



Town of Berthoud Planning Commission Meeting
Town Hall
807 Mountain Avenue
Thursday, December 12, 2024, at 7:30 p.m.

1. **Call Meeting To Order**
2. **Pledge Of Allegiance**
3. **Roll Call**
4. **Approval Of Planning Commission Meeting Minutes**

Documents:

[10 24 2024 PC MEETING MINUTES.PDF](#)

5. **Public Hearing - Consider A Request For A Preliminary Plat For The Legacy Park Subdivision**

Introduction By: Tawn Hillenbrand, Senior Planner

Documents:

[01 PRELIMINARY PLAT PC INFORMATION FORM.PDF](#)
[02 PRELIMINARY PLAT PC STAFF REPORT.PDF](#)
[03 RESOLUTION 2024.PDF](#)
[04 COMBINED STF RPT ATTACHMENTS.PDF](#)

6. **Report By Staff**

7. **Adjourn**

Join Zoom Meeting <https://us02web.zoom.us/j/86049631362> Meeting ID: 860 4963 1362
One tap mobile +17193594580,,86049631362# US

Individuals needing special accommodation may request assistance by contacting the Town Clerk at 807 Mountain Avenue, Berthoud, Colorado 80513, 970-532-2643 at least 24 hours in advance.



**MEETING MINUTES OF THE PLANNING COMMISSION and
THE HOUSING STEERING COMMITTEE
WORK SESSION
Town Board Room
807 Mountain Avenue, Berthoud, CO 80513
October 24, 2024, at 6:00 p.m.**

Housing Steering Committee

1. Meeting Called To Order – Chairperson Karen Anderson
Meeting Called to Order at 6:01 p.m.
2. Pledge of Allegiance
Chairperson Anderson led the Pledge of Allegiance
3. Roll Call

The following Commission members were present:

Karen Anderson, Chair
Abigail Smith, Vice Chair
Nick Semedallas, Commissioner
Marc Hofmans, Commissioner
Mark Brodie, Commissioner
David Pond, Commissioner

The following Commission member was absent:

Stacy Sigman, Commissioner

In addition to the Planning Commission members present for the Planning Commission meeting, the following Berthoud Housing Steering Committee members were also in attendance:

Tim Hardy, Town Trustee
Tiffany Brodie, Habitat for Humanity
Ryan Baker, Thompson Valley School District – Via Zoom
Jeff Feneis, Loveland Housing Authority

The following Steering Committee member was absend:

Sean Murphy, Mayor Pro-Tem

The following Staff members were present:

Anne Johnson, Community Development Director
Tawn Hillenbrand, Senior Planner

4. Presentations and Discussion
 - a. Loveland Housing Authority, Jeff Feneis
 - b. Ayres Associates, Karlyn Vasan and Josh Olhava
5. Chairperson Anderson closed the Housing Steering Committee Meeting at 7:19 p.m.

Planning Commission

1. Meeting Called To Order – Chairperson Karen Anderson
Meeting Called to Order at 7:35 p.m.

The following Commission members were present:

Karen Anderson, Chair
Abigail Smith, Vice Chair
Nick Semedalas, Commissioner
Marc Hofmans, Commissioner
Mark Brodie, Commissioner
David Pond, Commissioner

The following Commission member was absent:

Stacy Sigman, Commissioner

2. Approval of Planning Commission Meeting Minutes
 - a. September 26, 2024
 - b. October 10, 2024

MOTION made by Commissioner Semedalas to APPROVE the Minute for the September 26, 2024 Planning Commission Meeting. SECONDED by Commissioner Hofmans. With all in favor, THE MOTION CARRIED.

MOTION made by Commissioner Smith to APPROVE the Minute for the October 10, 2024 Planning Commission Meeting. SECONDED by Commissioner Semedalas. With all in favor, THE MOTION CARRIED.

3. Public Hearing - Consider a Request for an Annexation, Change of Zone and Neighborhood Master Plan for River Trails presented by Anne Johnson, Community Development Director

The applicant, Jim Birdsall provided a presentation and was accompanied by his partner, Jon Turner and consultants Kristin Turner and Ruth Rawlings.

Public Comment was opened by Chairperson Anderson at 8:46 p.m.

The following residents outside of Berthoud in unincorporated Larimer County provided comments opposing the River Trails development: Maria Culligan, Lisa Jacobsen, Jim Sewzek, Marshall Perry and Rick Stoner.

The following residents outside of Berthoud in unincorporated Larimer County provided comments indicating they were no in support or opposed to the River Trails development: Emily Harrison

There were no participants via Zoom.

Public Comment was closed by Chairperson Anderson at 9:06 p.m.

Chair Anderson and the Planning Commission members deliberated and deliberation ended at 9:25 p.m.

MOTION was made by Commissioner Smith to send a recommendation of approval to the Board of Trustees of the River Trails Annexation request as the Criteria for Approval outlined in the Staff Report have been met.

SECONDED by Commissioner Semedalas.
With those all in favor, THE MOTION CARRIED.

MOTION was made by Commissioner Smith to send a recommendation of approval with the four conditions listed below, to the Board of Trustees of the River Trails Neighborhood Master Plan request as the Criteria for Approval outlined in the Staff Report have been met.

1. An application for annexation of County Road 6C shall be submitted to the Town prior to submittal of the Preliminary Plan. The distance shall be from the eastern property boundary to County Road 1 (County Line Road) resulting in this entire mile of County Road 6 being annexed to the Town of Berthoud.
2. The Preliminary Plat application shall include an Ecological Resource Survey. The applicant shall consult with Colorado Parks and Wildlife to mitigate impacts of the proposed development to wildlife.
3. The Preliminary Plat application shall provide an updated Traffic Impact Study to include the intersection of County Road 6C and County Road 13/County Line Road.
4. The applicant shall have communication with the neighbors along County Road 6C and Spring Hill Lane to understand concerns and to attempt to mitigate their concerns.

SECONDED by Commissioner Brodie.
With those all in favor, THE MOTION CARRIED.

MOTION was made by Commissioner Semedalas to send a recommendation of approval to the Board of Trustees of the River Trails Zoning request as the Criteria for Approval outlined in the Staff Report have been met.

SECONDED by Commissioner Hofmans
With those all in favor, THE MOTION CARRIED.

Chair Anderson called a break at 10:15 pm and resumed the Planning Commission meeting at 10:20 pm.

4. Public Hearing - Consider a Request for a Change of Zone and Neighborhood Master Plan for Fickel Farms 5th Filing presented by Tawn Hillenbrand, Senior Planner

The applicant's representative Kristin Turner and Justin Beckner provided a presentation and addressed Commissioner questions.

Public Comment was opened by Chairperson Anderson at 10:46 p.m.

The following residents of Berthoud provided questions regarding the proposed Fickel Farms 5th Filing development: Lynn Larsen

There were no participants via Zoom.

Public Comment was closed by Chairperson Anderson at 10:49 p.m.

Chair Anderson and the Planning Commission members deliberated and deliberation ended at 11:04 p.m.

MOTION was made by Commissioner Semedalas to send a recommendation of approval to the Board of Trustees of the Fickel Farms 5th Filing Neighborhood Master Plan request as the Criteria for Approval outlined in the Staff Report have been met.

SECONDED by Commissioner Smith.
With those all in favor, THE MOTION CARRIED.

MOTION was made by Commissioner Semedallas to send a recommendation of approval to the Board of Trustees of the Fickel Farms 5th Filing Zoning request as the Criteria for Approval outlined in the Staff Report have been met.

SECONDED by Commissioner Brodie.
With those all in favor, THE MOTION CARRIED.

5. Report by Staff

- There will not be a Planning Commission meeting on November 14 or November 26, 2024
- The next Housing Steering Committee meeting will be on December 12, 2024
- The next Planning Commission meeting will be on December 12, 2024 preceded by a Pot Luck Dinner, watch for details in mid-November
- The Town has hired a Development Review engineer and he starts on Monday, November 28. Luke Seeber will be joining the Town and building an Engineering Team for Development Review. Luke has been at Baseline Engineering and serving the Town as a consultant engineer.
- The Town will be hiring an early-career or mid-career Planner and the job description has been posted.
- Teri Reger, the Town's Planning Technician resigned this week and the Town will not be re-filling the position.

6. Adjourn

The meeting was adjourned at 11:07 p.m.

Chairperson

Secretary

PLANNING COMMISSION INFORMATION



COMMUNITY DEVELOPMENT DEPARTMENT

Meeting Date:	December 12, 2024
Agenda Title/Subject:	Public Hearing to consider a request for a Preliminary Plat known as Legacy Park located south of Mountain Avenue, east of Meadowlark Drive and west of S. Berthoud Parkway
Type of Item:	Public Hearing
Purpose:	Request for approval of a Preliminary Plat to create 439 single-family residential lots, 17 future development tracts, and multiple outlots to accommodate future parks and open space development for Legacy Park.
Presented by:	Tawn Hillenbrand, Senior Planner

ATTACHMENTS:

- Staff Report with application materials
- Resolution ## (Series 2024)

BACKGROUND:

Legacy Park, formally known as Ludlow Farm, received Neighborhood Master Plan and Rezone approval in April 2023. The currently undeveloped property is an approximate 306 acres and is currently zoned Suburban Residential and Urban Residential. The proposed Preliminary Plat is in substantial compliance with the Neighborhood Master Plan approved in April 2023. The road network, lot configuration, density, and proposed open space areas are aligned with the previously approved plan. The Preliminary Plat includes 439 single-family detached residential lots, a centrally located linear park, and future development tracts.

Preliminary Plat is the next phase of the overall land use approval process for a subdivision following Neighborhood Master Plan and Rezone approval.

UPDATE/NEXT STEPS:

Tonight, the Planning Commission will hear one request of the applicant. The purpose of the Preliminary Plat is to provide the Town with an overall plat and the associated engineering for the proposed development.

Following the Planning Commission public meeting, the Town Board of Trustees will hear the request at their regularly scheduled hearing on January 14, 2024. The applicant will be required to record the Preliminary Plat if approved by the Town Board of Trustees, and any Conditions of Approval will need to be addressed prior to submitting an application for the final process. The final planning process step would be a public hearing before the Planning

Commission for a Final Plat. The Final Plat phase includes review of the Construction Documents (100%), referral agency review, analysis of the utilities and infrastructure planned for the project, off-site and on-site improvements, for example. The Final Plat can encompass all or a portion of the project. Both the Preliminary and Final platting must adhere to the Neighborhood Master Plan.

Referral agencies such as the school district, fire protection district, utility and infrastructure providers, for example have reviewed the Preliminary Plat applications. Referral agency comments at this phase are incorporated into the Staff Report and are used by the applicant when they are preparing their next land use application materials for review. Sanitary sewer and water main engineering designs, the need for water dedication, and school bus stop locations, if needed, for example are reviewed at the Preliminary Plat and Final Plat stages. The developer has provided Construction Documents with this phase and will be required to with the next or final phase of development, and these will be reviewed by the Town Engineer and supportive agencies.

FISCAL IMPACT AND FUND SOURCE:

There is no negative impact to the Town in consideration of this request for Preliminary Plat. Public notice is funded through fees paid by the applicant. Development review is funded through fees paid by the applicant.

COMMUNITY TOUCHSTONES:

Consideration of this request does not negatively impact community touchstones and in fact is supportive of the 2021 Comprehensive Plan. The proposed Preliminary Plat is consistent with the previously approved Neighborhood Master Plan which aligns with the vision of the Comprehensive Plan and Mountain Avenue Overlay Corridor.

RECOMMENDED ACTION(S):

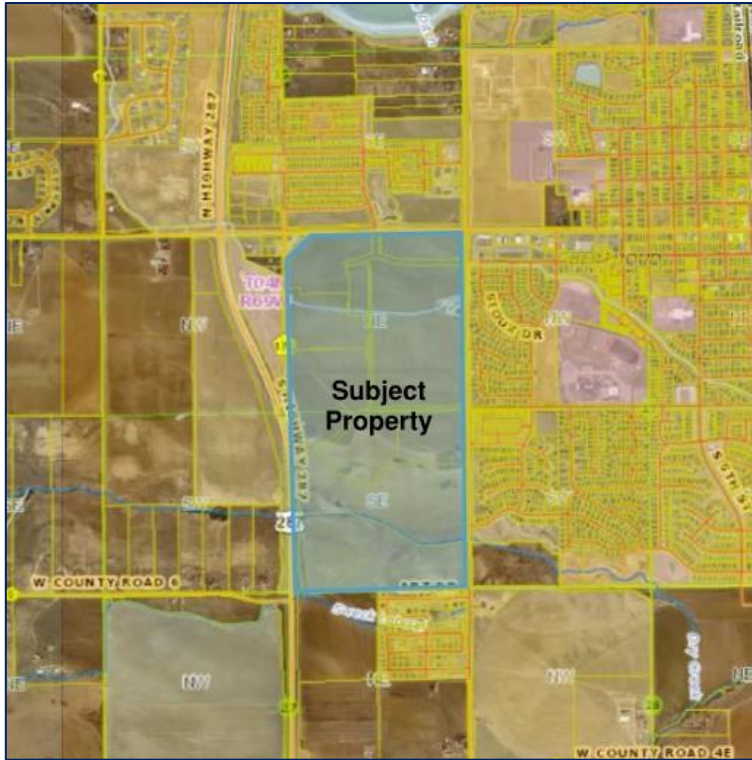
Staff recommends approval of the request. See suggested motions in the Staff Report.



STAFF REPORT: LEGACY PARK PRELIMINARY PLAT

DATE: December 12, 2024

GENERAL INFORMATION

Applicant:	JM Hinson – Manager, LP Communities, LLC	Size: 306 acres
Site Location:	The property is located south of Mountain Avenue, east of Meadowlark Drive and west of S. Berthoud Parkway. 	
Applicant's Request:	The Applicant is requesting a preliminary plat for the creation of 439 single-family residential lots, 17 future development tracts, and multiple outlots to accommodate future public parks and open space development.	
Current Zoning:	UR – Urban Residential and SR – Suburban Residential	

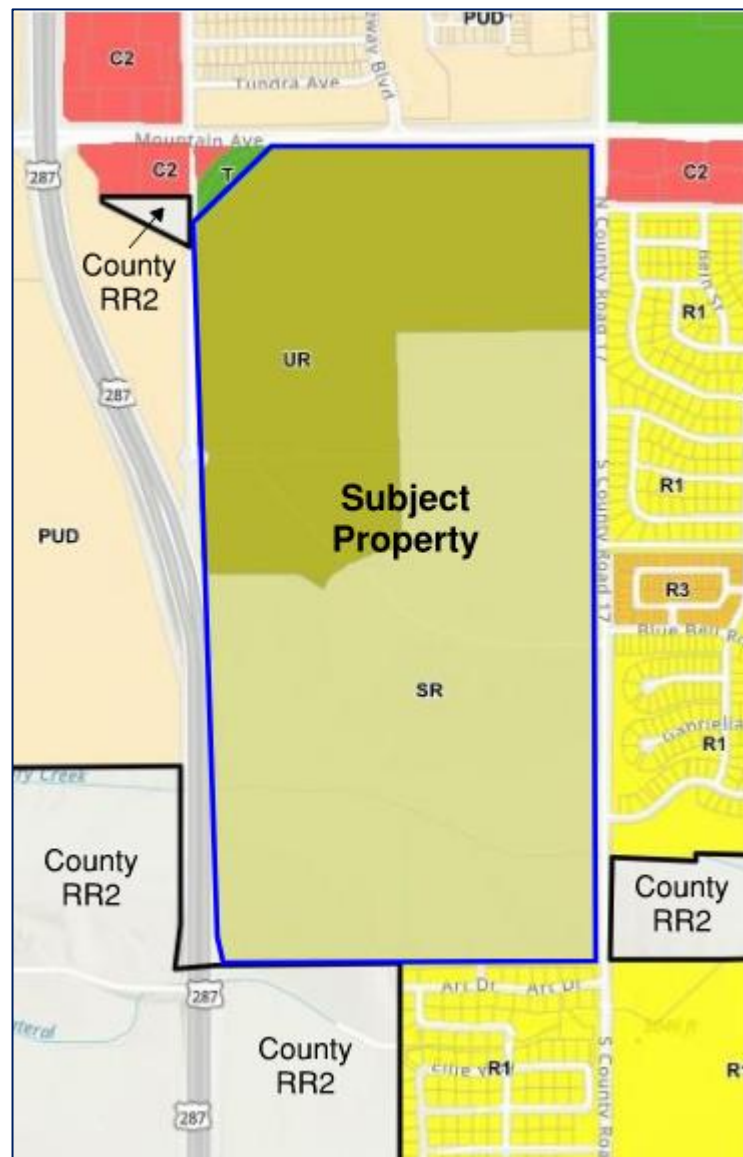
ZONING DISTRICT INFORMATION

	UR (Single-family Detached)	SR (Single-family Detached)
Max Density	N/A (defined by NMP)	N/A (defined by NMP)
Min. Lot Area	N/A	2,500 sq. ft./3,500 sq. ft.
Front Setback	8'-12'	20' front loaded / 10' rear loaded or no garage
Side Setback	5' / 10' corner side	5' / 10' corner side
Rear Setback	5' rear loaded garage	20' front loaded / 5' rear loaded
Max Building Height:	50'	30'

SURROUNDING ZONING, LAND USE AND REQUIRED BUFFERS

	<u>Adjacent Zoning</u>	<u>Adjacent Land Uses</u>	<u>Setbacks for Adjacent Zoning</u>
North – across Mountain Ave.	PUD	Undeveloped / Single-family Residential	N/A
Northwest corner	C2 & T	Fuel station / Coffee Shop	N/A
South	R1 / County RR2	Single-family Residential / Undeveloped	N/A
East	C2 / R1 / R3 / County RR2	Commercial / Single-family Residential / Undeveloped	N/A
West	C2 / County RR2 / PUD	Commercial / Single-family Residential	N/A

Zoning Map:



Proposal

The applicant proposes to create 439 single-family residential lots, 17 future development tracts, and multiple outlots to accommodate future public parks and open space development. The proposed Preliminary Plat is in substantial compliance with the approved Neighborhood Master Plan approved in April 2023. The Preliminary Plat, if approved, would allow the applicant to apply for a Final Plat that would formally subdivide the lots.

Background

The currently undeveloped property is an approximate 306 acres and is currently zoned Suburban Residential and Urban Residential. Legacy Park, formally known as Ludlow Farm, received Neighborhood Master Plan and Rezone approval in April 2023. The approved Neighborhood Master Plan includes a mix of uses, including single-family detached, townhomes, condos, and commercial development with an estimated project total of 1500-1800 units.

The proposed Preliminary Plat is consistent with the approved Neighborhood Master Plan. The road network, lot configuration, density, and proposed open space areas are aligned with the previously approved plan. The Preliminary Plat includes 439 single-family detached residential lots, future development tracts, and a centrally located linear park. The future development tracts will be required to be further subdivided through subsequent Preliminary Plats; meaning, additional Preliminary Plats for the Legacy Park development will be required moving forward.

Preliminary Plat Review Criteria

In addition to all provisions of this Code, the Town shall use the following criteria to evaluate the applicant's request:

30-6-107(B) Review Criteria	Finding	Rationale
1. The preliminary plat represents a functional system of land use and is consistent with the rationale and criteria set forth in this Code.	Yes	The preliminary plat is a functional system of land use. The road network, lot configuration, density, and proposed open space areas are aligned with the previously approved Neighborhood Master Plan. Those residential lots being created with this plat meet the standards of the SR – Suburban Residential zone district.
2. The application is consistent with the approved concept plan and incorporates the Town's recommendations and any conditions of approval.	Yes	The plan is consistent with the approved Neighborhood Master Plan (2023). The approved Neighborhood Master Plan contains two (2) conditions of approval, one regarding a traffic signal at the future Spartan Avenue and Hwy 287 intersection and the second regarding a pedestrian crossing over Dry Creek. The signal for the Spartan Avenue and Hwy 287 intersection is addressed in the Legacy Park Preliminary Traffic Impact Study (TIS). Engineering for the pedestrian connection at Dry Creek will be provided with the Preliminary Plat accompanying later phases (southern portions) of the development.
3. The land use mix within the project conforms to Berthoud's Zoning District Map and Preferred Land Use Map and furthers the goals and policies of the Comprehensive Plan and PORT Plan.	Yes	The creation of single-family residential lots and future development tracts conform to Berthoud's Development Code for SR – Suburban Residential and UR – Urban Residential. The Future Land Use Map identifies this area as Suburban Business along Mountain Avenue, transitioning into Urban Residential primarily along the west portions of the site along Meadowlark Drive, and Suburban Residential along the south and east portions of the site. The approved Neighborhood Master Plan is consistent with the Future

		Land Use Map, and the Preliminary Plat is consistent with the approved Neighborhood Master Plan. The project provides adequate public sidewalks, trails, and pedestrian connections to allow walkability within the project area and well beyond. Once developed, the project will be well connected to the neighboring residential and commercial areas.
30-6-107(B) Review Criteria	Finding	Rationale
4. The utility and transportation design is adequate, given existing and planned capacities of those systems.	Yes	As part of the Preliminary Plat application, the applicant provided a Preliminary Traffic Impact Study (TIS) and Preliminary Water and Sewer Plan. Additionally, the required dry utility easement locations are included on the Plat. The plans were reviewed by Town Staff as well as outside referral agencies. Staff and referral agencies find that the applicant has provided adequate plans for utilities and transportation designs.
5. Negative impacts on adjacent land uses including, but not limited to: solar access, heat, dust, glare, traffic and noise have been identified and satisfactorily mitigated.	Yes	The applicant provided the following required preliminary plans and reports which were reviewed by Town Staff and referral agencies specializing in the specific areas of study: - Preliminary Grading and Drainage Plan - Preliminary Water and Sewer Plan - Soils Report (Geotechnical Report) - Preliminary Landscape Plan - Preliminary Traffic Impact Study (TIS) - Environmental Characterization Study Staff and referral agencies found that the reports and plans identify and satisfactorily mitigate impacts to adjacent land uses.
6. There is a need or desirability within the community for the applicant's development and the development will help achieve a balance of land use and/or housing types within Berthoud.	Yes	The Comprehensive Plan and Future Land Use Map anticipate the Urban Residential designated areas to be developed with a mix of land uses. Development should provide walkable blocks and streets, a diversity of housing, and shopping in close proximity, and accessible public spaces. A variety of housing types, at varying price points is desired. The Suburban Residential designated areas are anticipated to develop with primarily single-family detached, single-family attached homes (townhomes, duplexes), and affordable housing options. This development reflects the desirability within the community as it is defined in the Comprehensive Plan and will achieve a balance of land use and housing types.
7. How the applicant has addressed comments received from the public, during the Public Comment portion of the process.	Yes	The applicant hosted a Q&A session on November 21, 2024, for the community and adjacent property owners. A Q&A session or neighborhood meeting are not currently required as part of the land use approval process. The applicant elected to host this Q&A session. Comments received as part of the Public Comment portion of the process have been provided to the applicant and

		included with this report as an attachment. Comments received to date have been addressed.
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PUBLIC NOTICE AND COMMENT

Notice of the Planning Commission Public Hearing and Town Board of Trustees hearing has been mailed to property owners within 500 feet of the subject property on November 25, 2024, a legal ad published on November 21 and November 22, 2024, and the property was posted as required by the Development Code by November 27, 2024. In addition, notice of application was sent out to all property owners within 500 feet upon initial submittal in November 2023 with an invitation to comment on the request within three weeks of receipt.

FINDINGS AND RECOMMENDATIONS

Staff recommends Planning Commission make a motion to recommend approval of the Legacy Park Preliminary Plat to the Board of Trustees, subject to the following two (2) condition:

- 1. The applicant shall address the remaining comment received by Little Thompson Water District, regarding a small error that does not impact the scope nor design of the project, at the Final Plat submittal.**
- 2. The applicant shall address the remaining comments received by Baseline Engineering Surveyor, regarding minor technical errors, at the Final Plat submittal.**

Attachments

1. Application form
2. Preliminary Plat
3. Preliminary Landscape Plan
4. Approved Neighborhood Master Plan (for reference only)
5. Traffic Impact Study (TIS)
6. Outstanding LTWD Comments
7. Outstanding Baseline Engineering Surveyor Comments
8. Community/Neighbor Comments

RESOLUTION NUMBER ##

(SERIES 2024)

A RESOLUTION OF THE TOWN OF BERTHOUD BOARD OF TRUSTEES APPROVING A
PRELIMINARY PLAT FOR A DEVELOPMENT KNOWN AS THE “LEGACY PARK
DEVELOPMENT” IN THE TOWN OF BERTHOUD.

WHEREAS, the property under consideration is known as the “Legacy Park” development;
and more particularly described in Exhibit A attached hereto; and

WHEREAS, the Town of Berthoud (“Town”) approved Resolution 8-2023 on April 25,
2023, approving a Neighborhood Master Plan; and,

WHEREAS, the Town approved Ordinance No. 1318 on April 25, 2024 amending the
zoning map of the Town of Berthoud to Suburban Residential (SR) and Urban Residential (UR);
and

WHEREAS, the Preliminary Plat attached herein as Exhibit B has been reviewed by
referral agencies to ensure the proposed development does not present a burden on service
provision; and

WHEREAS, notice was properly posted in the manner required by law and a public hearing
was conducted on January 14, 2024; a legal ad was published on November 21, 2024, and affected
property owners within 500 feet of the site were notified by first-class mail before the Berthoud
Planning Commission hearing on November 25, 2024; and

WHEREAS, after the public hearing on December 12, 2024, the Berthoud Planning
Commission made a unanimous recommendation to the Town Board of Trustees to approve the
Preliminary Plat with conditions; and

WHEREAS, based on the testimony and evidence presented at the public hearing on
January 14, 2024, the Board of Trustees determines and finds that compliance with the Preliminary
Plat review criteria as provided in Section 30-6-107(B) of the Berthoud Municipal Code has been
demonstrated.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF TRUSTEES OF THE
TOWN OF BERTHOUD, COLORADO:

Section 1. Preliminary Plat Approval. The Preliminary Plat is hereby approved with the following
Conditions of Approval:

1. The applicant shall address the remaining comment received by Little Thompson Water
District, regarding a small error that does not impact the scope nor design of the project,
at the Final Plat submittal.

2. The applicant shall address the remaining comments received by Baseline Engineering Surveyor, regarding minor technical errors, at the Final Plat submittal.

Section 2. Interpretation: This Resolution shall be interpreted and construed to effectuate its general purpose.

Section 3. Effective Date: The provisions of this Resolution shall take effect upon adoption.

APPROVED AND ADOPTED this 14th day of January 2024.

TOWN OF BERTHOUD

By _____

William Karspeck, Mayor

ATTEST:

By: _____

Christian Samora, Town Clerk

Exhibit A: Legal Description

PARCEL 1:

Lots 1 through 9, and Tract A, LUDLOW FARMS, Town of Berthoud, County of Larimer, State of Colorado.

PARCEL 2:

A tract of land situated in the northwest corner of the Northeast Quarter of Section 22, Township 4 North, Range 69 West of the 6th P.M., more particularly described as follows:

BEGINNING at the northwest corner of the tract from whence the North Quarter of said Southeast 22 bears North 46°17' West 42.4 Feet distant, THENCE South 0°20' East along a line which is 30 feet east of and parallel to quarter section line a distance of 486.4 feet;

THENCE North 43°54' East 718.4 feet to a point 30 feet south of the north line of said Section 22;

THENCE South 88°43' West along a line which is 30 feet south of and parallel to the said north line of Section 22 a distance of 520.6 feet to the POINT OF BEGINNING, EXCEPT those portions in deed recorded August 25, 2021 at Reception No. 20210080442.

PARCEL 3:

A parcel of land being a part of the Southeast Quarter of Section 22, Township 4 North, Range 69 West of the 6th P.M., Town of Berthoud, County of Larimer, State of Colorado, being more particularly described as follows:

Considering the South line of the Southeast Quarter of said Section 22, as bearing South 89°06'41" West, an assumed bearing, and with all bearings contained herein relative thereto:

COMMENCING at the South Quarter corner of said Section 22, being monumented by a 3.25" aluminum cap, thence along said South line of said Section 22, North 89°06'41" East, 223.67 feet to a point on the Easterly right-of-way line U.S. Highway 287, said point being the POINT OF BEGINNING;

THENCE North 07°21'53" West a distance of 25.76 feet to the Southwest corner of Lot 9, Ludlow Farms - Conveyance Plat, recorded at Reception No. 20110018205, Larimer County Clerk and Recorder;

THENCE along the Southerly line of said Lot 9 the following seven (7) courses and distances, South 88°00'48" East a distance of 107.18 feet;

THENCE North 89°17'36" East a distance of 232.13 feet;

THENCE North 89°35'38" East a distance of 219.93 feet;

THENCE North 89°49'13" East a distance of 204.24 feet;

THENCE South 89°36'42" East a distance of 152.83 feet;

THENCE North $88^{\circ}06'10''$ East a distance of 188.67 feet;

THENCE South $00^{\circ}08'00''$ West a distance of 15.02 feet to the Southeast $1/16$ corner of said Section 22;

THENCE along the South line of the Southeast Quarter of said Section 22, South $89^{\circ}06'41''$ West a distance of 1101.58 feet to the POINT OF BEGINNING.

Said parcel containing 305.61 acres (13,312,372 square feet), more or less, and maybe subject to easements and right-of-ways now on record or existing.

Exhibit B: Preliminary Plat

(to be inserted)



Town of Berthoud
807 Mountain Ave.
P.O. Box 1229
Berthoud, CO 80513
970.532.2643

DEVELOPMENT REVIEW APPLICATION

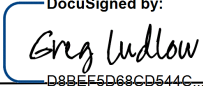
All required information must be provided before submittal will be accepted and deemed complete.
To be complete, the application must include all items identified on the submittal checklist.
Please complete both sides of application form.

Parcel Number(s): 9422105001 - 9422405009		
Site Address: SW Corner of Mountain Avenue & Berthoud Parkway		
Project Name: Legacy Park		
Brief description of project: Residential and mixed-use subdivision.		
APPLICATION TYPE (Check as appropriate):		
☐ Annexation	☒ Preliminary Subdivision Plat	☐ Final Site Plan
☐ Rezoning	☐ Final Subdivision Plat	☐ PUD Amendment
☐ Concept Plan	☐ Plat Amendment	☐ PUD Preliminary Development Plan
☐ Minor Subdivision	☐ Oil and Gas	☐ PUD Final Development Plan
☐ Special Use Review	☐ ROW Vacation	☐ Other _____
APPLICANT		
Name: LP Communities, LLC - JM Hinson, Manager		
E-mail: jmhinson@me.com	Mailing Address: 700 Ken Pratt Blvd Suite 113	
Phone: 1-904-945-8636	City/State/Zip: Longmont, CO 80501	
CONTACT PERSON (will receive correspondence from Town Staff/Referral Agencies)		
Name: Kristin Turner - TB Group		
E-mail: kristin@tbgroup.us	Mailing Address: 444 Mountain Avenue	
Phone: 970.532.5891	City/State/Zip: Berthoud, CO 80513	
OWNER(S) (If different than applicant)		
Name: Smilin' 11 LLC - Greg Ludlow, Manager		
E-mail: greg.ludlow5@gmail.com	Mailing Address: 1909 Sundance Drive	
Phone: (970) 302-9332	City/State/Zip: Longmont, Colorado 80504	
CONSULTANT (Engineer, Surveyor, or Planner)		
Name:		
E-mail:	Mailing Address:	
Phone:	City/State/Zip:	

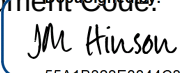
LAND USE INFORMATION					
Existing Use: Vacant Proposed Use: Residential & Future Development					
Existing Zoning: SR & UR Proposed Zoning: (if applicable): SR, UR Number of acres: ~305.61 AC Proposed Access: Berthoud Parkway & Mc	Adjacent zoning / land use:				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">East Side: BERTHOUD PARKWAY</td> <td style="width: 50%;">North Side: MOUNTAIN AVENUE</td> </tr> <tr> <td>West Side: HWY 287</td> <td>South Side: R1 AND LARIMER COUNTY</td> </tr> </table>	East Side: BERTHOUD PARKWAY	North Side: MOUNTAIN AVENUE	West Side: HWY 287	South Side: R1 AND LARIMER COUNTY
East Side: BERTHOUD PARKWAY	North Side: MOUNTAIN AVENUE				
West Side: HWY 287	South Side: R1 AND LARIMER COUNTY				
UTILITY SERVICE INFORMATION					
Water: Town of Berthoud	Sewer: Town of Berthoud				
PROJECT INFORMATION					
Number of proposed units: 439 Number of phases: TBD - multiple Number of Units per phase: TBD Number of lots proposed: 439 Lot size minimum: 2,790 sf Lot size maximum: 8,600 sf Lot size average: 5,600 sf Gross density (units/acre): 2.6 (excluding future development area) Net density (units/acre): 3.6 (excluding future development area) Area and percent open space: 71.6 AC/ 22%	Non-Residential Building Area (Sq. Ft.) Proposed: N/A Non-Residential Construction Floor Area Ratio Proposed: N/A Total Number of Parking Spaces: N/A <u>Acreage of Site:</u> a. Gross: 305.61 b. Right-of-Way: 46.04 c. Net (a-b) 259.57				
	Type of Housing Proposed (please check):				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> ☒ Future Single Family ☐ Duplex ☐ Multi-family (# of units: TBD) </td> <td style="width: 50%;"> ☐ Townhouse ☐ Condominium </td> </tr> </table>	☒ Future Single Family ☐ Duplex ☐ Multi-family (# of units: TBD)	☐ Townhouse ☐ Condominium		
☒ Future Single Family ☐ Duplex ☐ Multi-family (# of units: TBD)	☐ Townhouse ☐ Condominium				

Signatures are required for ALL Property Owners and the Applicant

I hereby certify that I am the lawful owner of the parcel(s) of land that this application concerns and consent to the action. I hereby permit Town of Berthoud staff to enter upon the property for the purposes of inspection relating to the application. Building Permits will not be accepted while this application is in process.

DocuSigned by:

 Property Owner(s): _____ Date: 10/27/2023
 Property Owner(s): _____ Date: _____

In submitting the application materials and signing this application agreement, I acknowledge and agree that the application is subject to the applicable processing and public hearing requirements set forth in the Development Code.

Applicant:  Date: 10/27/2023

FOR OFFICE USE ONLY
Received By:
Date:

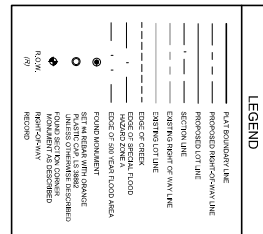
A TRACT OF LAND LOCATED IN THE EAST HALF OF SECTION 22, TOWNSHIP 4 NORTH, RANGE 69 WEST OF THE 6TH P.M.
TOWN OF BERTHOUD, COUNTY OF LARIMER, STATE OF COLORADO

PRELIMINARY
09/18/24
EXHIBITION OR
ONLY

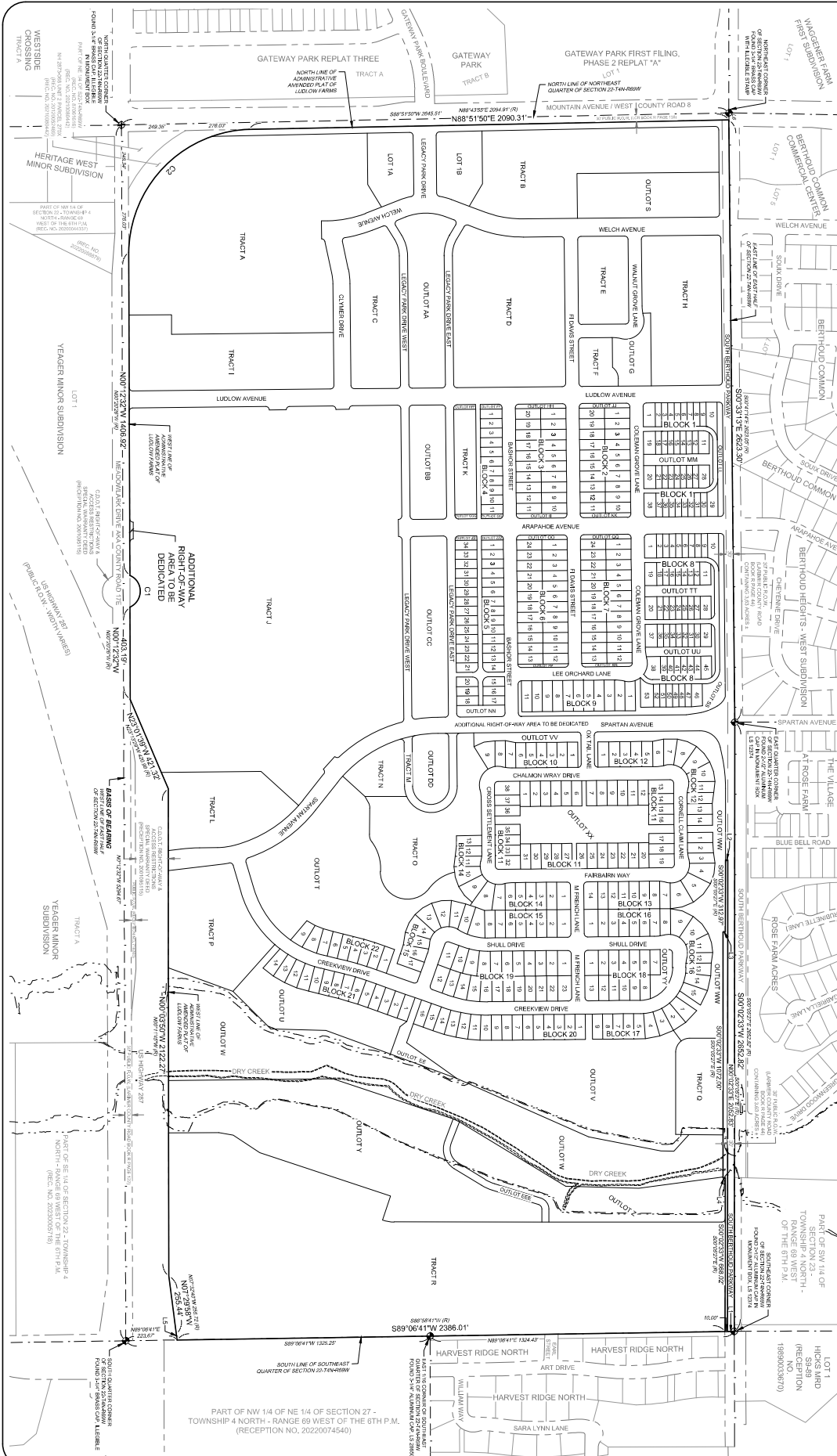
NOT FOR CONSTRUCTION PURPOSES - FOR REVIEW ONLY

For and on Behalf of EPS Group, Inc.

SEE SHEET 28 OF 28 SHEETS
FOR CURVE AND LINE TABLES



NOTICE:
According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years after the date of the certificate shown hereon.



TOWN OF BERTHOUD, LARIMER COUNTY, COLORADO

Sheet
3
Of 26 Sheets

PROJECT: 1859-001	DATE: 09/18/24
CLIENT: LP COMM. LLC	SCALE: 1" = 200'
DRAWN BY: T. HELGERSON	REVIEWED BY: B. TESSELY



SECTION: 22
TOWNSHIP: 4 NORTH
RANGE: 69 WEST OF 6TH PM

SS/Survey Jobs/1859-001/Dac/Preliminary Pls/1859-001 Preliminary Pls.dwg

SEE SHEET 5

PRELIMINARY PLAT OF

LEGACY PARK

A TRACT OF LAND LOCATED IN THE
EAST HALF OF SECTION 22,
TOWNSHIP 4 NORTH, RANGE 69
WEST OF THE 6TH P.M. TOWN OF
BERTHOUD, COUNTY OF LARIMER,
STATE OF COLORADO

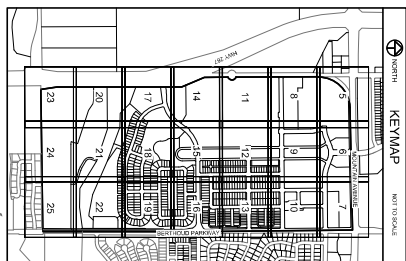
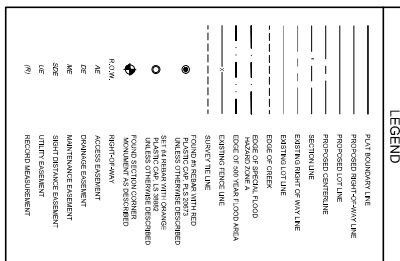
NOTICE:
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TRACT A
752,233 SQ. FT.
17.27 ACRES
FUTURE DEVELOPMENT

TRACT I
233,849 SQ. FT.
5.37 ACRES
FUTURE DEVELOPMENT

TRACT J
1,830,469 SQ. FT.
42.02 ACRES
FUTURE DEVELOPMENT

SEE SHEET 9



PRELIMINARY
09/18/24
FOR REVIEW ONLY

SEE SHEET 11

Tharen J. Helgeson
Colorado Professional Land Surveyor No. 38885
For and on Behalf of EPS Group, Inc.

PRELIMINARY PLAT OF
LEGACY PARK

TOWN OF BERTHOUD, LARIMER COUNTY, COLORADO

PROJECT: 1859-001	DATE: 09/18/24
CLIENT: LP COMM. LLC	SCALE: 1" = 40'
DRAWN BY: T. HELGERSON	REVIEWED BY: B. TESSELY



SECTION:
22

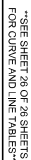
TOWNSHIP:
4 NORTH

RANGE:
69 WEST OF 6TH PM

Sheet	8
Of 26 Sheets	

SciSurvey Jobs\1859-001\Doc\Preliminary Pls\1859-001 Preliminary Pls.doc

EAST HALF OF SECTION 22,
TOWNSHIP 4 NORTH, RANGE 69
WEST OF THE 6TH P.M., TOWN OF
BERTHOUD, COUNTY OF LARIMER,
STATE OF COLORADO



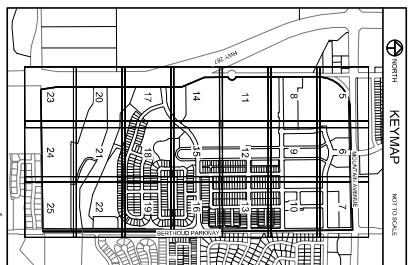
****SEE SHEET 26 OF 26 SHEETS
FOR CURVE AND LINE TABLES****

[illegible]

 NORTH

KEYMAP

NOT TO SCALE



PRELIMINARY
09/18/24
FOR REVIEW ONLY

Colorado Professional Land Surveyor No. 3885
For and on Behalf of EPS Group, Inc.

TOWN OF BERTHOUD, LARIMER COUNTY, COLORADO

PROJECT: 1859-001	DATE: 09/18/24
CLIENT: LP COMM, LLC	SCALE: 1" = 40'
DRAWN BY: T. HELGERSON	REVIEWED BY: B. TESSELY



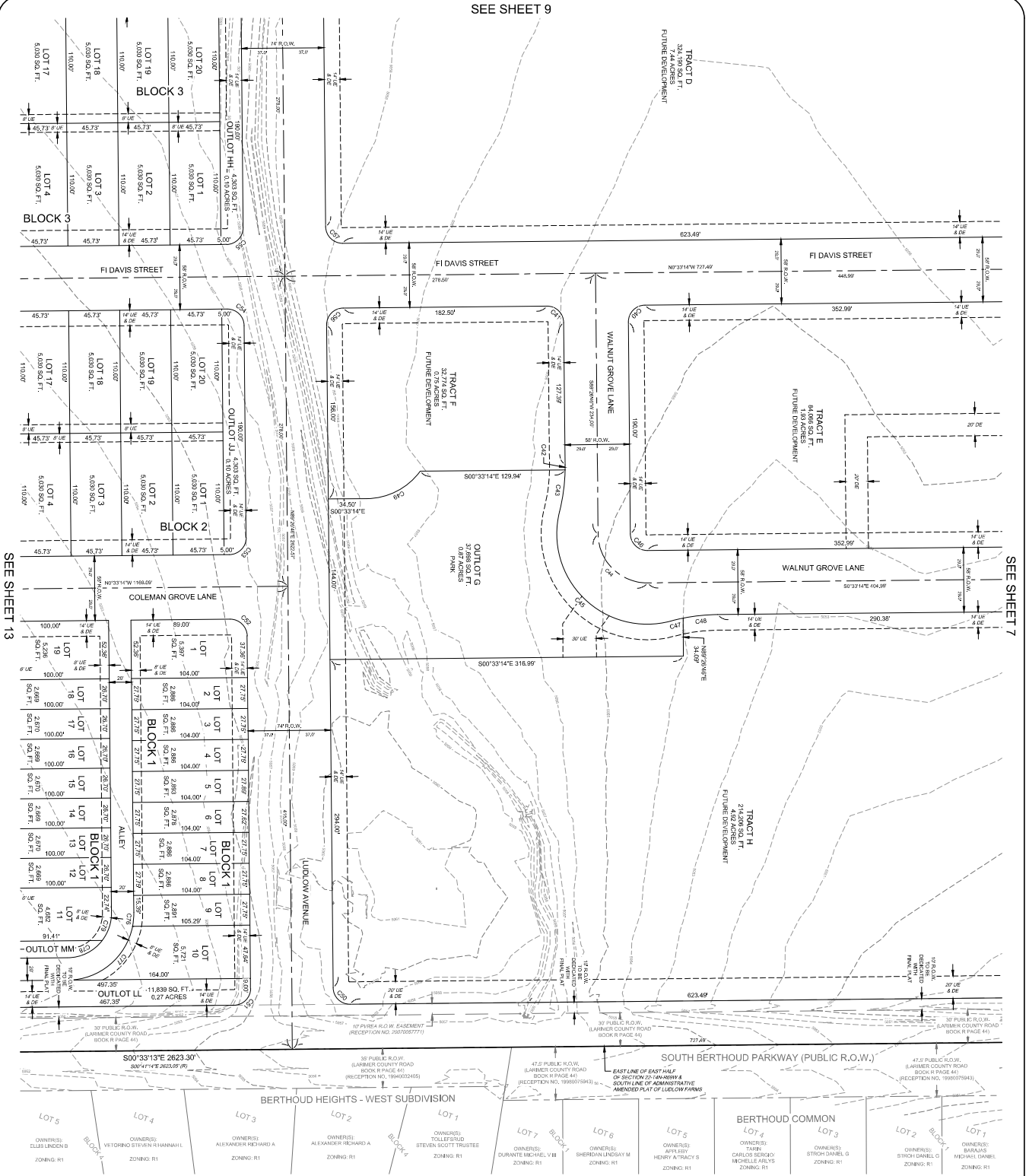
NOTICE:
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9
Of 26 Sheets

S:\Survey Jobs\1859-001\Draw\ Preliminary Plot\1859-001 Preliminary Plot.dwg

SEE SHEET 9

SEE SHEET 7



SEE SHEET 13

PRELIMINARY PLAT OF LEGACY PARK

A TRACT OF LAND LOCATED IN THE EAST HALF OF SECTION 22, TOWNSHIP 4 NORTH, RANGE 69 WEST OF THE 6TH P.M. TOWN OF BERTHOUD, COUNTY OF LARIMER, STATE OF COLORADO

OWNER: [Name]

PREPARED BY: [Name]

DATE: [Date]

SCALE: 1" = 40'

PROJECT: [Project Name]

CUSTOMER: [Customer Name]

DRAWN BY: [Name]

REVIEWED BY: [Name]

DATE: [Date]

SCALE: 1" = 40'

PROJECT: [Project Name]

CUSTOMER: [Customer Name]

DRAWN BY: [Name]

REVIEWED BY: [Name]

DATE: [Date]

SCALE: 1" = 40'

LEGACY PARK

A TRACT OF LAND LOCATED IN THE EAST HALF OF SECTION 22, TOWNSHIP 4 NORTH, RANGE 69 WEST OF THE 6TH P.M. TOWN OF BERTHOUD, COUNTY OF LARIMER, STATE OF COLORADO

OWNER: [Name]

PREPARED BY: [Name]

DATE: [Date]

SCALE: 1" = 40'

PROJECT: [Project Name]

CUSTOMER: [Customer Name]

DRAWN BY: [Name]

REVIEWED BY: [Name]

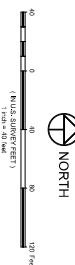
DATE: [Date]

SCALE: 1" = 40'

PRELIMINARY PLAT OF

LEGACY PARK

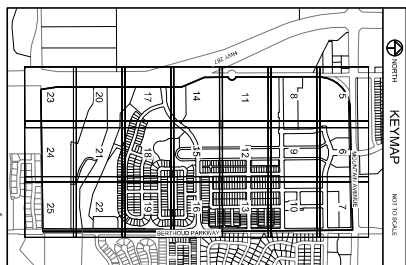
A TRACT OF LAND LOCATED IN THE
EAST HALF OF SECTION 22,
TOWNSHIP 4 NORTH, RANGE 69
WEST OF THE 6TH P.M. TOWN OF
BERTHOUD, COUNTY OF LARIMER,
STATE OF COLORADO



SEE SHEET 26 OF 26 SHEETS
FOR CURVE AND LINE TABLES

[illegible]

SEE SHEET 12



PRELIMINARY
09/18/24
FOR REVIEW ONLY

SEE SHEET 14

Tharen J. Helgeson
Colorado Professional Land Surveyor No. 38885
For and on Behalf of EPS Group, Inc.

PRELIMINARY PLAT OF
LEGACY PARK

TOWN OF BERTHOUD, LARIMER COUNTY, COLORADO

PROJECT: 1859-001	DATE: 09/18/24
CLIENT: LP COMM. LLC	SCALE: 1" = 40'
DRAWN BY: T. HELGERSON	REVIEWED BY: B. TESSELY



NE
NORTHERN
ENGINEERING

SECTION:
22

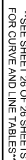
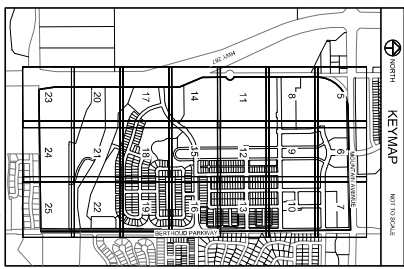
TOWNSHIP:
4 NORTH

RANGE:
69 WEST OF 6TH PM

NOTICE:
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A TRACT OF LAND LOCATED IN THE
EAST HALF OF SECTION 22,
TOWNSHIP 4 NORTH, RANGE 69
WEST OF THE 6TH P.M. TOWN OF
BERTHOUD, COUNTY OF LARIMER,
STATE OF COLORADO

[illegible]

TOWN OF BERTHOUD, LARIMER COUNTY, COLORADO

Sheet	12
Of 26 Sheets	

\\Survey Jobs\1859-001\Draw\ Preliminary Plot\1859-001 Preliminary Plot.dwg

PROJECT: 1859-001	DATE: 09/18/20
CLIENT: LP COMM. LLC	SCALE: 1" = 40'
DRAWN BY: T. HELGERSON	REVIEWED BY: B. TESKE

DATE:	09/18/2
SCALE:	1" = 40'
REVIEW:	B. TES



SECTION: 22
TOWNSHIP: 4 NORTH
RANGE: 69 WEST OF 6TH PM

NOTICE:
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LEGEND

PROPOSED RIGHT-OF-WAY

PROPOSED LOT LINE

PROPOSED CENTERLINE
SECTION LINE

EXISTING LOT LINE

EDGE OF SPECIAL FLOOD
HAZARD ZONE A

—X—
EXISTING FENCE LINE

FOUND IN REBAR WITH RE-
PLASTIC CAP, PLS 20073
UNLESS OTHERWISE DES-

SET IN REBAR WITH ORAN
PLASTIC CAP, LS 31002
UNLESS OTHERWISE DES

FOOTED SECTION CORNER
MONUMENT AS DESCRIBED

R.O.W.

RIGHT-OF-WAY

AE	ACCESS EASEMENT
DE	DRAINAGE EASEMENT

ML	PERCENT LIQUID VOLUME
SDI	SIGHT DISTANCE EASEMENT

(N) RECORD MEASUREMENT

KEYMAP

6024700 AVENUE

8	9	10
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[illegible]

14

15

16

23	24	25
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Summary

PRELIMINARY
1/14/24

USP
FOR REVIEW ONLY

Professional Land Surveyor No. 32852

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	52
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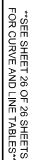
13 Street

PRELIMINARY PLAT OF
LEGACY PARK
TOWN OF BERTHOUD, LARIMER COUNTY, COLORADO

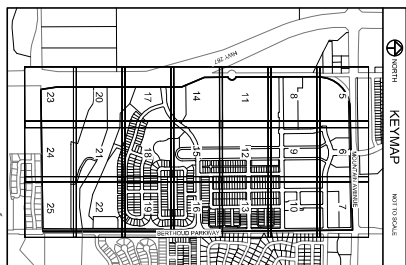
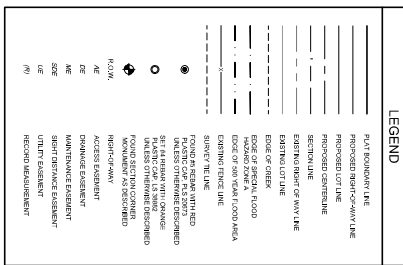
NOTES:	NOTES:
SHIP:	Acco
BIRTH	action
GE:	after
WEST OF 6TH PM	based
	than

CE:
According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you discover such defect. In no event may any action be commenced upon any defect in this survey be commenced more than ten years after the date of the certificate shown hereon.

A TRACT OF LAND LOCATED IN THE
EAST HALF OF SECTION 22,
TOWNSHIP 4 NORTH, RANGE 69
WEST OF THE 6TH P.M. TOWN OF
BERTHOUD, COUNTY OF LARIMER,
STATE OF COLORADO



SEE SHEET 22



PRELIMINARY
09/18/24
FOR REVIEW ONLY

Tharen J. Helgerson
Colorado Professional Land Surveyor No. 38885
For and on Behalf of EPS Group, Inc.

