123	156	2
Queue Length 95th (ft)	120	117	0	m184	306	m173	m4
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	324	1599	502	2742	3115	1152
Starvation Cap Reductn	0	0	0	0	621	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.32	0.46	0.47	0.64	0.68	0.41

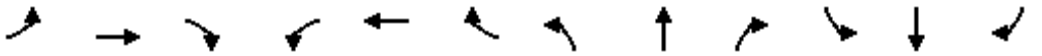
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	180	10	681	215	1257	0	0	2037	440
Future Volume (vph)	0	0	0	180	10	681	215	1257	0	0	2037	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1711	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.06	1.00			1.00	1.00
Satd. Flow (perm)				1698	1711	1599	112	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.96	0.92
Adj. Flow (vph)	0	0	0	196	11	740	234	1352	0	0	2122	478
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	183
Lane Group Flow (vph)	0	0	0	104	103	740	234	1352	0	0	2122	295
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.5	10.5	100.0	77.5	77.5			61.3	61.3
Effective Green, g (s)				10.5	10.5	100.0	77.5	77.5			61.3	61.3
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.61	0.61
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				178	179	1599	272	2742			3117	970
v/s Ratio Prot							c0.10	0.38			0.42	
v/s Ratio Perm				0.06	0.06	c0.46	c0.57					0.19
v/c Ratio				0.58	0.58	0.46	0.86	0.49			0.68	0.30
Uniform Delay, d1				42.7	42.6	0.0	28.7	4.1			12.9	9.2
Progression Factor				1.00	1.00	1.00	1.16	1.37			0.59	0.36
Incremental Delay, d2				3.1	2.8	1.0	17.9	0.5			0.5	0.3
Delay (s)				45.8	45.4	1.0	51.3	6.1			8.1	3.6
Level of Service				D	D	A	D	A			A	A
Approach Delay (s)		0.0			10.7			12.7			7.3	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	180	10	681	215	1257	0	0	2037	440
Future Volume (veh/h)	0	0	0	180	10	681	215	1257	0	0	2037	440
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1885	1885	1885	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				204	0	0	234	1352	0	0	2122	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.96	0.92
Percent Heavy Veh, %				1	1	1	2	2	0	0	2	2
Cap, veh/h				280	0		270	2850	0	0	3530	
Arrive On Green				0.08	0.00	0.00	0.12	1.00	0.00	0.00	0.69	0.00
Sat Flow, veh/h				3591	0	1598	1781	3647	0	0	5274	1585
Grp Volume(v), veh/h				204	0	0	234	1352	0	0	2122	0
Grp Sat Flow(s),veh/h/ln				1795	0	1598	1781	1777	0	0	1702	1585
Q Serve(g_s), s				5.6	0.0	0.0	3.8	0.0	0.0	0.0	22.0	0.0
Cycle Q Clear(g_c), s				5.6	0.0	0.0	3.8	0.0	0.0	0.0	22.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				280	0		270	2850	0	0	3530	
V/C Ratio(X)				0.73	0.00		0.87	0.47	0.00	0.00	0.60	
Avail Cap(c_a), veh/h				682	0		607	2850	0	0	3530	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.60	0.60	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				45.1	0.0	0.0	17.4	0.0	0.0	0.0	8.2	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.0	2.0	0.3	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	0.0	0.0	3.7	0.1	0.0	0.0	6.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.4	0.0	0.0	19.4	0.3	0.0	0.0	8.9	0.0
LnGrp LOS				D	A		B	A	A	A	A	
Approach Vol, veh/h					204			1586			2122	
Approach Delay, s/veh					46.4			3.2			8.9	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	86.2		11.1	75.1		13.8						
Change Period (Y+Rc), s	6.0		5.0	6.0		6.0						
Max Green Setting (Gmax), s	69.0		25.0	39.0		19.0						
Max Q Clear Time (g_c+I1), s	2.0		5.8	24.0		7.6						
Green Ext Time (p_c), s	13.4		0.3	11.7		0.3						

Intersection Summary		
HCM 6th Ctrl Delay	8.5	
HCM 6th LOS	A	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

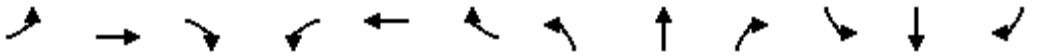


Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	216	215	223	1120	147	1327	1001
v/c Ratio	0.81	0.80	0.14	0.72	0.19	1.70	0.39
Control Delay	62.5	61.5	0.2	26.2	3.5	350.6	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.5	61.5	0.2	26.2	3.5	350.6	6.0
Queue Length 50th (ft)	138	137	0	299	0	~675	0
Queue Length 95th (ft)	#236	#233	0	377	34	#786	83
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1557	778	779	2538
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.68	0.14	0.72	0.19	1.70	0.39

Intersection Summary

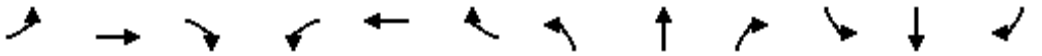
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	382	15	205	0	0	0	0	1075	135	1300	961	0
Future Volume (vph)	382	15	205	0	0	0	0	1075	135	1300	961	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1659	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1659	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.92	0.98	0.96	0.92
Adj. Flow (vph)	415	16	223	0	0	0	0	1120	147	1327	1001	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	82	0	0	0
Lane Group Flow (vph)	216	215	223	0	0	0	0	1120	65	1327	1001	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	16.3	16.3	100.0					44.0	44.0	22.7	71.7	
Effective Green, g (s)	16.3	16.3	100.0					44.0	44.0	22.7	71.7	
Actuated g/C Ratio	0.16	0.16	1.00					0.44	0.44	0.23	0.72	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	268	270	1553					1557	696	779	2537	
v/s Ratio Prot								c0.32		c0.39	0.28	
v/s Ratio Perm	c0.13	0.13	0.14						0.04			
v/c Ratio	0.81	0.80	0.14					0.72	0.09	1.70	0.39	
Uniform Delay, d1	40.3	40.3	0.0					22.9	16.3	38.6	5.6	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.20	0.95	
Incremental Delay, d2	15.2	14.0	0.2					2.9	0.3	320.6	0.4	
Delay (s)	55.5	54.3	0.2					25.8	16.6	366.9	5.7	
Level of Service	E	D	A					C	B	F	A	
Approach Delay (s)		36.2			0.0			24.8			211.6	
Approach LOS		D			A			C			F	

Intersection Summary			
HCM 2000 Control Delay	128.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	382	15	205	0	0	0	0	1075	135	1300	961	0
Future Volume (veh/h)	382	15	205	0	0	0	0	1075	135	1300	961	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1841	1841	1841				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	426	0	0				0	1120	0	1327	1001	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.96	0.92	0.98	0.96	0.92
Percent Heavy Veh, %	4	4	4				0	2	2	2	2	0
Cap, veh/h	502	0					0	1730		691	2619	0
Arrive On Green	0.14	0.00	0.00				0.00	0.49	0.00	0.13	0.49	0.00
Sat Flow, veh/h	3506	0	1560				0	3647	1585	3456	3647	0
Grp Volume(v), veh/h	426	0	0				0	1120	0	1327	1001	0
Grp Sat Flow(s),veh/h/ln	1753	0	1560				0	1777	1585	1728	1777	0
Q Serve(g_s), s	11.9	0.0	0.0				0.0	23.6	0.0	20.0	17.6	0.0
Cycle Q Clear(g_c), s	11.9	0.0	0.0				0.0	23.6	0.0	20.0	17.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	502	0					0	1730		691	2619	0
V/C Ratio(X)	0.85	0.00					0.00	0.65		1.92	0.38	0.00
Avail Cap(c_a), veh/h	666	0					0	1730		691	2619	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.68	0.68	0.00
Uniform Delay (d), s/veh	41.8	0.0	0.0				0.0	19.2	0.0	43.3	11.1	0.0
Incr Delay (d2), s/veh	6.2	0.0	0.0				0.0	1.9	0.0	417.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	0.0				0.0	9.2	0.0	48.7	7.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.0	0.0	0.0				0.0	21.1	0.0	461.0	11.4	0.0
LnGrp LOS	D	A					A	C		F	B	A
Approach Vol, veh/h		426						1120			2328	
Approach Delay, s/veh		48.0						21.1			267.7	
Approach LOS		D						C			F	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	54.7		20.3		79.7
Change Period (Y+Rc), s	5.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	20.0	44.0		19.0		69.0
Max Q Clear Time (g_c+I1), s	22.0	25.6		13.9		19.6
Green Ext Time (p_c), s	0.0	7.2		0.5		8.1

Intersection Summary		
HCM 6th Ctrl Delay		172.2
HCM 6th LOS		F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.1
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	383	366	531
Demand Flow Rate, veh/h	391	373	542
Vehicles Circulating, veh/h	347	147	171
Vehicles Exiting, veh/h	366	591	349
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	5.4	4.4	5.4
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.471	0.529	0.458	0.542	0.640	0.360
Follow-Up Headway, s	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
Entry Flow, veh/h	184	207	171	202	347	195
Cap Entry Lane, veh/h	981	1057	1179	1253	1153	1228
Entry HV Adj Factor	0.979	0.981	0.980	0.980	0.980	0.979
Flow Entry, veh/h	180	203	168	198	340	191
Cap Entry, veh/h	960	1037	1149	1221	1130	1203
V/C Ratio	0.188	0.196	0.146	0.162	0.301	0.159
Control Delay, s/veh	5.6	5.3	4.4	4.3	6.1	4.4
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	1

Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	155	5	60	194	18	207
Future Vol, veh/h	155	5	60	194	18	207
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	221	5	65	277	20	225

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	226	0	631	224
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	407	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1337	-	443	813
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	670	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1337	-	421	813
Mov Cap-2 Maneuver	-	-	-	-	421	-
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	637	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	757	-	-	1337	-
HCM Lane V/C Ratio	0.323	-	-	0.049	-
HCM Control Delay (s)	12	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1.4	-	-	0.2	-

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	513	442	388
Demand Flow Rate, veh/h	528	456	400
Vehicles Circulating, veh/h	126	34	515
Vehicles Exiting, veh/h	364	881	139
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.6	4.4	8.7
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.276	0.724	0.085	0.915
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	528	126	330	34	366
Cap Entry Lane, veh/h	1213	1377	1377	889	889
Entry HV Adj Factor	0.972	0.968	0.971	0.971	0.970
Flow Entry, veh/h	513	122	320	33	355
Cap Entry, veh/h	1179	1333	1337	863	862
V/C Ratio	0.435	0.092	0.240	0.038	0.412
Control Delay, s/veh	7.6	3.4	4.7	4.5	9.1
LOS	A	A	A	A	A
95th %tile Queue, veh	2	0	1	0	2

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	14	4	23	45	36	16	66	91	113	14	9
Future Vol, veh/h	3	14	4	23	45	36	16	66	91	113	14	9
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	15	4	25	49	39	17	72	99	123	15	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	88	0	0	19	0	0	154	161	17	228	144	69
Stage 1	-	-	-	-	-	-	23	23	-	119	119	-
Stage 2	-	-	-	-	-	-	131	138	-	109	25	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1501	-	-	1591	-	-	811	729	1059	725	745	991
Stage 1	-	-	-	-	-	-	993	874	-	883	795	-
Stage 2	-	-	-	-	-	-	870	780	-	894	872	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1501	-	-	1591	-	-	779	715	1059	598	731	991
Mov Cap-2 Maneuver	-	-	-	-	-	-	779	715	-	598	731	-
Stage 1	-	-	-	-	-	-	991	872	-	881	781	-
Stage 2	-	-	-	-	-	-	830	767	-	742	870	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	1.6	10.3	12.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	870	1501	-	-	1591	-	-	626
HCM Lane V/C Ratio	0.216	0.002	-	-	0.016	-	-	0.236
HCM Control Delay (s)	10.3	7.4	0	-	7.3	0	-	12.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.9

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	215	2	16	92	10	10	1	84	30	1	2
Future Vol, veh/h	1	215	2	16	92	10	10	1	84	30	1	2
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	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	1	234	2	17	100	11	11	1	91	33	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	111	0	0	236	0	0	378	382	235	423	378	106
Stage 1	-	-	-	-	-	-	237	237	-	140	140	-
Stage 2	-	-	-	-	-	-	141	145	-	283	238	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1479	-	-	1325	-	-	578	551	802	541	554	948
Stage 1	-	-	-	-	-	-	764	709	-	863	781	-
Stage 2	-	-	-	-	-	-	860	777	-	724	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1479	-	-	1325	-	-	570	543	802	474	546	948
Mov Cap-2 Maneuver	-	-	-	-	-	-	570	543	-	474	546	-
Stage 1	-	-	-	-	-	-	763	708	-	862	771	-
Stage 2	-	-	-	-	-	-	846	767	-	640	707	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.1	10.4	12.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	765	1479	-	-	1325	-	-	491
HCM Lane V/C Ratio	0.135	0.001	-	-	0.013	-	-	0.073
HCM Control Delay (s)	10.4	7.4	-	-	7.8	-	-	12.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.2

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	358	353	87	689
Demand Flow Rate, veh/h	368	364	90	710
Vehicles Circulating, veh/h	700	41	1040	122
Vehicles Exiting, veh/h	132	1089	28	283
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.8	4.0	8.2	9.2
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.470	0.530	0.313	0.687	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	173	195	114	250	90	710
Cap Entry Lane, veh/h	709	783	1300	1371	587	1280
Entry HV Adj Factor	0.972	0.972	0.967	0.972	0.970	0.970
Flow Entry, veh/h	168	190	110	243	87	689
Cap Entry, veh/h	689	761	1257	1333	569	1242
V/C Ratio	0.244	0.249	0.088	0.182	0.153	0.555
Control Delay, s/veh	8.1	7.5	3.6	4.2	8.2	9.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	1	4

Intersection	
Intersection Delay, s/veh	19
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	1	73	222	2	88	23	182	48	33	339	16
Future Vol, veh/h	49	1	73	222	2	88	23	182	48	33	339	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	53	1	79	241	2	96	25	198	52	36	368	17
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	12.2	19.1	15.2	23.5
HCM LOS	B	C	C	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	40%	71%	100%	0%
Vol Thru, %	0%	79%	1%	1%	0%	95%
Vol Right, %	0%	21%	59%	28%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	230	123	312	33	355
LT Vol	23	0	49	222	33	0
Through Vol	0	182	1	2	0	339
RT Vol	0	48	73	88	0	16
Lane Flow Rate	25	250	134	339	36	386
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.052	0.476	0.253	0.609	0.072	0.717
Departure Headway (Hd)	7.519	6.856	6.812	6.463	7.23	6.686
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	475	525	525	556	495	540
Service Time	5.279	4.615	4.883	4.514	4.983	4.439
HCM Lane V/C Ratio	0.053	0.476	0.255	0.61	0.073	0.715
HCM Control Delay	10.7	15.7	12.2	19.1	10.5	24.7
HCM Lane LOS	B	C	B	C	B	C
HCM 95th-tile Q	0.2	2.5	1	4.1	0.2	5.8

Intersection	
Intersection Delay, s/veh	12.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	1	97	206	1	39	31	212	76	32	85	19
Future Vol, veh/h	61	1	97	206	1	39	31	212	76	32	85	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	66	1	105	224	1	42	34	230	83	35	92	21
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	10.7	13.1	14.2	10.5
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	38%	84%	100%	0%
Vol Thru, %	0%	74%	1%	0%	0%	82%
Vol Right, %	0%	26%	61%	16%	0%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	288	159	246	32	104
LT Vol	31	0	61	206	32	0
Through Vol	0	212	1	1	0	85
RT Vol	0	76	97	39	0	19
Lane Flow Rate	34	313	173	267	35	113
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.062	0.512	0.269	0.428	0.067	0.196
Departure Headway (Hd)	6.585	5.89	5.595	5.758	6.897	6.257
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	543	610	639	623	518	571
Service Time	4.338	3.642	3.658	3.813	4.664	4.024
HCM Lane V/C Ratio	0.063	0.513	0.271	0.429	0.068	0.198
HCM Control Delay	9.8	14.7	10.7	13.1	10.2	10.6
HCM Lane LOS	A	B	B	B	B	B
HCM 95th-tile Q	0.2	2.9	1.1	2.1	0.2	0.7

