AGENDA
CITY OF LAUREL
CITY/COUNTY PLANNING BOARD
WEDNESDAY, JULY 16, 2025
6:00 PM
COUNCIL CHABMERS

Public Input: *Citizens may address the committee regarding any item of business that is not on the agenda. The duration for an individual speaking under Public Input is limited to three minutes. While all comments are welcome, the committee will not take action on any item not on the agenda.*

Disclosure of Ex Parte Communication

Public Hearing

Major Preliminary Plat - Lazy KU Subdivision 3rd Filing

General Items

New Business

1. Major Preliminary Plat - Lazy KU Subdivision 3rd Filing

Old Business

Other Items

Announcements

The City makes reasonable accommodations for any known disability that may interfere with a person's ability to participate in this meeting. Persons needing accommodation must notify the City Clerk's Office to make needed arrangements. To make your request known, please call 406-628-7431, Ext. 5100, or write to City Clerk, PO Box 10, Laurel, MT 59044, or present your request at City Hall, 115 West First Street, Laurel, Montana.

File Attachments for Item:

1. Major Preliminary Plat - Lazy KU Subdivision 3rd Filing

Return to:
WWC Engineering
550 S. 24th Street W. Suite 201
Billings, MT 59102

DECLARATION OF EASEMENT FOR DRY HYDRANT

FOR VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, the undersigned, **Matt Peila** (the "Grantor"), does this _____ day of _____, 20____, hereby grants unto YELLOWSTONE COUNTY, for the benefit of the Public (the "Grantee") a perpetual easement as written below, across, over and through certain real property known as Lot 6 and Lot 7, Block 4 of Lazy KU Subdivision, 3rd Filing within the SE1/4 of Section 25, T.2S., R.24E., P.M.M., Yellowstone County, Montana, said easement being more particularly described as follows, to wit:

> DRY HYDRANT EASEMENT as on the plat within the Lazy KU Subdivision, 3rd Filing recorded with the Yellowstone County Clerk and Recorder under Document No. _____.

The Grantor does hereby grant unto the Grantee, its successors and assigns, the right, privilege, and authority to construct, reconstruct, maintain, operate, repair, improve, replace, and use a dry hydrant facility and any necessary fixtures and appurtenances over, across and upon said real property.

This perpetual easement shall run with the real property and be binding on all parties having any right, title or interest in the described property or any part thereof, their heirs, executors, successors, administrators and assignees, and shall bind each owner thereof.

_____
Cherryl Ann Kramer, Manager
Lazy KU Estates, LLC

STATE OF MONTANA)
:ss
COUNTY OF Yellowstone)

On this_____day of _____, 20_____, before me a Notary Public for the State of Montana, personally appeared Cherryl Ann Kramer, Manager of Lazy KU

Estates, LLC, who executed the foregoing instrument and acknowledged to me that she executed the same.

_____
Notary Public for the State of Montana
Residing at: _____
My commission expires: _____

Acknowledgement and Acceptance of Conveyance

The Yellowstone County Board of County Commissioners acknowledges receipt of this conveyance and accepts on behalf of Yellowstone County the property interest conveyed through this instrument.

BOARD OF COUNTY COMMISIONERS

YELLOWSTONE COUNTY, MONTANA

_____
Chairperson

_____
Commissioner

_____
Commissioner

ATTEST: _____
Clerk and Recorder

STATE OF MONTANA)
: ss
County of Yellowstone)

On this ___ day of _____, 20___, before me a Notary Public of the State of Montana, personally appeared _____, _____, and _____, as members of the Yellowstone County Board of County Commissioners, and _____, as the Yellowstone County Clerk and Recorder, and acknowledged to me that they executed the Acknowledgment and Acceptance of Conveyance portion of this conveyance on behalf of Yellowstone County in their official capacity as Board Members and the Clerk and Recorder.

IN WINESSS WHEREOF, I have hereunto set my hand and affixed my seal this day and year in this certificate first above written.

_____
Notary Public in and for the State of Montana

BLOCK	LOT	ACRES	7.50%	5.00%	2.50%
Block 4	Lot 6	1.46		0.07	
	Lot 7	1.47		0.07	
	Lot 8	1.47		0.07	
	Lot 9	1.49		0.07	
	Lot 10	1.76		0.09	
Block 3	Lot 8	1.00		0.05	
	Lot 9	1.05		0.05	
	Lot 10	1.00		0.05	
	Lot 11	1.00		0.05	
Block 5	Lot 1	1.01		0.05	
	Lot 2	1.00		0.05	
	Lot 3	1.06		0.05	
	Lot 4	1.01		0.05	
	Lot 5	1.02		0.05	
	Lot 6	1.00		0.05	
	Lot 7	1.00		0.05	
	Lot 8	1.01		0.05	
Block 6	Lot 1	0.8	0.06		
	Lot 2	0.75	0.06		
	Lot 3	0.75	0.06		
	Lot 4	0.87	0.07		
	Lot 5	0.87	0.07		
	Lot 6	1.05		0.05	
	Lot 7	0.76	0.06		
	Lot 8	0.76	0.06		
	Lot 9	0.77	0.06		
	Lot 10	0.83	0.06		
Block 7	Lot 1	1.34		0.07	
	Lot 2	1.21		0.06	
	Lot 3	1.23		0.06	
	Lot 4	1.24		0.06	
	Lot 5	1.3		0.07	
TOTAL		34.34	0.54	1.36	1.90

LAZY KU SUBDIVISION, 3rd FILING

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LAZY KU SUBDIVISION, 3rd FILING

This agreement is made and entered into this _____day of _____, 20 __, by and between *Lazy KU Estates LLC*, whose address for the purpose of this agreement is **3116 S 72nd Street W, Billings, Montana 59106**, hereinafter referred to as "Subdivider," and YELLOWSTONE COUNTY, Montana, hereinafter referred to as "County."

WITNESSETH:

WHEREAS, at a regular meeting conducted on ___day of _____, 20__, the Laurel City/County Board of Planning recommended conditional approval of a preliminary plat of *LAZY KU SUBDIVISION, 3rd FILING*; and

WHEREAS, at a regular meeting conducted on _____ day of _____, 20____, the Yellowstone County Board of County Commissioners conditionally approved a preliminary plat of *LAZY KU SUBDIVISION, 3rd FILING*; and

WHEREAS, a Subdivision Improvements Agreement is required by the County prior to the approval of the final plat.

WHEREAS, the provisions of this agreement shall be effective and applicable to *LAZY KU SUBDIVISION, 3rd FILING* upon the filing of the final plat thereof in the office of the Clerk and Recorder of Yellowstone County, Montana. The Subdivision shall comply with all requirements of the Laurel Subdivision Regulations, the rules, regulations, policies, and resolutions of Yellowstone County, and the laws and administrative rules of the State of Montana.

THEREFORE, THE PARTIES TO THIS AGREEMENT, for and in consideration of the mutual promises herein contained and for other good and valuable consideration, do hereby agree as follows:

I. VARIANCES

Subdivider requests no variances.

II. CONDITIONS THAT RUN WITH THE LAND

A. Lot owners should be aware that this subdivision is being built in close proximity to prime deer and antelope habitat, and it is likely that homeowners will experience problems with damage to landscaped shrubs, flowers, and gardens. The Montana Fish, Wildlife, and Parks Department does not provide damage assistance unless there is damage to commercial crops and/or a threat to public health and safety.

B. Lot owners should be aware that soil characteristics within the area of this subdivision, as described in the 1972 Yellowstone County Soil Survey, indicate that there could be potential limitations for proposed construction on the lots, which may require a geotechnical survey prior to construction.

C. No water rights have been transferred to the lot owners. Irrigation ditches that exist on the

perimeter of this development are for the benefit of other properties. Perimeter ditches and drains shall remain in place and shall not be altered by the Subdivider or subsequent owners.

D. There is attached hereto a Waiver waiving the right to protest the creation of the special improvement district or districts which by this reference is expressly incorporated herein and made as much a part hereof as though fully and completely set forth herein at this point. The Waiver will be filed with the plat, shall run with the land, and shall constitute the guarantee by the Subdivider and property owner, or owners of the developments described herein. Said Waiver is effective upon filing and is not conditioned on the completion of the conditions set forth in this Agreement. The Subdivider and owner specifically agree that they are waiving valuable rights and do so voluntarily.

E. Culverts and associated drainage swales shall not be filled in or altered by the subdivider or subsequent lot owners.

F. When required by road improvements, all fences and irrigation ditches in the public right-of- way adjacent to this subdivision shall be removed or relocated outside of the public right-of- way and any relocation outside of the public right-of-way shall be subject to securing and recording easements.

G. Future maintenance of all public (or common) improvements shall be done through one (1) or more RSID(s) created as part of the SIA for this subdivision.

H. Lot owners or their agent will obtain an Access Permit from County Public Works prior to any construction on any lot within the subdivision. The application will include a site plan showing the desired location of the access and show that it meets the requirements outlined by the DEQ storm water requirements for the subdivision. Failure to do so will result in the lot owner or their agent removing what has been installed and locating the access in an approved location at the lot owners' expense.

III. TRANSPORTATION

The subdivider agrees to guarantee all improvements for a period of one (1) year from the date of final acceptance by Yellowstone County.

A. Streets

High Fences Drive, Alfalfa Drive, and Livestock Drive, and the extension of Haystack Lane, shall be built to county paved road standards with a satisfactory subbase, base course, and asphalt surface. High Fences Drive, Alfalfa Drive, and Livestock Drive, and the extension of Haystack Lane, shall be a 60' right-of-way. They will be paved to the end of the lots being developed. The design cross-section shall be a 24-foot asphalt width street with 2-foot-wide gravel shoulders and shoulder drainage swales. These portions will be dedicated county road. The entire lengths of High Fences Drive, Alfalfa Drive, and Livestock Drive, and the extension of Haystack Lane, will be maintained by expansion of the existing county road RSID 869M.

B. Traffic Control Devices

Street name and stop signs for streets within the subdivision, or located immediately adjacent thereto, shall be furnished and installed in accordance with the specifications of the Yellowstone County Public Works Departments.

C. Access

Primary access to the subdivision will be from Danford Road.

Secondary access to the subdivision will be from Barbed Wire to Farmhouse Lane to Kramer Way to 72nd Street West.

D. Billings Area Bikeways and Trail Master Plan (BABTMP)

There is a proposed Long-Range Trail identified on 72nd Street West. The applicant is not responsible for any additional road development for bike lanes.

IV. EMERGENCY SERVICE

A 30,000-gallon water storage tank/dry hydrant was installed on the northern side of Ronald Kramer Drive within Lot 8, Block 1 of Lazy KU Subdivision, 2nd Filing. The dry hydrant is located within a dry hydrant easement filed under Document No. 3997761 and is maintained and serviced by the existing RSID 870M. The dry hydrant system was installed by the Subdivider and inspected and approved by the Laurel Volunteer Fire Department.

A 30,000-gallon water storage tank/dry hydrant will be installed on the western side of Haystack Lane within Lots 6 and 7, Block 4 of Lazy KU Subdivision, 3rd Filing. The dry hydrant will be located within a dry hydrant easement and will be maintained and serviced by the existing RSID 870M. The dry hydrant system will be installed by the Subdivider and inspected and approved by the Laurel Volunteer Fire Department.

V. STORM DRAINAGE

All drainage improvements shall comply with the provisions of the Section 16.04.070, Laurel Subdivision Regulations, and a stormwater management plan shall be submitted to and approved by the Montana Department of Environmental Quality (MDEQ), or its designee.

Stormwater will be collected onsite using a combination of swales, culverts, and the natural slope of the land and delivered to onsite storm detention facilities. All stormwater facilities will have access easements to facilitate maintenance.

VI. UTILITIES

A. Water

Public water service is not available in the subdivision at this time. In accordance with Section 16.04.080 Laurel Subdivision Regulations, all proposed water systems must obtain approval by MDEQ, or its designee.

Individual wells will be permitted. An approval letter from MDEQ will be submitted with the final plat. The maintenance and operation of the individual systems will be facilitated by the individual lot owner.

B. Septic System

Municipal public sewer service is not available in the subdivision at this time. In accordance with Section 16.04.080 Yellowstone County Subdivision Regulations, all proposed sanitary sewer systems must obtain approval by MDEQ, or its designee.

Individual septic systems will be permitted. An approval letter from MDEQ will be submitted with the final plat. The maintenance and operation of the individual systems will be facilitated by the individual lot owner.

C. Power, Telephone, Gas, and Cable Television

The private utilities shall be installed within the provided easements. 10-foot-wide utility easements have been shown on the plat adjacent to all streets within the subdivision per the request of the utility companies.

VII. PARKS/OPEN SPACE

A total of 1.92 acres of parkland is required for this subdivision and will be provided by park dedication as an extension of parkland dedicated by previous filings. The parkland will be graded and seeded with native prairie grass mixture. RSID 871M will be expanded for the maintenance of the parkland.

VIII. IRRIGATION

All internal irrigation facilities bordering the subdivision will remain. There are no water shares to be transferred to the lot owners.

IX. WEED MANAGEMENT

All noxious weeds on the latest Yellowstone County Noxious Weed List shall be controlled on all properties in the subdivision.

A. A Weed Management Plan must be filed and updated as needed for approval by the Yellowstone County Weed Department. Said weed management plan shall contain the noxious weeds being addressed and the plan for the control of those weeds. All associated cost for noxious weed control is the responsibility of the owner of record.

B. A revegetation plan shall be submitted as part of the management plan. A seeding recommendation can be obtained from the Yellowstone County Weed Department pursuant to Section 7-22-2152, MCA. The Yellowstone County Weed Department reserves the right to revise these recommendations based on the required site inspection.

X. SOILS/GEOTECHNICAL STUDY

Lot owners should be aware that soil characteristics within the area of this subdivision, as described in 1972 Yellowstone County Soil Survey, indicate that there could be potential limitations for proposed construction on the lots, which may require a geotechnical survey prior to construction.

XI. FINANCIAL GUARANTEES

Except as otherwise provided, Subdivider shall install and construct said required improvements by private contracts secured by bonds, irrevocable letters of credit, sequential development, or any other method that may be acceptable to the Planning Board and Board of County Commissioners. All engineering and legal work in connection with such improvements shall be paid by the contracting parties pursuant to said special improvement district or private contract, and the improvements shall be designed by and constructed under the supervision of a professional engineer competent in civil engineering, licensed in the state of Montana. Upon completion of the improvements, the consulting Engineer shall file with the Public Works Department, a statement certifying that the improvements have been completed in accordance with approved, seal stamped, record drawings, along with all required post-construction certification per Section 4.6.C. of the Yellowstone County Subdivision Regulations.

XII. LEGAL PROVISIONS

A. Subdivider agrees to guarantee all public improvements for a period of one year from the date of final acceptance by Yellowstone County.

B. The owners of the properties involved in this proposed Subdivision by signature subscribed herein below agree, consent, and shall be bound by the provisions of this Agreement.

C. The covenants, agreements, and all statements in this Agreement apply to and shall be binding on the heirs, personal representatives, successors and assigns of the respective parties.

D. In the event it becomes necessary for either party to this Agreement to retain an attorney to

enforce any of the terms or conditions of this Agreement or to give any notice required herein, then the prevailing party or the party giving notice shall be entitled to reasonable attorney fees and costs.

E. Any amendments or modifications of this Agreement or any provisions herein shall be made in writing and executed in the same manner as this original document and shall after execution become a part of this Agreement.

F. Subdivider shall comply with all applicable federal, state, and local statutes, ordinances, and administrative regulations during the performance and discharge of its obligations. Subdivider acknowledges and agrees that nothing contained herein shall relieve or exempt it from such compliance.

G. Subdivider agrees to create any required (or expansion of existing) RSID(s) for future maintenance of all public (or common) constructed improvements prior to final plat approval.

IN WITNESS WHEREOF, the parties hereto have set their hands and official seals on the date first above written.

"SUBDIVIDER" *Lazy KU Estates LLC*

By: _____

Its: _____

STATE OF MONTANA)
: ss
County of Yellowstone)

On this ____day of_____, 20___, before me, a Notary Public in and for the State of Montana, personally appeared Cherryl Ann Kramer, known to me to be the Manager of *Lazy KU Estates LLC*, who executed the foregoing instrument and acknowledged to me that he/she executed the same.

_____
Notary Public in and for the State of Montana
Printed Name: _____
Residing at: _____
My commission expires: _____

This agreement is hereby approved and accepted by Yellowstone County, this ____ day of _____, 20 ____.

"COUNTY"
COUNTY OF YELLOWSTONE MONTANA

County of Yellowstone
Board of County Commissioners

By: _____
Chairman

_____
Commissioner

_____
Commissioner

Attest: _____
County Clerk and Recorder

STATE OF MONTANA)
: ss
County of Yellowstone)

On this _____day of _____, 20____, before me, a Notary Public in and for the State of Montana, personally appeared _____, and _____ , known to me to be the Board of County Commissioners and the County Clerk and Recorder, respectively, of Yellowstone County, Montana, whose names are subscribed to the foregoing instrument in such capacity and acknowledged to me that they executed the same on behalf of Yellowstone County, Montana.

_____
Notary Public in and for the State of Montana
Printed Name: _____
Residing at: _____
My commission expires: _____

Waiver of Right to Protest

FOR VALUABLE CONSIDERATION, the undersigned, being the Subdivider and all of the owners of the hereinafter described real property, do hereby waive the right to protest the formation of one or more Rural Special Improvement Districts (RSID's), for a period of no more than twenty years from the recording of this waiver, which Yellowstone County may require.

This Waiver and Agreement is independent from all other agreements and is supported by sufficient independent consideration to which the undersigned are parties, and shall run with the land and shall be binding upon the undersigned, their successors and assigns, and the same shall be recorded in the office of the County Clerk and Recorder of Yellowstone County, Montana.

The real property hereinabove mentioned is more particularly described as follows:

LAZY KU SUBDIVISION, 3rd FILING

Signed and dated this ____day of _____, 20____ .

Lazy KU Estates LLC

By: _____

Its: _____

STATE OF MONTANA)
: ss
County of Yellowstone)

On this _____day of _____, 20____, before me, a Notary Public in and for the State of Montana, personally appeared Cherryl Ann Kramer, known to me to be the Manager of *Lazy KU Estates LLC*, the person who executed the forgoing instrument and acknowledged to me that he/she executed the same.

IN WITNESS WHEROF, I have hereunto set my hand and affixed my Notarial Seal the day and year hereinabove written.

_____
Notary Public in and for the State of Montana
Printed name: _____
Residing in: _____
My commission expires: _____

Owner name	Property Address	Address 1	Address 2	City	State	Zipcode
JERRY KRUSHENSKY	C19170	PO BOX 81508		BILLINGS	MT	59108
JERRY KRUSHENSKY	C19159	PO BOX 81508		BILLINGS	MT	59108
JERRY KRUSHENSKY	C19160	PO BOX 81508		BILLINGS	MT	59108
JERRY KRUSHENSKY	C19161	PO BOX 81508		BILLINGS	MT	59108
JERRY KRUSHENSKY	C19162	PO BOX 81508		BILLINGS	MT	59108
JERRY KRUSHENSKY	C19163	PO BOX 81508		BILLINGS	MT	59108
JERRY KRUSHENSKY	C19164	PO BOX 81508		BILLINGS	MT	59108
LAZY KU ESTATES LLC	C19165	3116 2. 72ND ST. W.		BILLINGS	MT	59106
CHRRYL ANN KRAMER REVOCABLE TRUST	D00239	3116 S. 72ND ST. W.		BILLINGS	MT	59106
CHRRYL ANN KRAMER REVOCABLE TRUST	D00239E	3116 S. 72ND ST. W.		BILLINGS	MT	59106
CHRRYL ANN KRAMER REVOCABLE TRUST	D00239D	3116 S. 72ND ST. W.		BILLINGS	MT	59106
GERALD VICTOR MILLER	D00238	15542 MANCHSTER DR.		LAKE OSWEGO	OR	97035

YELLOWSTONE COUNTY WEED DISTRICT
WEED MANAGEMENT PLAN

Date: 3/24/2025

Contact person & Phone number: Jerry Krushensky

Name of project: Lazy KU Subdivision, 3rd Filing

Land Description (Legal & Descriptive): Within SE1/4 of Section 25, T01S, R24E

Number of acres involved: 42 acres

Noxious Weed Species found on site if any:
Site will be inspected May of 2025.

Type of control to be used:

_____ Cultivation- (must include an attached Revegetation plan)
__X__ Herbicide- (must include what kind, application rate and time & method)
_____ Grazing- (must complete enclosed grazing plan)
_____ Hand pulling/Mowing- (please include method of disposal)

Specific control measures: _____

Weed control to be completed by: _____Self __X__Commercial Firm
If a commercial firm is to be used, please give name and address when hired.

Dates weed control will be implemented: Spring and Fall

Is there live or open water on the property? If so please outline on your map. No

This plan if implemented by said contractor, will be in effect for two years from the date of project completion. The responsibility for weed control will revert back to the landowner after this period.

Dated this 24 day of March, 2025.

I acknowledge and agree to the foregoing provisions.

Signature Jerry Krushensky 03/24/25

Name and Address Please print
Jerry Krushensky
PO Box 81508
Billings, MT 59108
406-581-0658

Weed Management Approval: (Yes) (No) Date 3/24/2025

Weed District Representative [signature] approved

County Weed District Recommendations: None at this time.

Attach additional information if needed

YELLOWSTONE COUNTY WEED DISTRICT
REVEGETATION PLAN

Should you decide to use cultivation as a control method on a rangeland, non crop site, or other disturbed sites (reference section 7-22-2152, Montana Code Annotated) please complete the following plan. If you have a revegetation plan already in place, please attach a copy to your Yellowstone County Weed Management Plan.

(a) Please describe the site to be revegetated.
Undeveloped farmland

(b) Outline what method(s) will be used to accomplish revegetation of the disturbed areas (seeding, planting, sod, etc.)
The developed lots within the subdivision will be landscaped as per the Declarations of Covenants and Restrictions. The roadsides will be reseeded with a roadside grass mix as per the Yellowstone County Public road standards.

(c) If applicable list the type and amount of seed/sod to be used for revegetation. N/A

Type		Rate		On		Acres
Type		Rate		On		Acres
Type		Rate		On		Acres
Type		Rate		On		Acres

(d) If applicable list the type and amount of fertilizer to be used: N/A

Type		Rate		On		Acres
Type		Rate		On		Acres
Type		Rate		On		Acres
Type		Rate		On		Acres

(e) Timing of revegetation practices: N/A

Approximate cultivation date(s) _____

Approximate seeding / sod date(s) _____

Approximate fertilizer date(s) _____

Attach additional information if needed

YELLOWSTONE COUNTY WEED DISTRICT
NOXIOUS WEED GRAZING MANAGEMENT PLAN

IS THERE A CURRENT GRAZING SYSTEM USED? No
PLEASE EXPLAIN

NOXIOUS WEED TO BE GRAZED?

TYPE OF ANIMAL TO BE USED?

A.U.M.'S PER ACRE?

TURN IN DATE_____ TURN OUT DATE_____

SEASON OF GRAZING?

STAGE OF PLANT GROWTH?

WERE ANIMALS HELD IN AN AREA TO LET INFESTED FORAGE PASS BEFORE ANIMALS WERE MOVED INTO UNINFESTED AREA?

WILL THIS METHOD BE USED ALONG WITH HERBICIDE CONTROL?

WHAT KIND OF MONITORING OR FOLLOW UP WILL BE DONE TO INSURE THAT GRAZING IS WORKING AS A WEED CONTROL MEASURE AND THE LAND IS NOT BEING OVER-GRAZED?

DATE INSPECTED BY WEED DEPT. 3/24/2025

NOTES_____

Attach additional information if needed

Aaron Redland

From: Ryan Robertus <rRobertus@laurel.mt.gov>
Sent: Tuesday, March 25, 2025 7:30 PM
To: Aaron Redland
Subject: Lazy KU

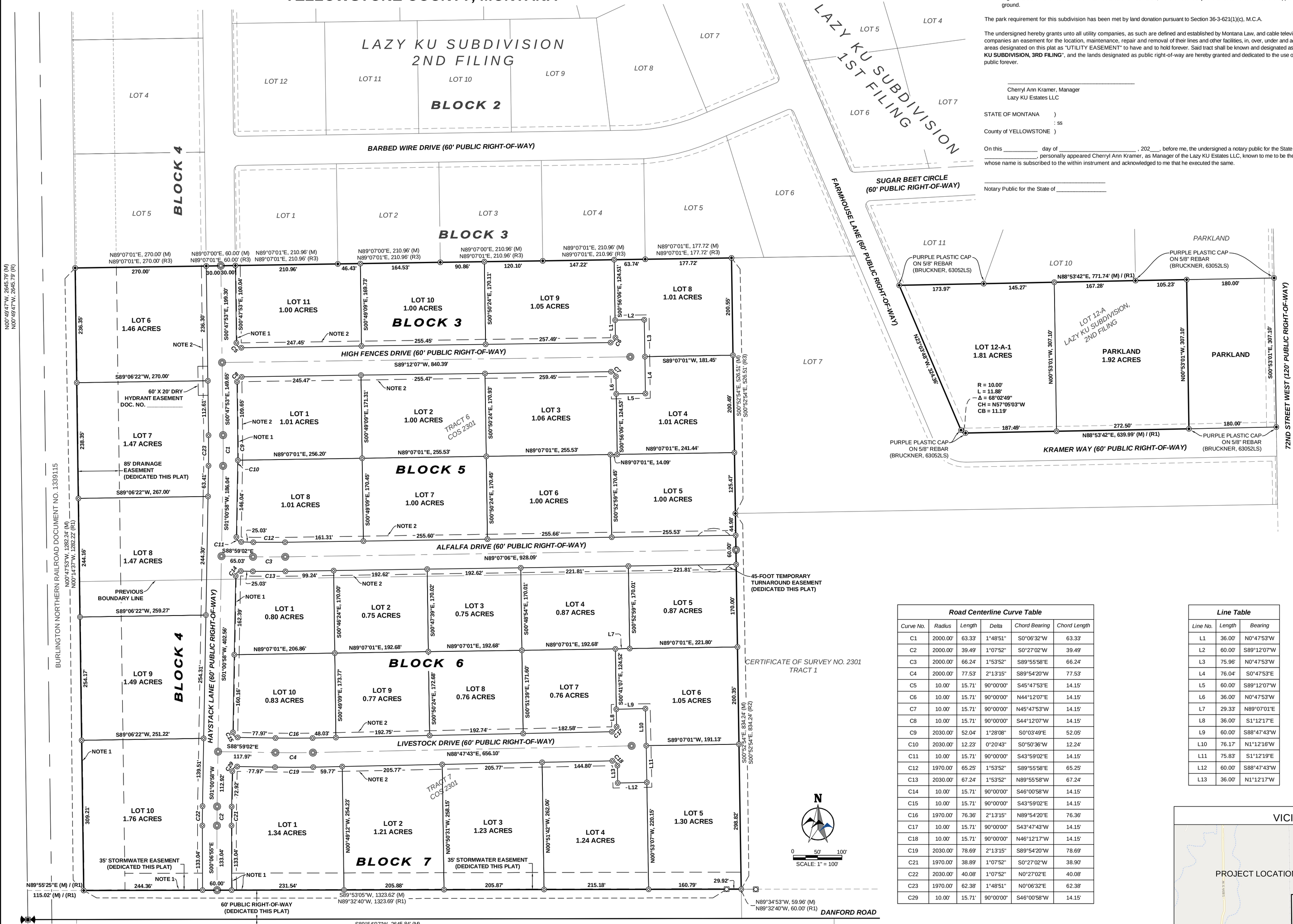
Good evening,

I'm the fire marshal for Laurel fire department and I was forwarded your email regarding the new dry hydrant for lazy KU subdivision and the drawings look good, once it's put in let me know and I'll run out and inspect it and give it the final sign off.

