



YELLOWSTONE COUNTY BOARD OF PLANNING

CITY OF BILLINGS AND
YELLOWSTONE COUNTY, MONTANA



AGENDA

APRIL 28, 2026 MEETING TIME: 4:30 p.m.
City Council Chambers, 5th Floor
316 N 26th St, Billings MT

NOTICE TO THE PUBLIC

Citizens are invited to:

. Review the Agenda Packet on the City's website at: <https://ci.billings.mt.us/117/Agendas-Minutes>
Public comment will be taken only during the Public Comment periods as indicated on the agenda and during the Public Hearings, if any are scheduled, under the Regular agenda. Comments may be sent to the Board via email before 12:00 pm on the meeting date. All emails received prior to this time will be entered into the record for the public hearing. Comments may be submitted by:

- . Mail: City/County Planning Division PO Box 1178, Billings MT 59103
- . Email: plnonline@billingsmt.gov
- . NOTICE: All meetings and official activities of the MPO are held in buildings and locations that comply with accessibility standards according to the Americans with Disabilities Act (ADA). A TTY number for the hearing impaired, 406-657-3079, is available upon request. Special arrangements for participation in the public hearings by individuals with hearing, speech, or vision impairment may be made upon request at least three days prior to the hearing. Please notify Brenda Berns, Planning Clerk at bernsb@billingsmt.gov or call 406-247-8610.

1. **CALL TO ORDER - Planning Board President:** Welcome and Introduction Board Members and Staff.
2. **APPROVAL OF AGENDA*** - including any additions or deletions to agenda. The agenda for a regular meeting will be closed at 5:00 p.m. three (3) working days prior to the date of the meeting.
3. **MEETING MINUTES:**
 - a. Meeting Minutes of April 14, 2026
4. **PUBLIC COMMENT PERIOD** -- As required (3 minute maximum per person). *Any member of the public may be heard on any subject that is not on the agenda. The Planning Board will not take any action on these items at this time, but could choose to add an item to the next meeting's agenda for discussion.*
 - 4a) **Comments on items not on agenda and requests to add items to future agendas**
 - 4b) **Comments on items on the non-public hearing agenda items**
5. **DISCLOSURE OF CONFLICT OF INTEREST:**
6. **DISCLOSURE OF EX PARTE COMMUNICATION:**
7. **OLD BUSINESS** (Agenda items that were not discussed or not completed in a previous meeting or items requiring action).
 - a. **PUBLIC HEARINGS/PUBLIC HEARING PARTICIPATION GUIDELINES.** The County Planning Board welcomes public input on matters brought before the Board. To ensure a fair and effective public comment process, we ask that you consider the following guidelines when presenting your comments: Address the Planning Board directly. You must state your name and address before commenting. This is an opportunity to explain how you will be affected by the decision and why that is an important consequence. By state law, the Planning Board must consider only certain criteria when reviewing subdivisions (76-3-608(a), MCA). Please see the attached guidelines for the criterion.
 - b. **Central Avenue Major Subdivision Preliminary Plat. Public Hearing and Board Action**
Hunter Kelly, Planner

8. **NEW BUSINESS:** (Agenda items new to this meeting).
 - a. 2024-2028 Transportation Improvement Program (TIP) Amendment 3 - Public Hearing and Board Action
Lora Mattox, Transportation Planning Coordinator
9. **OTHER BUSINESS:**
 - a. (Standing Item) Long Range Strategic Issues and an overview of future City and County issues and projects.
10. **FUTURE AGENDA ITEMS**
11. **ADJOURNMENT**

CITY/COUNTY PLANNING BOARD
City Council Chambers, 5th Floor
316 N 26th St, Billings MT



Public Hearing Participation Guidelines

NOTICE: All meetings and official activities of the MPO are held in buildings and locations that comply with accessibility standards according to the Americans with Disabilities Act (ADA). A TTY number for the hearing impaired, 406-657-3079, is available upon request. Special arrangements for participation in the public hearings by individuals with hearing, speech, or vision impairment may be made upon request at least three days prior to the hearing. Please notify the Planning Division Office, at 406-247-8610.

The County Planning Board welcomes public input on matters brought before the Board. To ensure a fair and effective public comment process, we ask that you consider the following guidelines when presenting your comments: **Address the Planning Board directly. You must state your name and address before commenting.** This is an opportunity to explain how you will be affected by the decision and why that is an important consequence. Be informed of the process and the requirements of the Board. If you are commenting about a subdivision, please limit your comments to the review criteria.

By state law, the Planning Board must consider only certain criteria when reviewing subdivisions (76-3-608(a), MCA). These criteria include:

-Effect on agriculture and agricultural water user facilities; Effect on local services; -Effect on the natural environment; Effect on wildlife and wildlife habitat; Effect on public health and safety

Provide specific information about why you are concerned about the pending application, how the decision will impact the review criteria listed above, and provide suggestions on how to minimize or eliminate the impact.

Respect the right of others to participate. Wait until the previous speaker has completed their comments before making your own comments. Do not talk over the person commenting or with other people in attendance.

The public hearing is not an opportunity to question or accuse the applicant or their agent. If you have questions of the Board, the applicant or the agent, ask questions directly to the Board during the public hearing portion of the meeting. The Board will respond or request the applicant or agent to respond after the public comment portion of the hearing is closed.

After the public comment portion of the hearing is closed, no further comments are allowed unless you are addressed directly by a Board member.

You should expect the Board to make a balanced recommendation in accordance with its statutory responsibilities. The Board's ability to make reasonable and thoughtful recommendations is dependent on a fair consideration of everyone's interests.

Thank you for participating.

Date: 04/28/2026
Title:
Presented by:
Department: Planning & Community Services
Presentation:

Information

RECOMMENDATION

Meeting Minutes of April 14, 2026

BACKGROUND (Consistency with Adopted Plans and Policies, if applicable)

ALTERNATIVES

City Council may:

- Approve; or,
- Not Approve

FISCAL EFFECTS

Attachments

Minutes of April 14, 2026

CITY/COUNTY PLANNING BOARD

TUESDAY, APRIL 14, 2026 at 4:30pm

Members	Position	01/13/2026	01/27/2026	02/10/2026	02/24/2026	03/10/2026	03/24/2026	04/14/2026	04/28/2026	05/12/2026	05/27/2026	06/09/2026	06/23/2026	07/14/2026	07/28/2026	08/11/2026	08/25/2026	09/08/2026	09/22/2026	10/13/2026	10/27/2026	11/10/2026	11/24/2026	12/08/2026	12/22/2026
		Jim Ronquillo	Billings Ward I	1	C	C	C	1	1	A															
Roger Gravgaard	Billings Ward II	1	C	C	C	1	1	1																	
Dennie Stephenson	Billings Ward III	1	C	C	C	1	1	1																	
John Staley PRESIDENT	Billings Ward IV	1	C	C	C	1	1	1																	
David Nordel	Billings Ward V	V	C	C	C	A	A	V																	
Troy Boucher	YC District 1	1	C	C	C	A	V	1																	
Dennis Cook, VICE PRESIDENT	YC District 2	1	C	C	C	1	1	1																	
Vacant	YC District 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant	YC District 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant	YC District 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alexis Bonogofsky	YC District 6	1	C	C	C	A	A	A																	
Vacant	YC District 7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scott Reiter Megan Trevino	Ex-Officio SD2	1 A	C C	C C	C C	1 A	1 A	A A																	

Please note: "A" stands for excused absence, "1" stands for present, "V" stands for Zoom participation, "C" stands for Canceled

Call the Meeting to Order: President Staley called the meeting to order at 4:32 PM

Introduction of Planning Board Members and Planning Department Staff

President Staley called for introductions of the members of the Planning Board and staff.

Attending Staff: Wyeth Friday, Planning & Community Services Director, Dave Green, Planner II; Brenda Berns, Planning Clerk

Others in Attendance: Taylor Kasperick, Performance Engineering

2. Approval of Agenda

Motion

Motion by Board member Stephenson to approve the agenda as submitted. Second by Board member Cook. Motion passed unanimously.

3. Approval of Minutes: March 24, 2026

Motion

Motion by Board member Stephenson to approve the March 24, 2026 meeting minutes. Second by Board Member Boucher. Motion passed unanimously.

4. Public Comment: No public comment was received.

5. Disclosure of Outside (Ex-Parte) Communication – None disclosed.

6. Disclosure of Conflicts of Interest – None disclosed.

7. Old Business – No old business.

8. New Business

a. Central Avenue Major Subdivision – Preliminary Plat Review. Presentation and Discussion. Dave Green, Planner II

Dave Green presented an overview of the proposed subdivision, including its location and phased development approach. The project includes two variances related to connections and block dimensions. Board members asked clarifying questions about the site, including its proximity to the Cloverleaf area, which was confirmed. Additional discussion noted that a Traffic Impact Study has been completed, and the developers will be responsible for any applicable impact fees.

Recommendation

Staff recommends conditional approval, subject to five conditions, and approval of the two requested variances.

A Public Hearing will be held at the next Planning Board meeting on April 28, 2026. City Council is scheduled to review and act on May 26, 2026.

Board Questions

Board members discussed roadway conditions, potential improvements, and future infrastructure needs related to the subdivision. Questions were raised about traffic impacts, including possible turn lanes and road connectivity.

Applicant's Agent:

Taylor Kasperick, Performance Engineering

Mr. Kasperick described the project's phasing, noting that initial development will focus on residential lots, with commercial development planned for a later phase in conjunction with zoning approvals. Traffic and infrastructure were discussed, including findings from the Traffic Impact Study, which recommends turn lanes to improve east–west traffic flow. A signalized intersection is planned and already under contract, intended to help manage traffic without requiring road widening. Coordination among multiple developers and with the City was emphasized to ensure efficient construction sequencing.

Roadway alignment and access planning were also reviewed, including coordination with City Engineering to refine connections across multiple properties. The overall subdivision includes a mix of residential and commercial lots of varying sizes.

Board Questions

Board members discussed access and circulation for the commercial portion of the development, including concerns about curb cuts and high-traffic uses. Questions were raised about adjacent roadway development, including 44th Street, which is being developed separately. Board members expressed safety concerns about drivers potentially bypassing signalized intersections, suggesting traffic calming measures as a possible solution.

It was noted that traffic impacts will be addressed by the developer and noted that future connectivity, including the extension of Broadwater Avenue, is expected to improve east–west traffic flow. Broadwater is planned as a collector road and will be constructed to applicable standards. Comparisons were made to similar traffic patterns observed in other areas.

Other Business

Wyeth provided an update on the MLUPA process, noting that City Council is expected to take action in May ahead of the legislative deadline of May 17, 2026. Additional meetings have been held with the Interim Planning Commission (IPC), along with work sessions with City Council, to maintain progress and continue discussions leading up to the April 29th meeting, when a recommendation will be made to City Council.

Mr. Friday also noted that MLUPA requirements will necessitate changes to the current planning structure, including the formation of a Planning Commission and adjustments to city representation. Coordination between city and county boards is expected to continue, though details regarding consolidation are still being worked out, particularly in relation to the City of Laurel, which will continue to operate independently.

Mr. Friday shared updates from Community Planning Week and highlighted the ongoing public survey available on the website. He noted strong public engagement, particularly through map-based comments, which are being compiled and analyzed to inform the IPC and City Council. An upcoming IPC meeting is scheduled for April 21 at 12:00 p.m., with City Council members invited to attend.

Additional outreach was conducted at Oasis Water Park for the Heights Neighborhood Plan, with good attendance and community participation. Staff are currently compiling feedback from that event. Work is also nearing completion on the final draft of the West End Neighborhood Plan.

The next Planning Board meeting will be Tuesday, April 28, 2026

Adjournment 5:20PM

Brenda J Berns, Planning Clerk

Planning Board

Date: 04/28/2026
Title: Central Avenue Subdivision, Major Preliminary Plat Public Hearing
Presented by: Hunter Kelly, Planner 1
Department: Planning & Community Services
Presentation: Yes

Information

RECOMMENDATION

Staff recommends the Planning Board recommend to City Council that the preliminary plat of Central Avenue Subdivision be conditionally approved, variances accepted, and the Findings of Fact adopted as presented in the staff report.

BACKGROUND (Consistency with Adopted Plans and Policies, if applicable)

On November 3, 2025, Performance Engineering, on behalf of Kari Ellen, Donna Marie, and Diana Lynne Barber, applied for preliminary plat approval for Central Avenue Subdivision. The proposed subdivision creates nine (9) lots for development. The subject property is generally located north of Central Avenue, south of Broadwater Avenue, and west 44th Street West. The property is currently zoned in the county as A-Agriculture. There is a concurrent zone application for annexation with a proposed Planned Neighborhood Development that includes the zonings of Corridor Mixed Use 1 (CMU1), Mixed Residential 1 (NX1), Mid-Century Neighborhood Residential (N2), Suburban Neighborhood Residential (N3), and Parks and Open space (P1).

VARIANCES

Two variances are requested:

1. Variance from Section 23-406-A.1: Streets and Roads, A, 1. Said section requires developments to provide connections from the subdivision to undeveloped land. This subdivision is providing a connection to four (4) of the five (5) adjacent undeveloped lots. Said undeveloped lots have been previously divided, and are of a particular parcel size that they may, or may not, be further subdivided upon development thus not necessitating or continuing a connection.
2. Variance from Section 23-405: Blocks, A. Said section requires block dimensional standard to be met, including block perimeter, section, and length. Said requirements are planned to be met at final development of the created parcels, however as large lots are being proposed it causes the need for variance from said block dimensional standards.

Staff is recommending approval of the variance requests. Further explanation and analysis can be found in the Variance Request Letter.

PROPOSED CONDITIONS OF APPROVAL

1. To minimize the effects on local service prior to final plat approval, the applicant will coordinate with the USPS to determine what type of deliver system is preferred and to locate and provide the correct amount of space for safely delivering the mail to businesses and residents.
2. To provide correct documentation and timelines for the propose phasing of the subdivision, prior to final plat, the applicant will include proposed opening dates for the phases and the correct documentation for future phases, certificates and release form.
3. Block dimension standards shall be met during the master site plan for the proposed development.
4. Minor changes may be made in the SIA and final documents, as requested by the Planning, Legal or Public Works Departments to clarify the documents and bring them into the standard acceptable format.
5. The final plat shall comply with all requirements of the City of Billings Subdivision Regulations, rules, regulations, policies, and resolutions of the City of Billings, and the laws and Administrative Rules of the State of Montana.

PROCEDURAL HISTORY

Pre-Application Meeting: July 14, 2025
Preliminary Plat application submitted to Planning Division: November 3, 2025
Departmental Review Meeting: November 13, 2025
Preliminary Plat Resubmittal: November 20, 2025
Planning Board Plat Review: December 9, 2025
Planning Board Public Hearing: December 23, 2025
Preliminary Plat to City Council: January 26, 2026
60 Working-Day Preliminary Plat Review period ends: February 4, 2026

- Note: Applicant requested a hold of the application and requested an extension to May 26, 2026 in order to accommodate alterations to their proposed zone change prior to being brought to the Planning Board. Therefore, the following dates apply:
 - Planning Board Plat Review: April 14, 2026
 - Planning Board Public Hearing: April 28, 2026
 - Preliminary Plat to City Council: May 26, 2026

PLAT INFORMATION

General Location: North of Central Avenue, south of Broadwater Avenue

Legal Description: Lot 3 & Lot 4 of Barber Farm Subdivision

Owner/Subdivider: Kari Ellen, Donna Marie, and Diana Lynne Barber

Engineer/Surveyor: Performance Engineering

Existing Zoning: A-Agriculture

Existing Land Use: agricultural land

Proposed Zoning: PND - CMU1, NX1, N2, N3 and P1 (Zone Change 1078)

Proposed Land Use: Residential & Commercial

Gross Area: ± 55.46 Acres

Lot Size:

Minimum: ± 0.63 Acres

Maximum: ± 11.83 Acres

Parkland Requirements: Subdivision regulations require a dedication of .22 acres. However, zoning regulations require 2% of the area included within a planned neighborhood development to be open space. This would require 1.11 acres. The applicant has provided 2 acres of open space through the PND.

PHASING

The subdivision will be constructed in two phases. Public improvements associated with these phases shall be constructed or monetarily guaranteed prior to opening the phase.

- **Phase I:** Lot 1, Block 2 and Lot 1, Block 3.
 - Double Haul Lane, Road B, and Road C constructed entirely from Central Avenue to the northern property line of Lot 1, Block 2 and Lot 1, Block 3.
 - West curb and gutter and 35 feet of asphalt will be constructed for Road A from Central Avenue to Road B.
 - Sanitary sewer will be constructed up to the northern property line of Lot 1, Block 2 and Lot 1, Block 3
 - Water main will be constructed up to the northern property line of Lot 1, Block 2 and Lot 1, Block 3
 - Stormwater detention facility, and associated storm drain and inlets, serving Phase 1 and incorporating management plan for Phase 2 will be constructed.
- **Phase II:** Lots 1-4, Block 1; Lot 2, Block 2; and Lots 2-3, Block 3.
 - Road C will be constructed from the terminus of Phase I to the intersection with Broadwater Avenue.
 - Broadwater Avenue will be constructed along the northern boundary of the subdivision.

Traffic Impact Study (TIS) CONCLUSIONS

Analysis of trip generation estimates, traffic operations, and considerations for alternative modes of transportation reveal that the proposed Central Avenue Subdivision project will have minimal impact on area traffic operations. Based on the additional lots created with the Central Avenue Subdivision, the percentage of traffic contributions and associated cost to these intersections based on a pro-rata share, as negotiated with City Engineering, are as follows:

- **Phase I**
 - Broadwater Avenue and Shiloh Road -- 1.0%
 - Central Avenue and 48th Street West -- 0.4%
 - Central Avenue and Shiloh Road -- 3.5%
 - Central Avenue and South 44th Street West -- 5.3%
- **Phase II**
 - Broadwater Avenue and Shiloh Road -- 1.5%
 - Central Avenue and 48th Street West -- 1.6%
 - Central Avenue and Shiloh Road -- 7.3%
 - Central Avenue and South 44th Street West -- 8.9%

STAKEHOLDERS

There are no stakeholder responses at this time. Stakeholder input will be received at a public hearing scheduled for this subdivision on April 28, 2026.

Planning Board Plat Review - April 14

Planner Dave Green gave a presentation outlining the proposed subdivision. After his presentation ended, the Planning Board invited the applicant's agent, Taylor Kasperik of Performance Engineering. Taylor likewise gave a presentation to the Planning Board about the proposed subdivision, detailing the intent of the lot groups and their associated zoning. Boardmember Staley asked about the road width for the commercial lots, and inquired about the addition of speed bumps on the main road within the subdivision to reduce the likelihood of speeding. Boardmember Staley also asked about connectivity of Broadwater Avenue will be affected in the future via this subdivision, with staff noting that Broadwater will eventually connect to Shiloh as adjacent lots develop. There were no more questions for staff or the applicant.

ALTERNATIVES

In accordance with state law, the City Council has 60 working days to act upon this major preliminary plat. The 60 working day review period for the proposed plat ends May 26, 2026 State and City subdivision regulations also require that preliminary plat be reviewed using specific criteria, as stated within this report. The City may not unreasonably restrict an owner's ability to develop land if the subdivider provides evidence that any identified adverse effects can be mitigated. Within the 60 working day review period, the City Council is required to:

1. Approve;
2. Conditionally Approve; or
3. Deny the Preliminary Plat

Note: The original 60-day working period ended on February 4, 2026. The applicant requested a hold of the application and requested an extension to May 26, 2026 in order to accommodate alterations to their proposed zone change.

FISCAL EFFECTS

The preliminary plat of this subdivision will have no financial impact on the Planning Division.

SUMMARY

One of the purposes of the City's subdivision review process is to identify potential negative effects of property being subdivided. Negative effects that are identified become the subdivider's responsibility to mitigate. Various City departments, private service/utility providers and the affected school district/s, have reviewed this application and provided input on effects and mitigation. The Findings of Fact, which are presented as an attachment, discuss potential negative impacts of the subdivision and conditions of approval are recommended as measures to further mitigate any impacts. In this case, there were found to be minimal impacts from this proposed subdivision.

Attachments

Preliminary Plat
Draft Subdivision Improvement Agreement
Findings of Fact
Variance Request Letter
Traffic Study

PRELIMINARY PLAT OF CENTRAL AVE SUBDIVISION

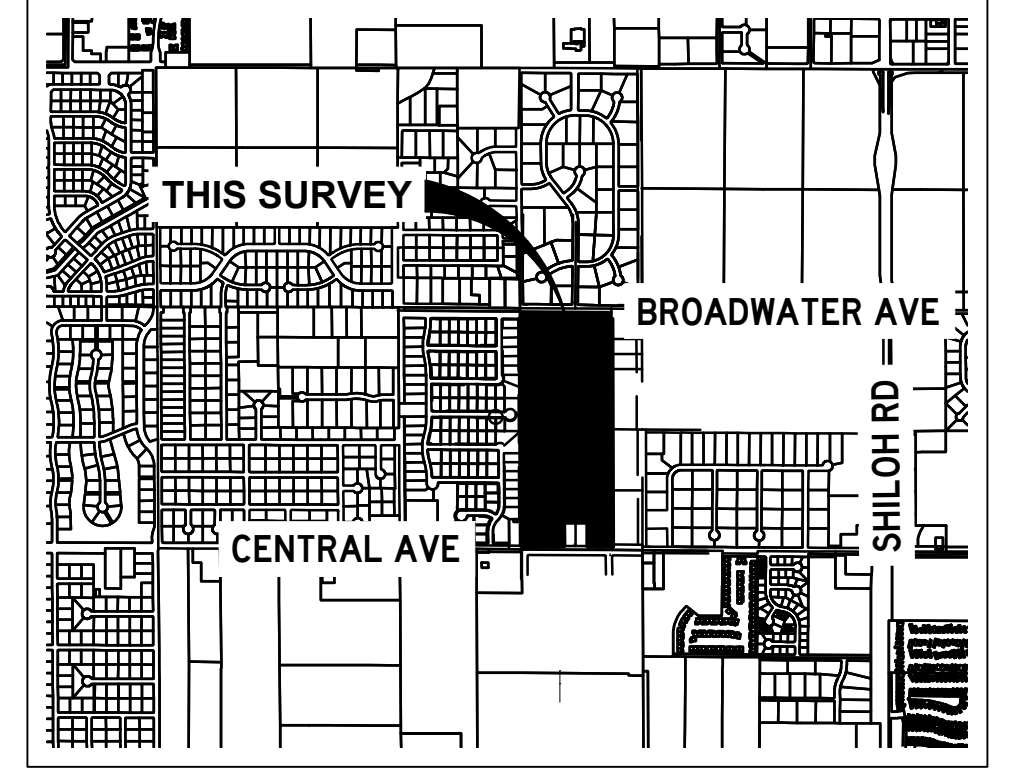
BEING TRACT 3 OF BARBER FARMS SUBDIVISION
LOCATED IN THE SW 1/4 OF SECTION 3, TOWNSHIP 01 SOUTH, RANGE 25 EAST, P.M.M.,
YELLOWSTONE COUNTY, MONTANA

PREPARED FOR : KARIN ELLEN, DONNA MARIE,
AND DIANA LYNNE BARBER



PREPARED BY : PERFORMANCE ENGINEERING, LLC

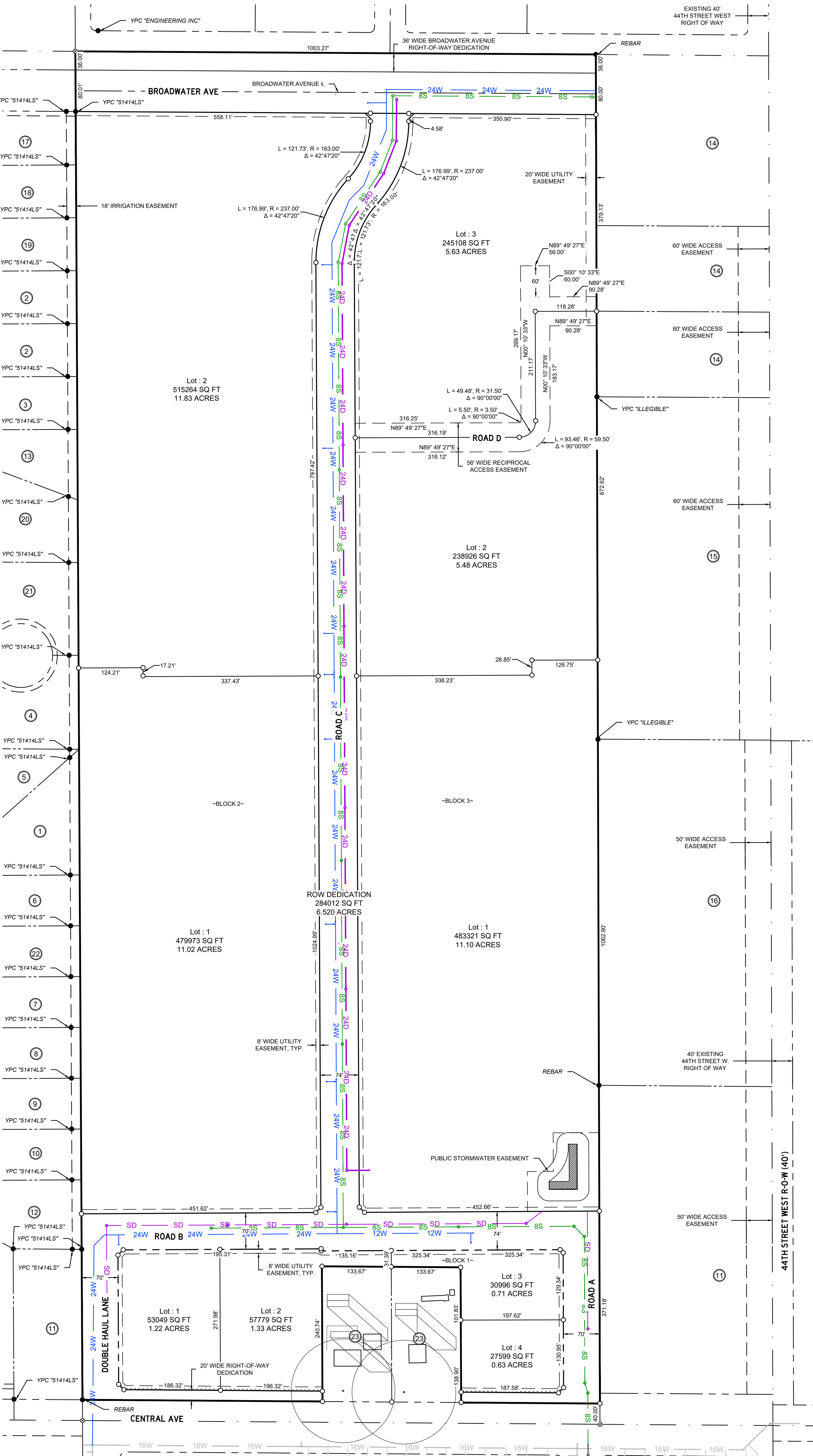
TOTAL GROSS AREA OF SUBDIVISION : ± 55.465
TOTAL NET AREA OF SUBDIVISION : ± 48.992
SEPTEMBER 2025



VICINITY MAP
NOT TO SCALE

LEGEND

- FOUND PROPERTY CORNER, AS DESCRIBED
- SET PROPERTY CORNER, 5/8" REBAR W/ PEC CAP
- ⊗ CALCULATED CORNER, NOT FOUND NOT SET
- SURVEY BOUNDARY
- - - EXISTING PROPERTY LINE
- - - PROPOSED PROPERTY LINE
- - - RIGHT-OF-WAY LINE
- - - EASEMENT LINE
- - - SECTION LINE



SITE DATA	
NO. OF LOTS	8
MAXIMUM LOT AREA	± 515,319 SF
MINIMUM LOT AREA	± 27,649 SF
PARKLAND AREA REQUIRED	48,317 SF
PARKLAND AREA PROVIDED	67,954 SF
GROSS ACREAGE	± 55.46 AC
EXISTING ZONING	A
EXISTING LAND USE	AGRICULTURAL
PROPOSED LAND USE	CMU/NX1/N2/P1
SANITARY SEWER	CITY OF BILLINGS
WATER	CITY OF BILLINGS
FIRE SERVICE AREA	BILLINGS FIRE DEPT.

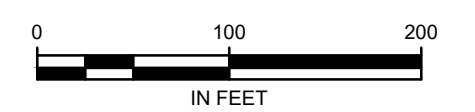
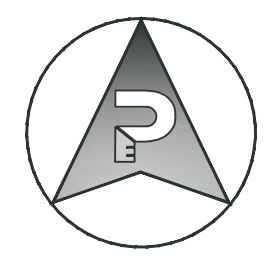
PROPERTY OWNER INFORMATION

- 1 REGAL LAND SUNDANCE, LLC
PO BOX 80445
BILLINGS, MT 59108
- 2 LC CUSTOM HOMES, INC.
2044 BROADWATER AVE, SUITE A
BILLINGS, MT 59102
- 3 MATTHEW W & CHELSEA THOMPSON
5234 BLACK STONE CIR
BILLINGS, MT 59106
- 4 TONY & JOY GAFFKE
4602 LIAHONA LN
BILLINGS, MT 59106
- 5 WILLARD HENRY BARRY & MELINDA SUE TRUSTEE
4607 SUN BASIN RD
BILLINGS, MT 59106
- 6 MARSICH INVESTMENTS, INC.
4804 VERDE LN
BILLINGS, MT 59106
- 7 JAMES & CATHERINE MCDONALD
205 SUNDANCE RIDGE RD
BILLINGS, MT 59106
- 8 PATRICK PETER MCDONALD & MARGARET ANN CARROLL
189 SUNDANCE RIDGE RD
BILLINGS, MT 59106
- 9 JOHN & LISA RITTENHOUSE
165 SUNDANCE RIDGE RD
BILLINGS, MT 59106
- 10 JAMILYN WELLS & CURTIS HARRIS
139 SUNDANCE RIDGE RD
BILLINGS, MT 59106
- 11 BRADLEY W HARDT
4620 CENTRAL AVE
BILLINGS, MT 59106
- 12 KENNETH AUGUST SCHAEFBAUER
117 SUNDANCE RIDGE RD
BILLINGS, MT 59106
- 13 ALAN MOOER
507 CANDLE LIGHT LN
BILLINGS, MT 59106
- 14 BIEGEL PROPERTIES LLC
4221 WELLS PL
BILLINGS, MT 59106
- 15 STEVE & CANDACE WELLS
PO BOX 80445
BILLINGS, MT 59108
- 16 JOHN L THIEL REVOCABLE TRUST
C/O JOHN L THIEL, TRUSTEE
PO BOX 81530
BILLINGS, MT 59108
- 17 JARDEE RANCH INC
1441 MILL IRON CAMP CROOK RD
EKALAKA, 59324
- 18 RICHARD & SUSAN REPUCCI
643 CANDLE LIGHT LN
BILLINGS, MT 59106
- 19 ROBERT & STACEY LOUCKS
613 CANDLE LIGHT LN
BILLINGS, MT 59106
- 20 CODY KEGEL
501 CANDLE LIGHT LN
BILLINGS, MT 59106
- 21 FREDRICK & PEGGY SCHNEIDER
4231 JULAURA LN
BILLINGS, MT 59106
- 22 JAMES & CATHERINE MCDONALD
PO BOX 7454
FORT WORTH, TX 76111
- 23 DONNA MARIE, DIANA LYNNE, & KARIN ELLEN BARBER
PO BOX 121
HOGELAND, MT 59529

BASIS OF BEARINGS

Bearings shown on this survey are derived from a low distortion Lambert Conformal Conic single parallel projection with parameters as follows:

Latitude of Origin: 45° 47' 00" N
Longitude of Origin: 108° 25' 00" W
Mapping Scale Factor: 1.0001515
Datum: Nad83 (2011)
Distances are ground.



SHEET 1 OF 1

**SUBDIVISION IMPROVEMENTS AGREEMENT
& WAIVER OF RIGHT TO PROTEST FUTURE SPECIAL IMPROVEMENT
DISTRICTS**

Central Avenue Subdivision

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(City of Billings)

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**SUBDIVISION IMPROVEMENTS AGREEMENT
& WAIVER OF RIGHT TO PROTEST FUTURE SPECIAL
IMPROVEMENT DISTRICTS**

Central Avenue Subdivision

This agreement is made and entered into this ____ day of _____, 20__, by and between *CK Land, LLC*, whose address for the purpose of this agreement is **2729 Aspen Way, Billings, MT 59106**, hereinafter referred to collectively as “Subdivider,” and the **CITY OF BILLINGS**, Billings, Montana, hereinafter referred to as “City.”

WITNESSETH:

WHEREAS, the plat of *Central Avenue Subdivision*, located in Yellowstone County, Montana, was submitted to the Yellowstone County Board of Planning; and

WHEREAS, at a regular meeting conducted on ____ day of _____, 20__, the Board of Planning recommended conditional approval of a preliminary plat of *Central Avenue Subdivision*; and

WHEREAS, at a regular meeting conducted on ____ day of _____, 20__, the City Council conditionally approved a preliminary plat of *Central Avenue Subdivision*; and

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

WHEREAS, the provisions of this agreement shall be effective and applicable to *Central Avenue Subdivision* 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 City of Billings Subdivision Regulations, the rules, regulations, policies, and resolutions of the City of Billings, 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 has requested, and the City hereby grants, the following variances by the City Council from the strict interpretation of the City’s Subdivision Regulations (Section 23.1101, BMCC):

1. Variance from Section 23-406-A.1: Streets and Roads, A, 1. Said section requires developments to provide connections from the subdivision to undeveloped land.

This subdivision is providing a connection to four (4) of the five (5) adjacent undeveloped lots. Said undeveloped lots have been previously divided, and are of a particular parcel size that they may, or may not, be further subdivided upon development thus not necessitating or continuing a connection.

2. Variance from Section 23-405: Blocks, A. Said section requires block dimensional standard to be met, including block perimeter, section, and length. Said requirements are planned to met at final development of the created parcels, however as large lots are being proposed it causes the need for variance from said block dimensional standards.

II. PROPERTY CONDITIONS AND INFORMATION FOR LOT PURCHASERS

- A. Lot owners will be required to construct sidewalk along the segment of the existing access road(s) that fronts their property at the time of lot development. If sidewalk is not constructed within 5 years, the City has the right to construct the sidewalk and assess the property owners.
- B. 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.
- C. 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.
- D. 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.
- E. 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.

- F. The subdivider and subsequent contractors/builders acknowledge that there is a Stormwater Pollution and Prevention Plan (SWPPP) filed with the city and the Montana Department of Environmental Quality (MDEQ). This SWPPP shall be adhered to during all phases of construction and shall be updated as required by MDEQ under the General Permit for Stormwater Discharges Associated with Construction Activity, Chapter 28, BMCC and the Billings Stormwater Management Manual.
- G. Individual lot owners should be aware that Best Management Practices for stormwater control shall be required for new construction on lots. Best Management Practices are defined within Section 28-201, BMCC and detailed in the Billings Stormwater Management Manual.

III. TRANSPORTATION

A. Streets

- Central Avenue currently exists in a 100-foot wide rights-of-way. As part of the development an additional 20-feet of rights-of-way will be dedicated extending north from the edge of existing Central Avenue rights-of-way. Additionally, a 70-foot wide rights-of-way for Double Haul Lane, Road A, and Road B, and a 74-foot wide rights-of-way for Road C will be dedicated for public roads and utilities within the development. Said rights-of-way widths are in conformance with the Subdivision Regulations for commercial and collector roadways, respectively. Broadwater Avenue currently exists as an 80' rights-of-way previously dedicated as part of Barber Farm Subdivision.
- A westbound right turn lane on Central Avenue at Road A will be constructed as part of Phase I of the Subdivision improvements.
- Eastbound left turn lanes on Central Avenue at Road A and Double Haul Lane will be constructed as part of Phase II of the Subdivision improvements.
- Double Haul Lane and Road B (west of Road C) will be constructed as commercial local access streets meeting City of Billings subdivision requirements, being constructed to commercial local street widths. Road B east of its intersection of Road C will be constructed as a collector roadway street meeting City of Billings subdivision requirements, being constructed to a collector road width. Improvements will be completed by private contract or SID.
- Road A will be constructed as a collector roadway street meeting City of Billings subdivision requirements, being constructed to a collector road width. At the time of development, Road A will include curb and gutter on

the west side of the street and 35 feet of asphalt paving. Curb and gutter on the east side of the street and the additional asphalt paving shall be constructed as Parcel 2A1 of COS 2007, Amended is annexed into the City of Billings and developed.

- Road C shall be constructed as a collector street meeting City of Billings subdivision requirements, being constructed to a collector road width. Improvements will be completed by private contract or SID. Road C will be constructed to the north edge of Phase 1 and incorporate a fire apparatus turnaround. Upon opening of Phase 2, the remaining length of Road C will be constructed to its intersection with Broadwater Avenue, which will also be constructed as a City of Billings collector roadway from the western edge of the development to the eastern edge of the development at that time.
- Broadwater Avenue shall be constructed as a collector street meeting City of Billings subdivision requirements. At the time of development, Broadwater Avenue will include curb and gutter on the south side of the street and 35 feet of asphalt paving. Improvements will be completed by private contract or SID. Final alignment of Broadwater Avenue to be determined by City Engineering.
- No connection to Bluegrass Drive West is proposed at this time, and the Subdivider waives the right to protest inclusion in a future SID should the connection be pursued by the City of Billings.
- A Traffic Impact Study has been completed for the *Central Avenue Subdivision*. All required intersection improvement contributions identified therein shall be completed by the Subdivider at the Subdivider's expense. Based on the additional lots created with the *Central Avenue Subdivision*, the percentage of traffic contributions and associated cost to these intersections based on a pro-rata share, as negotiated with City Engineering, are as follows:
 - Phase I -
 - Broadwater Avenue and Shiloh Road – 1.0%
 - Central Avenue and 48th Street West – 0.4%
 - Central Avenue and Shiloh Road – 3.5%
 - Central Avenue and South 44th Steet West – 5.3%
 - Phase II-
 - Broadwater Avenue and Shiloh Road – 1.5%
 - Central Avenue and 48th Street West – 1.6%
 - Central Avenue and Shiloh Road – 7.3%
 - Central Avenue and South 44th Steet West – 8.9%

The cash contributions shall be based on the percentage of traffic contributions to the intersections based on the total cost of an intersection as determined by City Engineering for the year in which the contribution is made. These cash contributions for the intersection improvements will be made prior to final plat approval. The percentage of contributions are as outlined within the Traffic Impact Study for *Central Avenue Subdivision* as submitted with the preliminary plat.

B. Sidewalks

- Individual lot owners will be responsible for the construction of the sidewalks adjacent to public rights-of-way fronting their lot at the time of lot construction and shall be included in each building permit.
- Sidewalks shall be 5-foot-wide boulevard style walks aside from the areas designated for an 8' wide asphalt trail, as indicated in "Section F".
- ADA ramps shall be installed by the Subdivider at the time of construction of public improvements.

C. Street Lighting

- Street lighting in the public rights-of-way will be installed by private contract or SID. A Street Light Maintenance District will be created in the future and is included in the waiver of right to protest.

D. Traffic Control Devices

- Street name signs for streets within the subdivision, or located immediately adjacent thereto, shall be furnished and installed in accordance with the specifications of the City of Billings Public Works and Fire Departments.
- No traffic signals are anticipated to be warranted within this subdivision. Stop signs shall be installed on the southbound lane of Double Haul Lane and Road A at their intersections with Central Avenue, as well as the southbound lane of Road C at its intersection with Road B and northbound lane at its intersection with Broadwater Avenue.
- The Subdivider shall furnish and install all necessary traffic control devices in accordance with the Manual of Uniform Traffic Control Devices and approved by the City of Billings Public Works Department.
- As detailed in the TIS prepared for the Subdivision and within the City of Billings Subdivision Regulations, traffic calming measures will be incorporated on roadways without traffic controls for distances greater than 500'.

E. Access

- The Subdivision will be accessed by way of Central Avenue through intersections at Double Haul Lane and Central Avenue and Road A and Central Avenue during Phase 1
- The Subdivision will have a third access point at the time Phase 2 is built out which will connect to the existing eastern edge of Broadwater Avenue north of Sundance Subdivision and progress west to Broadwater Avenue's intersection with 48th Street West.
- Double Haul Lane, Road A, Road B and Road C will be public rights-of-way providing access to the lots within the development.

F. Billings Area Bikeway and Trail Master Plan

As part of this project, an 8-foot wide asphalt trail will be constructed as adjacent lots are developed. This trail will be constructed at the time of lot development in the areas as follows:

- On the west side of Road A from Central Avenue to Road B.
- On the south side of Road B from Road A to Road C.
- On the east side of Road C from Road B to Broadwater Avenue.

G. Public Transit

- MET Transit provides service along Central Avenue with the closest stop at the intersection of Central Avenue and Shiloh Road, approximately 0.5 miles east of the Subdivision. No improvements are required to ensure public transit service.

IV. EMERGENCY SERVICE

Construction of buildings made of combustible materials shall have adequate fire apparatus access roads and water supply (fire hydrants) in place to allow for fire suppression requirements. Prior to the issuance of a building permit for construction using combustible materials (i.e. lumber, plywood, wood trusses, etc.), fire apparatus access roads and water supply requirements shall be provided in accordance with the International Fire Code as adopted by the City of Billings.

At a minimum, the following is required:

- An unobstructed gravel road or gravel road base must be within 150 feet of the furthest portion of a building under construction as measured along the approved route.
- The access roads are required to support fire apparatus vehicle loading (40 tons) during all weather conditions and shall be a minimum of twenty (20) feet wide.
- An operational fire hydrant shall be located within 600 feet of the furthest portion of a residence under construction or within 400 feet of the furthest portion of a commercial building under construction as measured along the access roads to the site.
- The above requirements do not alter or effect the current minimum subdivision requirements for fire apparatus access and water supply.

V. STORM DRAINAGE

All drainage improvements shall comply with the provisions set forth in Chapter 28, BMCC, and the Stormwater Management Manual in place at the time of development. A complete stormwater management plan shall be submitted to the Engineering Division for review and approval at the time of private contract permitting for public facilities and as part of individual lot development.

Stormwater drainage will be collected and conveyed to detention facilities located within areas that will serve as private parkland. These underground detention facilities will be sized to accept runoff generated from the public rights-of-way of Double Haul Lane, Road A, Road B, Road C and Broadwater Avenue. It is anticipated infiltration of captured stormwater will be utilized to evacuate the stored water, with connection to underlying gravels providing the capacity for this means. Stormwater treatment will comply with the City of Billings Stormwater Management Manual. The detention facilities will be within a “Stormwater Detention Easement” that will be determined by the final approved Comprehensive Drainage Report. The detention facility will be managed and maintained by the Subdivision Owner’s Association.

VI. UTILITIES

The Subdivision Improvements Agreement does not constitute an approval for extension of or connection to water mains and sanitary sewers. The property owner shall make application for extension/connection of water mains and sanitary sewers to the Public Works Department – Engineering Division. The extension/connection of/to water mains and sanitary sewers is subject to the approval of the applications and the conditions of approval. Applications shall be submitted for processing prior to the start of any construction and prior to review and approval of any project plans and specifications.

The Developer/Owner acknowledges that the Subdivision shall be subject to the applicable System Development Fees in effect at the time new water and/or sanitary sewer service connections are made.

The design/installation of sanitary sewers and appurtenances, and water mains and appurtenances (fire hydrants, etc) shall be in accordance with design standards, specifications, rules, regulations of and as approved by the City of Billings Public Works Department, Fire Department and the Montana Department of Environmental Quality.

A. Water

- The Subdivision will be extending a 24-inch water main north through the subdivision within Double Haul Lane, Road B (west of Road C), Road C, and continuing east through Broadwater Avenue from Road C. Said 24-inch water main will connect onto the existing 16-inch water main within Central Avenue prior to being extended.
- The Subdivision will extend a 12-inch water main east of Road C within Road B to a point along Lot 3, Block 1 to provide service to said lot.
- Lot 4, Block 1 will be serviced from the existing 16-in water main located south of Central Avenue. The Developer will reimburse for the constructed water main along the Subdivision's frontage in accordance with the City's Rules and Regulations Governing Water and Wastewater Service.

B. Sanitary Sewer

- The Subdivision will be extending an 8-inch sanitary sewer main from the existing 8-inch sewer south of Central Avenue. The Developer is responsible for extending the 8-inch main through Road A, Road C, and east through Broadwater Avenue. 8-inch sewer main will be constructed within Road B east of its intersection with Road C, and far enough west within Road B to provide service to Lots 1 and 2 of Block 1.

C. Power, Telephone, Gas, and Cable Television

All telephone, gas, electrical power, and cable television lines within the public rights-of-way shall be installed prior to surface improvements. Private utility easements are provided along the front lot lines of lots as shown on the plat.

VII. PARKS/OPEN SPACE

- Section 27-803 of the City Code of Billings, Montana covers the open space requirements for Planned Neighborhood Developments. Table 27-

800.1 calls for a minimum of 2 percent of the land proposed to be zoned for open space. The required open space for the subdivision is 1.11 acres.

- No parkland dedication is required outside that included in Section 27-803 as the subject lots are commercial or greater than 5 acres.

VIII. IRRIGATION

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 unless authorization from current and downstream users is provided.

IX. SOILS/GEOTECHNICAL STUDY

A geotechnical investigation was performed for the area and can be obtained from the City Engineering Department office.

X. PHASING OF IMPROVEMENTS

The Subdivision will be constructed in phases as defined below. Public improvements associated with these phases shall be constructed or monetarily guaranteed prior to opening the phase.

- Phase I: Lot 1, Block 2 and Lot 1, Block 3.
 - Double Haul Lane, Road B and Road C constructed entirely from Central Avenue to the northern property line of Lot 1, Block 2 and Lot 1, Block 3.
 - West curb and gutter and 35 feet of asphalt will be constructed for Road A from Central Avenue to Road B.
 - Sanitary sewer will be constructed up to the northern property line of Lot 1, Block 2 and Lot 1, Block 3
 - Water main will be constructed up to the northern property line of Lot 1, Block 2 and Lot 1, Block 3
 - Stormwater detention facility, and associated storm drain and inlets, serving Phase 1 and incorporating management plan for Phase 2 will be constructed.
- Phase II: Lots 1-4, Block 1; Lot 2, Block 2; and Lots 2-3, Block 3.
 - Road C will be constructed from the terminus of Phase I to the intersection with Broadwater Avenue.
 - Broadwater Avenue will be constructed along the northern boundary of the subdivision.

XI. FINANCIAL GUARANTEES

Except as otherwise provided, Subdivider shall install and construct said required improvements with cash or by utilizing the mechanics of a private contract secured by letters of credit or a letter of commitment to lend funds from a commercial lender, or by SID. All engineering and legal work in connection with

such improvements shall be paid by the contracting parties pursuant to said private contract, and the improvements shall be installed as approved by the City Engineer and Utility Department Manager.

XII. LEGAL PROVISIONS APPLYING TO SUBDIVIDER

- A.** Subdivider agrees to guarantee all public improvements for a period of two year from the date of final acceptance by the City of Billings.
- 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 run with the land and apply to and shall be binding on the heirs, personal representatives, successors, assigns and transferees 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.

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

“SUBDIVIDER”

CK Land, LLC

By: _____

Title: _____

STATE OF MONTANA)

: ss

County of)

On this ____ day of _____, 20__, before me, a Notary Public in and for the State of _____, personally appeared _____, known to me to be the _____ of *CK Land, LLC*, who executed the foregoing instrument and acknowledged to me that he/she executed the same.

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

This agreement is hereby approved and accepted by the City of Billings, this ____ day of _____, 20__.

“CITY”
CITY OF BILLINGS
MONTANA

By: _____
Mayor

Attest: _____
City Clerk

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 Mayor and City Clerk, respectively, of the City of Billings, Montana, whose
names are subscribed to the foregoing instrument in such capacity and acknowledged to
me that they executed the same on behalf of the City of Billings, Montana.

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

Waiver of Right to Protest

FUTURE SPECIAL IMPROVEMENT DISTRICTS

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 special improvement district(s) for a period of no more than twenty years from the recording of this waiver, for street light maintenance and energy, and for the construction of streets, street widening, sidewalks, survey monuments, street name signs, curb and gutter, street lights, driveways, traffic signals, and traffic control devices, parks and park maintenance, trails, sanitary sewer lines, water lines, storm drains (either within or outside the area), and other improvements which the City of Billings 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.

This Waiver is in addition to any other recorded waiver related to the property described herein and is not intended to replace, supersede, or invalidate any such waiver.

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

Central Avenue Subdivision

Signed and dated this _____ day of _____, 20__.

FINDINGS OF FACT

The Planning staff has prepared the Findings of Fact for the preliminary plat of Central Avenue Subdivision. These findings are based on the preliminary plat application and supplemental documents and address the review criteria required by the Montana Subdivision and Platting Act (76-3-608, MCA) and the Billings Subdivision Regulations (Section 23-303(H), BMCC).

A. What are the effects on agriculture, local services, the natural environment, wildlife, wildlife habitat, and public health, safety and welfare? [MCA 76-3-608 (3) (a) and BMCC 23-302.H.2.]

1. Effect on agriculture and agricultural water user facilities

The subject property is Agricultural. Perimeter ditches and drains shall remain in place and not be altered by the subdivider or subsequent owners. The subdivision should not affect agricultural water users' facilities.

2. Effect on local services

- a. **Utilities** – Water service will be provided by the City of Billings. New individual services will be provided to all the lots, and new fire hydrants will be installed as required by the City Fire Department. The water service for this subdivision comes from Central Avenue. Any needed extension of those water lines will be installed by the subdivider to meet the requirements of the City of Billings Engineering Department regulations. The subdivider will install all new water lines in the local streets and individual services for each lot in accordance with design standards, specifications, rules and regulations of the City of Billings Engineering/Public Works Department and MDEQ. This is outlined in the SIA under the heading VI Utilities, A, Water.

Sanitary sewer service will be provided by connecting to the existing City of Billings' sewer mains. There is an existing main in Central Avenue. All new services shall be installed in accordance with design standards, specifications, rules and regulations of the City of Billings Public Works Department and MDEQ. This is outlined in the SIA under the heading VI Utilities, B, Sanitary Sewer.

Private Utilities will be provided from existing facilities to the subdivision. No additional easements on the lot frontage have been requested.

Stormwater – Stormwater drainage for the public streets is proposed to be provided by curb and gutters that discharge into storm water pipes. These and all other drainage improvements shall satisfy the criteria set forth by the *City of Billings Stormwater Management Manual* and will be subject to review and approval by the City Engineering Department.

- b. **Solid Waste** – The City of Billings will provide solid waste collection and disposal. The City's landfill has adequate capacity for this waste.

- a. **Streets** – The subdivision is adjacent to Central Avenue and Broadwater. Both of these streets are developed rights of way. A westbound right turn lane on Central Avenue at Road A will be constructed as part of Phase I of the Subdivision improvements. Eastbound left turn lanes will be constructed as part of Phase II of the Subdivision improvements. No other street improvements are anticipated at this time. Street improvements are included in the Waiver of Right to Protest Future Special Improvement Districts.

The sidewalks will be installed by the respective lot owner on a lot-by-lot basis, as lots develop. Sidewalks along the street frontage shall be minimum 5-foot-wide and separated with a boulevard width not less than five feet. The developer will also install all ADA required ramps at the intersections within the proposed subdivision. This information is all in the SIA under the heading Transportation.

- b. **Emergency Services** – The Billings Police and Fire Departments will respond to emergencies within the proposed subdivision. The nearest fire station is Station #7 approximately 2.20 road miles or 5 minutes driving time to the subject property. The subdivision is located within the ambulance service area of American Medical Response (AMR).
- c. **Schools** – School District #2 provides educational services to elementary through high school students. Meadowlark Elementary School will provide educational services for elementary students, with 644 enrolled students out of a capacity of 460 students. Ben Steele Middle School will provide educational services for middle school students, with 738 enrolled students out of a capacity of 750 students. West End high school will provide education services for high school students, with 2176 enrolled students out of a capacity of 1731 students.
- d. **Parks and Recreation** – This subdivision is part of a planned neighborhood development. The parkland requirements have been met with the previous filing of the subdivision.
- e. **Mail Delivery** - The United States Postal Service will provide postal service to the subdivision and has indicated that centralized mailbox units will be required as were installed for the previous filings of this subdivision. The developer will need to coordinate mailbox locations with the postal service (**Condition #1**).
- f. **Phasing** – The subdivision is proposed to be constructed in phases as defined below. Public improvements associated with these phases shall be constructed or monetarily guaranteed prior to opening the phase (**Condition #2**).

- Phase 1: Lot 1, Block 1 & Lot 1, Block 3
- Phase 2: Lots 1-4, Block 1; Lot 2, Block 2; Lots 2-3, Block 3

3. Effect on the natural environment

The subject property is currently agricultural with the proposed use of commercial and residential development. The property is not located in a floodplain. During development, storm water pollution prevention best management practices are required to be used and monitored to prevent erosion on exposed ground. Overall, the effect on the natural environment should be minimal.

4. Effect on wildlife and wildlife habitat

There are no known endangered or threatened species on the property. There is a paragraph in the SIA that warns future lot owners of the presence of deer in the area, which may cause damage to their landscaping. This subdivision should have a minimal effect on wildlife and wildlife habitat.

5. Effect on the public health, safety and welfare

There will be no significant impacts to public health, safety and welfare because of this subdivision.

B. Was an Environmental Assessment required? [(MCA 76-3-616 and BMCC 23-302.H.1.)]

The proposed subdivision is exempt from the requirement for an Environmental Assessment pursuant to Section 76-3-616, MCA.