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	30	12	1	10	6	4	117	1	2	53	4
Future Vol, veh/h	12	30	12	1	10	6	4	117	1	2	53	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	13	33	13	1	11	7	4	127	1	2	58	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.6	7.3	7.9	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	22%	6%	3%
Vol Thru, %	96%	56%	59%	90%
Vol Right, %	1%	22%	35%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	122	54	17	59
LT Vol	4	12	1	2
Through Vol	117	30	10	53
RT Vol	1	12	6	4
Lane Flow Rate	133	59	18	64
Geometry Grp	1	1	1	1
Degree of Util (X)	0.152	0.07	0.022	0.074
Departure Headway (Hd)	4.118	4.3	4.25	4.152
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	863	838	847	852
Service Time	2.18	2.301	2.251	2.229
HCM Lane V/C Ratio	0.154	0.07	0.021	0.075
HCM Control Delay	7.9	7.6	7.3	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.2	0.1	0.2

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	30	10	302	106	18
Future Vol, veh/h	55	30	10	302	106	18
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	60	33	11	328	115	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	475	125	135	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	546	923	1443	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	542	923	1443	-	-	-
Mov Cap-2 Maneuver	542	-	-	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	711	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1443	-	634	-	-
HCM Lane V/C Ratio	0.008	-	0.146	-	-
HCM Control Delay (s)	7.5	-	11.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	635	285	199	646	204	173
v/c Ratio	0.28	0.22	0.18	0.24	0.53	0.11
Control Delay	9.1	0.7	4.0	4.5	47.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	0.7	4.0	4.5	47.2	0.1
Queue Length 50th (ft)	76	0	11	46	64	0
Queue Length 95th (ft)	155	12	32	108	98	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	2248	1516	1301	2685	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.19	0.15	0.24	0.21	0.11

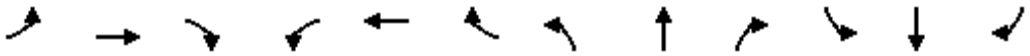
Intersection Summary



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	584	262	183	594	198	159
Future Volume (vph)	584	262	183	594	198	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	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)	3505	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.36	1.00	0.95	1.00
Satd. Flow (perm)	3505	1568	1313	3574	3467	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.92
Adj. Flow (vph)	635	285	199	646	204	173
RTOR Reduction (vph)	0	82	0	0	0	0
Lane Group Flow (vph)	635	203	199	646	204	173
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	60.1	71.2	71.1	71.1	11.1	100.0
Effective Green, g (s)	60.1	71.2	71.1	71.1	11.1	100.0
Actuated g/C Ratio	0.60	0.71	0.71	0.71	0.11	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	2106	1116	1062	2541	384	1599
v/s Ratio Prot	c0.18	0.02	0.01	c0.18	c0.06	
v/s Ratio Perm		0.11	0.12			c0.11
v/c Ratio	0.30	0.18	0.19	0.25	0.53	0.11
Uniform Delay, d1	9.7	4.8	4.8	5.1	42.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	0.0	0.2	0.7	0.1
Delay (s)	10.1	4.8	4.8	5.3	42.7	0.1
Level of Service	B	A	A	A	D	A
Approach Delay (s)	8.4			5.2	23.2	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



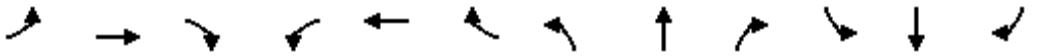
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	119	10	883	266	10	65	1140	1638	212	33	1437	60
v/c Ratio	0.32	0.08	0.55	0.45	0.08	0.23	0.94	0.73	0.20	0.18	0.94	0.04
Control Delay	41.5	44.8	1.3	37.2	44.8	2.0	48.9	13.6	1.9	54.1	42.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	44.8	1.3	37.2	44.8	2.0	48.9	13.6	1.9	54.1	42.9	0.0
Queue Length 50th (ft)	37	6	0	74	6	0	~398	322	0	11	342	0
Queue Length 95th (ft)	45	13	0	110	13	0	89	464	16	m20	#430	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	372	171	1615	597	169	312	1210	2248	1084	209	1525	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.06	0.55	0.45	0.06	0.21	0.94	0.73	0.20	0.16	0.94	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	5	883	245	5	60	285	1523	195	30	1394	30
Future Volume (veh/h)	89	5	883	245	5	60	285	1523	195	30	1394	30
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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	119	10	0	266	10	65	1140	1638	212	33	1437	0
Peak Hour Factor	0.75	0.50	1.00	0.92	0.50	0.92	0.25	0.93	0.92	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	459	95		581	164	139	1045	2229	994	62	1737	
Arrive On Green	0.05	0.05	0.00	0.09	0.09	0.09	0.30	0.62	0.62	0.02	0.34	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	5106	1585
Grp Volume(v), veh/h	119	10	0	266	10	65	1140	1638	212	33	1437	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1702	1585
Q Serve(g_s), s	3.1	0.5	0.0	7.1	0.5	3.9	30.0	31.8	5.8	0.9	25.8	0.0
Cycle Q Clear(g_c), s	3.1	0.5	0.0	7.1	0.5	3.9	30.0	31.8	5.8	0.9	25.8	0.0
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	459	95		581	164	139	1045	2229	994	62	1737	
V/C Ratio(X)	0.26	0.11		0.46	0.06	0.47	1.09	0.74	0.21	0.53	0.83	
Avail Cap(c_a), veh/h	590	171		581	170	144	1045	2229	994	207	1737	
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.7	45.4	0.0	40.1	41.9	43.4	35.0	13.2	8.2	48.7	30.3	0.0
Incr Delay (d2), s/veh	0.4	0.6	0.0	0.7	0.2	2.9	56.0	2.2	0.5	2.6	4.7	0.0
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(50%),veh/ln	1.4	0.3	0.0	3.1	0.2	1.6	20.0	11.1	2.0	0.4	10.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.0	46.0	0.0	40.7	42.1	46.4	91.0	15.4	8.7	51.3	35.0	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	C	
Approach Vol, veh/h		129			341			2990			1470	
Approach Delay, s/veh		42.3			41.8			43.7			35.3	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	68.2	15.0	11.0	34.0	40.0	11.3	14.7
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	9.0	9.0	30.0	30.0	9.0	9.0
Max Q Clear Time (g_c+I1), s	2.9	33.8	9.1	2.5	32.0	27.8	5.1	5.9
Green Ext Time (p_c), s	0.0	12.5	0.0	0.0	0.0	1.6	0.1	0.1

Intersection Summary	
HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D

Notes

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

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix G –
All-Way Stop Control Warrant Analysis

1.0 All -Way Stop Control Warrants

Warrants from the Manual on Uniform Traffic Control Devices (MUTCD) were analyzed to support the installation of all-way stop control at intersections #106 and #107 on Sorrel Avenue (as shown in **Figures 25, 26, and 27**). Section 2B.07 of the MUTCD defines appropriate applications of multi-way stop control. Criteria for multi-way stop control include:

- Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.

- Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions. As the intersections have not yet been built and therefore have no crash history, the consideration of crash occurrence is not applicable to these intersections.

- Minimum volumes:

    - The vehicular volume entering the intersect from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and

    - The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but

    - If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in the previous two items.

1.1 Traffic Signal Warrants for Consideration

Applicable traffic signal warrants were considered for the first multi-way stop control criterion. Of the eight (8) traffic signal warrants in the MUTCD, Warrant 1 (Eight-Hour Vehicular Volume), Warrant 2 (Four-Hour Vehicular Volume), and Warrant 3 (Peak Hour) are applicable for consideration at these two intersections. Warrant 1 (Eight-Hour Vehicular Volume) and Warrant 2 (Four-Hour Vehicular Volume) are unlikely to be met at intersections #106 and #107 based on projected traffic volume generated by Redtail Ridge land uses and connectivity of Sorrel Avenue. Warrant 3 (Peak Hour) was analyzed in detail.

1.1.1 Traffic Signal Warrant 3, Peak Hour

Section 4C.04 of the MUTCD defines the criteria for traffic signal Warrant 3, Peak Hour. Guidance for this warrant states "this signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time." Given the industrial use of Redtail Ridge, consideration of Warrant 3 is appropriate at intersections #106 and #107. Criteria for this traffic signal warrant are:

- If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:
    - The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach; and
    - The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes; and
    - The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.
- The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.

2.0 All-way Stop Control Warrant Evaluation

Intersections #106 and #107 were evaluated based on the previously defined criteria for multi-way stop control and peak hour traffic signal warrants. Turning movement volumes at both intersections were only developed for the future AM and PM peak hours; therefore the only volume warrant that can be evaluated is traffic signal Warrant 3, Peak Hour. The results of traffic signal Warrant 3 evaluation are shown in **Table G.1**.

Table G.1 - Traffic Signal Warrant 3 (Peak Hour) Evaluation

	Criteria	Calculated	Threshold	Criteria Satisfied?
Intersection #106	Maximum minor street delay	8.9 vehicle-hours (PM peak)	4 vehicle-hours	Yes
	Maximum minor street volume	312 vph (PM peak)	100 vph	Yes
	Total entering volume	1076 vph (PM peak)	800 vph	Yes
Intersection #107	Maximum minor street delay	2.3 vehicle-hours (PM peak)	4 vehicle-hours	No
	Maximum minor street volume	246 vph (PM peak)	100 vph	Yes
	Total entering volume	860 vph (PM peak)	800 vph	Yes

Based on the PM peak operations, intersection #106 meets all three criteria to satisfy traffic signal Warrant 3, peak hour. Though one traffic signal warrant is met, it is very unlikely that any others would be met. Considering that the minor street volume is primarily driven by traffic to and from the hospital use, which has more even demand throughout the day than industrial uses, the future 8-hour volume at intersection #106 may satisfy the all-way stop warrant minimum volume. One traffic signal warrant does not require the installation of a traffic signal, and in this case, installing an all-way stop at intersection #106 is a more prudent course of action.

At intersection #107, two of three criteria for the peak hour traffic signal warrant are met. While peak hour delay does not meet the threshold for the peak hour traffic signal warrant, peak hour delay does exceed 30 seconds delay per vehicle for the minor street approach as identified in the multi-way stop warrant. Peak hour volumes also exceed the peak hour volume thresholds in the multi-way stop warrant in addition to traffic signal Warrant 3. To estimate off-peak volume, projected peak hour volume was extrapolated based on the nearest daily traffic counts on 96th Street south of Dillon Road. Based on the projected volumes at intersection #107 shown in **Table G.2** the multi-way stop warrant is met for five hours. Three additional hours nearly meet the threshold for the multi-way stop warrant with vehicle traffic only. With the addition of pedestrian and bicycle traffic anticipated based on the multimodal connections through Redtail Ridge it is very likely that the multi-way stop warrant will be met. An all-way stop is therefore recommended at intersection #107 for operational benefit, as well as improving opportunities for pedestrians and bicyclists to cross Sorrel Avenue.

Table G.2 – Intersection #107 Multi-Way Stop Evaluation

Hour	Sorrel Avenue Volume	Internal Connector/Access Volume	Multi-Way Stop Warrant Met?
5:00 AM	111	18	No
6:00 AM	254	41	No
7:00 AM	541	87	No
8:00 AM	652	105	No
9:00 AM	398	64	No
10:00 AM	339	55	No
11:00 AM	365	211	Yes
12:00 PM	417	239	Yes
1:00 PM	250	223	Almost
2:00 PM	282	251	Almost
3:00 PM	373	332	Yes
4:00 PM	455	405	Yes
5:00 PM	432	385	Yes
6:00 PM	255	227	Almost

It should be noted that this planning-level evaluation assumes that all hospital access is from Sorrel Avenue at intersections #106 and #107. If the hospital-requested right-in right-out access to Northwest Parkway is approved, volumes at these intersections is likely to be reduced and intersection control should be reevaluated. The project team prefers the implementation of all-way stop control at intersection #106 and intersection #107 over roundabout control due to operational flexibility should the Northwest Parkway right-in right-out access be approved.

Appendix H – Percent Contribution

Appendix G: Redtail Ridge Percent of Total Entering Traffic to the Intersection/Segment

Intersection/Segments	Year 2025 + Phase 1 (AM Peak)					Year 2025 + Phase 1 (PM Peak)						Year 2040 + Project (AM Peak)					Year 2040 + Project (PM Peak)					
	Ex	Bkgd	Redtail	Total	Redtail %	Ex	Bkgd	Redtail	Total	Redtail %	Average	Ex	Bkgd	Redtail	Total	Redtail %	Ex	Bkgd	Redtail	Total	Redtail %	Average
Dillon Road/McCaslin Boulevard	2591	171	60	2822	2%	3475	156	63	3694	2%	2%	2591	429	133	3153	4%	3475	470	152	4097	4%	4%
Dillon Road/88th Street	1402	271	60	1733	3%	1594	221	63	1878	3%	3%	1402	403	133	1938	7%	1594	386	152	2132	7%	7%
Dillon Road/96th Street	2884	594	182	3660	5%	3176	443	193	3812	5%	5%	2884	881	384	4149	9%	3176	759	443	4378	10%	10%
88th Street/Campus Drive	1746	149	45	1940	2%	1035	143	47	1225	4%	3%	1746	184	98	2028	5%	1035	205	110	1350	8%	6%
88th Street/Tape Drive	1075	139	15	1229	1%	708	134	0	842	0%	1%	1075	235	85	1395	6%	708	192	102	1002	10%	8%
96th Street/Campus Drive	2269	331	334	2934	11%	2102	230	354	2686	13%	12%	2269	536	581	3386	17%	2102	428	660	3190	21%	19%
Northwest Parkway/96th Street/Via Varra	2780	351	190	3321	6%	2998	246	201	3445	6%	6%	2780	735	280	3795	7%	2998	677	312	3987	8%	8%
Northwest Parkway/Tape Drive/Via Varra	2707	285	493	3485	14%	2816	210	521	3547	15%	14%	2707	638	1082	4427	24%	2816	579	1245	4640	27%	26%
Northwest Parkway/US 36 North Ramps (WB)	2948	267	455	3670	12%	2993	196	481	3670	13%	13%	2948	662	999	4609	22%	2993	607	1150	4750	24%	23%
Northwest Parkway/US 36 South Ramps (EB)	2189	158	169	2516	7%	2667	151	333	3151	11%	9%	2189	486	361	3036	12%	2667	518	801	3986	20%	16%
88th Street/Rock Creek Parkway	1138	179	15	1332	1%	969	195	16	1180	1%	1%	1138	292	32	1462	2%	969	291	39	1299	3%	3%
S. 88th St. (Btw Dillon Rd and Campus Dr)	869	103	30	1002	3%	679	107	31	817	4%	3%	869	186	83	1138	7%	679	181	94	954	10%	9%
S. 88th St. (Btw Campus Dr and Tape Dr)	1075	145	15	1235	1%	708	130	16	854	2%	2%	1075	185	68	1328	5%	708	182	79	969	8%	7%
S. 88th St. (South of Tape Dr)	1075	139	15	1229	1%	708	134	0	842	0%	1%	1075	235	32	1342	2%	708	192	39	939	4%	3%
Dillon Rd (Btw S. 88th St. and S. 96th St.)	740	242	30	1012	3%	1231	193	32	1456	2%	3%	740	320	50	1110	5%	1231	319	58	1608	4%	4%
S. 96th St. (North of Dillon Rd)	1622	436	114	2172	5%	1718	318	121	2157	6%	5%	1622	593	251	2466	10%	1718	482	289	2489	12%	11%
S. 96th St. (Btw Dillon Road and Northwest Pkwy)	2159	315	182	2656	7%	1983	213	193	2389	8%	7%	2159	521	384	3064	13%	1983	407	443	2833	16%	14%
Northwest Pkwy (Northeast of S. 96th St.)	1130	54	76	1260	6%	1221	48	81	1350	6%	6%	1130	285	166	1581	10%	1221	304	192	1717	11%	11%
Northwest Pkwy (Btw S. 96th St. and Tape Dr)	2338	233	152	2723	6%	2459	147	160	2766	6%	6%	2338	567	197	3102	6%	2459	511	215	3185	7%	7%
Northwest Pkwy (Btw Tape Dr and US 36)	2600	260	455	3315	14%	2743	186	481	3410	14%	14%	2600	615	999	4214	24%	2743	562	1150	4455	26%	25%
Northwest Pkwy (South of US 36)	1749	70	38	1857	2%	1902	70	40	2012	2%	2%	1749	351	83	2183	4%	1902	368	95	2365	4%	4%

BOULDER VALLEY SCHOOL DISTRICT RE-2

RESOLUTION NO. 22-25

WHEREAS, the Board of Education ("Board") of Boulder Valley School District RE-2 ("District") is the owner of the Monarch K-8 and Monarch High School Campus ("Campus") located in the City of Louisville, Colorado ("City"); and

WHEREAS, vehicular access to and from the Campus is primarily along Campus Drive, a public right-of-way previously dedicated by the District and owned by the City; and

WHEREAS, the real property adjacent to the Campus on the south was acquired by Brue-Baukol Capital Partners which recently has become a joint owner with Sterling Bay Capital Partners, (collectively the "Developer"); and

WHEREAS, the Developer has filed a preliminary and final plat with the City for the development of the Property titled "Redtail Ridge – Filing No. 1;" and

WHEREAS, as a condition of the application process for Redtail Ridge – Filing No. 1, the City requires the Developer to make the widening and extension of Campus Drive part of the first phase of infrastructure improvements that will be followed in the future as part of a larger construction project by the Developer to extend the right-of-way on the Developer's property to South 96th Street, creating a second and much-needed access to the Campus; and

WHEREAS, the alignment currently proposed by the Developer, in consultation with the District and City, will add approximately 1.15 acres of District property to the current Campus Drive right-of-way, improve pedestrian and vehicle access to and from the Campus, and keep the Campus parking lot virtually intact; and

WHEREAS, the proposed new configuration of Campus Drive is depicted on Attachment A; and general vicinity of the Campus Drive widening improvements is depicted on Attachment B; and

WHEREAS, the District's staff has reviewed the proposed widening and new alignment, has determined that the construction of the Campus Drive project will not significantly impact school operations, and has recommended the project as it will provide a substantial benefit to the District by improving access to and from the Campus.