TOWN OF BERTHOUD, LARIMER COUNTY, COLORADO

PROJECT: 1859-001	DATE: 08/18/24
CLIENT: LP COMM. LLC	SCALE: 1" = 40'
DRAWN BY: T. HELGERSON	REVIEWED BY: B. TESSELY



SECTION:
22

TOWNSHIP:
4 NORTH

RANGE:
69 WEST OF 6TH PM

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S:\Survey Jobs\1859-001\Draw\Preliminary Plot\1859-001 Preliminary Plot.dwg

SEE SHEET 24

SEE SHEET 22



26 Sheet	PRELIMINARY PLAT OF LEGACY PARK TOWN OF BERTHOUD, LARIMER COUNTY, COLORADO		PROJECT: 1855A001	DATE: 08/18/24	 	SECTION: 22	NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years after the date of the certificate shown hereon.
			CLIENT: LP COMM, LLC	SCALE: 1" = 40'		TOWNSHIP: 4 NORTH	
			DRAWN BY: T. HELGERSON	REVIEWED BY: B. TESSELY	9/23/24 1418 NOT COULING PRELIMINARY [MESA] [GOODMAN] [TUSCON] NORTH PLAINFIELD TOWN OF BERTHOUD	RANGE: 69 WEST OF 6TH PM	

1.5" ± 1.5"		BENCH MARK (ELEVATION: 10.00)
1.6" ± 1.6"		1.6" ± 1.6"
1.7" ± 1.7"		1.7" ± 1.7"
1.8" ± 1.8"		1.8" ± 1.8"
1.9" ± 1.9"		1.9" ± 1.9"
2.0" ± 2.0"		2.0" ± 2.0"
2.1" ± 2.1"		2.1" ± 2.1"
2.2" ± 2.2"		2.2" ± 2.2"
2.3" ± 2.3"		2.3" ± 2.3"
2.4" ± 2.4"		2.4" ± 2.4"
2.5" ± 2.5"		2.5" ± 2.5"
2.6" ± 2.6"		2.6" ± 2.6"
2.7" ± 2.7"		2.7" ± 2.7"
2.8" ± 2.8"		2.8" ± 2.8"
2.9" ± 2.9"		2.9" ± 2.9"
3.0" ± 3.0"		3.0" ± 3.0"
3.1" ± 3.1"		3.1" ± 3.1"
3.2" ± 3.2"		3.2" ± 3.2"
3.3" ± 3.3"		3.3" ± 3.3"
3.4" ± 3.4"		3.4" ± 3.4"
3.5" ± 3.5"		3.5" ± 3.5"
3.6" ± 3.6"		3.6" ± 3.6"
3.7" ± 3.7"		3.7" ± 3.7"
3.8" ± 3.8"		3.8" ± 3.8"
3.9" ± 3.9"		3.9" ± 3.9"
4.0" ± 4.0"		4.0" ± 4.0"
4.1" ± 4.1"		4.1" ± 4.1"
4.2" ± 4.2"		4.2" ± 4.2"
4.3" ± 4.3"		4.3" ± 4.3"
4.4" ± 4.4"		4.4" ± 4.4"
4.5" ± 4.5"		4.5" ± 4.5"
4.6" ± 4.6"		4.6" ± 4.6"
4.7" ± 4.7"		4.7" ± 4.7"
4.8" ± 4.8"		4.8" ± 4.8"
4.9" ± 4.9"		4.9" ± 4.9"
5.0" ± 5.0"		5.0" ± 5.0"
5.1" ± 5.1"		5.1" ± 5.1"
5.2" ± 5.2"		5.2" ± 5.2"
5.3" ± 5.3"		5.3" ± 5.3"
5.4" ± 5.4"		5.4" ± 5.4"
5.5" ± 5.5"		5.5" ± 5.5"
5.6" ± 5.6"		5.6" ± 5.6"
5.7" ± 5.7"		5.7" ± 5.7"
5.8" ± 5.8"		5.8" ± 5.8"
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6.0" ± 6.0"		6.0" ± 6.0"
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6.2" ± 6.2"		6.2" ± 6.2"
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6.4" ± 6.4"		6.4" ± 6.4"
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6.8" ± 6.8"		6.8" ± 6.8"
6.9" ± 6.9"		6.9" ± 6.9"
7.0" ± 7.0"		7.0" ± 7.0"
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7.2" ± 7.2"		7.2" ± 7.2"
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7.6" ± 7.6"		7.6" ± 7.6"
7.7" ± 7.7"		7.7" ± 7.7"
7.8" ± 7.8"		7.8" ± 7.8"
7.9" ± 7.9"		7.9" ± 7.9"
8.0" ± 8.0"		8.0" ± 8.0"
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8.2" ± 8.2"		8.2" ± 8.2"
8.3" ± 8.3"		8.3" ± 8.3"
8.4" ± 8.4"		8.4" ± 8.4"
8.5" ± 8.5"		8.5" ± 8.5"
8.6" ± 8.6"		8.6" ± 8.6"
8.7" ± 8.7"		8.7" ± 8.7"
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8.9" ± 8.9"		8.9" ± 8.9"
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11.2" ± 11.2"		11.2" ± 11.2"
11.3" ± 11.3"		11.3" ± 11.3"
11.4" ± 11.4"		11.4" ± 11.4"
11.5" ± 11.5"		11.5" ± 11.5"
11.6" ± 11.6"		11.6" ± 11.6"
11.7" ± 11.7"		11.7" ± 11.7"
11.8" ± 11.8"		11.8" ± 11.8"
11.9" ± 11.9"		11.9" ± 11.9"
12.0" ± 12.0"		12.0" ± 12.0"
12.1" ± 12.1"		12.1" ± 12.1"
12.2" ± 12.2"		12.2" ± 12.2"
12.3" ± 12.3"		12.3" ± 12.3"
12.4" ± 12.4"		12.4" ± 12.4"
12.5" ± 12.5"		12.5" ± 12.5"
12.6" ± 12.6"		12.6" ± 12.6"
12.7" ± 12.7"		12.7" ± 12.7"

UNITS PROVIDED (ESTIMATED TOTAL)	1500 - 1800
SUBMISSION IDENTITY ELEMENTS POINTS REQUIRED	8
1. POCKET PARK	1
2. TRAIL S.	1
3. PLAYGROUND	2
4. POOL	2
5. POLYUNTO PLANT PALETTE	1
6. COMMUNIT BUILDINGS	2
7. ALLEY/LOADED SHEETS	2
TOTAL	10

[illegible]

SHEET 1	COVER SHEET
SHEET 2	OVERALL LANDSCAPE
SHEETS 3-23	LANDSCAPE PLANS
SHEETS 24-31	COMMUNITY PARK E
SHEETS 32-35	PLANTING ENLARGE
SHEET 36	DETAILS
SHEET 37	OVERALL HYDROZON

[illegible]

10. (1) THE MINIMUM EXISTENCE OF 100 FT SHALL BE CONSIDERED FOR LATER USE ON AREAS REQUIRING REVEGETATION AND LANDSCAPING.

BEFORE PLACEMENT AND COMPACTION OF SOIL.

DEPTH, REMOVE ALL UNDESIRABLE TOPSOIL, INCLUDING ALL ROCKS LARGER THAN 3 INCHES IN ANY DIRECTION, ALL CONCRETE, TRASH, DEBRIS, WEEDS, ROOTS AND OTHER MATERIALS. AFTER THAT TIME CLASS OR II, EXCLUDING MANURE, SHALL THEN BE THOROUGHLY TILLED AND INCORPORATED TO A MINIMUM 6" DEPTH IN THESE AREAS AT THE

13. UNIFORMLY COMPACT AND FINE GRADE THESE SOD / GRASS AREAS AND PLANTING BEDS TO A SMOOTH SURFACE, FREE FROM IRREGULAR SURFACE CHANGES. CUT OUT SOF

14. ONCE COMPACTED AND FINE GRADED ALL ROCKS, DEBRIS, WASTE MATERIAL AND VEGETATION MATERIAL LARGER THAN 1/2" WILL BE RAKED FROM THE SURFACE AND REMOVED FROM SITE.

(3) IMPROVED VARIETIES, HAVING A HEALTHY VIGOROUS ROOT SYSTEM, ONCE TURF IS LAID IT SHALL BE PROPERLY ROLLED, COMPACTED AND PUSHED TOGETHER TO ELIMINATE AIR SPACES.

16. ALL PLANT MATERIALS ARE SIZED AND OUTLINED IN PLANT LIST. ALL PLANTS TO BE PLANTED IN AMENDED SOIL AND STAKED AS SHOWN IN DETAILS. ALL PLANT MATERIAL SHALL MEET OR EXCEED THE CODE OR STANDARDS CURRENTLY RECOMMENDED BY THE CALIFORNIA NURSERY ACT FOR NURSERY ONE GRADE.

17. IF PLANT'S ARE IN NEED OF REPLACEMENT DUE TO DECLINING HEALTH, DISEASE, OR DEATH, THE PLANT'S MUST BE REPLACED WITH THE ORIGINAL SPECIES UNLESS APPROVED BY THE TOWN.

10. UNREMOVABLE ELEMENTS OF PLANT LOCATION INFORMATION SHALL BE LISTED ON THE LOCATION MAP. PLANS SHALL REFLECT THE REMOVAL OF THE LOCATION TO INDICATE PLANT REPLACEMENT. OVERALL QUANTITY AND QUALITY TO BE CONSISTENT WITH THE APPROVED PLANS. IN THE EVENT OF CONFLICT WITH THE QUANTITIES INCLUDED IN THE PLAN LIST, QUANTITY AND QUALITY SHALL BE GOVERNED BY THE APPROVED PLANS.

19. ALL TREES AND SHRUBS TO BE BALLED AND BURLAPPED, OR CONTAINERIZED.

21. ALL PLANT MATERIAL SHALL HAVE ALL WIRE, TWINE, BASKETS, BURLAP, AND ALL OTHER NON-BIODEGRADABLE CONTAINMENT MATERIAL REMOVED FROM THE TRUNK AND/OR

22. ALL SHRUB BEDS SHALL HAVE MINIMUM 4" DEPTH SHREDED CEDAR MULCH - NATURAL COLOR AND/OR WASHED SMOOTH COBBLE. A CONTINUOUS LAYER OF TYPAR LANDSCAPE FABRIC OR APPROVED EQUIV. SHALL BE INSTALLED IN ALL COBBLE AREA WITH 6" OVERLAP AT SEAMS WITH A STAPLES 4" O.C. IN ALL DIRECTIONS.

23. EDGING BETWEEN GRASS TYPES AND SHRUB BEDS / ROCK COBBLE SHALL BE HEAVY DUTY STEEL EDGER MIN. $\frac{1}{2}$ " x 4" WITH ROUNDED TOP AND PLASTIC CAP AND SHALL BE SET LEVEL WITH THE TOP OF THE ADJACENT SOO. NO EDGING SHALL BE USED BETWEEN CEDAR MULCH AND COBBLE TRANSITIONS.

24. LANDSCAPING WITHIN THE FRONT YARD SETBACK OF RESIDENTIAL PROPERTIES MUST BE INSTALLED WITHIN ONE (1) YEAR OF CERTIFICATION OF OCCUPANCY.

26. ALL TURF GRASSES PLANTED IN PUBLIC R.O.W. MUST BE SOD

28. STREET TREES WILL BE PLANTED AT LEAST 9' FROM ANY SERVICE LINE AND DRIVEWAY.

25. UNIT IS REQUIRED IN ALL NEW DRAWING AND IS THE RESPONSIBILITY OF THE BUILDING/HOME OWNER IN FRONT OF BUILDING LOT 3.

31. WEED CONTROL WILL BE PRACTICED ON ALL AREAS DISTURBED BY CONSTRUCTION AND THOSE AREAS SHALL BE RESEED TO PREVENT EROSION. NATIVE, NONINVASIVE GRASSES SHALL BE USED FOR REVEGETATION WHERE PRACTICAL. WEED CONTROL IS THE RESPONSIBILITY OF THE LANDOWNER ON ALL RESEED AREAS AND PRESERVATION AREAS.

SHALL BE MADE TO PREVENT THE SPREAD OF NOXIOUS WEEDS.

33. STREET TREES ARE TO BE PLANTED WITHIN THIRTY (30) TO FORTY (40) FOOT OF EACH OTHER WITH THE EXCEPTION OF UTILITY CONFLICTS.

OWNER BEFORE ANY CONSTRUCTION OF THOSE ITEMS HAS COMMENCED.

ON CENTER, UNLESS THE HYDROPHONIS, SIKREE LIGHTS, DRIVEWAY LOCATIONS, UTILITIES OR OTHER ITEMS WHICH REQUIRE SEPARATION FROM TREES, PROHIBIT THE INTENDING SPACING.

1. ENTIRE IRRIGATION SYSTEM AND ASSOCIATED IRRIGATION PIPES TO BE SIZED, DESIGNED AND BUILT BY CONTRACTOR. IRRIGATION CONTRACTOR SHALL VERIFY P.S.I. AND GPM AVAILABLE. SYSTEM SHALL BE DESIGNED TO MEET THE AVAILABLE P.S.I. AND GPM. IF NECESSARY CONTACT THE WATER DISTRICT PRIOR TO BEGINNING DESIGN.

2. ALL INDICATED TURF GRASS AREAS ARE TO BE IRRIGATED BY A PERMANENT UNDERGROUND AUTOMATIC IRRIGATION SYSTEM. TURF AREAS LESS THAN 25 FEET IN WIDTH ARE TO BE IRRIGATED WITH BOB LIIP SPRAY HEADS AND AREAS GREATER THAN 25 FEET SHALL USE A ROTOR BOB LIIP SPRAY SYSTEM.

3. ALL TREES, SHRUBS AND PERENNIALS OUTSIDE OF IRRIGATED TURF GRASS AREAS, ARE TO BE IRRIGATED WITH A PERMANENT DRIP IRRIGATION SYSTEM.

WATER REQUIREMENTS, BASED ON THE NEEDS OF SELECTED PLANT MATERIAL.

2. ELM1 LOCATION OF IRRADIATION HEADS MUST BE APPROVED BY CHAIRMAN OF REPRESENTATIVE OPINION TO BE COORDINATED IN THE ELEM

7. ALL IRRIGATION TRENCHES SHALL BE PROPERLY WATERED AND COMPACTED TO AVOID FUTURE SETTLING. ANY SETTLING DURING WARRANTY PERIOD WILL BE REPAIRED.

8. COORDINATE ALL IRRIGATION WORK WITH EXISTING UTILITIES AND RESPECTIVE TRADES.

GENERAL CONTRACTOR. ALL IRRIGATION SLEEVING TO BE STAKED IN THE FIELD OR LOCATED ON DIMENSIONED "AS-BUILT" DRAWING BY THE GENERAL CONTRACTOR TO ALLOW ELEVATEE USE AND LOCATION.

1. ALL SLOES SHALL BE REQUIRED TO PARRY FOR SLOE PERMIT.
2. PROPOSED GRADES SHALL MATCH OR IMPROVE EXISTING GRADES TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING WHILE PROVIDING A SMOOTH TRANSITION BETWEEN ALL ADJACENT UNIMPROVED GRADES AND PROPOSED GRADES.
3. JOB SITE TO BE KEPT CLEAN AT ALL TIMES AND CONSTRUCTION AREA ARE TO BE MAINTAINED FOR SAFETY.
4. ALL SLOES DESTROYED DUE TO WORK AREA, INCLUDING AREAS OUTSIDE OF SHOWN PROTECTIVE LIMITS, DUE TO EXISTING CONDITIONS ARE TO BE REPAIRED AND SHAPED/CONDITIONS IMPROVED SUFFICIENTLY TO HAVE CONFORMING SURFACE TO SHOWN SLOE AND THE NATIVE SEED AND VEGETATION IN THIS SHEET.
5. PROTECT EXISTING SURFACES AND SOILS, BOTH INSIDE AND OUTSIDE OF CONSTRUCTION LIMITS, DURING CONSTRUCTION. IF GRADES, CONCRETE OR ASPHALT ARE DAMAGED DUE TO CONSTRUCTION OPERATIONS OR WEATHER THE CONTRACTOR IS RESPONSIBLE FOR REPAIR TO HAVE EQUIVALENT TO EXISTING CONSTRUCTION AS NOT DEPENDENT TO THE OWNMENT.
6. CONTRACTOR IS RESPONSIBLE FOR SETUP OF DOWNGUAGES, WARNING SIGNALS, OR OTHER PROTECTIVE DEVICES IF AN EXCAVATION ARE LEFT EXPOSED AND NOT SECURED FROM PUBLIC.
7. THE CONTRACTOR SHALL NOT PROGRESSFULLY PROCEED WITH ANY CONSTRUCTION PER PLAN PROVIDED WHEN OBSTRUCTIONS AND/OR GRADE DIFFERENCES ARE IDENTIFIED. THE CONTRACTOR SHALL BE REQUIRED TO STOP CONSTRUCTION UNTIL THE OBSTRUCTIONS ARE REMOVED AND/OR THE GRADES ARE CORRECTED TO THE POINT WHERE SITUATION RISKS AND REVISIONS ARE NECESSARY.
8. THE CONTRACTOR SHALL PREVENT SEDIMENT, OILS AND OTHER POLLUTANTS FROM ENTERING ANY STORM WATER SEWER SYSTEM OR ADJACENT WATER WAYS, ETC. DURING THE CONSTRUCTION OF CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE AND PROVIDE THE WORK DONE AS PART OF THIS PROJECT TO PREVENT ANY SUCH POLLUTANTS FROM ADJACENT WATERWAYS, WETLANDS ETC. RESULTING FROM THE CONSTRUCTION AS PART OF THIS PROJECT.
9. THE CONTRACTOR SHALL BE RESPONSIBLE, PRIOR TO BEGINNING ANY CONSTRUCTION, OF ALL EXISTING AND PROPOSED UTILITIES, PIPES, STRUCTURES, ETC. CALL UNLOC. THREE DAYS BEFORE TO BEGIN ANY CONSTRUCTION OF WORK AT 811 OR 1-800-292-3867.

FOOTBALL 3 MATRE GRASS MIX OR APPROVED EQUIVALENT SEED SHALL BE A MIXTURE THAT MATCHES THE FOLLOWING:								
Common Name	Scientific Nomenclature	Variety	Seed Zone	Lifelong	Specifications / Recommendations			
					Applied P.L.S. B lb/a/c	IT2	% of Seed in MIX	
Grasses								
Indian Broomgrass	<i>Andropogon hymenoides</i>	Vaghai	8	NC	141,000	2.00	6.5	10.2%
Shoebud Grass	<i>Bouteloua curtipendula</i>	Varahi	12	NW	157,000	2.00	8.8	13.9%
Blue grama	<i>Bouteloua gracilis</i>	Nisho	10	NW	825,000	0.40	9.5	15.0%
Bulbousgrass	<i>Bouteloua distachya</i>	Bahro	10	NW	38,000	1.00	0.9	1.4%
Stemless Broomgrass	<i>Elymus canadensis</i> ssp. <i>hirsutus</i>	Dhyer	12	NC	159,000	2.00	7.3	11.5%
Green seed burgrass	<i>Elymus viridula</i>	Lodham	12	NC	181,000	2.00	8.3	13.1%
Western Wheatgrass	<i>Panicum aridum</i>	Arwa	10	NC	118,000	4.00	10.1	16.0%
Little Bluestem	<i>Setochloa purpurea</i>	Mdous	14	NW	260,000	2.00	11.9	18.5%

- 36-5337.
2. DILLED IN TWO PERPENDICULAR DIRECTIONS WITH AN APPLICATION RATE: 25.0 LBS (9.5 PER ACRE) (137 LBS / 1000 SF)
3. ADEQUATE FERTILIZER RIGATION, OR BY OTHER ACCEPTABLE MEANS, WILL BE PROVIDED BY CONTRACTOR FOR THE WATERING, ESTABLISHMENT AND MAINTENANCE OF THE PLANTING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE PLANTING FROM DAMAGE BY WEEDS, TRASH AND ANIMALS AND SHALL NOT REPRESENT A GUARANTEE FOR THE FLOWERS AND GROWTH.

MULCHING AND WEEDS SEEDS:

1. IMMEDIATELY FOLLOWING THE PLANTING, SEEDING OPERATION, AND STRAW MULCH TO THE SEEDING AREAS.
2. APPLY STRAW MULCH IN A MINIMUM OF 1.5 TONS PER ACRE OF ANY DRY MATERIAL. SPREAD STRAW MULCH UNIFORMLY OVER THE AREA WITH MECHANICAL MULCH EQUIPMENT. DO NOT COVER MULCH WITH VEGETATION EXCEPTED IN STEP 1.
3. WHENEVER THE USE OF CONVENTIONAL MULCH IS PROHIBITED, OR MECHANICAL MULCH IS UNAVAILABLE, THE CONTRACTOR SHALL USE A 100% BROWN ASBESTOS FIBER MULCH. THE MULCH SHALL BE PLACED IN THE PLANTING AREAS TO A MINIMUM OF 1.5 TONS PER ACRE AND SPREAD UNIFORM WITH AN APPLICATION RATE OF 1.5 TONS PER ACRE. THE MULCH SHALL BE APPLIED IN A MANNER THAT PREVENTS THE FRAY OF THE EQUIPMENT FROM DAMAGING THE MULCH. ANCHOR MULCH IN A MINIMUM DEPTH OF 2 INCHES AND ACROSS THE SCOTCH WHERE PRACTICAL WITHIN 60 DAYS FROM THE PLANTING OF THE ANCHORING EQUIPMENT.
4. IMMEDIATELY UPON COMPLETION OF THE PLANTING AND SEEDING OPERATION, THE SEEDING AREAS SHALL BE REBATED, KEEPING THE TOP 2 INCHES OF SOIL EXPOSED. THE REBATING SHALL BE DONE WITHIN 10 DAYS OF THE PLANTING AND SEEDING OPERATION.
5. WEEDING OPERATIONS SHALL BE DONE IN A MANNER WHICH WILL PROVIDE AROUND OVERCROB BUT WHICH WILL NOT CAUSE EROSION, MOVEMENT OR DAMAGE TO THE FINISHED SURFACE.
6. APPLY TEMPORARY SEEDING OF TACKLERIES OR MULCH WITHIN 10 DAYS.

Tree Protection Notes

[illegible]

THE DISTANCE FROM THE FACE OF THE TRENCH	
0-2	1
3-4	5
5-9	6
10-14	10
15-19	12
OVER 19	15

Overall Landscape Legend Contin

Overall Landscape Legend Contin.

GRASSES					
	52	Brodiaea grass, Brodiaea	1 gal	2	WELL ROOTED AND ESTABLISHED
	66	Calamagrostis arvensis, Soft Fescue	1 gal	5	WELL ROOTED AND ESTABLISHED
	46	Centrepiece Grass, No-Trim Light	1 gal	1.5	WELL ROOTED AND ESTABLISHED
	27	Indulgence Sunflowers	1 gal	3	WELL ROOTED AND ESTABLISHED
	79	Midwest Grass	1 gal	4	WELL ROOTED AND ESTABLISHED
	164	Midwest Grass, Sunflower	1 gal	4	WELL ROOTED AND ESTABLISHED
	18	Patience, Virginia Heavy Metal	1 gal	4	WELL ROOTED AND ESTABLISHED
	73	Perennial Sunflower, Sunflower	1 gal	3	WELL ROOTED AND ESTABLISHED
	27	Shenandoah White Grass	1 gal	2	WELL ROOTED AND ESTABLISHED
	73	Perennial Sunflower, Sunflower	1 gal	2	WELL ROOTED AND ESTABLISHED
	70	Perennial Sunflower, Sunflower	1 gal	1.5	WELL ROOTED AND ESTABLISHED
	35	Perennial Sunflower, Sunflower	1 gal	1	WELL ROOTED AND ESTABLISHED
	164	Shenandoah White Grass	1 gal	5	WELL ROOTED AND ESTABLISHED
PERENNIALS					
	19	Estimote, perennials, Bright Star	1 gal	3	WELL ROOTED AND ESTABLISHED
	19	Estimote, perennials, Bright Star	1 gal	3	WELL ROOTED AND ESTABLISHED

Materials Legend					
STATION	DESCRIPTION	QTY			
1	IRRIGATED TURF	650,006 sf			
2	DRAINAGE TURF	19,227 sf			
3	IRRIGATED WASTE BED				
4	SEE DETAILS FOR BED MIX				
5	MINIMUM 4" DEPTH SHREDDED	34,079 sf			
6	1.5" WASHED RIVER ROCK COARSE	424 sf			
7	1.5" WASHED RIVER ROCK COARSE	3,378 sf			
8	PEAT MULCH OR APPROX. EQUAL	10,888 sf			
9	IRRIGATED TURF DRAINAGE TURF BLEND				
10	OR APPROX. EQUAL 50% HOLLOWCORE				

PROPERTY BOUNDARY					
EASEMENTS					
LANDSCAPE EDDING					
SIGHT DISTANCE TRIANGLE					

TREE DIVERSITY SUMMARY					
EQUITY 25% MAX, DIVERSITY 25% MAX					
ACER	3.2%	SAPINDACEAE	3.0%		
ALNUS	13.9%	BIGNONIACEAE	13.9%		
CATALPA	14.1%	CONIFERAE	14.1%		
CESTRA	15.1%	FRAGACEAE	14.8%		
GRINCAULUS	15.1%	FRAGACEAE	12.8%		
QUERCUS	1.0%	FRAGACEAE	6.9%		
TELU	3.8%	PROTEACEAE	3.7%		
PRUNUS	3.1%	OLEACEAE	2.3%		
PRUNUS	0.8%				
SYRINGA	2.3%				

Landscape Legend Conti

[illegible]

Sheet Key:

3	4	5
6	7	8
9	10	11
12	13	14
15	16	17

PROPERTY BOUNDARY

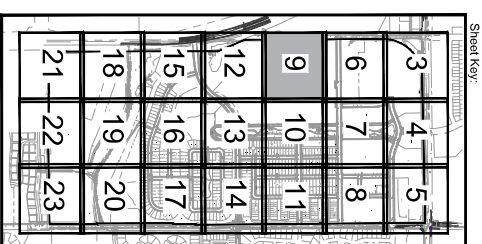
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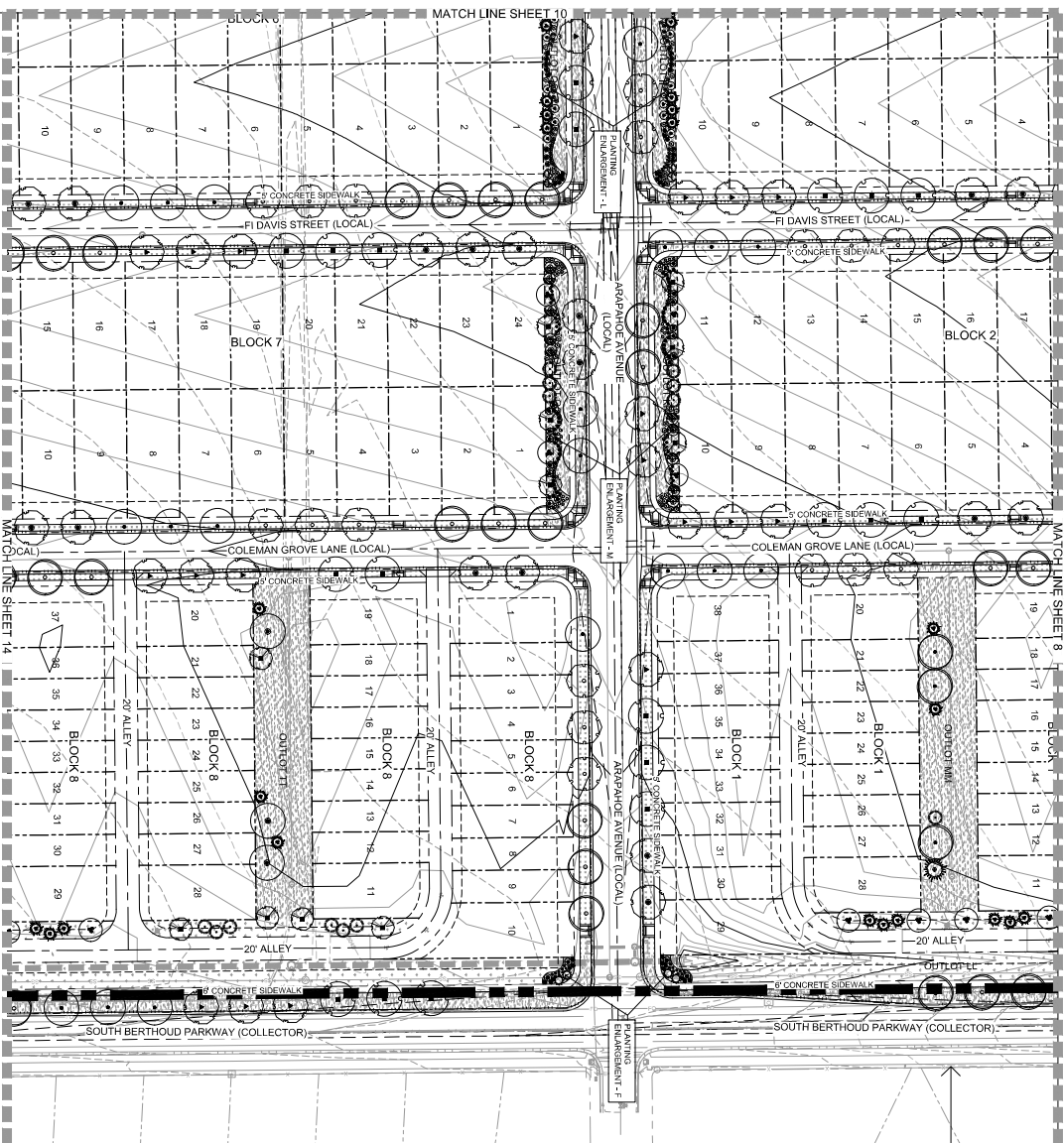
LANDSCAPE EDGEING

SIGHT DISTANCE TRIANGLE

- BOLLARD LIGHT*

* ALL LIGHTING WILL MEET THE DEVELOPMENT CODE DARK SKY STANDARDS





SYMBOL	DESCRIPTION	QTY
	IRREGULAR TUFF QUARRYING TUFF BLEND OR APPROVED EQUAL	60,000 #
	RANDOMLY DISTRIBUTED SIZE 20-75 FOR BED MIX	1,912,277 sf
	WOOD PLANK ALL SHUNK BEGS TO RECEIVE A RANDOMLY DISTRIBUTED SIZED CEMENT WASH	84,079 sf
	WASHED BIT ROCK CONCRETE ALL SHUNK BEGS TO RECEIVE A RANDOMLY DISTRIBUTED SIZE CEMENT WASH	424 #
	REGULAR TUFF OR APPROVED EQUAL	1,279 sf
	IRREGULAR TUFF OR APPROVED EQUAL	110,828 sf

PROPERTY BOUNDARY

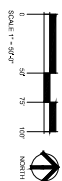
BASEMENTS

LANDSCAPE EDGING

SIGHT DISTANCE TRIANGLE

BOLLARD LIGHT*

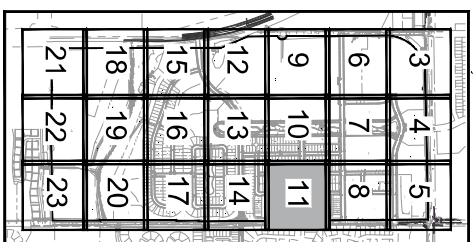
* ALL LIGHTING WILL MEET THE DEVELOPMENT CODE DARK SKY STANDARDS

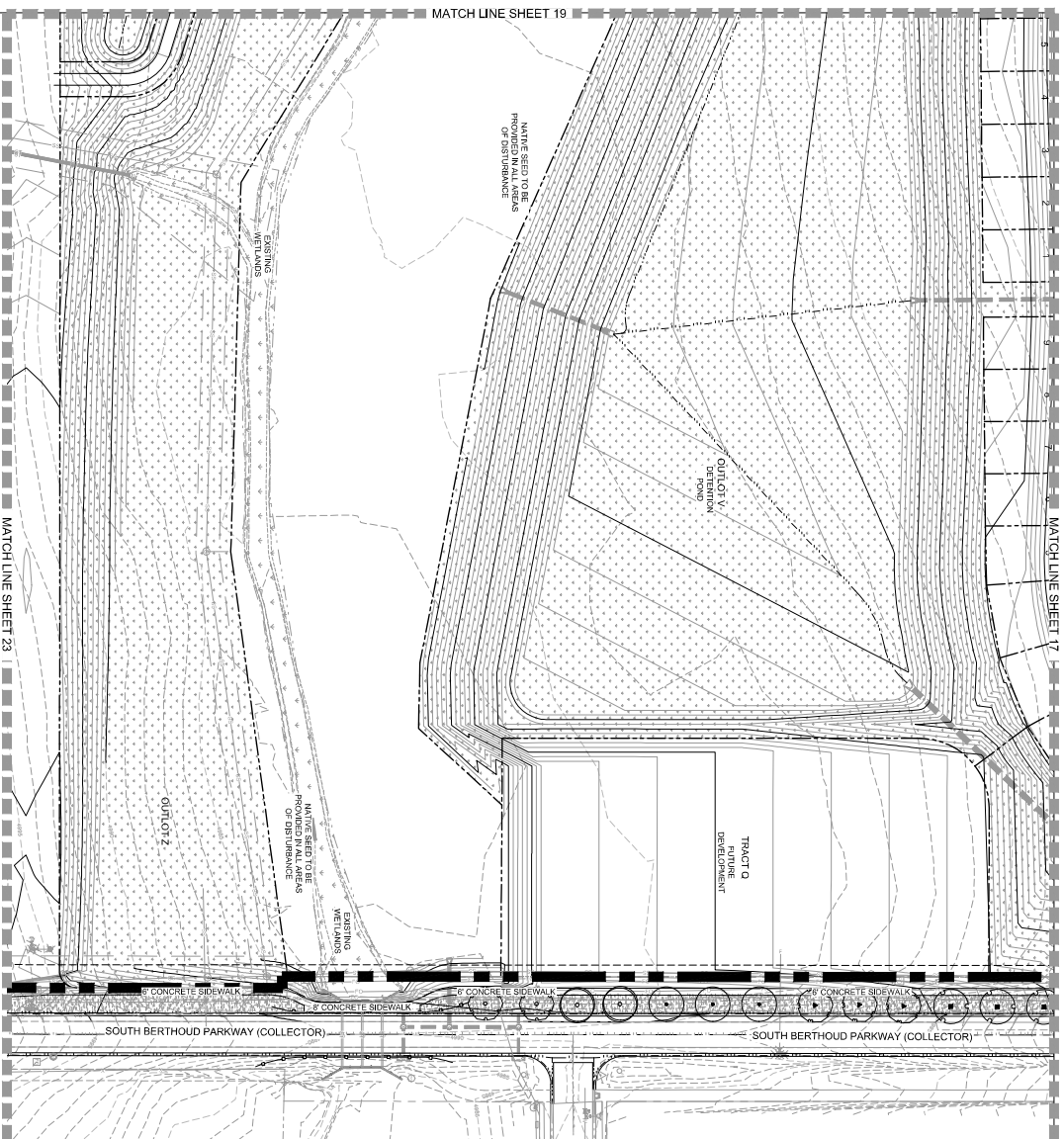


Landscape Design			
SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE
DECIDUOUS TREES			
	18	Aster 'southern Belle' Cotton Sugar Maple	2.0' cal. BB
	171	Catalpa species Western Catalpa	2.0' cal. BB
	172	Coffea robusta Waxton Hickory	2.0' cal. BB
	178	Quercus macrocarpa Shadblow Shagbark Elm	2.0' cal. BB
	181	Gymnocladus dioica Spontaneous Climber	2.0' cal. BB
	179	Rhus x serotina Eucalyptus	2.0' cal. BB
	198	Quercus laevis Shagbark Elm	2.0' cal. BB
	9	Tilia americana Redbud	2.0' cal. BB
	3	Tilia americana Savory	2.0' cal. BB

CAMOGREEN TREES			
	14	Picea sitchensis 'Baum' Baker Spruce	6' B&B
	33	Picea canadensis 'Hoopsii' Hoops Spruce	10-12' B&B
	32	Picea heterophylla 'Lucidissima' Bristle Pine	6' B&B
	2	Picea canadensis 'Thurbergiana' Thurberian Hops Pine	6' B&B
	4	Picea sitchensis Sitka Spruce	6' B&B
ORNAMENTAL TREES			
	19	Acer glabrum 'Plum' Amur Maple	1.5' cal. B&B
	36	Malus 'Sargentii' Sargent Snow Crab Apple	1.5' cal. B&B
	10	Prunus virginiana 'BOOP' Siberian Prunus Chamaemorus	1.5' cal. B&B
	28	Staphylea trifolia American Tree Lilac	1.5' cal. B&B
SYMBOL, QTY, BOTANICAL / COMMON NAME, SIZE			
DECIDUOUS TREES			
	24	Aspen glabrum 'Aristata' Regent	10' gal.
	62	Rosa glabrum 'Sundown' Red Chablis Rose	5' gal.
	7	Crataegus canadensis Yellow Bristle Rose	5' gal.
	51	Acacia glabrum 'Dorothy' Acacia Rose Dogwood	5' gal.
	96	Pinus strobus 'Aristata' Pink Spruce	5' gal.
	37	Pinus strobus 'Aristata' Coppertone Spruce	5' gal.
	57	Thuja occidentalis 'Lamb's Tail' Pencil Pine	5' gal.
	16	Prunus glabrum 'Aristata' Summer Yellow	5' gal.
	106	Prunus glabrum 'Aristata' Dorothy Rose	5' gal.
	27	Quercus glabrum 'Aristata' Golf-Wing Magnolia	5' gal.
	35	Malus glabrum 'Aristata' Sargentii	5' gal.
	32	Malus glabrum 'Aristata' Nannyberry	5' gal.
EVERGREEN TREES			
	12	Picea canadensis 'Aristata' Hillsides Spruce Pine	5' gal.

CARNOSACEAE LEGUMINOSAE				
GRASSES				
52		<i>Panicum prostratum</i> , <i>Brachiaria distachya</i>		1 gal
53		<i>Brachiaria distachya</i> , <i>Brachiaria distachya</i>		1 gal
46		<i>Cenchrus ciliaris</i> , <i>Cenchrus ciliaris</i>		1 gal
45		<i>Cenchrus ciliaris</i> , <i>Cenchrus ciliaris</i>		1 gal
27		<i>Cenchrus ciliaris</i> , <i>Cenchrus ciliaris</i>		1 gal
79		<i>Cenchrus ciliaris</i> , <i>Cenchrus ciliaris</i>		1 gal
134		<i>Cenchrus ciliaris</i> , <i>Cenchrus ciliaris</i>		1 gal
54		<i>Cenchrus ciliaris</i> , <i>Cenchrus ciliaris</i>		1 gal
27		<i>Cenchrus ciliaris</i> , <i>Cenchrus ciliaris</i>		1 gal
72		<i>Cenchrus ciliaris</i> , <i>Cenchrus ciliaris</i>		1 gal
54		<i>Cenchrus ciliaris</i> , <i>Cenchrus ciliaris</i>		1 gal
54		<i>Cenchrus ciliaris</i> , <i>Cenchrus ciliaris</i>		1 gal
PERENNIALS				
19		<i>Pennisetum purpureum</i> , <i>Pennisetum purpureum</i>		1 gal





SYMBOL	DESCRIPTION	QTY
10 GENERAL		
11 PLASTER	PLASTERED THIR PLASTER FESQUE BLEND OR APPROXIED EQUAL	160.00sf
12 PLASTER	PLASTERED THIR PLASTER FESQUE BLEND OR APPROXIED EQUAL	192.27sf
13 PLASTER	PLASTERED THIR PLASTER FESQUE BLEND OR APPROXIED EQUAL	42sf
14 PLASTER	PLASTERED THIR PLASTER FESQUE BLEND OR APPROXIED EQUAL	16.07sf
15 PLASTER	PLASTERED THIR PLASTER FESQUE BLEND OR APPROXIED EQUAL	1.37sf
16 PLASTER	PLASTERED THIR PLASTER FESQUE BLEND OR APPROXIED EQUAL	110.88sf

PROPERTY BOUNDARY

EASEMENTS

LANDSCAPE EDGING

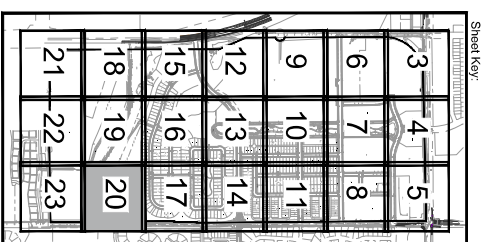
SIGHT DISTANCE TRIANGLE

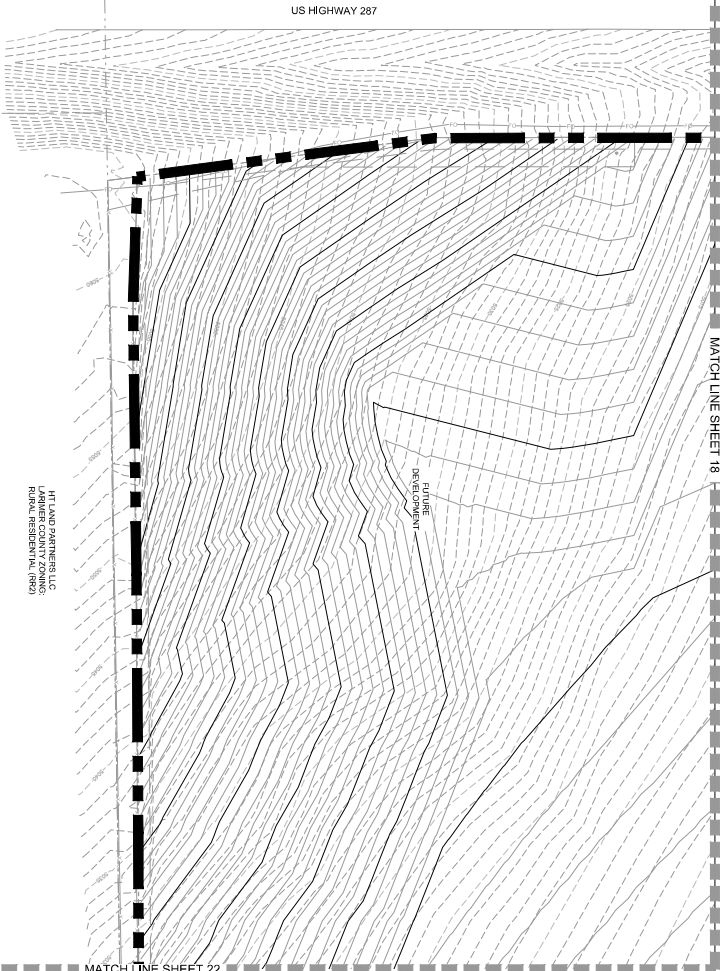
• BOLLARD LIGHT*

* ALL LIGHTING WILL MEET THE DEVELOPMENT CODE DARK SKY STANDARDS

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE
DECIDUOUS TREES			
●	18	Acer incanum 'Vandy' Oxeye Maple	2.0' cal BB
●	171	Carya speciosa Whitebark Hick	2.0' cal BB
○	172	Calla occidentalis Western Hackberry	2.0' cal BB
▲	173	Quercus bicolor Shadblow	2.0' cal BB
○	181	Gymnocladus dioica 'Expansa' Smoothed Greenleaf Speedwell Kentucky Coffeetree	2.0' cal BB
○	178	Platanus 'Aurea', 'Edmondson' Eurasian Plane	2.0' cal BB
●	189	Quercus shumardii Shumard Red Oak	2.0' cal BB
○	9	Tilia americana 'Redmond' Redmond Linden	2.0' cal BB
●	3	Tilia tomentosa 'Savory' American Linden	2.0' cal BB
EVERGREEN TREES			
☀	14	Picea pungens 'Baum' Blue Spruce	6' B&B
☀	32	Picea pungens 'Hoopii' Hoop Spruce	10-12' B&B
○	32	Pinus strobus 'Lancaster' Bristle Pine	6' B&B
○	2	Pinus mugo 'Tumidulum' Tumidulum Mugo Pine	6' B&B
▲	4	Pinus rigida Austrian Pine	6' B&B
ORNAMENTAL TREES			
♥	19	Acer glabrum 'Flame' Flame Maple	1.5' cal BB
⦿	36	Nyctagala 'Spring Snow' Spring Snow Star Magnolia	1.5' cal BB
+	10	Prunus virginiana 'Pigeon' Spotted Pigeon Cherry	1.5' cal BB
⦿	28	Syringa vesicaria Shagbark Tree, Lilac	1.5' cal BB
SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE
DECIDUOUS SHRUBS			
▲	24	Abutilon triflorum 'Aurea' Rose of Sharon	10 gal
●	42	Azalea arborea Red Caneberry	5 gal
●	8	Cornus sericea 'Asterice' Yellow Spicebush	3 gal
●	51	Cornus sericea 'Asterice' Yellow Spicebush	5 gal
×	96	Philadelphus 'Lilac Spruce' Lilac Spruce Shrub	5 gal
⦿	37	Physocarpus opulifolius Physocarpus	5 gal
○	50	Lythrum 'Dawn' Lilac Dawn	5 gal
●	16	Prunella 'Lutescens' Lutescens	5 gal
○	106	Prunella 'Lutescens' Lutescens	5 gal
●	27	Rosa 'Glen of Imaal' Glen of Imaal Rose	5 gal
⦿	4	Syringa 'Lilac Spruce' Lilac Spruce	5 gal
⦿	35	Syringa 'Lilac Spruce' Lilac Spruce	5 gal
⦿	12	Nyctagala 'Spring Snow' Spring Snow	5 gal
EVERGREEN SHRUBS			
●	12	Hydrangea 'Lilac Spruce' Lilac Spruce	5 gal

GRASSES			
52	 Solidus grass, Bayou Anchoa	1 yd	
53	 Calceoglossis aculeata, Kist Creek	1 yd	
54	 Poa, Reed Grass, Natchez, LA 307	1 yd	
46	 Northern Pig Tailed Hair Grass	1 yd	
55	 Solidus grass, Canebrake	1 yd	
79	 Microstachys spines, Gleditsias	1 yd	
56	 Solidus grass, Canebrake	1 yd	
504	 Microstachys spines, Yucca Flora (Palm Marjory) Grass	1 yd	
18	 Heavy Metal Grass, Grass	1 yd	
73	 Punctate vagans, Sanguinolent	1 yd	
75	 Punctate vagans, Sanguinolent	1 yd	
76	 Punctate vagans, Sanguinolent	1 yd	
77	 Punctate vagans, Sanguinolent	1 yd	
78	 Punctate vagans, Sanguinolent	1 yd	
79	 Punctate vagans, Sanguinolent	1 yd	
80	 Punctate vagans, Sanguinolent	1 yd	
81	 Punctate vagans, Sanguinolent	1 yd	
82	 Punctate vagans, Sanguinolent	1 yd	
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84	 Punctate vagans, Sanguinolent	1 yd	
85	 Punctate vagans, Sanguinolent	1 yd	
86	 Punctate vagans, Sanguinolent	1 yd	
87	 Punctate vagans, Sanguinolent	1 yd	
88	 Punctate vagans, Sanguinolent	1 yd	
89	 Punctate vagans, Sanguinolent	1 yd	
90	 Punctate vagans, Sanguinolent	1 yd	
91	 Punctate vagans, Sanguinolent	1 yd	
92	 Punctate vagans, Sanguinolent	1 yd	
93	 Punctate vagans, Sanguinolent	1 yd	
94	 Punctate vagans, Sanguinolent	1 yd	





SYMBOL	DESCRIPTION	QTY
OT GENERAL		
REGULATED TUFF		
QUARRY FESSILE BLIND		460.00 sf
ON APPROVED EQUAL		
SET OF TALS FOR BED MIX		1.92/277 sf
WOOD MULCH		
ALL SHINER BEDS TO RECEIVE A		
CEMENT MULCH		84.079 sf
1" WASHED MISTY ROCK COBBLE		
ALL SHINER BEDS TO RECEIVE A		
CEMENT MULCH		424 sf
REAR WALL TO RECEIVE A		
CEMENT MULCH		1.79 sf
10.000 sf		
ON APPROVED EQUAL BY HOMEOWNER		
QUARRY FESSILE BLIND		
10.000 sf		

PROPERTY BOUNDARY

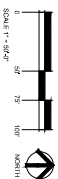
EASEMENTS

LANDSCAPE EDGING

SLIGHT DISTANCE TRIANGLE

BOLLARD LIGHT

ALL LIGHTING WILL MEET THE DEVELOPMENT CODE DARK SKY STANDARDS



SYMBOL		BOTANICAL / COMMON NAME		SIZE
DECIDUOUS TREES				
	18	Alder, <i>Alnus incana</i> "cedro" cedar, Sugar maple	2.0' cal. BB	
	171	Corkbark species Corkbark, Oakleaf	2.0' cal. BB	
	172	Cornus <i>occidentalis</i> Western Huckleberry	2.0' cal. BB	
	178	Quercus <i>laevis</i> "serotina" Shoestring Birch, Shumard	2.0' cal. BB	
	161	Gymnocladia dioica "diptera" Dipterocarpus, winged tree	2.0' cal. BB	
	179	Rhus <i>x</i> <i>seabrae</i> "Evelandii" Evelandii, Phytolacca	2.0' cal. BB	
	198	Quercus <i>laevis</i> "serotina" Shumard Red Oak	2.0' cal. BB	
	9	Thuja occidentalis "Redwarf" Redwarf Juniper	2.0' cal. BB	
	3	Thuja americana "Smyly" American Arborvitae	2.0' cal. BB	

EVERGREEN TREES		
	14	Pines purgens, Baseri Baker Spruce
	33	Pines purgens, Hoopii Hoopii Spruce
	32	Pines, Lawsonia laucodermis Bonati Pine
	2	Pines, Pinus "Tarahekah" Tarahekah Hoop Pine
	4	Pines, riga Aulian Pine
		6 B&B

ORNAIMENTAL TREES		SIZE
	19	17' cal. BB
		
	36	15' cal. BB
		
	10	17' cal. BB
		
	28	17' cal. BB
		
SYMBOL	QTY	BOTANICAL / COMMON NAME

24		Acronis True Image Agent	10 gtl
62		Avira Antispy Tool	5 gtl
7		Avira Antispy Tool	5 gtl
7		Avira Antispy Tool	5 gtl
31		Avira Antispy Tool	5 gtl
31		Avira Antispy Tool	5 gtl
31		Avira Antispy Tool	5 gtl
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31		Avira Antispy Tool	5 gtl

GRASSES			
	92	<i>Bouteloua gracilis</i> (Nash) Ariz. & Johnston	1 yd.
	93	<i>Chloropogon andrieuxii</i> Kuhn, Fernald	1 yd.
	96	<i>Chloropogon viridis</i> (Nuttall) Munz	1 yd.
	100	<i>Hordeum jubatum</i> L.	1 yd.
	101	<i>Hordeum jubatum</i> L.	1 yd.
	102	<i>Hordeum jubatum</i> L.	1 yd.
	103	<i>Hordeum jubatum</i> L.	1 yd.
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PROPERTY BOUNDARY

EASEMENTS

LANDSCAPE EDGING

SIGHT DISTANCE TRIANGLE

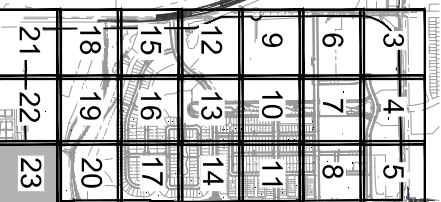
- BOLLARD LIGHT*

* ALL LIGHTING WILL MEET THE DEVELOPMENT CODE DARK SKY STANDARDS

EVEN TREES		
	Potsa jurgens "Baai" Hoop Spruce	6' 8d8
	Potsa jurgens "Hoop" Hoop Spruce	10'-12' 8d8
	Potsa "Indokum" Lucidissima Boutati Pine	6' 8d8
	Potsa "naga" "Tandakum" Tandakum Hoop Pine	6' 8d8
	Potsa "naga" Austrian Pine	6' 8d8

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PERENNIALS		
	19	Echinacea purpurea 'Bright Star' Bright Star Purple Coneflower
		1 gal.

