

Item 2

2910 N Montana



Michael Alvarez, Planner II
Community Development Department
316 North Park Avenue, Room 403
Helena, MT 59623

Phone: 406-447-8459
Fax: 406-447-8460
Email: malvarez@helenamt.gov

helenamt.gov

Date: September 06, 2022

CONDITIONAL USE PERMIT

STAFF REPORT

CITY OF HELENA PLANNING DIVISION
316 North Park Avenue
Helena, Montana 59632

TO: City of Helena Zoning Commission

FROM: Michael Alvarez, City Planning

SUBJECT: **To make a recommendation on a resolution granting a Conditional Use Permit to allow a Casino use in the B-2 (Commercial) Zoning District for property legally described as Tract "A" on COS #432628/T, records of Lewis and Clark County, Montana.**
This property is located at 2910 N Montana Ave and generally occupies a tract of land on the southwest corner of N Montana Ave and Tara Ct.

OVERVIEW

GENERAL INFORMATION

DATE OF APPLICATION: July 11th, 2022
DATE DEEMED COMPLETE: July 20th, 2022

PUBLIC HEARING DATES:
Zoning Commission: 6:00 P.M. Tuesday, September 13, 2022
City Commission: 6:00 P.M. Monday, October 17, 2022

PUBLIC NOTICE:
Legal notice has been published August 28, 2022 in the Independent Record; notice letters have been sent to adjacent property owners and a sign posted on the property.

PUBLIC COMMENT:
As of Tuesday, September 6, 2022 05, 2022, no public comments have been expressed regarding this proposed CUP.

APPLICANT: Dan Casne
ADDRESS: 600 S Main St, Butte, MT 59701
EMAIL: Dans@townpump.com

OWNER: Helena N Montana Misc RE, LLC
ADDRESS: PO Box 6000, Butte, MT 59702
EMAIL: Dans@townpump.com

SURVEYOR/ENGINEER: Casne & Associates, Inc.
ADDRESS: PO Box 1123, Helena, MT 59624
EMAIL: ryan@caneinc.com

SUBJECT PROPERTY ADDRESS: 2910 N Montana Ave, Helena, MT 59601

LEGAL DESCRIPTION: Tract "A" on COS #432628/T, records of Lewis and Clark County, Montana.

GENERAL LOCATION: This property is located at 2910 N Montana Ave and generally occupies a tract of land on the southwest corner of N Montana Ave and Tara Ct.

DESCRIPTION / BACKGROUND

This lot currently sits vacant. The last use on the lot was "restaurant, drive-in" the designation most applicable for a coffee kiosk there. The applicant is requesting a Conditional Use Permit (CUP) to allow a "casino" use in a B-2 (commercial) zoning district. The applicant plans to erect a new 16,500sf facility. The casino will occupy approximately 4,000sf (see: "Premise Exhibit") with the remainder being a convenience store supporting new gas pump islands. Per the requirements of the B-2 District a CUP is required for a casino use.

ZONING USE DEFINITIONS:

CASINO: An establishment licensed for on premises consumption of alcoholic beverages which:

- A. Is licensed for and has six (6) or more video gaming machines or gambling devices; or
- B. Is licensed for and used to conduct any of the following types of gambling: calcutta pools, live card games, live card game tournaments, and live keno.

B-2 (commercial) district provides for compatible residential uses and a broad range of commercial and service uses that serve large areas of the City and that are normally required to sustain a community.

PRESENT LAND USE & ZONING: B-2 (commercial) – the property is mostly vacant being used to display custom sheds for sale and it houses a coffee kiosk.

ADJACENT LAND USE & ZONING:

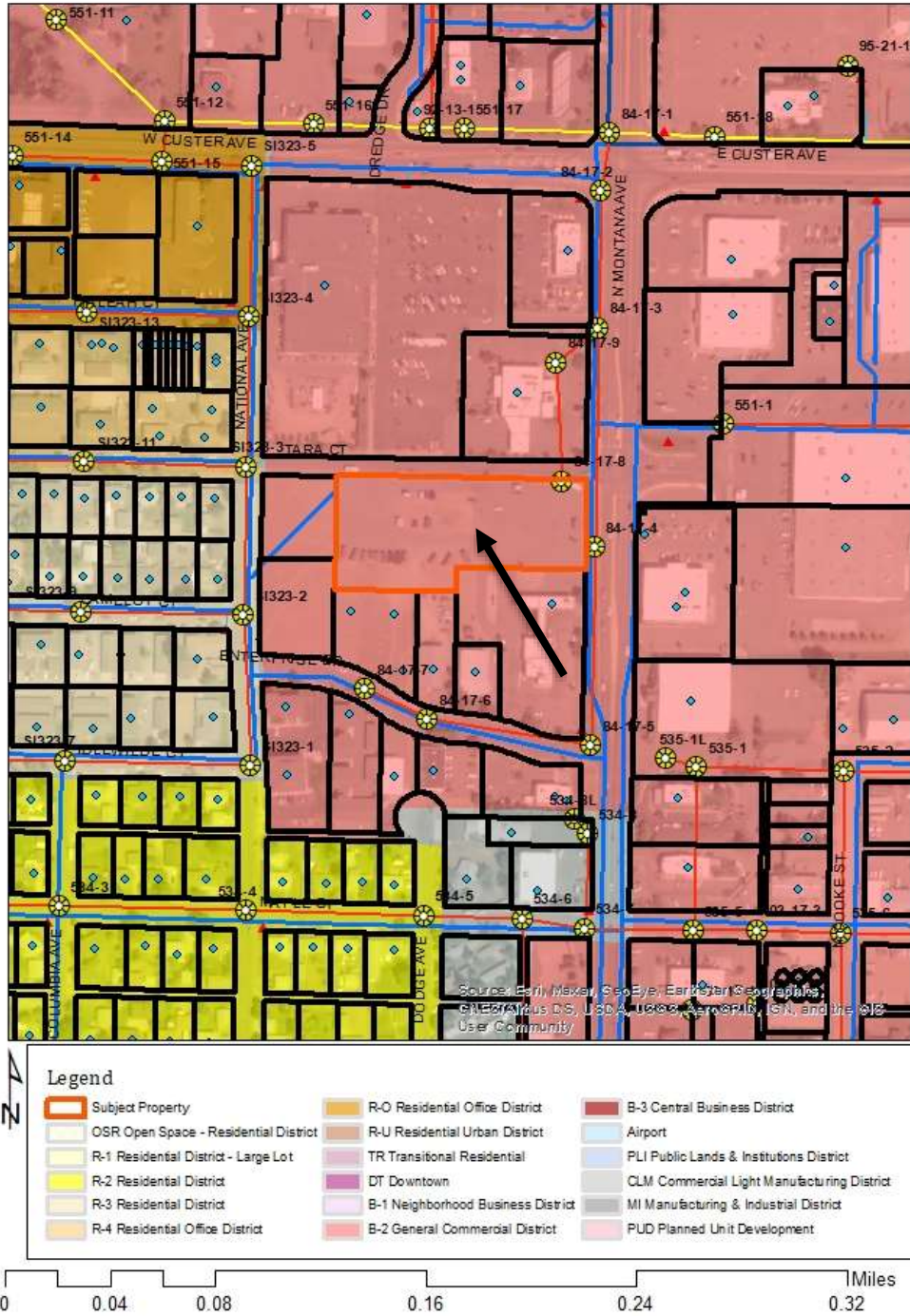
North: B-2 (commercial) – general retail sales (Murdoch's), financial services (Valley Bank)

South: B-2 (commercial) – from east to west, casino (Lucky Lil's), Fuel Sales (existing Town Pump), general professional services -- (Eagle Electric Inc), general retail sales (Spas of Montana), multiple-dwelling unit residences

East: B-2 (commercial) – Shopping Center/General Retail Sales (Natural Grocers, Good Samaritan Thrift Store, Harbor Freight, Dollar Tree), casino (Gold Island Casino).

West: B-2 (commercial) – Vacant land (immediately), R-3 (residential) single dwelling-units (across National Ave)

VICINITY MAP:



REVIEW CRITERIA FOR THE CONDITIONAL USE

Section 11-3-4 of the Helena Zoning Ordinance includes certain criteria that must be reviewed as part of the conditional use permit procedure.

A. A conditional use permit may be granted by the city commission only upon a finding, supported by substantial credible evidence in the record that the following standards are met:

- 1. The proposed conditional use, as conditioned, will not adversely impact the public health, safety, or general welfare.*
- 2. The proposed conditional use will not adversely impact or impair the peaceful use of existing property or improvements in the vicinity and the zoning district in which the subject property is located.*

B. In considering whether sections §11-3-4(A)(1) and (A)(2) of this chapter have been met, the following factors must be considered in determining the impacts of the proposed conditional use on the abutting properties and the neighborhood:

- 1. Location, character, and natural features of the subject property as it currently exists.*
- 2. Type and size of the proposed structure and improvements and their relative location on the subject property.*
- 3. Historical uses, established use patterns, and recent changes and trends in the neighborhood.*
- 4. Conformity of the proposed use with the neighborhood plan, if one has been adopted.*
- 5. Current and proposed pedestrian, vehicular, and bicycle traffic including ingress and egress, circulation and parking.*
- 6. Whether the use is consistent with the Helena Climate Change Action Plan.*
- 7. Whether the proposal meets the zoning dimensional standards requirements for the zoning district without the need for a variance.*
- 8. Hours of operation.*
- 9. Noise.*
- 10. Glare.*
- 11. Odor.*
- 12. Expressed public opinion related to factors identified above.*

C. The above factors are weighed and evaluated depending on the circumstances of each case. Any one factor may be sufficient to find adverse impacts for the purposes of Section §11-3-4(A)(1) and (A)(2) justifying denial of the permit or placement of special conditions.

FINDINGS & EVALUATION

- 1. Location, character, and natural features of the subject property as it currently exists.*

The site is located at the southwest corner of N Montana Ave and Tara Ct. The site is largely adjacent to commercial activity (see: adjacent land use & zoning section of this report). That adjacent commercial activity is largely car-oriented in its development pattern.

- 2. Type and size of the proposed structure and improvements and their relative location on the subject property.*

The proposed casino would be housed inside a newly constructed 16,500sf facility. The casino will occupy approximately 4,000sf (see: "Premise Exhibit") with the remainder

being a convenience store supporting new gas pump islands.

The facility will necessitate new parking facilities with all pertinent access, landscaping, and screening required by code.

3. *Historical uses, established use patterns, and recent changes and trends in the neighborhood.*

The site was once occupied by the Circus Theatre. The commercial activity currently on the site is a coffee kiosk. The site also serves as display for custom sheds. This area of N. Montana Ave is typically developed as commercial enterprises almost exclusively arrived at by car. The intersection of Tara Ct and N Montana Ave is signalized.

4. *Conformity of the proposed use with the neighborhood plan, if one has been adopted.*

The City of Helena Future land Use map designates this area as commercial. It is zoned B-2 commercial, and other than the casino the other uses at the property *Vehicle Fuel Sales* is permitted by right at the location.

5. *Current and proposed pedestrian, vehicular, and bicycle traffic including ingress and egress, circulation, and parking.*

The applicant has performed a Traffic Impact Study for the location. While that study is still be evaluated by City staff, the casino use is not expected to be the major driver of traffic at the site.

The building will require the installation of new sidewalks along the frontages. This is an especially critical portion of connectivity on N Montana as this property currently interrupts the sidewalk there.

6. *Whether the use is consistent with the Helena Climate Change Action Plan.*

The applicant intends to do the following design elements that are in-keeping with the City of Helena's Climate Action Plan:

- a. Minimize live vegetative cover that requires landscape irrigation (water).
- b. Use low-flow fixtures (i.e. Toilets, Urinals, Faucets).
- c. Storm water design will utilize underground chambers that allows collected surface runoff (storm water) to infiltrate onsite and provide groundwater recharge.

7. *Whether the proposal meets the zoning dimensional standards requirements for the zoning district without the need for a variance.*

The proposal, as presented, meets the zoning dimensional requirements for the B-2 zoning district without the need for a variance.

8. *Hours of operation.*

The proposed hours of operation are 8a to 2a. N Montana Ave has motor vehicle traffic at all times and this time range would not produce an unusual or novel amount of traffic in the area.

9. *Noise.*

The applicant states that the proposed noise from the casino would not increase external noise. The only noise generated would be produced by the vehicles entering/leaving the parking lot. The addition of the Town Pump casino to N Montana Ave's noise producing traffic is negligible/unquantifiable.

10. *Glare.*

The parking lots are currently not screened from the nearby residential neighborhood. The parking lots would not need to be screened per § 11-24-5 because there is a vacant B-2 (commercial) lot between the proposed Town Pump site and the neighborhood. It is recommended that Town Pump install screening until such a time as that parcel is developed.

11. *Odor.*

There are no expected new odors to be produced from the casino with this proposal.

12. *Expressed public opinion related to factors identified above.*

As of Tuesday, 09/06/2022, no public comments have been given for this proposal.

RECOMMENDATION

To recommend **Approval** of a resolution granting a Conditional Use Permit to allow a casino use in the B-2 (Commercial) Zoning District for property legally described as Tract "A" on COS #432628/T, records of Lewis and Clark County, Montana.

This property is located at 2910 N Montana Ave and generally occupies a tract of land on the southwest corner of N Montana Ave and Tara Ct., with the following conditions:

1. A building permit must be submitted for within one (1) year.
2. Screening shall be put in place along the western lot line until such a time as the commercial property to the west is developed.
3. All conditions must be met within one year of CUP approval, as per Section 11-3-9 of the Helena City Code.



**CONDITIONAL USE PERMIT/AMENDMENT
APPLICATION FORM**
Community Development Department, Planning Division
316 North Park Avenue, Room 445
Helena, MT 59623

: Phone: 406-447-8490
: Fax: 406-447-8460
: Website: helenamt.gov

APPLICATION FEE: \$435.00
(PAYABLE TO THE CITY OF HELENA)
ALL FEES ARE NON-REFUNDABLE

APPLICANT/REPRESENTATIVE: Primary Representative?

Name: Dan Sampson Primary Number: 4064976860
Address: 600 S Main St. Butte, MT 59701 Other Phone: _____
Email: dans@townpump.com

PROPERTY OWNER (If different from applicant): Primary Representative?

Name: Helena N Montana Misc RE,LLC Primary Number: 4064976860
Address: PO Box 6000, Butte, MT 59702 Other Phone: 4064976700
Email: dans@townpump.com

SURVEYOR/ENGINEER: Primary Representative?

Name: Casne & Associates, Inc. Primary Number: 4064431656
Address: PO Box 1123, Helena, MT 59624-1123 Other Phone: _____
Email: ryan@casneinc.com Company: _____

ADDRESS OF PROPERTY: 2910 N. Montana Ave. Helena, MT 59601
Address City State Zip Code

LEGAL DESCRIPTION OF PROPERTY (Block & Lots, Subdivision/Addition):
Tract A of COS#3476 (Doc#432628/T), located in NE1/4NE1/4, S19, T10N, R3W.

ZONING DISTRICT: B-2 General Commercial

GEOCODE: 05-1888-19-1-30-40-0000

IT IS THE POLICY OF THE CITY COMMISSION NOT TO ACT ON A PROPOSAL IF THE APPLICANT/APPLICANT'S REPRESENTATIVE IS NOT PRESENT AT THE COMMISSION MEETING. City Planning Staff represents the City; staff cannot answer questions for the applicant.

The taxes and assessments on the applicant's property, which is the subject of the proposed action, must be paid or payment of said taxes and assessments must be made a condition of final approval of said action by the City Commission, with the taxes and assessments to be paid within fourteen (14) days after final passage. In the event the taxes and assessments are not paid, the proposal will be brought back before the City Commission at the next regularly scheduled meeting for reconsideration.



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APPLICATION FORM

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316 North Park Avenue, Room 445
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Phone: 406-447-8490
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Website: helenamt.gov

I HEREBY CERTIFY AND ACKNOWLEDGE THE ABOVE STATEMENTS AND ANY ATTACHED INFORMATION ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

Signed:

[Signature]
Applicant

Date: 6-17-22

Property Owner:

[Signature]
(If different from Applicant)

Date: 6-17-22

Please provide all the information requested in the Application Instructions. An incomplete application may delay the review of your request. Updated: 08/2020

Are you requesting any variances with this application? Yes No

If yes, see Board of Adjustment application.

Have any variances of CUPs been previously given for this property? Yes No

If yes, provide a copy of the variance decision or CUP Resolution. *NOT THAT WE ARE AWARE OF.*

Review Process and Criteria: The following completeness review is required for applications for conditional use permits:

- A. Within ten (10) working days of receipt of an application and required filing fee, the City shall review the submitted information to determine whether the application contains all the information required by this chapter. The application is complete if all the information required is provided, thereby forming the basis for an informed decision on the application. The City shall give written notice to the applicant of the determination as to whether or not the application is complete.
- B. If the City determines that information is missing from the application, the City will identify those elements in the notification. If the applicant fails to submit the missing information within five (5) working days of the notice of deficiency, the City may deny approval of the application.
- C. If the applicant corrects the deficiencies and resubmits the application within the time provided above; the City has ten (10) working days to notify the applicant whether the resubmitted application contains all the information required by this chapter.
- D. After a complete application has been filed, the City shall investigate the facts bearing on the application to assure that the action on the application is consistent with the intent and purpose of this Title, and then give its recommendation to the Zoning and City Commission.

A CONDITIONAL USE PERMIT IS EFFECTIVE UPON APPROVAL BY THE CITY COMMISSION AND AFTER ALL OF THE CONDITIONS FOR APPROVAL HAVE BEEN COMPLETED.