C. Does the subdivision conform to the City of Billings 2016 Growth Policy, the 2014 Transportation Plan, and the Billings Area Bikeway and Trail Master Plan? [BMCC 23-302.H.4.]

1. City of Billings 2016 Growth Policy

The proposed subdivision is consistent with the following goals of the Growth Policy:

A. Essential Investments:

- a. Infill development and development near existing City infrastructure may be the most cost-effective.
- b. Neighborhoods that are safe and attractive and provide essential services are much desired.
- c. Mobility and Access (transportation choices in places where goods and services are accessible to all).

B. Prosperity:

- a. Community investments that attract and retain a strong, skilled, and diverse workforce also attracts businesses.

C. Strong Neighborhoods;

- a. Walkable neighborhoods that permit convenient destinations such as neighborhood services, open space, parks, schools, and public gathering spaces foster health, goodwill and social interaction.
- b. Neighborhoods that are safe and attractive and provide essential services are much desired. Implementation of the Infill Policy is important to encourage the development of underutilized properties.

2. West End Area Plan

The proposed subdivision is consistent with the following goals of the West End Area Plan.

• **Planned Growth**

- Conserving land and natural resources by limiting sprawl (unplanned and unmanaged growth) through achieving more compact development.
- Reserving key land parcels for parks and open space.
- Having mixed land use to allow shorter automobile trips, more walking, and less automobile reliance.

3. 2023 Billings Urban Area Long Range Transportation Plan

The proposed subdivision adheres to the goals and objectives of the 2023 Transportation Plan and preserves the street network and street hierarchy specified in the plan.

4. Billings Area Bikeway and Trail Master Plan (BABTMP)

The proposed subdivision is within the jurisdiction of the Billings Area Bikeways and Trail Master Plan. An 8-foot wide asphalt trail will be constructed as adjacent lots are developed east of Road A and Road C and north of Road B east of the intersection of Road B and Road C.

D. Does the subdivision conform to the Montana Subdivision and Platting Act and to local subdivision regulations? [MCA 76-3-608 (3) (b) and BMCC 23-302.H.3.a.]

The proposed subdivision satisfies the requirements of the Montana Subdivision and Platting Act and to the design standards specified in the local subdivision regulations. The subdivider and the local government have complied with the subdivision review and approval procedures set forth in the local and state subdivision regulations.

E. Does the proposed subdivision conform to all requirements of the zoning in effect? [BMCC 23-302.H.3.e.]

The subject property is located within a PND – Planned Neighborhood Development zoning. The lot frontages conform to the requirements of this zone. Other building setbacks and structure specific requirements will be reviewed for compliance at the time of building permit review. Future development is intended to be developed within a

Master Site Plan, which would likewise conform to the zoning requirements. Development within the Master Site Plan process shall conform to block dimension standards (**Condition #3**).

F. Does the proposed plat provide easements for the location and installation of any utilities? [MCA 76-3-608 (3) (c) and BMCC 23-302.H.3.b.]

The subdivider will provide utility easements as requested by private utility companies on the face of the plat.

G. Does the proposed plat provide legal and physical access to each parcel within the subdivision and notation of that access on the plat? [MCA 76-3-608 (3) (d) and BMCC 23-302.H.3.c.]

Phase 1's legal and physical access is provided to the proposed will be from Central Avenue. Phase 2's legal and physical access is provided to the proposed will be from Central Avenue & Broadwater Avenue. New internal access will provide circulation to individual lots.

CONCLUSIONS OF FINDINGS OF FACT

- The preliminary plat of Central Avenue Subdivision does not create any adverse impacts that warrant denial of the subdivision.
- The proposed subdivision conforms to several of the goals and policies of the 2016 Growth Policy nor West End Area Plan and does not conflict with the Transportation or Bikeway/Trail Plans.
- The proposed subdivision complies with state and local subdivision regulations, local zoning, and sanitary requirements and provides legal and physical access to each lot.
- Any potential negative or adverse impacts will be mitigated with the proposed conditions of approval.

RECOMMENDATION

The Planning Board recommends to City Council that the preliminary plat of Central Avenue Subdivision be conditionally approved, the variances accepted and adopt the Findings of Fact as presented in the staff report.

Variance Request A
Central Avenue Subdivision

Central Avenue Subdivision is a proposed major subdivision in the City of Billings. The applicant is requesting a variance from Section 23-406 Street and Roads. A. 1

1. Relation to Undeveloped Areas: W h e n a proposed subdivision adjoins undeveloped land, streets within the proposed subdivision shall be arranged to allow access to the adjoining undeveloped land this may require multiple connections to multiple adjacent undeveloped parcels. The maximum distance between connections to undeveloped lands shall not exceed 600 feet.

The subdivision has undeveloped land to the east and providing a future connection to those parcels will give those parcels an opportunity to connect to a road system as well as the possibility to connect to City of Billings services that can be much closer to them. Because the lots within the Central Avenue Subdivision are being developed individually, using the master site plan review process, there is limited opportunity to know where roads will be laid out. The developer is providing connection to 3 lots to the east. Subdivision Regulations required connections every 600 feet. The 600-foot maximum is based on a subdivision being laid out using block lengths outlined in the City of Billings subdivision regulations.

1. The granting of the variance will not be detrimental to the public health, safety, or general welfare or injurious to other adjoining properties. Staff does not believe that granting the variance will be detrimental to the public health, safety, or general welfare of the public. With the connections being provided it will give future development to the east a second way in and out of the area.

2. Because of the particular physical surroundings, shape, or topographical conditions of the specific property involved, an undue hardship to the owner would result if the strict letter of the regulation was enforced. There are no topographical conditions that would create a hardship to the developer. The land has been used as farm land with minimum grades across the land.

3. The variance will not result in an increase in taxpayer burden. The variance will not increase a tax burden on taxpayers.

4. The variance will not in any manner place the subdivision in nonconformance with any adopted zoning regulations or Growth Policy. Granting the variance would not place the subdivision in nonconformance with any adopted zoning regulations or the growth policy.

5. The subdivider must prove that the alternative design is equally effective, and the objectives of the improvements are satisfied. Because the lots to the east are smaller in general the need for a connection every 600 feet would provide many connections but no real need for them if someone were to only place a single home on a large lot. In this case fewer connections are the most logical option.

Variance Request B
Central Avenue Subdivision

Central Avenue Subdivision is a proposed major subdivision in the City of Billings. The applicant is requesting a variance from Section 23-405 Blocks

Block Length means the measurement along the property lines of all lots that share the same street frontage until another street intersects (see Figure 23-405.2.). A block length continues until the street frontage changes from one cardinal direction to another.

TABLE 23-405.1 REQUIRED BLOCK DESIGN; only the zoning for this subdivision is shown.

	Block Length		
	Max.	Min.	Preferred
NX1	780'	160'	600'
N2	950'	160'	720'
CMU1	700'	160'	500'
P1	N/A	N/A	N/A

The proposed subdivision is platting large lots with the intent to do master site plans on the large lots. Large lots have been platted before in the city with the intent of doing a master site plan layout on lots at a later time. Subdivision regulations still require streets to be laid out to meet the requirement of block as required by zoning. Because this subdivision is platting large lots it requires them to request a variance from block layout requirements of the subdivision regulations.

1. The granting of the variance will not be detrimental to the public health, safety, or general welfare or injurious to other adjoining properties. The applicant will be laying out blocks with the development of each lot with the master site plan review. Staff does not believe that granting the variance will be detrimental to the public health, safety, or general welfare of the public.

2. Because of the particular physical surroundings, shape, or topographical conditions of the specific property involved, an undue hardship to the owner would result if the strict letter of the regulation was enforced. There are no topographical conditions that would create a hardship to the developer. The land has been used as farm land with minimum grades across the land.

3. The variance will not result in an increase in taxpayer burden. The variance will not increase a tax burden on taxpayers.

4. The variance will not in any manner place the subdivision in nonconformance with any adopted zoning regulations or Growth Policy. Granting the variance would not place the subdivision in nonconformance with any adopted zoning regulations or the growth policy.

5. *The subdivider must prove that the alternative design is equally effective, and the objectives of the improvements are satisfied.* Because they are platting large lots, the alternative will be to layout the blocks at the time of master site plan review.

Traffic Impact Study

Prepared for submittal to:



for the project:

Barber Farm Subdivision

on behalf of:

Performance Engineering
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PTOE #1185, certified in 2003

October 2025

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- A: Original Raw Count Data for Intersections
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- C: Auxiliary Turn Lane Analysis Charts
- D: Central Avenue at 44th Intersection Signal Warrant Summaries
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1 INTRODUCTION

This report documents the Traffic Impact Study (TIS) conducted for the Barber Farm subdivision project in northwest Billings. This is a working title for the project. Some parts of the site could be marketed under a different name before final occupancy. The study was conducted by and under the direction of a Professional Traffic Operations Engineer and Montana-licensed PE with expertise and experience in traffic engineering.

This TIS builds on findings from the recent TIS conducted for the similar subdivision located due south across Central Avenue, Clearwater/44 West (406 Traffic for Performance Engineering, August 2025) because the two subdivisions will share two new intersections to Central as their primary access points—Barber from the north and Clearwater/44 West from the south. The relationship and timing of these two subdivisions is important for traffic impact analysis and will be described in that context at various points in this report.

1.1 PROJECT SITE AND STUDY AREA

The overall Barber Farm subdivision site location is shown in **Exhibit 1** along with the intersections studied. The following study intersections were identified during preapplication review with City of Billings staff, along with the two access points the Clearwater/44 West subdivision proponent is in the process of constructing:

1. Broadwater Avenue at S. 48th Street West
2. Broadwater Avenue at Shiloh Road
3. Central Avenue at S. 48th Street West
4. Central Avenue at Sundance Ridge Road
5. Central Avenue at Double Haul Lane
6. Central Avenue at S. 44th Street West (called Road A in some application materials)
7. Central Avenue at Shiloh Road

From here forward in this report, existing intersections are generally referred to only by their distinguishing street names (e.g., “Shiloh at Central”) for the sake of brevity. The subdivision’s two new access points on Central Avenue, Double Haul Lane and S. 44th Street West, have only been analyzed for future scenarios because they are not constructed yet. The site’s third access will be to a future extension of Broadwater Avenue, which is expected to be extended east into the site area to serve the second phase. The Broadwater extension will provide access to 48th Street West. Because Broadwater will not be connected to the north or east of the Barber site in the timeline of this project, its connection with the internal collector (Road C) will not function as an intersection and was therefore not analyzed in this study.

1.2 PROPOSED LAND USE AND PHASING

The site is currently agricultural land. The subdivision’s proposed land uses will be a combination of residential and commercial, with 370 single-family attached homes three commercial uses: a 35,000 square-foot (SF) recreational community center (or similar), an 8,500 SF restaurant, and an 8,500 SF building for small office use. These areas are for planning/estimating purposes and could vary slightly as project definition is finalized. The project is divided into two logical phases. Phase 1 contains only residential use—one half (185) of the single-family homes indicated. Broadwater Avenue access was only assumed to be available when Phase 2 opens. Phase 2 contains the remainder of the proposed land uses.

Because the site is generally rural, the types and locations of specific pathways or other facilities and connections for pedestrians and bicycles have not yet been identified. A brief examination of potential traffic calming needs indicated that no local streets have long enough blocks uninterrupted by traffic control devices that the need for such measures could arise. On-street parking is expected to be allowed throughout the site wherever street width and sight distance allow for it and such parking does not interfere with operations at the Central Avenue access intersections.

Exhibit 2 shows the Barber Farm site plan on which the analysis here is based. It indicates land uses and phasing (red = Phase 1), with Central Avenue at the bottom of the page. This site plan drawing is provided for illustrative purposes only. The full high-resolution drawing is submitted separately by the applicant.

Exhibit 1. Overall Site Location and Study Intersections



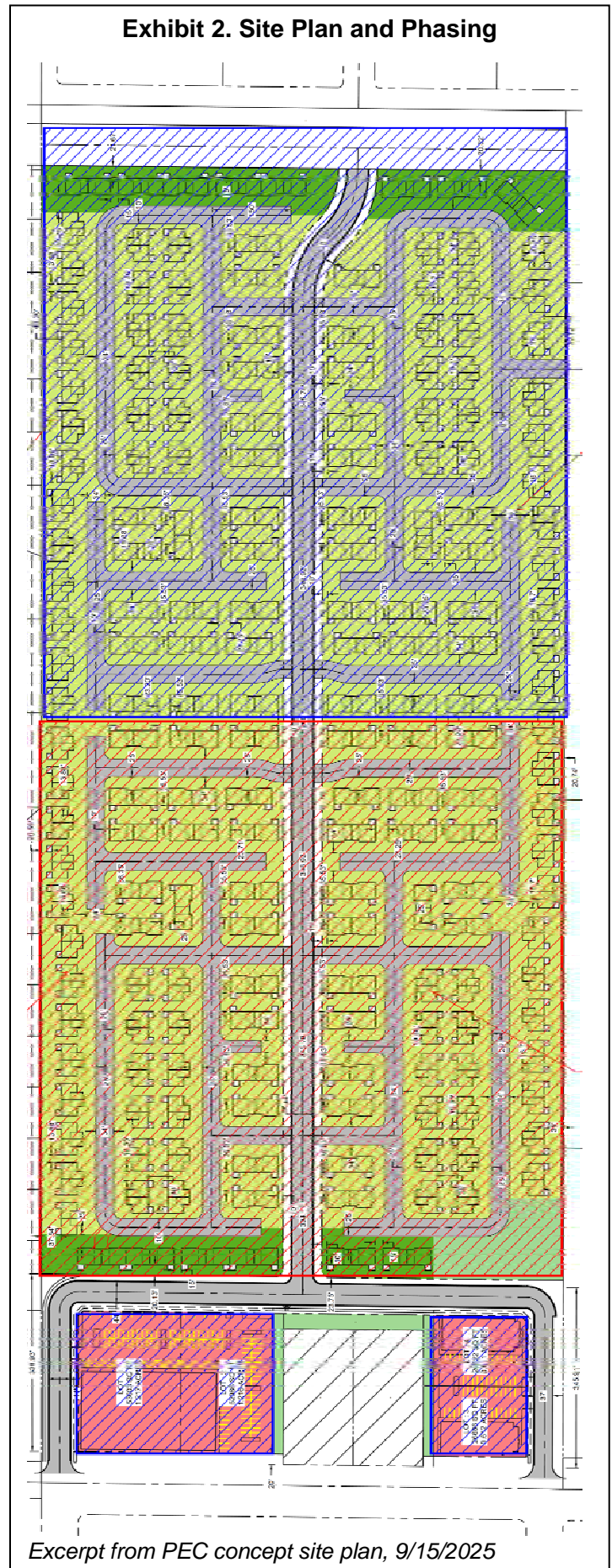
For analysis purposes, both Double Haul Lane and S. 44th Street West were initially assumed to have one northbound lane and one southbound lane at their intersections with Central, such that vehicles leaving the site wait in a single shared lane regardless of their eventual turning movement.

1.3 ANALYSIS METHODS AND REFERENCES

Raw field traffic counts were gathered from other recent traffic study work in the area by Sanbell and provided to this project’s applicant team, along with new intersection counts at Intersections 1 and 4. These raw counts were then adjusted slightly for this TIS based on both (a) recent traffic growth and (b) 2024 City of Billings annualization factors prior to their use in impact analysis.

Trip generation rates, or equations as applicable, are from the Institute of Transportation Engineers (ITE) Trip Generation suite’s 11th edition, which was the most current available at the onset of this study. While the 12th edition became available, the project team used the 11th edition in order to maintain consistency with the Clearwater/44 West TIS. 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. General ITE guidance calls for the use of the fitted curve equation when the data set for the land use type in question is comprised of studies from 20 or more separate sites and when the equation produces a correlation coefficient (R^2) of 0.75 or higher, with 1.0 being the best possible fit.

Operational performance was analyzed at the study intersections through the use of 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. Synchro Studio 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, the most recent available 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). These delay estimates are assigned Level of Service (LOS) grades that range from A (best) to F (worst), as indicated in **Exhibit 3**. 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. “T” intersections with side-street stop control also fall under this category. All stop-controlled intersections in this study area, including the two new proposed accesses to Central, are “T” intersections, where the approach on the stem of the T, rather than a main street turning movement, contains the worst lane group.

Operations impacts are determined by how peak hour LOS relates to acceptability standards. Billings employs a LOS standard of C or better. When LOS without the project is D or worse, an operations impact is usually defined when the project would increase delay.

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

In addition to intersection operations analysis, the need for auxiliary left- and right-turn lanes was examined as part of this study effort. These movements on arterial roadways at stop-controlled site access points with volumes that meet MDT criteria with respect to the department’s guidelines indicated in Chapter 28 of its Traffic Engineering Manual. These auxiliary lanes would serve traffic entering the project site. Only locations with free-flowing traffic on the primary street are considered in this auxiliary lane analysis.

Potential mitigation of traffic impacts at the Central/44th intersection included the examination of traffic signal warrants according to the guidance in the Manual on Uniform Traffic Control Devices (MUTCD).

2 EXISTING AND BACKGROUND CONDITIONS

2.1 STREETS AND INTERSECTIONS

Shiloh Road, which also carries the designation of MT-302, is a north-south urban principal arterial according to the Montana Department of Transportation (MDT), and a principal arterial according to the 2023 Billings Long Range Transportation Plan (LRTP). It has two travel lanes in each direction and a speed limit of 45 mph in the study area. Shiloh Road has been a key facilitator of the city’s westward expansion, with substantial residential and commercial growth having occurred adjacent to it in recent years. It is characterized by a series of roundabouts at intersections with several of western Billings’ east-west arterials and collectors. It also provides access to Interstate 90 via Zoo Drive to the south. A raised median prevents left turns at many two-way stop-controlled intersections. Exclusive left-turn lanes exist at some accesses and local streets. A sidewalk runs along the east side of the road, and a shared-use path called Shiloh Road Trail runs along the west side, much of it separated from the road by a large ditch. There are also two MET Transit bus stops on its east side between the Broadwater and Central roundabouts. These are not considered to be close enough to the project to site to provide meaningful transit access.

Central Avenue is an east-west road that is classified by the MDT as an urban collector to the west of Shiloh Road and as an urban principal arterial to the east of it. It has one travel lane in each direction to the west of Shiloh, and two travel lanes in each direction to the east of it. Its entire length from 64th St W to Montana Avenue is classified as a principal arterial in the 2023 Billings LRTP. It has a speed limit of 45 mph on both sides of Shiloh Road, but it becomes 50 mph to the west of 48th St W. It connects residential neighborhoods to many of western Billings’ commercial centers. Central currently has no exclusive turning lanes or connecting multimodal facilities to the west of Shiloh Road. However, the 2023 Billings LRTP shows that a shared-use path and/or trail are planned to be installed on this segment of Central Avenue and the Clearwater/44 West project has completed construction on such a path on the south side of the road along its frontage. There are

also plans to expand Central Avenue to a three-lane cross-section to the west of Shiloh Road: one travel lane in each direction and a center left-turn lane.

48th Street W is a north-south local road according to the MDT, and a principal arterial according to the 2023 Billings LRTP. It has one travel lane in each direction, and its speed limit is 45 mph to the north of Central Avenue and 50 mph to the south of it. It links residences and agricultural properties on the western edges of Billings to the east-west routes that lead into the city, such as Central Avenue and King Avenue. No exclusive turning lanes or multimodal facilities currently exist on 48th in the study area.

East of Shiloh Road, **Broadwater Avenue** is an east-west urban principal arterial according to the MDT, and a principal arterial according to the 2023 Billings LRTP. It has one travel lane in each direction and a speed limit of 35 mph in the study area. It serves as a link between residential neighborhoods in western Billings, some small commercial centers, and downtown Billings. Its eastern terminus is at its intersection with Division Street, 1st Ave N, and N 36th Street near downtown. Its western terminus is currently at a roundabout intersection with Shiloh Road. Currently, the roundabout's west leg only connects to two agricultural lots in active use, but the roundabout's infrastructure here has been built out in preparation for a future westward extension of the road. The arterial Broadwater Avenue has an exclusive westbound right-turn lane at the Shiloh roundabout. There is a shared-use path on the road's north side, and there is a sidewalk on Broadwater's south side extending east.

West of Shiloh Road, Broadwater is a local road segment is currently disconnected from the rest of the arterial network and only accessible via 48th Street W.

Intersection traffic control currently comes in only three forms at the five existing study intersections: two-way stop control (TWSC), all-way stop control (AWSC), and roundabouts. Each leg of the three roundabouts has a crosswalk with a pedestrian refuge in the splitter island. Most of these crosswalks have solar-powered rectangular rapid flashing beacons. The intersection of 48th Street and Central Avenue is all-way stop-controlled and is augmented with flashing red beacons facing all four directions, but it is projected to be upgraded to signalized control in 2026. **Exhibit 4** shows schematically the existing traffic control and lane arrangements at each existing intersection as well as posted speed limits on selected road segments as of the start of this study effort.

2.2 EXISTING TRAFFIC VOLUMES

Existing (2025) annualized volumes were estimated from raw field counts collected in 2024 and 2025 as described earlier in subsection 1.3 and are shown in **Exhibit 5**. These raw counts are provided in Appendix A.

2.3 HISTORIC GROWTH AND BACKGROUND CONDITION TRAFFIC

The "Background Condition" described here is represented by the volumes and intersection performance after multiple years of traffic growth assumed to occur during the permitting, construction, sales, and occupancy of the project. These steps are expected to be complete for Phase 1 in 2029. The resulting volumes and operating conditions form the basis for evaluating marginal intersection delay effects of traffic generated by this first phase of the Barber Farm subdivision. Full buildout (Phase 2) is scheduled for completion and occupancy in 2031. In order to estimate traffic growth without the project, average daily traffic volumes were gathered from selected MDT periodic data collection locations in the study area. The best and most logical data set available was represented by the four legs of the Shiloh intersection at Central. Data were recorded or estimated by MDT annually on each leg dating back at least 20 years. This historical traffic information is shown in the graph in **Exhibit 6**.

Exhibit 4. Existing Road and Intersection Basics

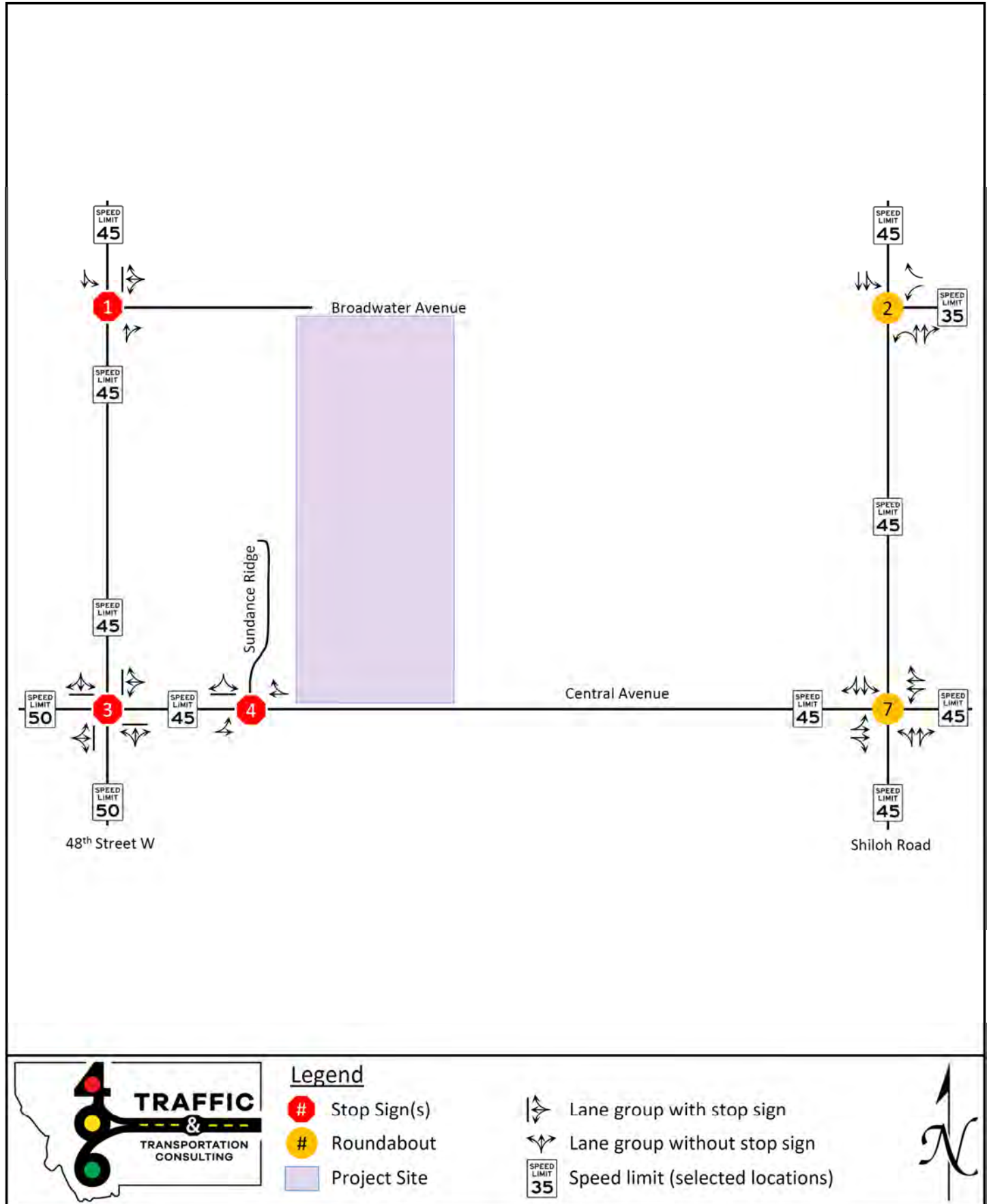
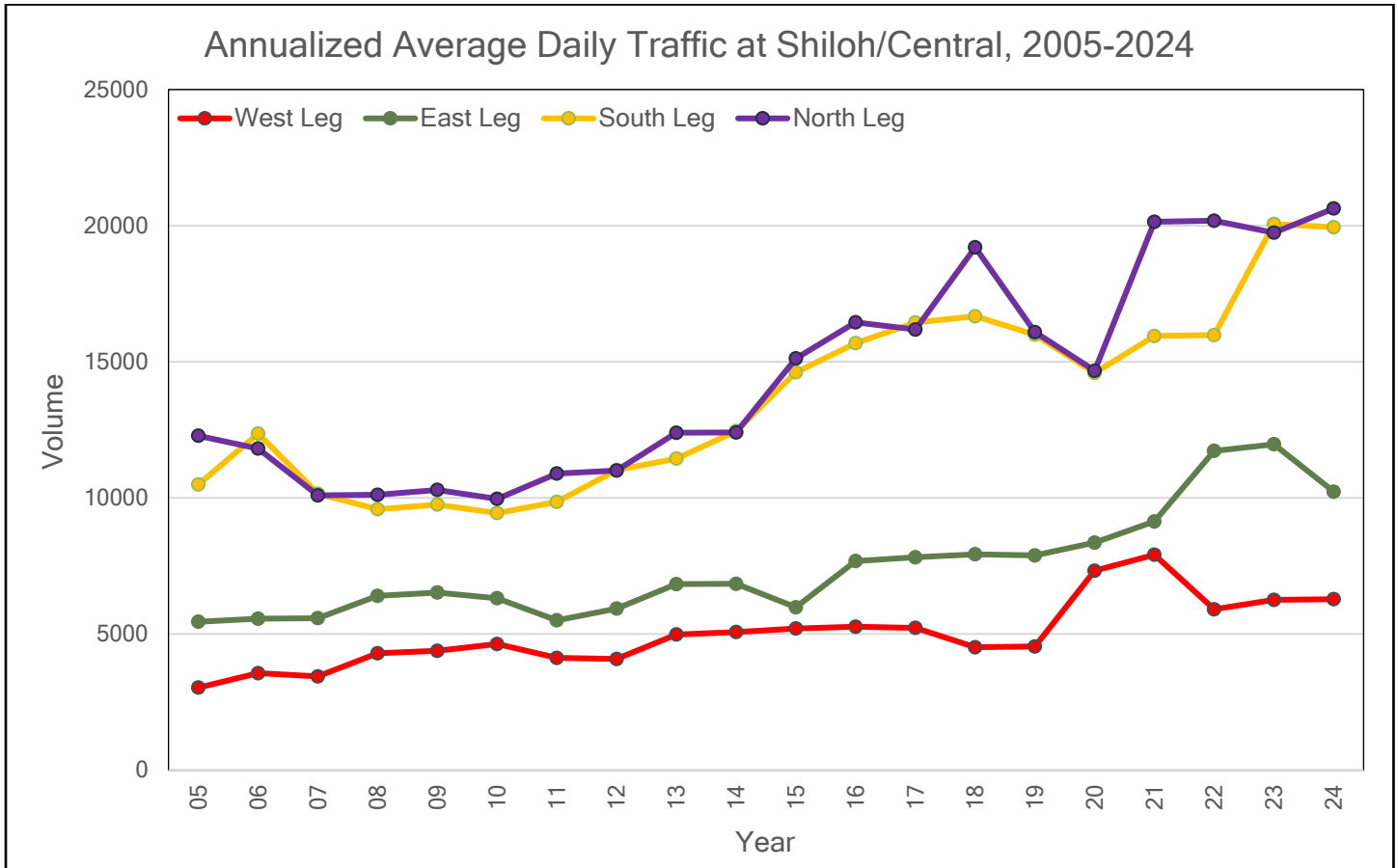


Exhibit 5. Existing Traffic Volumes

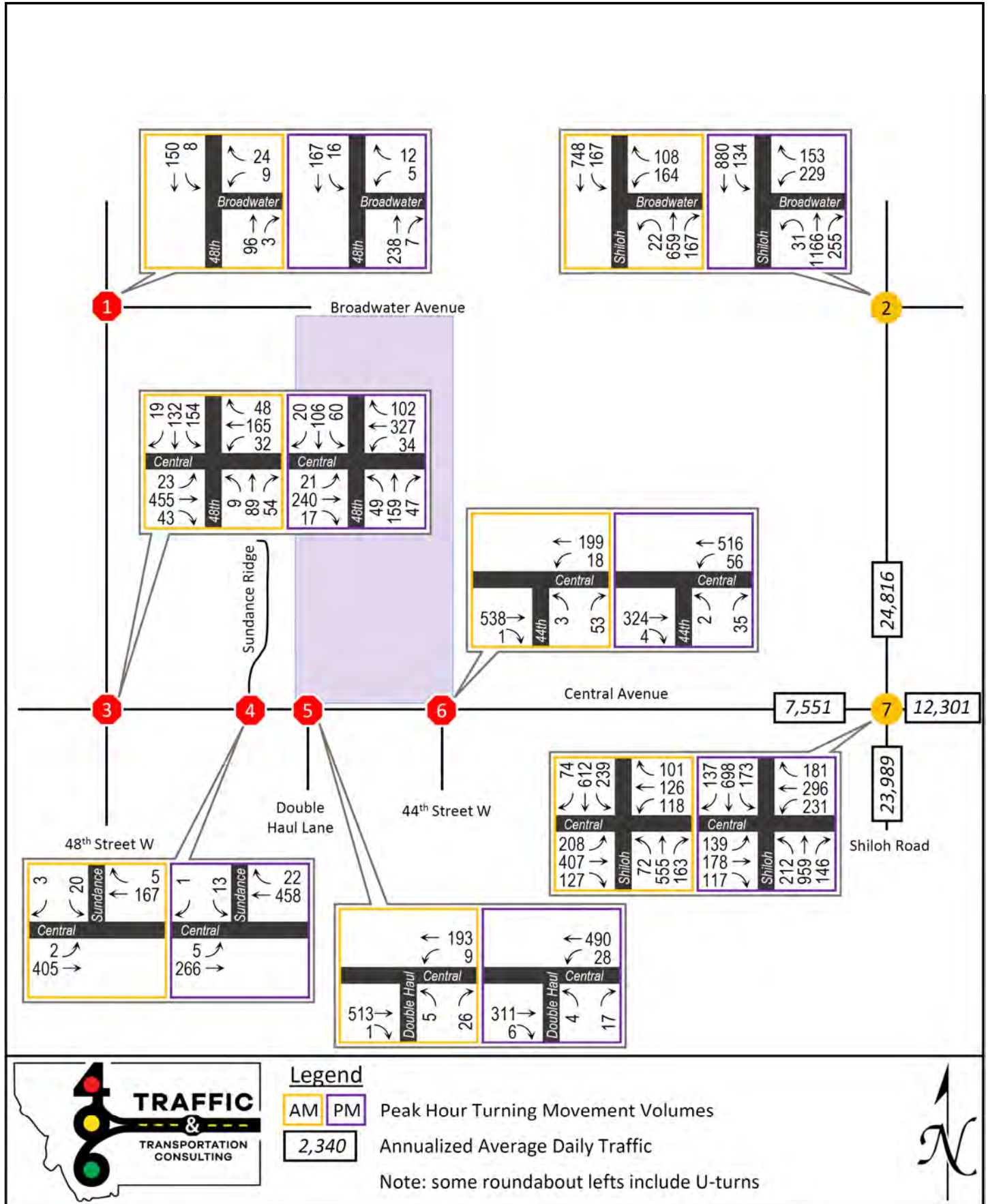


Exhibit 6. Historical Daily Traffic Volumes



Counts from the most recent ten of these years were used to calculate the average annual growth rate in daily traffic for these four locations in aggregate, which was approximately 3.8% per year. This rate was then applied to the annualized peak hour intersection counts for each study year. Because the two phases of this project will be constructed sequentially and were not considered independent 'all-or-nothing' conditions at each two-year interval, the second phase's traffic builds on that generated by Phase 1 and each phase's traffic impacts were analyzed incrementally. 2029 Background traffic is shown in **Exhibit 7**.

Exhibit 7. 2029 Background Traffic Volumes



2.4 INTERSECTION TRAFFIC OPERATIONS WITHOUT THE PROJECT

The existing and 2029 background peak hour intersection Level of Service (LOS) and delay results are shown in **Exhibit 8**. Analysis software results are provided in Appendix B, and as described earlier, no separate 2031 background scenario was examined.

Exhibit 8. Existing and 2029 Background Intersection LOS and Delay

	Intersection	Traffic Control	Peak Hour LOS (delay, in seconds/vehicle)	
			Existing	2029 Background
AM Peak Hour	1. Broadwater at 48 th	TWSC*	A (9.2)	A (9.4)
	2. Broadwater at Shiloh	Roundabout	A (6.1)	A (7.1)
	3. Central at 48 th	AWSC, then Signal	C (25.0)	A (9.9)
	4. Central at Sundance Ridge	TWSC*	B (12.4)	B (13.7)
	5. Central at Double Haul	TWSC*	-	B (13.0)
	6. Central at 44 th	TWSC*	-	B (13.4)
	7. Central at Shiloh	Roundabout	B (12.1)	C (22.3)
PM Peak Hour	1. Broadwater at 48 th	TWSC*	B (10.1)	B (10.5)
	2. Broadwater at Shiloh	Roundabout	A (9.3)	B (12.5)
	3. Central at 48 th	AWSC, then Signal	C (18.9)	A (8.5)
	4. Central at Sundance Ridge	TWSC*	B (14.0)	C (15.9)
	5. Central at Double Haul	TWSC*	-	B (11.9)
	6. Central at 44 th	TWSC*	-	B (11.2)
	7. Central at Shiloh	Roundabout	B (14.9)	D (33.7)

* Intersections 1 and 4 – 6 are all T intersections, so the worst lane group that determines LOS is the minor approach.

The results in the table indicate that with 2025 annualized average traffic volume, all intersections operate at LOS B or better except the AWSC at Central/48th. For the 2029 scenario without Barber traffic, signalization of the intersection by Yellowstone County would result in LOS A there in both peaks. For the busiest intersection in the study area, Central at Shiloh, addition of early-phase Clearwater/44 West trips and four years of background growth would result in LOS D in the PM peak hour.

3 PROJECT TRIP GENERATION AND DISTRIBUTION

3.1 TRIP GENERATION

Trip generation rates, or equations as applicable, are 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.

Barber Farm will consist of mostly residential land uses. Small parkland areas within the subdivision are designed and intended for use by residents and their guests, and will be similar to park spaces located in other residential areas around Billings. For that reason, they will not generate external traffic. The commercial space in Phase 2 has had fairly certain sub-types of commercial use identified, and no drive-through activity is expected.

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. Second, a modal adjustment can be taken if a facility is clearly served by robust high-capacity transit and serves a clientele inclined to use transit to get there, or if the potential land use mix and walk/bike network are likely to lead to nonmotorized trips, either internal or external. Finally, some land uses such as gas stations or coffee shops attract trips that were already using the adjacent or nearby road network by virtue of improved convenience over a similar site that could 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.

The Phase 2 commercial element is the only part of the site considered for these discounts. Due to the retail site's location, small size, and expected general similarity to other sites along the Central Avenue corridor, only a small aggregate discount of the first two types was assumed here; it is not expected to support a use special enough or large enough to generate offsite multimodal or pass-by/diverted-linked trip activity. The estimated reduction in vehicle trip use for the on-site retail due to residents' use applied here is 10%. This reduction in retail vehicle trip use could take the form of subdivision residents (a) stopping at the on-site retail on their way to/from home, (b) choosing to drive to and from the on-site retail rather than a site farther away due to its proximity and convenience, or (c) choosing to walk or bike to and from the on-site retail for the same reason.

To arrive at phase-specific residential trip generation totals, the land use totals for the entire project (370 attached-home lots) were first estimated, then the resulting trip totals were proportioned according to the amount of each home type in each phase. **Exhibit 9** shows the subdivision's trip generation details by phase and land use. Commercial trips are listed first in Phase 2 for clearer accounting of the internal capture effect.

Exhibit 9. Trip Generation

	Daily	AM Peak Hour	PM Peak Hour
Phase 1			
ITE Land Use 215 – Single Family Attached Housing: X = 185 dwelling units			
Equation/Rate	T = 7.62(X) - 50.48	T = 0.52(X) - 5.70	T = 0.60(X) - 3.93
Peak hour in/out split	-	25% / 75%	59% / 41%
Trips	1,384	93 (23 in / 70 out)	109 (64 in / 45 out)
ITE Land Use 495 – Recreational Community Center: X = 35 ksf (thousands of square feet)			
Equation/Rate	T = 28.82(X)	T = 1.91(X)	T = 2.50(X)
Peak hour in/out split	-	66% / 34%	47% / 53%
Trips	1,009	67 (44 / 23)	88 (41 / 46)
ITE Land Use 712 – Small Office Building: X = 8.5 ksf			
Equation/Rate	T = 14.39(X)	T = 1.67(X)	T = 2.16(X)
Peak hour in/out split	-	82% / 18%	34% / 66%
Trips	122	14 (12 in / 3 out)	18 (6 in / 12 out)
Phase 2			
ITE Land Use 931 – Fine Dining Restaurant: X = 8.5 ksf			
Equation/Rate	T = 83.84(X)	T = 0.73(X)	T = 7.80(X)
Peak hour in/out split	-	50% / 50%	67% / 33%
Trips	713	6 (3 in / 3 out)	66 (44 in / 22 out)
Full gross Phase 2 Commercial trips, all uses	1,844	87 (59 in / 28 out)	172 (92 in / 80 out)
Less 10% internal and walk/bike	-184	- 9 (-6 in / -3 out)	- 17 (-9 in / -8 out)
Net Phase 2 Commercial Trips	1,659	79 (53 in / 26 out)	155 (83 in / 72 out)
ITE Land Use 215 – Single Family Attached Housing: X = 185 dwelling units			
Phase 2 Residential Trips	1,384	93 (23 in / 70 out)	109 (64 in / 45 out)
Phase 2 Total Net Trips	3,044	172 (76 in / 96 out)	264 (147 in, 117 out)
Combined net trips, both phases:	4,428	265 (100 in / 166 out)	373 (211 in / 162 out)

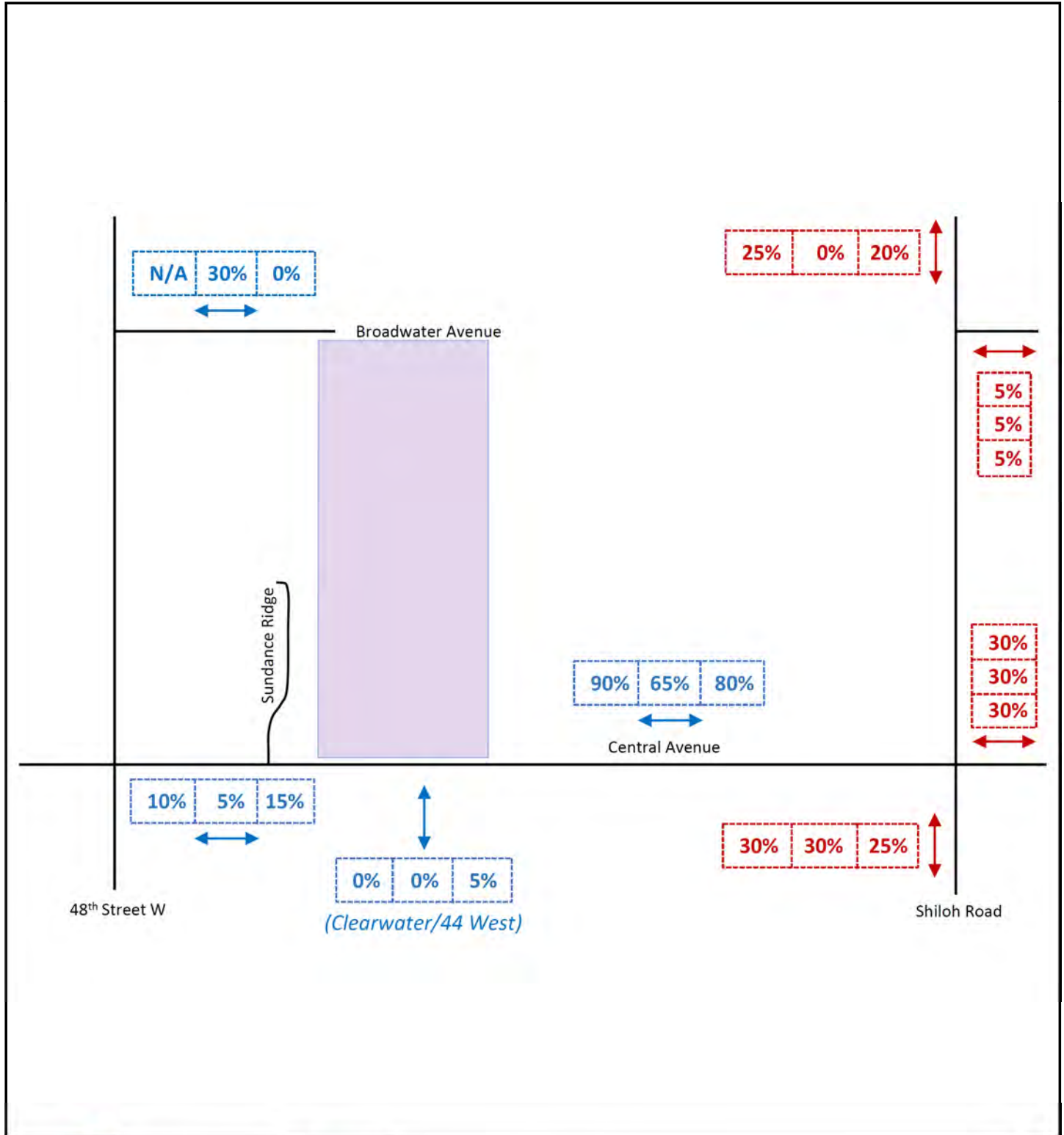
Source: Equations/rates from ITE Trip Generation, 11th Edition.

Note: Some totals may be reported +/- one vehicle due to rounding.

3.2 TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution has been estimated for the streets surrounding the project site in percentages that add to 100%. Farther from the site, traffic eventually disperses in smaller percentages to/from other routes. Because there is no new information regarding a future developer's plan to connect Broadwater Avenue and/or the similar connection in Phase 2 to the east, no Barber Farm traffic was assumed to use such a connection. Trip distribution and large-scale assignment percentages are shown in **Exhibit 10**. Phase 1 Project Trips are shown in **Exhibit 11**. Future traffic volumes for the 2029 Total Traffic scenario and 2031 scenario without Phase 2 are shown in **Exhibits 12** and **13**, respectively. Phase 2 Project Trips are shown in **Exhibit 14** and 2031 Total Traffic volumes are shown in **Exhibit 15**.

Exhibit 10. Trip Distribution Percentages



Legend

- 30% Primary Distribution (100%)
 - 10% Secondary Assignment
- } of New Vehicle Trips to Project Site

Phase 1	Phase 2 Residential	Phase 2 Commercial
---------	---------------------	--------------------