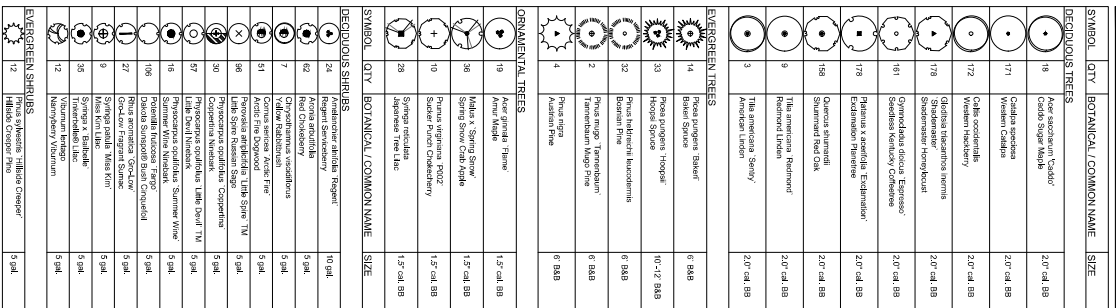




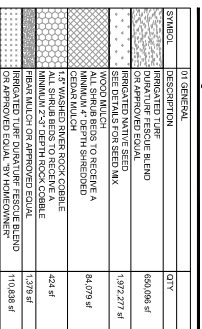
ALL PARK FURNISHINGS, PLAY EQUIPMENT, AND SPECIFIC STRUCTURES AS SPECIFIED OR APPROVED EQUAL.
ALL PARK FURNISHINGS, PLAY EQUIPMENT, AND SPECIFIC STRUCTURES ARE CONCEPTUAL AND WILL BE FINALIZED AT FINAL PLAT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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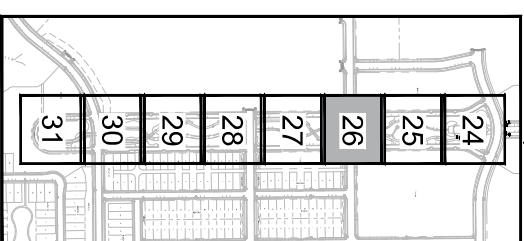
Age	Number of people
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25	8
26	6
27	4
28	2
29	1
30	1
31	1

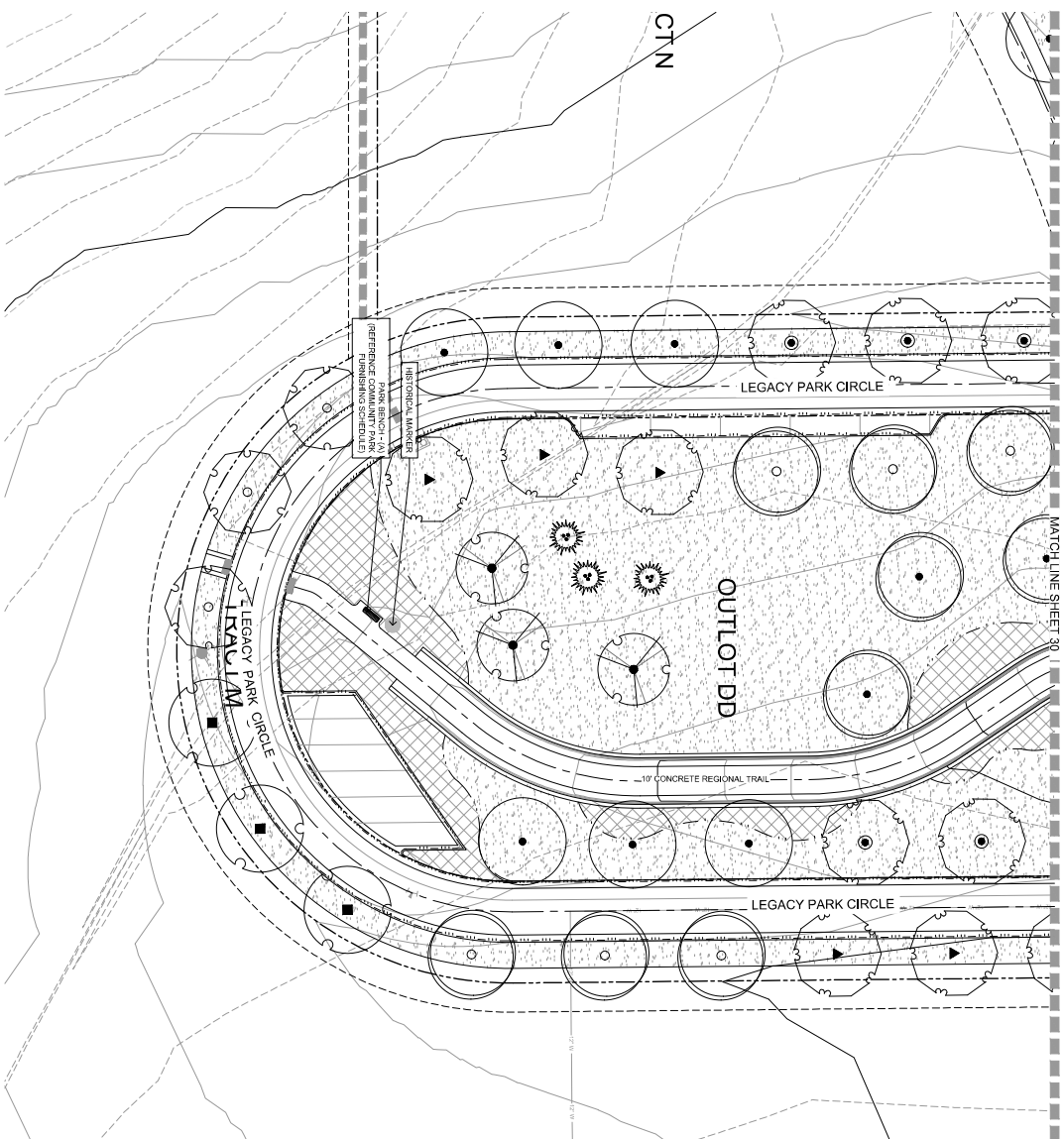
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SYMBOL		QTY	BOTANICAL / COMMON NAME	SIZE
DECIDUOUS TREES				
	18	Red flowering "Cedar" Cedro Negro Maple	2.0' - 4.0' BB	
	171	Yellow Catalpa	2.0' - 4.0' BB	
	172	Calles occidentalis Western Hackberry	2.0' - 4.0' BB	
	173	Gleditsia nectarum Stinkwood	2.0' - 4.0' BB	
	191	Gymnocladus dioica "Eurasica" Spotted Locust Tree	2.0' - 4.0' BB	
	179	"Palmus x akebilae" "Eurasica" Exclamation Palm tree	2.0' - 4.0' BB	
	150	Quercus agrifolia Shumard Red Oak	2.0' - 4.0' BB	
	9	"The american" Redwood Redwood tree	2.0' - 4.0' BB	
	3	"The american" Spruce American Spruce	2.0' - 4.0' BB	
EVERGREEN TREES				
	14	Picea jeffersonii "Bailey" Blue Spruce	6' B&B	
	33	Pinus jeffersonii "Hoopii" Hoopii Spruce	1.0' - 12' B&B	
	32	Pinus baltica "Lindheimeri" Baltic Pine	6' B&B	
	2	Pinus nigra "Tortuosa" Tortuosa Pine	6' B&B	
	4	Pinus nigra Austrian Pine	6' B&B	
ORNAMENTAL TREES				
	19	Acer glabrum "Flame" Red Maple	1.5' - 4.0' BB	
	36	Mala x "Sung Snow" Sung Snow Crab Apple	1.5' - 4.0' BB	
	10	Salix purpurea "Purpurea" Purpurea Willow	1.5' - 4.0' BB	
	28	Salix purpurea "Purpurea" Purpurea Willow	1.5' - 4.0' BB	
SYMBOL		QTY	BOTANICAL / COMMON NAME	SIZE
DECIDUOUS TREES				
	24	Rapax "Sung Snow" Sung Snow Crab Apple	10' gal	
	62	Pinus jeffersonii "Hoopii" Hoopii Spruce	5' gal	
	7	Yucca "Sung Snow" Sung Snow Yucca	5' gal	
	51	Pinus jeffersonii "Hoopii" Hoopii Spruce	5' gal	
	96	Pinus jeffersonii "Hoopii" Hoopii Spruce	5' gal	
	9	Pinus jeffersonii "Hoopii" Hoopii Spruce	5' gal	
	35	Pinus jeffersonii "Hoopii" Hoopii Spruce	5' gal	
	12	Pinus jeffersonii "Hoopii" Hoopii Spruce	5' gal	
EVERGREEN TREES				
	12	Pinus jeffersonii "Hoopii" Hoopii Spruce	5' gal	



SYMBOL	DESCRIPTION	QTY
01 GENERAL		
	PREPARED FOR THE	
	DIAPHRAGM RESISTE BLIND	656,006 sf
	OR APPROVED EQUAL	
	PREPARED NATIVE SEED	
	WOOD MULCH	1,912,277 sf
	OR APPROVED EQUAL	
	ALL SH-818 BEERS TO RECEIVE A	
	ANNUAL 4" DEPTH (SHEDDING)	84,079 sf
	ALL SH-818 BEERS TO RECEIVE A	
	ANNUAL 4" DEPTH (SHEDDING)	
	ALL SH-818 BEERS TO RECEIVE A	
	ANNUAL 2" DEPTH ROCK COARSE	424 sf
	OR APPROVED EQUAL	
	PREPARED FOR THE	
	DIAPHRAGM RESISTE BLIND	110,088 sf
	OR APPROVED EQUAL	
	PREPARED FOR THE	
	DIAPHRAGM RESISTE BLIND	
	OR APPROVED EQUAL	





GRASSES			
	52	Syntherisma gracilis, Blume's Ambrosia	1 yd.
	56	Cynanthopsis aculeata, Knot Fescue	1 yd.
	46	Feather Grass	1 yd.
	46	Western Light Grass	1 yd.
	27	Helictotrichon lanuginosum	1 yd.
	79	Monocotus spicatus, Grasslike	1 yd.
	104	Plume Purple Meadow Grass	1 yd.
	48	Purple Yucca, Honey Yucca	1 yd.
	73	Shawnee's Switch Grass	1 yd.
	27	Pseudots. Rhodocarpus, Mustang	1 yd.
	70	Pseudots. Rhodocarpus, Life Berry	1 yd.
	35	Little Berry Pseudots. Grass	1 yd.
	154	Syntherisma gracilis, Blume's Ambrosia	1 yd.
PERENNIALS			
	19	Edmonds Purple Stem Star	1 yd.

Materials Legend

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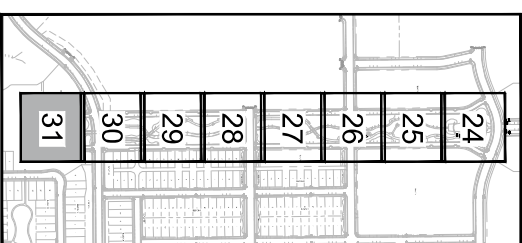
LANDSCAPE EXHIBING
SHORT DISTANCE TRIANGLE

* ROLLAD LIGHT *

'ALL LIFTING WILL MEET THE DEVELOPMENT CODE DARK SKY
STANDARDS'

Linear Park Sheet Key:

24
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Landscape Legend			
SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE
DECIDUOUS TREES			
	24	Redwood Alder, Redwood	10 gal.
	18	Regent Serraworty	5 gal.
	62	Aurea Inductiva	5 gal.
	62	Red Oak	5 gal.
	62	Crab Oak	5 gal.
	62	Valley Ash	5 gal.
	31	Cornus alabica	5 gal.
	31	Amelanchier	5 gal.
	96	Amelanchier	5 gal.
	30	Amelanchier	5 gal.
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	16	Amelanchier	5 gal.

SIGNOLA	DESCRIPTION	QTY
	1" SQUARE	
	BRICKLAIN	
	BRICKLAIN TUFF	650.096 sf
	DURABLE FESCLE BLEND	
	OR APPROVED EQUAL	
	SEBASTIAN NATIVE SAND	1,972.27 sf
	OR APPROVED EQUAL	
	WOOD MULCH	
	OR APPROVED EQUAL	
	1" SHIN BEES TO MEET A	
	CEMENT SHEDDING	84.079 sf
	CEMENT MULCH	
	1"7 WASHED RIVER ROCK COBBLE	
	ALL SHIN BEES TO MEET A	424 sf
	CEMENT MULCH	
	OR APPROVED EQUAL	
	BRICKLAIN TUFF	1,379 sf
	DURABLE FESCLE BLEND	
	OR APPROVED EQUAL	
	OR APPROVED EQUAL BY HOMEOWNER	110.038 sf

November 03, 2023

PLANTING ENLARGEMENTS

Sheet Number: **33**

Of: 37

Landscape Legend

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE
DECIDUOUS SHRUBS			
1	24	Amelanchier alnifolia	10 gal
2	62	Amelanchier canadensis	5 gal
3	7	Chamaecyparis thyoides	5 gal
4	51	Yucca filamentosa	5 gal
5	51	Yucca filamentosa	5 gal
6	51	Yucca filamentosa	5 gal
7	51	Yucca filamentosa	5 gal
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97	51	Yucca filamentosa	5 gal
98	51	Yucca filamentosa	5 gal
99	51	Yucca filamentosa	5 gal
100	51	Yucca filamentosa	5 gal

Materials Legend

SYMBOL	DESCRIPTION	QTY
1	PROPOSED TURF IN LAND	650,098 sf
2	PROPOSED NATIVE SEED	1,922,277 sf
3	WOOD MULCH 2-3" DEPTH	84,079 sf
4	ALL RUBBER MULCH TO RECEIVE A	424 sf
5	CEMENT MULCH	1,379 sf
6	PEASANT MULCH ON APPROVED EQUAL	170,888 sf
7	PROPOSED TURF IN LAND	170,888 sf



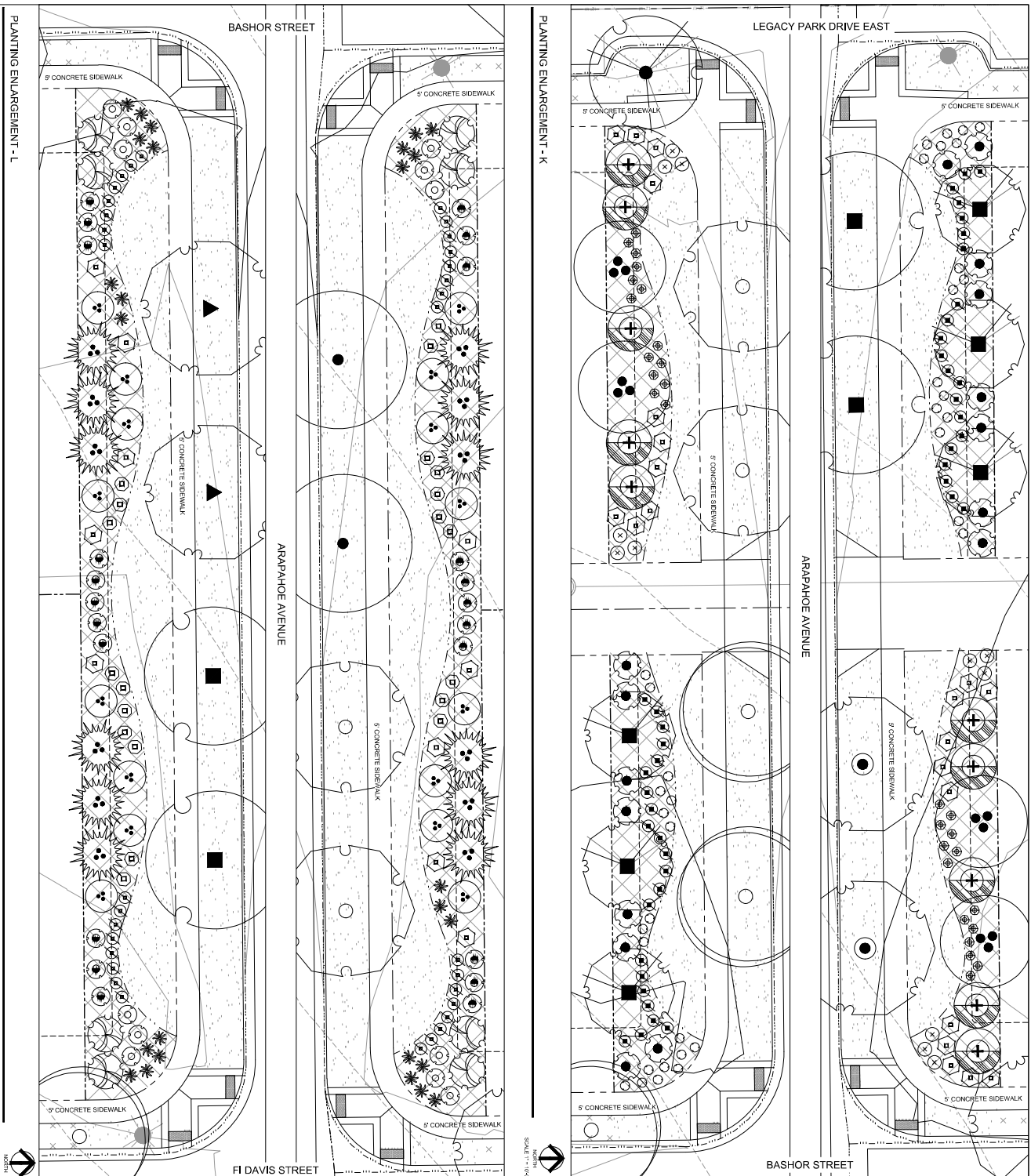
ALL LIGHTING WILL MEET THE DEVELOPMENT CODE BOOK, SIX
STANDARDS

PROPERTY BOUNDARY

LANDSCAPE EXISTING

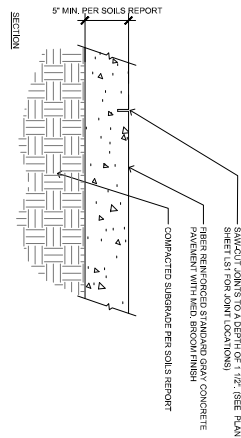
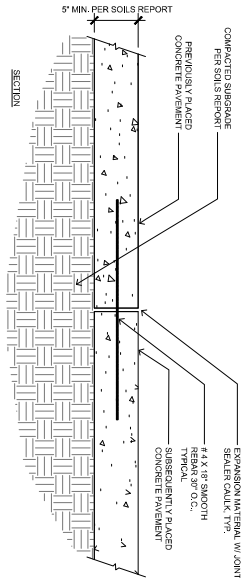
RIGHT OF WAY

BOUNDARY LIGHT

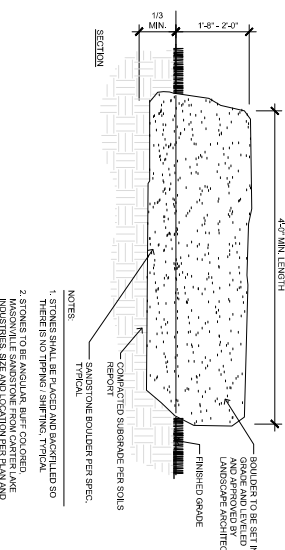


PLANTING ENLARGEMENT - L

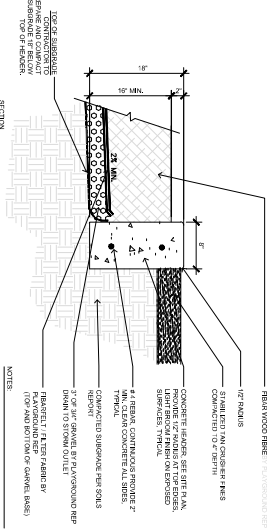
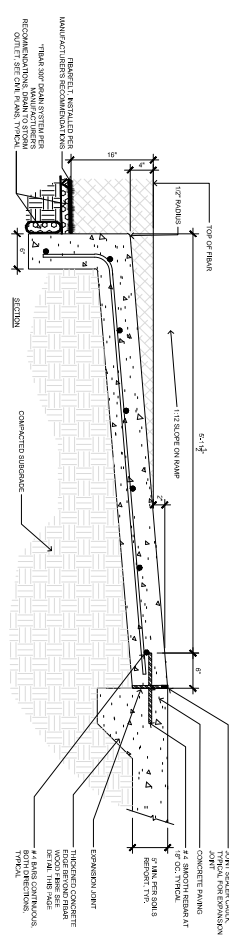
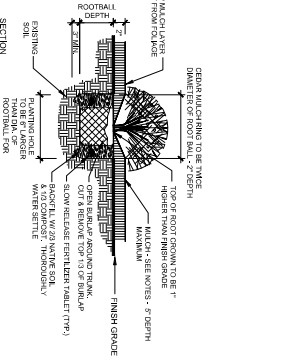
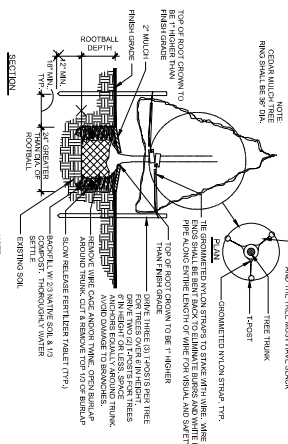
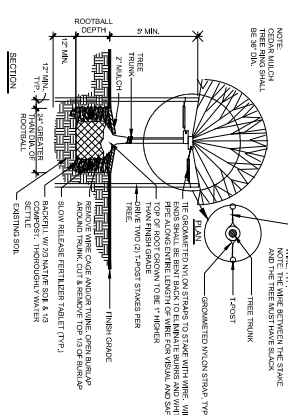
PLANTING ENLARGEMENT - K



- NOTES
1. APPLY MENTAL BROOK FINISH PERPENDICULAR TO DIRECTION OF FLOW. 1/4\"/>
 - 2. OUTSIDE EDGE AT
 - 3. APPLY ROOM FINISH TO PLANTING OUTSIDE EDGES
 - 4. MATERIAL IS STANDARD GRAY
 - 5. CONCRETE PAVEMENT SHALL OTHERWISE NOTED PROVIDE 2% CROSS SLOPE IN DIRECTION OF DRAINAGE. SEE OTHER SHEETS NOTED, TYP.



- NOTES
1. COBBLES SHALL BE 5\"/>
 - 2. STONES TO BE ANGULAR, BLUFF CORNERED, MAGNIFIABLE SANDSTONE FROM CARTER LAKE DISTRICT.



- NOTES
1. FINISH GRADE TO BE PROVIDED IN A MINIMUM OF 1\"/>
 - 2. FINISH GRADE TO BE PROVIDED IN A MINIMUM OF 1\"/>



Overall Hydzone Legend		
REFERENCE NOTES SCHEDULE LUDLOW		
SYMBOL	DESCRIPTION	QTY
	IG IRRIGAZONE	
	IRRIGATED TUBE	650.006 sf
	SPRINKLER BEDS	94.070 sf
	IRRIGATED NATIVE SEED MIX	1,592.277 sf
	IRRIGATED TREES IN NATIVE SEED	14.400 sf
	IRRIGATED TUBE BY HANDCOWER	110.038 sf

Water Requirement (litres)	Water (litres)	Landscape Type	Acres (A.C.)	SF
4.77	3	Irrigated turf	1.92	650,096
2.57	1.33	Specified arid/wood mulch	1.93	64,079
36.22	0.8	Irrigated Native Fescue Grass Mix	42.28	1,972,277
0.44	1.33	Irrigated trees in Native Soil Areas	0.33	14,400
		Irrigated turf By Homeowner	2.54	110,838
84.00		TOTAL WATER CONSUMPTION		

1. IRRIGATION WATER IS ANTICIPATED TO BE PROVIDED VIA A NON-POTABLE SYSTEM. THE VIABILITY OF THIS SYSTEM IS CURRENTLY BEING EVALUATED WITH THE INTENTION OF A NON-POT SYSTEM BEING DESIGNED FOR ALL COMMON AREA SPACES. THE FEASIBILITY AND DESIGN OF THIS SYSTEM WILL BE FINALIZED AND DETAILED AS PART OF THE FINAL PLANTING LANDSCAPE APPLICATION.

Approved Neighborhood Master Plan

LEGAL DESCRIPTION

PROPERTY 1:
TRACT A AND LOTS 1 THROUGH 9, INCLUSIVE, LUDLOW FARMS ACCORDING TO THE RECORDED CONVEYANCE PLAT, COUNTY OF LARIMER, STATE OF COLORADO

PROPERTY 2:
A TRACT OF LAND SITUATED IN THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF SECTION 22, TOWNSHIP 4 NORTH OF RANGE 69 WEST OF THE 6TH PM, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF THIS TRACT FROM WHENCE THE NORTH QUARTER OF SAID SECTION 22 BEARS NORTH 46° 17' WEST 42.4 FEET DISTANT, THENCE SOUTH 0° 20' EAST ALONG A LINE WHICH IS 30 FEET EAST OF AND PARALLEL TO QUARTER SECTION LINE A DISTANCE OF 488.4 FEET TO THE TRUE POINT OF BEGINNING, THENCE NORTH 43° 54' EAST 718.4 FEET TO A POINT 30 FEET SOUTH OF THE TRUE POINT OF BEGINNING, THENCE NORTH 43° 54' EAST 718.4 FEET TO A POINT 30 FEET SOUTH OF THE CENTRAL ANGLE OF 87° 12' 34" 2, RADIUS OF 543.00 FEET, AN ARC LENGTH OF 836.40 FEET, AND CHORD BEARING SOUTH 44° 04' 22" WEST A DISTANCE OF 748.99 FEET TO THE TRUE POINT OF BEGINNING, COUNTY OF LARIMER, STATE OF COLORADO

TRAFFIC INFORMATION

1. REFER TO PLAN FOR PROPOSED STREET NETWORK AND EXISTING ROAD NETWORK INCLUDING ALL ACCESS POINTS.

2. UNLESS OTHERWISE NOTED ON THE PLAN, ALL STREETS ARE LOCAL STREETS AND/OR ALLEYS.

SHEET INDEX

SHEET 1 - OVERALL NEIGHBORHOOD MASTER PLAN
SHEET 2 - OPEN SPACE, CIRCULATION, & PARKS
SHEET 3 - OPEN SPACE, CIRCULATION, & PARKS
SHEET 4 - PARKS ENLARGEMENT

SUBDIVISION IDENTITY & RESIDENTIAL STANDARDS

APPROX. 1500-1800

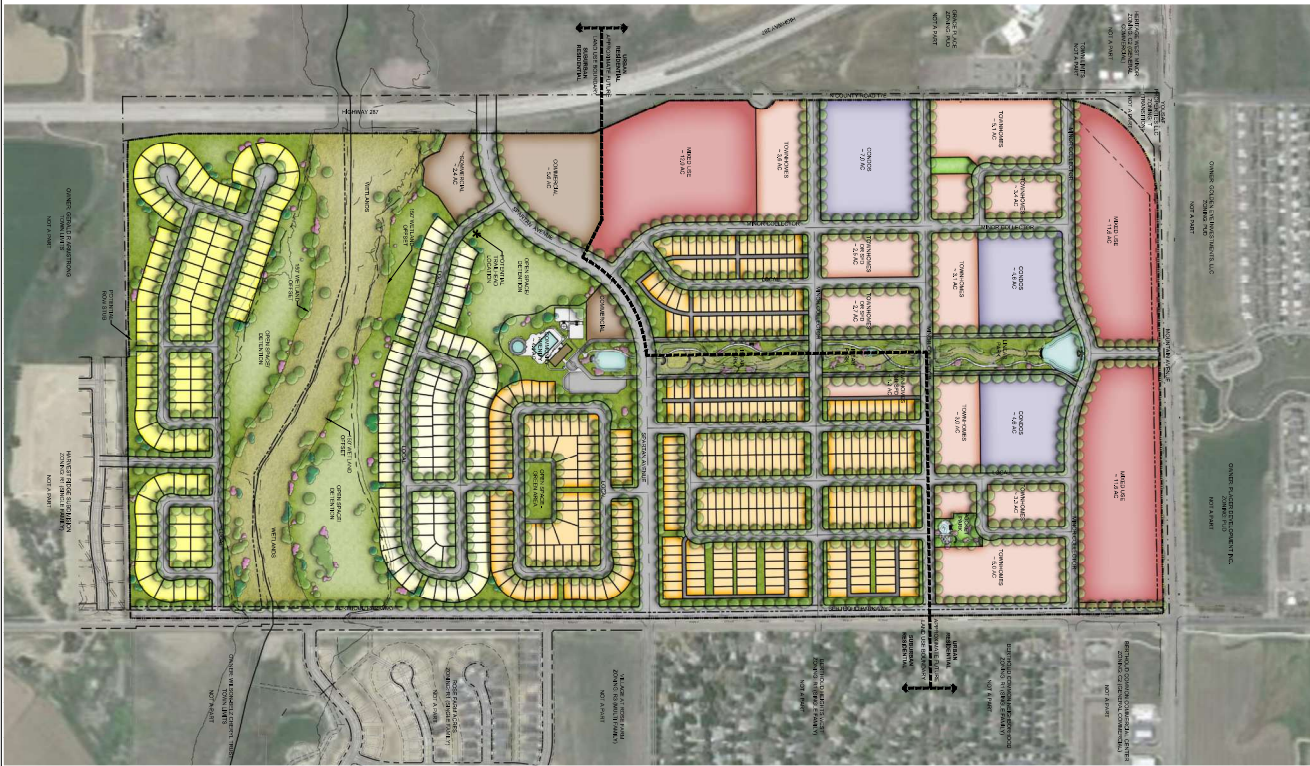
SUBDIVISION IDENTITY ELEMENTS POINTS REQUIRED: 8

THE SUBDIVISION IDENTITY ELEMENTS TO BE PROVIDED WILL BE DETERMINED AT THE TIME OF PLAT. A MINIMUM OF ELEMENT POINTS MUST BE PROVIDED. THE FOLLOWING LIST OF ELEMENTS THAT IS BEING EVALUATED FOR THIS SITE, BUT IS SUBJECT TO CHANGE, SO LONG AS THE REQUIRED ELEMENT POINTS ARE ACHIEVED AT THE TIME OF PLAT:

1. POCKET PARK	1
2. TRAILS	1
3. PLAYGROUND	1
4. POOL	2
5. POLLINATOR PLANT PALETTE	1
6. COMMUNITY BUILDING	2
7. ALLEY LOADED STREETS	2
TOTAL:	10

NOTES:

1. PROPOSED LOT COUNT AND LOT SIZES ARE CONCEPTUAL AND MAY CHANGE AT TIME OF PLAT, DEPENDING ON MARKET CONDITIONS.
2. COMMERCIAL AREAS ALONG HIGHWAY 287 ARE CONCEPTUAL IN SIZE AND MAY ADJUST, DEPENDING ON MARKET CONDITIONS.
3. RESIDENTIAL PRODUCT TYPES DEPICTED ARE CONCEPTUAL AND MAY BE ADJUSTED AT PLATING. PER THE MUNICIPAL CODE, A MINIMUM OF FOUR (4) PRODUCT TYPES WILL BE INCLUDED IN THE SUBDIVISION. RESIDENTIAL PRODUCT TYPES COULD INCLUDE BUT ARE NOT LIMITED TO: SINGLE-FAMILY DETACHED, TOWNHOMES, TOWNHOMES OR SFD, TOWNHOMES OR SFD, TOWNHOMES OR SFD, RESIDENTIAL PRODUCT TYPES AS SPECIFIED IN THE MUNICIPAL CODE, PER ZONE DISTRICT.
4. THE RESIDENTIAL STRUCTURES ADJACENT TO SOUTH BERTHOUD PARKWAY AND SOUTH OF WELCH AVENUE SHALL BE SINGLE FAMILY DETACHED UNITS AND NOT EXCEED TWO STORIES IN HEIGHT.



VICINITY MAP



LAND USE SUMMARY

SINGLE FAMILY DETACHED 40' X 110'	1500-1800 UNITS
SINGLE FAMILY DETACHED 60' X 110'	
SINGLE FAMILY DETACHED 60' X 110'	
TOWNHOMES OR SFD	
CONDOS	
MIXED USE	
COMMERCIAL	

NOTE: LOT SIZES ARE CONCEPTUAL AND SUBJECT TO CHANGE AT PLAT.

LAND USE STATISTICS

TOTAL ACRES	~306.4 ACRES
ROW/PRIVATE DRIVE/PARKING	~54.0 ACRES
% OF SITE AS ROW/PRIVATE/PARKING	17.5%
OPEN SPACE ACRES	~76.7 ACRES
% OF SITE AS OPEN SPACE	23.0%

APPROVAL CERTIFICATES

Approved by the Town of Berthoud, Colorado this _____ day of _____, 2022.

Mayor

The foregoing map is approved for filing and accepted by the Town of Berthoud, Colorado this _____ day of _____, 2022.

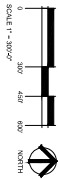
ATTEST:

Town Clerk

APPROVAL CERTIFICATES

Approved by the Planning Commission of the Town of Berthoud, Colorado this _____ day of _____, 2022.

Chairman



PARK STATISTICS:

ESTIMATED PARK SPACE REQUIRED 15-18 ACRES
(APPROX. 1500-1800 UNITS)

PARK SPACE PROVIDED 13.54 ACRES

4.4% OF SITE

NOTE: FINAL PARK SPACE REQUIREMENT WILL BE BASED ON ACTUAL UNIT COUNT,
TO BE DETERMINED WITH FINAL PLATS.

OPEN SPACE CALCULATIONS:

TOTAL OPEN SPACE REQUIRED= 30.6 AC 10.0%
TOTAL OPEN SPACE PROVIDED= 76.7 AC 25.0%

TOTAL SITE ACREAGE = ~306.4 AC

COMMUNITY PARK ELEMENTS:

- LIST B. 3 ELEMENTS REQUIRED
- GROUP PICNIC SHELTER (500 S.F. MIN. & 3 TABLES)
 - MIN. 15,000 S.F. TURF PLAY AREA (COUNTED AS 1 PER 15,000 S.F.)
 - LOOP WALK (MIN. 2,000 L.F.)

- LIST D. 2 ELEMENTS REQUIRED
- AMPHITHEATER
 - PLAYGROUND
 - SPLASH PARK
 - COMMUNITY BUILDING
 - POOL

- LIST E. 4 ELEMENTS + 1 RESTROOM BUILDING REQUIRED
- BBQ GRILL (S. MIN. 1 PER EVERY 2 TABLES)
 - BENCHES (MIN. ONE PER HALF ACRE)
 - DRINKING FOUNTAINS (MIN. 1 PER EVERY 4 ACRES)
 - SHADE STRUCTURES FOR COMPONENTS FROM LIST C (AT SPLASH PARK)

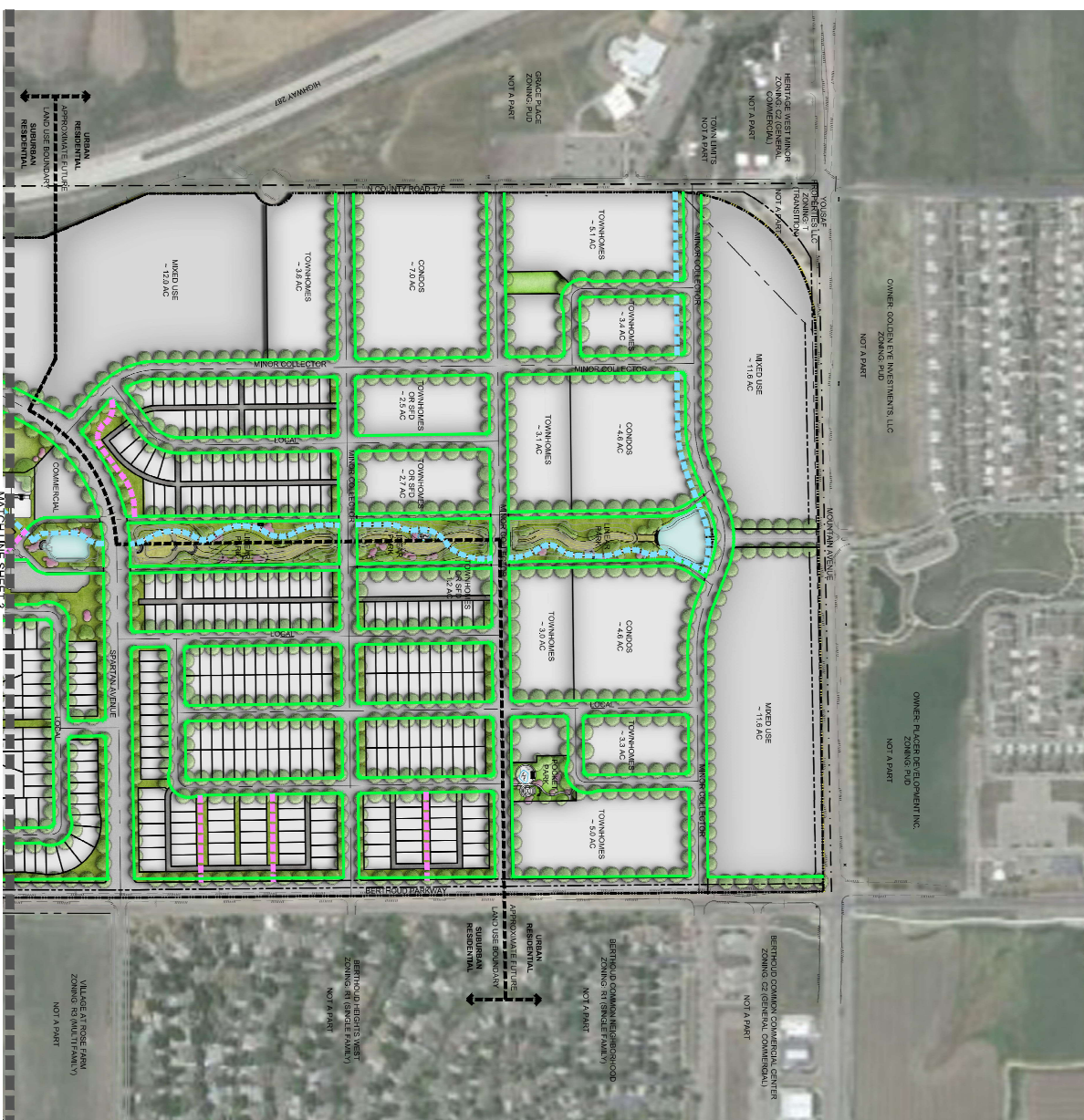
POCKET PARK ELEMENTS:

- LIST A. ALL ELEMENTS REQUIRED
- ELECTRICITY
 - IRRIGATION
 - SECURITY LIGHTING
 - TRASH RECEPTACLES (MIN. 2 PER AC)
 - WATER SERVICE
 - BIKE RACKS
 - LANDSCAPING

- LIST B. 3 ELEMENTS REQUIRED
- GROUP PICNIC SHELTER (500 S.F. MIN. & 3 TABLES)
 - MIN. 15,000 S.F. TURF PLAY AREA (COUNTED AS 1 PER 15,000 S.F.)
 - LOOP WALK (MIN. 2,000 L.F.)

- LIST D. 2 ELEMENTS REQUIRED
- COMMERCIAL-GRADE PLAYGROUND
 - AMPHITHEATER

- LIST E. RESTROOMS + 3 ELEMENTS REQUIRED
- PORTABLE RESTROOMS
 - SHADE STRUCTURE FOR PLAYGROUND
 - BENCHES (1 PER 1/2 ACRE)
 - BBOS (1 PER 2 TABLES)



OPEN SPACE ELEMENTS

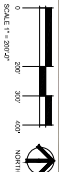
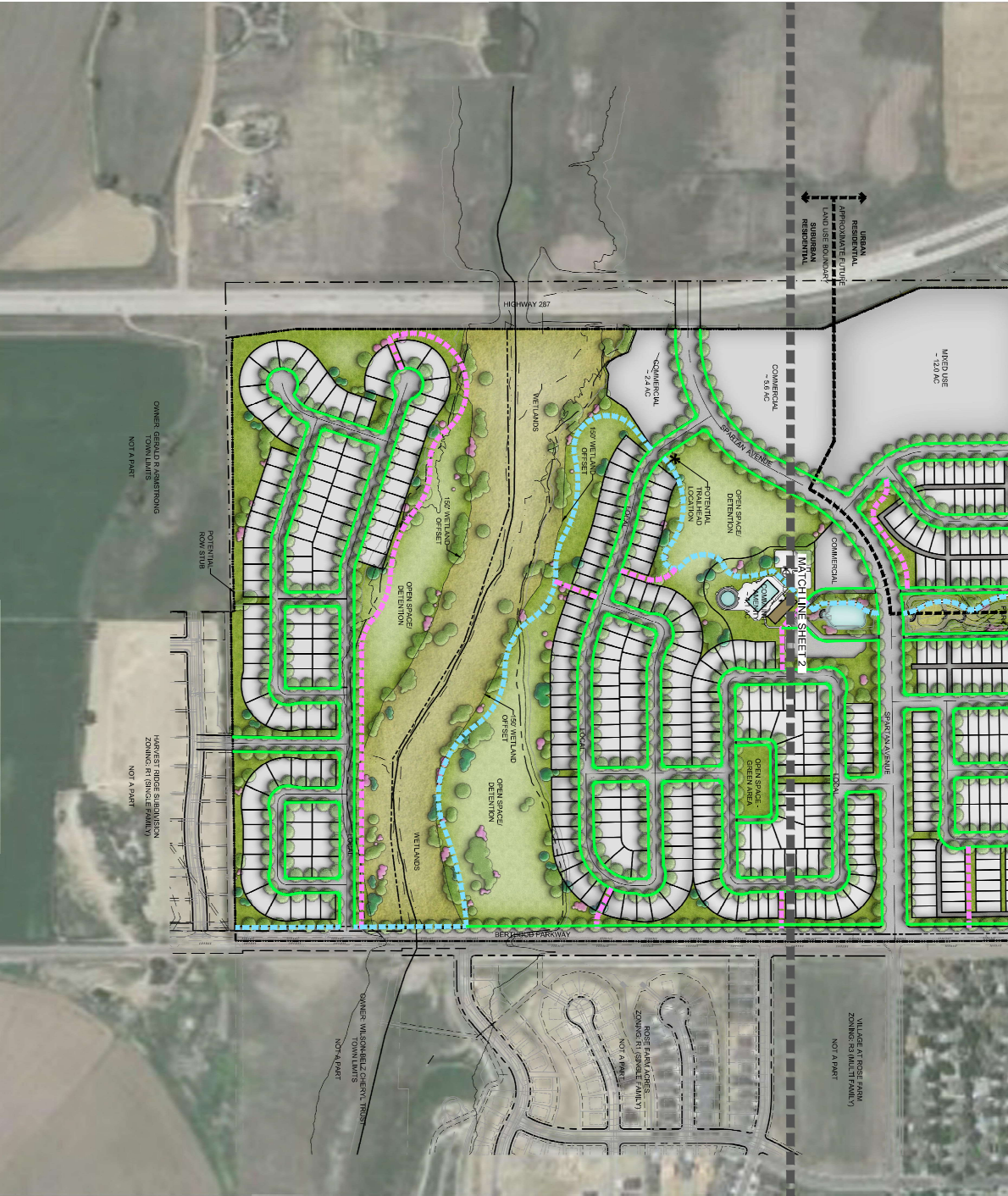
OPEN SPACE ELEMENTS	4 ELEMENTS REQUIRED
OPEN SPACE ELEMENTS	4 ELEMENTS PROVIDED
HABITAT AREA	1 ELEMENT
GREEN AREA	2 ELEMENTS
TRAILHEAD	1 ELEMENT

OPEN SPACE SUMMARY	
PARK SPACE	13.5 ACRES
OPEN SPACE	67.4 ACRES
TOTAL	80.9 ACRES

WALKS/TRAILS SUMMARY*

DETACHED CONCRETE SIDEWALK -	74,976 feet
PROPOSED TRAIL/TRAIL CONNECTION PER TOWN PORT PLAN, MATERIAL TBD.	3,383 feet
TRAIL CONNECTION PER TOWN PLAN.	9,445 feet

*NOTE: TRAIL LOCATIONS ARE CONCEPTUAL. FINAL LOCATION TO BE DETERMINED AT PLAT.



COMMUNITY PARK - A

COMMUNITY PARK ELEMENTS:

LIST A: ALL ELEMENTS REQUIRED

- IRRIGATION
- SECURITY LIGHTING
- TRASH RECEPTACLES (MIN. 2 PER AC)
- WATER SERVICE
- BIKE RACKS
- LANDSCAPING

LIST B: 3 ELEMENTS REQUIRED

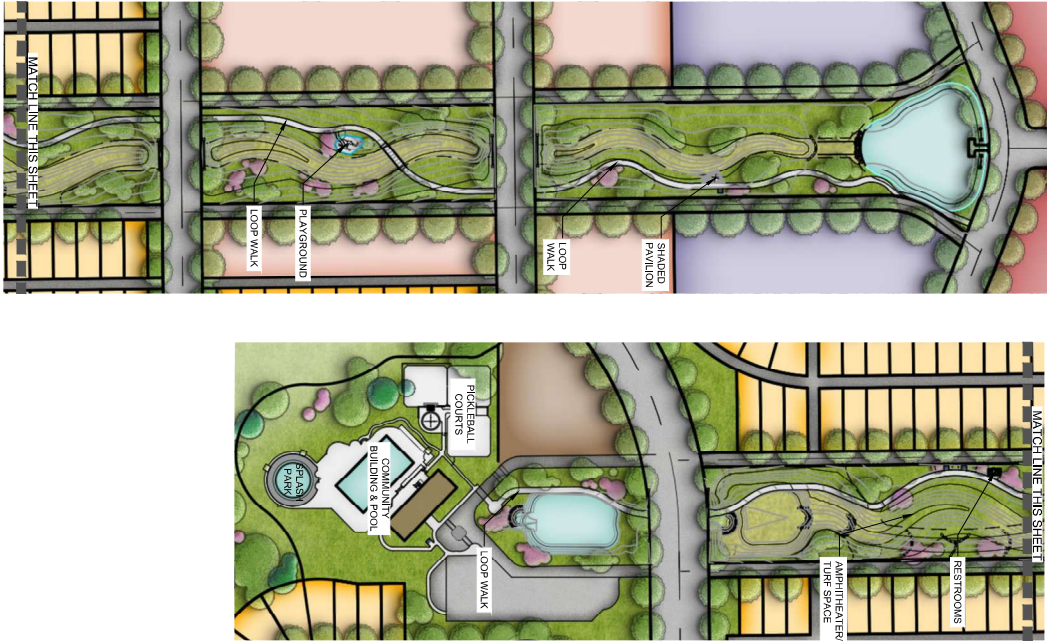
- GROUP PICNIC SHELTER (500 S.F., MIN. 8 3 TABLES)
- MIN. 15,000 S.F. TURF PLAY AREA (COUNTED AS 1 PER 15,000 S.F.)
- LOOP WALK (MIN. 2,000 L.F.)

LIST D: 2 ELEMENTS REQUIRED

- AMPHITHEATER
- PLAYGROUND
- SPLASH PARK
- COMMUNITY BUILDING
- POOL

LIST E: 4 ELEMENTS + 1 RESTROOM BUILDING

- REQUIRED
- 2 BOGIES (MIN. 1 PER EVERY 2 TABLES)
- BENCHES (MIN. ONE PER HALF ACRE)
- DRINKING FOUNTAINS (MIN. 1 PER EVERY 4 ACRES)
- SHADE STRUCTURES FOR COMPONENTS FROM LIST C (AT SPLASH PARK)



POCKET PARK - B

POCKET PARK ELEMENTS:

LIST A: ALL ELEMENTS REQUIRED

- IRRIGATION
- SECURITY LIGHTING
- TRASH RECEPTACLES (MIN. 2 PER AC)
- WATER SERVICE
- BIKE RACKS
- LANDSCAPING

LIST B: 3 ELEMENTS REQUIRED

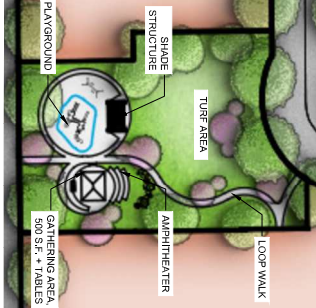
- GROUP PICNIC SHELTER (500 S.F., MIN. 8 3 TABLES)
- MIN. 15,000 S.F. TURF PLAY AREA (COUNTED AS 1 PER 15,000 S.F.)
- LOOP WALK (MIN. 2,000 L.F.)

LIST D: 2 ELEMENTS REQUIRED

- COMMERCIAL-GRADE PLAYGROUND
- AMPHITHEATER

LIST E: RESTROOMS + 3 ELEMENTS REQUIRED

- PORTABLE RESTROOMS
- SHADE STRUCTURE FOR PLAYGROUND
- BENCHES (1 PER 1 ACRE)
- BBQS (1 PER 2 TABLES)



LEGAL DESCRIPTION

PROPERTY 1:
TRACT A AND LOTS 1 THROUGH 9, INCLUSIVE, LUDLOW FARMS ACCORDING TO THE RECORDED CONVEYANCE PLAT, COUNTY OF LARIMER, STATE OF COLORADO

PROPERTY 2:
A TRACT OF LAND SITUATED IN THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF SECTION 22, TOWNSHIP 4 NORTH OF RANGE 69 WEST OF THE 6TH PM, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
BEGINNING AT THE NORTHWEST CORNER OF THIS TRACT FROM WHENCE THE NORTH QUARTER OF SAID SECTION 22 BEARS NORTH 46° 17' WEST 42.4 FEET DISTANT, THENCE SOUTH 70° 20' EAST ALONG A LINE TO THE POINT OF BEGINNING, 100 FEET, THENCE S 89° 54' E 100 FEET, THENCE S 89° 54' E 100 FEET TO THE TRUE POINT OF BEGINNING, 148° 54' EAST, 100 FEET, THENCE S 89° 54' E 100 FEET, THENCE S 89° 54' E 100 FEET TO THE NORTH LINE OF SAID SECTION 22, THENCE ALONG A CURVE TO THE LEFT, SAID CURVE HAVING A CENTRAL ANGLE OF 87° 12' 34", A RADIUS OF 43.00 FEET, AN ARC LENGTH OF 826.50 FEET, A CHORD BEARING SOUTH 44° 04' 22" WEST, A DISTANCE OF 745.59 FEET TO THE TRUE POINT OF BEGINNING, COUNTY OF LARIMER, STATE OF COLORADO

TRAFFIC INFORMATION

1. REFER TO PLAN FOR PROPOSED STREET NETWORK AND EXISTING ROAD NETWORK INCLUDING ALL ACCESS POINTS.
2. UNLESS OTHERWISE NOTED ON THE PLAN ALL STREETS ARE LOCAL STREETS AND/OR ALLEYS.

SHEET INDEX

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SUBDIVISION IDENTITY & RESIDENTIAL STANDARDS

UNITS PROVIDED: APPROX. 1500-1800
SUBDIVISION IDENTITY ELEMENTS TO BE PROVIDED WILL BE DETERMINED AT THE TIME OF PLAT. A MINIMUM OF FOUR (4) PRODUCT TYPES WILL BE INCLUDED IN THE PLAT. THIS PLAT IS BEING EVALUATED FOR THIS SITE BUT IS SUBJECT TO CHANGE, SO LONG AS THE REQUIRED ELEMENT POINTS ARE ACHIEVED AT THE TIME OF PLAT.

1. POCKET PARK 1
 2. TRAILS 1
 3. PLAYGROUND 1
 4. POOL 2
 5. POLLINATOR PLANT PALETTE 1
 6. COMMUNITY BUILDING 2
 7. ALLEY LOADED STREETS 2
- TOTAL: 10

NOTES:

1. PROPOSED LOT COUNT AND LOT SIZES ARE CONCEPTUAL AND MAY CHANGE AT TIME OF PLAT, DEPENDING ON MARKET CONDITIONS.
2. COMMERCIAL AREAS ALONG HIGHWAY 287 ARE CONCEPTUAL IN SIZE AND MAY ADJUST, DEPENDING ON MARKET CONDITIONS.
3. RESIDENTIAL PRODUCT TYPES DEPICTED ARE CONCEPTUAL AND MAY BE ADJUSTED AT PLATTING, PER THE LUDLOW PAL CODE. A MINIMUM OF FOUR (4) PRODUCT TYPES WILL BE INCLUDED IN THE SUBDIVISION. RESIDENTIAL PRODUCT TYPES COULD INCLUDE, BUT ARE NOT LIMITED TO: SINGLE FAMILY DETACHED, TOWNHOMES, DUPLEXES, CONDOMINIUMS, APARTMENTS AND/OR OTHER RESIDENTIAL PRODUCT TYPES AS SPECIFIED IN THE LUDLOW PAL CODE, PER ZONE DISTRICT.
4. THE RESIDENTIAL STRUCTURES ADJACENT TO SOUTH BERTHOUD PARKWAY AND SOUTH OF IVE CH AVENUE SHALL BE SINGLE FAMILY DETACHED UNITS AND NOT EXCEED TWO STORES IN HEIGHT.



VICINITY MAP



LAND USE SUMMARY

SINGLE FAMILY DETACHED (40' X 110')	111
SINGLE FAMILY DETACHED (60' X 110')	111
SINGLE FAMILY DETACHED (60' X 110')	111
TOWNHOMES OR SFD	111
CONDOS	111
MIXED USE	111
COMMERCIAL	111
ESTIMATED PROJECT TOTAL	1500-1800 UNITS

*NOTE: LOT SIZES ARE CONCEPTUAL AND SUBJECT TO CHANGE AT PLAT

LAND USE STATISTICS

TOTAL ACREAGE	~306.4 ACRES
ROW/PRIVATE DRIVE/PARKING	~54.0 ACRES
% OF SITE AS ROW/DRIVE/PARKING	17.6%
OPEN SPACE ACREAGE	~73.7 ACRES
% OF SITE AS OPEN SPACE	25.0%

APPROVAL CERTIFICATES

Approved by the Town of Berthoud, Colorado this 29th day of April, 2023.
[Signature]
Mayor

This foregoing map is approved for filing and accepted by the Town of Berthoud, Colorado this 29th day of April, 2023.
[Signature]
Town Clerk

ATTEST:

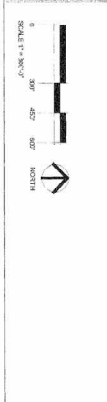
Town Clerk

APPROVAL CERTIFICATES

Approved by the Planning Commission of the Town of Berthoud, Colorado this 29th day of May, 2023.
[Signature]
Chairman

APPROVAL CERTIFICATES

Approved by the Planning Commission of the Town of Berthoud, Colorado this 29th day of May, 2023.
[Signature]
Chairman



PARK STATISTICS:

ESTIMATED PARK SPACE REQUIRED (APPROX. 1500-1800 UNITS)	15-18 ACRES
PARK SPACE PROVIDED	13.54 ACRES
	4.4% OF SITE
NOTE: FINAL PARK SPACE REQUIREMENT WILL BE BASED ON ACTUAL UNIT COUNT. TO BE DETERMINED WITH FINAL PLATS.	

OPEN SPACE CALCULATIONS:

TOTAL OPEN SPACE REQUIRED=	30.6 AC	10.0%
TOTAL OPEN SPACE PROVIDED=	76.7 AC	25.0%
TOTAL SITE ACREAGE =	~308.4 AC	

COMMUNITY PARK ELEMENTS:

- LIST B: 3 ELEMENTS REQUIRED
- GROUP PICNIC SHELTER (300 S.F. MIN. & 3 TABLES)
 - MIN. 15,000 S.F. TURF PLAY AREA (COUNTED AS 1 PER 15,000 S.F.)
 - LOOP WALK (MIN. 2,000 L.F.)

- LIST D: 2 ELEMENTS REQUIRED
- AMPHITHEATER
 - PLAYGROUND
 - SPLASH PARK
 - COMMUNITY BUILDING
 - POOL

- LIST E: 4 ELEMENTS + 1 RESTROOM BUILDING REQUIRED
- BEO GRILLS (MIN. 1 PER EVERY 2 TABLES)
 - BENCHES (MIN. ONE PER HALF ACRE)
 - DINING FOUNTAINS (MIN. 1 PER EVERY 4 ACRES)
 - SHADE STRUCTURES FOR COMPONENTS FROM LIST C (AT SPLASH PARK)

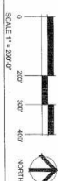
POCKET PARK ELEMENTS:

- LIST A: ALL ELEMENTS REQUIRED
- ELECTRICITY
 - IRRIGATION
 - SECURITY LIGHTING
 - TRASH RECEPTACLES (MIN. 2 PER AC)
 - WATER SERVICE
 - BIKE RACKS
 - LANDSCAPING

- LIST B: 3 ELEMENTS REQUIRED
- GROUP PICNIC SHELTER (500 S.F. MIN. & 3 TABLES)
 - MIN. 15,000 S.F. TURF PLAY AREA (COUNTED AS 1 PER 15,000 S.F.)
 - LOOP WALK (MIN. 2,000 L.F.)