YOUR PROPOSAL MUST COMPLY WITH THE FOLLOWING:

- Building and fire codes including required building and occupancy permits.
- Zoning Ordinance requirements including but not limited to minimum lot area; front, side and rear yard setbacks; maximum lot coverage; building height; landscaping; parking; screening; and signage.
- Sidewalks, curbs and gutters; if deteriorated, repair or replacement may be required.



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Phone: 406-447-8490
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Website: helenamt.gov

APPLICATION INSTRUCTIONS:

All applications for conditional use permits must include the following information:

- A person desiring a conditional use permit shall apply to the City on the appropriate forms and pay any required fees.
- Type and extent of the proposed use (including hours of operation)
- Site plan showing the proposed and current location of:
 - Pedestrian, vehicular, and bicycle ingress and egress to the property; *ALSO SEE T.I.S.*
 - Parking and loading areas;
 - Landscaping and screening;
 - Solid waste collection areas;
 - Utilities;
 - Signs; and
 - Lighting;
- Proposed storm water drainage plan;
- Traffic impact study for any use that will generate more than two hundred (200) vehicle trips a day;
- Vicinity map of the area showing the location of the property in relation to surrounding land and zoning in the immediate area, water and wastewater mains, other utilities, and city streets;
- Planned modifications to the existing structure; *-NO EXIST. STRUCTURE*
- Preliminary architectural drawings for new construction with elevations that include building heights;
- An evaluation of the impacts on the abutting properties and the neighborhood with respect to the factors identified in section 11-3-5B. The evaluation must address any potential adverse impacts and how any such adverse impacts will be mitigated.
- Expected time when the permitted conditional use will commence; and
- Variances requested. (Ord. 3097, 4-7-2008) *-NONE*

All applications for conditional use permits will be evaluated against the following criteria:

- The proposed conditional use, as conditioned, will not adversely impact public health, safety, or general welfare.
- The proposed conditional use, as conditioned, will not adversely impact the peaceful use of existing property or improvements in the vicinity and the zoning district in which the subject property is located.



CONDITIONAL USE PERMIT/AMENDMENT APPLICATION FORM

Community Development Department, Planning Division
316 North Park Avenue, Room 445
Helena, MT 59623

Phone: 406-447-8490
Fax: 406-447-8460
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The following factors must be considered in determining the impacts of the proposed conditional use on the abutting properties and the neighborhood. **Please provide the following:**

- Location, character, and natural features of the subject property as it currently exists;
- Type and size of the proposed structure and improvements and their relative location on the subject property;
- Historical uses, established use patterns, and recent changes and trends in the neighborhood;
- Conformity of the proposed use with the neighborhood plan, if one has been adopted;
- Current and proposed pedestrian, vehicular, and bicycle traffic including ingress and egress, circulation, and parking;
- Whether the use is consistent with the Helena Climate Change Action Plan;
- Whether the proposal meets the zoning dimensional standards requirements for the zoning district without the need for a variance;
- Hours of operation;
- Noise;
- Glare;
- Odor;
- Expressed public opinion related to factors identified above.

Please include the most recent Deed for impacted property.

DATE: 7-8-22
Project: Town Pump – Helena #4 with Casino
Purpose: Conditional Use Permit for Casino Operations

SUPPORTING INFO. FOR C.U.P. APPLICATION (CASINO OPERATION)

1. **Type and Extent of Proposed Use:** Casino. Proposed use is for adult gaming. Identical use to adjacent and existing Lucky Lil’s Casino located at 2900 N. Montana Ave. Proposed hours of operation: 8am – 2am.
2. **Prelim. Site Plan:** See attached plan by Casne and Associates.
3. **Prelim. Grading and Drainage Plan:** See attached plan by Casne and Associates.
4. **Traffic Impact Study:** See attached by Abelin Traffic Services.
5. **Vicinity Map:** See attached. Refer to attached site plan to see approx. location of other known utilities.
6. **Prelim Architectural Plans:** See attached by CWG Architects.
7. **Anticipated conditional use to commence (occupancy permit):** September 2023.
8. **No known reasons to request a variance at this time.**

Evaluation of potential impacts (from Proposed Conditional Use) to both abutting properties and the neighborhood:

1. **Location, character, and natural features:** The site is located at the SW corner of N. Montana Avenue and Tara Court. Adjacent to the site are many commercial buildings including Murdochs, Valley Bank, Town Pump Convenience Store, Town Pump fueling station, Lucky Lils Casino, Spas of Montana, and Eagle Electric. Many years ago, this site was the location of another commercial facility, Circus Theatre. It currently serves as a location for commercial display of custom sheds and also has a coffee kiosk. The majority of the parcel is currently paved with asphalt surfacing.
2. **The proposed casino would be housed inside a brand-new commercial building (Town Pump convenience store).** The casino is estimated at 4,000sf and the entire Town Pump building footprint is estimated at 16,500sf. The attached site plan shows where the building is proposed to sit on the property.
3. **See #1 for historical use.** There is no established use pattern as business use has been random since Circus Theatres was demolished. We are not aware of recent changes and trends in the neighborhood. N. Montana Avenue is very busy and highly used by Helena residents. Development adjacent to N. Montana is very desirable. Development at this exact location is even more desirable given the signalized intersection (N. Montana Ave. and Tara Court) that allows motorists to make safe left turns onto and from N. Montana Avenue.
4. **We are not aware of a neighborhood plan.** If one exists, we assume that the proposed use is consistent as a Lucky Lils Casino currently exists just south of this property.

5. Refer to the attached Traffic Impact Study for pedestrian, vehicular, and bicycle traffic info.
6. Helena Climate Change Policy: We do not see statements in the 2009 Plan that are directly related to actions that new businesses should/must adhere to. The following items are proposed design elements that appear to be in-line with City of Helena's Climate Action Plan:
 - a. Minimize live vegetative cover that requires landscape irrigation (water).
 - b. Use low-flow fixtures (i.e. Toilets, Urinals, Faucets).
 - c. Storm water design will utilize underground chambers that allows collected surface runoff (storm water) to infiltrate onsite and provide groundwater recharge.
7. A variance is not needed for the zoning dimensional standard rqt.
8. Proposed hours of operation: 8am – 2am.
9. The proposed noise from gaming in the casino would not increase external noise. The only possible noise increase would come from vehicles entering/leaving the parking lot. However, given the commercial nature of this area and traffic corridor, high vehicle count on N. Montana Ave., and existing Town Pump and Casino adjacent to this property, potential increased noise is considered negligible.
10. Glare: N/A
11. Odor: N/A
12. We are currently not aware of any expressed public opinion related to the factors above for this proposed conditional approved use.

Attachments: Vicinity Map

Prelim. Site Plan

Prelim. Drainage Plan

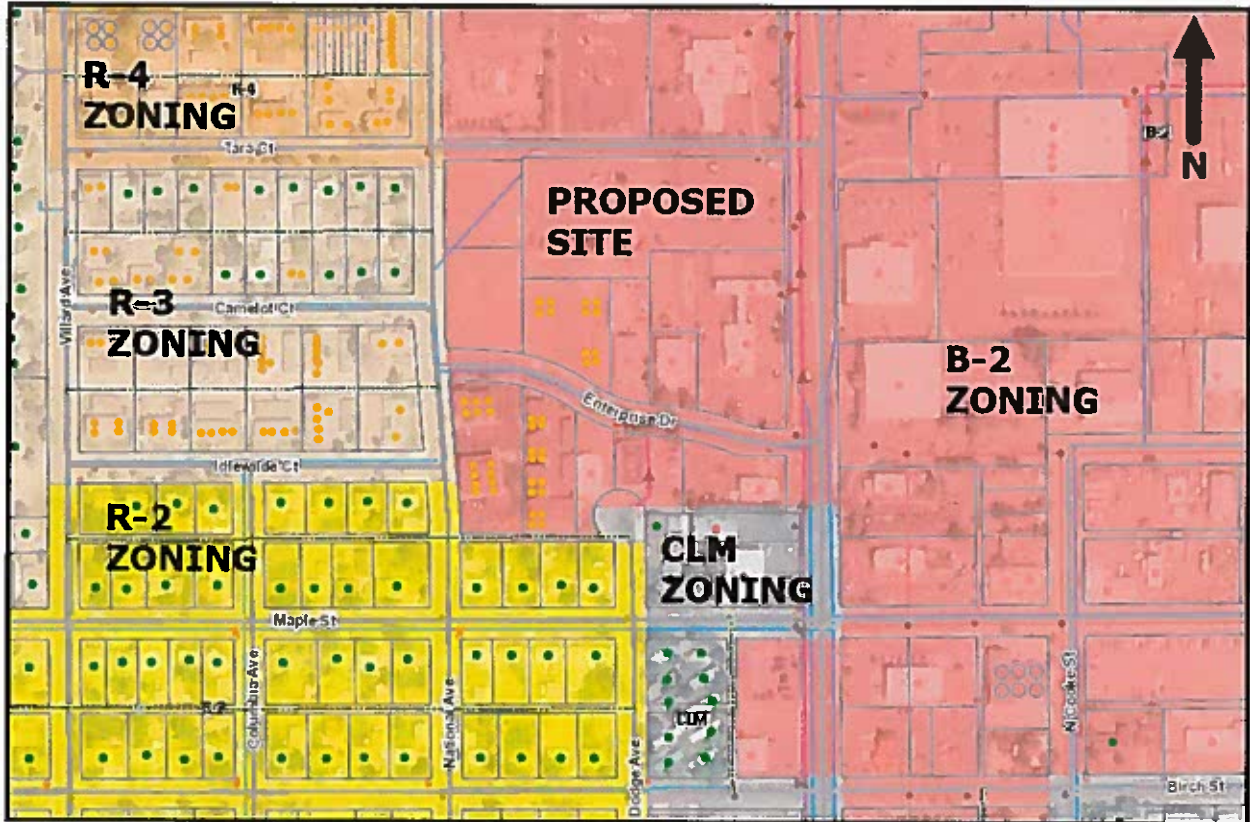
Traffic Impact Study

Prelim Architectural Plans

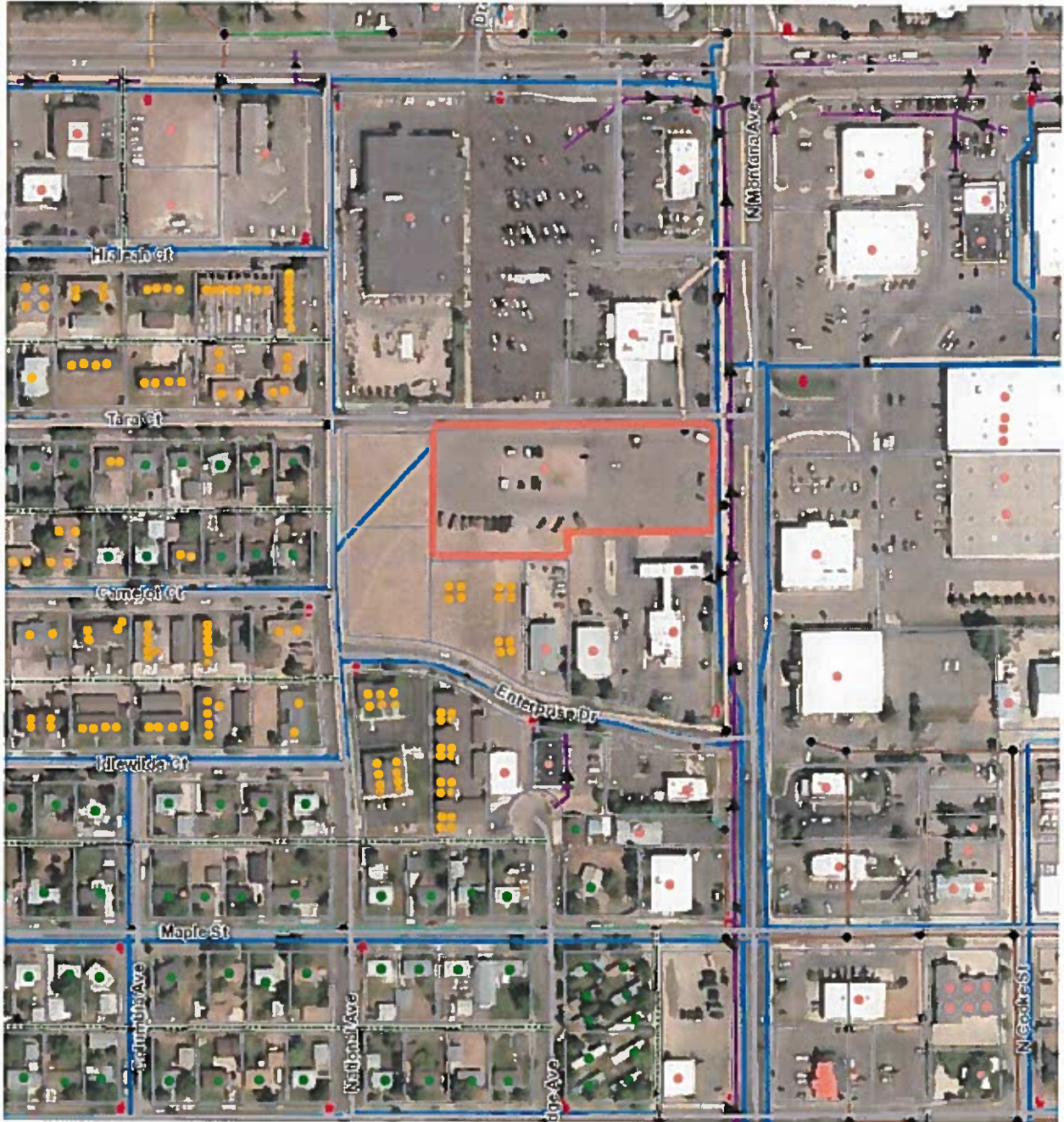
Deed

VICINITY MAP #1

ZONING



VICINITY MAP #2
GENERAL AND UTILITIES



AFTER RECORDING RETURN TO:

Daniel D. Manson
600 S. Main Street
Butte, MT 59701

SPECIAL WARRANTY DEED

THIS INDENTURE, made the 31st day of December, 2020, between BIG SKY PROGRESS LLC, a Delaware Limited Liability Company (the "GRANTOR"), and HELENA N MONTANA MISC RE LLC, a Montana Limited Liability Company, whose address is 600 S. Main Street, Butte, MT 59701 (the "GRANTEE"),

WITNESSETH:

That the GRANTOR, in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, does hereby transfer and convey unto the GRANTEE, and to the successors and assigns of GRANTEE, forever, all of GRANTOR'S right, title and interest in and to the following real property, situated in Lewis and Clark County, State of Montana, to-wit:

PARCEL I: Tract "A" of Certificate of Survey No. 3476, filed as Document No. 432628/T, located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 19, Township 10 North, Range 3 West, P.M.M., Lewis and Clark County, Montana, as shown on and according to the Official Plat thereof on File and of Record in the Office of the Clerk and Recorder for Lewis and Clark County, Montana.

PARCEL II: Tract 3 of the Sunset Drive-In Subdivision Plat No. 610, filed as Document No. 363054, located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 19, Township 10 North, Range 3 West, P.M.M., in the City of Helena, Montana, as described in and according to the Official Plat thereof on File and of Record in the Office of the Clerk and Recorder for Lewis and Clark County, Montana.

PARCEL III: Lots 1 and 2, in Block 1, of the Hagler &



**Waddell Subdivision Plat No. 2267, filed as Document No. 381310, located in the NE¼ of Section 19, Township 10 North, Range 3 West, P.M.M., in the City of Helena, Lewis and Clark County, Montana, as shown, described and according to the Official Plat thereof on File and Record in the Office of the Clerk and Recorder for Lewis and Clark County, Montana.
Deed Ref.: Document 3099283.**

Together with all the tenements, hereditaments, and appurtenances thereto belonging, and the reversions, remainders, rents, issues and profits thereof; and also all the estate, right, title, interest, property, possession, claim and demand whatsoever as well in law as in equity, of the GRANTOR, of, in or to the premises and every part and parcel thereof.

To have and to hold, all and singular, the premises, with the appurtenances, unto the GRANTEE, and to GRANTEE's the successors and assigns, forever.

GRANTOR will forever warrant and defend all right, title and interest in and to the premises and the quiet and peaceful possession thereof unto the GRANTEE against all acts and deeds of the GRANTOR and any person who may lawfully claim the premises by, through or under the GRANTOR, excepting from these warranties all restrictions, reservations, easement and/or encumbrances of record, and any visible easements or encroachments, and any taxes or assessments for 2020 and subsequent years.

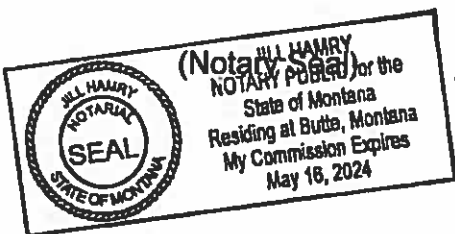
IN WITNESS WHEREOF, the GRANTOR has executed this instrument the day and year first above written.