Ryan Robertus

LAZY KU SUBDIVISION, 3RD FILING

TRACTS 6 AND 7 OF CERTIFICATE OF SURVEY NO. 2301 AND LOT 12A OF LAZY KU SUBDIVISION, 2ND FILING SITUATED IN THE SE1/4 OF SECTION 25, T.1S., R.24E., P.M.M. YELLOWSTONE COUNTY, MONTANA



Road Centerline Curve Table

Curve No.	Radius	Length	Delta	Chord Bearing	Chord Length
C1	2000.00'	63.33'	1°48'51"	S0°06'32"W	63.33'
C2	2000.00'	39.49'	1°07'52"	S0°27'02"W	39.49'
C3	2000.00'	66.24'	1°53'52"	S89°55'58"E	66.24'
C4	2000.00'	77.53'	2°13'15"	S89°54'20"W	77.53'
C5	10.00'	15.71'	90°00'00"	S45°47'53"E	14.15'
C6	10.00'	15.71'	90°00'00"	N44°12'07"E	14.15'
C7	10.00'	15.71'	90°00'00"	N45°47'53"W	14.15'
C8	10.00'	15.71'	90°00'00"	S44°12'07"W	14.15'
C9	2030.00'	52.04'	1°28'08"	S0°03'49"E	52.05'
C10	2030.00'	12.23'	0°20'43"	S0°50'36"W	12.24'
C11	10.00'	15.71'	90°00'00"	S43°59'02"E	14.15'
C12	1970.00'	65.25'	1°53'52"	S89°55'58"E	65.25'
C13	2030.00'	67.24'	1°53'52"	N89°55'58"W	67.24'
C14	10.00'	15.71'	90°00'00"	S46°00'58"W	14.15'
C15	10.00'	15.71'	90°00'00"	S43°59'02"E	14.15'
C16	1970.00'	76.36'	2°13'15"	N89°54'20"E	76.36'
C17	10.00'	15.71'	90°00'00"	S43°47'43"W	14.15'
C18	10.00'	15.71'	90°00'00"	N46°12'17"W	14.15'
C19	2030.00'	78.69'	2°13'15"	S89°54'20"W	78.69'
C21	1970.00'	38.89'	1°07'52"	S0°27'02"W	38.90'
C22	2030.00'	40.08'	1°07'52"	N0°27'02"E	40.08'
C23	1970.00'	62.38'	1°48'51"	N0°06'32"E	62.38'
C29	10.00'	15.71'	90°00'00"	S46°00'58"W	14.15'

Line Table

Line No.	Length	Bearing
L1	36.00'	N0°47'53"W
L2	60.00'	S89°12'07"W
L3	75.96'	N0°47'53"W
L4	76.04'	S0°47'53"E
L5	60.00'	S89°12'07"W
L6	36.00'	N0°47'53"W
L7	29.33'	N89°07'01"E
L8	36.00'	S1°12'17"E
L9	60.00'	S88°47'43"W
L10	76.17'	N1°12'16"W
L11	75.83'	S1°12'19"E
L12	60.00'	S88°47'43"W
L13	36.00'	N1°12'17"W

NOTES

1. *1' WIDE NO ACCESS STRIP EASEMENT, DEDICATED THIS PLAT*
2. *10' WIDE UTILITY EASEMENT, DEDICATED THIS PLAT*
3. *BASIS OF BEARING: NAD83(2011) MONTANA STATE PLANE COORDINATE SYSTEM, GRID*
4. *DISTANCES: GROUND, INTERNATIONAL FOOT*

LEGAL DESCRIPTION AND PROPERTY OWNER CERTIFICATE OF DEDICATION

STATE OF MONTANA)
: ss
County of YELLOWSTONE)

KNOW ALL MEN BY THESE PRESENTS: That, **LAZY KU ESTATES LLC,** the owner of the following described tract of land, does hereby certify that it has caused to be surveyed, subdivided and platted into lots, blocks and streets as shown on the plat, said tract being situated in Section 25, T.01S., R.24E., P.M.M. Yellowstone County, Montana, said tract being more particularly described as follows:

Tracts 6 and 7 of Certificate of Survey No. 2301 and Lot 12A of Lazy KU Subdivision, 2nd Filing, in Yellowstone County, Montana, according to the official plat on file in the office of the Clerk and Recorder of said County, under Document No. 1339115 containing a gross area of 41.97 acres and a final net area of 34.29 acres, more or less. Subject to all easements of record or apparent on the ground.

The park requirement for this subdivision has been met by land donation pursuant to Section 36-3-621(1)(c), M.C.A.

The undersigned hereby grants unto all utility companies, as such are defined and established by Montana Law, and cable television companies an easement for the location, maintenance, repair and removal of their lines and other facilities, in, over, under and across the areas designated on this plat as "UTILITY EASEMENT" to have and to hold forever. Said tract shall be known and designated as "**LAZY KU SUBDIVISION, 3RD FILING**", and the lands designated as public right-of-way are hereby granted and dedicated to the use of the public forever.

_____
Cherryl Ann Kramer, Manager
Lazy KU Estates LLC

STATE OF MONTANA)
: ss
County of YELLOWSTONE)

On this _____ day of _____, 202___, before me, the undersigned a notary public for the State of _____, personally appeared Cherryl Ann Kramer, as Manager of the Lazy KU Estates LLC, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

_____
Notary Public for the State of _____

CERTIFICATE OF APPROVAL

STATE OF MONTANA)
: ss
County of Yellowstone)

We do hereby certify that we have examined the plat of **LAZY KU SUBDIVISION**, **3RD FILING** and find that said plat conforms with the requirements of the laws of the State of Montana and that the requirements for park donation have been met to the satisfaction of the Laurel City-County Board of Planning. It is therefore approved and the dedication to the public use of any and all lands shown on this plat as being dedicated to such use are accepted.

IN WITNESS WHEREOF, we have set our hands and the seal of Yellowstone County, Montana, this _____ day of _____, 20___

_____
Commissioner

_____
Commissioner

_____
Chairman

Attest: _____
Clerk and Recorder

NOTICE OF APPROVAL

STATE OF MONTANA)
: ss
County of Yellowstone)

This plat has been approved for filing by the Laurel City-County Planning Board and conforms to the recommendations of this board.

_____
Chair Date

_____
Executive Secretary Date

CERTIFICATE OF CITY/COUNTY HEALTH DEPARTMENT

This Certificate of Subdivision Plat has been reviewed and approved by the Yellowstone City/County Health Department and the State Department of Environmental Quality.

_____
Health Officer or Authorized Representative
Yellowstone City/County Health Department

CERTIFICATE OF COUNTY ATTORNEY

This document has been reviewed by the Yellowstone County Attorney's Office and is acceptable as to form.

_____
County Attorney or Authorized Representative
Yellowstone County Attorney's Office

_____
Date

CERTIFICATE OF COUNTY TREASURER

I hereby certify that all real property taxes and special assessments have been paid per 76-3-611(1)(b)/76-3-207(3), M.C.A.

_____
County Treasurer or Authorized Representative
Yellowstone County Treasurer's Office

_____
Date

CERTIFICATE OF SURVEYOR

I, Jake K. Ziska, a Montana Registered Land Surveyor being first duly sworn, deposes and says that during the month of November 2024, a survey was performed under my supervision of a tract of land to be known as **LAZY KU SUBDIVISION**, **3RD FILING**, in accordance with the request of the owner thereof and in conformance with Montana Subdivision and Platting Act; said subdivision being in accordance with the Landowner's Certificate and as shown on the plat; that the monuments found and set are of the character and occupy the positions hereon.

Dated the _____ day of _____, 20___

_____
Jake K. Ziska
Registration Number 18636 LS

SUBDIVISION AREA

34.29 ACRES	(32 LOTS)
7.68 ACRES	(STREET DEDICATION)
41.97 ACRES	(GROSS)
1.92 ACRES	(PARKLAND

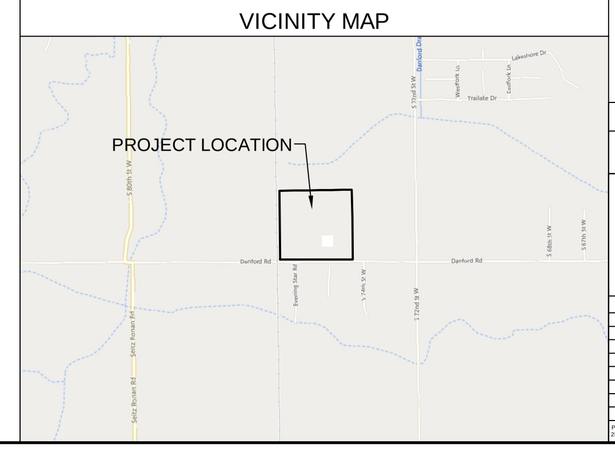
MONTANA PROFESSIONAL LICENSED LAND SURVEYOR JAKE K. ZISKA No. 18636LS

FREE PLAT

LEGEND

- FOUND QUARTER SECTION CORNER AS NOTED
- FOUND REBAR AS NOTED
- FOUND YELLOW PLASTIC CAP ON 5/8" REBAR (ZISKA, 18636 LS) OR AS NOTED
- NOTHING FOUND OR SET
- SET 5/8" REBAR W/ YELLOW PLASTIC CAP (ZISKA, 18636 LS)
- SET CENTERLINE MONUMENT - BRASS CAP SET IN CONCRETE
- EXISTING EASEMENTS
- NEW EASEMENTS
- SUBDIVISION BOUNDARY
- (M) MEASURED DISTANCE
- (R1) RECORD DISTANCE - LAZY KU SUBDIVISION DOC. NO. 3997758
- (R2) RECORD DISTANCE - COS 2301 DOC. NO. 133915
- (R3) RECORD DISTANCE - COS 3777 DOC. NO. 3969263

VICINITY MAP



PREPARED FOR: JERRY KRUSHENSKY
DATE SURVEYED: NOVEMBER 2024
PREPARED BY: WWC ENGINEERING

1/4	SEC.	TWP.	RGE.
	25	01S	24E

LAZY KU SUBDIVISION, 3RD FILING

JOB#: 2023-123

REVISIONS	
Date	By

WWC ENGINEERING
550 S 24th STREET W, SUITE 201
BILLINGS, MT 59102
(406) 894-2210

Drawn By: ZL | Checked By: JKZ | Date: MAR 2024 | Scale: 1" = 100'

PLOT STYLE: WWC_ALG.ctb
PLOT DATE: 11/20/2025
PLOT PATH: K:\Billings\Active\Lazy_ku\2023\123 Lazy KU 3rd Filing\SUCAD\Sheets\2023 LKU 3RD_Plat.dwg

PUBLIC HEARING NOTICE

The Laurel – Yellowstone City-County Planning Board and Zoning Commission will conduct a public hearing on the application on a Preliminary Subdivision Approval for the proposed Lazy KU 3rd Filing, a major subdivision. This proposed 32-lot residential subdivision is located in north-east of Laurel, at the intersection of Danford Road and 72nd Street West. The application was submitted by WCC Engineering on behalf of the owner/subdivider. The property is situated in the SE ¼ Section 25, Township 01 South, Range 24 East, P.M.M., Yellowstone County, Montana. Applicant is proposing that each lot will have an individual water well and septic tank and drainfiels.

Public comment is encouraged and can be provided in person at the public hearings on August 18th and September 14th. Public comment can also be made via email to the Planning Director, or via letter to the Planning Department office at 115 West 1st Street Laurel, MT 59044. A copy of the annexation and subdivision application and supporting documentation is available for review upon request at the Planning Department office. Questions regarding this public hearing may be directed to the Planning Director at 628.4796 ext. 5302, or via email at cityplanner@laurel.mt.gov.

TABLE OF CONTENTS

Introduction

This Environmental Assessment (EA) has been prepared for Lazy KU Subdivision, 3rd Filing (the Project) and is required per Section 76-3-603 in the Montana Code Annotated (MCA). This EA addresses the undeveloped portion of the Subdivision and has been prepared per Chapter 9 of the 2019 Amended Yellowstone County Subdivision Regulations. The EA will be provided with the submittal of the applicable preliminary plat and has been prepared per the Yellowstone County Subdivision Regulations and follows the general format of Chapter 9 within the Regulations.

Location

The Project is situated in the southeast quarter of Section 25, Township 1S, Range 24E in Yellowstone County, Montana. The site is generally located approximately 4 miles west of the Billings city limits. The Project is generally bound by the BNSF Railroad to the west, Lazy KU Subdivision, 2nd Filing to the north, farm ground to the east, and Danford Road to the south.

Description of Property

The total Project area is approximately 42 acres. Approximately 5.4 acres is proposed to be dedicated as right-of-way, 1.9 acres to parkland, and the remaining 34.7 acres will be developed into 32 residential lots with a minimum size of 0.75 acre and a maximum size of 1.75 acres.

Environmental Description

A. Surface Water

1 - 4. An upper private portion of the Danford Ditch is the only surface water located on the Project and has been identified on the plat. The Danford Ditch is an irrigation drainage ditch that is approximately 4 feet deep and 15 feet wide. It generally flows seasonally between April and October of each year. The canal will be protected by an existing easement. No bank alterations are proposed with this subdivision. The portion of the Danford Ditch within the property is private and the portion that is maintained via a Board of Directors is further east from the property.

5. The following water quality permits will be required: SWPPP

B. Groundwater

1. Based on test pit data and groundwater monitoring performed in 2024, shallow groundwater has been identified on portions of the Project. Per Circular DEQ 4, Section 2.2.2.2, a minimum of 4 feet of natural soil separation from the bottom of the drainfield to the seasonally high groundwater level must be observed at each drainfield location.

Shallow groundwater is present in areas of the property lots requiring alteration of MDEQ drainfield designs.

Monitoring wells were installed in March 2024 and were monitored from April 16, 2024 to September 20, 2024. With Lazy KU Subdivision, 1st Filing, monitoring showed the seasonal high groundwater to be between 5.5 and 8.0 feet below the ground surface across the subdivision, typically peaking around late October to early November in irrigation impacted locations. Lazy KU Subdivision, 2nd Filing showed similar results with seasonal high groundwater between 4.8 and 8.39 feet below the surface typically peaking between July and November. The monitoring performed for Lazy KU Subdivision, 3rd Filing followed this trend. With irrigation of adjacent fields stopped throughout the monitoring period, peak groundwater conditions between 4.05 and 7.75 feet below surface occurred between August and early September.

Water for domestic use will be via individual wells. A beneficial water use permit will be obtained from DNRC for water use within this subdivision.

2. The proposed subdivision will be designed to meet MDEQ permitting requirements, to avoid the degradation of groundwater and groundwater recharge areas.

C. Geology/Soils/Slopes

1 - 4.

According to the USGA National Geologic Map Database, https://ngmdb.usgs.gov, this subdivision area is within the gravel geology which means there are variable deposits that range from pebble to boulder size and include sand, silt, and clay. Dominantly alluvial terrace, abandoned channel and floodplain, remnant alluvial fan, and local glacial outwash.

There are no geologic hazards, such as rock falls or slides; land, mud, or snow slides; high water table, unstable or expansive soil conditions, or slopes greater than twenty-five percent (25%) within the area of this subdivision.

Table 1 includes a review of the Web Soil Survey (WSS) information from the United States Department of Agriculture (USDA), Natural Resource and Conservation Service (NRCS) on February 25, 2025 for the Project which includes the soil limitations for sanitary facilities (septic tank absorption fields), building site development (dwellings with basements), roads (local roads and streets), and water features (hydrologic group) for each soil type.

D. Vegetation

1 - 2. According to the Natural Heritage Map Viewer (http://mtnhp.org/), most of the project is located in an agricultural cultivated area. There are some trees and other vegetation located along portions of Danford Ditch. A Dryland Prairie seed mix may be used in the park area and applied by either broadcast or drill method.

E. Wildlife

1 - 3. According to the Natural Heritage Map Viewer (http://mtnhp.org/), there were no species of concern documented in or adjacent to the Project area. The Montana Sage Grouse Habitat Conservation Map (https://sagegrouse.mt.gov/ProgramMap) identified that the Project is not located in or adjacent to a sage grouse conservation area.

The United States Fish and Wildlife (USFWS) Information for Planning and Consultation (IPaC) website (https://ecos.fws.gov/ipac/) identified that "there are no endangered species expected to occur at this location."

Table 1 Soil Limitations (USDA, NRCS Web Soil Survey information)

Map Symbol and Soil Name	Dwellings with basements	Local Roads and Streets	Septic tank absorption fields	Hydrologic Group
Bm – Bew	Very limited Shrink-swell	Very limited shrink-swell low strength	Very limited slow water movement	C (slow infiltration rate when thoroughly wet)
Ke - Keiser	Not limited	Very limited Low strength Frost action	Very limited slow water movement	C (slow infiltration rate when thoroughly wet)
Kl - Kyle	Very limited Shrink-swell	Very limited shrink-swell low strength	Very limited slow water movement	D (very slow infiltration rate; high runoff potential; when thoroughly wet)
Lr - Lohmiller	Somewhat limited shrink-swell	Very limited shrink-swell Low	Very limited Slow water movement	C (slow infiltration rate when thoroughly wet)

Map Symbol and Soil Name	Dwellings with basements	Local Roads and Streets	Septic tank absorption fields	Hydrologic Group
		strength		
Ls - Lomiller	Very limited, flooding shrink-swell depth to saturated zone	Very limited shrink-swell Low strength Flooding	Very limited slow water movement Depth to saturated zone Flooding	C (slow infiltration rate when thoroughly wet)
Te - Toluca	Not limited	Somewhat limited Frost action	Somewhat limited Slow water movement	B (moderate infiltration rate when thoroughly wet)
Va – Vananda	Very limited Shrink-swell	Very limited Shrink-swell Low strength	Very limited Slow water movement	D (very slow infiltration rate; high runoff potential; when thoroughly wet)

Community Impact

A. Impact on Agriculture / Agricultural Water User Facilities

1 - 4. The property has been historically used for crop production. Land uses within the immediate vicinity of the proposed subdivision include agricultural and residential uses.

A private portion of a drainage ditch is located along the west side of the Subdivision and appropriate easements will be maintained.

B. Impact on Local Services and Public Health and Safety

Water Supply

A – F. Connection to a public system is not proposed at this time. Individual wells are proposed for the 32 residential lots and will be installed at the expense of the lot owner.

Water for fire protection will be provided in accordance with the Laurel Fire Service Area (Laurel FSA) requirements. A new dry hydrant will be installed and inspected by Laurel Fire Department along Haystack Lane. There was a dry hydrant installed with the previously filed subdivision and dedicated for fire use within the subdivision.

This subdivision will require approximately 180 gallons per day per three-bedroom home based on statistics from the 2000 census and the American Water Works Association (AWWA). There are 32 lots proposed under the coverage of this EA. Therefore, approximately 5,760 gallons per day will be required the subdivision for domestic uses, not including irrigation usage.

Sewage Disposal

A - E. The proposed method of sewage disposal is through septic systems (individual systems). Per the MDEQ Circular DEQ 4, Montana Standards for Subsurface Wastewater Treatment Systems, the design standard is 300 gallons per day of effluent will be produced by each three-bedroom home. There are 32 lots proposed as part of this EA, therefore assuming a three-bedroom home is built on each lot; approximately 9,600 gallons of effluent will be produced by this portion of the subdivision each day.

These systems will be designed in accordance with applicable rules and regulations. The on-site wastewater systems will require approval by the Montana Department of Environmental Quality (MDEQ) and the local health department prior to approval of the final plat. The site plan indicates the location and specifications of proposed septic systems.

Solid Waste Disposal

A – C. Republic Services and MacKenzie Disposal, Inc. currently offer waste collection services in the area. Solid waste is disposed of at the Billings Regional Landfill operated by the City of Billings. According to the Billings Regional Landfill website (http://ci.billings.mt.us/2551/Landfill), if the landfill continues to receive the same amount of waste it will be full in approximately 50 years. The MDEQ recognizes the Billings Regional Landfill as a permitted solid waste disposal facility.

Stormwater

A – B. The amount of stormwater run-off that will be generated by the Project is to remain unchanged from pre-development discharge to meet DEQ stormwater design standards.

The proposed storm water collection and drainage systems will be designed to satisfy the standards set forth by DEQ.

Roads

A – J. The portion of the subdivision covered by this EA will require the construction of roads that will be paved to county standards. The design and construction of new roads will be reviewed and approved by the Yellowstone County Public Works Department. Roads will be designed to prevent water pollution and erosion. Dust control will be provided as needed during construction.

Utilities

A – C. There is currently an overhead power line and a fiber optic line along Danford Road. Utilities were installed to service the lots within the previously filed subdivisions near the northern border of this subdivision. Utility easements would be maintained as required. The preliminary plat will be submitted to affected utilities for review.

The following utilities will serve the subdivision and currently offer services on the developed portion of the subdivision:

-NorthWestern Energy for electricity

-Montana Dakota Utilities for gas

Utility installation will progress as required by development and would be installed prior to surface implementation.

Emergency Services

A – E. Emergency services available to the subdivision include the following:

- Laurel Volunteer Fire Department (subdivision is located within the Laurel Fire Service Area according to the Yellowstone County Interactive Mapping)

- Yellowstone County Sheriff's Department

- Ambulance service will be provided by the City of Laurel. American Medical Response (AMR) in Billings is the secondary response in the event that the City of Laurel cannot respond. Transports are made to Billings Hospitals.

According to the Bureau of Justice, in 2011, an estimated 1 in 8 U.S. residents age 16 or older, or 31.4 million persons, requested assistance from police at least once, most commonly to report a crime, suspicious activity, or neighborhood disturbance (https://www.bjs.gov/index.cfm?ty=pbdetail&iid=4780).

According to the National Fire Protection Agency (NFPA), in 2021 there were 36,624,000 calls made to fire department with 1,353,500 of the calls being a fire in the United States (https://www.nfpa.org/News-and-Research/Data-research-and-tools/Emergency-Responders/Fire-department-calls).

According to the National Association of State EMS Officials (NASEMSO), in 2021 there were an estimated 43,488,767 EMS events (responses) in the U.S., resulting in approximately 19,533,036 transports (https://www.ems.gov/pdf/811723-National-EMS-Assessment-2011.pdf.)

Based on the previous data it would be conservative to estimate that 25% of the proposed households (31 lots) will require one emergency response per year; resulting in approximately 8 responses per year.

As identified on Department of Natural Resources & Conservation (MDNRC) Wildland Urban Interface (WUI) Map of Yellowstone County the proposed subdivision is located in a WUI area (https://leg.mt.gov/content/Services%20Division/Lepo/statreports/wildland-urban-parcels/2012-wildland-urban-parcels.pdf).

Schools

A – C. According to the Yellowstone County Interactive Mapping tool, the subdivision is served by Laurel for elementary, middle school, high school.

Census data from 2017-2021 indicates that there were 2.41 people per household in Montana. Population estimates in July, 2022, indicate that Montana had a population of 1,122,867 with 20.8% under 18 years. A conservative estimate would be 0.5 child per household or approximately 16 total children.

Parks and Recreation Facilities

A – B. A 1.9 acre park will be dedicated with this subdivision.

C. Land Use

1 – 4. The proposed subdivision is located in an unzoned area within Yellowstone County.

The subdivision is not anticipated to impact access to public lands and complements existing adjacent land uses (agricultural and residential subdivisions). Based on existing and known proposed land uses, nuisances such as unpleasant odors, dust, and smoke are not expected. The use of an adjacent BNSF line is expected to generate noise when being used.

D. Historical Features

WWC contacted Mr. Murdo on January 28, 2021 and requested a file search for the overall property of Lazy KU Subdivision, including this portion of the project. No changes have

occurred since that timeframe to the portion of the property that encompasses this subdivision. Mr. Murdo conducted a cultural resource file search on January 28, 2021 and identified “Site 24YL0664”, the Historic Irrigation System, Danford Ditch, within the proposed project area. He states that it is SHPO’s position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If structures are to be altered and are over fifty years old, we would recommend that they be recorded and a determination of their eligibility be made. Mr. Murdo stated that the “absence” of cultural properties in the area does not mean that they do not exist but rather may reflect the absence of any previous cultural resource inventory in the area, as our records indicated none. Based on the lack of previous inventory and the ground disturbance required by this undertaking Mr. Murdo feels that this project has the potential to impact cultural properties and therefore, recommends that a cultural resource inventory be conducted in order to determine whether or not sites exist and if they will be impacted; and stated that it is ultimately up to the County whether or not a cultural resource inventory needs to be conducted or not.

E. Visual Impact

1 - 3. The land being developed for this subdivision has been used for agricultural purposes for many years. With the growth of Yellowstone County consistently moving west, this subdivision will stay with the trend of the direction of the growth.

Summary of Probable Impacts

A. Description of Project Effects

1. Agriculture

The land in the proposed subdivision is being utilized for agricultural use.

2. Agricultural water user facilities

There are no definitive plans for connecting to agricultural irrigation.

3. Local Services

There appears to be adequate available local services to service the proposed subdivision (increase in lots/residences).

4. The natural environment

The high-water table was considered during siting and design. Proper siting and design is believed to adequately protect water quality.

5. Wildlife and wildlife habitat

There are no known protected species or special status habitats within the proposed subdivision.

6. Public health and safety

Proper siting and design is believed to adequately protect public health and safety.

B. Description of Compliance

Survey Requirements Provided in Part 4 of the Montana Subdivision and Plating Act (MSPA)

The application submittal process is consistent with the MSPA and a review is required.

Subdivision Regulations

This EA and associated plat have been prepared per the Laurel Subdivision Regulations.

Subdivision Review Process as described in Chapter 3 of the Subdivision Regulations

This EA is to be provided with the “Preliminary Plat Application”. The proposed subdivision is believed to be consistent with the adopted Growth Policy and Transportation Plan.

C. Description of Utilities and Related Easements

Fiber optic and overhead power lines are located at the southern border of the subdivision and will be protected in an easement. Natural gas and electric lines are located at the northern border of the subdivision. Storm drainage easements are also provided in multiple places throughout the subdivision. The plat will identify and dedicate required utility easements.

D. Description of Legal and Physical Lot Access (Notation of Access Required on Plat)

Each lot has been provided with legal and physical access as identified on the plat.

References

Billings School District. https://www.croppermap.com/billings/.

Bureau of Justice Statistics. https://www.bjs.gov/.

City of Billings. 2018. Landfill webpage, https://www.billingsmtpublicworks.gov/236/Billings-Regional-Landfill.

Montana Department of Environmental Quality. 2013. Circular DEQ 4, Montana Standards for Subsurface Wastewater Treatment Systems.

Montana Department of Natural Resources & Conservation. https://leg.mt.gov/content/Services%20Division/Lepo/statreports/wildland-urban-parcels/2012-wildland-urban-parcels.pdf

National Fire Protection Agency. https://www.nfpa.org/News-and-Research/Data-research-and-tools/Emergency-Responders/Fire-department-calls.

Yellowstone County Interactive Mapping database. https://maps.co.yellowstone.mt.gov/mapping/index.html.