- LIST D: 2 ELEMENTS REQUIRED
- COMMERCIAL GRADE PLAYGROUND
 - AMPHITHEATER

- LIST E: RESTROOMS + 3 ELEMENTS REQUIRED
- PORTABLE RESTROOMS
 - SHADE STRUCTURE FOR PLAYGROUND
 - BENCHES (1 PER 1/2 ACRE)
 - BBOSS (1 PER 2 TABLES)



OPEN SPACE ELEMENTS

OPEN SPACE ELEMENTS	4 ELEMENTS REQUIRED
OPEN SPACE ELEMENTS	4 ELEMENTS PROVIDED
HABITAT AREA	1 ELEMENT
GREEN AREA	2 ELEMENTS
TRAILHEAD	1 ELEMENT

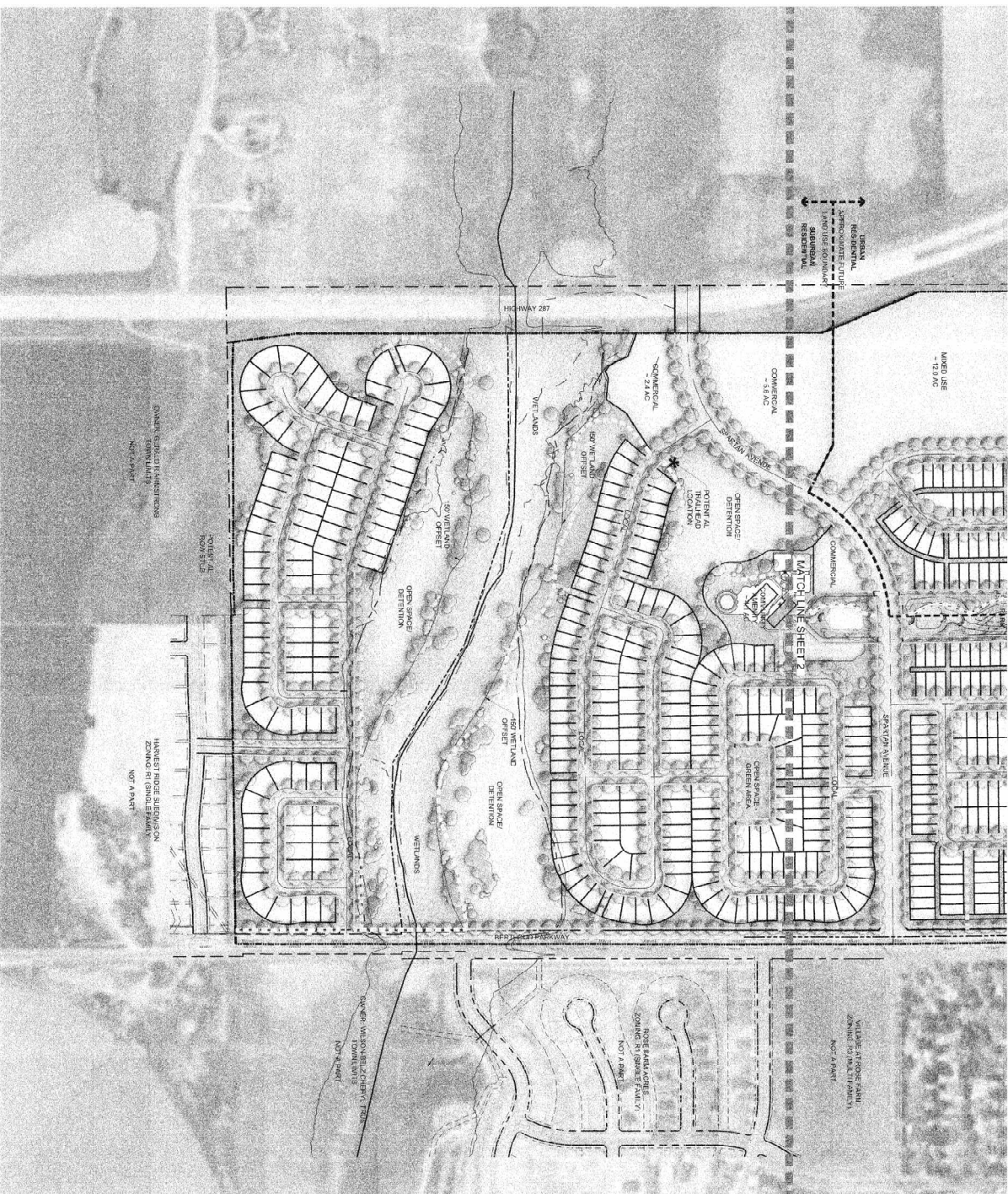
OPEN SPACE SUMMARY

PARK SPACE	13.5 ACRES
OPEN SPACE	67.4 ACRES
TOTAL	80.9 ACRES

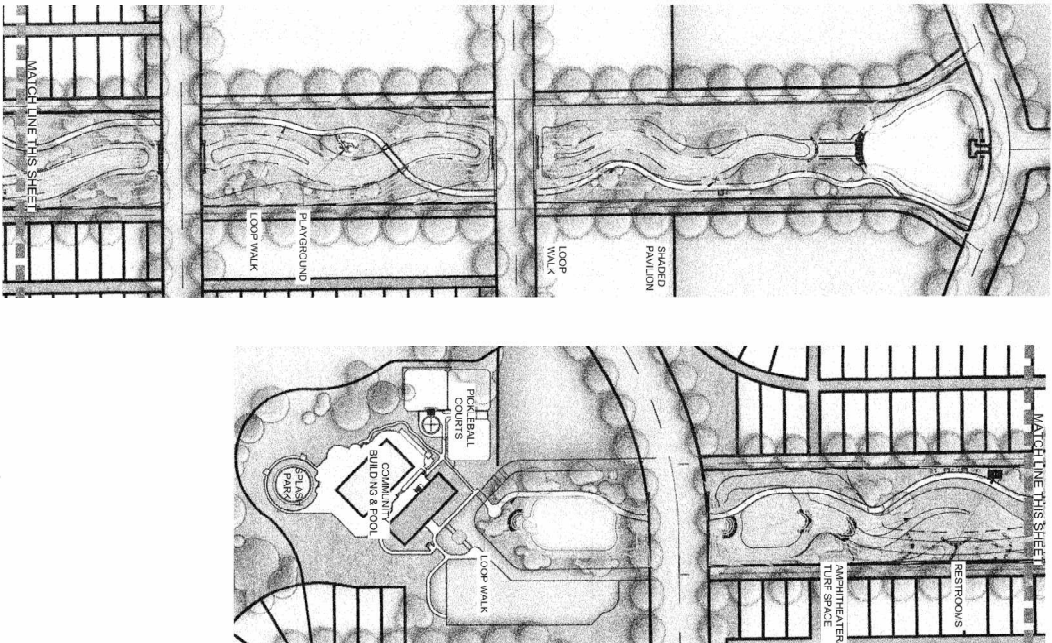
WALKS/TRAILS SUMMARY*

DETACHED CONCRETE SIDEWALK -	74,576 FEET
PROPOSED TRAIL/TAI CONNECTION PER	5,383 FEET
TRAIL CONNECTION PER TOWN PLAN -	5,415 FEET

*NOTE: TRAIL LOCATIONS ARE CONCEPTUAL. FINAL LOCATION TO BE DETERMINED AT PLAT.



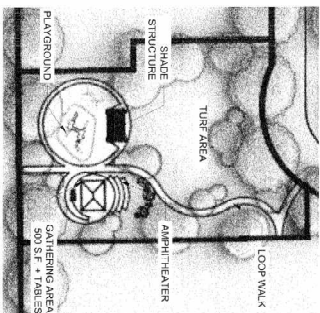
COMMUNITY PARK - A



COMMUNITY PARK ELEMENTS:

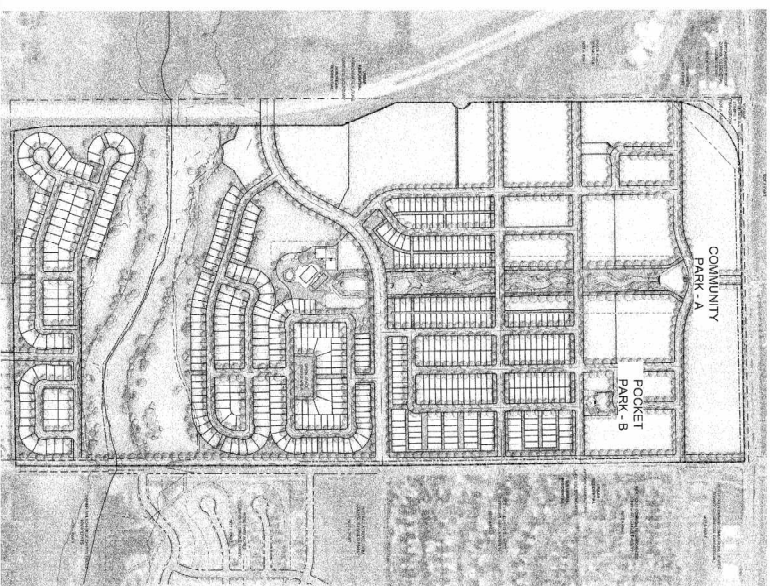
- LIST A: ALL ELEMENTS REQUIRED
- ELECTRICITY
 - IRRIGATION
 - SECURITY LIGHTING
 - TRASH RECEPTACLES (MIN. 2 PER AC)
 - WATER SERVICE
 - BIKE RACKS
 - LANDSCAPING
- LIST B: 3 ELEMENTS REQUIRED
- GROUP PICNIC SHELTER (500 S.F. MIN. & 3 TABLES)
 - MIN. 15,000 S.F. TURF PLAY AREA (COUNTED AS 1 PER 15,000 S.F.)
 - LOOP WALK (MIN. 2,000 L.F.)
- LIST D: 2 ELEMENTS REQUIRED
- AMPHITHEATER
 - PLAYGROUND
 - SPLASH PARK
 - COMMUNITY BUILDING
 - POOL
- LIST E: 4 ELEMENTS + 1 RESTROOM BUILDING REQUIRED
- BBQ GRILLS (MIN. 1 PER EVERY 2 TABLES)
 - BENCHES (MIN. ONE PER HALF ACRE)
 - DRINKING FOUNTAINS (MIN. 1 PER EVERY 4 ACRES)
 - SHADE STRUCTURES FOR COMPONENTS FROM LIST C (AT SPLASH PARK)

POCKET PARK - B



POCKET PARK ELEMENTS

- LIST A: ALL ELEMENTS REQUIRED
- ELECTRICITY
 - IRRIGATION
 - SECURITY LIGHTING
 - TRASH RECEPTACLES (MIN. 2 PER AC)
 - WATER SERVICE
 - BIKE RACKS
 - LANDSCAPING
- LIST B: 3 ELEMENTS REQUIRED
- GROUP PICNIC SHELTER (500 S.F. MIN. & 3 TABLES)
 - MIN. 15,000 S.F. TURF PLAY AREA (COUNTED AS 1 PER 15,000 S.F.)
 - LOOP WALK (MIN. 2,000 L.F.)
- LIST D: 2 ELEMENTS REQUIRED
- COMMERCIAL-GRADE PLAYGROUND
 - AMPHITHEATER
- LIST E: RESTROOMS + 3 ELEMENTS REQUIRED
- PORTABLE RESTROOMS
 - SHADE STRUCTURE FOR PLAYGROUND
 - BENCHES (1 PER 1 ACRE)
 - BBQS (1 PER 2 TABLES)





MEMORANDUM

To: Tawn Hillenbrand, Town of Berthoud
Don Hinson, Legacy Park
Kristin Turner, TB Group

From: Ruth Rollins, *Rollins* Consult LLC

Date: September 18, 2024

Subject: Legacy Park Initial Phase – Analysis Without Connection of Legacy Park Drive to Mountain Avenue

A transportation study was performed for Legacy Park Phase 1 and documented in *Legacy Park Phase 1, Transportation Impact Study*, April 29th, 2024. After the study was completed, two elements of the project were revised:

- What was referred to as Phase 1 represented the Preliminary Plat. This was subdivided into construction phases.
- Access to Mountain Avenue at the future Legacy Park Drive is not proposed with the Initial Phase of Legacy Park.

The purpose of this analysis is to determine how many single family and multi-family dwelling units can be constructed without the Legacy Park Drive connection to Mountain Avenue. The analysis will focus on the intersection of Berthoud Parkway at Mountain Avenue. The other access points along Berthoud Parkway are being designed for full build out of Legacy Park and therefore were not included.

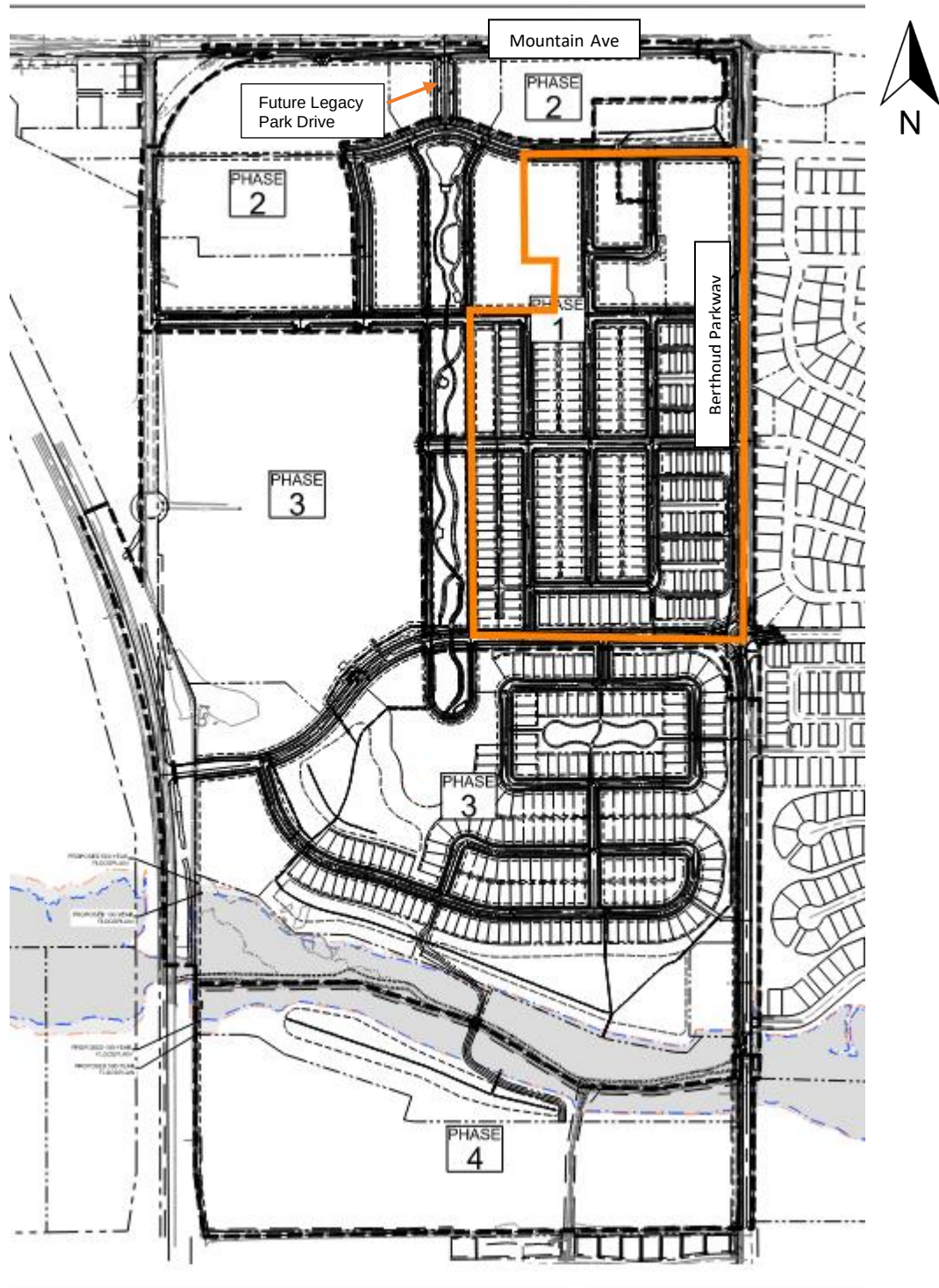
Initial Phase Land Use

The April 29th study looked at the Preliminary Plat with 489 single family and 145 multi-family dwelling units. An iterative analysis was performed to determine the amount of development that could be built and supported by the adjacent roadway system without the Legacy Park Drive connection to Mountain Avenue. The analysis resulted in 344 single family and 38 multi-family dwelling units. The trip generation associated with the recommended Initial Phase is provided below in Table 1. The approximate location of the initial phase is shown on Figure 1.

Table 1 – Trip Generation – Initial Phase

ITE Land Use Code & Rates		Project		Project Trip Generation					
Land Use	Land Use Code	Dwelling Units	Daily	AM			PM		
				IN	Out	Total	IN	Out	Total
Single-Family Detached	210	344	3144	60	170	229	200	117	317
Multi-Family Low Rise	220	38	319	8	26	35	23	14	37
PHASE 1 TOTAL			3463	68	196	264	223	131	354

Figure 1 – Initial Phase



Traffic Projections – Berthoud Parkway at Mountain Avenue

The Initial Phase project traffic was assigned to the street system using the overall distribution patterns from the April 2024 study. These project trips were distributed onto the roadway system. The resulting peak hour traffic projections at Berthoud Parkway and Mountain Avenue are shown on Figure 2. The 2028 background traffic from the April 2024 study is provided on Figure 3. The 2028 total future traffic was determined by adding the project traffic to the background traffic. The 2028 total future traffic is provided on Figure 4.

Figure 2 – Project Traffic

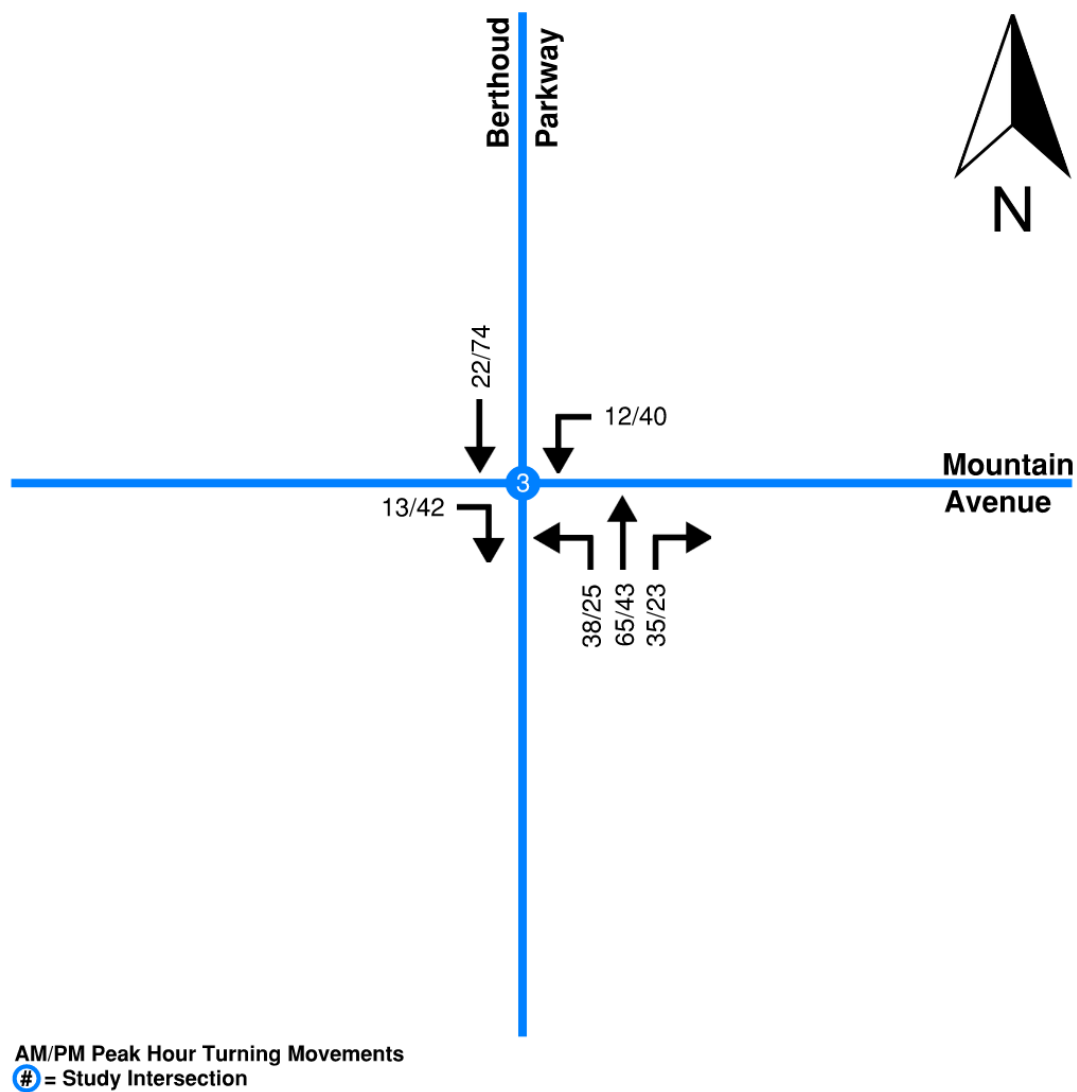


Figure 3 –2028 Background Traffic

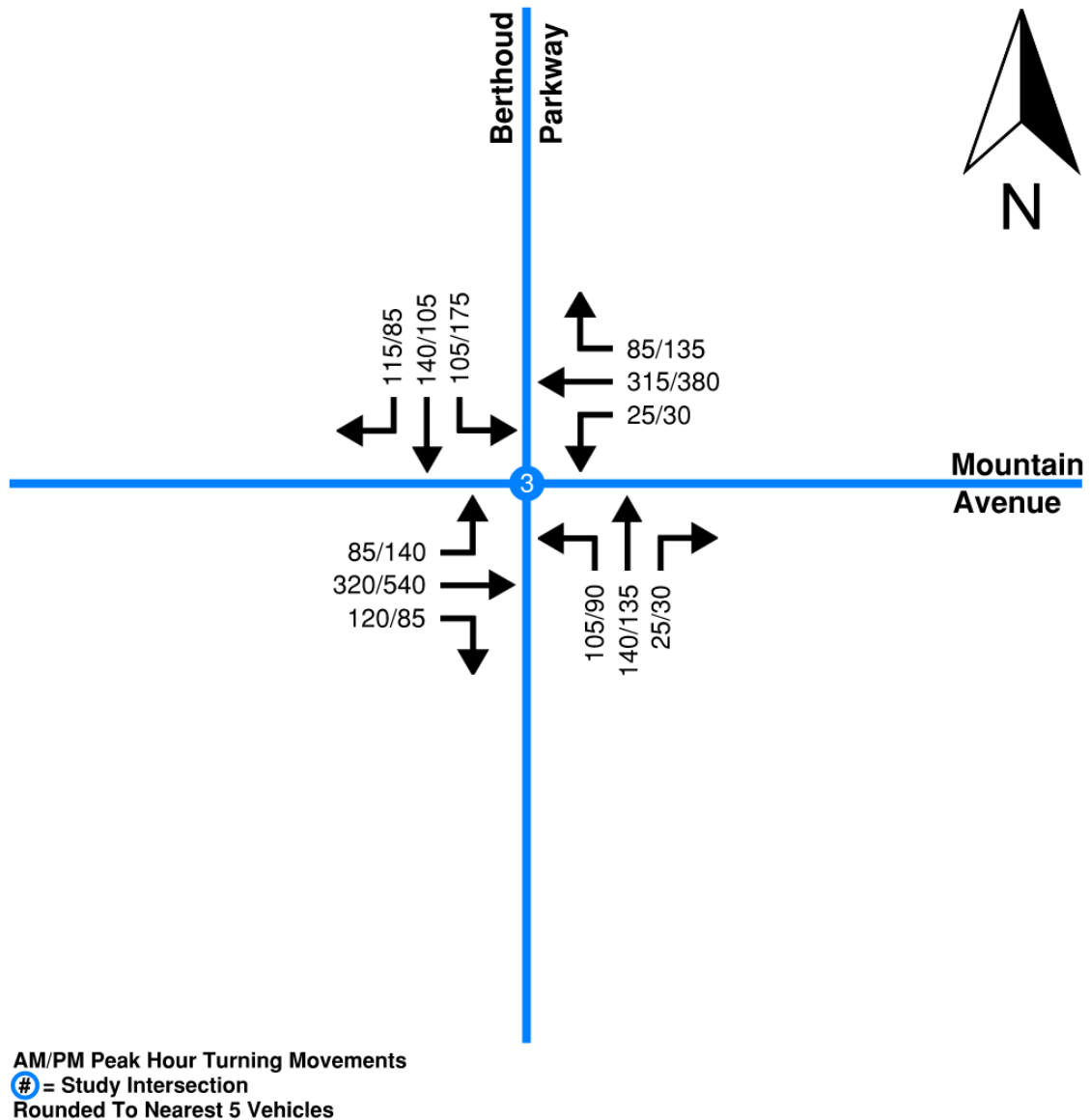
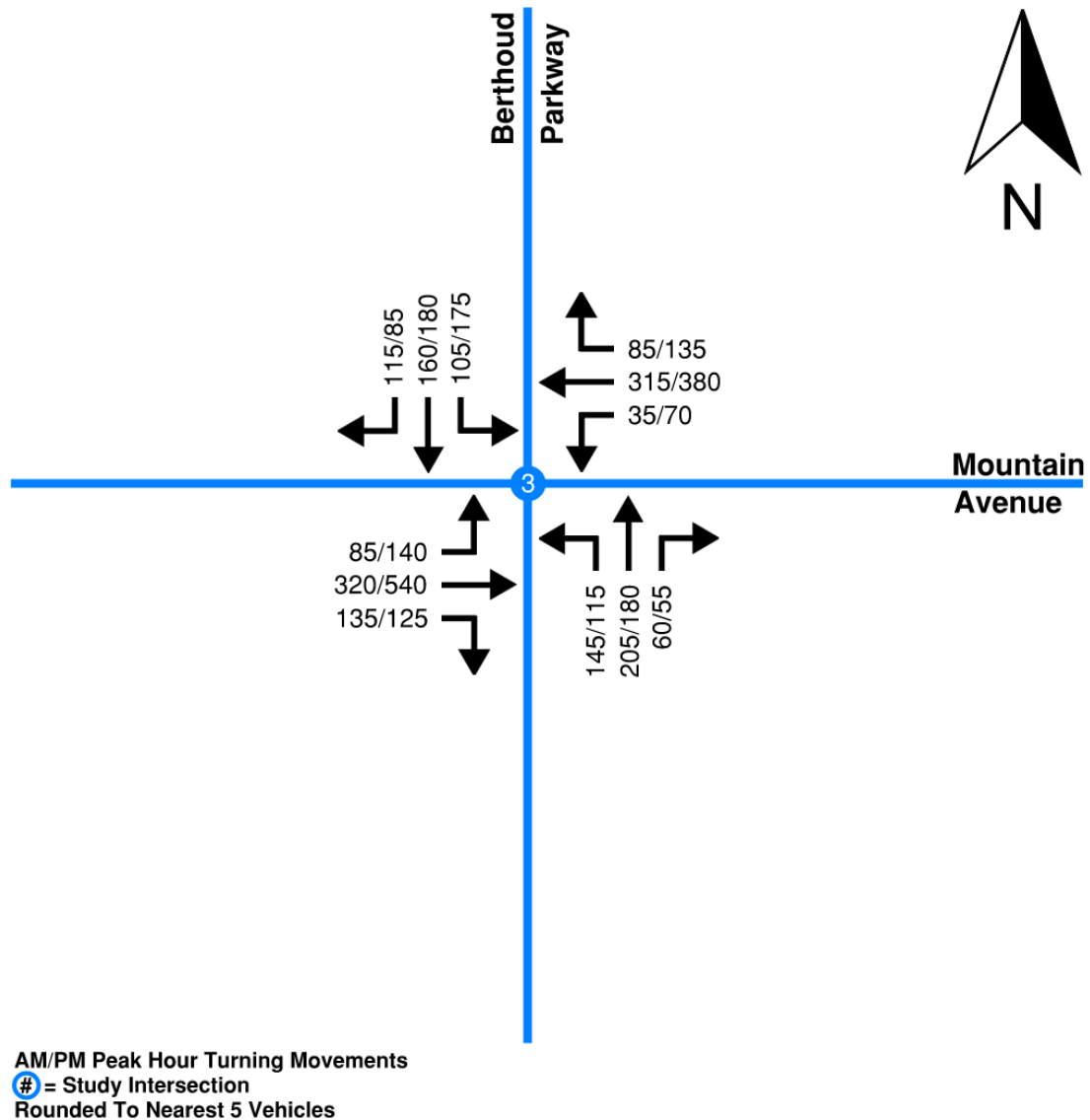


Figure 4 – 2028 Total Traffic



Analysis Results for Initial Phase

The intersection of Berthoud Parkway and Mountain Avenue was analyzed during each peak hour under 2028 background and total traffic conditions. The results of this analysis are provided in Table 2. As indicated in the table, the intersection is projected to operate at acceptable levels with the development of the 344 single family homes and 38 multi-family dwelling units. This analysis includes the addition of an eastbound right-turn lane from Mountain Avenue onto Berthoud Parkway. The analysis worksheets are included in Attachment A.

Table 2
2028 Peak Hour Intersection Level of Service

#	Intersection	Overall Movement	Background		Total	
			AM	PM	AM	PM
3	Berthoud Pkwy & Mountain Ave Signal	Overall	D	D	D	D
		EB LT	C	C	C	D
		EB T/RT	D	D	D	D
		EB RT	NA	NA	C	B
		WB LT	C	C	C	C
		WB T	C	C	D	D
		WB RT	C	C	C	C
		NB LT/T	D	D	D	D
		NB RT	C	C	C	C
		SB LT/T	D	D	D	D
		SB RT	C	C	C	C

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. LOS is reported for both overall intersection and each constrained STOP-controlled movement or approach.

Conclusions

The Initial Phase of the Legacy Park development can be accommodated by the adjacent roadway system without an additional connection to Mountain Avenue at Legacy Park Drive. This phase can include up to 344 single family and 38 multi-family dwelling units, or the equivalent units that would generate the peak hour trips shown in Table 1. The construction of an eastbound right-turn lane from Mountain Avenue to Berthoud Parkway will be necessary.

Attachment A LOS Worksheets

HCM 6th Signalized Intersection Summary 3: Berthoud Pkwy & Mountain

09/18/2024

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↱	↰		↱	↰		↱	↰
Traffic Volume (veh/h)	85	320	135	35	315	85	145	205	60	105	160	115
Future Volume (veh/h)	85	320	135	35	315	85	145	205	60	105	160	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	94	356	150	39	350	94	161	228	67	117	178	128
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	206	441	374	185	398	338	229	324	478	170	259	371
Arrive On Green	0.06	0.24	0.24	0.03	0.21	0.21	0.30	0.30	0.30	0.24	0.24	0.24
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	752	1066	1572	722	1098	1572
Grp Volume(v), veh/h	94	356	150	39	350	94	389	0	67	295	0	128
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1818	0	1572	1819	0	1572
Q Serve(g_s), s	3.9	17.3	7.7	1.6	17.4	4.8	18.1	0.0	3.0	14.1	0.0	6.5
Cycle Q Clear(g_c), s	3.9	17.3	7.7	1.6	17.4	4.8	18.1	0.0	3.0	14.1	0.0	6.5
Prop In Lane	1.00		1.00	1.00		1.00	0.41		1.00	0.40		1.00
Lane Grp Cap(c), veh/h	206	441	374	185	398	338	553	0	478	429	0	371
V/C Ratio(X)	0.46	0.81	0.40	0.21	0.88	0.28	0.70	0.00	0.14	0.69	0.00	0.35
Avail Cap(c_a), veh/h	208	496	420	218	486	412	553	0	478	429	0	371
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.5	34.3	30.6	28.8	36.3	31.3	29.4	0.0	24.1	33.2	0.0	30.3
Incr Delay (d2), s/veh	1.6	8.7	0.7	0.6	14.5	0.4	7.3	0.0	0.6	8.7	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	8.4	2.8	0.7	9.0	1.8	8.7	0.0	1.1	7.1	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	42.9	31.3	29.3	50.7	31.7	36.7	0.0	24.7	41.9	0.0	32.9
LnGrp LOS	C	D	C	C	D	C	D	A	C	D	A	C
Approach Vol, veh/h		600			483			456			423	
Approach Delay, s/veh		38.0			45.3			35.0			39.2	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	2	3	4			6	7	8				
Phs Duration (G+Y+Rc), s	33.5	7.7	27.2			27.0	9.9	25.0				
Change Period (Y+Rc), s	4.5	4.5	4.5			4.5	4.5	4.5				
Max Green Setting (Gmax), s	29.0	5.0	25.5			22.5	5.5	25.0				
Max Q Clear Time (g_c+I1), s	20.1	3.6	19.3			16.1	5.9	19.4				
Green Ext Time (p_c), s	1.7	0.0	1.3			1.1	0.0	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			39.4									
HCM 6th LOS			D									
Notes												
User approved pedestrian interval to be less than phase max green.												

Total 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
RR

Synchro 11 Light Report
Page 1

HCM 6th Signalized Intersection Summary
3: Berthoud Pkwy & Mountain

09/18/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	540	125	70	380	135	115	180	55	175	180	85
Future Volume (veh/h)	140	540	125	70	380	135	115	180	55	175	180	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	144	557	129	72	392	139	119	186	57	180	186	88
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	310	596	834	155	452	760	149	232	401	214	221	572
Arrive On Green	0.12	0.32	0.32	0.05	0.24	0.24	0.21	0.21	0.21	0.24	0.24	0.24
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	710	1110	1572	891	920	1572
Grp Volume(v), veh/h	144	557	129	72	392	139	305	0	57	366	0	88
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1820	0	1572	1811	0	1572
Q Serve(g_s), s	2.1	28.5	4.1	3.3	19.9	4.9	15.6	0.0	2.7	18.9	0.0	0.0
Cycle Q Clear(g_c), s	2.1	28.5	4.1	3.3	19.9	4.9	15.6	0.0	2.7	18.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.39		1.00	0.49		1.00
Lane Grp Cap(c), veh/h	310	596	834	155	452	760	381	0	401	434	0	572
V/C Ratio(X)	0.46	0.93	0.15	0.46	0.87	0.18	0.80	0.00	0.14	0.84	0.00	0.15
Avail Cap(c_a), veh/h	310	625	859	164	625	907	381	0	401	434	0	572
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.7	32.3	11.8	32.7	35.6	14.4	36.8	0.0	28.2	35.5	0.0	21.0
Incr Delay (d2), s/veh	1.1	20.9	0.1	2.2	9.4	0.1	16.1	0.0	0.7	17.7	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	15.3	2.1	1.4	9.6	2.6	8.4	0.0	1.1	10.2	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.8	53.2	11.9	34.8	45.0	14.5	52.9	0.0	28.9	53.2	0.0	21.6
LnGrp LOS	D	D	B	C	D	B	D	A	C	D	A	C
Approach Vol, veh/h	830			603			362			454		
Approach Delay, s/veh	44.3			36.7			49.1			47.1		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	25.0		9.0	36.0		28.0		16.6	28.3			
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5		4.5	4.5			
Max Green Setting (Gmax), s	20.5		5.0	33.0		23.5		5.0	33.0			
Max Q Clear Time (g_c+1), s	17.6		5.3	30.5		20.9		4.1	21.9			
Green Ext Time (p_c), s	0.5		0.0	0.9		0.7		0.0	2.0			
Intersection Summary												
HCM 6th Ctrl Delay	43.6											
HCM 6th LOS	D											
Notes												

Transportation Impact Study Town of Berthoud

April 29, 2024

Prepared for:
Legacy Park LLC

Rollins Consult LLC

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1 INTRODUCTION

This report documents the results of a study to evaluate the potential traffic impacts of the first Phase of the Legacy Park project in the Town of Berthoud. The overall long range transportation study for the project was performed and documented in the *Legacy Park Transportation Impact Study*, November 2, 2023 (Legacy Park is now called Legacy Park). Rollins Consult LLC conducted this study as required for the project's development application. The study will focus on the short range transportation conditions with completion of Phase 1. As additional phases are submitted, a transportation study will be performed.

PROJECT DESCRIPTION

The proposed Legacy Park project is located to the west of downtown Berthoud. The project site is located to the south of Mountain Avenue and east of the intersection of US 287. Figure 1 illustrates the location of Legacy Park and the study area. The site is currently undeveloped.

Phase 1 is depicted on Figure 2. This initial phase will include 489 single family homes and 145 multi-family dwelling units. Gateway Park will be built with a connection to Mountain Avenue. The residential areas are located on the eastern side of the site. Spartan Avenue will be constructed within the site and connect with a roundabout at Berthoud Parkway. At this time Spartan Avenue would not connect to US 287 on the west side of the site.

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
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Figure 1 – Project Location

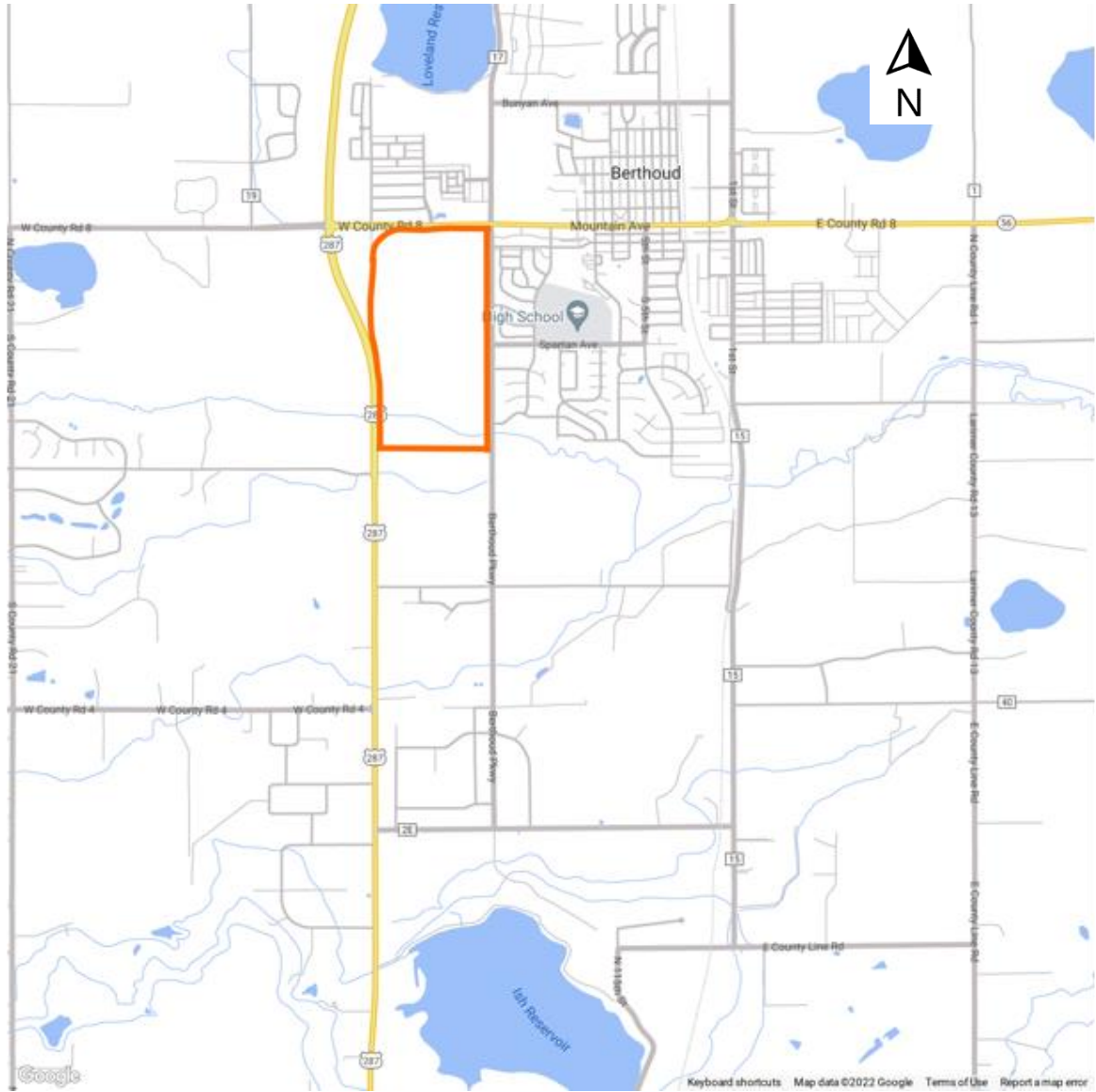
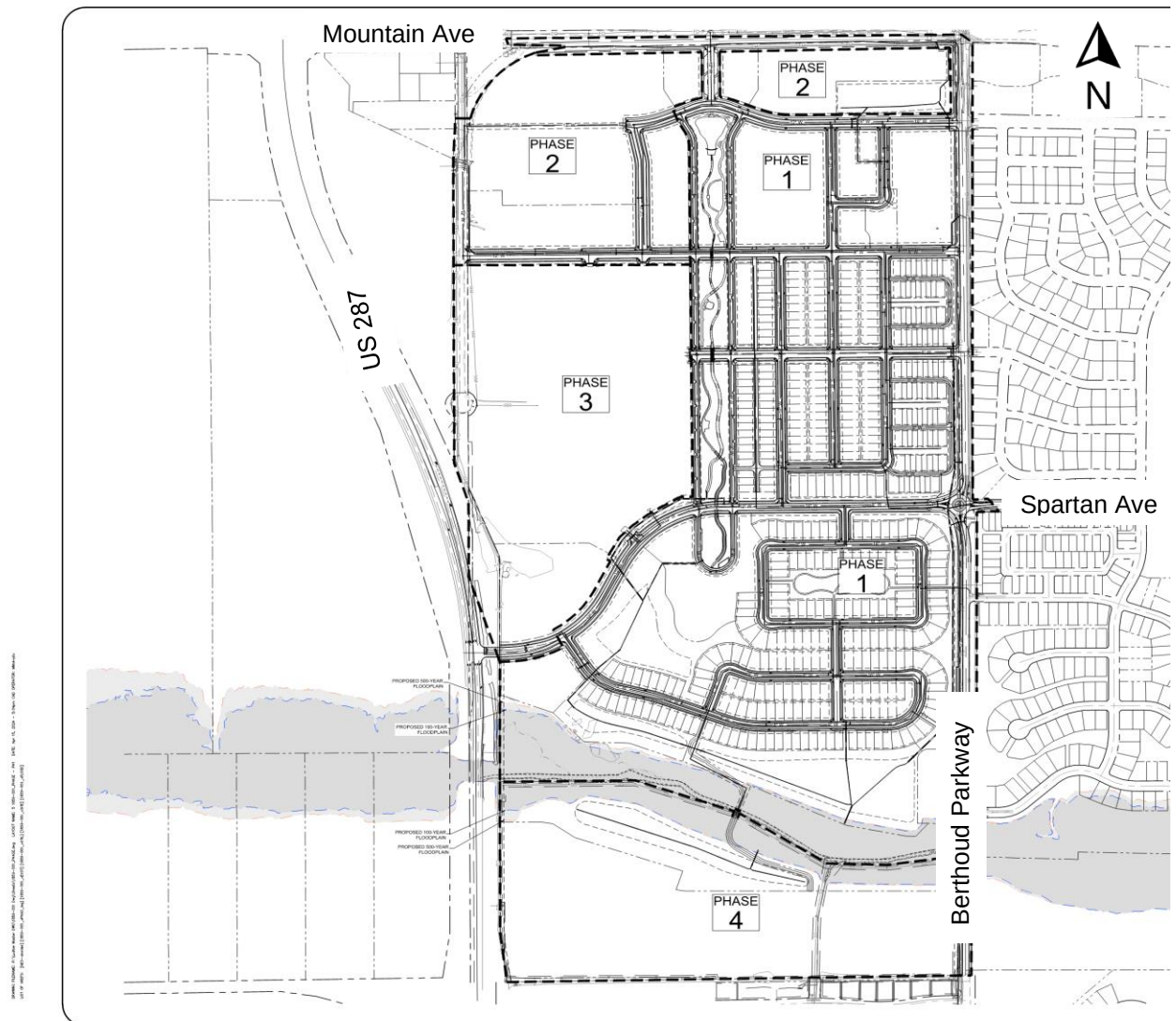


Figure 2 – Site Plan



STUDY SCOPE

The scope of work for this study was developed in conjunction with the Town of Berthoud's traffic engineering consultant. The base assumptions, technical methodologies, and geographic coverage of the study were all identified as part of the study approach. The study analyzes the potential project-generated traffic impacts on the adjacent street system.

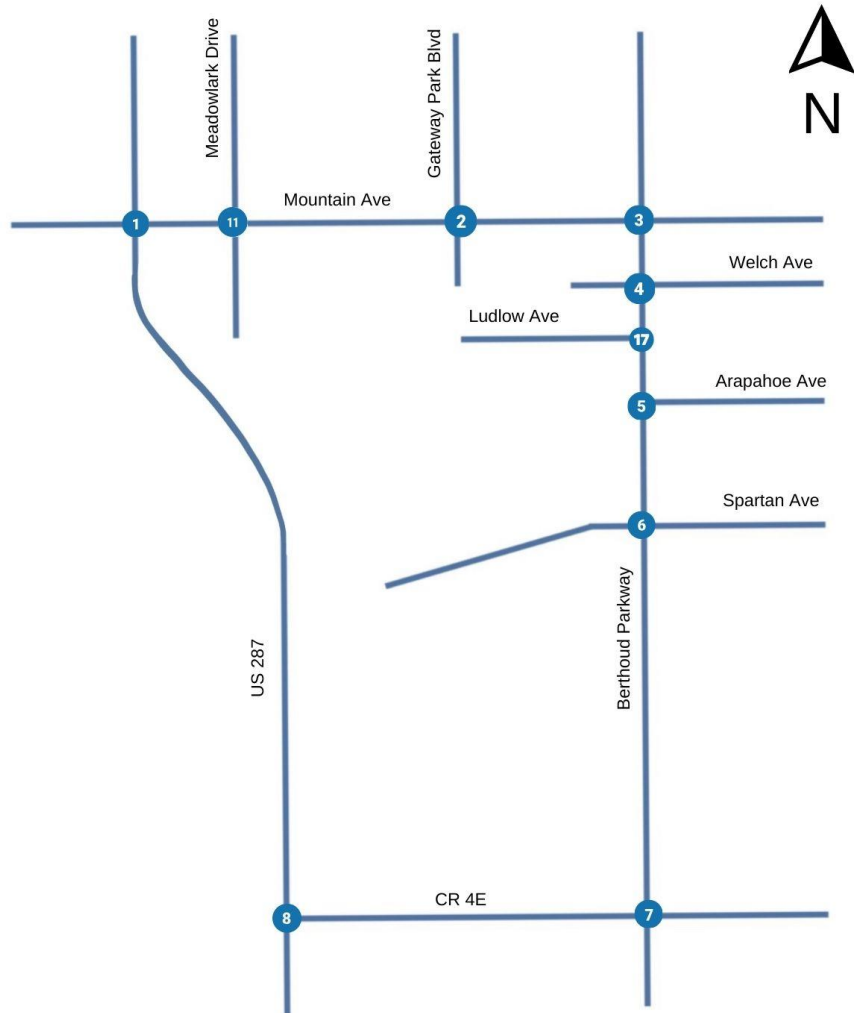
The study evaluates the transportation system after the completion of Phase 1 of the proposed Legacy Park development for the year 2028. The following transportation scenarios were analyzed for the AM and PM peak hours:

- **Existing Conditions** – The analysis of existing traffic conditions provides a basis for the remainder of the study. The existing transportation system is described. Peak hour intersection operations are evaluated.
- **Project Travel Demand** – The traffic generated by Phase 1 will be estimated, distributed, and assigned to the transportation network.
- **2028 Background Conditions** – Future traffic conditions are projected without the proposed Project for the buildout year 2028. The background traffic will include overall growth in traffic within the area and traffic from proposed development projects near the site.
- **Total Future Conditions** – The traffic associated with the Project will be added to the Background traffic. The intersection operations will be determined.
- **Auxiliary Lanes** – The need for left-turn and right-turn lanes at the project access point will be evaluated.

The study examined nine existing intersections, one planned project access streets. The study intersections are depicted on Figure 3. These were identified by the Town for inclusion in the study. The study intersections are listed below.

1. US 287 at Mountain Avenue
2. Gateway Park Boulevard at Mountain Avenue
3. Berthoud Parkway at Mountain Avenue
4. Berthoud Parkway at Welch Avenue
5. Berthoud Parkway at Arapahoe Avenue
6. Berthoud Parkway at Spartan Avenue
7. Berthoud Parkway at CR 4E
8. US 287 at CR 4E
11. Meadowlark Drive at Mountain Avenue
17. Berthoud Parkway at Ludlow Avenue (future)

Figure 3 – Study Intersections



2 EXISTING CONDITIONS

The transportation system has numerous elements that are described in this chapter. The roadway network is described, and traffic volume information is presented for the study intersections.

ADJACENT LANDUSE

The Project site is located east of US 287 and south of Mountain Avenue. East of the project site is commercial use and residential. To the west is rural undeveloped land. South of the future Legacy Park is residential uses. North of the site is residential and proposed commercial.

TRANSPORTATION NETWORK

The primary roadways that serve the Project site are described below. Roadway designations were provided in the Town of Berthoud *Transportation Plan Map*, 2021.

Roadway Network

US 287 is a north-south state highway that connects cities within northern Colorado from Fort Collins south to Longmont. US 287 is a four-lane highway with paved shoulders and room for a center left-turn lane. The speed limit in the study area is 65 mph. This state highway is classified as an NR-A, Non-Rural Regional Highway.

Meadowlark Drive is a north-south two-lane local street. There is a striped shoulder and no sidewalks. North of Mountain Avenue, where development has occurred, there are sidewalks.

Gateway Park Boulevard is a two-lane north-south local street. There are bike lanes and sidewalks on both sides of Gateway Park Boulevard north of Tundra Avenue. Near Mountain Avenue, there are sidewalks on the east side of the street.

Berthoud Parkway is a north-south two-lane roadway. This major collector is currently posted with a 35 to 40 mph speed limit. There are no auxiliary lanes on the road currently. Berthoud Parkway is classified as a two-lane Arterial north of Mountain Avenue and a Major Collector south of Mountain Avenue. There is a pedestrian/bike trail north of Mountain Avenue on the east side of Berthoud Parkway. To the south of Mountain Avenue, there is a paved shoulder. There are sidewalks adjacent to developed sections.

Mountain Avenue is a two-lane east-west roadway that runs through downtown Berthoud. This road is also SH 56. It is classified as a two-lane Arterial. There are paved shoulders and a sidewalk on the north side adjacent to existing residential areas. The speed limit is posted at 45 mph adjacent to the project site and 50 mph west of US 287.

Welch Avenue is a two-lane east-west road that provides access to commercial areas along Mountain Avenue and adjacent residential areas. The speed limit is posted at 25

mph. There are sidewalks on both sides of the street. Welch Avenue is classified as a local street.

Arapahoe Avenue is a two-lane east-west local street. It has sidewalks on both sides of the street. The speed limit is 25 mph.

Spartan Avenue is a two-lane east-west roadway. It provides access to adjacent residential uses and Berthoud High School. Spartan is classified as a major collector east of Berthoud Parkway. The Town has identified Spartan to extend to the west and connect to US 287. The speed limit is 30 mph.

CR 4E is a two-lane east-west road located south of the Project site. It is identified as a major collector. The speed limit is posted at 45 mph.

Pedestrian, Bicycle, and Transit Network

The location of pedestrian and bicycle lanes adjacent to the roads is described above. As areas develop they will include bike lanes and sidewalks within their public rights-of-way. Berthoud has identified two pedestrian/bike trails within the Ludlow project. These are identified in the Town's *Berthoud Unified Trail Master Plan*, June 2018. One is an east/west trail to be located in the southern area of the site and the other is a north/south trail on the western edge of the site.

Berthoud is served by Transfort's Flex service. This is a regional bus that serves the communities of Fort Collins, Loveland, Berthoud, Longmont, and Boulder. There are stops on Mountain Avenue at 2nd and 3rd Streets. Berthoud also operates the Berthoud Area Transportation Service (BATS). It offers door-to-door service within Berthoud and offers service to Loveland and Longmont.

EXISTING TRAFFIC CONDITIONS

Existing intersection operations were evaluated for both the morning and evening peak hours. Intersection count data was collected in June of 2022. These counts were performed at eight of the existing study intersections. Peak hour traffic data on Meadowlark Avenue at Mountain Avenue was obtained from the Traffic Impact Study for Gateway (northeast corner of us 287 and mountain avenue), Aldridge Transportation Consultants, LLC, October 24, 2019.

Appendix A includes the intersection turning movement count data. The counts were compared to peak hour counts conducted when school was in session and the volumes were modified upward to reflect school time conditions. The resulting peak hour turning movements are provided on Figure 4. The current lane configurations of the study intersections are shown on Figure 5.