Big Sky Progress LLC

By James M. Kenneally
James M. Kenneally
Manager

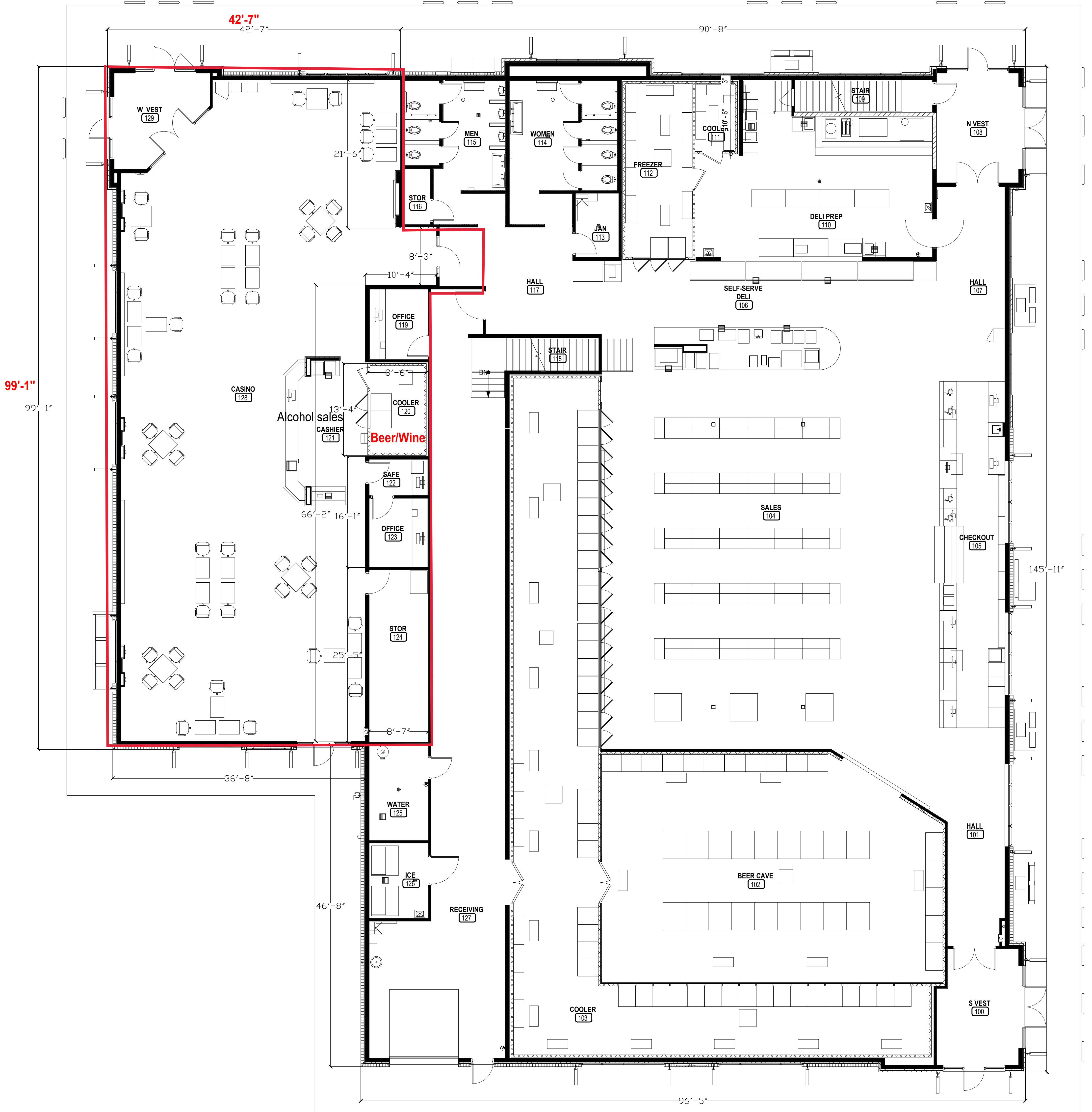
STATE OF MONTANA)
 : ss.
County of Silver Bow)

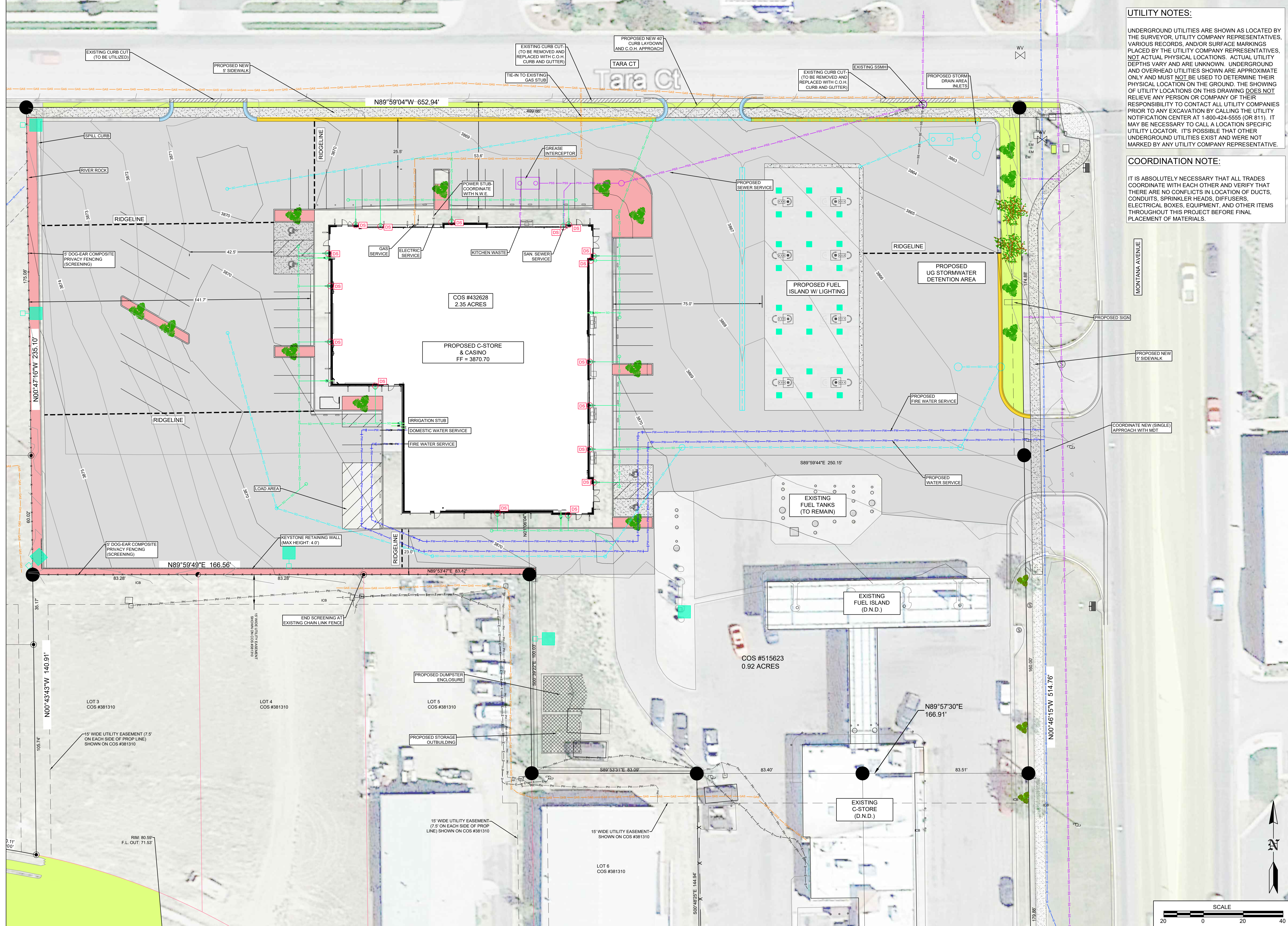
This instrument was acknowledged before me on this 31st day of December, 2020, by James M. Kenneally as Manager of Big Sky Progress LLC.



Jill Hamry
Notary Public

Lucky Lil's Casino of Helena
Helena 4 Lucky Lil's LLC
1150 Enterprise Dr.
Helena, MT 59601
05-601-3923-301
July 2022





UTILITY NOTES:

UNDERGROUND UTILITIES ARE SHOWN AS LOCATED BY THE SURVEYOR, UTILITY COMPANY REPRESENTATIVES, VARIOUS RECORDS, AND/OR SURFACE MARKINGS PLACED BY THE UTILITY COMPANY REPRESENTATIVES. NOT ACTUAL PHYSICAL LOCATIONS. ACTUAL UTILITY DEPTHS VARY AND ARE UNKNOWN. UNDERGROUND AND OVERHEAD UTILITIES SHOWN ARE APPROXIMATE ONLY AND MUST NOT BE USED TO DETERMINE THEIR PHYSICAL LOCATION ON THE GROUND. THE SHOWING OF UTILITY LOCATIONS ON THIS DRAWING DOES NOT RELIEVE ANY PERSON OR COMPANY OF THEIR RESPONSIBILITY TO CONTACT ALL UTILITY COMPANIES PRIOR TO ANY EXCAVATION BY CALLING THE UTILITY NOTIFICATION CENTER AT 1-800-424-5555 (OR 811). IT MAY BE NECESSARY TO CALL A LOCATION SPECIFIC UTILITY LOCATOR. IT'S POSSIBLE THAT OTHER UNDERGROUND UTILITIES EXIST AND WERE NOT MARKED BY ANY UTILITY COMPANY REPRESENTATIVE.

COORDINATION NOTE:

IT IS ABSOLUTELY NECESSARY THAT ALL TRADES COORDINATE WITH EACH OTHER AND VERIFY THAT THERE ARE NO CONFLICTS IN LOCATION OF DUCTS, CONDUITS, SPRINKLER HEADS, DIFFUSERS, ELECTRICAL BOXES, EQUIPMENT, AND OTHER ITEMS THROUGHOUT THIS PROJECT BEFORE FINAL PLACEMENT OF MATERIALS.

Casne & Associates, Inc.
 PO Box 1123
 Helena, Montana 59624
 (406) 443-1656
 ryan@casneinc.com

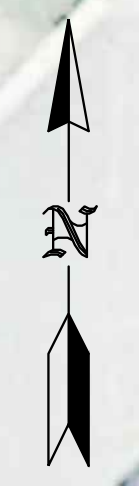
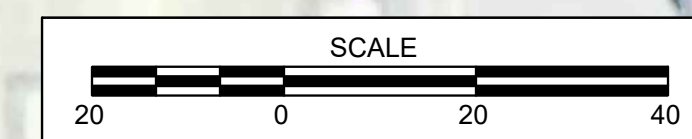


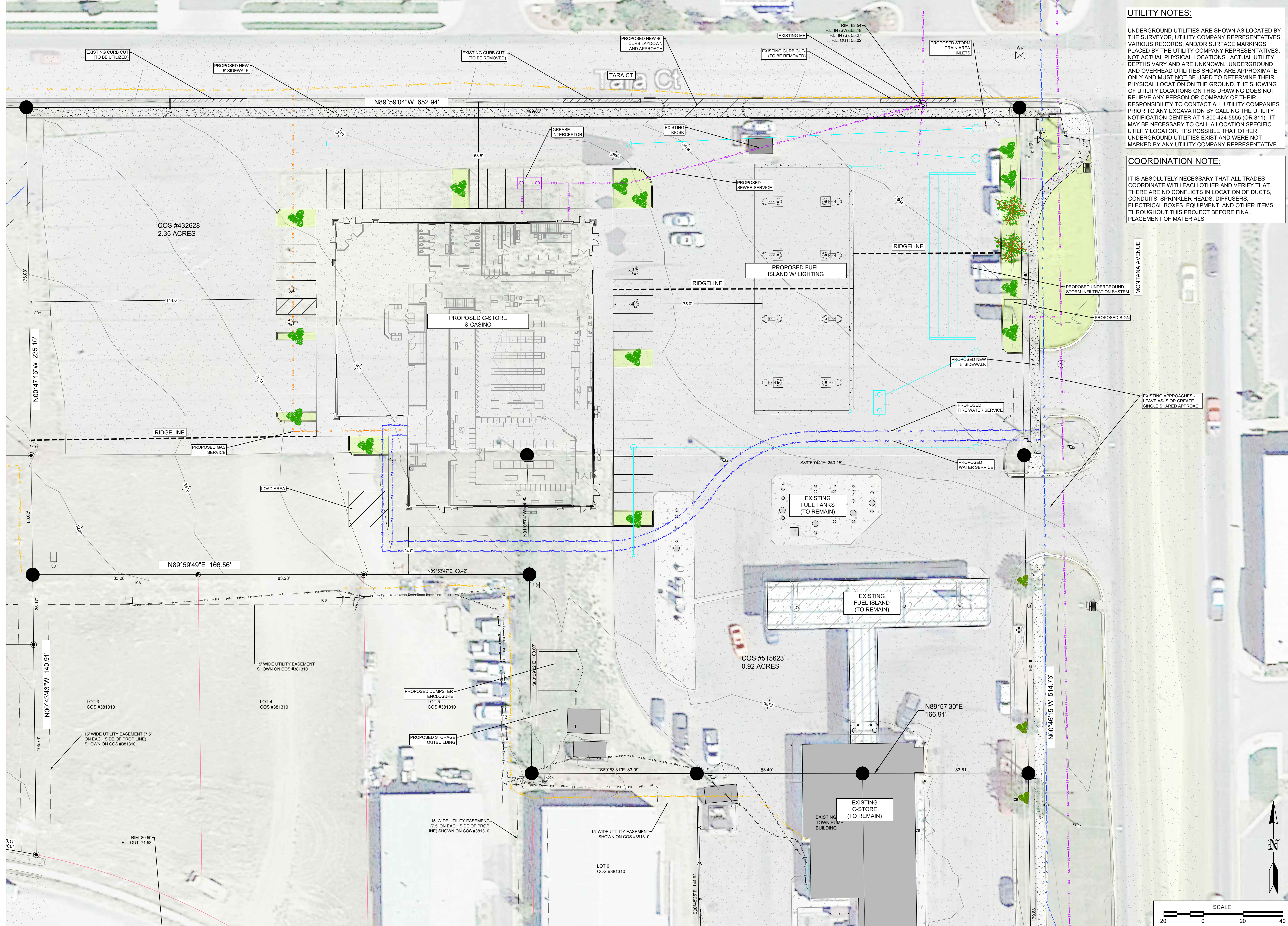
HELENA #4 TOWN PUMP
 2810 N. MONTANA AVENUE
 HELENA, MT 59601

TOWN PUMP, INC.
 600 S. MAIN
 P.O. BOX 6000
 BUTTE, MONTANA 59702

DRAWN BY SK
 APPROVED JS
 DATE 9/2/2022

PRELIMINARY SITE PLAN FOR C.U.P. APPLICATION (UPDATED 9/2/22)





UTILITY NOTES:

UNDERGROUND UTILITIES ARE SHOWN AS LOCATED BY THE SURVEYOR, UTILITY COMPANY REPRESENTATIVES, VARIOUS RECORDS, AND/OR SURFACE MARKINGS PLACED BY THE UTILITY COMPANY REPRESENTATIVES. NOT ACTUAL PHYSICAL LOCATIONS. ACTUAL UTILITY DEPTHS VARY AND ARE UNKNOWN. UNDERGROUND AND OVERHEAD UTILITIES SHOWN ARE APPROXIMATE ONLY AND MUST NOT BE USED TO DETERMINE THEIR PHYSICAL LOCATION ON THE GROUND. THE SHOWING OF UTILITY LOCATIONS ON THIS DRAWING DOES NOT RELIEVE ANY PERSON OR COMPANY OF THEIR RESPONSIBILITY TO CONTACT ALL UTILITY COMPANIES PRIOR TO ANY EXCAVATION BY CALLING THE UTILITY NOTIFICATION CENTER AT 1-800-424-5555 (OR 811). IT MAY BE NECESSARY TO CALL A LOCATION SPECIFIC UTILITY LOCATOR. IT'S POSSIBLE THAT OTHER UNDERGROUND UTILITIES EXIST AND WERE NOT MARKED BY ANY UTILITY COMPANY REPRESENTATIVE.

COORDINATION NOTE:

IT IS ABSOLUTELY NECESSARY THAT ALL TRADES COORDINATE WITH EACH OTHER AND VERIFY THAT THERE ARE NO CONFLICTS IN LOCATION OF DUCTS, CONDUITS, SPRINKLER HEADS, DIFFUSERS, ELECTRICAL BOXES, EQUIPMENT, AND OTHER ITEMS THROUGHOUT THIS PROJECT BEFORE FINAL PLACEMENT OF MATERIALS.