United States Census Bureau. https://www.census.gov/quickfacts/MT

LAUREL CITY-COUNTY PLANNING DEPARTMENT

STAFF REPORT & FINDINGS OF FACT

TO: Laurel City-County Planning Board
FROM: Forrest Sanderson, Contracted Planner
RE: Major Preliminary Plat – Lazy KU Subdivision 3rd Filing
DATE: June 27, 2025

DESCRIPTION OF REQUEST

A Major Preliminary Plat application and document packet was submitted by WWC Engineering on behalf of Cheryl Ann Kramer on May 27, 2025. The 32-lot subdivision is located north of the intersection of Danford Rd. and 72nd Street West, legally described as tracts 6 and 7 of COS 2301 and lot 12A of Lazy KU Subdivision 2nd Filing situated in the S.E ¼ of S25, T01 S, R24 E, the subdivision is located within the Laurel City-County Planning Jurisdiction. This subdivision is the third filing of land adjacent to Lazy KU Subdivision which was recently approved for subdivision. Houses are being built in the first and second filings subdivision and the property owner has found a partnership to complete an adjacent subdivision called the Lazy KU Subdivision 3rd Filing.

The applicant has provided all the supporting subdivision elements as per Appendix F of the Laurel-Yellowstone County Subdivision Regulations. The documents provided by the applicant were deemed sufficient by The Laurel Planning Director and could proceed to public hearing at the Laurel City-County Planning Board.

Owner:	Cheryl Kramer
Legal Description:	Tracts 6 and 7 of COS 2301 and lot 12A of Lazy KU Subdivision situated in the S.E ¼ of S25, T01 S, R24 E
Subdivision size:	45.7 acres gross
Existing Land Use:	Agricultural, Vacant
Proposed Land Use:	Residential Subdivision

BACKGROUND AND PROCEDURAL HISTORY

- Subdivision Pre-application meeting on December 5, 2024
- Subdivision Application submitted on May 19, 2025
- All submitted information was forwarded to County Departments on May 27, 20252023

- Several required elements were missing from the submittal. WWC Engineering was notified of the deficiencies.
- Element Review Letter was sent to WWC on June 2, 2025
- Sufficiency Review Letter was submitted to WWC Engineering on June 3, 2025.
- A Public Hearing for the review of the Lazy KU Subdivision 3rdFiling has been scheduled at the Planning Board meeting on July 16, 2025.

STAFF FINDINGS

1. The Developer has submitted a Major Preliminary Plat Application and supporting documents.
2. The Application was found to contain all the necessary elements and an element review letter was submitted to the Applicant on June 2, 2025.
3. The Application and its supporting documentation were found to be sufficient for review by the Planning Board and Governing Body.
4. A sufficiency Review letter was submitted to the Applicant on June 3, 2025.
5. The Major Preliminary Plat for the Lazy KU Subdivision contains:
    a. The Major Preliminary Plat consists of 32 lots and a reduction of Lot 12A, Lazy KU Subdivision to facilitate more Parkland dedication as required the Laurel-Yellowstone County Subdivision regulations.
    b. Subdivision Improvement Agreement.
    c. Environmental Assessment
    d. Weed Management Plan included in the SIA.
    e. Water/Wastewater design and construction plans pending DEQ Approval.
    f. Traffic Impact Study.
    g. Declaration of Covenants.
    h. Water Quality reports.
    i. Addition RSID documents to join to the previous RSIDs for Lazy KU Subdivision.
6. Agriculture Impacts.
    a. There does not appear to be any major impact to agricultural facilities besides transitioning the existing agricultural land within the planned subdivision to residential use.
7. Agricultural water user facilities Impacts.
    a. No water rights have been conferred to the subdivider or future owners of the lots within the subdivision.
    b. Existing irrigation and other related water user facilities shall not be changed or modified from their current use.
8. Local Services Impacts.
    a. Fire Service will be provided by the Laurel Volunteer Fire Department (Laurel Fire District).
    b. Law Enforcement shall be provided by the Yellowstone County Sherriff's Department.
    c. The property is within the Laurel School District.

d. The proposed roadways and improvements for existing roadways within and adjacent to the proposed Subdivision will not create a burden for roadway maintenance on the area agencies as per the traffic impact study.

9. Natural Environment Impacts
    a. The area of the proposed subdivision is existing agricultural land.
    b. The proposed subdivision follows the trend within Yellowstone County of agricultural land transitioning to residential and commercial uses.
    c. The applicant has prepared the subdivision design in order to adequately protect water quality.
10. Wildlife and Wildlife Habitat Impacts
    a. The proposed Subdivision contains no known protected species or those with special status.
11. Public health & Safety Impacts
    a. The water and wastewater system has been submitted to DEQ for review and approval.
    b. The subdivision has been designed to ensure no impacts arise for the subdivision or surrounding property regarding water and/or wastewater.

PLANNING BOARD AND GOVERNING BODY REVIEW CRITERIA

LMC 16.03.010.030.C Part 4 states:

"After the planner has notified the subdivider or the subdivider's agent that an application contains sufficient information delineated herein, the AGB shall approve, conditionally approve, or deny the proposed subdivision within sixty working days based on its determination of whether the application conforms to the provisions of these regulations. For major subdivisions over fifty lots, the AGB shall approve, conditionally approve, or deny the proposed subdivisions with eighty working days. The subdivider and the planner may agree to an extension or suspension of the review period, not to exceed one year, or a subsequent public hearing is scheduled and held as provided in herein. (MCA; §76-3-604(4))"

RECOMMENDATIONS

The Planning Director recommends that the Planning Board approve the Major Preliminary Plat of the Lazy KU Subdivision 3rd Filing and amended lot 12 of Lazy KU Subdivision with the following conditions:

1. The Preliminary Plat and supporting water and wastewater design will be approved by MDEQ.
2. The Roadways and Right-of-Ways shall be constructed to the specifications presented in the plat plan and supporting documentation.
3. This Preliminary Approval shall be valid for 3 calendar years.
4. The comments made by Yellowstone County Departments shall be addressed prior to submittal of final plat and approval by the Board of Yellowstone County Commissioners.

ATTACHMENTS

1. Preliminary Plat of Lazy KU Subdivision 3rd Filing
2. Dry Hydrant Easement
3. Environmental Assessment
4. Preliminary Geotechnical Report
5. Laurel Fire Memo
6. Subdivision Improvements Agreement
7. Names and Addresses of Adjoining Property Owners
8. Public Hearing Notice
9. Traffic Impact Study
10. Signed Preliminary Plat Application
11. Parkland Calculation
12. Water/Wastewater Design (DEQ Submitted)
13. RSID Dry Hydrant
14. RSID Parks
15. RSID Roads
16. Weed Management Plan in the SIA
17. Element Review Letter
18. Sufficiency Review Letter
19. Yellowstone County Public Works Comments
20. Yellowstone County Clerk & Recorder Comments

RIMROCK
ENGINEERING, INC.

PRELIMINARY GEOTECHNICAL ENGINEERING REPORT

Lazy KU Subdivision 3rd Filing
72nd Street West
Laurel, Montana

April 28, 2025
Project No. G25032

Prepared for:

WWC Engineering
550 S. 24th Street W., Suite 201
Billings, Montana 59102

Prepared by:

Rimrock Engineering, Inc.
5440 Holiday Avenue
Billings, Montana 59101

RIMROCK ENGINEERING, INC.

5440 Holiday Avenue · Billings, Montana 59101: · Phone: 406.294.8400 · www.rimrock.biz

April 28, 2025

Mr. Greg Reid, P.E.
WWC Engineering
550 S. 24th Street W., Suite 201
Billings, Montana 59102

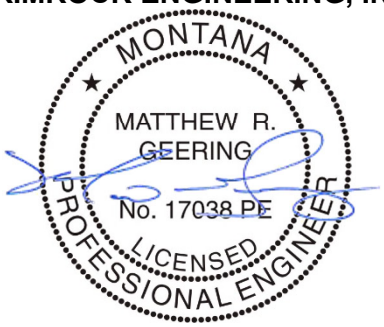
Re: Preliminary Geotechnical Engineering Report
Lazy KU Subdivision 3rd Filing
72nd Street West
Laurel, Montana

Dear Greg:

Rimrock Engineering, Inc. has completed the preliminary geotechnical engineering services for the referenced project. The attached report presents the results of our findings. Our work consisted of subsurface exploration, laboratory testing, engineering analyses, and preparation of this report.

We appreciate this opportunity to be of service to you and are prepared to provide design level geotechnical engineering and construction materials testing services during the construction phase of the project. If you have any questions regarding this report or need additional information or services, please contact us.

Sincerely,
RIMROCK ENGINEERING, INC.



Matt Geering, P.E.
Principal/Vice President

Wade Reynolds
Principal/President

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PAGE

GEOTECHNICAL ENGINEERING REPORT

Lazy KU Subdivision 3rd Filing
72nd Street West
Laurel, Montana

1.0 INTRODUCTION AND SCOPE

1.1 Project Description

The project consists of possible development of Lazy KU Subdivision, 3rd Filing to be located along 72nd Street West in Laurel, Montana. The subdivision is expected to consist of about 32 lots with associated streets and utilities.

1.2 Purpose and Scope of Work

The purpose of these studies will be to perform a limited geotechnical investigation and provide preliminary geotechnical information for due diligence considerations and to provide information, opinions, and geotechnical engineering recommendations relative to:

- General soil and groundwater conditions
- Possible foundation alternatives and limitations

Our scope of services consisted of background review, site reconnaissance, field exploration, laboratory testing, engineering analyses, and preparation of this report.

2.0 INVESTIGATION

2.1 Field Exploration

The subsurface exploration consisted of drilling six (6) borings on March 28, 2025 to approximately 10 to 20 feet below existing grades. The borings were drilled using our truck mounted drill rig equipped with hollow stem and solid flight augers. Groundwater levels were measured during drilling operations, if encountered. Upon completion of drilling and/or groundwater measurements, the borings were backfilled with drill cuttings and compacted with the equipment at hand.

Logs of the borings along with a Vicinity/Site Map are included in Appendix A. The borings were located in the field by Rimrock Engineering based on information provided. Ground surface elevations were set at 100 for purposes of this investigation. The locations and elevations of the borings should be considered accurate only to the degree implied by the means and methods used to define them.

Rimrock Engineering personnel logged the soil conditions encountered in the borings. At selected intervals, samples of the subsurface materials were taken by driving split-spoon samplers and collecting auger cuttings. Penetration resistance measurements were obtained by driving the samplers into the subsurface materials with a 140-pound automatic hammer falling 30 inches. The penetration resistance value is a useful index in estimating the relative density, or consistency, of the materials encountered. The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification.

2.2 Laboratory Testing

The purpose of the laboratory testing is to assess the physical and engineering properties of the soil samples collected in the field to be used in our geotechnical evaluations and analyses. Laboratory testing was performed on selected soil samples to assess the following:

- Visual classification (USCS)
- Moisture content
- Atterberg limits
- Sieve analysis

The soil descriptions presented on the boring log are in accordance with the Unified Soil Classification System (USCS) and Key. Individual laboratory test results can be found in Appendix B at the end of this report.

3.0 SITE & SUBSURFACE CONDITIONS

3.1 Site Conditions

The site consists of vacant property located south of the 2nd Filing along 72nd Street West and north of Danford Road in Laurel, Montana. The site consists of agricultural farm fields. The site generally slopes to the south towards Danford. The surrounding areas consist mainly of agricultural fields and residential developments.

3.2 Subsurface Soil Conditions

Based on the materials encountered in our borings, the subsurface profile generally consists of about 5 to 9 feet of soft to medium stiff lean clay soils overlying dense gravels which extended to the maximum depth explored of about 20 feet.

The subsurface clay soils had Standard Penetration Test (SPT) N-values in the range of 2 to 6 blows per foot which indicates the soils to be soft to medium stiff in consistency, have high compressibility, and low shear strength characteristics. For a more detailed description of the subsurface conditions, please refer to the logs provided in Appendix A.

3.3 Groundwater Conditions

The borings were observed while drilling and after completion for the presence and level of groundwater. Groundwater was encountered at approximately 5.5 to 9 feet below grade while drilling or for the short duration the borings were allowed to remain open. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations. Groundwater can be expected to fluctuate with varying seasonal, weather and irrigation conditions. Evaluation of the factors that affect groundwater fluctuations is beyond the scope of this report.

3.4 Laboratory Test Results

The site soils were tested for grain size distribution (sieve analysis) and Atterberg Limits. Atterberg limits are a basic measure of the critical water contents of a fine-grained soils. The site soils encountered in the borings generally have medium plasticity. Results are summarized below:

Location	Depth (ft)	USCS	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Gravel (%)	Sand (%)	Clay/Silt (%)
B-1	4.5	CL	32	18	14	1.4	10.1	88.5
B-2	9.5	GW-GM	NP	NP	NP	56.7	35.1	8.2
B-5	4.5	CL	36	16	20	2.8	17.0	80.2

4.0 PRELIMINARY FINDINGS AND RECOMMENDATIONS

Excavations across the site will generally encounter soft to medium stiff, medium plasticity clay soils. Depending on depth of excavations, dense gravels and groundwater may be encountered. It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment such as tractor mounted backhoes and tracked excavators.

Lean clay soils were encountered at or near anticipated footing and slab elevations across the site. The site soils are expected to be highly compressible and potentially collapsible. Additionally, shallow groundwater was encountered. Due to these conditions, deep foundations such as helical piers extending to the underlying gravel stratum or rammed aggregate piers are potential options for structures on this site. Also, basement construction may not be feasible.

Another common foundation alternative based on the conditions described above is to utilize shallow spread footing foundations bearing on a zone of geotextile reinforced structural fill. Depth of structural fill varies with anticipated structural loading and subsurface conditions. An allowable bearing capacity for foundations bearing on structural fill generally ranges from 1,500 to 2,500 psf, depending on site specific subsurface conditions, foundation loading, and thickness of the structural fill zone. Regardless of the subsurface conditions, good surface drainage is important and should be maintained throughout the life of the structures.

It is anticipated that pavement subgrade soils will consist of clay soils which are typically considered poor materials for pavement support. Depending on anticipated traffic loads and subgrade strength parameters, subgrade stabilization may be required for pavement construction at the site.

Site-specific design level geotechnical investigations should be performed once specific project design information has been established.

5.0 LIMITATIONS

Recommendations contained in this report are based on our field explorations, laboratory tests, and our understanding of the proposed construction. The study was performed using a mutually agreed upon scope of work. It is our opinion that this study was a cost-effective method to evaluate the subject site and evaluate some of the potential geotechnical concerns.

The soils data used in the preparation of this report were obtained from borings made for this investigation. It is possible that variations in soils exist between the points explored. The nature and extent of soil variations may not be evident until construction occurs.

This report may be used only by the Client and for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on- and off-site), or other factors including advances in man's understanding of applied science may change over time and could materially affect our findings. Therefore, this report should not be relied upon after 36 months from its issue. Rimrock Engineering should be notified if the project is delayed by more than 24 months from the date of this report so that a review of site conditions can be made, and recommendations revised if appropriate.

It is the Client's responsibility to see that all parties to the project including the designer, contractor, subcontractors, etc., are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk. Any party other than the Client who wishes to use this report shall notify Rimrock Engineering of such intended use. Based on the intended use of the report, Rimrock Engineering may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the Client or anyone else will release Rimrock Engineering from any liability resulting from the use of this report by any unauthorized party.

APPENDIX A

Field Exploration

Rimrock Engineering, Inc.
5440 Holiday Avenue
Billings, MT 59101 Tel. (406) 294-8400

PROJECT NO. G25032

VICINITY/SITE MAP

LAZY KU SUBDIVISION 3RD - PRELIMINARY
72nd Street
Billings, Montana

N

Rimrock Engineering, Inc.
5440 Holiday Avenue
Billings, MT 59101

BORING NUMBER B-1

CLIENT WWC
PROJECT NAME Lazy KU 3rd Filing
PROJECT NUMBER G25032
PROJECT LOCATION Billings, MT
DATE STARTED 3/28/25 **COMPLETED** 3/28/25
GROUND ELEVATION 100 ft **HOLE SIZE** 5 inches
DRILLING CONTRACTOR Rimrock Engineering, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger
▽ **AT TIME OF DRILLING** 9.00 ft / Elev 91.00 ft
LOGGED BY G.J. **CHECKED BY** M.G.
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL										
		(CL) LEAN CLAY Brown, medium stiff, medium plasticity, some fine sand.										
5			SPT	100	3-3-3 (6)			30	32	18	14	88
		▽ (GW-GM) WELL-GRADED GRAVEL with SILT and SAND Gray/brown, dense.										
10			SPT	100	15-14-25 (39)			12				
15												
20												

Bottom of borehole at 20.0 feet.

BORING NUMBER B-2

Rimrock Engineering, Inc.
5440 Holiday Avenue
Billings, MT 59101

CLIENT WWC
PROJECT NAME Lazy KU 3rd Filing
PROJECT NUMBER G25032
PROJECT LOCATION Billings, MT
DATE STARTED 3/28/25 **COMPLETED** 3/28/25
GROUND ELEVATION 100 ft **HOLE SIZE** 5 inches
DRILLING CONTRACTOR Rimrock Engineering, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger
▽ **AT TIME OF DRILLING** 8.50 ft / Elev 91.50 ft
LOGGED BY G.J. **CHECKED BY** M.G.
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL										
		(CL) LEAN CLAY Brown, medium stiff, medium plasticity, some fine sand.										
5			SPT	100	2-3-3 (6)			18				
		▽										
		(GW-GM) WELL-GRADED GRAVEL with SILT and SAND Gray/brown, dense.										
10			SPT	100	12-15-22 (37)			8	NP	NP	NP	8

Bottom of borehole at 11.0 feet.

Rimrock Engineering, Inc.
5440 Holiday Avenue
Billings, MT 59101

BORING NUMBER B-3

CLIENT WWC
PROJECT NAME Lazy KU 3rd Filing
PROJECT NUMBER G25032
PROJECT LOCATION Billings, MT
DATE STARTED 3/28/25 **COMPLETED** 3/28/25
GROUND ELEVATION 100 ft **HOLE SIZE** 5 inches
DRILLING CONTRACTOR Rimrock Engineering, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger
▽ **AT TIME OF DRILLING** 6.00 ft / Elev 94.00 ft
LOGGED BY G.J. **CHECKED BY** M.G.
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL										
		(CL) LEAN CLAY Brown, medium stiff, medium plasticity, some fine sand.										
5		▽ (GW-GM) WELL-GRADED GRAVEL with SILT and SAND Gray/brown, dense.	SPT	100	4-12-14 (26)			5				
10												

Bottom of borehole at 10.0 feet.

BORING NUMBER B-4

Rimrock Engineering, Inc.
5440 Holiday Avenue
Billings, MT 59101

CLIENT WWC
PROJECT NAME Lazy KU 3rd Filing
PROJECT NUMBER G25032
PROJECT LOCATION Billings, MT
DATE STARTED 3/28/25 **COMPLETED** 3/28/25
GROUND ELEVATION 100 ft **HOLE SIZE** 5 inches
DRILLING CONTRACTOR Rimrock Engineering, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger
▽ **AT TIME OF DRILLING** 5.50 ft / Elev 94.50 ft
LOGGED BY G.J. **CHECKED BY** M.G.
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL										
		(CL) LEAN CLAY Brown, medium stiff, medium plasticity, some fine sand.										
5		▽	SPT	100	2-2-16 (18)			10				
		(GW-GM) WELL-GRADED GRAVEL with SILT and SAND Gray/brown, dense.										
10												

Bottom of borehole at 10.0 feet.

BORING NUMBER B-5

Rimrock Engineering, Inc.
5440 Holiday Avenue
Billings, MT 59101

CLIENT WWC
PROJECT NAME Lazy KU 3rd Filing
PROJECT NUMBER G25032
PROJECT LOCATION Billings, MT
DATE STARTED 3/28/25 **COMPLETED** 3/28/25
GROUND ELEVATION 100 ft **HOLE SIZE** 5 inches
DRILLING CONTRACTOR Rimrock Engineering, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger
▽ **AT TIME OF DRILLING** 8.00 ft / Elev 92.00 ft
LOGGED BY G.J. **CHECKED BY** M.G.
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL										
		(CL) LEAN CLAY with SAND Brown, soft, medium plasticity, fine sand.										
5			SPT	100	1-1-1 (2)			20	36	16	20	80
		▽ (GW-GM) WELL-GRADED GRAVEL with SILT and SAND Gray/brown, dense.										
10			SPT	100	15-19-32 (51)			9				

Bottom of borehole at 11.0 feet.

BORING NUMBER B-6

Rimrock Engineering, Inc.
5440 Holiday Avenue
Billings, MT 59101

CLIENT WWC
PROJECT NAME Lazy KU 3rd Filing
PROJECT NUMBER G25032
PROJECT LOCATION Billings, MT
DATE STARTED 3/28/25 **COMPLETED** 3/28/25
GROUND ELEVATION 100 ft **HOLE SIZE** 5 inches
DRILLING CONTRACTOR Rimrock Engineering, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger
▽ **AT TIME OF DRILLING** 5.50 ft / Elev 94.50 ft
LOGGED BY G.J. **CHECKED BY** M.G.
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL										
		(CL) LEAN CLAY with SAND Brown, soft, medium plasticity, fine sand.										
5		(GW-GM) WELL-GRADED GRAVEL with SILT and SAND ▽ Gray/brown, dense.	SPT	100	2-14-24 (38)			9				
10												

Bottom of borehole at 10.0 feet.

KEY TO SYMBOLS

Rimrock Engineering, Inc.
5440 Holiday Avenue
Billings, MT 59101

CLIENT WWC **PROJECT NAME** Lazy KU 3rd Filing

PROJECT NUMBER G25032 **PROJECT LOCATION** Billings, MT

LITHOLOGIC SYMBOLS (Unified Soil Classification System)

- CL: USCS Low Plasticity Clay
- GW-GM: USCS Well-graded Gravel with Silt
- TOPSOIL: Topsoil

SAMPLER SYMBOLS

- Standard Penetration Test

WELL CONSTRUCTION SYMBOLS

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
W - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
NP - NON PLASTIC
-200 - PERCENT PASSING NO. 200 SIEVE
PP - POCKET PENETROMETER (TSF)

TV - TORVANE
PID - PHOTOIONIZATION DETECTOR
UC - UNCONFINED COMPRESSION
ppm - PARTS PER MILLION

- Water Level at Time Drilling, or as Shown
- Water Level at End of Drilling, or as Shown
- Water Level After 24 Hours, or as Shown

APPENDIX B

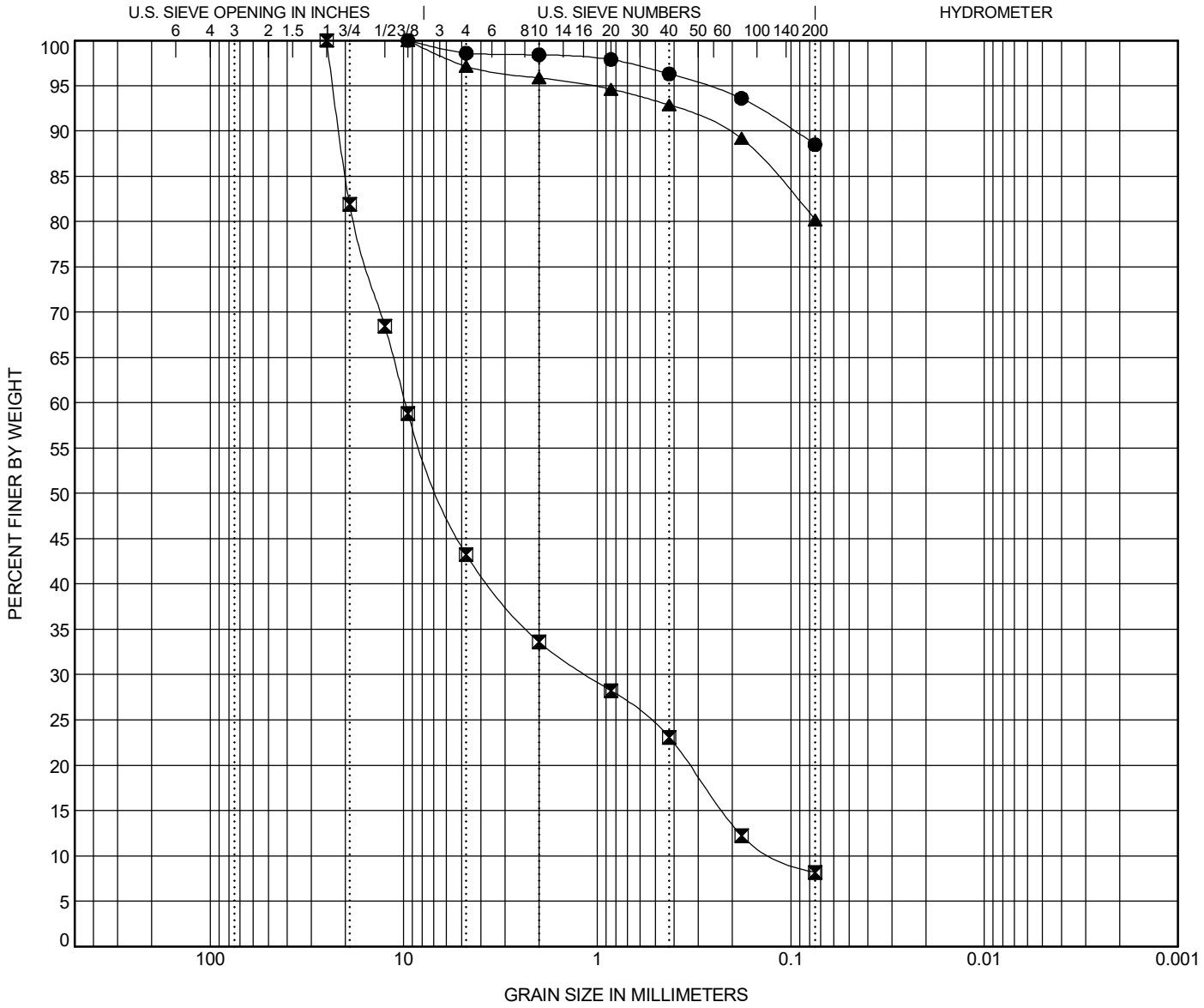
Laboratory Test Results

GRAIN SIZE DISTRIBUTION

Rimrock Engineering, Inc.
5440 Holiday Avenue
Billings, MT 59101

CLIENT WWC **PROJECT NAME** Lazy KU 3rd Filing

PROJECT NUMBER G25032 **PROJECT LOCATION** Billings, MT



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	**B-1**	**4.5**	**LEAN CLAY(CL)**	**32**	**18**	**14**		
⊠	**B-2**	**9.5**	**WELL-GRADED GRAVEL with SILT and SAND(GW-GM)**	**NP**	**NP**	**NP**	**1.16**	**88.29**
▲	**B-5**	**4.5**	**LEAN CLAY with SAND(CL)**	**36**	**16**	**20**		

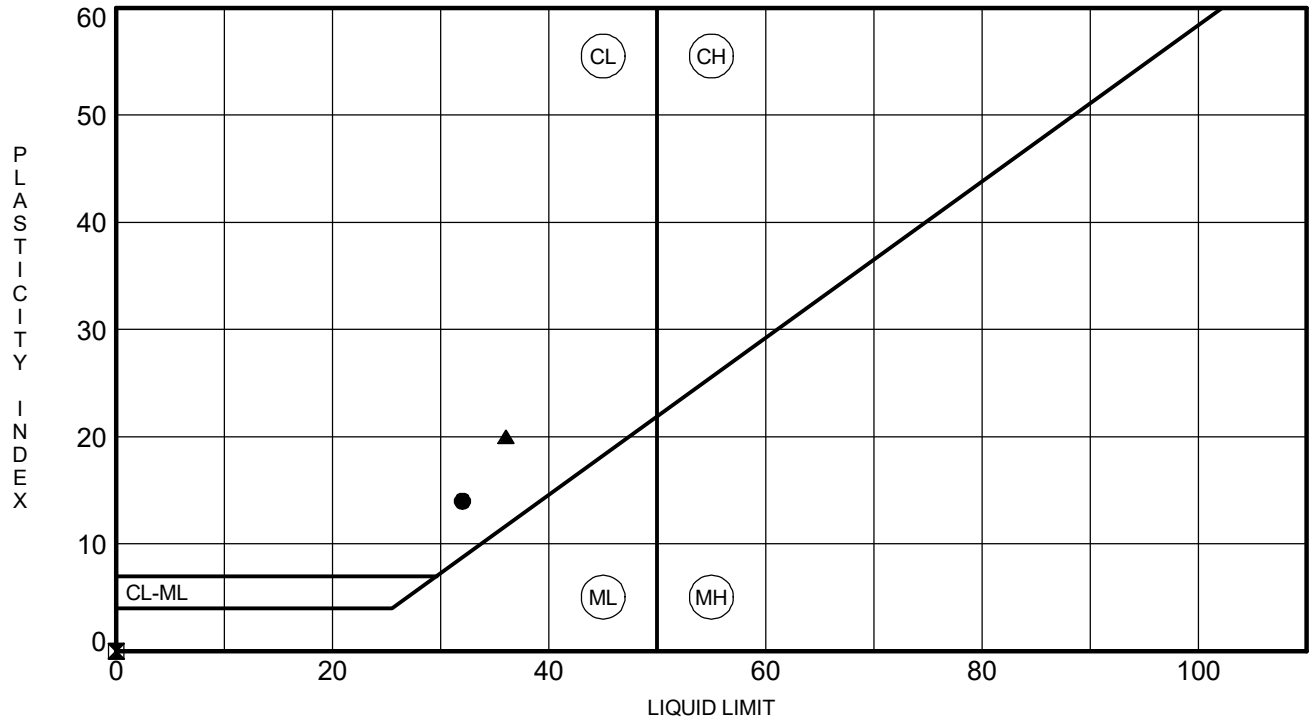
	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-1**	**4.5**	**9.5**				**1.4**	**10.1**	**88.5**	
⊠	**B-2**	**9.5**	**25**	**9.828**	**1.127**	**0.111**	**56.7**	**35.1**	**8.2**	
▲	**B-5**	**4.5**	**9.5**				**2.8**	**17.0**	**80.2**	

ATTERBERG LIMITS' RESULTS

Rimrock Engineering, Inc.
5440 Holiday Avenue
Billings, MT 59101

CLIENT WWC **PROJECT NAME** Lazy KU 3rd Filing

PROJECT NUMBER G25032 **PROJECT LOCATION** Billings, MT



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-1**	**4.5**	**32**	**18**	**14**	**88**	**LEAN CLAY(CL)**
⊠	**B-2**	**9.5**	**NP**	**NP**	**NP**	**8**	**WELL-GRADED GRAVEL with SILT and SAND(GW-GM)**
▲	**B-5**	**4.5**	**36**	**16**	**20**	**80**	**LEAN CLAY with SAND(CL)**

COVER SHEET

TO: YELLOWSTONE COUNTY BOARD OF COMMISSIONERS

This petition is respectfully submitted this _____ day of _____, 20___.