Exhibit 11. Phase 1 Project Trips

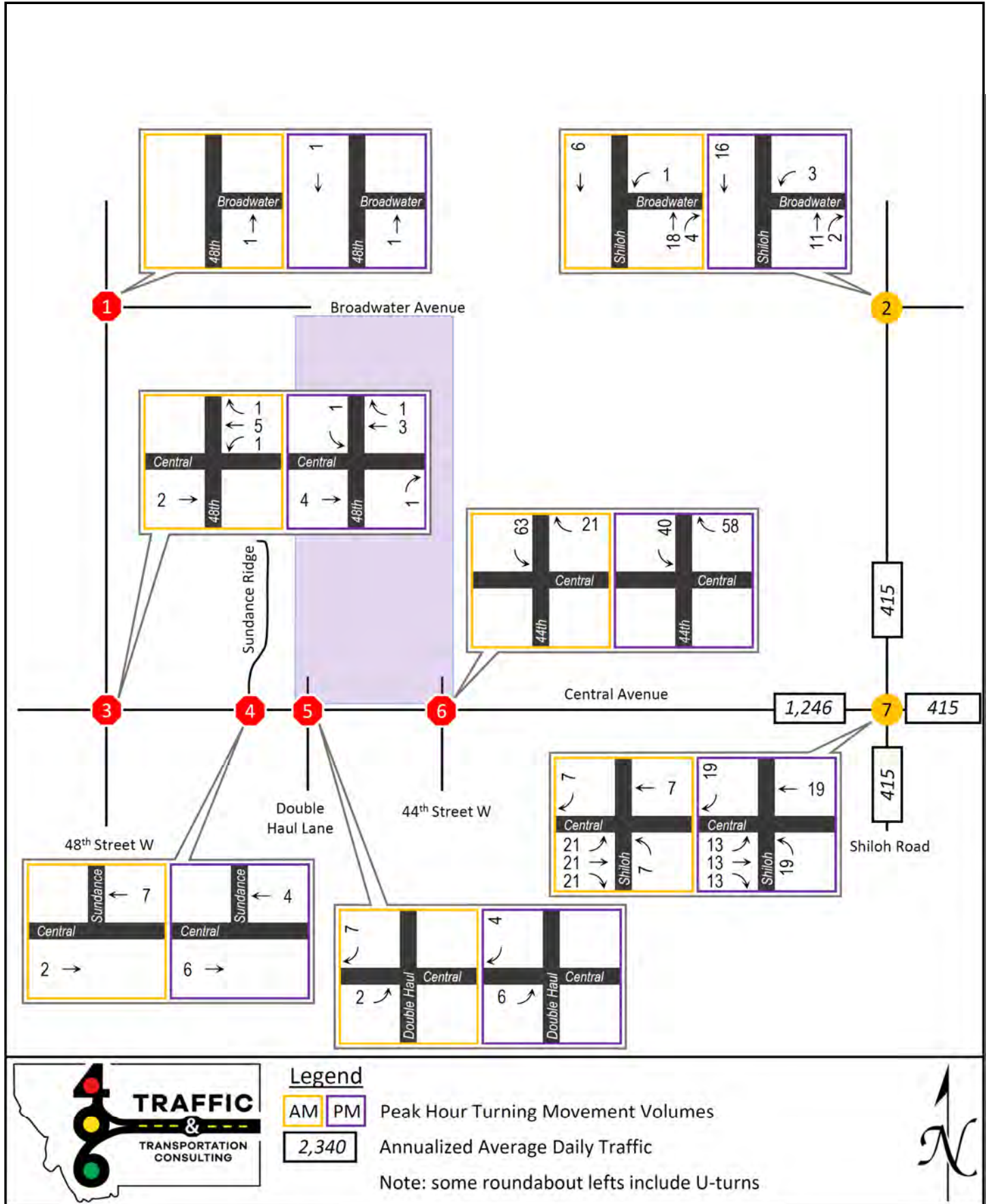


Exhibit 12. 2029 Total Traffic

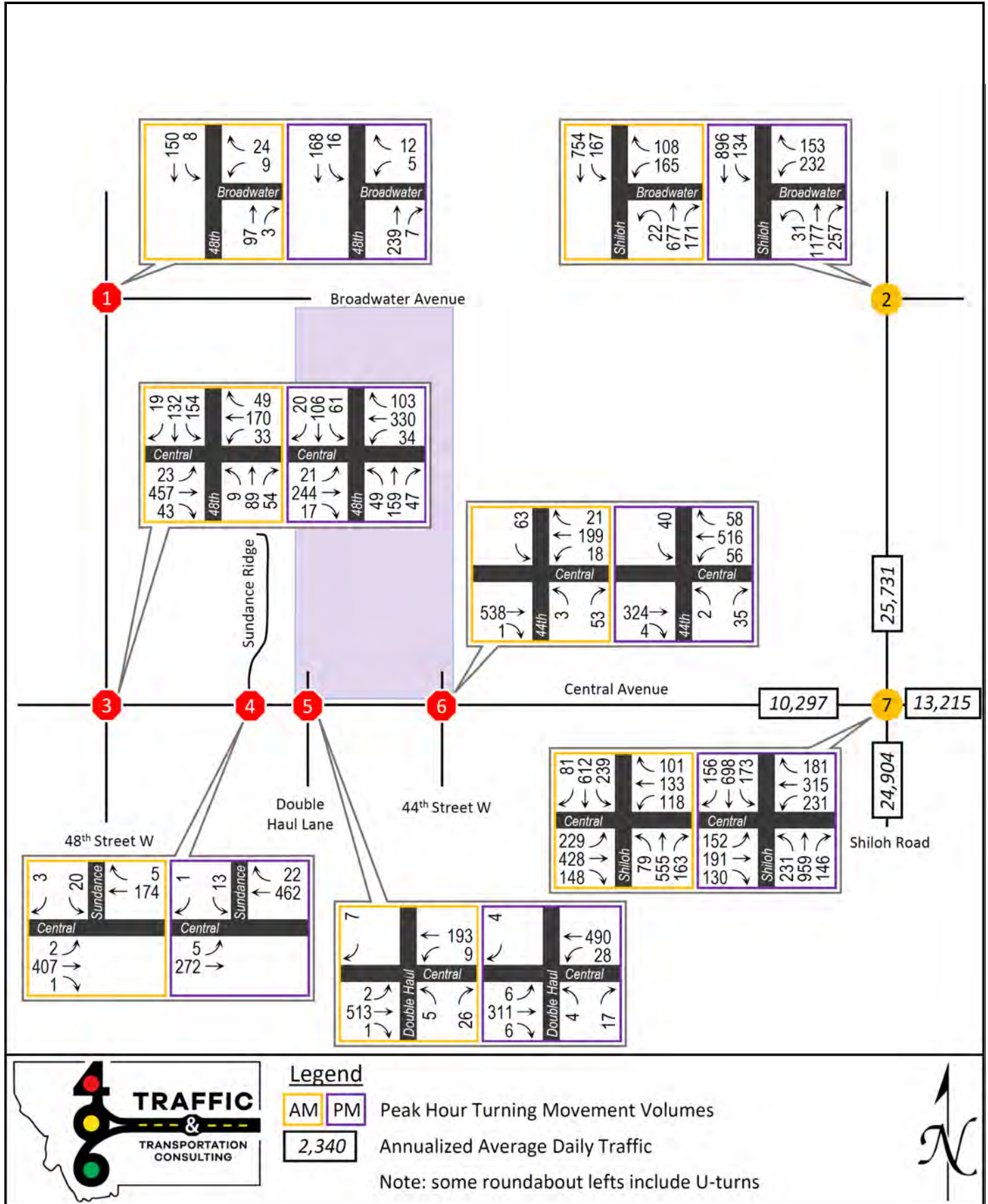


Exhibit 13. 2031 Traffic without Phase 2

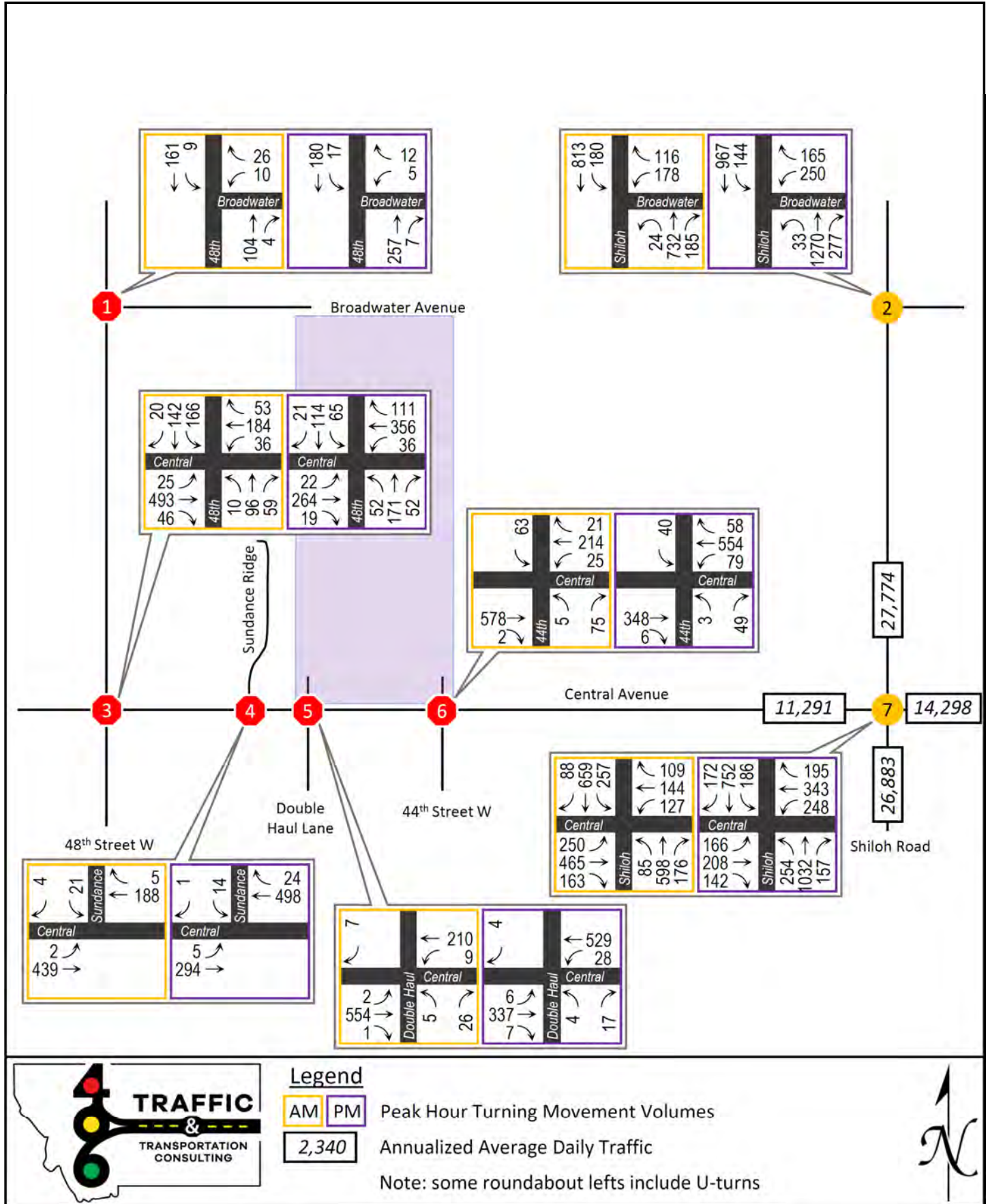


Exhibit 14. Phase 2 Project Trips

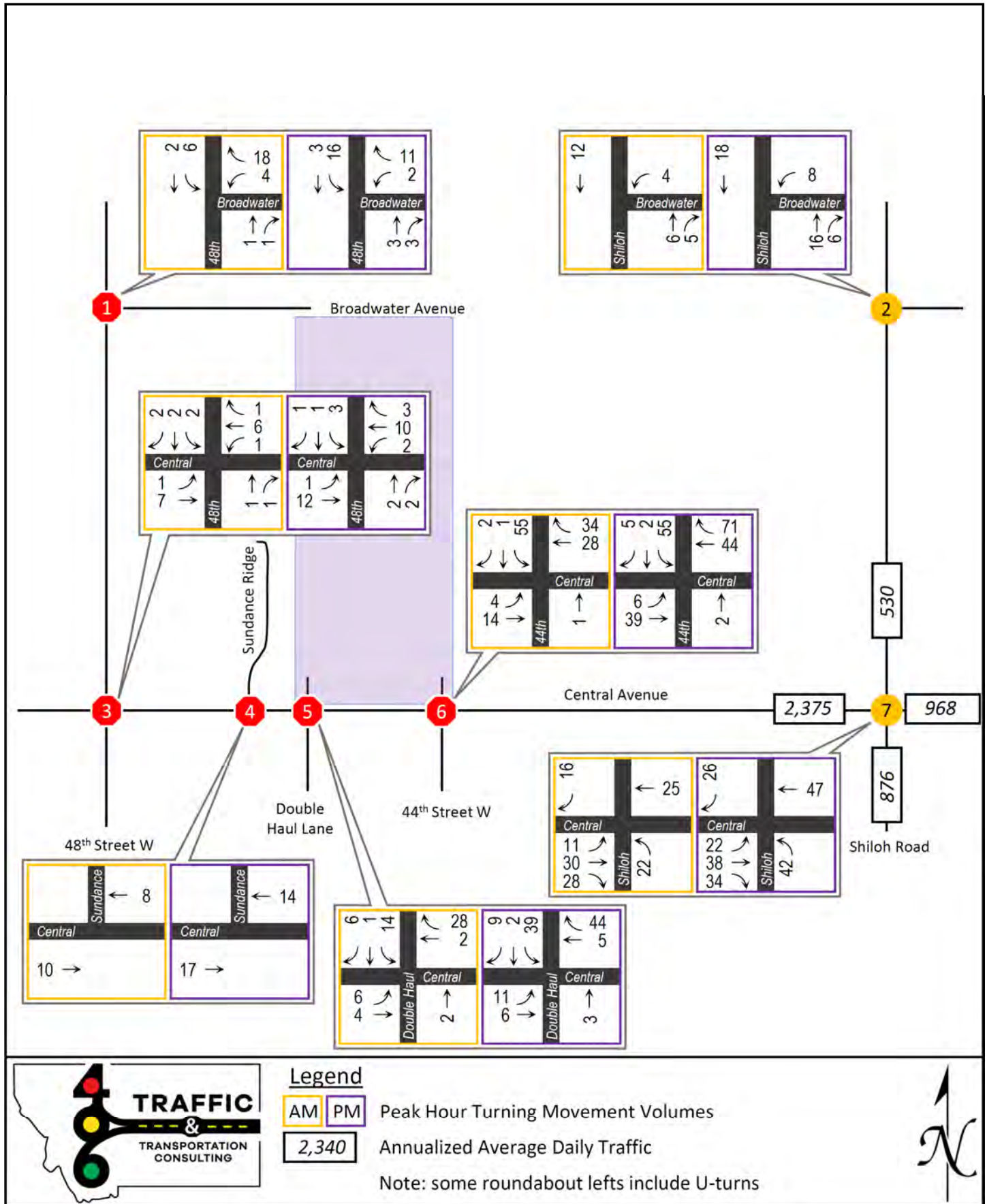
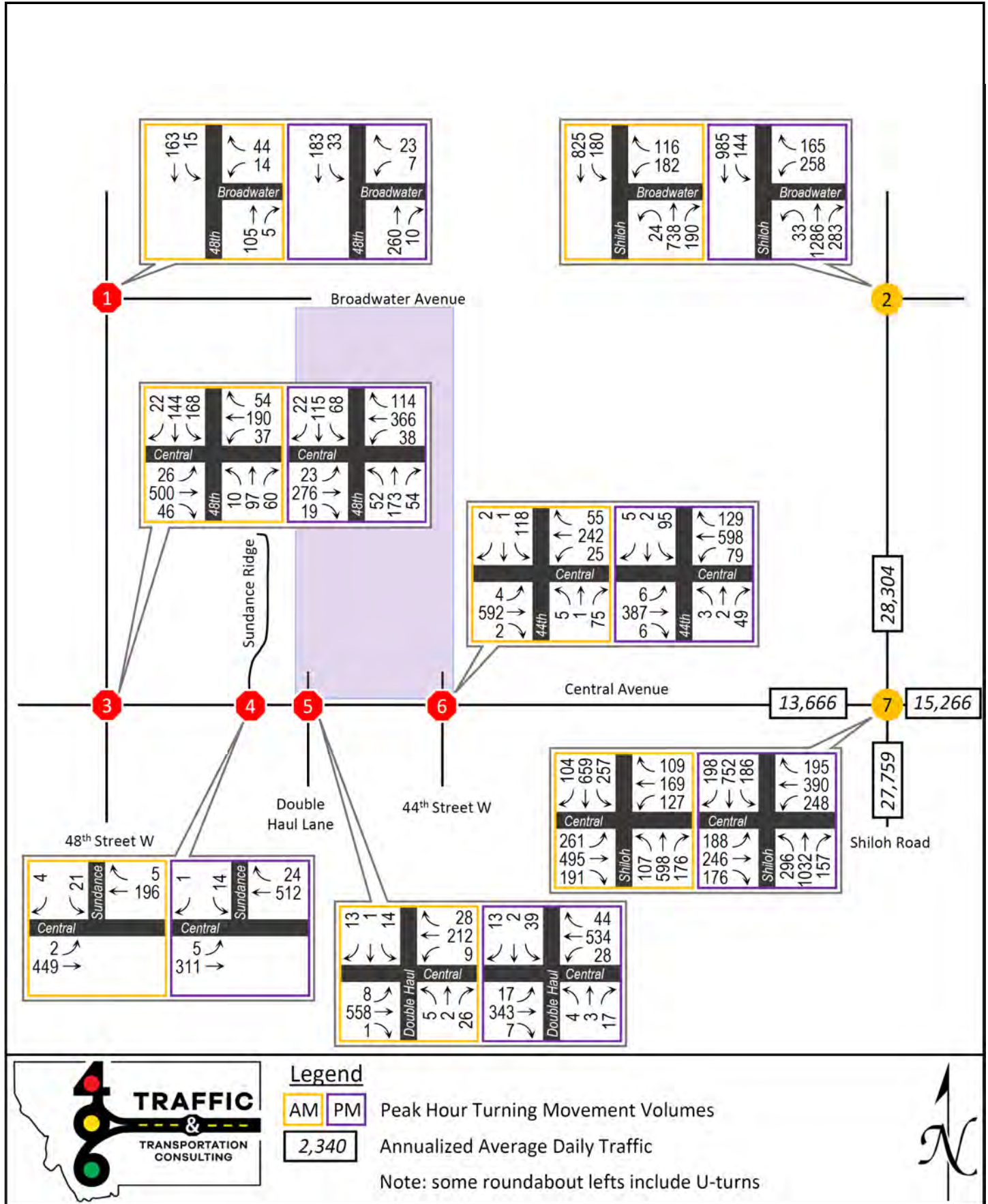


Exhibit 15. 2031 Total Traffic



4 CAPACITY ANALYSIS

The analysis results described in this section are organized by project phase order. Project traffic by phase is additive such that the Phase 2 scenario includes Phase 1 traffic. Summaries of intersection capacity and auxiliary turn lane analysis results are provided for each phase in the study area when it's projected to be fully open. As with the existing condition, intersection capacity analysis software output results for the future conditions analyzed are provided in Appendix B. Turn lane warrant summaries for applicable situations are provided in Appendix C and summaries of MUTCD signal warrant analysis for Intersection 6 (44th Avenue W) are provided by phase in Appendix D.

4.1 INTERSECTION DELAY

The peak hour intersection Level of Service (LOS) and delay results with and without Clearwater/ 44 West subdivision Phase 1 traffic are shown in **Exhibit 16**. Bold results indicate LOS cases that are projected to be worse than the LOS C standard.

Exhibit 16. Future Intersection LOS and Delay

Intersection	Traffic Control	LOS (delay, in seconds/vehicle)				
		2029 Background	2029 Total	2031, No Phase 2	2031 Total	
AM Peak Hour	1. Broadwater at 48 th	TWSC*	A (9.4)	A (9.4)	A (9.5)	A (9.7)
	2. Broadwater at Shiloh	Roundabout	A (7.1)	A (7.2)	A (7.8)	A (7.9)
	3. Central at 48 th	Signal	A (9.9)	A (10.0)	B (11.4)	B (11.7)
	4. Central at Sundance Ridge	TWSC*	B (13.7)	B (13.8)	B (14.4)	B (14.5)
	5. Central at Double Haul	TWSC*	B (13.0)	B (13.3)	B (14.0)	C (16.2)
	6. Central at 44 th	TWSC*	B (13.4)	D (26.5)	D (33.8)	F (75.9)
	7. Central at Shiloh	Roundabout	C (22.3)	D (26.7)	E (44.4)	F (57.8)
PM Peak Hour	1. Broadwater at 48 th	TWSC*	B (10.5)	B (10.6)	B (10.8)	B (10.9)
	2. Broadwater at Shiloh	Roundabout	B (12.5)	B (12.8)	C (15.5)	C (16.3)
	3. Central at 48 th	Signal	A (8.5)	A (8.5)	A (9.2)	A (9.4)
	4. Central at Sundance Ridge	TWSC*	C (15.9)	C (16.0)	C (17.2)	C (17.8)
	5. Central at Double Haul	TWSC*	B (11.9)	B (12.6)	B (13.2)	D (29.9)
	6. Central at 44 th	TWSC*	B (11.2)	D (33.9)	E (47.2)	F (204.1)
	7. Central at Shiloh	Roundabout	D (33.7)	E (40.2)	F (69.9)	F (102.6)

* Intersections 1 and 4 – 6 are all TWSC intersections; worst lane group that determines LOS is a minor approach.

Intersections 1 through 4 would all operate at LOS C or better in all scenarios, and Intersection 5, Central Avenue at Double Haul Lane, would only exceed the LOS C standard in the 2031 PM peak hour. Signalization of Intersection 3, Central at 48th, is indicated here to provide clear benefits to peak hour traffic operations. The east site access to Central Avenue would operate beyond the LOS C standard in both phases, including LOS F conditions in the 2031 PM peak hour under standard two-way stop control. The need for evaluation of additional capacity and control is clearly indicated for this location. Initial testing of signalization with PM peak hour traffic assumptions here shows that LOS could be expected to be well within acceptable limits (LOS A). While this also means that AM peak LOS would also be expected to improve and be within the LOS C standard, additional engineering study is recommended before a signal is formally considered.

The Central/Shiloh roundabout would operate beyond the LOS C standard in at least one peak hour in all scenarios, as has been demonstrated in multiple recent traffic impact analyses. Mitigation of future delay problems at the Central/Shiloh roundabout is recommended with or without the Barber Farm subdivision, in the form of the eventual addition of a westbound right turn bypass lane, subject to additional evaluation by City staff. Preliminary testing with 2031 Phase 2 PM peak hour volumes indicates that addition of a westbound bypass lane would reduce overall intersection delay considerably, while it would still be in the LOS F range. Synchro's estimate of the 95th percentile westbound queue would be reduced by about 46%, from 24 vehicles per lane to 13.

4.2 TURN LANE WARRANTS

Auxiliary turn lanes were evaluated using the methods and tools in MDT Traffic Engineering Manual, Chapter 28 for the three locations where project-generated traffic accesses the surrounding highway network at qualifying locations: Intersections 1, 5, and 6. Both AM and PM conditions were evaluated for both right-turn and left-turn lanes, and condition could provide justification for considering a turn lane. Intersection 1 was only evaluated for 2031 conditions because Broadwater is not projected to be extended east from 48th to serve the project site before that time. This analysis indicates that three such lanes could be justified by the MDT method: westbound right on Central at 44th in 2029, and eastbound left on Central at both Double Haul Lane and 44th in 2031. Despite the low eastbound turning volume (single-digits in both 2031 peaks), the MDT methodology still considers a lane justified due to the very heavy east-west through volumes projected on Central. Note that the LOS results shown in Exhibit 16 above do not reflect the addition of any auxiliary lanes.

Growth in background traffic on Central is a strong part of the future need for left turn lanes. The project team believes strongly that, especially in concert with other side-street turning activity in the corridor, proportionate share cost contributions (discussed in the next chapter) for the Double Haul and 44th intersections from both subdivisions should be used to help the City and County construct the LRTP project that would create a 3-lane section on Central between Shiloh and 48th.

4.3 SIGNAL WARRANTS AT 44TH AVENUE W

At Intersection 6, only the volume warrants are meaningful and relevant. With 2029 Phase 1 conditions none of them would be met, although the intersection is projected to operate at LOS D in both peaks with projected stop control, in which the highest-delay movement's (southbound left turn) delay is the basis for LOS reporting. In contrast, when Phase 2 and two years of additional background traffic growth are added, 2031 full-project traffic there results in all three signal warrants being met. With respect to the Clearwater/44 West subdivision under the City's consideration across Central Avenue to the south, the 2031 Barber horizon year corresponds to the completion of all residential units in the northern half of the project, but no commercial development activity. A traffic signal is expected to be warranted by 2031 based on the analysis indicated in this study.

5 COST PARTICIPATION

The net new trips identified in this report were subject to examination under the City's arterial intersection cost participation program to the extent that they would travel through studied intersections. City staff also requested that the two project access intersections on Central be included even though they are effectively local streets (low-speed with parking and driveways, not connected to other major routes) rather than arterials. Critical traffic shares that drive intersection cost participation can be excluded if they are below 2%, but project trips from all phases are considered together when evaluating such a possibility. Phase-specific project trips used in this calculation were shown previously in Exhibits 11 and 14.

Exhibit 17 shows the incremental intersection cost participation for the new trips associated with each project phase. Exempted shares for Phase 1 traffic would be deferred until the cost participation contribution is due for the second phase. These are shown in brackets and excluded from the Phase 1 total.

Exhibit 17. Intersection Cost Participation by Phase

Intersection	Phase		Project Total
	1	2	
1. Broadwater at 48 th	[0.1%]	[1.8%]	1.9%-exempt
2. Broadwater at Shiloh	[1.0%]	[1.5%]	2.5%
3. Central at 48 th	[0.4%]	2.0%	2.4%
4. Central at Sundance Ridge	[0.6%]	[1.5%]	2.1%
7. Central at Shiloh	4.0%	9.8%	13.8%
Arterial Intersection Subtotal:	4.0%		20.8%
5. Central at Double Haul (Local)	[0.5%]	4.8%	5.3%
6. Central at 44 th (Local)	5.3%	8.9%	14.2%
Total Participation:	9.3%		40.3%

Note: each % represents the highest project critical-volume share of the two peak hours (AM or PM) for that location.

As shown in the table, only Intersection 1 qualifies for the “sub-2%” exemption when both phases are considered. A total of 9.3% is due with Phase 1 and the remaining 31.0% is due with Phase 2. The details of these cost participation calculations are provided in Appendix E.

This concludes the Barber Farm Subdivision TIS.

Appendix A: Original Raw Traffic Count Data for Intersections

Note: Intersections 5 and 6 were not yet built at the time of this study.

Intersection 1. Broadwater Ave & 48th St. W.

Start Date Wednesday, August 20, 2025

Start Time 7:00 AM, 4:00 PM

Start Time	48th Street West Southbound				Broadwater Avenue Westbound				48th Street West Northbound				n/a Eastbound			
	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
7:00 AM		23	2	0	2		1	0	1	8		0				
7:15 AM		29	3	0	2		1	0	0	17		0				
7:30 AM		35	1	0	8		2	0	0	28		0				
7:45 AM		43	2	0	5		3	0	0	21		0				
8:00 AM		29	0	0	5		0	0	0	20		0				
8:15 AM		26	4	0	4		3	0	3	14		0				
8:30 AM		36	0	0	4		0	0	1	25		0				
8:45 AM		30	1	0	3		1	0	0	24		0				
4:00 PM		27	4	0	4		0	0	5	45		0				
4:15 PM		37	5	0	6		1	0	2	27		0				
4:30 PM		34	1	0	4		0	0	2	52		0				
4:45 PM		33	2	0	5		2	0	0	50		0				
5:00 PM		30	2	0	0		0	0	2	54		0				
5:15 PM		39	6	0	4		1	0	4	59		0				
5:30 PM		44	4	0	1		1	0	0	47		0				
5:45 PM		35	7	0	3		0	0	1	31		0				

Intersection 2. Shiloh & Broadwater
 Start Date Thursday, March 7th, 2024
 Start Time 7:00 AM, 4:00 PM

	Shiloh Road Southbound				Broadwater Avenue Westbound				Shiloh Road Northbound				Eastbound Approach Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
7:00 AM	0	111	22	0	17	0	8	0	23	52	0	0	0	1	0	0
7:15 AM	0	147	52	0	21	0	25	0	35	102	0	6	0	3	0	0
7:30 AM	0	182	63	0	18	0	33	0	28	122	0	2	0	4	0	0
7:45 AM	0	170	34	0	23	0	39	0	38	140	0	4	0	4	0	0
8:00 AM	0	131	22	0	26	0	29	0	39	143	0	6	0	6	0	0
8:15 AM	0	139	21	0	24	0	36	0	32	130	0	6	0	4	0	0
8:30 AM	0	133	23	0	18	0	28	0	42	137	0	5	0	3	0	0
8:45 AM	0	150	49	0	18	0	28	0	34	124	0	3	0	4	0	0
4:00 PM	0	143	17	0	33	0	42	0	27	244	0	5	0	2	0	0
4:15 PM	0	151	25	0	20	0	46	0	36	226	0	2	0	0	1	0
4:30 PM	0	151	31	0	21	0	38	0	50	238	2	2	0	0	0	0
4:45 PM	0	177	21	0	24	0	37	0	35	201	1	3	0	0	0	0
5:00 PM	0	169	23	0	40	0	56	0	56	281	0	8	0	3	0	0
5:15 PM	0	193	32	1	44	0	52	0	63	283	4	8	0	0	0	0
5:30 PM	0	179	35	1	20	0	43	0	57	202	1	1	0	0	0	0
5:45 PM	0	160	33	2	20	1	35	0	43	200	0	0	0	0	0	0

Intersection 3. 48th & Central
 Start Date Tuesday, September 10, 2024
 Start Time 12:00 AM

	48th Street Southbound				Central Avenue Westbound				48th Street Northbound				Central Avenue Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
7:00 AM	3	19	14	0	8	11	3	0	5	10	1	0	6	48	3	0
7:15 AM	4	13	33	0	7	31	1	0	11	23	1	0	8	94	4	0
7:30 AM	3	35	34	0	11	35	7	0	19	17	4	0	8	104	5	0
7:45 AM	6	41	35	0	15	42	11	0	14	19	1	0	15	103	3	0
8:00 AM	3	26	31	0	8	29	8	0	3	18	2	0	6	92	8	0
8:15 AM	2	20	22	0	5	49	7	0	12	18	2	0	6	61	5	0
8:30 AM	6	10	20	0	11	29	4	0	20	12	3	0	5	54	5	0
8:45 AM	1	16	16	0	7	19	4	0	8	17	1	0	6	34	1	0
4:00 PM	4	17	10	0	14	46	10	0	11	31	12	0	2	37	6	0
4:15 PM	2	23	10	0	15	68	9	0	7	29	8	0	4	35	7	0
4:30 PM	8	17	17	0	25	53	9	0	10	37	7	0	13	43	4	0
4:45 PM	3	17	11	0	15	56	8	0	10	32	10	0	3	40	3	0
5:00 PM	2	15	15	0	19	71	10	0	7	35	14	0	4	55	7	0
5:15 PM	8	29	10	0	26	95	4	0	14	43	9	0	3	55	2	0
5:30 PM	4	31	14	0	27	58	7	0	10	28	9	0	5	52	6	0
5:45 PM	4	18	19	0	18	46	9	0	5	26	10	0	8	39	4	0

Intersection 4. Central Ave & Sundance Ridge Rd

Start Date Wednesday, August 20, 2025

Start Time 7:00 AM, 4:00 PM

	Sundance Ridge Road Southbound				Central Avenue Westbound				Northbound Approach Northbound				Central Avenue Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
7:00 AM	1	0	1	0	0	22	0	0	0	0	0	0	0	57	1	0
7:15 AM	0	0	7	0	1	32	0	0	0	0	0	0	0	79	1	0
7:30 AM	2	0	3	0	1	39	0	0	0	0	0	0	0	76	0	0
7:45 AM	1	0	6	0	1	37	0	0	1	0	0	0	1	111	0	0
8:00 AM	1	0	4	0	1	33	0	0	0	0	0	0	0	85	0	0
8:15 AM	1	0	3	0	0	30	0	0	0	0	0	0	0	76	2	0
8:30 AM	0	0	5	0	2	40	0	0	0	0	0	0	0	87	0	0
8:45 AM	2	0	4	0	2	42	0	0	0	0	0	0	0	67	0	0
4:00 PM	1	0	4	0	4	75	0	0	0	0	0	0	0	58	1	0
4:15 PM	0	0	2	0	2	72	0	0	0	0	0	0	0	45	1	0
4:30 PM	0	0	2	0	3	81	0	0	0	0	0	0	0	55	3	0
4:45 PM	0	0	2	0	2	93	0	0	0	0	0	0	0	62	0	0
5:00 PM	1	0	3	0	2	99	0	0	0	0	0	0	0	58	2	0
5:15 PM	0	0	3	0	9	114	0	0	0	0	0	0	0	61	1	0
5:30 PM	0	0	3	0	7	97	0	0	0	0	0	0	0	47	1	0
5:45 PM	0	0	5	0	2	71	1	0	0	0	1	0	0	36	0	0

Intersection 7. Shiloh & Central

Start Date Thursday, March 21st, 2024

Start Time 7:00 AM

	Shiloh Road Southbound				Central Avenue Westbound				Shiloh Road Northbound				Central Avenue Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
7:00 AM	6	74	22	0	7	13	15	0	19	66	9	1	19	51	15	0
7:15 AM	8	118	48	0	7	18	28	0	32	84	14	0	25	90	17	0
7:30 AM	16	128	69	1	18	25	29	0	41	96	15	0	22	112	36	0
7:45 AM	17	135	67	0	26	19	34	0	36	130	19	0	20	91	42	0
8:00 AM	7	116	32	0	29	25	17	0	33	114	10	0	21	76	37	0
8:15 AM	15	135	31	1	12	29	19	0	27	127	9	0	22	41	38	0
8:30 AM	9	98	29	0	15	30	21	0	26	146	10	0	16	30	31	0
8:45 AM	10	102	31	1	20	22	24	0	17	119	20	0	22	40	30	0
4:00 PM	19	127	37	0	23	51	45	0	35	168	24	0	21	29	27	0
4:15 PM	20	100	34	0	35	41	58	0	26	156	45	0	20	39	25	0
4:30 PM	23	127	35	0	38	50	62	0	30	163	47	0	21	26	27	0
4:45 PM	19	153	33	0	41	45	49	0	26	174	41	0	15	36	23	0
5:00 PM	26	152	34	0	38	63	48	0	31	235	32	0	21	46	23	0
5:15 PM	24	154	43	0	35	67	35	0	35	233	35	0	26	26	28	0
5:30 PM	17	142	35	0	40	74	46	0	32	148	35	0	14	32	27	0
5:45 PM	21	148	30	0	31	46	41	0	32	162	26	0	24	22	30	0

Appendix B: Intersection Analysis Software Output

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	8	21	81	3	7	129
Future Vol, veh/h	8	21	81	3	7	129
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, %	0	0	0	0	0	0
Mvmt Flow	9	24	94	3	8	150

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	262	96	0	0	98
Stage 1	96	-	-	-	-
Stage 2	166	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	731	966	-	-	1508
Stage 1	933	-	-	-	-
Stage 2	868	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	727	966	-	-	1508
Mov Cap-2 Maneuver	727	-	-	-	-
Stage 1	933	-	-	-	-
Stage 2	863	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	9.23	0	0.38
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	886	93
HCM Lane V/C Ratio	-	-	0.038	0.005
HCM Ctrl Dly (s/v)	-	-	9.2	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Intersection Delay, s/veh	6.1					
Intersection LOS	A					
Approach	WB	NB			SB	
Entry Lanes	1	2			2	
Conflicting Circle Lanes	2	1			1	
Adj Approach Flow, veh/h	249	756			833	
Demand Flow Rate, veh/h	252	771			842	
Vehicles Circulating, veh/h	618	155			173	
Vehicles Exiting, veh/h	308	860			597	
Ped Vol Crossing Leg, #/h	0	0			0	
Ped Cap Adj	1.000	1.000			1.000	
Approach Delay, s/veh	5.9	5.9			6.3	
Approach LOS	A	A			A	
Lane	Left	Bypass	Left	Right	Left	Right
Designated Moves	L	R	LT	TR	LT	TR
Assumed Moves	L		LT	TR	LT	TR
RT Channelized	Yield					
Lane Util	1.000		0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.327	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420
B (Slope)	8.501e-4	8.499e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	152	100	362	409	396	446
Cap Entry Lane, veh/h	840	855	1233	1233	1213	1213
Entry HV Adj Factor	0.987	0.990	0.981	0.980	0.989	0.990
Flow Entry, veh/h	150	99	355	401	392	442
Cap Entry, veh/h	829	847	1210	1208	1200	1201
V/C Ratio	0.181	0.117	0.294	0.332	0.326	0.368
Control Delay, s/veh	6.2	5.4	5.7	6.1	6.1	6.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	0	1	1	1	2

Intersection												
Intersection Delay, s/veh	25											
Intersection LOS	C											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	391	37	27	137	40	8	77	47	133	114	16
Future Vol, veh/h	20	391	37	27	137	40	8	77	47	133	114	16
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	5	5	5	5	5	5	2	2	2
Mvmt Flow	23	455	43	31	159	47	9	90	55	155	133	19
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	37	14.7	13.1	18.6
HCM LOS	E	B	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	4%	13%	51%
Vol Thru, %	58%	87%	67%	43%
Vol Right, %	36%	8%	20%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	132	448	204	263
LT Vol	8	20	27	133
Through Vol	77	391	137	114
RT Vol	47	37	40	16
Lane Flow Rate	153	521	237	306
Geometry Grp	1	1	1	1
Degree of Util (X)	0.299	0.872	0.435	0.574
Departure Headway (Hd)	7.004	6.023	6.606	6.756
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	510	599	541	532
Service Time	5.094	4.085	4.688	4.829
HCM Lane V/C Ratio	0.3	0.87	0.438	0.575
HCM Control Delay, s/veh	13.1	37	14.7	18.6
HCM Lane LOS	B	E	B	C
HCM 95th-tile Q	1.2	10	2.2	3.6

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	348	136	4	17	3
Future Vol, veh/h	2	348	136	4	17	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	2	414	162	5	20	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	167	0	-	0	583
Stage 1	-	-	-	-	164
Stage 2	-	-	-	-	419
Critical Hdwy	4.11	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.209	-	-	-	3.5
Pot Cap-1 Maneuver	1417	-	-	-	478
Stage 1	-	-	-	-	870
Stage 2	-	-	-	-	668
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1417	-	-	-	477
Mov Cap-2 Maneuver	-	-	-	-	477
Stage 1	-	-	-	-	868
Stage 2	-	-	-	-	668

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.04	0	12.37
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	10	-	-	-	512
HCM Lane V/C Ratio	0.002	-	-	-	0.046
HCM Ctrl Dly (s/v)	7.5	0	-	-	12.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection									
Intersection Delay, s/veh	12.1								
Intersection LOS	B								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	644		326		757		887		
Demand Flow Rate, veh/h	657		335		780		896		
Vehicles Circulating, veh/h	950		797		790		297		
Vehicles Exiting, veh/h	243		773		817		835		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	16.1		8.4		15.0		8.0		
Approach LOS	C		A		B		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.469	0.531	0.471	0.529	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
A (Intercept)	1350	1420	1350	1420	1350	1420	1350	1420	
B (Slope)	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	
Entry Flow, veh/h	309	348	157	178	367	413	421	475	
Cap Entry Lane, veh/h	563	633	648	721	653	726	1027	1103	
Entry HV Adj Factor	0.979	0.980	0.975	0.970	0.969	0.971	0.990	0.990	
Flow Entry, veh/h	302	341	153	173	356	401	417	470	
Cap Entry, veh/h	551	621	632	699	633	705	1017	1092	
V/C Ratio	0.549	0.550	0.242	0.247	0.562	0.569	0.410	0.431	
Control Delay, s/veh	16.9	15.4	8.7	8.1	15.6	14.5	8.0	7.9	
LOS	C	C	A	A	C	B	A	A	
95th %tile Queue, veh	3	3	1	1	4	4	2	2	

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	4	10	204	6	14	142
Future Vol, veh/h	4	10	204	6	14	142
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, %	0	0	0	0	0	0
Mvmt Flow	5	12	237	7	16	165

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	438	241	0	0	244	0
Stage 1	241	-	-	-	-	-
Stage 2	198	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	579	803	-	-	1334	-
Stage 1	804	-	-	-	-	-
Stage 2	840	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	572	803	-	-	1334	-
Mov Cap-2 Maneuver	572	-	-	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	829	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	10.12	0	0.69
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	720	162
HCM Lane V/C Ratio	-	-	0.023	0.012
HCM Ctrl Dly (s/v)	-	-	10.1	7.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Intersection Delay, s/veh	9.3					
Intersection LOS	A					
Approach	WB	NB		SB		
Entry Lanes	1	2		2		
Conflicting Circle Lanes	2	1		1		
Adj Approach Flow, veh/h	374	1420		981		
Demand Flow Rate, veh/h	374	1420		990		
Vehicles Circulating, veh/h	1171	134		252		
Vehicles Exiting, veh/h	383	1108		1141		
Ped Vol Crossing Leg, #/h	0	0		0		
Ped Cap Adj	1.000	1.000		1.000		
Approach Delay, s/veh	12.6	9.4		7.9		
Approach LOS	B	A		A		
Lane	Left	Bypass	Left	Right	Left	Right
Designated Moves	L	R	LT	TR	LT	TR
Assumed Moves	L		LT	TR	LT	TR
RT Channelized	Yield					
Lane Util	1.000		0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.327	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420
B (Slope)	8.501e-4	8.499e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	222	152	667	753	465	525
Cap Entry Lane, veh/h	525	539	1257	1257	1129	1129
Entry HV Adj Factor	1.000	1.000	1.001	0.999	0.991	0.990
Flow Entry, veh/h	222	152	667	753	461	520
Cap Entry, veh/h	525	539	1258	1256	1119	1118
V/C Ratio	0.423	0.282	0.531	0.599	0.412	0.465
Control Delay, s/veh	13.9	10.7	8.7	10.0	7.5	8.3
LOS	B	B	A	B	A	A
95th %tile Queue, veh	2	1	3	4	2	3

Intersection												
Intersection Delay, s/veh	18.9											
Intersection LOS	C											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	201	15	29	279	87	42	137	40	50	91	17
Future Vol, veh/h	18	201	15	29	279	87	42	137	40	50	91	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	21	236	18	34	328	102	49	161	47	59	107	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	5.2	25.1	15.3	13.6
HCM LOS	C	D	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	8%	7%	32%
Vol Thru, %	63%	86%	71%	58%
Vol Right, %	18%	6%	22%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	219	234	395	158
LT Vol	42	18	29	50
Through Vol	137	201	279	91
RT Vol	40	15	87	17
Lane Flow Rate	258	275	465	186
Geometry Grp	1	1	1	1
Degree of Util (X)	0.469	0.484	0.758	0.352
Departure Headway (Hd)	6.547	6.327	5.871	6.814
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	549	567	613	526
Service Time	4.616	4.394	3.928	4.889
HCM Lane V/C Ratio	0.47	0.485	0.759	0.354
HCM Control Delay, s/veh	15.3	15.2	25.1	13.6
HCM Lane LOS	C	C	D	B
HCM 95th-tile Q	2.5	2.6	6.8	1.6

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	4	221	391	19	11	1
Future Vol, veh/h	4	221	391	19	11	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	4	248	439	21	12	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	461	0	-	0	707 450
Stage 1	-	-	-	-	450 -
Stage 2	-	-	-	-	257 -
Critical Hdwy	4.11	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.209	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1106	-	-	-	405 613
Stage 1	-	-	-	-	647 -
Stage 2	-	-	-	-	790 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1106	-	-	-	403 613
Mov Cap-2 Maneuver	-	-	-	-	403 -
Stage 1	-	-	-	-	644 -
Stage 2	-	-	-	-	790 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.15	0	13.98
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	32	-	-	-	414
HCM Lane V/C Ratio	0.004	-	-	-	0.033
HCM Ctrl Dly (s/v)	8.3	0	-	-	14
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection									
Intersection Delay, s/veh	14.9								
Intersection LOS	B								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	351		630		1195		908		
Demand Flow Rate, veh/h	351		630		1195		917		
Vehicles Circulating, veh/h	1029		1172		422		633		
Vehicles Exiting, veh/h	521		445		958		1169		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	11.0		22.7		13.0		13.6		
Approach LOS	B		C		B		B		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.470	0.530	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
A (Intercept)	1350	1420	1350	1420	1350	1420	1350	1420	
B (Slope)	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	
Entry Flow, veh/h	165	186	296	334	562	633	431	486	
Cap Entry Lane, veh/h	524	592	459	524	916	992	754	829	
Entry HV Adj Factor	1.000	1.000	1.000	1.000	0.999	1.001	0.990	0.990	
Flow Entry, veh/h	165	186	296	334	562	633	427	481	
Cap Entry, veh/h	524	592	459	524	915	993	746	821	
V/C Ratio	0.315	0.314	0.644	0.637	0.614	0.638	0.572	0.586	
Control Delay, s/veh	11.6	10.4	24.2	21.3	13.0	13.0	13.9	13.3	
LOS	B	B	C	C	B	B	B	B	
95th %tile Queue, veh	1	1	4	4	4	5	4	4	

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	9	24	96	3	8	150
Future Vol, veh/h	9	24	96	3	8	150
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, %	0	0	0	0	0	0
Mvmt Flow	10	28	112	3	9	174

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	306	113	0	0	115	0
Stage 1	113	-	-	-	-	-
Stage 2	193	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	690	945	-	-	1486	-
Stage 1	916	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	685	945	-	-	1486	-
Mov Cap-2 Maneuver	685	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	839	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	9.4	0	0.38
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	856	91
HCM Lane V/C Ratio	-	-	0.045	0.006
HCM Ctrl Dly (s/v)	-	-	9.4	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Intersection Delay, s/veh	7.1					
Intersection LOS	A					
Approach	WB	NB			SB	
Entry Lanes	1	2			2	
Conflicting Circle Lanes	2	1			1	
Adj Approach Flow, veh/h	289	904			974	
Demand Flow Rate, veh/h	292	923			984	
Vehicles Circulating, veh/h	741	180			202	
Vehicles Exiting, veh/h	362	1006			715	
Ped Vol Crossing Leg, #/h	0	0			0	
Ped Cap Adj	1.000	1.000			1.000	
Approach Delay, s/veh	7.0	6.9			7.4	
Approach LOS	A	A			A	
Lane	Left	Bypass	Left	Right	Left	Right
Designated Moves	L	R	LT	TR	LT	TR
Assumed Moves	L		LT	TR	LT	TR
RT Channelized	Yield					
Lane Util	1.000		0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.327	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420
B (Slope)	8.501e-4	8.499e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	176	116	434	489	462	522
Cap Entry Lane, veh/h	756	773	1206	1206	1182	1182
Entry HV Adj Factor	0.989	0.990	0.979	0.980	0.991	0.989
Flow Entry, veh/h	174	115	425	479	458	516
Cap Entry, veh/h	748	766	1181	1182	1171	1169
V/C Ratio	0.233	0.150	0.360	0.406	0.391	0.442
Control Delay, s/veh	7.4	6.3	6.6	7.1	7.0	7.7
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	2	2	2	2

HCM 7th Signalized Intersection Summary
3: 48th & Central

Barber Farm TIS
10/13/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	23	455	43	32	165	48	9	89	54	154	132	19
Future Volume (veh/h)	23	455	43	32	165	48	9	89	54	154	132	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1723	1723	1682	1682	1682	1682	1682	1682	1723	1723	1723
Adj Flow Rate, veh/h	27	529	50	37	192	56	10	103	63	179	153	22
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	5	5	5	5	5	5	2	2	2
Cap, veh/h	117	669	61	154	518	137	114	304	175	353	230	29
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	33	1509	139	98	1169	310	32	977	562	658	738	93
Grp Volume(v), veh/h	606	0	0	285	0	0	176	0	0	354	0	0
Grp Sat Flow(s),veh/h/ln	1681	0	0	1577	0	0	1571	0	0	1489	0	0
Q Serve(g_s), s	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0
Cycle Q Clear(g_c), s	11.4	0.0	0.0	4.3	0.0	0.0	3.2	0.0	0.0	7.6	0.0	0.0
Prop In Lane	0.04		0.08	0.13		0.20	0.06		0.36	0.51		0.06
Lane Grp Cap(c), veh/h	847	0	0	810	0	0	593	0	0	612	0	0
V/C Ratio(X)	0.72	0.00	0.00	0.35	0.00	0.00	0.30	0.00	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1266	0	0	1171	0	0	1186	0	0	1154	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.8	0.0	0.0	6.9	0.0	0.0	9.8	0.0	0.0	11.2	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	0.8	0.0	0.0	0.7	0.0	0.0	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.0	0.0	0.0	7.2	0.0	0.0	10.1	0.0	0.0	12.0	0.0	0.0
LnGrp LOS	A			A			B			B		
Approach Vol, veh/h		606			285			176			354	
Approach Delay, s/veh		10.0			7.2			10.1			12.0	
Approach LOS		A			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.9		20.8		15.9		20.8				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		25.5		25.5		25.5		25.5				
Max Q Clear Time (g_c+I1), s		5.2		13.4		9.6		6.3				
Green Ext Time (p_c), s		0.8		2.8		1.8		1.5				
Intersection Summary												
HCM 7th Control Delay, s/veh				9.9								
HCM 7th LOS				A								

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	2	405	167	5	20	3
Future Vol, veh/h	2	405	167	5	20	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	2	482	199	6	24	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	205	0	-	0	689 202
Stage 1	-	-	-	-	202 -
Stage 2	-	-	-	-	487 -
Critical Hdwy	4.11	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.209	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1373	-	-	-	415 844
Stage 1	-	-	-	-	837 -
Stage 2	-	-	-	-	622 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1373	-	-	-	414 844
Mov Cap-2 Maneuver	-	-	-	-	414 -
Stage 1	-	-	-	-	835 -
Stage 2	-	-	-	-	622 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.04	0	13.66
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	9	-	-	-	443
HCM Lane V/C Ratio	0.002	-	-	-	0.062
HCM Ctrl Dly (s/v)	7.6	0	-	-	13.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	514	1	9	193	5	26
Future Vol, veh/h	514	1	9	193	5	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	571	1	10	214	6	29

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	572	0	806
Stage 1	-	-	-	-	572
Stage 2	-	-	-	-	234
Critical Hdwy	-	-	4.12	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.218	-	3.5
Pot Cap-1 Maneuver	-	-	1001	-	354
Stage 1	-	-	-	-	569
Stage 2	-	-	-	-	809
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1001	-	350
Mov Cap-2 Maneuver	-	-	-	-	350
Stage 1	-	-	-	-	569
Stage 2	-	-	-	-	800

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.38	12.99
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	485	-	-	80	-
HCM Lane V/C Ratio	0.071	-	-	0.01	-
HCM Ctrl Dly (s/v)	13	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	539	1	18	199	3	53
Future Vol, veh/h	539	1	18	199	3	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	599	1	20	221	3	59

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	600	0	861
Stage 1	-	-	-	-	599
Stage 2	-	-	-	-	261
Critical Hdwy	-	-	4.12	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.218	-	3.5
Pot Cap-1 Maneuver	-	-	977	-	329
Stage 1	-	-	-	-	552
Stage 2	-	-	-	-	787
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	977	-	321
Mov Cap-2 Maneuver	-	-	-	-	321
Stage 1	-	-	-	-	552
Stage 2	-	-	-	-	769

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.73	13.41
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	490	-	-	149	-
HCM Lane V/C Ratio	0.127	-	-	0.02	-
HCM Ctrl Dly (s/v)	13.4	-	-	8.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection									
Intersection Delay, s/veh	22.3								
Intersection LOS	C								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	834		388		889		1040		
Demand Flow Rate, veh/h	851		399		915		1051		
Vehicles Circulating, veh/h	1104		966		977		366		
Vehicles Exiting, veh/h	313		926		978		999		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	35.1		11.1		29.4		10.2		
Approach LOS	E		B		D		B		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.471	0.529	0.470	0.530	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
A (Intercept)	1350	1420	1350	1420	1350	1420	1350	1420	
B (Slope)	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	
Entry Flow, veh/h	400	451	188	211	430	485	494	557	
Cap Entry Lane, veh/h	489	556	555	625	550	619	964	1040	
Entry HV Adj Factor	0.980	0.980	0.969	0.974	0.972	0.972	0.990	0.990	
Flow Entry, veh/h	392	442	182	206	418	471	489	551	
Cap Entry, veh/h	479	544	538	608	534	601	954	1030	
V/C Ratio	0.818	0.812	0.339	0.338	0.783	0.784	0.512	0.535	
Control Delay, s/veh	37.3	33.2	11.8	10.6	30.8	28.2	10.2	10.1	
LOS	E	D	B	B	D	D	B	B	
95th %tile Queue, veh	8	8	1	1	7	7	3	3	

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	12	238	7	16	167
Future Vol, veh/h	5	12	238	7	16	167
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, %	0	0	0	0	0	0
Mvmt Flow	6	14	277	8	19	194

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	512	281	0	0	285	0
Stage 1	281	-	-	-	-	-
Stage 2	231	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	525	763	-	-	1289	-
Stage 1	771	-	-	-	-	-
Stage 2	812	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	517	763	-	-	1289	-
Mov Cap-2 Maneuver	517	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	799	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	10.54	0	0.68
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	669	157
HCM Lane V/C Ratio	-	-	0.03	0.014
HCM Ctrl Dly (s/v)	-	-	10.5	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Intersection Delay, s/veh	12.5					
Intersection LOS	B					
Approach	WB	NB		SB		
Entry Lanes	1	2		2		
Conflicting Circle Lanes	2	1		1		
Adj Approach Flow, veh/h	439	1668		1165		
Demand Flow Rate, veh/h	439	1668		1177		
Vehicles Circulating, veh/h	1375	156		298		
Vehicles Exiting, veh/h	449	1319		1340		
Ped Vol Crossing Leg, #/h	0	0		0		
Ped Cap Adj	1.000	1.000		1.000		
Approach Delay, s/veh	19.4	12.4		10.1		
Approach LOS	C	B		B		
Lane	Left	Bypass	Left	Right	Left	Right
Designated Moves	L	R	LT	TR	LT	TR
Assumed Moves	L		LT	TR	LT	TR
RT Channelized	Yield					
Lane Util	1.000		0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.327	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420
B (Slope)	8.501e-4	8.499e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	263	176	784	884	553	624
Cap Entry Lane, veh/h	441	455	1232	1232	1083	1083
Entry HV Adj Factor	1.000	1.000	1.000	1.000	0.990	0.989
Flow Entry, veh/h	263	176	784	884	547	617
Cap Entry, veh/h	441	455	1232	1232	1072	1071
V/C Ratio	0.596	0.387	0.636	0.717	0.511	0.576
Control Delay, s/veh	22.5	14.8	11.1	13.5	9.4	10.7
LOS	C	B	B	B	A	B
95th %tile Queue, veh	4	2	5	7	3	4

HCM 7th Signalized Intersection Summary
3: 48th & Central

Barber Farm TIS
10/13/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	21	240	17	34	327	102	49	159	47	60	106	20
Future Volume (veh/h)	21	240	17	34	327	102	49	159	47	60	106	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Adj Flow Rate, veh/h	25	282	20	40	385	120	58	187	55	71	125	24
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	149	666	45	152	533	158	195	307	81	253	296	48
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	53	1533	103	60	1226	363	204	1124	298	359	1084	177
Grp Volume(v), veh/h	327	0	0	545	0	0	300	0	0	220	0	0
Grp Sat Flow(s),veh/h/ln1690	0	0	0	1649	0	0	1626	0	0	1619	0	0
Q Serve(g_s), s	0.0	0.0	0.0	1.8	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.0	0.0	0.0	8.4	0.0	0.0	4.9	0.0	0.0	3.3	0.0	0.0
Prop In Lane	0.08		0.06	0.07		0.22	0.19		0.18	0.32		0.11
Lane Grp Cap(c), veh/h	860	0	0	842	0	0	583	0	0	597	0	0
V/C Ratio(X)	0.38	0.00	0.00	0.65	0.00	0.00	0.51	0.00	0.00	0.37	0.00	0.00
Avail Cap(c_a), veh/h	1499	0	0	1480	0	0	1462	0	0	1419	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.1	0.0	0.0	7.3	0.0	0.0	9.9	0.0	0.0	9.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.8	0.0	0.0	0.7	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln0.5	0.0	0.0	0.0	1.2	0.0	0.0	1.0	0.0	0.0	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.3	0.0	0.0	8.1	0.0	0.0	10.6	0.0	0.0	9.7	0.0	0.0
LnGrp LOS	A			A			B			A		
Approach Vol, veh/h		327			545			300			220	
Approach Delay, s/veh		6.3			8.1			10.6			9.7	
Approach LOS		A			A			B			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.9		17.9		12.9		17.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		25.5		25.5		25.5		25.5				
Max Q Clear Time (g_c+I1), s		6.9		6.0		5.3		10.4				
Green Ext Time (p_c), s		1.5		1.6		1.1		2.9				
Intersection Summary												
HCM 7th Control Delay, s/veh				8.5								
HCM 7th LOS				A								

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	266	458	22	13	1
Future Vol, veh/h	5	266	458	22	13	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	6	299	515	25	15	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	539	0	-	0	837 527
Stage 1	-	-	-	-	527 -
Stage 2	-	-	-	-	310 -
Critical Hdwy	4.11	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.209	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1034	-	-	-	339 555
Stage 1	-	-	-	-	596 -
Stage 2	-	-	-	-	748 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1034	-	-	-	337 555
Mov Cap-2 Maneuver	-	-	-	-	337 -
Stage 1	-	-	-	-	592 -
Stage 2	-	-	-	-	748 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.16	0	15.87
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	33	-	-	-	347
HCM Lane V/C Ratio	0.005	-	-	-	0.045
HCM Ctrl Dly (s/v)	8.5	0	-	-	15.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	311	6	28	490	4	17
Future Vol, veh/h	311	6	28	490	4	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	1	1	0	0
Mvmt Flow	346	7	31	544	4	19

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	352	0	956 349
Stage 1	-	-	-	-	349 -
Stage 2	-	-	-	-	607 -
Critical Hdwy	-	-	4.11	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.209	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	1212	-	289 699
Stage 1	-	-	-	-	719 -
Stage 2	-	-	-	-	548 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1212	-	278 699
Mov Cap-2 Maneuver	-	-	-	-	278 -
Stage 1	-	-	-	-	719 -
Stage 2	-	-	-	-	528 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.44	11.93
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	543	-	-	97	-
HCM Lane V/C Ratio	0.043	-	-	0.026	-
HCM Ctrl Dly (s/v)	11.9	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	324	4	56	516	2	35
Future Vol, veh/h	324	4	56	516	2	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	1	1	0	0
Mvmt Flow	360	4	62	573	2	39

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	364	0	1060
Stage 1	-	-	-	-	362
Stage 2	-	-	-	-	698
Critical Hdwy	-	-	4.11	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.209	-	3.5
Pot Cap-1 Maneuver	-	-	1200	-	250
Stage 1	-	-	-	-	709
Stage 2	-	-	-	-	497
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1200	-	231
Mov Cap-2 Maneuver	-	-	-	-	231
Stage 1	-	-	-	-	709
Stage 2	-	-	-	-	460

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.8	11.21
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	621	-	-	176	-
HCM Lane V/C Ratio	0.066	-	-	0.052	-
HCM Ctrl Dly (s/v)	11.2	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-

Intersection									
Intersection Delay, s/veh	33.7								
Intersection LOS	D								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	465		776		1416		1084		
Demand Flow Rate, veh/h	465		776		1416		1095		
Vehicles Circulating, veh/h	1195		1407		527		809		
Vehicles Exiting, veh/h	709		536		1133		1374		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	16.7		70.5		23.6		28.0		
Approach LOS	C		F		C		D		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.471	0.529	0.470	0.530	0.470	0.530	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
A (Intercept)	1350	1420	1350	1420	1350	1420	1350	1420	
B (Slope)	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	
Entry Flow, veh/h	219	246	365	411	666	750	515	580	
Cap Entry Lane, veh/h	450	514	370	429	831	907	641	714	
Entry HV Adj Factor	0.998	1.002	0.999	1.001	0.999	1.001	0.990	0.991	
Flow Entry, veh/h	219	246	365	411	666	750	510	575	
Cap Entry, veh/h	449	515	370	430	831	908	635	707	
V/C Ratio	0.487	0.478	0.986	0.957	0.801	0.827	0.803	0.812	
Control Delay, s/veh	17.8	15.6	77.4	64.4	23.3	23.8	28.7	27.3	
LOS	C	C	F	F	C	C	D	D	
95th %tile Queue, veh	3	3	11	11	9	10	8	9	

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	9	24	97	3	8	150
Future Vol, veh/h	9	24	97	3	8	150
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, %	0	0	0	0	0	0
Mvmt Flow	10	28	113	3	9	174

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	308	115	0	0	116	0
Stage 1	115	-	-	-	-	-
Stage 2	193	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	689	943	-	-	1485	-
Stage 1	915	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	684	943	-	-	1485	-
Mov Cap-2 Maneuver	684	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	839	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	9.41	0	0.38
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	855	91
HCM Lane V/C Ratio	-	-	0.045	0.006
HCM Ctrl Dly (s/v)	-	-	9.4	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Intersection Delay, s/veh	7.2					
Intersection LOS	A					
Approach	WB	NB			SB	
Entry Lanes	1	2			2	
Conflicting Circle Lanes	2	1			1	
Adj Approach Flow, veh/h	291	927			980	
Demand Flow Rate, veh/h	294	946			990	
Vehicles Circulating, veh/h	760	180			204	
Vehicles Exiting, veh/h	366	1014			734	
Ped Vol Crossing Leg, #/h	0	0			0	
Ped Cap Adj	1.000	1.000			1.000	
Approach Delay, s/veh	7.1	7.0			7.4	
Approach LOS	A	A			A	
Lane	Left	Bypass	Left	Right	Left	Right
Designated Moves	L	R	LT	TR	LT	TR
Assumed Moves	L		LT	TR	LT	TR
RT Channelized		Yield				
Lane Util	1.000		0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.327	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420
B (Slope)	8.501e-4	8.499e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	178	116	445	501	465	525
Cap Entry Lane, veh/h	744	761	1206	1206	1179	1179
Entry HV Adj Factor	0.989	0.990	0.979	0.981	0.991	0.989
Flow Entry, veh/h	176	115	436	491	461	519
Cap Entry, veh/h	736	754	1180	1182	1168	1167
V/C Ratio	0.239	0.153	0.369	0.416	0.394	0.445
Control Delay, s/veh	7.6	6.4	6.7	7.3	7.0	7.8
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	2	2	2	2

