The applicant is requesting to rezone the subject property from Single-Family Residential to a B-2 zoning district. The proposed rezoning will allow the development of a modern, well-buffered distribution facility intended for package intake, sorting, and outbound delivery operations, with associated parking and limited office space.

The site is appropriately located near transportation corridors and public utilities, with no significant environmental constraints identified. The proposed facility has been designed to minimize impacts on nearby residential areas through landscaped buffers, screening, lighting controls, and thoughtful orientation of loading and circulation areas. Traffic impacts will be managed through access design and coordination with transportation authorities.

The rezoning supports the community's future land-use vision by introducing employment opportunities, increasing the local tax base, and converting underutilized residential land into a productive economic use. With strong alignment to comprehensive planning objectives and mitigation measures that ensure compatibility with surrounding uses, the requested rezoning is reasonable, beneficial, and in the public interest.

The proposed development of a distribution center in proximity to the airport represents a strategically aligned land use that meaningfully supports the city's long-term growth objectives. Concentrating logistics-oriented development near this existing airport strengthens the city's established infrastructure.

Distribution centers rely heavily on efficient transportation networks, particularly those that facilitate rapid movement of goods. Locating such facilities adjacent to an airport significantly reduces transportation time and costs, thereby improving supply chain performance. National development trends demonstrate that airport-adjacent industrial areas consistently experience strong job growth and sustained market demand, further validating this land-use pattern as an economic driver for host communities.

In addition to job creation, such locations help broaden the local tax base and accelerate economic diversification. As distribution employment clusters around the airport, secondary benefits extend into hospitality, retail, construction, and professional services. These cumulative impacts increase economic resilience and support the city's long-range planning goals related to employment balance, infrastructure utilization, and regional competitiveness.

By aligning the distribution center with airport-area land use, the City positions itself to maximize the return on existing transportation infrastructure, encourage high-value private investment, and support sustainable long-term growth. This project is consistent with modern economic development principles and is expected to provide lasting benefits to both the immediate vicinity and the broader community.

Annexation TIS Review

Project Name: Project Highline
Engineer: Kimley Horn
Date: Feb 26, 2026

The City of Helena Transportation Systems Department has reviewed your submittal, and noted the following concerns:

Comments:

1. **Introduction (PDF p.8):** Please expand the project description to characterize the anticipated uses of the site accesses, on-site circulating roadways, loading bays, and parking areas. Identify employee, visitor, and truck access, circulation, and parking areas as appropriate.

2. **Existing and Future Roadway Network (p.13):** In the description of the Jeannette Rankin Drive & Crossroads Parkway intersection, please state that this analysis did not assume construction of the Crossroads Parkway extension further south as projected in planning documents.

3. **Unspecified Development Traffic Growth (p.15):** Please specify the types and quantity of Mountain View Meadows development which was assumed to be built out in the 2029 and 2050 horizons (i.e. number of single-family and/or multifamily units).

4. **Unspecified Development Traffic Growth** (p.15): Please describe the methodology used to forecast background traffic redistribution associated with the Alice Street extension.

5. **Trip Generation** (p.19): The report does not provide sufficient information to review the local trip generation data and analysis. In the report body and Appendix D, please identify the date and location of local trip generation data collection as well as the gross floor area of the study site. If the trip generation data reflects anticipated use rather than an existing facility, clearly state so in the text.

6. **Trip Distribution** (p.20): Please provide additional justification to support the driveway trip distribution forecast, including 100 percent of inbound trips utilizing the Alice Street East Access in the AM peak hour and 100 percent of outbound trips utilizing the Alice Street East Access in the PM peak hour.

7. **Trip Distribution** (p.21): The right-in/right-out access configuration assumes an uncharacteristic driver behavior of no U-turns on Crossroads Parkway and requires over 1 mile of out-of-direction travel for vehicles turning left out of the site, including 85 percent of AM peak hour outbound trips (35 trips). Discuss the potential safety impacts of U-turning

vehicles. Please provide analysis of project trip impacts on the following intersections, which will be utilized by the out-of-direction project trips:

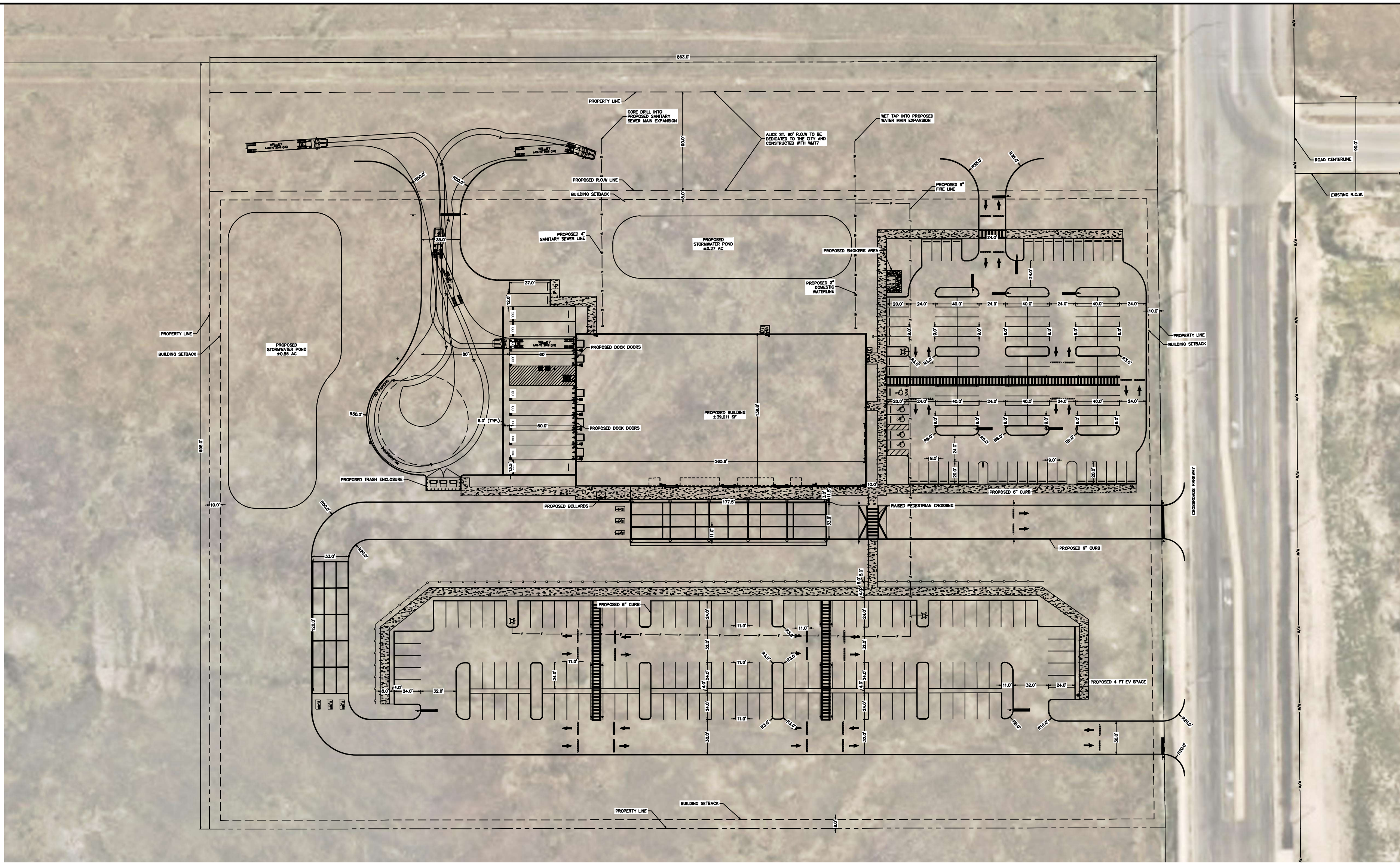
a. Jeannette Rankin Drive & Elouise Cobell Street
b. Alice Street & Elouise Cobell Street

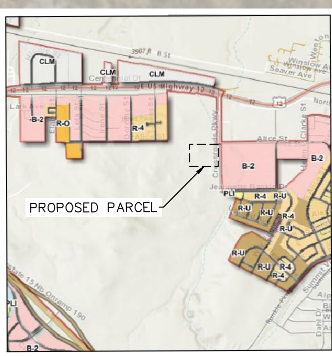
8. **Vehicle Queuing Analysis (p.30):** Please discuss potential interaction between the Alice Street East Access and eastbound Alice Street vehicle queuing and channelization. The recommended 150-foot eastbound left-turn lane appears to extend through and could potentially block the Alice Street access as identified on the provided site plan. Discuss the safety impacts of providing a full access approach within the functional area of a future signalized intersection.
9. **Appendix D** (p.49): Please include brief definitions of the vehicle types identified in the Traffic Schedule. What is the relationship of each vehicle type to site access, circulation, and parking?
10. **Appendix D** (p.50): Per ITE *Trip Generation Handbook* guidance, ITE fitted curve equations should be applied to the AM peak hour and PM peak hour ITE-based trip generation analysis.

The current status of your submittal is "**Revise and Resubmit**". The report should be revised as noted, signed, stamped and dated. We recommend that the engineer provide a design memorandum, as part of the re-submittal that specifically addresses the required changes or concerns. This review is provided commensurate with the level of detail provided. As such, the city may add additional requirements or change requirements based upon new information provided in subsequent submittals. Please be advised that if future submittals do not affirmatively address comments provided by this review, plan approval will likely continue to be withheld. If there is disagreement with any comment, resolving that issue prior to resubmittal may prevent unnecessary delay of project approvals.

Sincerely,

Mark Young, P.E.,
Transportation Engineer





VICINITY MAP

PROPOSED LOT INFOMATION	
APPROXIMATE AREA	± 13.89 ACRES / 605,000 SF

PRELIMINARY ZONING INFOMATION	
ZONING	URBAN RESIDENTIAL MIXED USE (R-1/R-2)
UTILITIES	UTILITY INFORMATION NOT AVAILABLE
FRONT SET BACK	10 FT
SIDE SET BACK	8 FT
REAR SET BACK	10 FT
LA REQUIREMENTS	THIRTY (30) SQUARE FEET OF LANDSCAPING PER VEHICLE PARKING SPACE
MINIMUM DRIVE AISLE DIMENSIONS	24'
MINIMUM PARKING STALL DIMENSIONS	9'X20'

No.	REVISIONS	DATE	BY

Kimley»Horn

© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
6876 MARWICK LN. SUITE 350, ORLANDO, FL 32827
PHONE: 407-536-4440
REACH OUT TO BROOKS STICKLER, P.E. WITH QUESTION AT BROOKS.STICKLER@KIMLEY-HORN.COM

FOR INFORMATIONAL PURPOSES ONLY

KHA PROJECT –
2/9/2026
SCALE AS SHOWN
DESIGNED BY: EJH
DRAWN BY: JTW
CHECKED BY: KCN

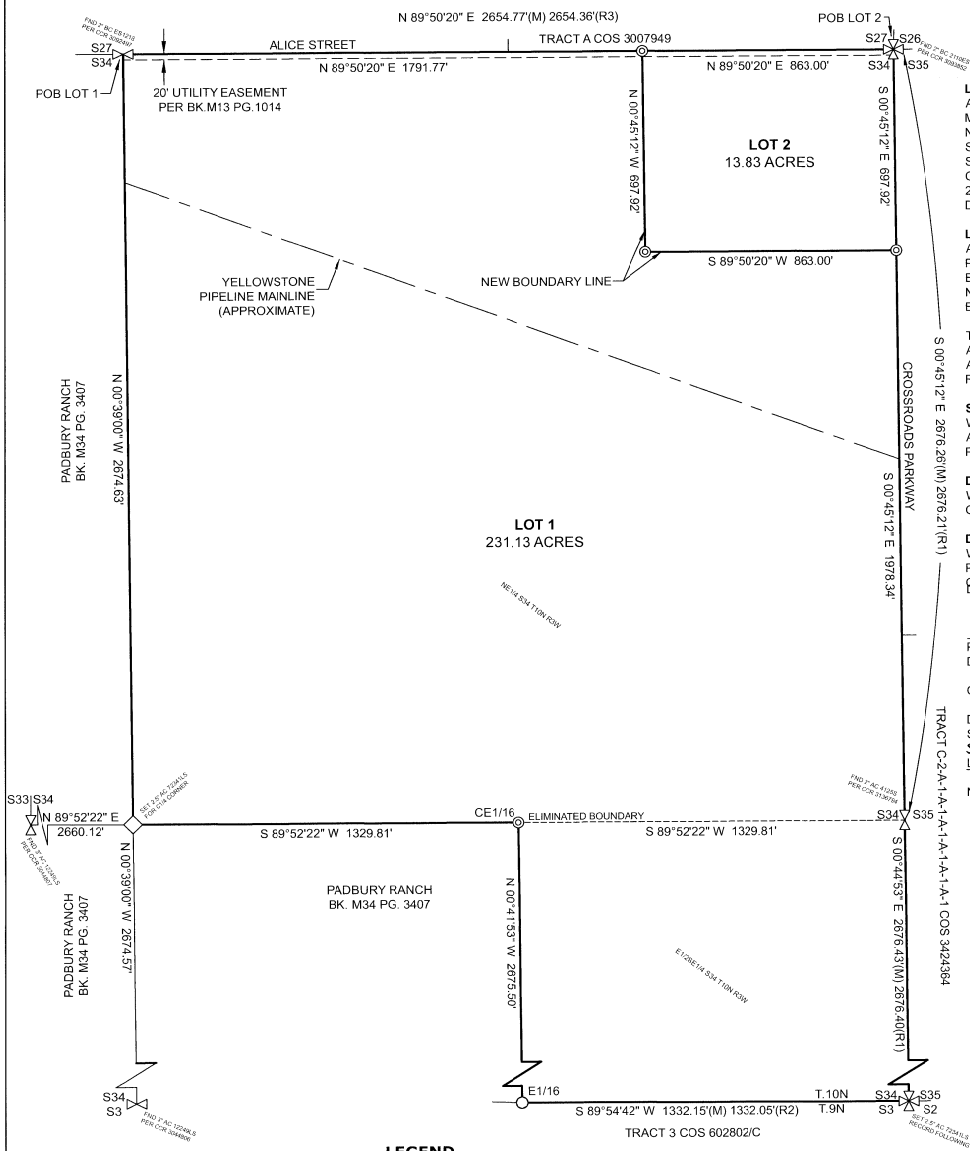
PROJECT HIGHLINE

LEWIS AND CLARK COUNTY — MONTANA

SHEET NUMBER

CERTIFICATE OF SURVEY

FOR: PADBURY RANCH PROPERTIES, LLC
PURPOSE: TO RELOCATE COMMON BOUNDARY LINES



LOT 1
A TRACT OF LAND LOCATED IN THE NE1/4 AND E1/2SE1/4 OF SECTION 34, TOWNSHIP 10 NORTH, RANGE 3 WEST, P.M.M, LEWIS AND CLARK COUNTY, MONTANA, MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTH 1/4 CORNER OF SAID SECTION 34; THENCE N 89°50'20" E, 1791.77 FEET ALONG THE NORTH LINE OF SAID SECTION 34; THENCE S 00°45'12" E, 697.92 FEET; THENCE N 89°50'20" E, 863.00 FEET TO THE EAST LINE OF SAID SECTION 34; THENCE S 00°45'12" E, 1978.34 FEET TO THE EAST 1/4 CORNER OF SAID SECTION 34; THENCE S 00°44'53" E, 2676.43 FEET TO THE SOUTHEAST SECTION CORNER OF SAID SECTION 34; THENCE S 89°54'42" W, 1332.15 FEET TO THE EAST 1/16 CORNER COMMON TO SECTIONS 3 AND 34; THENCE N 00°41'53" W, 2675.50 FEET TO THE CENTER-EAST 1/16 CORNER OF SAID SECTION 34; THENCE S 89°52'22" W, 1329.81 FEET TO THE CENTER 1/4 CORNER OF SAID SECTION 34; THENCE N 00°39'00" W, 2674.63 FEET TO THE POINT OF BEGINNING. THE TRACT OF LAND CONTAINS 231.13 ACRES, MORE OR LESS AND IS SUBJECT TO ALL EXISTING EASEMENTS AND DOCUMENTS OF RECORD.

LOT 2
A TRACT OF LAND LOCATED IN THE NE1/4 OF SECTION 34, TOWNSHIP 10 NORTH, RANGE 3 WEST, P.M.M, LEWIS AND CLARK COUNTY, MONTANA, MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHEAST SECTION CORNER OF SAID SECTION 34; THENCE S 00°45'12" E, 697.92 FEET ALONG THE EAST LINE OF SAID SECTION 34; THENCE S 89°50'20" W, 863.00 FEET; THENCE N 00°45'12" W, 697.92 FEET TO THE NORTH LINE OF SAID SECTION 34; THENCE N 89°50'20" E, 863.00 FEET TO THE POINT OF BEGINNING THE TRACT OF LAND CONTAINS 13.83 ACRES, MORE OR LESS AND IS SUBJECT TO ALL EXISTING EASEMENTS AND DOCUMENTS OF RECORD.

THE AREA THAT IS BEING REMOVED FROM ONE TRACT OF RECORD AND JOINED WITH ANOTHER TRACT OF RECORD IS NOT ITSELF A TRACT OF RECORD. SAID AREA SHALL NOT BE AVAILABLE AS A REFERENCE LEGAL DESCRIPTION IN ANY SUBSEQUENT REAL PROPERTY TRANSFER AFTER THE INITIAL TRANSFER ASSOCIATED WITH THE AMENDED PLAT ON WHICH SAID AREA IS DESCRIBED, UNLESS SAID AREA IS INCLUDED WITH OR EXCLUDED FROM ADJOINING TRACTS OF RECORD. 24.183.1104(1)(f)(iii)(C), ARM

SUBDIVISION EXEMPTION
WE, THE UNDERSIGNED, HEREBY CERTIFY THAT THE DIVISION OF LAND SHOWN ON THIS CERTIFICATE OF SURVEY IS EXEMPT FROM REVIEW AS A SUBDIVISION IN ACCORDANCE WITH THE PROVISIONS OF SECTION 76-3-207(1)(a) OF MCA, AS THIS IS A RELOCATION OF COMMON BOUNDARY LINES BETWEEN ADJOINING PROPERTIES MADE OUTSIDE OF A PLATTED SUBDIVISION.

DEQ EXEMPTION (LOT 1)
WE, THE UNDERSIGNED, HEREBY CERTIFY THAT LOT 1 IS EXEMPT FROM DEQ REVIEW IN ACCORD WITH MCA 76-4-103, BECAUSE THIS IS A PARCEL 20 ACRES OR GREATER, EXCLUSIVE OF PUBLIC ROADWAYS.

DEQ EXEMPTION (LOT 2)
WE, THE UNDERSIGNED, HEREBY CERTIFY THAT LOT 2 IS EXEMPT FROM DEQ REVIEW IN ACCORD WITH ARM 17.36.605(2)(a), BECAUSE THIS IS A NEWLY CREATED PARCEL WITHOUT EXISTING FACILITIES FOR WATER SUPPLY, WASTEWATER DISPOSAL, OR SOLID WASTE DISPOSAL AND WATER SUPPLY, WASTEWATER DISPOSAL, OR SOLID WASTE DISPOSAL FACILITIES WILL NOT BE CONSTRUCTED ON THE PARCEL.

DATE February 3, 2026

PADBURY RANCH PROPERTIES, LLC
DIDI AUGUSTINE PECCIA, MANAGING MEMBER

ON THIS 3rd DAY OF February, 2026.

DIDI AUGUSTINE PECCIA PERSONALLY APPEARED BEFORE ME AND DID HEREIN EXECUTE THE ABOVE INSTRUMENT FOR THE PURPOSES STATED.
State of Montana
LEWIS & CLARK COUNTY, MONTANA

NOTARY'S SEAL/STAMP

NOTARY PUBLIC FOR THE STATE OF MONTANA

PRINTED NAME
NOTARY PUBLIC FOR THE STATE OF Montana
RESIDING AT
MY COMMISSION EXPIRES: _____, 20__

WILLIAM C GOWEN
NOTARY PUBLIC for the
State of Montana
Residing at Helena, Montana
My Commission Expires
October 1, 2027

CERTIFICATE OF COUNTY TREASURER

I HEREBY CERTIFY, PURSUANT TO SECTION 76-3-207 (3) OF MCA, THAT ALL REAL PROPERTY TAXES AND SPECIAL ASSESSMENTS ASSESSED AND LEVIED ON THE LAND DESCRIBED ON THIS CERTIFICATE OF SURVEY ARE PAID IN FULL.

GEO CODE 05-1888-34-1-01-01-0000
TAX CODE 13625

DATED THIS 4th DAY OF February 2026.

Amy Reeves / dw
TREASURER, LEWIS & CLARK COUNTY, MONTANA

DOCUMENTS USED
3424364 COS (R1)
602802 COS (R2)
3093852 CCR (R3)

BASIS OF BEARING
GEODETIC NORTH BASED ON GPS OBSERVATION

JOB: 25-148
SURVEYED BY: AL
FIELD WORK DATE: DECEMBER, 2025
DATE: FEBUARY 3. 2026

LEGEND
- SET. 5/8" REBAR W/Y.P.C. TRIPLE TREE 72341LS
- FND 5/8" REBAR 4125S YPC
- 1/4 SECTION CORNER AS NOTED
- SECTION CORNER AS NOTED
- SET C1/4 CORNER AS NOTED

POB POINT OF BEGINNING
AC ALUMINUM CAP
BC BRASS CAP
PPC PER PLASTIC CAP

150' 0 300'

CERTIFICATE OF LAND SURVEYOR

ADRIAN L. LARGENT P.L.S. (72341LS)
PROFESSIONAL LAND SURVEYOR
2/4/26

CERTIFICATE OF EXAMINING LAND SURVEYOR

REVIEWED FOR ERRORS AND OMISSIONS IN CALCULATIONS AND DRAFTING THIS 3rd DAY OF February, 2026 PURSUANT TO SECTION 76-3-611(2)(a), MCA.

EXAMINING LAND SURVEYOR
LICENSE No. 12249LS

TRIPLE TREE
ENGINEERING
1145 CAP ROAD HELENA, MT 59602 (406) 461-0692

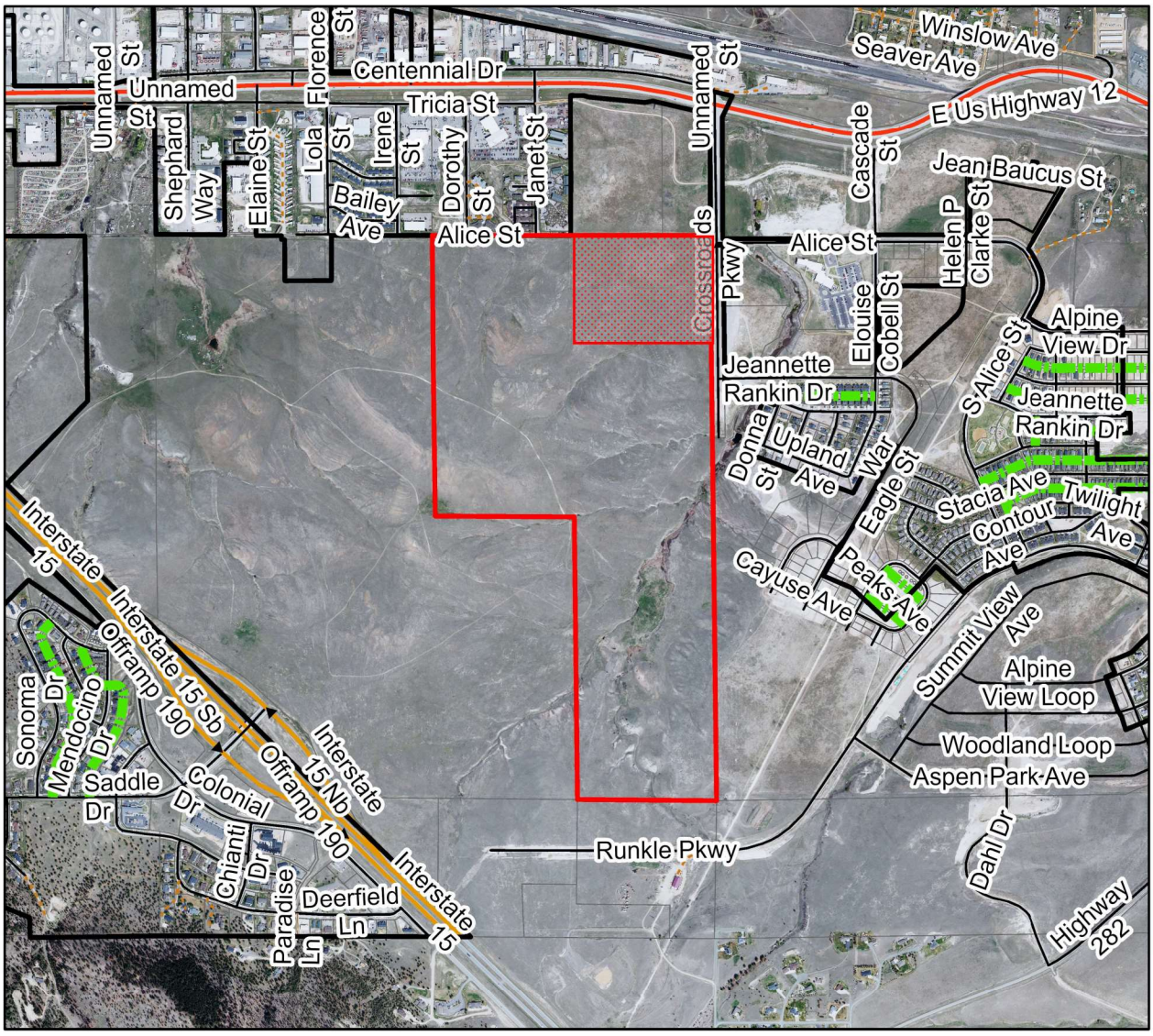
1/4	SEC.	T.	R.
☒	34	10N	3W

P.M.MONTANA, LEWIS AND CLARK COUNTY

3446240 COS
02/04/2026 03:11 PM Pages: 1 of 1 Fees: 226.00
Rec. Recrst Clerk & Recorder Lewis & Clark MT

DOCUMENT:

Lot 1 - Lot 2 in NE corner Vicinity Map



05188834101010000
Interstate
Divided 4-Lane
Paved
Unpaved
Driveway
Oneway

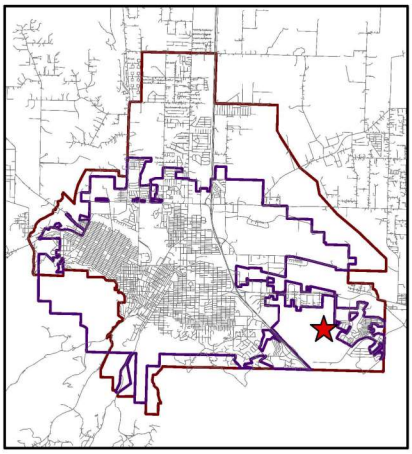
CITY OF HELENA
Est. 1881

Community Development
City/County Building
316 North Park Avenue, Rm. 445
Helena, MT 59623

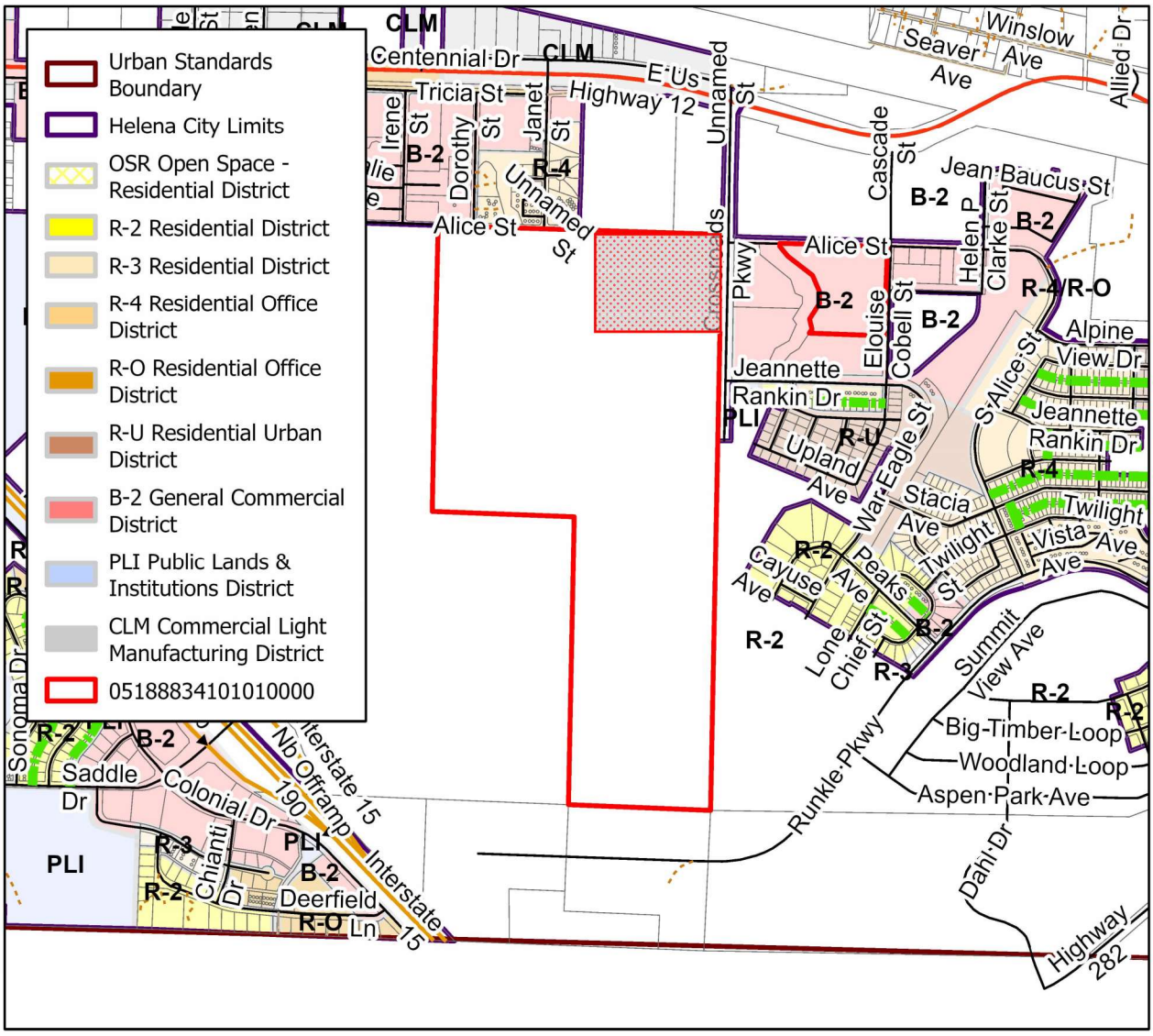
N

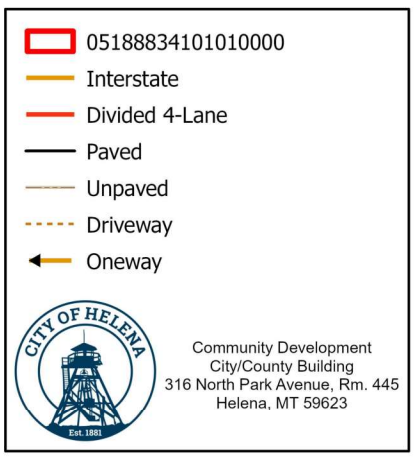
Feet
0 500 1,000 2,000 3,000

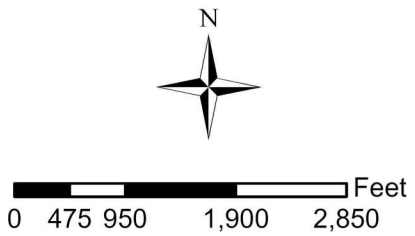
Legal Description: S34, T10 N, R03 W, NE4,E2SE4