Casne & Associates, Inc.
 PO Box 1123
 Helena, Montana 59624
 (406) 443-1656
 ryan@casneinc.com



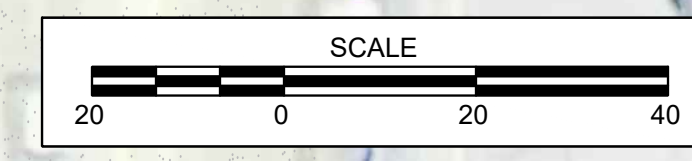
TOWN PUMP, INC.
 2010 N. MONTANA AVENUE
 HELENA, MT 59601

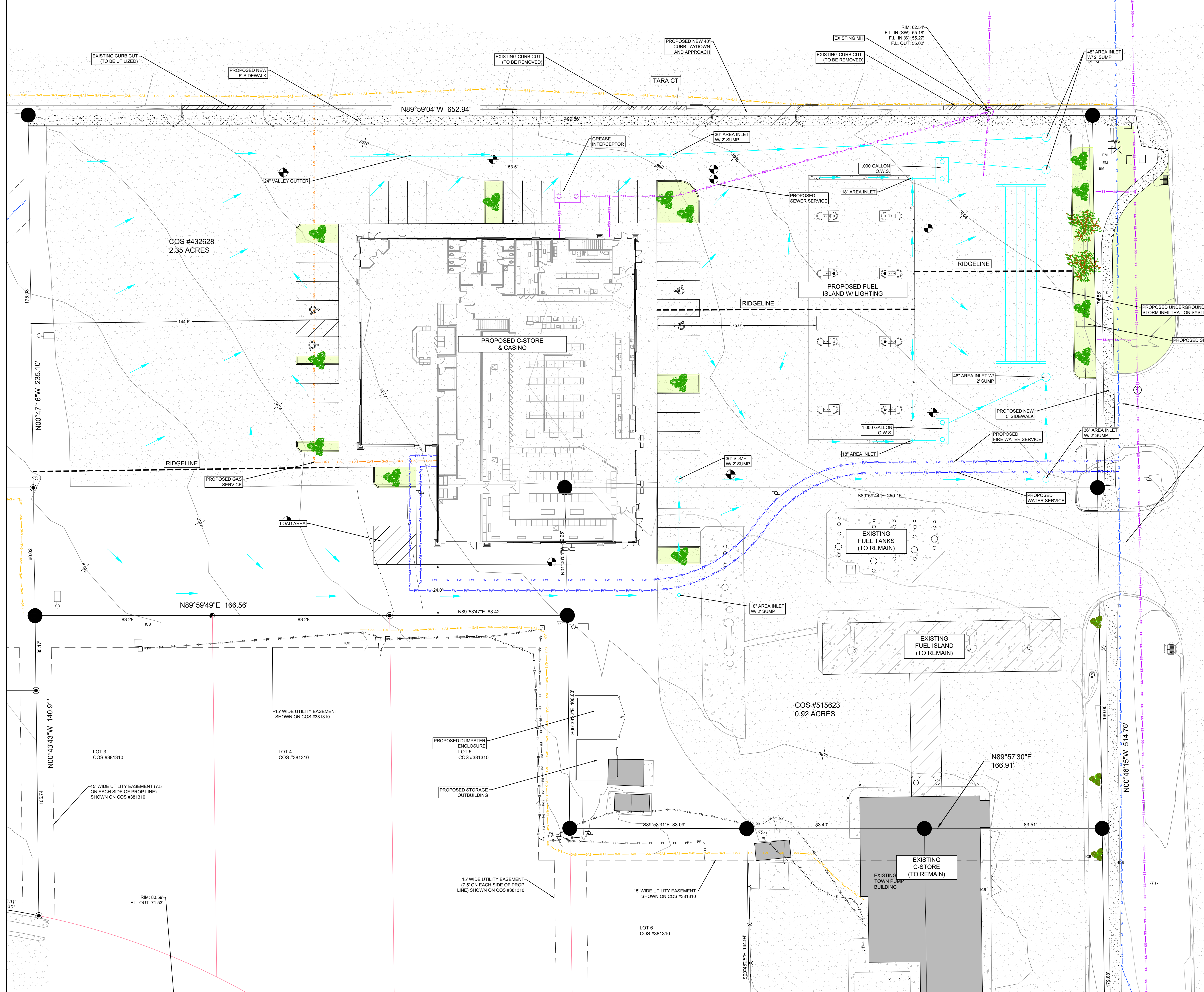
HELENA #4 TOWN PUMP
 PRELIMINARY SITE PLAN FOR C.U.P. APPLICATION

TOWN PUMP, INC.
 600 S. MAIN
 P.O. BOX 6000
 BUTTE, MONTANA 59702

DRAWN BY SK
 APPROVED JS
 DATE 7/8/2022

C1





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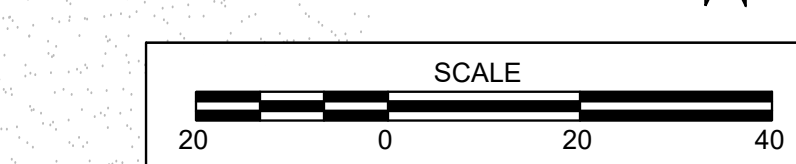


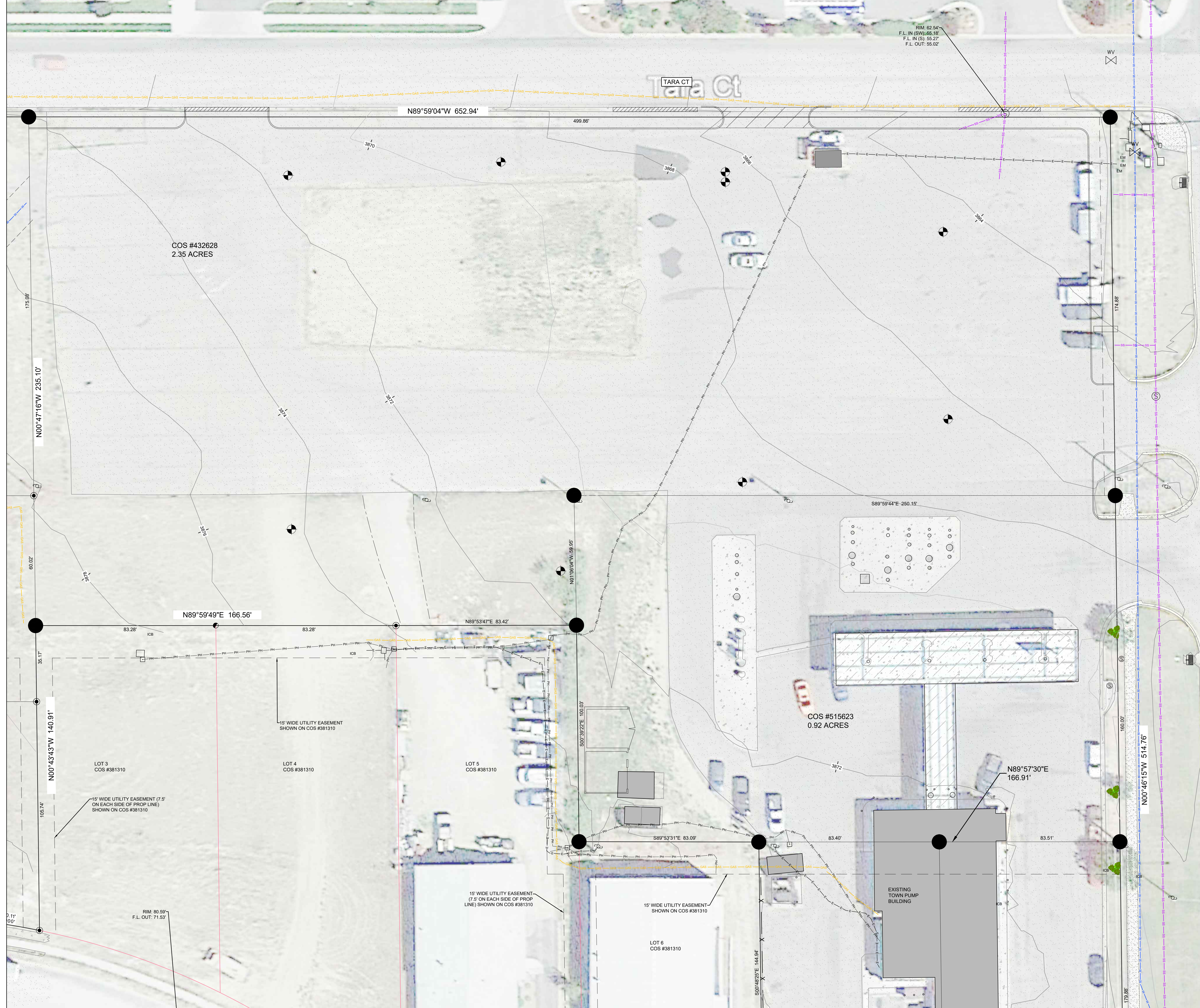
HELENA #4 TOWN PUMP
 2810 N. MONTANA AVENUE
 HELENA, MT 59601

TOWN PUMP, INC.
 600 S. MAIN
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 BUTTE, MONTANA 59702

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EXISTING UTILITY LEGEND:

EXISTING SS LINE	
EXISTING SS MANHOLE	
EXISTING WATER LINE	
EXISTING WATER VALVE	
EXISTING GAS LINE	
EXISTING TELEPHONE LINE	
EXISTING POWER POLE	
EXISTING ELECTRIC LINE	
EXISTING ELECTRIC METER	
EXISTING AREA INLET	
EXISTING STORM MH	
EXISTING FENCE	
ASSUMED BOREHOLE LOCATION	
EXISTING IRRIGATION CONTROL BOX	
EXISTING UTILITY PEDESTAL	
EXISTING UTILITY BOX	

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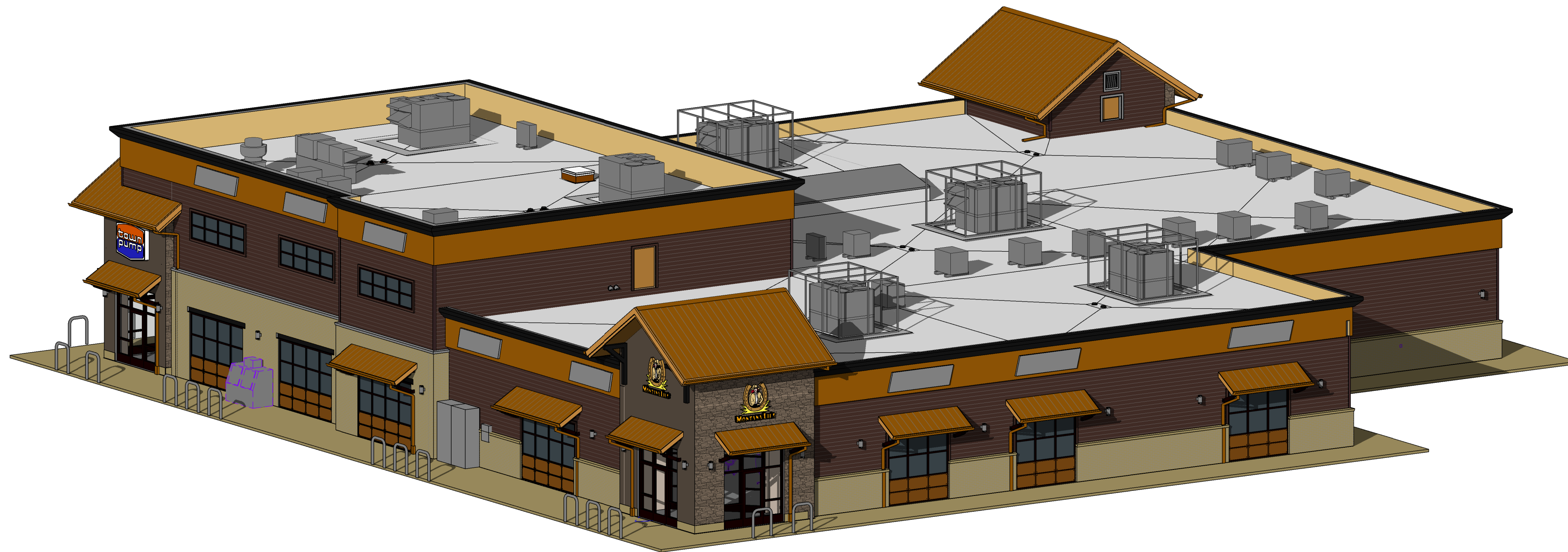
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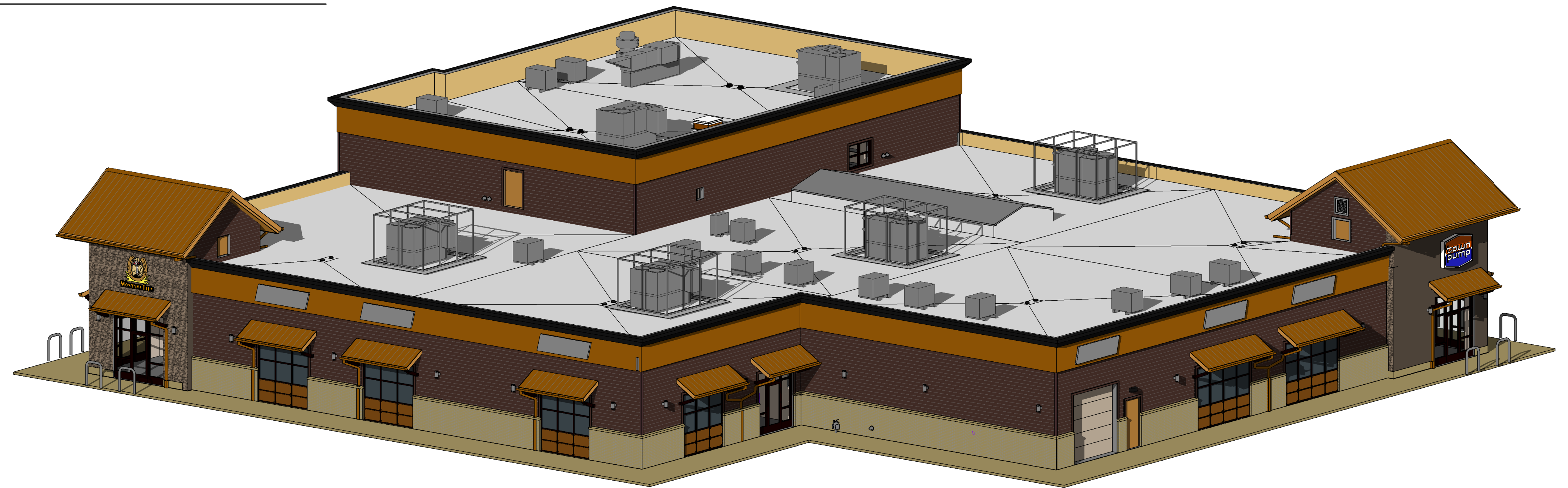
DRAWN BY SK
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 DATE 7/8/2022

EU1



NORTHWEST VIEW

SCALE:



SOUTHEAST VIEW

SCALE:

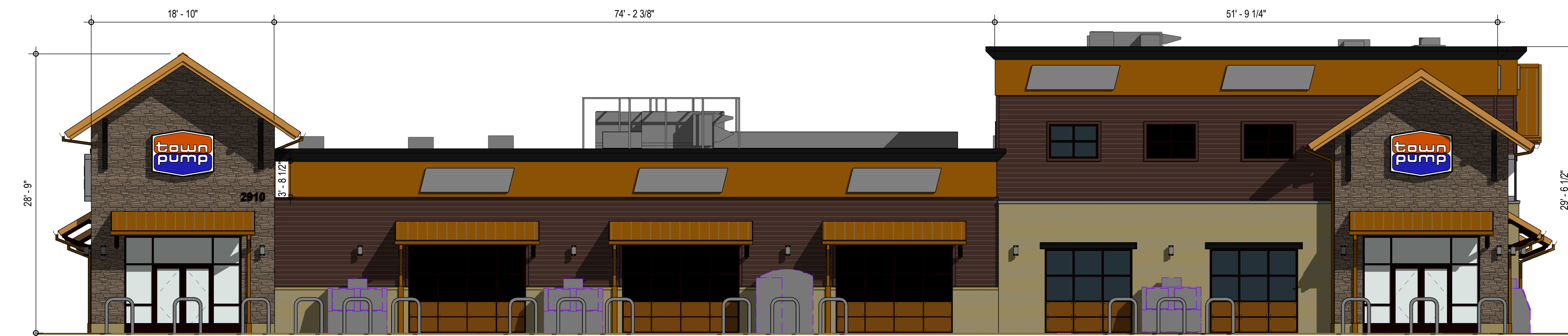


NORTHEAST VIEW

SCALE:



1 NORTH SCHEMATIC ELEVATION
SCALE: 1/8" = 1'-0"



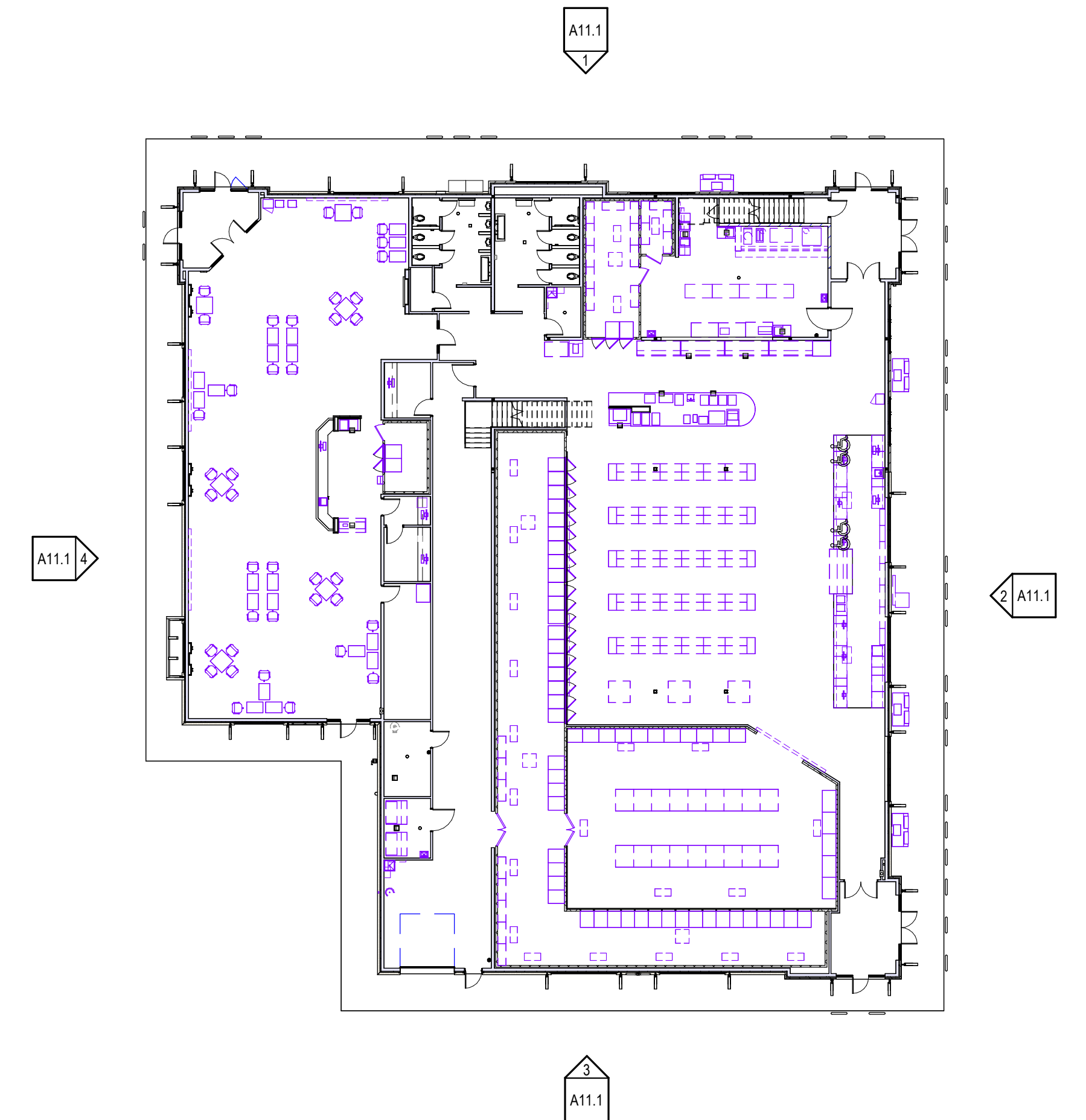
2 EAST SCHEMATIC ELEVATION
SCALE: 1/8" = 1'-0"



3 SOUTH SCHEMATIC ELEVATION
SCALE: 1/8" = 1'-0"



4 WEST SCHEMATIC ELEVATION
SCALE: 1/8" = 1'-0"



5 FIRST FLOOR PLAN
SCALE: 3/64" = 1'-0"

HELENA #4 TOWN PUMP
Schematic Elevations

6/28/2022

A11.1

4182-46-06





Helena Town Pump #4 Commercial Development Traffic Impact Study

Helena, Montana



Prepared For:

Casne & Associates Inc
664 Logan Street
Helena, MT 59601

July, 2022

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Helena Town Pump #4 Traffic Impact Study June 2022 Helena, Montana

A. EXECUTIVE SUMMARY

The Helena Town Pump #4 project is a 3.97-acre combined commercial gas station and casino development located south of Tara Court and west of Montana Avenue adjacent to the site of the existing Town Pump building in Helena, MT. At full build-out, the project may produce up to 3,286 daily vehicle trips, but only half of this traffic will likely be new trips to the area. The new estimated traffic generation for the site will largely be offset by the elimination of the existing Town Pump gas station to the south and the coffee kiosk on the property. The existing known traffic congestion issues at the intersection of Custer Avenue and Montana Avenue to the north are creating some queueing and safety issues at the intersections to the south, but these conditions will not be heavily impacted by the proposed project. The project will also improve traffic roadway safety by eliminating two existing approaches into the study property. Based on the existing and estimated new traffic from the new gas station casino, no additional road improvements are currently recommended at the development site at this time.