Figure 4 – Existing Peak Hour Traffic Volumes

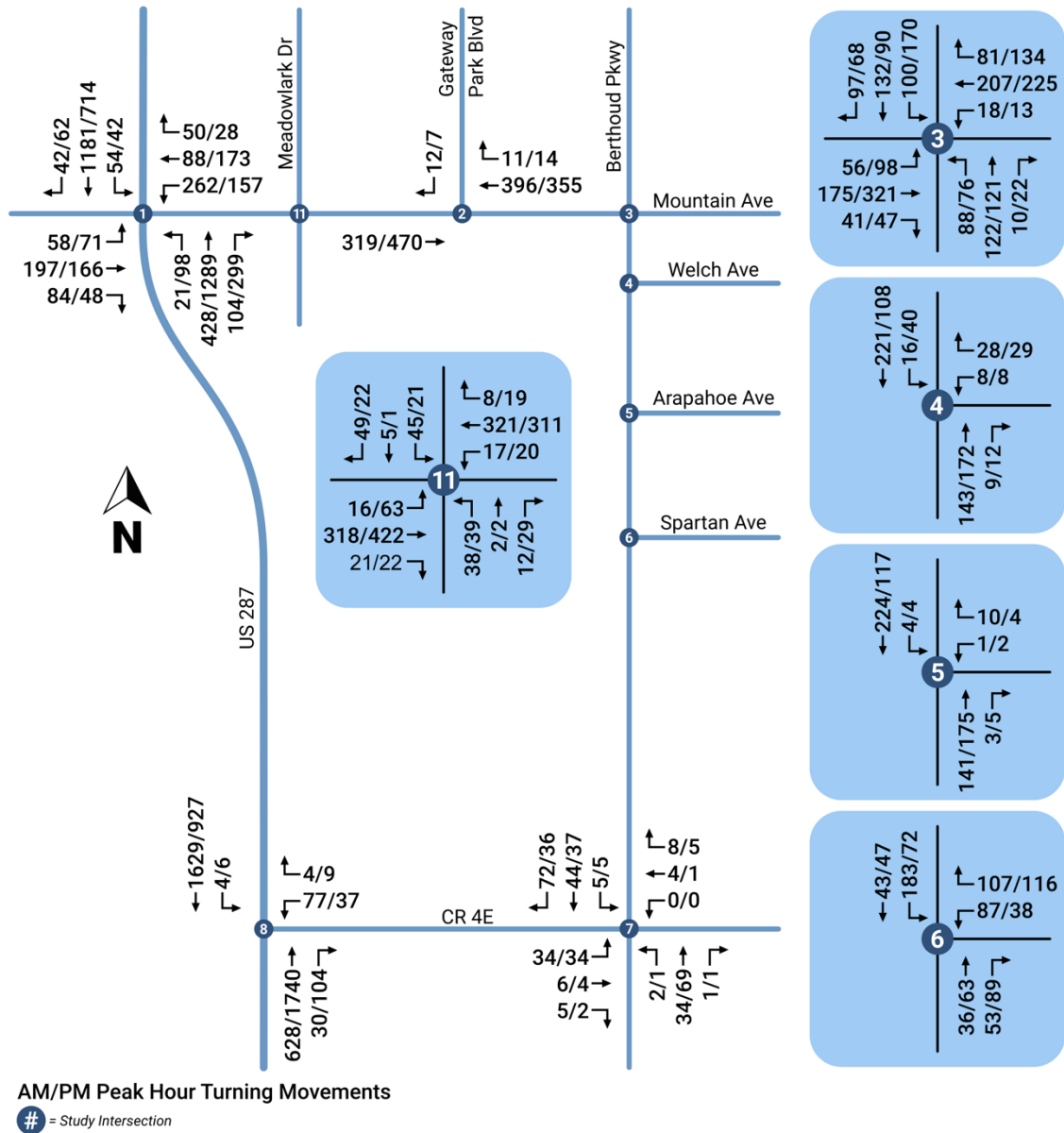
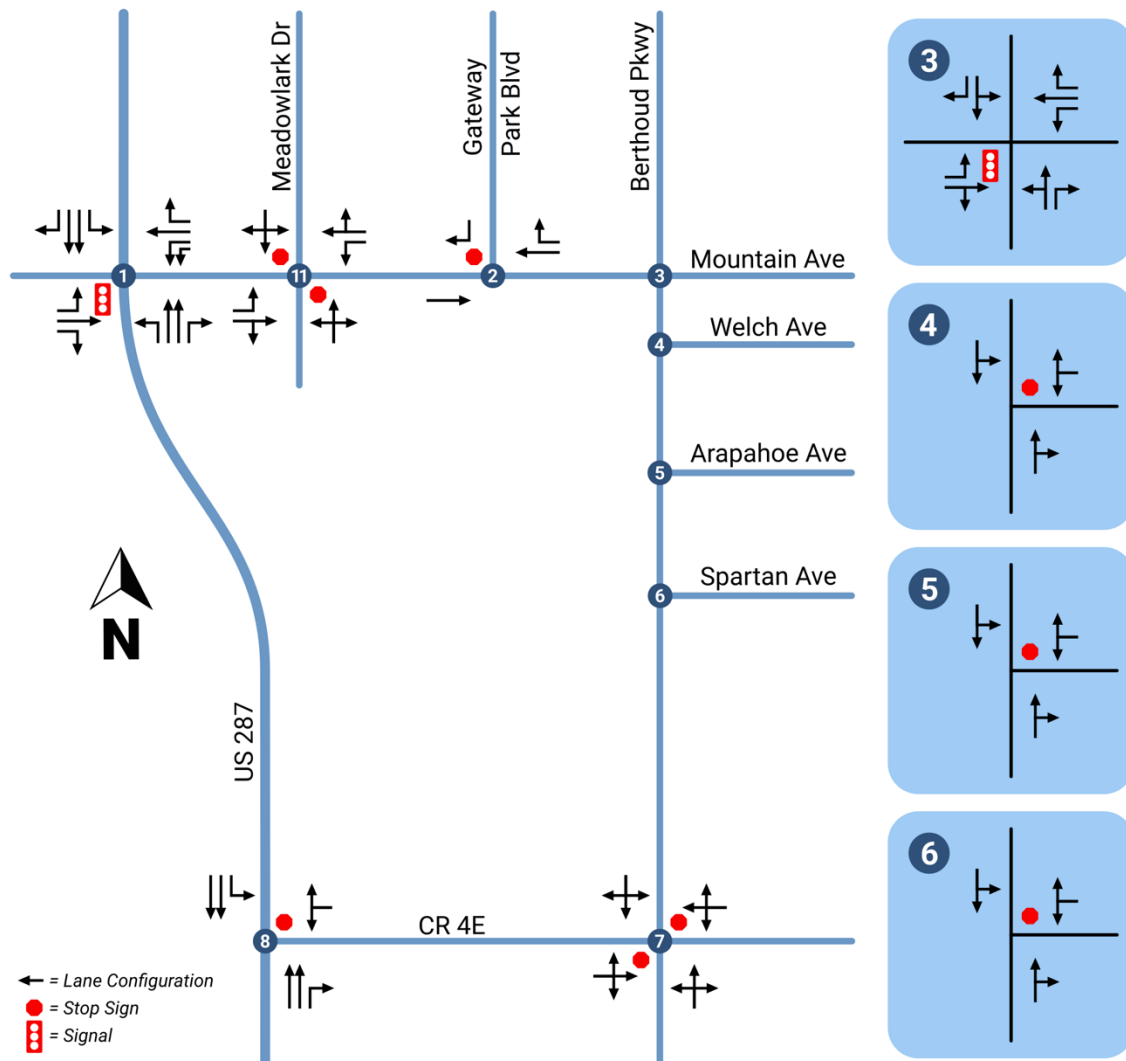


Figure 5 – Existing Lane Configurations



Intersection Level of Service Analysis Methodologies

Transportation professionals evaluate intersections to determine how they are currently operating and will operate in the future. The methods employed can be found in the Transportation Research Board's, 6th Edition, 2016 *Highway Capacity Manual* (HCM). Level of service (LOS) is based on a "graded" system from LOS A, with very little to no delays to LOS F which represents excessive delays and congestion. Table 1 provides the thresholds for acceptable levels of service. The table is from the *Larimer County Urban Area Street Standards* (LCUASS), August 1, 2021.

Table 1
Intersection Level of Service Thresholds

Intersection Component	Major Intersection ¹	Minor Intersection ²	Driveway
Overall (City Limits)	LOS C	LOS C	No Limit
Overall (GMAs)	LOS D	LOS D	No Limit
Any Leg	LOS D	LOS E	No Limit
Any Movement	LOS E	LOS F	No Limit
¹ Includes all signalized and unsignalized arterial/arterial and arterial/ major collector intersections. ² Includes all unsignalized intersections (except major intersections) and high volume driveways ³ There are no LOS standards for I-25 Interchanges. ⁴ On State Highways, overall LOS D is acceptable.			

Signalized Intersection

Peak hour levels of motor vehicle delay at signalized intersections were estimated using methods provided in the HCM. This operations analysis method uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Table 2 summarizes the relationship between the average control delay per vehicle and LOS for signalized intersections.

Table 2
Signalized Intersection Level of Service Definitions

Level of Service	Average Control Delay Per Vehicle (Seconds)	Description
A	≤ 10.0	Free Flow or Insignificant Delays: Operations with very low delay, when signal progression is extremely favorable and most vehicles arrive during the green light phase. Most vehicles do not stop at all.
B	> 10.0 and ≤ 20.0	Stable Operation or Minimal Delays: Generally, occurs with good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average delay. An occasional approach phase is fully utilized.
C	> 20.0 and ≤ 35.0	Stable Operation or Acceptable Delays: Higher delays resulting from fair signal progression and/or longer cycle lengths. Drivers begin having to wait through more than one red light. Most drivers feel somewhat restricted.
D	> 35.0 and ≤ 55.0	Approaching Unstable or Tolerable Delays: Influence of congestion becomes more noticeable. Longer delays result from unfavorable signal progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop. Drivers may have to wait through more than one red light. Queues may develop, but dissipate rapidly, without excessive delays.
E	> 55.0 and ≤ 80.0	Unstable Operation or Significant Delays: Considered to be the limit of acceptable delay. High delays indicate poor signal progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
F	> 80.0	Forced Flow or Excessive Delays: Occurs with oversaturation when flows exceed the intersection capacity. Represents jammed conditions. Many cycle failures. Queues may block upstream intersections.

Source: Transportation Research Board, Highway Capacity Manual, 2016.

Unsignalized Intersection

Peak hour levels of motor vehicle delay at unsignalized intersections were estimated using the method from Chapter 17 of the 2016 *Highway Capacity Manual*. The delays for the entire intersection and the movement and/or approach are determined. Table 3 summarizes the relationship between the average control delay per vehicle and LOS for unsignalized intersections.

Table 3
Unsignalized Intersection Level of Service Definitions

Level of Service	Average Control Delay Per Vehicle (Seconds)	Description
A	≤ 10.0	No delay for stop-controlled approaches.
B	10.0 and ≤ 15.0	Operations with minor delay.
C	> 15.0 and ≤ 25.0	Operations with moderate delays.
D	> 25.0 and ≤ 35.0	Operations with increasingly unacceptable delays.
E	> 35.0 and ≤ 50.0	Operations with high delays, and long queues.
F	> 50.0	Operations with extreme congestion, and with very high delays and long queues unacceptable to most drivers.

Source: Transportation Research Board, Highway Capacity Manual, 2016

Existing Intersection Conditions

Using the HCM methodology, the weekday AM, and PM peak hour intersection operations were determined. The results are provided in Table 4. The Town's LOS thresholds, provided in Table 1, were utilized to evaluate existing operations. As indicated in Table 4, the study intersections are currently operating at acceptable levels of service. The detailed analysis worksheets are provided in Appendix B. It should be noted that at US 287/CR 4E the westbound direction operates at LOS F, this is a minor intersection, and a LOS F is considered acceptable.

Table 4
Existing Weekday Peak-Hour Intersection Level of Service

#	Intersection	Overall Movement	Level of Service	
			AM Peak Hr	PM Peak Hr
1	US 287 & Berthoud Parkway Signal	Overall	C	C
		EB LT	D	E
		EB T	E	E
		EB RT	A	A
		WB LT	E	E
		WB T	C	D
		WB RT	A	A
		NB LT	B	B
		NB T	B	C
		NB RT	A	A
		SB LT	B	B
		SB T	C	B
		SB RT	A	A
2	Gateway PK Blvd & Mountain Ave Right-In-Right-Out	Overall	A	A
		SB RT	B	B
3	Berthoud Pkwy & Mountain Ave Signal	Overall	B	B
		EB LT	A	B
		EB T/RT	B	B
		WB LT	A	A
		WB T	B	C
		WB RT	A	A
		NB LT/T	B	B
		NB RT	A	A
		SB LT/T	B	B
		SB RT	A	A

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. LOS is reported for both overall intersection and each constrained STOP-controlled movement or approach.

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Table 4 (continued)
Existing Weekday Peak-Hour Intersection Level of Service

#	Intersection	Overall Movement	Level of Service	
			AM Peak Hr	PM Peak Hr
4	Berthoud Pkwy & Welch Ave T-Stop	Overall	A	A
		WB LT/RT	B	B
		SB LT	A	A
5	Berthoud Pkwy & Arapahoe Ave T-Stop	Overall	A	A
		WB LT/RT	A	A
		SB LT	A	A
6	Berthoud Pkwy & Spartan Ave T-Stop	Overall	A	A
		WB LT/RT	C	B
		SB LT	A	A
7	Berthoud Pkwy & CR 4E Two-Way Stop	Overall	A	A
		NB LT	A	A
		EB Approach	A	A
		WB Approach	A	A
		SB LT	A	A
8	US 287 & CR 4E T-Stop	Overall	A	A
		WB Approach	F	F
		SB LT	A	C
11	Meadowlark Dr & Mountain Ave Two-Way Stop	Overall	A	A
		NB Approach	C	C
		EB LT	A	A
		WB LT	A	A
		SB Approach	C	C

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. LOS is reported for both overall intersection and each constrained STOP-controlled movement or approach.

3 PROJECT TRAVEL DEMAND

This chapter provides an overview of the project and a description of the travel demand methodology to estimate vehicle trip generation, distribution, and assignment of project-generated traffic along area roadways and intersections.

PROJECT CHARACTERISTICS

The proposed Phase 1 of the Legacy Park project will include residential uses. The project site plan is depicted on Figure 2. As shown on the figure, vehicular access to the project will be from locations along Mountain Avenue and Berthoud Parkway

PROJECT TRIP GENERATION

The trip generation characteristics of the project were estimated using data from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. Table 5 provides the trip generation estimated for Phase 1. As indicated in the table, Phase 1 of the project will result in an estimated 5,350 daily, 385 morning, and 525 evening peak hour trips.

Table 5
Estimated Trip Generation

ITE Land Use Code & Rates		Project	Project Trip Generation						
Land Use	Land Use Code	Dwelling Units	Daily	AM			PM		
				IN	Out	Total	IN	Out	Total
Single-Family Detached	210	489	4,346	82	234	316	278	163	442
Multi-Family Low Rise	220	145	1,005	16	52	68	52	31	83
PHASE 1 TOTAL			5,351	98	285	384	331	194	525

Based on ITE Trip Generation 11th Edition

PROJECT TRIP DISTRIBUTION | ASSIGNMENT

The distribution of the project traffic onto the roadway system was based on the location of the project within Berthoud and northern Colorado, the roadway system, and existing traffic data. The project trip distribution is depicted on Figure 6 and indicates the distribution for residential and commercial/office uses. The resulting peak hour traffic associated with the buildout of Legacy Park is shown on Figure 7.

Figure 6 – Trip Distribution

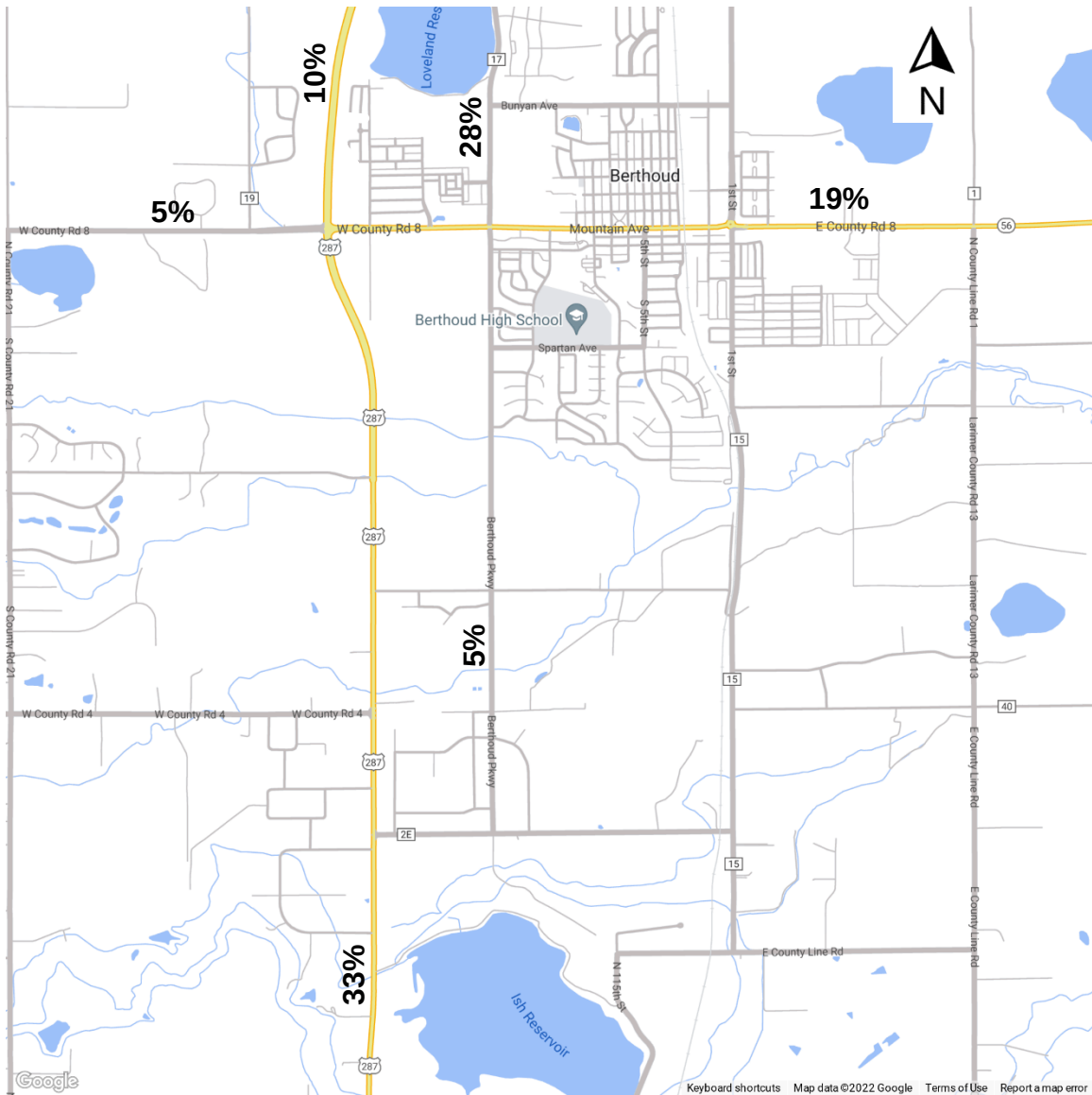
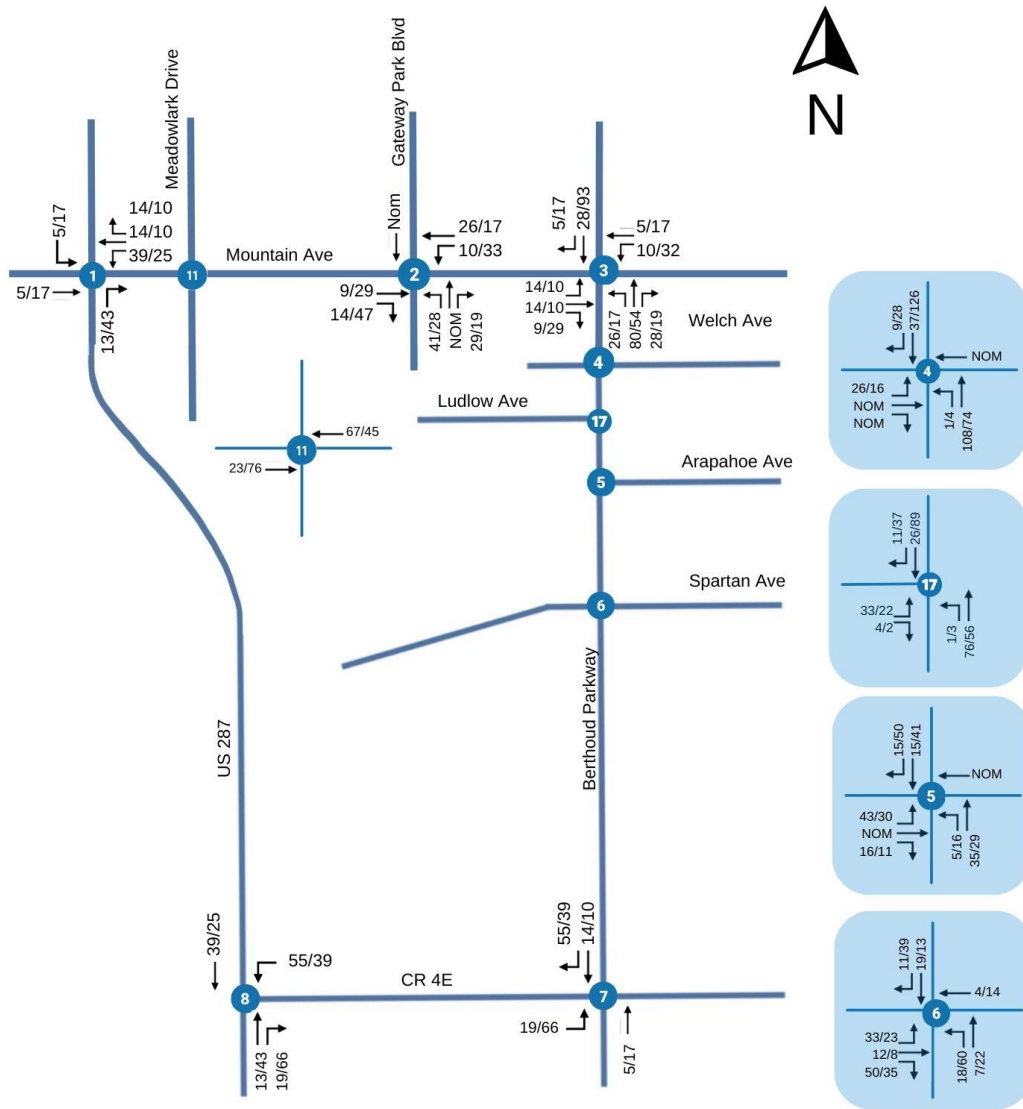


Figure 7 – Project Traffic



4 FUTURE TRAFFIC PROJECTIONS

Estimates of future traffic conditions both with and without the proposed Phase 1 were necessary to evaluate the potential impact of the project on the local street system. The background base traffic scenario represents future traffic conditions without the addition of Phase 1, while the total scenario represents future traffic conditions with the completion of Phase 1. These projections were developed for Year 2028. The development of these future traffic scenarios is described in this chapter.

BACKGROUND 2028 TRAFFIC PROJECTIONS

The background traffic projections reflect growth in traffic from two primary sources: ambient growth in the existing traffic volumes due to regional growth both in and outside of the study area, and consideration of traffic generated by nearby planned projects. Each of these elements is described below.

- The **areawide/ambient growth** in traffic was determined based on the direction from the Colorado Department of Transportation (CDOT). The 20 year growth factors were from 1.18 to 1.39. Because numerous other projects' traffic will also be included, growth factor of 1.03 was applied.
- The future traffic related to the **other proposed projects** was added to the background traffic. Three proposed projects were included as follows.
 - Traffic Impact Study for Gateway (northeast corner of US 287 and Mountain Avenue), Aldridge Transportation Consultants, LLC, October 24, 2019
 - Trails at Creekview (northeast corner Berthoud Parkway and CR 4E) Rollins Consult LLC, January 27, 2022.
 - The upcoming Revere project (northwest corner of US 287 and Mountain Avenue) is being prepared by Rollins Consult LLC
 - Gateway at Berthoud Transportation Impact Study, Delich Associates, January 2024.

The resulting Background 2028 traffic projections for the study intersections are provided on Figure 8.

TOTAL TRAFFIC PROJECTIONS

The total traffic projections include both the background plus project traffic. The project-generated traffic volumes from Figure 7 were added to the Year 2028 background traffic volumes illustrated on Figure 8 to develop background plus project peak hour traffic volumes. The resulting Year 2028 total traffic is depicted on Figure 9.

Figure 8 – Background Traffic 2028

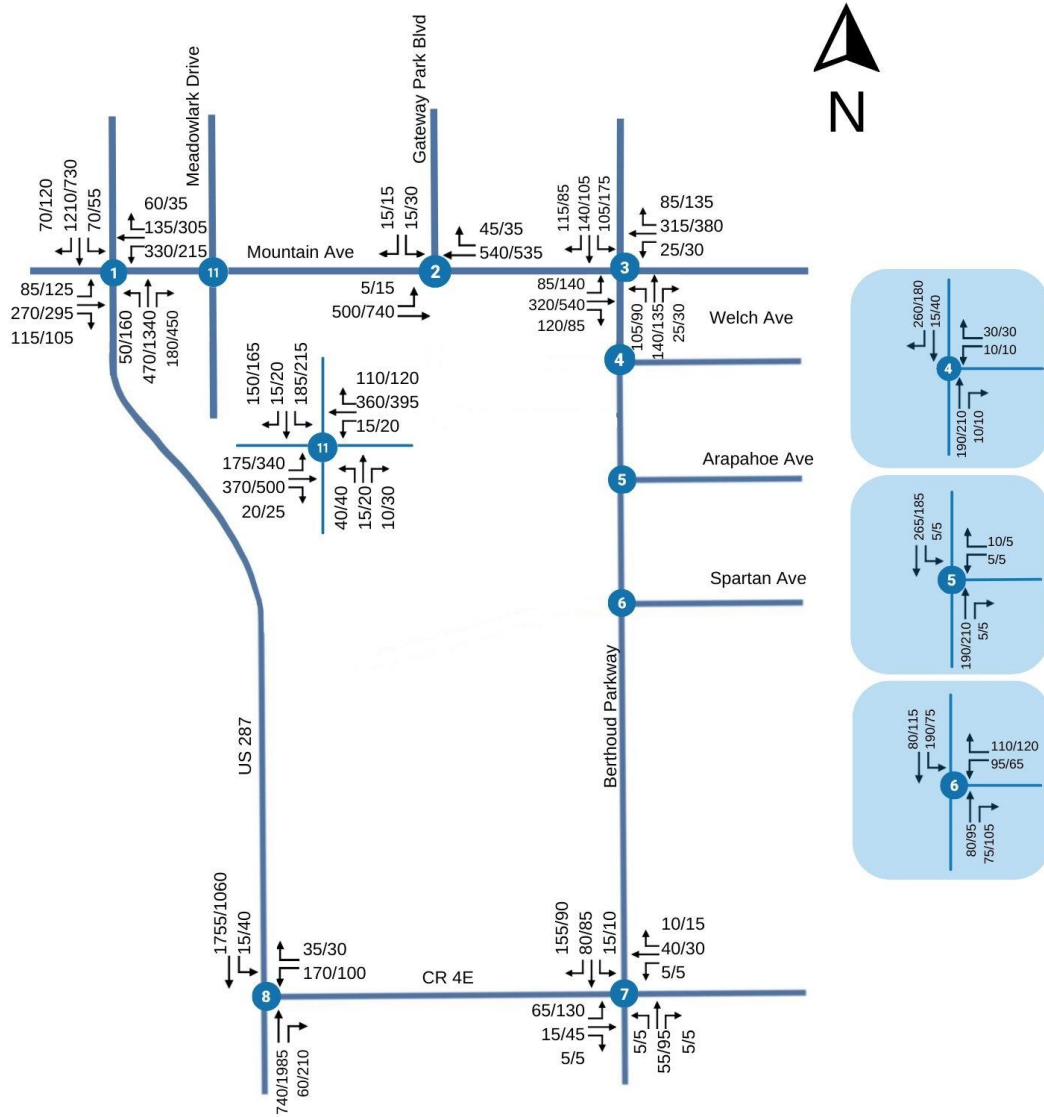
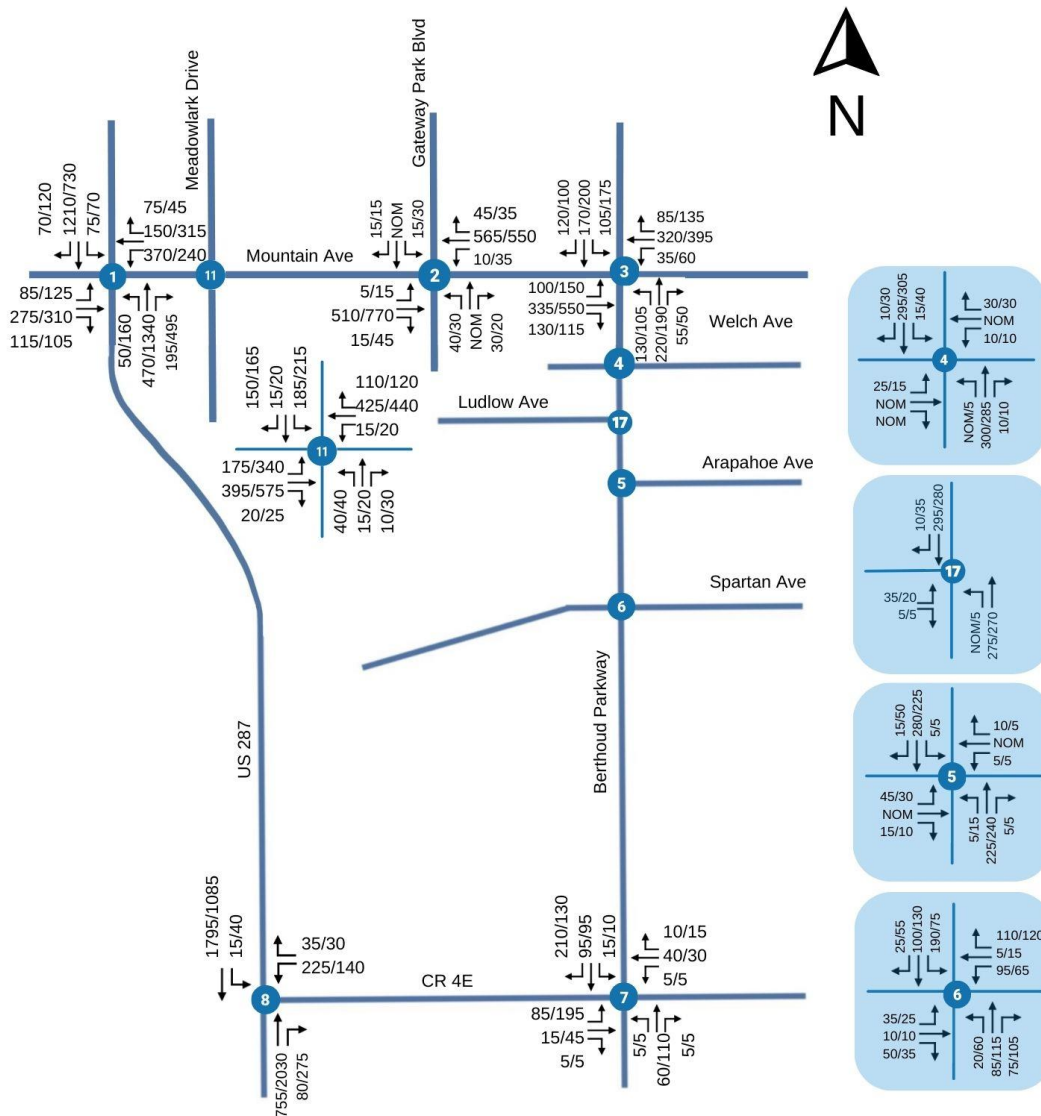


Figure 9 – Total Traffic 2028



5 AUXILIARY LANE ANALYSIS

An analysis was conducted to determine the need for auxiliary turn lanes to the project site from US 287, Mountain Avenue, and Berthoud Parkway.

The guidelines from Figure 8-4 in LCUASS (provided in Appendix D) were applied to the total future projected volumes depicted on Figure 9 for 2028 total traffic conditions. Using the LCUASS criteria, it was determined that several auxiliary lanes satisfy the turn lane criteria. The following lanes are required under 2028 Total conditions.

Mountain Avenue

- An eastbound right-turn lane at Gateway Park Boulevard

Berthoud Parkway

- A southbound right-turn lane at Welch, Ludlow, and Arapahoe Avenues

These lanes will be assumed for the analysis of the study intersection operations for 2028 conditions. For the future roundabout at Berthoud Parkway and Spartan Avenue, it will be assumed that each leg is a single lane.

6 TRAFFIC IMPACT ANALYSIS

This chapter presents an analysis of the potential impacts of the traffic generated by the proposed Legacy Park project on the local street system. The analysis compares the projected levels of service at each study intersection under future background and total conditions to estimate the incremental increase in the level of service caused by the proposed Project. This provides the information needed to assess the potential impact of the Project using the acceptable operations criteria.

The analysis includes signalization of US 287 at CR 4E. This is required with the final phases of the Trails at Creekview project, whose total future traffic is included in this study. The analysis also includes the future roundabout at Berthoud Parkway and Spartan Avenue.

FUTURE INTERSECTION TRAFFIC CONDITIONS

The future traffic projections at the nine study intersections were analyzed to determine their operating conditions. The analysis results are provided in Table 6 for both background and total conditions. As indicated in Table 6, the intersections are projected to operate within the acceptable limits established by the Town of Berthoud with the following exceptions:

- At Gateway Park Boulevard at Mountain Avenue, both the north and southbound left-turns will operate with long delays. This is typical where lower volume streets intersect arterial streets and are within acceptable levels of service. The anticipated 95th percentile queue lengths are 2 vehicles or lower.
- The intersection of Berthoud Parkway and Mountain Avenue is projected to have long delays in excess of acceptable levels in the eastbound direction.

INTERSECTION IMPROVEMENTS

An eastbound right-turn lane is proposed on Mountain Avenue at Berthoud Parkway. The intersection operations with this improvement are provided in Table 7. This improvement will result in acceptable operations. The resulting 2028 intersection configurations at the study intersections are provided on Figure 10.

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Table 6
2028 Peak Hour Intersection Level of Service

#	Intersection	Overall Movement	Background		Total	
			AM	PM	AM	PM
1	US 287 & Berthoud Parkway Signal	Overall	D	D	D	D
		EB LT	D	E	D	E
		EB T	E	E	E	E
		EB RT	A	A	A	A
		WB LT	E	E	E	E
		WB T	D	E	D	D
		WB RT	A	A	A	A
		NB LT	B	B	B	B
		NB T	C	D	C	E
		NB RT	A	A	A	A
		SB LT	B	B	B	B
		SB T	D	C	D	C
		SB RT	A	A	A	A
2	Gateway PK Blvd & Mountain Ave Two-Way Stop Control	Overall	A	A	A	A
		EB LT	A	A	A	A
		WB LT	-	-	A	A
		NB LT	-	-	E	F
		NB T/RT	-	-	B	C
		SB LT	C	E	D	F
		SB T/RT	B	B	B	B
3	Berthoud Pkwy & Mountain Ave Signal	Overall	D	D	E	E
		EB LT	C	C	C	C
		EB T/RT	D	D	F	F
		WB LT	C	C	C	C
		WB T	C	C	D	C
		WB RT	C	C	C	C
		NB LT/T	D	D	D	E
		NB RT	C	C	C	C
		SB LT/T	D	D	D	E
		SB RT	C	C	C	C

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. LOS is reported for both overall intersection and each constrained STOP-controlled movement or approach.

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
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Table 6 (continued)
2028 Peak Hour Intersection Level of Service

#	Intersection	Overall Movement	Background		Total	
			AM	PM	AM	PM
4	Berthoud Pkwy & Welch Ave T-Stop	Overall	A	A	A	A
		NB LT	-	-	A	A
		EB LT/T/RT	-	-	C	C
		WB LT/T/RT	B	B	B	B
		SB LT	A	A	A	A
5	Berthoud Pkwy & Arapahoe Ave T-Stop	Overall	A	A	A	A
		NB LT	-	-	A	A
		EB LT/T/RT	-	-	C	B
		WB LT/RT	B	B	B	B
		SB LT	A	A	A	A
6	Berthoud Pkwy & Spartan Ave All-Way Stop (Background) Roundabout (Total)	Overall	A	A	A	A
		EB LT/T/RT	-	-	A	A
		WB LT/T/RT	C	B	A	A
		NB LT/T/RT	-	-	A	A
		SB LT/ T/RT	A	A	A	A
7	Berthoud Pkwy & CR 4E Two-Way Stop	Overall	A	A	A	A
		NB Approach	A	A	A	A
		EB Approach	B	C	B	C
		WB Approach	B	B	B	B
		SB Approach	A	A	A	A
8	US 287 & CR 4E Signal	Overall	A	A	B	A
		WB LT	D	D	D	D
		WB RT	D	D	D	D
		NB T	A	A	A	A
		NB RT	A	A	A	A
		SB T	A	B	A	C
		SB LT	A	A	A	A

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. LOS is reported for both overall intersection and each constrained STOP-controlled movement or approach.

Table 6 (continued)
2028 Peak Hour Intersection Level of Service

#	Intersection	Overall Movement	Background		Total	
			AM	PM	AM	PM
11	Meadowlark Dr & Mountain Ave Signal	Overall	C	C	C	C
		EB LT	C	C	C	C
		EB T/RT	A	A	A	A
		WB LT	C	C	C	C
		WB T	D	D	D	D
		WB RT	C	C	C	C
		NB L/T/RT	B	B	C	B
		SB LT	B	C	B	C
		SB T	B	B	B	B
		SB RT	B	B	B	C

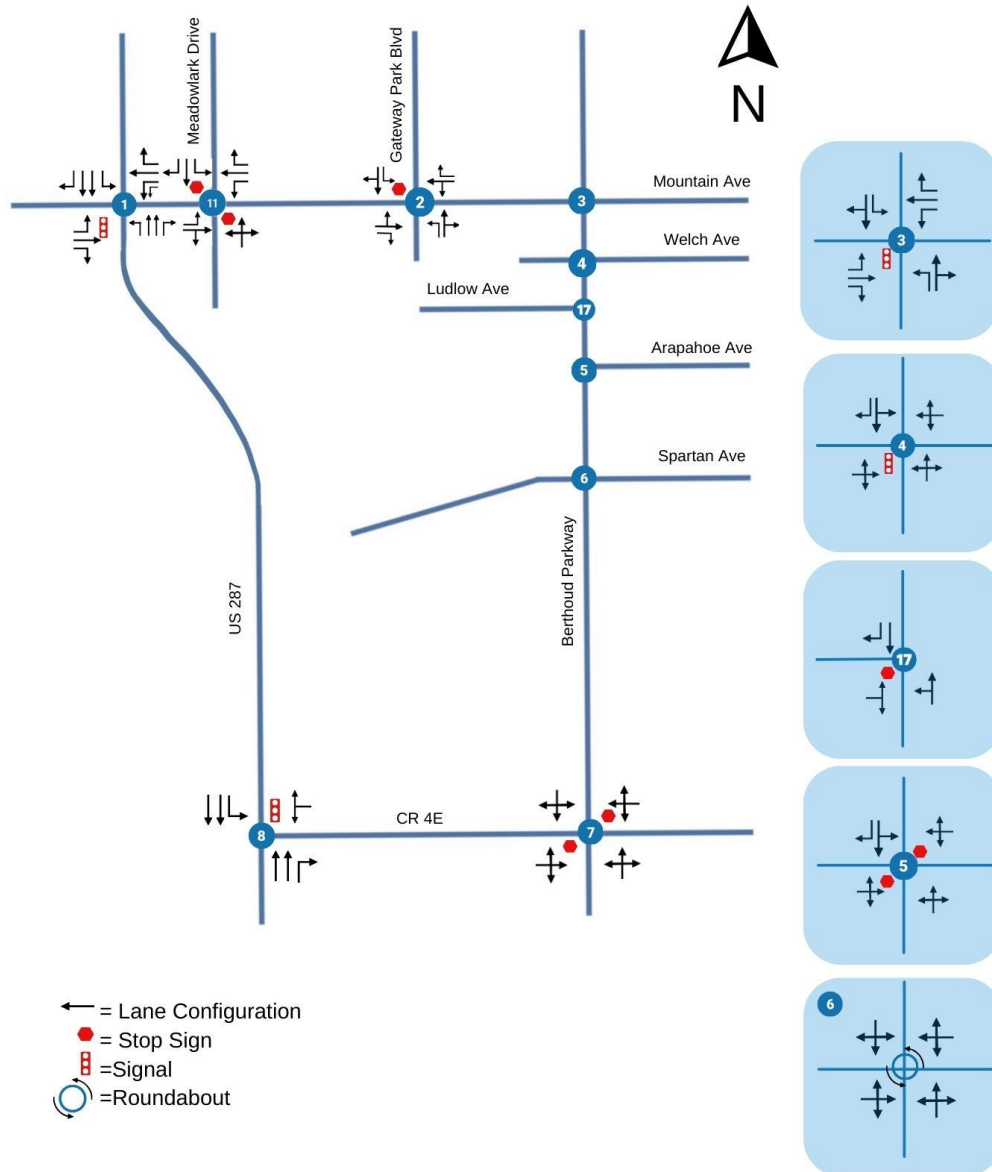
1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. LOS is reported for both overall intersection and each constrained STOP-controlled movement

Table 7
2028 Peak Hour Intersection Level of Service With Improvements

#	Intersection	Overall Movement	Total	
			AM	PM
3	Berthoud Pkwy & Mountain Ave Signal	Overall	D	D
		EB LT	C	C
		EB T	D	D
		EB RT	C	C
		WB LT	C	C
		WB T	D	C
		WB RT	C	C
		NB L/T/T	D	E
		NB RT	C	C
		SB L/T/T	D	E
		SB RT	C	C

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. LOS is reported for both overall intersection and each constrained STOP-controlled movement or approach.

Figure 10
2028 Intersection Configurations



7 CONCLUSIONS

This study was undertaken to analyze the potential short range traffic impacts of the proposed Phase 1 of the Legacy Park property in the Town of Berthoud. The following summarizes the results of this analysis:

- The proposed Legacy Park project is located south of Mountain Avenue and east of US 287. The site is currently undeveloped.
- The traffic study analyzed the short range 2028 traffic conditions with the first phase of the project.
- The proposed project includes a connection to Mountain Avenue at Gateway Park Boulevard, and several connections along Berthoud Parkway. A roundabout is proposed at Berthoud Parkway and Spartan Avenue. This initial phase of the Legacy Park project will not connect Spartan Avenue with US 287.
- The project was modeled with 489 single family homes and 145 multi-family dwellings that are in the eastern side of the site
- The full buildout of the project is anticipated to result in an estimated 5,350 daily, 385 morning, and 525 evening peak hour trips.
- Currently, the study intersections are at acceptable levels.
- Several right-turn lanes are required to access the project site. These are in the eastbound direction at Gateway Park/Mountain, and at Berthoud Parkway/Mountain. Each of the access streets along Berthoud Parkway will need southbound right-turn lanes. The roundabout at Berthoud Parkway and Spartan Avenue will be a single lane roundabout.
- The study intersections are projected to operate acceptably under the 2028 background and total traffic conditions with the noted exceptions listed below.
- At the intersection of Gateway Park Boulevard and Mountain Avenue there will be delays for the north and southbound left-turns. The level of service falls within the Town's acceptable levels.
- The signalized intersection of Berthoud Parkway and Mountain Avenue will require the eastbound right-turn lane to operate acceptably

APPENDICIES

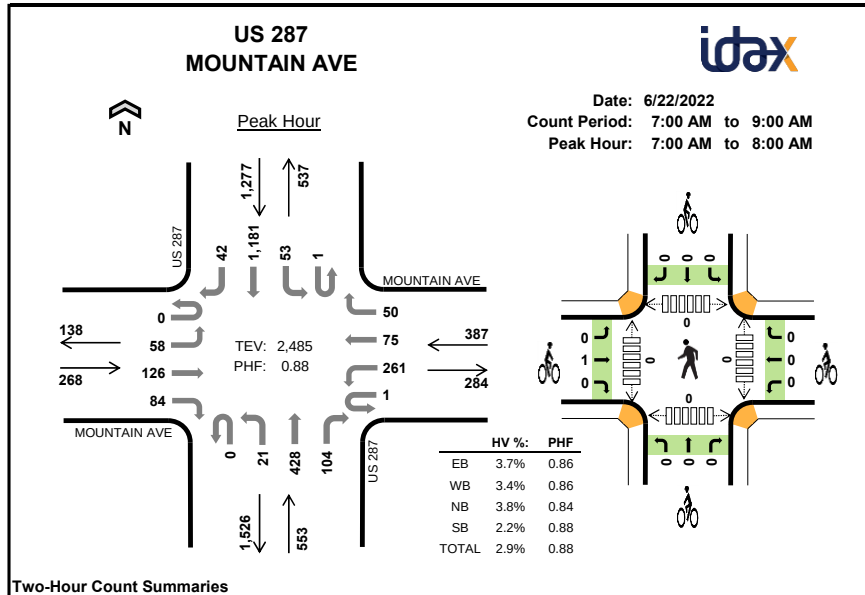
- Appendix A: Intersection Turning Movement Count Data
- Appendix B: Level of Service Worksheets

Appendix A Intersection Turning Movement Count Data

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Town of Berthoud

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Two-Hour Count Summaries

Interval Start	MOUNTAIN AVE				MOUNTAIN AVE				US 287				US 287				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	13	21	18	0	61	13	8	0	4	91	15	0	6	262	12	524	0	
7:15 AM	0	21	33	24	1	66	17	7	0	2	88	32	0	10	312	8	621	0	
7:30 AM	0	15	36	16	0	67	24	22	0	5	124	35	1	30	321	9	705	0	
7:45 AM	0	9	36	26	0	67	21	13	0	10	125	22	0	7	286	13	635	2,485	
8:00 AM	0	11	30	14	0	66	28	7	0	14	103	16	0	3	219	10	521	2,482	
8:15 AM	0	15	26	13	0	70	17	5	0	10	136	28	0	9	230	17	576	2,437	
8:30 AM	0	19	37	15	1	50	17	3	0	10	97	37	0	22	210	10	528	2,260	
8:45 AM	0	14	47	15	0	46	32	13	0	6	97	33	0	20	189	13	525	2,150	
Count Total	0	117	266	141	2	493	169	78	0	61	861	218	1	107	2,029	92	4,635	0	
Peak Hour	All	0	58	126	84	1	261	75	50	0	21	428	104	1	53	1,181	42	2,485	0
	HV	0	1	6	3	0	8	5	0	0	1	15	5	0	1	26	1	72	0
	HV%	-	2%	5%	4%	0%	3%	7%	0%	-	5%	4%	5%	0%	2%	2%	2%	3%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	2	3	7	14	0	0	0	0	0	0	0	0	0	0
7:15 AM	3	5	4	9	21	0	0	0	0	0	0	0	0	0	0
7:30 AM	1	4	7	6	18	1	0	0	0	1	0	0	0	0	0
7:45 AM	4	2	7	6	19	0	0	0	0	0	0	0	0	0	0
8:00 AM	1	3	11	8	23	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	2	3	10	17	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	4	7	12	23	0	0	0	0	0	0	0	0	0	0
8:45 AM	2	2	13	7	24	0	1	0	0	1	0	0	0	0	0
Count Total	15	24	55	65	159	1	1	0	0	2	0	0	0	0	0
Peak Hour	10	13	21	28	72	1	0	0	0	1	0	0	0	0	0

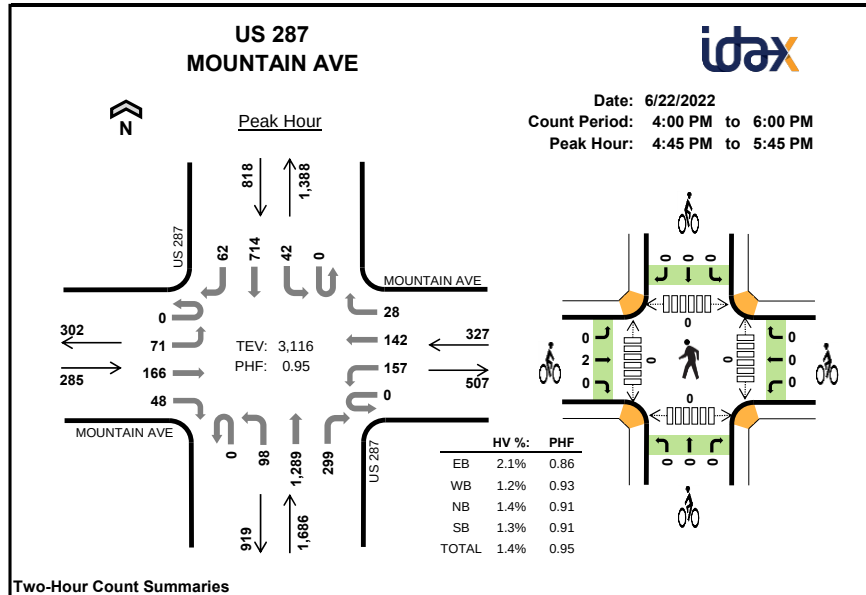
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Two-Hour Count Summaries

Interval Start		MOUNTAIN AVE				MOUNTAIN AVE				US 287				US 287				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	19	34	14	0	29	36	4	0	22	287	54	0	9	161	13	682	0
4:15 PM		0	27	31	16	0	42	34	7	0	15	295	50	0	5	200	16	738	0
4:30 PM		0	20	43	16	0	53	37	9	0	24	259	78	0	15	140	18	712	0
4:45 PM		0	11	42	8	0	39	36	13	0	30	314	72	0	17	177	16	775	2,907
5:00 PM		0	20	49	14	0	39	34	3	0	13	316	71	0	5	199	20	783	3,008
5:15 PM		0	21	36	13	0	37	39	8	0	28	359	78	0	11	174	12	816	3,086
5:30 PM		0	19	39	13	0	42	33	4	0	27	300	78	0	9	164	14	742	3,116
5:45 PM		0	23	42	16	1	42	35	6	0	20	286	57	0	4	154	13	699	3,040
Count Total		0	160	316	110	1	323	284	54	0	179	2,416	538	0	75	1,369	122	5,947	0
Peak Hour	All	0	71	166	48	0	157	142	28	0	98	1,289	299	0	42	714	62	3,116	0
	HV	0	2	1	3	0	3	1	0	0	1	17	5	0	2	8	1	44	0
	HV%	-	3%	1%	6%	-	2%	1%	0%	-	1%	1%	2%	-	5%	1%	2%	1%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	10	5	16	0	0	0	1	1	0	0	0	0	0
4:15 PM	1	1	7	3	12	0	0	0	0	0	0	0	0	0	0
4:30 PM	1	1	7	2	11	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	6	3	9	1	0	0	0	1	0	0	0	0	0
5:00 PM	3	3	5	2	13	0	0	0	0	0	0	0	0	0	0
5:15 PM	2	0	6	4	12	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	1	6	2	10	1	0	0	0	1	0	0	0	0	0
5:45 PM	1	1	3	2	7	0	0	0	0	0	0	0	0	0	0
Count Total	10	7	50	23	90	2	0	0	1	3	0	0	0	0	0
Peak Hour	6	4	23	11	44	2	0	0	0	2	0	0	0	0	0

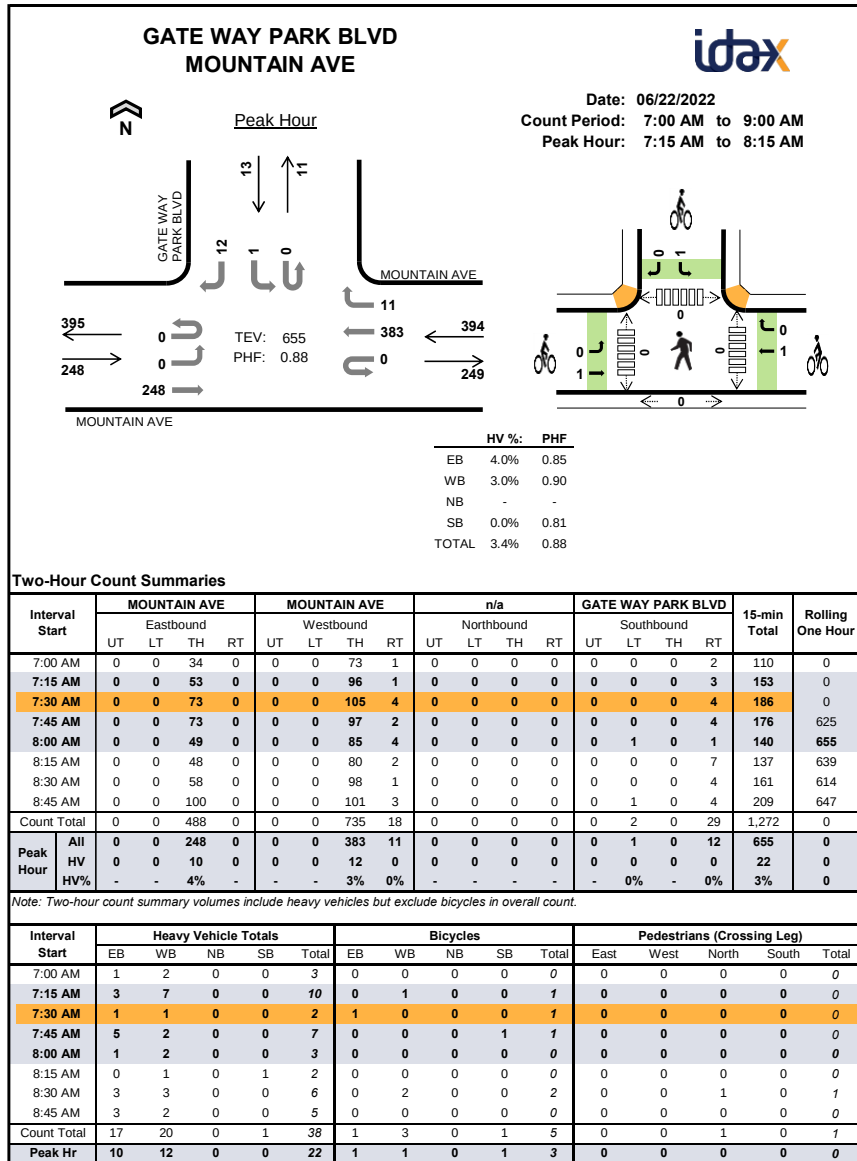
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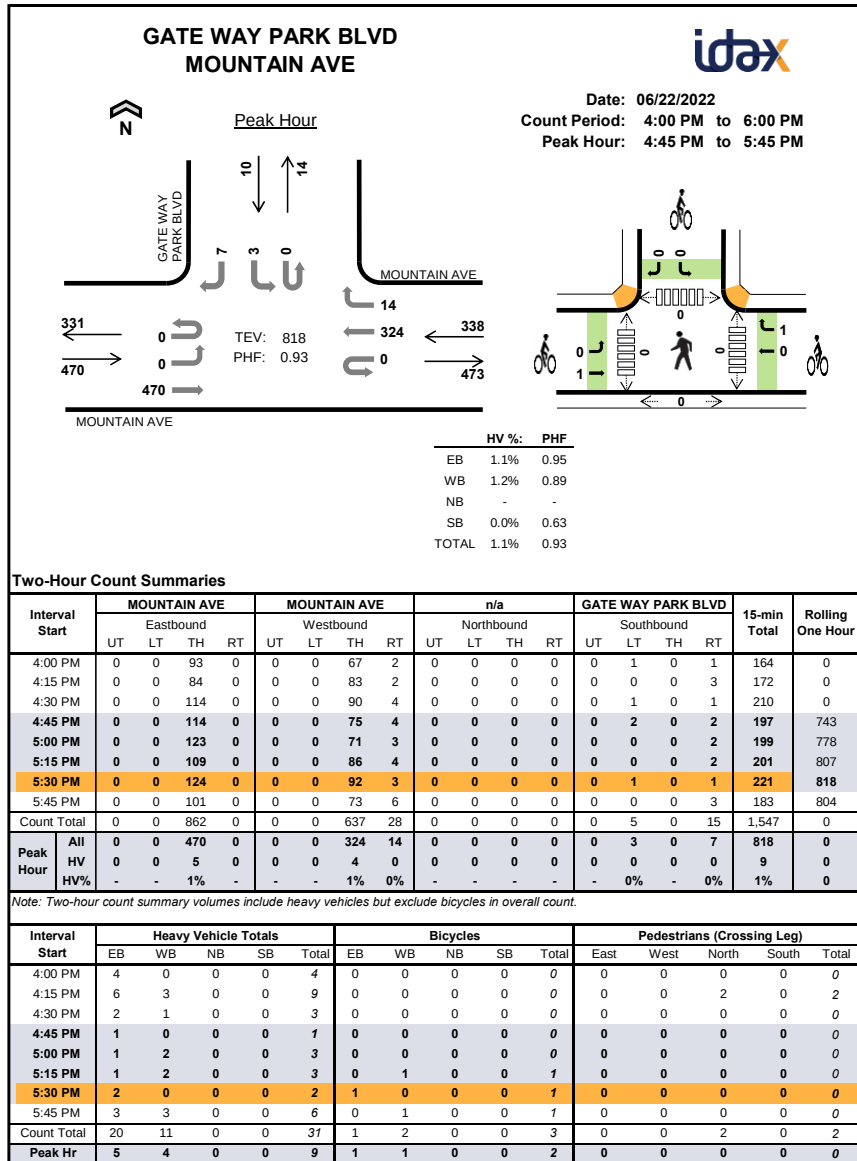
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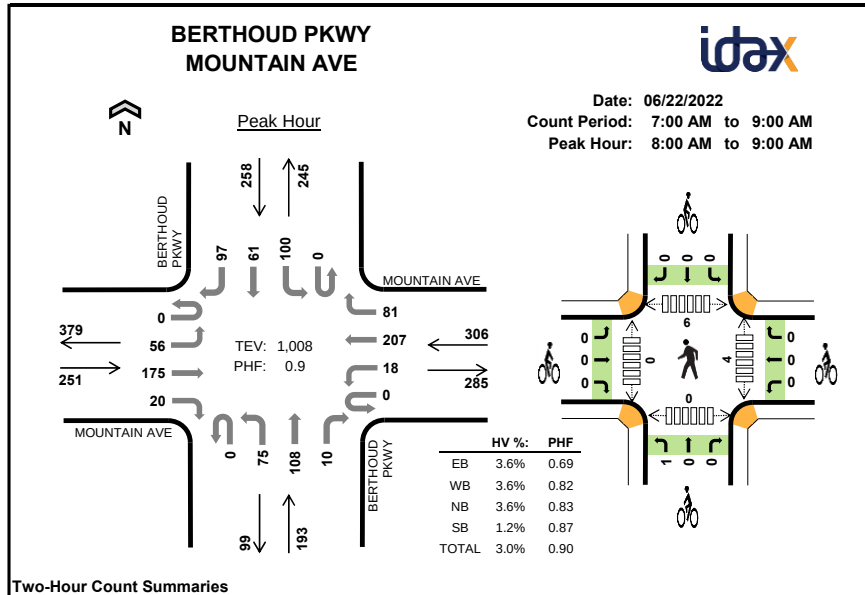
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Two-Hour Count Summaries