HCM 7th Signalized Intersection Summary
3: 48th & Central

Barber Farm TIS
10/19/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	23	457	43	33	170	49	9	89	54	154	132	19
Future Volume (veh/h)	23	457	43	33	170	49	9	89	54	154	132	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1723	1723	1682	1682	1682	1682	1682	1682	1723	1723	1723
Adj Flow Rate, veh/h	27	531	50	38	198	57	10	103	63	179	153	22
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	5	5	5	5	5	5	2	2	2
Cap, veh/h	117	671	61	155	520	136	113	304	175	352	230	29
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	32	1510	138	99	1171	307	32	977	562	658	738	93
Grp Volume(v), veh/h	608	0	0	293	0	0	176	0	0	354	0	0
Grp Sat Flow(s),veh/h/ln	1681	0	0	1577	0	0	1571	0	0	1489	0	0
Q Serve(g_s), s	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0
Cycle Q Clear(g_c), s	11.5	0.0	0.0	4.5	0.0	0.0	3.2	0.0	0.0	7.6	0.0	0.0
Prop In Lane	0.04		0.08	0.13		0.19	0.06		0.36	0.51		0.06
Lane Grp Cap(c), veh/h	849	0	0	811	0	0	592	0	0	611	0	0
V/C Ratio(X)	0.72	0.00	0.00	0.36	0.00	0.00	0.30	0.00	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1262	0	0	1168	0	0	1183	0	0	1150	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.9	0.0	0.0	6.9	0.0	0.0	9.8	0.0	0.0	11.2	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	0.8	0.0	0.0	0.7	0.0	0.0	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.0	0.0	0.0	7.2	0.0	0.0	10.1	0.0	0.0	12.1	0.0	0.0
LnGrp LOS	B			A			B			B		
Approach Vol, veh/h		608			293			176			354	
Approach Delay, s/veh		10.0			7.2			10.1			12.1	
Approach LOS		B			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.9		20.8		15.9		20.8				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		25.5		25.5		25.5		25.5				
Max Q Clear Time (g_c+I1), s		5.2		13.5		9.6		6.5				
Green Ext Time (p_c), s		0.8		2.8		1.8		1.6				
Intersection Summary												
HCM 7th Control Delay, s/veh				10.0								
HCM 7th LOS				A								

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	2	407	174	5	20	3
Future Vol, veh/h	2	407	174	5	20	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	2	485	207	6	24	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	213	0	-	0	699 210
Stage 1	-	-	-	-	210 -
Stage 2	-	-	-	-	489 -
Critical Hdwy	4.11	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.209	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1363	-	-	-	409 835
Stage 1	-	-	-	-	830 -
Stage 2	-	-	-	-	620 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1363	-	-	-	408 835
Mov Cap-2 Maneuver	-	-	-	-	408 -
Stage 1	-	-	-	-	828 -
Stage 2	-	-	-	-	620 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.04	0	13.79
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	9	-	-	-	437
HCM Lane V/C Ratio	0.002	-	-	-	0.063
HCM Ctrl Dly (s/v)	7.6	0	-	-	13.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	513	1	9	193	0	5	0	26	0	0	7
Future Vol, veh/h	2	513	1	9	193	0	5	0	26	0	0	7
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	2	2	2	0	0	0	0	0	0
Mvmt Flow	2	570	1	10	214	0	6	0	29	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	214	0	0	571	0	0	809	809	571	809	810	214
Stage 1	-	-	-	-	-	-	575	575	-	234	234	-
Stage 2	-	-	-	-	-	-	234	234	-	574	576	-
Critical Hdwy	4.11	-	-	4.12	-	-	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	2.209	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1362	-	-	1002	-	-	301	316	524	301	316	831
Stage 1	-	-	-	-	-	-	507	506	-	773	715	-
Stage 2	-	-	-	-	-	-	773	715	-	507	506	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1362	-	-	1002	-	-	294	312	524	281	312	831
Mov Cap-2 Maneuver	-	-	-	-	-	-	294	312	-	281	312	-
Stage 1	-	-	-	-	-	-	506	505	-	764	706	-
Stage 2	-	-	-	-	-	-	757	706	-	478	504	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.03			0.38			13.35			9.38		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	466	7	-	-	80	-	-	831
HCM Lane V/C Ratio	0.074	0.002	-	-	0.01	-	-	0.009
HCM Ctrl Dly (s/v)	13.3	7.6	0	-	8.6	0	-	9.4
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	538	1	18	199	21	3	0	53	63	0	0
Future Vol, veh/h	0	538	1	18	199	21	3	0	53	63	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	2	2	2	0	0	0	0	0	0
Mvmt Flow	0	598	1	20	221	23	3	0	59	70	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	244	0	0	599	0	0	859	883	598	871	872	233
Stage 1	-	-	-	-	-	-	598	598	-	273	273	-
Stage 2	-	-	-	-	-	-	261	284	-	598	599	-
Critical Hdwy	4.11	-	-	4.12	-	-	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	2.209	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1328	-	-	978	-	-	279	287	506	274	291	811
Stage 1	-	-	-	-	-	-	492	494	-	738	688	-
Stage 2	-	-	-	-	-	-	748	680	-	493	494	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1328	-	-	978	-	-	272	280	506	236	284	811
Mov Cap-2 Maneuver	-	-	-	-	-	-	272	280	-	236	284	-
Stage 1	-	-	-	-	-	-	492	494	-	720	671	-
Stage 2	-	-	-	-	-	-	730	664	-	435	494	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0			0.66			13.54			26.54		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	483	1328	-	-	134	-	-	236
HCM Lane V/C Ratio	0.129	-	-	-	0.02	-	-	0.296
HCM Ctrl Dly (s/v)	13.5	0	-	-	8.8	0	-	26.5
HCM Lane LOS	B	A	-	-	A	A	-	D
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	1.2

Intersection									
Intersection Delay, s/veh	26.7								
Intersection LOS	D								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	904		395		896		1048		
Demand Flow Rate, veh/h	922		406		923		1059		
Vehicles Circulating, veh/h	1104		997		1025		382		
Vehicles Exiting, veh/h	337		951		1001		1021		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	44.1		11.7		34.6		10.5		
Approach LOS	E		B		D		B		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.470	0.530	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
A (Intercept)	1350	1420	1350	1420	1350	1420	1350	1420	
B (Slope)	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	
Entry Flow, veh/h	433	489	191	215	434	489	498	561	
Cap Entry Lane, veh/h	489	556	539	608	526	594	950	1026	
Entry HV Adj Factor	0.982	0.980	0.971	0.973	0.971	0.971	0.989	0.990	
Flow Entry, veh/h	425	479	185	209	421	475	493	556	
Cap Entry, veh/h	480	545	524	592	510	577	940	1016	
V/C Ratio	0.886	0.880	0.354	0.353	0.825	0.823	0.524	0.547	
Control Delay, s/veh	46.6	41.9	12.4	11.1	36.4	33.0	10.6	10.5	
LOS	E	E	B	B	E	D	B	B	
95th %tile Queue, veh	10	10	2	2	8	8	3	3	

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	5	12	239	7	16	168
Future Vol, veh/h	5	12	239	7	16	168
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, %	0	0	0	0	0	0
Mvmt Flow	6	14	278	8	19	195

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	515	282	0	0	286	0
Stage 1	282	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	524	762	-	-	1288	-
Stage 1	770	-	-	-	-	-
Stage 2	811	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	515	762	-	-	1288	-
Mov Cap-2 Maneuver	515	-	-	-	-	-
Stage 1	770	-	-	-	-	-
Stage 2	798	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	10.56	0	0.68
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	668	157
HCM Lane V/C Ratio	-	-	0.03	0.014
HCM Ctrl Dly (s/v)	-	-	10.6	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Intersection Delay, s/veh	12.8					
Intersection LOS	B					
Approach	WB	NB		SB		
Entry Lanes	1	2		2		
Conflicting Circle Lanes	2	1		1		
Adj Approach Flow, veh/h	443	1683		1184		
Demand Flow Rate, veh/h	443	1683		1196		
Vehicles Circulating, veh/h	1388	156		302		
Vehicles Exiting, veh/h	451	1342		1353		
Ped Vol Crossing Leg, #/h	0	0		0		
Ped Cap Adj	1.000	1.000		1.000		
Approach Delay, s/veh	20.1	12.6		10.3		
Approach LOS	C	B		B		
Lane	Left	Bypass	Left	Right	Left	Right
Designated Moves	L	R	LT	TR	LT	TR
Assumed Moves	L		LT	TR	LT	TR
RT Channelized	Yield					
Lane Util	1.000		0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.327	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420
B (Slope)	8.501e-4	8.499e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	267	176	791	892	562	634
Cap Entry Lane, veh/h	436	450	1232	1232	1079	1079
Entry HV Adj Factor	1.000	1.000	1.000	1.000	0.990	0.990
Flow Entry, veh/h	267	176	791	892	556	627
Cap Entry, veh/h	436	450	1232	1232	1068	1068
V/C Ratio	0.612	0.391	0.642	0.724	0.521	0.588
Control Delay, s/veh	23.5	15.0	11.2	13.8	9.6	11.0
LOS	C	C	B	B	A	B
95th %tile Queue, veh	4	2	5	7	3	4

HCM 7th Signalized Intersection Summary
3: 48th & Central

Barber Farm TIS
10/18/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	21	244	17	34	330	103	49	159	48	61	106	20
Future Volume (veh/h)	21	244	17	34	330	103	49	159	48	61	106	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Adj Flow Rate, veh/h	25	287	20	40	388	121	58	187	56	72	125	24
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	148	670	44	151	535	158	194	306	83	254	295	48
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	53	1536	102	59	1226	363	203	1120	302	364	1079	176
Grp Volume(v), veh/h	332	0	0	549	0	0	301	0	0	221	0	0
Grp Sat Flow(s),veh/h/ln1691	0	0	0	1649	0	0	1626	0	0	1619	0	0
Q Serve(g_s), s	0.0	0.0	0.0	1.9	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.1	0.0	0.0	8.6	0.0	0.0	5.0	0.0	0.0	3.3	0.0	0.0
Prop In Lane	0.08		0.06	0.07		0.22	0.19		0.19	0.33		0.11
Lane Grp Cap(c), veh/h	863	0	0	844	0	0	583	0	0	596	0	0
V/C Ratio(X)	0.38	0.00	0.00	0.65	0.00	0.00	0.52	0.00	0.00	0.37	0.00	0.00
Avail Cap(c_a), veh/h	1491	0	0	1470	0	0	1453	0	0	1409	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.1	0.0	0.0	7.3	0.0	0.0	10.0	0.0	0.0	9.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.9	0.0	0.0	0.7	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln0.5	0.0	0.0	0.0	1.2	0.0	0.0	1.0	0.0	0.0	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.4	0.0	0.0	8.2	0.0	0.0	10.7	0.0	0.0	9.8	0.0	0.0
LnGrp LOS	A			A			B			A		
Approach Vol, veh/h		332			549			301			221	
Approach Delay, s/veh		6.4			8.2			10.7			9.8	
Approach LOS		A			A			B			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.9		18.0		12.9		18.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		25.5		25.5		25.5		25.5				
Max Q Clear Time (g_c+I1), s		7.0		6.1		5.3		10.6				
Green Ext Time (p_c), s		1.5		1.7		1.1		2.9				
Intersection Summary												
HCM 7th Control Delay, s/veh				8.5								
HCM 7th LOS				A								

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	272	462	22	13	1
Future Vol, veh/h	5	272	462	22	13	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	6	306	519	25	15	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	544	0	-	0	848 531
Stage 1	-	-	-	-	531 -
Stage 2	-	-	-	-	317 -
Critical Hdwy	4.11	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.209	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1030	-	-	-	334 552
Stage 1	-	-	-	-	593 -
Stage 2	-	-	-	-	743 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1030	-	-	-	332 552
Mov Cap-2 Maneuver	-	-	-	-	332 -
Stage 1	-	-	-	-	590 -
Stage 2	-	-	-	-	743 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.15	0	16.04
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	32	-	-	-	342
HCM Lane V/C Ratio	0.005	-	-	-	0.046
HCM Ctrl Dly (s/v)	8.5	0	-	-	16
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	311	6	28	490	0	4	0	17	0	0	4
Future Vol, veh/h	6	311	6	28	490	0	4	0	17	0	0	4
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	1	1	1	0	0	0	0	0	0
Mvmt Flow	7	346	7	31	544	0	4	0	19	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	544	0	0	352	0	0	969	969	349	966	972	544
Stage 1	-	-	-	-	-	-	362	362	-	607	607	-
Stage 2	-	-	-	-	-	-	607	607	-	359	366	-
Critical Hdwy	4.12	-	-	4.11	-	-	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	2.218	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1025	-	-	1212	-	-	235	256	699	236	254	543
Stage 1	-	-	-	-	-	-	661	629	-	487	490	-
Stage 2	-	-	-	-	-	-	487	490	-	663	626	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1025	-	-	1212	-	-	223	244	699	220	243	543
Mov Cap-2 Maneuver	-	-	-	-	-	-	223	244	-	220	243	-
Stage 1	-	-	-	-	-	-	655	624	-	469	472	-
Stage 2	-	-	-	-	-	-	465	472	-	640	621	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.16			0.44			12.61			11.69		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	497	33	-	-	97	-	-	543
HCM Lane V/C Ratio	0.047	0.007	-	-	0.026	-	-	0.008
HCM Ctrl Dly (s/v)	12.6	8.5	0	-	8	0	-	11.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	324	4	56	516	58	2	0	35	40	0	0
Future Vol, veh/h	0	324	4	56	516	58	2	0	35	40	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	1	1	1	0	0	0	0	0	0
Mvmt Flow	0	360	4	62	573	64	2	0	39	44	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	638	0	0	364	0	0	1060	1124	362	1090	1094	606
Stage 1	-	-	-	-	-	-	362	362	-	730	730	-
Stage 2	-	-	-	-	-	-	698	762	-	360	364	-
Critical Hdwy	4.12	-	-	4.11	-	-	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	2.218	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	946	-	-	1200	-	-	204	207	687	194	216	501
Stage 1	-	-	-	-	-	-	661	629	-	417	431	-
Stage 2	-	-	-	-	-	-	434	416	-	662	627	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	946	-	-	1200	-	-	187	190	687	168	198	501
Mov Cap-2 Maneuver	-	-	-	-	-	-	187	190	-	168	198	-
Stage 1	-	-	-	-	-	-	661	629	-	383	396	-
Stage 2	-	-	-	-	-	-	399	383	-	625	627	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0			0.73			11.44			33.86		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	600	946	-	-	157	-	-	168
HCM Lane V/C Ratio	0.068	-	-	-	0.052	-	-	0.264
HCM Ctrl Dly (s/v)	11.4	0	-	-	8.2	0	-	33.9
HCM Lane LOS	B	A	-	-	A	A	-	D
HCM 95th %tile Q(veh)	0.2	0	-	-	0.2	-	-	1

Intersection									
Intersection Delay, s/veh	40.2								
Intersection LOS	E								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	508		797		1436		1105		
Demand Flow Rate, veh/h	508		797		1436		1117		
Vehicles Circulating, veh/h	1195		1442		556		850		
Vehicles Exiting, veh/h	772		550		1147		1389		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	18.1		86.7		27.1		33.8		
Approach LOS	C		F		D		D		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.471	0.529	0.470	0.530	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
A (Intercept)	1350	1420	1350	1420	1350	1420	1350	1420	
B (Slope)	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	
Entry Flow, veh/h	239	269	375	422	675	761	525	592	
Cap Entry Lane, veh/h	450	514	358	417	809	885	618	689	
Entry HV Adj Factor	0.999	1.001	0.999	1.001	1.000	1.000	0.990	0.990	
Flow Entry, veh/h	239	269	375	422	675	761	520	586	
Cap Entry, veh/h	449	515	358	417	809	885	611	682	
V/C Ratio	0.532	0.523	1.047	1.012	0.834	0.860	0.850	0.859	
Control Delay, s/veh	19.4	17.0	95.2	79.2	26.6	27.5	34.6	33.0	
LOS	C	C	F	F	D	D	D	D	
95th %tile Queue, veh	3	3	13	13	10	11	9	10	

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	10	26	104	4	9	161
Future Vol, veh/h	10	26	104	4	9	161
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, %	0	0	0	0	0	0
Mvmt Flow	12	30	121	5	10	187

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	331	123	0	0	126	0
Stage 1	123	-	-	-	-	-
Stage 2	208	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	668	933	-	-	1473	-
Stage 1	907	-	-	-	-	-
Stage 2	831	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	662	933	-	-	1473	-
Mov Cap-2 Maneuver	662	-	-	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	825	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	9.52	0	0.39
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	838	95
HCM Lane V/C Ratio	-	-	0.05	0.007
HCM Ctrl Dly (s/v)	-	-	9.5	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection						
Intersection Delay, s/veh	7.8					
Intersection LOS	A					
Approach	WB	NB		SB		
Entry Lanes	1	2		2		
Conflicting Circle Lanes	2	1		1		
Adj Approach Flow, veh/h	312	1003		1056		
Demand Flow Rate, veh/h	315	1024		1067		
Vehicles Circulating, veh/h	823	193		219		
Vehicles Exiting, veh/h	394	1093		795		
Ped Vol Crossing Leg, #/h	0	0		0		
Ped Cap Adj	1.000	1.000		1.000		
Approach Delay, s/veh	7.8	7.6		8.1		
Approach LOS	A	A		A		
Lane	Left	Bypass	Left	Right	Left	Right
Designated Moves	L	R	LT	TR	LT	TR
Assumed Moves	L		LT	TR	LT	TR
RT Channelized	Yield					
Lane Util	1.000		0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.327	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420
B (Slope)	8.501e-4	8.499e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	191	124	481	543	501	566
Cap Entry Lane, veh/h	705	723	1191	1191	1163	1163
Entry HV Adj Factor	0.990	0.990	0.981	0.980	0.991	0.989
Flow Entry, veh/h	189	123	472	532	496	560
Cap Entry, veh/h	698	715	1169	1167	1153	1151
V/C Ratio	0.271	0.172	0.404	0.456	0.431	0.486
Control Delay, s/veh	8.4	6.9	7.2	7.9	7.6	8.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	2	2	2	3

HCM 7th Signalized Intersection Summary
3: 48th & Central

Barber Farm TIS
10/19/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	25	493	46	36	184	53	10	96	59	166	142	20
Future Volume (veh/h)	25	493	46	36	184	53	10	96	59	166	142	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1723	1723	1682	1682	1682	1682	1682	1682	1723	1723	1723
Adj Flow Rate, veh/h	29	573	53	42	214	62	12	112	69	193	165	23
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	5	5	5	5	5	5	2	2	2
Cap, veh/h	107	693	62	147	530	140	105	314	181	349	233	29
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	33	1510	136	104	1155	305	36	976	563	673	723	90
Grp Volume(v), veh/h	655	0	0	318	0	0	193	0	0	381	0	0
Grp Sat Flow(s),veh/h/ln1679	0	0	1564	0	0	1576	0	0	1485	0	0	0
Q Serve(g_s), s	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0
Cycle Q Clear(g_c), s	14.1	0.0	0.0	5.4	0.0	0.0	3.9	0.0	0.0	9.3	0.0	0.0
Prop In Lane	0.04		0.08	0.13		0.19	0.06		0.36	0.51		0.06
Lane Grp Cap(c), veh/h	862	0	0	817	0	0	600	0	0	610	0	0
V/C Ratio(X)	0.76	0.00	0.00	0.39	0.00	0.00	0.32	0.00	0.00	0.62	0.00	0.00
Avail Cap(c_a), veh/h	1132	0	0	1048	0	0	1062	0	0	1030	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.8	0.0	0.0	7.5	0.0	0.0	10.7	0.0	0.0	12.4	0.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln3.1	0.0	0.0	1.1	0.0	0.0	0.9	0.0	0.0	0.0	2.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.0	0.0	0.0	7.8	0.0	0.0	11.1	0.0	0.0	13.4	0.0	0.0
LnGrp LOS	B			A			B			B		
Approach Vol, veh/h		655			318			193			381	
Approach Delay, s/veh		12.0			7.8			11.1			13.4	
Approach LOS		B			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		17.7		23.3		17.7		23.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		25.5		25.5		25.5		25.5				
Max Q Clear Time (g_c+I1), s		5.9		16.1		11.3		7.4				
Green Ext Time (p_c), s		0.9		2.7		1.9		1.7				
Intersection Summary												
HCM 7th Control Delay, s/veh				11.4								
HCM 7th LOS				B								

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	439	188	5	21	4
Future Vol, veh/h	2	439	188	5	21	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	2	523	224	6	25	5

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	230	0	-	0	754 227
Stage 1	-	-	-	-	227 -
Stage 2	-	-	-	-	527 -
Critical Hdwy	4.11	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.209	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1344	-	-	-	380 818
Stage 1	-	-	-	-	816 -
Stage 2	-	-	-	-	596 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1344	-	-	-	379 818
Mov Cap-2 Maneuver	-	-	-	-	379 -
Stage 1	-	-	-	-	814 -
Stage 2	-	-	-	-	596 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.03	0	14.36
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	8	-	-	-	414
HCM Lane V/C Ratio	0.002	-	-	-	0.072
HCM Ctrl Dly (s/v)	7.7	0	-	-	14.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	554	1	9	210	0	5	0	26	0	0	7
Future Vol, veh/h	2	554	1	9	210	0	5	0	26	0	0	7
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	2	2	2	0	0	0	0	0	0
Mvmt Flow	2	616	1	10	233	0	6	0	29	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	233	0	0	617	0	0	874	874	616	873	874	233
Stage 1	-	-	-	-	-	-	621	621	-	253	253	-
Stage 2	-	-	-	-	-	-	253	253	-	620	621	-
Critical Hdwy	4.11	-	-	4.12	-	-	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	2.209	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1340	-	-	963	-	-	272	290	494	273	290	811
Stage 1	-	-	-	-	-	-	479	483	-	755	701	-
Stage 2	-	-	-	-	-	-	755	701	-	479	482	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1340	-	-	963	-	-	266	286	494	253	286	811
Mov Cap-2 Maneuver	-	-	-	-	-	-	266	286	-	253	286	-
Stage 1	-	-	-	-	-	-	477	481	-	746	693	-
Stage 2	-	-	-	-	-	-	739	693	-	450	481	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.03			0.36			14.01			9.48		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	434	6	-	-	74	-	-	811
HCM Lane V/C Ratio	0.079	0.002	-	-	0.01	-	-	0.01
HCM Ctrl Dly (s/v)	14	7.7	0	-	8.8	0	-	9.5
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	578	2	25	214	21	5	0	75	63	0	0
Future Vol, veh/h	0	578	2	25	214	21	5	0	75	63	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	2	2	2	0	0	0	0	0	0
Mvmt Flow	0	642	2	28	238	23	6	0	83	70	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	261	0	0	644	0	0	937	960	643	947	949	249
Stage 1	-	-	-	-	-	-	643	643	-	305	305	-
Stage 2	-	-	-	-	-	-	293	317	-	642	644	-
Critical Hdwy	4.11	-	-	4.12	-	-	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	2.209	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1309	-	-	941	-	-	247	259	477	243	262	794
Stage 1	-	-	-	-	-	-	465	471	-	709	666	-
Stage 2	-	-	-	-	-	-	719	658	-	466	471	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1309	-	-	941	-	-	238	250	477	194	253	794
Mov Cap-2 Maneuver	-	-	-	-	-	-	238	250	-	194	253	-
Stage 1	-	-	-	-	-	-	465	471	-	684	643	-
Stage 2	-	-	-	-	-	-	694	635	-	384	471	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0.86	14.99	33.76
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	449	1309	-	-	170	-	-	194
HCM Lane V/C Ratio	0.198	-	-	-	0.03	-	-	0.362
HCM Ctrl Dly (s/v)	15	0	-	-	8.9	0	-	33.8
HCM Lane LOS	B	A	-	-	A	A	-	D
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	1.5

Intersection									
Intersection Delay, s/veh	44.4								
Intersection LOS	E								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	986		427		966		1128		
Demand Flow Rate, veh/h	1006		440		995		1139		
Vehicles Circulating, veh/h	1186		1078		1111		413		
Vehicles Exiting, veh/h	366		1028		1081		1105		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	80.5		13.8		58.9		12.1		
Approach LOS	F		B		F		B		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.470	0.530	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
A (Intercept)	1350	1420	1350	1420	1350	1420	1350	1420	
B (Slope)	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	
Entry Flow, veh/h	473	533	207	233	468	527	535	604	
Cap Entry Lane, veh/h	453	518	501	568	486	552	923	1000	
Entry HV Adj Factor	0.979	0.980	0.970	0.972	0.970	0.971	0.991	0.989	
Flow Entry, veh/h	463	522	201	226	454	512	530	598	
Cap Entry, veh/h	444	508	486	552	471	536	915	989	
V/C Ratio	1.043	1.029	0.413	0.410	0.963	0.954	0.580	0.604	
Control Delay, s/veh	85.3	76.2	14.6	13.0	62.4	55.9	12.1	12.1	
LOS	F	F	B	B	F	F	B	B	
95th %tile Queue, veh	14	15	2	2	12	12	4	4	

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	5	12	257	7	17	180
Future Vol, veh/h	5	12	257	7	17	180
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, %	0	0	0	0	0	0
Mvmt Flow	6	14	299	8	20	209

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	552	303	0	0	307	0
Stage 1	303	-	-	-	-	-
Stage 2	249	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	498	742	-	-	1265	-
Stage 1	754	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	490	742	-	-	1265	-
Mov Cap-2 Maneuver	490	-	-	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	10.77	0	0.68
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	644	155
HCM Lane V/C Ratio	-	-	0.031	0.016
HCM Ctrl Dly (s/v)	-	-	10.8	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Intersection Delay, s/veh	15.5					
Intersection LOS	C					
Approach	WB	NB		SB		
Entry Lanes	1	2		2		
Conflicting Circle Lanes	2	1		1		
Adj Approach Flow, veh/h	477	1815		1277		
Demand Flow Rate, veh/h	477	1815		1290		
Vehicles Circulating, veh/h	1497	168		324		
Vehicles Exiting, veh/h	486	1446		1460		
Ped Vol Crossing Leg, #/h	0	0		0		
Ped Cap Adj	1.000	1.000		1.000		
Approach Delay, s/veh	27.1	15.1		11.8		
Approach LOS	D	C		B		
Lane	Left	Bypass	Left	Right	Left	Right
Designated Moves	L	R	LT	TR	LT	TR
Assumed Moves	L		LT	TR	LT	TR
RT Channelized	Yield					
Lane Util	1.000		0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.327	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420
B (Slope)	8.501e-4	8.499e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	287	190	853	962	606	684
Cap Entry Lane, veh/h	398	411	1219	1219	1057	1057
Entry HV Adj Factor	1.000	1.000	1.000	1.000	0.990	0.989
Flow Entry, veh/h	287	190	853	962	600	677
Cap Entry, veh/h	398	411	1219	1219	1047	1046
V/C Ratio	0.722	0.463	0.700	0.789	0.573	0.647
Control Delay, s/veh	32.9	18.4	13.0	16.9	10.8	12.7
LOS	D	C	B	C	B	B
95th %tile Queue, veh	6	2	6	9	4	5

HCM 7th Signalized Intersection Summary
3: 48th & Central

Barber Farm TIS
10/19/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	22	264	19	36	356	111	52	171	52	65	114	21
Future Volume (veh/h)	22	264	19	36	356	111	52	171	52	65	114	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Adj Flow Rate, veh/h	26	311	22	42	419	131	61	201	61	76	134	25
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	138	697	47	141	554	165	183	313	86	244	304	48
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	51	1539	104	58	1224	364	200	1119	307	365	1086	173
Grp Volume(v), veh/h	359	0	0	592	0	0	323	0	0	235	0	0
Grp Sat Flow(s),veh/h/ln1693	0	0	0	1647	0	0	1627	0	0	1624	0	0
Q Serve(g_s), s	0.0	0.0	0.0	2.7	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.8	0.0	0.0	10.2	0.0	0.0	5.9	0.0	0.0	3.8	0.0	0.0
Prop In Lane	0.07		0.06	0.07		0.22	0.19		0.19	0.32		0.11
Lane Grp Cap(c), veh/h	881	0	0	860	0	0	583	0	0	596	0	0
V/C Ratio(X)	0.41	0.00	0.00	0.69	0.00	0.00	0.55	0.00	0.00	0.39	0.00	0.00
Avail Cap(c_a), veh/h	1372	0	0	1350	0	0	1334	0	0	1295	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.4	0.0	0.0	7.8	0.0	0.0	10.8	0.0	0.0	10.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	1.0	0.0	0.0	0.8	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln0.7	0.0	0.0	0.0	1.7	0.0	0.0	1.3	0.0	0.0	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.7	0.0	0.0	8.8	0.0	0.0	11.6	0.0	0.0	10.5	0.0	0.0
LnGrp LOS	A			A			B			B		
Approach Vol, veh/h		359			592			323			235	
Approach Delay, s/veh		6.7			8.8			11.6			10.5	
Approach LOS		A			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.9		19.8		13.9		19.8				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		25.5		25.5		25.5		25.5				
Max Q Clear Time (g_c+I1), s		7.9		6.8		5.8		12.2				
Green Ext Time (p_c), s		1.6		1.8		1.2		3.1				
Intersection Summary												
HCM 7th Control Delay, s/veh				9.2								
HCM 7th LOS				A								

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	294	498	24	14	1
Future Vol, veh/h	5	294	498	24	14	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	6	330	560	27	16	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	587	0	-	0	915
Stage 1	-	-	-	-	573
Stage 2	-	-	-	-	342
Critical Hdwy	4.11	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.209	-	-	-	3.5
Pot Cap-1 Maneuver	993	-	-	-	305
Stage 1	-	-	-	-	568
Stage 2	-	-	-	-	724
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	993	-	-	-	303
Mov Cap-2 Maneuver	-	-	-	-	303
Stage 1	-	-	-	-	564
Stage 2	-	-	-	-	724

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.14	0	17.19
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	30	-	-	-	312
HCM Lane V/C Ratio	0.006	-	-	-	0.054
HCM Ctrl Dly (s/v)	8.6	0	-	-	17.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	337	7	28	529	0	4	0	17	0	0	4
Future Vol, veh/h	6	337	7	28	529	0	4	0	17	0	0	4
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	1	1	1	0	0	0	0	0	0
Mvmt Flow	7	374	8	31	588	0	4	0	19	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	588	0	0	382	0	0	1042	1042	378	1038	1046	588
Stage 1	-	-	-	-	-	-	392	392	-	650	650	-
Stage 2	-	-	-	-	-	-	650	650	-	388	396	-
Critical Hdwy	4.12	-	-	4.11	-	-	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	2.218	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	987	-	-	1182	-	-	210	232	673	211	230	513
Stage 1	-	-	-	-	-	-	637	610	-	461	468	-
Stage 2	-	-	-	-	-	-	461	468	-	640	608	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	987	-	-	1182	-	-	198	221	673	195	219	513
Mov Cap-2 Maneuver	-	-	-	-	-	-	198	221	-	195	219	-
Stage 1	-	-	-	-	-	-	631	605	-	443	450	-
Stage 2	-	-	-	-	-	-	439	450	-	617	603	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.15			0.41			13.21			12.08		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	462	31	-	-	90	-	-	513
HCM Lane V/C Ratio	0.051	0.007	-	-	0.026	-	-	0.009
HCM Ctrl Dly (s/v)	13.2	8.7	0	-	8.1	0	-	12.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0

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	348	6	79	554	58	3	0	49	40	0	0
Future Vol, veh/h	0	348	6	79	554	58	3	0	49	40	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	1	1	2	0	2	0	2	2	2
Mvmt Flow	0	387	7	88	616	64	3	0	54	44	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	680	0	0	393	0	0	1181	1246	390	1210	1217	648
Stage 1	-	-	-	-	-	-	390	390	-	823	823	-
Stage 2	-	-	-	-	-	-	791	856	-	387	393	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.1	6.52	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.5	4.018	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	912	-	-	1171	-	-	168	174	663	159	181	471
Stage 1	-	-	-	-	-	-	638	608	-	367	388	-
Stage 2	-	-	-	-	-	-	386	375	-	637	606	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	912	-	-	1171	-	-	148	153	663	128	159	471
Mov Cap-2 Maneuver	-	-	-	-	-	-	148	153	-	128	159	-
Stage 1	-	-	-	-	-	-	638	608	-	323	340	-
Stage 2	-	-	-	-	-	-	339	329	-	584	606	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0			0.95			12.28			47.17		
HCM LOS							B			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	552	912	-	-	202	-	-	128
HCM Lane V/C Ratio	0.105	-	-	-	0.075	-	-	0.346
HCM Ctrl Dly (s/v)	12.3	0	-	-	8.3	0	-	47.2
HCM Lane LOS	B	A	-	-	A	A	-	E
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	1.4

Intersection									
Intersection Delay, s/veh	69.9								
Intersection LOS	F								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	555		862		1552		1194		
Demand Flow Rate, veh/h	555		862		1552		1206		
Vehicles Circulating, veh/h	1286		1561		604		925		
Vehicles Exiting, veh/h	845		595		1237		1498		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	23.8		160.9		44.1		59.1		
Approach LOS	C		F		E		F		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.470	0.530	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
A (Intercept)	1350	1420	1350	1420	1350	1420	1350	1420	
B (Slope)	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	
Entry Flow, veh/h	261	294	405	457	729	823	567	639	
Cap Entry Lane, veh/h	414	476	321	377	774	850	576	647	
Entry HV Adj Factor	0.999	1.001	1.000	1.000	1.001	0.999	0.990	0.990	
Flow Entry, veh/h	261	294	405	457	729	823	561	633	
Cap Entry, veh/h	413	476	321	377	775	849	570	641	
V/C Ratio	0.631	0.618	1.261	1.213	0.941	0.968	0.984	0.988	
Control Delay, s/veh	25.6	22.1	174.0	149.2	42.4	45.5	60.5	57.9	
LOS	D	C	F	F	E	E	F	F	
95th %tile Queue, veh	4	4	19	19	14	16	14	15	

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	14	44	105	5	15	163
Future Vol, veh/h	14	44	105	5	15	163
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, %	0	0	0	0	0	0
Mvmt Flow	16	51	122	6	17	190

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	349	125	0	0	128	0
Stage 1	125	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	652	931	-	-	1471	-
Stage 1	906	-	-	-	-	-
Stage 2	818	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	643	931	-	-	1471	-
Mov Cap-2 Maneuver	643	-	-	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	9.66	0	0.63
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	840	152
HCM Lane V/C Ratio	-	-	0.08	0.012
HCM Ctrl Dly (s/v)	-	-	9.7	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0

Intersection						
Intersection Delay, s/veh	7.9					
Intersection LOS	A					
Approach	WB	NB		SB		
Entry Lanes	1	2		2		
Conflicting Circle Lanes	2	1		1		
Adj Approach Flow, veh/h	317	1014		1069		
Demand Flow Rate, veh/h	320	1035		1080		
Vehicles Circulating, veh/h	829	193		224		
Vehicles Exiting, veh/h	399	1111		801		
Ped Vol Crossing Leg, #/h	0	0		0		
Ped Cap Adj	1.000	1.000		1.000		
Approach Delay, s/veh	8.0	7.6		8.2		
Approach LOS	A	A		A		
Lane	Left	Bypass	Left	Right	Left	Right
Designated Moves	L	R	LT	TR	LT	TR
Assumed Moves	L		LT	TR	LT	TR
RT Channelized	Yield					
Lane Util	1.000		0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.327	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420
B (Slope)	8.501e-4	8.499e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	196	124	486	549	508	572
Cap Entry Lane, veh/h	702	719	1191	1191	1158	1158
Entry HV Adj Factor	0.990	0.990	0.981	0.980	0.989	0.991
Flow Entry, veh/h	194	123	477	538	503	567
Cap Entry, veh/h	695	712	1169	1167	1146	1147
V/C Ratio	0.279	0.173	0.408	0.461	0.439	0.494
Control Delay, s/veh	8.6	7.0	7.2	8.0	7.8	8.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	2	2	2	3

HCM 7th Signalized Intersection Summary
3: 48th & Central

Barber Farm TIS
10/19/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	26	500	46	37	190	54	10	97	60	168	144	22
Future Volume (veh/h)	26	500	46	37	190	54	10	97	60	168	144	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1723	1723	1682	1682	1682	1682	1682	1682	1723	1723	1723
Adj Flow Rate, veh/h	30	581	53	43	221	63	12	113	70	195	167	26
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	5	5	5	5	5	5	2	2	2
Cap, veh/h	105	696	62	145	532	138	102	317	184	346	232	32
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	35	1510	134	105	1154	300	36	975	566	669	716	99
Grp Volume(v), veh/h	664	0	0	327	0	0	195	0	0	388	0	0
Grp Sat Flow(s),veh/h/ln1679	0	0	0	1559	0	0	1576	0	0	1484	0	0
Q Serve(g_s), s	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0
Cycle Q Clear(g_c), s	14.7	0.0	0.0	5.7	0.0	0.0	4.0	0.0	0.0	9.7	0.0	0.0
Prop In Lane	0.05		0.08	0.13		0.19	0.06		0.36	0.50		0.07
Lane Grp Cap(c), veh/h	863	0	0	815	0	0	603	0	0	611	0	0
V/C Ratio(X)	0.77	0.00	0.00	0.40	0.00	0.00	0.32	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	1105	0	0	1021	0	0	1037	0	0	1005	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.0	0.0	0.0	7.6	0.0	0.0	10.9	0.0	0.0	12.7	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln8.3	0.0	0.0	0.0	1.2	0.0	0.0	1.0	0.0	0.0	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.6	0.0	0.0	8.0	0.0	0.0	11.2	0.0	0.0	13.8	0.0	0.0
LnGrp LOS	B			A			B			B		
Approach Vol, veh/h		664			327			195			388	
Approach Delay, s/veh		12.6			8.0			11.2			13.8	
Approach LOS		B			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.2		23.9		18.2		23.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		25.5		25.5		25.5		25.5				
Max Q Clear Time (g_c+I1), s		6.0		16.7		11.7		7.7				
Green Ext Time (p_c), s		0.9		2.7		1.9		1.8				
Intersection Summary												
HCM 7th Control Delay, s/veh				11.7								
HCM 7th LOS				B								

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	439	196	5	21	4
Future Vol, veh/h	2	439	196	5	21	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	2	523	233	6	25	5

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	239	0	-	0	764 236
Stage 1	-	-	-	-	236 -
Stage 2	-	-	-	-	527 -
Critical Hdwy	4.11	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.209	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1333	-	-	-	375 808
Stage 1	-	-	-	-	808 -
Stage 2	-	-	-	-	596 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1333	-	-	-	374 808
Mov Cap-2 Maneuver	-	-	-	-	374 -
Stage 1	-	-	-	-	806 -
Stage 2	-	-	-	-	596 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.03	0	14.49
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	8	-	-	-	409
HCM Lane V/C Ratio	0.002	-	-	-	0.073
HCM Ctrl Dly (s/v)	7.7	0	-	-	14.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

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	8	558	1	9	212	28	5	2	26	14	1	13
Future Vol, veh/h	8	558	1	9	212	28	5	2	26	14	1	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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	2	2	2	0	0	0	0	0	0
Mvmt Flow	9	620	1	10	236	31	6	2	29	16	1	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	267	0	0	621	0	0	894	925	621	910	910	251
Stage 1	-	-	-	-	-	-	638	638	-	271	271	-
Stage 2	-	-	-	-	-	-	256	287	-	639	639	-
Critical Hdwy	4.11	-	-	4.12	-	-	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	2.209	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1303	-	-	960	-	-	264	271	491	258	277	792
Stage 1	-	-	-	-	-	-	468	474	-	739	689	-
Stage 2	-	-	-	-	-	-	753	678	-	468	474	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1303	-	-	960	-	-	252	265	491	235	270	792
Mov Cap-2 Maneuver	-	-	-	-	-	-	252	265	-	235	270	-
Stage 1	-	-	-	-	-	-	463	469	-	730	680	-
Stage 2	-	-	-	-	-	-	729	670	-	434	469	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.11			0.32			14.62			16.24		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	411	25	-	-	64	-	-	351
HCM Lane V/C Ratio	0.089	0.007	-	-	0.01	-	-	0.089
HCM Ctrl Dly (s/v)	14.6	7.8	0	-	8.8	0	-	16.2
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

Intersection												
Int Delay, s/veh	9.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	592	2	25	242	55	5	1	75	118	1	2
Future Vol, veh/h	4	592	2	25	242	55	5	1	75	118	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	2	2	2	0	0	0	0	0	0
Mvmt Flow	4	658	2	28	269	61	6	1	83	131	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	330	0	0	660	0	0	993	1053	659	1022	1024	299
Stage 1	-	-	-	-	-	-	668	668	-	355	355	-
Stage 2	-	-	-	-	-	-	325	386	-	667	669	-
Critical Hdwy	4.11	-	-	4.12	-	-	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	2.209	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1235	-	-	928	-	-	226	228	467	216	237	745
Stage 1	-	-	-	-	-	-	451	460	-	666	633	-
Stage 2	-	-	-	-	-	-	692	614	-	451	459	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1235	-	-	928	-	-	215	218	467	169	227	745
Mov Cap-2 Maneuver	-	-	-	-	-	-	215	218	-	169	227	-
Stage 1	-	-	-	-	-	-	448	457	-	642	610	-
Stage 2	-	-	-	-	-	-	663	591	-	368	456	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.05			0.7			15.57			75.9		
HCM LOS							C			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	430	12	-	-	135	-	-	172
HCM Lane V/C Ratio	0.209	0.004	-	-	0.03	-	-	0.783
HCM Ctrl Dly (s/v)	15.6	7.9	0	-	9	0	-	75.9
HCM Lane LOS	C	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.8	0	-	-	0.1	-	-	5.1

Intersection									
Intersection Delay, s/veh	57.8								
Intersection LOS	F								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	1064		455		990		1146		
Demand Flow Rate, veh/h	1085		469		1020		1157		
Vehicles Circulating, veh/h	1186		1115		1158		467		
Vehicles Exiting, veh/h	438		1063		1113		1117		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	105.8		15.3		76.8		13.6		
Approach LOS	F		C		F		B		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.469	0.531	0.470	0.530	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
A (Intercept)	1350	1420	1350	1420	1350	1420	1350	1420	
B (Slope)	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	
Entry Flow, veh/h	510	575	220	249	479	541	544	613	
Cap Entry Lane, veh/h	453	518	484	550	465	531	878	955	
Entry HV Adj Factor	0.980	0.981	0.973	0.969	0.971	0.970	0.990	0.990	
Flow Entry, veh/h	500	564	214	241	465	525	538	607	
Cap Entry, veh/h	445	508	471	533	452	515	869	946	
V/C Ratio	1.125	1.110	0.455	0.452	1.030	1.020	0.619	0.642	
Control Delay, s/veh	111.1	101.2	16.1	14.5	80.7	73.2	13.7	13.6	
LOS	F	F	C	B	F	F	B	B	
95th %tile Queue, veh	18	18	2	2	14	15	4	5	

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	7	23	260	10	33	183
Future Vol, veh/h	7	23	260	10	33	183
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, %	0	0	0	0	0	0
Mvmt Flow	8	27	302	12	38	213

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	598	308	0	0	314	0
Stage 1	308	-	-	-	-	-
Stage 2	290	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	469	737	-	-	1258	-
Stage 1	750	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	452	737	-	-	1258	-
Mov Cap-2 Maneuver	452	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	10.93	0	1.21
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	642	275
HCM Lane V/C Ratio	-	-	0.054	0.031
HCM Ctrl Dly (s/v)	-	-	10.9	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1

Intersection						
Intersection Delay, s/veh	16.3					
Intersection LOS	C					
Approach	WB	NB		SB		
Entry Lanes	1	2		2		
Conflicting Circle Lanes	2	1		1		
Adj Approach Flow, veh/h	487	1840		1298		
Demand Flow Rate, veh/h	487	1840		1311		
Vehicles Circulating, veh/h	1515	168		334		
Vehicles Exiting, veh/h	493	1477		1478		
Ped Vol Crossing Leg, #/h	0	0		0		
Ped Cap Adj	1.000	1.000		1.000		
Approach Delay, s/veh	29.7	15.6		12.4		
Approach LOS	D	C		B		
Lane	Left	Bypass	Left	Right	Left	Right
Designated Moves	L	R	LT	TR	LT	TR
Assumed Moves	L		LT	TR	LT	TR
RT Channelized	Yield					
Lane Util	1.000		0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.327	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420
B (Slope)	8.501e-4	8.499e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	297	190	865	975	616	695
Cap Entry Lane, veh/h	392	404	1219	1219	1048	1048
Entry HV Adj Factor	1.000	1.000	1.000	1.000	0.990	0.990
Flow Entry, veh/h	297	190	865	975	610	688
Cap Entry, veh/h	392	404	1218	1219	1038	1037
V/C Ratio	0.758	0.470	0.710	0.800	0.588	0.663
Control Delay, s/veh	36.7	18.9	13.4	17.5	11.2	13.3
LOS	E	C	B	C	B	B
95th %tile Queue, veh	6	2	6	9	4	5

HCM 7th Signalized Intersection Summary
3: 48th & Central

Barber Farm TIS
10/18/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	23	276	19	38	366	114	52	173	54	68	115	22
Future Volume (veh/h)	23	276	19	38	366	114	52	173	54	68	115	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Adj Flow Rate, veh/h	27	325	22	45	431	134	61	204	64	80	135	26
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	135	711	46	140	562	166	178	313	89	245	300	49
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	52	1544	100	62	1220	361	197	1114	317	381	1067	175
Grp Volume(v), veh/h	374	0	0	610	0	0	329	0	0	241	0	0
Grp Sat Flow(s),veh/h/ln1695	0	0	0	1644	0	0	1627	0	0	1623	0	0
Q Serve(g_s), s	0.0	0.0	0.0	3.3	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.2	0.0	0.0	10.9	0.0	0.0	6.2	0.0	0.0	4.1	0.0	0.0
Prop In Lane	0.07		0.06	0.07		0.22	0.19		0.19	0.33		0.11
Lane Grp Cap(c), veh/h	891	0	0	868	0	0	580	0	0	594	0	0
V/C Ratio(X)	0.42	0.00	0.00	0.70	0.00	0.00	0.57	0.00	0.00	0.41	0.00	0.00
Avail Cap(c_a), veh/h	1330	0	0	1305	0	0	1292	0	0	1251	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.5	0.0	0.0	8.0	0.0	0.0	11.2	0.0	0.0	10.5	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	1.1	0.0	0.0	0.9	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln0.8	0.0	0.0	0.0	1.8	0.0	0.0	1.4	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.8	0.0	0.0	9.0	0.0	0.0	12.1	0.0	0.0	10.9	0.0	0.0
LnGrp LOS	A			A			B			B		
Approach Vol, veh/h		374			610			329			241	
Approach Delay, s/veh		6.8			9.0			12.1			10.9	
Approach LOS		A			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		14.3		20.5		14.3		20.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		25.5		25.5		25.5		25.5				
Max Q Clear Time (g_c+I1), s		8.2		7.2		6.1		12.9				
Green Ext Time (p_c), s		1.6		1.9		1.2		3.1				
Intersection Summary												
HCM 7th Control Delay, s/veh				9.4								
HCM 7th LOS				A								

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	311	512	24	14	1
Future Vol, veh/h	5	311	512	24	14	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	6	349	575	27	16	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	602	0	-	0	949
Stage 1	-	-	-	-	589
Stage 2	-	-	-	-	361
Critical Hdwy	4.11	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.209	-	-	-	3.5
Pot Cap-1 Maneuver	980	-	-	-	291
Stage 1	-	-	-	-	559
Stage 2	-	-	-	-	710
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	980	-	-	-	289
Mov Cap-2 Maneuver	-	-	-	-	289
Stage 1	-	-	-	-	555
Stage 2	-	-	-	-	710

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.14	0	17.81
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	28	-	-	-	298
HCM Lane V/C Ratio	0.006	-	-	-	0.057
HCM Ctrl Dly (s/v)	8.7	0	-	-	17.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

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	17	343	7	28	534	44	4	3	17	39	2	13
Future Vol, veh/h	17	343	7	28	534	44	4	3	17	39	2	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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	1	1	1	0	0	0	0	0	0
Mvmt Flow	19	381	8	31	593	49	4	3	19	43	2	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	642	0	0	389	0	0	1079	1127	385	1101	1107	618
Stage 1	-	-	-	-	-	-	423	423	-	680	680	-
Stage 2	-	-	-	-	-	-	657	704	-	421	427	-
Critical Hdwy	4.12	-	-	4.11	-	-	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	2.218	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	942	-	-	1175	-	-	198	206	667	191	212	493
Stage 1	-	-	-	-	-	-	613	591	-	444	454	-
Stage 2	-	-	-	-	-	-	457	442	-	614	589	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	942	-	-	1175	-	-	177	193	667	171	198	493
Mov Cap-2 Maneuver	-	-	-	-	-	-	177	193	-	171	198	-
Stage 1	-	-	-	-	-	-	597	576	-	426	435	-
Stage 2	-	-	-	-	-	-	423	424	-	578	574	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.41			0.38			15.27			29.87		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	377	83	-	-	82	-	-	204
HCM Lane V/C Ratio	0.071	0.02	-	-	0.026	-	-	0.294
HCM Ctrl Dly (s/v)	15.3	8.9	0	-	8.1	0	-	29.9
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0.1	-	-	1.2

Intersection												
Int Delay, s/veh	16.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	387	6	79	598	129	3	2	49	95	2	5
Future Vol, veh/h	6	387	6	79	598	129	3	2	49	95	2	5
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	1	1	1	0	0	0	0	0	0
Mvmt Flow	7	430	7	88	664	143	3	2	54	106	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	808	0	0	437	0	0	1288	1430	433	1356	1362	736
Stage 1	-	-	-	-	-	-	447	447	-	912	912	-
Stage 2	-	-	-	-	-	-	841	983	-	444	450	-
Critical Hdwy	4.12	-	-	4.11	-	-	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	2.218	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	817	-	-	1128	-	-	142	136	627	128	149	422
Stage 1	-	-	-	-	-	-	595	577	-	331	356	-
Stage 2	-	-	-	-	-	-	362	329	-	597	575	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	817	-	-	1128	-	-	117	115	627	~ 97	126	422
Mov Cap-2 Maneuver	-	-	-	-	-	-	117	115	-	~ 97	126	-
Stage 1	-	-	-	-	-	-	588	571	-	283	304	-
Stage 2	-	-	-	-	-	-	303	281	-	537	569	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.14			0.83			14.34			204.1		
HCM LOS							B			F		

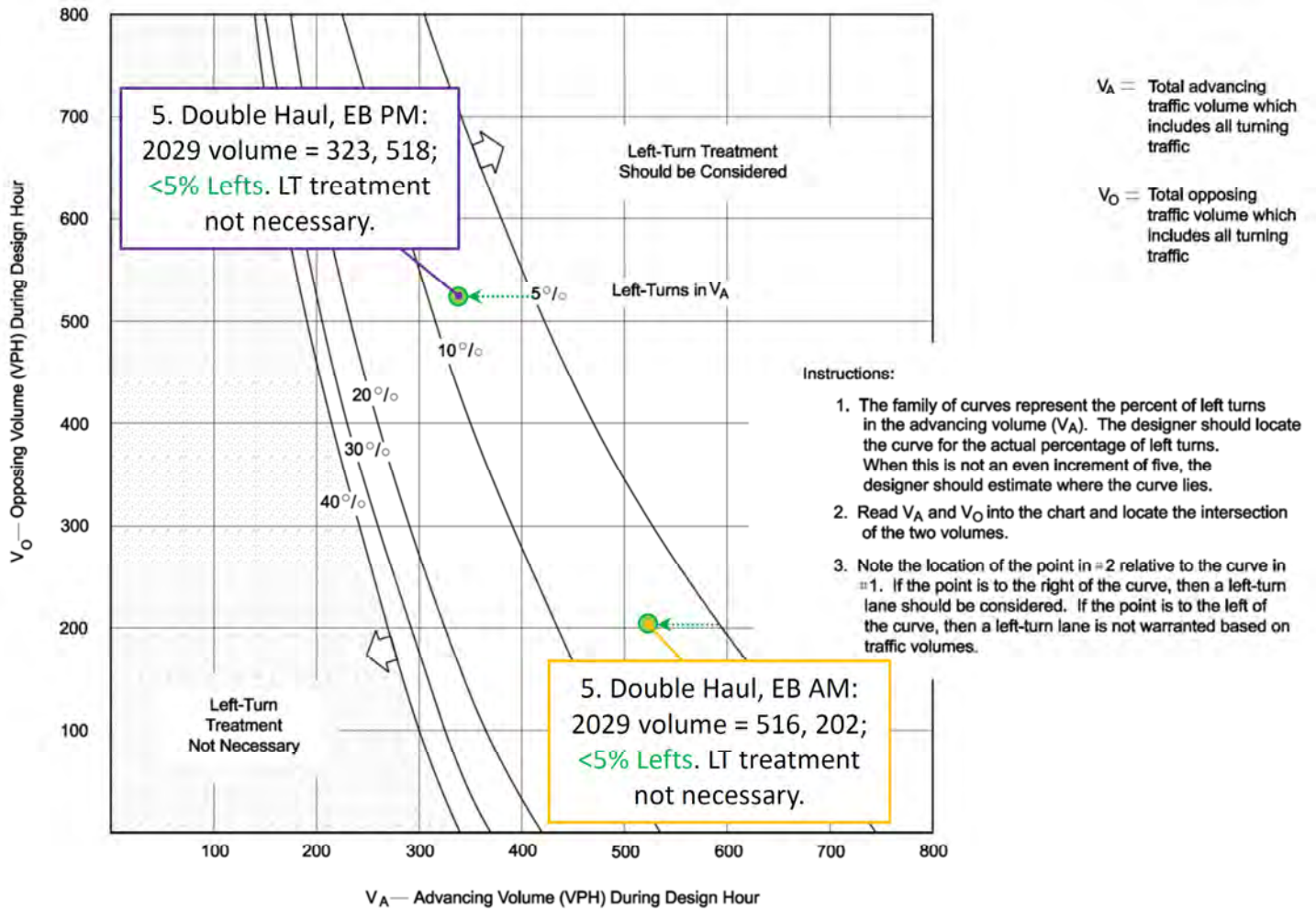
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	445	27	-	-	170	-	-	101
HCM Lane V/C Ratio	0.135	0.008	-	-	0.078	-	-	1.12
HCM Ctrl Dly (s/v)	14.3	9.4	0	-	8.5	0	-	204.1
HCM Lane LOS	B	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.5	0	-	-	0.3	-	-	7.3