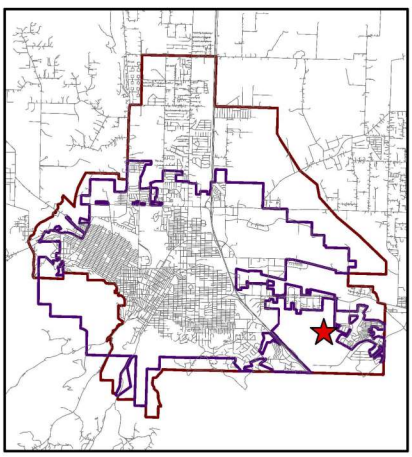
Lot 1 - Lot 2 in NE corner Zoning Map



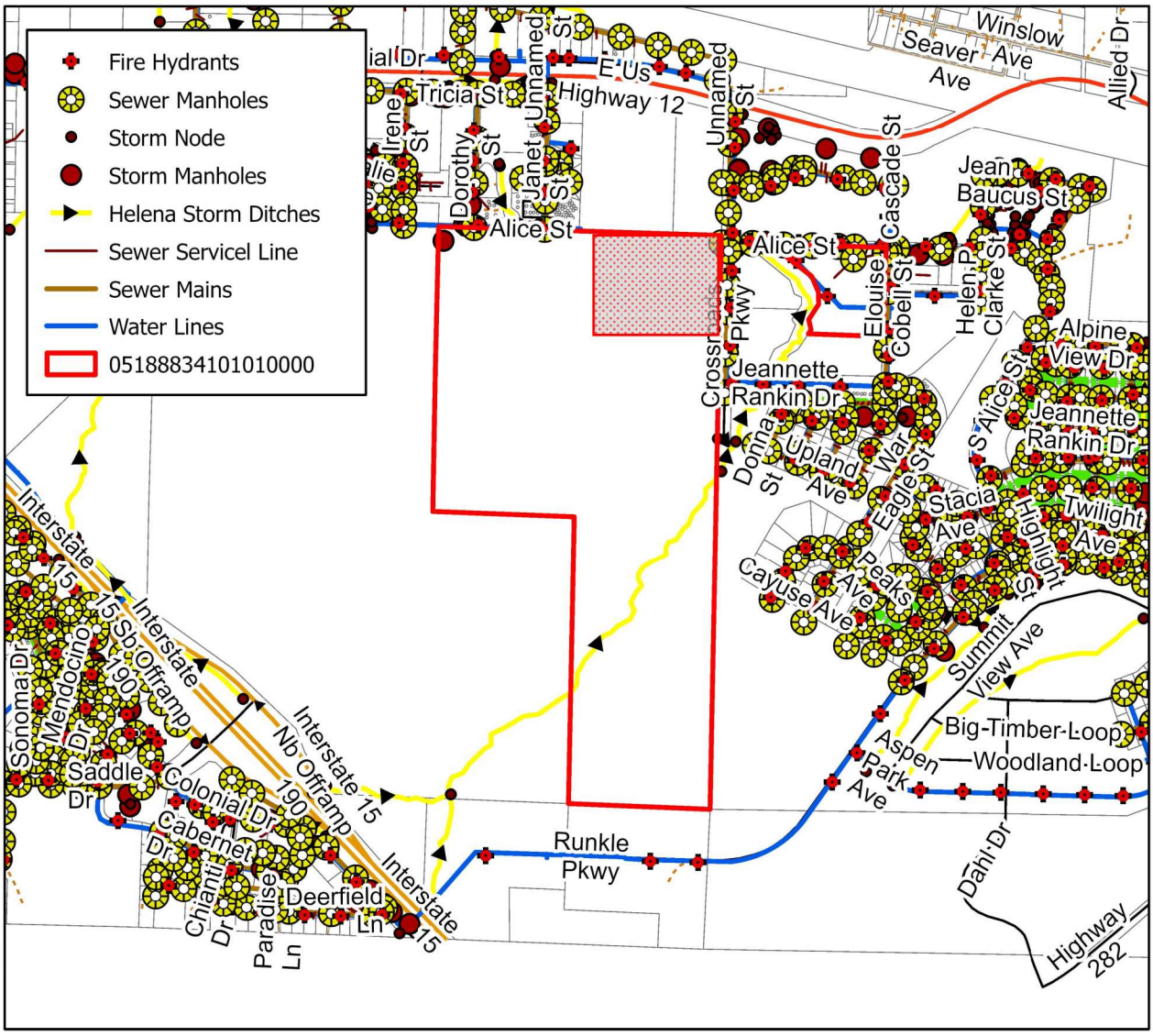




Legal Description: S34, T10 N, R03 W, NE4,E2SE4



Lot 1 - Lot 2 in NE corner Utility Map

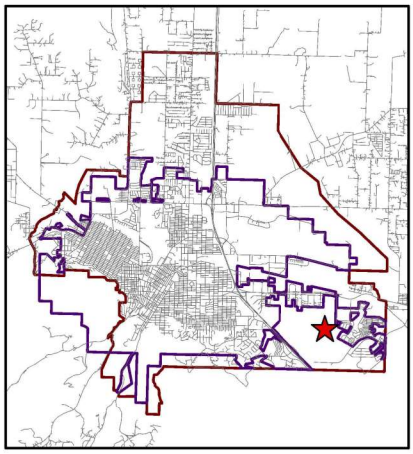


05188834101010000
Interstate
Divided 4-Lane
Paved
Unpaved
Dri
On
On
All
M

N

0 475 950 1,900 2,850 Feet

Legal Description: S34, T10 N, R03 W, NE4,E2SE4



CITY OF HELENA Est. 1881

Community Development
City/County Building
316 North Park Avenue, Rm. 445
Helena, MT 59623

Return to: Padbury Ranch LLC
3400 Centennial Dr
Helena MT 59601

3446241 B: M65 P: 498 DEED
02/04/2026 03:11 PM Pages: 1 of 1 Fees: 20.00
Amy Reeves Clerk & Recorder, Lewis & Clark MT

WARRANTY DEED

FOR VALUABLE CONSIDERATION, **Padbury Ranch Properties, LLC**, a Montana Limited liability company, the grantor(s), do(es) hereby grant, bargain, sell, convey and confirm unto, **Padbury Ranch Properties, LLC**, a Montana Limited liability company, 3400 Centennial Dr., Helena, MT 59601, the grantee(s), and their heirs and assigns, the following described premises in County, Montana, to-wit:

Parcel 1:
Lot 1, located in the NE1/4 and E1/2SE1/4 of Section 34, Township 10 North, Range 3 West, P.M.M., Lewis and Clark County, Montana, as shown on Certificate of Survey filed under Document Number 3446240.

Parcel 2:
Lot 2, located in the NE1/4 of Section 34, Township 10 North, Range 3 West, P.M.M., Lewis and Clark County, Montana, as shown on Certificate of Survey filed under Document Number 3446240.

TO HAVE AND TO HOLD the said premises, with its appurtenances unto the said Grantees, and their assigns forever.

SUBJECT TO: A. All reservations, exceptions, covenants, conditions and restrictions of record and in patents from the United States or the State of Montana; B. All existing easements, rights of way and restrictions apparent or of record; C. Taxes and assessments for the current year and subsequent years; D. All prior conveyances, leases or transfers of any interest in minerals, including oil, gas and other hydrocarbons; and E. Building, use, zoning, sanitary, and environmental restrictions.

Grantor(s) do(es) hereby WARRANT unto the said Grantee(s), their heirs and assigns, that previous to the date of this conveyance said Grantor(s) has not conveyed the same estate or any right, title, or interest therein to any person other than Grantee(s) and that such estate is at the time of the execution of this conveyance, free from encumbrances done, made, or suffered by them or any person claiming under them.

Dated: February 3, 2026

Padbury Ranch Properties, LLC, a Montana limited liability company

By: Didi Peccia
Didi Peccia, Manager

STATE of MONTANA
COUNTY of Lewis and Clark

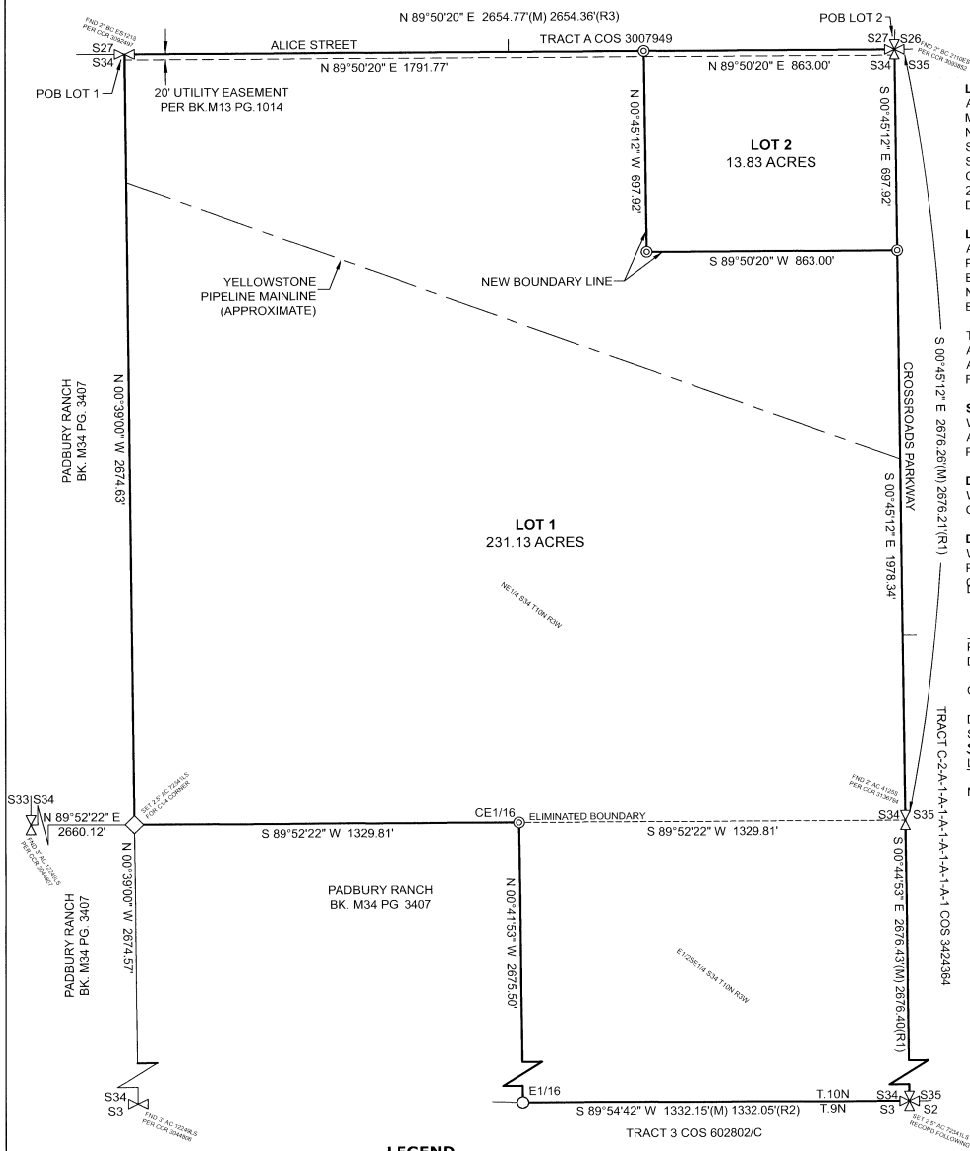
This instrument was acknowledged before me on February 3, 2026, by **Didi Peccia as Manager of Padbury Ranch Properties, LLC**, a Montana limited liability company.

Notary Public for Montana

WILLIAM C GOWEN NOTARIAL SEAL STATE OF MONTANA
WILLIAM C GOWEN
NOTARY PUBLIC for the
State of Montana
Residing at Helena, Montana
My Commission Expires
October 1, 2027

CERTIFICATE OF SURVEY

FOR: PADBURY RANCH PROPERTIES, LLC
PURPOSE: TO RELOCATE COMMON BOUNDARY LINES



LOT 1
A TRACT OF LAND LOCATED IN THE NE1/4 AND E1/2SE1/4 OF SECTION 34, TOWNSHIP 10 NORTH, RANGE 3 WEST, P.M.M, LEWIS AND CLARK COUNTY, MONTANA, MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTH 1/4 CORNER OF SAID SECTION 34, THENCE N 89°50'20" E, 1791.77 FEET ALONG THE NORTH LINE OF SAID SECTION 34; THENCE S 00°45'12" E, 697.92 FEET; THENCE N 89°50'20" E, 863.00 FEET TO THE EAST LINE OF SAID SECTION 34; THENCE S 00°45'12" E, 1978.34 FEET TO THE EAST 1/4 CORNER OF SAID SECTION 34; THENCE S 00°44'53" E, 2676.43 FEET TO THE SOUTHEAST SECTION CORNER OF SAID SECTION 34; THENCE S 89°54'42" W, 1332.15 FEET TO THE EAST 1/16 CORNER COMMON TO SECTIONS 3 AND 34; THENCE N 00°41'53" W, 2675.50 FEET TO THE CENTER-EAST 1/16 CORNER OF SAID SECTION 34; THENCE S 89°52'22" W, 1329.81 FEET TO THE CENTER 1/4 CORNER OF SAID SECTION 34; THENCE N 00°39'00" W, 2674.63 FEET TO THE POINT OF BEGINNING. THE TRACT OF LAND CONTAINS 231.13 ACRES, MORE OR LESS AND IS SUBJECT TO ALL EXISTING EASEMENTS AND DOCUMENTS OF RECORD.

LOT 2
A TRACT OF LAND LOCATED IN THE NE1/4 OF SECTION 34, TOWNSHIP 10 NORTH, RANGE 3 WEST, P.M.M, LEWIS AND CLARK COUNTY, MONTANA, MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHEAST SECTION CORNER OF SAID SECTION 34, THENCE S 00°45'12" E, 697.92 FEET ALONG THE EAST LINE OF SAID SECTION 34; THENCE S 89°50'20" W, 863.00 FEET; THENCE N 00°45'12" W, 697.92 FEET TO THE NORTH LINE OF SAID SECTION 34; THENCE N 89°50'20" E, 863.00 FEET TO THE POINT OF BEGINNING THE TRACT OF LAND CONTAINS 13.83 ACRES. MORE OR LESS AND IS SUBJECT TO ALL EXISTING EASEMENTS AND DOCUMENTS OF RECORD.

THE AREA THAT IS BEING REMOVED FROM ONE TRACT OF RECORD AND JOINED WITH ANOTHER TRACT OF RECORD IS NOT ITSELF A TRACT OF RECORD. SAID AREA SHALL NOT BE AVAILABLE AS A REFERENCE LEGAL DESCRIPTION IN ANY SUBSEQUENT REAL PROPERTY TRANSFER AFTER THE INITIAL TRANSFER ASSOCIATED WITH THE AMENDED PLAT ON WHICH SAID AREA IS DESCRIBED, UNLESS SAID AREA IS INCLUDED WITH OR EXCLUDED FROM ADJOINING TRACTS OF RECORD. 24.183.1104(1)(f)(iii)(C), ARM

SUBDIVISION EXEMPTION
WE, THE UNDERSIGNED, HEREBY CERTIFY THAT THE DIVISION OF LAND SHOWN ON THIS CERTIFICATE OF SURVEY IS EXEMPT FROM REVIEW AS A SUBDIVISION IN ACCORDANCE WITH THE PROVISIONS OF SECTION 76-3-207(1)(a) OF MCA, AS THIS IS A RELOCATION OF COMMON BOUNDARY LINES BETWEEN ADJOINING PROPERTIES MADE OUTSIDE OF A PLATTED SUBDIVISION.

DEQ EXEMPTION (LOT 1)
WE, THE UNDERSIGNED, HEREBY CERTIFY THAT LOT 1 IS EXEMPT FROM DEQ REVIEW IN ACCORD WITH MCA 76-4-103, BECAUSE THIS IS A PARCEL 20 ACRES OR GREATER, EXCLUSIVE OF PUBLIC ROADWAYS.

DEQ EXEMPTION (LOT 2)
WE, THE UNDERSIGNED, HEREBY CERTIFY THAT LOT 2 IS EXEMPT FROM DEQ REVIEW IN ACCORD WITH ARM 17.36.605(2)(a), BECAUSE THIS IS A NEWLY CREATED PARCEL WITHOUT EXISTING FACILITIES FOR WATER SUPPLY, WASTEWATER DISPOSAL, OR SOLID WASTE DISPOSAL AND WATER SUPPLY, WASTEWATER DISPOSAL, OR SOLID WASTE DISPOSAL FACILITIES WILL NOT BE CONSTRUCTED ON THE PARCEL.

DATE February 3, 2026.

Didi Augustine Peccia
PADBURY RANCH PROPERTIES, LLC
DIDI AUGUSTINE PECCIA, MANAGING MEMBER

ON THIS 3rd DAY OF February, 2026.

DIDI AUGUSTINE PECCIA PERSONALLY APPEARED BEFORE ME AND DID HEREIN EXECUTE THE ABOVE INSTRUMENT FOR THE PURPOSES STATED.
State of Montana
LEWIS & CLARK COUNTY, MONTANA

NOTARY'S SEAL/STAMP

NOTARY PUBLIC FOR THE STATE OF MONTANA

PRINTED NAME
NOTARY PUBLIC FOR THE STATE OF Montana
RESIDING AT
MY COMMISSION EXPIRES: , 20

WILLIAM C GOWEN
NOTARY PUBLIC for the
State of Montana
Residing at Helena, Montana
My Commission Expires
October 1, 2027

CERTIFICATE OF COUNTY TREASURER
I HEREBY CERTIFY, PURSUANT TO SECTION 76-3-207 (3) OF MCA, THAT ALL REAL PROPERTY TAXES AND SPECIAL ASSESSMENTS ASSESSED AND LEVIED ON THE LAND DESCRIBED ON THIS CERTIFICATE OF SURVEY ARE PAID IN FULL.

GEO CODE 05-1888-34-1-01-01-0000
TAX CODE 13625

DATED THIS 4th DAY OF February 2026.

Amy Reeves
TREASURER, LEWIS & CLARK COUNTY, MONTANA

DOCUMENTS USED
3424364 COS (R1)
602802 COS (R2)
3093852 CCR (R3)

BASIS OF BEARING
GEODETIC NORTH BASED ON GPS OBSERVATION

JOB: 25-148
SURVEYED BY: AL
FIELD WORK DATE: DECEMBER, 2025
DATE: FEBUARY 3, 2026

LEGEND
- SET. 5/8" REBAR W/Y.P.C. TRIPLE TREE 72341LS
- FND 5/8" REBAR 4125S YPC
- 1/4 SECTION CORNER AS NOTED
- SECTION CORNER AS NOTED
- SET C1/4 CORNER AS NOTED

POB POINT OF BEGINNING
AC ALUMINUM CAP
BC BRASS CAP

150' 0 300'

CERTIFICATE OF LAND SURVEYOR

ADRIAN L. LARGENT P.L.S. (72341LS)
PROFESSIONAL LAND SURVEYOR

CERTIFICATE OF EXAMINING LAND SURVEYOR
REVIEWED FOR ERRORS AND OMISSIONS IN CALCULATIONS AND DRAFTING THIS 3rd DAY OF February, 2026 PURSUANT TO SECTION 76-3-611(2)(a), MCA.

EXAMINING LAND SURVEYOR
LICENSE No. 12249LS

TRIPLE TREE
ENGINEERING
1145 CAP ROAD HELENA, MT 59602 (406) 461-0692

1/4	SEC.	T.	R.
☒	34	10N	3W

P.M.MONTANA, LEWIS AND CLARK COUNTY

3446240 COS
02/04/2026 03:11 PM Pages: 1 of 1 Fees: 226.00
Amy Reeves Clerk & Recorder Lewis & Clark MT

DOCUMENT:

Lot 2 has recently been split and does not have any yearly taxes currently.

Outlook

Re: rezoning for Amazon

From Michael Alvarez <MALVAREZ@helenamt.gov>
Date Mon 4/6/2026 8:37 AM
To Jim Schaible <jm_schaible@yahoo.com>

Hello Jim and Glenna,
Thank you for your comment on this zoning action. It will be attached to the record and given to the Zoning Commission.
One thing I would like to note in response is that B-2 zoning does not allow a warehouse/distribution center by right. The applicant would then need to obtain a conditional use permit (CUP) to have that use in that area. B-2 is a zoning type already enjoyed in the area, and within Mountain View Meadows itself. It is the city's general commercial zone type.
I just want to separate the use that they are seeking from the zone type since the B-2 zoning requires additional review and may be approved or denied then.

Best,

Michael Alvarez
Planner II, Community Development Dept.
(406) 447-8459 | malvarez@helenamt.gov | helenamt.gov
Room 403, City-County Building

Helena FORWARD
History • Opportunity • Legacy

To request an accommodation or alternate information format, please contact the Community Development Department/Planning Division at: Voice: 406-447-8490 | TTY: 1-800-253-4091|Relay: 711 Email: citycommunitydevelopment@helenamt.gov

Book time with Michael Alvarez

From: Jim Schaible <jm_schaible@yahoo.com>
Sent: Saturday, April 4, 2026 12:52 PM
To: Michael Alvarez <MALVAREZ@helenamt.gov>
Subject: rezoning for Amazon

April 5, 2026

Dear Planner Alvarez,

We oppose the changing of rezoning the parcel to allow the construction of an Amazon Distribution Center (ADC) at the corner of Crossroads and Alice. The construction of ADC will negatively impact the value of our property for many reasons. We choose to build there to have a quiet neighborhood where families know each other and our kids play safely.

1. We live in the Upland development and Crossroads is the main artery to that development. The intersection of Crossroads and Hwy 12 is already quite busy with a number of accidents annually. With the addition of the ADC that traffic intersection will become super busy and will not be a safe and smooth flow of traffic.
2. We enjoy driving that stretch of road on my way home observing open land that teams with antelope and seasonal elk. It is truly a Montana experience to see such a view. These beautiful creatures use that ground as a safe place to reproduce and otherwise survive. Interstate15, Hwy12, and the housing development already box in the land they currently use. There is a natural pond on that parcel of land that serves as a water supply for these animals and other smaller ones. It is a natural wildlife area for the birds and other fowl and should be left undisturbed. If that is distributed it will further impact not only the wildlife that lives there, but the natural beauty of the environment that he residents enjoy, which relates to property value
3. With a large box building with large trucks coming and going it will detract from the beauty of our environment. It is totally out of place. Please consider putting it in an industrial area in Helena that will serve its purpose.
4. The redistricting the land to B2 flies in the face of the Helena Forward Land Use Plan, which Helena tax payers have invested over $400,000.
5. Last but not least the rezoning of the land to B2 opens the door for more such construction to take place in other nearby property. Once the area gets a “foot in the door” there is no stopping further destruction of our beautiful Montana place to live.

Respectfully submitted,
Jim & Glenna Schaible
387 Titus St. Helena, MT

Outlook

Amazon Distribution Center

From Jenn Wine <jennwiney@gmail.com>
Date Sat 4/4/2026 2:14 PM
To Michael Alvarez <MALVAREZ@helenamt.gov>

Good Afternoon,

I am writing to express my absolute firm and unequivocal opposition to the proposed Amazon distribution center near the Mountain View Meadows neighborhood. As I'm sure none of you live in or near this neighborhood, you probably think it's a wonderful idea to build an Amazon Distribution center here. This proposal is not only deeply inappropriate for this thriving residential area, but it also poses serious and lasting harm to the quality of life, safety, and well being of the people who call this community home.

This neighborhood is growing a community that the distribution center would greatly impact. There are plenty of other designated areas in and around Helena to build a distribution center, and you are aware of that. Our neighborhood and surrounding land was not designed and clearly not zoned for a major distribution center. If it were, you wouldn't need a "work-around" to allow the construction and placement of the distribution center. The introduction of a high-traffic distribution hub would fundamentally alter the character of this area. Crossroads parkway & HWY 12 are the main entry points into this neighborhood from Helena. Again, as I'm sure no one lives in this neighborhood on this committee, you probably just drive right by on highway 12 on your way out of town barely paying any attention to the surrounding beauty that this neighborhood and community add to Helena, you know.. something you should care deeply about. An amazon distribution center would greatly diminish that.

Safety is also of paramount concern. Too many times coming into our neighborhood from HWY 12, there have been accidents, people blowing through red lights, not slowing down, the list goes on and on. Now add an entire distribution center with Semi's going in and out, delivery vehicles speeding down Crossroad parkway, employees racing to work. It is avoidable if this proposal for the Amazon Distribution center is disapproved.

Equally troubling is the precedent this will set. Approving this distribution center signals that residential communities are expendable in the face of corporate expansion. What's next, a data center? I don't mean to be adding to your list of ideas.

If you'd venture out to this neighborhood you would see that the land proposed for this distribution center is a thriving home to pronghorns, an Elk herd, and plenty of other animals. That is what makes Montana an amazing place to live, not some distribution center.

Jennesa Winey
Resident of Mountain View Meadows

Outlook

Fw: Oppose Amazon distribution center where proposed for development

---

From Christopher Brink <CBRINK@helenamt.gov>
Date Mon 4/6/2026 8:13 AM
To Michael Alvarez <MALVAREZ@helenamt.gov>

FIY. Please place this in the public comment record and provide to the boards as necessary.

Christopher J. Brink, AICP, EDFP
Director, Department of Community Development
Office (406) 447-8490 | cbrink@helenamt.gov
Direct (406) 447-8445 | helenamt.gov
316 North Park Avenue, Room 445, Helena, Montana 59623

Helena FORWARD
History • Opportunity • Legacy

To request an accommodation or alternate information format, please contact the Community Development Department/Planning Division at: Voice: 406-447-8490 | TTY: 1-800-253-4091|Relay: 711 Email: citycommunitydevelopment@helenamt.gov

Book time to meet with Chris

From: Michael Karls <mickkarls@yahoo.com>
Sent: Friday, April 3, 2026 5:17 PM
To: Emily Dean <EDEAN@helenamt.gov>; juguatafson@helenamt.gov <juguatafson@helenamt.gov>; mreed@helenamy.gov <mreed@helenamy.gov>; Sean Logan <SLOGAN@helenamt.gov>; Ben Rigby <brigby@helenamt.gov>; Alana Lake <alake@helenamt.gov>; Christopher Brink <CBRINK@helenamt.gov>; Ellie Ray <ERAY@helenamt.gov>
Subject: Oppose Amazon distribution center where proposed for development

[You don't often get email from mickkarls@yahoo.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Please oppose the proposed location for the Amazon distribution center, as it contradicts:

1. The Helena Forward land use plan
2. Puts an industrial facility in a residential area which is incompatible with a housing area

3. Would significantly increase traffic in an area not designed for it.

I'm not opposed to a facility…it just needs to be located in an area more suitable for it.

Thank you.

Mick Karls
2847 Jeannette Rankin Dr
Helena

Outlook

Fw: Amazon site next to MVzm

From Christopher Brink <CBRINK@helenamt.gov>
Date Mon 4/6/2026 8:15 AM
To Michael Alvarez <MALVAREZ@helenamt.gov>

FIY. Please place this in the public comment record and provide to the boards as necessary.

Christopher J. Brink, AICP, EDFP
Director, Department of Community Development
Office (406) 447-8490 | cbrink@helenamt.gov
Direct (406) 447-8445 | helenamt.gov
316 North Park Avenue, Room 445, Helena, Montana 59623

Helena FORWARD
History • Opportunity • Legacy

To request an accommodation or alternate information format, please contact the Community Development Department/Planning Division at: Voice: 406-447-8490 | TTY: 1-800-253-4091|Relay: 711 Email: citycommunitydevelopment@helenamt.gov

Book time to meet with Chris

From: Emily Dean <EDEAN@helenamt.gov>
Sent: Saturday, April 4, 2026 10:57 AM
To: Alana Lake <alake@helenamt.gov>; Christopher Brink <CBRINK@helenamt.gov>; Dannai Clayborn <DMCLAYBORN@helenamt.gov>
Subject: Fw: Amazon site next to MVzm

We've gotten a couple public comment to emails on this. I'll forward as they come in if they are not through the public comment form.

Get Outlook for iOS

From: sarah alling <adawn1036@gmail.com>
Sent: Saturday, April 4, 2026 10:44:21 AM
To: Emily Dean <EDEAN@helenamt.gov>
Subject: Amazon site next to MVzm

I am writing you asking you to not allow the Amazon building site to be next to the Mountain View Meadows living neighborhood. We have enough building going on around us at the congestion is already out of control and to have a site that is industrial based Will be negative to our community, our children or parks everything that is around here and what this is based on a living neighborhood community what we need are grocery stores to support our community and a coffee shop or a restaurant to support our community of hundreds and hundreds of people not an industrial complex please please please do not allow this

Sarah alling
2844 Alexis Ave
Helena mt 59601

Outlook

Fw: Amazon Distribution Center

From Christopher Brink <CBRINK@helenamt.gov>
Date Mon 4/6/2026 8:16 AM
To Michael Alvarez <MALVAREZ@helenamt.gov>

FIY. Please place this in the public comment record and provide to the boards as necessary.