B. PROJECT DESCRIPTION

This document studies the possible effects on the surrounding road system from the redevelopment of the existing Town Pump property along Montana Avenue in Helena, Montana. The redevelopment would include the construction of a new gas station, casino, and convenience store just north of the existing Town Pump gas station. Ultimately the existing Town Pump is expected to be closed and the property will eventually be redeveloped with a future project. This document identifies any traffic mitigation efforts that the proposed development may require.

C. EXISTING CONDITIONS

The proposed development property currently consists of a 2.41-acre lot and a 1.56-acre lot at the intersection of North Montana Avenue and Tara Court. The property includes the Town Pump building which is presently operating with 16 gas pumps. The site also includes the existing City Brew coffee kiosk which is not part of this project. The adjacent commercial properties include Valley Bank and a storage shed sales business. The properties have two existing approaches onto Montana Avenue 140 feet and 210 feet south of Tara Court. Both existing approaches to the property along Montana Avenue are southbound in/out only due to existing raised medians along Montana Avenue. The Montana Avenue corridor is under the jurisdiction of MDT including the traffic signals at Montana Avenue and Tara Court. The northern lot also has three existing

approaches onto Tara Court. See **Figure 1** for a location map of the proposed development.

Adjacent Roadways

Tara Court is a local route which is maintained by the City of Helena. The road provides access to the commercial area east and west of Tara Court. The road has a paved width of 32 feet and includes on-street parking. According to traffic data collected by Abelin Traffic Services (ATS) in 2022, the roadway currently carries 2,000 VPD.

North Montana Avenue is a north/south minor arterial roadway which provides access through much of Helena. The road has a five-lane cross-section north of Custer Avenue and a posted speed limit of 35 MPH. According to traffic data collected by MDT in 2021, this section of North Montana Avenue currently carries 19,980 VPD. The intersections of Custer Avenue and Tara Court are currently signalized.

Figure 1 - Proposed Development Site



Traffic Data

The traffic data used for this report was collected on the surrounding road system by ATS in June of 2022. Traffic data was also obtained from a May 2020 count conducted by Montana Department of Transportation (MDT) at Montana Avenue and Custer Avenue. The June 2022 data was factored for seasonal variations using traffic information from the MDT continuous traffic counter along Custer Avenue at site #A-079 which indicated that the traffic data collected on June 8th and 9th was 120-130% of the AADT for this area. Refer to **Figure 1** for detail of the data collection/acquisition sites. The raw traffic data is included in **Appendix A** of this report.

Historic Traffic Data

ATS collected historic traffic data for the surrounding road system to help develop short-term background growth rates for the area. The information indicates that traffic volumes along Custer Avenue and North Montana Avenue have decreased slightly over the past ten years. The *Greater Helena Area Long Range Transportation Plan 2014 Update* suggests that Custer Avenue will see a 18% increase in traffic volumes over the next 15 years to 20,000 VPD and traffic volumes along Montana Avenue will increase 21% to 23,000 VPD.

Table 1 – Historic Average Daily Traffic Data

Location	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Custer Ave. West of MT Ave.	17,140	18,140	21,590	18,960	20,454	17,778	17,735	17,841	16,592	14,049	17,140
Custer Ave. East of MT Ave.	20,460	23,620	27,890	22,735	27,378	23,384	22,774	22,911	21,307	19,219	20,460
MT Ave. North of Custer Ave.	19,530	21,960	23,990	19,608	23,648	20,006	18,726	18,838	17,519	18,921	19,530
MT Ave. South of Custer Ave.	18,980	20,370	20,160	18,500	22,356	19,190	17,807	17,914	16,660	18,681	18,980

Level of Service

Using the data collected for this project, ATS conducted a Level of Service (LOS) analysis at area intersections. This evaluation was conducted in accordance with the procedures outlined in the Transportation Research Board’s *Highway Capacity Manual (HCM) - Special Report 209* and the Highway Capacity Software (HCS) version 7.9. Intersections are graded from A to F representing the average delay that a vehicle entering an intersection can expect. Typically, a LOS of C or better is considered acceptable for peak-hour conditions.

Table 2 – Existing 2022 Level of Service Summary

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (Sec.)	LOS	Delay (Sec.)	LOS
Custer Ave. & Montana Ave.	32.2	C	38.1	D
Montana Ave. & Tara Court	6.7	A	13.0	B
Montana Ave. & Existing Right-In/Out Approach.*	20.4	C	17.1	C
Tara Court & North Approach*	9.3	A	9.8	A

*Eastbound/Westbound or Northbound/Southbound LOS and Delay.

Table 2 shows the existing 2022 LOS for the AM and PM peak hours without the traffic from the Town Pump redevelopment but includes the existing Town Pump operation and the coffee kiosk. The LOS calculations are included in **Appendix B**. The analysis shows that most of the study intersections are currently operating at or above their ideal capacity (LOS C). However, the intersection of Montana Avenue and Custer has known peak-hour LOS issues which have existed at this location for more than ten years. The *Greater Helena Area Long Range Transportation Plan 2014 Update* recommends widening large sections of Custer Avenue to correct the overall LOS issues at this location. The section of Tara Court near the proposed development site has relatively low usage and operates with little overall intersection delay. However, the field studies did indicate the intersection of Tara Court with Montana Avenue does experience additional delay due to traffic backing through the intersection from the Custer Avenue traffic signal during peak hours. The general congestion in this area will likely continue until the necessary improvements along Custer Avenue area implemented. Based on the historic traffic data for this area, the overall operational conditions for this area have not changed significantly in the past ten years.

Area Crash Data

ATS collected crash data from MDT’s public crash site to assess intersections for geometric and roadway characteristic deficiencies. The 5-year MDT data includes 48 crashes at the intersection of Montana Avenue and Tara Court and two crashes at the right in/out approaches from Montana Avenue. Generally, crashes are expressed as a rate of crashes per million vehicles entering (MVE). The crash rate at Tara Court and Montana Avenue is 1.3 crashes per MVE, which is high compared to standard crash rates for urban roadways. The crash trends at this intersection are like being affected by the congestion from the Custer Avenue traffic signal to the north. The crash rate at the right in/out approaches onto Montana Avenue is 0.1 per MVE which is relatively low and does not suggest any traffic mitigation measures are necessary currently.

D. PROPOSED REDEVELOPMENT

The redevelopment of the Town Pump property would include the construction of a new convenience store and casino with 16 gas pumps on the property directly north of the existing Town pump building. The old Town Pump building and gas pumps will be closed and possibly redeveloped in the future. The existing Coffee Kiosk would also be removed. The two existing approaches to the site along Montana Avenue would be combined into one shared approach. The three approaches to the site along Tara Court would be modified to include only two approaches and the nearest existing approach would be closed. The project would likely be completed in 2023. The Helena Town Pump #4 site plan is shown in **Figure 2**.

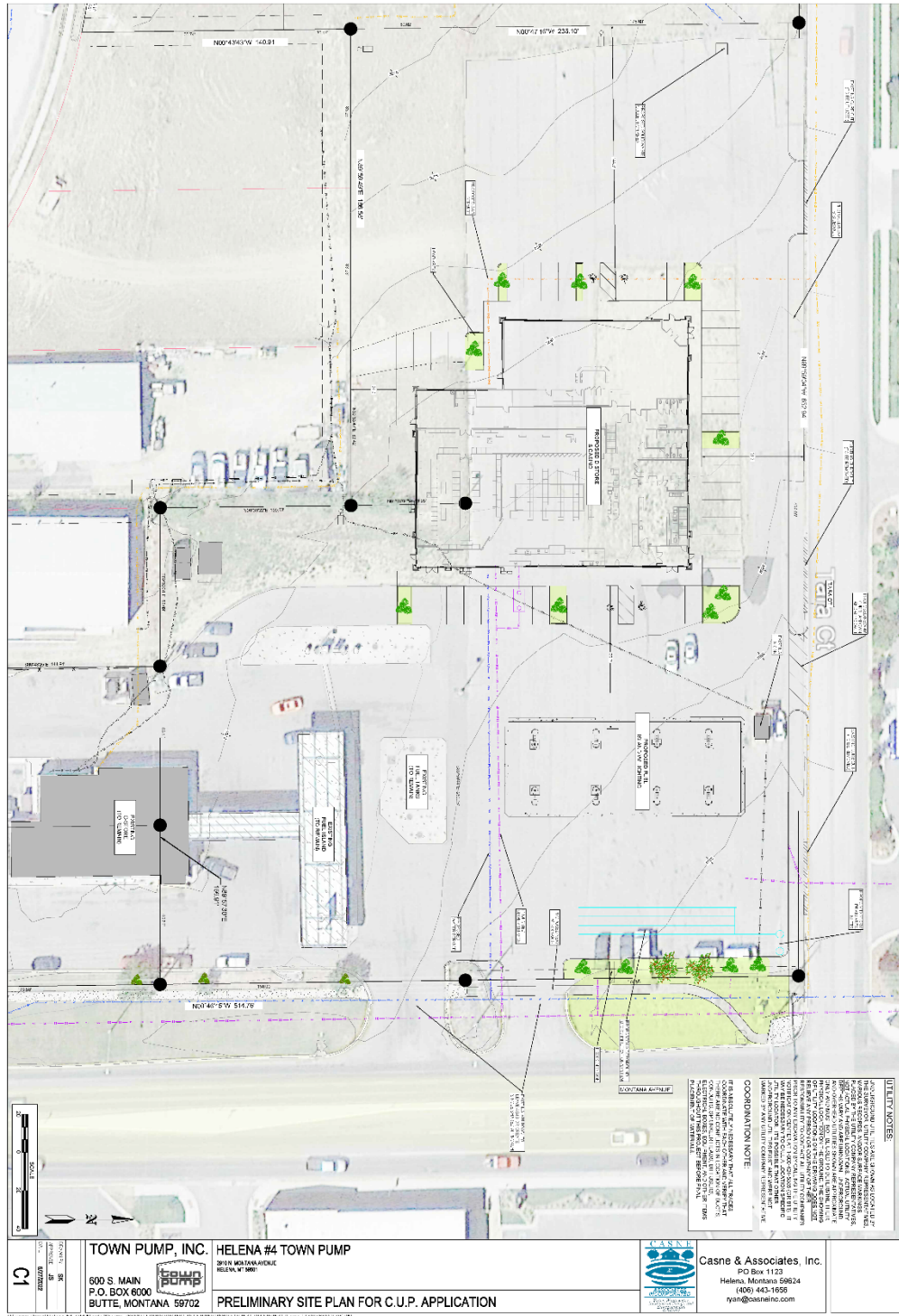
E. TRIP GENERATION AND ASSIGNMENT

ATS performed a trip generation analysis to determine the anticipated future traffic volumes from the proposed developments using the trip generation rates contained in *Trip Generation* (Institute of Transportation Engineers, Tenth Edition). These rates are the national standard and are based on the most current information available to planners. A vehicle “trip” is defined as any trip that either begins or ends at the development site. ATS determined that the critical traffic impacts on the intersections and roadways would occur during the weekday morning and evening peak hours. According to the ITE trip generation rates, at full build-out the development would produce 200 AM peak hour trips, 224 PM peak hour trips, and 3,286 daily trips. See **Table 3** for detailed trip generation information.

Table 3 - Trip Generation Rates

Land Use	Units	AM Peak Hour Trip Ends per Unit	Total AM Peak Hour Trip Ends	PM Peak Hour Trip Ends per Unit	Total PM Peak Hour Trip Ends	Weekday Trip Ends per Unit	Total Weekday Trip Ends
Gas Station ITE# 945	16 Pumps	12.47	200 (102 in/ 98 out)	13.99	224 (114 in/ 110 out)	205.36	3,286

Figure 2 – Helena Town Pump #4 Site Plan



Trip Types

As proposed, the development will produce some new traffic. However, not all of this traffic will be additive to the current road volumes in this area. There are three basic trip types that describe the traffic generated by new developments. These trip types include the following:

New Trips- This is the basic trip type created by all traffic generators. These trips are defined as those that occur only to utilize one traffic generator at a proposed development site.

Internal (Shared) Trips- These trips are created by associated facilities within or directly adjacent to the development. The trips are combined into one joint trip to the development and do not represent additional trips on the surrounding road network. Modern mixed-use developments, which are designed to be pedestrian and bicycle friendly, can produce high levels of internally captured trips. Internal trips are not applicable for the purposes of this report.

Pass-By Trips are those characterized by a vehicle which enters the development on their way to another destination. Upon leaving the driver continues along the roadway to their destination. Pass-By trips are not generally considered new trips on the surrounding road network because they would exist whether or not the development has been constructed. A common example of this type of trip is a driver which stops at a grocery store on their way home from work. Pass-by trips can be discounted from the through traffic on the adjacent roadways but must be included making the appropriate turning maneuvers at intersections. Generally, gas stations can be assumed to have a pass-by rate of at least 50 to 70%. For the purposes of this a 60% pass-by rate was used in the impact calculations.

F. TRIP DISTRIBUTION

The traffic distribution and assignment for the proposed subdivision was based upon the existing ADT volumes along the adjacent roadways and the peak-hour turning volumes. Traffic from the proposed project is estimated to distribute as shown in **Figure 2**.

G. TRAFFIC IMPACTS OUTSIDE OF THE DEVELOPMENT

Using the trip generation and trip distribution numbers, ATS determined the future Level of Service for the area intersections. The anticipated intersection LOS with the Town Pump #4 is shown in **Table 4**. The LOS calculations are included in **Appendix A** of this report.

Table 4 –Future Level of Service Summary

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (Sec.)	LOS	Delay (Sec.)	LOS
Custer Ave. & Montana Ave.	32.2	C	39.1	D
Montana Ave. & Tara Court	10.8	B	17.2	B
Montana Ave. & Existing Right-In/Out Approach.*	22.4	C	18.6	C
Tara Court & North Approach*	9.9	A	10.5	B

*Eastbound/Westbound or Northbound/Southbound LOS and Delay.