Petitioner/Initiator (and/or) Contact Person:

NAME: _Cherryl Kramer _____

ADDRESS: 3116 S 72nd Street W

Billings, MT 59106

PHONE NO: 406-690-4537

I swear that all of the information presented in this petition is true and correct and the landowner's signatures (Section F) are the original true and consenting landowners.

_____ _____

Petitioner's Signature Date

LIST ALL ADDITIONAL ATTACHMENTS:

SECTION A
MAPS OF RURAL SPECIAL IMPROVEMENT DISTRICT BOUNDARY (ATTACHED)

SECTION B
LEGAL DESCRIPTIONS

PROPERTY LEGAL DESCRIPTIONS

Lots 8 through 11 of Block 3 of Lazy KU Subdivision, 3rd Filing

Lots 6 through 10 of Block 4 of Lazy KU Subdivision, 3rd Filing

Lots 1 through 8 of Block 5 of Lazy KU Subdivision, 3rd Filing

Lots 1 through 10 of Block 6 of Lazy KU Subdivision, 3rd Filing

Lots 1 through 5 of Block 7 of Lazy KU Subdivision, 3rd Filing

Total = 32 Lots

SECTION C
ESTIMATED ANNUAL MAINTENANCE COST

FALL MAINTENANCE:

ACTIVITY	ESTIMATED COST
	$
	$

WINTER MAINTENANCE:

ACTIVITY	ESTIMATED COST
	$
	$

SPRING MAINTENANCE:

ACTIVITY	ESTIMATED COST
Weed Management (per year)	$
	$

SUMMER MAINTENANCE:

ACTIVITY	ESTIMATED COST
Mowing (per year)	$
	$

TOTAL ESTIMATED ANNUAL MAINTENANCE COST: $125/lot/yr

SECTION D
METHOD OF ASSESSMENT

CHOOSE A METHOD OF ASSESSMENT:

☐	Square Footage
☒	Equal Amount
☐	Front Footage
☐	Other (Describe)

SECTION E
PROPOSED RURAL SPECIAL IMPROVEMENT DISTRICT
RECOMMENDATIONS FOR AD HOC COMMITTEE

NAME **TELEPHONE NUMBER**

1. Cherryl Kramer (Chairman) 406-690-4537
   Printed Name

   _____
   Signature

2. _____ _____
   Printed Name

   _____
   Signature

3. _____ _____
   Printed Name

   _____
   Signature

4. _____ _____
   Printed Name

   _____
   Signature

5. _____ _____
   Printed Name

   _____
   Signature

SECTION F

CONSENT OF PROPERTY OWNERS IN PROPOSED RURAL SPECIAL IMPROVEMENT DISTRICT

WE, THE UNDERSIGNED property owners, hereby provide the following information for consideration in the possible creation of an RSID. It is our understanding that if support exists for the RSID, information will be provided to the County and a public hearing scheduled regarding the creation of this district. Following the public hearing, the County Commissioners shall take action on whether or not to create the district. Should the County Commissioners create the district, WE, as property owners, understand that we shall bear the costs of the district as formally approved by the County Commissioners.

PROPERTY LEGAL DESCRIPTION	OWNER (PRINTED NAME)	OWNER SIGNATURE	IN FAVOR	OPPOSED
Tract 6 & 7 of COS 2301 & Lot 12A of Lazy KU Subdivision, 2nd Filing	Cherryl Ann Kramer, Manager of Lazy KU Estates, LLC		X	

SECTION F (Continued)

CONSENT OF PROPERTY OWNERS IN PROPOSED RURAL SPECIAL IMPROVEMENT DISTRICT

WE, THE UNDERSIGNED property owners, hereby provide the following information for consideration in the possible creation of an RSID. It is our understanding that if support exists for the RSID, information will be provided to the County and a public hearing scheduled regarding the creation of this district. Following the public hearing, the County Commissioners shall take action on whether or not to create the district. Should the County Commissioners create the district, WE, as property owners, understand that we shall bear the costs of the district as formally approved by the County Commissioners.

PROPERTY LEGAL DESCRIPTION	OWNER (PRINTED NAME)	OWNER SIGNATURE	IN FAVOR	OPPOSED

SECTION G
OWNERSHIP REPORT (ATTACHED)

COVER SHEET

TO: YELLOWSTONE COUNTY BOARD OF COMMISSIONERS

This petition is respectfully submitted this _____ day of _____, 20___.

Petitioner/Initiator (and/or) Contact Person:

NAME: _Cherryl Kramer _____

ADDRESS: 3116 S 72nd Street W

Billings, MT 59106

PHONE NO: 406-690-4537

I swear that all of the information presented in this petition is true and correct and the landowner's signatures (Section F) are the original true and consenting landowners.

_____ _____

Petitioner's Signature Date

LIST ALL ADDITIONAL ATTACHMENTS:

SECTION A
MAPS OF RURAL SPECIAL IMPROVEMENT DISTRICT BOUNDARY (ATTACHED)

SECTION B
LEGAL DESCRIPTIONS

PROPERTY LEGAL DESCRIPTIONS

Lots 8 through 11 of Block 3 of Lazy KU Subdivision, 3rd Filing

Lots 6 through 10 of Block 4 of Lazy KU Subdivision, 3rd Filing

Lots 1 through 8 of Block 5 of Lazy KU Subdivision, 3rd Filing

Lots 1 through 10 of Block 6 of Lazy KU Subdivision, 3rd Filing

Lots 1 through 5 of Block 7 of Lazy KU Subdivision, 3rd Filing

Total = 32 Lots

SECTION C
ESTIMATED ANNUAL MAINTENANCE COST

FALL MAINTENANCE:

ACTIVITY	ESTIMATED COST
	$
	$

WINTER MAINTENANCE:

ACTIVITY	ESTIMATED COST
Snowplowing	$
	$

SPRING MAINTENANCE:

ACTIVITY	ESTIMATED COST
Weed Management (per year)	$
Stormwater Maintenance	$

SUMMER MAINTENANCE:

ACTIVITY	ESTIMATED COST
Roads	$
	$

TOTAL ESTIMATED ANNUAL MAINTENANCE COST: $439/lot/yr

SECTION D
METHOD OF ASSESSMENT

CHOOSE A METHOD OF ASSESSMENT:

☐	Square Footage
☒	Equal Amount
☐	Front Footage
☐	Other (Describe)

SECTION E
PROPOSED RURAL SPECIAL IMPROVEMENT DISTRICT
RECOMMENDATIONS FOR AD HOC COMMITTEE

	NAME	TELEPHONE NUMBER
1.	Cherryl Kramer (Chairman) Printed Name _____ Signature	406-690-4537
2.	_____ Printed Name _____ Signature	_____
3.	_____ Printed Name _____ Signature	_____
4.	_____ Printed Name _____ Signature	_____
5.	_____ Printed Name _____ Signature	_____

SECTION F

CONSENT OF PROPERTY OWNERS IN PROPOSED RURAL SPECIAL IMPROVEMENT DISTRICT

WE, THE UNDERSIGNED property owners, hereby provide the following information for consideration in the possible creation of an RSID. It is our understanding that if support exists for the RSID, information will be provided to the County and a public hearing scheduled regarding the creation of this district. Following the public hearing, the County Commissioners shall take action on whether or not to create the district. Should the County Commissioners create the district, WE, as property owners, understand that we shall bear the costs of the district as formally approved by the County Commissioners.

PROPERTY LEGAL DESCRIPTION	OWNER (PRINTED NAME)	OWNER SIGNATURE	IN FAVOR	OPPOSED
Tract 6 & 7 of COS 2301 and Lot 12A Lazy KU Subdivision, 2nd Filing	Cherryl Ann Kramer, Manager of Lazy KU Estates LLC		X	

SECTION F (Continued)

CONSENT OF PROPERTY OWNERS IN PROPOSED RURAL SPECIAL IMPROVEMENT DISTRICT

WE, THE UNDERSIGNED property owners, hereby provide the following information for consideration in the possible creation of an RSID. It is our understanding that if support exists for the RSID, information will be provided to the County and a public hearing scheduled regarding the creation of this district. Following the public hearing, the County Commissioners shall take action on whether or not to create the district. Should the County Commissioners create the district, WE, as property owners, understand that we shall bear the costs of the district as formally approved by the County Commissioners.

PROPERTY LEGAL DESCRIPTION	OWNER (PRINTED NAME)	OWNER SIGNATURE	IN FAVOR	OPPOSED

SECTION G
OWNERSHIP REPORT (ATTACHED)

COVER SHEET

TO: YELLOWSTONE COUNTY BOARD OF COMMISSIONERS

This petition is respectfully submitted this _____ day of _____, 20___.

Petitioner/Initiator (and/or) Contact Person:

NAME: _Cherryl Kramer _____

ADDRESS: 3116 S 72nd Street W

Billings, MT 59106

PHONE NO: 406-690-4537

I swear that all of the information presented in this petition is true and correct and the landowner's signatures (Section F) are the original true and consenting landowners.

_____ _____

Petitioner's Signature Date

LIST ALL ADDITIONAL ATTACHMENTS:

SECTION A
MAPS OF RURAL SPECIAL IMPROVEMENT DISTRICT BOUNDARY (ATTACHED)

SECTION B
LEGAL DESCRIPTIONS

PROPERTY LEGAL DESCRIPTIONS

Lots 8 through 11 of Block 3 of Lazy KU Subdivision, 3rd Filing

Lots 6 through 10 of Block 4 of Lazy KU Subdivision, 3rd Filing

Lots 1 through 8 of Block 5 of Lazy KU Subdivision, 3rd Filing

Lots 1 through 10 of Block 6 of Lazy KU Subdivision, 3rd Filing

Lots 1 through 5 of Block 7 of Lazy KU Subdivision, 3rd Filing

Total = 32 Lots

SECTION C
ESTIMATED ANNUAL MAINTENANCE COST

FALL MAINTENANCE:

ACTIVITY	ESTIMATED COST
Fill standpipe with nitrogen, General Inspection	$ 6.25
	$

WINTER MAINTENANCE:

ACTIVITY	ESTIMATED COST
Dry hydrant snow removal as required, General Inspection	$ 6.25
	$

SPRING MAINTENANCE:

ACTIVITY	ESTIMATED COST
Dry hydrant weed control, General Inspection	$ 6.25
	$

SUMMER MAINTENANCE:

ACTIVITY	ESTIMATED COST
Dry hydrant weed control, General Inspection	$ 6.25
	$

TOTAL ESTIMATED ANNUAL MAINTENANCE COST: $25/lot/year

SECTION D
METHOD OF ASSESSMENT

CHOOSE A METHOD OF ASSESSMENT:

	Square Footage
X	Equal Amount
	Front Footage
	Other (Describe)

SECTION E
PROPOSED RURAL SPECIAL IMPROVEMENT DISTRICT
RECOMMENDATIONS FOR AD HOC COMMITTEE

NAME	TELEPHONE NUMBER
1. Cherryl Kramer (Chairman)	406-690-4537
Printed Name	
_____	
Signature	
2. _____	_____
Printed Name	
_____	
Signature	
3. _____	_____
Printed Name	
_____	
Signature	
4. _____	_____
Printed Name	
_____	
Signature	
5. _____	_____
Printed Name	
_____	
Signature	

SECTION F

CONSENT OF PROPERTY OWNERS IN PROPOSED RURAL SPECIAL IMPROVEMENT DISTRICT

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PROPERTY LEGAL DESCRIPTION	OWNER (PRINTED NAME)	OWNER SIGNATURE	IN FAVOR	OPPOSED
Tract 6 & 7 of COS 2301 & Lot 12A Lazy KU Subdivision, 2nd Filing	Cherryl Ann Kramer, Manager of Lazy KU Estates LLC		X	

SECTION F (Continued)

CONSENT OF PROPERTY OWNERS IN PROPOSED RURAL SPECIAL IMPROVEMENT DISTRICT

WE, THE UNDERSIGNED property owners, hereby provide the following information for consideration in the possible creation of an RSID. It is our understanding that if support exists for the RSID, information will be provided to the County and a public hearing scheduled regarding the creation of this district. Following the public hearing, the County Commissioners shall take action on whether or not to create the district. Should the County Commissioners create the district, WE, as property owners, understand that we shall bear the costs of the district as formally approved by the County Commissioners.

PROPERTY LEGAL DESCRIPTION	OWNER (PRINTED NAME)	OWNER SIGNATURE	IN FAVOR	OPPOSED

SECTION G
OWNERSHIP REPORT (ATTACHED)

Traffic Impact Study

Prepared for submittal to:

for the project:

Lazy KU Subdivision, Third Filing

on behalf of:

WWC Engineering, Inc.
550 S 24th Street W, Suite 201
Billings, MT 59102
406.894.2210

by:

406 Traffic & Transportation Consulting
P.O. Box 249
Bozeman, MT 59771

406.922.7300

April 2025

TABLE OF CONTENTS

LIST OF EXHIBITS

APPENDICES

1 INTRODUCTION

This report documents the Traffic Impact Study conducted for the Lazy KU Subdivision, Third Filing, located to the northeast of the City of Laurel. It is situated in the SE 1/4 Section 25, Township 1 South, Range 24 East, Yellowstone County, Montana. The study documented here was conducted as required by Yellowstone County Subdivision Regulations Section 4.6.C.4.B, in concert with WWC Engineering, Inc. Selected elements and assumptions for this study have been adapted from the TIS conducted for this subdivision's Second Filing, which was completed in August 2023 by Marvin & Associates.

1.1 PROJECT SITE AND STUDY AREA

The site location is shown in **Exhibit 1** along with the intersections studied. The study intersections were identified in coordination with County staff. The three existing study intersections for this project are:

1. S 80th Street W at Neibauer Road (slightly offset with Vista Buttes Drive)
2. S 80th Street W (slightly offset with Seitz Ronan Road) at Danford Road
3. S 72nd Street W at Neibauer Road
4. S 72nd Street W at Ronald Kramer Drive
5. S 72nd Street W at Kramer Way
6. S 72nd Street W at Danford Road

This filing includes a new access point for the project that has also been studied with respect to intersection operations under future "total traffic" conditions. This road, Haystack Lane, will connect to the existing Danford Road intersection at Evening Star Road and to other local streets in the Lazy KU subdivision that were built in conjunction with the first and second filings. From here forward in this report, study intersections are generally referred to only by their distinguishing street names (e.g., "72nd at Danford") for the sake of brevity.

1.2 ZONING AND LAND-USE CONTEXT

The project site is along the north side of Danford Road and west of South 72nd Street West, in Yellowstone County outside of the existing city limits of Laurel and Billings. Being outside of any city limits, no zoning restrictions are in place for this area. All of the adjacent land uses are either agricultural or rural residential, including those of the first two Lazy KU subdivision filings. Most of the project trips will come from Laurel to the southwest, Interstate 90 to the south or east, and the greater Billings area to the northeast.

1.3 PROJECT DESCRIPTION

The proposed project is the third filing in the Lazy KU subdivision and consists of 32 single-family residential lots generally ranging in size from 0.75 acres to 1.5 acres. The site is bounded on the west by BNSF right of way, on the north by the second filing, on the south by Danford Road, and on the east by multiple properties. Access to these lots would be provided by a new street connection (the aforementioned Haystack Lane, which was under construction at the time of this traffic study) and the subdivision's internal street connections to two existing access points on 72nd, at Ronald Kramer Drive and Kramer Way. **Exhibit 2** shows the site plan and proposed access point locations for the proposed development. Note that this partial drawing is only provided here for illustrative purposes. The full high-resolution drawing is provided in other plat/permit application materials for this project.

Exhibit 1. Overall Site Location and Study Intersections

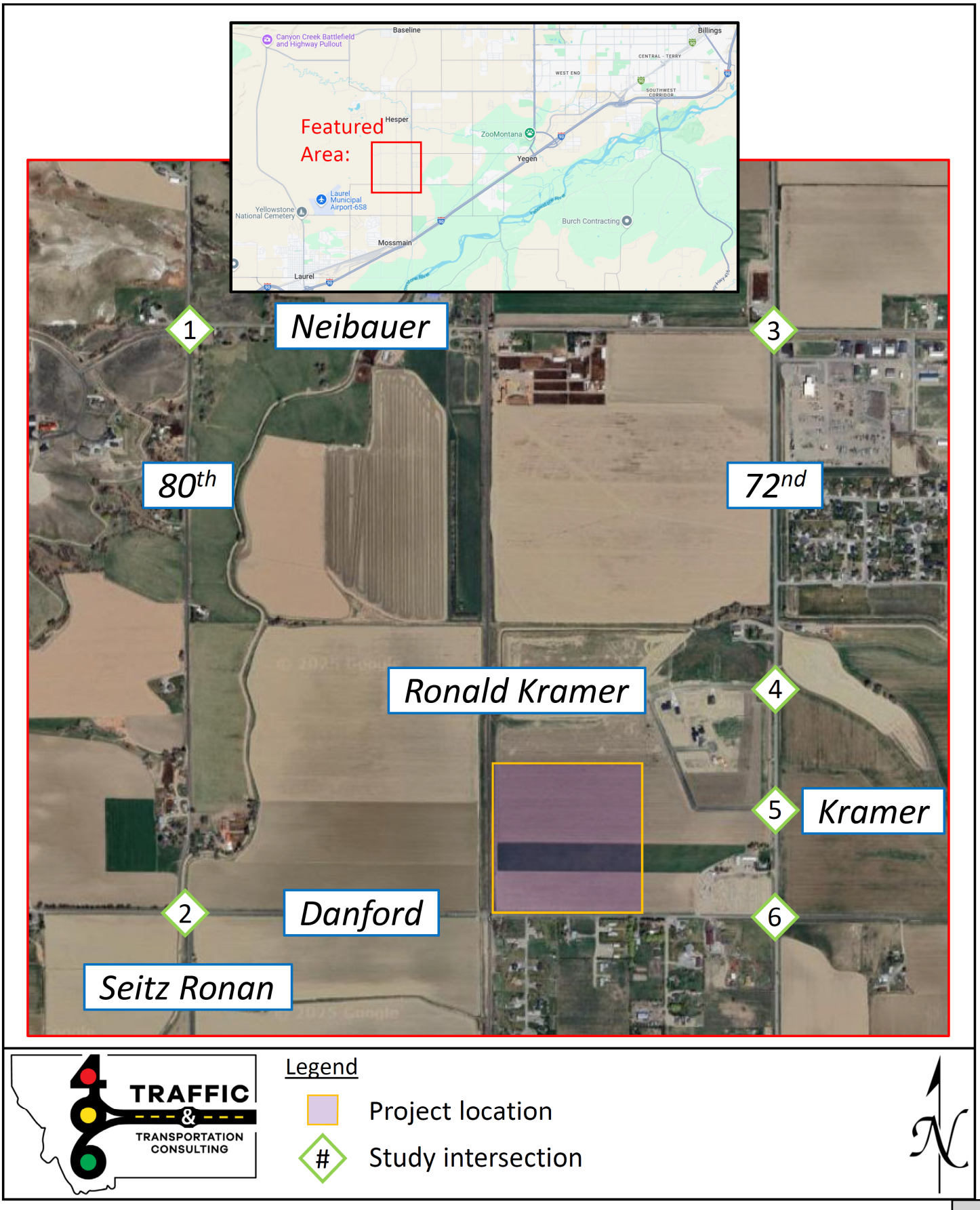
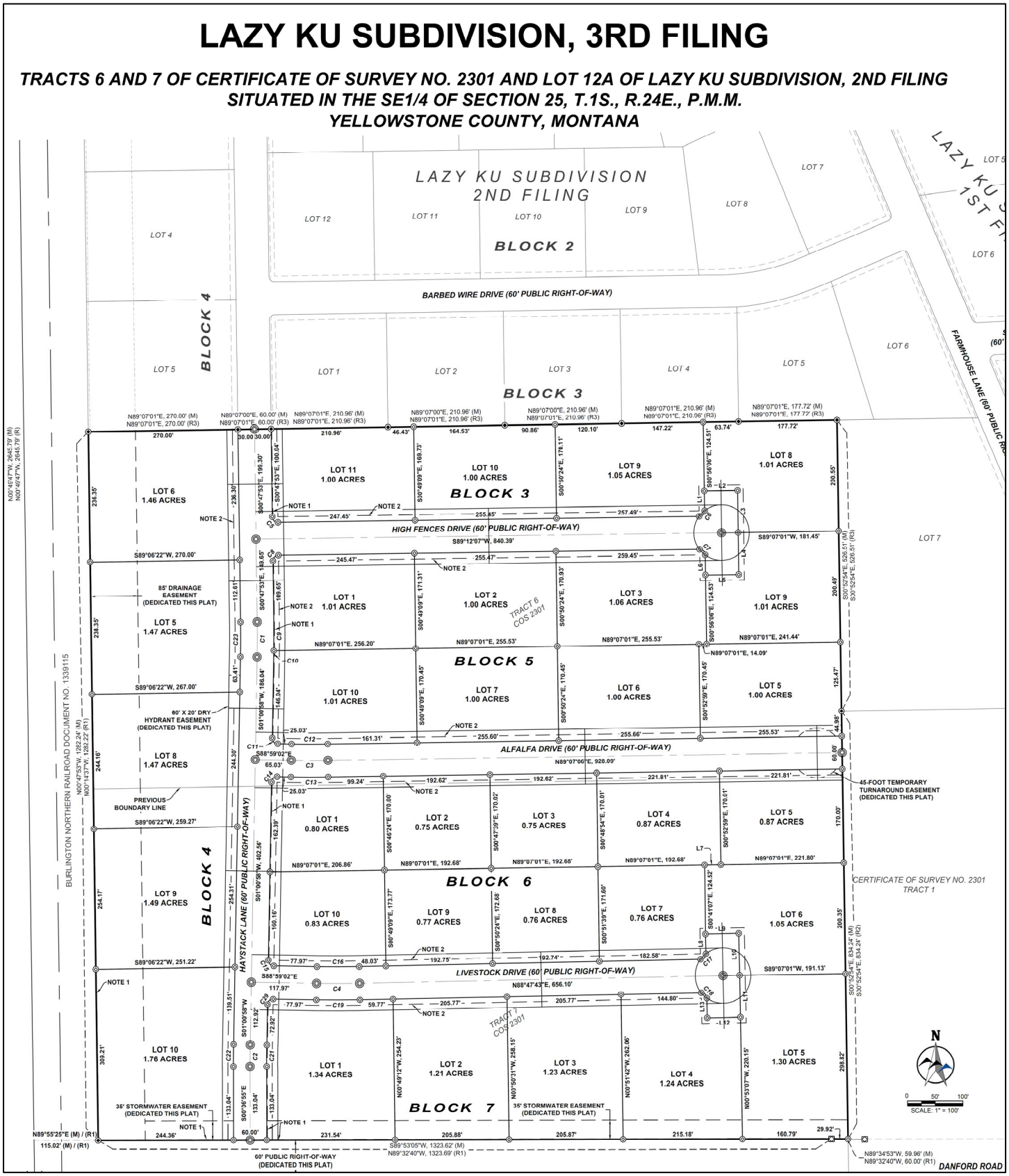


Exhibit 2. Site Plan



Source: Excerpted from drawing by WWC Engineering, 3/20/2025

1.4 Analysis Methods and References

Operational performance was analyzed at the study intersections using the industry-standard methods presented in the USDOT's Highway Capacity Manual (HCM), published in its modern form as Transportation Research Board Special Report 209. The Synchro software package, version 12, was employed as both a data repository and a capacity analysis tool, with reports for each intersection generated using Synchro's application of the assumptions of the HCM's 7th edition, which is the most recent at the time of this study. The HCM methodology for intersection capacity analysis produces delay estimates for each turning movement (or "lane group" when multiple turning movements operate from the same lane).

As indicated in **Exhibit 3**, these delay estimates are assigned Level of Service (LOS) grades that range from A (best) to F (worst). It's also important to note that for unsignalized intersections with only side-street stop sign control, LOS for the intersection is represented by the LOS for the worst lane group, which is most often on the stop-controlled side street approach. "T" intersections with side-street stop control also fall under this category.

Exhibit 3. LOS Definitions

LOS	Delay, seconds per vehicle
A	0 - 10.0
B	10.1 - 15.0
C	15.1 - 25.0
D	25.1 - 35.0
E	35.1 - 50.0
F	50.1 or more

Source: HCM 7th Edition

Operations impacts are determined by whether LOS relates to acceptability standards. According to the Yellowstone County subdivision regulations, the County employs a peak hour intersection LOS standard of C or better. If the future LOS at any intersection or approach is predicted to be lower than C, traffic mitigation measures such as turning lanes, roundabouts, all-way stops, or traffic signals may be required.