Christopher J. Brink, AICP, EDFP
Director, Department of Community Development
Office (406) 447-8490 | cbrink@helenamt.gov
Direct (406) 447-8445 | helenamt.gov
316 North Park Avenue, Room 445, Helena, Montana 59623

Helena FORWARD
History • Opportunity • Legacy

To request an accommodation or alternate information format, please contact the Community Development Department/Planning Division at: Voice: 406-447-8490 | TTY: 1-800-253-4091|Relay: 711 Email: citycommunitydevelopment@helenamt.gov

Book time to meet with Chris

From: Emily Dean <EDEAN@helenamt.gov>
Sent: Saturday, April 4, 2026 12:31 PM
To: Alana Lake <alake@helenamt.gov>; Dannai Clayborn <DMCLAYBORN@helenamt.gov>; Christopher Brink <CBRINK@helenamt.gov>
Subject: Fw: Amazon Distribution Center

Get Outlook for iOS

From: Pat Haynes <haynep27@icloud.com>
Sent: Saturday, April 4, 2026 12:28:03 PM
To: Emily Dean <EDEAN@helenamt.gov>
Subject: Amazon Distribution Center

[You don't often get email from haynep27@icloud.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good Morning,

I am writing regarding the planned proposal for an Amazon distribution center near the Mountain View meadows community. This is a thriving residential area with plans for apartments and senior living facility's. Not only would a distribution center increase the traffic in the area exponentially it would make absolutely zero sense right in front of a community. This community has families and kids not warehouses and semi trucks. This makes absolutely zero sense given the amount of land open near/around the airport or other industrial areas in Helena. Keep industrial building and warehouses near other industrial building. Do not ruin our neighborhood by building a warehouse where it makes absolutely no sense being. This is a residential neighborhood NOT an industrial park. I do not want my family or potential kids having an Amazon warehouse out front door. I am sure Bezos can afford land not in a neighborhood! We voted for you please do not repay that vote by ruining our neighborhood.

Thank you,
Pat

Sent from my iPhone

Outlook

Fw: Public Comments re: Project Highline - Pre-Zoning Application

From citycommunitydevelopment <citycommunitydevelopment@helenamt.gov>
Date Mon 4/6/2026 8:41 AM
To Michael Alvarez <MALVAREZ@helenamt.gov>

April Sparks, PACE
Administrative Assistant III, Community Development Department
(406) 447-8490| apsparks@helenamt.gov | helenamt.gov
316 N. Park Avenue, Room 445, Helena, MT 59623

Helena FORWARD
History • Opportunity • Legacy

Book a meeting with our staff!

Civic Access is up and running. You can now go to the Civic Access portal, and apply for building permits, submit land use applications, and more. Contact our office if you have any questions or issues. Thanks for your patience.

To request an accommodation or alternate information format, please contact the Community Development Department/Planning Division at: Voice: 406-447-8490 | TTY: 1-800-253-4091|Relay: 711 Email: citycommunitydevelopment@helenamt.gov

---

From: Sheldon Voss <svoss1987@gmail.com>
Sent: Saturday, April 4, 2026 2:27 PM
To: citycommunitydevelopment <citycommunitydevelopment@helenamt.gov>
Subject: Public Comments re: Project Highline - Pre-Zoning Application

Helena Zoning Commision members,

As a resident of Helena, I recently became aware of a pre-zoning application submitted by Venture West, titled Project Highline, and want to share my comments and concerns.

Please consider these comments before and/or during the upcoming hearing set for Tuesday, April 14. I will also be in attendance at the public hearing.

As a resident of Helena, and as someone who looked over and participated in the Helena Forward Land Use Plan (HFLUP), I am extremely disappointed to hear that an outside entity is requesting to re-zone ("pre-zone") land that is marked as Mixed Use and essentially change it to Industrial to accomodate an Amazon Distribution Center (by means I'm not entirely familiar with as they're requesting it be zoned Commercial (B-2)).

What exactly is the point of spending tax dollars provided by the hard-working residents of this city, spending years drafting and finalizing a 20-year plan, only to have corporate entities try and strong-arm their way into a location that just doesn't make sense from both a current and future-use perspective?

I'm including the Zoning definitions laid out in the HFLUP for both Commercial (I assume B-2 falls under this) and Industrial.

- **Commercial**

  Commercial land uses include a range of retail and services such as grocery stores, gas stations, restaurants, and pharmacies. **Essential commercial services should be located adjacent to existing and future residential areas**, ensuring that the scale and intensity of commercial development complements nearby neighborhoods. More **large scale commercial development should be prioritized along high-traffic corridors such as East Custer Avenue and Interstate 15** to maximize visibility and accessibility. In coordination with property owners and transportation jurisdictions along these commercial corridors, the City should reduce curb cuts and **encourage aesthetic improvements that support vibrant and exciting destinations**. Commercial land uses may also include high density residential development.

- **Industrial**

  Industrial land uses are intended to accommodate manufacturing, **warehousing**, and **distribution activities**. This land use classification includes both heavy and light industrial areas. Heavy industrial areas include more intense uses that may generate fumes, constant loud noise, or involve hazardous conditions. Typically, these areas are not compatible with residential uses. Light industrial/manufacturing areas focus on less intensive activities such as the assembly of products, storage and distribution of goods, and packaging. These uses typically exclude basic industrial processing and are often more compatible with residential, commercial, and other land uses.

I bolded some items within those definitions that, in my opinion, clearly define why we need to **reject** this application and the pre-zoning designation of B-2 for the Amazon Distribution Center in the Southwest Corner of Alice Street and Crossroads Parkway.

In what way is a distribution center ever considered an "essential" commercial service to existing **and** future residential areas -- it isn't. I'm not sure how Venture West can state they're attempting to use a zoning designation of Commercial (B-2), when as described above, warehousing/distribution activities clearly need to be within Industrial zoning.

I have also looked over the Industrial zoning areas just north of Highway 12 (south of the airport space) in the HFLUP.

- Why doesn't Venture West explore opportunities/possibilities within clearly defined Industrial zoning?
- Why not explore an area off I-15?
- E Custer Avenue potentially makes sense to accommodate the Amazon Distribution Center if Venture West can convince this city and its residents that the distribution center is somehow Commercial land and *not* Industrial (as described in the Commercial Zoning description for large-scale development).

I believe the above is something residents would likely be more receptive to.

As it stands, the location requested in this application/proposal does not align with existing and future-use land for our city and its residents.

- Existing (and future) housing would see a sharp decline in both desirability and value. People do not want to live next to a distribution center.
- Traffic and congestion would increase ten-fold with insufficient infrastructure to support this increase (in particular, a path south to connect with I-15 directly and alleviate congestion on Highway 12).
- Future land use, for any zoning designation except Industrial (which currently does not exist), would be negatively impacted in every way.
    - I want to re-emphasize my initial point above: why did the city and its residents spend money and time on a Future Land Use Plan, if it can potentially be changed on a whim?

I humbly request the Zoning Commision **swiftly reject** the Pre-Zoning Application, Project Highline, submitted by Venture West.

Thank you,
-Sheldon Voss

Outlook

Fw: Amazon Distribution Service

From Christopher Brink <CBRINK@helenamt.gov>
Date Mon 4/6/2026 11:48 AM
To Michael Alvarez <MALVAREZ@helenamt.gov>

FIY. Please place this in the public comment record and provide to the boards as necessary.

Christopher J. Brink, AICP, EDFP
Director, Department of Community Development
Office (406) 447-8490 | cbrink@helenamt.gov
Direct (406) 447-8445 | helenamt.gov
316 North Park Avenue, Room 445, Helena, Montana 59623

Helena FORWARD
History • Opportunity • Legacy

To request an accommodation or alternate information format, please contact the Community Development Department/Planning Division at: Voice: 406-447-8490 | TTY: 1-800-253-4091|Relay: 711 Email: citycommunitydevelopment@helenamt.gov

Book time to meet with Chris

From: Emily Dean <EDEAN@helenamt.gov>
Sent: Monday, April 6, 2026 11:43 AM
To: Alana Lake <alake@helenamt.gov>; Dannai Clayborn <DMCLAYBORN@helenamt.gov>; Christopher Brink <CBRINK@helenamt.gov>
Subject: Fwd: Amazon Distribution Service

Sent from my iPad

Begin forwarded message:

> **From:** Peg <pholwick@gmail.com>
> **Date:** April 6, 2026 at 08:04:01 MDT
> **To:** Emily Dean <EDEAN@helenamt.gov>
> **Subject: Amazon Distribution Service**

Dear Mayor Dean,

It was a happy day for Helena citizens when you became our mayor. One of the reasons I voted for you is because I believe you have a deep appreciation for the way communities are designed, for conservation of green spaces which leads to higher quality of life in our city and a model for other cities to adopt as they grow.

I understand the need for Amazon Distribution Centers, but the proposed site and zoning changes to incorporate an Amazon center adjacent to Mountain View Meadows is contrary to the "Helena Forward" Land Use Plan. I implore you to oppose changing the current land-use plan which includes mixed residential to B-2 or Industrial zoning.

Aren't there plenty of other, more suitable industrial sites for Amazon?

I look forward to attending the Helena Zoning Commision Meeting on April 14th. Thank you!

Sincerely,

Peg Holwick, (resident of Helena since 2002)
2906 Stacia Ave
Helena, MT 59601
4064-431-9741

Outlook

Fw: Amazon Distribution Center

From Christopher Brink <CBRINK@helenamt.gov>
Date Mon 4/6/2026 11:48 AM
To Michael Alvarez <MALVAREZ@helenamt.gov>

FIY. Please place this in the public comment record and provide to the boards as necessary.

Christopher J. Brink, AICP, EDFP
Director, Department of Community Development
Office (406) 447-8490 | cbrink@helenamt.gov
Direct (406) 447-8445 | helenamt.gov
316 North Park Avenue, Room 445, Helena, Montana 59623

Helena FORWARD
History • Opportunity • Legacy

To request an accommodation or alternate information format, please contact the Community Development Department/Planning Division at: Voice: 406-447-8490 | TTY: 1-800-253-4091|Relay: 711 Email: citycommunitydevelopment@helenamt.gov

Book time to meet with Chris

From: Emily Dean <EDEAN@helenamt.gov>
Sent: Monday, April 6, 2026 11:44 AM
To: Alana Lake <alake@helenamt.gov>; Christopher Brink <CBRINK@helenamt.gov>; Dannai Clayborn <DMCLAYBORN@helenamt.gov>
Subject: Fwd: Amazon Distribution Center

Sent from my iPad

Begin forwarded message:

> **From:** Jay Boughn <jboughn@gmail.com>
> **Date:** April 6, 2026 at 07:32:00 MDT
> **To:** Emily Dean <EDEAN@helenamt.gov>
> **Subject: Amazon Distribution Center**

Residents of Mountain View Meadows (MVM) Subdivision were recently informed about a land use permit for Amazon to build a distribution center in Mountain View Meadows. I am 100% opposed! MVM is a quiet residential neighborhood with a few larger business buildings....it is NOT an industrial park and will never become one. Amazon needs to look at more industrial focused areas, not where families make their homes, not where kids play in the park. It would also drive down home prices and dramatically increase traffic congestion. DO NOT ALLOW THIS To HAPPEN!!!!

Concerned citizen of Helena for over 60 years. Joseph Boughn

TRAFFIC IMPACT STUDY

Project Highline

Helena, Montana

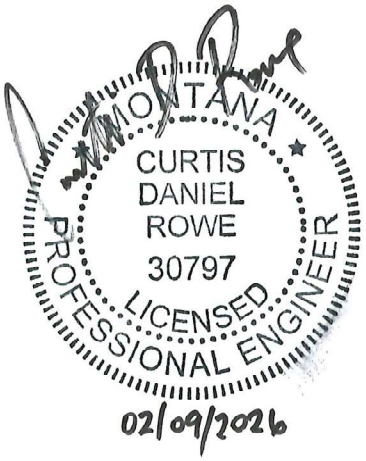
Kimley»Horn

T R A F F I C I M P A C T S T U D Y

Project Highline

Helena, Montana

Prepared by
Curtis D. Rowe, P.E., PTOE
Kimley-Horn and Associates, Inc.
6200 South Syracuse Way
Suite 300
Greenwood Village, Colorado 80111
(303) 228-2300



February 2026

TABLE OF CONTENTS

Appendices

LIST OF TABLES

LIST OF FIGURES

1.0 EXECUTIVE SUMMARY

Project Highline is proposed to be located on the southwest corner of the Alice Street and Crossroads Parkway intersection in Helena, Montana. The project is proposed to include an approximately 39,211 square-foot building that will serve as a warehouse industrial distribution center. It is expected that the project will be completed in the next several years. Therefore, analysis was conducted for the 2029 short-term buildout horizon as well as the 2050 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The following intersections were incorporated into this traffic study in accordance with the City of Helena and Montana Department of Transportation (MDT) standards and requirements:

- US-12/US-287 & Crossroads Parkway (Intersection #1)
- Alice Street & Crossroads Parkway (#2)
- Jeannette Rankin Drive & Crossroads Parkway (#3)

In addition, the two proposed full movement accesses on the future extension of Alice Street to the west of Crossroads Parkway as well as the two proposed right-in/right-out accesses on the west side of Crossroads Parkway were included for evaluation in this study.

Regional access to the site will be provided by Interstate 15 (I-15) and US-12/US-287. Primary access will be provided by US-12/US-287. Direct access will be provided by two proposed full movement accesses along a future extension of Alice Street to the west of Crossroads Parkway and two proposed right-in/right-out accesses located on Crossroads Parkway to the south of Alice Street.

Project Highline is expected to generate approximately 1,078 weekday daily trips, with 58 of these trips occurring during the morning peak hour and 97 of these trips occurring during the afternoon peak hour.

Based on the analysis presented in this report, Kimley-Horn believes Project Highline will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following recommendations:

2029 Recommendations

- Four accesses are proposed to be constructed as part of this project, with two full movement accesses on a future extension of Alice Street to the west of Crossroads Parkway, and two right-in/right-out accesses on Crossroads Parkway to the south of Alice Street. R1-1 "STOP" signs are recommended to be placed on the exiting approach at each of the four accesses. R3-2 No Left Turn signs are recommended to be placed beneath the "STOP" signs at the Crossroads access locations so eastbound exiting drivers are aware of the turning movement restriction. R6-1R "ONE WAY" signs could also be placed across from these accesses along the raised center median, visible to eastbound exiting drivers to further clarify the turning movement restriction at these access locations.

- At the Alice Street & Crossroads Parkway (#2) intersection, eastbound and westbound left turn lanes are recommended to be provided, which are recommended to provide 150 feet in length. In this 2029 short-term horizon, the intersection is expected to continue operating acceptably with stop control and as such, a R1-1 "STOP" sign should be placed on the eastbound Alice Street approach when the new west leg is constructed. The existing northbound left turn lane should be used for northbound vehicles, which should be striped to its existing available length of approximately 225 feet.

2050 Recommendations

- If projected 2050 traffic volumes are realized at the US-12 & Crossroads Parkway (#1) intersection, 300-foot dual northbound left turn lanes are recommended to be provided by the 2050 horizon once full buildout of the Mountain View Meadows development is complete. This can be accomplished by adding the second left turn lane to the west through removal of the second and inside southbound through lane along Crossroads Parkway as this second receiving lane isn't necessary.

- The Alice Street & Crossroads Parkway (#2) intersection is recommended to be signalized once Mountain View Meadows construction is complete.

- For purposes of this study, access into the future commercial parcel to the north of the Project Highline site was assumed to align with the Alice Street East Access (#5). If constructed, the intersection is expected to continue operating acceptably under stop control.

General Recommendations

- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of the City of Helena, Montana Department of Transportation (MDT), and the Manual on Uniform Traffic Control Devices (MUTCD) – 11th Edition, 2023.

2.0 INTRODUCTION

Kimley-Horn has prepared this report to document the results of a Traffic Impact Study for Project Highline proposed to be located on the southwest corner of the Alice Street and Crossroads Parkway intersection in Helena, Montana. A vicinity map illustrating the project development location is shown in **Figure 1**. The project is proposed to include an approximately 39,211 square-foot building that will serve as a distribution center. A conceptual site plan is attached in **Appendix A**. It is expected that the project will be completed in the next several years; therefore, analysis was conducted for the 2029 short-term buildout horizon as well as the 2050 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The following intersections were incorporated into this traffic study in accordance with the City of Helena and Montana Department of Transportation (MDT) standards and requirements:

- US-12/US-287 & Crossroads Parkway (Intersection #1)
- Alice Street & Crossroads Parkway (#2)
- Jeannette Rankin Drive & Crossroads Parkway (#3)

In addition, the two proposed full movement accesses on the future extension of Alice Street to the west of Crossroads Parkway as well as the two proposed right-in/right-out accesses on the west side of Crossroads Parkway were included for evaluation in this study.

Regional access to the site will be provided by Interstate 15 (I-15) and US-12/US-287. Primary access will be provided by US-12/US-287. Direct access will be provided by two proposed full movement accesses along a future extension of Alice Street to the west of Crossroads Parkway and two proposed right-in/right-out accesses located on Crossroads Parkway to the south of Alice Street.

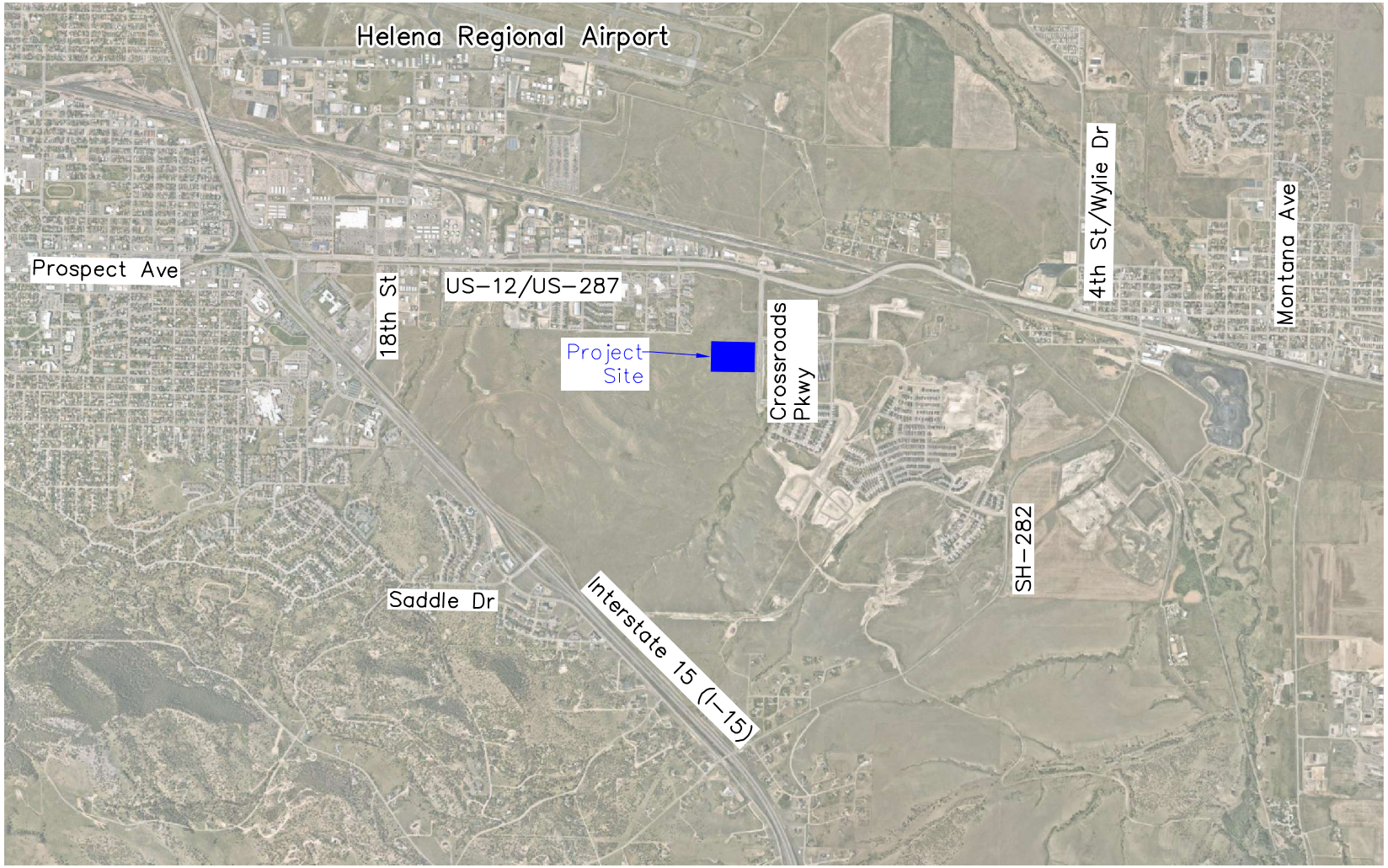


FIGURE 1
Project Highline
Helena, Montana
Vicinity Map

3.0 EXISTING AND FUTURE CONDITIONS

3.1 Existing Study Area

The existing site is comprised of vacant land. The developed parcels to the west of the site are primarily multifamily residential homes and commercial/light industrial uses. Directly to the north of the site is vacant land but just to the north of US-12/US-287 are additional retail/light industrial uses. Surrounding the remainder of the site is primarily vacant land and single- and multifamily residential homes. The project site is located adjacent to a large ongoing planned development known as Mountain View Meadows. Mountain View Meadows is being constructed in several phases, with several portions of the residential development in Mountain View Meadows already complete. The overall Mountain View Meadows development is proposed to include a broad range of single-family and multifamily uses, in addition to office/retail commercial uses at full buildout, with the commercial uses located along the south side of US-12/US-287.

3.2 Existing and Future Roadway Network

US-12/US-287 extends east/west with two through lanes in each direction and a raised center median within the study area, with a posted speed limit of 55 miles per hour (mph). The Greater Helena Area Metropolitan Planning Organization (GHAMPO) classifies US-12/US-287 as a Principal Arterial Roadway. US-12/US-287 provides a direct connection to I-15 approximately two miles to the west of Crossroads Parkway. As US-12/US-287 is signed as “US-12” at its intersection with Crossroads Parkway, it will be referred to solely as US-12 for the remainder of this study.

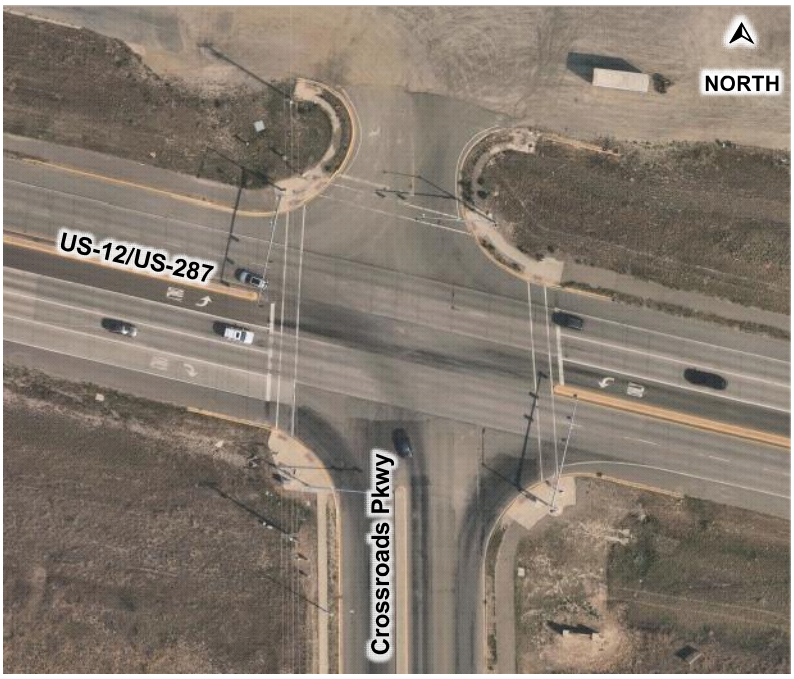
Crossroads Parkway extends north/south with two through lanes in each direction and a raised center median. There is a shared use path along the eastern edge of Crossroads Parkway and a sidewalk along the west side of the road. The roadway is categorized as a Minor Collector roadway in existing conditions. No posted speed limit could be determined from Google Street View imagery. In its existing conditions, Crossroads Parkway terminates approximately half a mile to the south of US-12. However, in 2025 the City of Helena was awarded a planning grant to assess the feasibility and proposed lane and intersection configurations of a future Crossroads Parkway extension that would connect to the existing South Helena interchange at I-15. This future roadway extension has been referred to as the “East Side Arterial Connector”, and if constructed, it is expected this would provide additional roadway connectivity to the eastern

portion of the Greater Helena area. As described by the future roadway name, it is likely this roadway would become a key arterial roadway if this extension is constructed.

Alice Street is an east/west roadway with one through lane in each direction and a posted speed limit of 35 mph. A shared use path is provided along the north side of Alice Street and most of the southern side of the roadway provides a sidewalk.

Jeannette Rankin Drive extends east/west with one through lane in each direction. No posted speed limit could be determined from Google Street View imagery. Jeannette Rankin Drive operates as a local roadway.

The US-12 & Crossroads Parkway (#1) intersection is signalized and operates with permissive left turn phasing on all four approaches to the intersection. The eastbound US-12 approach provides a left turn lane, two through lanes, and a right turn lane while westbound US-12 provides a left turn lane and two through lanes, with right turning movements operating from within the outermost through lane. The northbound Crossroads Parkway approach provides a left turn lane, one through lane, and a right turn lane. The southbound approach provides a left turn lane and a shared through/right turn lane. An aerial photo of the existing intersection configuration is below.

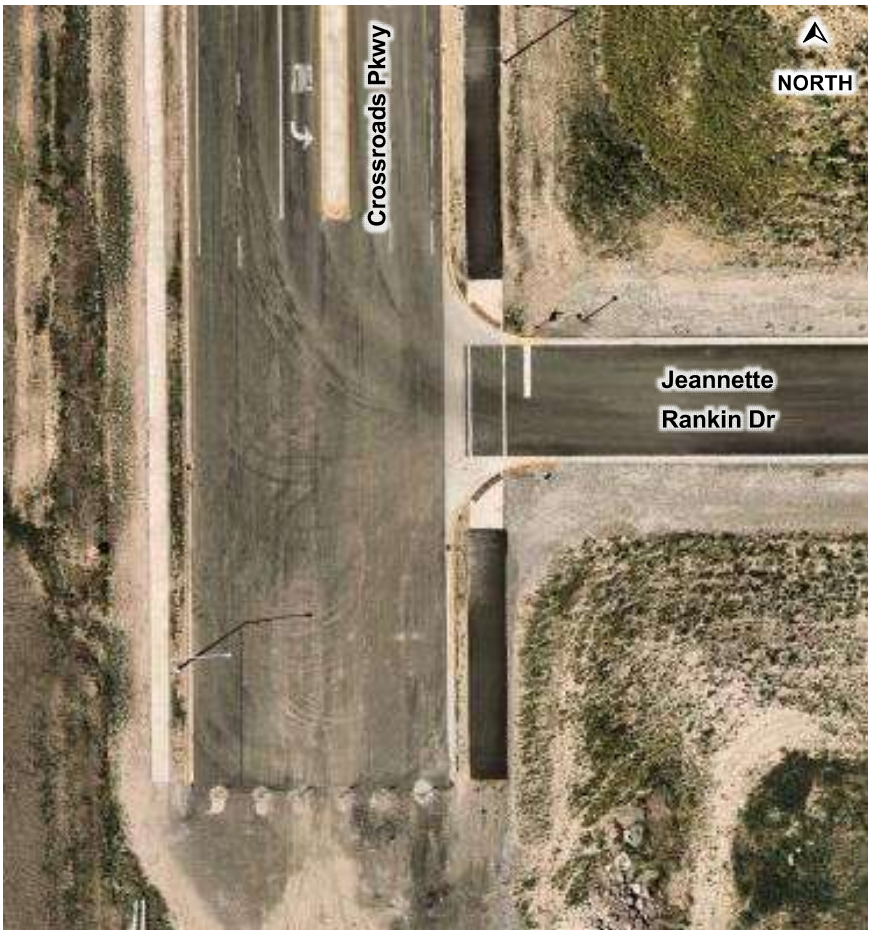


US-12/US-287 & Crossroads Parkway (#1)

The unsignalized 'T'-intersection of Alice Street and Crossroads Parkway operates with stop control on the westbound Alice Street approach. The northbound Crossroads Parkway approach provides two through lanes with the outer lane operating as a shared through/right lane while southbound Crossroads Parkway provides a left turn lane and two through lanes. The westbound Alice Street approach does not provide striping for lanes on the approach to the intersection and as such it was assumed to operate as a single shared left/right turn lane in existing conditions. It should be noted, however, that there is approximately 40 feet of pavement width available on Alice Street at this intersection. An aerial photo of the existing intersection configuration is below.

Alice Street & Crossroads Parkway (#2)

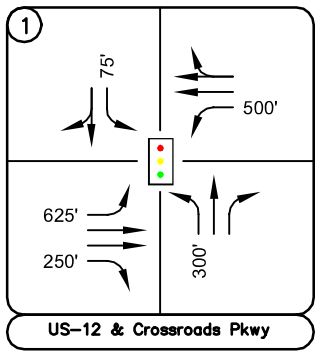
The Jeannette Rankin Drive & Crossroads Parkway (#3) intersection is unsignalized and operates with stop control on the westbound Jeannette Rankin Drive approach to the intersection. However, the south leg of the intersection is not yet constructed and as such, there are no conflicting vehicles with the westbound approach vehicles which would be expected to experience negligible delay in existing conditions. If the future Crossroads Parkway extension is completed, a new south leg would be constructed at this intersection. An aerial photo of the existing intersection configuration is below.