Figure 2 – Trip Distribution

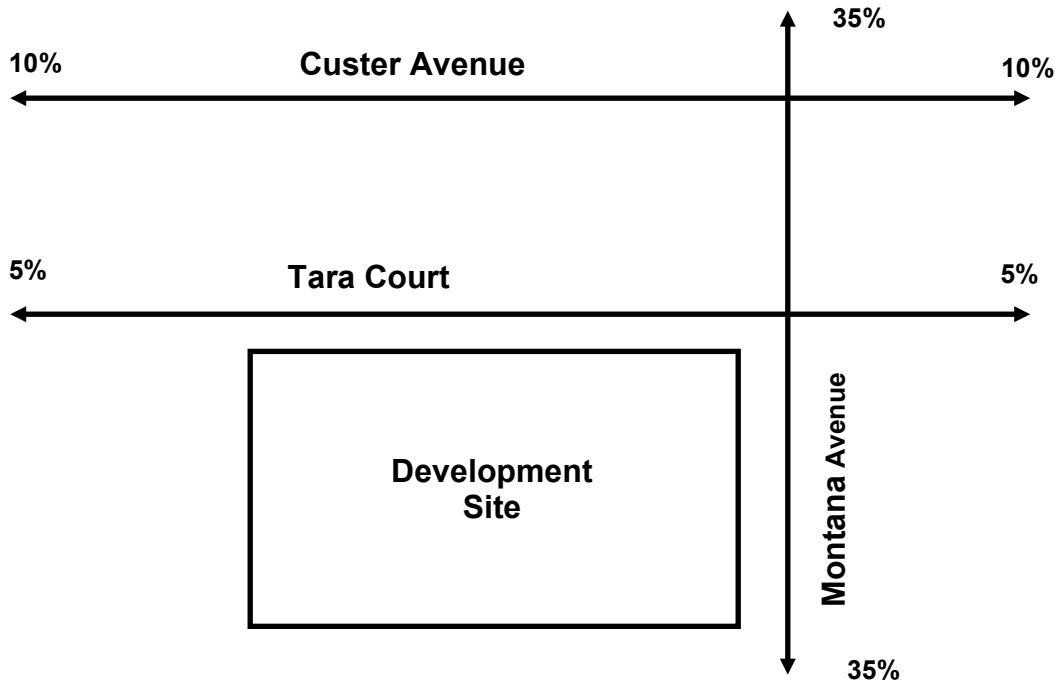


Table 4 indicates that the new Town Pump and Casino on Tara Court will not have any major impacts on traffic operations at the study intersections. Overall, the project would increase traffic volumes along Montana Avenue by 2-4% and the LOS at the study intersections will increase slightly over existing conditions. However, this analysis does not consider the drop in intersection traffic volumes which will occur due the closure of the existing 16-pump Town Pump and the coffee kiosk on the property. Together the elimination of these two land uses should offset the anticipated new traffic from the new Town Pump #4. The project will also include the added

benefit of reducing the total number of driveway approaches onto Montana Avenue by combining two existing approaches into one shared approach. Additionally, the project would improve traffic flow along Tara Court by eliminating the existing approach nearest to Montana Avenue which does not meet current approach spacing standards. No recommended improvements are needed with this project.

H. IMPACT SUMMARY & RECOMMENDATIONS

The existing known traffic congestion issues at the intersection of Custer Avenue and Montana Avenue to the north are creating some queueing and safety issues at the intersections to the south, but these conditions will not be heavily impacted by the proposed project. The project will also improve traffic roadway safety by eliminating two existing approaches into the study property. Based on the existing and estimated new traffic from the new gas station casino, no additional road improvements are currently recommended at the development site at this time.

APPENDIX A

Traffic Data

Turning Movement Count

All Vehicles

Location Helena Montana Ave. and Tara Ct.

Date June 9 and June 8 2022

	Northbound				Southbound				Eastbound				Westbound				TOTAL	
	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds		
7:00 - 7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 - 7:30	5	44	3	0	5	123	2	0	9	0	13	0	1	0	4	0	0	209
7:30 - 7:45	3	74	5	0	5	189	5	0	12	0	5	0	0	2	3	0	0	303
7:45 - 8:00	6	96	4	0	3	231	13	0	12	1	8	0	6	2	2	0	0	384
8:00 - 8:15	22	102	4	0	4	168	6	0	12	2	9	0	7	2	2	0	0	340
8:15 - 8:30	9	102	6	0	6	165	4	0	9	3	4	0	5	0	5	0	0	318
8:30 - 8:45	10	85	11	0	11	147	8	0	15	2	13	0	5	2	8	0	0	317
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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3:30 - 3:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 - 4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 - 4:30	14	191	23	0	13	154	7	0	28	10	7	0	21	10	22	0	0	500
4:30 - 4:45	18	180	18	0	18	161	8	0	18	3	10	0	16	3	21	0	0	474
4:45 - 5:00	20	177	20	0	17	158	2	0	14	0	9	0	15	6	24	0	0	462
5:00 - 5:15	16	224	18	0	18	164	10	0	28	0	4	0	16	1	23	0	0	522
5:15 - 5:30	18	200	25	0	11	188	6	0	28	6	8	0	20	3	21	0	0	534
5:30 - 5:45	15	197	13	0	14	149	2	0	11	3	8	0	12	5	15	0	0	444
5:45 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 - 6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 - 6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 - 6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 - 7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	156	1672	150	0	125	1997	73	0	196	30	98	0	124	36	150	0	0	4807

	6/6/2022	to	6/12/2022							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Week	Weekend	Week Day 85%
Hour	6/6/2022	6/7/2022	6/8/2022	6/9/2022	6/10/2022	6/11/2022	6/12/2022	Day Avg	Avg	Avg Speed
0 - 1	*	*	*	6	*	*	*	6	0	27
1 - 2	*	*	*	6	*	*	*	6	0	28
2 - 3	*	*	*	1	*	*	*	1	0	17
3 - 4	*	*	*	3	*	*	*	3	0	24
4 - 5	*	*	*	2	*	*	*	2	0	32
5 - 6	*	*	*	8	*	*	*	8	0	24
6 - 7	*	*	*	35	*	*	*	35	0	25
7 - 8	*	*	*	84	*	*	*	84	0	23.5
8 - 9	*	*	*	145	*	*	*	145	0	23.5
9 - 10	*	*	*	137	*	*	*	137	0	24.7
10 - 11	*	*	51	146	*	*	*	98.5	0	24.3
11 - 12	*	*	160	170	*	*	*	165	0	23.7
12 - 13	*	*	146	78	*	*	*	112	0	23.85
13 - 14	*	*	139	*	*	*	*	139	0	23.5
14 - 15	*	*	151	*	*	*	*	151	0	24.3
15 - 16	*	*	141	*	*	*	*	141	0	24
16 - 17	*	*	160	*	*	*	*	160	0	25.6
17 - 18	*	*	138	*	*	*	*	138	0	25
18 - 19	*	*	122	*	*	*	*	122	0	26.5
19 - 20	*	*	79	*	*	*	*	79	0	27
20 - 21	*	*	54	*	*	*	*	54	0	26.5
21 - 22	*	*	48	*	*	*	*	48	0	25.5
22 - 23	*	*	22	*	*	*	*	22	0	26
23 - 24	*	*	13	*	*	*	*	13	0	23
Totals	0	0	1424	821	0	0	0			
% of Total	0%	0%	63.43%	36.57%	0%	0%	0%			

APPENDIX B

Traffic Model

Helena Town Pump #4
Traffic Model

Existing Peak (15 Min x 4)
AM Peak Hour

LOS: 32.2 C

48	↶	↷	144
512	↓	←	364
152	↷	↶	180
80	↶	↷	100
368	→	↑	196
144	↷	↶	80

Custer Ave.

LOS: 6.7 A

52	↶	↷	8
924	↓	←	8
12	↷	↶	24
48	↶	↷	24
4	→	↑	384
32	↷	↶	16

LOS: 9.3 A

64	↑
20	↶

Tara Ct.

44	→	↶	28
28	↷	↶	40

LOS: 20.4 C

20	↶		
960	↓		
0	↶	↷	0
36	↷	↑	424

Approach

Seasonal Factor 1

Existing Peak (15 Min x 4)
PM Peak Hour

LOS: 38.1 D

76	↶	↷	300
404	↓	←	532
264	↷	↶	240
184	↶	↷	160
552	→	↑	584
104	↷	↶	124

Custer Ave.

LOS: 13.0 B

24	↶	↷	84
752	↓	←	12
44	↷	↶	80
112	↶	↷	72
24	→	↑	800
32	↷	↶	100

LOS: 9.8 A

92	↑
16	↶

Tara Ct.

140	→	↶	16
8	↷	↶	28

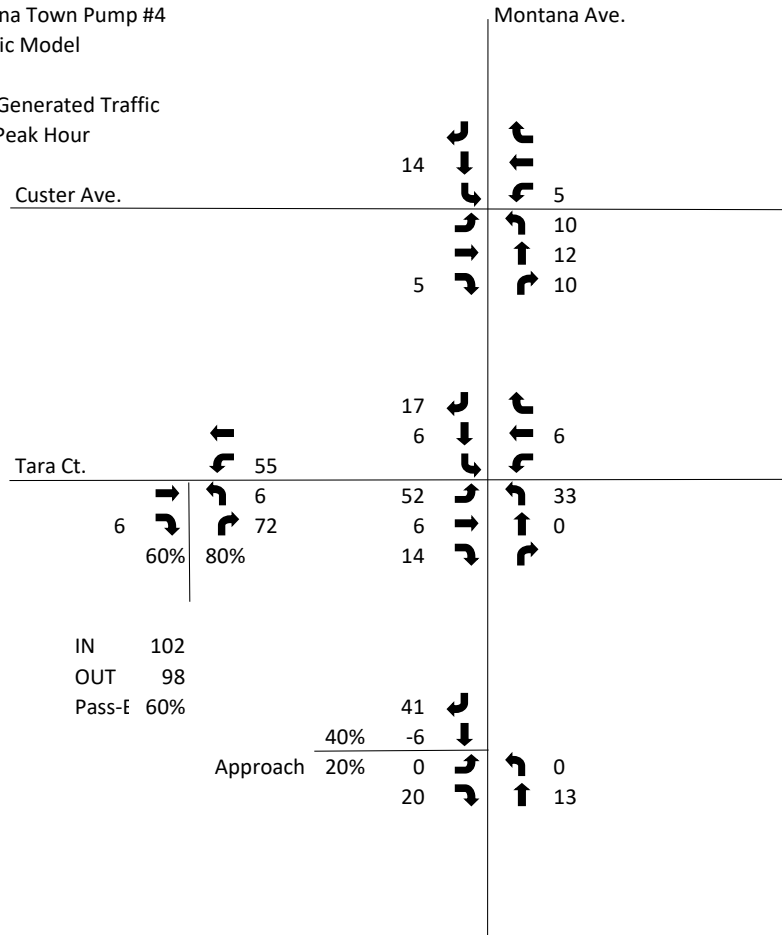
LOS: 17.1 C

16	↶		
848	↓		
0	↶	↷	0
24	↷	↑	972

Approach

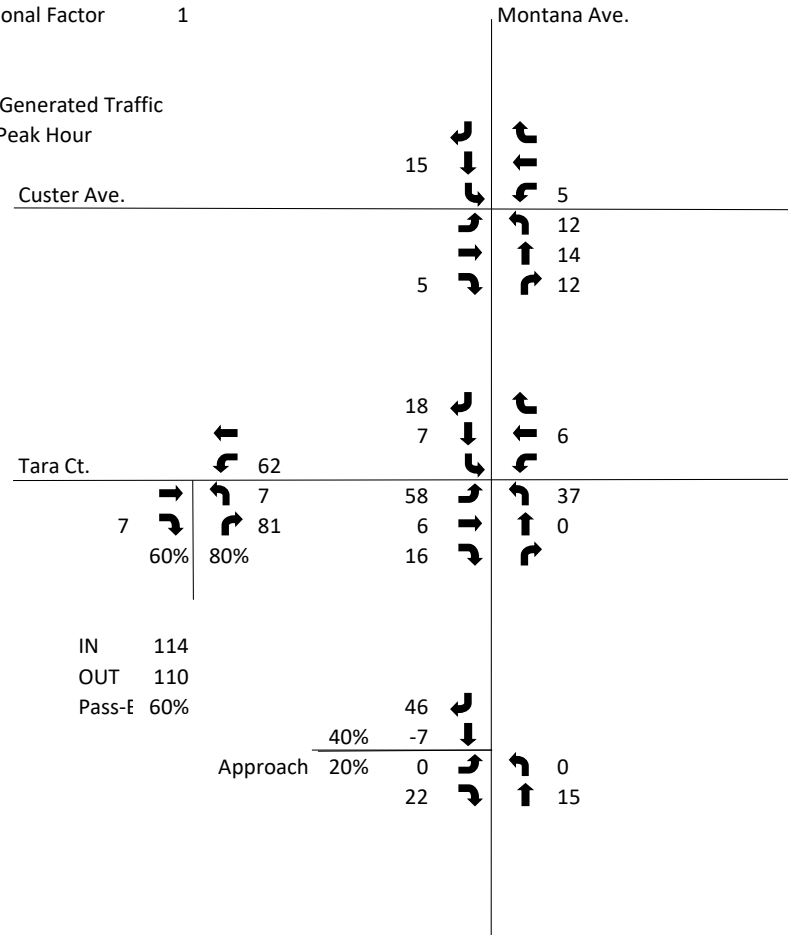
Helena Town Pump #4
Traffic Model

Site Generated Traffic
AM Peak Hour



Seasonal Factor 1

Site Generated Traffic
PM Peak Hour



Helena Town Pump #4
Traffic Model

2023 Total Projected Traffic
AM Peak Hour

LOS: 32.2 C

48	↶	↷	144
526	↓	←	364
152	↷	↶	185
80	↷	↶	110
368	→	↑	208
149	↷	↶	90

Custer Ave.

LOS: 10.8 B

69	↶	↷	8
930	↓	←	14
12	↷	↶	24
100	↷	↶	57
10	→	↑	384
46	↷	↶	16

LOS: 9.9 A

64	↑	
75	↶	
34	↷	
112	↶	

Tara Ct.

44	→
34	↷

LOS: 22.4 C

61	↶	
954	↓	
0	↷	0
56	↷	↑ 437

Approach

Growth Factor 1

2023 Total Projected Traffic
PM Peak Hour

LOS: 39.1 D

76	↶	↷	300
419	↓	←	532
264	↷	↶	245
184	↷	↶	172
552	→	↑	598
109	↷	↶	136

Custer Ave.

LOS: 18.6 B

42	↶	↷	84
759	↓	←	18
44	↷	↶	80
170	↷	↶	109
30	→	↑	800
48	↷	↶	100

Tara Ct.

140	→	↶	23
15	↷	↶	109

LOS: 18.6 C

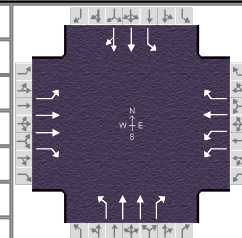
62	↶	
841	↓	
0	↷	0
46	↷	↑ 987

APPENDIX C

LOS Calculations

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ATS			Duration, h	0.250		
Analyst	RLA	Analysis Date	Jul 6, 2022	Area Type	Other		
Jurisdiction	MDT	Time Period	AM Peak Hour	PHF	1.00		
Urban Street	Montana Avenue	Analysis Year	2022	Analysis Period	1 > 7:00		
Intersection	Custer Avenue	File Name	MontanaSignalsAM.xus				
Project Description	Town Pump						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	80	368	144	180	364	144	100	196	80	152	512	48

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	6.4	0.9	72.4	6.3	0.1	26.9		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.0	0.0	3.0	3.0	3.0	3.0		
				Red	0.0	0.0	1.0	0.0	0.0	1.0		

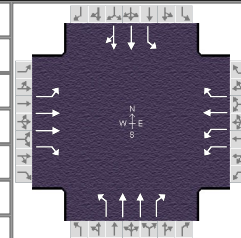
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	2.0	3.0	1.1	3.0	1.1	4.0
Phase Duration, s	9.3	30.9	12.4	34.1	9.4	76.4	10.2	77.3
Change Period, ($Y+R_c$), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Allow Headway (MAH), s	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s	6.6	14.6	9.0	27.8	6.2		7.0	
Green Extension Time (g_e), s	0.0	2.2	0.4	2.2	0.2	0.0	0.3	0.0
Phase Call Probability	0.94	1.00	1.00	1.00	0.99		1.00	
Max Out Probability	1.00	0.00	0.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	80	368	144	180	364	144	127	249	102	152	284	276
Adjusted Saturation Flow Rate (s), veh/h/ln	1755	1687	1502	1639	1772	1502	1688	1687	1502	1688	1772	1718
Queue Service Time (g_s), s	4.6	12.6	10.9	7.0	25.8	10.6	4.2	5.3	3.7	5.0	10.8	10.9
Cycle Queue Clearance Time (g_c), s	4.6	12.6	10.9	7.0	25.8	10.6	4.2	5.3	3.7	5.0	10.8	10.9
Green Ratio (g/C)	0.26	0.21	0.21	0.07	0.23	0.23	0.61	0.56	0.63	0.61	0.56	0.56
Capacity (c), veh/h	158	699	311	237	410	347	533	1880	945	732	999	969
Volume-to-Capacity Ratio (X)	0.506	0.526	0.463	0.760	0.888	0.415	0.239	0.133	0.108	0.208	0.284	0.285
Back of Queue (Q), ft/ln (95 th percentile)	92.8	230.2	187.3	135.2	436.4	180.8	69.9	96.3	57.5	83.1	201.2	194.7
Back of Queue (Q), veh/ln (95 th percentile)	3.7	9.1	7.4	5.3	17.2	7.1	2.8	3.8	2.3	3.3	7.9	7.8
Queue Storage Ratio (RQ) (95 th percentile)	0.29	0.46	0.59	0.30	0.87	0.36	0.22	0.19	0.19	0.26	0.40	0.40
Uniform Delay (d_1), s/veh	40.3	45.8	45.2	59.2	48.3	42.5	11.5	16.4	10.2	10.8	14.7	14.7
Incremental Delay (d_2), s/veh	0.9	0.2	0.4	1.9	2.7	0.3	0.1	0.1	0.2	0.1	0.7	0.7
Initial Queue Delay (d_3), 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
Control Delay (d), s/veh	41.2	46.1	45.6	61.1	51.0	42.8	11.6	16.5	10.4	10.9	15.4	15.5
Level of Service (LOS)	D	D	D	E	D	D	B	B	B	B	B	B
Approach Delay, s/veh / LOS	45.3		D	51.9		D	13.9		B	14.5		B
Intersection Delay, s/veh / LOS	32.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.30	B	2.41	B	2.26	B
Bicycle LOS Score / LOS	0.98	A	1.62	B	0.80	A	1.08	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ATS			Duration, h	0.250		
Analyst	RLA	Analysis Date	Jul 6, 2022		Area Type	Other	
Jurisdiction	MDT	Time Period	AM Peak Hour		PHF	1.00	
Urban Street	Montana Avenue		Analysis Year	2022		Analysis Period	1 > 7:00
Intersection	Custer Avenue		File Name	MontanaSignalsPM.xus			
Project Description	Town Pump						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	184	552	104	240	532	300	160	584	124	264	404	76