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

Intersection									
Intersection Delay, s/veh	102.6								
Intersection LOS	F								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	656		915		1597		1222		
Demand Flow Rate, veh/h	656		915		1597		1234		
Vehicles Circulating, veh/h	1286		1630		669		1023		
Vehicles Exiting, veh/h	971		636		1273		1522		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	31.3		226.2		66.9		94.9		
Approach LOS	D		F		F		F		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR	
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.470	0.530	0.470	0.530	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
A (Intercept)	1350	1420	1350	1420	1350	1420	1350	1420	
B (Slope)	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4	
Entry Flow, veh/h	308	348	430	485	751	846	580	654	
Cap Entry Lane, veh/h	414	476	301	355	729	804	527	595	
Entry HV Adj Factor	1.001	0.999	1.000	1.000	0.999	1.000	0.990	0.990	
Flow Entry, veh/h	308	348	430	485	751	846	574	648	
Cap Entry, veh/h	414	475	301	355	729	805	522	589	
V/C Ratio	0.745	0.731	1.427	1.365	1.029	1.052	1.101	1.099	
Control Delay, s/veh	33.8	29.2	242.9	211.3	64.9	68.7	97.4	92.7	
LOS	D	D	F	F	F	F	F	F	
95th %tile Queue, veh	6	6	23	24	18	21	18	20	

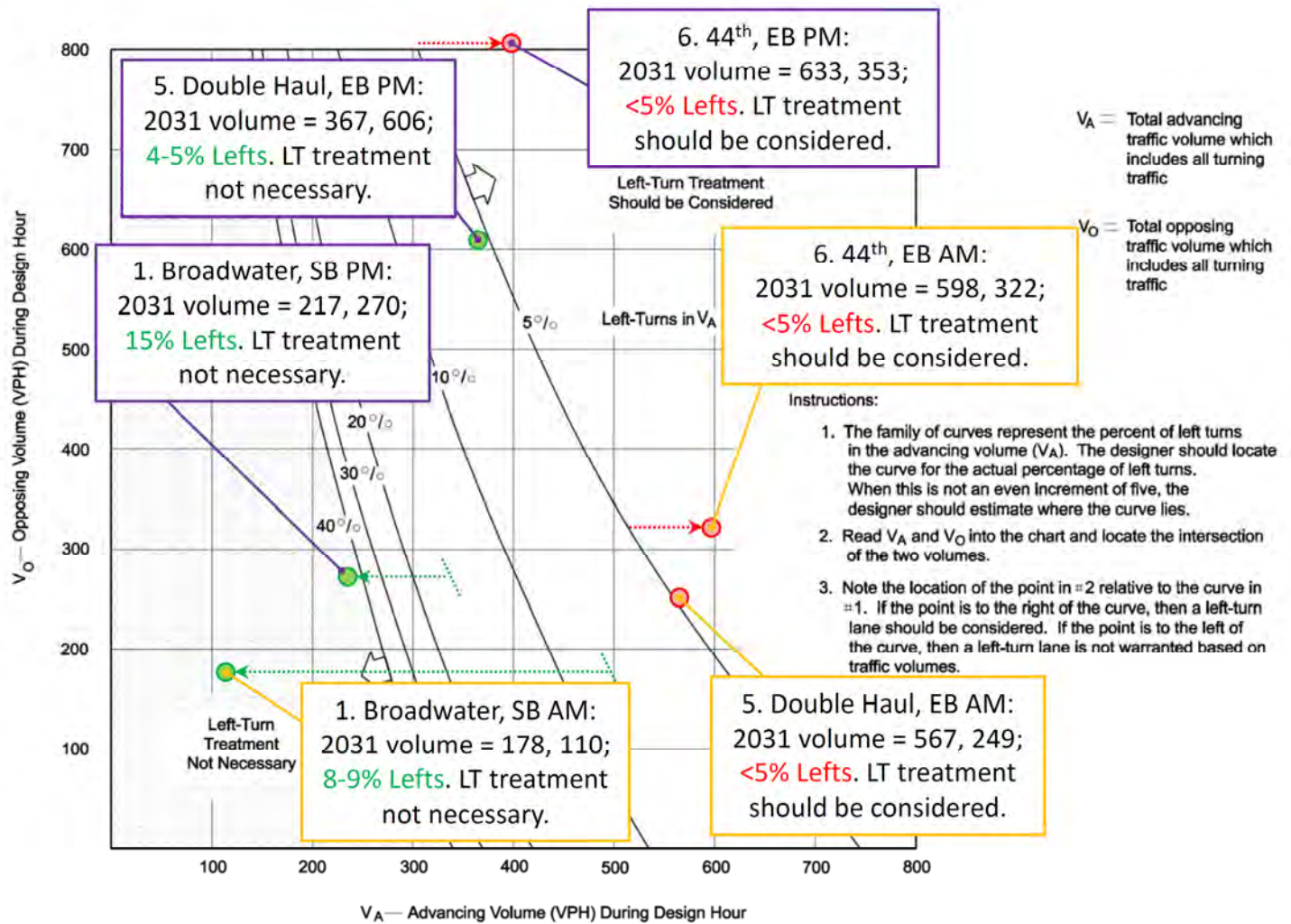
Appendix C: Auxiliary Turn Lane Analysis Charts

Exhibit C-1: 2029 Left Turns



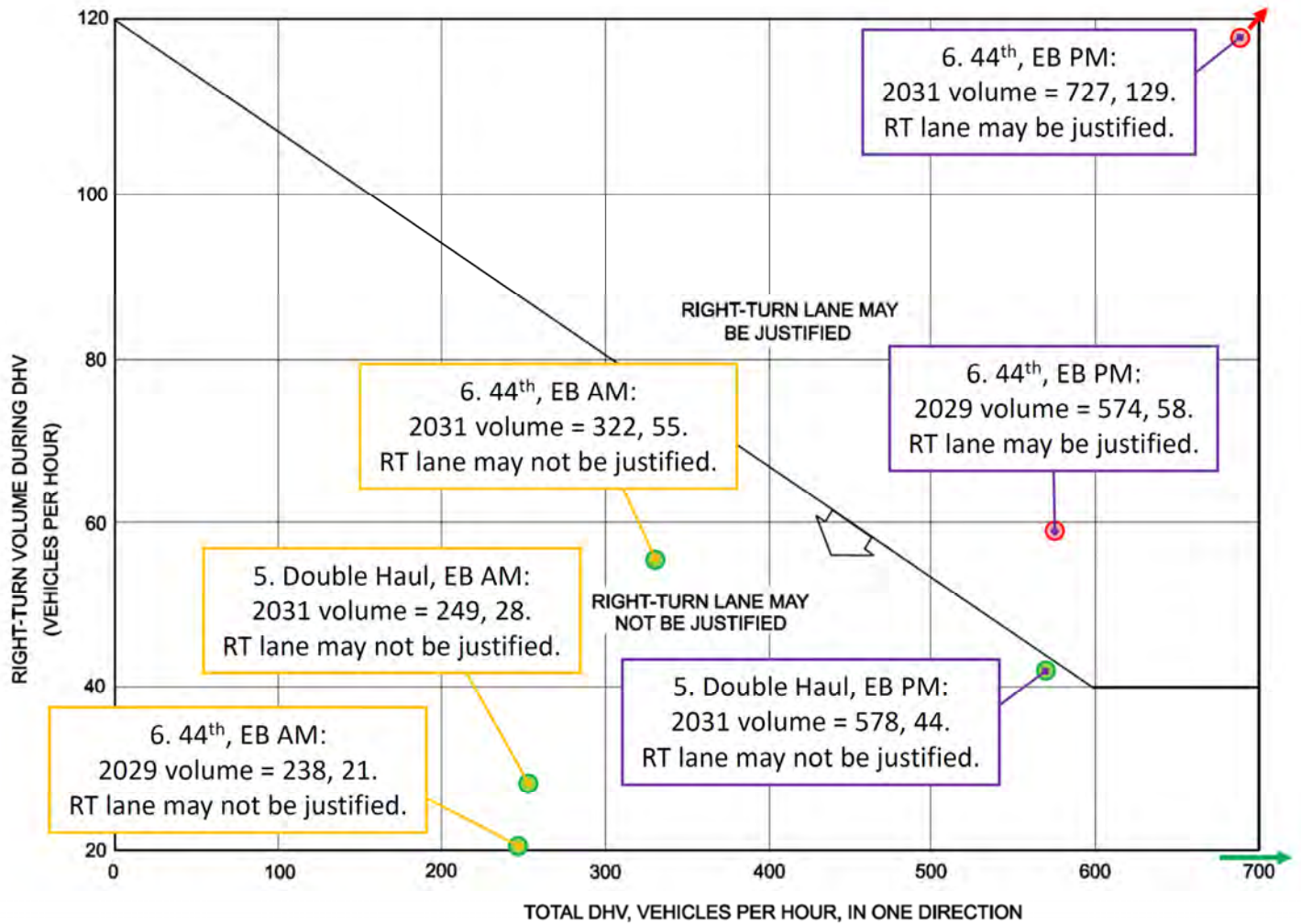
VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON 2-LANE HIGHWAYS (45 MPH)

Exhibit C-2: 2031 Left Turns



VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON 2-LANE HIGHWAYS (45 MPH)

Exhibit C-3: Right Turns



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.

Note that while northbound right turns on 48th at Broadwater were examined, total right turn volume is too low for the data point to appear on the graph (20 vph), so no right turn treatment is justified.

Appendix D: Central Avenue at 44th Intersection Signal Warrant Summaries

Traffic Signal Needs Analysis Summary: 44th St W at Central Ave

Scenario: Completion of Barber Subdivision Phase 1 in 2029	
Analysis Date: 10/17/2025	Conducted by: 406 Traffic & Transportation Consulting
Major Street: Central Ave (E/W), 1 moving lane per direction	Minor Street: 44th St W (N/S), 1 moving lane per direction
Speed Limit: 45 mph	Number of Approaches: 4

Traffic Volumes

Hour:	1	2	3	4	5	6	7	8	9	10	11	12
Start Time:	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM
Central Ave Eastbound:	506	486	425	381	399	401	336	283	296	275	328	223
Central Ave Westbound:	216	224	240	266	334	394	381	388	491	541	642	453
44th St W Northbound:	62	48	34	27	29	29	29	33	30	34	38	33
44th St W Southbound:	82	58	43	27	35	32	30	38	30	32	42	41
Total Entering Volume:	866	816	742	701	797	856	776	742	847	882	1050	750
TEV Rank:	3	6	10	12	7	4	8	10	5	2	1	9
Use for:	Warrant 2						Warrant 1			Warrant 3		
Major, Both Directions:	722	710	665	647	733	795	717	671	787	816	970	676
Minor, Higher Direction:	82	58	43	27	35	32	30	38	30	34	42	41

Warrants

Warrant	Condition	Value	Minimum	Value	Minimum	Met?	Met?		
1 Eight-Hour Vehicular Volume (either condition)	Condition A: Large Volume of Intersecting Traffic Major (Both Dir.) Minor (Higher Dir.) Value Minimum Value Minimum Met?	717	350 ^c	30	105 ^c	No	No		
	or Condition B: Interruption of Continuous Traffic Major (Both Dir.) Minor (Higher Dir.) Value Minimum Value Minimum Met?	717	525 ^c	30	53 ^c	No			
2 Four-Hour Vehicular Volume	MUTCD Figure 4C-2 for speed over 40 mph Major (Both Dir.) Minor (Higher Dir.) Value Minimum Value Minimum Met?	795	-	32	60	No	No		
3 Peak Hour* (either condition)	Condition A (must meet all three subconditions) Value Minimum Met?	1. Veh-Hrs of Delay	0.4	4	No	No			
	or Condition B (MUTCD Figure 4C-4) Major (Both Dir.) Minor (Higher Dir.) Value Minimum Value Minimum Met?	2. Minor Volume	42	100	No				
	3. Total Ent. Volume	1050	800	Yes	970		N/A	42	75
4 Pedestrian Volume (either criterion)	Criterion A: Four-hour (MUTCD Figure 4C-7) Major (Both Dir.) Pedestrians Value Minimum Value Minimum Met?	795	n/a	n/a	n/a	n/a	Not Evaluated		
	or Criterion B: One Hour (MUTCD Figure 4C-8) Major (Both Dir.) Pedestrians Value Minimum Value Minimum Met?	970	n/a	n/a	n/a	n/a	Evaluated		
5 School Crossing	No students projected to cross the major street at this location.						No		
6 Coordinated Signal System	Only one signal in the roadway network nearby.						No		
7 Crash Experience ** Condition A not evaluated (all conditions)	Condition B, 1-year Period (Table 4C-4) Angle+Ped Crashes or Fatal+Injury Angle+Ped Value Minimum Value Minimum Met?	n/a	4	n/a	3	n/a	Not Evaluated		
	and Condition C, 80% of Warrant 1 [Condition A] Major (Both Dir.) Minor (Higher Dir.) Value Minimum Value Minimum Met?	717		30		n/a			
	or Condition B, 3-year Period (Table 4C-5) Angle+Ped Crashes or Fatal+Injury Angle+Ped Value Minimum Value Minimum Met?	n/a	6	n/a	4	n/a			
	or Condition C, 80% of Warrant 1 [Condition B] Major (Both Dir.) Minor (Higher Dir.) Value Minimum Value Minimum Met?	717		30		n/a			
	or Condition C, 80% of Warrant 4 Four Hour Ped One Hour Ped Value Minimum Value Minimum Met?					n/a	Not Evaluated		
8 Roadway Network	Not an intersection of two or more major routes.						No		
9 Intersection Near Grade Xing	No railroad grade crossing nearby.						No		

Notes:

- c: Warrant 1 minimum values used for "70%" to account to reflect major-street speed over 40 mph
- * Warrant 3, Peak Hour, is indicated by the MUTCD as follows: "This signal warrant should be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time."
- ** No trial of alternatives with observance and enforcement has been attempted for crash reduction at this location.

Warrants Met: **0**
Recommendation: No Signal

Traffic Signal Needs Analysis Summary: 44th St W at Central Ave

Scenario: Completion of Barber Subdivision Phase 2 in 2031	
Analysis Date: 10/17/2025	Conducted by: 406 Traffic & Transportation Consulting
Major Street: Central Ave (E/W), 1 moving lane per direction	Minor Street: 44th St W (N/S), 1 moving lane per direction
Speed Limit: 45 mph	Number of Approaches: 4

Traffic Volumes

Hour:	1	2	3	4	5	6	7	8	9	10	11	12
Start Time:	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM
Central Ave Eastbound:	554	544	485	442	460	462	396	335	356	336	393	280
Central Ave Westbound:	280	319	345	382	464	533	516	529	680	757	891	661
44th St W Northbound:	88	69	49	39	42	42	43	47	44	50	55	49
44th St W Southbound:	232	175	139	97	119	109	107	125	109	117	145	141
Total Entering Volume:	1154	1107	1018	960	1085	1146	1062	1036	1189	1260	1484	1131
TEV Rank:	4	7	11	12	8	5	9	10	3	2	1	6
Use for:	Warrant 2				Warrant 1				Warrant 3			
Major, Both Directions:	834	863	830	824	924	995	912	864	1036	1093	1284	941
Minor, Higher Direction:	232	175	139	97	119	109	107	125	109	117	145	141

Warrants

												Met?			
1 Eight-Hour Vehicular Volume (either condition)	<i>Condition A: Large Volume of Intersecting Traffic</i>				<i>or Condition B: Interruption of Continuous Traffic</i>								Yes		
	Major (Both Dir.)	Minor (Higher Dir.)	Value	Minimum	Value	Minimum	Value	Minimum	Value	Minimum	Value	Minimum		Met?	
	924	350 ^c	119	105 ^c	Yes	924	525 ^c	119	53 ^c	Yes					
2 Four-Hour Vehicular Volume	<i>MUTCD Figure 4C-2 for speed over 40 mph</i>												Yes		
	Major (Both Dir.)	Minor (Higher Dir.)	Value	Minimum	Value	Minimum	Value	Minimum	Value	Minimum	Value	Minimum		Met?	
	834	-	232	60	Yes										
3 Peak Hour* (either condition)	<i>Condition A (must meet all three subconditions)</i>				<i>or Condition B (MUTCD Figure 4C-4)</i>								Yes*		
			Value	Minimum	Met?			Value	Minimum	Value	Minimum	Met?			
	1. Veh-Hrs of Delay	5.8	4	Yes	1284	N/A	145	280	No						
	2. Minor Volume	102	100	Yes											
	3. Total Ent. Volume	1484	800	Yes											
4 Pedestrian Volume (either criterion)	<i>Criterion A: Four-hour (MUTCD Figure 4C-7)</i>				<i>or Criterion B: One Hour (MUTCD Figure 4C-8)</i>								Not Evaluated		
	Major (Both Dir.)	Pedestrians	Value	Minimum	Value	Minimum	Value	Minimum	Value	Minimum	Value	Minimum		Met?	
	834	n/a			1284	n/a									
5 School Crossing	No students projected to cross the major street at this location.											No			
6 Coordinated Signal System	Only one signal in the roadway network nearby.											No			
7 Crash Experience ** Condition A not evaluated (all conditions)	<i>Condition B, 1-year Period (Table 4C-4)</i>				<i>and Condition C, 80% of Warrant 1 [Condition A]</i>								Not Evaluated		
	Angle+Ped Crashes	or Fatal+Injury	Angle+Ped	Value	Minimum	Value	Minimum	Value	Minimum	Value	Minimum	Value		Minimum	Met?
	n/a	4	n/a	3	n/a	924		119		n/a					
	<i>or Condition B, 3-year Period (Table 4C-5)</i>				<i>or Condition C, 80% of Warrant 1 [Condition B]</i>										
	Angle+Ped Crashes	or Fatal+Injury	Angle+Ped	Value	Minimum	Value	Minimum	Value	Minimum	Value	Minimum	Value		Minimum	Met?
	n/a	6	n/a	4	n/a	924		119		n/a					
					<i>or Condition C, 80% of Warrant 4</i>										
			Value	Minimum	Value	Minimum	Value	Minimum	Value	Minimum	Value	Minimum	Met?		
												n/a			
8 Roadway Network	Not an intersection of two or more major routes.											No			
9 Intersection Near Grade Xing	No railroad grade crossing nearby.											No			

Notes:

- c: Warrant 1 minimum values used for "70%" to account to reflect major-street speed over 40 mph
- * Warrant 3, Peak Hour, is indicated by the MUTCD as follows: "This signal warrant should be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time."
- ** No trial of alternatives with observance and enforcement has been attempted for crash reduction at this location.

Warrants Met: **3***
Recommendation: Signal

Appendix E: Intersection Cost Participation Calculations

City of Billings Intersection Cost Participation Worksheet: Barber Farm Phase 1

Shading Key: **No such movement** **Movement has no project traffic in this phase**

1: Broadwater at 48th

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	0				
WB L	1				
WB T	0				
EB L	0				
NB T	1	1	1	1	1
SB L	1				
SB T	1	0	0	1	1
NB L	0				
Project Critical Lane Volume		1		1	
Critical Lane Capacity		1140		1140	
% Increase		0.1%		0.1%	
Max % Increase		0.1%			

2: Broadwater at Shiloh

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	0				
WB L	1	1	1	3	3
WB T	0				
EB L	0				
NB T	2	18	9	11	6
SB L	1				
SB T	2	6	3	16	8
NB L	1				
Project Critical Lane Volume		10		11	
Critical Lane Capacity		1140		1140	
% Increase		0.9%		1.0%	
Max % Increase		1.0%			

3: 48th at Central

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	1	2	2	4	4
WB L	1	1	1	0	0
WB T	1	5	5	3	3
EB L	1				
NB T	1				
SB L	1	0	0	1	1
SB T	1				
NB L	1				
Project Critical Lane Volume		5		5	
Critical Lane Capacity		1200		1200	
% Increase		0.4%		0.4%	
Max % Increase		0.4%			

4: Sundance Ridge at Central

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	1	2	2	6	6
WB L	0				
WB T	1	7	7	4	4
EB L	1				
NB T	0				
SB L	1				
SB T	0				
NB L	0				
Project Critical Lane Volume		7		6	
Critical Lane Capacity		1140		1140	
% Increase		0.6%		0.5%	
Max % Increase		0.6%			

5: Double Haul Lane at Central

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	1				
WB L	1				
WB T	1				
EB L	1	2	2	6	6
NB T	1				
SB L	1				
SB T	1				
NB L	1				
Project Critical Lane Volume		2		6	
Critical Lane Capacity		1200		1200	
% Increase		0.2%		0.5%	
Max % Increase		0.5%			

6: Central at 44th

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	1				
WB L	1				
WB T	1				
EB L	1				
NB T	1				
SB L	1	63	63	40	40
SB T	1				
NB L	1				
Project Critical Lane Volume		63		40	
Critical Lane Capacity		1200		1200	
% Increase		5.3%		3.3%	
Max % Increase		5.3%			

7: Central at Shiloh

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	2	21	11	13	7
WB L	1				
WB T	2	7	4	19	10
EB L	1	7	7	19	19
NB T	2				
SB L	1				
SB T	2				
NB L	1	7	7	19	19
Project Critical Lane Volume		18		48	
Critical Lane Capacity		1200		1200	
% Increase		1.5%		4.0%	
Max % Increase		4.0%			

City of Billings Intersection Cost Participation Worksheet: Barber Farm Phase 2

Shading Key: **No such movement** **Movement has no project traffic in this phase**

1: Broadwater at 48th

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	0				
WB L	1	4	4	2	2
WB T	0				
EB L	0				
NB T	1	1	1	3	3
SB L	1	6	6	16	16
SB T	1	2	2	3	3
NB L	0				
Project Critical Lane Volume		11		21	
Critical Lane Capacity		1140		1140	
% Increase		1.0%		1.8%	
Max % Increase		1.8%			

2: Broadwater at Shiloh

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	0				
WB L	1	4	4	8	8
WB T	0				
EB L	0				
NB T	2	6	3	16	8
SB L	1				
SB T	2	12	6	18	9
NB L	1				
Project Critical Lane Volume		10		17	
Critical Lane Capacity		1140		1140	
% Increase		0.9%		1.5%	
Max % Increase		1.5%			

3: 48th at Central

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	1	7	7	12	12
WB L	1	1	1	2	2
WB T	1	6	6	10	10
EB L	1				
NB T	1				
SB L	1	6	6	10	10
SB T	1				
NB L	1				
Project Critical Lane Volume		14		24	
Critical Lane Capacity		1200		1200	
% Increase		1.2%		2.0%	
Max % Increase		2.0%			

4: Sundance Ridge at Central

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	1	10	10	17	17
WB L	0				
WB T	1	8	8	14	14
EB L	1				
NB T	0				
SB L	1				
SB T	0				
NB L	0				
Project Critical Lane Volume		10		17	
Critical Lane Capacity		1140		1140	
% Increase		0.9%		1.5%	
Max % Increase		1.5%			

5: Double Haul Lane at Central

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	1	4	4	6	6
WB L	1				
WB T	1	2	2	5	5
EB L	1	6	6	11	11
NB T	1	2	2	3	3
SB L	1	14	14	39	39
SB T	1	1	1	2	2
NB L	1				
Project Critical Lane Volume		24		58	
Critical Lane Capacity		1200		1200	
% Increase		2.0%		4.8%	
Max % Increase		4.8%			

6: Central at 44th

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	1	14	14	39	39
WB L	1				
WB T	1	28	28	44	44
EB L	1	4	4	6	6
NB T	1	1	1	2	2
SB L	1	55	55	55	55
SB T	1	1	1	2	2
NB L	1				
Project Critical Lane Volume		88		107	
Critical Lane Capacity		1200		1200	
% Increase		7.3%		8.9%	
Max % Increase		8.9%			

7: Central at Shiloh

Lane Group (critical)	Lanes	AM Peak Hour		PM Peak Hour	
		Vproject	Per Lane	Vproject	Per Lane
EB T	2	30	15	38	19
WB L	1				
WB T	2	25	13	47	24
EB L	1	25	25	47	47
NB T	2				
SB L	1				
SB T	2				
NB L	1	25	25	47	47
Project Critical Lane Volume		63		118	
Critical Lane Capacity		1200		1200	
% Increase		5.2%		9.8%	
Max % Increase		9.8%			

Planning Board

Date: 04/28/2026
Title: 2024-2028 Transportation Improvement Program (TIP) Amendment 3 - Public Hearing and Recommendation
Presented by: Lora Mattox
Department: Planning & Community Services
Presentation: Yes

Information

RECOMMENDATION

The Technical Advisory Committee (TAC) recommends the Planning Board (PB) receive a presentation of the 2024-2028 Transportation Improvement Program (TIP) Amendment 3 and conduct a public hearing to collect public testimony regarding the TIP Amendment. Following the public hearing, TAC recommends the PB forward a recommendation of approval of the TIP Amendment 3 to the Policy Coordinating Committee (PCC). The PCC is scheduled to take final action on the TIP at its meeting May 19, 2026.

BACKGROUND (Consistency with Adopted Plans and Policies, if applicable)

The TIP is a strategic plan outlining prioritized transportation projects within the Billings Metropolitan Organization (MPO) for 2024-2028. It facilitates the scheduling of federal funds for surface transportation, highlights regional priorities, and presents a short-term transportation vision. Periodic amendments are necessary to update project lists, funding allocations, and schedules. This amendment incorporates new projects, financial adjustments, and timing revisions based on funding availability and regional priorities. Key Updates in Amendment 3 are marked in red and green in the TIP tables (attached).

1. Project Additions -- These are new projects that identify project timing and funding sources but not necessarily project details. Listing projects in the TIP is the first step in project development.

- MDT Project - Laurel Road/Montana Avenue: Sidewalk improvements to meet ADA compliance.
- MDT Project - 1st Avenue South: Pavement preservation on 1st Avenue South.
- MDT Project - Junction Highway 312 to Mile Post 7.29: Striping and durable pavement markings.
- MDT Project -- South Frontage Road: Mallowney Lane to Wise Lane: Roadway striping.
- MDT Project -- Montana Avenue Bridges: Bridge rehabilitation.
- MDT Project -- Shiloh Road: King Avenue to Rimrock Road: Pavement preservation.
- MDT Project -- State Avenue: Pavement preservation.
- MDT Project -- King Avenue Signals: Intersection upgrades/signals.
- MPO -- Johnson Lane Sidewalks: Transportation Alternatives sidewalk project.
- MPO -- Safe Routes to School: Transportation Alternatives project that will improve safe routes to schools.
- MET Transit - Update Federal Transit Administration (FTA) allocations and new projects.

2. Financial Adjustments

- Funding sources and allocations updated to reflect revised cost estimates and grant awards.
- Adjustments made to federal, state, and local funding contributions.

3. Project Timing Revisions

- Schedule updates due to funding shifts, permitting processes, or construction timelines.

STAKEHOLDERS

The MPO's Transportation Planning Process includes multiple opportunities for public input. The Planning Board will host a public hearing, with additional public comment opportunities at Billings City Council, the Board of County Commissioners, and the Policy Coordinating Committee meetings.

ALTERNATIVES

The TIP provides the MPO a listing of federally funded projects through 2028. The Planning Board may:

- Forward a recommendation of approval of the 2024-2028 TIP Amendment 3 to the PCC which will allow the continuation of federal funds to the MPO, or;
- Not forward a recommendation of approval of the 2024-2028 TIP Amendment 3 to the PCC. Not forwarding a positive recommendation could jeopardize continued federal funding for projects in the MPO.

FISCAL EFFECTS

The TIP identifies available federal funding sources for transportation projects. However, many federally funded projects require a local match, which may have implications for City and County budgets. These local contributions are typically identified in other planning documents, such as the Capital Improvement Program (CIP). Non-federally funded projects are also accounted for in these existing planning documents.

SUMMARY

TIP Amendment 3 updates the Billings MPO Transportation Improvement Program (TIP) for 2024--2028, which prioritizes regional transportation projects and programs federal surface transportation funding. The amendment adds new projects, adjusts funding allocations, and revises project schedules to reflect updated costs, funding availability, and regional priorities.

Key updates include the addition of several MDT roadway projects (such as pavement preservation, bridge rehabilitation, striping, signal upgrades, and ADA sidewalk improvements) and two MPO Transportation Alternatives projects: Johnson Lane Sidewalks and a Safe Routes to School initiative. The amendment also updates funding sources and project timelines as needed.

The MPO planning process includes public hearings and opportunities for comment at Planning Board, City Council, County Commission, and Policy Coordinating Committee meetings. The Technical Advisory Committee (TAC) may recommend approval to maintain eligibility for federal transportation funding or decline approval, which could risk funding. The amendment does not directly affect City or County budgets, as federal funds support the projects and local projects are already included in other plans.

Attachments

TIP Amendment 3

TIP Tables

TIP Amendment 3 Presentation

The Billings Metropolitan Planning Organization
TRANSPORTATION IMPROVEMENT PROGRAM
(TIP)

Federal Fiscal Years

FFY 2024 – 2028

Amendment 3

May 19, 2026



Prepared by:
Billings Metropolitan Planning Organization
Yellowstone County Board of Planning

In cooperation with:
City of Billings, Montana
County of Yellowstone, Montana
Billings Urban Transportation District
Montana Department of Transportation
Federal Highway Administration
Federal Transit Administration

APPROVALS REVIEWED BY

	2024-2028	Administrative Modification 1	Amendment 2	Amendment 3	
Technical Advisory Committee	02/08/2024	N/A	03/13/2025	4/9/2026	
Yellowstone County Board of Planning	02/27/2024	N/A	04/8/2025	4/28/2026	
Billings City Council	03/11/2024	N/A	04/14/2025	4/27/2026	
Yellowstone County Board of County Commissioners	03/12/2024	N/A	04/8/2025	5/12/2026	

Approved By

	2024-2028	Administrative Modification 1	Amendment 2	Amendment 3	
Policy Coordinating Committee	03/19/2024	04/16/2024	04/15/2025	05/19/2026	
Montana Department of Transportation					

The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

The public notice of public involvement activities and time established for public review and comment on the TIP will satisfy the POP requirements of Section 5307 for the City of Billings MET Transit.

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Acronyms

BR	Bridge Replacement and Rehabilitation Program
CMAQ	Congestion Mitigation and Air Quality
CN	Construction
CO	Carbon Monoxide
CR	Carbon Reduction
EARMARK	Congressionally Directed Funds
EPA	Environmental Protection Agency
FAST Act	Fixing America's Surface Transportation Act
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FY/FFY	Fiscal Year/Federal Fiscal Year. The local and state government fiscal year runs from July 1 - June 30. The Federal fiscal year runs from October 1 – September 30
HSIP	Highway Safety Improvement Program
IC	Incidental Construction
IIJA	Infrastructure Investment and Jobs Act
IM	Interstate Maintenance, IM is a state sub-allocated program funded by the federal National Highway Performance Program
MACI	Montana Air and Congestion Initiative
MAP-21	Moving Ahead for Progress in the 21st Century Act
MDT	Montana Department of Transportation
MPO	Metropolitan Planning Organization. The Yellowstone County Board of Planning is the MPO for the Billings Urban area.
NAAQS	National Ambient Air Quality Standards
NH	National Highway System, NH is a state sub-allocated program funded by the federal National Highway Performance Program
NHPB	National Highway System Bridge Program
PCC	Policy Coordinating Committee. Together with the TAC, the transportation planning organization for Federal aid projects in the Billings urbanized area.
PE	Preliminary Engineering
PM₁₀	A federal standard for particulate (10 microns or less in size), i.e., road dust, brake lining and/or wood smoke particles.
PM_{2.5}	A federal standard for particulate (2.5 microns or less in size), i.e., road dust, brake lining and/or wood smoke particles.
ROW	Right of Way
RP	Road Reference Post
RRS	Railroad Crossing
SFCN	State Funded Construction
SRTS	Safe Routes to Schools
SIP	State Implementation Plan. A plan for improving air quality in the State, including the Billings area.
STIP	State Transportation Improvement Program
STPB	Surface Transportation Program Bridge
STPE	Surface Transportation Program Enhancements
STPP	Surface Transportation Program Primary

STPU	Surface Transportation Program Urban
STPX	Surface Transportation Program Off-System
TA	Transportation Alternatives
TAC	Technical Advisory Committee
TIP	Transportation Improvement Program. A multi-year program of highway and transit projects on the Federal aid system, which addresses the goals of the long-range plans and lists priority projects and activities for the region.
TSP	Total Suspended Particulate
UPP	Urban Pavement Preservation

Introduction

Preface

The Yellowstone County Board of Planning (YCBP) is the Metropolitan Planning Organization, (MPO), for the Billings metropolitan planning area. The Transportation Improvement Program, (TIP), is the funding mechanism for transportation projects requesting federal dollars in the Billings urbanized area. This document contains a list of all surface transportation projects requesting the use of federal funds. Local jurisdictions working through the Billings MPO's Policy Coordinating Committee (PCC) determine how the area's transportation system is developed and expanded.

The Infrastructure Investment and Jobs Act (IIJA) Passed by Congress on November 15, 2021, authorizing funding for Federal transportation programs for the five-year period from 2022-2026. The IIJA effectively replaced the Fixing America's Surface Transportation (FAST) Act and the prior infrastructure act Moving Ahead for Progress in the 21st Century (MAP-21) Act. MAP-21 authorized the Federal surface transportation programs for highways, highway safety, and transit for the 2-year period FFY 2013-2015. Like MAP-21, FAST Act and now IIJA requires that each Metropolitan Planning Organization (MPO) prepare a financially constrained transportation project programming document called a Transportation Improvement Program (TIP). While the IIJA replaced FAST, any previously obligated but unspent funds under the previous acts are still available at this time.

About the Transportation Improvement Program

The TIP is a short-range program of highway and transit projects in the Billings metropolitan planning area and is prepared by YCBP staff in cooperation with state and local agencies. The basic purpose of the TIP is to provide the mechanism for scheduling federal funds for surface transportation projects, indicating regional priorities, and demonstrating a short-range transportation vision for the area. A secondary purpose of the TIP is to provide information about other transportation projects in the planning area that are exempt from the TIP approval process such as projects that do not utilize federal funds.

TIP Process and Development

The development of the TIP document is the responsibility of the Billings MPO and provides an opportunity for local officials to determine priorities and spending for federal highway and transit funds. Any transportation project located in the Billings metropolitan planning area must be included in the TIP prior to receiving federal funds. TIP projects must be included in the area's Long Range Transportation Plan and are proposed for the TIP by local elected officials, transit operating officials, or state highway agencies. The TIP is reviewed and endorsed annually by the Billings MPO's Policy Coordinating Committee, (PCC), and may be modified through the TIP amendment process. The PCC includes a Billings City Council representative, the Chair of the Yellowstone County Commission, the President of the Yellowstone County Board of Planning and the District Administrator of the Montana Department of Transportation. After PCC endorsement, the TIP is submitted to the Montana Department of Transportation (MDT) for approval and to the Federal Highway Administration and Federal Transit Administration for federal review of the document and concurrence.

Federal Regulations

The Transportation Improvement Program (TIP) is a required planning program for federally assisted highway and transit improvements for the Billings metropolitan planning area and the Montana Department of Transportation (MDT) over a five-year period. The principal focus is given to the first two years of the program, the Biennial Element, however the TIP contains projects that could be implemented between October 1, 2024 – September 30, 2028 (FFY 2024 & 2028). The TIP is prepared annually and is in conformance with 23 CFR, Part 450 324-330.

Financial Resources

A range of federal funding sources is available to the Billings planning area for the purposes of funding transportation system improvements. Following is a list of those sources which, when available to the Billings area, are shown in the Transportation Improvement Program. Project implementation is indicated as expected to occur during the pertinent program year. Billings has had a favorable history of receiving federal earmarks as reflected in the table below.

BILLINGS FEDERAL EARMARK HISTORY 1999 – through 2009

Project	Earmark
Billings Bypass	\$22,445,600

Funding Sources

- Surface Transportation Program Off System (STPX)
- Surface Transportation Program Secondary (STPS)
- State Funded Construction (SFCN)
- Surface Transportation Program Urban (STPU)
- Surface Transportation Program Primary (STPP)
- National Highway (NH)
- National Highway Freight Program (NHFP)
- Interstate Maintenance (IM)
- Railroad Crossing (RRS)
- Highway Safety Improvement Program (HSIP)
- Bridge Replacement and Rehabilitation Program (BR includes NHPB and STPB)
- Urban Pavement Preservation (UPP)
- Transportation Alternatives (TA)
- Congestion Mitigation Air Quality (CMAQ)
- Montana Air Congestion Initiative (MACI)
- FTA Section 5339
- FTA Section 5307
- FTA Section 5310
- Transade (State Funded)
- Congressionally Directed Funds (EARMARK)

Air Quality Consistency

Billings was designated as a non-attainment area for both Total Suspended Particulates (TSP) and Carbon Monoxide (CO) on March 3, 1978, (Federal Register, Vol. 44, No. 150, page 45421, August 2, 1979). As such, Billings was required to prepare a Transportation Control Plan (TCP). The TCP identified strategies to mitigate the TSP and CO problems. The TCP is the Billings element of Montana's State Implementation Plan (SIP). The TIP is required to be, and is, consistent with the TCP as discussed in the Billings conformity statement. In 1987 the standard for TSP was dropped, and a new standard for particulate matter under 10 microns in size (PM - 10) was adopted (7/1/87 at 52 FR 24854). The Environmental Protection Agency (EPA) has also adopted the PM 2.5 standard and Billings is considered to be in compliance with both of these new standards.

The Billings CO maintenance area has shown continuous maintenance of the CO NAAQS from April 22, 2002, through April 22, 2022 (and to the present date); therefore, the area has met its obligation to demonstrate maintenance of the CO standard for 20 years. The Yellowstone County Board of Planning, as the designated metropolitan planning organization for the Billings area, is no longer required to address the transportation conformity determination requirements of 40 CFR part 93, subpart A for the Billings CO maintenance area, and such determinations for the Billings CO area will not be required as elements of future iterations of the Billings Urban Area Regional Transportation Plan and Transportation Improvement Program.

Regionally Significant Projects

There are no new regionally significant projects in this 2024-2028 Billings Urban Area TIP.

40 CFR part 93, subpart A - §93.126 Highway and Transit projects included in subpart A are exempt from the requirement to determine conformity. Such projects may proceed toward implementation even in the absence of a conforming transportation plan and TIP. A project will not be exempt if the MPO in consultation with other agencies, the EPA, FHWA, or FTA concur that it has potentially adverse emissions impacts for any reason.

REGIONALLY SIGNIFICANT PROJECT (2020-2024)

Project	Scope	Comments
Billings Bypass (aka North Bypass)	Location/Environmental	New Construction

Locally Significant Projects

Grand Avenue

The Billings MPO has identified the need to program the reconstruction of Grand Avenue from 41st Street West to 62nd Street West. In April of 2024, Montana Department of Transportation Highway Commission approved the request to add Grand Avenue to the Urban Highway System. With this approval, the MPO has identified the Grand Avenue project for Surface Transportation Program Urban (STPU) funds.

Project Description

Portions of Grand Avenue exist as a two-lane county road section in a growing area of the city that has no sidewalk or other multi-modal element. Increasing traffic levels on a narrow road and the inability to

separate left-turning vehicles are a main safety concern. This project completes Grand Avenue to City arterial standards where the street has not been constructed between 41st Street West and 62nd Street West. Grand Avenue is proposed as a three-lane roadway from 41st Street West to 62nd Street West, including a transition west from Shiloh Road. The project will construct a separated, multi-use path on one side and a separated sidewalk on the opposite side of the roadway. Multi-modal improvements, including recommendations from the Safe Routes to School plan, will be considered and implemented. Streetlights will be installed along the roadway corridor. A new traffic signal is anticipated at Grand Avenue and 56th Street West. Additionally, stormwater improvements will be constructed with the project, which will serve the roadway runoff as well as developments within the area. This will result in an overall improvement to the functionality of the stormwater on Billings' west end.

This project contributes to the System Performance Measure as the project will enhance the efficiency of the transportation system, reduce congestion and travel times.

Transportation Alternative Program

The Billings MPO added two Transportation Alternatives (TA) projects in 2025, building on earlier TA investments. Previously approved projects included the Stagecoach Trail, submitted by the City of Billings and currently in the design phase, and a Yellowstone County–sponsored project that completes a sidewalk segment in Lockwood.

In January 2025, the Billings MPO issued a call for applications for the Transportation Alternatives Program grant. The MPO was awarded \$1,784,111 for the 2025 funding cycle, which was available to projects sponsored by local, state, or federal agencies. Two applications were received and both were fully funded. The City of Billings was awarded \$1,292,030.94 in TA funds for a suite of Safe Routes to School projects, and Yellowstone County, through the Lockwood Pedestrian District, received \$217,021.43 for the Johnson Lane Sidewalk Connector Project.

These projects contribute to the Safety Performance Measure as the project will assist in the number of non-motorized fatalities and non-motorized serious injuries. These projects also contribute to the Congestion Mitigation and Air Quality (CMAQ) Performance Measure as the project will reduce on-road mobile source emissions.

Energy Conservation Considerations

Energy impact analyses have been conducted as a part of the urban transportation planning process. In addition, increased attention has been given to energy conservation and contingency planning on a project specific basis.

As part of the 2023 update of the Billings Urban Area Transportation Plan, energy conservation was considered in each of the proposed alternative transportation networks.

The City of Billings has a well-developed transit system, and ride-sharing opportunities have been examined. Transit facilities and highway system proposals will continue to be considered in a comprehensive method through the adopted Transportation Planning process.

The detailed energy conservation analysis of specific projects has been conducted for each of the major highway construction projects recommended in the 2023 update of the Billings Urban Area Transportation Plan.

Programming of Non-Urban System, Federal Aid, and State Funding

Proposed projects involving federal-aid funding, other than urban system funding, that are proposed within existing rights-of-way and which are determined to not significantly change traffic patterns, may not be considered to be of appropriate scale to warrant a modification to a currently valid TIP.

When there is knowledge of such projects prior to the annual adoption of the TIP, each project will be included in the program. Generally, projects falling within this category are those which serve to preserve and maintain the integrity of the existing plant or facility such as: overlays to improve or maintain surface conditions; bridge expansion joints and deck repairs necessary to maintain structural and surface sufficiency; slope repair necessary to maintain drainage adequacy; etc. Projects of this nature will be identified by MDT with appropriate justification when requesting program approval of federal highway funds. Local urban area officials will be advised by the Department through the local planning process of the Department's intent to expend federal funds (non-urban system) for such improvements in their area.

Performance Measures

Planning "Performance Measures" are a tool by which the effectiveness of the transportation programs can be measured and are a required element for MPO planning. Specifically, the adoption of Performance Measures and Targets are required for MPOs and States, and they must be included in the MPOs Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP).

The Billings MPO has adopted the measures and targets set by the Montana Department of Transportation and has committed to meeting the targets through implementation of its LRTP. The MPO has adopted the State's measures and targets for safety, pavement and bridge condition, system performance, freight and congestion mitigation and air quality, and will support the Billings Transit District's measures associated with transit. To support the targets, the MPO will plan and program projects that contribute toward meeting the targets for each Performance Measure. In general, since the MPO has opted to support the state targets, reporting on this information is completed at the state level. Reporting indicates that the agency has met or made considered progress toward meeting established targets. More detail and supporting data may be found in the Billings LRTP, which are incorporated by reference into this TIP.

The Billings MPO continues to support current targets and affirms this commitment through the inclusion of this statement of support in this document. The narratives and associated table that follow outline the currently adopted measures and targets. Finally, current projects in this TIP that support attainment of specific Performance Measure Targets are identified in the table "Projects List", which includes a column titled "Performance Measure & Target". While the project's contribution to target attainment is identified, it is impossible to quantify the contribution; thus, only the measure and target description are listed.

Safety

The Billings MPO supports the state's targets for applicable safety performance measures. The goal of safety performance measures is to reduce the number of traffic fatalities and serious injuries in the public right of way. Interstate Maintenance, National Highway, Highway Safety Improvement Program, Surface Transportation Program Off-System, Secondary, and State Funded Construction funding sources support projects with the intent to improve safety measures.

Performance Measure	2026 State Target (based on 5-year rolling average)
Number of fatalities	No more than 205.4 annual fatalities, which is an annual reduction of 8 fatalities per year
Rate of fatalities per 100 million vehicle miles traveled (AVMT)	No more than 1.507 fatalities per 100 million annual vehicle miles traveled (AVMT) which is a reduction of .056.
Number of serious injuries	No more than 750 serious injuries, which is an annual reduction of 29 serious injuries.
Rate of serious injuries per 100 million vehicle miles traveled (AVMT)	No more than 5.503 serious injuries per 100 million AVMT which is an annual reduction of .210.
Number of non-motorized fatalities and non-motorized serious injuries	No more than 57.2 non-motorized fatal and serious injuries, which is an annual reduction of 2 per year

Pavement and Bridge Condition

Pavement and bridge condition performance measures aim to maintain roadway and bridge infrastructure in such a way it remains functional and in good repair. Pavement and Bridge Condition are impacted most by Interstate Maintenance, National Highway, Bridge Program, and Urban Pavement Preservation funding sources. Projects included for funding under these sources were selected in part due to their contribution towards pavement and bridge condition targets.

Performance Measure	State Target	
	2-Year	4-Year
Percent of Pavements of the Interstate in Good Condition	50%	35%
Percent of Pavements of the Interstate in Poor Condition	2%	2%
Percent of Pavements of the Non-Interstate NHS in Good Condition	40%	30%
Percent of Pavements of the Non-Interstate NHS in Poor Condition	3%	3%
Percent of Bridges Classified as in Good Condition	16%	17%
Percent of Bridges Classified as in Poor Condition	9%	8%

System Performance

System performance measures exist to improve the efficiency of the overall transportation system, while helping to reduce congestion and travel times and increase reliability of the system. These measures are related to Congestion Mitigation and Air Quality, Surface Transportation Program Urban, and

Transportation Alternatives funding sources. Projects included in these funding sources will contribute to meeting state targets for system performance.

Performance Measure	State Target	
	2-Year	4-Year
Percent of the person-miles traveled on the interstate that are reliable	98%	98%
Percent of the person-miles traveled on the non-Interstate NHS that are reliable	80%	80%

Freight

The primary goal for establishing freight performance measures and targets is to improve the national freight network, while providing access to trade and enhancing the capacity of communities to participate in, and support regional economic development. The FHWA has established a performance measure specifically related to freight movement on the Interstate System, and MDT has set a 2- and 4-year target to address freight reliability (see table below).

Freight performance measures are most strongly influenced by the National Highway Freight Program Federal funding source. Projects selected for National Highways funding will contribute to improving the national freight network and meeting state targets. More information regarding freight related performance measures and metrics can be found in the [Montana Freight Plan](#).

Performance Measure	State Target	
	2-Year	4-Year
Truck Travel Time Reliability (TTTR) Index	1.30	1.30

Congestion Mitigation and Air Quality (CMAQ)

The collection of data regarding air quality performance measures helps to evaluate projects to ensure they are protecting and enhancing the health of the natural environment. These performance measures may be impacted by Congestion Mitigation and Air Quality, Montana Air and Congestion Initiative Discretionary Program, Transportation Alternatives, and Federal Transit Administration funding sources and associated projects that provide support for non-motorized transportation projects and programming that enhances air quality and encourages sustainable transportation options.

Performance Measure	State Target	
	2-Year	4-Year
CMAQ Traffic Congestion (Annual Hours of excessive delay per capita)	N/A	N/A
Percent of Non-SOV travel	N/A	N/A
CMAQ On-Road Mobile Source Emissions (Total Emission Reductions)		
Carbon Monoxide (CO)	>0.0 kg/day	>0.0 kg/day
Particulate Matter 10 (PM ₁₀)	>0.0 kg/day	>0.0 kg/day
Particulate Matter 2.5 (PM _{2.5})	N/A	N/A

Transit Asset Management

Transit Asset Management Performance targets and measures established for transit asset management (TAM) serve to provide safe, cost-effective, and reliable public transportation through a strategic and systematic process of operating, maintaining, and improving public transportation capital assets. The FTA has established four transit performance measures, three of which are applicable to MET Transit. Transit agencies are only required to establish targets for assets they have direct capital responsibility over. Thus, MET Transit was not required to establish targets for the infrastructure performance measure in their Transit Asset Management Plan (i.e. the percentage of track segments (by mode) that have

performance restrictions). The performance measures and targets established by MET Transit and supported by the MPO are shown in the table below:

Asset Category – Performance Measure	Asset Class	2024 Target	2025 Target	2026 Target	2027 Target	2028 Target
REVENUE VEHICLES						
Age - % of revenue vehicles within a particular asset class that have met or exceeded their minimum useful life	BU – Bus	11%	0%	0%	0%	0%
	CU – Cutaway Bus	59%	53%	0%	0%	0%
SERVICE VEHICLES						
Age - % of vehicles within a particular asset class that have met or exceeded their Useful Life Benchmark (ULB)	Trucks and other Rubber Tire Vehicles	100%	13%	25%	25%	25%
FACILITIES						
Condition - % of facilities with a condition rating below 3.0 on the FTA Transit Economic Requirements Model (TERM) Scale	Passenger Facilities	0%	0%	0%	0%	0%
	Administration and Maintenance	0%	0%	0%	0%	0%

Transit Safety Plan Targets

The Public Transportation Agency Safety Plan (PTASP) Final Rule (49 CFR Part 673) requires certain operators of public transportation systems that receive federal funds under FTA's Urbanized Area Formula Grants to develop safety plans that include the processes and procedures to implement Safety Management Systems (SMS). The plan must include safety performance targets regarding fatalities, injuries, safety events, and system reliability. The rule applies to all operators of public transportation systems that are recipients and sub-recipients of federal financial assistance under the Urbanized Area Formula Program (49 U.S.C. § 5307). MET Transit developed and established a Transit Agency Safety Plan with the following safety performance targets:

Safety Performance Targets for 2026	Fixed Route Service	Paratransit Service
Major Safety Events (Total)	2	0
Major Event Rate (per 100k VRM)	<0.25	0
Collision Rate (per 100k VRM)	<0.25	0
Pedestrian Collision Rate (per 100k VRM)	0	0
Vehicular Collision Rate (per 100k VRM)	<0.25	0
Fatalities (Total)	0	0
Fatality Rate (per 100k VRM)	0	0
Transit Worker Fatality Rate (per 100k VRM)	0	0
Injuries (Total)	2	0
Injury Rate (per 100k VRM)	<0.25	0
Transit Worker Injury Rate (per 100k VRM)	0	0
Assault on Transit Workers (Total)	0	0
Assault on Transit Workers Rate (per 100k VRM)	0	0
System Reliability (VRM/Failures)	30,000	50,000

Federal Transit Administration Projects

The Federal Transit Administration funded projects, including FTA Section 5339 grant projects, are intended to assure the continued efficient operation, maintenance and administration of the MET Transit system fleet and facilities, including meeting federal regulations such as the Americans with Disabilities Act (ADA). The operating grants are for the fiscal years of July 1, 2024, to June 30, 2028, and the Section 5339 grant projects will permit Bus and Bus Facilities projects in Fiscal Years 2024 through 2028.

The vehicle purchases for MET PLUS are projects to enable the City to continue providing the required specialized demand-responsive paratransit service for citizens who are unable to use the MET Transit System due to their disabling conditions. The projects to purchase vehicles for other entities will address some of the transportation needs of individuals with disabilities and senior populations.

Advancement of Projects

It is mutually agreed that the first two years of this program are the best estimate of the project phase that will be undertaken during the Biennial timeframe. Occasionally, projects advance through the design process faster than anticipated. An approved project may accelerate into the next logical phase providing that the funding source does not change from that which was initially identified in the TIP. Federal, State, and local governments have agreed that a TIP revision is not required in order to accelerate a specific project phase, so long as other planned work is not unduly delayed.