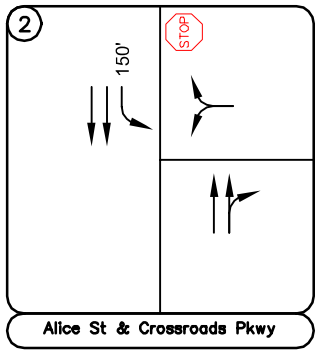


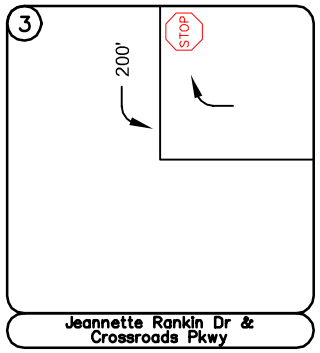
Jeannette Rankin Dr & Crossroads Parkway (#3)

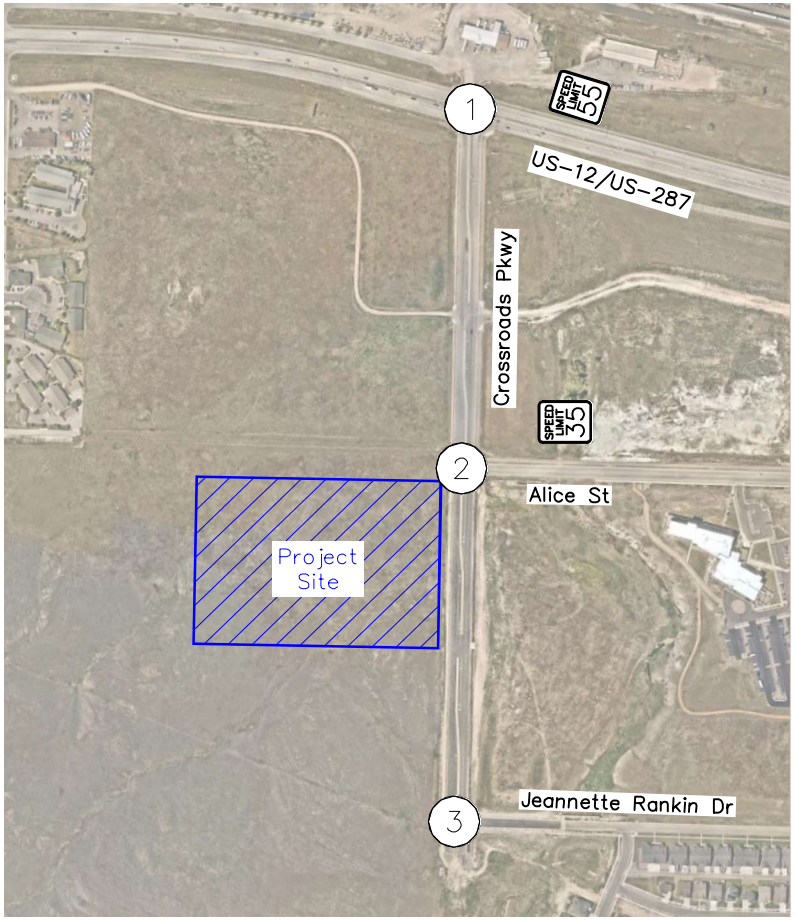
The intersection lane configuration and control for the study area intersections are shown in **Figure 2**.

Kimley»Horn
NORTH
NTS 249641001









LEGEND

- X — Study Area Key Intersection
- Signalized Intersection
- STOP — Stop-Controlled Approach
- SPEED LIMIT XX — Roadway Speed Limit
- 100' — Turn Lane Length (feet)

Kimley»Horn

FIGURE 2
Project Highline
Helena, Montana
Existing Geometry and Control

3.3 Existing Traffic Volumes

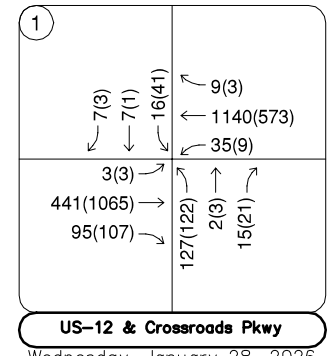
Existing turning movement counts were conducted at the study intersections on Wednesday, January 28, 2026 during the weekday morning and afternoon peak hours. The counts were conducted during the morning and afternoon peak hours of adjacent street traffic in 15-minute intervals from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on this count date. The existing intersection traffic volumes are shown in **Figure 3** with count sheets provided in **Appendix B**.

3.4 Unspecified Development Traffic Growth

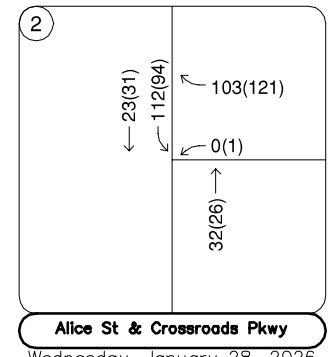
According to traffic projections from the Greater Helena Area Long Range Transportation Plan, an annual growth rate of 0.94 percent is used for analysis. Based on the US-12/US-287 annual average daily traffic (AADT) volumes from 2021 through 2025 in the area, the traffic volumes have been approximately flat over the past five years of data available, decreasing by approximately 0.05 percent per year. Future traffic volume projections and growth rate calculations are provided in **Appendix C**. However, to be conservative, the annual growth rate of 0.94 percent was used to estimate short-term 2029 and long-term 2050 traffic volume projections at the key intersections.

In addition to a background traffic growth rate of 0.94 percent per year, the remaining portions of development to be constructed as part of the overall Mountain View Meadows development were estimated and included in the background traffic volumes. For purposes of this study, it was assumed that approximately one quarter of the overall remaining development area would be complete prior to the 2029 horizon while full buildout would be complete prior to the 2050 horizon. The calculated background traffic volumes for 2029 and 2050 are shown in **Figure 4** and **Figure 5**, respectively. Of note, for purposes of this study it was assumed that if Project Highline was not constructed that the Alice Street extension to the west of Crossroads Parkway would still occur after 2029 but prior to 2050.

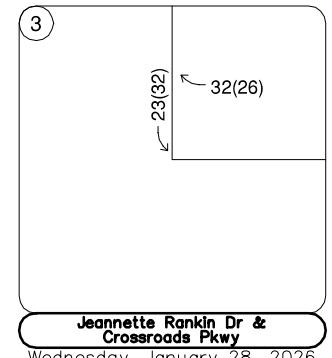
Kimley»Horn
NORTH
NTS 249641001



Wednesday, January 28, 2026
7:45 to 8:45AM (4:30 to 5:30PM)



Wednesday, January 28, 2026
7:45 to 8:45AM (4:00 to 5:00PM)



Wednesday, January 28, 2026
7:45 to 8:45AM (4:00 to 5:00PM)

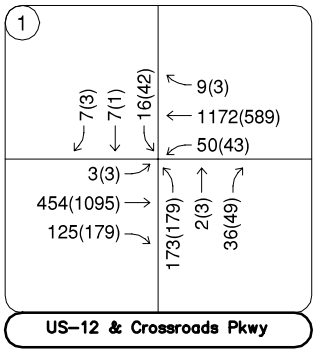
LEGEND

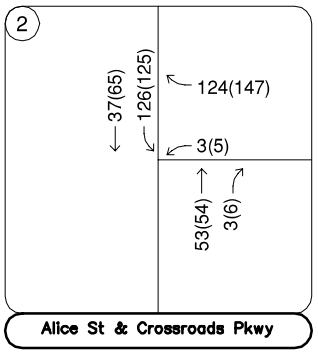
(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

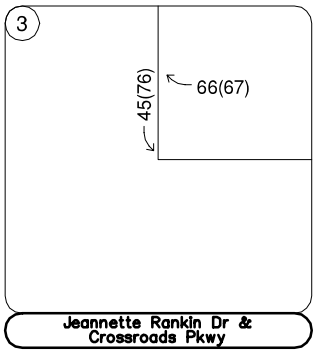
FIGURE 3
Project Highline
Helena, Montana
2026 Existing Traffic Volumes

Kimley»Horn

Kimley»Horn
NORTH
NTS 249641001







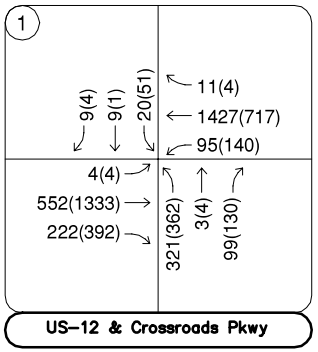
LEGEND

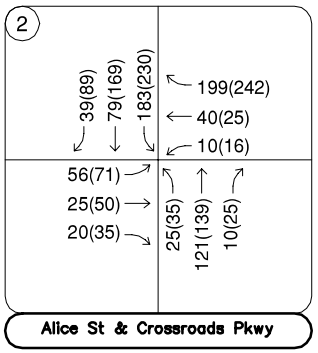
(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

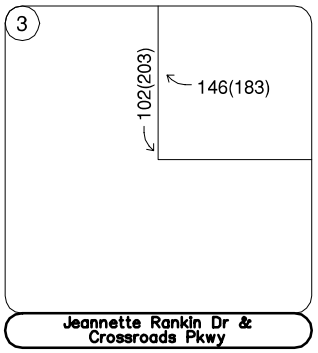
FIGURE 4
Project Highline
Helena, Montana
2029 Background Traffic Volumes

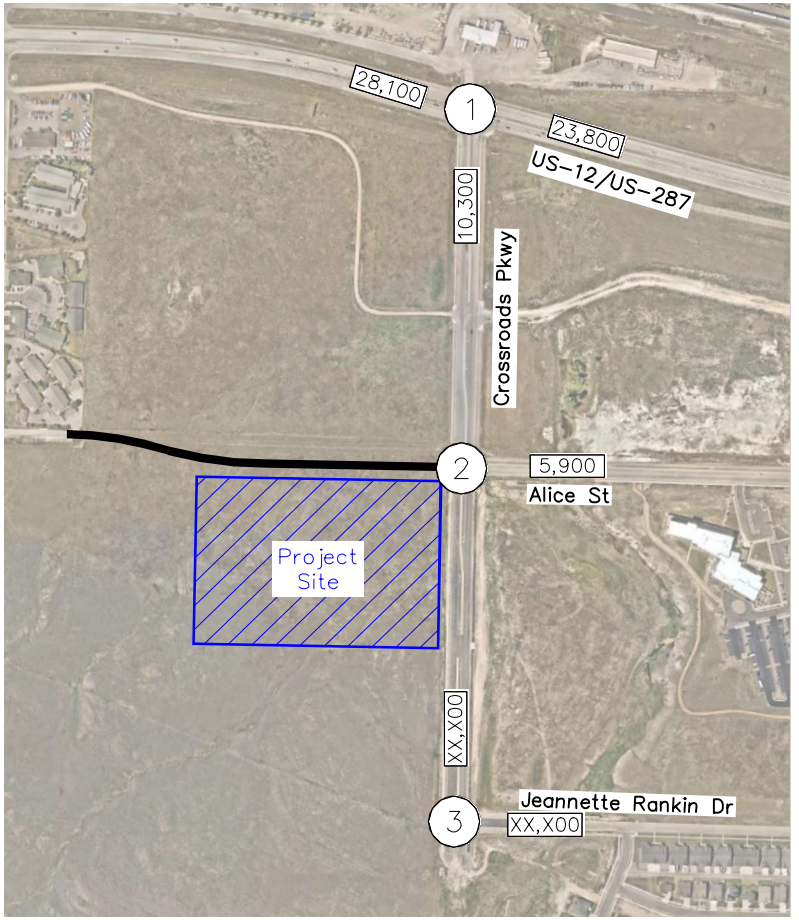
Kimley»Horn

Kimley»Horn
NORTH
NTS 249641001









LEGEND

(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

FIGURE 5
Project Highline
Helena, Montana
2050 Background Traffic Volumes

Kimley»Horn

4.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. For this study, Kimley-Horn site-specific data provided by the user of this facility for traffic associated with the development. To provide a comparison to what the ITE Trip Generation Manual, 12th Edition rates and equations would have been expected to produce for the otherwise applicable land use code, a comparison to those trip generation estimates is provided for comparison.

Project Highline is expected to generate approximately 970 weekday daily vehicle trips, with 52 of these vehicle trips occurring during the morning peak hour and 97 of these vehicle trips occurring during the afternoon peak hour. Daily truck trips to and from the site are expected to generate approximately 36 daily trips, with two truck (2) trips during the morning peak hour and zero truck trips during the afternoon peak hour. It should be noted that these truck trips typically occur outside the peak hours. To provide a conservative estimate of the effect larger vehicles have on intersection operations, a passenger car equivalent (PCE) of 3.0 was used for truck trips. As such, 108 weekday daily trips, with six (6) morning peak hour trips and no afternoon peak hour trips are attributed to trucks. As such, the total expected daily traffic generation of this site is expected to be approximately 1,078 weekday daily trips, with 58 trips during the morning peak hour and 97 trips during the afternoon peak hour.

For calculations of the ITE trip generation comparison, those, calculations were based on the procedure and information provided in the ITE *Trip Generation Manual, 12th Edition – Volume 1: User's Guide and Handbook*, 2025. **Table 1** summarizes the estimated trip generation for the site. The ITE trip generation worksheet is included in **Appendix D**. The ITE trip generation estimates for a Warehouse (ITE Land Use Code 150) facility for a building of 39,211 square feet would be expected to generate approximately 56 weekday daily trips, with five (5) trips during the morning peak hour and six (6) trips during the afternoon peak hour. As such, it is believed that using the site-specific user identified trip generation estimates represent a more appropriate analysis of the trips to be generated by this site.

Table 1 – Project Highline Traffic Generation

Land Use and Size	Weekday Vehicle Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Project Highline Trip Generation							
Automobile	970	17	35	52	43	54	97
Trucks (veh)	36	0	2	2	0	0	0
Trucks (PCE)	108	0	6	6	0	0	0
Project Highline Total Trips	**1,078**	**17**	**41**	**58**	**43**	**54**	**97**
ITE Trip Generation Estimate							
Warehousing (ITE 150) – 39,211 Square Feet	56	4	1	5	2	4	6
Net Difference in Trips	***+1,022***	***+13***	***+40***	***+53***	***+41***	***+50***	***+91***

4.2 Trip Distribution

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding demographic information, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. This proposed site has specific shift schedules that vary from the morning to the afternoon peak hour. As such, unique trip distributions were used for the morning and afternoon peak periods. The morning project trip distribution for the proposed development is illustrated in **Figure 6** while the afternoon trip distribution is shown in **Figure 7.**

4.3 Traffic Assignment

The project's traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the development shown in **Table 1**. Traffic assignment is shown in **Figure 8**.

4.4 Total (Background Plus Project) Traffic

Site traffic volumes were added to the background volumes to represent estimated traffic conditions for the short-term 2029 buildout horizon and long-term 2050 twenty-year planning horizon. These total traffic volumes for the study area are illustrated for the 2029 and 2050 horizon years in **Figure 9** and **Figure 10**, respectively.

Kimley»Horn
NORTH
NTS 249641001

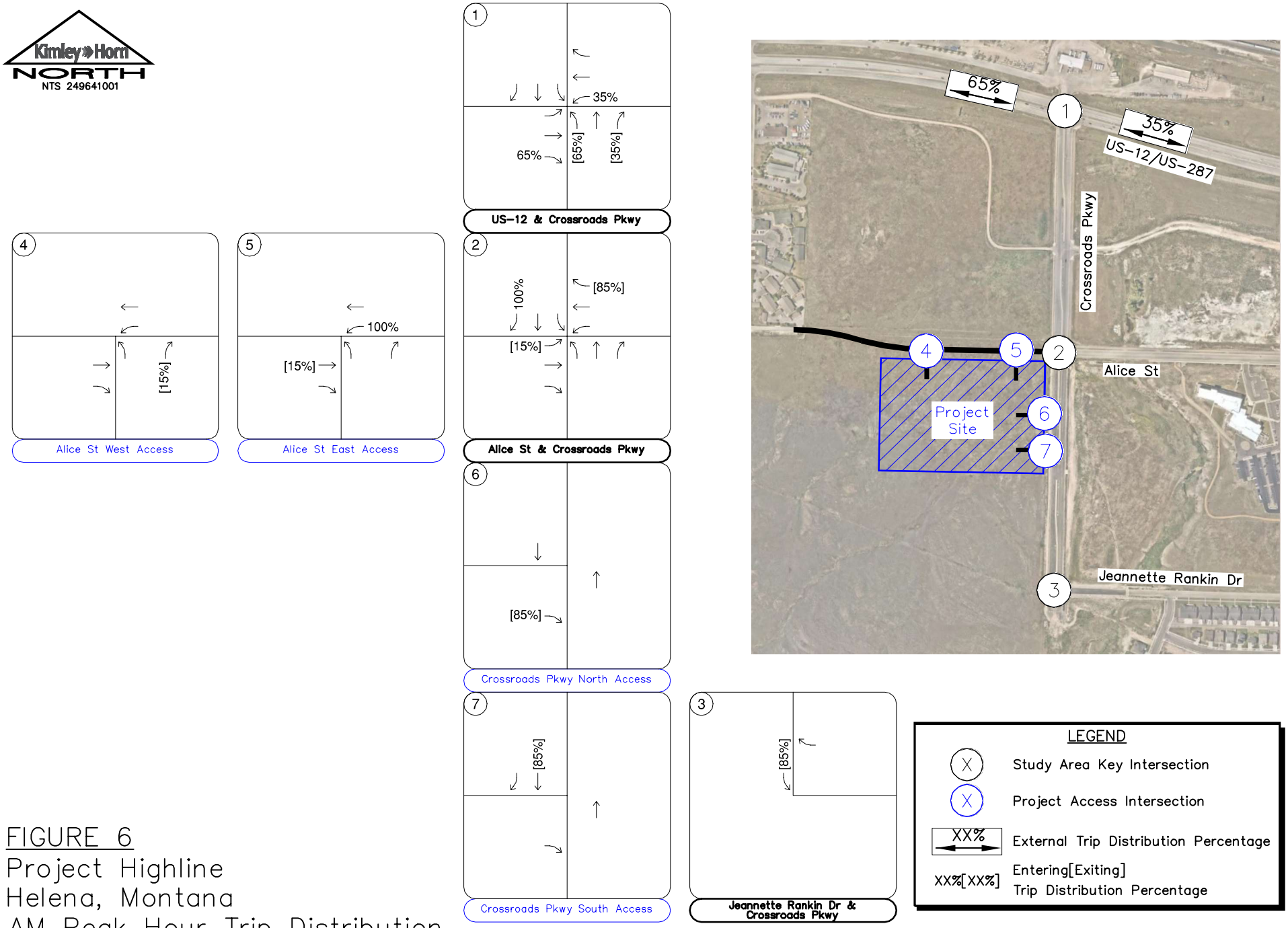


FIGURE 6
Project Highline
Helena, Montana
AM Peak Hour Trip Distribution

Kimley»Horn

Kimley»Horn
NORTH
NTS 249641001

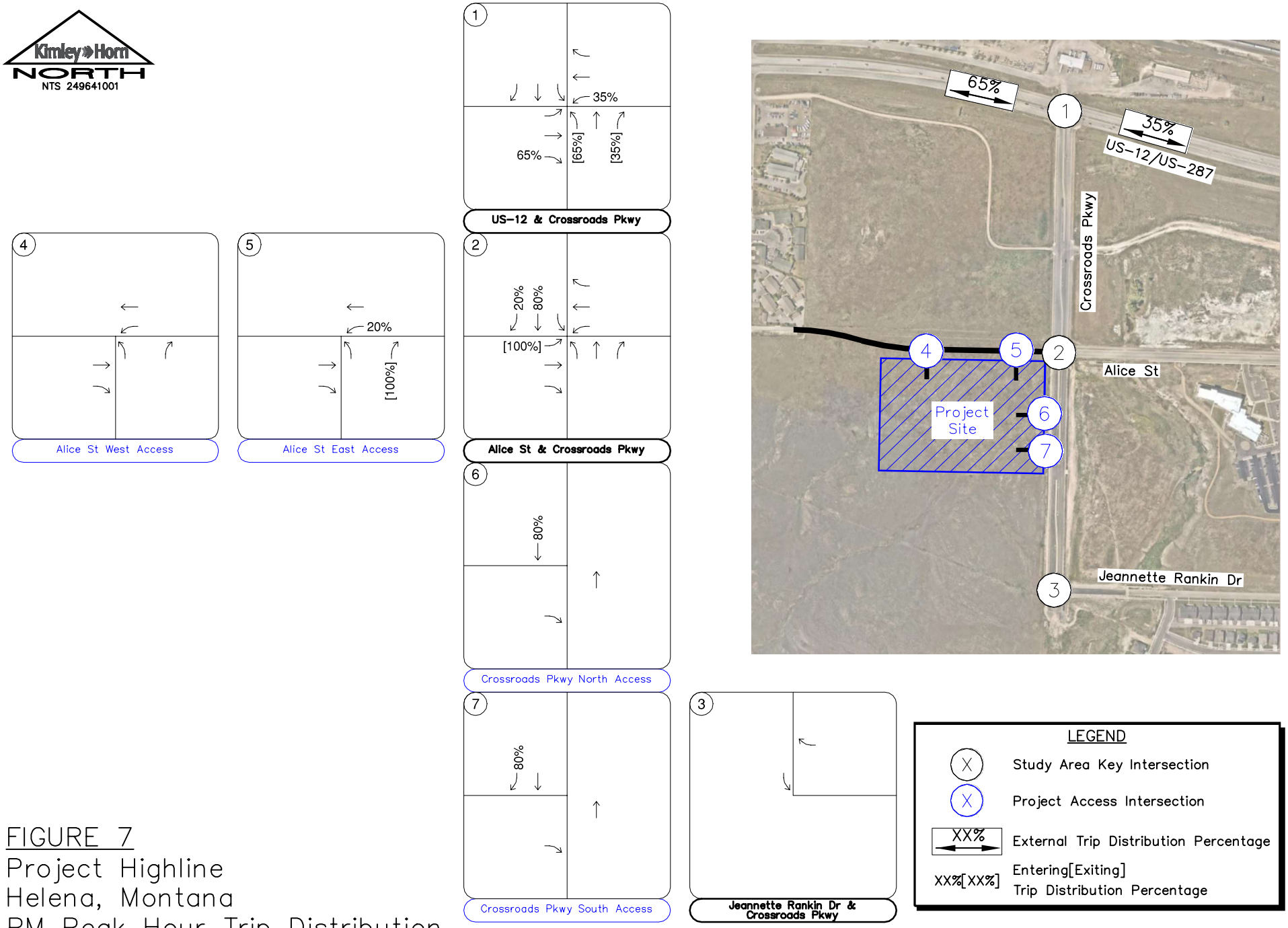
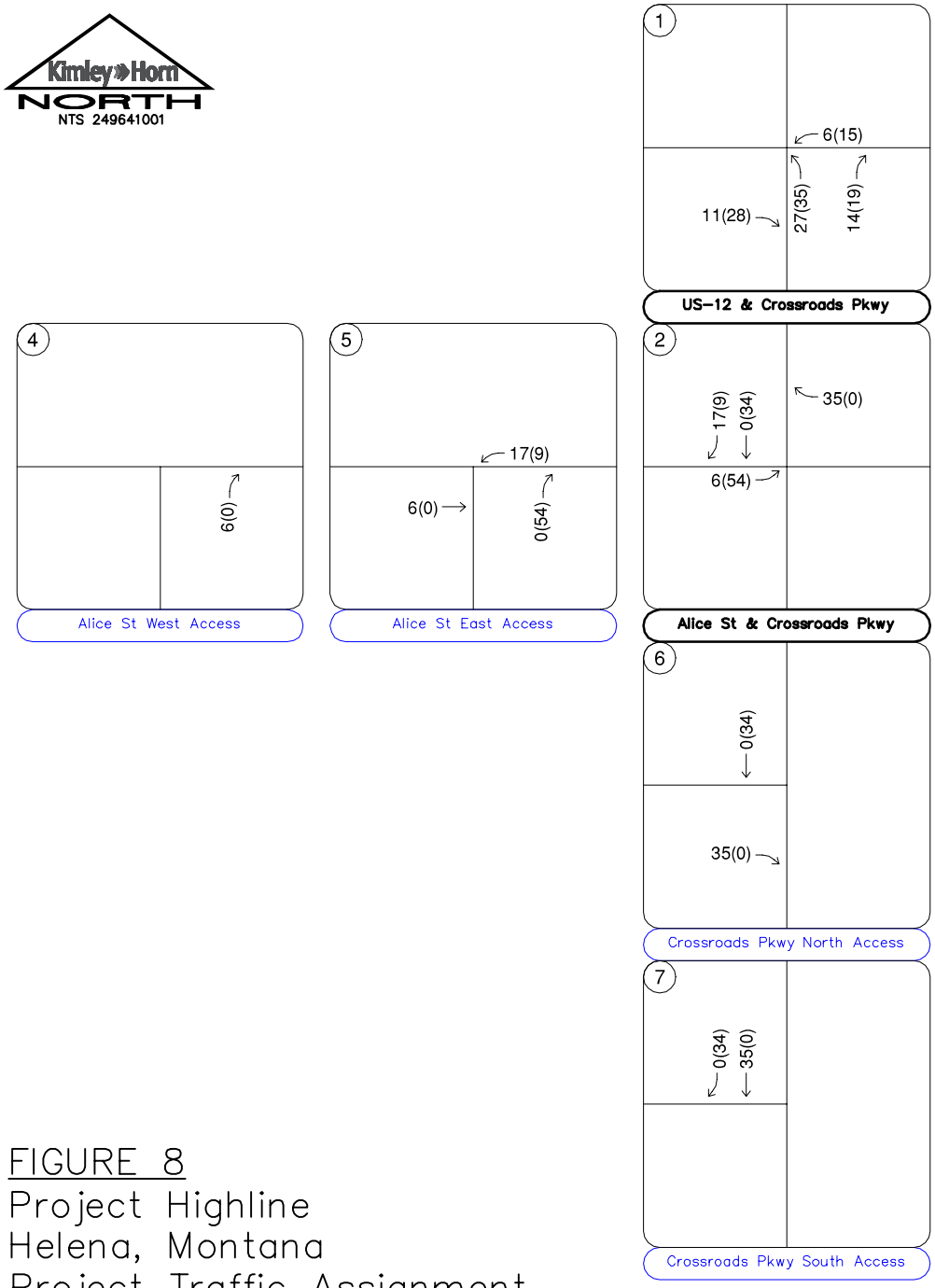
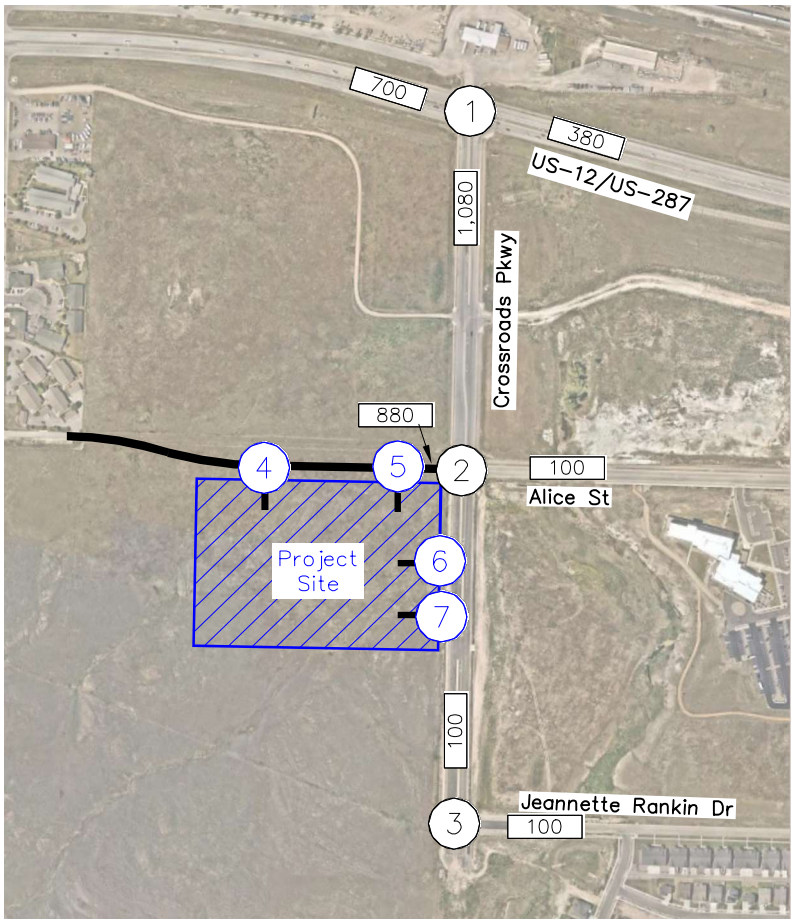


FIGURE 7
Project Highline
Helena, Montana
PM Peak Hour Trip Distribution

Kimley»Horn

Kimley»Horn
NORTH
NTS 249641001





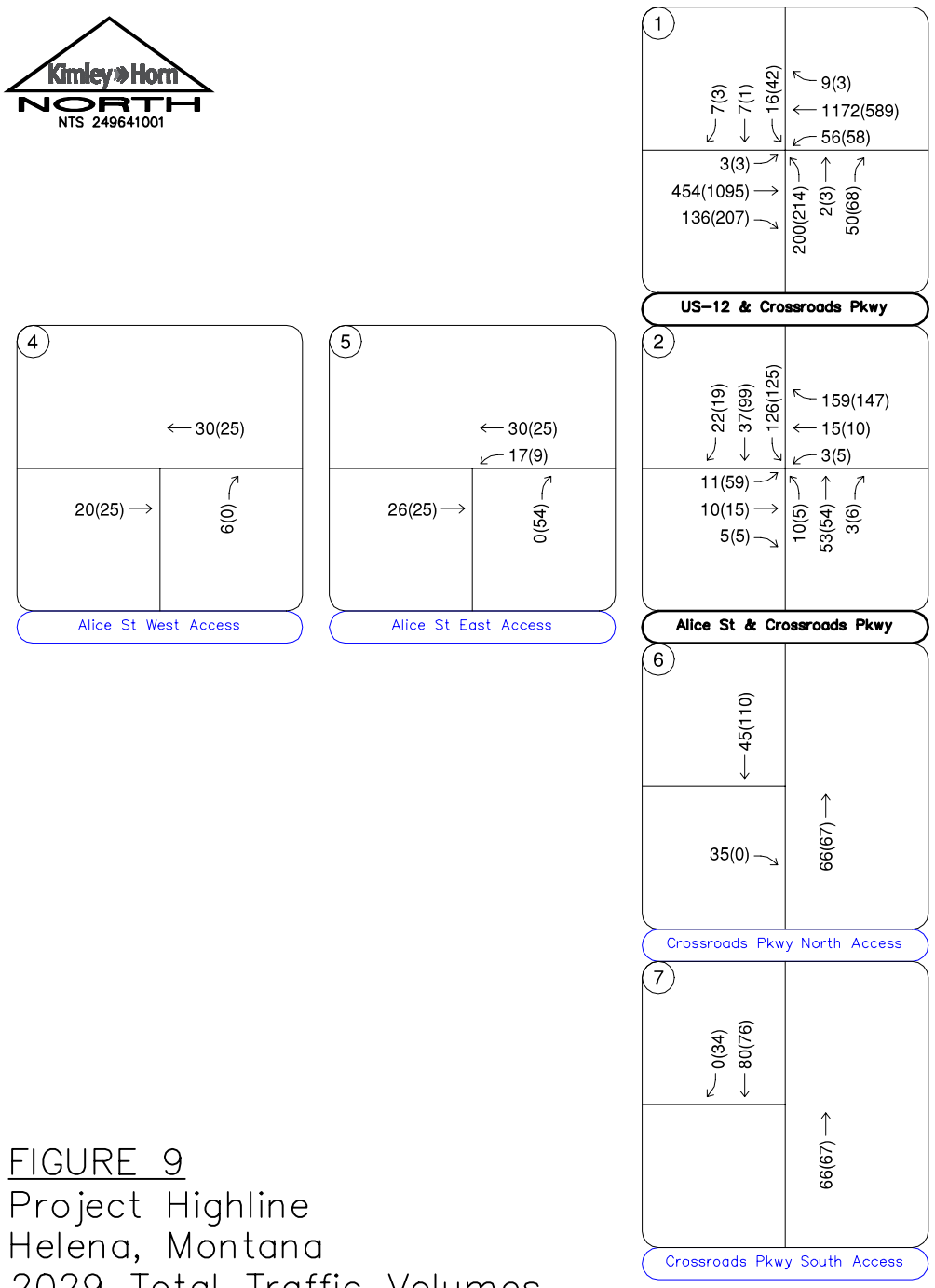
LEGEND

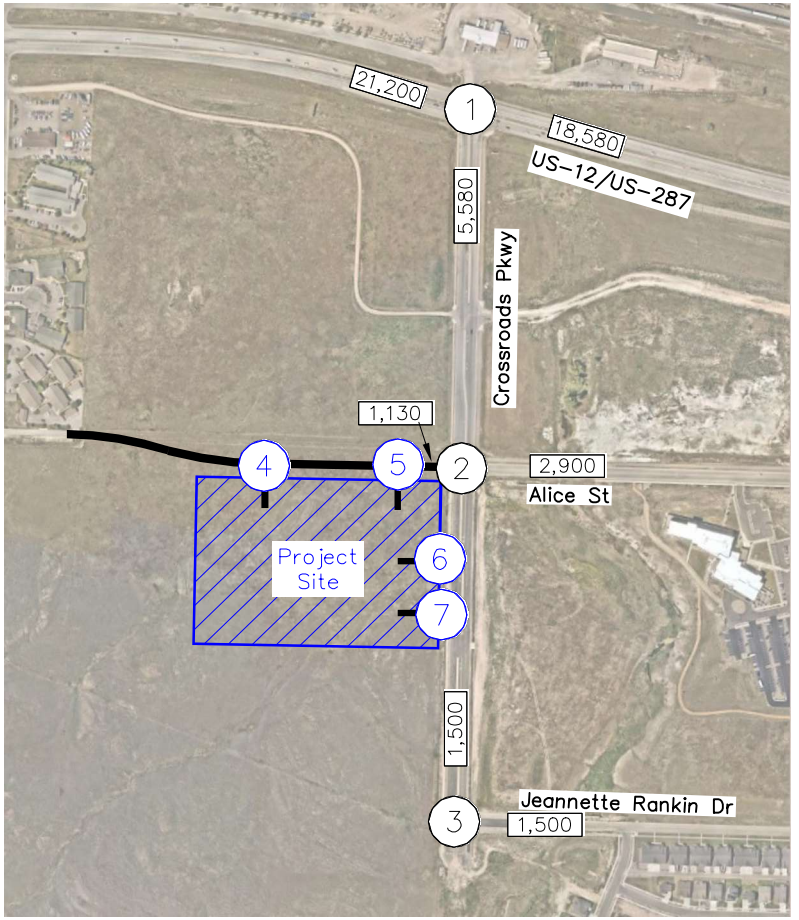
(X)	Study Area Key Intersection
(X)	Project Access Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