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	11.5	2.8	49.7	9.0	2.9	40.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.0	0.0	3.0	3.0	0.0	3.0			
				Red	0.0	0.0	1.0	0.0	0.0	1.0			

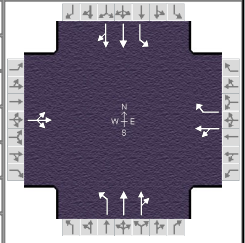
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	2.0	3.0	1.1	3.0	1.1	4.0
Phase Duration, s	12.0	44.0	14.9	46.9	14.5	53.7	17.4	56.6
Change Period, (Y+R _c), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Allow Headway (MAH), s	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s	11.0	19.6	11.3	39.4	11.2		13.9	
Green Extension Time (g _e), s	0.0	3.6	0.5	3.5	0.4	0.0	0.5	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	0.00	0.00	0.01	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	184	552	104	240	532	300	200	728	155	264	245	235
Adjusted Saturation Flow Rate (s), veh/h/ln	1755	1687	1502	1639	1772	1502	1688	1687	1502	1688	1772	1674
Queue Service Time (g _s), s	9.0	17.6	6.7	9.3	37.4	21.8	9.2	23.3	8.0	11.9	12.4	12.6
Cycle Queue Clearance Time (g _c), s	9.0	17.6	6.7	9.3	37.4	21.8	9.2	23.3	8.0	11.9	12.4	12.6
Green Ratio (g/C)	0.38	0.31	0.31	0.09	0.33	0.33	0.47	0.38	0.47	0.51	0.40	0.40
Capacity (c), veh/h	201	1038	462	299	584	495	472	1291	712	390	717	677
Volume-to-Capacity Ratio (X)	0.914	0.532	0.225	0.802	0.910	0.606	0.423	0.564	0.217	0.677	0.342	0.347
Back of Queue (Q), ft/ln (95 th percentile)	260.7	296.1	112.3	179.5	613.4	319.8	167.8	383.5	138.5	208.5	237.2	226.7
Back of Queue (Q), veh/ln (95 th percentile)	10.3	11.7	4.4	7.1	24.1	12.6	6.6	15.1	5.5	8.2	9.3	9.1
Queue Storage Ratio (RQ) (95 th percentile)	0.81	0.59	0.35	0.40	1.23	0.64	0.52	0.77	0.46	0.65	0.47	0.46
Uniform Delay (d ₁), s/veh	35.4	37.2	33.5	57.9	41.7	36.5	21.5	35.2	20.6	22.5	26.8	26.8
Incremental Delay (d ₂), s/veh	39.6	0.2	0.1	1.9	7.9	0.4	0.2	1.7	0.7	0.8	1.3	1.4
Initial Queue Delay (d ₃), 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
Control Delay (d), s/veh	75.0	37.4	33.6	59.8	49.6	36.9	21.7	36.9	21.2	23.3	28.1	28.2
Level of Service (LOS)	E	D	C	E	D	D	C	D	C	C	C	C
Approach Delay, s/veh / LOS	45.2		D	48.3		D	31.9		C	26.4		C
Intersection Delay, s/veh / LOS	38.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.29	B	2.44	B	2.28	B
Bicycle LOS Score / LOS	1.18	A	2.26	B	1.20	A	1.10	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ATS			Duration, h	0.250		
Analyst	RLA	Analysis Date	Jul 6, 2022	Area Type	Other		
Jurisdiction	MDT	Time Period	AM Peak Hour	PHF	0.92		
Urban Street	Montana Avenue	Analysis Year	2022	Analysis Period	1> 7:00		
Intersection	Tara Court	File Name	MontanaSignalsAM.xus				
Project Description	Town Pump						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	48	4	32	24	8	8	24	384	16	12	924	52

Signal Information				Signal Phases									
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		113.2	9.8	0.0	0.0	0.0	0.0				
		Yellow		3.0	3.0	0.0	0.0	0.0	0.0				
		Red		0.0	1.0	0.0	0.0	0.0	0.0				

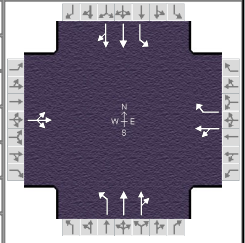
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		7.0		6.0		6.0
Phase Duration, s		13.8		13.8		116.2		116.2
Change Period, (Y+R _c), s		4.0		4.0		3.0		3.0
Max Allow Headway (MAH), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g _s), s		9.7		4.9				
Green Extension Time (g _e), s		0.2		0.2		0.0		0.0
Phase Call Probability		0.99		0.99				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12	
Adjusted Flow Rate (v), veh/h		91			35	9		26	218	216	10	417	409
Adjusted Saturation Flow Rate (s), veh/h/ln		1514			1425	1525		674	1800	1774	969	1800	1766
Queue Service Time (g _s), s		4.8			0.0	0.7		0.8	2.3	2.3	0.2	2.8	2.9
Cycle Queue Clearance Time (g _c), s		7.7			2.9	0.7		3.7	2.3	2.3	2.5	2.8	2.9
Green Ratio (g/C)		0.08			0.08	0.08		0.87	0.87	0.87	0.87	0.87	0.87
Capacity (c), veh/h		157			156	115		627	1568	1545	882	1568	1538
Volume-to-Capacity Ratio (X)		0.580			0.223	0.076		0.042	0.139	0.140	0.012	0.266	0.266
Back of Queue (Q), ft/ln (95 th percentile)		134.9			49.1	12.1		3.8	20.8	20.7	1	25.1	25.8
Back of Queue (Q), veh/ln (95 th percentile)		5.4			2.0	0.5		0.2	0.8	0.8	0.0	1.0	1.0
Queue Storage Ratio (RQ) (95 th percentile)		0.00			0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh		59.1			56.9	55.9		1.5	1.2	1.2	1.1	0.7	0.7
Incremental Delay (d ₂), s/veh		1.3			0.3	0.1		0.1	0.2	0.2	0.0	0.4	0.4
Initial Queue Delay (d ₃), s/veh		0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		60.3			57.1	56.0		1.7	1.4	1.4	1.1	1.1	1.1
Level of Service (LOS)		E			E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	60.3	E		56.9	E		1.4	A		1.1	A		
Intersection Delay, s/veh / LOS			6.7						A				

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS	2.32	B	2.32	B
Bicycle LOS Score / LOS	0.64	A	0.56	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ATS			Duration, h	0.250		
Analyst	RLA	Analysis Date	Jul 6, 2022	Area Type	Other		
Jurisdiction	MDT	Time Period	AM Peak Hour	PHF	0.92		
Urban Street	Montana Avenue	Analysis Year	2022	Analysis Period	1 > 7:00		
Intersection	Tara Court	File Name	MontanaSignalsPM.xus				
Project Description	Town Pump						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	112	24	32	80	12	84	72	800	100	44	752	24

Signal Information				Phase Diagram								
Cycle, s	130.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	105.1	17.9	0.0	0.0	0.0	0.0	1	2	3	4
		Yellow	3.0	3.0	0.0	0.0	0.0	0.0				
		Red	0.0	1.0	0.0	0.0	0.0	0.0	5	6	7	8

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		7.0		6.0		6.0
Phase Duration, s		21.9		21.9		108.1		108.1
Change Period, (Y+R _c), s		4.0		4.0		3.0		3.0
Max Allow Headway (MAH), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g _s), s		17.4		11.5				
Green Extension Time (g _e), s		0.5		0.6		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.02		0.00				

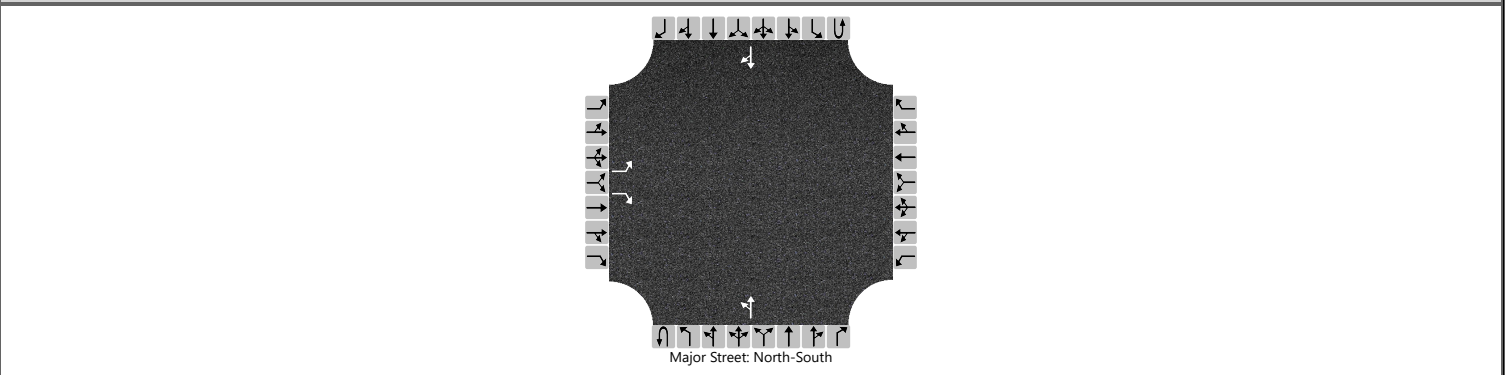
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	183			100	91	78	499	479	40	356	352	
Adjusted Saturation Flow Rate (s), veh/h/ln	1510			1295	1525	752	1800	1729	584	1800	1780	
Queue Service Time (g _s), s	5.9			0.0	7.1	3.8	9.5	9.5	2.0	8.2	8.2	
Cycle Queue Clearance Time (g _c), s	15.4			9.5	7.1	12.1	9.5	9.5	11.7	8.2	8.2	
Green Ratio (g/C)	0.14			0.14	0.14	0.81	0.81	0.81	0.81	0.81	0.81	
Capacity (c), veh/h	254			230	210	616	1455	1398	485	1455	1439	
Volume-to-Capacity Ratio (X)	0.719			0.435	0.435	0.127	0.343	0.343	0.083	0.244	0.245	
Back of Queue (Q), ft/ln (95 th percentile)	249.6			138.1	123.8	27.2	130.2	125.6	11.3	121.8	118.7	
Back of Queue (Q), veh/ln (95 th percentile)	10.0			5.5	5.0	1.1	5.2	5.0	0.5	4.9	4.7	
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	54.9			52.4	51.4	4.7	3.3	3.3	3.9	4.4	4.3	
Incremental Delay (d ₂), s/veh	2.3			0.5	0.5	0.4	0.6	0.7	0.3	0.4	0.4	
Initial Queue Delay (d ₃), s/veh	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	57.2			52.8	51.9	5.1	3.9	4.0	4.2	4.7	4.7	
Level of Service (LOS)	E			D	D	A	A	A	A	A	A	
Approach Delay, s/veh / LOS	57.2	E	52.4	D	4.0	A	4.7	A				
Intersection Delay, s/veh / LOS	13.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	1.83	B	1.61	B
Bicycle LOS Score / LOS	0.79	A	0.80	A	1.36	A	1.22	A

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA	Intersection	Town Pump approach				
Agency/Co.	ATS	Jurisdiction	Lewis&Clakr				
Date Performed	7/6/2022	East/West Street	NA				
Analysis Year	2022	North/South Street	Montana				
Time Analyzed	AM existing	Peak Hour Factor	0.92				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	Town Pump - Montana						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		1	0	1		0	0	0		0	1	0		0	1	0	
Configuration		L		R						LT						TR	
Volume (veh/h)		0		36						0	424				960	20	
Percent Heavy Vehicles (%)		3		3						3							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized		No															
Median Type Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

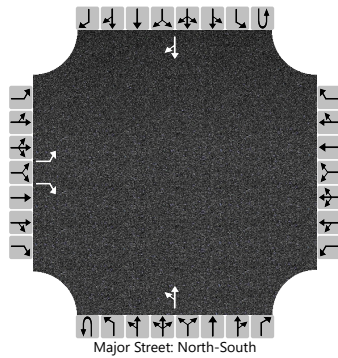
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0		39						0						
Capacity, c (veh/h)		131		273						650						
v/c Ratio		0.00		0.14						0.00						
95% Queue Length, Q ₉₅ (veh)		0.0		0.5						0.0						
Control Delay (s/veh)		32.5		20.4						10.5						
Level of Service (LOS)		D		C						B						
Approach Delay (s/veh)		20.4								0.0						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA	Intersection	Town Pump approach				
Agency/Co.	ATS	Jurisdiction	Lewis&Clakr				
Date Performed	7/6/2022	East/West Street	NA				
Analysis Year	2022	North/South Street	Montana				
Time Analyzed	PM existing	Peak Hour Factor	0.92				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	Town Pump - Montana						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0		0	1	0		0	1	0
Configuration		L		R						LT						TR
Volume (veh/h)		0		24						0	972				848	16
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No															
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

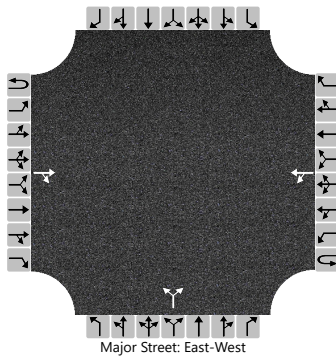
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0		26						0						
Capacity, c (veh/h)		67		322						726						
v/c Ratio		0.00		0.08						0.00						
95% Queue Length, Q ₉₅ (veh)		0.0		0.3						0.0						
Control Delay (s/veh)		59.0		17.1						10.0						
Level of Service (LOS)		F		C						A						
Approach Delay (s/veh)	17.1								0.0							
Approach LOS	C															

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Tara Court approach		
Agency/Co.	ATS			Jurisdiction	Lewis&Clakr		
Date Performed	7/6/2022			East/West Street	Tara Court		
Analysis Year	2022			North/South Street	NA		
Time Analyzed	AM existing			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Town Pump - Montana						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	0	0	
Configuration				TR		LT					LR					
Volume (veh/h)			44	28		20	64			28		40				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

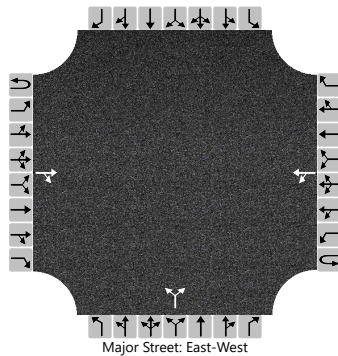
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						22					74					
Capacity, c (veh/h)						1514					906					
v/c Ratio						0.01					0.08					
95% Queue Length, Q ₉₅ (veh)						0.0					0.3					
Control Delay (s/veh)						7.4					9.3					
Level of Service (LOS)						A					A					
Approach Delay (s/veh)					1.8				9.3							
Approach LOS					A				A							

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Tara Court approach		
Agency/Co.	ATS			Jurisdiction	Lewis&Clakr		
Date Performed	7/6/2022			East/West Street	Tara Court		
Analysis Year	2022			North/South Street	NA		
Time Analyzed	PM existing			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Town Pump - Montana						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	
Configuration				TR		LT					LR					
Volume (veh/h)			140	8		16	92			16		28				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

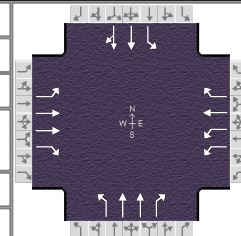
Base Critical Headway (sec)						4.1				7.1		6.2			
Critical Headway (sec)						4.13				6.43		6.23			
Base Follow-Up Headway (sec)						2.2				3.5		3.3			
Follow-Up Headway (sec)						2.23				3.53		3.33			

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						17					48					
Capacity, c (veh/h)						1412					802					
v/c Ratio						0.01					0.06					
95% Queue Length, Q ₉₅ (veh)						0.0					0.2					
Control Delay (s/veh)						7.6					9.8					
Level of Service (LOS)						A					A					
Approach Delay (s/veh)					1.2				9.8							
Approach LOS									A							

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ATS			Duration, h	0.250		
Analyst	RLA	Analysis Date	Jul 6, 2022	Area Type	Other		
Jurisdiction	MDT	Time Period	Projected AM Peak	PHF	1.00		
Urban Street	Montana Avenue	Analysis Year	2023	Analysis Period	1 > 7:00		
Intersection	Custer Avenue	File Name	MontanaSignalsAMprojected.xus				
Project Description	Town Pump						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	80	368	149	185	364	144	110	208	90	152	526	48

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	7.0	0.3	72.4	6.3	0.3	26.8		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.0	0.0	3.0	3.0	3.0	3.0		
				Red	0.0	0.0	1.0	0.0	0.0	1.0		