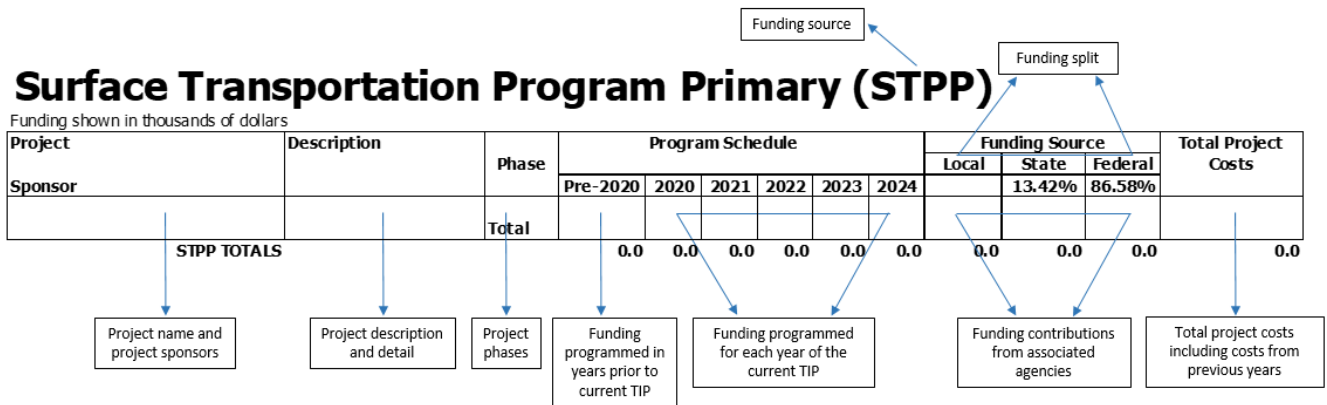
- The priorities with regard to the FTA Section 5307 projects in the Biennial Element are:
 - 1) Operating Assistance.
- The priorities with regard to the FTA Section 5310 projects in the Biennial Element are:
 - 1) Replacement vehicles for MET Special Transit and other local agencies.
- The priorities with regard to the FTA Section 5339 projects are:
 - 1) Assistance for bus/bus facilities

Annual Listing of Projects

Federal regulation (23 CFR §450.334) requires publication of an annual listing of projects for which Federal funds have been obligated in the TIP in the preceding year consistent with the categories identified in the TIP. The MPO will post this list to the Transportation Resource page of the City of Billings Website: https://billingsmt.gov/DocumentCenter/View/54291/10-1-2024TO9_30_2025BLGS

Understanding TIP Funding Tables

The TIP project funding tables consist of multiple components and are designed to best display integral information regarding the projects within the TIP. The image below identifies and explains each of the various components of the TIP project funding tables and can be used as a tool to understand the information being presented within the funding tables.



All construction projects included in the TIP will be completed in multiple phases (i.e. PE, RW, IC, and CN). Funding for each construction project is broken down by the costs of each specific phase. The table below provides a description of construction project phases and additional project phases the reader can expect to see within TIP funding tables.

Project Phase	Description
CN	Construction – Construction and/or reconstruction work performed by the agency or contractor to include construction engineering.
IC	Incidental Construction – ‘Safety net’ for unexpected construction expenditures
OT	Other – Additional programmatic expenditures including costs for education, and outreach
PE	Preliminary Engineering – Analysis and design work completed prior to project construction (the abbreviation EIS will be added if phase includes an environmental impact statement)
Purch.	Purchase – Procuring equipment, software, vehicles, or facilities
RW	Right of Way – Tasks associated with acquiring and preparing the right of way for a project (e.g. property acquisition and utility relocation)
Transit	Transit operations

Billings MPO Project List

PROJECT	UPN	SCOPE	COMMENTS	PERFORMANCE MEASURES
CMAQ				
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River		
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		System performance - Efficiency
Grand Ave 41st to 62nd		Reconstruction of existing roadway	Possible LAG project	System performance - Efficiency
STPU				
Billings Bypass - Five Mile Road	4199-002	Reconstruction of roadway	Completed	System performance - Efficiency
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River		
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		System performance - Efficiency
Grand Ave 41st to 62nd		Reconstruction of existing roadway	Possible LAG project	System performance - Efficiency
IM				
MDT Preventative Maintenance		Pavement Preservation and Striping	Placeholder to allow project nominations	
I-90 Yellowstone River - Billings	7972	Bridge Replacement		Bridge condition
Mossman Intch - West Blgs Intch	9198	Pavement Preservation w/ signal improvements at off ramps		Pavement condition
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		Safety - Reduce Fatalities & Serious Injuries
Lockwood Intechange - Billings	9978	Reconstruction of existing Interchange to a diverging diamond design		Safety - Reduce Fatalities & Serious Injuries
I-90 CULVERTS - BILLINGS AREA	10427	Culvert replacement	Not all locations inside MPO boundary	
NH				
MDT Preventative Maintenance		Pavement Preservation and Striping	Placeholder to allow project nominations	
Billings Bypass	4199-000	New Construction	Covers PE & IC	
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River		
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		
Billings Bypass - RR O'pass	4199-005	New construction of bridge over the railroad		
Billings Bypass - Johnson Ln Intch-RR O'pass	4199-008	New construction of roadway connection from existing Interchange to the bridge over the railroad		Safety - Reduce Fatalities & Serious Injuries
Billings Bypass - Johnson Lane Intch - RR O'pass	4199-006	New construction of connection from interchange to the railroad overpass		
Billings Bypass - Five Mile Road to US 87	4199-004	New construction of connection from Five Mile to US 87		
Exposition Dr. & 1st Ave N. Blgs	7908	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries
Underpass Ave. Improvements	8669	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries
Airport Rd. & Main St. - Blgs	8718	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries
1st Ave. N - N 9th to RR Xing	9022	Major Reconstruction		
Zoo Drive Improvements	9597	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries
1st Ave. N - RR Xing to Broadway	9880	Major Reconstruction		
1st Ave. N - Broadway to Division	9881	Major Reconstruction		
Montana Ave Crosswalks - Billings	9998	Sidewalk Improvements ADA Compliance		Safety - Reduce Fatalities & Serious Injuries
Laurel RD / Montana Ave - BLGS	9998001	Sidewalk Improvements ADA Compliance	Split from MT Ave Crosswalks	Safety - Reduce Fatalities & Serious Injuries
1st Ave South - Billings	10692	Pavement Preservation on 1st Ave South N-114 Mill & Fill with underseal and possible Digouts.		
ICT Hwy 312 to MP 7.29		Striping and Durable Pavement Markings		

New project

New project

New project

Billings MPO Project List (Continued)

NHFP				
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		
I-90 Yellowstone River - Billings	7972	Bridge Replacement		Freight Network
STPX, STPS, SFCN				
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River		
Lockwood Interchange	9588	Interchange Improvements Study		
Jct Main & 87 to Worden		Roadway Striping		
SF 209 BILLINGS DIST SIGNS	10299	instal safety improvement: signs, delineaton, chevrons		
Mulowney Ln to Wise Ln		Roadway Striping		New project
STPP				
RRS				
HSIP				
Various Safety Projects			Placeholder to allow project nominations	
SF 129 - Rndabout King 56th	8052	Intersection Improvements - Roundabout		Safety - Reduce Fatalities & Serious Injuries
SF 169 Rimrock & 62nd St. W	9383		Roundabout	Safety - Reduce Fatalities & Serious Injuries
Zoo Drive Improvements	9597	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries
SF 189 South D5 Safety Imprv	9912	Intersection Safety Improvements	Several intersections West End Billings using 10% for costs	Safety - Reduce Fatalities & Serious Injuries
SF 209 BILLINGS DIST SIGNS	10299	instal safety improvement: signs, delineaton, chevrons		
KING AVE & 48TH STREET - BLGS	10643	Roundabout safety and operational improvements	split funded	Safety - Reduce Fatalities & Serious Injuries
BR				
Billng Bypass - Yellowstone River	4199-003	New construction of bridge over the Yellowstone River		
I-90 Yellowstone River - Billings	7972	Bridge Replacement		
BR PRES COLUMBUS JOLIET AREA	9552	Minor bridge rehab	One project in MPO Boundary	
SHILOH RD / I-90 BRIDGE - BLGS	9720	Bridge rehab		Bridge condition
MONTANA AVE OVERPASS- BILLINGS	9913	Bridge rehab		Bridge condition
MONTANA AVE BRIDGES- BILLINGS	10765	Bridge rehab		Bridge condition New project
UPP				
Various Preservation Projects		Pavement preservation	Placeholder to allow project nominations	
Shiboh Rd - King Ave to Rimrock	10703	Pavement preservation		New project
State Avenue - Billings	10704	Pavement preservation		New project
MACI				
MDT MACI		Statewide CMAQ - Various	Placeholder to allow project nominations	
MDT MACI		Statewide CMAQ - ADA Compliance	Placeholder to allow project nominations	
Underpass Ave. Improvements	8669	Intersection Improvements		
Mossman Intch - West Blgs Intch	9198	Pavement Preservation w/ signal improvements at off ramps	Partially funded IM is primary	
ATSPM - MAIN STREET (BILLINGS)	10400	Signal Improvements		
BILLINGS DISTRICT ADA UPGRADES	10431	Signal Improvements	CE only	
King Ave Signals - Billings	10585	INT upgrades/signals		New project

Billings MPO Project List (Continued)

CR				
BILLINGS DISTRICT ADA UPGRADES	10431	Signal Improvements	CN only	
Zoo Drive Improvements	9597	Intersection Improvements	CN only	
KING AVE & 48TH STREET - BLS	10643	Roundabout safety and operational improvements	split funded	
TA				
Stagecoach Trail		Shared use path		Non-Motorized Fatalities and Serious Injuries
Old Hardin Sidewalk		Sidewalk construction		Non-Motorized Fatalities and Serious Injuries
Johnson Ln - Sidewalks	10721	Sidewalk construction		Non-Motorized Fatalities and Serious Injuries
Safe Routes to Schools - BLS	10722	Improve routes in Billings school districts		Non-Motorized Fatalities and Serious Injuries
FWP				
Rose Park Trail, Phase 1	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local (In-Kind) \$25,000	
Rose Park Trail, Phase 2	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Lillis Park Trail Connector	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Big Ditch Trail Extension	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Southern Riverfront Park Trail*	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Trailside Education Signs*	Local	Trail Signage	Recreational Trails Program \$47,000 Local \$12,000	
EARMARK				
Billings Bypass	4199-001	New Construction	Covers Environmental Doc., PE, RW	
FTA 5307				
FTA 5339				
FTA 5310				
FTA 5311				
100 % LOCALLY FUNDED PROJECTS				
Various Projects		Annual Operation and Maintenance		
State Funded Maintenance				
Various Maintenance Projects		Maintenance		

New project
New project

Projects with Multiple Funding

Billings Bypass

Funding shown in thousands of dollars

Project: Billings Bypass	Description	Phase	Program Schedule							Funding Source	Local	State	Federal	Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	2028+					
Sponsor: MDT														
Billings Bypass UPN4199000	Environmental Impact Statement	PE-EIS	4,919.6							EARMARK		660.2	4,259.4	4,919.6
	Preliminary Engineering	PE	9,679.0							EARMARK		1,298.9	8,380.0	9,679.0
	Preliminary Engineering	PE	8,074.0		1,353.5	381.7				NH		1,316.4	8,492.9	9,809.3
	Right of Way Acquisition	RW	11,420.0	4,500.0		10,000.0				EARMARK/NH		3,478.5	22,441.5	25,920.0
	Utility Moves	IC								NH		0.0	0.0	0.0
MDT		Total	34,092.6	4,500.0	1,353.5	10,381.7	0.0	0.0				6,754.0	43,573.9	50,327.9
Billings Bypass UPN4199002	Construction of Five Mile Road (Five Mile Road)	IC	140.1							STPU		18.8	121.3	140.1
MDT		CN	5,865.9							STPU		787.2	5,078.7	5,865.9
MDT		Total	6,006.1	0.0	0.0	0.0	0.0	0.0				806.0	5,200.1	6,006.1
Billings Bypass UPN4199003	Construction of a new bridge over the Yellowstone River	IC	416.2	-90.8						NH		43.7	281.8	325.5
		CN	11,364.2							STPU		1,525.1	9,839.1	11,364.2
		CN	5,000.0							CMAQ		671.0	4,329.0	5,000.0
		CN	5,000.0							BRIDGE		671.0	4,329.0	5,000.0
		CN	18,261.7	-1,740.9						NH		2,217.1	14,303.7	16,520.8
		CN	12.9							SFCX		12.9	0.0	12.9
MDT		Total	40,055.0	-1,831.7	0.0	0.0	0.0	0.0				5,140.8	33,082.6	38,223.4
Billings Bypass UPN4199007	Reconstruction of existing Interchange	IC	4,121.1		-83.0	1,269.9				NH		712.3	4,595.7	5,308.0
		CN				2,429.7				STPU		326.1	2,103.7	2,429.7
		CN				6,200.0				CMAQ		832.0	5,368.0	6,200.0
		CN				3,800.0				NH		510.0	3,290.0	3,800.0
		CN				14,357.7				NHFP split at 91.24/8.76		1,257.7	13,100.0	14,357.7
		CN				29,160.8				IM*		2,554.5	26,606.3	29,160.8
MDT		Total	4,121.1	0.0	-83.0	57,218.2	0.0	0.0				6,192.6	55,063.7	61,256.3
Billings Bypass UPN4199005	Construction of new bridge over railroad	IC	764.4	469.2	64.5					NH		174.2	1,123.9	1,298.1
MDT		CN	16,929.6	520.0	24.5					NH		2,345.0	15,129.1	17,474.1
MDT		Total	17,694.0	989.2	89.0	0.0	0.0	0.0				2,519.2	16,253.0	18,772.2
Billings Bypass UPN4199008	New construction of roadway connection from existing Interchange to the bridge over the railroad	CN	7,726.3	-722.5	-11.9					NH		938.3	6,053.5	6,991.8
MDT		Total	7,726.3	-722.5	-11.9	0.0	0.0	0.0				938.3	6,053.5	6,991.8
Billings Bypass UPN4199006	Construction of connection from Interchange to RR O'pass	IC						1,000.0		NH		134.2	865.8	1,000.0
MDT		CN						8,252.8		NH		1,107.5	7,145.3	8,252.8
MDT		Total	0.0	0.0	0.0	0.0	0.0	9,252.8				1,241.7	8,011.1	9,252.8
Billings Bypass UPN4199004	Construction of connection from Five Mile Rd to US 87	IC							500.0	NH		67.1	432.9	500.0
MDT		CN							14,719.6	NH		1,975.4	12,744.2	14,719.6
MDT		Total	0.0	0.0	0.0	0.0	0.0	0.0	15,219.6			2,042.5	13,177.1	15,219.6
Totals			109,695.2	2,935.1	1,347.5	67,599.9	0.0	9,252.8	15,219.6		0.0	25,635.1	180,415.0	206,050.1

Funding projections are based on best available information and are subject to change given current funding uncertainties and unknown impacts of future congressional or other federal actions.

CN estimates include CE costs

modified pe to actuals
modified RW to actuals

modification to actuals

Final
modified to actuals

Final

moved to 28 from 25

Projects with Multiple Funding Continued

I-90 Yellowstone River Bridges

Funding shown in thousands of dollars

Project: I-90 Yellowstone River Bridge	Description	Phase	Program Schedule							Funding Source	Local	State	Federal	Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	2028+					
Sponsor: MDT														
I-90 Yellowstone River Bridges UPN 7972	Reconstruction of Interstate bridges over the Yellowstone River	PE	4,833.3							BRIDGE		648.6	4,184.6	4,833.3
		PE	722.2							IM*		63.3	658.9	722.2
		PE	801.4							NHFP		70.2	731.2	801.4
		RW	180.0							IM*		15.8	164.2	180.0
		CN	63,376.3	2,074.9						BRIDGE		8,783.6	56,667.7	65,451.3
		CN	4,384.0							IM*		384.0	4,000.0	4,384.0
	CN	17,325.0							NHFP		2,325.0	15,000.0	17,325.0	
MDT	RP 450 to 452.7	Total	91,622.3	2,074.9	0.0	0.0	0.0	0.0	0.0		12,290.5	81,406.7	93,697.2	
Totals			91,622.3	2,074.9	0.0	0.0	0.0	0.0	0.0		12,290.5	81,406.7	93,697.2	

CN estimates include CE costs

*IM funding split is 91.24% Federal/8.76% State

KING AVE & 48TH STREET - BLGS

Funding shown in thousands of dollars

Project: KING AVE & 48TH STREET - BL	Description	Phase	Program Schedule							Funding Source	Local	State	Federal	Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	2028+					
Sponsor: MDT														
KING AVE & 48TH STREET - BLGS UPN 10643	address safety and operational issues at the intersection of King Avenue and 48th Street. The preferred alternative is a roundabout.	PE			600.0					CR		80.5	519.5	600.0
		RW					400.0			CR		53.7	346.3	400.0
		IC							400.0	CR		53.7	346.3	400.0
		CN								CR		257.2	1,659.4	1,916.6
		CN								HSIP		194.9	1,754.1	1,949.0
		CN								Local Contribution	341.9	0.0	0.0	341.9
	MDT	U-1037 RP 16.5 to 16.7	Total	0.0	0.0	600.0	0.0	400.0	400.0	4,207.5	341.9	640.0	4,625.6	5,607.5
Totals			0.0	0.0	600.0	0.0	400.0	400.0	4,207.5	341.9	640.0	4,625.6	5,607.5	

CN estimates include CE costs

HSIP split at 90/10%

updated costs
updated estimates to TCP

Project: Grand Avenue

Funding shown in thousands of dollars

Project: Grand Avenue	Description	Phase	Program Schedule							Funding Source	Local	State	Federal	Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	2028+					
Sponsor: MDT														
Grand Avenue UPN 10702	reconstruction of existing roadway	PE			2,362.6					STPU		317.1	2,045.5	2,362.6
		RW				1,260.0				STPU		169.1	1,090.9	1,260.0
		IC					1,500.0			STPU		201.3	1,298.7	1,500.0
		CN						16,985.7		STPU		2,279.5	14,706.2	16,985.7
		CN							3,426.8	CMAQ		459.9	2,966.9	3,426.8
	MDT	41st St West to 62nd St West	Total	0.0	0.0	2,362.6	1,260.0	1,500.0	20,412.4	0.0		3,426.8	22,108.2	25,535.0
Totals			0.0	0.0	2,362.6	1,260.0	1,500.0	20,412.4	0.0		3,426.8	22,108.2	25,535.0	

Estimated Revenue

Amounts shown in thousands of dollars

Federal	STP/S*/X*															
Fiscal Year	CMAQ**	STPU*	IM*	NH*	NHFP*	SFCN	STPP*	RRS	HSIP*	BR*	UPP*	MACI*	CR*	TA*	FWP	SUBTOTAL
Carryover	7,186.9	12,767.4												5,945.0		25,899.3
FFY 2024	1,490.4	2,551.8	3,333.0	11,374.8	0.0	0.0	0.0	0.0	-669.0	3,665.4	500.0	865.2	388.4	790.0	349.6	24,639.5
FFY 2025	1,520.2	2,551.8	1,474.3	8,623.6	0.0	180.5	0.0	0.0	2,053.8	421.8	749.9	775.2	590.4	790.0	184.1	19,915.5
FFY 2026	1,550.6	2,551.8	30,660.8	16,877.2	14,357.7	64.6	0.0	0.0	342.5	3,242.5	500.0	743.8	57.0	790.0	125.0	71,863.5
FFY 2027	1,550.6	2,551.8	2,328.2	8,688.6	0.0	0.0	0.0	0.0	500.0	0.0	3,489.4	750.0	400.0	790.0	125.0	21,173.5
FFY 2028	1,550.6	2,551.8	70,892.1	78,496.4	0.0	0.0	0.0	0.0	2,449.0	24,426.6	500.0	750.0	2,316.6	790.0	125.0	184,848.0
TOTAL	14,849.3	25,526.2	108,688.6	124,060.6	14,357.7	245.1	0.0	0.0	4,676.2	31,756.3	5,739.3	3,884.2	3,752.4	9,894.8	908.7	348,339.3

Federal	FTA 5307		FTA 5339		DISCRETIONARY 5339		FTA 5310		GAS TAX			
Fiscal Year	Federal	Local	Federal	Local	Federal	Local	Federal	Local	CITY	COUNTY	OTHER***	TOTAL
Carryover	5,107.7		1,011.2		6,904.6		0.0					38,922.9
FFY 2024	2,859.7	3,290.6	735.0	210.6	910.3	1,487.0	203.9	36.0	1,739.8	313.8	1,222.3	37,648.5
FFY 2025	2,847.0	1,915.1	758.7	180.0	0.0	165.1	297.2	59.1	1,739.8	313.8	1,222.3	29,413.4
FFY 2026	2,847.0	1,902.5	758.7	196.2	0.0	0.0	270.8	67.7	1,726.8	324.8	2,043.1	82,001.0
FFY 2027	2,847.0	1,880.9	758.7	113.9	0.0	0.0	180.8	45.2	1,779.9	299.1	1,222.3	30,301.2
FFY 2028	2,847.0	1,880.9	758.7	280.0	0.0	0.0	180.8	45.2	1,726.8	324.8	1,676.0	194,568.0
TOTAL	19,355.4	10,869.8	4,780.9	980.7	7,814.9	1,652.1	1,133.5	253.1	8,713.1	1,576.2	7,385.8	412,855.0

Funding projections are based on best available information and are subject to change given current funding uncertainties and unknown impacts of future congressional or other federal actions. Federal program funding availability may impact the scheduling of projects. Funding beyond 2024 will be subject to the obligation limitation set by the annual appropriations process.

NOTES:

These estimates are based on historical data and projections.

* STPU, IM, NH, NHFP, STPX, STPP, HSIP, BR, UPP, MACI, and TA funds include match.

** Reflective of federal share only.

*** Operations and Maintenance funds (average of Fiscal Years 2023-2025), TRANSADe, and CMAQ (match) makes up OTHER

Congestion Mitigation & Air Quality (CMAQ)

Funding shown in thousands of dollars

Unless otherwise indicated the matching ratios for these projects are 86.58% Federal and 13.42% Match

Project	Description	Phase							Funding Source			Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	Local 13.42%	State 13.42%	Federal 86.58%	
<i>Carryover (Federal)</i>				7,186.9	8,677.3	10,197.5	6,380.1	7,930.7				
<i>Estimated allocation (Federal)</i>				1,490.4	1,520.2	1,550.6	1,550.6	1,550.6				
Billings Bypass (Yellowstone River Bridge) <i>UPN4199003</i> <i>MDT</i>	Construction of a new bridge over the Yellowstone River	CN	5,000.0							671.0	4,329.0	5,000.0
Total			0.0	0.0	0.0	0.0	0.0	0.0	0.0	671.0	4,329.0	5,000.0
Billings Bypass (Johnson Lane Interchange) <i>UPN4199007</i> <i>MDT</i>	Reconstruction of existing Interchange	CN				6,200.0				832.0	5,368.0	6,200.0
Total			0.0	0.0	0.0	6,200.0	0.0	0.0	0.0	832.0	5,368.0	6,200.0
Grand Avenue <i>UPN 10702</i> <i>Possible LAG with city</i>	Reconstruction of existing roadway 41st to 62nd street 2.6 miles	CN						3,426.8		459.9	2,966.9	3,426.8
Total			0.0	0.0	0.0	0.0	0.0	3,426.8	0.0	459.9	2,966.9	3,426.8
Service Operations* Operating - 80% match <i>MET Transit</i>	Transfer from CMAQ to 5307	Transit							0.0		0.0	0.0
Total			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Project Adjustments/Closures												
CMAQ Totals			0.0	0.0	6,200.0	0.0	3,426.8	0.0	1,962.9	12,663.9	14,626.8	
Federal			0.0	0.0	5,368.0	0.0	2,966.9					
State			0.0	0.0	820.9	0.0	453.7					
Ending Balance (Federal)			8,677.3	10,197.5	6,380.1	7,930.7	6,514.4					

updated allocation

moved to 26 from 25

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Surface Transportation Program Urban (STPU)

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal	
<i>Carryover</i> <i>Estimated Allocation (STPU)</i>				12,767.4 2,551.8	15,319.2 2,551.8	15,508.4 2,551.8	14,370.4 2,551.8	15,422.1 2,551.8		13.42%	86.58%	
Billings Bypass (Five Mile Road) <i>UPN41990</i> <i>MDT</i>	Construction of Five Mile Road	IC CN Total	140.1 5,865.9 6,006.1	0.0	0.0	0.0	0.0	0.0		18.8 787.2 806.0	121.3 5,078.7 5,200.1	140.1 5,865.9 6,006.1
Billings Bypass (Yellowstone River Bridge) <i>UPN41990</i> <i>MDT</i>	Construction of a new bridge over the Yellowstone River	CN Total	11,364.2 11,364.2	0.0	0.0	0.0	0.0	0.0	0.0	1,525.1 1,525.1	9,839.1 9,839.1	11,364.2 11,364.2
Billings Bypass (Johnson Lane Interchange) <i>UPN41990</i> <i>MDT</i>	Reconstruction of existing Interchange	CN Total	0.0	0.0	0.0	2,429.7 2,429.7	0.0	0.0	0.0	326.1 326.1	2,103.7 2,103.7	2,429.7 2,429.7
Grand Avenue <i>UPN 10702</i> <i>Possible LAG with city</i> Adjustment/Closures	Reconstruction of existing roadway 41st to 62nd street 2.6 miles	PE RW IC CN Total	0.0	0.0	2,362.6 2,362.6	1,260.0 1,260.0	1,500.0 1,500.0	16,985.7 16,985.7	0.0	317.1 169.1 201.3 2,279.5 2,966.9	2,045.5 1,090.9 1,298.7 14,706.2 19,141.3	2,362.6 1,260.0 1,500.0 16,985.7 22,108.2
STPU Totals			0.0	2,362.6	3,689.7	1,500.0	16,985.7	0.0	5,624.1	36,284.1	41,908.2	
Federal			0.0	2,045.5	3,194.6	1,298.7	14,706.2					
State			0.0	317.1	495.2	201.3	2,279.5					
Balance			15,319.2	15,508.4	14,370.4	15,422.1	988.2					

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Interstate Maintenance (IM)

Funding shown in thousands of dollars

Project	Description	Phase	Funding Source						Total Project			
			Pre-2024	2024	2025	2026	2027	2028		Local	State	Federal
										8.76%	91.24%	
MDT-PREVENTATIVE MAINTENANCE	Maintenance - Striping, Durable Pavement Pres.	All		1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	0.0	657.0	6,843.0	7,500.0
MDT		Total		1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	0.0	657.0	6,843.0	7,500.0
Johnson Lane Interchange Ramps	Striping and Durable Pavement Mar Interchange	OT		4.0						0.3	3.6	4.0
UPN												
MDT	I-90 RP 455- 455.5	Total	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.3	3.6	4.0
Lockwood Interchange Ramps	Striping and Durable Pavement Mar Interchange	OT		4.0						0.3	3.6	4.0
UPN												
MDT	I-90 RP 452.6- 453.1	Total	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.3	3.6	4.0
27TH ST. Interchange Ramps	Striping and Durable Pavement Mar Interchange	OT		4.0						0.3	3.6	4.0
UPN												
MDT	I-90 RP 449.9- 450.4	Total	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.3	3.6	4.0
South Billings Blvd Interchange Ramps	Striping and Durable Pavement Mar Interchange	OT		4.0						0.3	3.6	4.0
UPN												
MDT	I-90 RP 447- 447.5	Total	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.3	3.6	4.0
King Ave West Interchange Ramps	Striping and Durable Pavement Mar Interchange	OT		4.0						0.3	3.6	4.0
UPN												
MDT	I-90 RP 446.2- 446.4	Total	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.3	3.6	4.0
Zoo Drive Interchange Ramps	Striping and Durable Pavement Mar Interchange	OT		4.5						0.4	4.1	4.5
UPN												
MDT	I-90 RP 443.1- 443.7	Total	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.4	4.1	4.5
Billings Bypass - Johnson Lane Intch	Reconstruction of existing Interchange	CN				29,160.8				2,554.5	26,606.3	29,160.8
UPN 4199-007												
MDT	I-90 RP	Total	0.0	0.0	0.0	29,160.8	0.0	0.0	0.0	2,554.5	26,606.3	29,160.8
I-90 Yellowstone River Bridges	Bridge Replacement	PE	722.2							63.3	658.9	722.2
UPN 7972		RW	180.0							15.8	164.2	180.0
		CN	4,384.0							384.0	4,000.0	4,384.0
MDT	I-90 RP 450.09 to 452.73	Total	5,286.3	0.0	0.0	0.0	0.0	0.0	0.0	463.1	4,823.2	5,286.3
Mossmain Intch - West Blgs Intch	Pavement Preservation	PE	910.5							79.8	830.8	910.5
UPN 9198	Not all locations inside MPO bounda	CN	24,304.8	1,051.7	-925.7					2,140.1	22,290.7	24,430.8
MDT	I-90 RP 437.12 to 446.7	Total	25,215.3	1,051.7	-925.7	0.0	0.0	0.0	0.0	2,219.9	23,121.5	25,341.4
Lockwood Interchange - Billings	Capital Construction	PE	3,331.2		900.0					370.7	3,860.6	4,231.2
UPN 9978	Improvements to Lockwood Interch	RW					768.7			67.3	701.4	768.7
		IC						768.7		67.3	701.4	768.7
		CN						63,686.3		5,578.9	58,107.4	63,686.3
MDT	I-90 RP 450 to RP 453.5	Total	3,331.2	0.0	900.0	0.0	768.7	64,455.1	0.0	6,084.3	63,370.7	69,455.0
I-90 CULVERTS - BILLINGS AREA	Culvert Replacement	PE		757.0						66.3	690.7	757.0
UPN 10427	Not all locations inside MPO bounda	RW					59.5			5.2	54.3	59.5
MDT	I-90 RP 413 to 528	Total	0.0	757.0	0.0	0.0	59.5	4,937.1	0.0	432.5	4,504.6	4,937.1
IM TOTAL			33,832.8	3,333.0	1,474.3	30,660.8	2,328.2	70,892.1	0.0	12,484.9	130,036.5	142,521.3

modified to actuals final voucher

updated estimate to match tcp

added RW phase
moved to 28 from 27

Funding projections are based on best available information and are subject to change given current funding uncertainties and unknown impacts of future congressional or other federal actions.

Federal program funding availability may impact the scheduling of projects. Funding will be subject to the obligation limitation set by the annual appropriations process.

*IM is a state sub-allocated program funded by the federal National Highway Performance Program.

CN estimates include CE costs

National Highway (NH)*

Funding shown in thousands of dollars

Project	Description	Phase	Funding						Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor													
MDT-PREVENTATIVE MAINTENANCE - NH	Maintenance - Striping, Durable Pavement, Durable Pavement Pres.	All		1,000.0	1,000.0	1,000.0	1,000.0	1,000.0		671.0	4,329.0	5,000.0	
MDT		Total		1,000.0	1,000.0	1,000.0	1,000.0	1,000.0		671.0	4,329.0	5,000.0	
Heights Main St.	Striping and Durable Pavement BR 1-90/US-87	OT		140.7						18.9	121.8	140.7	
UPN		Total	0.0	140.7	0.0	0.0	0.0	0.0	0.0	18.9	121.8	140.7	
MDT													
27th St.	Striping and Durable Pavement MT-3	OT		142.2						19.1	123.1	142.2	
UPN		Total	0.0	142.2	0.0	0.0	0.0	0.0	0.0	19.1	123.1	142.2	
MDT													
Zoo Drive Interchange	Striping and Durable Pavement Zoo Drive	OT		55.5						7.5	48.1	55.5	
UPN		Total	0.0	55.5	0.0	0.0	0.0	0.0	0.0	7.5	48.1	55.5	
MDT													
King Ave West	Striping and Durable Pavement King Ave West	OT		22.5						3.0	19.4	22.5	
UPN		Total	0.0	22.5	0.0	0.0	0.0	0.0	0.0	3.0	19.4	22.5	
MDT													
Old Laurel Road	Striping and Durable Pavement BR 1-90	OT		16.6						2.2	14.4	16.6	
UPN		Total	0.0	16.6	0.0	0.0	0.0	0.0	0.0	2.2	14.4	16.6	
MDT													
ICT Hwy 312 to MP 7.29	Striping and Durable Pavement US-87	OT				33.8				4.5	29.3	33.8	new striping and marking project
UPN		Total	0.0	0.0	0.0	33.8	0.0	0.0	0.0	4.5	29.3	33.8	
MDT													
Billings Bypass	New construction	PE		8,074.0	1,353.5	381.7				1,316.4	8,492.9	9,809.3	modified to actuals
UPN 4199-000		RW		3,573.0	4,500.0	10,000.0				2,425.4	15,647.6	18,073.0	modified to actuals
MDT		IC								0.0	0.0	0.0	
MDT		Total	11,647.0	4,500.0	1,353.5	10,381.7	0.0	0.0	0.0	3,741.8	24,140.5	27,882.3	
Billings Bypass - Yellowstone River Bridge	New construction of bridge over the Yellowstone River	IC		416.2	-90.8					43.7	281.8	325.5	
UPN 4199-003		CN		18,261.7	-1,621.0	-1,755.6				1,997.6	12,887.5	14,885.1	
MDT		Total	18,677.9	-1,621.0	-1,846.3	0.0	0.0	0.0	0.0	2,041.3	13,169.3	15,210.5	
Billings Bypass - Five Mile Rd to US 87	Construction of connection from Five Mile to US 87	IC						500.0		67.1	432.9	500.0	
UPN 4199-004		CN						14,719.6		1,975.4	12,744.2	14,719.6	
MDT		Total	0.0	0.0	0.0	0.0	0.0	15,219.6	0.0	2,042.5	13,177.1	15,219.6	
Billings Bypass - RR O'pass	New construction of RR O'pass	IC		764.4	469.2					165.6	1,068.1	1,233.6	
UPN 4199-005		CN		16,929.6	520.0					2,341.7	15,107.9	17,449.6	
MDT		Total	17,694.0	989.2	0.0	0.0	0.0	0.0	0.0	2,507.3	16,176.0	18,683.2	
Billings Bypass - Johnson Ln. Intch - RR O'pass	New construction of connection from Interchange to bridge	IC						1,000.0		134.2	865.8	1,000.0	moved to 28 from 25
UPN 4199-006		CN						8,252.8		1,107.5	7,145.3	8,252.8	moved to 28 from 25
MDT		Total	0.0	0.0	0.0	0.0	0.0	9,252.8	0.0	1,241.7	8,011.1	9,252.8	
Billings Bypass - Johnson Lane Intch	Reconstruction of existing Interchange	IC		4,121.1	-83.0	1,269.9				712.3	4,595.7	5,308.0	modified to actuals
UPN 4199-007		CN				3,800.0				510.0	3,290.0	3,800.0	moved to 26 from 25
MDT		Total	4,121.1	-83.0	0.0	5,069.9	0.0	0.0	0.0	1,222.3	7,885.7	9,108.0	
Billings Bypass - (RR O'pass to Yellowstone)	New construction of roadway connection from existing Interchange to the bridge over the railroad	CN		7,726.3	-722.5	-11.9				938.3	6,053.5	6,991.8	Final;
MDT		Total	7,726.3	-722.5	-11.9	0.0	0.0	0.0	0.0	938.3	6,053.5	6,991.8	
Exposition Dr. & 1st Ave. N. Blgs	Intersection Improvements	PE		1,537.3	2,334.8					539.8	3,482.3	4,022.0	modified to actuals
UPN 7908		RW				160.3				21.5	138.8	160.3	added RW phase
MDT		IC						2,585.8		347.0	2,238.8	2,585.8	added IC phase
MDT		Total	1,537.3	2,334.8	160.3	150.0	2,585.8	16,783.9	0.0	2,252.4	14,531.5	16,783.9	updated costs and moved to 28 from 27
Underpass Ave. Improvements	Intersection Improvements	PE								1,938.7	12,507.8	14,446.5	
UPN 8669		CN		10,763.2	3,531.5	151.8				1,938.7	12,507.8	14,446.5	
MDT		Total	10,763.2	3,531.5	151.8	0.0	0.0	0.0	0.0	1,938.7	12,507.8	14,446.5	
Airport Rd. & Main St. - Blgs	Intersection Improvements	PE		295.6						39.7	255.9	295.6	
UPN 8718		RW		2,229.8	350.7					346.3	2,234.2	2,580.5	
MDT		IC				61.2				8.2	53.0	61.2	
MDT		Total	2,525.4	350.7	0.0	61.2	250.0	9,403.1	0.0	1,261.9	8,141.2	9,403.1	updated estimated
1st Ave. N - N 9th to RR King	Reconstruction of roadway Major Rehab	PE		2,984.3		328.0				444.5	2,867.8	3,312.3	updated to actuals
UPN 9022		RW					59.8			8.0	51.8	59.8	
MDT		IC						213.2		28.6	184.6	213.2	
MDT		Total	2,984.3	0.0	328.0	59.8	213.2	23,905.7	0.0	3,208.1	20,697.6	23,905.7	updated estimate
Zoo Drive Improvements	Intersection Improvements	PE		499.7	492.7	13.9				135.0	871.3	1,006.3	Final;
UPN 9597		RW			225.0	-109.4				15.5	100.1	115.6	Final;
MDT		IC				54.3				1.3	8.6	9.9	Final;
MDT		Total	499.7	717.7	7,339.2	95.1	0.0	0.0	0.0	1,009.2	6,510.8	7,519.9	modified to actuals
1st Ave. N - RR King to Broadway	Reconstruction of roadway Major Rehab	PE		831.1						111.5	719.5	831.1	moved to 28 from 25
UPN 9880		RW						12.4		1.7	10.8	12.4	moved to 28 from 26
MDT		IC						255.6		34.3	221.3	255.6	
MDT		Total	831.1	0.0	0.0	0.0	0.0	268.1	0.0	147.5	951.6	1,099.1	
1st Ave. N - Broadway to Division	Reconstruction of roadway Major Rehab	PE		840.7						112.8	727.8	840.7	moved to 28 from 25
UPN 9881		RW						12.6		1.7	10.9	12.6	moved to 28 from 26
MDT		IC						282.0		37.8	244.2	282.0	
MDT		Total	840.7	0.0	0.0	0.0	0.0	294.6	0.0	152.4	982.9	1,135.3	
Montana Ave Crosswalks - BLGS	Sidewalk Improvements ADA compliance	PE		128.2						17.2	111.0	128.2	
UPN 9998		RW				25.6				3.4	22.2	25.6	
MDT		IC						51.3		6.9	44.4	51.3	moved to 27 from 28
MDT		Total	128.2	0.0	0.0	25.6	1,883.1	0.0	0.0	245.8	1,586.0	1,831.8	moved to 27 from 28 and decreased costs to estimate
Laurel RD / Montana Ave - BLGS	Sidewalk Improvements ADA compliance	CN								0.0	0.0	0.0	added new project split from Montana Ave Crosswalks
UPN 9998001		Total	0.0	0.0	0.0	0.0	2,706.5	0.0	0.0	363.2	2,343.3	2,706.5	
MDT													
1st Ave South - Billings	Pavement Preservation on 1st Ave South N-114 Mill & Fill with underseal and possible	PE			149.0					20.0	129.0	149.0	added new Project
UPN 10692		IC								6.7	43.3	50.0	
MDT		Total	0.0	0.0	149.0	0.0	50.0	2,368.7	0.0	317.9	2,050.8	2,368.7	
NH TOTAL			79,976.2	11,374.8	8,623.6	16,877.2	8,688.6	78,496.4	0.0	27,381.7	176,655.1	204,036.8	

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National Highway Freight Program (NHFP)*

Funding shown in thousands of dollars

Project Sponsor	Description	Phase	Funding						Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Billings Bypass (Johnson Lane Interchange) <i>MDT</i>	Reconstruction of existing Interchange	CN				14,357.7					8.76%	91.24%	14,357.7
											0.0	0.0	0.0
											0.0	0.0	0.0
			Total	0.0	0.0	0.0	14,357.7	0.0	0.0	0.0	0.0	1,257.7	13,100.0
I-90 Yellowstone River Bridges UPN 7972 <i>MDT</i>	Reconstruction of interstate bridges	CN	801.4								70.2	731.2	801.4
			17,325.0								1,517.7	15,807.3	17,325.0
											0.0	0.0	0.0
			Total	18,126.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,587.9	16,538.6
NHFP TOTAL			18,126.4	0.0	0.0	14,357.7	0.0	0.0	0.0	0.0	2,845.6	29,638.6	32,484.2

Funding projections are based on best available information and are subject to change given current funding uncertainties and unknown impacts of future congressional or other federal actions. Federal program funding availability may impact the scheduling of projects. Funding will be subject to the obligation limitation set by the annual appropriations process.

*NHFP is funded by the federal National Highway Performance Program.
CN estimates include CE costs

Surface Transportation Program Off System (STPX), Secondary (STPS), State Funded Construction (SFCN)

Funding shown in thousands of dollars

Project Sponsor	Description	Phase	Funding						Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
(Yellowstone River Bridge) UPN 4199003 BBP <i>MDT</i>	Construction of a new bridge over the Yellowstone River	CN	12.9								13.42%	86.58%	12.9
			Total	12.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.9	0.0
Lockwood Interchange UPN 9588 <i>MDT</i>	Interchange Improvement Study RP 450 to 455.3	OT	1,546.8								207.6	1,339.2	1,546.8
			Total	###	0.0	0.0	0.0	0.0	0.0	0.0	207.6	1,339.2	1,546.8
South Billings Blvd UPN <i>MDT</i>	Roadway Striping RP 0 to 1.3	OT	55.3								7.4	47.9	55.3
			Total	55.3	0.0	0.0	0.0	0.0	0.0	0.0	7.4	47.9	55.3
Johnson Lane Interchange UPN <i>MDT</i>	Roadway Striping RP 0 to 10.6	OT	10.6								1.4	9.2	10.6
			Total	10.6	0.0	0.0	0.0	0.0	0.0	0.0	1.4	9.2	10.6
88TH ST- SHILOH UPN <i>MDT</i>	Roadway Striping RP 10.8 to 17.7	OT			69.7						9.4	60.3	69.7
			Total	0.0	0.0	69.7	0.0	0.0	0.0	0.0	9.4	60.3	69.7
Mullowney Ln to Wise Ln UPN <i>MDT</i>	Roadway Striping RP 0 to 3.3	OT				64.6					8.7	56.0	64.6
			Total	0.0	0.0	0.0	64.6	0.0	0.0	0.0	8.7	56.0	64.6
SF 209 BILLINGS DIST SIGNS UPN 10299 Not all locations inside MPO Boundary <i>MDT</i>	Install safety improvement: signs, delineation, chevrons Various Locations	CN			110.8						14.9	95.9	110.8
			Total	0.0	0.0	110.8	0.0	0.0	0.0	0.0	14.9	95.9	110.8
TOTALS			###	0.0	180.5	64.6	0.0	0.0	0.0	0.0	262.2	1,608.5	1,870.7

New striping pavement marking

programmed in 25 not 26

CN estimates include CE costs

Surface Transportation Program Primary (STPP)

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor										13.42%	13.42%	86.58%	
No New Projects		Total											
STPP TOTALS			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CN estimates include CE costs

Railroad Crossing (RRS)

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor											10.00%	90.00%	
No New Projects		Total											
TOTALS			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CN estimates include CE costs

Highway Safety Improvement Program (HSIP)

Funding is shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor													
SAFETY PROJECTS	Various Locations	ALL		500.0	500.0	500.0	500.0	500.0		250.0	2,250.0		2,500.0
<i>MDT</i>		Total		500.0	500.0	500.0	500.0	500.0	0.0	250.0	2,250.0		2,500.0
SF 129 - Rndabout King 56th	Intersection Improvements - Roundabout	PE	923.3							92.3	831.0		923.3
UPN 8052		RW	1,530.0							153.0	1,377.0		1,530.0
		IC	415.1		-38.1					37.7	339.3		377.0
	ST SEC RTE 532	CN	4,050.1	94.5						414.5	3,730.2		4,144.7
<i>MDT</i>	RP 15.4 to 15.7	Total	6,918.6	94.5	-38.1	0.0	0.0	0.0	0.0	697.5	6,277.6		6,975.1
SF 169 RIMROCK & 62ND ST W	Intersection Improvements - Roundabout	PE	863.9	87.6						95.1	856.3		951.5
UPN 9383		IC	1,175.7	-108.5	161.7	-157.5				107.1	964.2		1,071.4
		CN	8,113.4	-1,412.9	212.8					691.3	6,222.0		6,913.4
<i>MDT</i>	U1034 RP 2.4-2.8	Total	10,153.0	-1,433.8	374.5	-157.5	0.0	0.0	0.0	893.6	8,042.6		8,936.2
ZOO DRIVE IMPROVEMENTS - BLG	Safety Improvements for Traffic Op	PE								0.0	0.0		0.0
UPN 9597		CN			500.0					50.0	450.0		500.0
<i>MDT</i>	Various Locations	Total	0.0	0.0	500.0	0.0	0.0	0.0	0.0	50.0	450.0		500.0
SF189 SOUTH D5 SAFETY IMPRV	Warning signs and flashers	PE	16.9							1.7	15.2		16.9
UPN 9912	Not all locations inside MPO boundary using 10% for costs	CN		170.2						17.0	153.2		170.2
<i>MDT</i>	Various Locations	Total	16.9	170.2	0.0	0.0	0.0	0.0	0.0	18.7	168.4		187.1
SF 209 BILLINGS DIST SIGNS	install safety improvement: signs, delineation, chevrons	PE	44.8		39.2					8.4	75.6		84.0
UPN 10299	Not all locations inside MPO Boundary	CN			678.2					67.8	610.4		678.2
<i>MDT</i>	Various Locations	Total	44.8	0.0	717.4	0.0	0.0	0.0	0.0	76.2	686.0		762.2
KING AVE & 48TH STREET - BLGS	address safety and operational issues at the intersection of King Avenue and 48th Street. The preferred alternative is a												
UPN 10643	U-1037 RP 16.5 to 16.7	CN						1,949.0		194.9	1,754.1		1,949.0
<i>MDT</i>		Total	0.0	0.0	0.0	0.0	0.0	1,949.0	0.0	194.9	1,754.1		1,949.0
HSIP Totals			17,133.4	-669.0	2,053.8	342.5	500.0	2,449.0	0.0	2,181.0	19,628.6		21,809.6

Final

Final

programmed in 25 not 26

updated estimates to TCP

CN estimates include CE costs

Bridge Program

Funding shown in thousands of dollars

Project	Description	Phase	Program Schedule						Funding Source			Total Project
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal	
Sponsor												
BBP-YELLOWSTONE RIVER UPN 4199-003 MDT	New bridge construction Statewide	CN	5,000.0							0.0	0.0	0.0
Total			5,000.0	0.0	0.0	0.0	0.0	0.0	0.0	671.0	4,329.0	5,000.0
I-90 Yellowstone River UPN 7972 MDT	RP 2.7 to 3.0	PE CN	4,833.3 63,376.3	2,074.9						648.6 8,783.6	4,184.6 56,667.7	4,833.3 65,451.3
Total			68,209.6	2,074.9	0.0	0.0	0.0	0.0	0.0	9,432.2	60,852.3	70,284.5
BR PRES COLUMBUS JOLIET AREA UPN 9552 One project in MPO MDT	Minor bridge rehab Using 33% for costs U-1033 RP 0.9 to 1.1	PE CN	168.9	30.7						26.8	172.9	199.6
Total			168.9	1,777.0	421.8	0.0	0.0	0.0	0.0	291.0	1,877.2	2,168.1
SHILOH RD / I-90 BRIDGE - BLGS UPN 9720 MDT	Bridge rehab U-1031 RO 5.0 to 5.3	PE IC CN	309.9							41.6 1.7	268.3 10.7	309.9 12.4
Total			309.9	0.0	0.0	0.0	0.0	0.0	7,882.0	1,057.8	6,824.3	7,882.0
MONTANA AVE OVERPASS- BILLINGS UPN 9913 MDT	Bridge rehab N113 RP1.82 TO 1.92	PE CN	43.3 1,092.3	-186.6						5.8 121.6	37.5 784.2	43.3 905.8
Total			1,135.6	-186.6	0.0	0.0	0.0	0.0	0.0	127.4	821.7	949.1
MONTANA AVE BRIDGES- BILLINGS UPN 10765 MDT	Bridge rehab Montana Ave over Laurel Road N113 RP1.7 TO 2.1	PE CN				1,996.3				267.9 2,210.2	1,728.4 14,259.6	1,996.3 16,469.8
Total			0.0	0.0	0.0	1,996.3	0.0	0.0	16,469.8	2,478.2	15,988.0	18,466.2
BBWA CANAL - N27TH ST BILLINGS UPN 10801 IC/CN outside of TIP timeframe MDT	Bridge replacement Canal on N2th Street N53 RP 2.4 to 2.7	PE RW IC CN				1,246.2				167.2 8.4	1,079.0 53.9	1,246.2 62.3
Total			0.0	0.0	0.0	1,246.2	0.0	0.0	62.3	0.0	0.0	0.0
BR TOTAL			74,824.1	3,665.4	421.8	3,242.5	0.0	24,426.6	0.0	14,303.1	92,277.3	106,580.4

Final
Removed IC not needed
modified to actuals

moved to 28 from 26
updated estimates to TCP

New Project

New Project

CN estimates include CE costs

Urban Pavement Preservation (UPP)

Funding shown in thousands of dollars

Project	Description	Phase	Program Schedule						Funding Source			Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal	
Sponsor												
URBAN PAVEMENT PRESERVATION MDT	Various Locations	ALL		500.0	500.0	500.0	500.0	500.0		335.5	2,164.5	2,500.0
Total				500.0	500.0	500.0	500.0	500.0	0.0	335.5	2,164.5	2,500.0
Shiloh RD-King Ave to Rimrock UPN 10703 MDT	Urban Pavement Preservation RP 0 to 2.98	PE CN			187.4			1,903.8		25.2 255.5	162.3 1,648.4	187.4 1,903.8
Total			0.0	0.0	187.4	0.0	1,903.8	0.0	0.0	280.6	1,810.6	2,091.3
State Avenue - Billings UPN 10704 MDT	Urban Pavement Preservation RP 0 to 1.5	PE CN			62.5		1,085.6			8.4 145.7	54.1 939.9	62.5 1,085.6
Total			0.0	0.0	62.5	0.0	1,085.6	0.0	0.0	154.1	994.0	1,148.0
UPP TOTAL			0.0	500.0	749.9	500.0	3,489.4	500.0	0.0	770.2	4,969.1	5,739.3

added new project

added new project

CN estimates include CE costs

Montana Air and Congestion Initiative (MACI)-Discretionary Program

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	Local 13.42%	State 13.42%	Federal 86.58%	
ADA COMPLIANCE		All		500.0	500.0	500.0	500.0	500.0		335.5	2,164.5	2,500.0
<i>MDT</i>	ADA upgrades	Total		500.0	500.0	500.0	500.0	500.0		335.5	2,164.5	2,500.0
TRAFFIC MITIGATION		All		250.0	250.0	250.0	250.0	250.0		167.8	1,082.3	1,250.0
<i>MDT</i>	Signalization	Total		250.0	250.0	250.0	250.0	250.0		167.8	1,082.3	1,250.0
Underpass Ave. Improvements	Intersection Improvements	PE	1,093.6							146.8	946.8	1,093.6
		RW	150.0	-17.4						17.8	114.8	132.6
		IC	452.9		-4.6					60.2	388.1	448.3
UPN 8669		CN	1,154.4							154.9	999.5	1,154.4
<i>MDT</i>	RP .51 to .72	Total	2,850.9	-17.4	-4.6	0.0	0.0	0.0	0.0	379.6	2,449.2	2,828.8
Mossmain Intch-West Blgs Inch	Pavement Preservation											
UPN 9198	Not all locations inside MPO bound	CN	554.4							74.4	480.0	554.4
<i>MDT</i>	I-90 RP 437.12 to 446.7	Total	554.4	0.0	0.0	0.0	0.0	0.0	0.0	74.4	480.0	554.4
ATSPM - MAIN STREET (BILLINGS)	INT UPGRADE/SIGNALS	OT	221.0							29.7	191.4	221.0
UPN 10400	Various Locations	Total	221.0	0.0	0.0	0.0	0.0	0.0	0.0	29.7	191.4	221.0
<i>MDT</i>												
BILLINGS DISTRICT ADA UPGRAD	ADA upgrades	PE	25.2	12.6	29.8	-6.2				8.2	53.2	61.5
	Not all locations inside MPO boundary											
UPN 10431	using 10% for costs	Total	25.2	12.6	29.8	-6.2	0.0	0.0	0.0	8.2	53.2	61.5
<i>MDT</i>	Various Locations											
King Ave Signals - Billings	INT UPGRADE/SIGNALS	OT		120.0						16.1	103.9	120.0
UPN 10585	Various Locations	Total	0.0	120.0	0.0	0.0	0.0	0.0	0.0	16.1	103.9	120.0
<i>MDT</i>												
Total			3,651.5	865.2	775.2	743.8	750.0	750.0	0.0	1,011.3	6,524.5	7,535.7