FIGURE 8
Project Highline
Helena, Montana
Project Traffic Assignment

Kimley»Horn

Kimley»Horn
NORTH
NTS 249641001





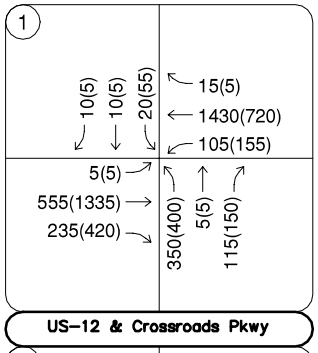
LEGEND

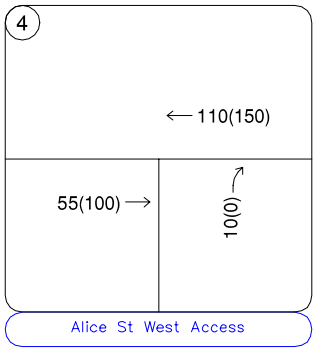
X	Study Area Key Intersection
X	Project Access Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

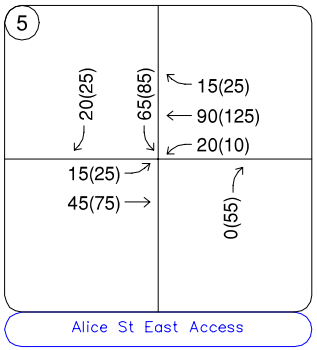
FIGURE 9
Project Highline
Helena, Montana
2029 Total Traffic Volumes

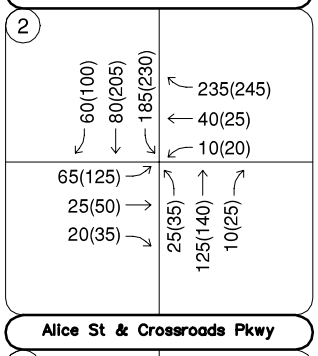
Kimley»Horn

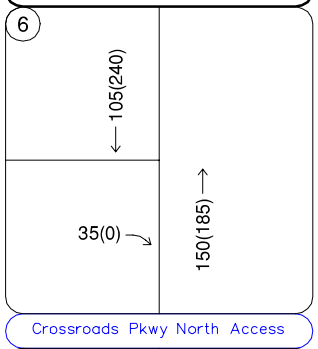
Kimley»Horn
NORTH
NTS 249641001

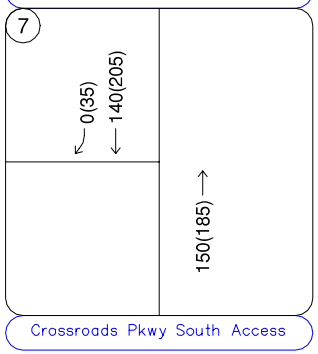


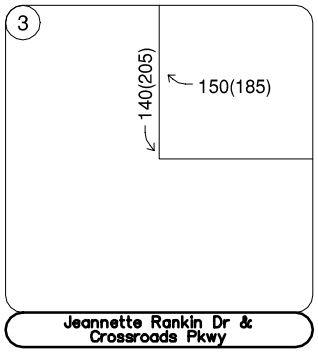


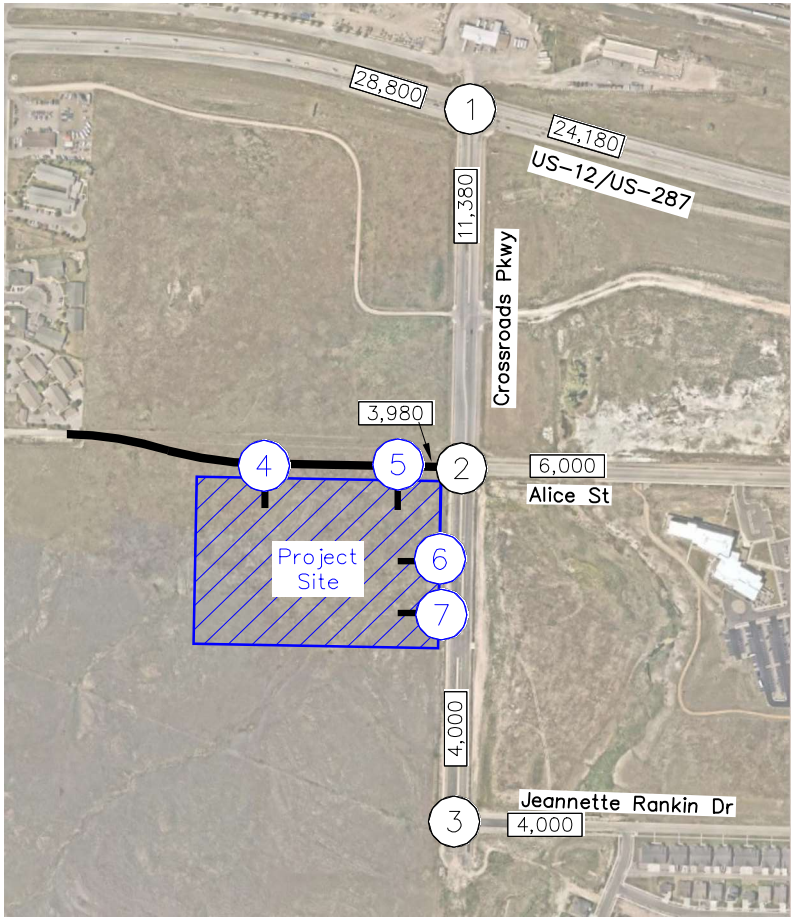












LEGEND

X	Study Area Key Intersection
X	Project Access Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

FIGURE 10
Project Highline
Helena, Montana
2050 Total Traffic Volumes

Kimley»Horn

Kimley-Horn's analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2029 and 2050 development horizons at the identified key intersections. The acknowledged source for determining overall capacity is the *Highway Capacity Manual (HCM)*[1].

5.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). For intersections and roadways in this study area, City of Helena traffic engineering standards recommend both overall intersection LOS D and movement/approach LOS D as the minimum desirable thresholds for acceptable operations during the peak hours. **Table 2** shows the definition of level of service for signalized and unsignalized intersections.

Table 2 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Seventh Edition, Transportation Research Board, 2022.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, the LOS for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for signalized, roundabout, and all-way stop controlled intersections are defined for each approach and for the overall intersection.

[1] Transportation Research Board, *Highway Capacity Manual*, Seventh Edition, Washington DC, 2022.

5.2 Key Intersection Operational Analysis

Calculations for the operational level of service at the key intersections for the study area are provided in **Appendix E.** The existing year analysis is based on the lane geometry and intersection control shown in **Figure 2**. Existing peak hour factors were utilized in the existing and 2029 horizon analysis years while the HCM urban standard of 0.92 was used for the long-term 2050 horizon analysis at intersections. The existing heavy vehicle percentages obtained from the turning movement counts were also used in each horizon year. The signalized intersection analysis utilizes the observed cycle lengths with optimized phasing and timing. Synchro traffic analysis software was used to analyze the signalized and unsignalized key intersections for HCM level of service.

US-12 & Crossroads Parkway (#1)

The intersection of US-12 & Crossroads Parkway (#1) is signalized and operates with permissive left turn phasing on all four approaches to the intersection. The intersection operates acceptably at LOS A during both peak hours in existing conditions and is expected to continue operating acceptably at LOS B during both peak hours with the addition of project traffic through the 2029 horizon. Once full buildout of the Mountain View Meadows area is complete, it is believed that dual northbound left turn lanes may be needed to minimize expected vehicle queues. If these dual left turn lanes are needed by this horizon, it is believed this can be constructed by using the second southbound through receiving lane, and at this time it would be recommended these dual left turn lanes operate with protected-only left turn phasing. With this improvement, the intersection is expected to operate acceptably at LOS C through the 2050 horizon. **Table 3** provides the results of the LOS analysis conducted at this intersection.

Table 3 – US-12 & Crossroads Parkway (#1) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2026 Existing	8.1	A	7.7	A
2029 Background	10.0	B	10.1	B
2029 Background Plus Project	11.2	B	11.6	B
2050 Background	17.5	B	20.5	C
2050 Background Plus Project	21.6	C	26.1	C

Alice Street & Crossroads Parkway (#2)

The Alice Street & Crossroads Parkway 'T'-intersection (#2) is unsignalized and operates with stop control on the westbound Alice Street approach to the intersection. The intersection movements operate acceptably at LOS A during both peak hours in existing conditions. With development of the Project Highline site, a new fourth leg will be constructed at this intersection as a west leg to the intersection. When this occurs, separate eastbound and westbound left turn lanes are recommended to be striped while there is an existing northbound left turn lane for this Alice Street extension that should also be striped. Eastbound Alice Street should also operate with stop control with a posted R1-1 "STOP" sign. With this improvement, the intersection is expected to continue operating acceptably at LOS C or better during both peak hours with the addition of project traffic through the 2029 horizon. Once full buildout of the Mountain View Meadows area is complete prior to the 2050 horizon, the intersection is expected to require signalization to continue operating acceptably. All four approaches were assumed to operate with protected-permissive left turn phasing when signalized. With this improvement, the intersection is expected to operate acceptably at LOS C through the 2050 horizon. Table 3**Table 4** provides the results of the LOS analysis conducted at this intersection.

Table 4 – Alice Street & Crossroads Parkway (#2) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2026 Existing				
Westbound Approach	8.8	A	9.0	A
Southbound Left	7.5	A	7.5	A
2029 Background				
Westbound Approach	9.1	A	9.4	A
Southbound Left	7.6	A	7.6	A
2029 Background Plus Project[1]				
Northbound Left	7.4	A	7.5	A
Eastbound Left	14.5	B	17.9	C
Eastbound Through/Right	11.4	B	12.6	B
Westbound Left	12.6	B	13.4	B
Westbound Through/Right	9.8	A	9.8	A
Southbound Left	7.6	A	7.6	A
2050 Background[1]				
Northbound Left	7.5	A	7.8	A
Eastbound Left	29.1	D	**67.6**	**F**
Eastbound Through/Right	14.0	B	21.8	C
Westbound Left	18.5	C	30.1	D
Westbound Through/Right	12.9	B	13.7	B
Southbound Left	7.9	A	8.1	A
2050 Background Plus Project[2]	26.4	C	27.0	C

[1]West leg constructed; EBL, WBL, and NBL turn lanes; [2]Note 1 + Signalized

Jeannette Rankin Drive & Crossroads Parkway (#3)

The Jeannette Rankin Drive & Crossroads Parkway intersection (#3) is unsignalized and operates with stop control on the westbound approach to the intersection. In its existing conditions, the south leg of the intersection terminates at this intersection but may become a future extension to connect to the I-15 and South Helena interchange. While this potential roadway extension may be constructed, since the planning grant for this future corridor analysis was awarded in 2025, no available published studies are known to date. For purposes of this study, it was assumed this intersection would continue operating in its current conditions. As the westbound right turning movement experiences no conflict points with other vehicles in the current intersection configuration, no measurable delay is experienced at this intersection.

Project Accesses

With completion of the project, two full movement accesses on Alice Street and two right-in/right-out (RIRO) accesses on Crossroads Parkway are proposed. It is recommended that R1-1 “STOP” signs be installed on the exiting approaches of each access. **Table 5** provides the results of the level of service for these project accesses. As shown in the table, the project accesses are anticipated to have all movements operating with acceptable LOS B or better during the peak hours in both the buildout year 2029 and the 2050 long-term horizons. Of note, where zero delay is reported for a specific movement, no vehicles are anticipated to make those turning movements during the peak hours based on the expected site traffic distribution and assignment. During the 2050 long-term horizon, for purposes of this study it was assumed that the Alice Street East Access (#5) could have a north leg aligning to the intersection, with commercial parcels to the north of the site being developed by the 2050 horizon. R3-2 No Left Turn signs are recommended to be placed beneath the “STOP” signs at the Crossroads access locations so eastbound exiting drivers are aware of the turning movement restriction. R6-1R “ONE WAY” signs could also be placed across from these accesses along the raised center median, visible to eastbound exiting drivers to further clarify the turning movement restriction at these access locations.

Table 5 – Project Access Level of Service Results

Intersection	2029 Total				2050 Total			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS
Alice West Access (#4)								
Northbound Approach	8.4	A	0.0	A	8.6	A	0.0	A
Westbound Left	0.0	A	0.0	A	0.0	A	0.0	A
Alice East Access (#5)								
Northbound Approach	0.0	A	8.7	A	0.0	A	8.9	A
Eastbound Left	-	-	-	-	7.5	A	7.6	A
Westbound Left	7.3	A	7.3	A	7.3	A	7.4	A
Southbound Approach	-	-	-	-	10.5	B	11.9	B
Crossroads North Access (#6)								
Eastbound Right	8.6	A	0.0	A	8.8	A	0.0	A
Crossroads South Access (#7)								
Eastbound Right	0.0	A	0.0	A	0.0	A	0.0	A

5.3 Vehicle Queuing Analysis

A vehicle queuing analysis was conducted for the study area intersections. The queuing analysis was performed using Synchro presenting the results of the 95th percentile queue lengths. Results are shown in the following **Table 6** with calculations provided within the level of service operational sheets of **Appendix E** for unsignalized intersections and **Appendix F** for signalized intersections. Of note, vehicle queues were assumed to be a minimum of 25 feet (approximately one vehicle).

Table 6 – Turn Lane Queuing Analysis Results

Intersection Turn Lane	Existing Turn Lane Length	2029 Calculated Queue (AM/PM)	2029 Recommended Length	2050 Calculated Queue (AM/PM)	2050 Recommended Length
US-12 & Crossroads (#1)					
Eastbound Left	625’	25’/25’	625’	25’/25’	625’
Eastbound Right	250’	25’/25’	250’	41’/121’	250’
Westbound Left	500’	35’/49’	500’	54’/232’	500’
Northbound Left	300’	178’/195’	300’	205’/225’	300’ **DL**
Northbound Right	C	27’/37’	C	47’/84’	C
Southbound Left	75’	25’/46’	75’	44’/89’	75’
Alice & Crossroads (#2)					
Eastbound Left	DNE	25’/25’	**150’**	59’/95’	150’
Westbound Left	DNE	25’/25’	**150’**	25’/25’	150’
Northbound Left	225’	25’/25’	225’	25’/26’	225’
Southbound Left	150’	25’/25’	150’	92’/124’	150’

DNE = Does Not Exist; C = Continuous Turn Lane; DL = Dual Left Turn Lanes; **Blue** Text = Recommendation

All queues are anticipated to remain within the existing or recommended turn lane lengths through 2050 except the southbound left turn queue at the US-12 & Crossroads Parkway (#1) intersection. In the current configuration of Centennial Drive and developments to the north of US-12 today, this turn lane cannot be extended further. However, this queue is only experienced during the 2050 long-term horizon and extends less than one vehicle beyond the available storage length.

Recommended turn lane recommendations include improvements at the US-12 & Crossroads Parkway (#1) intersection and Alice Street & Crossroads Parkway (#2) intersection. The improvements are described in the following paragraphs.

If projected 2050 traffic volumes are realized at the US-12 & Crossroads Parkway (#1) intersection, 300-foot dual northbound left turn lanes are recommended to be provided by the 2050 horizon once full buildout of the Mountain View Meadows development is complete. This can be accomplished by adding the second left turn lane to the west through removal of the second and inside southbound through lane along Crossroads Parkway as this second receiving lane isn't necessary. Otherwise, if the City prefers maintaining a single northbound left turn lane at this US-12 & Crossroads Parkway intersection, the existing 300-foot northbound left turn lane could be extended to 425 feet with the northbound left turn phasing operating in protected/permissive. To maintain the back-to-back left turn lanes along Crossroads Parkway for the first median opening location to the south, the southbound left turn lane at this location would need to reduce from 200 feet to 75 feet while maintaining the same bay taper. Although this is feasible, it is believed that the dual northbound left turns would operate better.

At the Alice Street & Crossroads Parkway (#2) intersection, eastbound and westbound left turn lanes are recommended to be provided, which are recommended to provide 150 feet in length. Further, it is recommended that the 225-foot northbound left turn lane be striped.

5.4 Improvement Summary

Based on the results of the intersection operational and vehicle queuing analysis, the key intersection recommended improvements and control are shown in **Figure 11** for the 2029 horizon and **Figure 12** for the 2050 horizon.

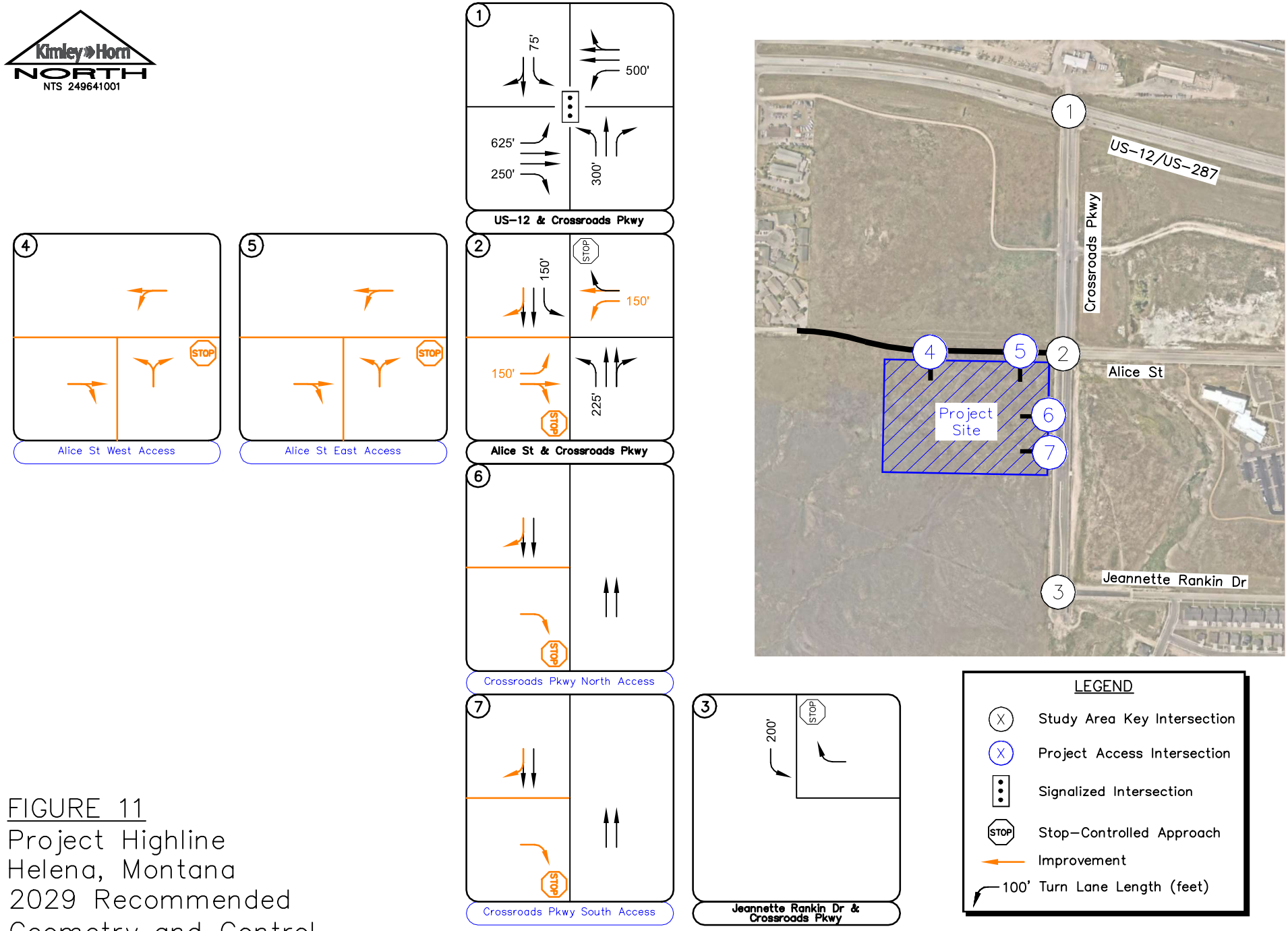
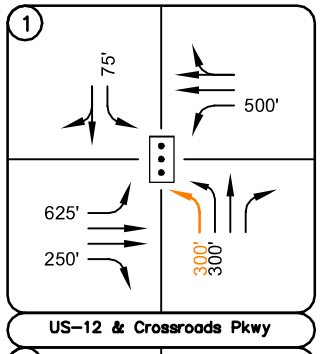
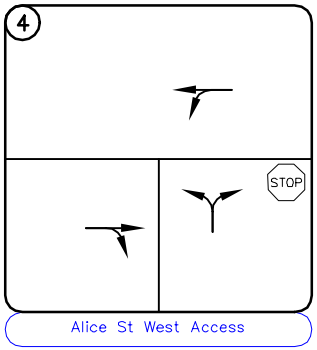
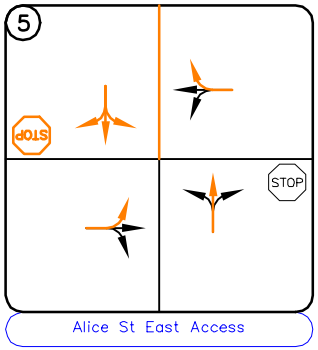


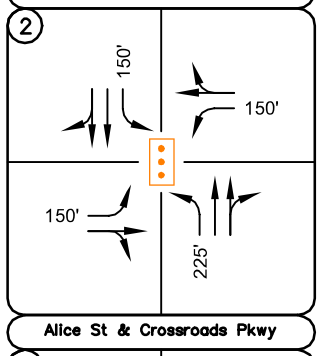
FIGURE 11
Project Highline
Helena, Montana
2029 Recommended
Geometry and Control

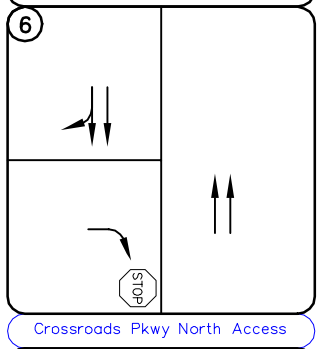
Kimley»Horn
NORTH
NTS 249641001

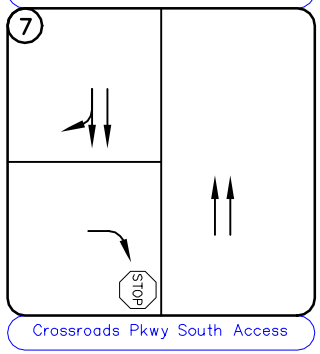


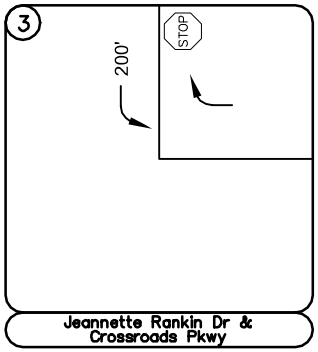


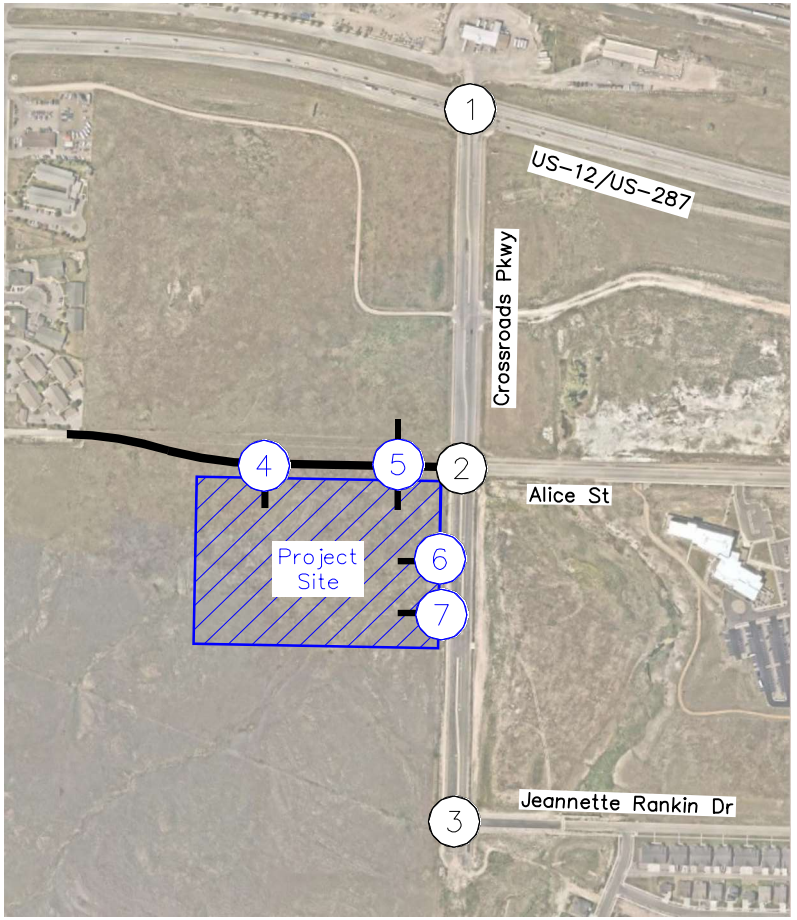












LEGEND

- Study Area Key Intersection
- Project Access Intersection
- Signalized Intersection
- Stop–Controlled Approach
- Improvement
- 100' Turn Lane Length (feet)

FIGURE 12
Project Highline
Helena, Montana
2050 Recommended
Geometry and Control

Kimley»Horn

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes Project Highline will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following recommendations:

2029 Recommendations

- Four accesses are proposed to be constructed as part of this project, with two full movement accesses on a future extension of Alice Street to the west of Crossroads Parkway, and two right-in/right-out accesses on Crossroads Parkway to the south of Alice Street. R1-1 "STOP" signs are recommended to be placed on the exiting approach at each of the four accesses. R3-2 No Left Turn signs are recommended to be placed beneath the "STOP" signs at the Crossroads access locations so eastbound exiting drivers are aware of the turning movement restriction. R6-1R "ONE WAY" signs could also be placed across from these accesses along the raised center median, visible to eastbound exiting drivers to further clarify the turning movement restriction at these access locations.

- At the Alice Street & Crossroads Parkway (#2) intersection, eastbound and westbound left turn lanes are recommended to be provided, which are recommended to provide 150 feet in length. In this 2029 short-term horizon, the intersection is expected to continue operating acceptably with stop control and as such, a R1-1 "STOP" sign should be placed on the eastbound Alice Street approach when the new west leg is constructed. The existing northbound left turn lane should be used for northbound vehicles, which should be striped to its existing available length of approximately 225 feet.

2050 Recommendations

- If projected 2050 traffic volumes are realized at the US-12 & Crossroads Parkway (#1) intersection, 300-foot dual northbound left turn lanes are recommended to be provided by the 2050 horizon once full buildout of the Mountain View Meadows development is complete. This can be accomplished by adding the second left turn lane to the west through removal of the second and inside southbound through lane along Crossroads Parkway as this second receiving lane isn't necessary.