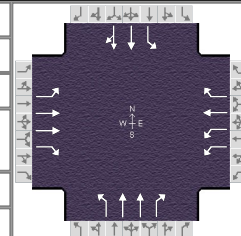
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	2.0	3.0	1.1	3.0	1.1	4.0
Phase Duration, s	9.3	30.8	12.6	34.1	10.0	76.4	10.2	76.7
Change Period, ($Y+R_c$), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Allow Headway (MAH), s	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s	6.6	14.6	9.2	27.8	6.7		7.0	
Green Extension Time (g_e), s	0.0	2.2	0.4	2.2	0.3	0.0	0.3	0.0
Phase Call Probability	0.94	1.00	1.00	1.00	0.99		1.00	
Max Out Probability	1.00	0.00	0.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	80	368	149	185	364	144	144	273	118	152	291	283
Adjusted Saturation Flow Rate (s), veh/h/ln	1755	1687	1502	1639	1772	1502	1688	1687	1502	1688	1772	1719
Queue Service Time (g_s), s	4.6	12.6	11.4	7.2	25.8	10.6	4.7	6.7	4.7	5.0	11.2	11.3
Cycle Queue Clearance Time (g_c), s	4.6	12.6	11.4	7.2	25.8	10.6	4.7	6.7	4.7	5.0	11.2	11.3
Green Ratio (g/C)	0.25	0.21	0.21	0.07	0.23	0.23	0.61	0.56	0.63	0.61	0.56	0.56
Capacity (c), veh/h	158	694	309	242	410	347	529	1879	947	708	991	961
Volume-to-Capacity Ratio (X)	0.505	0.530	0.482	0.765	0.888	0.415	0.273	0.145	0.125	0.215	0.293	0.295
Back of Queue (Q), ft/ln (95 th percentile)	93	230.6	194.4	139	436.4	180.8	79	124.2	75	83.1	208.4	201.6
Back of Queue (Q), veh/ln (95 th percentile)	3.7	9.1	7.7	5.5	17.2	7.1	3.1	4.9	3.0	3.3	8.2	8.1
Queue Storage Ratio (RQ) (95 th percentile)	0.29	0.46	0.61	0.31	0.87	0.36	0.25	0.25	0.25	0.26	0.42	0.41
Uniform Delay (d_1), s/veh	40.4	46.0	45.5	59.1	48.3	42.5	11.5	19.3	11.3	10.9	15.1	15.1
Incremental Delay (d_2), s/veh	0.9	0.2	0.4	1.9	2.7	0.3	0.1	0.2	0.3	0.1	0.8	0.8
Initial Queue Delay (d_3), 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
Control Delay (d), s/veh	41.3	46.2	45.9	61.0	51.0	42.8	11.6	19.5	11.6	11.0	15.9	15.9
Level of Service (LOS)	D	D	D	E	D	D	B	B	B	B	B	B
Approach Delay, s/veh / LOS	45.5	D		52.0	D		15.6	B		14.9	B	
Intersection Delay, s/veh / LOS	32.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.30	B	2.41	B	2.26	B
Bicycle LOS Score / LOS	0.98	A	1.63	B	0.82	A	1.09	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ATS			Duration, h	0.250		
Analyst	RLA	Analysis Date	Jul 6, 2022	Area Type	Other		
Jurisdiction	MDT	Time Period	Projected AM Peak	PHF	1.00		
Urban Street	Montana Avenue	Analysis Year	2023	Analysis Period	1 > 7:00		
Intersection	Custer Avenue	File Name	MontanaSignalsPMprojected.xus				
Project Description	Town Pump						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	184	552	109	245	532	300	172	598	136	264	419	76

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	12.4	2.1	49.6	9.0	0.1	39.8			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.0	0.0	3.0	3.0	3.0	3.0			
				Red	0.0	0.0	1.0	0.0	0.0	1.0			

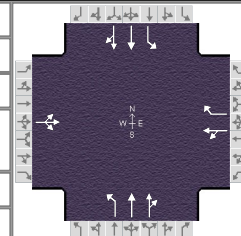
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	2.0	3.0	1.1	3.0	1.1	4.0
Phase Duration, s	12.0	43.8	15.1	46.9	15.4	53.6	17.5	55.7
Change Period, (Y+R _c), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Max Allow Headway (MAH), s	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s	11.0	19.6	11.5	39.4	12.0		14.0	
Green Extension Time (g _e), s	0.0	3.6	0.5	3.5	0.4	0.0	0.5	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	0.00	0.00	0.01	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	184	552	109	245	532	300	217	756	172	264	253	242
Adjusted Saturation Flow Rate (s), veh/h/ln	1755	1687	1502	1639	1772	1502	1688	1687	1502	1688	1772	1677
Queue Service Time (g _s), s	9.0	17.6	7.1	9.5	37.4	21.7	10.0	25.0	9.3	12.0	13.0	13.2
Cycle Queue Clearance Time (g _c), s	9.0	17.6	7.1	9.5	37.4	21.7	10.0	25.0	9.3	12.0	13.0	13.2
Green Ratio (g/C)	0.38	0.31	0.31	0.09	0.33	0.33	0.48	0.38	0.47	0.50	0.40	0.40
Capacity (c), veh/h	201	1033	460	304	585	495	470	1287	712	378	704	667
Volume-to-Capacity Ratio (X)	0.914	0.534	0.237	0.805	0.910	0.606	0.463	0.588	0.241	0.699	0.359	0.363
Back of Queue (Q), ft/ln (95 th percentile)	260.8	296.7	118.4	183.2	613.3	319.8	180.5	410.7	169.2	211.2	246.8	235.9
Back of Queue (Q), veh/ln (95 th percentile)	10.3	11.7	4.7	7.2	24.1	12.6	7.1	16.2	6.7	8.3	9.7	9.4
Queue Storage Ratio (RQ) (95 th percentile)	0.82	0.59	0.37	0.41	1.23	0.64	0.56	0.82	0.56	0.66	0.49	0.48
Uniform Delay (d ₁), s/veh	35.5	37.4	33.7	57.8	41.7	36.5	21.4	37.6	21.6	23.3	27.5	27.6
Incremental Delay (d ₂), s/veh	39.5	0.2	0.1	1.9	7.8	0.4	0.2	1.8	0.7	0.9	1.4	1.5
Initial Queue Delay (d ₃), 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
Control Delay (d), s/veh	75.0	37.6	33.8	59.7	49.5	36.9	21.6	39.4	22.4	24.2	28.9	29.1
Level of Service (LOS)	E	D	C	E	D	D	C	D	C	C	C	C
Approach Delay, s/veh / LOS	45.2		D	48.3		D	33.5		C	27.4		C
Intersection Delay, s/veh / LOS	39.0						D					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.45	B	2.29	B	2.44	B	2.28
Bicycle LOS Score / LOS	1.18	A	2.26	B	1.24	A	1.11	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ATS			Duration, h	0.250		
Analyst	RLA	Analysis Date	Jul 6, 2022	Area Type	Other		
Jurisdiction	MDT	Time Period	Projected AM Peak	PHF	0.92		
Urban Street	Montana Avenue	Analysis Year	2023	Analysis Period	1 > 7:00		
Intersection	Tara Court	File Name	MontanaSignalsAMprojected.xus				
Project Description	Town Pump						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	100	10	46	24	14	8	57	384	16	12	930	69

Signal Information																		
Cycle, s	130.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	106.2	16.8	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	0.0	1.0	0.0	0.0	0.0	0.0								

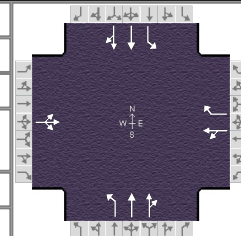
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		7.0		6.0		6.0
Phase Duration, s		20.8		20.8		109.2		109.2
Change Period, (Y+R c), s		4.0		4.0		3.0		3.0
Max Allow Headway (MAH), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g s), s		16.6		5.2				
Green Extension Time (g e), s		0.3		0.4		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	170			41 9			62 218 216			10 430 420		
Adjusted Saturation Flow Rate (s), veh/h/ln	1485			1402 1525			659 1800 1774			969 1800 1756		
Queue Service Time (g s), s	11.4			0.0 0.6			3.4 3.3 3.3			0.2 8.7 8.5		
Cycle Queue Clearance Time (g c), s	14.6			3.2 0.6			12.0 3.3 3.3			3.5 8.7 8.5		
Green Ratio (g/C)	0.13			0.13 0.13			0.82 0.82 0.82			0.82 0.82 0.82		
Capacity (c), veh/h	238			227 198			550 1470 1449			822 1470 1434		
Volume-to-Capacity Ratio (X)	0.713			0.182 0.044			0.113 0.149 0.149			0.012 0.293 0.293		
Back of Queue (Q), ft/ln (95 th percentile)	234.3			54.5 11.2			21.1 43.3 42.9			1.7 119.2 112.9		
Back of Queue (Q), veh/ln (95 th percentile)	9.4			2.2 0.4			0.8 1.7 1.7			0.1 4.8 4.5		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00 0.00			0.00 0.00 0.00			0.00 0.00 0.00		
Uniform Delay (d 1), s/veh	55.5			50.5 49.5			4.5 2.5 2.5			2.1 3.5 3.4		
Incremental Delay (d 2), s/veh	1.5			0.1 0.0			0.4 0.2 0.2			0.0 0.5 0.5		
Initial Queue Delay (d 3), s/veh	0.0			0.0 0.0			0.0 0.0 0.0			0.0 0.0 0.0		
Control Delay (d), s/veh	57.0			50.7 49.6			4.9 2.7 2.7			2.1 3.9 3.9		
Level of Service (LOS)	E			D D			A A A			A A A		
Approach Delay, s/veh / LOS	57.0	E		50.5	D		3.0	A		3.9	A	
Intersection Delay, s/veh / LOS	10.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	1.83	B	1.60	B
Bicycle LOS Score / LOS	0.77	A	0.57	A	0.90	A	1.39	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ATS			Duration, h	0.250		
Analyst	RLA	Analysis Date	Jul 6, 2022	Area Type	Other		
Jurisdiction	MDT	Time Period	Projected AM Peak	PHF	0.92		
Urban Street	Montana Avenue	Analysis Year	2023	Analysis Period	1 > 7:00		
Intersection	Tara Court	File Name	MontanaSignalsPMprojected.xus				
Project Description	Town Pump						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	170	30	48	80	18	84	109	800	100	44	759	42

Signal Information																		
Cycle, s	130.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	97.8	25.2	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.0	3.0	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	0.0	1.0	0.0	0.0	0.0	0.0								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		7.0		6.0		6.0
Phase Duration, s		29.2		29.2		100.8		100.8
Change Period, (Y+R c), s		4.0		4.0		3.0		3.0
Max Allow Headway (MAH), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g s), s		25.1		11.1				
Green Extension Time (g e), s		0.1		0.8		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		0.00				

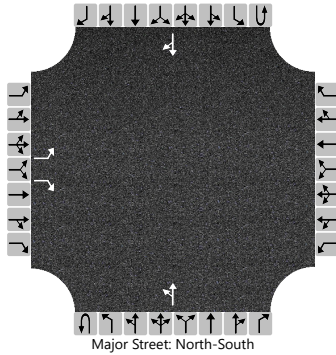
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	270			107 91			118	499	479	40	370	363
Adjusted Saturation Flow Rate (s), veh/h/ln	1489			1327 1525			735	1800	1729	584	1800	1766
Queue Service Time (g s), s	14.0			0.0 6.7			8.6	12.4	12.4	2.5	12.5	12.3
Cycle Queue Clearance Time (g c), s	23.1			9.1 6.7			21.1	12.4	12.4	15.2	12.5	12.3
Green Ratio (g/C)	0.19			0.19 0.19			0.75	0.75	0.75	0.75	0.75	0.75
Capacity (c), veh/h	336			308 296			537	1354	1300	439	1354	1328
Volume-to-Capacity Ratio (X)	0.803			0.346 0.308			0.220	0.369	0.369	0.092	0.273	0.273
Back of Queue (Q), ft/ln (95 th percentile)	368			136.2 114.4			65.6	193.4	187.5	15.9	217.9	208.6
Back of Queue (Q), veh/ln (95 th percentile)	14.7			5.4 4.6			2.6	7.7	7.5	0.6	8.7	8.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00 0.00			0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d 1), s/veh	51.4			45.8 44.9			9.2	5.5	5.5	6.3	8.8	8.5
Incremental Delay (d 2), s/veh	11.6			0.2 0.2			0.9	0.8	0.8	0.4	0.4	0.4
Initial Queue Delay (d 3), s/veh	0.0			0.0 0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	63.0			46.0 45.1			10.1	6.3	6.3	6.7	9.2	8.9
Level of Service (LOS)	E			D D			B	A	A	A	A	A
Approach Delay, s/veh / LOS	63.0	E		45.6	D		6.7	A		8.9	A	
Intersection Delay, s/veh / LOS	17.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	1.85	B	1.63	B
Bicycle LOS Score / LOS	0.93	A	0.81	A	1.39	A	1.25	A

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Town Pump approach		
Agency/Co.	ATS			Jurisdiction	Lewis&Clakr		
Date Performed	7/6/2022			East/West Street	NA		
Analysis Year	2023			North/South Street	Montana		
Time Analyzed	AM projected			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Town Pump - Montana						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0	
Configuration		L		R						LT						TR	
Volume (veh/h)		0		56						0	437				954	61	
Percent Heavy Vehicles (%)		3		3						3							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized		No															
Median Type Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

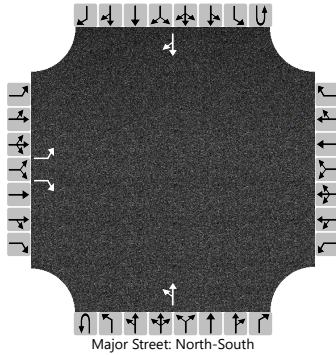
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0		61						0						
Capacity, c (veh/h)		125		267						629						
v/c Ratio		0.00		0.23						0.00						
95% Queue Length, Q ₉₅ (veh)		0.0		0.9						0.0						
Control Delay (s/veh)		33.7		22.4						10.7						
Level of Service (LOS)		D		C						B						
Approach Delay (s/veh)		22.4								0.0						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	TownPump approach		
Agency/Co.	ATS			Jurisdiction	Lewis&Clakr		
Date Performed	7/6/2022			East/West Street	NA		
Analysis Year	2023			North/South Street	Montana		
Time Analyzed	PM projected			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Town Pump - Montana						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0	
Configuration		L		R						LT						TR	
Volume (veh/h)		0		46						0	987				841	62	
Percent Heavy Vehicles (%)		3		3						3							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized		No															
Median Type Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

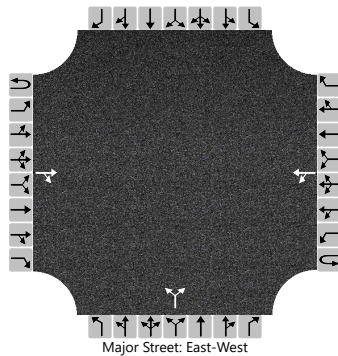
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0		50						0							
Capacity, c (veh/h)		63		315						699							
v/c Ratio		0.00		0.16						0.00							
95% Queue Length, Q ₉₅ (veh)		0.0		0.6						0.0							
Control Delay (s/veh)		61.7		18.6						10.1							
Level of Service (LOS)		F		C						B							
Approach Delay (s/veh)		18.6								0.0							
Approach LOS		C															

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Tara Court approach		
Agency/Co.	ATS			Jurisdiction	Lewis&Clakr		
Date Performed	7/6/2022			East/West Street	Tara Court		
Analysis Year	2023			North/South Street	NA		
Time Analyzed	AM projected			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Town Pump - Montana						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	0	0	
Configuration				TR		LT					LR					
Volume (veh/h)			44	34		75	64			34		112				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

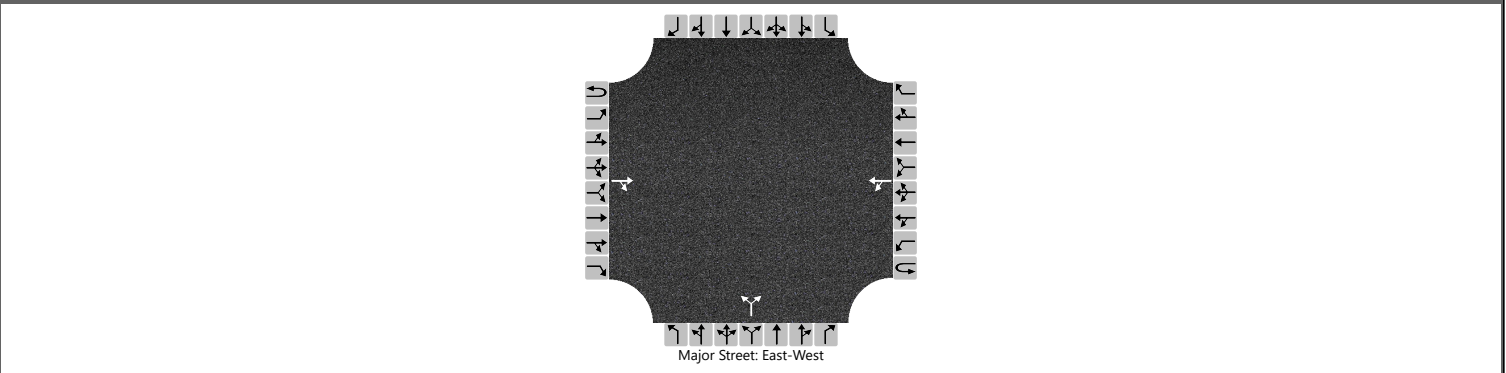
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						82					159					
Capacity, c (veh/h)						1505					886					
v/c Ratio						0.05					0.18					
95% Queue Length, Q ₉₅ (veh)						0.2					0.6					
Control Delay (s/veh)						7.5					9.9					
Level of Service (LOS)						A					A					
Approach Delay (s/veh)					4.3				9.9							
Approach LOS					A				A							

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Tara Court approach		
Agency/Co.	ATS			Jurisdiction	Lewis&Clakr		
Date Performed	7/6/2022			East/West Street	Tara Court		
Analysis Year	2023			North/South Street	NA		
Time Analyzed	PM projected			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Town Pump - Montana						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	0	0	
Configuration				TR		LT					LR					
Volume (veh/h)			140	15		78	92			23		109				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						85				143						
Capacity, c (veh/h)						1403				796						
v/c Ratio						0.06				0.18						
95% Queue Length, Q ₉₅ (veh)						0.2				0.7						
Control Delay (s/veh)						7.7				10.5						
Level of Service (LOS)						A				B						
Approach Delay (s/veh)					3.8				10.5							
Approach LOS									B							