NOW, THEREFORE, BE IT RESOLVED:

Section 1. Approval of Concept. That the Board of Education hereby approves the concept for the widening of Campus Drive by the Developer, substantially in the configuration presented on Attachment B, including the potential future conveyance or dedication by the District of approximately 1.15 acres of District property to the City for additional right-of-way as shown on Attachment B, subject to the following:

A. That a land use application filed by the Developer or its successor that includes the new alignment of Campus Drive as shown on Attachment A is approved by the City within one year from the date of this Resolution; and

B. That upon receipt of the City's written request within 180 days after approval of the land use application, the additional right-of-way be dedicated by the District to the City and that any necessary documents of conveyance to be subject to approval by the District's legal counsel; and

C. That, if deemed necessary by the Authorized District Officials, designated below, to allow construction of the Campus Drive widening improvements to proceed prior to dedication or conveyance of the additional right-of-way to the City as provided herein, the District will grant a temporary construction easement to the Developer, on terms approved by the District's legal counsel, following or in conjunction with approval and the issuance of building permits for the project by the City.

D. That the widening of Campus Drive in the configuration presented does not prevent or materially interfere with pedestrian or vehicular access to and from the Campus during construction.

Section 2. Approval and Execution of Documents; Authorized District Officials. The President or Vice-President of the Board, the Superintendent of Schools, and the District's Assistant Superintendent for Operational Services ("Authorized District Officials") are each individually hereby authorized to execute and deliver for and on behalf of the Board and District any and all additional documents, easements, agreements and other papers and to perform all other acts that each of them may deem necessary or appropriate in order to implement and carry out the transaction and other matters authorized by this Resolution.

Section 3. Severability. If any section, paragraph, clause, or provision of this Resolution shall for any reason be held to be invalid or unenforceable, the invalidity or unenforceability of such section, paragraph, clause, or provision shall not affect any of the remaining provisions of this Resolution.

APPROVED AND ADOPTED this 23rd day of August 2022.

BOULDER VALLEY SCHOOL DISTRICT RE-2

By: Kathy Gebhardt
Name: Kathy Gebhardt
Title: President, Board of Education

ATTEST:

By: _____
Name: Laura Shafer
Title: Secretary, Board of Education

4880-7561-6557, v. 1

101 Spader Way
Broomfield, Colorado 80020
303-452-9910 Fax 303-451-0289
www.northmetrofire.org

David A. Ramos
Fire Chief

April 9, 2021

Jordan Swisher & Jay Hardy
Redtail Ridge Development
1515 Blake Street
Suite 210
Denver, CO 80202

Re: Letter of Support for Easement Request

Mr. Swisher & Mr. Hardy:

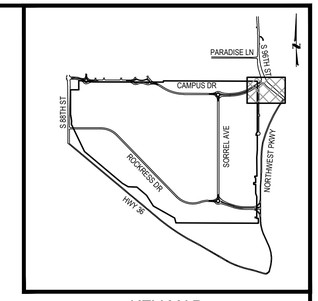
North Metro Fire Rescue District ("District") submits this letter of support for Redtail Ridge Development's ("RRD") request for a right-of-way access easement consisting of .056 acres ("Easement") over a portion of the District' property located at 13975 S 96th Street, Broomfield, CO 80020 ("Property"), subject to the conditions described herein.

When the Northwest Parkway Public Highway Authority ("Authority") deeded the Property to the District, it retained a perpetual multi-use easement over and across portions of the Property, including the area that is the subject of the RRD's requested Easement. The District and Authority have had preliminary discussions concerning RRD's Easement request, which the District intends to continue should this development proceed.

It is the District's understanding that the requested Easement will be used to expand both Campus Drive and the turn lane onto southbound S 96th Street. Subject to the final design and form of the Easement agreement, the District believes the Easement will benefit traffic flow. In exchange for the Easement, RRD has agreed to cover all costs associated with the Easement, including legal fees. RRD has also agreed to pay for the costs related to installation of an Opticom Emergency Traffic System on 96th Street.

Based on the foregoing, the District is in support of RRD's Easement request. Please do not hesitate to contact me with any questions.

Richard Miller, Board President
North Metro Fire Rescue District



KEY MAP
1"=2000'

BOUNDER COUNTY

CITY OF LOUISVILLE

CITY OF BROOMFIELD

CAMPUS DR
(120' ROW)

EXISTING PROPERTY
BOUNDARY (TYP)

NORTHWEST PARKWAY
PUBLIC HIGHWAY AUTHORITY
BROOMFIELD BUSINESS
CENTER FILING NO. 1

S 96TH ST
(EX ROW)

NORTH METRO FIRE RESCUE DISTRICT
BROOMFIELD BUSINESS CENTER
FILING NO. 1 REPLAT B

OLD S 96TH ST
(EX ROW)

REDTAIL RIDGE
PROPERTY
BOUNDARY

LEGEND

PR ROW

EX ROW

NORTH METRO FIRE
RESCUE DISTRICT
ROW DEDICATION AREA

NORTHWEST PARKWAY
PUBLIC HIGHWAY AUTHORITY
ROW DEDICATION AREA

NORTHWEST PARKWAY
(EX ROW)

CAMPUS DR ROW AREA		
LOCATION	PROPOSED ROW AREA TO BE DEDICATED (SF)	PROPOSED ROW AREA TO BE DEDICATED (ACRES)
NORTH METRO FIRE RESCUE DISTRICT	2499.33	0.06

S 96TH ST ROW AREA		
LOCATION	PROPOSED ROW AREA TO BE DEDICATED (SF)	PROPOSED ROW AREA TO BE DEDICATED (ACRES)
NORTH METRO FIRE RESCUE DISTRICT	1331.68	0.03
NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY	7088.55	0.16

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

REDTAIL RIDGE - ROW ACQUISITION EXHIBIT

40 0 40 80
SCALE: 1" = 40'

Filepath: P:\190108\ENGINEERING\EXHIBIT\ROW ACQUISITION EXHIBIT DWG Layout: LAYOUT2
User: Cesar Loya Date/Time: Wed, 07/13/22 11:38:00A By: Cesar Loya
Plotter: FRI 07/15/22 11:38:00A By: Cesar Loya

Mr. Rob Zuccaro
Planning and Building Safety Director
City of Louisville
749 Main St
Louisville, CO 80027

Re: Redtail Ridge Xcel Easement Encroachments

Dear Mr. Zuccaro:

Please be advised that Public Service Company of Colorado (dba Xcel Energy) is in receipt of the Final Plat for Redtail Ridge dated April 28th, 2022, and Civil Construction Drawings dated May 23rd and May 26th, 2022. We have also had numerous conversations with the Redtail Ridge development team regarding Xcel's easements through the property and the proposed impact and encroachments into our easements.

The specific easements encroachments that have been reviewed include:

1. 50' PSCO Easement Rec. No. 543534 – Rockcress Drive extension crossing
2. 40' PSCO easement Rec. No. 290792 – Sorrel Avenue crossing & path crossing
3. 26' PSCO easement Rec. No. 00639459 – Sorrel Avenue crossing & path crossing
4. 40' PSCO easement Rec. No. 531606 – path crossing (2 crossings)

We have reviewed the existing easements for ***Electric Distribution*** and have discussed the encroachments with the Redtail Ridge development team. By means of this letter, The Electric Distribution Area Engineer at Xcel Energy is accepting the proposed crossings pertaining to Electric Distribution; contingent upon the improvements remaining consistent with the reviewed documents and in conformance with the underlying requirements defined in the individual easement documents.

Should you have any questions concerning this matter, please feel free to contact me at (303) 571-3305.

Sam Bebernes
Area Engineer – Boulder

Boulder County

Parks & Open Space
5201 St. Vrain Road • Longmont, CO 80503
303-678-6200 • POSinfo@bouldercounty.org
www.BoulderCountyOpenSpace.org

February 16, 2023

Rob Zuccaro
Director of Community Development
City of Louisville
749 Main Street
Louisville, CO 80027

Re: Redtail Ridge Proposed Open Space Donation

Dear Rob,

It is the county's understanding that the Redtail Ridge project may come before the Louisville City Council for preliminary plat approval within the next few months. If the city accepts an offer of dedication of 47.7 acres of land in the vicinity of Paradise Lane for open space, the county would be willing to own the fee title to the property subject to a conservation easement to be held by the city. The county would also be willing to manage the property.

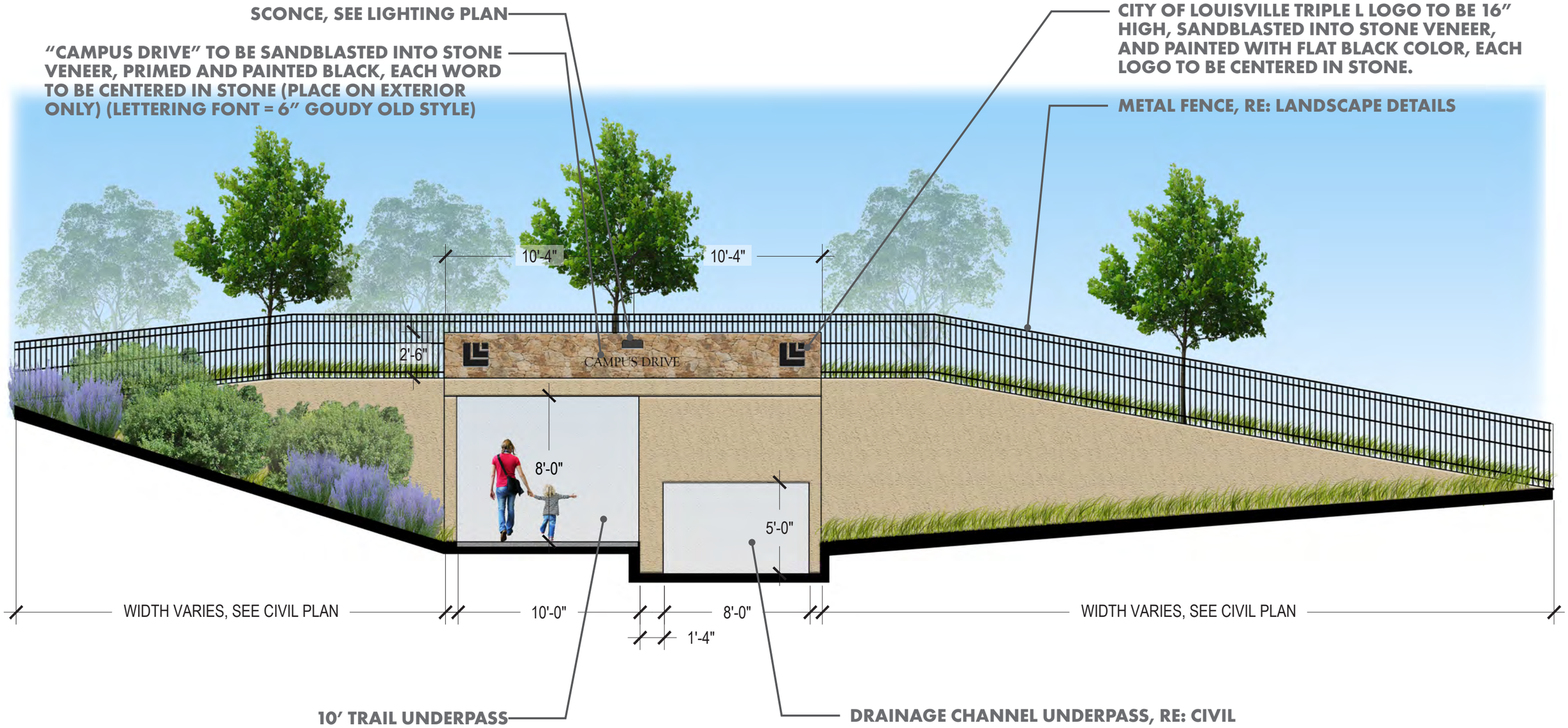
The acceptance of the property would be subject to final approval of the Board of County Commissioners at a public meeting.

Please let me know if you have any questions.

Sincerely,

Therese Glowacki
Director
Parks & Open Space

Claire Levy *County Commissioner* **Marta Loachamin** *County Commissioner* **Ashley Stolzmann** *County Commissioner*



REDTAIL RIDGE | WEST UNDERPASS ELEVATION

08/10/2022

SCALE: 3/16" = 1'-0"

NORRIS DESIGN
Planning | Landscape Architecture | Branding

SCONCE, RE: LIGHTING PLAN

"CAMPUS DRIVE" TO BE SANDBLASTED INTO STONE VENEER, PRIMED AND PAINTED BLACK, EACH WORD TO BE CENTERED IN STONE (PLACE ON EXTERIOR ONLY) (LETTERING FONT = 6" GOUDY OLD STYLE)

METAL FENCE, RE: LANDSCAPE DETAILS

CITY OF LOUISVILLE TRIPLE L LOGO TO BE 16" HIGH, SANDBLASTED INTO STONE VENEER, AND PAINTED WITH FLAT BLACK COLOR, EACH LOGO TO BE CENTERED IN STONE.