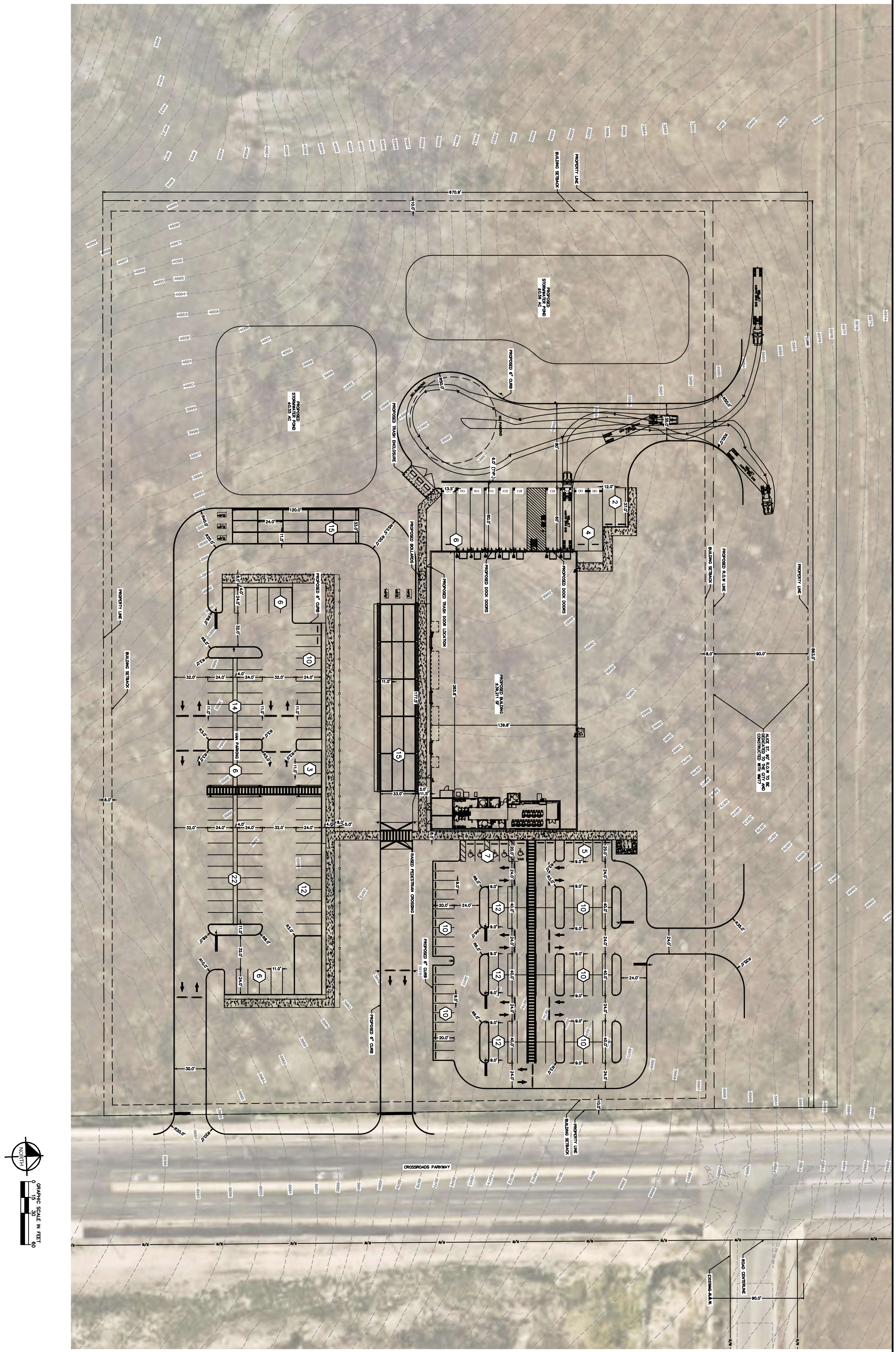
- The Alice Street & Crossroads Parkway (#2) intersection is recommended to be signalized once Mountain View Meadows construction is complete.

- For purposes of this study, access into the future commercial parcel to the north of the Project Highline site was assumed to align with the Alice Street East Access (#5). If constructed, the intersection is expected to continue operating acceptably under stop control.

General Recommendations

- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of the City of Helena, Montana Department of Transportation (MDT), and the Manual on Uniform Traffic Control Devices (MUTCD) – 11th Edition, 2023.

Appendix A: Conceptual Site Plan



SHEET NUMBER	CONCEPTUAL SITE PLAN	PROJECT HIGHLINE	KHA PROJECT –
R0	LEWIS AND CLARK COUNTY MONTANA		1/23/2026
			SCALE AS SHOWN
			DESIGNED BY: EJH
			DRAWN BY: JTW
			CHECKED BY: KCN

FOR INFORMATIONAL PURPOSES ONLY

Kimley»Horn

6876 MARWICK LN, SUITE 350, ORLANDO, FL 32827
PHONE: 407-536-4440
REACH OUT TO BROOKS STICKLER, P.E. WITH QUESTION AT BROOKS.STICKLER@KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

Appendix B: Intersection Count Sheets

Abelin Traffic Services

Turning Movement Count

Passenger Vehicles

Location Helena - Highway 12 and Crossroads Parkway Total Vehicles = 6764

Date Jan. 28, 2026

	Northbound				Southbound				Eastbound				Westbound				
	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	TOTAL
7:00 - 7:15	17	0	1	0	2	0	0	0	1	52	6	0	2	203	5	0	**289**
7:15 - 7:30	29	1	3	0	2	1	1	0	0	65	11	0	3	213	4	0	**333**
7:30 - 7:45	28	0	3	0	2	0	1	0	1	81	16	0	3	249	0	0	**384**
7:45 - 8:00	36	0	9	0	2	0	2	0	0	125	23	0	3	320	2	0	**522**
8:00 - 8:15	39	2	4	0	5	0	1	0	1	111	24	0	16	315	2	0	**520**
8:15 - 8:30	22	0	0	0	6	5	0	0	1	95	20	0	10	281	1	0	**441**
8:30 - 8:45	30	0	2	0	2	1	3	0	1	102	28	0	6	217	4	0	**396**
8:45 - 9:00	18	1	1	0	2	0	1	0	4	102	25	0	3	197	1	0	**355**
4:00 - 4:15	22	1	4	0	10	1	3	0	1	234	36	0	2	159	0	0	**473**
4:15 - 4:30	26	0	6	0	4	0	0	0	4	231	24	0	3	110	1	0	**409**
4:30 - 4:45	46	1	5	0	12	0	2	0	2	243	26	0	4	132	0	0	**473**
4:45 - 5:00	27	1	3	0	3	0	0	0	0	235	26	0	4	119	1	0	**419**
5:00 - 5:15	23	1	6	0	16	0	0	0	0	300	32	0	0	186	1	0	**565**
5:15 - 5:30	25	0	7	0	10	1	0	0	1	275	22	0	1	130	1	0	**473**
5:30 - 5:45	25	0	4	0	5	0	0	0	0	192	28	0	3	130	0	0	**387**
5:45 - 6:00	8	0	2	0	2	0	0	0	0	162	20	0	2	129	0	0	**325**
	421	8	60	0	85	9	14	0	17	2605	367	0	65	3090	23	0	6764

Abelin Traffic Services

Turning Movement Count

Trucks

Location Helena - Highway 12 and Crossroads Parkway Total Vehicles = 87

Date Jan. 28, 2026

	Northbound				Southbound				Eastbound				Westbound				
	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	TOTAL
7:00 - 7:15	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	0	**6**
7:15 - 7:30	0	0	0	0	0	0	2	0	0	3	0	0	0	5	0	0	**10**
7:30 - 7:45	0	0	0	0	0	0	1	0	0	2	0	0	0	3	0	0	**6**
7:45 - 8:00	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	**3**
8:00 - 8:15	0	0	0	0	0	1	0	0	0	4	0	0	0	3	0	0	**8**
8:15 - 8:30	0	0	0	0	1	0	0	0	0	2	0	0	0	1	0	0	**4**
8:30 - 8:45	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	**3**
8:45 - 9:00	1	0	0	0	0	0	0	0	1	1	0	0	0	6	0	0	**9**
4:00 - 4:15	0	0	0	0	0	0	0	0	0	2	0	0	0	5	0	0	**7**
4:15 - 4:30	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	0	**7**
4:30 - 4:45	0	0	0	0	0	0	1	0	0	4	0	0	0	1	0	0	**6**
4:45 - 5:00	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	**5**
5:00 - 5:15	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	**4**
5:15 - 5:30	1	0	0	0	0	0	0	0	0	2	1	0	0	2	0	0	**6**
5:30 - 5:45	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**1**
5:45 - 6:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	**2**
	2	0	0	0	1	1	5	0	1	40	1	0	0	35	1	0	87

Abelin Traffic Services

Turning Movement Count

All Vehicles

Total Vehicles =	6851
Total Trucks =	87 1.3%

Location Helena - Highway 12 and Crossroads Parkway

Date Jan. 28, 2026

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	**TOTAL**	
7:00 - 7:15	17	0	1	0	2	0	0	0	1	57	6	0	2	204	5	0	**295**	
7:15 - 7:30	29	1	3	0	2	1	3	0	0	68	11	0	3	218	4	0	**343**	
7:30 - 7:45	28	0	3	0	2	0	2	0	1	83	16	0	3	252	0	0	**390**	
7:45 - 8:00	36	0	9	0	2	0	2	0	0	126	23	0	3	322	2	0	**525**	1553
8:00 - 8:15	39	2	4	0	5	1	1	0	1	115	24	0	16	318	2	0	**528**	1786
8:15 - 8:30	22	0	0	0	7	5	0	0	1	97	20	0	10	282	1	0	**445**	1888
8:30 - 8:45	30	0	2	0	2	1	4	0	1	103	28	0	6	218	4	0	**399**	1897
8:45 - 9:00	19	1	1	0	2	0	1	0	5	103	25	0	3	203	1	0	**364**	1736
4:00 - 4:15	22	1	4	0	10	1	3	0	1	236	36	0	2	164	0	0	**480**	
4:15 - 4:30	26	0	6	0	4	0	0	0	4	236	24	0	3	112	1	0	**416**	
4:30 - 4:45	46	1	5	0	12	0	3	0	2	247	26	0	4	133	0	0	**479**	
4:45 - 5:00	27	1	3	0	3	0	0	0	0	237	26	0	4	122	1	0	**424**	1799
5:00 - 5:15	23	1	6	0	16	0	0	0	0	304	32	0	0	186	1	0	**569**	1888
5:15 - 5:30	26	0	7	0	10	1	0	0	1	277	23	0	1	132	1	0	**479**	1951
5:30 - 5:45	25	0	4	0	5	0	0	0	0	193	28	0	3	130	0	0	**388**	1860
5:45 - 6:00	8	0	2	0	2	0	0	0	0	163	20	0	2	129	1	0	**327**	1763
	423	**8**	**60**	**0**	**86**	**10**	**19**	**0**	**18**	**2645**	**368**	**0**	**65**	**3125**	**24**	**0**	**6851**	

Abelin Traffic Services

Turning Movement Count

Passenger Vehicles

Location Helena - Alice Street and Crossroads Pkwy Total Vehicles = 945

Date Jan. 28, 2026

	Northbound				Southbound				Eastbound				Westbound				
	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	TOTAL
7:00 - 7:15	0	8	0	0	8	3	0	0	0	0	0	0	0	0	19	0	**38**
7:15 - 7:30	0	11	0	0	9	6	0	0	0	0	0	0	0	0	21	0	**47**
7:30 - 7:45	0	8	0	0	19	3	0	0	0	0	0	0	0	0	26	0	**56**
7:45 - 8:00	0	11	0	0	25	5	0	0	0	0	0	0	0	0	31	0	**72**
8:00 - 8:15	0	11	0	0	30	5	0	0	0	0	0	0	0	0	28	0	**74**
8:15 - 8:30	0	6	0	0	26	7	0	0	0	0	0	0	0	0	18	0	**57**
8:30 - 8:45	0	4	0	0	30	6	0	0	0	0	0	0	0	0	26	0	**66**
8:45 - 9:00	0	4	0	0	24	2	0	0	0	0	0	0	0	0	18	0	**48**
4:00 - 4:15	0	1	0	0	28	9	0	0	0	0	0	0	0	0	27	0	**65**
4:15 - 4:30	0	9	0	0	21	7	0	0	0	0	0	0	1	0	29	0	**67**
4:30 - 4:45	0	7	0	0	22	7	0	0	0	0	0	0	0	0	45	0	**81**
4:45 - 5:00	0	9	0	0	23	8	0	0	0	0	0	0	0	0	20	0	**60**
5:00 - 5:15	0	6	0	0	20	5	0	0	0	0	0	0	0	0	25	0	**56**
5:15 - 5:30	0	7	0	0	24	7	0	0	0	0	0	0	1	0	25	0	**64**
5:30 - 5:45	0	11	0	0	18	13	0	0	0	0	0	0	0	0	18	0	**60**
5:45 - 6:00	0	2	0	0	14	9	0	0	0	0	0	0	0	0	9	0	**34**
	0	115	0	0	341	102	0	0	0	0	0	0	2	0	385	0	945

Abelin Traffic Services

Turning Movement Count

Trucks

Location Helena - Alice Street and Crossroads Pkwy Total Vehicles = 2

Date Jan. 28, 2026

	Northbound				Southbound				Eastbound				Westbound				
	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	TOTAL
7:00 - 7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 - 7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 - 8:15	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 - 8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	**1**
4:00 - 4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 - 4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 - 4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 - 5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 - 5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 - 5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 - 5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2

Abelin Traffic Services

Turning Movement Count

All Vehicles

Total Vehicles =	947
Total Trucks =	2 0.2%

Location Helena - Alice Street and Crossroads Pkwy

Date Jan. 28, 2026

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	TOTAL	
7:00 - 7:15	0	8	0	0	8	3	0	0	0	0	0	0	0	0	19	0	38	
7:15 - 7:30	0	11	0	0	9	6	0	0	0	0	0	0	0	0	21	0	47	
7:30 - 7:45	0	8	0	0	19	3	0	0	0	0	0	0	0	0	26	0	56	
7:45 - 8:00	0	11	0	0	25	5	0	0	0	0	0	0	0	0	31	0	72	213
8:00 - 8:15	0	11	0	0	31	5	0	0	0	0	0	0	0	0	28	0	75	250
8:15 - 8:30	0	6	0	0	26	7	0	0	0	0	0	0	0	0	18	0	57	260
8:30 - 8:45	0	4	0	0	30	6	0	0	0	0	0	0	0	0	26	0	66	270
8:45 - 9:00	0	4	0	0	24	2	0	0	0	0	0	0	0	0	19	0	49	247
4:00 - 4:15	0	1	0	0	28	9	0	0	0	0	0	0	0	0	27	0	65	
4:15 - 4:30	0	9	0	0	21	7	0	0	0	0	0	0	1	0	29	0	67	
4:30 - 4:45	0	7	0	0	22	7	0	0	0	0	0	0	0	0	45	0	81	
4:45 - 5:00	0	9	0	0	23	8	0	0	0	0	0	0	0	0	20	0	60	273
5:00 - 5:15	0	6	0	0	20	5	0	0	0	0	0	0	0	0	25	0	56	264
5:15 - 5:30	0	7	0	0	24	7	0	0	0	0	0	0	1	0	25	0	64	261
5:30 - 5:45	0	11	0	0	18	13	0	0	0	0	0	0	0	0	18	0	60	240
5:45 - 6:00	0	2	0	0	14	9	0	0	0	0	0	0	0	0	9	0	34	214
	0	115	0	0	342	102	0	0	0	0	0	0	2	0	386	0	947	

Appendix C: Future Traffic Projections

F. Crash history shall be analyzed to document any existing safety conditions that may be aggravated or impacted by the development or development mitigation. The minimum history is typically latest five years.

V. TRAFFIC FORECASTS

Any modal split should be addressed for Sections B and C including documentation and justification. Documentation shall include reference to any standards or prior studies. Any modal split shall be approved prior to initiation of the TIS.

A. The study scenarios for traffic forecasts and analysis should include the following:

- Existing conditions
- Existing plus proposed development (each applicable phase and build out)
- 20-year horizon (typical) plus development (Mitigation design life 20-years).

Since improvements are designed for a minimum life of 20-years, analysis of any mitigation for a 20-year horizon is prudent. Variations to the planning horizon may be allowed on a case-by-case basis, depending on the size of the development and the potential need for mitigation. The planning horizon noted in the GHALRTP is 20-years. Growth rates used in the GHALRTP are approximately 0.94% per year (p. 52). Past AADT's maybe used for growth rates.

For land use actions such as a zone change, conditional use permit, annexation or subdivision, the traffic forecasts and analysis shall include the reasonable worst-case scenario of the area subject to the land use action, i.e., the total acres and max density. A proposed development plan, typically, doesn't provide the worst-case scenario. Per development regulations, a full range of development potential (min. to max.) under current vs. proposed land use designations shall be addressed in the analysis. Reasonable worst-case analysis must have justification and should be based on maximum viable development.

B. Non-site traffic includes existing traffic plus proposed or approved development in the area not accounted for in existing traffic counts. If other traffic studies for surrounding developments are used to estimate non-site traffic, those sources must be adequately documented. Trips need to be adjusted for each scenario based on the approved growth factor. Any assumptions for trip generation must be documented.

C. ITE trip generation rates are generally used as noted in Section III A above and adjusted by approved growth rates. Explanation of trip distribution and assignment should include any assumptions. Provide a diagram noting percentages and trip numbers from both the proposed development and non-site trips. Directional distribution for both the AM and PM peak hours should be

Project Highline - Helena, Montana

Location	Average Daily Traffic Volume (AADT)					Average	Growth Rate (%)
	2021	2022	2023	2024	2025		
US-12/US-287 W of Shephard Way	20,702	18,929	19,327	19,211	18,944	19,423	-1.76%
US-12/US-287 W of 4th St	17,196	15,055	15,371	15,279	17,377	16,056	0.21%
US-12/US-287 E of 18th St	20,501	20,609	21,042	20,916	21,932	21,000	1.36%
Total	**58,399**	**54,593**	**55,740**	**55,406**	**58,253**	**56,478**	**-0.05%**

Appendix D: Trip Generation Worksheet

Traffic Schedule

	Autos (Excl. FLEX)			Box Trucks			Vans			FLEX Vehicles			Line-Haul Trucks			Total		
Time	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
00:00			0			0			0	0	0	0	0	1	1	0	1	1
00:30			0			0			0	0	0	0	0	1	1	0	1	1
01:00			0			0			0	0	0	0	0	1	1	0	1	1
01:30			0			0			0	0	0	0	0	1	1	0	1	1
02:00			0			0			0	0	0	0	0	1	1	0	1	1
02:30			0			0			0	0	0	0			0	0	0	0
03:00	4		4			0			0	0	0	0			0	4	0	4
03:30	0	41	41	0	2	2			0	0	0	0			0	0	43	43
04:00	36	0	36			0			0	0	0	0	2	0	2	38	0	38
04:30			0			0			0	0	0	0	2	0	2	2	0	2
05:00			0			0			0	0	0	0	2	1	3	2	1	3
05:30	8		8			0			0	0	0	0	2	1	3	10	1	11
06:00	18	0	18			0			0	0	0	0	2	1	3	20	1	21
06:30	18	0	18			0	0	18	18	0	0	0	2	1	3	20	19	39
07:00	17		17			0	0	18	18	0	0	0	0	1	1	17	19	36
07:30			0			0	0	17	17	0	0	0	0	1	1	0	18	18
08:00			0			0			0	0	0	0	0	1	1	0	1	1
08:30			0			0			0	0	0	0	0	1	1	0	1	1
09:00	30	36	66			0			0	0	0	0		0	0	30	36	66
09:30			0			0			0	0	0	0		0	0	0	0	0
10:00	58	0	58			0	0	0	0	0	0	0			0	58	0	58
10:30	7		7			0	0	14	14	0	0	0			0	7	14	21
11:00	14		14			0	0	7	7	0	0	0			0	14	7	21
11:30	7		7			0	0	14	14	0	0	0		2	2	7	16	23
12:00	5		5			0	0	7	7	0	0	0		2	2	5	9	14
12:30		30	30			0	0	5	5	0	0	0			0	0	35	35
13:00			0			0			0	14	0	14			0	14	0	14
13:30			0			0			0	14	0	14			0	14	0	14
14:00	0	36	36			0			0	14	14	28			0	14	50	64
14:30			0	2	0	2			0	14	14	28			0	16	14	30
15:00		4	4			0			0	14	14	28			0	14	18	32
15:30			0			0			0	14	14	28			0	14	14	28
16:00			0			0			0	14	14	28			0	14	14	28
16:30			0			0	18	0	18	14	14	28			0	32	14	46
17:00			0			0	18	0	18	8	14	22			0	26	14	40
17:30	0	26	26			0	17	0	17	0	14	14			0	17	40	57
18:00	0	18	18			0			0	0	8	8			0	0	26	26
18:30	0	17	17			0			0	0	0	0			0	0	17	17
19:00			0			0			0	0	0	0			0	0	0	0
19:30			0			0			0	0	0	0			0	0	0	0
20:00			0			0			0	0	0	0			0	0	0	0
20:30			0			0	14	0	14	0	0	0			0	14	0	14
21:00		14	14			0	7	0	7	0	0	0			0	7	14	21
21:30		7	7			0	26	0	26	0	0	0			0	26	7	33
22:00		26	26			0	0	0	0	0	0	0			0	0	26	26
22:30	36	8	44			0	0	0	0	0	0	0	2		2	38	8	46
23:00			0			0			0	0	0	0	2		2	2	0	2
23:30	5		5			0			0	0	0	0	2	1	3	7	1	8
Total	263	263	526	2	2	4	100	100	200	120	120	240	18	18	36	503	503	1,006

ITE Land Use Daily Trip Generation Calculations

	TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS		
	Land Use + Code	Source	Scale	ITE Unit	Equation/Rate	Entering %	Exiting %	In	Out	Total
1	(150) Warehouse	ITE 12th Ed	39.2	KSF	T = 1.38(X)	50%	50%	28	28	56

ITE Land Use AM Peak Hour Trip Generation Calculations

	TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS		
	Land Use + Code	Source	Scale	ITE Unit	Equation/Rate	Entering %	Exiting %	In	Out	Total
1	(150) Warehouse	ITE 12th Ed	39.2	KSF	T = 0.12(X)	77%	23%	4	1	5

ITE Land Use PM Peak Hour Trip Generation Calculations

	TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		BASELINE TRIPS		
	Land Use + Code	Source	Scale	ITE Unit	Equation/Rate	Entering %	Exiting %	In	Out	Total
1	(150) Warehouse	ITE 12th Ed	39.2	KSF	T = 0.15(X)	28%	72%	2	4	6

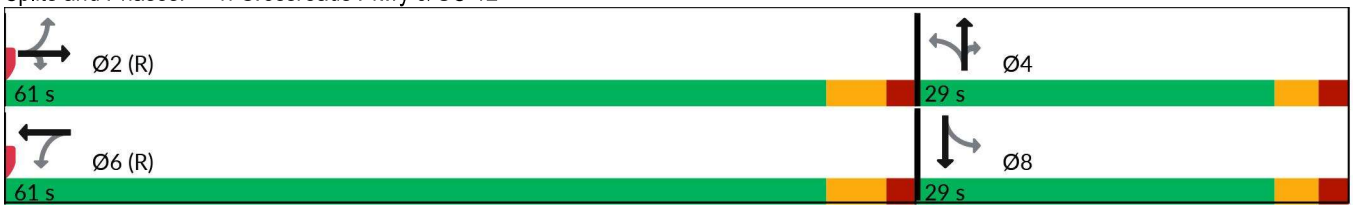
Appendix E: Intersection Analysis Worksheets

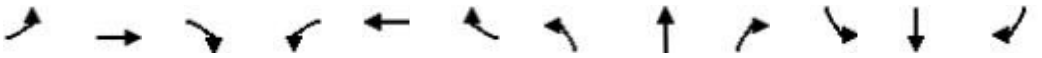
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	441	95	35	1140	127	2	15	16	7
Future Volume (vph)	3	441	95	35	1140	127	2	15	16	7
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2			6		4			8
Permitted Phases	2		2	6		4		4	8	
Detector Phase	2	2	2	6	6	4	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	61.0	61.0	61.0	61.0	61.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	67.8%	67.8%	67.8%	67.8%	67.8%	32.2%	32.2%	32.2%	32.2%	32.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 1: Crossroads Pkwy & US-12





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	441	95	35	1140	9	127	2	15	16	7	7
Future Volume (veh/h)	3	441	95	35	1140	9	127	2	15	16	7	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1752	1752	1752
Adj Flow Rate, veh/h	3	490	106	39	1267	10	141	2	17	18	8	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	10	10	10
Cap, veh/h	344	2651	1182	660	2695	21	252	247	209	251	106	106
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	433	3554	1585	822	3614	29	1397	1870	1585	1305	804	804
Grp Volume(v), veh/h	3	490	106	39	623	654	141	2	17	18	0	16
Grp Sat Flow(s),veh/h/ln	433	1777	1585	822	1777	1865	1397	1870	1585	1305	0	1607
Q Serve(g_s), s	0.2	3.7	1.6	1.3	12.3	12.4	8.9	0.1	0.8	1.1	0.0	0.8
Cycle Q Clear(g_c), s	12.6	3.7	1.6	5.0	12.3	12.4	9.6	0.1	0.8	1.2	0.0	0.8
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	344	2651	1182	660	1325	1391	252	247	209	251	0	212
V/C Ratio(X)	0.01	0.18	0.09	0.06	0.47	0.47	0.56	0.01	0.08	0.07	0.00	0.08
Avail Cap(c_a), veh/h	344	2651	1182	660	1325	1391	440	499	423	427	0	429
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.9	3.4	3.1	4.1	4.5	4.5	38.5	33.9	34.3	34.5	0.0	34.3
Incr Delay (d2), s/veh	0.0	0.2	0.1	0.2	1.2	1.1	1.9	0.0	0.2	0.1	0.0	0.1
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	0.0	0.7	0.3	0.2	2.7	2.8	3.1	0.0	0.3	0.4	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	7.0	3.5	3.3	4.3	5.7	5.6	40.4	34.0	34.4	34.6	0.0	34.4
LnGrp LOS	A	A	A	A	A	A	D	C	C	C		C
Approach Vol, veh/h		599			1316			160			34	
Approach Delay, s/veh		3.5			5.6			39.7			34.5	
Approach LOS		A			A			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		73.1		16.9		73.1		16.9				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		55.0		24.0		55.0		24.0				
Max Q Clear Time (g_c+I1), s		14.6		11.6		14.4		3.2				
Green Ext Time (p_c), s		3.4		0.3		9.5		0.1				

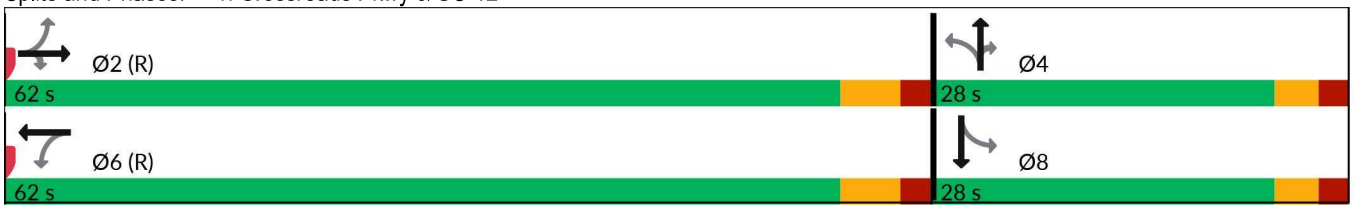
Intersection Summary												
HCM 7th Control Delay, s/veh			8.1									
HCM 7th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	1065	107	9	573	122	3	21	41	1
Future Volume (vph)	3	1065	107	9	573	122	3	21	41	1
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2			6		4			8
Permitted Phases	2		2	6		4		4	8	
Detector Phase	2	2	2	6	6	4	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	62.0	62.0	62.0	62.0	62.0	28.0	28.0	28.0	28.0	28.0
Total Split (%)	68.9%	68.9%	68.9%	68.9%	68.9%	31.1%	31.1%	31.1%	31.1%	31.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 1: Crossroads Pkwy & US-12



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	1065	107	9	573	3	122	3	21	41	1	3
Future Volume (veh/h)	3	1065	107	9	573	3	122	3	21	41	1	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	1238	124	10	666	3	142	3	24	48	1	3
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	615	2673	1192	328	2729	12	254	235	199	252	52	155
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	768	3554	1585	399	3628	16	1412	1870	1585	1383	412	1236
Grp Volume(v), veh/h	3	1238	124	10	326	343	142	3	24	48	0	4
Grp Sat Flow(s),veh/h/ln	768	1777	1585	399	1777	1867	1412	1870	1585	1383	0	1648
Q Serve(g_s), s	0.1	11.9	1.9	0.9	5.0	5.0	8.8	0.1	1.2	2.8	0.0	0.2
Cycle Q Clear(g_c), s	5.1	11.9	1.9	12.8	5.0	5.0	9.0	0.1	1.2	3.0	0.0	0.2
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		0.75
Lane Grp Cap(c), veh/h	615	2673	1192	328	1337	1405	254	235	199	252	0	207
V/C Ratio(X)	0.00	0.46	0.10	0.03	0.24	0.24	0.56	0.01	0.12	0.19	0.00	0.02
Avail Cap(c_a), veh/h	615	2673	1192	328	1337	1405	438	478	405	432	0	421
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.2	4.2	3.0	6.7	3.4	3.4	38.4	34.5	34.9	35.8	0.0	34.5
Incr Delay (d2), s/veh	0.0	0.6	0.2	0.2	0.4	0.4	1.9	0.0	0.3	0.4	0.0	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	2.3	0.4	0.1	1.0	1.1	3.1	0.1	0.5	1.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.2	4.8	3.2	6.8	3.8	3.8	40.4	34.5	35.2	36.1	0.0	34.5
LnGrp LOS	A	A	A	A	A	A	D	C	D	D		C
Approach Vol, veh/h		1365			679			169			52	
Approach Delay, s/veh		4.7			3.9			39.5			36.0	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		73.7		16.3		73.7		16.3				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		56.0		23.0		56.0		23.0				
Max Q Clear Time (g_c+I1), s		13.9		11.0		14.8		5.0				
Green Ext Time (p_c), s		10.7		0.3		3.9		0.1				

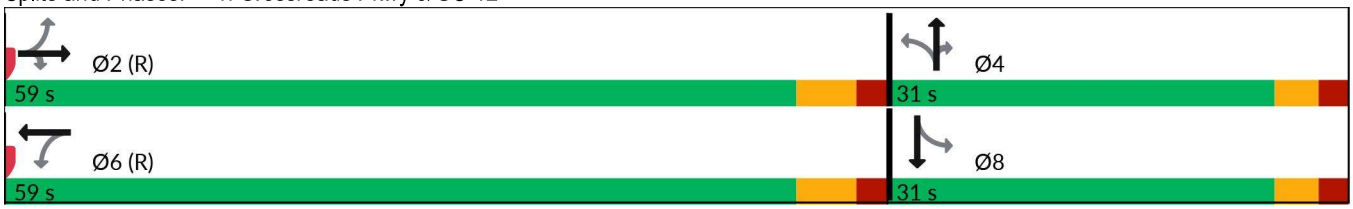
Intersection Summary												
HCM 7th Control Delay, s/veh			7.7									
HCM 7th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	454	125	50	1172	173	2	36	16	7
Future Volume (vph)	3	454	125	50	1172	173	2	36	16	7
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2			6		4			8
Permitted Phases	2		2	6		4		4	8	
Detector Phase	2	2	2	6	6	4	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	59.0	59.0	59.0	59.0	59.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 1: Crossroads Pkwy & US-12