Interval Start	MOUNTAIN AVE				MOUNTAIN AVE				BERTHOUD PKWY				BERTHOUD PKWY				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	10	23	1	0	2	39	18	0	16	27	4	0	30	12	17	199	0	
7:15 AM	0	15	35	5	0	1	60	7	0	15	15	3	0	30	7	23	216	0	
7:30 AM	0	19	46	9	0	3	67	19	0	18	23	1	0	28	8	32	273	0	
7:45 AM	0	17	52	5	0	1	56	11	0	18	19	2	0	34	16	12	243	931	
8:00 AM	0	6	39	5	0	3	54	21	0	14	27	3	0	18	18	22	230	962	
8:15 AM	0	10	36	5	0	0	48	15	0	15	18	3	0	33	17	24	224	970	
8:30 AM	0	14	43	2	0	8	58	27	0	22	34	2	0	23	15	26	274	971	
8:45 AM	0	26	57	8	0	7	47	18	0	24	29	2	0	26	11	25	280	1,008	
Count Total	0	117	331	40	0	25	429	136	0	142	192	20	0	222	104	181	1,939	0	
Peak Hour	All	0	56	175	20	0	18	207	81	0	75	108	10	0	100	61	97	1,008	0
	HV	0	3	6	0	0	3	5	3	0	2	4	1	0	1	2	0	30	0
	HV%	-	5%	3%	0%	-	17%	2%	4%	-	3%	4%	10%	-	1%	3%	0%	3%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	2	2	2	7	0	0	0	0	0	0	0	0	0	0
7:15 AM	3	6	1	1	11	0	0	0	2	2	1	0	1	0	2
7:30 AM	2	3	0	1	6	1	0	0	0	1	3	0	0	0	3
7:45 AM	5	2	0	1	8	1	0	0	0	1	2	0	2	0	4
8:00 AM	1	3	2	0	6	0	0	0	0	0	0	0	3	0	3
8:15 AM	2	2	2	0	6	0	0	0	0	0	2	0	1	0	3
8:30 AM	3	4	3	1	11	0	0	1	0	1	0	0	1	0	1
8:45 AM	3	2	0	2	7	0	0	0	0	0	2	0	1	0	3
Count Total	20	24	10	8	62	2	0	1	2	5	10	0	9	0	19
Peak Hour	9	11	7	3	30	0	0	1	0	1	4	0	6	0	10

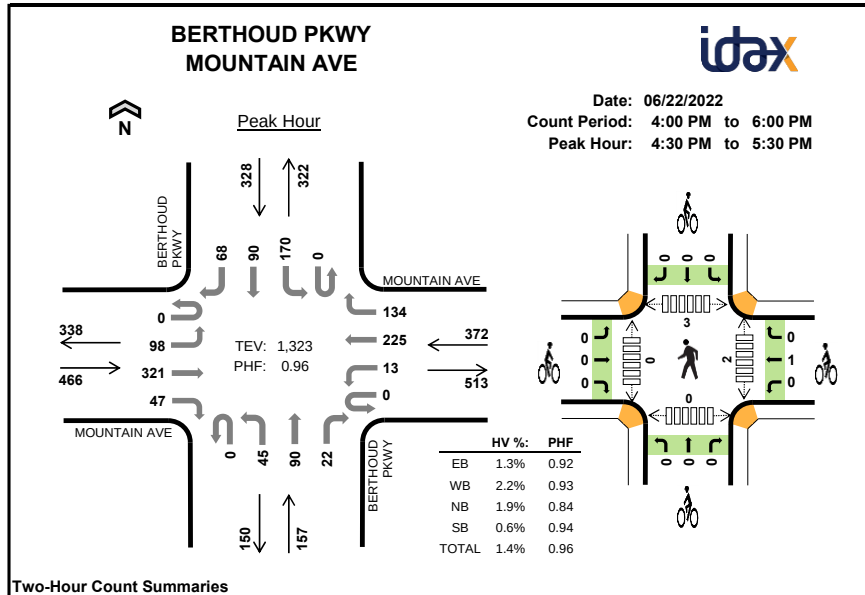
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Two-Hour Count Summaries

Interval Start	MOUNTAIN AVE				MOUNTAIN AVE				BERTHOUD PKWY				BERTHOUD PKWY				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	30	68	4	0	1	50	35	0	10	21	0	0	37	22	10	288	0	
4:15 PM	0	19	55	5	0	1	57	39	0	15	24	5	0	42	22	13	297	0	
4:30 PM	0	26	80	13	0	3	64	33	0	14	21	5	0	50	18	17	344	0	
4:45 PM	0	17	86	10	0	7	51	35	0	8	20	6	0	42	21	18	321	1,250	
5:00 PM	0	24	88	14	0	0	56	29	0	8	23	5	0	36	23	16	322	1,284	
5:15 PM	0	31	67	10	0	3	54	37	0	15	26	6	0	42	28	17	336	1,323	
5:30 PM	0	32	76	11	0	1	50	33	0	18	30	2	0	43	21	20	337	1,316	
5:45 PM	0	32	61	11	0	2	62	36	0	12	22	6	0	48	16	10	318	1,313	
Count Total	0	211	581	78	0	18	444	277	0	100	187	35	0	340	171	121	2,563	0	
Peak Hour	All	0	98	321	47	0	13	225	134	0	45	90	22	0	170	90	68	1,323	0
	HV	0	1	5	0	0	1	6	1	0	1	2	0	0	1	0	1	19	0
	HV%	-	1%	2%	0%	-	8%	3%	1%	-	2%	2%	0%	-	1%	0%	1%	1%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	0	0	2	6	0	0	0	0	0	2	0	3	0	5
4:15 PM	4	3	0	0	7	0	0	0	1	1	0	0	3	0	3
4:30 PM	4	1	0	0	5	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	2	1	1	4	0	0	0	0	0	1	0	3	0	4
5:00 PM	2	2	2	1	7	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	3	0	0	3	0	1	0	0	1	1	0	0	0	1
5:30 PM	4	1	0	1	6	0	0	0	0	0	0	0	1	0	1
5:45 PM	2	2	0	1	5	0	1	0	0	1	2	0	0	0	2
Count Total	20	14	3	6	43	0	2	0	1	3	6	0	10	0	16
Peak Hour	6	8	3	2	19	0	1	0	0	1	2	0	3	0	5

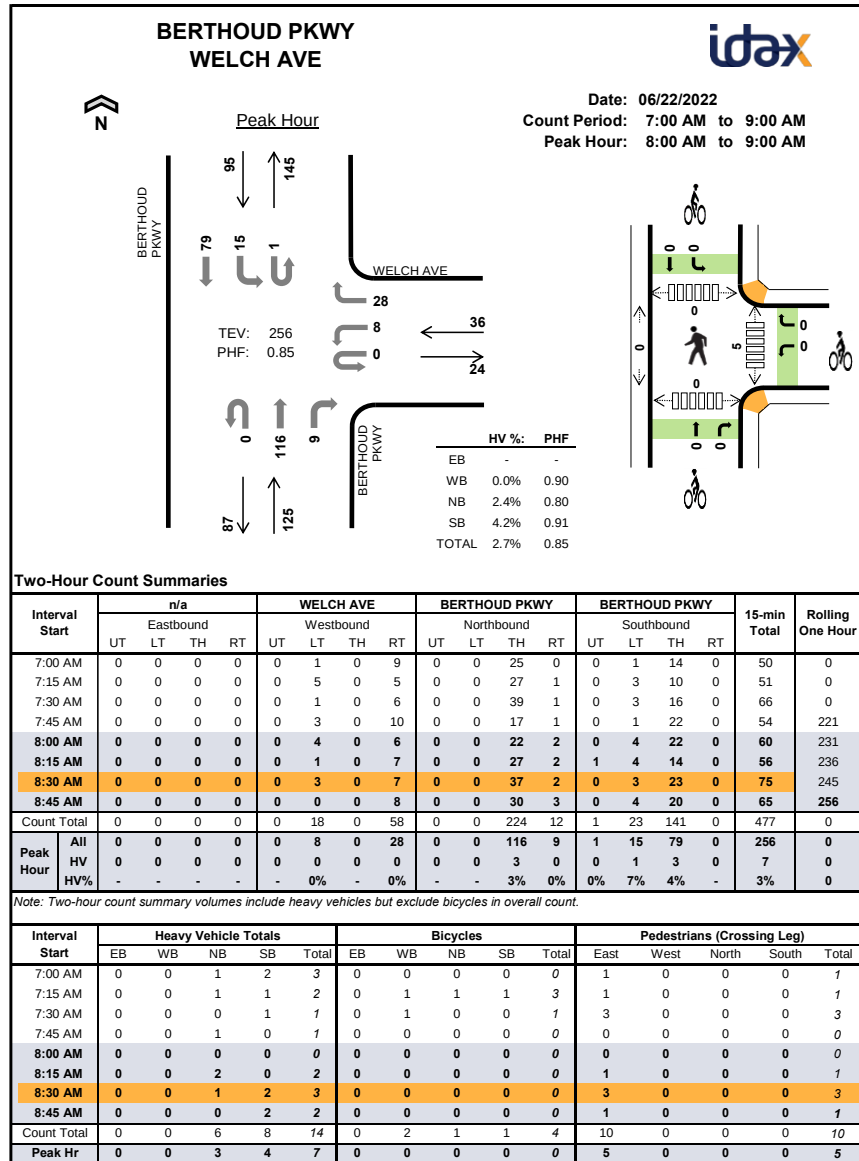
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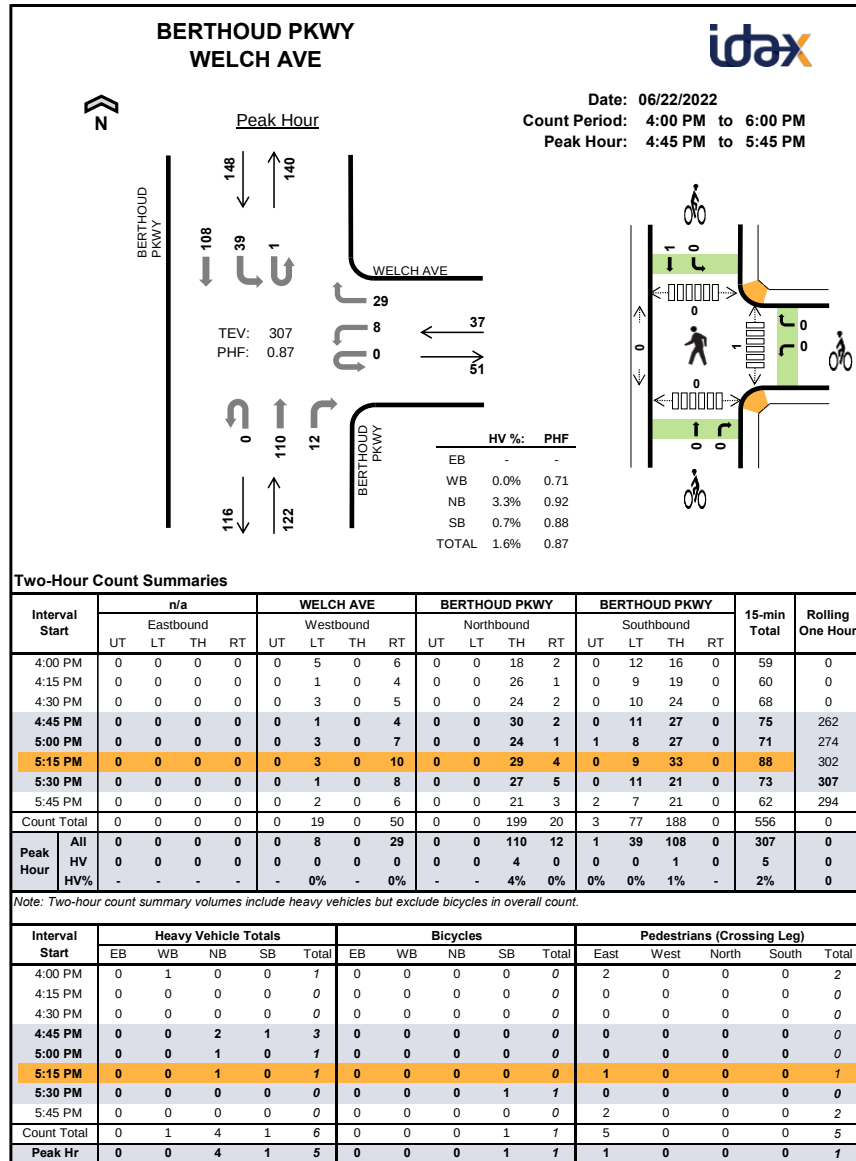
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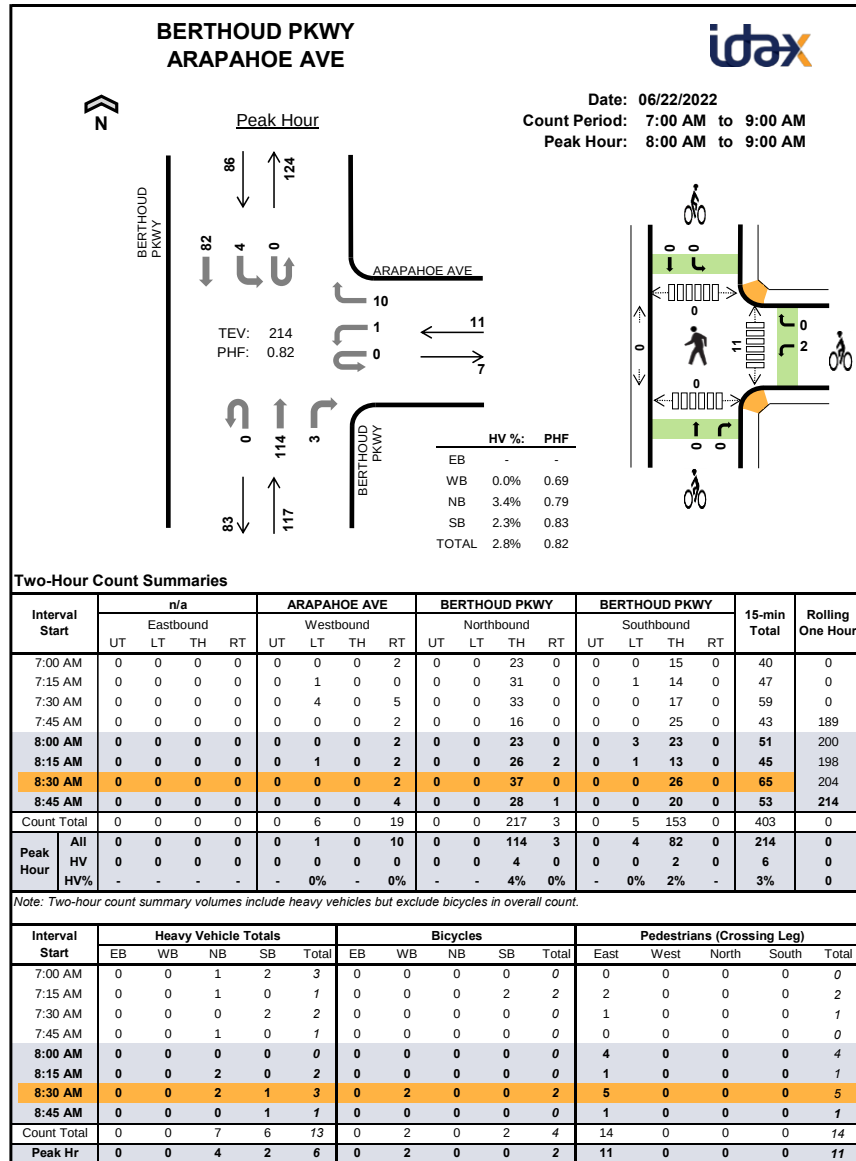
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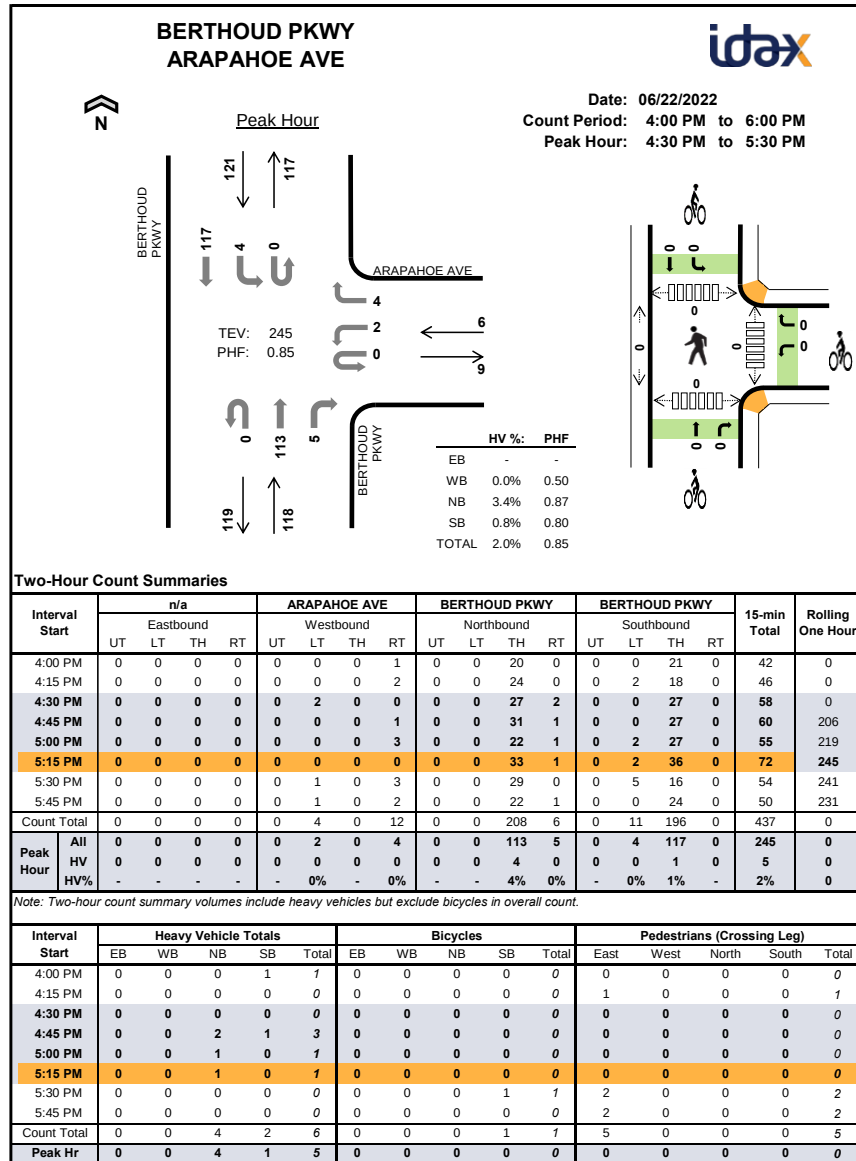
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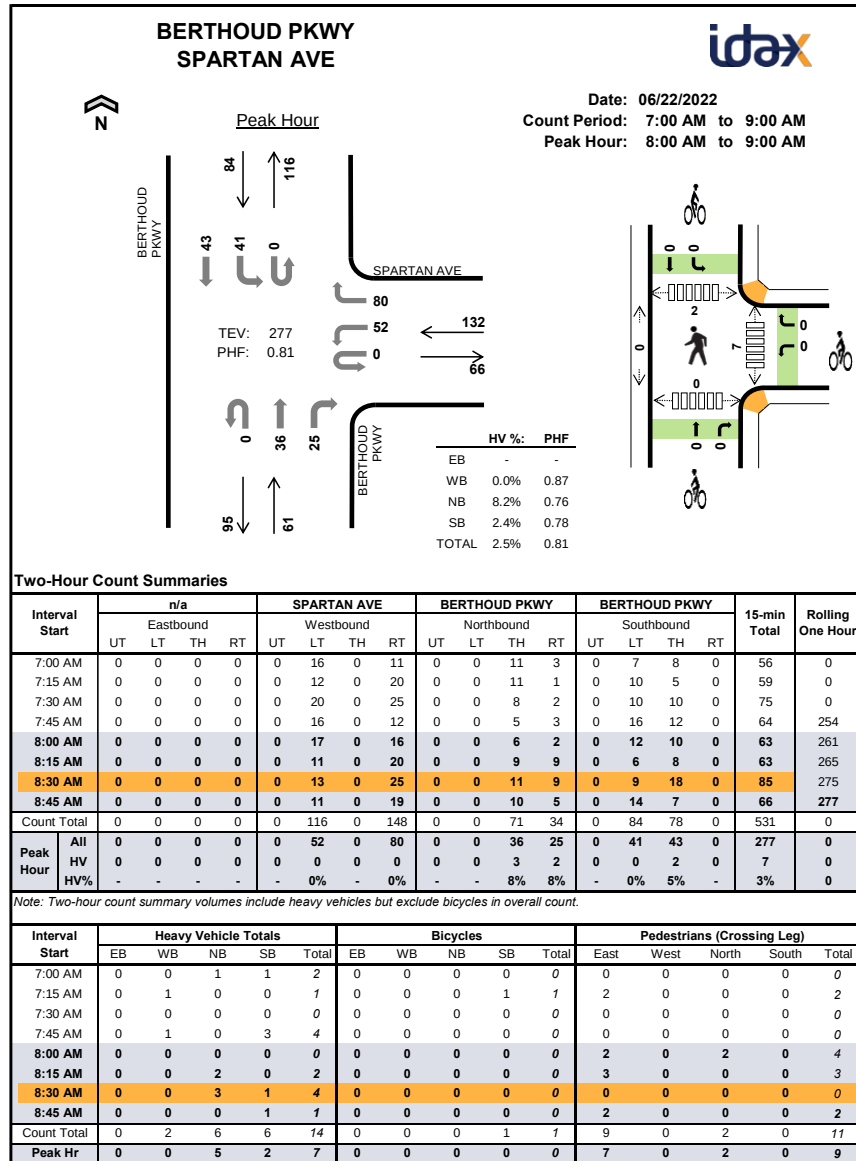
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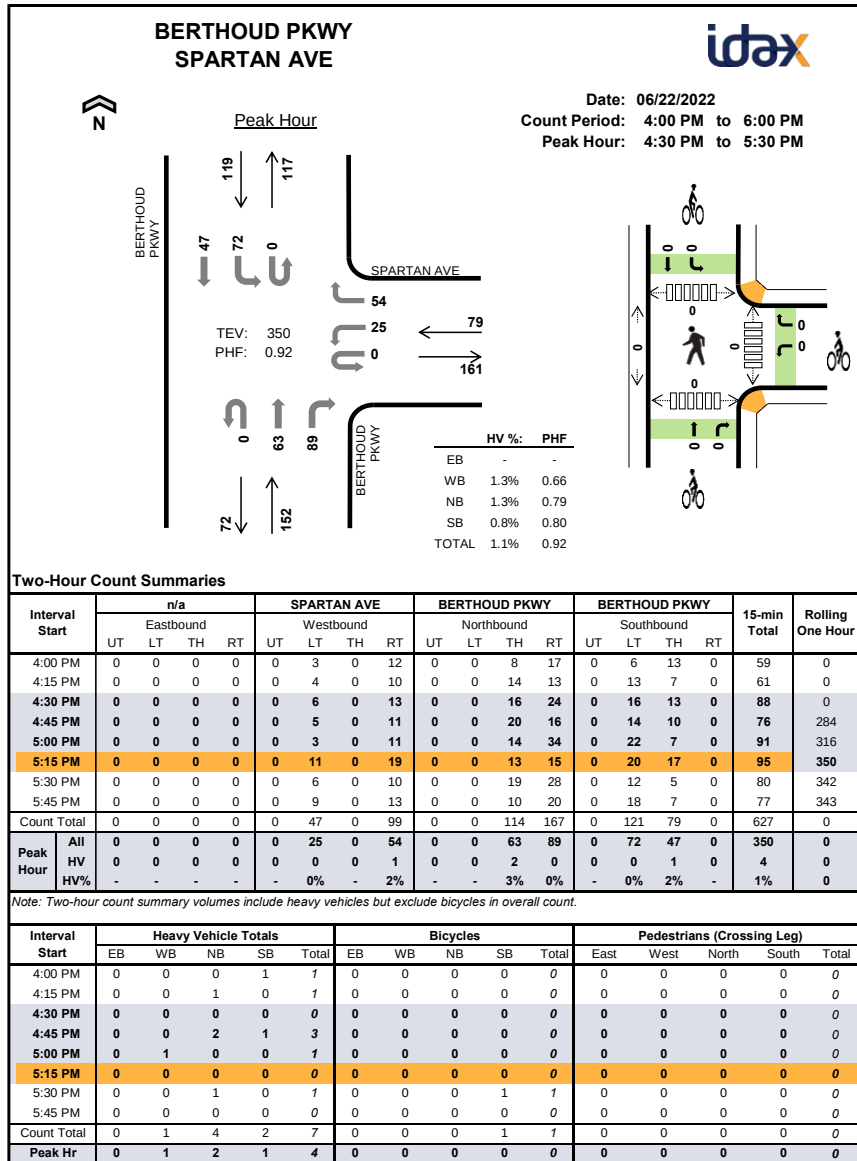
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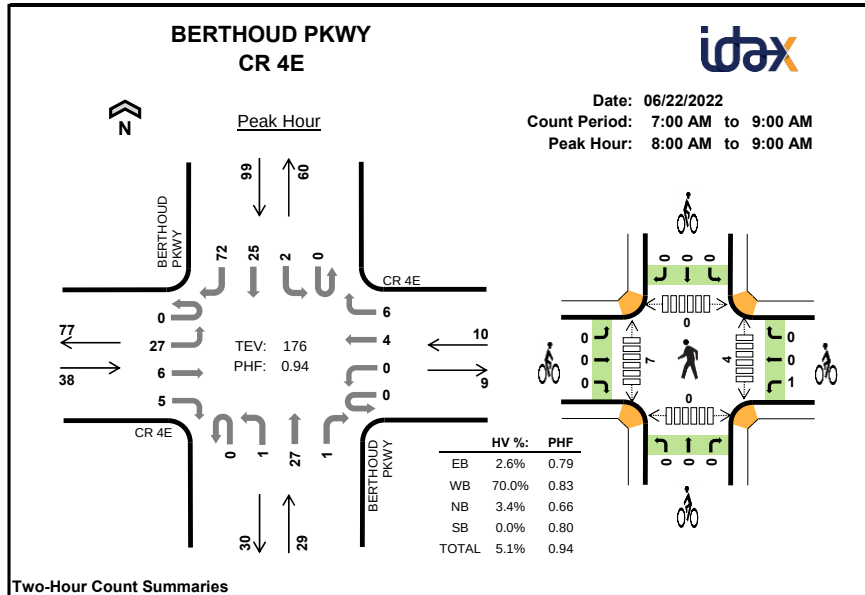
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Two-Hour Count Summaries

Interval Start		CR 4E				CR 4E				BERTHOUD PKWY				BERTHOUD PKWY				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	5	1	0	0	0	1	0	0	0	1	0	0	0	9	17	34	0
7:15 AM		0	4	1	0	0	0	0	0	0	1	6	0	0	0	7	20	39	0
7:30 AM		0	5	0	1	0	0	0	0	0	2	5	0	0	2	8	22	45	0
7:45 AM		0	4	1	0	0	0	1	0	0	1	4	0	0	1	8	16	36	154
8:00 AM		0	5	1	1	0	0	2	1	0	1	5	0	0	0	8	23	47	167
8:15 AM		0	9	0	1	0	0	0	3	0	0	7	0	0	0	5	17	42	170
8:30 AM		0	6	2	1	0	0	0	1	0	0	5	0	0	2	10	17	44	169
8:45 AM		0	7	3	2	0	0	2	1	0	0	10	1	0	0	2	15	43	176
Count Total		0	45	9	6	0	0	6	6	0	5	43	1	0	5	57	147	330	0
Peak Hour	All	0	27	6	5	0	0	4	6	0	1	27	1	0	2	25	72	176	0
	HV	0	0	0	1	0	0	1	6	0	0	1	0	0	0	0	9	0	0
	HV%	-	0%	0%	20%	-	-	25%	100%	-	0%	4%	0%	-	0%	0%	0%	5%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0
7:30 AM	1	0	0	0	1	0	0	0	0	0	2	0	0	0	2
7:45 AM	0	1	0	0	1	0	0	0	0	0	9	0	0	0	9
8:00 AM	0	1	0	0	1	0	0	0	0	0	4	4	0	0	8
8:15 AM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3
8:30 AM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
8:45 AM	1	2	1	0	4	0	0	0	0	0	0	0	0	0	0
Count Total	2	8	1	0	11	0	1	0	2	3	15	7	0	0	22
Peak Hour	1	7	1	0	9	0	1	0	0	1	4	7	0	0	11

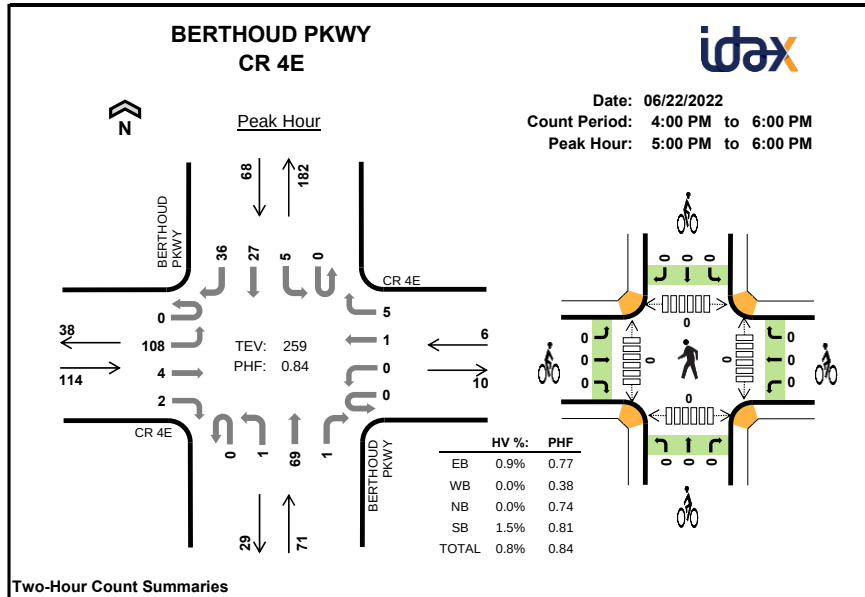
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Two-Hour Count Summaries

Interval Start	CR 4E				CR 4E				BERTHOUD PKWY				BERTHOUD PKWY				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	24	1	1	0	0	0	0	0	0	10	0	0	2	10	7	55	0	
4:15 PM	0	19	0	0	0	0	0	2	0	1	9	0	0	1	9	6	47	0	
4:30 PM	0	27	1	1	0	0	2	1	0	0	18	0	0	0	4	10	64	0	
4:45 PM	0	23	0	0	0	0	0	1	0	0	8	0	0	0	5	14	51	217	
5:00 PM	0	26	2	0	0	0	0	2	0	0	24	0	0	2	6	4	66	228	
5:15 PM	0	17	0	1	0	0	0	0	0	0	15	1	0	2	9	10	55	236	
5:30 PM	0	37	0	0	0	0	1	3	0	0	19	0	0	0	4	13	77	249	
5:45 PM	0	28	2	1	0	0	0	0	0	1	11	0	0	1	8	9	61	259	
Count Total	0	201	6	4	0	0	3	9	0	2	114	1	0	8	55	73	476	0	
Peak Hour	All	0	108	4	2	0	0	1	5	0	1	69	1	0	5	27	36	259	0
	HV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0
	HV%	-	1%	0%	0%	-	-	0%	0%	-	0%	0%	0%	-	0%	4%	0%	1%	0

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

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

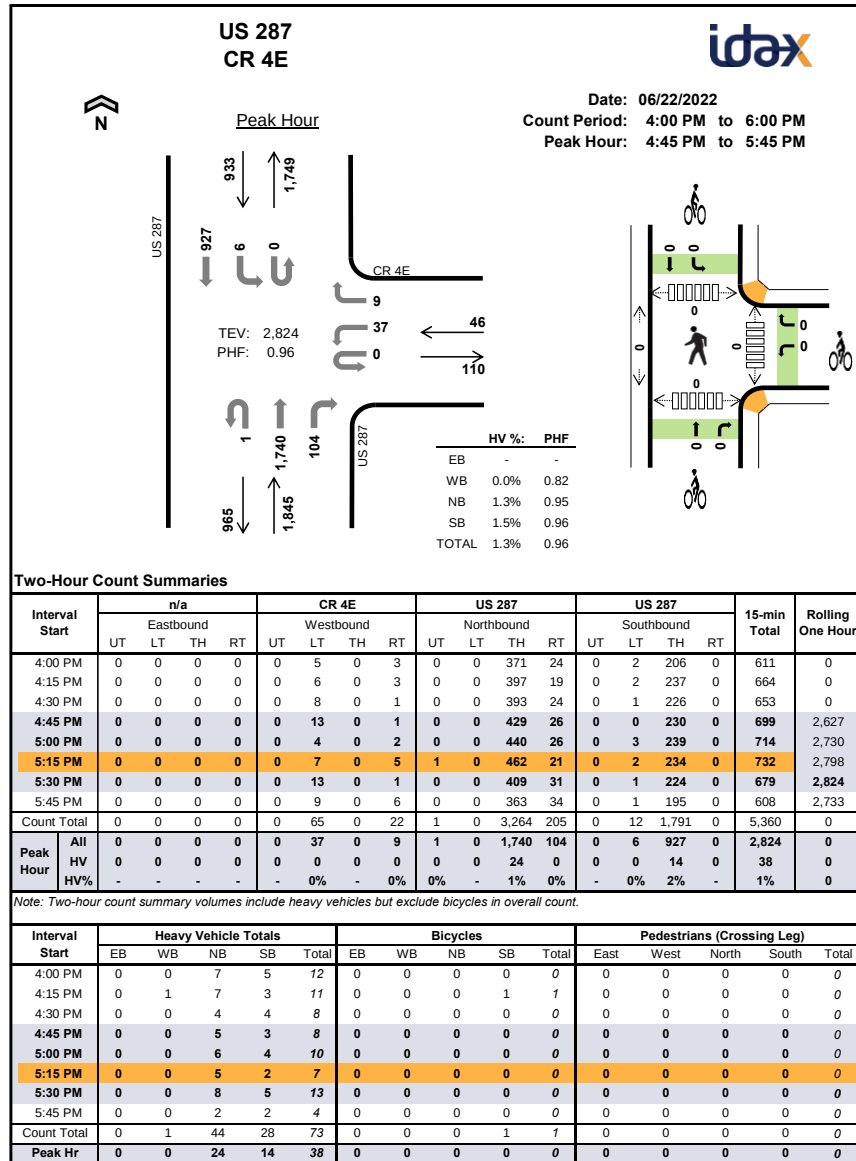
Project Manager: (720) 646-1008

project.manager.co@idaxdata.com

LEGACY PARK PHASE I | TRANSPORTATION IMPACT STUDY

Town of Berthoud

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Project Manager: (720) 646-1008

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Appendix B Level of Service Worksheets

EXISTING

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY

Town of Berthoud

Lanes, Volumes, Timings

1: US 287 & Mountain

09/12/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	197	84	262	88	50	21	428	104	54	1181	42
Future Volume (vph)	58	197	84	262	88	50	21	428	104	54	1181	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1660	1568	3400	1845	1568	1752	3505	1568	1752	3505	1568
Flt Permitted	0.950			0.950			0.099			0.416		
Satd. Flow (perm)	1752	1660	1568	3400	1845	1568	183	3505	1568	767	3505	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			213			213			213			164
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		3408			2270			654			2586	
Travel Time (s)		51.6			34.4			8.1			32.1	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Parking (#/hr)		0										
Adj. Flow (vph)	66	224	95	298	100	57	24	486	118	61	1342	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	224	95	298	100	57	24	486	118	61	1342	48
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free	2		Free	6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												

Existing AM 7:00 am 06/22/2022 Existing AM
RR

Synchro 11 Light Report
Page 1

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY Town of Berthoud

Lanes, Volumes, Timings

1: US 287 & Mountain

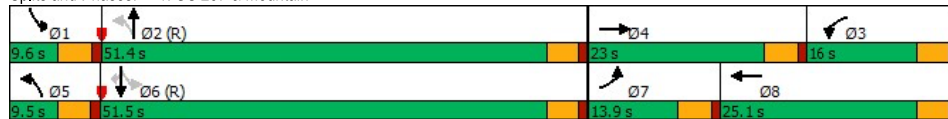
09/12/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	13.9	23.0		16.0	25.1		9.5	51.4		9.6	51.5	51.5
Total Split (%)	13.9%	23.0%		16.0%	25.1%		9.5%	51.4%		9.6%	51.5%	51.5%
Maximum Green (s)	9.4	18.5		11.5	20.6		5.0	46.9		5.1	47.0	47.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	8.3	16.8	100.0	11.5	22.1	100.0	54.4	50.3	100.0	56.4	54.3	54.3
Actuated g/C Ratio	0.08	0.17	1.00	0.12	0.22	1.00	0.54	0.50	1.00	0.56	0.54	0.54
v/c Ratio	0.46	0.80	0.06	0.76	0.25	0.04	0.13	0.28	0.08	0.13	0.70	0.05
Control Delay	53.8	61.6	0.1	56.5	34.9	0.0	11.3	15.8	0.1	10.5	20.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	61.6	0.1	56.5	34.9	0.0	11.3	15.8	0.1	10.5	20.9	0.1
LOS	D	E	A	E	C	A	B	B	A	B	C	A
Approach Delay		45.1			44.7			12.7			19.7	
Approach LOS		D			D			B			B	

Intersection Summary

Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 25.5	Intersection LOS: C
Intersection Capacity Utilization 69.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: US 287 & Mountain


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Existing AM 7:00 am 06/22/2022 Existing AM
RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings
1: US 287 & Mountain

09/12/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	166	48	157	173	28	98	1289	299	42	714	62
Future Volume (vph)	71	166	48	157	173	28	98	1289	299	42	714	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1660	1568	3400	1845	1568	1752	3505	1568	1752	3505	1568
Flt Permitted	0.950			0.950			0.297			0.116		
Satd. Flow (perm)	1752	1660	1568	3400	1845	1568	548	3505	1568	214	3505	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			177			177			177			136
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		3408			2270			654			2586	
Travel Time (s)		51.6			34.4			8.1			32.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Parking (#/hr)		0										
Adj. Flow (vph)	75	175	51	165	182	29	103	1357	315	44	752	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	175	51	165	182	29	103	1357	315	44	752	65
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free	2		Free	6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												

Existing PM 5:00 pm 06/22/2022

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY Town of Berthoud

Lanes, Volumes, Timings 1: US 287 & Mountain

09/12/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	16.3	27.0		16.0	26.7		11.0	66.8		10.2	66.0	66.0
Total Split (%)	13.6%	22.5%		13.3%	22.3%		9.2%	55.7%		8.5%	55.0%	55.0%
Maximum Green (s)	11.8	22.5		11.5	22.2		6.5	62.3		5.7	61.5	61.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	9.9	17.5	120.0	10.6	20.4	120.0	75.7	69.8	120.0	72.9	66.8	66.8
Actuated g/C Ratio	0.08	0.15	1.00	0.09	0.17	1.00	0.63	0.58	1.00	0.61	0.56	0.56
v/c Ratio	0.52	0.73	0.03	0.55	0.58	0.02	0.25	0.67	0.20	0.21	0.39	0.07
Control Delay	65.4	65.6	0.0	59.5	54.2	0.0	10.3	20.8	0.3	11.4	16.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	65.6	0.0	59.5	54.2	0.0	10.3	20.8	0.3	11.4	16.5	0.1
LOS	E	E	A	E	D	A	B	C	A	B	B	A
Approach Delay		54.4			52.3			16.6			15.0	
Approach LOS		D			D			B			B	
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green											
Natural Cycle:	80											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.73											
Intersection Signal Delay:	23.7					Intersection LOS: C						
Intersection Capacity Utilization	68.1%					ICU Level of Service C						
Analysis Period (min)	15											

Splits and Phases: 1: US 287 & Mountain

↖ Ø1	↖ Ø2 (R)	→ Ø4	↖ Ø3
10.2 s	66.8 s	27 s	16 s
↖ Ø5	↖ Ø6 (R)	↖ Ø7	↖ Ø8
11 s	66 s	16.3 s	26.7 s

Existing PM 5:00 pm 06/22/2022

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 2: Mountain & Gate Way

08/24/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑		↑
Traffic Vol, veh/h	0	319	396	11	0	12
Future Vol, veh/h	0	319	396	11	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	363	450	13	0	14
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	-	450
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.327
Pot Cap-1 Maneuver	0	-	-	-	0	607
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	607
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		11.1	
HCMLOS					B	
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	607		
HCM Lane V/C Ratio	-	-	-	0.022		
HCM Control Delay (s)	-	-	-	11.1		
HCM Lane LOS	-	-	-	B		
HCM95th %tile Q(veh)	-	-	-	0.1		

Existing AM 7:00 am 06/22/2022 Existing AM
 RR

Synchro 11 Light Report
 Page 1

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 2: Mountain & Gate Way

08/24/2022

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑		↑
Traffic Vol, veh/h	0	470	355	14	0	7
Future Vol, veh/h	0	470	355	14	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	505	382	15	0	8
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	-	382
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.327
Pot Cap-1 Maneuver	0	-	-	-	0	663
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	663
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		10.5		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	663		
HCM Lane V/C Ratio	-	-	-	0.011		
HCM Control Delay (s)	-	-	-	10.5		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0		

Existing PM 5:00 pm 06/22/2022

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY

Town of Berthoud

HCM 6th Signalized Intersection Summary

3: Berthoud Pkwy & Mountain

04/27/2024

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	100	335	130	35	320	85	130	220	55	105	170	120
Future Volume (veh/h)	100	335	130	35	320	85	130	220	55	105	170	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	111	372	144	39	356	94	144	244	61	117	189	133
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	233	453	384	204	403	341	176	299	410	160	258	360
Arrive On Green	0.06	0.24	0.24	0.04	0.22	0.22	0.26	0.26	0.26	0.23	0.23	0.23
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	676	1146	1572	696	1125	1572
Grp Volume(v), veh/h	111	372	144	39	356	94	388	0	61	306	0	133
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1822	0	1572	1821	0	1572
Q Serve(g_s), s	3.8	14.9	6.0	1.3	14.6	3.9	15.7	0.0	2.3	12.2	0.0	5.6
Cycle Q Clear(g_c), s	3.8	14.9	6.0	1.3	14.6	3.9	15.7	0.0	2.3	12.2	0.0	5.6
Prop In Lane	1.00		1.00	1.00		1.00	0.37		1.00	0.38		1.00
Lane Grp Cap(c), veh/h	233	453	384	204	403	341	475	0	410	417	0	360
V/C Ratio(X)	0.48	0.82	0.37	0.19	0.88	0.28	0.82	0.00	0.15	0.73	0.00	0.37
Avail Cap(c_a), veh/h	233	453	384	252	437	370	475	0	410	417	0	360
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.2	28.1	24.7	23.5	29.8	25.6	27.3	0.0	22.3	28.1	0.0	25.5
Incr Delay (d2), s/veh	1.5	11.5	0.6	0.4	18.0	0.4	14.3	0.0	0.8	10.9	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	7.4	2.1	0.5	8.0	1.4	8.3	0.0	0.9	6.3	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.7	39.5	25.3	23.9	47.8	26.0	41.6	0.0	23.1	38.9	0.0	28.4
LnGrp LOS	C	D	C	C	D	C	D	A	C	D	A	C
Approach Vol, veh/h		627			489			449			439	
Approach Delay, s/veh		33.6			41.7			39.1			35.7	
Approach LOS		C			D			D			D	
Timer - Assigned Phs	2	3	4		6	7	8					
Phs Duration (G+Y+Rc), s	25.0	7.4	23.7		22.5	9.5	21.5					
Change Period (Y+Rc), s	4.5	4.5	4.5		4.5	4.5	4.5					
Max Green Setting (Gmax), s	20.5	5.0	18.5		18.0	5.0	18.5					
Max Q Clear Time (g_c+I1), s	17.7	3.3	16.9		14.2	5.8	16.6					
Green Ext Time (p_c), s	0.7	0.0	0.4		0.8	0.0	0.4					

Intersection Summary

HCM 6th Ctrl Delay 37.3
HCM 6th LOS D

Notes

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

LEGACY PARK PHASE I | TRANSPORTATION IMPACT STUDY Town of Berthoud

HCM 6th Signalized Intersection Summary 3: Berthoud Pkwy & Mountain

04/27/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	321	47	13	225	134	76	121	22	170	90	68
Future Volume (veh/h)	98	321	47	13	225	134	76	121	22	170	90	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	102	334	49	14	234	140	79	126	23	177	94	71
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	287	380	56	165	360	305	176	281	394	290	154	388
Arrive On Green	0.06	0.24	0.24	0.02	0.19	0.19	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	1582	232	1767	1856	1572	702	1119	1572	1174	623	1572
Grp Volume(v), veh/h	102	0	383	14	234	140	205	0	23	271	0	71
Grp Sat Flow(s),veh/h/ln	1767	0	1814	1767	1856	1572	1820	0	1572	1797	0	1572
Q Serve(g_s), s	3.3	0.0	14.9	0.5	8.5	5.8	7.0	0.0	0.8	9.8	0.0	2.6
Cycle Q Clear(g_c), s	3.3	0.0	14.9	0.5	8.5	5.8	7.0	0.0	0.8	9.8	0.0	2.6
Prop In Lane	1.00		0.13	1.00		1.00	0.39		1.00	0.65		1.00
Lane Grp Cap(c), veh/h	287	0	436	165	360	305	457	0	394	443	0	388
V/C Ratio(X)	0.35	0.00	0.88	0.09	0.65	0.46	0.45	0.00	0.06	0.61	0.00	0.18
Avail Cap(c_a), veh/h	318	0	507	255	496	420	457	0	394	443	0	388
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	26.8	23.9	27.3	26.2	23.2	0.0	20.9	24.5	0.0	21.8
Incr Delay (d2), s/veh	0.7	0.0	14.6	0.2	2.0	1.1	3.2	0.0	0.3	6.2	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	7.6	0.2	3.6	2.1	3.2	0.0	0.3	4.7	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	0.0	41.4	24.2	29.3	27.2	26.4	0.0	21.2	30.7	0.0	22.8
LnGrp LOS	C	A	D	C	C	C	C	A	C	C	A	C
Approach Vol, veh/h	485			388			228			342		
Approach Delay, s/veh	37.4			28.3			25.9			29.1		
Approach LOS	D			C			C			C		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	22.9		5.7	22.1		22.6		9.1	18.7			
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5		4.5	4.5			
Max Green Setting (Gmax), s	18.4		5.0	20.5		18.1		5.9	19.6			
Max Q Clear Time (g_c+I1), s	9.0		2.5	16.9		11.8		5.3	10.5			
Green Ext Time (p_c), s	0.7		0.0	0.7		0.9		0.0	1.1			
Intersection Summary												
HCM 6th Ctrl Delay	31.2											
HCM 6th LOS	C											
Notes												

Existing PM 5:00 pm 06/22/2022

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 4: Welch & Berthoud Pkwy

08/24/2022

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	8	28	143	9	16	221
Future Vol, veh/h	8	28	143	9	16	221
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3
Mmt Flow	9	33	168	11	19	260
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	472	174	0	0	179	0
Stage 1	174	-	-	-	-	-
Stage 2	298	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	549	867	-	-	1391	-
Stage 1	854	-	-	-	-	-
Stage 2	751	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	540	867	-	-	1391	-
Mov Cap-2 Maneuver	540	-	-	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10	0		0.5		
HCM LOS	B					
Minor Lane/Major Mmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	764	1391	-	
HCM Lane V/C Ratio	-	-	0.055	0.014	-	
HCM Control Delay (s)	-	-	10	7.6	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

Existing AM 7:00 am 06/22/2022 Existing AM
 RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 4: Welch & Berthoud Pkwy

08/24/2022

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	T	T	T	T	T
Traffic Vol, veh/h	8	29	172	12	40	108
Future Vol, veh/h	8	29	172	12	40	108
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3
Mmt Flow	9	33	198	14	46	124
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	421	205	0	0	212	0
Stage 1	205	-	-	-	-	-
Stage 2	216	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	587	833	-	-	1352	-
Stage 1	827	-	-	-	-	-
Stage 2	818	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	565	833	-	-	1352	-
Mov Cap-2 Maneuver	565	-	-	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10	0	2.1			
HCM LOS	B					
Minor Lane/Major Mmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	756	1352	-	
HCM Lane V/C Ratio	-	-	0.056	0.034	-	
HCM Control Delay (s)	-	-	10	7.8	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	

Existing PM 5:00 pm 06/22/2022

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 5: Berthoud Pkwy & Arapahoe

08/24/2022

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	T	T	T	T	T
Traffic Vol, veh/h	1	10	141	3	4	224
Future Vol, veh/h	1	10	141	3	4	224
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mmt Flow	1	12	172	4	5	273
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	457	174	0	0	176	0
Stage 1	174	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	560	867	-	-	1394	-
Stage 1	854	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	558	867	-	-	1394	-
Mov Cap-2 Maneuver	558	-	-	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	760	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.4	0	0.1			
HCM LOS	A					
Minor Lane/Major Mmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	825	1394	-	
HCM Lane V/C Ratio	-	-	0.016	0.003	-	
HCM Control Delay (s)	-	-	9.4	7.6	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

Existing AM 7:00 am 06/22/2022 Existing AM
 RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 5: Berthoud Pkwy & Arapahoe

08/24/2022

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	2	4	175	5	4	117
Future Vol, veh/h	2	4	175	5	4	117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3
Mmt Flow	2	5	206	6	5	138
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	357	209	0	0	212	0
Stage 1	209	-	-	-	-	-
Stage 2	148	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	639	829	-	-	1352	-
Stage 1	824	-	-	-	-	-
Stage 2	877	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	636	829	-	-	1352	-
Mov Cap-2 Maneuver	636	-	-	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	873	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.8	0	0.3			
HCM LOS	A					
Minor Lane/Major Mmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	753	1352	-	
HCM Lane V/C Ratio	-	-	0.009	0.003	-	
HCM Control Delay (s)	-	-	9.8	7.7	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0	0	-	

Existing PM 5:00 pm 06/22/2022

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 6: Spartan & Berthoud Pkwy

08/24/2022

Intersection						
Int Delay, s/veh	8.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	T	T	T	T	T
Traffic Vol, veh/h	87	107	36	53	183	43
Future Vol, veh/h	87	107	36	53	183	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mmt Flow	107	132	44	65	226	53
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	582	77	0	0	109	0
Stage 1	77	-	-	-	-	-
Stage 2	505	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	474	981	-	-	1475	-
Stage 1	943	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	399	981	-	-	1475	-
Mov Cap-2 Maneuver	399	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	15.1	0	6.4			
HCM LOS	C					
Minor Lane/Major Mmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	593	1475	-	
HCM Lane V/C Ratio	-	-	0.404	0.153	-	
HCM Control Delay (s)	-	-	15.1	7.9	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	1.9	0.5	-	

Existing AM 7:00 am 06/22/2022 Existing AM
 RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 6: Spartan & Berthoud Pkwy

08/24/2022

Intersection						
Int Delay, s/veh	5.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	116	63	89	72	47
Future Vol, veh/h	38	116	63	89	72	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	47	143	78	110	89	58
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	369	133	0	0	188	0
Stage 1	133	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	629	913	-	-	1380	-
Stage 1	891	-	-	-	-	-
Stage 2	801	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	587	913	-	-	1380	-
Mov Cap-2 Maneuver	587	-	-	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.9		0		4.7	
HCMLOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	803	1380	-	
HCM Lane V/C Ratio	-	-	0.237	0.064	-	
HCM Control Delay (s)	-	-	10.9	7.8	0	
HCM Lane LOS	-	-	B	A	A	
HCM95th %tile Q(veh)	-	-	0.9	0.2	-	

Existing PM 5:00 pm 06/22/2022

Synchro 11 Light Report
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LEGACY PARK PHASE I | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 7: Berthoud Pkwy & CR 4E

08/24/2022

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	34	6	5	0	4	8	2	34	1	5	44	72
Future Vol, veh/h	34	6	5	0	4	8	2	34	1	5	44	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	36	6	5	0	4	9	2	36	1	5	47	77

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	143	137	86	142	175	37	124	0
Stage 1	96	96	-	41	41	-	-	-
Stage 2	47	41	-	101	134	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-
Pot Cap-1 Maneuver	824	752	970	825	717	1032	1457	-
Stage 1	908	814	-	971	859	-	-	-
Stage 2	964	859	-	903	784	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	811	749	970	813	714	1032	1457	-
Mov Cap-2 Maneuver	811	749	-	813	714	-	-	-
Stage 1	907	812	-	970	858	-	-	-
Stage 2	950	858	-	888	782	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.1	0.4	0.3
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1457	-	-	817	899	1567	-	-
HCM Lane V/C Ratio	0.001	-	-	0.059	0.014	0.003	-	-
HCM Control Delay (s)	7.5	0	-	9.7	9.1	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

Existing AM 7:00 am 06/22/2022 Existing AM
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Synchro 11 Light Report
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LEGACY PARK PHASE I | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 7: Berthoud Pkwy & CR 4E

08/24/2022

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	34	4	2	0	1	5	1	69	1	5	37	36
Future Vol, veh/h	34	4	2	0	1	5	1	69	1	5	37	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	40	5	2	0	1	6	1	82	1	6	44	43