DRAINAGE CHANNEL UNDERPASS, RE: CIVIL

10' TRAIL UNDERPASS

REDTAIL RIDGE | EAST UNDERPASS ELEVATION

08/10/2022

SCALE: 3/16" = 1'-0"

NORRIS DESIGN
Planning | Landscape Architecture | Branding

Redtail Ridge

Sustainability & Wellness

TRYBA ARCHITECTS Perkins&Will

BranchPattern HKS HARRIS KOCHER SMITH

Sustainability Commitments

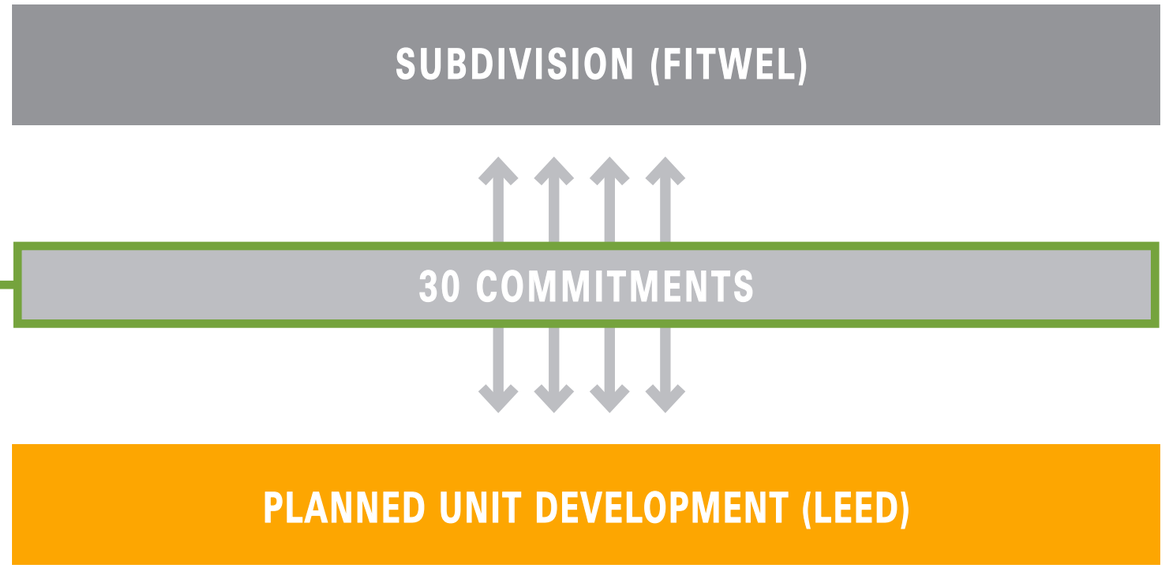
SECTION	#	COMMITMENT	VALIDATION
Community	1	Wayfinding	Fitwel
	2	Crop Share Drop Off	Fitwel
	3	Building Operational Guidelines	Fitwel
	4	Comprehensive Composting	LEED
	5	Emergency Preparedness Plan	Fitwel
	6	Public Art	Fitwel
Energy & Carbon	7	LEED Certification for all buildings	LEED
	8	Idle Reduction	Fitwel
	9	Optimize Energy Performance	LEED
	10	Renewable Energy Production Min. 2.6 MW Solar Garden	LEED
	11	Heat Island Reduction	Fitwel
	12	Advanced Energy Metering	LEED
Site Development & Water	13	Open Space	LEED
	14	Walking Trail	Fitwel
	15	Light Pollution Mitigation	Fitwel
	16	Restorative Garden	Fitwel
	17	Indoor Water Use	LEED
	18	Outdoor Water Use	LEED
Transportation & Mobility	19	Pedestrian Network	Fitwel
	20	Green Vehicles	Fitwel
	21	Safe Street Infrastructure	Fitwel
	22	Transit Access	Fitwel
	23	Bicycle Parking	Fitwel
	24	Universal Accessibility	Fitwel
Health	25	Outdoor Fitness Area	Fitwel
	26	Bike Lanes	Fitwel
	27	Minimum IAQ Performance	LEED
	28	Outdoor Space Amenities	Fitwel
	29	Air Quality Testing	Fitwel
	30	Tobacco and Smoke-Free Outdoor Spaces	Fitwel

Sustainability Plan and Commitments

Redtail Ridge 2.0 has developed a sustainability framework that targets outcomes in the areas of community, energy, site, transportation, and health. These commitments will be validated through globally recognized third-party rating systems: LEED and Fitwel. Together, these certification programs address sustainability at the building level (LEED) and at the level of the overall district (Fitwel Commercial and Industrial Site). Commitments validated through Fitwel will form part of the project's final scorecard for Fitwel: Commercial and Industrial Sites.

Executive Summary of Sustainability Commitments planned for the Subdivision Improvement Agreement (SIA).

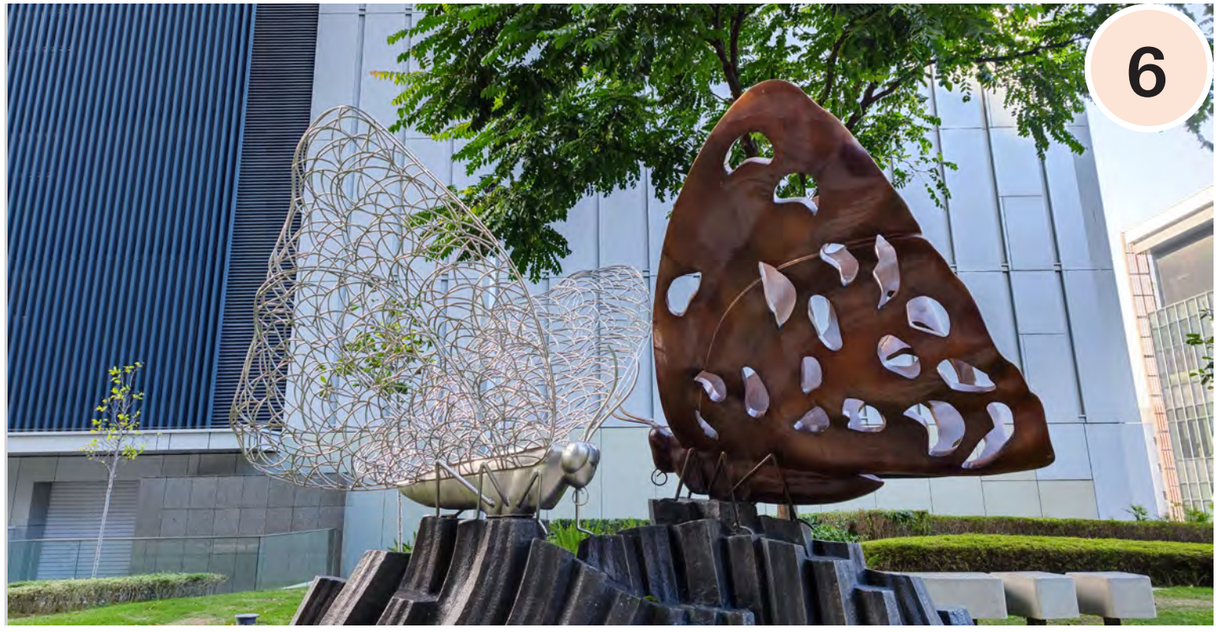
Commitments that apply to development of projects in the district will be validated through LEED certifications. In addition to requiring LEED Silver certification, the SIA will also list specific LEED credits that must be achieved by each project, as demonstrated by its final LEED scorecard.



Credit Validation | Community

SECTION	#	COMMITMENT	VALIDATION
Community	1	Wayfinding	Fitwel
	2	Crop Share Drop Off	Fitwel
	3	Building Operational Guidelines	Fitwel
	4	Comprehensive Composting	LEED
	5	Emergency Preparedness Plan	Fitwel
	6	Public Art	Fitwel





Credit Validation | Energy & Carbon

SECTION	#	COMMITMENT	VALIDATION
Energy & Carbon	7	LEED Certification for all buildings	LEED
	8	Idle Reduction	Fitwel
	9	Optimize Energy Performance	LEED
	10	Renewable Energy Production Min. 2.6 MW Solar Garden	LEED
	11	Heat Island Reduction	Fitwel
	12	Advanced Energy Metering	LEED





Credit Validation | Site Development & Water

SECTION	#	COMMITMENT	VALIDATION
Site Development & Water	13	Open Space	LEED
	14	Walking Trail	Fitwel
	15	Light Pollution Mitigation	Fitwel
	16	Restorative Garden	Fitwel
	17	Indoor Water Use	LEED
	18	Outdoor Water Use	LEED





Credit Validation | Transportation & Mobility

SECTION	#	COMMITMENT	VALIDATION
Transportation & Mobility	19	Pedestrian Network	Fitwel
	20	Green Vehicles	Fitwel
	21	Safe Street Infrastructure	Fitwel
	22	Transit Access	Fitwel
	23	Bicycle Parking	Fitwel
	24	Universal Accessibility	Fitwel





Credit Validation | Health

SECTION	#	COMMITMENT	VALIDATION
Health	25	Outdoor Fitness Area	Fitwel
	26	Bike Lanes	Fitwel
	27	Minimum IAQ Performance	LEED
	28	Outdoor Space Amenities	Fitwel
	29	Air Quality Testing	Fitwel
	30	Tobacco and Smoke-Free Outdoor Spaces	FItwel





SUSTAINABILITY COMMITMENTS BREAKDOWN

	#	PREVIOUS COMMITMENT	CURRENT ENFORCEABLE COMMITMENT	VALIDATION	DETAILED REQUIREMENTS
Community	1	5: All-electric HVAC and domestic water heating systems, with exceptions	2.6: Wayfinding	Fitwel	Include wayfinding within the project boundary that: 1. provides directions to a minimum of three qualifying amenities located within the project boundary. 2. provides directions to a minimum of two qualifying amenities located within a 1/2 mile walking distance from a site entrance. 3. outlines walking distances to identified qualifying amenities. 4. is located within 100 feet or 30 meters of all the following: a main entrance of each building, all site entrances, all on-site outdoor areas.
	2	21: Food truck coordination	10.4: Crop Share Drop-Off	Fitwel	Provide access to a minimum of one drop-off point designated for qualifying crop share or other fresh food delivery programs that is: 1. publicized to all regular occupants. 2. free to all regular occupants. 3. open during workplace work hours. 4. located within a 1/2-mile or an 800-meter walking route from all regularly occupied buildings. Qualifying crop share or other fresh food delivery programs: 1. provide access to fresh fruits and vegetables. 2. are scheduled to operate: – during workplace work hours. – a minimum of one day a week during workplace work days. – a minimum of five months of the year, or for the maximum growing season of the region.
	3	29: Sustainability Tenant Education	5.5: Building Operational Guidelines	Fitwel	Establish building operational guidelines that: 1. recommend the implementation of the following: – a tobacco- and smoke-free policy for all indoor areas. – an Indoor Air Quality (IAQ) policy that is as rigorous as the Fitwel Indoor Air Quality Standard (found at www.fitwel.org/fitwel-standards). – conducting IAQ testing at least once a year. – ventilating areas with chemicals use and storage separately for all indoor building areas. – an Integrated Pest Management (IPM) policy for all indoor building areas that is as rigorous as the Fitwel Integrated Pest Management Standard (found at www.fitwel.org/fitwel-standards). – a Green Purchasing policy for all indoor building areas that is as rigorous as the Fitwel building Green Purchasing policy, found under the Fitwel Building Policies tab. 2. are shared with occupants through one of the following: – tenant leases (for multi-tenant projects only) – tenant manual (for multi-tenant projects only) – digital communication, such as a website or digital application.
	4	28: Composting and Recycling Service	SSpc: Comprehensive Composting	LEED	Provide composting infrastructure to meet the needs of the entire project. Select one of the following: Option 1. Regular compost collection and offsite processing Provide organic waste receptacles and regular organic waste collection. Option 2. Onsite compost processing Provide organic waste collection receptacles and onsite compost unit(s) for onsite storage and processing.
	5	30: Participate in PACE	12.1: Emergency Preparedness Plan	Fitwel	Adopt a jurisdiction or district-wide emergency response plan or implement a comprehensive on-site emergency preparedness plan that: – identifies a minimum of one potential emergency scenario for the site context/geography (eg, biological events, storms, extreme weather events, fire, flooding, utility disruption). – outlines protective actions for each of the potential emergency scenario(s) identified (eg, evacuation, sheltering, shelter-in-place, lockdown, backup generators). – recommends emergency supplies that will be kept within the project boundary for each of the potential emergency scenarios identified. – outlines a framework for site-wide communication of proper precautions, available resources, and emergency notification. – outlines recurring trainings, drills, or emergency exercises. – establishes an emergency response team(s). – is publicized to all regular occupants.
	6	9: Participate in Xcel renewable energy program	7.1: Public Art	Fitwel	One Include a minimum of one permanent public artwork that: 1. is located in a minimum of one of the following spaces: – park or plazas – transit stops – outside a main building entrance – site entrance – on a building exterior visible to regular occupants. 2. is viewable by all regular occupants. 3. is executed by a local or regional artist. of public art by local artist
	7	1: All commercial development above 10,000 sq. ft. shall meet the LEED Silver rating.	LEED Certification for all buildings	LEED	Hold 10ksf - some small / accessory buildings may be developed

Energy & Carbon	8	2: in. 1 Point required in key LEED categories	6.5: Idle Reduction	Fitwel	Establish and implement an idle reduction policy that: 1. includes a maximum allowable idle time of 3 minutes, excluding: – legally authorized emergency motor vehicles – necessary operation (e.g., bus idling to deliver passengers; maintenance vehicles who rely on primary engine power). 2. applies to all vehicles entering the project boundary, both personal and commercial. 3. incorporates idle reduction signage in all designated loading areas within the project boundary. 4. establishes a protocol for reporting offenses. 5. is shared with all tenants through one of the following (for multi-tenant projects only): – tenant leases – tenant manuals.
	9	3: IECC 2021 (~20% more efficient than LEED v4.0 baseline)	EA: Optimize Energy Performance	LEED	IECC 2021 is exceeded by Louisville Municipal Code Establish an energy performance target no later than the schematic design phase. The target must be established as kBtu per square foot-year (kWh per square meter-year) of source energy use. Choose one of the options below: Option 1. Whole-building energy simulation Option 2. Prescriptive compliance: ASHRAE Advanced Energy Design Guide
	10	4: Install 2.6 MW solar on-site	EA: Renewable Energy Production	LEED	Use the building's annual energy cost, calculated in EA Prerequisite Minimum Energy Performance, if Option 1 was pursued; otherwise use the U.S. Department of Energy's Commercial Buildings Energy Consumption Survey (CBECS) database to estimate energy use and cost. The use of solar gardens or community renewable energy systems is allowed if both of the following requirements are met. The project owns the system or has signed a lease agreement for a period of at least 10 years. The system is located with the same utility service area as the facility claiming the use. Credit is based on the percentage of ownership or percentage of use assigned in the lease agreement.
	11	6: White roofs	6.2: Heat Island Mitigation	Fitwel	Implement qualifying heat island mitigation practices on a minimum of 51% all structures, open spaces, and paved infrastructure. Qualifying heat island mitigation practices include: – non-paved natural surfaces on pathways walkways, such as wood, dirt, grass, etc. – green roofs – green walls – high albedo surfaces on roofs and paved pathways, roadways, and parking areas, including white roofs and light-colored concrete – reflective shading devices over paved areas such as parking areas, sidewalks, or pedestrian plazas – vegetation coverage on roofs and paved pathways, roadways, and parking areas – preservation or creation of green open space, such as parks – heat-resistant construction materials
	12	7: Sub-metering	EA: Advanced Energy Metering	LEED	Install meters for future tenant spaces so that tenants will be capable of independently metering energy consumption (electricity, chilled water, etc.) for all systems dedicated to their space. Provide a sufficient number of meters to capture total tenant energy use with a minimum of one meter per energy source per floor. Install advanced energy metering for all base building energy sources used by the building.The advanced energy metering must have the following characteristics. Meters must be permanently installed, record at intervals of one hour or less, and transmit data to a remote location. Electricity meters must record both consumption and demand. Whole-building electricity meters should record the power factor, if appropriate. The data collection system must use a local area network, building automation system, wireless network, or comparable communication infrastructure. The system must be capable of storing all meter data for at least 36 months. The data must be remotely accessible. All meters in the system must be capable of reporting hourly, daily, monthly, and annual energy use.
& Water	13	10: Habitat Management Plan	SSc: Open Space	LEED	Provide outdoor space greater than or equal to 30% of the total site area (including building footprint). A minimum of 25% of that outdoor space must be vegetated (turf grass does not count as vegetation) or have overhead vegetated canopy. The outdoor space must be physically accessible and be one or more of the following: a pedestrian-oriented paving or turf area with physical site elements that accommodate outdoor social activities; a recreation-oriented paving or turf area with physical site elements that encourage physical activity; a garden space with a diversity of vegetation types and species that provide opportunities for year-round visual interest; a garden space dedicated to community gardens or urban food production; preserved or created habitat that meets the criteria of SS Credit Site Development—Protect or Restore Habitat and also includes elements of human interaction.
	14	11: Native and water-wise landscaping	3.4: Walking Trail	Fitwel	Include a qualifying outdoor walking trail that is free of charge, is min. of 1/4-mile long, shielded from other functions and located within a 1/2-mile walking route from all regularly occupied buildings.
	15	12: Biophillic site plan	6.3: Light Pollution Mitigation	Fitwel	Include a minimum of two of the following light pollution mitigation practices: 1. include light shields on all outdoor light fixtures. 2. install lighting motion sensors on pathway and walkway lighting. 3. require tenants to implement strategies to reduce light pollution from interior spaces. 4. schedule outdoor cleaning during daylight hours.