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	454	125	50	1172	9	173	2	36	16	7	7
Future Volume (veh/h)	3	454	125	50	1172	9	173	2	36	16	7	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1752	1752	1752
Adj Flow Rate, veh/h	3	504	139	56	1302	10	192	2	40	18	8	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	10	10	10
Cap, veh/h	308	2517	1123	599	2560	20	305	317	269	296	136	136
Arrive On Green	0.71	0.71	0.71	0.71	0.71	0.71	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	419	3554	1585	787	3614	28	1397	1870	1585	1278	804	804
Grp Volume(v), veh/h	3	504	139	56	640	672	192	2	40	18	0	16
Grp Sat Flow(s),veh/h/ln	419	1777	1585	787	1777	1865	1397	1870	1585	1278	0	1607
Q Serve(g_s), s	0.3	4.3	2.5	2.3	14.8	14.8	12.0	0.1	1.9	1.1	0.0	0.8
Cycle Q Clear(g_c), s	15.1	4.3	2.5	6.7	14.8	14.8	12.8	0.1	1.9	1.1	0.0	0.8
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	308	2517	1123	599	1258	1321	305	317	269	296	0	273
V/C Ratio(X)	0.01	0.20	0.12	0.09	0.51	0.51	0.63	0.01	0.15	0.06	0.00	0.06
Avail Cap(c_a), veh/h	308	2517	1123	599	1258	1321	472	540	458	448	0	464
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.4	4.5	4.2	5.6	6.0	6.0	36.7	31.1	31.8	31.5	0.0	31.3
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.3	1.5	1.4	2.1	0.0	0.3	0.1	0.0	0.1
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	0.0	1.0	0.6	0.3	3.8	4.0	4.2	0.0	0.8	0.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.5	4.6	4.4	5.9	7.5	7.4	38.8	31.1	32.1	31.6	0.0	31.4
LnGrp LOS	A	A	A	A	A	A	D	C	C	C		C
Approach Vol, veh/h		646			1368			234			34	
Approach Delay, s/veh		4.6			7.4			37.6			31.5	
Approach LOS		A			A			D			C	

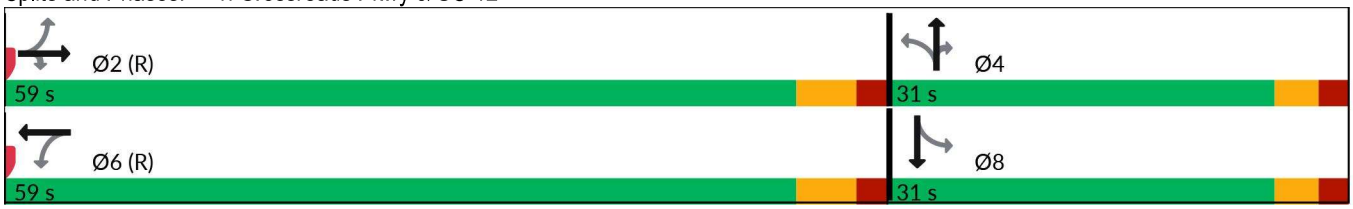
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		69.7		20.3		69.7		20.3				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		53.0		26.0		53.0		26.0				
Max Q Clear Time (g_c+I1), s		17.1		14.8		16.8		3.1				
Green Ext Time (p_c), s		3.6		0.5		10.0		0.1				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.0									
HCM 7th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	1095	179	43	589	179	3	49	42	1
Future Volume (vph)	3	1095	179	43	589	179	3	49	42	1
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2			6		4			8
Permitted Phases	2		2	6		4		4	8	
Detector Phase	2	2	2	6	6	4	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	59.0	59.0	59.0	59.0	59.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Crossroads Pkwy & US-12



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	1095	179	43	589	3	179	3	49	42	1	3
Future Volume (veh/h)	3	1095	179	43	589	3	179	3	49	42	1	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	1273	208	50	685	3	208	3	57	49	1	3
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	559	2502	1116	272	2555	11	323	325	275	311	72	215
Arrive On Green	0.70	0.70	0.70	0.70	0.70	0.70	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	755	3554	1585	356	3628	16	1412	1870	1585	1343	412	1236
Grp Volume(v), veh/h	3	1273	208	50	335	353	208	3	57	49	0	4
Grp Sat Flow(s),veh/h/ln	755	1777	1585	356	1777	1867	1412	1870	1585	1343	0	1648
Q Serve(g_s), s	0.1	14.9	4.0	6.8	6.2	6.2	12.9	0.1	2.8	2.8	0.0	0.2
Cycle Q Clear(g_c), s	6.3	14.9	4.0	21.6	6.2	6.2	13.1	0.1	2.8	2.9	0.0	0.2
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		0.75
Lane Grp Cap(c), veh/h	559	2502	1116	272	1251	1315	323	325	275	311	0	286
V/C Ratio(X)	0.01	0.51	0.19	0.18	0.27	0.27	0.64	0.01	0.21	0.16	0.00	0.01
Avail Cap(c_a), veh/h	559	2502	1116	272	1251	1315	485	540	458	466	0	476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.0	6.1	4.5	11.1	4.9	4.9	36.2	30.8	31.9	32.0	0.0	30.8
Incr Delay (d2), s/veh	0.0	0.7	0.4	1.5	0.5	0.5	2.2	0.0	0.4	0.2	0.0	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	3.6	0.9	0.6	1.6	1.7	4.5	0.1	1.1	0.9	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.0	6.9	4.9	12.6	5.4	5.4	38.4	30.8	32.2	32.2	0.0	30.8
LnGrp LOS	A	A	A	B	A	A	D	C	C	C		C
Approach Vol, veh/h		1484			738			268			53	
Approach Delay, s/veh		6.6			5.9			37.0			32.1	
Approach LOS		A			A			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		69.4		20.6		69.4		20.6				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		53.0		26.0		53.0		26.0				
Max Q Clear Time (g_c+I1), s		16.9		15.1		23.6		4.9				
Green Ext Time (p_c), s		11.3		0.6		4.8		0.1				

Intersection Summary		
HCM 7th Control Delay, s/veh	10.1	
HCM 7th LOS	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	454	136	56	1172	200	2	50	16	7
Future Volume (vph)	3	454	136	56	1172	200	2	50	16	7
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2			6		4			8
Permitted Phases	2		2	6		4		4	8	
Detector Phase	2	2	2	6	6	4	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	56.0	56.0	56.0	56.0	56.0	34.0	34.0	34.0	34.0	34.0
Total Split (%)	62.2%	62.2%	62.2%	62.2%	62.2%	37.8%	37.8%	37.8%	37.8%	37.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 1: Crossroads Pkwy & US-12

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	454	136	56	1172	9	200	2	50	16	7	7
Future Volume (veh/h)	3	454	136	56	1172	9	200	2	50	16	7	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	504	151	62	1302	10	222	2	56	18	8	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	2439	1088	574	2481	19	337	358	303	336	164	164
Arrive On Green	0.69	0.69	0.69	0.69	0.69	0.69	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	419	3554	1585	778	3614	28	1397	1870	1585	1345	858	858
Grp Volume(v), veh/h	3	504	151	62	640	672	222	2	56	18	0	16
Grp Sat Flow(s),veh/h/ln	419	1777	1585	778	1777	1865	1397	1870	1585	1345	0	1716
Q Serve(g_s), s	0.3	4.7	3.0	2.8	15.9	15.9	13.9	0.1	2.7	1.0	0.0	0.7
Cycle Q Clear(g_c), s	16.2	4.7	3.0	7.5	15.9	15.9	14.6	0.1	2.7	1.1	0.0	0.7
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	294	2439	1088	574	1220	1281	337	358	303	336	0	328
V/C Ratio(X)	0.01	0.21	0.14	0.11	0.52	0.52	0.66	0.01	0.18	0.05	0.00	0.05
Avail Cap(c_a), veh/h	294	2439	1088	574	1220	1281	520	603	511	512	0	553
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.9	5.2	4.9	6.5	6.9	6.9	35.6	29.5	30.5	29.9	0.0	29.7
Incr Delay (d2), s/veh	0.1	0.2	0.3	0.4	1.6	1.5	2.2	0.0	0.3	0.1	0.0	0.1
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	0.0	1.2	0.7	0.4	4.4	4.6	4.8	0.0	1.0	0.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.0	5.3	5.2	6.9	8.5	8.5	37.9	29.5	30.8	30.0	0.0	29.8
LnGrp LOS	B	A	A	A	A	A	D	C	C	C		C
Approach Vol, veh/h		658			1374			280			34	
Approach Delay, s/veh		5.3			8.4			36.4			29.9	
Approach LOS		A			A			D			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	67.8	22.2	67.8	22.2
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0
Max Green Setting (Gmax), s	50.0	29.0	50.0	29.0
Max Q Clear Time (g_c+I1), s	18.2	16.6	17.9	3.1
Green Ext Time (p_c), s	3.6	0.7	9.7	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	11.2
HCM 7th LOS	B

Notes

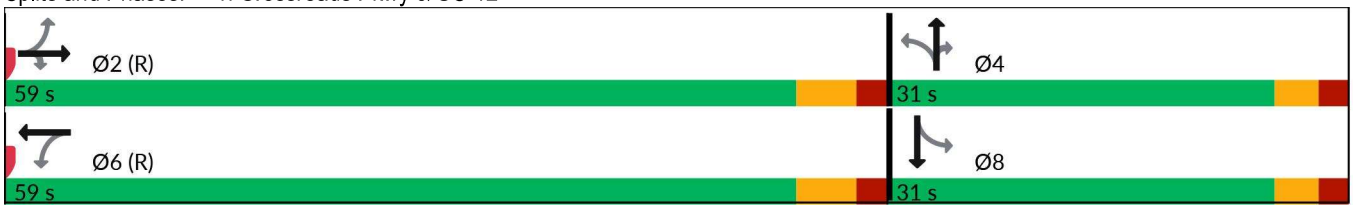
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	1095	207	58	589	214	3	68	42	1
Future Volume (vph)	3	1095	207	58	589	214	3	68	42	1
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2			6		4			8
Permitted Phases	2		2	6		4		4	8	
Detector Phase	2	2	2	6	6	4	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	59.0	59.0	59.0	59.0	59.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Crossroads Pkwy & US-12



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	1095	207	58	589	3	214	3	68	42	1	3
Future Volume (veh/h)	3	1095	207	58	589	3	214	3	68	42	1	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	1273	241	67	685	3	249	3	79	49	1	3
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	532	2399	1070	251	2450	11	363	379	321	345	83	250
Arrive On Green	0.68	0.68	0.68	0.68	0.68	0.68	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	755	3554	1585	345	3628	16	1412	1870	1585	1316	412	1236
Grp Volume(v), veh/h	3	1273	241	67	335	353	249	3	79	49	0	4
Grp Sat Flow(s),veh/h/ln	755	1777	1585	345	1777	1867	1412	1870	1585	1316	0	1648
Q Serve(g_s), s	0.1	16.3	5.2	11.0	6.8	6.8	15.4	0.1	3.8	2.8	0.0	0.2
Cycle Q Clear(g_c), s	6.9	16.3	5.2	27.3	6.8	6.8	15.6	0.1	3.8	2.9	0.0	0.2
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		0.75
Lane Grp Cap(c), veh/h	532	2399	1070	251	1200	1261	363	379	321	345	0	334
V/C Ratio(X)	0.01	0.53	0.23	0.27	0.28	0.28	0.69	0.01	0.25	0.14	0.00	0.01
Avail Cap(c_a), veh/h	532	2399	1070	251	1200	1261	485	540	458	459	0	476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.2	7.4	5.6	14.3	5.9	5.9	34.9	28.7	30.1	29.8	0.0	28.7
Incr Delay (d2), s/veh	0.0	0.8	0.5	2.6	0.6	0.6	2.5	0.0	0.4	0.2	0.0	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	4.4	1.3	0.9	1.9	2.0	5.4	0.1	1.5	0.9	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	7.3	8.2	6.1	16.9	6.4	6.4	37.4	28.7	30.5	30.0	0.0	28.7
LnGrp LOS	A	A	A	B	A	A	D	C	C	C		C
Approach Vol, veh/h		1517			755			331			53	
Approach Delay, s/veh		7.9			7.4			35.7			29.9	
Approach LOS		A			A			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		66.8		23.2		66.8		23.2				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		53.0		26.0		53.0		26.0				
Max Q Clear Time (g_c+I1), s		18.3		17.6		29.3		4.9				
Green Ext Time (p_c), s		11.4		0.7		5.0		0.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	11.6
HCM 7th LOS	B

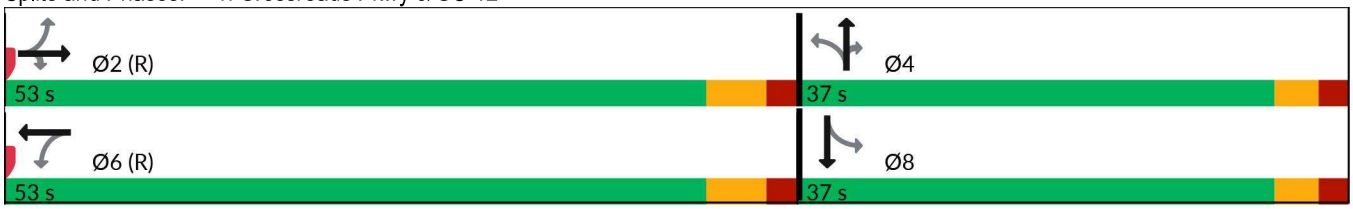
Notes
User approved pedestrian interval to be less than phase max green.

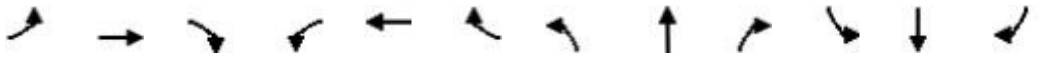
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	4	552	222	95	1427	321	3	99	20	9
Future Volume (vph)	4	552	222	95	1427	321	3	99	20	9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2			6		4			8
Permitted Phases	2		2	6		4		4	8	
Detector Phase	2	2	2	6	6	4	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	53.0	53.0	53.0	53.0	53.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	58.9%	58.9%	58.9%	58.9%	58.9%	41.1%	41.1%	41.1%	41.1%	41.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Crossroads Pkwy & US-12





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	552	222	95	1427	11	321	3	99	20	9	9
Future Volume (veh/h)	4	552	222	95	1427	11	321	3	99	20	9	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1752	1752	1752
Adj Flow Rate, veh/h	4	600	241	103	1551	12	349	3	108	22	10	10
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	2	2	2	2	2	2	10	10	10
Cap, veh/h	175	2109	941	414	2145	17	463	532	450	420	228	228
Arrive On Green	0.59	0.59	0.59	0.59	0.59	0.59	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	329	3554	1585	654	3614	28	1392	1870	1585	1201	804	804
Grp Volume(v), veh/h	4	600	241	103	762	801	349	3	108	22	0	20
Grp Sat Flow(s),veh/h/ln	329	1777	1585	654	1777	1865	1392	1870	1585	1201	0	1607
Q Serve(g_s), s	0.8	7.4	6.6	8.2	27.5	27.5	21.8	0.1	4.7	1.2	0.0	0.8
Cycle Q Clear(g_c), s	28.3	7.4	6.6	15.7	27.5	27.5	22.6	0.1	4.7	1.3	0.0	0.8
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	175	2109	941	414	1055	1107	463	532	450	420	0	457
V/C Ratio(X)	0.02	0.28	0.26	0.25	0.72	0.72	0.75	0.01	0.24	0.05	0.00	0.04
Avail Cap(c_a), veh/h	175	2109	941	414	1055	1107	562	665	564	506	0	571
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.1	8.9	8.8	12.8	13.0	13.0	31.6	23.1	24.7	23.6	0.0	23.3
Incr Delay (d2), s/veh	0.2	0.3	0.7	1.4	4.3	4.1	4.6	0.0	0.3	0.1	0.0	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	0.1	2.3	1.9	1.2	9.5	9.9	7.7	0.0	1.8	0.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.3	9.3	9.4	14.2	17.3	17.1	36.2	23.1	25.0	23.6	0.0	23.4
LnGrp LOS	C	A	A	B	B	B	D	C	C	C		C
Approach Vol, veh/h		845			1666			460			42	
Approach Delay, s/veh		9.4			17.0			33.5			23.5	
Approach LOS		A			B			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		59.4		30.6		59.4		30.6				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		47.0		32.0		47.0		32.0				
Max Q Clear Time (g_c+I1), s		30.3		24.6		29.5		3.3				
Green Ext Time (p_c), s		4.0		0.9		9.9		0.1				

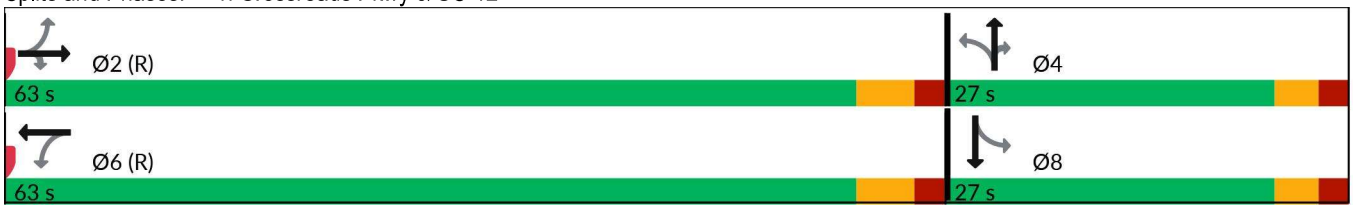
Intersection Summary												
HCM 7th Control Delay, s/veh			17.5									
HCM 7th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	4	1333	392	140	717	362	4	130	51	1
Future Volume (vph)	4	1333	392	140	717	362	4	130	51	1
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2			6		4			8
Permitted Phases	2		2	6		4		4	8	
Detector Phase	2	2	2	6	6	4	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	63.0	63.0	63.0	63.0	63.0	27.0	27.0	27.0	27.0	27.0
Total Split (%)	70.0%	70.0%	70.0%	70.0%	70.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 1: Crossroads Pkwy & US-12



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	1333	392	140	717	4	362	4	130	51	1	4
Future Volume (veh/h)	4	1333	392	140	717	4	362	4	130	51	1	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	1449	426	152	779	4	393	4	141	55	1	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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	448	2251	1004	173	2296	12	422	457	387	382	80	320
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	691	3554	1585	243	3625	19	1411	1870	1585	1243	327	1308
Grp Volume(v), veh/h	4	1449	426	152	382	401	393	4	141	55	0	5
Grp Sat Flow(s),veh/h/ln	691	1777	1585	243	1777	1867	1411	1870	1585	1243	0	1635
Q Serve(g_s), s	0.2	22.7	12.1	34.3	9.0	9.0	21.8	0.1	6.6	3.2	0.0	0.2
Cycle Q Clear(g_c), s	9.3	22.7	12.1	57.0	9.0	9.0	22.0	0.1	6.6	3.3	0.0	0.2
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		0.80
Lane Grp Cap(c), veh/h	448	2251	1004	173	1125	1182	422	457	387	382	0	400
V/C Ratio(X)	0.01	0.64	0.42	0.88	0.34	0.34	0.93	0.01	0.36	0.14	0.00	0.01
Avail Cap(c_a), veh/h	448	2251	1004	173	1125	1182	422	457	387	382	0	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.9	10.2	8.3	34.5	7.7	7.7	35.5	25.7	28.2	27.0	0.0	25.8
Incr Delay (d2), s/veh	0.0	1.4	1.3	42.7	0.8	0.8	27.5	0.0	0.6	0.2	0.0	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	6.8	3.4	5.2	2.7	2.9	11.9	0.1	2.5	0.9	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.9	11.6	9.6	77.3	8.5	8.5	63.0	25.8	28.8	27.2	0.0	25.8
LnGrp LOS	A	B	A	E	A	A	E	C	C	C		C
Approach Vol, veh/h		1879			935			538			60	
Approach Delay, s/veh		11.2			19.7			53.8			27.0	
Approach LOS		B			B			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		63.0		27.0		63.0		27.0				
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0				
Max Green Setting (Gmax), s		57.0		22.0		57.0		22.0				
Max Q Clear Time (g_c+I1), s		24.7		24.0		59.0		5.3				
Green Ext Time (p_c), s		14.5		0.0		0.0		0.1				

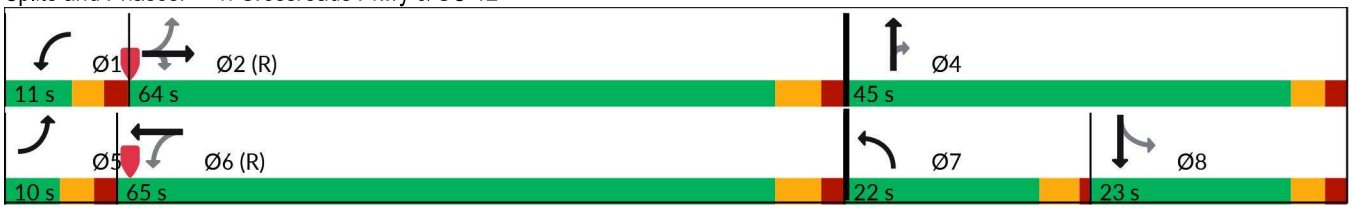
Intersection Summary												
HCM 7th Control Delay, s/veh			20.5									
HCM 7th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	5	555	235	105	1430	350	5	115	20	10
Future Volume (vph)	5	555	235	105	1430	350	5	115	20	10
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	Perm	NA
Protected Phases	5	2		1	6	7	4			8
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	2	1	6	7	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	9.5	23.0	23.0	23.0	23.0
Total Split (s)	10.0	64.0	64.0	11.0	65.0	22.0	45.0	45.0	23.0	23.0
Total Split (%)	8.3%	53.3%	53.3%	9.2%	54.2%	18.3%	37.5%	37.5%	19.2%	19.2%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.5	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	4.5	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: Crossroads Pkwy & US-12



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	555	235	105	1430	15	350	5	115	20	10	10
Future Volume (veh/h)	5	555	235	105	1430	15	350	5	115	20	10	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	603	255	114	1554	16	380	5	125	22	11	11
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	2201	982	481	2355	24	441	387	328	112	36	36
Arrive On Green	0.01	0.62	0.62	0.04	0.65	0.65	0.13	0.21	0.21	0.04	0.04	0.04
Sat Flow, veh/h	1781	3554	1585	1781	3603	37	3456	1870	1585	1260	858	858
Grp Volume(v), veh/h	5	603	255	114	766	804	380	5	125	22	0	22
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1864	1728	1870	1585	1260	0	1716
Q Serve(g_s), s	0.1	9.3	8.8	2.7	31.5	31.6	12.9	0.3	8.2	2.0	0.0	1.5
Cycle Q Clear(g_c), s	0.1	9.3	8.8	2.7	31.5	31.6	12.9	0.3	8.2	2.0	0.0	1.5
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	199	2201	982	481	1161	1218	441	387	328	112	0	71
V/C Ratio(X)	0.03	0.27	0.26	0.24	0.66	0.66	0.86	0.01	0.38	0.20	0.00	0.31
Avail Cap(c_a), veh/h	262	2201	982	498	1161	1218	504	623	528	249	0	257
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.6	10.5	10.4	7.6	12.7	12.7	51.3	37.9	41.0	56.1	0.0	55.8
Incr Delay (d2), s/veh	0.1	0.3	0.6	0.3	2.9	2.8	12.9	0.0	0.7	0.8	0.0	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	0.0	3.2	2.8	0.9	11.1	11.6	6.4	0.1	3.3	0.7	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.7	10.8	11.0	7.8	15.6	15.5	64.2	37.9	41.7	56.9	0.0	58.3
LnGrp LOS	B	B	B	A	B	B	E	D	D	E		E
Approach Vol, veh/h		863			1684			510			44	
Approach Delay, s/veh		10.9			15.0			58.5			57.6	
Approach LOS		B			B			E			E	

Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	80.3		29.8	5.8	84.4	19.8	10.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0	4.5	5.0				
Max Green Setting (Gmax), s	6.0	58.0		40.0	5.0	59.0	17.5	18.0				
Max Q Clear Time (g_c+I1), s	4.7	11.3		10.2	2.1	33.6	14.9	4.0				
Green Ext Time (p_c), s	0.0	4.8		0.4	0.0	11.2	0.4	0.1				

Intersection Summary		
HCM 7th Control Delay, s/veh	21.6	
HCM 7th LOS	C	

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	5	1335	420	155	720	400	5	150	55	5
Future Volume (vph)	5	1335	420	155	720	400	5	150	55	5
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	Perm	NA
Protected Phases	5	2		1	6	7	4			8
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	2	1	6	7	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	9.5	23.0	23.0	23.0	23.0
Total Split (s)	10.0	61.0	61.0	13.0	64.0	26.0	46.0	46.0	20.0	20.0
Total Split (%)	8.3%	50.8%	50.8%	10.8%	53.3%	21.7%	38.3%	38.3%	16.7%	16.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.5	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	4.5	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: Crossroads Pkwy & US-12

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	1335	420	155	720	5	400	5	150	55	5	5
Future Volume (veh/h)	5	1335	420	155	720	5	400	5	150	55	5	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	1451	457	168	783	5	435	5	163	60	5	5
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	418	1999	892	219	2212	14	504	466	395	140	56	56
Arrive On Green	0.01	0.56	0.56	0.06	0.61	0.61	0.15	0.25	0.25	0.07	0.07	0.07
Sat Flow, veh/h	1781	3554	1585	1781	3620	23	3456	1870	1585	1217	858	858
Grp Volume(v), veh/h	5	1451	457	168	384	404	435	5	163	60	0	10
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1866	1728	1870	1585	1217	0	1716
Q Serve(g_s), s	0.1	36.2	21.3	4.6	12.9	12.9	14.8	0.2	10.3	5.8	0.0	0.7
Cycle Q Clear(g_c), s	0.1	36.2	21.3	4.6	12.9	12.9	14.8	0.2	10.3	5.8	0.0	0.7
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	418	1999	892	219	1086	1141	504	466	395	140	0	113
V/C Ratio(X)	0.01	0.73	0.51	0.77	0.35	0.35	0.86	0.01	0.41	0.43	0.00	0.09
Avail Cap(c_a), veh/h	481	1999	892	240	1086	1141	619	639	542	212	0	214
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.4	19.4	16.1	23.3	11.6	11.6	50.1	33.9	37.7	55.1	0.0	52.7
Incr Delay (d2), s/veh	0.0	2.3	2.1	12.7	0.9	0.9	10.3	0.0	0.7	2.1	0.0	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	0.1	13.6	7.3	3.3	4.7	4.9	7.1	0.1	4.1	1.9	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.4	21.7	18.2	35.9	12.5	12.4	60.4	33.9	38.4	57.1	0.0	53.0
LnGrp LOS	B	C	B	D	B	B	E	C	D	E		D
Approach Vol, veh/h		1913			956			603			70	
Approach Delay, s/veh		20.9			16.6			54.2			56.6	
Approach LOS		C			B			D			E	

Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	73.5		34.9	5.8	79.3	22.0	12.9				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0	4.5	5.0				
Max Green Setting (Gmax), s	8.0	55.0		41.0	5.0	58.0	21.5	15.0				
Max Q Clear Time (g_c+I1), s	6.6	38.2		12.3	2.1	14.9	16.8	7.8				
Green Ext Time (p_c), s	0.1	10.2		0.5	0.0	4.5	0.7	0.1				

Intersection Summary		
HCM 7th Control Delay, s/veh		26.1
HCM 7th LOS		C

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

Intersection	
Int Delay, s/veh	6.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	103	32	0	112	23
Future Vol, veh/h	0	103	32	0	112	23
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	114	36	0	124	26

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	297	18	0	0	36	0
Stage 1	36	-	-	-	-	-
Stage 2	262	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	670	1056	-	-	1574	-
Stage 1	982	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	617	1056	-	-	1574	-
Mov Cap-2 Maneuver	617	-	-	-	-	-
Stage 1	982	-	-	-	-	-
Stage 2	698	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	8.82	0	6.21
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1056	1574	-
HCM Lane V/C Ratio	-	-	0.108	0.079	-
HCM Ctrl Dly (s/v)	-	-	8.8	7.5	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.3	-

Intersection	
Int Delay, s/veh	6.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	121	26	0	94	31
Future Vol, veh/h	1	121	26	0	94	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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	144	31	0	112	37

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	273	15	0	0	31	0
Stage 1	31	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	693	1060	-	-	1580	-
Stage 1	987	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	644	1060	-	-	1580	-
Mov Cap-2 Maneuver	644	-	-	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	720	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	8.96	0	5.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1054	1580	-
HCM Lane V/C Ratio	-	-	0.138	0.071	-
HCM Ctrl Dly (s/v)	-	-	9	7.5	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.2	-

Intersection	
Int Delay, s/veh	6.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	124	53	3	126	37
Future Vol, veh/h	3	124	53	3	126	37
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	138	59	3	140	41

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	361	31	0	0	62	0
Stage 1	61	-	-	-	-	-
Stage 2	301	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	611	1036	-	-	1539	-
Stage 1	955	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	556	1036	-	-	1539	-
Mov Cap-2 Maneuver	556	-	-	-	-	-
Stage 1	955	-	-	-	-	-
Stage 2	659	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	9.12	0	5.85
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1015	1539	-
HCM Lane V/C Ratio	-	-	0.139	0.091	-
HCM Ctrl Dly (s/v)	-	-	9.1	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.3	-

Intersection	
Int Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	147	54	6	125	65
Future Vol, veh/h	5	147	54	6	125	65
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	175	64	7	149	77