Final

updated costs to actuals final voucher

added project

CN estimates include CE costs

Carbon Reduction (CR) 50k-200k

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs		
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal			
Zoo Drive Improvements UPN 9597 <i>MDT</i>	Intersection Improvements I-90 RP 442.9 to 444.3 U-1011 RP 2.36 to 3.04	CN Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	removed cr funds
BILLINGS DISTRICT ADA UPGRAD UPN 10431 <i>MDT</i>	ADA upgrades Not all locations inside MPO boundary using 15% for costs Various Locations	PE CN Total	0.0	388.4	-9.6	57.0	0.0	0.0	0.0	58.5	377.3	435.8	435.8	modified to actuals
KING AVE & 48TH STREET - BLGS UPN 10643 <i>MDT</i>	address safety and operational issues at the intersection of King Avenue and 48th Street. The preferred alternative is a U-1037 RP 16.5 to 16.7	PE RW IC CN Total	0.0	0.0	600.0	0.0	400.0	400.0	2,316.6	0.0	445.1	2,871.5	3,316.6	updated costs
Total			0.0	388.4	590.4	57.0	400.0	2,316.6	0.0	503.6	3,248.8	3,752.4		

Transportation Alternatives

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	Local 13.42%	State 13.42%	Federal 86.58%	
Sponsor												
Carryover				5,945.0	5,698.4	5,626.5	6,232.0	7,022.0				
Estimated Allocation (TA)				790.0	790.0	790.0	790.0	790.0				
STAGECOACH TRAIL - BILLINGS	Shared use path	PE		931.2					125.0		806.2	931.2
UPN 10432		CN						5,348.7	717.8		4,630.9	5,348.7
<i>MDT/Local</i>	Skyline Trail to Zimmerman Trail	Total	0.0	931.2	0.0	0.0	0.0	5,348.7	842.8	0.0	5,437.1	6,279.9
SIDEWALKS - LOCKWOOD	Sidewalk construction	PE		266.1					35.7		230.4	266.1
UPN 10433		CN			995.4				133.6		861.8	995.4
<i>MDT/Local</i>	Old Hardin Road	Total	0.0	266.1	995.4	0.0	0.0	0.0	169.3	0.0	1,092.2	1,261.5
Johnson Lane -SIDEWALKS	Sidewalk construction	PE				50.0			6.7		43.3	50.0
UPN 10721		CN						195.0	26.2		168.8	195.0
<i>MDT/Local</i>	RP 0 to RP 0.6	Total	0.0	0.0	0.0	50.0	0.0	195.0	32.9	0.0	212.1	245.0
Safe Routes to Schools - BLGS	Improve routes in Billings School District	PE				163.0			21.9		141.2	163.0
UPN 10722		CN						1,329.3	178.4		1,150.9	1,329.3
<i>MDT/Local</i>	Various locations	Total	0.0	0.0	0.0	163.0	0.0	1,329.3	200.3	0.0	1,292.0	1,492.3
TA TOTALS			0.0	1,197.3	995.4	213.0	0.0	6,872.9	1,043.0	0.0	6,729.1	7,772.2
Federal			0.0	1,036.6	861.8	184.5	0.0	5,950.6				
Local			0.0	160.7	133.6	28.6	0.0	922.3				
Balance				5,698.4	5,626.5	6,232.0	7,022.0	1,861.3				

decreased estimate to award amount

New Project

New Project

CN estimates include CE costs

FWP Recreational Trails Program

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal	
Rec Trails Program <i>Local</i>	Trail Construction Various	All Total	0.0	0.0	0.0	125.0 125.0	125.0 125.0	125.0 125.0	75.0 75.0	0% 0.0	300.0 300.0	375.0 375.0
Rose Park Trail, Phase 1 <i>City of Billings/TrailNet</i>	New Trail Construction Local match sourced from cash in-kind contributions	PE CN Total	25.0 100.0 125.0	0.0 0.0 0.0	0.0 0.0 0.0	0 0 0	0 0 0	0 0 0	5.0 20.0 25.0	0% 0% 0.0	20.0 80.0 100.0	25.0 100.0 125.0
Rose Park Trail, Phase 2 <i>City of Billings/TrailNet</i>	Continuation of Rose Park Trail Local match sourced from cash in-kind contributions	PE CN Total	0.0 0.0 0.0	25.0 74.6 99.6	0.0 0.0 0.0	0 0 0	0 0 0	0 0 0	5.0 24.6 29.6	0% 0% 0.0	20.0 50.0 70.0	25.0 74.6 99.6
Lillis Park Trail Connector <i>City of Billings</i>	Trail reconstruction	PE CN Total	0.0 0.0 0.0	25.0 100.0 125.0	0.0 0.0 0.0	0 0 0	0 0 0	0 0 0	5.0 20.0 25.0	0% 0% 0.0	20.0 80.0 100.0	25.0 100.0 125.0
Big Ditch Trail Extension <i>City of Billings</i>	Trail reconstruction	PE CN Total	0.0 0.0 0.0	25.0 100.0 125.0	0.0 0.0 0.0	0 0 0	0 0 0	0 0 0	5.0 20.0 25.0	0% 0% 0.0	20.0 80.0 100.0	25.0 100.0 125.0
Southern Riverfront Park Trail <i>City of Billings</i>	Trail reconstruction	PE CN Total	0.0 0.0 0.0	0.0 0.0 0.0	25.0 100.0 125.0	0 0 0	0 0 0	0 0 0	5.0 20.0 25.0	0% 0% 0.0	20.0 80.0 100.0	25.0 100.0 125.0
Trailside Education Signs* <i>City of Billings/Trailnet</i>	Trail Signage	PE CN Total	0.0 0.0 0.0	0.0 0.0 0.0	59.1 59.1 59.1	0 0 0	0 0 0	0 0 0	0.0 11.8 11.8	0% 0% 0.0	0.0 47.2 47.2	0.0 59.1 59.1
Total			125.0	349.6	184.1	125.0	125.0	125.0	216.4	0.0	817.2	1,033.7

*pending award

Earmarks

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor										13.42%	13.42%	86.58%	
Billings Bypass	UPN41990	Environmental Impact Statement	PE	14,598.6							1,959.1	12,639.5	14,598.6
		Preliminary Engineering	RW	7,847.0							1,053.1	6,793.9	7,847.0
<i>MDT</i>		Right of Way Acquisition	Total	22,445.6	0.0	0.0	0.0	0.0	0.0	0.0	3,012.2	19,433.4	22,445.6
			Total	22,445.6	0.0	0.0	0.0	0.0	0.0	0.0	3,012.2	19,433.4	22,445.6

CN estimates include CE costs

Federal Transit Administration Section 5307*

Funding shown in thousands of dollars

Project	Description	Phase						Funding Source			Total Estimated Obligation
			2024	2025	2026	2027	2028	Local 20%	State	Federal 80%	
Sponsor											
<i>Carryover</i>			5,107.7	2,859.7	2,859.7	2,859.7	2,848.9				
<i>Allocation (Estimated)(Fed Share)</i>			2,859.7	2,905.0	2,970.9	2,970.9	2,970.9				
Bus & Passenger Amenities/Equipment											
Supportive Equipment											
Facilities/Amenities											
Security Related Capital (1% minimum)	*Used 5339 for Security in FY25/26		10.5				36.0	36.0	16.5		66.0
<i>Met Transi</i>		Total	10.5	0.0	0.0	36.0	36.0	16.5	66.0		82.5
Transit Operations***											
Fleet/Facility Preventive Maintenance	80/20 Match		1,557.1	862.5	900.0	900.0	900.0	1,023.9		4,095.7	5,119.6
ADA Paratransit (20% of apportionment)	80/20 Match		1,461.0	726.3	744.4	744.4	744.4	884.1		3,536.4	4,420.5
Fixed Route	50/50 Match		5,369.8	3,268.1	3,310.6	3,274.6	3,274.6	9,248.9		9,248.9	18,497.7
<i>Met Transi</i>		Total	8,387.8	4,856.8	4,955.1	4,919.1	4,919.1	11,156.9	0.0	16,880.9	28,037.8
Purchase buses											
Replacement Buses											
Expansion Buses											
<i>Met Transi</i>		Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SECTION 5307 TOTALS*			8,398.3	4,856.8	4,955.1	4,955.1	4,955.1	11,173.4	0.0	16,946.9	28,120.3
Federal			5,107.7	2,905.0	2,970.9	2,981.7	2,981.7				
Local			3,290.6	1,951.8	1,984.2	1,973.4	1,973.4				
Ending Balance (Federal)			2,859.7	2,859.7	2,859.7	2,848.9	2,838.1				

Full 5307 apportionment (FY2026)

\$2,970,851

Project 1 - Operating Assistance	FTA Amount	Local	Total	FTA Share	Local Share
ALI 30.09.01 - Up to 50% share Operating Assistance	\$ 1,656,681	\$ 1,656,681	\$ 3,313,362	50.00%	50.00%
ALI 30.09.01 - Up to 50% share Operating Assistance (1% for Security)	\$ -	\$ -	\$ -	80.00%	20.00% * used 5339 funds in FY26 for security requirement
ALI 11.7C.00 - Non Fixed Route ADA Paratransit Service	\$ 594,170	\$ 148,543	\$ 742,713	80.00%	20.00% *up to 20% of total allocation if 3 criteria is met
ALI 11.7A.00 - Preventative Maintenance	\$ 720,000	\$ 180,000	\$ 900,000	80.00%	20.00%
Total P2	\$ 2,970,851	\$ 1,985,224	\$ 4,956,075		

*FTA administered funds are not subject to indirect cost recovery. 5307 funds may be supplemented by Small Transit Intensive Cities (STIC) funds based on transit system performance for the urbanized area (MET).

***Total local funding reflects an overmatch on federal share. Operations Match ratio is 50/50.

Federal Transit Administration Section 5339

Funding shown in thousands of dollars

Project	Description	Phase						Funding Source			Total Estimated Obligation	
			2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor												
<i>Carryover</i>			1,011.2	753.1	1,173.4	431.8	811.8					
<i>Allocation (Estimated)</i>			735.0	758.7	780.0	780.0	780.0					
Rolling Stock	Replacement		602.1	0.0	0.0							
<i>Met Transit</i>	85/15 match for ADA		602.1	0.0	0.0	0.0	0.0	90.3		511.8	602.1	
Bus and Bus Technology	Upgrade		182.9	38.6	118.9							
<i>Met Transit</i>			182.9	38.6	118.9	0.0	0.0	68.1		272.3	340.4	
Bus Facilities and Support	Facility items, construction, technology, amenities, support equipment, etc.		418.8	88.9	725.0	400.0						
<i>Met Transit</i>				90.0	610.0	50.0						
				18.1		50.0						
			418.8	197.0	1,335.0	500.0	50.0	500.2		2,000.6	2,500.8	
Bus Facilities Security System	Upgrade			187.3	448.2							
<i>Met Transit</i>				187.3	448.2	0.0	0.0	127.1		508.4	635.6	
Bus, Facilities, and Technology	Upgrade facilities, replace buses, add technology		0.0	187.3	448.2	0.0	0.0	1,350.0	270.0	1,080.0	1,350.0	
<i>Met Transit</i>			0.0	187.3	448.2	0.0	0.0	1,350.0	270.0	1,080.0	1,350.0	
SECTION 5339 TOTALS			1,203.7	423.0	1,902.1	500.0	1,400.0	1,055.6	0.0	4,373.1	5,428.7	
Federal			993.1	338.4	1,521.7	400.0	1,120.0					
Local			210.6	84.6	380.4	100.0	280.0					
Balance			753.1	1,173.4	431.8	811.8	471.8					

updated allocation

PROJECTS

	2024	2025	2026	2027	2028
Overage bus diesel/electric					
AVL system		Bus Sign Controllers	Bus Pass Card Readers, APCs		
Facility Remodel		2 Support Vehicles, Generator, Shop Heaters	Transfer Center Amenities, Bus Wash Rehab	Transfer Center Amenities, Fork Lift, Bus Stops	Bus Stops
		Admin Building Security Cameras	Transfer Center Security Cameras		

Federal Transit Administration Section 5339 Discretionary Funding

Project	Description	Phase						Funding Source			Total Estimated Obligation
			2024	2025	2026	2027	2028	Local	State	Federal	
Sponsor											
<i>Carryover</i>			6,904.6								
<i>Allocation</i>	5339b/LowNo		0.0	910.3							
Rollingstock	Replace buses		5,499.8		1,000.0						
<i>MET Transit</i>	85/15 match for ADA	Total	5,499.8	0.0	1,000.0	0.0	0.0	975.0		5,524.8	6,499.8
Bus and Bus Facilities	Technology		465.0		70.0						
<i>MET Transit</i>	Facility Remodel		2,196.0								
	Training		20.1		5.4						
	Training Capital		210.8								
	80/20 Rate	Total	2,891.9	0.0	75.4	0.0	0.0	578.4		2,313.5	2,891.9
SECTION 5339 TOTALS			8,391.7	0.0	1,075.4	0.0	0.0	1,553.3		7,838.3	9,391.7
Federal			6,904.6	0.0	910.3	0.0	0.0				
Local			1,487.0	0.0	165.1	0.0	0.0				
Balance			0.0	910.3	0.0	0.0	0.0				

*Capital 80/20 Match, ADA Capital 85/15 Match

PROJECTS

	2024	2025	2026	2027	2028
4 Diesel Buses	4				
Electric Buses			Vans (moved from FY25)		
Electric Chargers			Vehicle Lift, Electric Bus Scaffolding, Maint. Staff Training (moved from FY25)		
METroplex Remodel	Bus				
Simulator & Training					

Federal Transit Administration Section 5310

Funding shown in thousands of dollars

Project	Description	Phase	Funding Source					Total Estimated		
			2024	2025	2026	2027	2028			
Sponsor										
<i>Carryover</i>			0.0	22.0	90.0	124.2	223.4			
<i>Allocation (Estimated)</i>			225.9	275.3	255.7	225.9	225.9			
Paratransit Vehicles	Purchase vehicles (ADA and Cutaway) for and other Coordination members as applicable	Purch.	128.0	143.8	104.7			56.5	320.0	376.4
		Purch.	111.9	100.0	50.0			52.4	209.5	261.9
<i>Met Transit and Coordination Group</i>			239.9	243.8	154.7	0.0	0.0	95.7	542.6	638.3
Traditional and Non-Traditional Projects	Projects to support identified community need but may be also be used for vehicles	Purch.	0.0			158.4	282.5	88.2	352.7	440.9
		Purch.						0.0	0.0	0.0
		Purch.						0.0	0.0	0.0
		Purch.						0.0	0.0	0.0
<i>Coordination Members</i>			0.0	0.0	0.0	158.4	282.5	88.2	352.7	440.9
Bus Stop Improvements	Upgrade bus stop amenities	Purch.			112.5			22.5	90.0	112.5
<i>MET Transit</i>	Will be sub-allocated to MET Transit		0.0	0.0	112.5	0.0	0.0	16.9	95.6	112.5
SECTION 5310 TOTALS			239.9	243.8	267.2	158.4	282.5	200.8	990.9	1,191.7
Federal			203.9	207.2	221.5	126.7	226.0			
Local			36.0	36.6	45.7	31.7	56.5			
Balance			22.0	90.0	124.2	223.4	223.3			

2024	2025	2026	2027	2028
MET ADA Transit Van	2 COR vans	1 COR ADA van 1 COR non-ADA vehicle		
YCCOA ADA Transit Van (updated van costs)	2 BSSS mini-vans			
			Projects determined based on annual Coordination	Projects determined based on annual Coordination
		MET infrastructure improvements (moved from FY25 to FY26)		

Funding dependent on the outcome of a competitive process and funding availability.

Transade (State Funded)

Funding shown in thousands of dollars

Project	Description	Phase	Funding Source					State Funded	Total Estimated
			2024	2025	2026	2027	2028		
Sponsor									
<i>Carryover</i>			0.0	0.0	0.0	0.0	0.0		
<i>Allocation (Estimated)</i>			348.9	253.8	214.7	214.7	214.7	1,246.7	
Transit Operations	Operating		348.9	253.8	214.7	214.7	214.7	1,246.7	
<i>Met Transit</i>			348.9	253.8	214.7	214.7	214.7	1,246.7	
STATE TOTALS			0.0	0.0	0.0	0.0	0.0	1,246.7	

Public Comment

The MPO will post the draft Transportation Improvement Program (TIP) to the Transportation Resource page of the City of Billings Website. Link to the page is: <https://www.billingsmt.gov/2336/Transportation-Resources> .

The MPO published a Public Hearing Notice in the Yellowstone County News on April 10 & April 17, 2026, noting that public comment will be received on the Transportation Improvement Plan at the Yellowstone County Planning Board Meeting scheduled for Tuesday, April 28, 2026.

Below is a list of the Public Meetings that allow for public review and comment on the Transportation Improvement Program. Each meeting minutes note the number of public attending and comments received from any public:

Technical Advisory Committee:	April 9, 2026
YC Planning Board:	April 28, 2026
YC Board of Commissioners:	May 12, 2026
Billings City Council:	April 27, 2026
Policy Coordinating Committee:	May 19, 2026 Attendance at Meeting: PCC Members, Staff, MDT Planning; Public Comment period

Public Participation Plan City of Billings MET Transit and the Billings MPO

The purpose of the City of Billings MET Transit Public Participation Plan is to ensure and improve access to MET's decision-making process for all members of the public including low-income, minority, and other disadvantaged populations. MET endeavors to provide opportunities for the public to assist and provide input on transit projects in regard to social, environmental, and economic impacts to the area's population.

The Public Participation Plan identifies methods for informing and involving the public in the decision-making process, including minority and limited-English proficiency (LEP) populations. Methods of informing the public include, but are not limited to, printed material, partner and community outreach, press releases, paid advertising, transit advertising, and the MET website and social media platforms. Methods of involving the public include, but are not limited to, public meetings, public hearings, surveys, Aviation and Transit Commission meetings, and multiple feedback options.

To download a copy of MET's updated (April 2025) Public Participation Plan, insert the link below in your browser

<https://www.billingsmt.gov/DocumentCenter/View/53562/2025-TITLE-VI-AND-PPP>

The Billings Metropolitan Planning Organization's (MPOs) [Public Participation Plan](#) (PPP) is intended to meet the Federal Highway Act of 1973 requirement to provide a cooperative, comprehensive, and continuing transportation planning and decision-making process. The MPO acts as a liaison between local governments, communities, residents, and the State and Federal Departments of Transportation (DOTs). The MPO currently operates under the U.S. DOT's IIJA (Infrastructure Investment and Jobs Act).

The Yellowstone County Planning Board (YCPB) is the designated MPO and oversees transportation planning for the Billings Urban Area. The area encompasses the City of Billings as well as a planning area extending approximately 4.5 miles outside the city limits.

The MPO is committed to the concept that planning is a community-based effort. In support of this, the MPO Public Participation Plan (PPP), defines a process that ensures reasonable opportunity for all interested parties to participate in the planning process.

This PPP serves two main purposes. The first is to provide the public with a guidebook for how and when they can participate in local and regional transportation planning and decision-making. Secondly, it outlines the policies and procedures for public engagement committed by the MPO. It is the intent of the MPO to consistently inform and engage the public throughout the regional planning process from the development of planning policies to the conceptual stages of planning projects through the adoption of formal planning documents.

Certification

The Billings Metropolitan Planning Organization for the Billings, Montana, urbanized area hereby certifies that the transportation planning process is addressing the major issues in the metropolitan planning area and is being conducted in accordance with all applicable requirements of:

- I. 49 USC. Section 5303 and 23 USC. 134 and CFR 450.336;
- II. Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d-1) and 49 CFR part 21;
- III. 49 U.S.C. 5332, prohibiting discrimination on the basis of race, color, creed, national origin, sex, or age in employment or business opportunity;
- IV. Section 1101(b) of the FAST Act (Pub. L. 114-357) and 49 CFR part 26 regarding the involvement of disadvantaged business enterprises in DOT funded projects;
- V. 23 CFR part 230, regarding the implementation of an equal employment opportunity program on Federal and Federal-aid highway construction contracts;
- VI. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) and 49 CFR parts 27, 37, and 38;
- VII. The Older Americans Act, as amended (42 U.S.C. 6101), prohibiting discrimination on the basis of age in programs or activities receiving Federal financial assistance;
- VIII. Section 324 of title 23 U.S.C. regarding the prohibition of discrimination based on gender; and
- IX. Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) and 49 CFR part 27 regarding discrimination against individuals with disabilities.

Billings, Montana
Metropolitan Planning Organization

John Staley, President
Yellowstone County Board of Planning

**Billings Metropolitan Planning Organization
Draft FFY 2024 - 2028 TIP AMD3
Date: Jan 03, 2025**

PROJECT	UPN	SCOPE	COMMENTS	PERFORMANCE MEASURES
CMAQ				
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River		
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		System performance - Efficiency
Grand Ave 41st to 62nd		Reconstruction of existing roadway	Possible LAG project	System performance - Efficiency
STPU				
Billings Bypass - Five Mile Road	4199-002	Reconstruction of roadway	Completed	System performance - Efficiency
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River		
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		System performance - Efficiency
Grand Ave 41st to 62nd		Reconstruction of existing roadway	Possible LAG project	System performance - Efficiency
IM				
MDT Preventative Maintenance		Pavement Preservation and Striping	Placeholder to allow project nominations	
I-90 Yellowstone River - Billings	7972	Bridge Replacement		Bridge condition
Mossmain Intch - West Blgs Intch	9198	Pavement Preservation w/ signal improvements at off ramps		Pavement condition
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		Safety - Reduce Fatalities & Serious Injuries
Lockwood Intechange - Billings	9978	Reconstruction of existing Interchange to a diverging diamond design		Safety - Reduce Fatalities & Serious Injuries
I-90 CULVERTS - BILLINGS AREA	10427	Culvert replacement	Not all locations inside MPO boundary	
NH				
MDT Preventative Maintenance		Pavement Preservation and Striping	Placeholder to allow project nominations	
Billings Bypass	4199-000	New Construction	Covers PE & IC	
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River		
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		
Billings Bypass - RR O'pass	4199-005	New construction of bridge over the railroad		
Billings Bypass - Johnson Ln Intch-RR O'pass	4199-008	New construction of roadway connection from existing Interchange to the bridge over the railroad		Safety - Reduce Fatalities & Serious Injuries
Billings Bypass - Johnson Lane Intch - RR O'pass	4199-006	New construction of connection from interchange to the railroad overpass		
Billings Bypass - Five Mile Road to US 87	4199-004	New construction of connection from Five Mile to US 87		
Exposition Dr. & 1st Ave N. Blgs	7908	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries
Underpass Ave. Improvements	8669	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries
Airport Rd. & Main St. - Blgns	8718	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries
1st Ave. N - N 9th to RR Xing	9022	Major Reconstruction		
Zoo Drive Improvements	9597	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries
1st Ave. N - RR Xing to Broadway	9880	Major Reconstruction		
1st Ave. N - Broadway to Division	9881	Major Reconstruction		
Montana Ave Crosswalks - Billings	9998	Sidewalk Improvements ADA Compliance		Safety - Reduce Fatalities & Serious Injuries
Laurel RD / Montana Ave - BLGS	9998001	Sidewalk Improvements ADA Compliance	Split from MT Ave Crosswalks	Safety - Reduce Fatalities & Serious Injuries
1st Ave South - Billings	10692	Pavement Preservation on 1st Ave South N-114 Mill & Fill with underseal and possible Digouts.		
JCT Hwy 312 to MP 7.29		Striping and Durable Pavement Markings		
NHFP				
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		
I-90 Yellowstone River - Billings	7972	Bridge Replacement		Freight Network
STPX, STPS, SFCN				
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River		
Lockwood Interchange	9588	Interchange Improvements Study		
Jct Main & 87 to Worden		Roadway Striping		
SF 209 BILLINGS DIST SIGNS	10299	install safety improvement: signs, delineation, chevrons		
Muldowney Ln to Wise Ln		Roadway Striping		
STPP				
RRS				
HSIP				
Various Safety Projects			Placeholder to allow project nominations	
SF 129 - Rndabout King 56th	8052	Intersection Improvements - Roundabout		Safety - Reduce Fatalities & Serious Injuries
SF 169 Rimrock & 62nd St. W	9383		Roundabout	Safety - Reduce Fatalities & Serious Injuries
Zoo Drive Improvements	9597	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries
SF 189 South D5 Safety Imprv	9912	Intersection Safety Improvements		Safety - Reduce Fatalities & Serious Injuries
SF 209 BILLINGS DIST SIGNS	10299	install safety improvement: signs, delineation, chevrons	Several intersections West End Billings using 10% for costs	Safety - Reduce Fatalities & Serious Injuries
KING AVE & 48TH STREET - BLGS	10643	Roundabout safety and operational improvements	split funded	Safety - Reduce Fatalities & Serious Injuries
BR				
Billings Bypass - Yellowstone River	4199-003	New construction of bridge over the Yellowstone River		
I-90 Yellowstone River - Billings	7972	Bridge Replacement		
BR PRES COLUMBUS JOLIET AREA	9552	Minor bridge rehab	One project in MPO Boundary	
SHILOH RD / I-90 BRIDGE - BLGS	9720	Bridge rehab		Bridge condition
MONTANA AVE OVERPASS- BILLINGS	9913	Bridge rehab		Bridge condition
MONTANA AVE BRIDGES- BILLINGS	10765	Bridge rehab		Bridge condition
UPP				
Various Preservation Projects		Pavement preservation	Placeholder to allow project nominations	
Shiloh Rd - King Ave to Rimrock	10703	Pavement preservation		
State Avenue - Billings	10704	Pavement preservation		
MACI				
MDT MACI		Statewide CMAQ - Various	Placeholder to allow project nominations	
MDT MACI		Statewide CMAQ - ADA Compliance	Placeholder to allow project nominations	
Underpass Ave. Improvements	8669	Intersection Improvements		
Mossmain Intch - West Blgs Intch	9198	Pavement Preservation w/ signal improvements at off ramps	Partially funded IM is primary	
ATSPM - MAIN STREET (BILLINGS)	10400	Signal Improvements		
BILLINGS DISTRICT ADA UPGRADES	10431	Signal Improvements	CE only	
King Ave Signals - Billings	10585	INT upgrades/signals		
CR				
BILLINGS DISTRICT ADA UPGRADES	10431	Signal Improvements	CN only	
Zoo Drive Improvements	9597	Intersection Improvements	CN only	
KING AVE & 48TH STREET - BLGS	10643	Roundabout safety and operational improvements	split funded	
TA				
Stagecoach Trail		Shared use path		Non-Motorized Fatalities and Serious Injuries
Old Hardin Sidewalk		Sidewalk construction		Non-Motorized Fatalities and Serious Injuries
Johnson Ln - Sidewalks	10721	Sidewalk construction		Non-Motorized Fatalities and Serious Injuries
Safe Routes to Schools - BLGS	10722	Improve routes in Billings school districts		Non-Motorized Fatalities and Serious Injuries
FWP				
Rose Park Trail, Phase 1	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local (In-Kind) \$25,000	
Rose Park Trail, Phase 2	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Lillis Park Trail Connector	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Big Ditch Trail Extension	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Southern Riverfront Park Trail*	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Trailside Education Signs*	Local	Trail Signage	Recreational Trails Program \$47,000 Local \$12,000	
EARMARK				
Billings Bypass	4199-001	New Construction	Covers Environmental Doc., PE, RW	
FTA 5307				
FTA 5339				
FTA 5310				
FTA 5311				
100 % LOCALLY FUNDED PROJECTS				
Various Projects		Annual Operation and Maintenance		
State Funded Maintenance				
Various Maintenance Projects		Maintenance		

New project

New project

New project

New project

New project

New project

New project

New project

New project

New project

Estimated Revenue

Amounts shown in thousands of dollars

Federal						STP/S*/X*										
Fiscal Year	CMAQ**	STPU*	IM*	NH*	NHFP*	SFCN	STPP*	RRS	HSIP*	BR*	UPP*	MACI*	CR*	TA*	FWP	SUBTOTAL
<i>Carryover</i>	7,186,935.	12,767,397.												5,945,000.		25,899,332.7
FFY 2024	1,490,380.	2,551,754.0	3,333,038.0	11,374,806.	0.0	0.0	0.0	0.0	-669,026.0	3,665,411.0	500,000.0	865,184.0	388,370.0	789,957.0	349,600.0	24,639,474.7
FFY 2025	1,520,187.	2,551,754.0	1,474,345.0	8,623,574.0	0.0	180,454.0	0.0	0.0	2,053,765.	421,806.0	749,900.0	775,241.0	590,428.0	789,957.0	184,059.0	19,915,470.0
FFY 2026	1,550,591.	2,551,754.0	30,660,808.	16,877,216.	14,357,738.0	64,638.0	0.0	0.0	342,473.0	3,242,534.0	500,000.0	743,787.0	56,990.0	789,957.0	125,000.0	71,863,486.0
FFY 2027	1,550,591.	2,551,754.0	2,328,242.0	8,688,566.0	0.0	0.0	0.0	0.0	500,000.0	0.0	3,489,403.0	750,000.0	400,000.0	789,957.0	125,000.0	21,173,513.0
FFY 2028	1,550,591.	2,551,754.0	70,892,144.	78,496,440.	0.0	0.0	0.0	0.0	2,448,973.	24,426,550.0	500,000.0	750,000.0	2,316,590.	789,957.0	125,000.0	184,847,999.0
TOTAL	14,849,275	25,526,167.	108,688,577.	124,060,602	14,357,738.0	245,092.0	0.0	0.0	4,676,185.	31,756,301.0	5,739,303.0	3,884,212.0	3,752,378.	9,894,785.	908,659.0	348,339,275.

Federal	FTA 5307		FTA 5339		DISCRETIONAR 5339		FTA 5310		GAS TAX			
Fiscal Year	Federal	Local	Federal	Local	Federal	Local	Federal	Local	CITY	COUNTY	OTHER***	TOTAL
<i>Carryover</i>	5,107,737.0		1,011,182.0		6,904,600.0		0.0					38,922,851.7
FFY 2024	2,859,705.	3,290,597.2	735,024.0	210,639.0	910,300.0	1,487,043.8	203,906.5	35,983.5	1,739,820.	313,793.0	1,222,251.0	37,648,537.6
FFY 2025	2,847,000.	1,915,100.	758,665.0	179,998.4	0.0	165,075.0	297,187.5	59,062.5	1,739,820.	313,793.0	1,222,251.0	29,413,422.4
FFY 2026	2,847,000.	1,902,450.	758,665.0	196,162.0	0.0	0.0	270,800.0	67,700.0	1,726,777.	324,800.0	2,043,131.0	82,000,971.0
FFY 2027	2,847,000.	1,880,850.	758,665.0	113,900.0	0.0	0.0	180,800.0	45,200.0	1,779,937.	299,060.0	1,222,251.0	30,301,176.0
FFY 2028	2,847,000.	1,880,850.	758,665.0	280,000.0	0.0	0.0	180,800.0	45,200.0	1,726,777.	324,800.0	1,675,956.1	194,568,047.1
TOTAL	19,355,442	10,869,847.	4,780,866.0	980,699.4	7,814,900.0	1,652,118.8	1,133,494	253,146.	8,713,131.	1,576,246.0	7,385,840.1	412,855,005.9

Funding projections are based on best available information and are subject to change given current funding uncertainties and unknown impacts of future congressional or other federal actions. Federal program funding availability may impact the scheduling of projects. Funding beyond 2024 will be subject to the obligation limitation set by the annual appropriations process.

NOTES:

These estimates are based on historical data and projections.

* STPU, IM, NH, NHFP, STPX, STPP, HSIP, BR, UPP, MACI, and TA funds include match.

**Reflective of federal share only.

***Operations and Maintenance funds (average of Fiscal Years 2023-2025),TRANSaDE, and CMAQ (match) makes up OTHER

Congestion Mitigation & Air Quality (CMAQ)

Funding shown in thousands of dollars

Unless otherwise indicated the matching ratios for these projects are 86.58% Federal and 13.42% Match

Project	Description	Phase							Funding Source			Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal	
<i>Carryover (Federal)</i>				7,186,935.	8,677,315.0	10,197,502	6,380,133.	7,930,724.				
<i>Estimated allocation (Federal)</i>				1,490,380.	1,520,187.0	1,550,591.	1,550,591.	1,550,591.				
Billings Bypass (Yellowstone River Bridge) <i>UPN4199003</i> <i>MDT</i>	Construction of a new bridge over the Yellowstone River	CN	5,000,000.0							671,000.0	4,329,000.0	5,000,000.0
		Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	671,000.	4,329,000.0	5,000,000.0
Billings Bypass (Johnson Lane Interchange) <i>UPN4199007</i> <i>MDT</i>	Reconstruction of existing Interchange	CN				6,200,000.				832,040.0	5,367,960.0	6,200,000.0
		Total	0.0	0.0	0.0	6,200,000	0.0	0.0	0.0	832,040.	5,367,960.0	6,200,000.0
Grand Avenue <i>UPN 10702</i> <i>Possible LAG with city</i>	Reconstruction of existing roadway 41st to 62nd street 2.6 miles	CN						3,426,776.		459,873.3	2,966,902.7	3,426,776.0
		Total	0.0	0.0	0.0	0.0	0.0	3,426,776	0.0	459,873.	2,966,902.7	3,426,776.0
Service Operations* Operating - 80% match <i>MET Transit</i>	Transfer from CMAQ to 5307	Transit							0.0		0.0	0.0
		Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Project Adjustments/Closures												
			CMAQ Total	0.0	0.0	6,200,000	0.0	3,426,776	0.0	1,962,91	12,663,862.	14,626,776.0
			Federal	0.0	0.0	5,367,960	0.0	2,966,902				
			State	0.0	0.0	820,880.0	0.0	453,705.1				
			Ending Bala	8,677,315	10,197,502.0	6,380,133	7,930,724	6,514,412				

updated allocation

moved to 26 from 25

Funding projections are based on best available information and are subject to change given current funding uncertainties and unknown impacts of future congressional or other federal actions.

Federal program funding availability may impact the scheduling of projects. Funding will be subject to the obligation limitation set by the annual appropriations process.

CN estimates include CE costs

Surface Transportation Program Urban (STPU)

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor													
<i>Carryover</i> <i>Estimated Allocation (STPU)</i>				12,767,397.7 2,551,754.0	15,319,151.7 2,551,754.0	15,508,354.7 2,551,754.0	14,370,371.7 2,551,754.0	15,422,125.7 2,551,754.0					
Billings Bypass (Five Mile Road) <i>MDT</i>	<i>UPN4199002</i> Construction of Five Mile Road	IC CN Total	140,142.0 5,865,934.0 6,006,076.	0.0	0.0	0.0	0.0	0.0		18,807.1 787,208.3 806,015.4	121,334.9 5,078,725.7 5,200,060.	140,142.0 5,865,934.0 6,006,076.0	
Billings Bypass (Yellowstone River Bridge) <i>MDT</i>	<i>UPN4199003</i> Construction of a new bridge over the Yellowstone River	CN Total	11,364,209.0 11,364,209	0.0	0.0	0.0	0.0	0.0		1,525,076.8 1,525,076.8	9,839,132.2 9,839,132.	11,364,209.0 11,364,209.0	
Billings Bypass (Johnson Lane Interchange) <i>MDT</i>	<i>UPN4199007</i> Reconstruction of existing Interchange	CN Total	0.0	0.0	0.0	2,429,737.0 2,429,737.	0.0	0.0		326,070.7 326,070.7	2,103,666.3 2,103,666.	2,429,737.0 2,429,737.0	
Grand Avenue <i>Possible LAG with city</i> Adjustment/Closures	<i>UPN 10702</i> Reconstruction of existing roadway 41st to 62nd street 2.6 miles	PE RW IC CN Total	0.0	0.0	2,362,551.0 2,362,551.0	1,260,000.0 1,260,000.	1,500,000.0 1,500,000.0	16,985,660.0 16,985,660.		317,054.3 169,092.0 201,300.0 2,279,475.6 2,966,921.9	2,045,496.7 1,090,908.0 1,298,700.0 14,706,184. 19,141,28	2,362,551.0 1,260,000.0 1,500,000.0 16,985,660.0 22,108,211.0	
STPU Total			0.0	2,362,551.0	3,689,737.	1,500,000.0	16,985,660.	0.0	5,624,084.9	36,284,14	41,908,233.0		
Federal			0.0	2,045,496.7	3,194,574.	1,298,700.0	14,706,184.						
State			0.0	317,054.3	495,162.7	201,300.0	2,279,475.6						
Balance			15,319,151.	15,508,354.	14,370,371	15,422,125.	988,219.7						

Funding projections are based on best available information and are subject to change given current funding uncertainties and unknown impacts of future congressional or other federal actions. Federal program funding availability may impact the scheduling of projects. Funding will be subject to the obligation limitation set by the annual appropriations process. CN estimates include CE costs

Interstate Maintenance (IM)*

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor													
MDT-PREVENTATIVE MAINTENANCE - I	Maintenance - Striping, Durable	All		1,500,000.0	1,500,000.0	1,500,000.0	1,500,000.0	1,500,000.0	1,500,000.0		657,000.0	6,843,000.0	7,500,000.0
<i>MDT</i>	Pave Marking, Pavement Pres.	Total		1,500,000.0	1,500,000.0	1,500,000.0	1,500,000.0	1,500,000.0	1,500,000.0	0.0	657,000.0	6,843,000.0	7,500,000.0
Johnson Lane Interchange Ramps	Striping and Durable Pavement Markin	OT		3,975.0							348.2	3,626.8	3,975.0
UPN	Interchange												
<i>MDT</i>	I-90 RP 455- 455.5	Total	0.0	3,975.0	0.0	0.0	0.0	0.0	0.0	0.0	348.2	3,626.8	3,975.0
Lockwood Interchange Ramps	Striping and Durable Pavement Markin	OT		3,975.0							348.2	3,626.8	3,975.0
UPN	Interchange												
<i>MDT</i>	I-90 RP 452.6- 453.1	Total	0.0	3,975.0	0.0	0.0	0.0	0.0	0.0	0.0	348.2	3,626.8	3,975.0
27TH ST. Interchange Ramps	Striping and Durable Pavement Markin	OT		3,975.0							348.2	3,626.8	3,975.0
UPN	Interchange												
<i>MDT</i>	I-90 RP 449.9- 450.4	Total	0.0	3,975.0	0.0	0.0	0.0	0.0	0.0	0.0	348.2	3,626.8	3,975.0
South Billings Blvd Interchange Ramps	Striping and Durable Pavement Markin	OT		3,975.0							348.2	3,626.8	3,975.0
UPN	Interchange												
<i>MDT</i>	I-90 RP 447- 447.5	Total	0.0	3,975.0	0.0	0.0	0.0	0.0	0.0	0.0	348.2	3,626.8	3,975.0
King Ave West Interchange Ramps	Striping and Durable Pavement Markin	OT		3,975.0							348.2	3,626.8	3,975.0
UPN	Interchange												
<i>MDT</i>	I-90 RP 446.2- 446.4	Total	0.0	3,975.0	0.0	0.0	0.0	0.0	0.0	0.0	348.2	3,626.8	3,975.0
Zoo Drive Interchange Ramps	Striping and Durable Pavement Markin	OT		4,473.0							391.8	4,081.2	4,473.0
UPN	Interchange												
<i>MDT</i>	I-90 RP 443.1- 443.7	Total	0.0	4,473.0	0.0	0.0	0.0	0.0	0.0	0.0	391.8	4,081.2	4,473.0
Billings Bypass - Johnson Lane Intch	Reconstruction of existing	CN				29,160,808.0					2,554,486.8	26,606,321.2	29,160,808.0
UPN 4199-007	Interchange												
<i>MDT</i>	I-90 RP	Total	0.0	0.0	0.0	29,160,808.0	0.0	0.0	0.0	0.0	2,554,486.8	26,606,321.2	29,160,808.0
I-90 Yellowstone River Bridges	Bridge Replacement	PE	722,211.8								63,265.8	658,946.0	722,211.8
UPN 7972		RW	180,000.0								15,768.0	164,232.0	180,000.0
<i>MDT</i>	I-90 RP 450.09 to 452.73	CN	4,384,042.0								384,042.1	3,999,999.9	4,384,042.0
		Total	5,286,253.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	463,075.8	4,823,178.0	5,286,253.8
Mossmain Intch - West Blgs Intch	Pavement Preservation	PE	910,517.0								79,761.3	830,755.7	910,517.0
UPN 9198	Not all locations inside MPO boundary	CN	24,304,792.0	1,051,706.0	-925,655.0						2,140,141.8	22,290,701.2	24,430,843.0
<i>MDT</i>	I-90 RP 437.12 to 446.7	Total	25,215,309.0	1,051,706.0	-925,655.0	0.0	0.0	0.0	0.0	0.0	2,219,903.1	23,121,456.9	25,341,360.0
Lockwood Interchange - Billings	Capital Construction	PE	3,331,209.0		900,000.0						370,653.9	3,860,555.1	4,231,209.0
UPN 9978	Improvements to Lockwood Interchan	RW					768,740.0				67,341.6	701,398.4	768,740.0
<i>MDT</i>	I-90 RP 450 to RP 453.5	IC						768,740.0			67,341.6	701,398.4	768,740.0
		CN							63,686,314.0		5,578,921.1	58,107,392.9	63,686,314.0
		Total	3,331,209.0	0.0	900,000.0	0.0	768,740.0	64,455,054.0	0.0	0.0	6,084,258.3	63,370,744.7	69,455,003.0
I-90 CULVERTS - BILLINGS AREA	Culvert Replacement	PE		756,984.0							66,311.8	690,672.2	756,984.0
UPN 10427	Not all locations inside MPO boundary	RW					59,502.0				5,212.4	54,289.6	59,502.0
<i>MDT</i>	I-90 RP 413 to 528	CN						4,937,090.0			432,489.1	4,504,600.9	4,937,090.0
		Total	0.0	756,984.0	0.0	0.0	59,502.0	4,937,090.0	0.0	0.0	504,013.3	5,249,562.7	5,753,576.0
IM TOTAL			33,832,771.8	3,333,038.0	1,474,345.0	30,660,808.0	2,328,242.0	70,892,144.0	0.0	12,484,870.2	130,036,478.0	142,521,348.0	

modified to actuals final voucher

updated estimate to match tcp

added RW phase moved to 28 from 27

Funding projections are based on best available information and are subject to change given current funding uncertainties and unknown impacts of future congressional or other federal actions. Federal program funding availability may impact the scheduling of projects. Funding will be subject to the obligation limitation set by the annual appropriations process.

*IM is a state sub-allocated program funded by the federal National Highway Performance Program. CN estimates include CE costs

National Highway (NH)*

Funding shown in thousands of dollars

Project	Description	Phase	Funding Source								Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State		Federal
									13.42%	86.58%		
MDT-PREVENTATIVE MAINTENANCE - NH <i>MDT</i>	Maintenance - Striping, Durable Pave Marking, Pavement Pres.	All		1,000,000.0	1,000,000.0	1,000,000.0	1,000,000.0	1,000,000.0		671,000.0	4,329,000.0	5,000,000.0
		Total		1,000,000.0	1,000,000.0	1,000,000.0	1,000,000.0	1,000,000.0		671,000.1	4,329,000.9	5,000,001.0
Heights Main St. UPN <i>MDT</i>	Striping and Durable Pavement M BR I-90/US-87 RP 0 to 4.7	OT		140,719.0						18,884.5	121,834.5	140,719.0
		Total	0.0	140,719.0	0.0	0.0	0.0	0.0	0.0	18,884.5	121,834.5	140,719.0
27th ST. UPN <i>MDT</i>	Striping and Durable Pavement M MT-3 RP 0 to 3.3	OT		142,172.0						19,079.5	123,092.5	142,172.0
		Total	0.0	142,172.0	0.0	0.0	0.0	0.0	0.0	19,079.5	123,092.5	142,172.0
Zoo Drive Interchange UPN <i>MDT</i>	Striping and Durable Pavement M Zoo Drive RP 0 to 0.9	OT		55,535.4						7,452.8	48,082.5	55,535.4
		Total	0.0	55,535.4	0.0	0.0	0.0	0.0	0.0	7,452.8	48,082.5	55,535.4
King Ave West UPN <i>MDT</i>	Striping and Durable Pavement M King Ave West RP 2.5 to 3.1	OT		22,456.8						3,013.7	19,443.1	22,456.8
		Total	0.0	22,456.8	0.0	0.0	0.0	0.0	0.0	3,013.7	19,443.1	22,456.8
Old Laurel Road UPN <i>MDT</i>	Striping and Durable Pavement M BR I-90 RP 0 to 0.7	OT		16,597.5						2,227.4	14,370.1	16,597.5
		Total	0.0	16,597.5	0.0	0.0	0.0	0.0	0.0	2,227.4	14,370.1	16,597.5
JCT Hwy 312 to MP 7.29 UPN <i>MDT</i>	Striping and Durable Pavement M US-87 RP 4.8 to 7.3	OT				33,802.0				4,536.2	29,265.8	33,802.0
		Total	0.0	0.0	0.0	33,802.0	0.0	0.0	0.0	4,536.2	29,265.8	33,802.0
Billings Bypass UPN 4199-000 <i>MDT</i>	New construction	PE RW IC	8,074,036.0 3,573,000.0	4,500,000.0	1,353,509.0	381,741.0				1,316,406.2 2,425,396.6 0.0	8,492,879.8 15,647,603.4 0.0	9,809,286.0 18,073,000.0 0.0
		Total	11,647,036.0	4,500,000.0	1,353,509.0	10,381,741.0	0.0	0.0	0.0	3,741,802.8	24,140,483.2	27,882,286.0
Billings Bypass - Yellowstone River Bridge UPN 4199-003 <i>MDT</i>	New construction of bridge over the Yellowstone River	IC CN	416,213.0 18,261,662.0	-1,621,041.0	-90,761.0	-1,755,554.0				43,675.7 1,997,576.0	281,776.3 12,887,491.0	325,452.0 14,885,067.0
		Total	18,677,875.0	-1,621,041.0	-1,846,315.0	0.0	0.0	0.0	0.0	2,041,251.6	13,169,267.4	15,210,519.0
Billings Bypass - Five Mile Rd to US 87 UPN 4199-004 <i>MDT</i>	Construction of connection from Five Mile to US 87	IC CN						500,000.0		67,100.0	432,900.0	500,000.0
		Total	0.0	0.0	0.0	0.0	0.0	14,719,587.0	0.0	1,975,368.6	12,744,218.4	14,719,587.0
Billings Bypass - RR O'pass UPN 4199-005 <i>MDT</i>	New construction of RR O'pass	IC CN	764,400.0 16,929,645.0	469,213.0 519,987.0						165,550.9 2,341,740.6	1,068,062.1 15,107,891.4	1,233,613.0 17,449,632.0
		Total	17,694,045.0	989,200.0	0.0	0.0	0.0	0.0	0.0	2,507,291.5	16,175,953.5	18,683,245.0
Billings Bypass - Johnson Ln. Intch - RR O'pass UPN 4199-006 <i>MDT</i>	New construction of connection from Interchange to bridge	IC CN						1,000,000.0		134,200.0	865,800.0	1,000,000.0
		Total	0.0	0.0	0.0	0.0	0.0	9,252,820.0	0.0	1,107,528.4	7,145,291.6	8,252,820.0
Billings Bypass - Johnson Lane Intch UPN 4199-007 <i>MDT</i>	Reconstruction of existing Interchange RP 455.5	IC CN	4,121,122.0	-82,974.0		1,269,876.0	3,800,000.0			712,336.8 509,960.0	4,595,687.2 3,290,040.0	5,308,024.0 3,800,000.0
		Total	4,121,122.0	-82,974.0	0.0	5,069,876.0	0.0	0.0	0.0	1,222,296.8	7,885,727.2	9,108,024.0
Billings Bypass - (RR O'pass to Yellowstone R) UPN4199-008 <i>MDT</i>	New construction of roadway connection from existing Interchange to the bridge over the railroad	CN	7,726,275.0	-722,491.0	-11,938.0					0.0 938,305.7	0.0 6,053,540.3	0.0 6,991,846.0
		Total	7,726,275.0	-722,491.0	-11,938.0	0.0	0.0	0.0	0.0	938,305.7	6,053,540.3	6,991,846.0
Exposition Dr. & 1st Ave. N. Blgs UPN 7908 <i>MDT</i>	Interseccion Improvements RP .35 to 1.35	PE RW IC CN	1,537,255.0	2,334,774.0	160,300.0	150,000.0				539,756.3 21,512.3 347,013.0 2,252,396.6	3,482,272.7 138,787.7 2,238,777.0 14,531,482.4	4,022,029.0 160,300.0 2,585,790.0 16,783,879.0
		Total	1,537,255.0	2,334,774.0	160,300.0	150,000.0	2,585,790.0	16,783,879.0	0.0	3,160,678.1	20,391,319.9	23,551,998.0
Underpass Ave. Improvements UPN 8669 <i>MDT</i>	Intersection Improvements RP .51 to .72	CN	10,763,236.0	3,531,470.0	151,823.0					1,938,724.2	12,507,804.8	14,446,529.0
		Total	10,763,236.0	3,531,470.0	151,823.0	0.0	0.0	0.0	0.0	1,938,724.2	12,507,804.8	14,446,529.0
Airport Rd. & Main St. - Blgs UPN 8718 <i>MDT</i>	Intersection Improvements RP 1.5 to 2.2	OT PE RW IC CN	295,609.0 2,229,813.0	350,690.0			61,235.0			39,670.7 346,303.5 8,217.7 33,550.0 1,261,895.6	255,938.3 2,234,199.5 53,017.3 216,450.0 8,141,201.4	295,609.0 2,580,503.0 61,235.0 250,000.0 9,403,097.0
		Total	2,525,422.0	350,690.0	0.0	61,235.0	250,000.0	9,403,097.0	0.0	1,689,637.6	10,900,806.4	12,590,444.0
1st Ave. N - N 9th to RR Xing UPN 9022 <i>MDT</i>	Reconstruction of roadway Major Rehab N-115 RP 0.7 - RP .93	PE RW IC CN	2,984,285.0		327,977.0	59,813.0				444,505.6 8,026.9 28,608.8 3,208,148.8	2,867,756.4 51,786.1 184,571.2 20,697,580.2	3,312,262.0 59,813.0 213,180.0 23,905,729.0
		Total	2,984,285.0	0.0	327,977.0	59,813.0	213,180.0	23,905,729.0	0.0	3,689,290.1	23,801,693.9	27,490,984.0
Zoo Drive Improvements UPN 9597 <i>MDT</i>	Intersection Improvements I-90 RP 442.9 to 444.3 U-1011 RP 2.36 to 3.04	PE RW IC CN	499,730.0	492,698.0 225,000.0		13,896.0 -109,428.0 54,312.0				135,048.7 15,509.8 1,332.9	871,275.3 100,062.2 8,599.1	1,006,324.0 115,572.0 9,932.0
		Total	499,730.0	717,698.0	7,339,219.0	95,105.0	0.0	0.0	0.0	1,161,065.1	7,490,686.9	8,651,752.0
1st Ave. N - RR Xing to Broadway UPN 9880 Project split from 9022 CN outside TIP Timeframe FY29 <i>MDT</i>	Reconstruction of roadway Major Rehab N-115 RP 0.93 - RP 1.45	PE RW IC CN	831,074.0							111,530.1 1,668.4 34,304.2 0.0	719,543.9 10,763.6 221,315.8 0.0	831,074.0 12,432.0 255,620.0 0.0
		Total	831,074.0	0.0	0.0	0.0	0.0	268,052.0	0.0	147,502.7	951,623.3	1,099,126.0
1st Ave. N - Broadway to Division UPN 9881 Project split from 9022 CN outside TIP Timeframe FY29 <i>MDT</i>	Reconstruction of roadway Major Rehab N-115 RP 1.45 to RP 2.05	PE RW IC CN	840,665.0							112,817.2 1,689.8 282,000.0 0.0	727,847.8 10,902.2 244,155.6 0.0	840,665.0 12,592.0 282,000.0 0.0
		Total	840,665.0	0.0	0.0	0.0	0.0	294,592.0	0.0	152,351.5	982,905.5	1,135,257.0
Montana Ave Crosswalks - BLGS UPN 9998 <i>MDT</i>	Sidewalk Improvements ADA compliance N-113 RP 2.9 to RP 4.25	PE RW IC CN	128,226.0							17,207.9 3,441.4 6,883.0 245,825.7	111,018.1 22,202.6 44,406.0 1,585,960.3	128,226.0 25,644.0 51,289.0 1,831,786.0
		Total	128,226.0	0.0	0.0	25,644.0	1,883,075.0	0.0	0.0	273,358.0	1,763,587.0	2,036,945.0
Laurel RD / Montana Ave - BLGS UPN 9998001 <i>MDT</i>	Sidewalk Improvements ADA compliance N-113 RP .17 to RP 2.9	CN								0.0	0.0	0.0
		Total	0.0	0.0	0.0	0.0	2,706,521.0	0.0	0.0	363,215.1	2,343,305.9	2,706,521.0
1st Ave South - Billings UPN 10692 <i>MDT</i>	Pavement Preservation on 1st Ave South N-114 Mill & Fill with underseal and possible Digouts. N-113 RP .17 to RP 4.25	PE IC CN			148,999.0					19,995.7 6,710.0 317,877.4	129,003.3 43,290.0 2,050,806.6	148,999.0 50,000.0 2,368,684.0
		Total	0.0	0.0	148,999.0	0.0	50,000.0	2,368,684.0	0.0	344,583.1	2,223,099.9	2,567,683.0
NH TOTAL			79,976,246.0	11,374,806.7	8,623,574.0	16,877,216.0	8,688,566.0	78,496,440.0	0.0	27,381,745.2	176,655,104.4	204,036,849.7

new striping and marking project

modified to actuals

modified to actuals

moved ot 28 from 25

moved ot 28 from 25

modified to actuals

moved to 26 from 25

Final;

modified to actuals

added RW phase

added IC phase

updated costs and moved to 28 from 27

updated estimated

moved to 28 from 27 and updated estimated

updated to actuals

updated estimate

Final;

Final;

Final;

modified to actuals

moved to 28 from 25

moved to 28 from 26

moved to 28 from 25

moved to 28 from 26

moved to 27 from 26

moved to 27 from 28 and decreased costs to estimate

added new project split from Montana Ave Crosswalks

Added new Project

Funding projections are based on best available information and are subject to change given current funding uncertainties and unknown impacts of future congressional or other federal actions.