2 EXISTING AND BASE CONDITIONS

2.1 Streets and Intersections

S 72nd St W is a north-south rural major collector in MDT Financial District 5, giving it MDT functional class designation RMA_RMC_345, with one travel lane in each direction and a speed limit of 60 mph in the study area. For those not using Interstate 90 to the south, it serves as part of the primary "backroad" route between Laurel and Billings, connecting to Neibauer Road and King Ave W to the north of the study area. At its southern terminus after crossing over railroad tracks, it turns into Old US 10, which connects to Interstate 90 and Laurel's Main Street. It has no exclusive turn lanes at any of the study intersections and it has no multimodal facilities.

Neibauer Road is a rural east-west minor collector with one travel lane in each direction and a speed limit of 50 mph in the study area. For the residences and farms northeast of Laurel, it provides access to several north-south routes such as S 72nd St W, 56th St W, and Shiloh Road at its eastern terminus near ZooMontana and Costco. Neibauer serves as part of a secondary "backroad" route between Laurel and southwest Billings for those not using Interstate 90 to the south. Trucks with a gross vehicle weight exceeding 16,000 lbs. are prohibited from driving on Neibauer Road due to Yellowstone County ordinance 07-107. Neibauer Road has no exclusive turn lanes at any of its study area intersections and no multimodal facilities in the study area.

Danford Road is an east-west local road with one travel lane in each direction and a speed limit of 50 mph in most of the study area. The speed limit is 45 mph west of 80th. It connects local farms and residences to north-south routes such as S 72nd St W, S 64th St W, and S 56th St W, which crosses under Interstate 90 and intersects with S Frontage Road. Danford Road has no exclusive turn lanes at any of its intersections and it has no multimodal facilities in the study area.

S 80th St W is a north-south local road with one travel lane in each direction and a speed limit of 50 mph in the study area. It connects residential neighborhoods, farms, and some storage facilities to the east-west routes between Laurel and Billings such as Neibauer Road, King Avenue W, and Danford Road at its southern

terminus. Trucks with a gross vehicle weight exceeding 16,000 lbs. are prohibited from driving on segments of S 80th St W to the south of King Avenue W due to Yellowstone County ordinance 07-107. There are no exclusive turn lanes, sidewalks, or other multimodal facilities on S 80th St W.

Seitz-Ronan Road is a north-south local road with one travel lane in each direction and a speed limit of 50 mph in the study area. For some farms and residential neighborhoods in northeast Laurel, it provides access to Laurel's Main Street, which connects to Interstate 90, as well as to Laurel Airport Road and Danford Road at its northern terminus. Trucks with a gross vehicle weight exceeding 16,000 lbs. are prohibited from driving on Seitz-Ronan Road due to Yellowstone County ordinance 07-107. There are no exclusive turn lanes, sidewalks, or other multimodal facilities on Seitz-Ronan Road.

Vista Buttes Drive is a short east-west local road with no marked travel lanes or posted speed limits. It provides access to the existing road network for residents of the private Vista Buttes subdivision. Its western terminus is at Vista Loop Drive, and its eastern terminus is at S 80th St W. There are no exclusive turn lanes, sidewalks, or other multimodal facilities on Vista Buttes Drive.

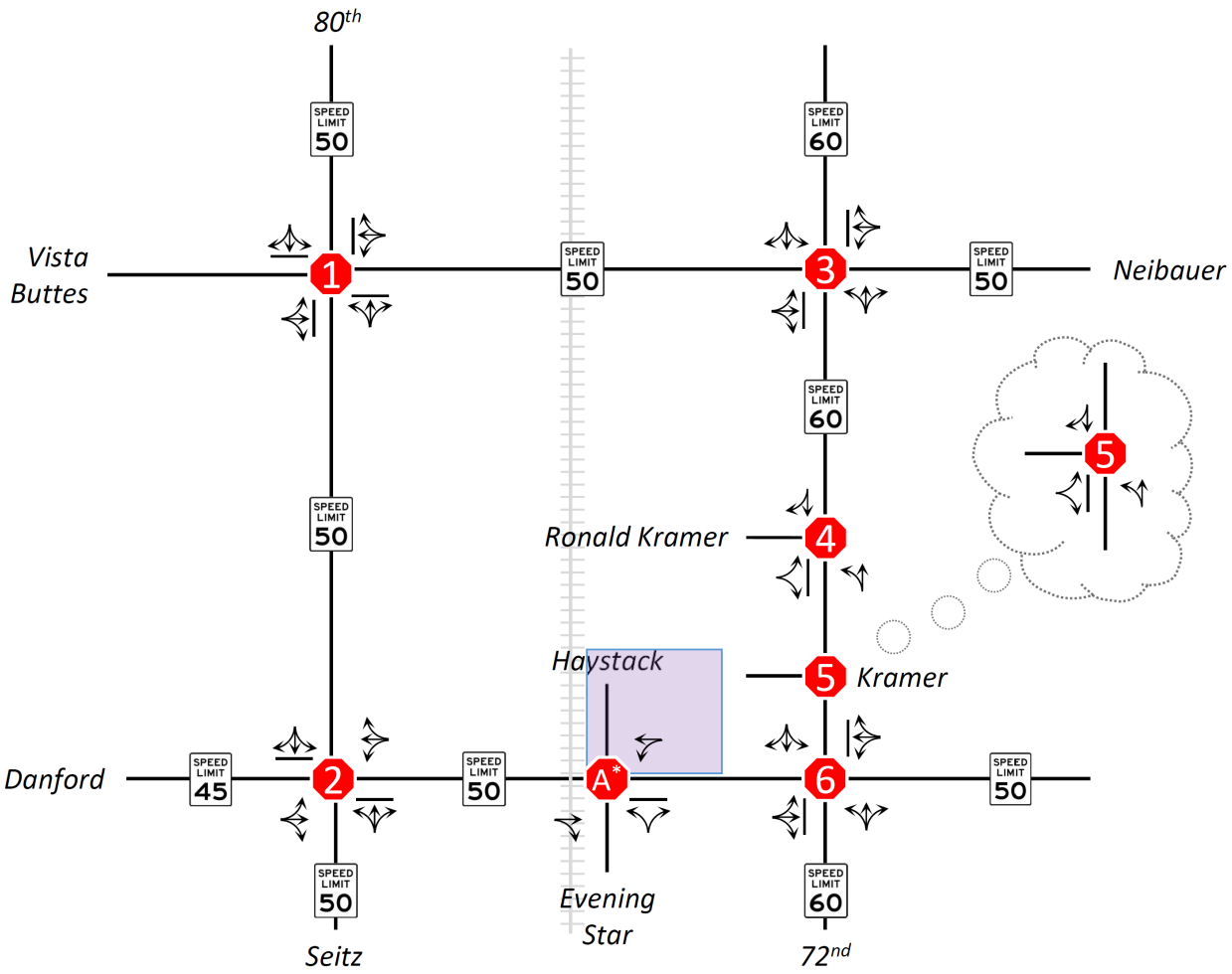
Kramer Way and **Ronald Kramer Drive** are short east-west local roads with no marked travel lanes or posted speed limits. They provide access to the existing road network for the Lazy KU residential subdivision. Both have eastern termini at S 72nd St W and western termini at Farmhouse Lane. There are no exclusive turn lanes, sidewalks, or other multimodal facilities on Kramer Way or Ronald Kramer Drive.

No signal-controlled intersections currently exist within the study area. All study intersections are currently two-way stop controlled. The intersections of Danford Road at S 80th St W and at Seitz-Ronan Road are offset by a short distance (125 feet or less in each case), so they are treated as a single four-way intersection for the purposes of this study. The same applies to the intersections of S 80th St W at Neibauer Road and at Vista Buttes Drive. **Exhibit 4** shows traffic control and lane arrangements schematically at each existing intersection, as well as posted speed limits on selected road segments.

2.2 HISTORICAL TRAFFIC VOLUMES

Daily traffic information was gathered from the Montana Department of Transportation's (MDT's) public-facing data resource, the Transportation Data Management System. The MDT maintains an annual, short-term traffic counting station on S 72nd St W between Laurel Airport Road and Danford Road from which the annualized average daily traffic (AADT) data was used in this study. These volumes were examined over ten years for a historical perspective. The historical AADT volumes are shown in **Exhibit 5**.

Exhibit 4. Road and Intersection Basics



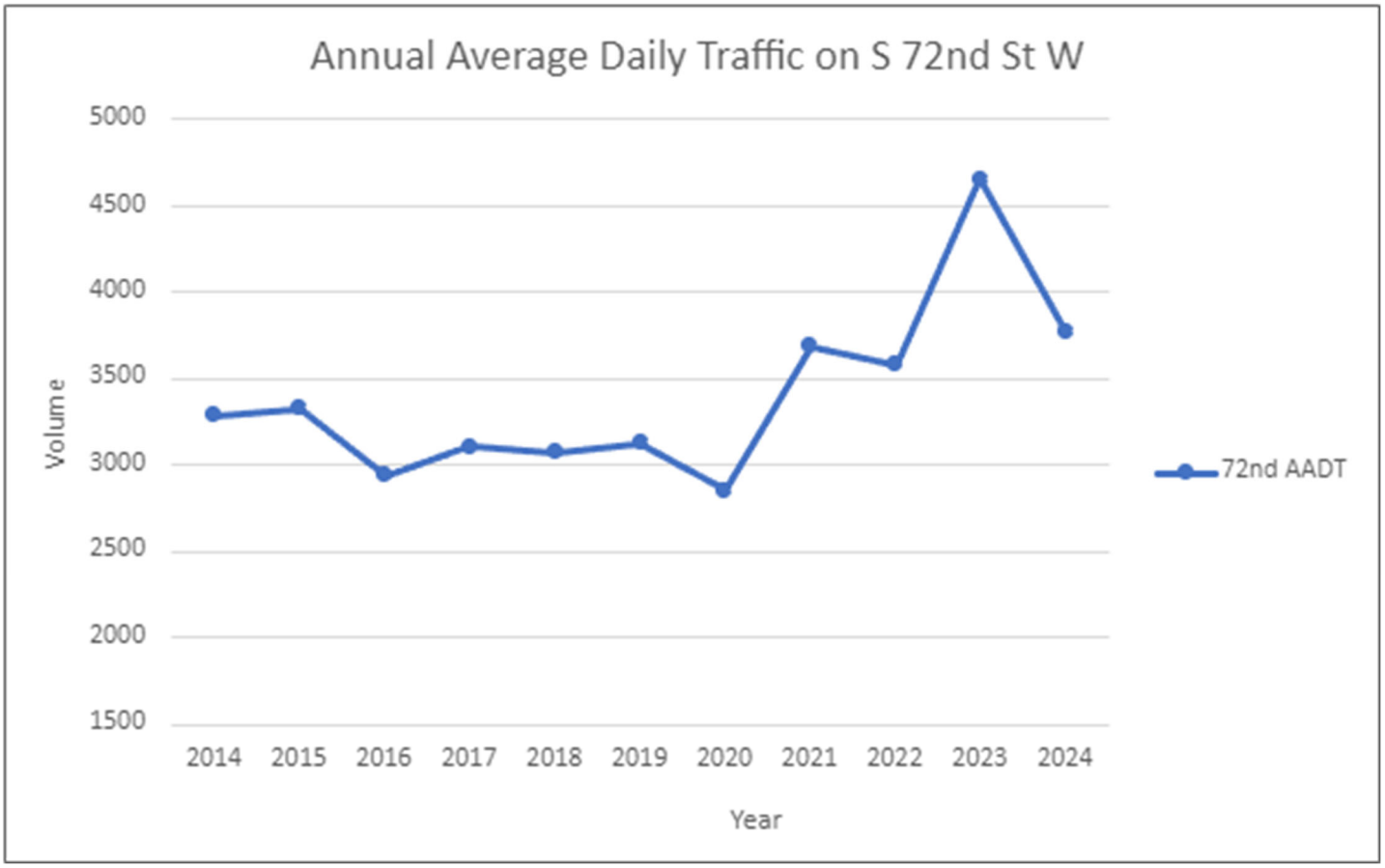
* Note: "A" denotes location of new access. Haystack Lane was under construction for 3rd Filing at the time of this study.

TRAFFIC & TRANSPORTATION CONSULTING

Legend

- # Study intersection (stop)
- Lane group with stop sign
- Lane group without stop sign
- Project Site
- SPEED LIMIT 50 Speed Limit (Selected Locations)

Exhibit 5. Historical AADT



Source: MDT Transportation Data Management System: retrieved 11/25/2024

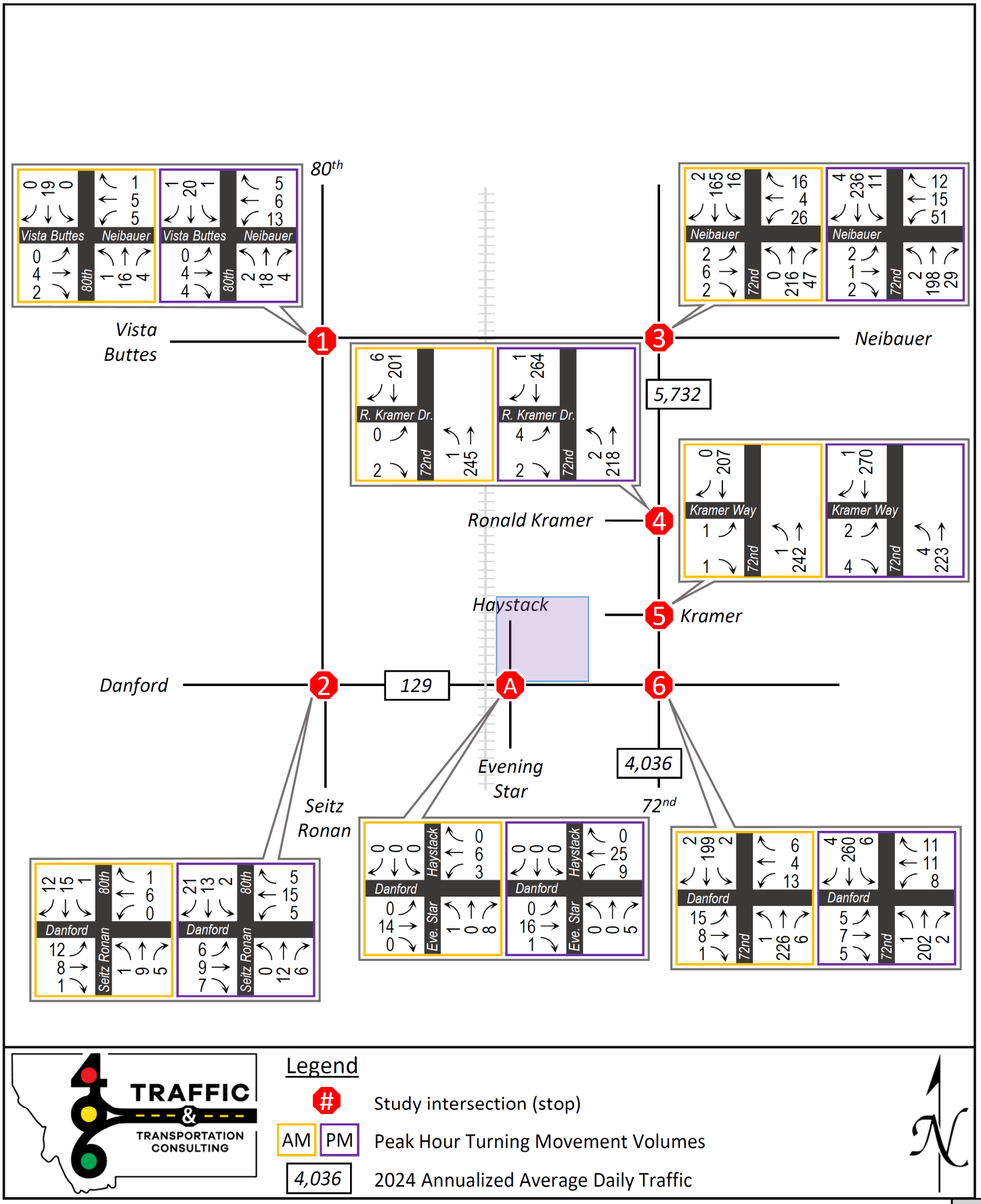
A few trends can be discerned from these data. The COVID-19 pandemic caused a slight decrease in traffic in 2020, but traffic levels quickly rebounded to exceed pre-pandemic levels in 2021. The sharp increase in traffic in 2023 was likely caused by the major MDT project on Interstate 90, which temporarily narrowed the freeway to one travel lane in each direction and closed the 56th underpass. For the duration of construction, this made 72nd a much more attractive route between Laurel and the northern parts of Billings than before. Traffic on 72nd drastically dropped after construction was complete, the 56th underpass was reopened, and all lanes of the interstate returned to normal operations. Aside from these events, a very slow average growth rate has been observed over the past decade. The 10-year average growth rate of just over 2% per year is used for this project's background traffic.

2.3 Recent Traffic Counts

The three study intersections were counted for this project from 7-9 a.m. and from 4-6 p.m. on Wednesday, March 12, 2025 using Miovision cameras. Counts were summarized for analysis in 15-minute increments. Based on total entering volume (TEV), the AM peak hour was identified from these counts as starting at 7:15 a.m. at the intersections on 80th and at 7:30 a.m. at the intersections on 72nd. The PM peak hour started at 4:00 p.m. at all study intersections except the 80th at Danford intersection, where it started at 5:00 p.m. The raw intersection traffic counts are provided in **Appendix A**.

Counts at intersections were adjusted for seasonal variation using the MDT's 2023 seasonal adjustment factor for a March Wednesday on a rural minor arterial/major collector in MDT financial district 5, which is 1.17. Existing annualized traffic volumes based on these counts are shown in **Exhibit 6**. Note that turning volumes for the Danford intersection at Evening Star were estimated using standard ITE rates for the 13 existing single-family homes to the south and an assumption of a 90%/10% east-west split.

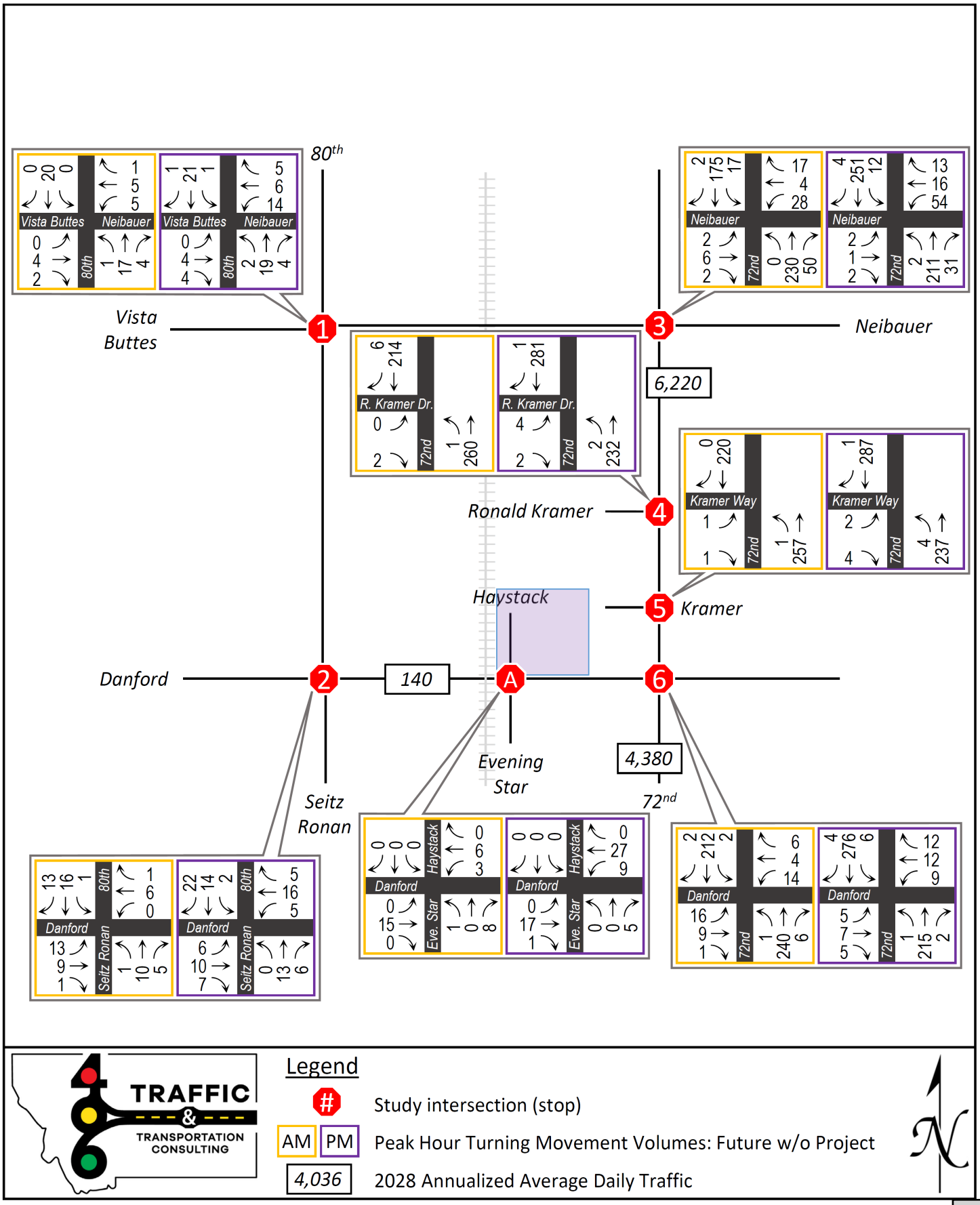
Exhibit 6. Existing Annualized Traffic Volumes



2.4 PROJECTED TRAFFIC WITHOUT THE PROPOSED DEVELOPMENT

Using the aforementioned background growth rate, existing traffic was projected three years into the future (2028). This future study year was chosen to reflect the time needed for final permitting activities, remaining site preparation/utility work, and the leasing and furnishing of individual industrial lots, along with an additional year to account for traffic associated with the project to stabilize. **Exhibit 7** shows 2028 traffic volumes without the project.

Exhibit 7. Projected 2028 No Project Traffic Volumes



3 TRIP GENERATION AND DISTRIBUTION

3.1 TRIP GENERATION

Trip generation rates, or equations as applicable, were taken from the Institute of Transportation Engineers (ITE) Trip Generation package's 11th edition. ITE trip generation data, when aggregated across enough varied sites, produce both simple average rates and best-fit equations, either linear or logarithmic, to help the analyst derive proper estimates for their situation. Equations are generally preferred over rates, especially for larger sites where trip generation per unit of land use can diminish with increasing project size.

Three types of adjustments to trip generation were evaluated for this project. First, a discount is sometimes taken to reflect internal capture where multiple uses are present in a single project site. All of the project site's lots are residential, so no such discount is taken for this single-use project. Second, modal reductions are sometimes taken where facilities and services for walking, cycling, and transit are more robust than in a "general urban/suburban" environment in which most ITE uses are studied. No such facilities exist near the project site, so no modal reductions are applied. Finally, some land uses attract trips that were already using the adjacent or nearby road network by virtue of improved convenience over a similar site that would have been used before. These are called "pass-by" and "diverted-linked" trips. Pass-by trips are those on streets bordering the site, while diverted-linked trips are those that might go slightly out of their way to stop at the establishment on their way to their destination. These reductions do not apply to this project because it is located far from any major roadways where travelers might see it on their way to another destination. In addition, few (if any) travelers would be inclined to stop at a residence on a regular basis on their way to another destination.

The summary of projected trip generation for the project is provided in **Exhibit 8**. Note that in/out splits are only meaningful for peak hour traffic.

Exhibit 8. Trip Generation

ITE 210: Single-Family	Daily	AM Peak Hour		PM Peak Hour	
Detached Housing	Equation	Equation	In / Out	Equation	In / Out
X = 32 Dwelling Units	Ln(T)=0.92Ln(X)+2.68	Ln(T)=0.91Ln(X)+0.12	25%/75%	Ln(T)=0.94Ln(X)+0.27	63%/37%
Trips (T):	354	26	6 / 20	34	21 / 13

Source: Equations from ITE Trip Generation, 11th Edition.

3.2 TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution has been estimated for the roads surrounding the project site in percentages that add to 100%. Trip distribution and assignment estimates were developed by considering the site's location relative to regional roadways and other major trip generators. Farther from the site, traffic eventually disperses in smaller percentages to other routes. No project trips were assigned to Neibauer Road west of 72nd or to 80th north of Danford Road because there are no prominent trip generators in those directions. Those roads also do not feature well-traveled connections to the existing road network outside of the study area. Trip distribution percentages are shown in **Exhibit 9**.

The project-generated trips presented as peak hour intersection turning movement volumes are shown in **Exhibit 10**, and the estimated total intersection volumes with the project are shown in **Exhibit 11**. These total intersection volumes were calculated by adding the new project trips to the 2028 Background trips.