Site Development &	16	13: Green stormwater infrastructure	3.6: Restorative Garden	Fitwel	Include a qualifying outdoor restorative garden that is: 1. free of charge to all regular occupants 2. located within 1/2 mile walking distance of all regularly occupied buildings 3. includes natural, restorative elements (eg, vegetation, water features, or water bodies), 4. includes a minimum of one of the following amenities: *(seating, water feature, shelter from the elements, walking path)* 4. shielded from congested area 5. positioned away from major noise sources.
	17	14: Low water indoor fixtures (30% reduction to LEED v4.0 baseline)	WEp: Indoor Water Use Reduction	LEED	1. Reduce aggregate water consumption by 20% from the baseline 2. Eligible fixtures to be WaterSense labeled
	18	15: 50% Reduction in outdoor potable water use	WEc: Outdoor Water Use Reduction	LEED	Reduce outdoor water use through one of the following options. Nonvegetated surfaces, such as permeable or impermeable pavement, should be excluded from landscape area calculations. Athletic fields and playgrounds (if vegetated) and food gardens may be included or excluded at the project team's discretion. Option 1. No irrigation required Show that the landscape does not require a permanent irrigation system beyond a maximum two-year establishment period. OR Option 2. Reduced irrigation Reduce the project's landscape water requirement (LWR) by at least 50% from the calculated baseline for the site's peak watering month. Reductions must first be achieved through plant species selection and irrigation system efficiency as calculated in the Environmental Protection Agency (EPA) WaterSense Water Budget Tool. Additional reductions beyond 30% may be achieved using any combination of efficiency, alternative water sources, and smart scheduling technologies.
Transportation & Mobility	19	16: Complete Street Design	1.3: Pedestrian Network	Fitwel	Provide a comprehensive pedestrian network on-site that includes: 1. pedestrian crossings at all street intersections. 2. sidewalks or designated pedestrian pathways between main entrances of all buildings, outdoor amenities, main building entrances and outdoor amenities.
	20	17: EV Ready Parking and Level 02 Chargers	LTc: Green Vehicles	LEED	Designate 5% of all parking spaces used by the project as preferred parking for green vehicles. Clearly identify and enforce for sole use by green vehicles. Distribute preferred parking spaces proportionally among various parking sections (e.g. between short-term and long-term spaces). Green vehicles must achieve a minimum green score of 45 on the American Council for an Energy Efficient Economy (ACEEE) annual vehicle rating guide. A discounted parking rate of at least 20% for green vehicles is an acceptable substitute for preferred parking spaces. The discounted rate must be publicly posted at the entrance of the parking area and permanently available to every qualifying vehicle. In addition to preferred parking for green vehicles, meet one of the following two options for alternative-fuel fueling stations: Option 1. Electric vehicle charging Install electrical vehicle supply equipment (EVSE) in 2% of all parking spaces used by the project. Clearly identify and reserve these spaces for the sole use by plug-in electric vehicles. Parking spaces that include EVSE must be provided separate from and in addition to preferred parking spaces for green vehicles. The EVSE must: Provide a Level 2 charging capacity (208 – 240 volts) or greater. Comply with the relevant regional or local standard for electrical connectors, such as SAE Surface Vehicle Recommended Practice J1772, SAE Electric Vehicle Conductive Charge Coupler or IEC 62196 of the International Electrotechnical Commission for projects outside the U.S. Be networked or internet addressable and be capable of participating in a demand-response program or time-of-use pricing to encourage off-peak charging. OR Option 2. Liquid, gas, or battery facilities Install liquid or gas alternative fuel fueling facilities or a battery switching station capable of refueling a number of vehicles per day equal to at least 2% of all parking spaces.
	21	18: City Minimum Parking	11.1: Safe Street Infrastructure	Fitwel	Include safe street infrastructure elements from a minimum of two of the qualifying categories that: 1. are located on a minimum of 51% of street intersections within the project. 2. are located on a minimum of 51% of mid-block crossings within the project. Qualifying safe street infrastructure categories are: – traffic controls (pedestrian, bicycle and motor vehicle signs, road markers, and signaling devices placed alongside roads, highways, and other public areas) – road design calming elements (narrowing streets and traffic lanes, widening sidewalks, incorporating traffic circles and roundabouts, adding diagonal parking spots alongside traffic lanes, and changing one way streets to two way streets) – pedestrian visibility (raised crosswalks, signalized crosswalks, curb extensions, pedestrian medians)
	22	19: Funding for shuttle	1.1: Transit Access	Fitwel	Metro District will provide a free, dedicated shuttle service that is connected to a transit stop (Flatiron RTD) - also proposing Ecopass. Connect the project to public transit by identifying a minimum of one transit stop that meets one of the following: – is located within a 1/2 mile or 800 meters walking distance of at least one entrance to the project. – is located within the project boundary. – is connected to a dedicated shuttle service that is free to all regular occupants.

	23	20: Shared electric bike fleet	2.5: Bicycle Parking	Fitwel	Include a minimum of one shared bicycle station or dockless bicycle hub within the project boundary that is accessible free of charge to all regular occupants. Include bicycle parking that: 1. is located within the project boundary. 2. is free of charge to all regular occupants. 3. is covered from the elements. 4. is secured from theft. 5. is located in a minimum of one of the following locations: – near shared bicycle stations or hubs – in a common open space – at pedestrian routes and pathways – in parking areas. 6. is provided for a minimum of 2.5% of regular occupants.
	24	8: Solar ready	2.1: Universal Accessibility	Fitwel	Provide qualifying universally accessible entrances and pathways at all of the following areas within the project: – all sidewalks – route to a transit stop if located on-site or within a 1/2 mile or 800 meters walking distance from a site entrance – all main entrances to buildings – outdoor amenities and open space(s) – street crossings. Qualifying universally accessible entrances and pathways meet the following: – are free of obstacles that may impede or cause difficulties for those with physical disabilities, such as impeding trees, planting pots, bike racks, steps, or other barriers. – include adjoining ramps and sloped access in the event of stairs or steps to all main entrances of buildings. – include curb cuts and warning strips at street crossings
	25	22: Active stairway design	3.5: Outdoor Fitness Area	FItwel	Include a qualifying outdoor fitness area that: 1. is free of charge to all regular occupants. 2. is accessible a minimum of 12 hours a day. 3. is a space specifically designed for sport and exercise that includes a minimum of one of the following: – sports fields or courts, such as basketball courts, baseball fields, football fields, or soccer fields – outdoor fitness equipment such as outdoor stationary bicycles, air walkers or sit-up boards – secured mobile fitness equipment such as free-weights, yoga mats, other exercise equipment. 4. is located within a 1/2-mile or 800-meter walking route from all regularly occupied buildings. Regularly occupied buildings are buildings where occupants work, including: – commercial buildings – industrial buildings – retail buildings
	26	23: Shared, outdoor landscape areas	2.3: Bike Lanes	FItwel	Include bicycle lanes or pathways that: 1. are separated from traffic and marked as designated bicycle lanes through color coding or material selection. 2. are a minimum of 1 mile or 1600 meters long in one direction. 3. if provided on-site, meet a minimum of two of the following: – connect to an off-site network of bicycle lanes or pathways – connect the main project entrances to a minimum of one other function on-site (common areas, outdoor areas, building entrances or designated bicycle parking) – traverse the project. 4. if provided off-site, are directly connected to the project.

Health	27	24: Pandemic design best practices for HVAC	EQp: Minimum IAQ Performance	LEED	Meet the requirements for both ventilation and monitoring. **Ventilation** **Mechanically ventilated spaces**: ASHRAE Standard 62.1–2010 **Naturally ventilated spaces**: For naturally ventilated spaces (and for mixed-mode systems when the mechanical ventilation is inactivated), determine the minimum outdoor air opening and space configuration requirements using the natural ventilation procedure from ASHRAE Standard 62.1–2010 or a local equivalent, whichever is more stringent. Confirm that natural ventilation is an effective strategy for the project by following the flow diagram in the Chartered Institution of Building Services Engineers (CIBSE) Applications Manual AM10, March 2005, Natural Ventilation in Nondomestic Buildings, Figure 2.8, and meet the requirements of ASHRAE Standard 62.1–2010, Section 4, or a local equivalent, whichever is more stringent. **Monitoring** **Mechanically ventilated spaces**: For variable air volume systems, provide a direct outdoor airflow measurement device capable of measuring the minimum outdoor air intake flow. This device must measure the minimum outdoor air intake flow with an accuracy of +/–10% of the design minimum outdoor airflow rate, as defined by the ventilation requirements above. An alarm must indicate when the outdoor airflow value varies by 15% or more from the outdoor airflow setpoint. For constant-volume systems, balance outdoor airflow to the design minimum outdoor airflow rate defined by ASHRAE Standard 62.1–2010 (with errata), or higher. Install a current transducer on the supply fan, an airflow switch, or similar monitoring device. **Naturally ventilated spaces** For naturally ventilated spaces (and for mixed-mode systems when the mechanical ventilation is inactivated), comply with at least one of the following strategies. Provide a direct exhaust airflow measurement device capable of measuring the exhaust airflow. This device must measure the exhaust airflow with an accuracy of +/–10% of the design minimum exhaust airflow rate. An alarm must indicate when airflow values vary by 15% or more from the
	28	25: On-Site Exercise Facility	3.1: Outdoor Space Amenities	Fitwel	Include a minimum of one outdoor space amenity within the project boundary that: 1. is free of charge to all regular occupants. 2. includes one of the following elements: – tables and chairs – pedestrian pathways – water features – open lawn areas. 3. is located within a 1/2 mile or 800 meter walking distance of all regularly occupied buildings.
	29	26: Annual indoor air quality testing	6.7: Air Quality Testing	Fitwel	Conduct outdoor air quality testing that: 1. tests the air quality in the following outdoor areas: – near building mechanical and exhaust areas. – parking areas. – outdoor common areas. 2. tests for the following: – ozone – carbon monoxide – VOCs. 3. tests the air twice a year.
	30	27: Office buildings and build-outs to have operable windows	3.8: Tobacco and Smoke-Free Outdoor Spaces	Fitwel	Entryway system, CO2 monitoring options Establish and implement a tobacco- and smoke-free policy that: 1. is applied to all outdoor areas. 2. prohibits the use of all forms of smoking, tobacco use, and unregulated nicotine products 3. prohibits the inclusion of designated smoking areas within the project boundary. 4. is shared with all tenants through tenant leases or manuals

Redtail Ridge
Transportation Demand Management Plan



Date: March 24, 2023

Submitted To:
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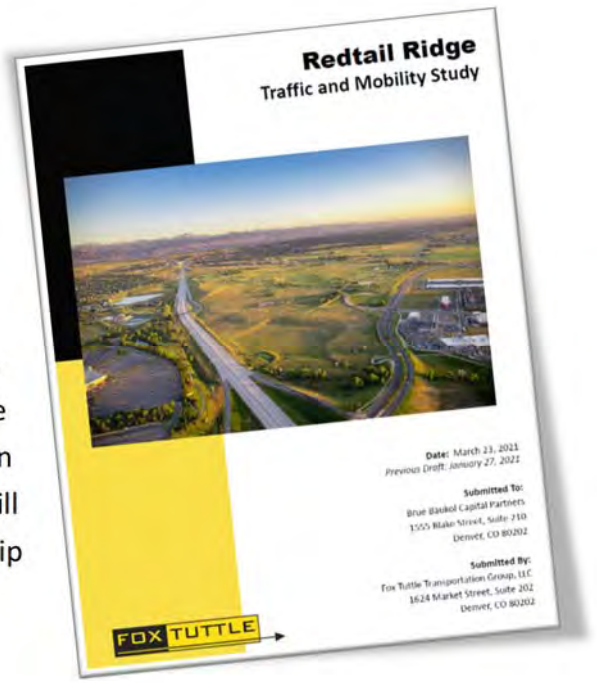
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1. Introduction

Transportation Demand Management (TDM) is the application of strategies and policies to reduce travel demand in general and single occupant vehicle (SOV) travel specifically. It can also mean redistributing this demand to occur at less impactful times. TDM measures help people use the transportation system more efficiently, while reducing traffic congestion, vehicle emissions and fuel consumption in support of a larger sustainability plan. TDM activities maximize the value of transportation infrastructure and services by making options for non-SOV trip making easier to use and more readily available.

This TDM Plan was requested by City of Louisville staff as a supplemental submittal to the *Redtail Ridge Traffic and Mobility Study (Study),* to outline possible strategies to reduce SOV traffic generated by the proposed development. Sterling Bay and its development partners are planning to encourage and support non-SOV trips by employees to and from the development. This TDM plan was created to detail the identified strategies and tools which will be implemented as part of the Redtail Ridge development. The elements of this TDM plan in combination with existing programs and facilities within the area, will ensure that non-SOV trips are encouraged and that the trip reduction used in the *Study* is reasonable.



2. Development Overview

Sterling Bay and its development partners are proposing to build a mix of office, industrial, retail and commercial buildings on the former StorageTek campus in the City of Louisville, as detailed in the *Study*. The site is generally bounded by S. 88th Street to the west, Campus Drive to the north, S. 96th Street/Northwest Parkway to the east, and US-36 to the south. The project area is currently vacant but was previously occupied by Storage Tek, which was an active site until the 1990's. The *Study* provides a detailed comparison of potential trip making from the prior Storage Tek uses, the previously approved land uses associated with the ConocoPhillips development and the proposed land use associated with the Redtail Ridge development. In summary, the *Study* estimates that the Redtail Ridge development will generate approximately 28% fewer trips than the formally approved

ConocoPhillips development.

Trip generation of new land use is a significant part of the *Study* as they are modelled as additional trips within the community, and *Study* area roadways and intersections are evaluated for existing and future performance. The *Study* included a motor vehicle trip reduction of 12% to account for the presumed number of external non-single occupant vehicle trips (non-SOV trips)[1]. These trips would be made by walking, biking, carpool, vanpool, shared ride mobility service and/or transit service.



Exhibit 1: Sketch of Redtail Ridge Development and Multi-Modal Facilities (Source: Sterling Bay)

3. Current and Future Non-SOV Mode Share Goals

The new *City of Louisville Transportation Master Plan (TMP)* documented how commuters in Louisville and nearby communities travel to work. This data is based on US Census American Community Survey (https://www.census.gov/programs-surveys/acs) and is summarized in ***Figure 1***. This data is commonly used by agencies across the Denver region as a baseline for TDM programs. The current data is shown below and is the most current estimates available. Based on this data, approximately 28% of people who work in Louisville travel to work by non-SOV modes.