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	166	163	66	166	184	83	87	0	0	83	0	0
Stage 1	78	78	-	85	85	-	-	-	-	-	-	-
Stage 2	88	85	-	81	99	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	796	728	995	796	708	974	1503	-	-	1508	-	-
Stage 1	928	828	-	920	822	-	-	-	-	-	-	-
Stage 2	917	822	-	925	811	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	787	724	995	787	704	974	1503	-	-	1508	-	-
Mov Cap-2 Maneuver	787	724	-	787	704	-	-	-	-	-	-	-
Stage 1	927	825	-	919	821	-	-	-	-	-	-	-
Stage 2	909	821	-	914	808	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.9			9			0.1			0.5		
HCM LOS	A			A								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1503	-	-	788	915	1508	-	-
HCM Lane V/C Ratio	0.001	-	-	0.06	0.008	0.004	-	-
HCM Control Delay (s)	7.4	0	-	9.9	9	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

Existing PM 5:00 pm 06/22/2022

Synchro 11 Light Report
 Page 1

LEGACY PARK PHASE I | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 8: US 287 & CR 4E

08/24/2022

Intersection						
Int Delay, s/veh	4.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕	↕	↔	↕
Traffic Vol, veh/h	77	4	628	30	4	1629
Future Vol, veh/h	77	4	628	30	4	1629
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mmt Flow	85	4	690	33	4	1790
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1593	345	0	0	723	0
Stage 1	690	-	-	-	-	-
Stage 2	903	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	97	648	-	-	869	-
Stage 1	456	-	-	-	-	-
Stage 2	353	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	97	648	-	-	869	-
Mov Cap-2 Maneuver	97	-	-	-	-	-
Stage 1	456	-	-	-	-	-
Stage 2	351	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	135.8	0	0			
HCM LOS	F					
Minor Lane/Major Mmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	101	869	-	
HCM Lane V/C Ratio	-	-	0.881	0.005	-	
HCM Control Delay (s)	-	-	135.8	9.2	-	
HCM Lane LOS	-	-	F	A	-	
HCM 95th %tile Q(veh)	-	-	5.1	0	-	

Existing AM 7:00 am 06/22/2022 Existing AM
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Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 8: US 287 & CR 4E

08/24/2022

Intersection						
Int Delay, s/veh	6.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	37	9	1740	104	6	927
Future Vol, veh/h	37	9	1740	104	6	927
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mmt Flow	39	9	1813	108	6	966
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2308	907	0	0	1921	0
Stage 1	1813	-	-	-	-	-
Stage 2	495	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	~ 32	277	-	-	300	-
Stage 1	114	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 31	277	-	-	300	-
Mov Cap-2 Maneuver	~ 31	-	-	-	-	-
Stage 1	114	-	-	-	-	-
Stage 2	564	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	397.6		0		0.1	
HCM LOS	F					
Minor Lane/Major Mmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	38	300	-	
HCM Lane V/C Ratio	-	-	1.261	0.021	-	
HCM Control Delay (s)	-	-	397.6	17.3	-	
HCM Lane LOS	-	-	F	C	-	
HCM 95th %tile Q(veh)	-	-	4.9	0.1	-	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Existing PM 5:00 pm 06/22/2022

Synchro 11 Light Report
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LEGACY PARK PHASE I | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 11: Meadowlark & Mountain

12/28/2022

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			↕			↕	
Traffic Vol, veh/h	16	318	21	17	321	8	38	2	12	45	5	49
Future Vol, veh/h	16	318	21	17	321	8	38	2	12	45	5	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mmt Flow	18	361	24	19	365	9	43	2	14	51	6	56

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	374	0	0	385	0	0	848	821	373	825	829	370
Stage 1	-	-	-	-	-	-	409	409	-	408	408	-
Stage 2	-	-	-	-	-	-	439	412	-	417	421	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1179	-	-	1168	-	-	280	308	671	290	305	673
Stage 1	-	-	-	-	-	-	617	594	-	618	595	-
Stage 2	-	-	-	-	-	-	595	593	-	611	587	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1179	-	-	1168	-	-	247	298	671	276	296	673
Mov Cap-2 Maneuver	-	-	-	-	-	-	247	298	-	276	296	-
Stage 1	-	-	-	-	-	-	608	585	-	609	585	-
Stage 2	-	-	-	-	-	-	532	584	-	587	578	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.4			20.5			17.8		
HCM LOS							C			C		

Minor Lane/Major Mmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	291	1179	-	-	1168	-	-	392
HCM Lane V/C Ratio	0.203	0.015	-	-	0.017	-	-	0.287
HCM Control Delay (s)	20.5	8.1	-	-	8.1	-	-	17.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	1.2

Existing AM 7:00 am 06/22/2022 Existing AM
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Synchro 11 Light Report
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BACKGROUND 2028

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings
1: US 287 & Mountain

04/27/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	270	115	330	135	60	50	470	180	70	1210	70
Future Volume (vph)	85	270	115	330	135	60	50	470	180	70	1210	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)	0%			0%			0%			0%		
Storage Length (ft)	525		265	285		270	1000		715	1000		785
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt	0.850			0.850			0.850			0.850		
Flt Protected												
Satd. Flow (prot)	1660	1494	1411	3221	1660	1411	1660	3154	1411	1660	3154	1411
Flt Permitted												
Satd. Flow (perm)	1660	1494	1411	3221	1660	1411	1660	3154	1411	1660	3154	1411
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	262			262			262			262		
Link Speed (mph)	45			45			55			55		
Link Distance (ft)	3408			850			2500			2586		
Travel Time (s)	51.6			12.9			31.0			32.1		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)	0											
Mid-Block Traffic (%)	0%			0%			0%			0%		
Adj. Flow (vph)	92	293	125	359	147	65	54	511	196	76	1315	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	293	125	359	147	65	54	511	196	76	1315	76
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)	24			24			12			12		
Link Offset(ft)	0			0			0			0		
Crosswalk Width(ft)	16			16			16			16		
Two way Left Turn Lane												
Headway Factor	1.14	1.30	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	Free			Free			2			Free		
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												

Background 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
 RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings
1: US 287 & Mountain

04/27/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	16.9	26.0		18.4	27.5		9.6	46.0		9.6	46.0	46.0
Total Split (%)	16.9%	26.0%		18.4%	27.5%		9.6%	46.0%		9.6%	46.0%	46.0%
Maximum Green (s)	12.4	21.5		13.9	23.0		5.1	41.5		5.1	41.5	41.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	17.2	21.1	100.0	13.6	19.6	100.0	44.2	44.2	100.0	44.2	44.2	44.2
Actuated g/C Ratio	0.17	0.21	1.00	0.14	0.20	1.00	0.44	0.44	1.00	0.44	0.44	0.44
v/c Ratio	0.32	0.93	0.09	0.82	0.45	0.05	0.07	0.37	0.14	0.10	0.94	0.11
Control Delay	38.9	76.2	0.1	58.5	42.5	0.1	18.2	20.4	0.2	18.4	42.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.9	76.2	0.1	58.5	42.5	0.1	18.2	20.4	0.2	18.4	42.7	0.3
LOS	D	E	A	E	D	A	B	C	A	B	D	A
Approach Delay		50.8			47.7			15.0			39.2	
Approach LOS		D			D			B			D	
Queue Length 50th (ft)	49	184	0	115	89	0	20	116	0	29	~436	0
Queue Length 95th (ft)	101	#341	0	#183	145	0	45	160	0	58	#597	0
Internal Link Dist (ft)		3328			770			2420			2506	
Turn Bay Length (ft)	525		265	285		270	1000		715	1000		785
Base Capacity (vph)	305	321	1411	447	425	1411	733	1393	1411	733	1393	714
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.91	0.09	0.80	0.35	0.05	0.07	0.37	0.14	0.10	0.94	0.11
Intersection Summary												
Area Type: CBD												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 90												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.94												
Intersection Signal Delay: 36.9												
Intersection LOS: D												
Intersection Capacity Utilization 82.6%												
ICU Level of Service E												
Analysis Period (min) 15												

Background 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
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Synchro 11 Light Report
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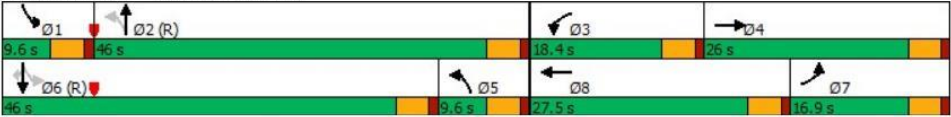
LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings
1: US 287 & Mountain

04/27/2024

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: US 287 & Mountain



LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings
1: US 287 & Mountain

04/27/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	295	105	215	305	35	160	1340	450	55	730	120
Future Volume (vph)	125	295	105	215	305	35	160	1340	450	55	730	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	525		265	285		270	1000		715	1000		785
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected												
Satd. Flow (prot)	1660	1494	1411	3221	1660	1411	1660	3154	1411	1660	3154	1411
Flt Permitted												
Satd. Flow (perm)	1660	1494	1411	3221	1660	1411	1660	3154	1411	1660	3154	1411
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164			474			126
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		3408			850			2500			2586	
Travel Time (s)		51.6			12.9			31.0			32.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		0										
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	132	311	111	226	321	37	168	1411	474	58	768	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	311	111	226	321	37	168	1411	474	58	768	126
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.30	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			Free			Free	2		Free	6		6
Detector Phase	7	4		3	8		5	2		1	6	7
Switch Phase												

Background 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings
 1: US 287 & Mountain

04/27/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	9.5
Total Split (s)	14.5	32.5		13.0	31.0		10.8	45.0		9.5	43.7	14.5
Total Split (%)	14.5%	32.5%		13.0%	31.0%		10.8%	45.0%		9.5%	43.7%	14.5%
Maximum Green (s)	10.0	28.0		8.5	26.5		6.3	40.5		5.0	39.2	10.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lag	Lead		Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	11.0	24.5	100.0	9.6	23.1	100.0	50.0	44.5	100.0	46.3	40.9	51.9
Actuated g/C Ratio	0.11	0.24	1.00	0.10	0.23	1.00	0.50	0.44	1.00	0.46	0.41	0.52
v/c Ratio	0.72	0.85	0.08	0.73	0.84	0.03	0.20	1.01	0.34	0.08	0.60	0.16
Control Delay	66.6	57.3	0.1	61.2	71.0	0.0	13.4	46.5	0.4	13.4	26.0	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	57.3	0.1	61.2	71.0	0.0	13.4	46.5	0.4	13.4	26.0	1.9
LOS	E	E	A	E	E	A	B	D	A	B	C	A
Approach Delay		48.1			62.7			33.2			22.0	
Approach LOS		D			E			C			C	
Queue Length 50th (ft)	82	185	0	61	215	0	39	~544	0	18	203	0
Queue Length 95th (ft)	#184	#304	0	m#89	m265	m0	m66	#673	m0	39	267	19
Internal Link Dist (ft)		3328			770			2420			2506	
Turn Bay Length (ft)	525		265	285		270	1000		715	1000		785
Base Capacity (vph)	183	418	1411	310	439	1411	829	1402	1411	768	1290	793
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.74	0.08	0.73	0.73	0.03	0.20	1.01	0.34	0.08	0.60	0.16
Intersection Summary												
Area Type:	CBD											
Cycle Length:	100											
Actuated Cycle Length:	100											
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green											
Natural Cycle:	90											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.01											
Intersection Signal Delay:	36.8					Intersection LOS: D						
Intersection Capacity Utilization	85.9%					ICU Level of Service E						
Analysis Period (min)	15											

Background 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
 RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY Town of Berthoud

Lanes, Volumes, Timings

1: US 287 & Mountain

04/27/2024

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: US 287 & Mountain



Background 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
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Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 2: Mountain & Gate Way

04/28/2024

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	500	540	45	15	15
Future Vol, veh/h	5	500	540	45	15	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	5	543	587	49	16	16
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	636	0	-	0	1140	587
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	553	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	943	-	-	-	221	508
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	574	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	943	-	-	-	219	508
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	574	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		17.6		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	943	-	-	-	219	508
HCM Lane V/C Ratio	0.006	-	-	-	0.074	0.032
HCM Control Delay (s)	8.8	0	-	-	22.8	12.3
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.1

Background 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
 RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 2: Mountain & Gate Way

04/28/2024

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	↕
Traffic Vol, veh/h	15	740	535	35	30	15
Future Vol, veh/h	15	740	535	35	30	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	16	796	575	38	32	16
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	613	0	-	0	1403	575
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	828	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	961	-	-	-	153	516
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	427	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	961	-	-	-	148	516
Mov Cap-2 Maneuver	-	-	-	-	148	-
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	427	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		28.1		
HCM LOS	D					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	961	-	-	-	148	516
HCM Lane V/C Ratio	0.017	-	-	-	0.218	0.031
HCM Control Delay (s)	8.8	0	-	-	36	12.2
HCM Lane LOS	A	A	-	-	E	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	0.1

Background 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
 RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY

Town of Berthoud

HCM 6th Signalized Intersection Summary

3: Berthoud Pkwy & Mountain

04/28/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	320	120	35	315	85	105	140	25	105	140	115
Future Volume (veh/h)	85	320	120	35	315	85	105	140	25	105	140	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	94	356	133	39	350	94	117	156	28	117	156	128
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	284	392	146	173	529	448	192	256	388	172	229	347
Arrive On Green	0.05	0.30	0.30	0.03	0.28	0.28	0.25	0.25	0.25	0.22	0.22	0.22
Sat Flow, veh/h	1767	1288	481	1767	1856	1572	779	1038	1572	779	1038	1572
Grp Volume(v), veh/h	94	0	489	39	350	94	273	0	28	273	0	128
Grp Sat Flow(s),veh/h/ln	1767	0	1769	1767	1856	1572	1817	0	1572	1817	0	1572
Q Serve(g_s), s	3.4	0.0	24.7	1.4	15.4	4.2	12.4	0.0	1.3	12.8	0.0	6.4
Cycle Q Clear(g_c), s	3.4	0.0	24.7	1.4	15.4	4.2	12.4	0.0	1.3	12.8	0.0	6.4
Prop In Lane	1.00		0.27	1.00		1.00	0.43		1.00	0.43		1.00
Lane Grp Cap(c), veh/h	284	0	539	173	529	448	448	0	388	401	0	347
V/C Ratio(X)	0.33	0.00	0.91	0.23	0.66	0.21	0.61	0.00	0.07	0.68	0.00	0.37
Avail Cap(c_a), veh/h	313	0	638	210	642	544	448	0	388	401	0	347
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.9	0.0	31.0	24.9	29.3	25.2	31.0	0.0	26.8	33.2	0.0	30.7
Incr Delay (d2), s/veh	0.7	0.0	15.2	0.7	1.9	0.2	6.1	0.0	0.4	9.0	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	12.0	0.6	6.7	1.5	6.0	0.0	0.5	6.5	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.5	0.0	46.3	25.6	31.1	25.5	37.1	0.0	27.2	42.2	0.0	33.7
LnGrp LOS	C	A	D	C	C	C	D	A	C	D	A	C
Approach Vol, veh/h	583			483			301			401		
Approach Delay, s/veh	42.6			29.6			36.1			39.5		
Approach LOS	D			C			D			D		
Timer - Assigned Phs	2		3	4		6	7	8				
Phs Duration (G+Y+Rc), s	27.4		7.7	32.8		25.0	9.5	31.0				
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s	22.9		5.1	33.5		20.5	6.5	32.1				
Max Q Clear Time (g_c+I1), s	14.4		3.4	26.7		14.8	5.4	17.4				
Green Ext Time (p_c), s	1.0		0.0	1.6		1.0	0.0	1.9				
Intersection Summary												
HCM 6th Ctrl Delay	37.2											
HCM 6th LOS	D											
Notes												

Background 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY Town of Berthoud

HCM 6th Signalized Intersection Summary 3: Berthoud Pkwy & Mountain

04/28/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	540	85	30	380	135	90	135	30	175	105	85
Future Volume (veh/h)	140	540	85	30	380	135	90	135	30	175	105	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	146	562	89	31	396	141	94	141	31	182	109	89
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	339	596	94	153	628	532	140	211	304	235	141	328
Arrive On Green	0.07	0.38	0.38	0.03	0.34	0.34	0.19	0.19	0.19	0.21	0.21	0.21
Sat Flow, veh/h	1767	1563	248	1767	1856	1572	728	1091	1572	1125	674	1572
Grp Volume(v), veh/h	146	0	651	31	396	141	235	0	31	291	0	89
Grp Sat Flow(s),veh/h/ln	1767	0	1811	1767	1856	1572	1819	0	1572	1799	0	1572
Q Serve(g_s), s	4.9	0.0	33.3	1.1	17.2	6.2	11.5	0.0	1.6	14.6	0.0	4.5
Cycle Q Clear(g_c), s	4.9	0.0	33.3	1.1	17.2	6.2	11.5	0.0	1.6	14.6	0.0	4.5
Prop In Lane	1.00		0.14	1.00		1.00	0.40		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	339	0	690	153	628	532	351	0	304	375	0	328
V/C Ratio(X)	0.43	0.00	0.94	0.20	0.63	0.26	0.67	0.00	0.10	0.77	0.00	0.27
Avail Cap(c_a), veh/h	387	0	728	194	658	558	351	0	304	375	0	328
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	28.7	24.1	26.6	23.0	35.8	0.0	31.8	35.8	0.0	31.8
Incr Delay (d2), s/veh	0.9	0.0	20.2	0.6	1.8	0.3	9.7	0.0	0.7	14.4	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	17.0	0.4	7.4	2.2	5.9	0.0	0.6	7.7	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	0.0	48.9	24.8	28.5	23.3	45.6	0.0	32.5	50.2	0.0	33.8
LnGrp LOS	C	A	D	C	C	C	D	A	C	D	A	C
Approach Vol, veh/h	797			568			266			380		
Approach Delay, s/veh	43.6			27.0			44.0			46.4		
Approach LOS	D			C			D			D		
Timer - Assigned Phs	2		3	4		6	7	8				
Phs Duration (G+Y+Rc), s	23.0		7.3	41.0		24.5	11.4	37.0				
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s	18.5		5.0	38.5		20.0	9.5	34.0				
Max Q Clear Time (g_c+I1), s	13.5		3.1	35.3		16.6	6.9	19.2				
Green Ext Time (p_c), s	0.6		0.0	1.2		0.6	0.1	2.3				
Intersection Summary												
HCM 6th Ctrl Delay	39.5											
HCM 6th LOS	D											
Notes												

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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 4: Welch & Berthoud Pkwy

04/27/2024

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	10	30	190	10	15	260
Future Vol, veh/h	10	30	190	10	15	260
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	12	35	224	12	18	306
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	572	230	0	0	236	0
Stage 1	230	-	-	-	-	-
Stage 2	342	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	480	807	-	-	1325	-
Stage 1	806	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	472	807	-	-	1325	-
Mov Cap-2 Maneuver	472	-	-	-	-	-
Stage 1	806	-	-	-	-	-
Stage 2	706	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.6	0	0.4			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	685	1325	-	
HCM Lane V/C Ratio	-	-	0.069	0.013	-	
HCM Control Delay (s)	-	-	10.6	7.8	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

Background 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
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Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 4: Welch & Berthoud Pkwy

04/27/2024

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	10	30	210	10	40	180
Future Vol, veh/h	10	30	210	10	40	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	34	241	11	46	207
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	546	247	0	0	252	0
Stage 1	247	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	497	789	-	-	1307	-
Stage 1	792	-	-	-	-	-
Stage 2	750	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	477	789	-	-	1307	-
Mov Cap-2 Maneuver	477	-	-	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	720	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.7	0	1.4			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	678	1307	-	
HCM Lane V/C Ratio	-	-	0.068	0.035	-	
HCM Control Delay (s)	-	-	10.7	7.9	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	

Background 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
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Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 5: Berthoud Pkwy & Arapahoe

04/27/2024

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	T	T	T	T	T
Traffic Vol, veh/h	5	10	190	5	5	265
Future Vol, veh/h	5	10	190	5	5	265
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	12	232	6	6	323
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	570	235	0	0	238	0
Stage 1	235	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	481	802	-	-	1323	-
Stage 1	802	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	478	802	-	-	1323	-
Mov Cap-2 Maneuver	478	-	-	-	-	-
Stage 1	802	-	-	-	-	-
Stage 2	718	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.7	0	0.1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	654	1323	-	
HCM Lane V/C Ratio	-	-	0.028	0.005	-	
HCM Control Delay (s)	-	-	10.7	7.7	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
5: Berthoud Pkwy & Arapahoe

04/27/2024

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	5	5	210	5	5	185
Future Vol, veh/h	5	5	210	5	5	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	6	247	6	6	218
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	480	250	0	0	253	0
Stage 1	250	-	-	-	-	-
Stage 2	230	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	543	786	-	-	1306	-
Stage 1	789	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	540	786	-	-	1306	-
Mov Cap-2 Maneuver	540	-	-	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.7	0	0.2			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	640	1306	-	
HCM Lane V/C Ratio	-	-	0.018	0.005	-	
HCM Control Delay (s)	-	-	10.7	7.8	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
6: Spartan & Berthoud Pkwy

04/27/2024

Intersection						
Int Delay, s/veh	8.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	95	110	85	75	190	100
Future Vol, veh/h	95	110	85	75	190	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	117	136	105	93	235	123
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	745	152	0	0	198	0
Stage 1	152	-	-	-	-	-
Stage 2	593	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	380	892	-	-	1369	-
Stage 1	874	-	-	-	-	-
Stage 2	550	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	310	892	-	-	1369	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	449	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	20.8	0	5.4			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	477	1369	-	
HCM Lane V/C Ratio	-	-	0.531	0.171	-	
HCM Control Delay (s)	-	-	20.8	8.2	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	3.1	0.6	-	

Background 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
RR

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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
6: Spartan & Berthoud Pkwy

04/28/2024

Intersection						
Int Delay, s/veh	5.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	65	120	95	105	75	115
Future Vol, veh/h	65	120	95	105	75	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	80	148	117	130	93	142
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	510	182	0	0	247	0
Stage 1	182	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	522	858	-	-	1313	-
Stage 1	847	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	482	858	-	-	1313	-
Mov Cap-2 Maneuver	482	-	-	-	-	-
Stage 1	847	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	13.1	0	3.1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	673	1313	-	
HCM Lane V/C Ratio	-	-	0.339	0.071	-	
HCM Control Delay (s)	-	-	13.1	8	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1.5	0.2	-	

Background 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 7: Berthoud Pkwy & CR 4E

04/27/2024

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	65	15	5	5	40	10	5	55	5	15	80	155
Future Vol, veh/h	65	15	5	5	40	10	5	55	5	15	80	155
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	69	16	5	5	43	11	5	59	5	16	85	165

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	299	274	168	282	354	62	250	0	0	64	0	0
Stage 1	200	200	-	72	72	-	-	-	-	-	-	-
Stage 2	99	74	-	210	282	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	651	631	874	668	570	1000	1310	-	-	1532	-	-
Stage 1	800	734	-	935	833	-	-	-	-	-	-	-
Stage 2	905	831	-	790	676	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	600	621	874	643	561	1000	1310	-	-	1532	-	-
Mov Cap-2 Maneuver	600	621	-	643	561	-	-	-	-	-	-	-
Stage 1	797	725	-	931	830	-	-	-	-	-	-	-
Stage 2	846	828	-	759	668	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.9			11.4			0.6			0.4		
HCM LOS	B			B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1310	-	-	615	617	1532	-	-
HCM Lane V/C Ratio	0.004	-	-	0.147	0.095	0.01	-	-
HCM Control Delay (s)	7.8	0	-	11.9	11.4	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.3	0	-	-

Background 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
 RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 7: Berthoud Pkwy & CR 4E

04/27/2024

Intersection												
Int Delay, s/veh	6.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	130	45	5	5	30	15	5	110	5	10	85	90
Future Vol, veh/h	130	45	5	5	30	15	5	110	5	10	85	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	155	54	6	6	36	18	6	131	6	12	101	107

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	352	328	155	355	378	134	208	0
Stage 1	179	179	-	146	146	-	-	-
Stage 2	173	149	-	209	232	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-
Pot Cap-1 Maneuver	601	589	888	598	552	912	1357	-
Stage 1	820	749	-	854	774	-	-	-
Stage 2	827	772	-	791	711	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	554	580	888	546	544	912	1357	-
Mov Cap-2 Maneuver	554	580	-	546	544	-	-	-
Stage 1	816	742	-	850	770	-	-	-
Stage 2	769	768	-	722	704	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.2	11.4	0.3	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1357	-	-	566	619	1441	-	-
HCM Lane V/C Ratio	0.004	-	-	0.379	0.096	0.008	-	-
HCM Control Delay (s)	7.7	0	-	15.2	11.4	7.5	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.8	0.3	0	-	-

Background 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
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Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Signalized Intersection Summary
8: US 287 & CR 4E

04/28/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	170	35	740	60	15	1755
Future Volume (veh/h)	170	35	740	60	15	1755
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	187	38	813	66	16	1929
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	224	199	2761	1232	522	2761
Arrive On Green	0.13	0.13	0.78	0.78	0.78	0.78
Sat Flow, veh/h	1767	1572	3618	1572	626	3618
Grp Volume(v), veh/h	187	38	813	66	16	1929
Grp Sat Flow(s),veh/h/ln	1767	1572	1763	1572	626	1763
Q Serve(g_s), s	10.3	2.2	6.5	0.9	0.7	26.2
Cycle Q Clear(g_c), s	10.3	2.2	6.5	0.9	7.2	26.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	224	199	2761	1232	522	2761
V/C Ratio(X)	0.83	0.19	0.29	0.05	0.03	0.70
Avail Cap(c_a), veh/h	345	307	2761	1232	522	2761
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.6	39.1	3.1	2.5	4.1	5.2
Incr Delay (d2), s/veh	10.1	0.5	0.3	0.1	0.1	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.9	1.2	0.2	0.1	4.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	52.8	39.5	3.3	2.5	4.2	6.7
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	225		879		1945	
Approach Delay, s/veh	50.5		3.3		6.7	
Approach LOS	D		A		A	
Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	82.8				82.8	17.2
Change Period (Y+Rc), s	4.5				4.5	4.5
Max Green Setting (Gmax), s	71.5				71.5	19.5
Max Q Clear Time (g_c+I1), s	8.5				28.2	12.3
Green Ext Time (p_c), s	5.9				21.6	0.4
Intersection Summary						
HCM 6th Ctrl Delay			8.9			
HCM 6th LOS			A			

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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Signalized Intersection Summary
8: US 287 & CR 4E

04/27/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	100	30	1985	210	40	1060
Future Volume (veh/h)	100	30	1985	210	40	1060
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	104	31	2068	219	42	1104
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	138	123	2933	1308	168	2933
Arrive On Green	0.08	0.08	0.83	0.83	0.83	0.83
Sat Flow, veh/h	1767	1572	3618	1572	161	3618
Grp Volume(v), veh/h	104	31	2068	219	42	1104
Grp Sat Flow(s),veh/h/ln	1767	1572	1763	1572	161	1763
Q Serve(g_s), s	5.8	1.9	23.8	2.7	14.4	7.7
Cycle Q Clear(g_c), s	5.8	1.9	23.8	2.7	38.2	7.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	138	123	2933	1308	168	2933
V/C Ratio(X)	0.75	0.25	0.71	0.17	0.25	0.38
Avail Cap(c_a), veh/h	318	283	2933	1308	168	2933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	43.4	3.4	1.6	11.2	2.1
Incr Delay (d2), s/veh	8.0	1.1	1.5	0.3	3.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.8	5.1	0.6	0.6	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	53.2	44.4	4.9	1.9	14.7	2.4
LnGrp LOS	D	D	A	A	B	A
Approach Vol, veh/h	135		2287		1146	
Approach Delay, s/veh	51.2		4.6		2.9	
Approach LOS	D		A		A	
Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	87.7				87.7	12.3
Change Period (Y+Rc), s	4.5				4.5	4.5
Max Green Setting (Gmax), s	73.0				73.0	18.0
Max Q Clear Time (g_c+I1), s	25.8				40.2	7.8
Green Ext Time (p_c), s	31.6				12.8	0.2
Intersection Summary						
HCM 6th Ctrl Delay			5.8			
HCM 6th LOS			A			

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Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Signalized Intersection Summary
11: Meadowlark & Mountain

04/28/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	370	20	15	360	110	40	15	10	185	15	150
Future Volume (veh/h)	175	370	20	15	360	110	40	15	10	185	15	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	199	420	23	17	409	125	45	17	11	210	17	170
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	291	701	38	312	474	402	470	175	104	778	942	798
Arrive On Green	0.20	0.80	0.80	0.26	0.26	0.26	0.51	0.51	0.51	0.51	0.51	0.51
Sat Flow, veh/h	1767	1743	95	939	1856	1572	812	344	205	1371	1856	1572
Grp Volume(v), veh/h	199	0	443	17	409	125	73	0	0	210	17	170
Grp Sat Flow(s),veh/h/ln	1767	0	1838	939	1856	1572	1361	0	0	1371	1856	1572
Q Serve(g_s), s	8.0	0.0	9.1	1.4	21.1	6.4	1.1	0.0	0.0	5.7	0.5	6.0
Cycle Q Clear(g_c), s	8.0	0.0	9.1	1.4	21.1	6.4	2.4	0.0	0.0	8.1	0.5	6.0
Prop In Lane	1.00		0.05	1.00		1.00	0.62		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	291	0	740	312	474	402	749	0	0	778	942	798
V/C Ratio(X)	0.68	0.00	0.60	0.05	0.86	0.31	0.10	0.00	0.00	0.27	0.02	0.21
Avail Cap(c_a), veh/h	367	0	1075	443	733	621	749	0	0	778	942	798
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.00	0.82	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	6.7	28.2	35.6	30.1	12.7	0.0	0.0	14.0	12.2	13.6
Incr Delay (d2), s/veh	3.0	0.0	0.6	0.1	6.6	0.4	0.3	0.0	0.0	0.9	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	2.2	0.3	9.9	2.4	0.9	0.0	0.0	2.8	0.2	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.4	0.0	7.4	28.3	42.2	30.5	12.9	0.0	0.0	14.8	12.3	14.2
LnGrp LOS	C	A	A	C	D	C	B	A	A	B	B	B
Approach Vol, veh/h	642		551				73			397		
Approach Delay, s/veh	12.9		39.1				12.9			14.5		
Approach LOS	B		D				B			B		
Timer - Assigned Phs	2		4		6		7	8				
Phs Duration (G+Y+Rc), s	55.3		44.7		55.3		14.7	30.0				
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5	4.5				
Max Green Setting (Gmax), s	32.5		58.5		32.5		14.5	39.5				
Max Q Clear Time (g_c+I1), s	4.4		11.1		10.1		10.0	23.1				
Green Ext Time (p_c), s	0.4		2.7		1.3		0.2	2.5				
Intersection Summary												
HCM 6th Ctrl Delay	22.0											
HCM 6th LOS	C											

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Signalized Intersection Summary
11: Meadowlark & Mountain

04/28/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	500	25	20	395	120	40	20	30	215	20	165
Future Volume (veh/h)	340	500	25	20	395	120	40	20	30	215	20	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	370	543	27	22	429	130	43	22	33	234	22	179
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	426	852	42	293	490	415	319	166	220	654	786	666
Arrive On Green	0.35	0.97	0.97	0.26	0.26	0.26	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	1767	1753	87	835	1856	1572	631	393	520	1338	1856	1572
Grp Volume(v), veh/h	370	0	570	22	429	130	98	0	0	234	22	179
Grp Sat Flow(s),veh/h/ln	1767	0	1840	835	1856	1572	1544	0	0	1338	1856	1572
Q Serve(g_s), s	15.2	0.0	2.2	2.0	22.1	6.6	1.0	0.0	0.0	7.3	0.7	7.4
Cycle Q Clear(g_c), s	15.2	0.0	2.2	2.0	22.1	6.6	3.6	0.0	0.0	10.8	0.7	7.4
Prop In Lane	1.00		0.05	1.00		1.00	0.44		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	426	0	895	293	490	415	706	0	0	654	786	666
V/C Ratio(X)	0.87	0.00	0.64	0.08	0.88	0.31	0.14	0.00	0.00	0.36	0.03	0.27
Avail Cap(c_a), veh/h	493	0	1095	352	622	527	706	0	0	654	786	666
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.00	0.85	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.5	0.0	0.7	27.8	35.2	29.5	17.6	0.0	0.0	19.5	16.8	18.7
Incr Delay (d2), s/veh	12.1	0.0	0.7	0.1	11.1	0.4	0.4	0.0	0.0	1.5	0.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.5	0.4	11.3	2.5	1.4	0.0	0.0	3.9	0.3	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.6	0.0	1.5	27.9	46.3	29.9	18.0	0.0	0.0	21.0	16.9	19.7
LnGrp LOS	C	A	A	C	D	C	B	A	A	C	B	B
Approach Vol, veh/h	940				581		98				435	
Approach Delay, s/veh	12.5				42.0		18.0				20.3	
Approach LOS	B				D		B				C	
Timer - Assigned Phs	2		4		6		7		8			
Phs Duration (G+Y+Rc), s	46.9		53.1		46.9		22.2		30.9			
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5		4.5			
Max Green Setting (Gmax), s	31.5		59.5		31.5		21.5		33.5			
Max Q Clear Time (g_c+I1), s	5.6		4.2		12.8		17.2		24.1			
Green Ext Time (p_c), s	0.5		4.5		1.4		0.5		2.3			
Intersection Summary												
HCM 6th Ctrl Delay			22.8									
HCM 6th LOS			C									

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Synchro 11 Light Report
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TOTAL 2028

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings
 1: US 287 & Mountain

04/27/2024

														
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	85	275	115	370	150	75	50	470	195	75	1210	70		
Future Volume (vph)	85	275	115	370	150	75	50	470	195	75	1210	70		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)	0%				0%				0%					
Storage Length (ft)	525			265	285			270	1000			715	1000	785
Storage Lanes	1			1	2			1	1			1	1	1
Taper Length (ft)	25			25				25				25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Ped Bike Factor														
Frt	0.850			0.850			0.850			0.850				
Flt Protected														
Satd. Flow (prot)	1660	1494	1411	3221	1660	1411	1660	3154	1411	1660	3154	1411		
Flt Permitted														
Satd. Flow (perm)	1660	1494	1411	3221	1660	1411	1660	3154	1411	1660	3154	1411		
Right Turn on Red				Yes	Yes			Yes			Yes			
Satd. Flow (RTOR)				262	262			262			164			
Link Speed (mph)	45			45			55			55				
Link Distance (ft)	3408			850			2500			2586				
Travel Time (s)	51.6			12.9			31.0			32.1				
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)	0													
Mid-Block Traffic (%)	0%			0%			0%			0%				
Adj. Flow (vph)	92	299	125	402	163	82	54	511	212	82	1315	76		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	92	299	125	402	163	82	54	511	212	82	1315	76		
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No		
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right		
Median Width(ft)	24			24			12			12				
Link Offset(ft)	0			0			0			0				
Crosswalk Width(ft)	16			16			16			16				
Two way Left Turn Lane														
Headway Factor	1.14	1.30	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14		
Turning Speed (mph)	15	9		15	9		15	9		15	9			
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20		
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0		
Turn Type	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm		
Protected Phases	7	4	3		8	5		2	Free		1	6		
Permitted Phases	Free			Free			2	Free		6	6			
Detector Phase	7	4	3		8	5		2	1		6	6		
Switch Phase														

Total 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
 RR

Synchro 11 Light Report
 Page 1

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings

1: US 287 & Mountain

04/27/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	16.9	26.0		18.4	27.5		9.6	46.0		9.6	46.0	46.0
Total Split (%)	16.9%	26.0%		18.4%	27.5%		9.6%	46.0%		9.6%	46.0%	46.0%
Maximum Green (s)	12.4	21.5		13.9	23.0		5.1	41.5		5.1	41.5	41.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	16.4	21.3	100.0	13.9	20.9	100.0	43.7	43.7	100.0	43.7	43.7	43.7
Actuated g/C Ratio	0.16	0.21	1.00	0.14	0.21	1.00	0.44	0.44	1.00	0.44	0.44	0.44
v/c Ratio	0.34	0.94	0.09	0.90	0.47	0.06	0.07	0.37	0.15	0.11	0.96	0.11
Control Delay	40.2	78.0	0.1	67.0	41.8	0.1	18.2	20.6	0.2	18.5	44.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	78.0	0.1	67.0	41.8	0.1	18.2	20.6	0.2	18.5	44.7	0.3
LOS	D	E	A	E	D	A	B	C	A	B	D	A
Approach Delay		52.4			52.2			14.9			40.9	
Approach LOS		D			D			B			D	
Queue Length 50th (ft)	50	188	0	131	99	0	20	116	0	31	~436	0
Queue Length 95th (ft)	103	#350	0	#217	157	0	45	160	0	62	#597	0
Internal Link Dist (ft)		3328			770			2420			2506	
Turn Bay Length (ft)	525		265	285		270	1000		715	1000		785
Base Capacity (vph)	291	321	1411	447	433	1411	724	1376	1411	724	1376	708
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.93	0.09	0.90	0.38	0.06	0.07	0.37	0.15	0.11	0.96	0.11
Intersection Summary												
Area Type: CBD												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 100												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.96												
Intersection Signal Delay: 38.8												
Intersection LOS: D												
Intersection Capacity Utilization 84.1%												
ICU Level of Service E												
Analysis Period (min) 15												

Total 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
 RR

Synchro 11 Light Report
 Page 2

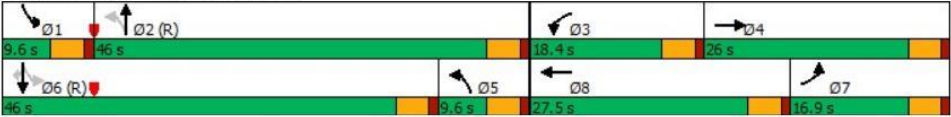
LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings
1: US 287 & Mountain

04/27/2024

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: US 287 & Mountain



LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings
 1: US 287 & Mountain

04/24/2024

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Volume (vph)	125	310	105	240	315	45	160	1340	495	70	800	120			
Future Volume (vph)	125	310	105	240	315	45	160	1340	495	70	800	120			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12			
Grade (%)	0%				0%				0%						
Storage Length (ft)	525			265	285			270	1000			715	1000		785
Storage Lanes	1			1	2			1	1			1	1		
Taper Length (ft)	25			25				25				25			
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00			
Ped Bike Factor															
Frt	0.850			0.850			0.850			0.850					
Flt Protected															
Satd. Flow (prot)	1660	1494	1411	3221	1660	1411	1660	3154	1411	1660	3154	1411			
Flt Permitted															
Satd. Flow (perm)	1660	1494	1411	3221	1660	1411	1660	3154	1411	1660	3154	1411			
Right Turn on Red				Yes				Yes				Yes			
Satd. Flow (RTOR)				164				164				521			
Link Speed (mph)	45			45			55			55					
Link Distance (ft)	3408			850			2500			2586					
Travel Time (s)	51.6			12.9			31.0			32.1					
Confl. Peds. (#/hr)															
Confl. Bikes (#/hr)															
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0			
Parking (#/hr)	0														
Mid-Block Traffic (%)	0%			0%			0%			0%					
Adj. Flow (vph)	132	326	111	253	332	47	168	1411	521	74	842	126			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	132	326	111	253	332	47	168	1411	521	74	842	126			
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No			
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right			
Median Width(ft)	24			24			12			12					
Link Offset(ft)	0			0			0			0					
Crosswalk Width(ft)	16			16			16			16					
Two way Left Turn Lane															
Headway Factor	1.14	1.30	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14			
Turning Speed (mph)	15	9		15	9		15	9		15	9				
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1			
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right			
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20			
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0			
Turn Type	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	pm+ov			
Protected Phases	7	4	3		8	Free	5	2	Free	1	6	7			
Permitted Phases	Free			Free			2	Free		6	6				
Detector Phase	7	4	3		8	5		2	1		6	7			
Switch Phase															

Total 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
 RR

Synchro 11 Light Report
 Page 1

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings
 1: US 287 & Mountain

04/24/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	9.5
Total Split (s)	13.5	32.5		13.0	32.0		10.8	45.0		9.5	43.7	13.5
Total Split (%)	13.5%	32.5%		13.0%	32.0%		10.8%	45.0%		9.5%	43.7%	13.5%
Maximum Green (s)	9.0	28.0		8.5	27.5		6.3	40.5		5.0	39.2	9.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lag	Lead		Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	11.3	25.2	100.0	9.9	23.9	100.0	48.8	43.8	100.0	45.5	40.4	51.6
Actuated g/C Ratio	0.11	0.25	1.00	0.10	0.24	1.00	0.49	0.44	1.00	0.46	0.40	0.52
v/c Ratio	0.71	0.87	0.08	0.79	0.84	0.03	0.21	1.02	0.37	0.10	0.66	0.16
Control Delay	65.8	58.7	0.1	63.8	54.9	0.0	14.8	60.3	0.7	13.7	27.7	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	58.7	0.1	63.8	54.9	0.0	14.8	60.3	0.7	13.7	27.7	2.0
LOS	E	E	A	E	D	A	B	E	A	B	C	A
Approach Delay		48.9			54.3			41.9			23.6	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	82	193	0	83	198	0	57	~542	0	24	230	0
Queue Length 95th (ft)	#195	#327	0	#159	#299	0	97	#677	0	48	300	20
Internal Link Dist (ft)		3328			770			2420			2506	
Turn Bay Length (ft)	525		265	285		270	1000		715	1000		785
Base Capacity (vph)	186	418	1411	319	456	1411	809	1380	1411	755	1273	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.78	0.08	0.79	0.73	0.03	0.21	1.02	0.37	0.10	0.66	0.16
Intersection Summary												
Area Type:	CBD											
Cycle Length:	100											
Actuated Cycle Length:	100											
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green											
Natural Cycle:	100											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.02											
Intersection Signal Delay:	40.2					Intersection LOS: D						
Intersection Capacity Utilization	86.6%					ICU Level of Service E						
Analysis Period (min)	15											

Total 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
 RR

Synchro 11 Light Report
 Page 2

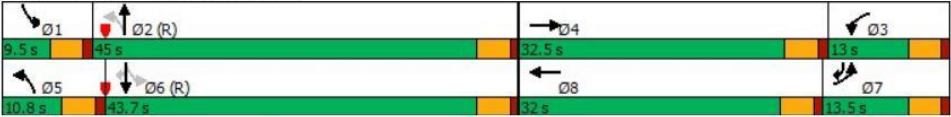
LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

Lanes, Volumes, Timings
1: US 287 & Mountain

04/24/2024

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: US 287 & Mountain



LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 2: Mountain & Gate Way

04/28/2024

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗	↘		↗	↘	↗	↘		↗	↘	
Traffic Vol, veh/h	5	510	15	10	565	45	40	1	30	15	1	15
Future Vol, veh/h	5	510	15	10	565	45	40	1	30	15	1	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	554	16	11	614	49	43	1	33	16	1	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	663	0	0	570	0	0	1233	1249	554	1225	1216	614
Stage 1	-	-	-	-	-	-	564	564	-	636	636	-
Stage 2	-	-	-	-	-	-	669	685	-	589	580	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	921	-	-	997	-	-	153	172	530	155	180	490
Stage 1	-	-	-	-	-	-	509	507	-	464	470	-
Stage 2	-	-	-	-	-	-	445	447	-	493	499	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	921	-	-	997	-	-	144	168	530	142	175	490
Mov Cap-2 Maneuver	-	-	-	-	-	-	144	168	-	142	175	-
Stage 1	-	-	-	-	-	-	505	503	-	460	462	-
Stage 2	-	-	-	-	-	-	421	439	-	458	495	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			28.4			23.2		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	144	496	921	-	-	997	-	-	142	440
HCM Lane V/C Ratio	0.302	0.068	0.006	-	-	0.011	-	-	0.115	0.04
HCM Control Delay (s)	40.5	12.8	8.9	0	-	8.7	0	-	33.6	13.5
HCM Lane LOS	E	B	A	A	-	A	A	-	D	B
HCM 95th %tile Q(veh)	1.2	0.2	0	-	-	0	-	-	0.4	0.1

Total 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
 RR

Synchro 11 Light Report
 Page 1

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 2: Mountain & Gate Way

04/24/2024

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗	↘		↗	↘	↗	↘		↗	↘	
Traffic Vol, veh/h	15	770	45	35	550	35	20	1	20	30	1	15
Future Vol, veh/h	15	770	45	35	550	35	20	1	20	30	1	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	92	92	93	93	92	92	92	93	92	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	828	49	38	591	38	22	1	22	32	1	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	629	0	0	877	0	0	1555	1565	828	1563	1576	591
Stage 1	-	-	-	-	-	-	860	860	-	667	667	-
Stage 2	-	-	-	-	-	-	695	705	-	896	909	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	948	-	-	766	-	-	91	111	369	90	109	505
Stage 1	-	-	-	-	-	-	349	371	-	447	455	-
Stage 2	-	-	-	-	-	-	431	438	-	333	352	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	948	-	-	766	-	-	80	99	369	77	97	505
Mov Cap-2 Maneuver	-	-	-	-	-	-	80	99	-	77	97	-
Stage 1	-	-	-	-	-	-	337	359	-	432	420	-
Stage 2	-	-	-	-	-	-	384	404	-	302	340	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.6			40.8			58.5		
HCM LOS							E			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	80	327	948	-	-	766	-	-	77	399
HCM Lane V/C Ratio	0.272	0.07	0.017	-	-	0.05	-	-	0.419	0.043
HCM Control Delay (s)	66	16.8	8.9	0	-	9.9	0	-	82	14.4
HCM Lane LOS	F	C	A	A	-	A	A	-	F	B
HCM 95th %tile Q(veh)	1	0.2	0.1	-	-	0.2	-	-	1.7	0.1

Total 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
 RR

Synchro 11 Light Report
 Page 1

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY Town of Berthoud

HCM 6th Signalized Intersection Summary 3: Berthoud Pkwy & Mountain

04/28/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	335	130	35	320	85	130	220	55	105	170	120
Future Volume (veh/h)	100	335	130	35	320	85	130	220	55	105	170	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	111	372	144	39	356	94	144	244	61	117	189	133
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	224	331	128	132	439	372	200	338	464	159	257	360
Arrive On Green	0.06	0.26	0.26	0.03	0.24	0.24	0.30	0.30	0.30	0.23	0.23	0.23
Sat Flow, veh/h	1767	1274	493	1767	1856	1572	676	1146	1572	696	1125	1572
Grp Volume(v), veh/h	111	0	516	39	356	94	388	0	61	306	0	133
Grp Sat Flow(s),veh/h/ln	1767	0	1767	1767	1856	1572	1822	0	1572	1821	0	1572
Q Serve(g_s), s	4.7	0.0	25.5	1.6	17.8	4.8	18.7	0.0	2.8	15.3	0.0	7.0
Cycle Q Clear(g_c), s	4.7	0.0	25.5	1.6	17.8	4.8	18.7	0.0	2.8	15.3	0.0	7.0
Prop In Lane	1.00		0.28	1.00		1.00	0.37		1.00	0.38		1.00
Lane Grp Cap(c), veh/h	224	0	458	132	439	372	538	0	464	417	0	360
V/C Ratio(X)	0.50	0.00	1.13	0.30	0.81	0.25	0.72	0.00	0.13	0.73	0.00	0.37
Avail Cap(c_a), veh/h	224	0	458	163	472	400	538	0	464	417	0	360
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.1	0.0	36.4	29.5	35.4	30.4	31.0	0.0	25.4	35.1	0.0	31.9
Incr Delay (d2), s/veh	1.7	0.0	81.0	1.2	9.6	0.4	8.2	0.0	0.6	10.9	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	20.6	0.7	8.8	1.8	9.2	0.0	1.1	7.9	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	0.0	117.4	30.7	45.1	30.8	39.2	0.0	26.0	46.0	0.0	34.8
LnGrp LOS	C	A	F	C	D	C	D	A	C	D	A	C
Approach Vol, veh/h	627			489			449			439		
Approach Delay, s/veh	101.9			41.2			37.4			42.6		
Approach LOS	F			D			D			D		
Timer - Assigned Phs	2		3	4		6	7	8				
Phs Duration (G+Y+Rc), s	33.5		7.8	30.0		27.0	10.0	27.8				
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s	29.0		5.0	25.5		22.5	5.5	25.0				
Max Q Clear Time (g_c+I1), s	20.7		3.6	27.5		17.3	6.7	19.8				
Green Ext Time (p_c), s	1.6		0.0	0.0		1.0	0.0	1.0				
Intersection Summary												
HCM 6th Ctrl Delay	59.6											
HCM 6th LOS	E											
Notes												

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY Town of Berthoud

HCM 6th Signalized Intersection Summary 3: Berthoud Pkwy & Mountain

04/28/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	550	115	60	395	135	105	190	50	175	200	100
Future Volume (veh/h)	150	550	115	60	395	135	105	190	50	175	200	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	156	573	120	62	411	141	109	198	52	182	208	104
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	291	503	105	146	578	490	131	237	317	201	229	373
Arrive On Green	0.07	0.34	0.34	0.04	0.31	0.31	0.20	0.20	0.20	0.24	0.24	0.24
Sat Flow, veh/h	1767	1488	312	1767	1856	1572	647	1176	1572	846	967	1572
Grp Volume(v), veh/h	156	0	693	62	411	141	307	0	52	390	0	104
Grp Sat Flow(s),veh/h/ln	1767	0	1799	1767	1856	1572	1823	0	1572	1813	0	1572
Q Serve(g_s), s	5.9	0.0	33.5	2.3	19.4	6.7	16.0	0.0	2.7	20.7	0.0	5.4
Cycle Q Clear(g_c), s	5.9	0.0	33.5	2.3	19.4	6.7	16.0	0.0	2.7	20.7	0.0	5.4
Prop In Lane	1.00		0.17	1.00		1.00	0.36		1.00	0.47		1.00
Lane Grp Cap(c), veh/h	291	0	608	146	578	490	368	0	317	430	0	373
V/C Ratio(X)	0.54	0.00	1.14	0.43	0.71	0.29	0.83	0.00	0.16	0.91	0.00	0.28
Avail Cap(c_a), veh/h	291	0	608	162	595	505	368	0	317	430	0	373
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	32.8	26.3	30.1	25.8	38.0	0.0	32.6	36.7	0.0	30.9
Incr Delay (d2), s/veh	1.9	0.0	81.3	2.0	3.8	0.3	19.5	0.0	1.1	25.4	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	27.2	1.0	8.7	2.4	9.0	0.0	1.1	11.9	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.2	0.0	114.1	28.3	34.0	26.1	57.5	0.0	33.8	62.1	0.0	32.7
LnGrp LOS	C	A	F	C	C	C	E	A	C	E	A	C
Approach Vol, veh/h	849			614			359			494		
Approach Delay, s/veh	97.7			31.6			54.0			55.9		
Approach LOS	F			C			D			E		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	24.5		8.6	38.0		28.0		11.2	35.4			
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5		4.5	4.5			
Max Green Setting (Gmax), s	20.0		5.0	33.5		23.5		6.7	31.8			
Max Q Clear Time (g_c+I1), s	18.0		4.3	35.5		22.7		7.9	21.4			
Green Ext Time (p_c), s	0.4		0.0	0.0		0.2		0.0	2.0			
Intersection Summary												
HCM 6th Ctrl Delay	64.5											
HCM 6th LOS	E											
Notes												

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 4: Welch & Berthoud Pkwy

04/24/2024

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	25	0	1	10	0	30	1	300	10	15	295	10
Future Vol, veh/h	25	0	1	10	0	30	1	300	10	15	295	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	85	92	85	92	85	85	85	85	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	27	0	1	12	0	35	1	353	12	18	347	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	762	750	347	750	755	359	358	0	0	365	0	0
Stage 1	383	383	-	361	361	-	-	-	-	-	-	-
Stage 2	379	367	-	389	394	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	320	339	694	326	337	683	1195	-	-	1188	-	-
Stage 1	638	610	-	655	624	-	-	-	-	-	-	-
Stage 2	641	620	-	633	603	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	299	332	694	320	330	683	1195	-	-	1188	-	-
Mov Cap-2 Maneuver	299	332	-	320	330	-	-	-	-	-	-	-
Stage 1	637	598	-	654	623	-	-	-	-	-	-	-
Stage 2	607	619	-	620	592	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	18	-	-	12.4	-	-	0	-	-	0.4	-	-
HCM LOS	C	-	-	B	-	-	-	-	-	-	-	-

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1195	-	-	306	532	1188	-	-
HCM Lane V/C Ratio	0.001	-	-	0.092	0.088	0.015	-	-
HCM Control Delay (s)	8	0	-	18	12.4	8.1	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Total 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
 RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 4: Welch & Berthoud Pkwy

04/24/2024

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	15	1	5	10	1	30	5	285	10	40	305	30
Future Vol, veh/h	15	1	5	10	1	30	5	285	10	40	305	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	87	92	87	92	87	87	87	87	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	1	5	11	1	34	5	328	11	46	351	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	804	792	351	807	820	334	384	0	0	339	0	0
Stage 1	443	443	-	344	344	-	-	-	-	-	-	-
Stage 2	361	349	-	463	476	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	300	320	690	299	309	706	1169	-	-	1215	-	-
Stage 1	592	574	-	669	635	-	-	-	-	-	-	-
Stage 2	655	632	-	577	555	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	273	303	690	284	293	706	1169	-	-	1215	-	-
Mov Cap-2 Maneuver	273	303	-	284	293	-	-	-	-	-	-	-
Stage 1	589	546	-	666	632	-	-	-	-	-	-	-
Stage 2	619	629	-	544	528	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	17.1			12.8			0.1			0.9		
HCM LOS	C			B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1169	-	-	321	506	1215	-	-
HCM Lane V/C Ratio	0.005	-	-	0.071	0.093	0.038	-	-
HCM Control Delay (s)	8.1	0	-	17.1	12.8	8.1	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0.1	-	-

Total 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
 RR

Synchro 11 Light Report
 Page 1

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 5: Berthoud Pkwy & Arapahoe

04/24/2024

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕			↕			↕	↕
Traffic Vol, veh/h	45	0	15	5	0	10	5	225	5	5	280	15
Future Vol, veh/h	45	0	15	5	0	10	5	225	5	5	280	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	82	92	82	92	82	82	82	82	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	49	0	16	6	0	12	5	274	6	6	341	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	646	643	341	656	656	277	357	0	0	280	0	0
Stage 1	353	353	-	287	287	-	-	-	-	-	-	-
Stage 2	293	290	-	369	369	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	383	391	699	377	384	759	1196	-	-	1277	-	-
Stage 1	662	629	-	718	673	-	-	-	-	-	-	-
Stage 2	713	670	-	649	619	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	374	387	699	365	380	759	1196	-	-	1277	-	-
Mov Cap-2 Maneuver	374	387	-	365	380	-	-	-	-	-	-	-
Stage 1	659	625	-	714	670	-	-	-	-	-	-	-
Stage 2	698	667	-	630	615	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.1	11.7	0.2	0.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR	
Capacity (veh/h)	1196	-	-	423	558	1277	-	-
HCM Lane V/C Ratio	0.005	-	-	0.154	0.033	0.005	-	-
HCM Control Delay (s)	8	0	-	15.1	11.7	7.8	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.1	0	-	-