Exhibit 9. Distribution of Project Trips

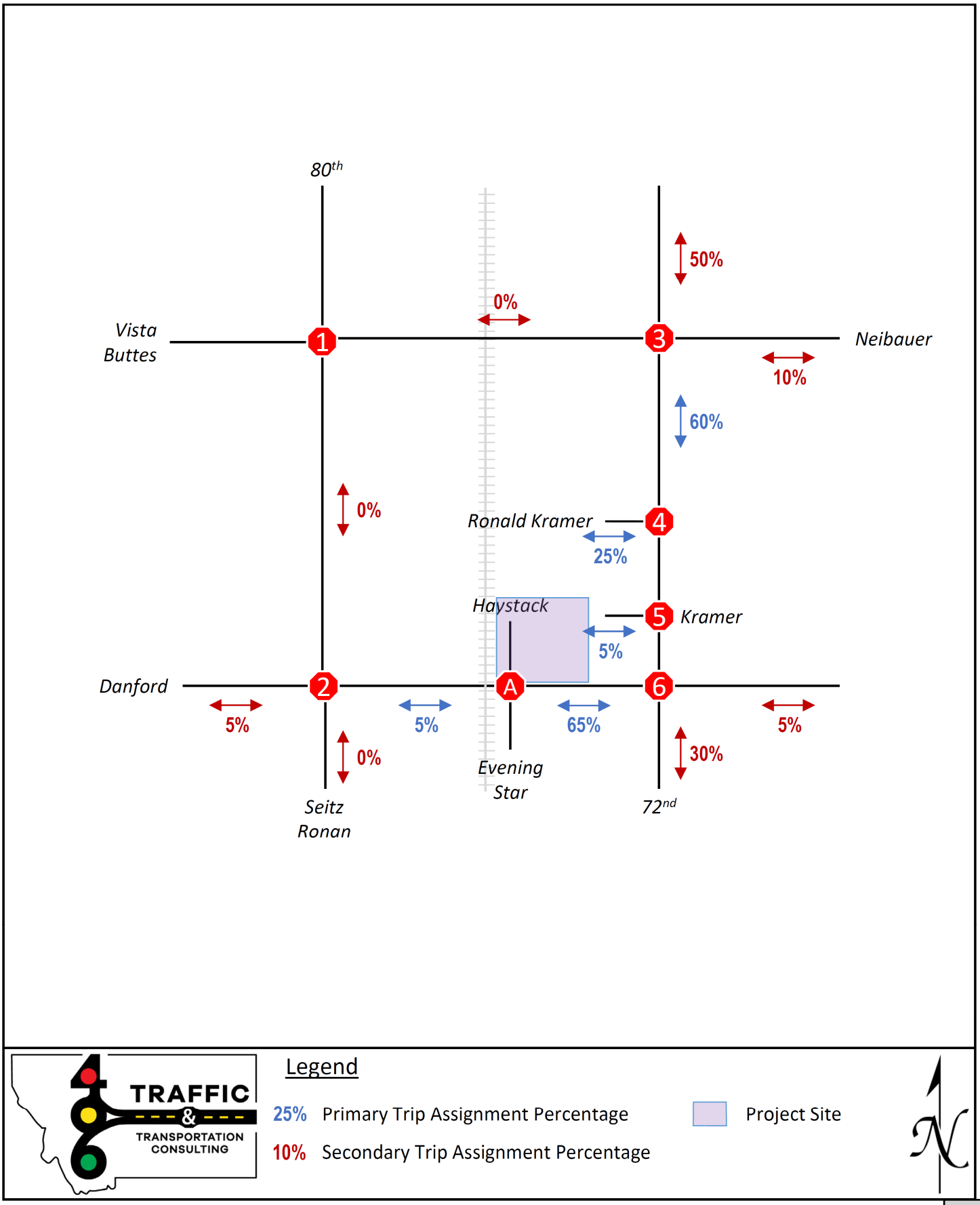


Exhibit 10. Project Trip Assignment

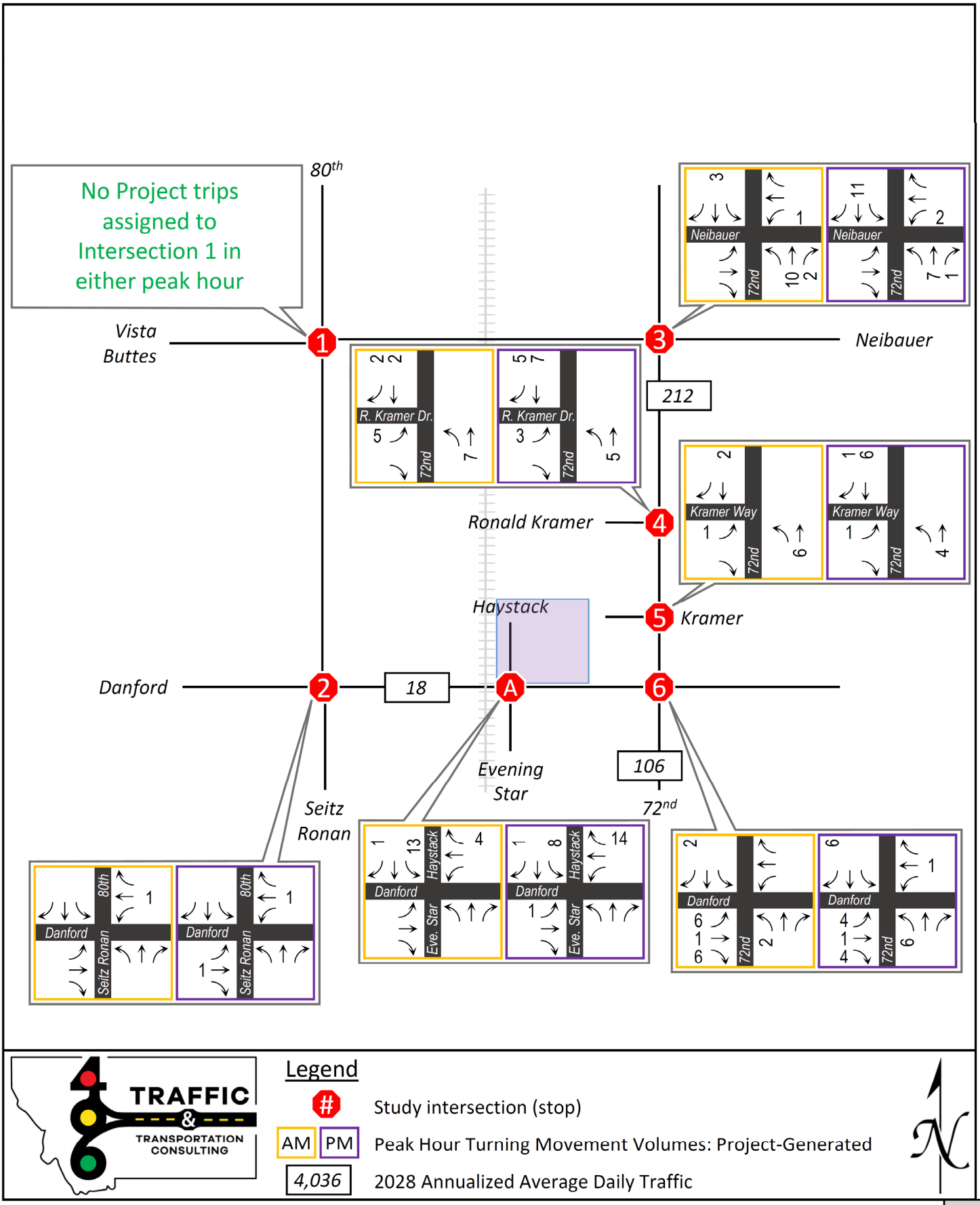
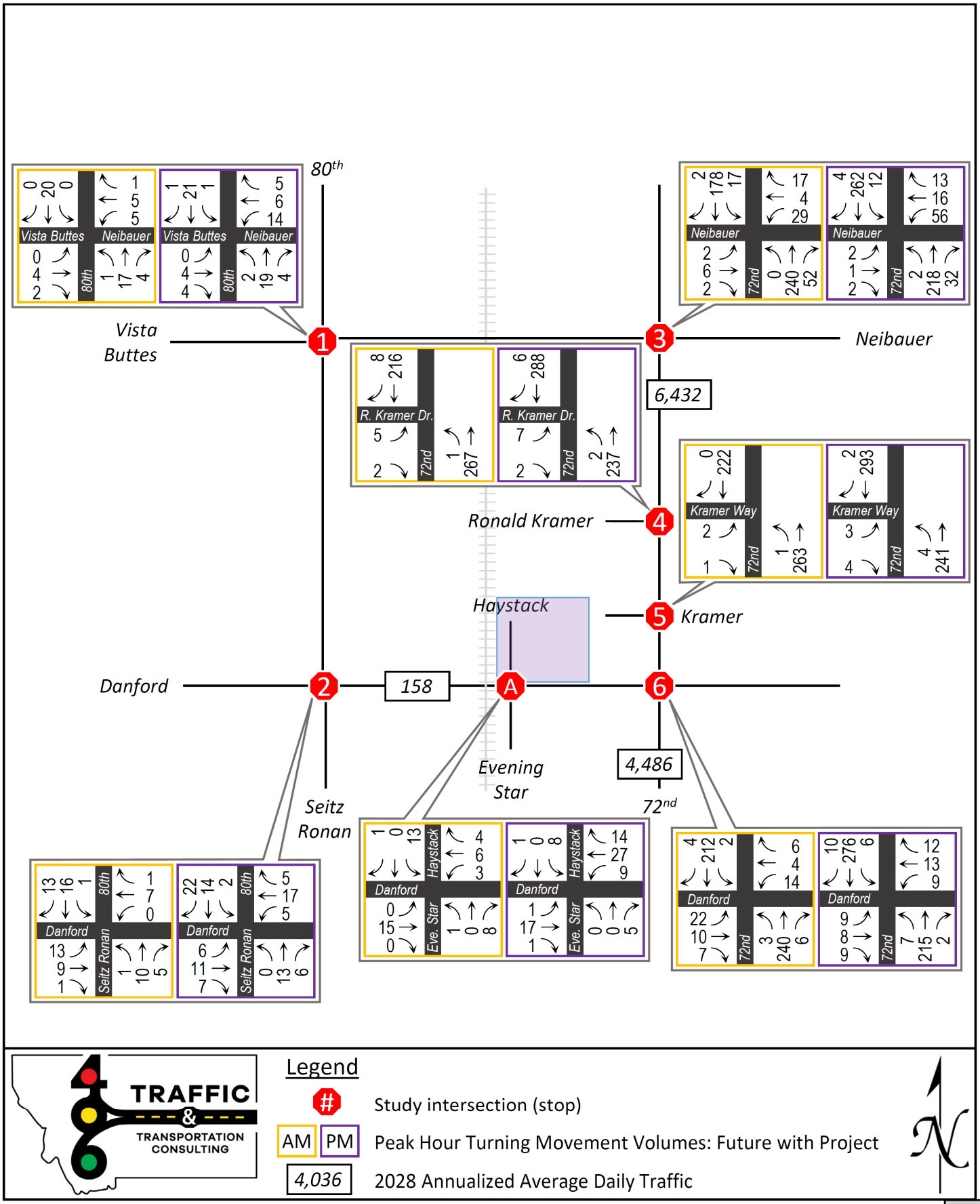


Exhibit 11. 2028 Total Traffic with Project



4 TRAFFIC ANALYSIS RESULTS

4.1 INTERSECTION OPERATIONS

All study intersections operate with two-way stop control (TWSC) in all scenarios. The intersection at the new site access to Danford Road (Haystack Lane) was only analyzed for the Future With Project scenario. The peak hour intersection Level of Service (LOS) and delay results with and without the project are shown in **Exhibit 12**. Analysis software results are provided in Appendix B. As turning restrictions will not be needed at any of the site accesses, all were analyzed with full access allowed.

Exhibit 12. Intersection LOS and Delay Results

		LOS (delay, seconds/vehicle)			*TWSC Worst*
	Intersection	**Existing**	**Future Background**	**Future With Project**	***Lane Group****
AM Peak Hour	1. 80th at Neibauer/Vista Buttes	A (9.0)	A (9.0)	A (9.0)	Westbound
	2. 80th/Seitz Ronan at Danford	A (9.3)	A (9.3)	A (9.3)	Northbound
	3. 72nd at Neibauer	B (12.9)	B (13.3)	B (13.6)	Westbound
	4. 72nd at Ronald Kramer	B (10.1)	B (10.3)	B (11.9)	Eastbound
	5. 72nd at Kramer Way	B (11.7)	B (12.0)	B (12.2)	Eastbound
	6. 72nd at Danford	B (12.8)	B (13.3)	B (13.1)	Eastbound
	7. (A) Haystack/Evening Star at Danford	-	-	A (8.8)	Southbound
PM Peak Hour	1. 80th at Neibauer/Vista Buttes	A (9.1)	A (9.1)	A (9.1)	Westbound
	2. 80th/Seitz Ronan at Danford	A (9.2)	A (9.2)	A (9.2)	Northbound
	3. 72nd at Neibauer	B (13.8)	B (14.4)	B (14.8)	Westbound
	4. 72nd at Ronald Kramer	B (12.1)	B (12.4)	B (12.7)	Eastbound
	5. 72nd at Kramer Way	B (10.8)	B (11.0)	B (11.3)	Eastbound
	6. 72nd at Danford	B (12.5)	B (12.9)	B (13.1)	Eastbound
	7. (A) Haystack/Evening Star at Danford	-	-	A (9.0)	Southbound

* *Worst lane group is the one that determines the intersection LOS at a Two-Way Stop Controlled intersection.*

The results in the table indicate that traffic generated by the project would result in small changes in peak hour delay. No cases indicate a future LOS of C under the assumptions used in this study; all intersections would operate at LOS A or B. In one case, the PM peak hour at Intersection 3, westbound Neibauer traffic would experience average delay in the "With Project" scenario that is very close to the LOS B upper limit of 15.0 seconds per vehicle.

One minor oddity was detected in the results. In the AM peak hour at Intersection 6, eastbound Danford traffic was estimated by Synchro to experience a very slight reduction in delay despite small increases in both approaching and conflicting volume. Inputs leading to this result were double-checked with no apparent direct cause found. With the result still indicating a delay estimate well within the standard, no further investigation was conducted.

With all intersections projected to operate within the peak hour LOS standard documented previously in Section 1.4, no mitigations are necessary to reduce the delay impacts of project-generated traffic.

4.2 AUXILIARY TURN LANES

MDT turn lane analysis was considered for all turning movements with 40 or more right-turning vehicles or 20 or more left-turning vehicles on the free-flowing approaches of public roads at study intersections, for total traffic with the project. This analysis is required in accordance with the MDT *Traffic Engineering Manual*, Section 28.4.1, using the peak hour total traffic volumes shown previously in Exhibit 10 of this report. For left turn analysis, the MDT chart for a 60 mph design speed was used despite some roadway segments in the study area having current 50 mph posted speed limits because posted speed can vary from design speed. The turning movement conditions that qualified and were subject to this analysis are indicated in **Exhibit 13**, as defined by their peak hour and approach direction.

Exhibit 13. Locations Qualified for Auxiliary Turn Lane Analysis

Intersection (**bold** = free-flowing road)	**Right Turns** (40+ vph)		**Left Turns** (20+ vph)	
	AM Peak	PM Peak	AM Peak	PM Peak
1. **80th** at Neibauer/Vista Buttes	-	-	-	-
2. 80th/Seitz Ronan at **Danford**	-	-	-	-
3. **72nd** at Neibauer	NB	-	-	-
4. **72nd** at Ronald Kramer	-	-	-	-
5. **72nd** at Kramer Way	-	-	-	-
6: **72nd** at Danford	-	-	-	-
7. (A) Haystack/Evening Star at **Danford**	-	-	-	-

Only one study area movement qualified for turn lane analysis. At Intersection 3, the northbound total right turn volume with Third Filing traffic would be 52 vehicles in the AM peak hour. While the westbound left turn movement at this location is also high-volume, it's not subject to this analysis because it's a stopped movement rather than a free-flowing one.

The analysis of a potential right turn lane on 72nd at Neibauer (Intersection 3) indicated that such a lane would not be justified, or be close to being justified, in the project buildout year of 2028. The completed chart for auxiliary right turn lane analysis is provided in Appendix C.

5 CRASH HISTORY ANALYSIS

Information reported in this crash history analysis includes the total number of reported crashes, injuries, and fatalities, the crash frequencies, crash rates, and severity indices, and the types of collisions at each of the three study intersections. Crash data were acquired from MDT for the 5-year time frame between January 1, 2019 and December 31, 2023, the most recent such period for which crash data were available at the time of this study.

5.1 CRASH FREQUENCY

The following formula was used to calculate crash frequencies for each of the three study intersections, where CF = crash frequency measured in crashes per year:

$$CF = \frac{Total\ Crashes\ within\ time\ period}{Time\ Period}$$

5.2 CRASH RATE

Crash rates, measured in crashes per million entering vehicles, were computed using the following formula, where CF = crash frequency measured in crashes per year, and DEV = daily entering volume:

$$Crash\ Rate = \left(\frac{CF}{365} \div DEV\right) \times 1{,}000{,}000$$

The crash frequency is divided by 365 days per year to approximate the average number of crashes per day.

To calculate this rate, the project's field data for peak hour entering volume needed to be converted to a daily average. The average daily entering volumes for the study period were calculated using the following formula, where DEV = daily entering volume, Peak Hour TEV = the total entering volume during the study's current PM peak hour, GrowthFactor = the estimated average annual growth rate assumed for this study based on MDT historical data, and k = a K-Factor from MDT's public-facing traffic count database system for the primary location on 72nd where AADT is reported (south of Danford Road):

$$DEV = \frac{Peak\ Hour\ TEV \times k}{GrowthFactor^3}$$

The Peak Hour TEV is divided by the annual growth rate cubed (to represent three years of growth) and multiplied by a 2021 K-Factor to estimate the average daily entering volumes across the five-year period from which crash data is available. For this calculation, the average DEV is assumed to have occurred in 2021, the middle year of that period.

5.3 CRASH SEVERITY INDEX

The formula below was used to calculate the crash severity index for each of the three study intersections, where K = the number of fatal crashes, ABC = the number of crashes involving an injury of any severity, and PDO = the number of property damage only crashes:

$$Severity\ Index = \frac{(8 \times K) + (3 \times ABC) + (1 \times PDO)}{Total\ Crashes}$$

This formula assigns a weight to each crash severity. For example, an injury crash is considered three times as severe as a PDO crash in this calculation. These weighting coefficients are used by MDT and were provided by a Yellowstone County designee for use in this study.

5.4 CRASH ANALYSIS SUMMARY

Exhibit 14 tabulates the results of the study area crash history analysis.

Exhibit 14. Crash History Analysis Results

Reported Crash Types, Injuries, and Fatalities:						
Study Intersection	80th at Neibauer	80th at Danford	72nd at Neibauer	72nd at Ronald Kramer	72nd at Kramer	72nd at Danford
Right angle			2			2
Rear-End				1		
Roll Over	1				1	
Fixed Object		3	2			
Total Reported Crashes	1	3	4	1	1	2
Total Number of Fatalities	0	0	0	0	0	0
Total Number of Injuries	1	0	0	0	0	7
Crash Severities, Frequencies, and Rates:						
Study Intersection	80th at Neibauer	80th at Danford	72nd at Neibauer	72nd at Ronald Kramer	72nd at Kramer	72nd at Danford
Property Damage Only	0	3	4	1	1	0
Suspected Minor Injury	1	0	0	0	0	1
Suspected Serious Injury	0	0	0	0	0	1
Fatal Crashes	0	0	0	0	0	0
Crash Frequency (crashes/year)	0.2	0.6	0.8	0.2	0.2	0.4
Daily Entering Volume, crash study midpoint year	767	994	5,539	4,831	4,959	5,136
Crash Rate (crashes per million entering vehicles)	0.71	1.65	0.40	0.11	0.11	0.21
Severity Index	3.0	1.0	1.0	1.0	1.0	3.0

The highest crash frequency was reported at the intersection of 72nd at Neibauer, which was also estimated to have had the highest daily traffic volumes. The highest crash rate is reported at the intersection of 80th/Seitz-Ronan at Danford. All of the crashes at this intersection were fixed object collisions, the most common collision type among the total number of crashes reported in the study area. It was dark and ice and snow were reported on the road at the time of two of these fixed object collisions. At the intersections with the highest

severity indices, 80th at Neibauer and 72nd at Danford, every reported crash had injuries reported. Both of the crashes at the intersection of 72nd at Danford were (a) right-angle collisions, (b) occurred in the evening, and (c) were associated with several injuries because the vehicles involved were transporting multiple occupants who were reported injured. Right-angle collisions are often related to the failure of a side-street driver to properly yield the right of way when facing a stop sign. At the right-angle crash involving only minor injuries, the stop sign for westbound traffic was reportedly inoperative, missing, or obscured. The only crashes reported at the intersections of 80th at Neibauer and 72nd at Kramer Way were roll-overs, and only a rear-end collision was reported at the intersection of 72nd at Ronald Kramer Drive, during which sand, soil, and dirt were blowing around. No fatal crashes were reported at any of the six study intersections during the 5-year study period.

6 INTERSECTION COST PARTICIPATION

The net new trips identified in this report are subject to examination under Yellowstone County's cost participation program to the extent that they would travel through studied intersections. Cost participation has been estimated for the three public-street intersections in this study under the assumptions that (a) the peak with the highest percentage of trips added to the intersection's critical volume pairs governs cost contribution and (b) site traffic must result in an increase of 2% in total critical-movement volume, after project trips are considered, to be subject to cost participation. The project trips used in this calculation are those shown previously in Exhibit 10. Once it is demonstrated that an intersection is eligible, the applicant pays the entire percentage, not just the marginal part above 2%, unless another arrangement is made with the County. **Exhibit 15** shows the intersection cost participation summary for project trips.

Exhibit 15. Intersection Cost Participation

Intersection	AM	PM	Higher Peak, if 2% or Greater
1. 80th at Neibauer/Vista Buttes	-	-	-
2. 80th/Seitz Ronan at Danford	0.1%	0.1%	n/a
3. 72nd at Neibauer	0.9%	1.1%	n/a
4. 72nd at Ronald Kramer	1.1%	0.9%	n/a
5. 72nd at Kramer Way	0.6%	0.6%	n/a
6. 72nd at Danford	0.7%	0.9%	n/a
7. Haystack/Evening Star at Danford	1.1%	0.8%	n/a
	Total Participation %:		**0%**
		x $500,000	**$0**

Note: Intersection 1 wasn't analyzed because it would carry no project trips.

None of the intersections studied would experience a high enough critical-movement volume increase due to the project to require participation in the cost of future intersection improvements. The detailed cost participation calculations for project trips are provided in Appendix D.

7 CONCLUSIONS AND RECOMMENDATIONS

The Lazy KU Subdivision Third Filing has been studied in accordance with Yellowstone County TIS guidelines and the latest traffic engineering industry standards and references for traffic impact analysis. Because no traffic impacts are indicated with respect to the County's LOS C standard for peak hour intersection operations, no mitigations for traffic operations are recommended as a result of this project. No auxiliary turn lanes would be warranted with or without this project based on design hour volume, per MDT guidelines and procedures. All study intersections would have critical traffic shares well below the 2% threshold for cost participation so no such contribution is required.

This concludes the Lazy KU Subdivision Third Filing Traffic Impact Study.

Appendix A: Raw Traffic Count Data

Intersection 1. 80th St & Neibauer Rd/Vista Buttes Dr
Start Date 3/12/2025
Start Time 7:00 AM

	S 80th Street W Southbound				Neibauer Road Westbound				S 80th Street W Northbound				Vista Buttes Drive Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
7:00 AM	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7:15 AM	0	6	0	0	0	1	0	0	1	1	0	0	0	1	0	0
7:30 AM	0	4	0	0	0	2	1	0	1	4	1	0	0	1	0	0
7:45 AM	0	3	0	0	1	0	1	0	1	6	0	0	1	1	0	0
8:00 AM	0	3	0	0	0	1	2	0	0	3	0	0	1	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0
8:30 AM	0	4	2	0	0	1	0	0	0	3	0	0	0	0	0	0
8:45 AM	0	4	0	0	1	1	4	0	0	2	0	0	0	0	1	0
4:00 PM	0	4	1	0	1	0	3	0	1	3	1	0	2	1	0	0
4:15 PM	0	7	0	0	1	2	3	0	0	6	0	0	0	1	0	0
4:30 PM	0	2	0	0	0	0	3	0	2	4	1	0	1	1	0	0
4:45 PM	1	4	0	0	2	3	2	0	0	2	0	0	0	0	0	0
5:00 PM	0	6	2	0	0	0	0	0	0	3	0	0	0	3	0	0
5:15 PM	0	7	0	0	0	0	2	0	0	4	0	0	0	0	0	0
5:30 PM	1	7	0	0	0	1	4	0	2	5	0	0	0	0	0	0
5:45 PM	0	3	0	0	0	0	1	0	0	1	1	0	0	1	0	0

Intersection 2. 80th St & Seitz Ronan Rd/Danford Dr
Start Date 3/12/2025
Start Time 7:00 AM

	S 80th Street W Southbound				Danford Road Westbound				Seitz Ronan Road Northbound				Danford Road Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
7:00 AM	0	3	0	0	0	1	1	0	1	0	1	0	0	0	0	0
7:15 AM	2	3	1	0	0	2	0	0	1	1	0	0	1	0	1	0
7:30 AM	1	6	0	0	1	1	0	0	2	4	0	0	0	5	2	0
7:45 AM	4	2	0	0	0	1	0	0	0	1	1	0	0	1	4	0
8:00 AM	3	2	0	0	0	1	0	0	1	2	0	0	0	1	3	0
8:15 AM	0	1	0	0	0	1	0	0	1	1	0	0	2	3	3	0
8:30 AM	2	2	0	0	0	0	0	0	1	1	0	0	0	2	2	0
8:45 AM	3	5	1	0	0	2	0	0	0	1	0	0	0	2	2	0
4:00 PM	2	4	0	1	0	2	1	0	3	1	0	0	0	1	1	0
4:15 PM	4	7	0	0	0	1	0	0	2	3	0	0	0	2	4	0
4:30 PM	4	2	0	0	1	2	1	0	3	4	1	0	0	1	1	0
4:45 PM	4	1	0	0	0	1	0	0	3	1	0	0	0	1	0	0
5:00 PM	4	1	1	0	0	6	3	0	1	3	0	0	2	4	1	0
5:15 PM	8	0	0	0	1	3	0	0	1	2	0	0	2	2	2	0
5:30 PM	4	8	1	0	1	2	1	0	2	3	0	0	1	2	2	0
5:45 PM	2	2	0	0	2	2	0	0	1	2	0	0	1	0	0	0

Intersection 3. 72nd St & Neibauer Rd
Start Date 3/12/2025
Start Time 7:00 AM

	S 72nd Street W Southbound				Neibauer Road Westbound				S 72nd Street W Northbound				Neibauer Road Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
7:00 AM	0	23	4	0	1	1	4	0	8	38	0	0	0	0	0	0
7:15 AM	0	26	1	0	1	1	0	0	10	32	0	0	0	1	1	0
7:30 AM	1	32	3	0	3	1	2	0	21	57	0	0	1	2	1	0
7:45 AM	0	40	6	0	5	2	9	0	13	48	0	0	1	1	0	0
8:00 AM	1	35	3	0	4	0	10	0	4	43	0	0	0	0	0	0
8:15 AM	0	34	2	0	2	0	1	0	2	37	0	0	0	2	1	0
8:30 AM	0	25	1	0	1	1	5	0	7	48	0	0	0	1	0	0
8:45 AM	1	40	2	0	0	4	6	0	3	29	1	0	0	0	1	0
4:00 PM	1	53	3	0	1	3	10	0	9	47	1	0	1	0	1	0
4:15 PM	0	52	1	0	2	6	10	0	8	43	0	0	1	0	1	0
4:30 PM	0	45	1	0	1	2	10	0	3	35	0	0	0	1	0	0
4:45 PM	2	52	4	0	6	2	14	0	5	44	1	0	0	0	0	0
5:00 PM	0	53	1	0	1	3	15	0	3	42	0	0	1	4	0	0
5:15 PM	1	40	0	0	1	1	13	0	5	45	1	0	0	0	0	0
5:30 PM	1	47	0	0	1	5	10	0	3	35	0	0	0	3	0	0
5:45 PM	3	39	2	0	2	0	11	0	1	16	0	0	1	1	0	0

Intersection 4. 72nd St & Ronald Kramer Dr
Start Date 3/12/2025
Start Time 7:00 AM

	S 72nd Street W Southbound				n/a Westbound				S 72nd Street W Northbound				Ronald Kramer Drive Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
7:00 AM	1	33		0						41	0	0	0		0	0
7:15 AM	2	24		0						32	0	0	0		0	0
7:30 AM	1	43		0						60	1	0	1		0	0
7:45 AM	3	44		0						62	0	0	1		0	0
8:00 AM	1	43		0						48	0	0	0		0	0
8:15 AM	0	42		0						39	0	0	0		0	0
8:30 AM	2	29		0						49	0	0	0		0	0
8:45 AM	1	40		0						31	0	0	0		0	0
4:00 PM	0	64		0						55	1	0	1		1	0
4:15 PM	0	55		0						51	0	0	1		1	0
4:30 PM	0	49		0						33	1	0	0		1	0
4:45 PM	1	58		0						47	0	0	0		0	0
5:00 PM	0	63		0						43	0	0	1		1	0
5:15 PM	0	54		0						49	0	0	0		0	0
5:30 PM	3	50		0						37	0	0	0		1	0
5:45 PM	0	44		0						17	0	0	0		0	0