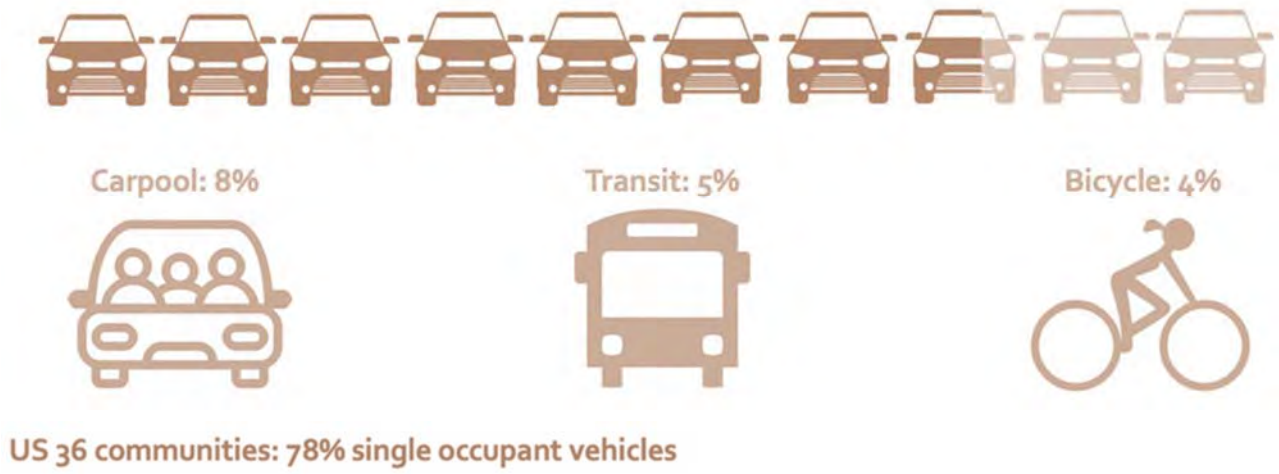
[1] City staff have required that a 12% reduction of SOV trip making potential be used in the *Study*. Analyses in the TDM study suggest this is conservative and the reduction could be as high as 28%.

Figure 1: Louisville and Comparison Area Commute Mode Share (from TMP)

	Drive Alone	Carpool	Transit	Bike	Walk	Work at Home	Other
City of Louisville	72.3%	4.7%	5.9%	2.3%	1.7%	12.7%	0.5%
City of Boulder	51.3%	4.9%	8.3%	10.3%	11.4%	12.5%	1.2%
Boulder County	65.2%	7.6%	5.0%	4.4%	5.3%	11.3%	1.3%
Denver Region	74.8%	8.5%	4.4%	1.2%	2.5%	7.5%	1.0%

The mode share data shown in ***Figure 2*** below is based on survey data from the *2016 Northwest Metro Region Mobility Report*, final draft dated July 2018, prepared by Commuting Solutions. This data shows the mode share for communities along the US 36 corridor, including the City of Louisville. The current data is shown below and is the most current estimates available. Based on this data, approximately 22% of people who work in the US 36 corridor travel to work by non-SOV modes.

Figure 2: US 36 Corridor Commute Mode Shares (from Commuting Solutions)



The anticipated effectiveness of TDM programs is based on their ability to serve commuters of different types of land uses and support trip making through means other than SOV. For the general office, industrial and retail land uses, the *Study* estimated the project would have 12% fewer SOV trips during the peak periods during all development phases.

Redtail Ridge's goal for multi-modal trip reduction is 25%. While substantially higher than the percentage reduction used in the *Study*, it is supported by the information outlined in **Figures 1 and 2**.

While the project team believes that the project's TDM efforts, coupled with existing TDM resources, will result in greater automobile trip reduction, the traffic analysis in the *Study* assumed a conservative trip reduction of 12% for all site uses based on feedback provided by City staff.

4. Planned Land Uses

The Redtail Ridge development at build-out is planning to include the following uses:

- 14,000 square feet of Retail Space (predominantly supporting other internal land use)
- 30,000 square feet of Amenity Space
- 118,750 square feet of Research and Development Space
- 435,000 square foot Hospital/Medical Office space
- 510,000 square feet of Industrial Space
- 534,000 square feet of Life Science Space
- 598,250 square feet of GMP Manufacturing Space
- 360,000 square feet of General Office Space

These land uses are anticipated to be constructed in a series of phases and culminating in full buildout. ***Figure 3*** illustrates the Redtail Ridge site plan to show locations of different land uses[2].

[2] Figure 3 depicts an estimated build out and it is subject to change

Figure 3: Redtail Ridge Development Site Plan



As noted in the site plan, there is a large pad dedicated to the future site of a hospital. The final location, implementation and design are expected to be finalized at the PUD level.

5. Existing Multi-Modal Network

The City of Louisville, Boulder County and the Colorado Department of Transportation (CDOT) have consistently invested in the development of a multi-modal transportation system in this region. The transportation system which serves the project area is a well-balanced mix of local, collector and arterial roadways, intersections with appropriate traffic control, bicycle facilities, pedestrian sidewalks, paths and crossing treatments and frequent transit service connecting to the larger front range area. New travel demand and trip making will be created by the Redtail Ridge development, but the existing and planned multi-modal programs and facilities in this area will ensure that many people can access the site using non-SOV modes of transportation.

The following is a summary of existing multi-modal programs and facilities.

Transit Service

The Redtail Ridge site is located within one mile of the RTD US 36 and East Flatiron Station (see **Photo 1**). This station is serviced by the Flatiron Flyer (routes FF1 and FF2) and the Sky Ride service to Denver International Airport (DEN) via route AB. The station has an underpass under US 36 and is connected to a network of first and final mile destinations. There are approximately 265 parking spaces and eight (8) bike racks at the station. This station is connected to the project site via the Northwest Parkway underpass and it's connecting multi-use path system.



Photo 1: US 36 and East Flatiron Station

The Flatiron Flyer BRT system provides fast and efficient service between Boulder and Denver. Buses are available at the US 36 and East Flatiron Station every 15 minutes during peak and every 30 minutes off peak (on average). Large air conditioned and air ride over the road coaches can serve approximately 50 passengers per vehicle. There is capacity for six (6) to eight (8) bikes on board depending on luggage and other passenger storage needs. The buses are equipped with charging for mobile devices.

The vehicles travel in the High Occupancy Vehicle (HOV) lanes on US 36 and I-25. The trip between the US 36 and East Flatiron Station and Denver Union Station is 28 minutes. The trip between downtown Boulder and the US 36 and East Flatiron Station is 23 minutes. The AB route that provides service to DEN is available every 30 minutes during most hours of the day. Large air conditioned and air ride over the road coaches can serve approximately 50 passengers per vehicle also service this route. The trip between DEN and the US 36 and East Flatiron Station is 34 minutes via the Northwest Parkway.

Walking

Most of the existing sidewalk and multi-use path network near the Redtail Ridge project is in the S. 88th Street corridor. This is due to the open lands that mostly front Dillon Road and S. 96th Street in the study area. The S. 88th Street sidewalks and multi-use paths connect the Monarch school campus to neighborhoods in Louisville and Superior. There is an existing underpass under S. 88th Street just south of Dillon Road. This underpass connects the Monarch school campus to the sidewalks on Dillon Road west of S. 88th Street. There are missing sidewalk and trail connections along S. 88th Street, Dillon Road, and S. 96th Street, with an example shown in **Photo 2**.



Photo 2: Coal Creek Regional Trail Informal Connection

It is anticipated that the demand to complete the sidewalk and multi-use path network between the CTC Campus, Redtail Ridge, Monarch school campus, residential areas, and retail centers will be increasingly important in the future as the TMP priorities are implemented. Specifically, new sidewalks and pathways will be necessary given future plans for shared ride mobility and BRT near Dillon Road and in the S. 96th Street corridor.

Figure 4 shows the proposed pedestrian and biking system internal to the site. **Figure 5** highlights the trail system and details the width of each facility.

Figure 4: Pedestrian and Biking System Exhibit

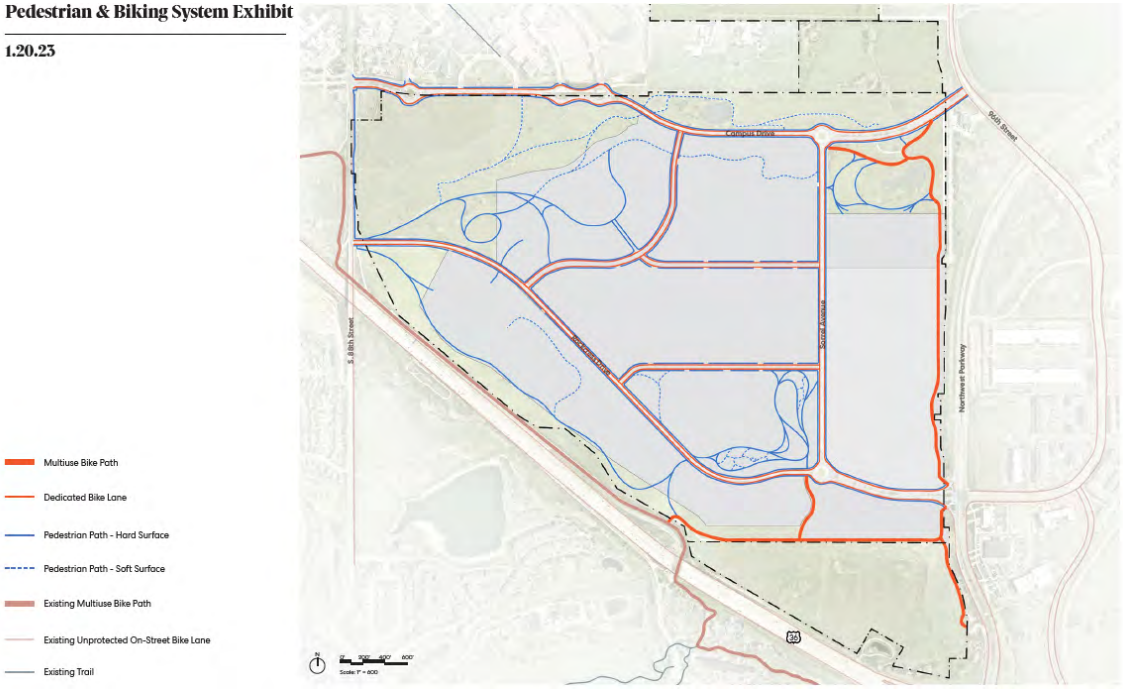
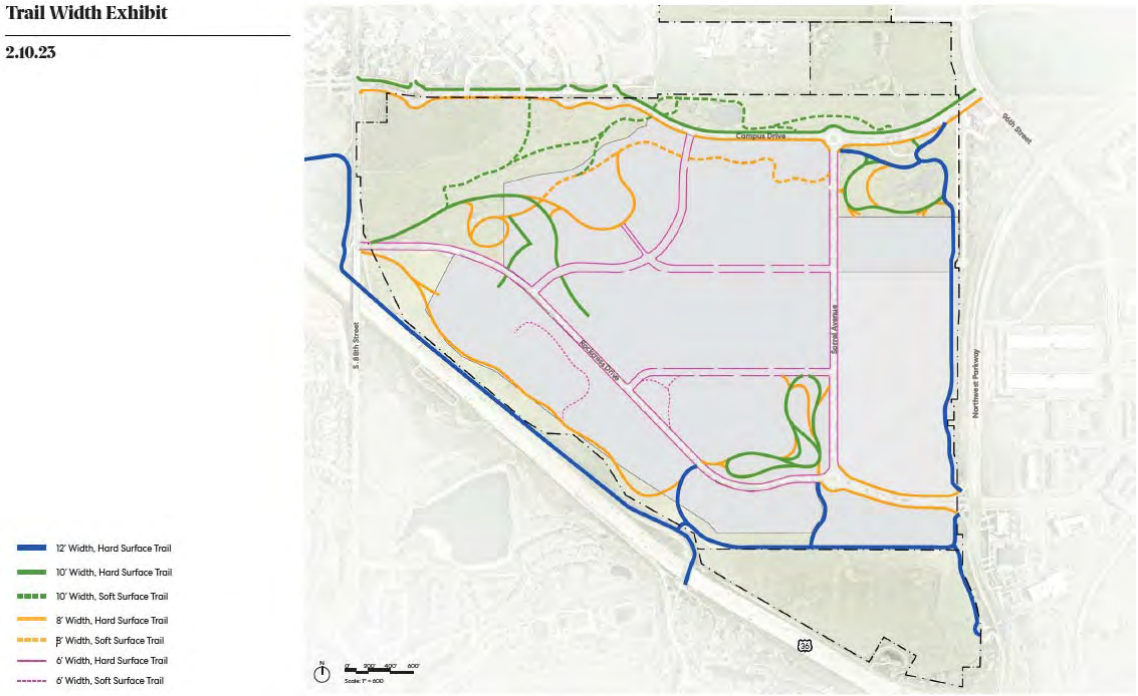


Figure 5: Trail System and Trail Widths Exhibit



The southeast corner of the Redtail Ridge site has an existing underpass that connects under Northwest Parkway (a photo of the underpass is shown in **Photo 3**). This connects sidewalks and multi-use pathways on the westside of Northwest Parkway to the new Broomfield sidewalk network on the eastside of Northwest Parkway. This underpass is also a critical part of the future walking connections to the Rock Creek and Broomfield Trails.

Photo 3: Northwest Parkway Multi-Use Path Underpass



Bicycling

The Redtail Ridge site is located at the confluence of many off-street trails and on-street bicycle lanes. The Coal Creek Trail, Rock Creek Trail and the US 36 Bikeway are located within a short bike ride (5 minutes or less than one mile) of the project site. S. 88th Street, Dillon Road and S. 96th Street currently have on-street bicycle lanes that provide connections to the Coal/Rock Creek Regional Trails and the US 36 Bikeway.

The City of Boulder is located within a six-mile bike ride on the US 36 Bikeway and the RTD US 36 and East Flatiron Station is located within a one-mile bike ride of the project site. Each intersection in the study area has approaches and departures that have accommodations for people on bicycles. The S. 88th Street underpass provides access to the Monarch school campus from Dillon Road.

The City of Louisville TMP evaluated the S. 88th Street, Dillon Road and S. 96th Street corridors/intersections for the level of bicycling comfort (a map summarizing the results of the bicycle level of comfort is illustrated in **Figure 6**). Based on the TMP analysis, the current design of the corridors and intersections have a high level of stress. This appears to be correlated to the high number of crashes at these locations. The high posted speed limits in these corridors and significant peak hour traffic volumes also contribute to the low level of comfort people experience.

Figure 6: Bicycle level of Comfort ratings from City of Louisville TMP



The City plans for future implementation of Great/Complete Street design treatments for the S. 88th Street, Dillon Road, and S. 96th Street corridors and intersections consistent with the TMP's policies. This includes the installing protected bike lanes, multi-use pathways, and intersection treatments throughout the project site and connect to the adjacent arterial roadways, which will provide greater opportunity and protection for all skill levels. Implementation on the public roadways by the City will be subject to public input, topographic limitations, right of way availability, conflicts with utilities and accesses, and construction costs.

6. Future Multi-Modal Network Assumptions

The future multi-modal network improvements around Redtail Ridge project are outlined in the City of Louisville TMP and shown in **Figure 7**. They include a series of bike lanes, transit stops, underpasses, and multiuse trail connections. The TMP also recommends a partnership with the City of Louisville and the business community to provide a shuttle circulator that connects employment areas to regional transit, retail, and other destinations. CTC, Centennial Valley, and Redtail Ridge were identified as service areas for the route. The transit network also includes Bus Rapid Transit (BRT) service in the S. 96th street corridor and two Northwest Rail stations within a mile of Redtail Ridge (see Figure 8). The Northwest Rail stations are planned to be located near the CTC and at the Flatiron and US 36 Park-n-Ride.

Figure 7: Future Multi-modal Network Identified in the City of Louisville TMP



A Bicycle facility connecting Dillon Rd to the US 36 bikeway

B New underpasses at proposed locations along Dillon Road

C Trail connections to provide increased access to the schools and hospital

D Proposed future transit connecting McCaslin Station to the hospital, schools, and CTC

E On-street shoulder bikeway improvements

F Dillon Road capacity improvements to improve intersection operations

G Campus Drive Extension to improve school circulation and improve emergency access

H Paradise Lane realignment to eliminate intersection at S 96th Street. (*Note: Paradise Lane is on County property).

I New signal at Campus Drive and S 96th Street near fire house

Potential Future Transit Service

The *Northwest Area Mobility Study (NAMS)* study identified the S. 96th Street/Highway 42 as one of the six (6) candidate Arterial Bus Rapid Transit (BRT) corridors. All corridors were evaluated, and recommendations were made for transit priority elements such as transit signal priority, queue jump lanes and headway-based scheduling. Operations and maintenance costs for the corridors were also prepared. The NAMS Policy Advisory Committee (PAC) recommended that all six (6) arterial BRT projects be implemented with system-wide service improvements. This corridor was recently identified as a Priority 3 corridor in the *RTD Regional Bus Rapid Transit Study*, the Metro Mayors Caucus is reviewing a ballot initiative to fund this corridor as part of regional ballot initiative, and the City of Louisville has applied for a grant to further study this service as part of a revised Highway 42 corridor study. Refer to **Figure 8** for a map of the identified transit network within the City.