Federal program funding availability may impact the scheduling of projects. Funding will be subject to the obligation limitation set by the annual appropriations process.

*NH is a state sub-allocated program funded by the federal National Highway Performance Program.

CN estimates include CE costs

National Highway Freight Program (NHFP)*

Funding shown in thousands of dollars

Project Sponsor	Description	Phase							Funding Source			Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal	
										8.76%	91.24%	
Billings Bypass (Johnson Lane Interchange) <i>MDT</i>	Reconstruction of existing Interchange	CN				14,357,738.				1,257,737.	13,100,000.	14,357,738.0
									0.0	0.0	0.0	
									0.0	0.0	0.0	
		Total	0.0	0.0	0.0	14,357,73	0.0	0.0	0.0	1,257,73	13,100,00	14,357,738.0
I-90 Yellowstone River Bridges UPN 7972 <i>MDT</i>	Reconstruction of interstate bridges	PE	801,428.6							70,205.1	731,223.5	801,428.6
		CN	17,325,017.0							1,517,671.	15,807,345.	17,325,017.0
										0.0	0.0	0.0
		Total	18,126,445.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,587,87	16,538,56
NHFP TOTAL			18,126,445.	0.0	0.0	14,357,73	0.0	0.0	0.0	2,845,61	29,638,56	32,484,183.6

Funding projections are based on best available information and are subject to change given current funding uncertainties and unknown impacts of future congressional or other federal actions. Federal program funding availability may impact the scheduling of projects. Funding will be subject to the obligation limitation set by the annual appropriations process.

*NHFP is funded by the federal National Highway Performance Program.

CN estimates include CE costs

Surface Transportation Program Off System (STPX), Secondary (STPS) State Funded Construction (SFCN)

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal	
Sponsor										13.42%	86.58%	
(Yellowstone River Bridge) UPN 4199003 BBP MDT	Construction of a new bridge over the Yellowstone River	CN	12,909.0							12,909.0	0.0	12,909.0
		Total	12,909.0	0.0	0.0	0.0	0.0	0.0	0.0	12,909.0	0.0	12,909.0
Lockwood Interchange UPN 9588 MDT	Interchange Improvement Study RP 450 to 455.3	OT	1,546,805							207,581.2	1,339,223.	1,546,805.0
		Total	1,546,80	0.0	0.0	0.0	0.0	0.0	0.0	207,581.2	1,339,22	1,546,805.0
South Billings Blvd UPN MDT	Roadway Striping RP 0 to 1.3	OT	55,271.0							7,417.4	47,853.6	55,271.0
		Total	55,271.0	0.0	0.0	0.0	0.0	0.0	0.0	7,417.4	47,853.6	55,271.0
Johnson Lane Interchange UPN MDT	Roadway Striping RP 0 to 10.6	OT	10,610.0							1,423.9	9,186.1	10,610.0
		Total	10,610.0	0.0	0.0	0.0	0.0	0.0	0.0	1,423.9	9,186.1	10,610.0
88TH ST- SHILOH UPN MDT	Roadway Striping RP 10.8 to17.7	OT			69,701.0					9,353.9	60,347.1	69,701.0
		Total	0.0	0.0	69,701.0	0.0	0.0	0.0	0.0	9,353.9	60,347.1	69,701.0
Muldowney Ln to Wise Ln UPN MDT	Roadway Striping RP 0 to 3.3	OT				64,638.0				8,674.4	55,963.6	64,638.0
		Total	0.0	0.0	0.0	64,638.0	0.0	0.0	0.0	8,674.4	55,963.6	64,638.0
SF 209 BILLINGS DIST SIGNS UPN 10299 Not all locations inside MPO Boundary MDT	install safety improvement: signs, delineation, chevrons Various Locations	CN			110,753.0					14,863.1	95,889.9	110,753.0
		Total	0.0	0.0	110,753.	0.0	0.0	0.0	0.0	14,863.1	95,889.9	110,753.0
TOTALS			1,625,59	0.0	180,454.	64,638.0	0.0	0.0	0.0	262,222.8	1,608,46	1,870,687.0

New striping pavement marking

programmed in 25 not 26

CN estimates include CE costs

Surface Transportation Program Primary (STPP)

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor													
No New Projects		Total											
STPP TOTALS			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CN estimates include CE costs

Railroad Crossing (RRS)

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor											10.00%	90.00%	
No New Projects		Total											
TOTALS			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CN estimates include CE costs

Highway Safety Improvement Program (HSIP)

Funding is shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor													
SAFETY PROJECTS	Various Locations	ALL		500,000.0	500,000.0	500,000.0	500,000.0	500,000.0	500,000.0	0.0	250,000.0	2,250,000.0	2,500,000.0
<i>MDT</i>		Total		500,000.0	500,000.0	500,000.0	500,000.0	500,000.0	500,000.0	0.0	250,000.0	2,250,000.0	2,500,000.0
SF 129 - Rndabout King 56th	Intersection Improvements - Roundabout	PE	923,348.0								92,334.8	831,013.2	923,348.0
UPN 8052		RW	1,530,000.0								153,000.0	1,377,000.0	1,530,000.0
		IC	415,121.0		-38,074.0						37,704.7	339,342.3	377,047.0
	ST SEC RTE 532	CN	4,050,141.0	94,543.0							414,468.4	3,730,215.6	4,144,684.0
<i>MDT</i>	RP 15.4 to 15.7	Total	6,918,610.0	94,543.0	-38,074.0	0.0	0.0	0.0	0.0	0.0	697,507.0	6,277,571.0	6,975,079.0
SF 169 RIMROCK & 62ND ST W	Intersection Improvements - Roundabout	PE	863,887.0	87,602.0							95,148.9	856,340.1	951,489.0
UPN 9383		IC	1,175,733.0	-108,506.0	161,672.0	-157,527.0					107,137.2	964,234.8	1,071,372.0
		CN	8,113,424.0	-1,412,860.0	212,801.0						691,336.5	6,222,028.5	6,913,365.0
<i>MDT</i>	U1034 RP 2.4-2.8	Total	10,153,044.0	-1,433,764.0	374,473.0	-157,527.0	0.0	0.0	0.0	0.0	893,622.0	8,042,603.0	8,936,226.0
ZOO DRIVE IMPROVEMENTS - BLGS	Safety Improvements for Traffic Operat	PE									0.0	0.0	0.0
UPN 9597		CN			500,000.0						50,000.0	450,000.0	500,000.0
<i>MDT</i>	Various Locations	Total	0.0	0.0	500,000.0	0.0	0.0	0.0	0.0	0.0	50,000.0	450,000.0	500,000.0
SF189 SOUTH D5 SAFETY IMPRV	Warning signs and flashers	PE	16,940.0								1,694.0	15,246.0	16,940.0
UPN 9912	Not all locations inside MPO boundary using 10% for costs	CN		170,195.0							17,019.5	153,175.5	170,195.0
<i>MDT</i>	Various Locations	Total	16,940.0	170,195.0	0.0	0.0	0.0	0.0	0.0	0.0	18,713.5	168,421.5	187,135.0
SF 209 BILLINGS DIST SIGNS	install safety improvement: signs, delineation, chevrons	PE	44,810.0		39,174.0						8,398.4	75,585.6	83,984.0
UPN 10299	Not all locations inside MPO Boundary	CN			678,192.0						67,819.2	610,372.8	678,192.0
<i>MDT</i>	Various Locations	Total	44,810.0	0.0	717,366.0	0.0	0.0	0.0	0.0	0.0	76,217.6	685,958.4	762,176.0
KING AVE & 48TH STREET - BLGS	address safety and operational issues at the intersection of King Avenue and 48th Street. The preferred alternative is a roundabout.												
UPN 10643		CN									194,897.3	1,754,075.7	1,948,973.0
<i>MDT</i>	U-1037 RP 16.5 to 16.7	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,948,973.0	1,754,075.0	1,948,973.0
HSIP Totals			17,133,404.0	-669,026.0	2,053,765.0	342,473.0	500,000.0	2,448,973.0	0.0	2,180,950.0	19,628,630.0	21,809,589.0	

Final

Final

programmed in 25 not 26

updated estimates to TCP

CN estimates include CE costs

Bridge Program

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor													
BBP-YELLOWSTONE RIVER UPN 4199-003 <i>MDT</i>	New bridge construction Statewide	CN Total	5,000,000.0 5,000,000.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 671,000.0 671,000.0	0.0 4,329,000.0 4,329,000.0	0.0 5,000,000.0 5,000,000.0	
I-90 Yellowstone River UPN 7972 <i>MDT</i>	RP 2.7 to 3.0	PE CN Total	4,833,257.6 63,376,310.0 68,209,567.0	2,074,940.0 2,074,940.0	0.0	0.0	0.0	0.0	0.0	648,623.2 8,783,557.8 9,432,180.9	4,184,634.4 56,667,692.3 60,852,326.0	4,833,257.6 65,451,250.0 70,284,507.0	
BR PRES COLUMBUS JOLIET AREA UPN 9552 One project in MPO <i>MDT</i>	Minor bridge rehab Using 33% for costs U-1033 RP 0.9 to 1.1	PE CN Total	168,945.0 168,945.0	30,704.0 1,746,340.0 1,777,044.0	421,806.0	0.0	0.0	0.0	0.0	26,792.9 290,965.2 317,758.1	172,856.1 1,877,180.8 2,050,036.9	199,649.0 2,168,146.0 2,367,795.0	Final Removed IC not needed modified to actuals
SHILOH RD / I-90 BRIDGE - BLGS UPN 9720 <i>MDT</i>	Bridge rehab U-1031 RO 5.0 to 5.3	PE IC CN Total	309,911.0 309,911.0	0.0	0.0	0.0	0.0	0.0	7,894,427.0	41,590.1 1,663.4 1,057,768.7 1,101,022.2	268,320.9 10,731.6 6,824,263.3 7,103,315.8	309,911.0 12,395.0 7,882,032.0 8,204,338.0	moved to 28 from 26 updated estimates to TCP
MONTANA AVE OVERPASS- BILLINGS UPN 9913 <i>MDT</i>	Bridge rehab N113 RP1.82 TO 1.92	PE CN Total	43,301.0 1,092,340.0 1,135,641.0	-186,573.0 -186,573.0	0.0	0.0	0.0	0.0	0.0	5,811.0 121,553.9 127,364.9	37,490.0 784,213.1 821,703.1	43,301.0 905,767.0 949,068.0	
MONTANA AVE BRIDGES- BILLINGS UPN 10765 <i>MDT</i>	Bridge rehab Montana Ave over Laurel Road N113 RP1.7 TO 2.1	PE CN Total	0.0	0.0	0.0	1,996,341.0	0.0	0.0	16,469,815.0	267,909.0 2,210,249.2 2,478,158.1	1,728,432.0 14,259,565.8 15,987,997.0	1,996,341.0 16,469,815.0 18,466,156.0	New Projet
BBWA CANAL - N27TH ST BILLINGS UPN 10801 <i>MDT</i>	Bridge replacement Canal on N2th Street N53 RP 2.4 to 2.7	PE RW IC CN Total	0.0	0.0	0.0	1,246,193.0	0.0	0.0	62,308.0	167,239.1 8,361.7 0.0 0.0 175,600.8	1,078,953.9 53,946.3 0.0 0.0 1,132,900.2	1,246,193.0 62,308.0 0.0 0.0 1,308,501.0	New Projet
BR TOTAL			74,824,064.0	3,665,411.0	421,806.0	3,242,534.0	0.0	24,426,550.0	0.0	14,303,085.0	92,277,280.0	106,580,360.0	

CN estimates include CE costs

Montana Air and Congestion Initiative (MACI)-DISCRETIONARY PROGRAM

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor													
ADA COMPLIANCE <i>MDT</i>	ADA upgrades	All Total		500,000.0 500,000.	500,000.0 500,000.	500,000.0 500,000.	500,000.0 500,000.	500,000.0 500,000.		335,500.0 335,500.	2,164,500.0 2,164,500.	2,500,000.0 2,500,000.0	
TRAFFIC MITIGATION <i>MDT</i>	Signalization	All Total		250,000.0 250,000.	250,000.0 250,000.	250,000.0 250,000.	250,000.0 250,000.	250,000.0 250,000.		167,750.0 167,750.	1,082,250.0 1,082,250.	1,250,000.0 1,250,000.0	
Underpass Ave. Improvements UPN 8669 <i>MDT</i>	Intersection Improvements RP .51 to .72	PE RW IC CN Total	1,093,608. 150,000.0 452,880.0 1,154,386. 2,850,87	-17,432.0 -17,432.	 -4,596.0 -4,596.0	 0.0	 0.0	 0.0	 0.0	146,762.2 17,790.6 60,159.7 154,918.6 379,631.	946,845.8 114,777.4 388,124.3 999,467.4 2,449,21	1,093,608.0 132,568.0 448,284.0 1,154,386.0 2,828,846.0	Final
Mossmain Intch-West Blgs Inch UPN 9198 <i>MDT</i>	Pavement Preservation Not all locations inside MPO bounda I-90 RP 437.12 to 446.7	CN Total	554,388.0 554,388.	 0.0	 0.0	 0.0	 0.0	 0.0	 0.0	74,398.9 74,398.9	479,989.1 479,989.	554,388.0 554,388.0	
ATSPM - MAIN STREET (BILLINGS) <i>UPN 10400</i> <i>MDT</i>	INT UPGRADE/SIGNALS Various Locations	OT Total	221,042.0 221,042.	 0.0	 0.0	 0.0	 0.0	 0.0	 0.0	29,663.8 0.0 29,663.8	191,378.2 0.0 191,378.	221,042.0 0.0 221,042.0	
BILLINGS DISTRICT ADA UPGRADES UPN 10431 <i>MDT</i>	ADA upgrades Not all locations inside MPO boundary using 10% for costs Various Locations	PE Total	25,233.0 25,233.0	12,616.0 12,616.0	29,837.0 29,837.0	-6,213.0 -6,213.0	 0.0	 0.0	 0.0	8,249.7 0.0 8,249.7	53,223.3 0.0 53,223.3	61,473.0 0.0 61,473.0	updated costs to actuals final voucher
King Ave Signals - Billings UPN 10585 <i>MDT</i>	INT UPGRADE/SIGNALS Various Locations	OT Total	 0.0	120,000.0 120,000.	 0.0	 0.0	 0.0	 0.0	 0.0	16,104.0 0.0 16,104.0	103,896.0 0.0 103,896.	120,000.0 0.0 120,000.0	added project
Total			3,651,53	865,184.	775,241.	743,787.	750,000.	750,000.	0.0	1,011,29	6,524,45	7,535,749.0	

CN estimates include CE costs

Urban Pavement Preservation (UPP)

Funding shown in thousands of dollars

Project	Description	Phase	Program Schedule						Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
URBAN PAVEMENT PRESERVATION <i>MDT</i>	Various Locations	ALL Total		500,000. 500,00	500,000. 500,00	500,000. 500,00	500,000.0 500,000.0	500,000. 500,00		335,500.0 335,500.	2,164,500. 2,164,50	2,500,000.0 2,500,000.0	
Shiloh RD-King Ave to Rimrock UPN 10703 <i>MDT</i>	Urban Pavement Preservatio RP 0 to 2.98	PE CN Total			187,425. 187,42			1,903,849.0 1,903,849.		25,152.4 255,496.5 280,649.	162,272.6 1,648,352. 1,810,62	187,425.0 1,903,849.0 2,091,274.0	added new project
State Avenue - Billings UPN 10704 <i>MDT</i>	Urban Pavement Preservatio RP 0 to 1.5	PE CN Total			62,475.0 62,475.			1,085,554.0 1,085,554.		8,384.1 145,681.3 154,065.	54,090.9 939,872.7 993,963.	62,475.0 1,085,554.0 1,148,029.0	added new project
UPP TOTAL			0.0	500,00	749,90	500,00	3,489,403.	500,00	0.0	770,214.	4,969,08	5,739,303.0	

CN estimates include CE costs

Carbon Reduction(CR) 50k-200k

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs			
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal				
Sponsor															
Zoo Drive Improvements UPN 9597 <i>MDT</i>	Intersection Improvements I-90 RP 442.9 to 444.3 U-1011 RP 2.36 to 3.04	CN Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	removed cr funds	
BILLINGS DISTRICT ADA UPGRADES UPN 10431 <i>MDT</i>	ADA upgrades Not all locations inside MPO boundary using 15% for costs Various Locations	PE CN Total	0.0	388,370.0	-9,572.0	56,990.0	0.0	0.0	0.0	58,482.7	377,305.3	435,788.0	435,788.0	modified to actuals	
KING AVE & 48TH STREET - BLGS UPN 10643 <i>MDT</i>	address safety and operational issues at the intersection of King Avenue and 48th Street. The preferred alternative is a roundabout. U-1037 RP 16.5 to 16.7	PE RW IC CN Total	0.0	0.0	600,000.0	0.0	400,000.0	400,000.0	2,316,590	80,520.0	519,480.0	257,206.4	1,659,383.0	1,916,590.0	updated costs
Total			0.0	388,370.0	590,428.0	56,990.0	400,000.0	2,316,590.0	0.0	503,569.0	3,248,800.0	3,752,378.0	3,752,378.0		

Transportation Alternatives - MPO

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal	
Sponsor												
Carryover				5,945,000.	5,698,375.	5,626,500.	6,232,001.	7,021,958.				
Estimated Allocation (TA)				789,957.0	789,957.0	789,957.0	789,957.0	789,957.0				
STAGECOACH TRAIL - BILLINGS	Shared use path	PE		931,193.0					124,966.1		806,226.9	931,193.0
UPN 10432		CN						5,348,666.	717,791.0		4,630,875.	5,348,666.0
<i>MDT/Locals</i>	Skyline Trail to Zimmerman Trail	Total	0.0	931,193.	0.0	0.0	0.0	5,348,666	842,757.1	0.0	5,437,10	6,279,859.0
SIDEWALKS - LOCKWOOD	Sidewalk construction	PE		266,060.0					35,705.3		230,354.7	266,060.0
UPN 10433		CN			995,417.0				133,585.0		861,832.0	995,417.0
<i>MDT/Locals</i>	Old Hardin Road	Total	0.0	266,060.	995,417.	0.0	0.0	0.0	169,290.2	0.0	1,092,18	1,261,477.0
Johnson Lane -SIDEWALKS	Sidewalk construction	PE				50,001.0			6,710.1		43,290.9	50,001.0
UPN 10721		CN						195,000.0	26,169.0		168,831.0	195,000.0
<i>MDT/Locals</i>	RP 0 to RP 0.6	Total	0.0	0.0	0.0	50,001.0	0.0	195,000.	32,879.1	0.0	212,121.	245,001.0
Safe Routes to Schools - BLGS	Improve routes in Billings School District	PE				163,046.0			21,880.8		141,165.2	163,046.0
UPN 10722		CN						1,329,251.	178,385.5		1,150,865.	1,329,251.0
<i>MDT/Locals</i>	Various locations	Total	0.0	0.0	0.0	163,046.0	0.0	1,329,25	200,266.3	0.0	1,292,03	1,492,297.0
TA TOTALS			0.0	1,197,25	995,417.	213,047.0	0.0	6,872,91	1,043,023.	0.0	6,729,13	7,772,156.0
Federal			0.0	1,036,58	861,832.	184,456.1	0.0	5,950,57				
Local			0.0	160,671.	133,585.	28,590.9	0.0	922,345.				
Balance				5,698,37	5,626,50	6,232,001	7,021,95	1,861,34				

decreased estimate to award amount

New Project

New Project

CN estimates include CE costs

FWP Recreational Trails Program

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal	
Sponsor									20.00%	0%	80.00%	
Rec Trails Program <i>Local</i>	Trail Construction Various	All Total	0.0	0.0	0.0	125,000.0 125,000.	125,000.0 125,000.	125,000.0 125,000.	75,000.0 75,000.0	0.0	300,000.0 300,000.	375,000.0 375,000.
Rose Park Trail, Phase 1 <i>City of Billings/TrailNet</i>	New Trail Construction Local match sourced from cash an in-kind contributions	PE CN Total	25,000.0 100,000.0 125,000.0	0.0	0.0	0	0	0	5,000.0 20,000.0 25,000.0	0.0	20,000.0 80,000.0 100,000.	25,000.0 100,000.0 125,000.
Rose Park Trail, Phase 2 <i>City of Billings/TrailNet</i>	Continuation of Rose Park Trail Local match sourced from cash an in-kind contributions	PE CN Total	0.0	25,000.0 74,600.0 99,600.0	0.0	0	0	0	5,000.0 24,615.0 29,615.0	0.0	20,000.0 50,000.0 70,000.0	25,000.0 74,615.0 99,615.0
Lillis Park Trail Connector <i>City of Billings</i>	Trail reconstruction	PE CN Total	0.0	25,000.0 100,000.0 125,000.	0.0	0	0	0	5,000.0 20,000.0 25,000.0	0.0	20,000.0 80,000.0 100,000.	25,000.0 100,000.0 125,000.
Big Ditch Trail Extension <i>City of Billings</i>	Trail reconstruction	PE CN Total	0.0	25,000.0 100,000.0 125,000.	0.0	0	0	0	5,000.0 20,000.0 25,000.0	0.0	20,000.0 80,000.0 100,000.	25,000.0 100,000.0 125,000.
Southern Riverfront Park Trail* <i>City of Billings</i>	Trail reconstruction	PE CN Total	0.0	0.0	25,000.0 100,000.0 125,000.	0	0	0	5,000.0 20,000.0 25,000.0	0.0	20,000.0 80,000.0 100,000.	25,000.0 100,000.0 125,000.
Trailside Education Signs* <i>City of Billings/Trailnet</i>	Trail Signage	PE CN Total	0.0	0.0	59,059.0 59,059.0	0	0	0	0.0 11,811.8 11,811.8	0.0	0.0 47,247.2 47,247.2	0.0 59,059.0 59,059.0
Total			125,000.0	349,600.	184,059.	125,000.	125,000.	125,000.	216,426.	0.0	817,247.	1,033,67

*pending award

EARMARKS

Funding shown in thousands of dollars

Project	Description	Phase							Funding Source			Total Project Costs	
			Pre-2024	2024	2025	2026	2027	2028	Local	State	Federal		
Sponsor										13.42%	13.42%	86.58%	
Billings Bypass	UPN419900	Environmental Impact Statement	PE	14,598,600.0							1,959,132.	12,639,467.	14,598,600.
		Preliminary Engineering											
		Right of Way Acquisition	RW	7,847,000.0							1,053,067.	6,793,932.6	7,847,000.0
<i>MDT</i>			Total	22,445,600.	0.0	0.0	0.0	0.0	0.0	0.0	3,012,19	19,433,40	22,445,60
			Total	22,445,600.	0.0	0.0	0.0	0.0	0.0	0.0	3,012,19	19,433,40	22,445,60

CN estimates include CE costs

Federal Transit Administration Section 5307*

Funding shown in thousands of dollars

Project	Description	Phase						Funding Source			Total Estimated Obligation
			2024	2025	2026	2027	2028	Local 20%	State	Federal 80%	
Sponsor											
<i>Carryover</i>			5,107,737.0	2,859,699.2	2,859,699.2	2,859,699.4	2,848,899.				
<i>Allocation (Estimated)(Fed Share)</i>			2,859,705.0	2,905,042.0	2,970,851.0	2,970,851.0	2,970,851.				
Bus & Passenger Amenities/Equipment											
Supportive Equipment											
Facilities/Ammenities											
Security Related Capital (1% minimum)	*Used 5339 for Security in FY25/26		10,518.0			36,000.0	36,000.0	16,503.6		66,014.4	82,518.0
<i>Met Transit</i>		Total	10,518.0	0.0	0.0	36,000.0	36,000.0	16,503.6		66,014.4	82,518.0
Transit Operations***											
Fleet/Facility Preventive Maintenance	80/20 Match		1,557,097.0	862,500.0	900,000.0	900,000.0	900,000.0	1,023,919.4		4,095,677.6	5,119,597.0
ADA Paratransit (20% of apportionment)	80/20 Match		1,460,961.0	726,260.0	744,416.0	744,416.0	744,416.0	884,093.8		3,536,375.2	4,420,469.0
Fixed Route	50/50 Match		5,369,764.0	3,268,068.0	3,310,636.0	3,274,636.0	3,274,636.	9,248,870.0		9,248,870.0	18,497,740.0
<i>Met Transit</i>		Total	8,387,822.0	4,856,828.0	4,955,052.0	4,919,052.0	4,919,05	11,156,883.2	0.0	16,880,92	28,037,806.0
Purchase buses											
Replacement Buses											
Expansion Buses											
<i>Met Transit</i>		Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
SECTION 5307 TOTALS*			8,398,340.0	4,856,828.0	4,955,052.0	4,955,052.0	4,955,05	11,173,386.8	0.0	16,946,93	28,120,324.0
Federal			5,107,742.8	2,905,042.0	2,970,850.8	2,981,650.8	2,981,65				
Local			3,290,597.2	1,951,786.0	1,984,201.2	1,973,401.2	1,973,40				
Ending Balance (Federal)			2,859,699.2	2,859,699.2	2,859,699.4	2,848,899.6	2,838,09				

Full 5307 apportionment (FY2026)

\$2,970,851

Project 1 - Operating Assistance

	FTA Amount	Local	Total	FTA Share	Local Share
ALI 30.09.01 - Up to 50% share Operating Assistance	\$ 1,656,681	\$ 1,656,681	\$ 3,313,362	50.00%	50.00%
ALI 30.09.01 - Up to 50% share Operating Assistance (1% for Security)	\$ -	\$ -	\$ -	80.00%	20.00% * used 5339 funds in FY26 for security requirement
ALI 11.7C.00 - Non Fixed Route ADA Paratransit Service	\$ 594,170	\$ 148,543	\$ 742,713	80.00%	20.00% *up to 20% of total allocation if 3 criteria is met
ALI 11.7A.00 - Preventative Maintenance	\$ 720,000	\$ 180,000	\$ 900,000	80.00%	20.00%
Total P2	\$ 2,970,851	\$ 1,985,224	\$ 4,956,075		

*FTA administered funds are not subject to indirect cost recovery. 5307 funds may be supplemented by Small Transit Intensive Cities (STIC) funds based on transit system performance for the urbanized area (MET).

***Total local funding reflects an overmatch on federal share. Operations Match ratio is 50/50.

Federal Transit Administration Section 5339

Funding shown in thousands of dollars

Project	Description	Phase	Funding Source					Total Estimated Obligation			
			2024	2025	2026	2027	2028		Local 20%	State	Federal 80%
<i>Carryover</i>			1,011,182.0	753,132.0	1,173,427	431,771.4	811,771.4				
<i>Allocation (Estimated)</i>			735,024.0	758,665.0	780,000.0	780,000.0	780,000.0				
Rolling Stock	Replacement		602,072.0	0.0	0.0						
<i>Met Transit</i>	85/15 match for ADA		602,072.0	0.0	0.0	0.0	0.0	90,310.		511,761.	602,072.0
Bus and Bus Technology	Upgrade		182,861.0	38,635.0	118,860.0						
<i>Met Transit</i>			182,861.0	38,635.0	118,860.0	0.0	0.0	68,071.		272,284.	340,356.0
Bus Facilities and Support	Facility items, construction, technology, amenities, support equipment, etc.		418,780.0	88,853.0	725,000.0	400,000.0					
<i>Met Transit</i>				90,000.0	609,990.0	50,000.0					
				18,140.0		50,000.0					
							50,000.0				
			418,780.0	196,993.	1,334,99	500,000.	50,000.0	500,152		2,000,61	2,500,763.0
Bus Facilities Security System	Upgrade			187,334.0	448,220.0						
<i>Met Transit</i>			0.0	187,334.	448,220.	0.0	0.0	127,110		508,443.	635,554.0
Bus, Facilities, and Technology	Upgrade facilities, replace buses, add technology		0.0	0.0	0.0	0.0	1,350,000	270,000		1,080,000	1,350,000.0
			1,203,713.	422,962.	1,902,07	500,000.	1,400,00	1,055,6	0.0	4,373,09	5,428,745.0
SECTION 5339 TOTALS											
Federal			993,074.0	338,369.	1,521,65	400,000.	1,120,00				
Local			210,639.0	84,592.4	380,414.	100,000.	280,000.				
Balance			753,132.0	1,173,42	431,771.	811,771.	471,771.				

updated allocation

PROJECTS

2024	2025	2026	2027	2028
Overage bus diesel/electric				
AVL system	Bus Sign Controllers	Bus Pass Card Readers, APCs		
Facility Remodel	2 Support Vehicles, Generator, Shop Heaters	Transfer Center Amenities, Bus Wash Rehab	Transfer Center Amenities, Fork Lift, Bus Stops	Bus Stops
	Admin Building Security Cameras	Access Control, Transfer Center Security Cameras		

Federal Transit Administration Section 5339 Discretionary Funding

Project	Description	Phase	Funding Source					Total Estimated Obligation			
			2024	2025	2026	2027	2028		Local 15%	State	Federal 85%
<i>Carryover</i>			6,904,600.0								
<i>Allocation</i>	5339b/LowNo		0.0	910,300.0							
Rollingstock	Replace buses		5,499,765.0		1,000,000						
<i>MET Transit</i>	85/15 match for ADA	Total	5,499,765.	0.0	1,000,00	0.0	0.0	974,964		5,524,80	6,499,765.0
Bus and Bus Facilities	Technology		465,000.0		70,000.0						
<i>MET Transit</i>	Facility Remodel		2,196,000.0								
	Training		20,145.0		5,375.0						
	Training Capital		210,750.0								
	80/20 Rate	Total	2,891,895.	0.0	75,375.0	0.0	0.0	578,379		2,313,516	2,891,895.0
SECTION 5339 TOTALS			8,391,660.	0.0	1,075,37	0.0	0.0	1,553,3		7,838,31	9,391,660.0
Federal			6,904,616.	0.0	910,300.	0.0	0.0				
Local			1,487,043.	0.0	165,075.	0.0	0.0				
Balance			-16.3	910,300.	0.0	0.0	0.0				

PROJECTS

2024	2025	2026	2027	2028
4 Diesel Buses				
4 Electric Buses		8 Paratransit Vans (moved from FY25)		
Electric Chargers		Vehicle Lift, Electric Bus Scaffolding, Maint. Staff Training (moved from FY25)		
METropex Remodel				
Bus Simulator & Training				

*Capital 80/20 Match, ADA Capital 85/15 Match

Federal Transit Administration Section 5310

Funding shown in thousands of dollars

Project	Description	Phase						Funding Source			Total Estimated Obligation
			2024	2025	2026	2027	2028	Local 15/20%	State	Federal 85/80%	
<i>Carryover Allocation (Estimated)</i>			0.0	21,984.	90,048.	124,244.	223,438				
Paratransit Vehicles	Purchase vehicles (ADA and Cutaway) for ME and other Coordination members as applicabl	Purch. Purch.	128,000 111,890	143,750 100,000	104,664 50,000.			56,462.1 52,378.0	319,951.9 209,512.0	376,414.0 261,890.0	
<i>Met Transit and Coordination Group</i>			239,89	243,75	154,66	0.0	0.0	95,745.6	542,558.	638,304.0	
Traditional and Non-Traditional Projects	Projects to support identified community needs but may be also be used for vehicles	Purch. Purch. Purch. Purch.	0.0			158,371.	282,500	88,174.2	352,696.8	440,871.0	
<i>Coordination Members</i>			0.0	0.0	0.0	158,371	282,50	88,174.2	352,696.	440,871.0	
Bus Stop Improvements	Upgrade bus stop amenities	Purch.			112,500			22,500.0	90,000.0	112,500.0	
MET Transit	Will be sub-allocated to MET Transit		0.0	0.0	112,50	0.0	0.0	16,875.0	95,625.0	112,500.0	
SECTION 5310 TOTALS			239,89	243,75	267,16	158,371	282,50	200,794.8	990,880.	1,191,675.0	
	Federal		203,90	207,18	221,46	126,696	226,00				
	Local		35,983	36,562	45,699	31,674.	56,500				
	Balance		21,984	90,048	124,24	223,438	223,32				

updated allocation

updated cost

updated cost

updated cost

updated cost

2024	2025	2026	2027	2028
MET ADA Transit Van	2 COR vans	1 COR ADA van 1 COR non-ADA vehicle		
YCCOA ADA Transit Van (updated van costs)	2 BSSS mini-vans		Projects determined based on annual Coordination Plan	Projects determined based on annual Coordination Plan
		MET infrastructure improvements (moved from FY25 to FY26)		

Funding dependent on the outcome of a competitive process and funding availability.

TRANSADE(STATE FUNDED)

Funding shown in thousands of dollars

Project	Description	Phase						State	Total Estimated
			2024	2025	2026	2027	2028	Funded	
Sponsor								100%	
<i>Carryover</i>			0.0	0.0	0.0	0.0	0.0		
<i>Allocation (Estimated)</i>			348,915	253,819	214,665	214,665	214,665	1,246,72	1,246,729.0
Transit Operations	Operating		348,915	253,819	214,665	214,665	214,665	1,246,72	
<i>Met Transit</i>			348,91	253,81	214,66	214,66	214,66	1,246,72	1,246,729.0
STATE TOTALS			0.0	0.0	0.0	0.0	0.0	1,246,72	1,246,729.0

updated allocation
updated costs

BILLINGS METROPOLITAN PLANNING ORGANIZATION



TRANSPORTATION IMPROVEMENT PROGRAM (TIP) Amendment #3 FY 2024 – 2028





Transportation Improvement Program

The TIP is a strategic plan outlining prioritized transportation projects within the Billings Metropolitan Organization (MPO) for 2024-2028. It facilitates the scheduling of federal funds for surface transportation, highlights regional priorities, and presents a short-term transportation vision. Additionally, it includes non-federally funded projects that do not require TIP approval.

Periodic amendments are necessary to update project lists, funding allocations, and schedules. This amendment incorporates:

- Project additions,
- Financial adjustments, and
- Timing revisions based on funding availability and regional priorities

Projects Added/Modified

Projects Added:

- MDT Project – Laurel Road/Montana Avenue: Sidewalk improvements to meet ADA compliance.
- MDT Project – 1st Avenue South: Pavement preservation on 1st Avenue South.
- MDT Project – Junction Highway 312 to Mile Post 7.29: Striping and durable pavement markings.
- MDT Project – Mallowney Lane to Wise Lane – Roadway striping.
- MDT Project – Montana Avenue Bridges – Bridge rehabilitation.
- MDT project – King Avenue to Rimrock Road: Pavement preservation.
- MDT Project – State Avenue: Pavement preservation.
- MDT Project – King Avenue Signals: Intersection upgrades/signals.
- MPO – Johnson Lane Sidewalks (County): Transportation Alternatives sidewalk project.
- MPO – Safe Routes to School (City): Transportation Alternatives project that will improve safe routes to schools.
- MET Transit – Updated allocations and projects.



Projects Added/Modified

Financial Adjustments:

- Funding sources and allocations updated to reflect revised cost estimates and grant awards.
- Adjustments made to federal, state, and local funding contributions.

Project Timing Revisions:

- Schedule updates due to funding shifts, permitting processes, or construction timelines.

Billings MPO Project List

PROJECT	UPN	SCOPE	COMMENTS	PERFORMANCE MEASURES	
CMAQ					
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River			
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		System performance - Efficiency	
Grand Ave 41st to 62nd		Reconstruction of existing roadway	Possible LAG project	System performance - Efficiency	
STPU					
Billings Bypass - Five Mile Road	4199-002	Reconstruction of roadway	Completed	System performance - Efficiency	
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River			
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		System performance - Efficiency	
Grand Ave 41st to 62nd		Reconstruction of existing roadway	Possible LAG project	System performance - Efficiency	
IM					
MDT Preventative Maintenance		Pavement Preservation and Striping	Placeholder to allow project nominations		
I-90 Yellowstone River - Billings	7972	Bridge Replacement		Bridge condition	
Mossman Intch - West Blgs Intch	9198	Pavement Preservation w/ signal improvements at off ramps		Pavement condition	
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		Safety - Reduce Fatalities & Serious Injuries	
Lockwood Intechange - Billings	9978	Reconstruction of existing Interchange to a diverging diamond design		Safety - Reduce Fatalities & Serious Injuries	
I-90 CULVERTS - BILLINGS AREA	10427	Culvert replacement	Not all locations inside MPO boundary		
NH					
MDT Preventative Maintenance		Pavement Preservation and Striping	Placeholder to allow project nominations		
Billings Bypass	4199-000	New Construction	Covers PE & IC		
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River			
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design			
Billings Bypass - RR O'pass	4199-005	New construction of bridge over the railroad			
Billings Bypass - Johnson Ln Intch-RR O'pass	4199-008	New construction of roadway connection from existing Interchange to the bridge over the railroad		Safety - Reduce Fatalities & Serious Injuries	
Billings Bypass - Johnson Lane Intch - RR O'pass	4199-006	New construction of connection from interchange to the railroad overpass			
Billings Bypass - Five Mile Road to US 87	4199-004	New construction of connection from Five Mile to US 87			
Exposition Dr. & 1st Ave N. Blgs	7908	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries	
Underpass Ave. Improvements	8669	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries	
Airport Rd. & Main St. - Blgs	8718	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries	
1st Ave. N - N 9th to RR Xing	9022	Major Reconstruction			
Zoo Drive Improvements	9597	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries	
1st Ave. N - RR Xing to Broadway	9880	Major Reconstruction			
1st Ave. N - Broadway to Division	9881	Major Reconstruction			
Montana Ave Crosswalks - Billings	9998	Sidewalk Improvements ADA Compliance		Safety - Reduce Fatalities & Serious Injuries	
Laurel RD / Montana Ave - BLGS	9998001	Sidewalk Improvements ADA Compliance	Split from MT Ave Crosswalks	Safety - Reduce Fatalities & Serious Injuries	New project
1st Ave South - Billings	10692	Pavement Preservation on 1st Ave South N-114 Mill & Fill with underseal and possible Dgouts.			New project
JCT Hwy 312 to MP 7.29		Striping and Durable Pavement Markings			New project

Billings MPO Project List (Continued)

NHFP				
Billings Bypass - Johnson Lane Interchange	4199-007	Reconstruction of existing Interchange to a diverging diamond design		
I-90 Yellowstone River - Billings	7972	Bridge Replacement		Freight Network
STPX, STPS, SFCN				
Billings Bypass - Yellowstone River Bridge	4199-003	New construction of bridge over the Yellowstone River		
Lockwood Interchange	9588	Interchange Improvements Study		
Jct Main & 87 to Worden		Roadway Striping		
SF 209 BILLINGS DIST SIGNS	10299	install safety improvement: signs, delineation, chevrons		
Mulowney Ln to Wise Ln		Roadway Striping		New project
STPP				
RRS				
HSIP				
Various Safety Projects			Placeholder to allow project nominations	
SF 129 - Rndabout King 56th	8052	Intersection Improvements - Roundabout		Safety - Reduce Fatalities & Serious Injuries
SF 169 Rimrock & 62nd St. W	9383		Roundabout	Safety - Reduce Fatalities & Serious Injuries
Zoo Drive Improvements	9597	Intersection Improvements		Safety - Reduce Fatalities & Serious Injuries
SF 189 South D5 Safety Imprv	9912	Intersection Safety Improvements	Several intersections West End Billings using 10% for costs	Safety - Reduce Fatalities & Serious Injuries
SF 209 BILLINGS DIST SIGNS	10299	install safety improvement: signs, delineation, chevrons		
KING AVE & 48TH STREET - BLGS	10643	Roundabout safety and operational improvements	split funded	Safety - Reduce Fatalities & Serious Injuries
BR				
Billings Bypass - Yellowstone River	4199-003	New construction of bridge over the Yellowstone River		
I-90 Yellowstone River - Billings	7972	Bridge Replacement		
BR PRES COLUMBUS JOLIET AREA	9552	Minor bridge rehab	One project in MPO Boundary	
SHILOH RD / I-90 BRIDGE - BLGS	9720	Bridge rehab		Bridge condition
MONTANA AVE OVERPASS- BILLINGS	9913	Bridge rehab		Bridge condition
MONTANA AVE BRIDGES- BILLINGS	10765	Bridge rehab		Bridge condition
				New project
UPP				
Various Preservation Projects		Pavement preservation	Placeholder to allow project nominations	
Shihoh Rd - King Ave to Rimrock	10703	Pavement preservation		New project
State Avenue - Billings	10704	Pavement preservation		New project
MACI				
MDT MACI		Statewide CMAQ - Various	Placeholder to allow project nominations	
MDT MACI		Statewide CMAQ - ADA Compliance	Placeholder to allow project nominations	
Underpass Ave. Improvements	8669	Intersection Improvements		
Mossmain Intch - West Blgs Intch	9198	Pavement Preservation w/ signal improvements at off ramps	Partially funded IM is primary	
ATSPM - MAIN STREET (BILLINGS)	10400	Signal Improvements		
BILLINGS DISTRICT ADA UPGRADES	10431	Signal Improvements	CE only	
King Ave Signals - Billings	10585	INT upgrades/signals		New project

Billings MPO Project List (Continued)

CR				
BILLINGS DISTRICT ADA UPGRADES	10431	Signal Improvements	CN only	
Zoo Drive Improvements	9597	Intersection Improvements	CN only	
KING AVE & 48TH STREET - BLS	10643	Roundabout safety and operational improvements	split funded	
TA				
Stagecoach Trail		Shared use path		Non-Motorized Fatalities and Serious Injuries
Old Hardin Sidewalk		Sidewalk construction		Non-Motorized Fatalities and Serious Injuries
Johnson Ln - Sidewalks	10721	Sidewalk construction		Non-Motorized Fatalities and Serious Injuries
Safe Routes to Schools - BLS	10722	Improve routes in Billings school districts		Non-Motorized Fatalities and Serious Injuries
FWP				
Rose Park Trail, Phase 1	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local (In-Kind) \$25,000	
Rose Park Trail, Phase 2	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Lillis Park Trail Connector	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Big Ditch Trail Extension	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Southern Riverfront Park Trail*	Local	Bike Pedestrian Path	Recreational Trails Program \$100,000 Local \$25,000	
Trailside Education Signs*	Local	Trail Signage	Recreational Trails Program \$47,000 Local \$12,000	
EARMARK				
Billings Bypass	4199-001	New Construction	Covers Environmental Doc., PE, RW	
FTA 5307				
FTA 5339				
FTA 5310				
FTA 5311				
100 % LOCALLY FUNDED PROJECTS				
Various Projects		Annual Operation and Maintenance		
State Funded Maintenance				
Various Maintenance Projects		Maintenance		

New project
New project

Transit Projects

- 5307
 - Updated to actual apportionment for 2025; estimated FY26-FY28
 - Updated project amounts for maintenance, paratransit, and operations
 - Updated the Program of Projects table to match project amounts
- 5339
 - Updated actual apportionment for 2025; estimated for FY26-FY28
 - Updated projects and funding amounts to reflect adopted CIP and ERP projects, as well as transfer center updates, bus wash rehab, technology updates, and equipment
 - Rolled paratransit van and equipment purchase forward to FY26 from FY25
- 5310
 - Updated with actual apportionment amounts
 - Updated projects table and amounts to reflect funding for COR vehicles and moved MET bus stop improvements forward from FY25 to FY26
- TransADE
 - Updated with actual apportionment amounts

Federal Transit Administration Section 5307*

Funding shown in thousands of dollars

Project	Description	Phase						Funding Source			Total Estimated Obligation
			2024	2025	2026	2027	2028	Local 20%	State	Federal 80%	
Sponsor											
<i>Carryover</i>			5,107.7	2,859.7	2,859.7	2,859.7	2,848.9				
<i>Allocation (Estimated)(Fed Share)</i>			2,859.7	2,905.0	2,970.9	2,970.9	2,970.9				
Bus & Passenger Amenities/Equipment											
Supportive Equipment											
Facilities/Amenities											
Security Related Capital (1% minimum)	*Used 5339 for Security in FY25/26		10.5				36.0	36.0	16.5	66.0	82.5
<i>Met Transf</i>		Total	10.5	0.0	0.0		36.0	36.0	16.5	66.0	82.5
Transit Operations***											
Fleet/Facility Preventive Maintenance	80/20 Match		1,557.1	862.5	900.0	900.0	900.0	1,023.9	4,095.7	5,119.6	
ADA Paratransit (20% of apportionment)	80/20 Match		1,461.0	726.3	744.4	744.4	744.4	884.1	3,536.4	4,420.5	
Fixed Route	50/50 Match		5,369.8	3,268.1	3,310.6	3,274.6	3,274.6	9,248.9	9,248.9	18,497.7	
<i>Met Transf</i>		Total	8,387.8	4,856.8	4,955.1	4,919.1	4,919.1	11,156.9	0.0	16,880.9	28,037.8
Purchase buses											
Replacement Buses											
Expansion Buses											
<i>Met Transf</i>		Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SECTION 5307 TOTALS*			8,398.3	4,856.8	4,955.1	4,955.1	4,955.1	11,173.4	0.0	16,946.9	28,120.3
Federal			5,107.7	2,905.0	2,970.9	2,981.7	2,981.7				
Local			3,290.6	1,951.8	1,984.2	1,973.4	1,973.4				
Ending Balance (Federal)			2,859.7	2,859.7	2,859.7	2,848.9	2,838.1				

Full 5307 apportionment (FY2026)

\$2,970,851

Project 1 - Operating Assistance	FTA Amount	Local	Total	FTA Share	Local Share
ALI 30.09.01 - Up to 50% share Operating Assistance	\$ 1,656,681	\$ 1,656,681	\$ 3,313,362	50.00%	50.00%
ALI 30.09.01 - Up to 50% share Operating Assistance (1% for Security)	\$ -	\$ -	\$ -	80.00%	20.00% * used 5339 funds in FY26 for security requirement
ALI 11.7C.00 - Non Fixed Route ADA Paratransit Service	\$ 594,170	\$ 148,543	\$ 742,713	80.00%	20.00% *up to 20% of total allocation if 3 criteria is met
ALI 11.7A.00 - Preventative Maintenance	\$ 720,000	\$ 180,000	\$ 900,000	80.00%	20.00%
Total P2	\$ 2,970,851	\$ 1,985,224	\$ 4,956,075		

*FTA administered funds are not subject to indirect cost recovery. 5307 funds may be supplemented by Small Transit Intensive Cities (STIC) funds based on transit system performance for the urbanized area (MET).

***Total local funding reflects an overmatch on federal share. Operations Match ratio is 50/50.

Federal Transit Administration Section 5339

Funding shown in thousands of dollars

Project	Description	Phase						Funding Source			Total Estimated Obligation
			2024	2025	2026	2027	2028	Local	State	Federal	
<i>Carryover</i>			1,011.2	753.1	1,173.4	431.8	811.8				
<i>Allocation (Estimated)</i>			735.0	758.7	780.0	780.0	780.0				
Rolling Stock	Replacement		602.1	0.0	0.0	0.0	0.0	90.3		511.8	602.1
<i>Met Transit</i>	85/15 match for ADA		602.1	0.0	0.0	0.0	0.0	90.3		511.8	602.1
Bus and Bus Technology	Upgrade		182.9	38.6	118.9	0.0	0.0	68.1		272.3	340.4
<i>Met Transit</i>	Upgrade		182.9	38.6	118.9	0.0	0.0	68.1		272.3	340.4
Bus Facilities and Support	Facility items, construction, technology, amenities, support equipment, etc.		418.8	88.9	725.0	400.0					
<i>Met Transit</i>	Facility items, construction, technology, amenities, support equipment, etc.		418.8	88.9	725.0	400.0					
				90.0	610.0	50.0					
				18.1		50.0					
							50.0				
			418.8	197.0	1,335.0	500.0	50.0	500.2		2,000.6	2,500.8
Bus Facilities Security System	Upgrade			187.3	448.2						
<i>Met Transit</i>	Upgrade			187.3	448.2						
			0.0	187.3	448.2	0.0	0.0	127.1		508.4	635.6
Bus, Facilities, and Technology	Upgrade facilities, replace buses, add technology						1,350.0	270.0		1,080.0	1,350.0
<i>Met Transit</i>	Upgrade facilities, replace buses, add technology						1,350.0	270.0		1,080.0	1,350.0
SECTION 5339 TOTALS			1,203.7	423.0	1,902.1	500.0	1,400.0	1,055.6	0.0	4,373.1	5,428.7
Federal			993.1	338.4	1,521.7	400.0	1,120.0				
Local			210.6	84.6	380.4	100.0	280.0				
Balance			753.1	1,173.4	431.8	811.8	471.8				

updated allocation

PROJECTS

2024	2025	2026	2027	2028
Overage bus diesel/electric				
AVL system	Bus Sign Controllers	Bus Pass Card Readers, APCs		
Facility Remodel	2 Support Vehicles, Generator, Shop Heaters	Transfer Center Amenities, Bus Wash, Rehab	Transfer Center Amenities, Fork Lift, Bus Stops	Bus Stops
	Admin Building Security Cameras	Transfer Center Security Cameras		

Federal Transit Administration Section 5339 Discretionary Funding

Project	Description	Phase						Funding Source		Total Estimated Obligation
			2024	2025	2026	2027	2028	15%	85%	
<i>Carryover</i>			6,904.6							
<i>Allocation</i>	5339b/Low/No		0.0	910.3						
Rollingstock	Replace buses		5,499.8		1,000.0					
<i>MET Transit</i>	85/15 match for ADA	Total	5,499.8	0.0	1,000.0	0.0	0.0	975.0	5,524.8	
Bus and Bus Facilities	Technology		465.0		70.0					
<i>MET Transit</i>	Facility Remodel		2,196.0							
	Training		20.1		5.4					
	Training Capital		210.8							
	80/20 Rate	Total	2,891.9	0.0	75.4	0.0	0.0	578.4	2,313.5	
SECTION 5339 TOTALS			8,391.7	0.0	1,075.4	0.0	0.0	1,553.3	7,838.3	
Federal			6,904.6	0.0	910.3	0.0	0.0			
Local			1,487.0	0.0	165.1	0.0	0.0			
Balance			0.0	910.3	0.0	0.0	0.0			

PROJECTS

2024	2025	2026	2027	2028
4 Diesel Buses	4 Electric Buses	8 Paratransit Vans (moved from FY25)		
Electric Chargers	METropex Remodel Bus Simulator & Training	Vehicle Lift, Electric Bus Scaffolding, Maint. Staff Training (moved from FY25)		

*Capital 80/20 Match, ADA Capital 85/15 Match

Federal Transit Administration Section 5310

Funding shown in thousands of dollars

Project	Description	Phase						Funding Source			Total Estimated
			2024	2025	2026	2027	2028	Local 15/20%	State	Federal 85/80%	
Sponsor											
<i>Carryover</i>			0.0	22.0	90.0	124.2	223.4				
<i>Allocation (Estimated)</i>			225.9	275.3	255.7	225.9	225.9				
Paratransit Vehicles	Purchase vehicles (ADA and Cutaway) for and other Coordination members as applicable	Purch.	128.0	143.8	104.7			56.5		320.0	376.4
		Purch.	111.9	100.0	50.0			52.4		209.5	261.9
<i>Met Transit and Coordination Group</i>			239.9	243.8	154.7	0.0	0.0	95.7		542.6	638.3
Traditional and Non-Traditional Projects	Projects to support identified community needs but may be also be used for vehicles	Purch.	0.0			158.4	282.5	88.2		352.7	440.9
		Purch.						0.0		0.0	0.0
		Purch.						0.0		0.0	0.0
		Purch.						0.0		0.0	0.0
<i>Coordination Members</i>			0.0	0.0	0.0	158.4	282.5	88.2		352.7	440.9
Bus Stop Improvements	Upgrade bus stop amenities	Purch.			112.5			22.5		90.0	112.5
<i>MET Transit</i>	Will be sub-allocated to MET Transit		0.0	0.0	112.5	0.0	0.0	16.9		95.6	112.5
SECTION 5310 TOTALS			239.9	243.8	267.2	158.4	282.5	200.8		990.9	1,191.7
	Federal		203.9	207.2	221.5	126.7	226.0				
	Local		36.0	36.6	45.7	31.7	56.5				
	Balance		22.0	90.0	124.2	223.4	223.3				

	2024	2025	2026	2027	2028
MET ADA Transit Van		2 COR vans	1 COR ADA van 1 COR non-ADA vehicle		
YCCOA ADA Transit Van (updated van costs)		2 BSSS mini-vans			
				Projects determined based on annual Coordination	Projects determined based on annual Coordination
			MET infrastructure improvements (moved from FY25 to FY26)		

Funding dependent on the outcome of a competitive process and funding availability.

TRANSADE (STATE FUNDED)

Funding shown in thousands of dollars

Project	Description	Phase						State Funded	Total Estimated
			2024	2025	2026	2027	2028		
Sponsor									
<i>Carryover</i>			0.0	0.0	0.0	0.0	0.0		
<i>Allocation (Estimated)</i>			348.9	253.8	214.7	214.7	214.7	1,246.7	
Transit Operations	Operating		348.9	253.8	214.7	214.7	214.7	1,246.7	
<i>Met Transit</i>			348.9	253.8	214.7	214.7	214.7	1,246.7	
STATE TOTALS			0.0	0.0	0.0	0.0	0.0	1,246.7	

updated allocation
updated costs



Review Schedule

Technical Advisory Committee (recommended approval)	April 9 th
Planning Board with Public Hearing	April 28 th
City Council Work Session	April 20 th
City Council (recommendation)	April 27 th
County Commissioners Discussion	April 30 th
County Commissioners (recommendation)	May 12 th
Policy Coordinating Committee (final action)	May 19 th