Total 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
 RR

Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 5: Berthoud Pkwy & Arapahoe

04/24/2024

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Traffic Vol, veh/h	30	1	10	5	1	5	15	240	5	5	225	50
Future Vol, veh/h	30	1	10	5	1	5	15	240	5	5	225	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	85	92	85	92	85	85	85	85	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	33	1	11	6	1	6	16	282	6	6	265	54

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	598	597	265	627	648	285	319	0
Stage 1	277	277	-	317	317	-	-	-
Stage 2	321	320	-	310	331	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-
Pot Cap-1 Maneuver	413	415	771	395	388	752	1235	-
Stage 1	727	679	-	692	652	-	-	-
Stage 2	689	651	-	698	643	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	402	406	771	382	380	752	1235	-
Mov Cap-2 Maneuver	402	406	-	382	380	-	-	-
Stage 1	716	675	-	682	642	-	-	-
Stage 2	672	641	-	683	639	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	12.5	0.4	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1235	-	-	455	493	1268	-	-
HCM Lane V/C Ratio	0.013	-	-	0.098	0.026	0.005	-	-
HCM Control Delay (s)	8	0	-	13.8	12.5	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Total 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
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Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Roundabout
6: Spartan & Berthoud Pkwy

04/27/2024

Intersection				
Intersection Delay, s/veh	5.9			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	103	258	220	385
Demand Flow Rate, veh/h	106	266	227	397
Vehicles Circulating, veh/h	490	170	292	149
Vehicles Exiting, veh/h	56	349	304	287
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.7	5.3	5.8	6.4
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	106	266	227	397
Cap Entry Lane, veh/h	837	1160	1024	1185
Entry HV Adj Factor	0.969	0.969	0.969	0.971
Flow Entry, veh/h	103	258	220	385
Cap Entry, veh/h	811	1125	992	1150
V/C Ratio	0.127	0.229	0.222	0.335
Control Delay, s/veh	5.7	5.3	5.8	6.4
LOS	A	A	A	A
95th %tile Queue, veh	0	1	1	1

Total 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Roundabout
6: Spartan & Berthoud Pkwy

04/27/2024

Intersection				
Intersection Delay, s/veh	5.6			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	76	244	337	313
Demand Flow Rate, veh/h	78	250	347	323
Vehicles Circulating, veh/h	343	241	135	165
Vehicles Exiting, veh/h	145	241	286	326
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.5	5.6	5.8	5.8
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	78	250	347	323
Cap Entry Lane, veh/h	973	1079	1202	1166
Entry HV Adj Factor	0.970	0.974	0.970	0.970
Flow Entry, veh/h	76	244	337	313
Cap Entry, veh/h	944	1051	1167	1131
V/C Ratio	0.080	0.232	0.289	0.277
Control Delay, s/veh	4.5	5.6	5.8	5.8
LOS	A	A	A	A
95th %tile Queue, veh	0	1	1	1

Total 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 7: Berthoud Pkwy & CR 4E

04/24/2024

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	85	15	5	5	40	10	5	60	15	15	95	210
Future Vol, veh/h	85	15	5	5	40	10	5	60	15	15	95	210
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	90	16	5	5	43	11	5	64	16	16	101	223

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	354	335	213	337	438	72	324	0
Stage 1	245	245	-	82	82	-	-	-
Stage 2	109	90	-	255	356	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-
Pot Cap-1 Maneuver	599	584	825	615	511	987	1230	-
Stage 1	756	702	-	924	825	-	-	-
Stage 2	894	818	-	747	627	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	547	574	825	590	502	987	1230	-
Mov Cap-2 Maneuver	547	574	-	590	502	-	-	-
Stage 1	753	693	-	920	822	-	-	-
Stage 2	835	815	-	716	619	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	12.2	0.5	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1230	-	-	560	560	1512	-	-
HCM Lane V/C Ratio	0.004	-	-	0.199	0.104	0.011	-	-
HCM Control Delay (s)	7.9	0	-	13	12.2	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.3	0	-	-

Total 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th TWSC
 7: Berthoud Pkwy & CR 4E

04/24/2024

Intersection												
Int Delay, s/veh	8.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	195	45	5	5	30	15	5	110	5	10	95	130
Future Vol, veh/h	195	45	5	5	30	15	5	110	5	10	95	130
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	232	54	6	6	36	18	6	131	6	12	113	155

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	388	364	191	391	438	134	268	0
Stage 1	215	215	-	146	146	-	-	-
Stage 2	173	149	-	245	292	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-
Pot Cap-1 Maneuver	569	562	848	566	511	912	1290	-
Stage 1	785	723	-	854	774	-	-	-
Stage 2	827	772	-	756	669	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	522	554	848	514	503	912	1290	-
Mov Cap-2 Maneuver	522	554	-	514	503	-	-	-
Stage 1	781	716	-	850	770	-	-	-
Stage 2	769	768	-	688	662	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.7	11.9	0.3	0.3
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1290	-	-	532	583	1441	-	-
HCM Lane V/C Ratio	0.005	-	-	0.548	0.102	0.008	-	-
HCM Control Delay (s)	7.8	0	-	19.7	11.9	7.5	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	3.3	0.3	0	-	-

Total 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
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Synchro 11 Light Report
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Signalized Intersection Summary
8: US 287 & CR 4E

04/28/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	225	35	755	80	15	1795
Future Volume (veh/h)	225	35	755	80	15	1795
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	247	38	830	88	16	1973
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	285	253	2640	1178	477	2640
Arrive On Green	0.16	0.16	0.75	0.75	0.75	0.75
Sat Flow, veh/h	1767	1572	3618	1572	604	3618
Grp Volume(v), veh/h	247	38	830	88	16	1973
Grp Sat Flow(s),veh/h/ln	1767	1572	1763	1572	604	1763
Q Serve(g_s), s	13.6	2.1	7.7	1.5	0.9	31.9
Cycle Q Clear(g_c), s	13.6	2.1	7.7	1.5	8.6	31.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	285	253	2640	1178	477	2640
V/C Ratio(X)	0.87	0.15	0.31	0.07	0.03	0.75
Avail Cap(c_a), veh/h	398	354	2640	1178	477	2640
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	36.1	4.1	3.3	5.5	7.2
Incr Delay (d2), s/veh	13.7	0.3	0.3	0.1	0.1	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	0.8	1.7	0.3	0.1	7.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.6	36.3	4.4	3.5	5.7	9.1
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	285		918		1989	
Approach Delay, s/veh	52.1		4.3		9.1	
Approach LOS	D		A		A	
Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	79.4				79.4	20.6
Change Period (Y+Rc), s	4.5				4.5	4.5
Max Green Setting (Gmax), s	68.5				68.5	22.5
Max Q Clear Time (g_c+l1), s	9.7				33.9	15.6
Green Ext Time (p_c), s	6.1				20.0	0.5
Intersection Summary						
HCM 6th Ctrl Delay			11.6			
HCM 6th LOS			B			

Total 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
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LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Signalized Intersection Summary
8: US 287 & CR 4E

04/27/2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	140	30	2030	275	40	1085
Future Volume (veh/h)	140	30	2030	275	40	1085
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	146	31	2115	286	42	1130
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	182	162	2846	1269	146	2846
Arrive On Green	0.10	0.10	0.81	0.81	0.81	0.81
Sat Flow, veh/h	1767	1572	3618	1572	144	3618
Grp Volume(v), veh/h	146	31	2115	286	42	1130
Grp Sat Flow(s),veh/h/ln	1767	1572	1763	1572	144	1763
Q Serve(g_s), s	8.1	1.8	28.9	4.3	19.9	9.1
Cycle Q Clear(g_c), s	8.1	1.8	28.9	4.3	48.8	9.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	182	162	2846	1269	146	2846
V/C Ratio(X)	0.80	0.19	0.74	0.23	0.29	0.40
Avail Cap(c_a), veh/h	318	283	2846	1269	146	2846
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.9	41.1	4.6	2.3	16.4	2.7
Incr Delay (d2), s/veh	8.0	0.6	1.8	0.4	4.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.7	7.2	1.0	0.8	2.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	51.9	41.6	6.5	2.7	21.3	3.2
LnGrp LOS	D	D	A	A	C	A
Approach Vol, veh/h	177		2401		1172	
Approach Delay, s/veh	50.1		6.0		3.8	
Approach LOS	D		A		A	
Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	85.2				85.2	14.8
Change Period (Y+Rc), s	4.5				4.5	4.5
Max Green Setting (Gmax), s	73.0				73.0	18.0
Max Q Clear Time (g_c+I1), s	30.9				50.8	10.1
Green Ext Time (p_c), s	30.5				11.1	0.3
Intersection Summary						
HCM 6th Ctrl Delay			7.4			
HCM 6th LOS			A			

Total 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
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LEGACY PARK PHASE I | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Signalized Intersection Summary
11: Meadowlark & Mountain

04/28/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	395	20	15	425	110	40	15	10	185	15	150
Future Volume (veh/h)	175	395	20	15	425	110	40	15	10	185	15	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	199	449	23	17	483	125	45	17	11	210	17	170
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	284	768	39	343	550	466	440	163	97	728	874	741
Arrive On Green	0.19	0.88	0.88	0.30	0.30	0.30	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1767	1750	90	914	1856	1572	810	347	205	1371	1856	1572
Grp Volume(v), veh/h	199	0	472	17	483	125	73	0	0	210	17	170
Grp Sat Flow(s),veh/h/ln	1767	0	1839	914	1856	1572	1362	0	0	1371	1856	1572
Q Serve(g_s), s	7.6	0.0	6.4	1.3	24.8	6.1	1.3	0.0	0.0	6.1	0.5	6.4
Cycle Q Clear(g_c), s	7.6	0.0	6.4	1.3	24.8	6.1	2.6	0.0	0.0	8.7	0.5	6.4
Prop In Lane	1.00		0.05	1.00		1.00	0.62		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	284	0	808	343	550	466	700	0	0	728	874	741
V/C Ratio(X)	0.70	0.00	0.58	0.05	0.88	0.27	0.10	0.00	0.00	0.29	0.02	0.23
Avail Cap(c_a), veh/h	350	0	1113	461	789	668	700	0	0	728	874	741
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.00	0.82	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	0.0	3.8	25.2	33.4	26.9	14.6	0.0	0.0	16.1	14.1	15.7
Incr Delay (d2), s/veh	3.8	0.0	0.6	0.1	8.0	0.3	0.3	0.0	0.0	1.0	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	1.4	0.3	11.7	2.2	1.0	0.0	0.0	3.1	0.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.1	0.0	4.4	25.3	41.5	27.2	14.9	0.0	0.0	17.1	14.2	16.4
LnGrp LOS	C	A	A	C	D	C	B	A	A	B	B	B
Approach Vol, veh/h		671			625			73			397	
Approach Delay, s/veh		10.5			38.2			14.9			16.7	
Approach LOS		B			D			B			B	
Timer - Assigned Phs	2		4		6	7	8					
Phs Duration (G+Y+Rc), s		51.6		48.4		51.6	14.2	34.2				
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		30.5		60.5		30.5	13.5	42.5				
Max Q Clear Time (g_c+I1), s		4.6		8.4		10.7	9.6	26.8				
Green Ext Time (p_c), s		0.4		3.0		1.2	0.2	2.9				
Intersection Summary												
HCM 6th Ctrl Delay			21.9									
HCM 6th LOS			C									

Total 2028 AM Legacy Park Phase 1 7:00 am 06/22/2022
RR

Synchro 11 Light Report
Page 1

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Signalized Intersection Summary
11: Meadowlark & Mountain

04/28/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	575	25	20	440	120	40	20	30	215	20	165
Future Volume (veh/h)	340	575	25	20	440	120	40	20	30	215	20	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	370	625	27	22	478	130	43	22	33	234	22	179
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	418	898	39	297	539	457	304	159	209	625	745	632
Arrive On Green	0.35	1.00	1.00	0.29	0.29	0.29	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1767	1766	76	774	1856	1572	629	396	520	1338	1856	1572
Grp Volume(v), veh/h	370	0	652	22	478	130	98	0	0	234	22	179
Grp Sat Flow(s),veh/h/ln	1767	0	1842	774	1856	1572	1544	0	0	1338	1856	1572
Q Serve(g_s), s	14.7	0.0	0.0	2.1	24.6	6.4	1.1	0.0	0.0	7.5	0.7	7.7
Cycle Q Clear(g_c), s	14.7	0.0	0.0	2.1	24.6	6.4	3.7	0.0	0.0	11.2	0.7	7.7
Prop In Lane	1.00		0.04	1.00		1.00	0.44		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	418	0	936	297	539	457	672	0	0	625	745	632
V/C Ratio(X)	0.89	0.00	0.70	0.07	0.89	0.28	0.15	0.00	0.00	0.37	0.03	0.28
Avail Cap(c_a), veh/h	492	0	1133	347	659	558	672	0	0	625	745	632
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.00	0.84	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.1	0.0	0.0	25.9	33.9	27.4	19.0	0.0	0.0	21.0	18.1	20.2
Incr Delay (d2), s/veh	13.6	0.0	1.2	0.1	12.0	0.3	0.5	0.0	0.0	1.7	0.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.3	0.4	12.6	2.4	1.5	0.0	0.0	4.1	0.3	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	0.0	1.2	26.0	45.9	27.8	19.4	0.0	0.0	22.7	18.2	21.3
LnGrp LOS	C	A	A	C	D	C	B	A	A	C	B	C
Approach Vol, veh/h		1022			630			98			435	
Approach Delay, s/veh		11.9			41.4			19.4			21.9	
Approach LOS		B			D			B			C	
Timer - Assigned Phs	2		4		6	7	8					
Phs Duration (G+Y+Rc), s	44.7		55.3		44.7	21.8	33.6					
Change Period (Y+Rc), s	4.5		4.5		4.5	4.5	4.5					
Max Green Setting (Gmax), s	29.5		61.5		29.5	21.5	35.5					
Max Q Clear Time (g_c+I1), s	5.7		2.0		13.2	16.7	26.6					
Green Ext Time (p_c), s	0.5		5.4		1.3	0.5	2.5					
Intersection Summary												
HCM 6th Ctrl Delay			22.8									
HCM 6th LOS			C									

Total 2028 PM Legacy Park Phase 1 5:00 pm 06/22/2022
 RR

Synchro 11 Light Report
 Page 1

Total 2028 With Improvements

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Signalized Intersection Summary
3: Berthoud Pkwy & Mountain

04/28/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	335	130	35	320	85	130	220	55	105	170	120
Future Volume (veh/h)	100	335	130	35	320	85	130	220	55	105	170	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	111	372	144	39	356	94	144	244	61	117	189	133
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	206	447	379	179	403	342	205	347	476	163	264	369
Arrive On Green	0.06	0.24	0.24	0.03	0.22	0.22	0.30	0.30	0.30	0.23	0.23	0.23
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	676	1146	1572	696	1125	1572
Grp Volume(v), veh/h	111	372	144	39	356	94	388	0	61	306	0	133
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1822	0	1572	1821	0	1572
Q Serve(g_s), s	4.7	18.2	7.3	1.6	17.8	4.8	18.1	0.0	2.7	14.8	0.0	6.8
Cycle Q Clear(g_c), s	4.7	18.2	7.3	1.6	17.8	4.8	18.1	0.0	2.7	14.8	0.0	6.8
Prop In Lane	1.00		1.00	1.00		1.00	0.37		1.00	0.38		1.00
Lane Grp Cap(c), veh/h	206	447	379	179	403	342	551	0	476	427	0	369
V/C Ratio(X)	0.54	0.83	0.38	0.22	0.88	0.27	0.70	0.00	0.13	0.72	0.00	0.36
Avail Cap(c_a), veh/h	206	494	418	212	484	410	551	0	476	427	0	369
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.8	34.5	30.4	28.9	36.3	31.2	29.6	0.0	24.2	33.7	0.0	30.7
Incr Delay (d2), s/veh	2.8	10.7	0.6	0.6	15.2	0.4	7.4	0.0	0.6	9.9	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	9.1	2.7	0.7	9.3	1.8	8.7	0.0	1.0	7.5	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.6	45.2	31.0	29.5	51.5	31.6	37.0	0.0	24.8	43.6	0.0	33.4
LnGrp LOS	C	D	C	C	D	C	D	A	C	D	A	C
Approach Vol, veh/h		627			489			449			439	
Approach Delay, s/veh		39.5			45.9			35.3			40.5	
Approach LOS		D			D			D			D	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		33.5	7.7	27.6		27.0	10.0	25.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		29.0	5.0	25.5		22.5	5.5	25.0				
Max Q Clear Time (g_c+I1), s		20.1	3.6	20.2		16.8	6.7	19.8				
Green Ext Time (p_c), s		1.7	0.0	1.2		1.1	0.0	1.0				
Intersection Summary												
HCM 6th Ctrl Delay				40.4								
HCM 6th LOS				D								
Notes												
User approved pedestrian interval to be less than phase max green.												

LEGACY PARK PHASE 1 | TRANSPORTATION IMPACT STUDY
Town of Berthoud

HCM 6th Signalized Intersection Summary
3: Berthoud Pkwy & Mountain

04/28/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	550	115	60	395	135	105	190	50	175	200	100
Future Volume (veh/h)	150	550	115	60	395	135	105	190	50	175	200	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	156	573	120	62	411	141	109	198	52	182	208	104
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	283	611	517	169	561	475	132	241	322	203	233	378
Arrive On Green	0.07	0.33	0.33	0.04	0.30	0.30	0.20	0.20	0.20	0.24	0.24	0.24
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	647	1176	1572	846	967	1572
Grp Volume(v), veh/h	156	573	120	62	411	141	307	0	52	390	0	104
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1823	0	1572	1813	0	1572
Q Serve(g_s), s	5.9	29.3	5.4	2.3	19.4	6.7	15.7	0.0	2.7	20.3	0.0	5.3
Cycle Q Clear(g_c), s	5.9	29.3	5.4	2.3	19.4	6.7	15.7	0.0	2.7	20.3	0.0	5.3
Prop In Lane	1.00		1.00	1.00		1.00	0.36		1.00	0.47		1.00
Lane Grp Cap(c), veh/h	283	611	517	169	561	475	373	0	322	436	0	378
V/C Ratio(X)	0.55	0.94	0.23	0.37	0.73	0.30	0.82	0.00	0.16	0.89	0.00	0.28
Avail Cap(c_a), veh/h	283	636	539	186	604	512	373	0	322	436	0	378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.5	31.8	23.8	25.8	30.6	26.1	37.2	0.0	32.0	35.9	0.0	30.2
Incr Delay (d2), s/veh	2.3	21.4	0.2	1.3	4.3	0.3	18.2	0.0	1.1	23.4	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	15.8	1.9	1.0	8.8	2.4	8.7	0.0	1.1	11.5	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.8	53.2	24.0	27.1	34.8	26.5	55.4	0.0	33.0	59.4	0.0	32.0
LnGrp LOS	C	D	C	C	C	C	E	A	C	E	A	C
Approach Vol, veh/h	849			614			359			494		
Approach Delay, s/veh	44.1			32.1			52.2			53.6		
Approach LOS	D			C			D			D		
Timer - Assigned Phs	2		3	4		6	7	8				
Phs Duration (G+Y+Rc), s	24.5		8.6	36.7		28.0	11.2	34.0				
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s	20.0		5.0	33.5		23.5	6.7	31.8				
Max Q Clear Time (g_c+I1), s	17.7		4.3	31.3		22.3	7.9	21.4				
Green Ext Time (p_c), s	0.4		0.0	0.9		0.3	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay	44.2											
HCM 6th LOS	D											
Notes												

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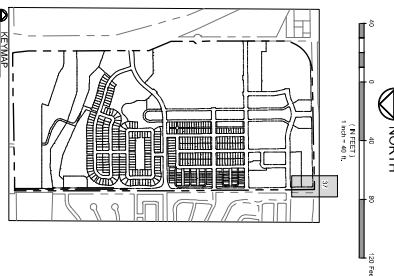
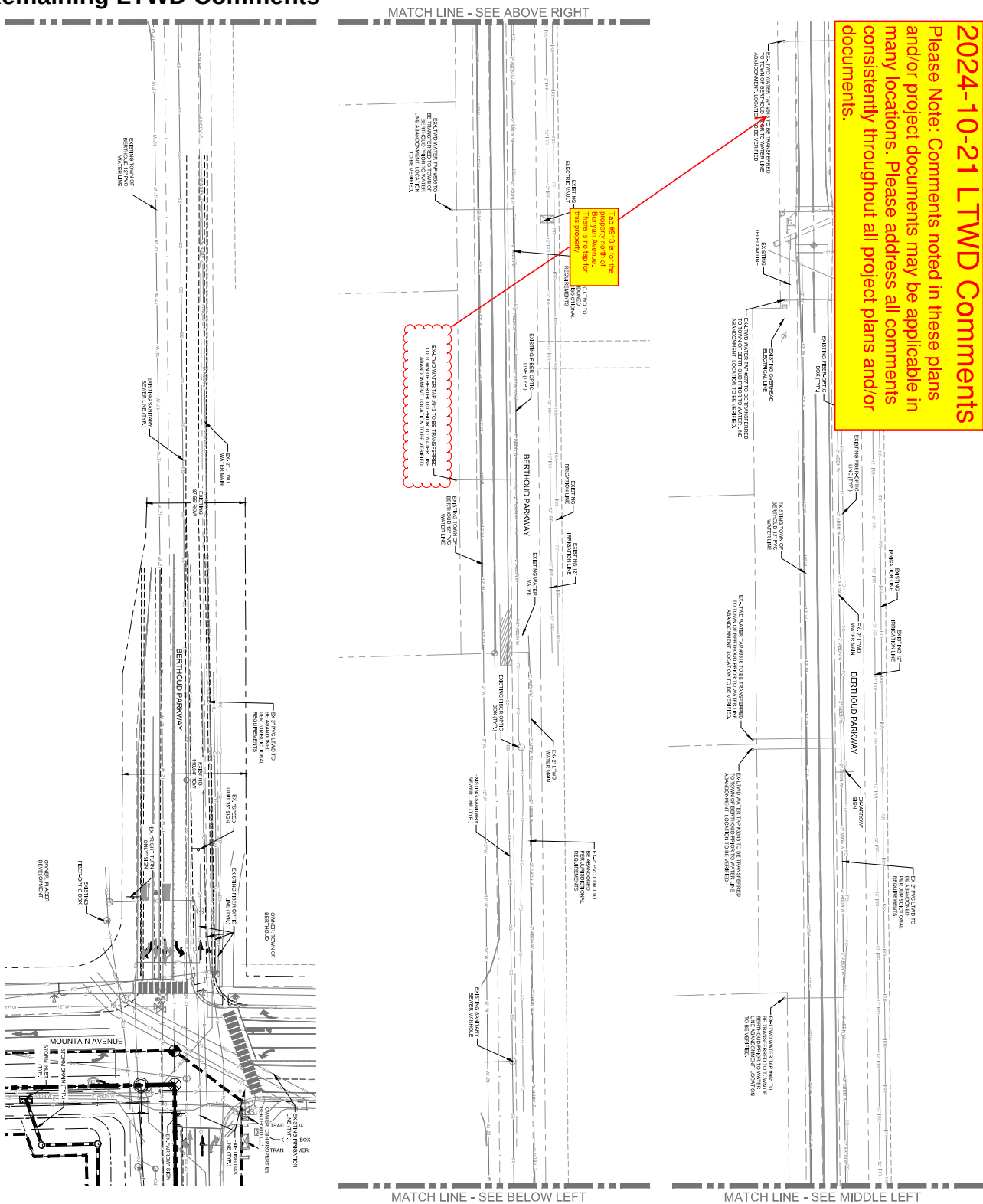
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Remaining LTWD Comments

2024-10-21 LTWD Comments

Please Note: Comments noted in these plans and/or project documents may be applicable in many locations. Please address all comments consistently throughout all project plans and/or documents.



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NOTES:

- [illegible]

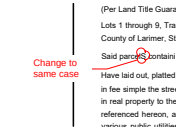


Know what's below.
Call before you dig.
CALL 1-800-4-A-DIG DAILY IN ADVANCE BEFORE YOU
EXCAVATE, OR OTHERWISE FOR THE SAFETY OF
UNDERGROUND UTILITIES.

Remaining Baseline Engineering Surveyor Comments

2 - 04 Legacy Park_Preliminary Plat.pdf Markup Summary

[1] 1 PLAT 1 (2)



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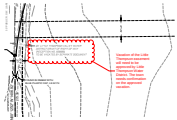
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An updated title commitment must be provided once the Administrative Amended Plat has been recorded.

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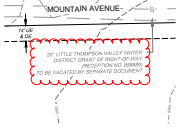


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Vacation of the Little Thompson easement will need to be approved by Little Thompson Water District. The town needs confirmation on the approved vacation.

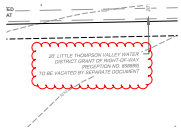


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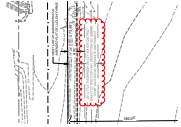
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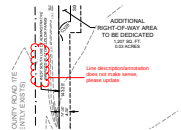
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[8] 8 PLAT 8 (1)



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[11] 11 PLAT 11 (1)



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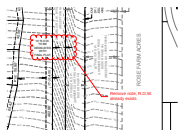
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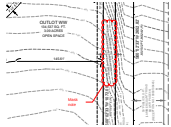
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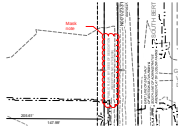
Remove note, R.O.W. already exists

[22] 22 PLAT 22 (2)



Subject: Cloud+
Page Label: [22] 22 PLAT 22
Lock: Unlocked
Status:
Checkmark: Unchecked
Author: Lancaster
Date: 10/29/2024 8:22:35 AM
Color: ■
Label:

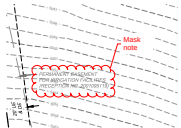
Mask note



Subject: Cloud+
Page Label: [22] 22 PLAT 22
Lock: Unlocked
Status:
Checkmark: Unchecked
Author: Lancaster
Date: 10/29/2024 8:23:16 AM
Color: ■
Label:

Mask note

[23] 23 PLAT 23 (1)



Subject: Cloud+
Page Label: [23] 23 PLAT 23
Lock: Unlocked
Status:
Checkmark: Unchecked
Author: Lancaster
Date: 10/29/2024 8:25:16 AM
Color: ■
Label:

Mask note

Public Comments

From: Mark Bergman <photofly0809@yahoo.com>
Sent: Sunday, November 19, 2023 10:18 AM
To: Tawn Hillenbrand
Subject: Comments on the Legacy Park Preliminary Plat

You don't often get email from photofly0809@yahoo.com. [Learn why this is important](#)

Ms. Twan, thank you for sending the neighborhood notice on the Legacy Park development. I have two comments...

First, I would like to see the development not build houses in the flood plain as described by the latest FEMA maps concerning the Dry Creek flow. It seems that there are lots planned in the flood plain along the southern development. We had built a home along Greenwood Drive the Rose Acres Farm development and were unaware that our home bordered the flood plain. We didn't find this out until we went to the closing where we were told that we had to purchase flood insurance (right now, it's running +\$2100 a year). With a mortgage, there's no way around it.

Secondly, I would like to see the traffic plan to control traffic in and out of the development on Spartan Avenue/Berthoud Parkway intersection. Because of School traffic, this is a very busy intersection today and doesn't need to push a significant number of automobiles through it.

Please let me know if you have any questions, I'd be happy to answer them.

Mark Bergman
1150 Greenwood Drive
Berthoud, CO 80513
651-600-0064

Tawn Hillenbrand

From: Todd Duval <broncos1td@yahoo.com>
Sent: Thursday, November 23, 2023 8:51 PM
To: Tawn Hillenbrand
Cc: Todd Duval
Subject: Legacy Park/ Former Ludlow Farms

You don't often get email from broncos1td@yahoo.com. [Learn why this is important](#)

Hello Tawn,

I have just reviewed the new application from LP communities.

Ludlow I suppose was sold to a new developer because I now see some extreme differences from the previous developer.

The extensive density is a major concern.

Does not appear to have near the green or park space area.

Much less single family homes.

I never agreed with allowing a height construction of 30 ft. Terrible for a plot of land with amazing views.

The extension of Spartan to 287 was a major concern with the last developer. With the 2 lane , two way roads of Spartan and Berthoud Parkway are definitely going to cause some extensive traffic's issue at the intersection. Even if the 287 at Spartan is right on and right off, the through traffic past Berthoud High and down to 5th ave, now makes that intersection a real issue now and dangerous to all the high pedestrian traffic already on Spartan.

With no schools planned in that area, it will now significantly increase traffic to the other schools in town.

It's disappointing that the city allowed the Urban zoning for this area at all.

What happened to the nice retail on Mountain ave? It had room and space for restaurants and bars with open patio space to the south.

The last plan had a nice preservation in the entire park area focusing on agriculture and the town of Berthoud. Gone?

It's not a concern of growth for me, in fact, I support it in a smart and citizen focused way.

Lastly, I definitely oppose this plan by this developer.

Thank you for taking the time to read my concerns.

Todd Duval

Heritage Ridge resident

[Sent from Yahoo Mail for iPhone](#)

Tawn Hillenbrand

From: Joanna Sullivan <josullivan827@gmail.com>
Sent: Thursday, November 23, 2023 10:02 PM
To: Tawn Hillenbrand
Subject: No to expansion

You don't often get email from josullivan827@gmail.com. [Learn why this is important](#)

Hello Tawn,

I'd like to voice my objection to the expansion of 1800 homes, extending Spartan Ave to 287.

With gratitude,

Joanna Sullivan

303.834.0018

Tawn Hillenbrand

From: anthony gracia <anthonygracia@yahoo.com>
Sent: Thursday, November 23, 2023 10:06 PM
To: Tawn Hillenbrand
Subject: Opposing new development

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

Awful idea for a small town with one grocery store and small high school.

Tawn Hillenbrand

From: Douglas Mason <doug@dougmason.tech>
Sent: Thursday, November 23, 2023 11:13 PM
To: Tawn Hillenbrand
Subject: Opposition to the Legacy Park Preliminary Plat Development

You don't often get email from doug@dougmason.tech. [Learn why this is important](#)

Tawn Hillenbrand
Senior Planner
Community Development Dept.
Town of Berthoud
P.O. Box 1229
Berthoud, CO 80513

Subject: Opposition to the Legacy Park Preliminary Plat Development

Dear Ms. Hillenbrand,

I am writing to you in my capacity as a resident of Berthoud with deep concerns regarding the proposed Legacy Park Preliminary Plat development, specifically the plan to construct 1,800 new homes in the vicinity of the intersection of Spartan Avenue and Berthoud Parkway.

While I understand and support the need for growth and progression within our town, I firmly believe that the selected area for this high-density housing project is unsuitable for several reasons. One of my primary concerns is the capacity of our local schools, which are currently not equipped to accommodate the significant increase in population that this development would bring. The influx of new residents would strain our educational resources, potentially lowering the quality of education and overwhelming facilities that are already operating at or near capacity.

Furthermore, the increase in traffic that such a large development would incur could lead to congestion and safety issues on roads that are not designed to handle such high volumes. The strain on local infrastructure, including roads, utilities, and public services, would require substantial investment to meet the demands of the additional households.

I urge the Planning Commission and Town Board to carefully consider the long-term implications of such a development on the Berthoud community. It is crucial that growth is managed in a way that maintains the quality of life for current residents, ensures the sustainability of our town's resources, and preserves the unique character that makes Berthoud a wonderful place to live.

I appreciate your attention to the voices of Berthoud's citizens in this matter and hope that our input will be a valuable part of the decision-making process.

Thank you for your time and consideration.

Sincerely,

Douglas Mason
1407 Mount Meeker Ave
Berthoud, CO 80513
440-279-3565



Doug Mason | Lead Mobile Automation Architect
Major League Baseball, Advanced Media

Tawn Hillenbrand

From: Seth Chaps <seth.chaps@gmail.com>
Sent: Friday, November 24, 2023 6:16 AM
To: Tawn Hillenbrand
Subject: Opposing the plan for new development

You don't often get email from seth.chaps@gmail.com. [Learn why this is important](#)

Greetings,

I've just been made aware of the plans for MORE housing development at Spartan and Berthoud Parkway. I want to make it known our family is completely against more new developments in Berthoud. The feeling of the town and community is being absolutely destroyed. We call on you to halt these plans and stop approving new ones!

Seth Chaps

Tawn Hillenbrand

From: kelly <mustharley@aol.com>
Sent: Friday, November 24, 2023 8:27 AM
To: Tawn Hillenbrand
Subject: Spartan and Berthoud Pkwy.

You don't often get email from mustharley@aol.com. [Learn why this is important](#)

Hi, I am writing to you about the upcoming project on Spartan and Berthoud. Please think this through. It is too big. Things to think about

Too dense
WATER WATER WATER (we all ready do not have not enough)
sewer
schools
really look over the fine print of what the developer is saying they want to do and will do.

What about if there is a fire ? They are building the housing too close . At the one meeting I was at the developer proposed a downtown ish area. What about our down town ? This project needs to be down sized.

We need more open space , if this project goes through, Berthoud will look like any of the other urban sprawl up and down the front range.

Please go and talk to the town of Superior and see how they got the wool pulled over their eyes from the developer with their downtown area.

Thank you

Kelly Macaulay
227 North 2nd St Trl 4
Berthoud Co

Tawn Hillenbrand

From: Danielle Dickson <danielledickson668@gmail.com>
Sent: Friday, November 24, 2023 11:40 AM
To: Tawn Hillenbrand
Subject: New development plans

[You don't often get email from danielledickson668@gmail.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification>]

I am emailing to oppose the development plan at spartan and Berthoud pkwy to 287. Please be sure to record my response. This town is not ready for more development and needs to work on infrastructure first with grocery stores, schools and streets. Additionally several new developments have needed months of extra work with the structure of the homes, replacing driveways that cracked, drainage issues and unfinished yards. Also, there are several common areas around Berthoud- particularly spartan and Berthoud pkwy where lights and stop signs are needed and the grassy areas along the sidewalk need to be redone properly .. again for the 2nd or 3rd time because they have been overrun with weeds and not kept up properly in the spring and summer.

Thank You,

Danielle Solano-Dickson MA, LPC, CACI

Any information, including protected health information (PHI), transmitted in this email is intended only for the person or entity to which it is addressed and may contain information that is privileged, confidential and or exempt from disclosure under applicable Federal or State law. Any review, retransmission, dissemination or other use of or taking of any action in reliance upon, protected health information (PHI) by persons or entities other than the intended recipient is prohibited. If you received this email in error, please contact the sender and delete the material from any computer.

Tawn Hillenbrand

From: Diane Guiragossian <deeno4jaay@icloud.com>
Sent: Friday, November 24, 2023 12:35 PM
To: Tawn Hillenbrand
Subject: Oppose Development

[You don't often get email from deeno4jaay@icloud.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification>]

I oppose the development. It will ruin the integrity of our town. We do not even have a grocery store so adding such a mass amount of people will not be good for us. Keep Berthoud small!

Sent from my iPhone

Tawn Hillenbrand

From: Sarah Jirkovsky <sarah.jirkovsky@gmail.com>
Sent: Saturday, November 25, 2023 4:02 PM
To: Tawn Hillenbrand
Subject: Opposition of legacy park

You don't often get email from sarah.jirkovsky@gmail.com. [Learn why this is important](#)

Good afternoon,

I am strongly opposed to the development of 1800 new homes in Legacy Park. Berthoud does not have the resources for this amount of home. Please stop this development and consider a much smaller one. It will ruin our humble town.

Thanks

Sarah, Berthoud home owner and resident since 2014, Colorado front range native

Tawn Hillenbrand

From: Karen Azevedo <summitco2003@gmail.com>
Sent: Sunday, November 26, 2023 5:37 PM
To: Tawn Hillenbrand
Subject: Legacy Park Proposal

You don't often get email from summitco2003@gmail.com. [Learn why this is important](#)

I vote no on this. If we can't even get commercial services and such that were promised to the Prairie Star subdivision built .at 287/Berthoud Parkway because of water concerns, why would you propose building 1800 more homes? Where will their water come from?? This is beyond ridiculous. We have lived in the Prairie Star subdivision for almost 8 years. Finish what has been promised before you even think of expanding more.

Karen Azevedo

Tawn Hillenbrand

From: Kathleen Tabor <kathy.tabor@icloud.com>
Sent: Monday, November 27, 2023 5:28 PM
To: Tawn Hillenbrand
Cc: kathleen Tabor
Subject: Ludlow farm /Legacy Park proposal

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

To the attention of Community Development Department/Tawn Hillenbrand

I am writing again after receiving the latest notification about the proposed development of Ludlow Farm. Again there is no consideration for the existing neighbors to the east of the Ludlow property who built their homes 30 years ago on county road 17 (now Berthoud Parkway) adjacent to a farm (now a proposed site for 1800 homes and retail properties). Your proposal has us living on a 287 exit next to 1800 homes not built to the same standards as the adjoining neighborhood. Instead of lots of 8-10,000 sq ft you have packed multiple row homes and businesses. There is no set back on your diagrams. These "homes" are built up against the existing neighborhoods with no buffer to allow for the disparity between the types of homes in the existing neighborhood on Berthoud Parkway between Mountain ave and Spartan and the proposed deveopement's packed row homes. I couldn't even get a definitive answer when it was asked what the setback was at the meetings I attended. No one wants to live next to a two story wall of tightly packed homes that obliterate the reason we built our homes thirty years ago- the view, openness and quiet that a county rd property next to a farm offered in a small farm town.

I have already written the town about the noise and traffic problems since the building of the Rose Farms development went in and as it continues to add more homes. We cannot even hear each other when sitting in our own back yard and now you want to bring in more traffic from 287 and an additional 1800 homes worth of cars onto Spartan Ave and Berthoud Parkway .You say you've done studies as to traffic and noise but the present noise level is not acceptable. It is waking us and not allowing us to use our yards. If studies were done they did not include any input from present residents who actually have to put up with the noise. If you think that much traffic noise is ok then funnel it through YOUR new proposed neighborhood not onto Spartan and Berthoud Parkway into our already overused roads .Dont connect the 287 Spartan exit to Berthoud Parkway !

Everything I have seen and heard at the meetings and mailings makes me that much more opposed to the dropping of 1800 of these type of homes behind us. My neighbor never even received ANY notification that the farm behind us was being developed . How any others have not had a chance to attend your meetings and provide any type of input? Even those of us who attended town meetings were not allowed to speak if others had already voiced the same opposition opinions.

The only "legacy" this plan leaves is that exiting residents don't really matter and neither does the preservation of this once quiet farm town . If you go ahead with this massive build out you devalue (per our appraiser) our properties and make them unlivable. You work for thirty years to pay off a property you value as your home to have someone else devalue it and take away your peace and see if you wouldn't be of the same opinion as I am.

Kathy Tabor
305 Cheyenne Drive
Berthoud, Co

Tawn Hillenbrand

From: GREG STARKS <dog1cat@comcast.net>
Sent: Tuesday, November 28, 2023 1:38 PM
To: Tawn Hillenbrand
Subject: Urban Sprawl

You don't often get email from dog1cat@comcast.net. [Learn why this is important](#)

To the town of Berthoud, or should I say the city of Berthoud, because that is what this proposal will do. We have already grown so much, the small town feel has already gone away. As I said in my email to you many months ago 1800 homes is way too much. That's an average of 7200 people.

Where will the children go to school?

Where is the water coming from?

Will you be adding additional police and fire protection?

Will you be putting in better roads to accommodate all the traffic from the 1800 homes?

We have seen pitiful improvements made by existing developers. There was an article in the paper stating our population growth in Colorado has slowed down quite a bit. Is it a wise move to build so much?

Will this be a metro-tax development? We all know that doesn't work for the people, just the developers.

The preliminary map you sent is very vague and difficult to read.

How tall will the apartments be?

Why are you putting apartments so close to single family homes? This will bring down the property values for the rest of us.

Our growth rate has gone up 132.9 %. This seems out of control.

Please consider the quality of life we all moved here for, instead of greed because that's what this is.

We don't want urban sprawl!

Sincerely,

Greg and Elka Starks

Tawn Hillenbrand, Senior Planner
Town of Berthoud

I wish to comment on the "proposed" development of Ludlow Farm, Legacy Park so called. Proposed in name only, since in attending meetings at Town Hall it seems clear that this project already has the full approval of the town board. The developers are simply complying with the protocol of building codes in each new and updated presentation.

Along with numerous neighbors and townspeople, I have spoken in opposition to the expansive nature of this use of the land at public hearings on this proposal.

I live just across County Road 17(Berthoud Parkway) to the East of the farm property. We most intentionally chose this location and built our home here because of the quiet country road, minimal development, the small town we loved, the farm land to the West and the amazing view of the mountains. The prospect of up to 1800 new homes and 5000 new residents is appalling. Berthoud was no bigger than that when we built almost 30 years ago!

Now our quiet county road is a busy main thoroughfare with traffic that sounds like Nascar qualifying most days. I have listened to the reports on traffic projections with this development and am hesitant to believe these are accurate for a town of this size. With the addition of retail/business traffic and several new residential streets emptying onto the Parkway plus the increase in traffic on Spartan Avenue from Hwy. 287 it will be both louder and more congested.

If the purpose here is to create a city contiguous to both Longmont and Loveland then you are on the right track now, are you not?!

Yours for a safe and sane Berthoud, I am:

Carl Tabor

305 Cheyenne Drive

Tawn Hillenbrand
Town of Berthoud

Tawn Hillenbrand

From: andersonmead <andersonmead@aol.com>
Sent: Sunday, December 3, 2023 8:39 AM
To: Tawn Hillenbrand
Subject: Development proposal

You don't often get email from andersonmead@aol.com. [Learn why this is important](#)

Mrs. Hillenbrand,

I am emailing to express my concerns regarding the development proposal on Spartan Ave. I am very much against this! If you look me up, you will see I've lived in Berthoud 3 years, but my family has been here over 40 years. This is my home, my village that helped raise me. We are a small town and we all love that small town feeling. It is already feeling overcrowded compared to how things used to be. We are losing what we are known and cherished for. Not to mention the fact that we don't have the capacity for all these new people. Traffic is terrible, finding a spot to park to shop is impossible and our schools can't handle the extra load. We would be setting ourselves and our children up for failure. We need more important things like a hospital or ER. I would even take a fairground to help with events now that they've become overcrowded. Please really consider what this would mean for Berthoid and think about the repercussions. I appreciate your time.

Thank you,
LeeAnna Smith

Sent from my T-Mobile 5G Device

Tawn Hillenbrand

From: Sandra <nokam06@gmail.com>
Sent: Sunday, December 3, 2023 2:42 PM
To: Tawn Hillenbrand
Subject: Opposed to development of the 1800 units

You don't often get email from nokam06@gmail.com. [Learn why this is important](#)

Hi Tawn - I live in Prairie Star - We have had issues since day one in getting approval for our on-site development of shops due to water.

And now Berthoud wants to add more homes to our area?? - this is truly outrageous in planning, preserving water and keeping our little small town feel.

PLEASE - everyone I've talked to is against this project.

Thank you for your time.

Best,
Sandra Waters
748 Country Rd Trail, Berthoud, CO 80513

Tawn Hillenbrand

From: Sandy Lowell <sanlowe25@gmail.com>
Sent: Sunday, December 3, 2023 2:43 PM
To: Tawn Hillenbrand
Subject: Proposed development

[You don't often get email from sanlowe25@gmail.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification>]

Dear Tawn ,

I strongly object to the development of the land identified for the construction of the 1800 homes. Too much construction in our little Berthoud!!!!

Thanks for your consideration in this matter.

Sandy Lowell
2833 Red Wheat Lane
Berthoud
Sent from my iPhone

Tawn Hillenbrand

From: Wendy Kelson <wkelson@gmail.com>
Sent: Monday, December 4, 2023 2:33 PM
To: Tawn Hillenbrand
Subject: Opposed Legacy Park Preliminary Plat

You don't often get email from wkelson@gmail.com. [Learn why this is important](#)

Hello Tawn,

Three weeks ago I received a letter with the proposed development plans to convert 306 acres of the Ludlow Farm into a subdivision of 1800 high density home plots located between Berthoud Parkway and Meadowlark Drive.

I would like to formally oppose this development request. There are several reasons for not developing the land into 1800 new homes. The water needed to supplement the new development is concerning. Our current water bills are already very high and if more water is needed for development I for-see the cost increase negatively impacting current and future Berthoud residents.

Along with water concerns there will be increased traffic and noise from future traffic and construction noise. The current construction of the Rose Farm development is impactful enough to disturb my family at our home several blocks away. The current noise level on Berthoud Pkwy between Spartan and Arapahoe is ever increasing. Future construction will only exacerbate the noise level.

Finally, I would ask you, Tawn, the senior planner, and the town board of trustees, to re-examine the use of this land; high density housing does not benefit the long term health and culture of the Berthoud community. 1800 new homes is way too many for this designated location.

Respectfully,

Wendy Kelson
Address:
303 Cheyenne Dr
Berthoud, CO

Tawn Hillenbrand

From: JODY CZILLINGER <jczillinger@comcast.net>
Sent: Tuesday, December 5, 2023 5:04 PM
To: Tawn Hillenbrand
Subject: Development of Spartan & Berthoud Parkway

Importance: High

You don't often get email from jczillinger@comcast.net. [Learn why this is important](#)

Hello Tawn-

I'm writing you to voice my extreme opposition to the proposed 1800 home development at the intersection of Spartan and Berthoud Parkway. The rate and aesthetic at which this town is allowing development to absolutely explode is both alarming and irresponsible.

We have been landowners, residents and business owners in Berthoud for 50 years, owning a farm, a former lumber company (Kroonenberg), and being a commercial landlord. When my father set out to own a farm in 1970, he chose Berthoud as the place to do so. It was quiet, beautiful and sprawling. Not anymore, sadly.

By realigning zoning, you've allowed these farmers in the once beautiful "Garden Spot" to be taken utter advantage of by these cheap, fast developers at the expense of our once beautiful landscape in the name of greed. There's been no consideration to make these developments attractive; rather our farmland is now being filled with ugly gray and beige cookie cutter boxes. You're also allowing chain stores and restaurants to take hold here and completely changing the charm of what Berthoud was.

On top of this, as water rights owners, what thought has been given to where all of these homes will get water? Are you planning to at some point strip the water from its rightful owners in order to hydrate these out-of-control exploding communities? Does the farming community mean nothing to this town anymore, or is the quest to fill every last inch of soil with houses more important?

With more housing comes more crime, more degradation of the small town charm that is drawing all of these people to Berthoud, more need for schools, etc...and as all of this is built, our community and way of life is erased.

Driving into Berthoud has become heart-breaking. Another cookie-cutter landscape of tract homes, nothing special, nothing sacred. And then when these new residents move in and start complaining about the smell of a dairy, or dust from a field, the longtime owners are the ones who suffer.

I STRONGLY urge you to oppose this development as well as insisting that far more thought is placed upon allowing further development in our once special town.

Sincerely and thoughtfully,

Jody Kroonenberg Czillinger

Tawn Hillenbrand

From: Megan <mmbocci@gmail.com>
Sent: Thursday, August 15, 2024 11:58 AM
To: Anne Johnson
Cc: Tawn Hillenbrand
Subject: Re: Town Hall meetings

Categories: Neighbor Comment

Thank you for getting back to me. We understand that this development is in phases and that there are a lot of unknowns right now. We just don't want to miss our opportunity to be heard when it will directly affect us and our lives.

We certainly knew about the development plans before purchasing this home. This home hit so many marks on our list that it was worth buying even if we enjoyed it only for a few years. We made sacrifices as a family and spent 2 years for a home in Berthoud because we did not want to buy a new build, we wanted an existing home. Being a native, I am very aware of the fast growing areas in CO. It is extremely sad to me to see true small towns being taken over by large HOA communities, ruin views and wild life. More recently in fact, I witnessed my home town of Louisville go up in flames because of the congested developments that kept being my built closer and closer to the mountains. With these recent fires, I am sure a lot of people feel that concern.

Getting to talk more with long time residents, who purchased theirs home for these views and the small town many years ago, it seems that no one is ok with the large congested development going in behind their homes. Most are comfortable and have accepted the idea of some type of development going in, but multiple have asked why so many, and so close to Berthoud pkwy. At least give us a chance to see the mountains still and reduce noise!

Sadly, money always wins and very rarely is any type of developer actually from the state, let alone the city they are developing in. It is a business and the impact it has on existing homes and people's lives are never taken into consideration.

All we ask is that our lives, homes, and our children's future are taken to heart. We all want to continue to love where we live and enjoy the small town of Berthoud.

These are the true concerns I have gathered from this community:

- Home values(due to not having a view anymore,etc) -traffic volume and noise directly behind our homes, as well as speed limit. Will the limit be lowered being a more residential road.

- Obviously the views. If you would like to come see what we have from our vantage, you would be concerned as well. Could we build further out and put parks and or open space closer to Berthoud pkwy, so we can attempt to keep some of the view we have and reduce noise.

- house congestion closer to mountains raising fire risk. Our climate is changing and we will be seeing more fires. These developments just bring us all and the town closer to the source.

We are planning to continue to follow the details on this development and will attend any meetings that are available to the public. This means a lot to our community.

Thank you for your time,
Megan Gray

Sent from Meg's iPhone

> On Aug 15, 2024, at 10:07 AM, Anne Johnson <AJohnson@berthoud.org> wrote:

>

> Megan,

> Thank you for reaching out to both Tawn and me. See attached email sent from Tawn a while back and our email correspondence trail below.

>

> Tawn's email describes the development review process. If you have any questions regarding the current Legacy project, the current development review phase, the proposed land uses, etc., please coordinate with Tawn. The public hearings for the preliminary plat have not been scheduled as the project is still in development review and there may not

be much more information to share at this time. You are welcome to review the application in review, and past approvals at any time. Continue to coordinate with Tawn.

>

> Many potential residents contact us before purchasing property to better understand the potential land uses in Town. When land is zoned for certain uses, those uses may be allowed through the development review process. Weld and Larimer counties in Colorado are some of the fastest growing counties in the nation and new residents such as yourself will continue to contribute to Berthoud's growth. Berthoud will continue to grow according to the vision and standards established.

>

> If you'd like to discuss overall planning in Berthoud, the original zoning, as well as the 2023 change of zone and neighborhood master plan specific to the Legacy project, I would be happy to have a call with you.

>

> Sincerely,

> Anne

>

> -----Original Message-----

> From: Megan <mmbocci@gmail.com>

> Sent: Thursday, August 15, 2024 9:19 AM

> To: Anne Johnson <AJohnson@berthoud.org>

> Cc: Tawn Hillenbrand <THillenbrand@berthoud.org>

> Subject: Re: Town Hall meetings

>

> Sorry I forgot to reply all....

>

> We have recently moved here after a long search for a forever home for our family and are just looking for answers. All of the neighbors(longtime residents) have voiced concern and are looking for answers. I have already been in touch with Tawn and didn't get many answers. I don't mean to be rude, we are just trying to protect small town Berthoud, along with many other long time and new residents. One of many reasons we moved here. Thanks for your time.

>

> Sent from Meg's iPhone

>

>> On Aug 13, 2024, at 9:35 PM, Anne Johnson <AJohnson@berthoud.org> wrote:

>>

>> Megan,

>> Residential and commercial development has been forecasted for the property for years and the zoning approved by the Town supports this use. Please coordinate with the Town's Senior Planner, Tawn Hillenbrand who is copied on this email regarding questions as she is processing the application and will be able to provide more information that I can.

>>

>> Sincerely,

>> Anne

>>

>> -----Original Message-----

>> From: Megan <mmbocci@gmail.com>

>> Sent: Tuesday, August 13, 2024 9:31 PM

>> To: Anne Johnson <AJohnson@berthoud.org>

>> Subject: Re: Town Hall meetings

>>

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

>>

>> Thank you for the prompt response and information.

>>

>> Are the plans for the Legacy Park development final? And a timeline for development?

>> We will be directly impacted by this development, so we are all curious.

>> Thank you

>>

>>

>> Sent from Meg's iPhone

>>

>>>> On Aug 13, 2024, at 9:22 PM, Anne Johnson <AJohnson@berthoud.org> wrote:

>>>>

>>> Hello Megan,

>>> There are no land use hearings scheduled at this time. The Planning Commission agendas can be found here:
<https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.berthoud.org%2F275%2FPlanning-Commissionnd&data=05%7C02%7CTHillenbrand%40berthoud.org%7Cac4c5d7eecfe4641001b08dcbd53d0b2%7C581b05d78b3c4a45885212dfc87bed0a%7C1%7C0%7C638593414920078361%7CUnknown%7CTWFPbGZsb3d8eyJWljoiMC4wLjAwMDAiLCJQljoiv2luMzliLCJBTiI6lk1haWwiLCJXVCi6Mn0%3D%7C0%7C%7C%7C&sdata=SWqLc5YzqA4WEYI82QrG7pKzK0FlyUac5j%2FP8TICT%2Bs%3D&reserved=0> and agendas for the Town Board of Trustees hearings can be found here: <https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.berthoud.org%2F257%2FBoard-of-Trustees&data=05%7C02%7CTHillenbrand%40berthoud.org%7Cac4c5d7eecfe4641001b08dcbd53d0b2%7C581b05d78b3c4a45885212dfc87bed0a%7C1%7C0%7C638593414920089366%7CUnknown%7CTWFPbGZsb3d8eyJWljoiMC4wLjAwMDAiLCJQljoiv2luMzliLCJBTiI6lk1haWwiLCJXVCi6Mn0%3D%7C0%7C%7C%7C&sdata=K6FRoAvaHgHj99PG5KKIH6NuGe7LlegEsbm33prFS48%3D&reserved=0> You may monitor the agendas to determine when the item will be presented.

>>>

>>> Information on the land use applicant can be found here:

>>> <https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.berthoud.org%2F180%2FCurrent-Development-Review-Projects&data=05%7C02%7CTHillenbrand%40berthoud.org%7Cac4c5d7eecfe4641001b08dcbd53d0b2%7C581b05d78b3c4a45885212dfc87bed0a%7C1%7C0%7C638593414920276671%7CUnknown%7CTWFPbGZsb3d8eyJWljoiMC4wLjAwMDAiLCJQljoiv2luMzliLCJBTiI6lk1haWwiLCJXVCi6Mn0%3D%7C0%7C%7C%7C&sdata=iGWo1vou%2FvjVK1x2q9Quly7edE1ublræEI3xPitpns%3D&reserved=0>

>>>

>>> Sincerely,

>>> Anne

>>>

>>> -----Original Message-----

>>> From: Megan <mmbocci@gmail.com>

>>> Sent: Tuesday, August 13, 2024 9:17 PM

>>> To: Anne Johnson <AJohnson@berthoud.org>

>>> Subject: Town Hall meetings

>>>

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

>>>

>>> Hello, I am wondering where to find a schedule for town hall meetings about the Legacy Park (Ludlow) development. If you could provide us with a schedule for Development meetings, that would be great.

>>> Thank you, Megan Gray

>>>

> <mime-attachment>