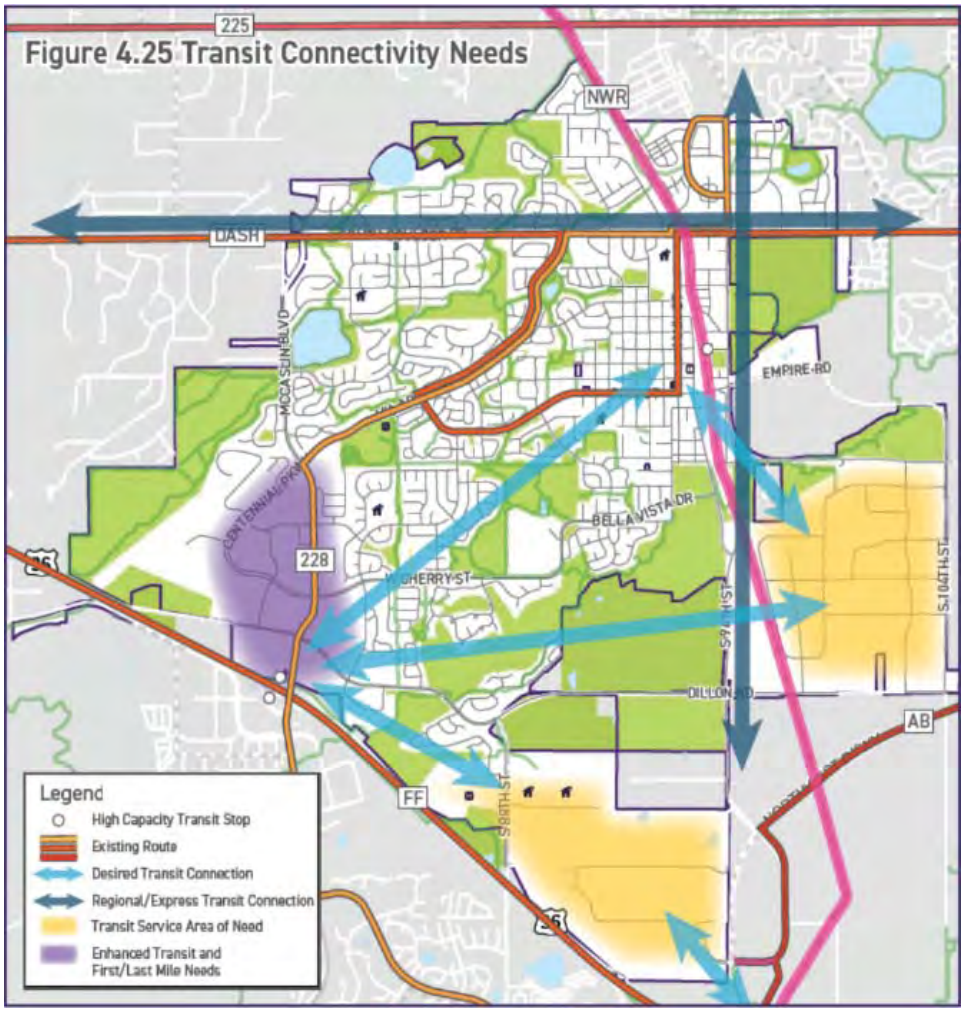


Figure 8: Future Transit Network Identified in the City of Louisville TMP

Proposed Walking and Biking

The Redtail Ridge project will be built over the next 10 years. During this time major shifts in transportation mobility and regional transportation project completion are expected to take place. Transit projects such Northwest Rail, SH 42 BRT, and the RTD local circulator will potentially be operating before Year 2040. In addition, as previously noted, the city's construction of complete streets on S. 88th Street, Dillon Road, and S. 96th Street as well as the new connections within the Red Tail Ridge project on Campus Drive, Rockcress Drive, and Sorrel Avenue will be a major part of the multi-modal transformation in Louisville. These corridors will serve many more travelers and modes in the future and the transformations will use the current right of way to move more people using safe, reliable, connected and sustainable transportation options. **Photo 4** shows an existing on-street bike lane within the study area.



Photo 4: On-Street Bike Lane

The enhanced-future multimodal network that is anticipated to be constructed by the City of Louisville in the vicinity of the Redtail Ridge project is shown in **Table 1**.

Table 1: Enhanced Future Multi-Modal Network Assumptions with Redtail Ridge Project

Schedule	Corridor	Bike Lanes	Multi-use pathways	Sidewalks	Bus Lanes
Background (without Redtail Ridge)	**S. 88th Street** (US 36 to Dillon Road)	buffered or protected	westside or eastside	westside and eastside	none
	Dillon Road (S. 88th to S. 96th Street)	buffered or protected	northside	northside and southside	none
	S. 96th Street (Northwest Parkway to County Road)	buffered or protected	westside	westside and eastside	yes
	Northwest Parkway (S. 96th Street to US 36)	None	eastside	eastside	shoulder running
With Redtail Ridge	**Campus Drive** (S. 88th Street to S. 96th Street)	buffered or protected	southside	northside	none
	Rockcress Drive (S. 88th Street to Northwest Parkway)	buffered or protected	none	northside and southside	none
	Sorrel Avenue (Campus Drive to Rockcress Drive)	buffered or protected	none	eastside and westside	none

** Expanded future multimodal network will include on-site and off-site improvements including connections beyond Louisville that do not exist today but have been identified. See the links to the documents in the "Previous Studies" Section for additional details.*

7. Existing TDM Resources

Redtail Ridge is located within an area that has several existing and proposed TDM measures, and the project will benefit from these existing resources. Along the US 36 corridor, TDM services are provided by 36 Commuting Solutions in partnership with Way to Go.

36 Commuting Solutions is a non-profit organization focused on enhancing mobility along US 36 for all commuting types, with a focus on non-auto travel. The organization is member-driven and advocates for and supports businesses, commuters, and municipalities along the corridor, including the City of Louisville. The program offers numerous services to help travelers, to provide alternative transportation options, and to reduce congestion along the roadways and through communities. The current programs provided by 36 Commuting Solutions for employers and residents within the US 36 corridor are as follows:

- **Free & subsidized transit passes:** The US 36 Master EcoPass Pilot Program subsidizes employers' purchases of EcoPasses for their employees. Eligible commuters can also receive a free 10-ride ticket booklet to try transit.

- **Carpool & Vanpool:** Travelers can use Way to Go services to find carpool and vanpool partners. There is a $75 incentive to individuals who form a new carpool or join a vanpool.

- **Bike & Walk:** In addition to the local and regional multi-use paths, there are interactive maps and education for people that walk and bike.

- **Telework:** In partnership with DRCOG, employers can receive free assistance to establish or expand their telework program.

- **Employer Outreach:** 36 Commuting Solutions staff works with employers to help encourage their employees to commute using sustainable travel modes and to develop commuter programs.

- **Marketing:** Encourages travelers to commute sustainably and participate in the available programs.



waytogo
A program of DRCOG



Commuting Solutions



- **Advocacy:** 36 Commuting Solutions staff work with local municipalities, businesses, and other stakeholders to develop support for transportation improvements and secure funding for these improvements.

8. TDM Strategies

TDM measures will be an important part of managing safe and efficient transportation operations within and in the areas around the project site. The goal of implementing TDM is to:

- Eliminate or shorten trips,
- Change the mode of travel,
- Change the time of day for a trip,
- Increase participation of carpooling, vanpooling, and transit, and
- Encourage bicycling and walking in place of driving.

TDM strategies also include employer-based programs such as alternative work schedules, which could shift demand away from peak travel times, and telework, which could reduce the need for trips entirely. There are local transportation management solution organizations that coordinate funding and service efforts that the Metro District should consider partnering with to help facilitate and encourage non-SOV travel.

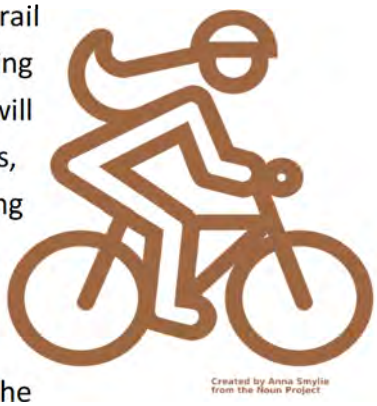
Program summaries are outlined below.

Walking Trips

Walking trips are a key part of the non-SOV mode share goals. The walking trips would likely occur between neighborhood homes, parks and schools. New walking trips will be made on the Complete Street sidewalk and trail network proposed internal to the development. The forecasted typical walk trip will be less than 1/4 mile or 5-minute walk from a home/work to a destination. It is likely that most of the walking trips will be single or multi-purpose trips within the site context. In the future, walking to shared ride mobility and transit services is also likely to increase. This is commonly referred to as the "first and last mile" of a shared ride or transit trip.



Cycling Trips



Cycling trips will increase in the future as the Complete Street and trail network is completed within the development. The future cycling trips will be made by people of all ages and cycling abilities. They will be connecting between neighborhood homes, parks, schools, commercial uses, and transit on and off site. Most of the new cycling trips would be a result of new people making a choice to cycle because of the protected cycle network and underpasses. That network is focused on removing conflicts with motor vehicles and providing safe access from neighborhoods to destinations in the adjacent area. These cycling trips will be approximately 4 to 6 miles and up to a 20-minute ride.

Carpool, Vanpool and Shared Ride Trips



Employers will have access to programs that match people to carpool services and on-demand rideshare opportunities. The commute carpools and shared rides are typically less than 30 miles.

Transit Trips



In the future, "High-Capacity Transit" services will be available within a 10-minute walk or bike ride as outlined in the City of Louisville and Boulder County Transportation Master Plans. These transit services will be accessible via a 10-minute walk or bike ride using the Complete Streets and underpasses. Local transit shuttles to High Capacity Transit stations will also be provided by partnership with the City of Louisville and private business using the operating models being piloted at the 61st and Pena Station (https://www.fulenwider.com/autonomous-shuttle-launches-in-denver.html) and the Lone Tree Link (http://www.lonetreelink.com).

Telecommute/Work From Home



Working hours which do not require commuting during peak periods (full time or part time work) as well as working from home is considered a valuable TDM strategy and this reduction in trip making is included in the non-SOV goals. As a result of changing work conditions and environments resulting from the COVID 19 pandemic, this will be an even larger reduction in historic trip making then in pre-COVID conditions.

9. Proposed TDM Program

Listed below are the TDM programs, tools and funding sources that the Redtail Ridge development will implement to achieve the project's non-SOV mode share goals. The TDM measures are explained within this letter to the detail available for the phase of development at this time. Future submittals will provide supplementary information when additional details on tenants, employees, and building locations are known. The Metro District is partnering with 36 Commuting Solutions, a local expert in transportation management solutions, to help facilitate these TDM measures.

Transit

Shuttles to High-Capacity Transit: The City of Louisville's TMP highly encourages developments to leverage existing and futures investments in transit. With this goal in mind, the Metro District will be contributing funds for a shuttle service that connects the project area to the Flatiron Flyer BRT station and to downtown Louisville. In addition, representatives of the Metro District will participate in the process which develops this shuttle service and will seek additional public and private partners, including RTD as well as neighboring entities such as Avista, Crocs and the CTC. The shuttle service could be operated with an on-demand application and/or be a fixed route service. The funds provided may be used to help contribute to the creation of the service and/or fund a portion of its initial operations. The Metro District will dedicate a fixed amount of funding at the time of building development completion and tenant occupancy. In addition, it will be a requirement of each subsequent building specific TDM program that the tenant occupying space in the development take on their proportional financial obligation in subsequent years for the operation of the shuttle service.

Employee EcoPasses: Regional Transportation District's (RTD) EcoPass is a bulk-rate, discounted

transit pass that is purchased from RTD and provides unlimited usage of RTD services including local and regional bus routes, the Skyride bus service to the airport, light rail and commuter rail. Access to free transit service has proven to be one of the most effective TDM programs for changing travel behavior and reducing the need to own a vehicle or multiple vehicles. Building on the availability of the US-36 Flatiron Flyer service and the intended future transit service planned for this area, the Metro District will encourage employee transit use by financially securing RTD EcoPasses to all employees for a period of two years. To accomplish this, the development will enter into an agreement with RTD to develop a Master Contract for all land uses within the project area. The cost of these EcoPasses through the Master Contract will be determined using RTD's regional formulas based on total number of employees within the Master Contract area. This will ensure that all employees working within the project area have access to free EcoPasses for the first two years of initial occupancy. In addition, it will be a Covenants, Conditions and Restrictions (CC&R) requirement that the tenant occupying space in the development take on their proportional financial obligation of the TDM program in subsequent years. This will ensure that employee EcoPasses are made available for all employees after the initial two years of funding is spent. Access to the *Guaranteed Ride Home Program* will be included in the Master Contract developed with RTD.

Programming and Education

TDM Coordinator: The Metro District will hire and fund, either independently or in partnership with other benefited parties, a TDM Coordinator or work with a local transportation management organization (such as 36 Commuting Solutions) to act as the TDM Coordinator, to manage the TDM program for the project area. The TDM Coordinator will provide employees with important travel information including transit maps and schedules, bicycle maps, local and regional marketing campaigns, and information on the commute benefits provided to employees. The TDM Coordinator's efforts will assist in ensuring the project's non-SOV mode share goals. In addition, the TDM coordinator would be responsible for coordinating the following programs/tools:

- *TDM Plan evaluation*: Provide periodic surveys of employee travel behavior to evaluate the TDM Plan. The survey is designed to collect anonymous travel information and takes less than 10 minutes to complete.

- *Orientation packets*: Prepare electronic orientation packets to employers that will include non-SOV program information and incentives. This information will be located on the

district website.

- *Flexible work schedules and telecommuting:* The Metro District and the TDM Coordinator will work with employers to encourage this program. Each building specific TDM plan will be encouraged to include language which supports this program. Working conditions in the Front Range, after the COVID 19 Pandemic have resulted in a much higher prevalence of telecommuting for jobs where that is possible.

Carpooling and Vanpooling

Employee Carpools and Vanpools: work with vertical developer/employers to encourage use and to implement dedicated parking for these programs on-site.

Carshare: There are a number of programs across the front range which allow persons to make use of carshare or vanpool vehicles. Use of these vehicles can limit the need for motor vehicle ownership and be a valuable component of a TDM program. Employment centers can support the use of these vehicles by provided dedicated space for these vehicles. Within the development, any land use with over 100,000 square feet of building space will allocate up to three parking spaces for dedicated carshare and/or vanpool vehicle parking. It is not intended that the development or the subsequent businesses occupying the buildings will operate either carshare or vanpool programs. Instead, the allocation of these parking spaces will be based on requests from employees who are using these services. The utilization of this service will be monitored to determine the appropriate number of spaces to allocate for carshare.

Walking and Biking

Walk and Bike Month: actively encourage employees and residents to register and participate in Bike to Work Day (June) or Winter Bike to Work Day (January).

Bicycle Access: Bicycle access to the site will be provided via Complete Streets and multi-use trails as shown on the Redtail Ridge Filing 1 Plat and supporting construction documents which connect to the existing and future bicycle infrastructure in the City of Louisville. Every structure will be accessible by bicycle.

Bicycle Parking: Future site plans will include outdoor short-term bicycle parking at a ratio consistent with Leadership in Energy and Environmental Design (LEED) commitments. Long-term bicycle

parking inside buildings or in covered parking areas will be provided at a rate of at least one secure area per building that is over 75,000 square feet of office space. The long-term parking should be a bicycle room with limited access or a caged secure area within a parking area protected from the weather, as appropriate to the use of the facility/building. At least one long-term bike parking area within the development will include a bicycle maintenance area complete with tools and air pumps for employee use. The specific design of long-term bike parking racks will be determined during final site plan development.

On-Site Bicycle Commuter Amenities: Office buildings will include showers and changing facilities for employees within the building consistent with LEED commitments. Future submittals will include detailed designs and access.