Intersection 5. 72nd St & Kramer Way
Start Date 3/12/2025
Start Time 7:00 AM

	S 72nd Street W Southbound				n/a Westbound				S 72nd Street W Northbound				Kramer Way Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
7:00 AM	0	32		0						42	0	0	0		0	0
7:15 AM	0	26		0						32	0	0	0		0	0
7:30 AM	0	43		0						62	0	0	0		0	0
7:45 AM	0	48		0						62	1	0	1		0	0
8:00 AM	0	43		0						45	0	0	0		1	0
8:15 AM	0	43		0						38	0	0	0		0	0
8:30 AM	0	26		0						50	1	0	1		0	0
8:45 AM	0	39		0						31	0	0	0		0	0
4:00 PM	0	63		0						56	1	0	1		0	0
4:15 PM	0	58		0						52	2	0	0		1	0
4:30 PM	1	49		0						36	0	0	0		1	0
4:45 PM	0	61		0						47	0	0	2		0	0
5:00 PM	1	62		0						42	1	0	1		0	0
5:15 PM	0	54		0						49	0	0	2		1	0
5:30 PM	0	50		0						38	0	0	1		0	0
5:45 PM	0	45		0						20	0	0	0		0	0

Intersection 6. 72nd St & Danford Rd
Start Date 3/12/2025
Start Time 7:00 AM

	S 72nd Street W Southbound				Danford Road Westbound				S 72nd Street W Northbound				Danford Road Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
7:00 AM	0	33	0	0	1	0	1	0	1	41	0	0	1	0	0	0
7:15 AM	0	26	0	0	1	2	0	0	0	29	0	0	2	1	2	0
7:30 AM	1	38	1	0	2	1	2	0	3	58	0	0	0	3	4	0
7:45 AM	1	47	0	0	1	2	3	0	0	58	0	0	0	1	5	0
8:00 AM	0	43	0	0	1	0	2	0	1	42	1	0	0	1	3	0
8:15 AM	0	42	1	0	1	0	4	0	1	35	0	0	1	2	1	0
8:30 AM	0	26	2	0	0	1	0	0	2	48	0	0	0	0	2	0
8:45 AM	1	39	0	0	0	1	1	0	0	29	0	0	0	0	2	0
4:00 PM	0	61	3	0	4	5	2	0	1	51	0	0	0	0	0	0
4:15 PM	1	54	1	0	1	2	2	0	0	48	1	0	1	2	2	0
4:30 PM	1	47	1	0	2	1	3	0	0	32	0	0	2	2	0	0
4:45 PM	1	60	0	0	2	1	0	0	1	42	0	0	1	2	2	0
5:00 PM	0	62	1	0	1	11	4	0	1	38	0	0	0	0	3	0
5:15 PM	1	55	0	0	1	2	2	0	1	47	1	0	1	1	1	0
5:30 PM	4	47	0	0	0	3	3	0	2	35	0	0	0	1	2	0
5:45 PM	2	42	1	0	0	4	2	0	3	15	1	0	2	0	2	0

Appendix B: Analysis Software Output

Scenario Order:

Existing AM

Existing PM

Future Background AM

Future Background PM

With Project AM

With Project PM

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	4	2	5	5	1	1	16	4	0	19	0
Future Vol, veh/h	0	4	2	5	5	1	1	16	4	0	19	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	11	11	11	13	13	13
Mvmt Flow	0	5	2	6	6	1	1	19	5	0	22	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	46	48	22	48	45	21	22	0	0	23	0	0
Stage 1	22	22	-	23	23	-	-	-	-	-	-	-
Stage 2	24	26	-	24	22	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.21	-	-	4.23	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.299	-	-	2.317	-	-
Pot Cap-1 Maneuver	961	848	1061	958	850	1062	1537	-	-	1523	-	-
Stage 1	1001	881	-	1000	880	-	-	-	-	-	-	-
Stage 2	999	878	-	999	881	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	952	847	1061	950	850	1062	1537	-	-	1523	-	-
Mov Cap-2 Maneuver	952	847	-	950	850	-	-	-	-	-	-	-
Stage 1	1001	881	-	999	879	-	-	-	-	-	-	-
Stage 2	991	877	-	991	881	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.99	9.01	0.35	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	82	-	-	908	910	1523	-	-
HCM Lane V/C Ratio	0.001	-	-	0.008	0.014	-	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	9	9	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

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	12	8	1	0	6	1	1	9	5	1	15	12
Future Vol, veh/h	12	8	1	0	6	1	1	9	5	1	15	12
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	69	69	69	69	69	69	69	69	69	69	69	69
Heavy Vehicles, %	0	0	0	17	17	17	15	15	15	4	4	4
Mvmt Flow	17	12	1	0	9	1	1	13	7	1	22	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	10	0	0	13	0	0	67	57	12	62	57	9
Stage 1	-	-	-	-	-	-	47	47	-	9	9	-
Stage 2	-	-	-	-	-	-	20	10	-	53	48	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.25	6.65	6.35	7.14	6.54	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.25	5.65	-	6.14	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.25	5.65	-	6.14	5.54	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.635	4.135	3.435	3.536	4.036	3.336
Pot Cap-1 Maneuver	1623	-	-	1513	-	-	895	809	1032	928	830	1066
Stage 1	-	-	-	-	-	-	934	831	-	1007	884	-
Stage 2	-	-	-	-	-	-	967	862	-	955	851	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1623	-	-	1513	-	-	848	801	1032	896	821	1066
Mov Cap-2 Maneuver	-	-	-	-	-	-	848	801	-	896	821	-
Stage 1	-	-	-	-	-	-	924	822	-	1007	884	-
Stage 2	-	-	-	-	-	-	928	862	-	923	842	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	4.14	0	9.25	9.12
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	869	1006	-	-	1513	-	-	914
HCM Lane V/C Ratio	0.025	0.011	-	-	-	-	-	0.044
HCM Ctrl Dly (s/v)	9.3	7.2	0	-	0	-	-	9.1
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	6	2	26	4	16	0	216	47	16	165	2
Future Vol, veh/h	2	6	2	26	4	16	0	216	47	16	165	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	13	13	13	7	7	7	8	8	8
Mvmt Flow	2	7	2	30	5	19	0	251	55	19	192	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	484	536	193	511	510	278	194	0	0	306	0	0
Stage 1	230	230	-	278	278	-	-	-	-	-	-	-
Stage 2	253	306	-	233	231	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.23	6.63	6.33	4.17	-	-	4.18	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.23	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.23	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.617	4.117	3.417	2.263	-	-	2.272	-	-
Pot Cap-1 Maneuver	497	454	854	456	451	735	1349	-	-	1222	-	-
Stage 1	777	718	-	705	661	-	-	-	-	-	-	-
Stage 2	755	665	-	746	693	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	471	446	854	440	444	735	1349	-	-	1222	-	-
Mov Cap-2 Maneuver	471	446	-	440	444	-	-	-	-	-	-	-
Stage 1	764	705	-	705	661	-	-	-	-	-	-	-
Stage 2	731	665	-	724	681	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	12.39	12.85	0	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1349	-	-	499	512	157	-	-
HCM Lane V/C Ratio	-	-	-	0.023	0.105	0.015	-	-
HCM Ctrl Dly (s/v)	0	-	-	12.4	12.9	8	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	1	245	201	6
Future Vol, veh/h	0	2	1	245	201	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	50	50	7	7	12	12
Mvmt Flow	0	2	1	278	228	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	513	232	235	0	-	0
Stage 1	232	-	-	-	-	-
Stage 2	281	-	-	-	-	-
Critical Hdwy	6.9	6.7	4.17	-	-	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.95	3.75	2.263	-	-	-
Pot Cap-1 Maneuver	446	702	1303	-	-	-
Stage 1	706	-	-	-	-	-
Stage 2	668	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	446	702	1303	-	-	-
Mov Cap-2 Maneuver	446	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	668	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.15	0.03	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	7	-	702	-	-
HCM Lane V/C Ratio	0.001	-	0.003	-	-
HCM Ctrl Dly (s/v)	7.8	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	1	242	207	0
Future Vol, veh/h	1	1	1	242	207	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	86	86	86	86	86	86
Heavy Vehicles, %	50	50	7	7	12	12
Mvmt Flow	1	1	1	281	241	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	524	241	241	0	-	0
Stage 1	241	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Critical Hdwy	6.9	6.7	4.17	-	-	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.95	3.75	2.263	-	-	-
Pot Cap-1 Maneuver	439	693	1297	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	438	693	1297	-	-	-
Mov Cap-2 Maneuver	438	-	-	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	666	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11.73	0.03	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	7	-	537	-	-
HCM Lane V/C Ratio	0.001	-	0.004	-	-
HCM Ctrl Dly (s/v)	7.8	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	8	1	13	4	6	1	226	6	2	199	2
Future Vol, veh/h	15	8	1	13	4	6	1	226	6	2	199	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	5	5	5	8	8	8	12	12	12
Mvmt Flow	17	9	1	15	5	7	1	257	7	2	226	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	493	498	227	498	495	260	228	0	0	264	0	0
Stage 1	232	232	-	263	263	-	-	-	-	-	-	-
Stage 2	261	266	-	235	233	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.15	6.55	6.25	4.18	-	-	4.22	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.545	4.045	3.345	2.272	-	-	2.308	-	-
Pot Cap-1 Maneuver	490	477	817	478	471	771	1305	-	-	1245	-	-
Stage 1	776	716	-	736	686	-	-	-	-	-	-	-
Stage 2	748	692	-	761	706	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	479	476	817	467	470	771	1305	-	-	1245	-	-
Mov Cap-2 Maneuver	479	476	-	467	470	-	-	-	-	-	-	-
Stage 1	774	715	-	735	685	-	-	-	-	-	-	-
Stage 2	736	692	-	749	705	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	12.84	12.27	0.03	0.08
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	8	-	-	486	521	18	-	-
HCM Lane V/C Ratio	0.001	-	-	0.056	0.05	0.002	-	-
HCM Ctrl Dly (s/v)	7.8	0	-	12.8	12.3	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	4	4	13	6	5	2	18	4	1	20	1
Future Vol, veh/h	0	4	4	13	6	5	2	18	4	1	20	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	5	5	5	0	0	0	5	5	5
Mvmt Flow	0	5	5	16	7	6	2	22	5	1	25	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	59	60	25	59	58	25	26	0	0	27	0	0
Stage 1	28	28	-	30	30	-	-	-	-	-	-	-
Stage 2	31	32	-	30	28	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.15	6.55	6.25	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.545	4.045	3.345	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	943	835	1057	929	827	1043	1601	-	-	1567	-	-
Stage 1	995	876	-	980	864	-	-	-	-	-	-	-
Stage 2	991	872	-	980	866	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	926	833	1057	917	825	1043	1601	-	-	1567	-	-
Mov Cap-2 Maneuver	926	833	-	917	825	-	-	-	-	-	-	-
Stage 1	994	875	-	978	863	-	-	-	-	-	-	-
Stage 2	975	871	-	969	865	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.91	9.07	0.6	0.33
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	145	-	-	932	915	81	-	-
HCM Lane V/C Ratio	0.002	-	-	0.011	0.032	0.001	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	8.9	9.1	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	9	7	5	15	5	0	12	6	2	13	21
Future Vol, veh/h	6	9	7	5	15	5	0	12	6	2	13	21
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	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	5	5	5	0	0	0	0	0	0
Mvmt Flow	8	11	9	6	19	6	0	15	8	3	16	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	25	0	0	20	0	0	70	68	16	68	69	22
Stage 1	-	-	-	-	-	-	31	31	-	34	34	-
Stage 2	-	-	-	-	-	-	39	38	-	34	35	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1603	-	-	1577	-	-	927	826	1070	929	825	1061
Stage 1	-	-	-	-	-	-	991	874	-	987	870	-
Stage 2	-	-	-	-	-	-	981	868	-	987	870	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1603	-	-	1577	-	-	878	819	1070	898	818	1061
Mov Cap-2 Maneuver	-	-	-	-	-	-	878	819	-	898	818	-
Stage 1	-	-	-	-	-	-	986	869	-	983	867	-
Stage 2	-	-	-	-	-	-	935	864	-	959	866	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.98	1.46	9.16	8.98
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	888	451	-	-	343	-	-	950
HCM Lane V/C Ratio	0.025	0.005	-	-	0.004	-	-	0.047
HCM Ctrl Dly (s/v)	9.2	7.3	0	-	7.3	0	-	9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	2	51	15	12	2	198	29	11	236	4
Future Vol, veh/h	2	1	2	51	15	12	2	198	29	11	236	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	3	3	3	2	2	2	3	3	3
Mvmt Flow	2	1	2	55	16	13	2	213	31	12	254	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	505	528	256	511	515	228	258	0	0	244	0	0
Stage 1	280	280	-	233	233	-	-	-	-	-	-	-
Stage 2	225	248	-	278	282	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.13	6.53	6.23	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.527	4.027	3.327	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	481	459	788	472	462	808	1307	-	-	1316	-	-
Stage 1	731	683	-	768	710	-	-	-	-	-	-	-
Stage 2	782	705	-	726	676	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	451	453	788	464	457	808	1307	-	-	1316	-	-
Mov Cap-2 Maneuver	451	453	-	464	457	-	-	-	-	-	-	-
Stage 1	724	676	-	766	709	-	-	-	-	-	-	-
Stage 2	750	703	-	716	669	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	11.68	13.76	0.07	0.34
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	15	-	-	545	495	79	-	-
HCM Lane V/C Ratio	0.002	-	-	0.01	0.17	0.009	-	-
HCM Ctrl Dly (s/v)	7.8	0	-	11.7	13.8	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.6	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	2	2	218	264	1
Future Vol, veh/h	4	2	2	218	264	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	20	20	3	3	3	3
Mvmt Flow	5	2	2	253	307	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	566	308	308	0	-	0
Stage 1	308	-	-	-	-	-
Stage 2	258	-	-	-	-	-
Critical Hdwy	6.6	6.4	4.13	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	2.227	-	-	-
Pot Cap-1 Maneuver	457	692	1247	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	745	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	456	692	1247	-	-	-
Mov Cap-2 Maneuver	456	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	745	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	12.1	0.07	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	16	-	514	-	-
HCM Lane V/C Ratio	0.002	-	0.014	-	-
HCM Ctrl Dly (s/v)	7.9	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	4	4	223	270	1
Future Vol, veh/h	2	4	4	223	270	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	4	4	3	3
Mvmt Flow	2	4	4	251	303	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	563	304	304	0	-	0
Stage 1	304	-	-	-	-	-
Stage 2	260	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	491	741	1245	-	-	-
Stage 1	753	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	489	741	1245	-	-	-
Mov Cap-2 Maneuver	489	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.76	0.14	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	32	-	632	-	-
HCM Lane V/C Ratio	0.004	-	0.011	-	-
HCM Ctrl Dly (s/v)	7.9	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	7	5	8	11	11	1	202	2	6	260	4
Future Vol, veh/h	5	7	5	8	11	11	1	202	2	6	260	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	4	4	4	3	3	3	3	3	3
Mvmt Flow	6	8	6	9	13	13	1	230	2	7	295	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	549	545	298	546	547	231	300	0	0	232	0	0
Stage 1	311	311	-	233	233	-	-	-	-	-	-	-
Stage 2	238	234	-	313	314	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.14	6.54	6.24	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.536	4.036	3.336	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	449	448	746	445	442	804	1255	-	-	1330	-	-
Stage 1	703	662	-	766	708	-	-	-	-	-	-	-
Stage 2	770	715	-	693	653	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	427	445	746	431	439	804	1255	-	-	1330	-	-
Mov Cap-2 Maneuver	427	445	-	431	439	-	-	-	-	-	-	-
Stage 1	699	658	-	765	707	-	-	-	-	-	-	-
Stage 2	744	714	-	676	649	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	12.52	12.36	0.04	0.17
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	9	-	-	498	523	40	-	-
HCM Lane V/C Ratio	0.001	-	-	0.039	0.065	0.005	-	-
HCM Ctrl Dly (s/v)	7.9	0	-	12.5	12.4	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	4	2	5	5	1	1	17	4	0	20	0
Future Vol, veh/h	0	4	2	5	5	1	1	17	4	0	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	11	11	11	13	13	13
Mvmt Flow	0	5	2	6	6	1	1	20	5	0	23	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	48	50	23	50	48	22	23	0	0	24	0	0
Stage 1	23	23	-	24	24	-	-	-	-	-	-	-
Stage 2	25	27	-	26	23	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.21	-	-	4.23	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.299	-	-	2.317	-	-
Pot Cap-1 Maneuver	957	845	1059	955	848	1061	1535	-	-	1522	-	-
Stage 1	1000	880	-	999	879	-	-	-	-	-	-	-
Stage 2	998	877	-	997	880	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	949	845	1059	947	847	1061	1535	-	-	1522	-	-
Mov Cap-2 Maneuver	949	845	-	947	847	-	-	-	-	-	-	-
Stage 1	1000	880	-	998	878	-	-	-	-	-	-	-
Stage 2	989	876	-	990	880	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	9	9.03	0.33	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	79	-	-	906	907	1522	-	-
HCM Lane V/C Ratio	0.001	-	-	0.008	0.014	-	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	9	9	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