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	404	36	0	0	71	0
Stage 1	68	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	585	1029	-	-	1527	-
Stage 1	947	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Platoon blocked, %	0		-	-		-
Mov Cap-1 Maneuver	528	1029	-	-	1527	-
Mov Cap-2 Maneuver	528	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	636	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	9.41	0	5.01
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	998	1527	-
HCM Lane V/C Ratio	-	-	0.181	0.097	-
HCM Ctrl Dly (s/v)	-	-	9.4	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.3	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	10	5	3	15	159	10	53	3	126	37	22
Future Vol, veh/h	11	10	5	3	15	159	10	53	3	126	37	22
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	150	-	-	150	-	-	225	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	11	6	3	17	177	11	59	3	140	41	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	393	418	33	389	428	31	66	0	0	62	0	0
Stage 1	333	333	-	83	83	-	-	-	-	-	-	-
Stage 2	60	84	-	306	346	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	541	525	1033	544	517	1036	1534	-	-	1539	-	-
Stage 1	654	642	-	916	825	-	-	-	-	-	-	-
Stage 2	944	824	-	679	634	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	392	473	1033	478	467	1036	1534	-	-	1539	-	-
Mov Cap-2 Maneuver	392	473	-	478	467	-	-	-	-	-	-	-
Stage 1	595	584	-	909	819	-	-	-	-	-	-	-
Stage 2	762	818	-	602	577	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	12.72	9.88	1.12	5.16
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1534	-	-	392	578	478	937	1539	-	-
HCM Lane V/C Ratio	0.007	-	-	0.031	0.029	0.007	0.206	0.091	-	-
HCM Ctrl Dly (s/v)	7.4	-	-	14.5	11.4	12.6	9.8	7.6	-	-
HCM Lane LOS	A	-	-	B	B	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	0.8	0.3	-	-

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	15	5	5	10	147	5	54	6	125	99	19
Future Vol, veh/h	59	15	5	5	10	147	5	54	6	125	99	19
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	150	-	-	150	-	-	225	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	18	6	6	12	175	6	64	7	149	118	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	477	510	70	445	518	36	140	0	0	71	0	0
Stage 1	427	427	-	80	80	-	-	-	-	-	-	-
Stage 2	50	83	-	365	438	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	481	472	999	507	467	1029	1453	-	-	1527	-	-
Stage 1	585	590	-	920	828	-	-	-	-	-	-	-
Stage 2	957	825	-	637	583	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0		0	-	-		-	-
Mov Cap-1 Maneuver	350	424	999	435	420	1029	1453	-	-	1527	-	-
Mov Cap-2 Maneuver	350	424	-	435	420	-	-	-	-	-	-	-
Stage 1	528	532	-	916	824	-	-	-	-	-	-	-
Stage 2	780	822	-	552	526	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	16.54	9.88	0.58	3.92
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1453	-	-	350	495	435	942	1527	-	-
HCM Lane V/C Ratio	0.004	-	-	0.201	0.048	0.014	0.198	0.097	-	-
HCM Ctrl Dly (s/v)	7.5	-	-	17.9	12.6	13.4	9.8	7.6	-	-
HCM Lane LOS	A	-	-	C	B	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.2	0	0.7	0.3	-	-

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	25	20	10	40	199	25	121	10	183	79	39
Future Vol, veh/h	56	25	20	10	40	199	25	121	10	183	79	39
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	150	-	-	150	-	-	250	-	-	150	-	-
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	27	22	11	43	216	27	132	11	199	86	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	647	702	64	646	717	71	128	0	0	142	0	0
Stage 1	505	505	-	191	191	-	-	-	-	-	-	-
Stage 2	142	197	-	454	526	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	363	366	1008	363	358	977	1469	-	-	1438	-	-
Stage 1	526	544	-	792	741	-	-	-	-	-	-	-
Stage 2	846	737	-	564	532	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0		0	-	-		-	-
Mov Cap-1 Maneuver	209	309	1008	278	303	977	1469	-	-	1438	-	-
Mov Cap-2 Maneuver	209	309	-	278	303	-	-	-	-	-	-	-
Stage 1	453	469	-	778	727	-	-	-	-	-	-	-
Stage 2	608	723	-	448	459	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	22.4	13.16	1.2	4.81
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1469	-	-	209	447	278	712	1438	-	-
HCM Lane V/C Ratio	0.019	-	-	0.291	0.109	0.039	0.365	0.138	-	-
HCM Ctrl Dly (s/v)	7.5	-	-	29.1	14	18.5	12.9	7.9	-	-
HCM Lane LOS	A	-	-	D	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.2	0.4	0.1	1.7	0.5	-	-

Intersection	
Int Delay, s/veh	11.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	71	50	35	16	25	242	35	139	25	230	169	89
Future Vol, veh/h	71	50	35	16	25	242	35	139	25	230	169	89
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	150	-	-	150	-	-	250	-	-	150	-	-
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	77	54	38	17	27	263	38	151	27	250	184	97

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	897	986	140	860	1021	89	280	0	0	178	0	0
Stage 1	732	732	-	241	241	-	-	-	-	-	-	-
Stage 2	165	254	-	619	780	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	252	259	969	269	247	951	1329	-	-	1395	-	-
Stage 1	403	443	-	741	705	-	-	-	-	-	-	-
Stage 2	820	696	-	473	420	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0		0	-	-		-	-
Mov Cap-1 Maneuver	129	206	969	161	197	951	1329	-	-	1395	-	-
Mov Cap-2 Maneuver	129	206	-	161	197	-	-	-	-	-	-	-
Stage 1	331	363	-	720	685	-	-	-	-	-	-	-
Stage 2	554	676	-	317	345	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	42.67	14.67	1.37	3.84
HCM LOS	E	B		

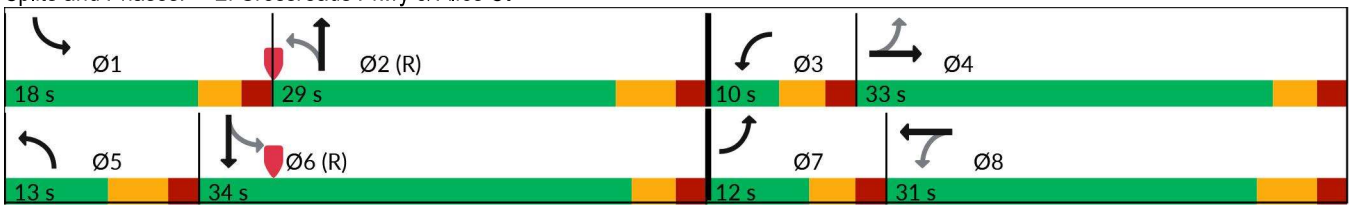
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1329	-	-	129	305	161	700	1395	-	-
HCM Lane V/C Ratio	0.029	-	-	0.598	0.302	0.108	0.415	0.179	-	-
HCM Ctrl Dly (s/v)	7.8	-	-	67.6	21.8	30.1	13.7	8.1	-	-
HCM Lane LOS	A	-	-	F	C	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3	1.2	0.4	2	0.7	-	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	65	25	10	40	25	125	185	80
Future Volume (vph)	65	25	10	40	25	125	185	80
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	10.0	24.0	11.0	24.0	10.0	23.0
Total Split (s)	12.0	33.0	10.0	31.0	13.0	29.0	18.0	34.0
Total Split (%)	13.3%	36.7%	11.1%	34.4%	14.4%	32.2%	20.0%	37.8%
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 2: Crossroads Pkwy & Alice St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	25	20	10	40	235	25	125	10	185	80	60
Future Volume (veh/h)	65	25	20	10	40	235	25	125	10	185	80	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	71	27	22	11	43	255	27	136	11	201	87	65
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	233	190	390	49	293	637	1372	110	713	927	635
Arrive On Green	0.05	0.24	0.24	0.01	0.21	0.21	0.03	0.41	0.41	0.09	0.46	0.46
Sat Flow, veh/h	1781	954	777	1781	234	1387	1781	3332	267	1781	2017	1381
Grp Volume(v), veh/h	71	0	49	11	0	298	27	72	75	201	76	76
Grp Sat Flow(s),veh/h/ln	1781	0	1731	1781	0	1621	1781	1777	1822	1781	1777	1622
Q Serve(g_s), s	2.8	0.0	2.0	0.4	0.0	16.0	0.8	2.2	2.3	5.6	2.2	2.4
Cycle Q Clear(g_c), s	2.8	0.0	2.0	0.4	0.0	16.0	0.8	2.2	2.3	5.6	2.2	2.4
Prop In Lane	1.00		0.45	1.00		0.86	1.00		0.15	1.00		0.85
Lane Grp Cap(c), veh/h	199	0	422	390	0	342	637	731	750	713	817	746
V/C Ratio(X)	0.36	0.00	0.12	0.03	0.00	0.87	0.04	0.10	0.10	0.28	0.09	0.10
Avail Cap(c_a), veh/h	255	0	538	466	0	450	727	731	750	817	817	746
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	0.0	26.5	27.2	0.0	34.3	14.4	16.2	16.2	12.1	13.7	13.8
Incr Delay (d2), s/veh	1.1	0.0	0.1	0.0	0.0	13.4	0.0	0.3	0.3	0.2	0.2	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	1.2	0.0	0.8	0.2	0.0	7.4	0.3	0.9	1.0	2.1	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.4	0.0	26.6	27.2	0.0	47.7	14.4	16.5	16.5	12.3	13.9	14.1
LnGrp LOS	C		C	C		D	B	B	B	B	B	B
Approach Vol, veh/h		120			309			174			353	
Approach Delay, s/veh		27.7			47.0			16.2			13.1	
Approach LOS		C			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	43.0	6.2	28.0	8.5	47.4	9.2	25.0
Change Period (Y+Rc), s	5.0	6.0	5.0	* 6	6.0	* 6	5.0	6.0
Max Green Setting (Gmax), s	13.0	23.0	5.0	* 28	7.0	* 29	7.0	25.0
Max Q Clear Time (g_c+I1), s	7.6	4.3	2.4	4.0	2.8	4.4	4.8	18.0
Green Ext Time (p_c), s	0.3	0.7	0.0	0.2	0.0	0.8	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	26.4
HCM 7th LOS	C

Notes

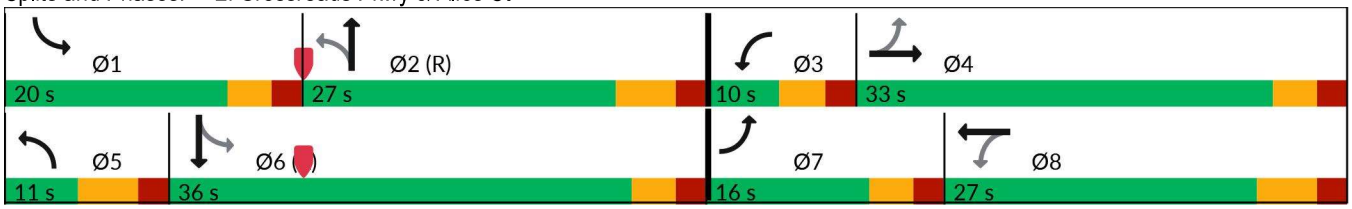
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	125	50	20	25	35	140	230	205
Future Volume (vph)	125	50	20	25	35	140	230	205
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	10.0	24.0	11.0	24.0	10.0	23.0
Total Split (s)	16.0	33.0	10.0	27.0	11.0	27.0	20.0	36.0
Total Split (%)	17.8%	36.7%	11.1%	30.0%	12.2%	30.0%	22.2%	40.0%
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 2: Crossroads Pkwy & Alice St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	50	35	20	25	245	35	140	25	230	205	100
Future Volume (veh/h)	125	50	35	20	25	245	35	140	25	230	205	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	54	38	22	27	266	38	152	27	250	223	109
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	250	265	187	389	30	299	522	1101	192	670	1001	472
Arrive On Green	0.08	0.26	0.26	0.02	0.21	0.21	0.03	0.36	0.36	0.11	0.43	0.43
Sat Flow, veh/h	1781	1022	719	1781	148	1460	1781	3026	527	1781	2343	1105
Grp Volume(v), veh/h	136	0	92	22	0	293	38	88	91	250	167	165
Grp Sat Flow(s),veh/h/ln	1781	0	1741	1781	0	1608	1781	1777	1776	1781	1777	1671
Q Serve(g_s), s	5.2	0.0	3.7	0.9	0.0	15.9	1.2	3.0	3.1	7.4	5.4	5.6
Cycle Q Clear(g_c), s	5.2	0.0	3.7	0.9	0.0	15.9	1.2	3.0	3.1	7.4	5.4	5.6
Prop In Lane	1.00		0.41	1.00		0.91	1.00		0.30	1.00		0.66
Lane Grp Cap(c), veh/h	250	0	452	389	0	330	522	646	646	670	759	714
V/C Ratio(X)	0.54	0.00	0.20	0.06	0.00	0.89	0.07	0.14	0.14	0.37	0.22	0.23
Avail Cap(c_a), veh/h	328	0	542	447	0	375	560	646	646	774	759	714
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	0.0	26.0	27.1	0.0	34.8	16.7	19.2	19.2	13.6	16.3	16.4
Incr Delay (d2), s/veh	1.8	0.0	0.2	0.1	0.0	20.3	0.1	0.4	0.5	0.3	0.7	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	2.3	0.0	1.5	0.4	0.0	8.0	0.5	1.3	1.3	2.9	2.2	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.4	0.0	26.2	27.2	0.0	55.1	16.7	19.6	19.7	13.9	17.0	17.1
LnGrp LOS	C		C	C		E	B	B	B	B	B	B
Approach Vol, veh/h		228			315			217			582	
Approach Delay, s/veh		27.0			53.1			19.1			15.7	
Approach LOS		C			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	38.7	7.1	29.4	9.1	44.4	12.0	24.5
Change Period (Y+Rc), s	5.0	6.0	5.0	* 6	6.0	* 6	5.0	6.0
Max Green Setting (Gmax), s	15.0	21.0	5.0	* 28	5.0	* 31	11.0	21.0
Max Q Clear Time (g_c+I1), s	9.4	5.1	2.9	5.7	3.2	7.6	7.2	17.9
Green Ext Time (p_c), s	0.4	0.8	0.0	0.4	0.0	2.0	0.1	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	27.0
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	0	0	30	0	6
Future Vol, veh/h	20	0	0	30	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	0	0	33	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	22	0	56	22
Stage 1	-	-	-	-	22	-
Stage 2	-	-	-	-	33	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1593	-	952	1055
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1593	-	952	1055
Mov Cap-2 Maneuver	-	-	-	-	952	-
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	989	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	8.43
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1055	-	-	1593	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Ctrl Dly (s/v)	8.4	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	25	0	0	25	0	0
Future Vol, veh/h	25	0	0	25	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	0	0	30	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	30	0	60	30
Stage 1	-	-	-	-	30	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1583	-	947	1045
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	993	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1583	-	947	1045
Mov Cap-2 Maneuver	-	-	-	-	947	-
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	993	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1583	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	55	0	0	110	0	10
Future Vol, veh/h	55	0	0	110	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	0	0	120	0	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	60	0	179	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	120	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1544	-	810	1006
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	906	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1544	-	810	1006
Mov Cap-2 Maneuver	-	-	-	-	810	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	906	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	8.62
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1006	-	-	1544	-
HCM Lane V/C Ratio	0.011	-	-	-	-
HCM Ctrl Dly (s/v)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	100	0	0	150	0	0
Future Vol, veh/h	100	0	0	150	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	0	0	163	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	109	0	272	109
Stage 1	-	-	-	-	109	-
Stage 2	-	-	-	-	163	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1482	-	718	945
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	866	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1482	-	718	945
Mov Cap-2 Maneuver	-	-	-	-	718	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	866	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1482	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	26	0	17	30	0	0
Future Vol, veh/h	26	0	17	30	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	0	19	33	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	29	0	100	29
Stage 1	-	-	-	-	29	-
Stage 2	-	-	-	-	71	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1584	-	899	1046
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	952	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1584	-	888	1046
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	940	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.64	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	651	-
HCM Lane V/C Ratio	-	-	-	0.012	-
HCM Ctrl Dly (s/v)	0	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	25	0	9	25	0	54
Future Vol, veh/h	25	0	9	25	0	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	0	11	30	0	64

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	30	0	81	30
Stage 1	-	-	-	-	30	-
Stage 2	-	-	-	-	51	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1583	-	921	1045
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	971	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1583	-	915	1045
Mov Cap-2 Maneuver	-	-	-	-	915	-
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	965	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.93	8.67
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1045	-	-	476	-
HCM Lane V/C Ratio	0.062	-	-	0.007	-
HCM Ctrl Dly (s/v)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	45	0	20	90	15	0	0	0	65	0	20
Future Vol, veh/h	15	45	0	20	90	15	0	0	0	65	0	20
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	49	0	22	98	16	0	0	0	71	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	114	0	0	49	0	0	223	239	49	231	231	106
Stage 1	-	-	-	-	-	-	82	82	-	149	149	-
Stage 2	-	-	-	-	-	-	141	158	-	82	82	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1475	-	-	1558	-	-	733	662	1020	724	669	948
Stage 1	-	-	-	-	-	-	927	827	-	853	774	-
Stage 2	-	-	-	-	-	-	862	767	-	927	827	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1475	-	-	1558	-	-	697	645	1020	705	651	948
Mov Cap-2 Maneuver	-	-	-	-	-	-	697	645	-	705	651	-
Stage 1	-	-	-	-	-	-	916	818	-	840	762	-
Stage 2	-	-	-	-	-	-	829	756	-	916	818	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.87	1.17	0	10.47
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	450	-	-	280	-	-	750
HCM Lane V/C Ratio	-	0.011	-	-	0.014	-	-	0.123
HCM Ctrl Dly (s/v)	0	7.5	0	-	7.3	0	-	10.5
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	75	0	10	125	25	0	0	55	85	0	25
Future Vol, veh/h	25	75	0	10	125	25	0	0	55	85	0	25
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	82	0	11	136	27	0	0	60	92	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	163	0	0	82	0	0	293	321	82	307	307	149
Stage 1	-	-	-	-	-	-	136	136	-	171	171	-
Stage 2	-	-	-	-	-	-	158	185	-	136	136	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1416	-	-	1516	-	-	659	596	978	645	607	897
Stage 1	-	-	-	-	-	-	867	784	-	831	757	-
Stage 2	-	-	-	-	-	-	845	747	-	867	784	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1416	-	-	1516	-	-	621	580	978	589	590	897
Mov Cap-2 Maneuver	-	-	-	-	-	-	621	580	-	589	590	-
Stage 1	-	-	-	-	-	-	850	768	-	824	751	-
Stage 2	-	-	-	-	-	-	813	741	-	798	768	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.9	0.46	8.92	11.93
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	978	450	-	-	109	-	-	639
HCM Lane V/C Ratio	0.061	0.019	-	-	0.007	-	-	0.187
HCM Ctrl Dly (s/v)	8.9	7.6	0	-	7.4	0	-	11.9
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	35	0	66	45	0
Future Vol, veh/h	0	35	0	66	45	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	39	0	73	50	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	25	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	1045	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	1045	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.58	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	1045	-	-
HCM Lane V/C Ratio	-	0.037	-	-
HCM Ctrl Dly (s/v)	-	8.6	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	67	110	0
Future Vol, veh/h	0	0	0	67	110	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	80	131	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	65	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	985	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	985	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	35	0	150	105	0
Future Vol, veh/h	0	35	0	150	105	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	38	0	163	114	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	57	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	997	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	997	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.75	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	997	-	-
HCM Lane V/C Ratio	-	0.038	-	-
HCM Ctrl Dly (s/v)	-	8.8	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	185	240	0
Future Vol, veh/h	0	0	0	185	240	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	201	261	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	130	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	895	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	895	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	66	80	0
Future Vol, veh/h	0	0	0	66	80	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	73	89	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	44	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	1016	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	1016	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	67	76	34
Future Vol, veh/h	0	0	0	67	76	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	80	90	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	65	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	985	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	985	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	150	140	0
Future Vol, veh/h	0	0	0	150	140	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	163	152	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	76	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	970	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	970	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

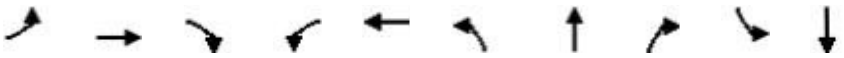
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	185	205	35
Future Vol, veh/h	0	0	0	185	205	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	201	223	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	130	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	895	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	895	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

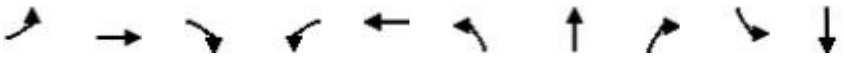
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Appendix F: Queue Analysis Worksheets



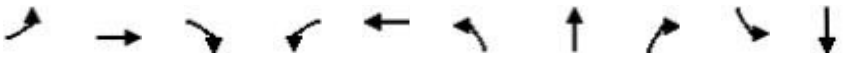
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	3	504	151	62	1312	222	2	56	18	16
v/c Ratio	0.02	0.22	0.14	0.11	0.56	0.73	0.00	0.14	0.06	0.04
Control Delay (s/veh)	8.0	7.2	1.8	7.9	10.5	45.8	23.5	7.8	24.9	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.0	7.2	1.8	7.9	10.5	45.8	23.5	7.8	24.9	17.2
Queue Length 50th (ft)	1	53	0	12	191	120	1	0	8	4
Queue Length 95th (ft)	5	99	25	35	324	178	6	27	23	18
Internal Link Dist (ft)		785			614		1281			74
Turn Bay Length (ft)	625		250	500		325				
Base Capacity (vph)	200	2330	1093	572	2328	448	600	548	454	560
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	0.02	0.22	0.14	0.11	0.56	0.50	0.00	0.10	0.04	0.03

Intersection Summary



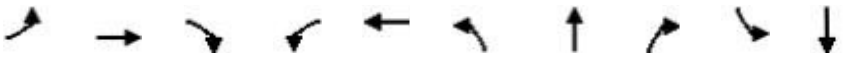
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	3	1273	241	67	688	249	3	79	49	4
v/c Ratio	0.01	0.55	0.22	0.32	0.30	0.78	0.01	0.19	0.15	0.01
Control Delay (s/veh)	7.3	10.5	1.6	14.1	7.9	49.1	23.7	10.8	26.8	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	7.3	10.5	1.6	14.1	7.9	49.1	23.7	10.8	26.8	17.3
Queue Length 50th (ft)	1	193	0	16	82	134	1	8	23	0
Queue Length 95th (ft)	4	271	25	49	123	195	7	37	46	8
Internal Link Dist (ft)		785			614		1281			74
Turn Bay Length (ft)	625		250	500		325				
Base Capacity (vph)	456	2301	1114	207	2300	406	538	500	406	479
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	0.55	0.22	0.32	0.30	0.61	0.01	0.16	0.12	0.01

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	5	603	255	114	1570	380	5	125	22	22
v/c Ratio	0.02	0.29	0.24	0.20	0.65	0.80	0.01	0.30	0.24	0.19
Control Delay (s/veh)	7.8	13.6	2.4	7.4	14.3	63.4	33.2	7.9	59.3	37.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	7.8	13.6	2.4	7.4	14.3	63.4	33.2	7.9	59.3	37.6
Queue Length 50th (ft)	1	128	0	29	360	150	3	0	17	8
Queue Length 95th (ft)	6	183	41	54	607	205	14	47	44	35
Internal Link Dist (ft)		785			614		325			74
Turn Bay Length (ft)	625		250	500		300				
Base Capacity (vph)	202	2112	1047	562	2429	500	621	611	219	267
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	0.02	0.29	0.24	0.20	0.65	0.76	0.01	0.20	0.10	0.08

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	5	1451	457	168	788	435	5	163	60	10
v/c Ratio	0.01	0.81	0.47	0.75	0.36	0.78	0.01	0.33	0.49	0.06
Control Delay (s/veh)	10.8	31.0	6.3	46.2	13.4	58.8	27.4	13.7	64.7	36.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.8	31.0	6.3	46.2	13.4	58.8	27.4	13.7	64.7	36.1
Queue Length 50th (ft)	1	538	41	77	151	169	3	34	46	4
Queue Length 95th (ft)	7	651	121	#232	265	225	12	84	89	21
Internal Link Dist (ft)		785			614		331			74
Turn Bay Length (ft)	625		250	500		300				
Base Capacity (vph)	420	1794	981	225	2205	615	636	609	175	219
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	0.81	0.47	0.75	0.36	0.71	0.01	0.27	0.34	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	71	49	11	298	27	147	201	152
v/c Ratio	0.37	0.13	0.05	0.74	0.04	0.09	0.25	0.07
Control Delay (s/veh)	30.2	18.2	22.9	19.4	8.8	14.9	8.3	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.2	18.2	22.9	19.4	8.8	14.9	8.3	7.3
Queue Length 50th (ft)	33	12	5	24	5	21	40	8
Queue Length 95th (ft)	59	42	16	98	19	51	92	34
Internal Link Dist (ft)		345		1427		280		876
Turn Bay Length (ft)	150		150		225		150	
Base Capacity (vph)	195	555	243	635	733	1710	824	2036
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.09	0.05	0.47	0.04	0.09	0.24	0.07

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	136	92	22	293	38	179	250	332
v/c Ratio	0.51	0.21	0.09	0.73	0.07	0.12	0.34	0.18
Control Delay (s/veh)	30.6	18.6	22.3	17.9	10.5	17.3	10.6	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.6	18.6	22.3	17.9	10.5	17.3	10.6	10.3
Queue Length 50th (ft)	62	24	9	15	8	27	58	37
Queue Length 95th (ft)	95	63	24	87	26	64	124	78
Internal Link Dist (ft)		345		1427		280		870
Turn Bay Length (ft)	150		150		225		150	
Base Capacity (vph)	282	569	243	579	548	1435	758	1805
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.16	0.09	0.51	0.07	0.12	0.33	0.18

Intersection Summary

Outlook

Fw: April 14th, 2026 Zoning Meeting

From Christopher Brink <CBRINK@helenamt.gov>
Date Tue 4/7/2026 8:04 AM
To Michael Alvarez <MALVAREZ@helenamt.gov>

For the comment file

Christopher J. Brink, AICP, EDFP
Director, Department of Community Development
Office (406) 447-8490 | cbrink@helenamt.gov
Direct (406) 447-8445 | helenamt.gov
316 North Park Avenue, Room 445, Helena, Montana 59623

Helena FORWARD
History • Opportunity • Legacy

To request an accommodation or alternate information format, please contact the Community Development Department/Planning Division at: Voice: 406-447-8490 | TTY: 1-800-253-4091|Relay: 711 Email: citycommunitydevelopment@helenamt.gov

Book time to meet with Chris

From: John Fawcett <jdf2028@gmail.com>
Sent: Monday, April 6, 2026 5:44 PM
To: Emily Dean <EDEAN@helenamt.gov>
Cc: Julia Gustafson <jugustafson@helenamt.gov>; Sean Logan <SLOGAN@helenamt.gov>; Melinda Reed <MREED@helenamt.gov>; Ben Rigby <brigby@helenamt.gov>; Alana Lake <alake@helenamt.gov>; Christopher Brink <CBRINK@helenamt.gov>; Ellie Ray <ERAY@helenamt.gov>; Michael Alvarez <MALVAREZ@helenamt.gov>; Kyle Holland <KHOLLAND@helenamt.gov>; Travis Goodrich <tgoodrich@helenamt.gov>
Subject: April 14th, 2026 Zoning Meeting

To All Concerned:
As a resident of Mountain View Meadows (MVM), I am raising my voice against re-zoning the proposed area Northwest of MVM.

As you all know this area is in direct contact with MVM residential area which I do not believe is in the best interest of the residents of MVM. It seems that re-zoning to industrial will not fit well for the local residents in terms of noise, traffic and other residential concerns.
I urge you all to vote against this change and consider the effects on residents and property values.
Respectfully submitted

Outlook

Fw: Amazon distribution center

From Christopher Brink <CBRINK@helenamt.gov>
Date Tue 4/7/2026 8:04 AM
To Michael Alvarez <MALVAREZ@helenamt.gov>

For the comment file

Christopher J. Brink, AICP, EDFP
Director, Department of Community Development
Office (406) 447-8490 | cbrink@helenamt.gov
Direct (406) 447-8445 | helenamt.gov
316 North Park Avenue, Room 445, Helena, Montana 59623

Helena FORWARD
History • Opportunity • Legacy

To request an accommodation or alternate information format, please contact the Community Development Department/Planning Division at: Voice: 406-447-8490 | TTY: 1-800-253-4091|Relay: 711 Email: citycommunitydevelopment@helenamt.gov

Book time to meet with Chris

From: Leslie <leslieflower@msn.com>
Sent: Tuesday, April 7, 2026 8:00 AM
To: Christopher Brink <CBRINK@helenamt.gov>
Subject: Amazon distribution center

I am against this going into my neighborhood as an eyesore and bringing down property values after we just recently moved in and spent money on fence, yard, etc... I would not have bought here if I knew this was coming in.
I have easily boycotted this billionaire company as they treat their employees poorly while making billions.
In my research I found nothing positive about these centers as they heighten air pollution, increased noise pollution, traffic congestion along with drivers driving over the speed limits resulting in accidents.

Light pollution and road degradation. This is a ridiculous idea when there's areas other areas to put one if they have to have one. Thank you, Leslie Marohn
Sent from my iPad

Outlook

---

thanks for your efforts to maintain high quality land use planning for Helena

---

From Peg <pholwick@gmail.com>
Date Tue 4/7/2026 8:16 AM
To Michael Alvarez <MALVAREZ@helenamt.gov>

Dear Mr. Alvarez,

The proposed site and zoning changes to incorporate an Amazon distribution center adjacent to Mountain View Meadows is contrary to the "Helena Forward" Land Use Plan. I trust our city planners to make the right land use decisions for Helena. Please do not change the current status of mixed residential to B-2 or Industrial zoning. There are other sites zoned as Industrial that would be more suitable for an Amazon distribution center.

I look forward to attending the Helena Zoning Commision Meeting on April 14th. Thank you!

Sincerely,

Peg Holwick
Helena, MT

Jamie Palagi
366 Elouise Cobell St
Helena, MT 59601
406-861-3689
jamiepalagi@gmail.com

April 6, 2026

City of Helena
Mayor Emily Dean
316 Park Ave
Helena, MT 59623

Dear Mayor Dean:

I am a homeowner in the Mountain View Meadows subdivision. I am writing to oppose the proposed zoning changes planned to accommodate an Amazon Distribution Center on approximately 13.83 acres at the southwest corner of Alice Street and Crossroads Parkway.

The proposed zoning change will compromise the multi-faceted planned community, already approved in the proposed area. As a primarily residential area surrounding the proposed property, increased traffic congestion as well as the potential for decreased home values are of utmost concern, creating potential safety and value concerns. This will also potentially impact tax revenue for the City of Helena as well. If there were a large manufacturing distribution center nearby when I was purchasing property, I would never have considered a home purchase. It compromises the neighborhood.

As I understand it, the city took considerable time and funding to build a Forward Land Use Plan which did not envision this zoning change and should not. Together with this plan and the already established zoning, protections are in place to honor the right type and balance of residential and professional business for mixed use.

Thank you for your attention to this matter. Please deny the proposal by Venture West.

Sincerely,

Jamie Palagi

Cc: Julia Gustafson, Sean Logan, Melinda Reed, Ben Rigby, Alana Lake, Christopher Brink, Ellie Ray, Michael Alvarez, Kyle Holland, Travis Goodrich, Betsy Story, Alyssa Sorenson, Mark Roylance, Nicole Anderson, Mark Runde