Note that all developers in the project will be required to submit a customized TDM plan for their building identifying what programs will be implemented to meet the non-SOV goals of the project and how they comply with the commitments outlined in this TDM report. Periodic surveys will be conducted by the Metro District to evaluate the TDM program effectiveness and adjustments will be made, if needed, to reach the project non-SOV goals.

10. Timeline and Funding for TDM measures

Metropolitan (Metro) Districts are a type of Colorado special district which is formed to provide services, such as Transportation, Water, Solid Waste Disposal, Sanitation and Street Maintenance and Improvement. Metro Districts are independent governmental entities formed to provide services which finance, design, install, construct, operate and or maintain public improvements not otherwise being provided. The existing Metro District will, amongst other things, manage the funding, operations, and maintenance of the TDM plan. A summation of the timeline for implementing recommended TDM strategies at different Phases of development is provided in **Table 2**. Only TDM Strategies with one-time or annual costs are included.

Table 2: Redtail Ridge TDM Plan Funding and Timeline Summation

TDM Strategy	*Timeline and Frequency*	*Amount*
Develop shuttle service	Metro District to contribute a one-time allocation for the planning and implementation of the shuttle service as a condition of Phase I occupancy permits.	Metro District paid through public RFP
Proportional yearly operational costs for shuttle service	Metro District to secure fees from property owners and/or leasees for annual allocation of proportional share of shuttle service operation. Fees provided to whomever is managing the shuttle service.	$75,000/Year
Employee EcoPasses upfront	Metro District to provide one-time allocation to secure employee EcoPasses, through Master Contract with RTD, for all employee in the initial, Phase 1. Fees paid directly to RTD.	$18,000
Long-term Employee EcoPasses	Metro District to secure funds to pay for EcoPasses through an RTD Master Contract fees in subsequent years.	$75,000/Year
Hire TDM Coordinator	Metro District to secure and maintain TDM Coordinator services	$100,000 annually - Metro District fees

SUMMARY OF PROPOSED REDTAIL RIDGE SUBDIVISION IMPROVEMENTS AGREEMENT

The developer of the Redtail Ridge Subdivision (the "Project'), Redtail Ridge Portfolio, LLC, a Delaware limited liability company (the "Developer"), in conjunction with the Redtail Metropolitan District (the "District'), a Colorado special district that has been formed to finance, design, construct, operate and maintain various public improvements associated with the Project, propose to enter into a Subdivision Improvements Agreement ("SIA") with the City of Louisville, Colorado ("City") to contain the following material terms related to the construction and maintenance of various public improvements required by the City in connection with the Project:

1. **Parties and Scope.**

The Developer and/or the District would be jointly obligated to design, construct, and complete a variety of public improvements, including public streets and sidewalks, curb and gutter, street signage, water and wastewater infrastructure, landscaping and irrigation, and drainage and stormwater control features. The Developer and/or the District would also be jointly obligated to construct, or contribute financially toward the construction of, a variety of off-site improvements, to include traffic improvements, trails, and wastewater treatment system improvements (provided that the offsite wastewater system improvements required to serve the Project are presently anticipated to be constructed by the City, with funding or reimbursement by the Developer or the District, pursuant to a separate wastewater treatment system improvements funding agreement to be finalized contemporaneously with the SIA).

2. **Engineered Plans and Specifications.**

The Developer and/or the District would procure engineered plans and specifications for all required public improvements for review and approval by the City.

3. **Financial Guarantees**.

The Developer and/or the District would provide a form of guarantee acceptable to the City to assure the installation of all required public improvements in an approved manner and in a reasonable time pursuant to Municipal Code Section 16.12.100 ("Improvement Guarantee").

4. **Infrastructure Phasing.**

The SIA would establish deadlines for completion of all required public improvements in up to two phases. These deadlines are presently anticipated to be 24 months following final plat recordation for a proposed first phase of Project infrastructure, and 36 months for completion of a second phase of Project infrastructure. The first phase would consist of necessary main arterial roads and infrastructure, including Campus Drive, Sorrell Avenue, 96th Street improvements south of Dillon Road, and wastewater treatment plant

upgrades (to be constructed by the City per separate agreement as noted above). The second phase would include all additional infrastructure necessary to support development along Rockcress Drive, as well as the completion of internal roadways. To avoid any vertical development proceeding that would require the second phase of infrastructure, the SIA would authorize the City to withhold building permits for any vertical development within PUD 3, PUD 4 or PUD 8 (see attached Phasing Plan) until Improvement Guarantees are posted for both infrastructure phases or all required infrastructure is otherwise completed and approved by the City.

5. **Streets and Offsite Traffic Improvements**.

All internal street improvements within the Project, and off-site traffic improvements required to serve the Project, would be designed and constructed by the Developer and/or the District. At this time, the Developer anticipates completing the following off-site improvements:

- Dual eastbound and westbound left-turn lanes on Dillon Road into 96th Street
- Widening 96th Street to four lane road between Dillon Road and NWPY
- New intersection at 96th Street and Dillon Road
- New intersection at 96th Street and Campus Drive
- Triple northbound left turn lanes from the Northwest Parkway onto 96th Street
- Dedicated left turn lane from southbound 88th Street to Rockcress Drive

The Developer is also currently collaborating with the Northwest Parkway to further study traffic impacts and to confirm the scope of any additional off-site traffic improvements along the Parkway corridor.

6. **Public Trails and Bicycle Lanes**.

The Developer and/or the District will design and construct public trails and/or bicycle lanes within the Project to connect to other regional trails and bicycle routes, pursuant to plans to be reviewed and approved by the City.

7. **Landscaping.**

Final landscaping plans shall be required and approved by the City prior to the installation of landscape and hardscape improvements.

8. **Drainage/Stormwater.**

The Developer and the District shall be responsible for designing and constructing all drainage improvements required to serve the Project, including a permanent stormwater facility within Tract D. No building permits shall issue until the City approves plans for all required drainage and stormwater improvements. The Developer, the District or an Owner's Association to be established for the project shall remain responsible for long-

term operation, maintenance, repair and replacement of all drainage improvements, including the stormwater facility to be located on Tract D.

9. **Street Lights.**

The Developer and the District shall be responsible for installation of all street lighting (and/or for causing Public Service Company to install the same), pursuant to plans and specifications to be reviewed and approved by the City concurrently with its review of plans for all proposed public streets within the Project. The Developer currently has a street light location exhibit and model numbers confirmed with Xcel.

10. **Water and Wastewater System Improvements.**

All required potable water delivery infrastructure to serve the Project would be designed and constructed by the Developer and/or the District. All required onsite sewage collection system components would also be designed and constructed by the Developer or the District, excepting that a lift station at the City's existing wastewater treatment plant site and other offsite wastewater treatment system upgrades required to serve the Project would be designed and constructed by the City at the cost of the Developer and/or the District pursuant to a separate wastewater system improvements funding agreement, as described above.

11. **Fire Station Parcel.**

Upon recordation of the Final Plat for the Project, the Developer would dedicate land (Tract H) to the City and/or the Louisville Fire Protection District to facilitate development of a fire station and police annex.

12. **Other Public Land and Easement Dedications.**

In connection with recordation of the Final Plat, the Developer would dedicate to the City those road rights-of-way, easements, and other dedications shown on the Final Plat, including but not limited to Tracts A, B, C, D, E, F, G, I, and K, consisting of a total of approximately 177.75 acres. Approximately an additional 47 acres north of the Project would be dedicated to Boulder County Open Space, and approximately 40 acres south of the Project would be dedicated to the City and County of Broomfield. for recreation, open space, and trail uses.

13. **Water Rights**.

The Developer would dedicate historical irrigation water rights associated with the Project property to the City in exchange for tap fee credits in accordance with City water rights dedication policies.

14. **Warranty.**

Following completion and acceptance of the public improvements by the City, the Developer and the District would provide a two-year warranty to the City.

15. **Maintenance Obligations.**

The Developer and/or the District would continue to maintain and repair the public improvements, including correction of any identified deficiencies, during the two-year warranty period after construction acceptance by the City, excepting that the City would assume immediate responsibility for snow removal from public streets and sidewalks, and ordinary maintenance responsibility for City-owned water and sewer utility infrastructure. Following completion of the two-year warranty period and correction of any deficiencies, the City will assume maintenance responsibility for all required public improvements, excepting that the District will continue to operate and maintain the public improvements to be constructed by the Developer and/or the District upon Tracts D, J and L.

16. **City Ownership.**

All water distribution infrastructure (excepting private water service lines and meters), sewage collection infrastructure (excepting individual sewer service lines)), public streets within City rights-of-way, curbs, gutters, sidewalks, public trails, would be dedicated to and owned by the City, for public use. All currently proposed irrigation systems (including irrigation within public rights-of-way) would continue to be owned by the Developer or the District.

17. **Construction Management.**

The Developer and the District would agree to take all steps necessary to control trash, debris and wind or water erosion during construction. The days and hours of construction would be limited pursuant to City Code.

18. **Breach; Enforcement.**

In the event of any breach of the SIA by the Developer or the District, after providing notice and an opportunity to cure the issue, the City may: (a) correct the same at the expense of the Developer or the District; (b) draw upon the Improvement Guarantee for purposes of completing any required public improvement; and (c) withhold any additional building permits or certificates of occupancy.

19. **Additional Agreements.**

As noted above, it is contemplated that the Developer, the District and the City will contemporaneously enter into a separate cost-sharing agreement for purposes of confirming the Project's responsibility to fund the City's design and construction of various wastewater system improvements needed to serve the Project. It is also

anticipated that additional development or improvements agreements will be required in connection with subsequent PUD approvals for individual lots within the Project.

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March 24, 2023

Mr. Rob Zuccaro
Planning and Building Safety Director
City of Louisville
749 Main St
Louisville, CO 80027
Sent via email: RZuccaro@LouisvilleCo.gov

RE: Response to Plan Commission Resolution No. 13, Series 2022

Dear Mr. Zuccaro,

Below please find detailed responses to five reasons the City of Louisville Planning Commission cited as their basis of denial of the preliminary plat on December 8, 2022. For ease of review, the Plan Commissions' concerns are repeated followed by our response.

Section 2. **Based on the testimony of the witnesses and the documents and other evidence made a part of the record of the hearing before the Planning Commission, the Planning Commission finds that the proposed subdivision does not promote the following purposes set forth in Section 16.04.020 of the Louisville Municipal Code ("LMC"), or comply with the following standards set forth in LMC Chapter 16.16 and this title:**

A. The Planning Commission finds that the application from Sterling Bay (the "Applicant") for approval of the Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat (the "Application") does not comply with LMC Sec. 16.16.010.D. and E., which states that natural features and vegetation must be preserved to the extent possible and a need for additional open space may be based on vegetation and the type and density of the propose development. The Applicant has not demonstrated that the proposed subdivision adequately preserves natural features, wildlife habitat and vegetation of the property. Previously undeveloped areas on the northern portion of the property include natural vegetation that could be further preserved as public or private open space with clustering of the development lots to the south.

Response: Code Section 16.16.010.D requires natural features and vegetation to "be preserved to the extent possible." Code Section 16.16.010.E generally governs the location of community facilities, parks, and open spaces, and also provides, "The need for additional

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open space, park, and recreation areas shall be based on the following factors: the city's comprehensive plan; topography, drainage, vegetation and other physical conditions; the type and density of the proposed development; the availability of other open space, park and recreation areas; and the overall need within the proposed development for such areas."

The proposed grading of the site is necessary to meet the development's drainage requirements, so the proposal satisfies Code Section 16.16.010.D's direction to preserve vegetation and natural features "to the extent possible." We will have one of our consultants present on these issues specifically, which should help defuse concerns in this area. Staff was in support of our wildlife programs and indicated that they met the Code's requirements.

Additionally, Code Section 16.16.010.E merely states that open space, like other public use amenities, should be designed to complement the proposed development. The provision does not allow the City to deny an application simply because the proposal could be redesigned to provide more open space. The required public use dedication of 12% is provided by Code Section 16.16.060, and the actual open space we propose dedicating greatly exceeds this threshold.

B. The Planning Commission finds that the Application does not comply with LMC Sec. 16.04.020.K, which states the purpose of a subdivision is to avoid traffic congestion, based on the following:

1. According to the traffic study submitted with the Application, the US 36 and Northwest Parkway interchange reaches a Level of Service F and would need modified by the year 2027-2028 to provide additional vehicular capacity to accommodate the proposed subdivision. The Application does not include proposals for mitigation, road capacity work, or contribution to future road capacity work for the interchange, nor are future improvements planned at this time.

   Response: Code Section 16.04.020.K does not state that an applicant must demonstrate avoidance of traffic congestion; instead, the provision merely states that traffic circulation is one of the many purposes for which the City has the authority to grant a subdivision. Thus, the Resolution's statement that the application "does not comply" with Section 16.04.020.K is not technically correct. The subdivision plat results in much needed and high priority reduction in congestion and dangerous traffic patterns for Monarch High School by extending Campus Drive. The current situation is known to be a safety hazard by the School District, the City and the citizens, and there is strong

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community support and school district support for the extension of Campus Drive to the east, which extension creates the issues with the NW Parkway.

2. The Application does not include a commitment from Northwest Parkway Authority for the acquisition of right of way needed to construct road capacity improvements included in the traffic study as needed to mitigate traffic congestion.

   Response: We continue to work with the NWPA regarding the improvements proposed within their right-of-way as well as the limited easements that are needed to accommodate sidewalks along sections of 96th Street.

C. The Planning Commission finds that the Application does not comply with LMC Sec. 16.16.040 concerning block length, as some blocks proposed in the Application exceed the maximum length of 1,320 feet. Although the Applicant requested a modification pursuant to LMC Chapter 16.24 to allow longer block lengths, the Commission does not find that there are unique physical or topographical circumstances or conditions to justify the modification. Maintaining prescribed block lengths is necessary to ensure an adequate and convenient transportation system to serve the proposed subdivision.

   Response: The preliminary and final plats have been modified to decrease the parcel sizes therefore eliminating the block length maximum being exceeded.

D. The Planning Commission finds that the Application does not comply with LMC Sec. 16.16.020.B., which states that drainage areas should be left in a natural state to the greatest extent possible. The Applicant has not demonstrated that grading of drainage areas within public opens spaces has been limited to the greatest extent possible.

   Response: The redevelopment of the project incorporates numerous criteria that were not in place when the original Storagetek campus was designed and built. Stormwater detention, water quality and drainage criteria have all become more stringent, and expansive soil conditions on the property now require over-excavation resulting in additional disturbance that we are mitigating to the greatest extent possible. We have asked our design team to scrutinize the grading limits, and they have been reduced in certain areas. While the criteria outlined in LMC Sec. 16.16.020.B is subjective in our opinion, our professional engineer and design professionals have done everything they feel possible to minimize impacts through their design of the redevelopment and feel we have satisfied the requirements of the City's municipal code and existing entitlement documents.

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E. The Planning Commission finds that the Application does not comply with the 2010 ConocoPhillips Campus General Development Plan (GDP). The type and character of the development proposed with the Application is not consistent with the GDP and the street network does not comply with the street network shown on the GDP because it is proposed as publicly dedicated roads rather than private roads.

Response: For (1), the "permitted uses" allowed by the GDP are very broad and include commercial uses, offices, "facilities for the research, development, manufacturing, fabrication, processing, or assembly of scientific and technical products, or other products," and "other uses as established by the City Council." Thus, while our proposed uses may not be precisely the same as what Conoco Phillips was contemplating, the proposed development fits within the general character of development described in the GDP, which is not tied to the specific uses Conoco Phillips might have contemplated.

The same applies to (2), to which we will respond by quoting the GDP's statement regarding the street network: "Traffic circulation patterns depicted within and across Lot A represent internal private drives and are conceptual only and subject to modification." While the GDP mentions private drives, the statement is intended to clarify that the streets depicted in the GDP are merely conceptual and should in no way limit future development. Thus, a site plan including dedicated public streets is not inconsistent with the GDP.

Thank you and your team for your continued efforts towards finalizing the Preliminary Plat and Filing 1 Final Plat for Redtail Ridge. We are available at your convenience to review and discuss any of your comments and our responses.

Respectfully,
STERLING BAY

Evan Pesonen

Evan Pesonen
Vice President – Asset Management and Acquisitions