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	13	9	1	0	6	1	1	10	5	1	16	13
Future Vol, veh/h	13	9	1	0	6	1	1	10	5	1	16	13
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	69	69	69	69	69	69	69	69	69	69	69	69
Heavy Vehicles, %	0	0	0	17	17	17	15	15	15	4	4	4
Mvmt Flow	19	13	1	0	9	1	1	14	7	1	23	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	10	0	0	14	0	0	72	62	14	67	62	9
Stage 1	-	-	-	-	-	-	51	51	-	9	9	-
Stage 2	-	-	-	-	-	-	20	10	-	58	52	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.25	6.65	6.35	7.14	6.54	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.25	5.65	-	6.14	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.25	5.65	-	6.14	5.54	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.635	4.135	3.435	3.536	4.036	3.336
Pot Cap-1 Maneuver	1623	-	-	1511	-	-	889	805	1030	921	825	1066
Stage 1	-	-	-	-	-	-	929	827	-	1007	884	-
Stage 2	-	-	-	-	-	-	966	862	-	949	847	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1623	-	-	1511	-	-	838	795	1030	887	816	1066
Mov Cap-2 Maneuver	-	-	-	-	-	-	838	795	-	887	816	-
Stage 1	-	-	-	-	-	-	919	817	-	1007	884	-
Stage 2	-	-	-	-	-	-	924	862	-	915	838	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	4.09	0	9.31	9.15
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	859	997	-	-	1511	-	-	911
HCM Lane V/C Ratio	0.027	0.012	-	-	-	-	-	0.048
HCM Ctrl Dly (s/v)	9.3	7.2	0	-	0	-	-	9.1
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	6	2	28	4	17	0	230	50	17	175	2
Future Vol, veh/h	2	6	2	28	4	17	0	230	50	17	175	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	13	13	13	7	7	7	8	8	8
Mvmt Flow	2	7	2	33	5	20	0	267	58	20	203	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	514	570	205	543	542	297	206	0	0	326	0	0
Stage 1	244	244	-	297	297	-	-	-	-	-	-	-
Stage 2	270	326	-	247	245	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.23	6.63	6.33	4.17	-	-	4.18	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.23	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.23	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.617	4.117	3.417	2.263	-	-	2.272	-	-
Pot Cap-1 Maneuver	474	434	841	434	432	718	1336	-	-	1201	-	-
Stage 1	764	708	-	689	648	-	-	-	-	-	-	-
Stage 2	740	652	-	733	683	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	448	426	841	418	424	718	1336	-	-	1201	-	-
Mov Cap-2 Maneuver	448	426	-	418	424	-	-	-	-	-	-	-
Stage 1	750	694	-	689	648	-	-	-	-	-	-	-
Stage 2	715	652	-	711	671	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	12.72	13.32	0	0.71
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1336	-	-	478	489	157	-	-
HCM Lane V/C Ratio	-	-	-	0.024	0.116	0.016	-	-
HCM Ctrl Dly (s/v)	0	-	-	12.7	13.3	8	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	1	260	214	6
Future Vol, veh/h	0	2	1	260	214	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	50	50	7	7	12	12
Mvmt Flow	0	2	1	295	243	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	544	247	250	0	-	0
Stage 1	247	-	-	-	-	-
Stage 2	298	-	-	-	-	-
Critical Hdwy	6.9	6.7	4.17	-	-	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.95	3.75	2.263	-	-	-
Pot Cap-1 Maneuver	426	688	1287	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	426	688	1287	-	-	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	656	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.25	0.03	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	7	-	688	-	-
HCM Lane V/C Ratio	0.001	-	0.003	-	-
HCM Ctrl Dly (s/v)	7.8	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	1	257	220	0
Future Vol, veh/h	1	1	1	257	220	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	86	86	86	86	86	86
Heavy Vehicles, %	50	50	7	7	12	12
Mvmt Flow	1	1	1	299	256	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	557	256	256	0	-	0
Stage 1	256	-	-	-	-	-
Stage 2	301	-	-	-	-	-
Critical Hdwy	6.9	6.7	4.17	-	-	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.95	3.75	2.263	-	-	-
Pot Cap-1 Maneuver	419	679	1281	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	418	679	1281	-	-	-
Mov Cap-2 Maneuver	418	-	-	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11.98	0.03	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	7	-	518	-	-
HCM Lane V/C Ratio	0.001	-	0.004	-	-
HCM Ctrl Dly (s/v)	7.8	0	12	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	9	1	14	4	6	1	240	6	2	212	2
Future Vol, veh/h	16	9	1	14	4	6	1	240	6	2	212	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	5	5	5	8	8	8	12	12	12
Mvmt Flow	18	10	1	16	5	7	1	273	7	2	241	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	524	528	242	529	526	276	243	0	0	280	0	0
Stage 1	247	247	-	278	278	-	-	-	-	-	-	-
Stage 2	277	282	-	251	248	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.15	6.55	6.25	4.18	-	-	4.22	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.545	4.045	3.345	2.272	-	-	2.308	-	-
Pot Cap-1 Maneuver	467	458	802	456	453	755	1289	-	-	1228	-	-
Stage 1	762	706	-	722	675	-	-	-	-	-	-	-
Stage 2	734	682	-	747	696	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	457	457	802	443	451	755	1289	-	-	1228	-	-
Mov Cap-2 Maneuver	457	457	-	443	451	-	-	-	-	-	-	-
Stage 1	760	704	-	721	674	-	-	-	-	-	-	-
Stage 2	721	681	-	733	694	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	13.28	12.68	0.03	0.07
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	7	-	-	465	496	17	-	-
HCM Lane V/C Ratio	0.001	-	-	0.064	0.055	0.002	-	-
HCM Ctrl Dly (s/v)	7.8	0	-	13.3	12.7	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	4	4	14	6	5	2	19	4	1	21	1
Future Vol, veh/h	0	4	4	14	6	5	2	19	4	1	21	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	5	5	5	0	0	0	5	5	5
Mvmt Flow	0	5	5	17	7	6	2	23	5	1	26	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	61	62	27	62	60	26	27	0	0	28	0	0
Stage 1	29	29	-	31	31	-	-	-	-	-	-	-
Stage 2	32	33	-	31	30	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.15	6.55	6.25	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.545	4.045	3.345	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	939	832	1055	926	825	1041	1600	-	-	1566	-	-
Stage 1	993	875	-	978	863	-	-	-	-	-	-	-
Stage 2	989	871	-	978	864	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	923	830	1055	914	823	1041	1600	-	-	1566	-	-
Mov Cap-2 Maneuver	923	830	-	914	823	-	-	-	-	-	-	-
Stage 1	992	874	-	977	862	-	-	-	-	-	-	-
Stage 2	974	870	-	967	864	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.92	9.09	0.58	0.32
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	139	-	-	929	912	78	-	-
HCM Lane V/C Ratio	0.002	-	-	0.011	0.034	0.001	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	8.9	9.1	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	10	7	5	16	5	0	13	6	2	14	22
Future Vol, veh/h	6	10	7	5	16	5	0	13	6	2	14	22
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	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	5	5	5	0	0	0	0	0	0
Mvmt Flow	8	13	9	6	20	6	0	16	8	3	18	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	26	0	0	21	0	0	73	71	17	71	72	23
Stage 1	-	-	-	-	-	-	32	32	-	36	36	-
Stage 2	-	-	-	-	-	-	41	39	-	36	36	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1601	-	-	1575	-	-	922	824	1068	925	822	1059
Stage 1	-	-	-	-	-	-	990	872	-	985	869	-
Stage 2	-	-	-	-	-	-	978	867	-	985	869	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1601	-	-	1575	-	-	872	817	1068	893	815	1059
Mov Cap-2 Maneuver	-	-	-	-	-	-	872	817	-	893	815	-
Stage 1	-	-	-	-	-	-	985	868	-	981	866	-
Stage 2	-	-	-	-	-	-	930	863	-	955	865	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.89	1.4	9.19	9.01
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	882	434	-	-	330	-	-	946
HCM Lane V/C Ratio	0.027	0.005	-	-	0.004	-	-	0.05
HCM Ctrl Dly (s/v)	9.2	7.3	0	-	7.3	0	-	9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	2	54	16	13	2	211	31	12	251	4
Future Vol, veh/h	2	1	2	54	16	13	2	211	31	12	251	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	3	3	3	2	2	2	3	3	3
Mvmt Flow	2	1	2	58	17	14	2	227	33	13	270	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	538	562	272	544	548	244	274	0	0	260	0	0
Stage 1	298	298	-	248	248	-	-	-	-	-	-	-
Stage 2	240	265	-	296	300	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.13	6.53	6.23	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.527	4.027	3.327	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	457	438	772	448	443	793	1289	-	-	1298	-	-
Stage 1	715	671	-	754	700	-	-	-	-	-	-	-
Stage 2	768	693	-	710	664	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	426	432	772	440	437	793	1289	-	-	1298	-	-
Mov Cap-2 Maneuver	426	432	-	440	437	-	-	-	-	-	-	-
Stage 1	707	663	-	752	698	-	-	-	-	-	-	-
Stage 2	735	692	-	699	656	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	11.98	14.4	0.06	0.35
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	14	-	-	521	472	81	-	-
HCM Lane V/C Ratio	0.002	-	-	0.01	0.189	0.01	-	-
HCM Ctrl Dly (s/v)	7.8	0	-	12	14.4	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.7	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	2	2	232	281	1
Future Vol, veh/h	4	2	2	232	281	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	20	20	3	3	3	3
Mvmt Flow	5	2	2	270	327	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	602	327	328	0	-	0
Stage 1	327	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	6.6	6.4	4.13	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	2.227	-	-	-
Pot Cap-1 Maneuver	435	674	1226	-	-	-
Stage 1	692	-	-	-	-	-
Stage 2	732	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	434	674	1226	-	-	-
Mov Cap-2 Maneuver	434	-	-	-	-	-
Stage 1	690	-	-	-	-	-
Stage 2	732	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	12.42	0.07	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	15	-	492	-	-
HCM Lane V/C Ratio	0.002	-	0.014	-	-
HCM Ctrl Dly (s/v)	7.9	0	12.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	4	4	237	287	1
Future Vol, veh/h	2	4	4	237	287	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	4	4	3	3
Mvmt Flow	2	4	4	266	322	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	598	323	324	0	-	0
Stage 1	323	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	468	723	1225	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	466	723	1225	-	-	-
Mov Cap-2 Maneuver	466	-	-	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	776	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.96	0.13	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	30	-	611	-	-
HCM Lane V/C Ratio	0.004	-	0.011	-	-
HCM Ctrl Dly (s/v)	7.9	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	7	5	9	12	12	1	215	2	6	276	4
Future Vol, veh/h	5	7	5	9	12	12	1	215	2	6	276	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	4	4	4	3	3	3	3	3	3
Mvmt Flow	6	8	6	10	14	14	1	244	2	7	314	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	583	578	316	579	580	245	318	0	0	247	0	0
Stage 1	330	330	-	248	248	-	-	-	-	-	-	-
Stage 2	253	249	-	331	332	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.14	6.54	6.24	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.536	4.036	3.336	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	427	429	729	423	423	788	1236	-	-	1313	-	-
Stage 1	688	650	-	752	698	-	-	-	-	-	-	-
Stage 2	755	704	-	678	641	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	403	426	729	409	420	788	1236	-	-	1313	-	-
Mov Cap-2 Maneuver	403	426	-	409	420	-	-	-	-	-	-	-
Stage 1	683	646	-	751	697	-	-	-	-	-	-	-
Stage 2	727	704	-	660	637	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	12.88	12.75	0.04	0.16
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	8	-	-	476	502	38	-	-
HCM Lane V/C Ratio	0.001	-	-	0.041	0.075	0.005	-	-
HCM Ctrl Dly (s/v)	7.9	0	-	12.9	12.8	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	4	2	5	5	1	1	17	4	0	20	0
Future Vol, veh/h	0	4	2	5	5	1	1	17	4	0	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	11	11	11	13	13	13
Mvmt Flow	0	5	2	6	6	1	1	20	5	0	23	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	48	50	23	50	48	22	23	0	0	24	0	0
Stage 1	23	23	-	24	24	-	-	-	-	-	-	-
Stage 2	25	27	-	26	23	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.21	-	-	4.23	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.299	-	-	2.317	-	-
Pot Cap-1 Maneuver	957	845	1059	955	848	1061	1535	-	-	1522	-	-
Stage 1	1000	880	-	999	879	-	-	-	-	-	-	-
Stage 2	998	877	-	997	880	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	949	845	1059	947	847	1061	1535	-	-	1522	-	-
Mov Cap-2 Maneuver	949	845	-	947	847	-	-	-	-	-	-	-
Stage 1	1000	880	-	998	878	-	-	-	-	-	-	-
Stage 2	989	876	-	990	880	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	9	9.03	0.33	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	79	-	-	906	907	1522	-	-
HCM Lane V/C Ratio	0.001	-	-	0.008	0.014	-	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	9	9	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	9	1	0	7	1	1	10	5	1	16	13
Future Vol, veh/h	13	9	1	0	7	1	1	10	5	1	16	13
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	69	69	69	69	69	69	69	69	69	69	69	69
Heavy Vehicles, %	0	0	0	17	17	17	15	15	15	4	4	4
Mvmt Flow	19	13	1	0	10	1	1	14	7	1	23	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	12	0	0	14	0	0	73	63	14	69	63	11
Stage 1	-	-	-	-	-	-	51	51	-	11	11	-
Stage 2	-	-	-	-	-	-	22	12	-	58	52	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.25	6.65	6.35	7.14	6.54	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.25	5.65	-	6.14	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.25	5.65	-	6.14	5.54	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.635	4.135	3.435	3.536	4.036	3.336
Pot Cap-1 Maneuver	1621	-	-	1511	-	-	887	803	1030	919	824	1064
Stage 1	-	-	-	-	-	-	929	827	-	1005	883	-
Stage 2	-	-	-	-	-	-	964	861	-	949	847	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1621	-	-	1511	-	-	836	794	1030	885	814	1064
Mov Cap-2 Maneuver	-	-	-	-	-	-	836	794	-	885	814	-
Stage 1	-	-	-	-	-	-	919	817	-	1005	883	-
Stage 2	-	-	-	-	-	-	922	861	-	915	838	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	4.1	0	9.31	9.16
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	858	997	-	-	1511	-	-	909
HCM Lane V/C Ratio	0.027	0.012	-	-	-	-	-	0.048
HCM Ctrl Dly (s/v)	9.3	7.2	0	-	0	-	-	9.2
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	6	2	29	4	17	0	240	52	17	178	2
Future Vol, veh/h	2	6	2	29	4	17	0	240	52	17	178	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	13	13	13	7	7	7	8	8	8
Mvmt Flow	2	7	2	34	5	20	0	279	60	20	207	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	529	587	208	559	558	309	209	0	0	340	0	0
Stage 1	248	248	-	309	309	-	-	-	-	-	-	-
Stage 2	281	340	-	250	249	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.23	6.63	6.33	4.17	-	-	4.18	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.23	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.23	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.617	4.117	3.417	2.263	-	-	2.272	-	-
Pot Cap-1 Maneuver	463	424	837	423	423	706	1332	-	-	1187	-	-
Stage 1	761	705	-	678	640	-	-	-	-	-	-	-
Stage 2	730	643	-	730	681	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	437	416	837	407	415	706	1332	-	-	1187	-	-
Mov Cap-2 Maneuver	437	416	-	407	415	-	-	-	-	-	-	-
Stage 1	746	692	-	678	640	-	-	-	-	-	-	-
Stage 2	704	643	-	707	668	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	12.89	13.6	0	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1332	-	-	468	476	155	-	-
HCM Lane V/C Ratio	-	-	-	0.025	0.122	0.017	-	-
HCM Ctrl Dly (s/v)	0	-	-	12.9	13.6	8.1	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	2	1	267	216	8
Future Vol, veh/h	5	2	1	267	216	8
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	88	88	88	88	88	88
Heavy Vehicles, %	14	14	7	7	12	12
Mvmt Flow	6	2	1	303	245	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	556	250	255	0	-	0
Stage 1	250	-	-	-	-	-
Stage 2	306	-	-	-	-	-
Critical Hdwy	6.54	6.34	4.17	-	-	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	2.263	-	-	-
Pot Cap-1 Maneuver	472	760	1282	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	472	760	1282	-	-	-
Mov Cap-2 Maneuver	472	-	-	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	721	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11.91	0.03	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	7	-	529	-	-
HCM Lane V/C Ratio	0.001	-	0.015	-	-
HCM Ctrl Dly (s/v)	7.8	0	11.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	1	1	263	222	0
Future Vol, veh/h	2	1	1	263	222	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	86	86	86	86	86	86
Heavy Vehicles, %	33	33	7	7	12	12
Mvmt Flow	2	1	1	306	258	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	566	258	258	0	-	0
Stage 1	258	-	-	-	-	-
Stage 2	308	-	-	-	-	-
Critical Hdwy	6.73	6.53	4.17	-	-	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.597	2.263	-	-	-
Pot Cap-1 Maneuver	437	711	1278	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	680	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	436	711	1278	-	-	-
Mov Cap-2 Maneuver	436	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	680	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	12.24	0.03	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	7	-	501	-	-
HCM Lane V/C Ratio	0.001	-	0.007	-	-
HCM Ctrl Dly (s/v)	7.8	0	12.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	10	7	14	4	6	3	240	6	2	212	4
Future Vol, veh/h	22	10	7	14	4	6	3	240	6	2	212	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	5	5	5	8	8	8	12	12	12
Mvmt Flow	25	11	8	16	5	7	3	273	7	2	241	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	530	534	243	534	533	276	245	0	0	280	0	0
Stage 1	248	248	-	283	283	-	-	-	-	-	-	-
Stage 2	282	286	-	251	250	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.15	6.55	6.25	4.18	-	-	4.22	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.545	4.045	3.345	2.272	-	-	2.308	-	-
Pot Cap-1 Maneuver	463	455	801	452	449	755	1286	-	-	1228	-	-
Stage 1	761	705	-	718	672	-	-	-	-	-	-	-
Stage 2	729	678	-	746	694	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	452	453	801	434	446	755	1286	-	-	1228	-	-
Mov Cap-2 Maneuver	452	453	-	434	446	-	-	-	-	-	-	-
Stage 1	759	704	-	715	670	-	-	-	-	-	-	-
Stage 2	716	676	-	725	693	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	13.07	12.81	0.09	0.07
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	22	-	-	490	488	16	-	-
HCM Lane V/C Ratio	0.003	-	-	0.09	0.056	0.002	-	-
HCM Ctrl Dly (s/v)	7.8	0	-	13.1	12.8	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	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	0	15	0	3	6	4	1	0	8	13	0	1
Future Vol, veh/h	0	15	0	3	6	4	1	0	8	13	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	17	0	0	0	0	0	0	0
Mvmt Flow	0	17	0	3	7	5	1	0	9	15	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	12	0	0	17	0	0	31	36	17	34	34	9
Stage 1	-	-	-	-	-	-	17	17	-	16	16	-
Stage 2	-	-	-	-	-	-	14	19	-	17	17	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1621	-	-	1613	-	-	982	860	1067	978	863	1078
Stage 1	-	-	-	-	-	-	1007	885	-	1009	886	-
Stage 2	-	-	-	-	-	-	1011	884	-	1007	885	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1621	-	-	1613	-	-	978	858	1067	968	861	1078
Mov Cap-2 Maneuver	-	-	-	-	-	-	978	858	-	968	861	-
Stage 1	-	-	-	-	-	-	1007	885	-	1006	884	-
Stage 2	-	-	-	-	-	-	1008	882	-	998	885	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	1.67	8.44	8.76
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1056	1621	-	-	385	-	-	975
HCM Lane V/C Ratio	0.01	-	-	-	0.002	-	-	0.017
HCM Ctrl Dly (s/v)	8.4	0	-	-	7.2	0	-	8.8
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	4	4	14	6	5	2	19	4	1	21	1
Future Vol, veh/h	0	4	4	14	6	5	2	19	4	1	21	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	5	5	5	0	0	0	5	5	5
Mvmt Flow	0	5	5	17	7	6	2	23	5	1	26	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	61	62	27	62	60	26	27	0	0	28	0	0
Stage 1	29	29	-	31	31	-	-	-	-	-	-	-
Stage 2	32	33	-	31	30	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.15	6.55	6.25	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.545	4.045	3.345	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	939	832	1055	926	825	1041	1600	-	-	1566	-	-
Stage 1	993	875	-	978	863	-	-	-	-	-	-	-
Stage 2	989	871	-	978	864	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	923	830	1055	914	823	1041	1600	-	-	1566	-	-
Mov Cap-2 Maneuver	923	830	-	914	823	-	-	-	-	-	-	-
Stage 1	992	874	-	977	862	-	-	-	-	-	-	-
Stage 2	974	870	-	967	864	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.92	9.09	0.58	0.32
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	139	-	-	929	912	78	-	-
HCM Lane V/C Ratio	0.002	-	-	0.011	0.034	0.001	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	8.9	9.1	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	6	11	7	5	17	5	0	13	6	2	14	22
Future Vol, veh/h	6	11	7	5	17	5	0	13	6	2	14	22
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	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	5	5	5	0	0	0	0	0	0
Mvmt Flow	8	14	9	6	21	6	0	16	8	3	18	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	28	0	0	23	0	0	76	73	18	74	74	24
Stage 1	-	-	-	-	-	-	33	33	-	37	37	-
Stage 2	-	-	-	-	-	-	43	40	-	37	38	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1599	-	-	1573	-	-	919	821	1066	922	820	1058
Stage 1	-	-	-	-	-	-	988	871	-	984	868	-
Stage 2	-	-	-	-	-	-	977	866	-	984	868	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1599	-	-	1573	-	-	868	814	1066	889	813	1058
Mov Cap-2 Maneuver	-	-	-	-	-	-	868	814	-	889	813	-
Stage 1	-	-	-	-	-	-	983	867	-	980	865	-
Stage 2	-	-	-	-	-	-	929	862	-	954	864	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.82	1.35	9.21	9.02
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	880	418	-	-	319	-	-	944
HCM Lane V/C Ratio	0.027	0.005	-	-	0.004	-	-	0.05
HCM Ctrl Dly (s/v)	9.2	7.3	0	-	7.3	0	-	9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	2	1	2	56	16	13	2	218	32	12	262	4
Future Vol, veh/h	2	1	2	56	16	13	2	218	32	12	262	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	3	3	3	2	2	2	3	3	3
Mvmt Flow	2	1	2	60	17	14	2	234	34	13	282	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	557	583	284	564	568	252	286	0	0	269	0	0
Stage 1	310	310	-	256	256	-	-	-	-	-	-	-
Stage 2	247	273	-	308	312	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.13	6.53	6.23	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.527	4.027	3.327	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	444	427	760	435	431	785	1276	-	-	1289	-	-
Stage 1	705	663	-	746	694	-	-	-	-	-	-	-
Stage 2	761	687	-	700	656	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	413	421	760	426	425	785	1276	-	-	1289	-	-
Mov Cap-2 Maneuver	413	421	-	426	425	-	-	-	-	-	-	-
Stage 1	696	655	-	745	692	-	-	-	-	-	-	-
Stage 2	727	686	-	688	648	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	12.17	14.8	0.06	0.34
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	14	-	-	508	458	77	-	-
HCM Lane V/C Ratio	0.002	-	-	0.011	0.199	0.01	-	-
HCM Ctrl Dly (s/v)	7.8	0	-	12.2	14.8	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.7	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	2	2	237	288	6
Future Vol, veh/h	7	2	2	237	288	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	11	11	3	3	3	3
Mvmt Flow	8	2	2	276	335	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	619	338	342	0	-	0
Stage 1	338	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Critical Hdwy	6.51	6.31	4.13	-	-	-
Critical Hdwy Stg 1	5.51	-	-	-	-	-
Critical Hdwy Stg 2	5.51	-	-	-	-	-
Follow-up Hdwy	3.599	3.399	2.227	-	-	-
Pot Cap-1 Maneuver	438	684	1212	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	437	684	1212	-	-	-
Mov Cap-2 Maneuver	437	-	-	-	-	-
Stage 1	701	-	-	-	-	-
Stage 2	747	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	12.74	0.07	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	15	-	475	-	-
HCM Lane V/C Ratio	0.002	-	0.022	-	-
HCM Ctrl Dly (s/v)	8	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	4	4	241	293	2
Future Vol, veh/h	3	4	4	241	293	2
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	89	89	89	89	89	89
Heavy Vehicles, %	0	0	4	4	3	3
Mvmt Flow	3	4	4	271	329	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	610	330	331	0	-	0
Stage 1	330	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	461	716	1217	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	459	716	1217	-	-	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11.32	0.13	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	29	-	577	-	-
HCM Lane V/C Ratio	0.004	-	0.014	-	-
HCM Ctrl Dly (s/v)	8	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	8	9	9	13	12	7	215	2	6	276	10
Future Vol, veh/h	9	8	9	9	13	12	7	215	2	6	276	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	4	4	4	3	3	3	3	3	3
Mvmt Flow	10	9	10	10	15	14	8	244	2	7	314	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	601	595	319	593	600	245	325	0	0	247	0	0
Stage 1	333	333	-	261	261	-	-	-	-	-	-	-
Stage 2	268	263	-	332	339	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.14	6.54	6.24	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.536	4.036	3.336	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	415	420	726	414	412	788	1229	-	-	1313	-	-
Stage 1	685	647	-	739	688	-	-	-	-	-	-	-
Stage 2	742	695	-	677	637	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	388	414	726	394	406	788	1229	-	-	1313	-	-
Mov Cap-2 Maneuver	388	414	-	394	406	-	-	-	-	-	-	-
Stage 1	681	643	-	734	683	-	-	-	-	-	-	-
Stage 2	708	690	-	654	633	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	13.11	13.06	0.25	0.16
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	56	-	-	474	485	37	-	-
HCM Lane V/C Ratio	0.006	-	-	0.062	0.08	0.005	-	-
HCM Ctrl Dly (s/v)	7.9	0	-	13.1	13.1	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	17	1	9	27	14	0	0	5	8	0	1
Future Vol, veh/h	1	17	1	9	27	14	0	0	5	8	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	5	0	0	0	0	0	0	0
Mvmt Flow	1	20	1	10	31	16	0	0	6	9	0	1

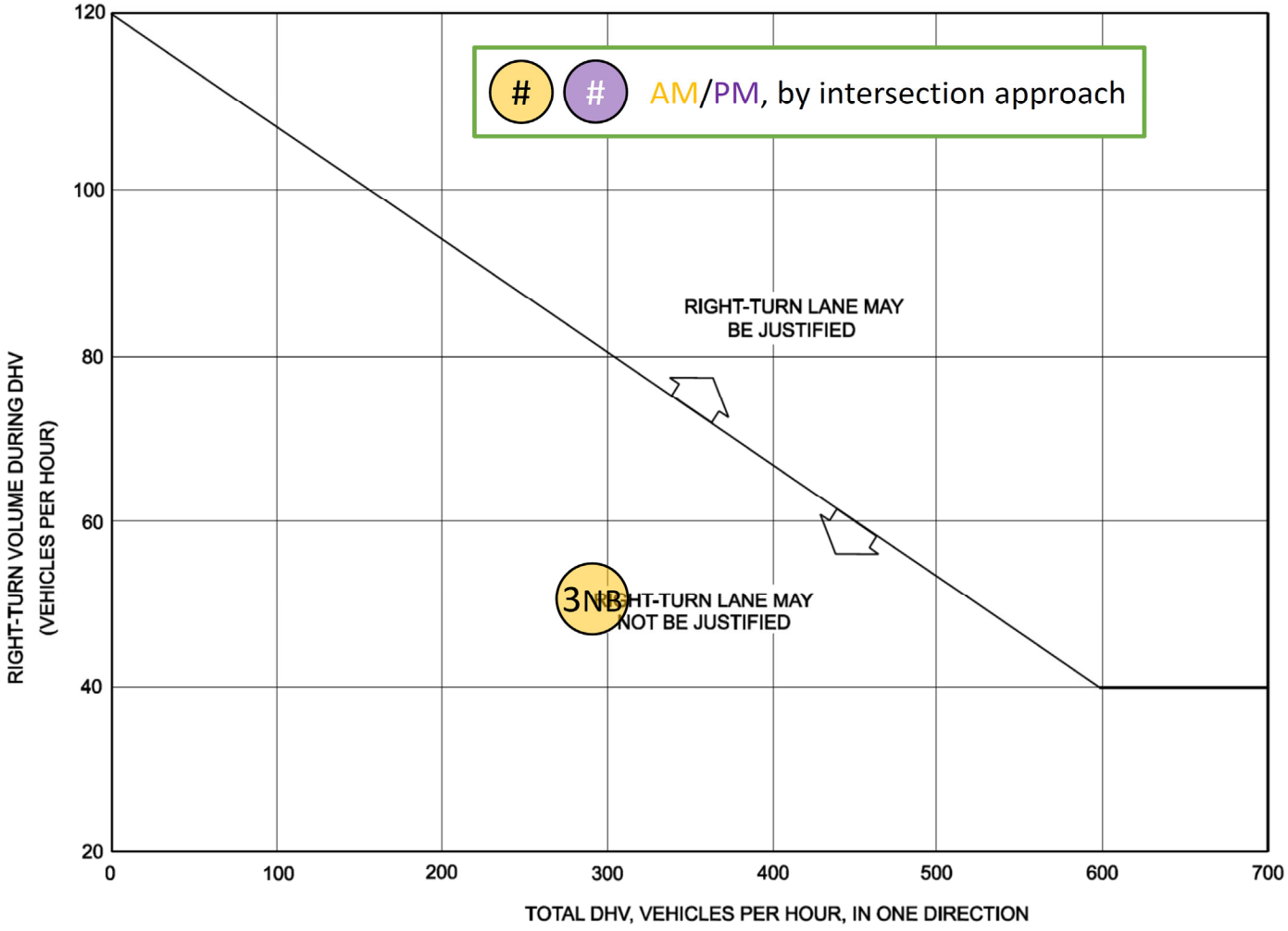
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	48	0	0	21	0	0	75	91	20	83	84	40
Stage 1	-	-	-	-	-	-	23	23	-	60	60	-
Stage 2	-	-	-	-	-	-	52	69	-	22	23	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1573	-	-	1608	-	-	920	803	1063	910	810	1038
Stage 1	-	-	-	-	-	-	1001	880	-	956	848	-
Stage 2	-	-	-	-	-	-	965	842	-	1001	880	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1573	-	-	1608	-	-	912	797	1063	898	804	1038
Mov Cap-2 Maneuver	-	-	-	-	-	-	912	797	-	898	804	-
Stage 1	-	-	-	-	-	-	1000	880	-	950	843	-
Stage 2	-	-	-	-	-	-	958	836	-	995	879	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.38	1.31	8.4	9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1063	94	-	-	303	-	-	912
HCM Lane V/C Ratio	0.005	0.001	-	-	0.007	-	-	0.011
HCM Ctrl Dly (s/v)	8.4	7.3	0	-	7.3	0	-	9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Appendix C: Auxiliary Turn Lane Analysis Chart

Right Turn Lane Analysis Chart (from MDT Design Manual, Figure 28.4A)



Note: For highways with a design speed below 50 mph (80 km/h) with a DHV < 300 and where right turns are > 40, an adjustment should be used. To read the vertical axis of the chart, subtract 20 from the actual number of right turns.

Appendix D: Intersection Cost Participation Calculations

Yellowstone County Cost Participation Worksheet: Lazy K U Subdivision, 3rd Filing

Whether a movement pair is **critical** is based on Project traffic

*Note that **Intersection 1, 80th at Neibauer**, is not shown in this summary because it would carry no project-oriented trips.*

2: 80th/Seitz Ronan at Danford

Lane Group		AM Peak Hour		PM Peak Hour	
(**critical**)	Lanes	Vproject	Per Lane	Vproject	Per Lane
EB T	1			1	1
WB L	1	No project traffic in this movement			
WB T	1	**1**	**1**	1	1
EB L	1	No project traffic in this movement			
NB T	1	No project traffic in these movements			
SB L	1				
SB T	1				
NB L	1				
Project **Critical** Lane Volume		**1**			**1**
Critical Lane Capacity		1200			1200
% Increase		0.1%			0.1%
Max % Increase		0.1%			

Intersection does not meet 2% cost participation threshold

3: 72nd at Neibauer

Lane Group		AM Peak Hour		PM Peak Hour	
(**critical**)	Lanes	Vproject	Per Lane	Vproject	Per Lane
EB T	1	No project traffic in this movement			
WB L	1	**1**	**1**	**2**	**2**
WB T	1	No project traffic in these movements			
EB L	1				
NB T	1	**10**	**10**	7	7
SB L	1	No project traffic in this movement			
SB T	1			**11**	**11**
NB L	1	No project traffic in this movement			
Project **Critical** Lane Volume		**11**			**13**
Critical Lane Capacity		1200			1200
% Increase		0.9%			1.1%
Max % Increase		1.1%			

Intersection does not meet 2% cost participation threshold

4: 72nd at Ronald Kramer Drive

Lane Group		AM Peak Hour		PM Peak Hour	
(**critical**)	Lanes	Vproject	Per Lane	Vproject	Per Lane
EB T	1	No such movements			
WB L	1				
WB T	1				
EB L	1	**5**	**5**	**3**	**3**
NB T	1	**7**	**7**	5	5
SB L	1	No such movement			
SB T	1	2	2	**7**	**7**
NB L	1	No project traffic in this movement			
Project **Critical** Lane Volume		**12**			**10**
Critical Lane Capacity		1140			1140
% Increase		1.1%			0.9%
Max % Increase		1.1%			

Intersection does not meet 2% cost participation threshold

5: 72nd at Kramer Way

Lane Group		AM Peak Hour		PM Peak Hour	
(**critical**)	Lanes	Vproject	Per Lane	Vproject	Per Lane
EB T	1	No such movements			
WB L	1				
WB T	1				
EB L	1	**1**	**1**	**1**	**1**
NB T	1	**6**	**6**	4	4
SB L	1	No such movement			
SB T	1	2	2	**6**	**6**
NB L	1	No project traffic in this movement			
Project **Critical** Lane Volume		**7**			**7**
Critical Lane Capacity		1140			1140
% Increase		0.6%			0.6%
Max % Increase		0.6%			

Intersection does not meet 2% cost participation threshold

6: 72nd at Danford

Lane Group		AM Peak Hour		PM Peak Hour	
(**critical**)	Lanes	Vproject	Per Lane	Vproject	Per Lane
EB T	1	1	1	1	1
WB L	1	No project traffic in this movement			
WB T	1	0	0	**1**	**1**
EB L	1	**6**	**6**	**4**	**4**
NB T	1	No project traffic in these movements			
SB L	1				
SB T	1				
NB L	1	**2**	**2**	**6**	**6**
Project **Critical** Lane Volume		**8**			**11**
Critical Lane Capacity		1200			1200
% Increase		0.7%			0.9%
Max % Increase		0.9%			

Intersection does not meet 2% cost participation threshold

7/A: New Access - Haystack at Danford

Lane Group		AM Peak Hour		PM Peak Hour	
(**critical**)	Lanes	Vproject	Per Lane	Vproject	Per Lane
EB T	1	No project traffic in these movements			
WB L	1				
WB T	1				
EB L	1	0	0	**1**	**1**
NB T	1	No project traffic in these movements			
SB L	1	**13**	**13**	**8**	**8**
SB T	1	No project traffic in these movements			
NB L	1				
Project **Critical** Lane Volume		**13**			**9**
Critical Lane Capacity		1200			1200
% Increase		1.1%			0.8%
Max % Increase		1.1%			

Intersection does not meet 2% cost participation threshold

APPENDIX E

Preliminary Plat Application

Subdivision Name: Lazy KU Subdivision, 3rd Filing

Date of Preapplication Meeting: December 5, 2024

Type: Major __X__ First Minor _____ Subsequent Minor _____

Tax Code: D00239E, D00239F, C18525

Location: S 72nd Street W and Danford Road

Legal Description: Tracts 6 and 7 Certificate of Survey No. 2301 and Lot 12A of Lazy KU Subdivision, 2nd Filing

¼ Section: __SE__, Township: __01S__, Range: __24E__

General Location: northwest of the intersection of S 72nd Street W and Danford Road

Subdivider Information:

Name (Include a list of officers if corporation):

Owner: Cherryl Ann Kramer Revocable Trust - Cherryl Ann Kramer, Trustee
Address: 3116 S. 72nd Street W, Billings, MT 59106
Telephone: 406-690-4537 E-mail: cherrylkramer@gmail.com

Developer: Jerry Krushensky
Address: PO Box 81508, Billings, MT 59108
Telephone: 406-581-0658 E-mail: jdwineridge@aol.com

Owner Information:

Name: Same as above

Plat Data:

Gross Area: 45.7 acres

Net Area: 34.7 acres

Number of Lots: 32 (32 residential lots)

Maximum Lot Size: 1.76 acres

Minimum Lot Size: 0.75 acre

Linear Feet of Streets: 4,040 lft

Existing Zoning: n/a

Surrounding Zoning: n/a

North: n/a

South: n/a

East: n/a

West: n/a

Existing Land Use: agriculture

Proposed Land Use: residential

Parkland Requirement:

Land: __X__ Acres: _1.92___

Cash: _____ Cash: $ _____

Variances Requested (list and attach Variance Request):

1. none

2.

3.

Service Providers for Proposed Subdivision

Gas: MDU

Electric: NWE

Telephone: Spectrum

School (Elementary, Middle, High): Laurel/Laurel/Laurel

Irrigation District: none

Cable Television: Spectrum

List of Materials Submitted with Application

1. Plat
2. Subdivision Improvements Agreement
3. Environmental Assessment
4. Letter requesting expansion of existing RSIDs
5. RSID Petitions for expansions
6. Names and addresses of surrounding landowners
7. Site Layout with proposed improvements
8. Geotechnical Report
9. Traffic Impact Study
10. Parkland Calculation
11. USPS Approval

Agent Information

Name: WWC Engineering, Aaron Redland

Address: 550 S. 24th Street W, Ste. 201, Billings, MT 59102

Telephone: 406-894-2210 (o) / 406-671-5606 (c)

I declare that I am the owner of record of the above-described property, and have examined all statements and information contained herein, and all attached exhibits, and to the best of my knowledge and belief, is true and correct.

Authentisign
Cherryl Kramer 05/25/25

Owner of Record, Date

Authentisign
Jerry Krushensky 05/23/25

Owner Under Contract, Date

The submission of a preliminary plat application constitutes a grant of permission by the subdivider to enter the subject property.

(Ord. 07-01 (part), 2007)