Board of Trustees
Workshop and Regular Meeting Agenda
Wednesday February 18, 2026

Workshop 4:30 p.m. - 5:30p.m.
Members of the Board will break for dinner 5:30 p.m. - 6:00 p.m.
Meeting 6:00 p.m. - 8:30p.m.
Fraser Town Hall, 153 Fraser Avenue and Virtually

NOTE: Times are approximate and agenda subject to change
Watch the meeting live on Fraser's YouTube Channel
https://www.youtube.com/channel/UCs5aHnl7d-kk0j1cxV28DSg

Participate in the meeting through our virtual platform
Zoom Meeting Information
https://us02web.zoom.us/j/2590408013
Meeting ID: 259 040 8013
Phone 1-346-248-7799

1. **4:30 P.M. Workshop - Quality Of Life Items - Garrett, Paul, Chief Trainor**
2. **6:00 P.M. Roll Call**
3. **Approval Of Agenda**
4. **Consent Agenda**
    a. Minutes February 4, 2026

        Documents:

        TBM 2026-02-04.Pdf
        Sign In Sheet February 4, 2026.Pdf

    b. Resolution 2026-02-01 Approving Energy And Mineral Impact Assistance Fund Grant Application For Fraser Public Works Facility

Documents:

Resolution 2026-02-01 Approving Energy And Mineral Impact Assistance Fund Grant Application For Fraser Public Works Facility.pdf

5. **Open Forum**

a. Business not on the agenda (If you would like to request time on a future agenda please contact the Town Clerk)

6. **Discussion And Possible Action Regarding**

a. (5 Minutes) Treasurer's Report - Laurie

Documents:

Treasurers Report 02182026.Pdf

b. (15 Minutes) Update Grand County Wildfire Council - Jessica Rahn

Documents:

2025 Summary.pdf
2026 Tax Mailer.pdf
Roads Safety Map.pdf
Firewise Community Map.pdf
Project Map.pdf

c. (15 Minutes) Off Premise Sign For Fraser Valley Arts - Garrett

Documents:

00 Staff Report_Fraser Valley Arts Off-Premise Sign.pdf
01 Sign Permit Application Materials.pdf
02 Verizon Cell Tower Site Plan (2017).Pdf
03 Fraser Post Office Site Plan (1989).Pdf
04 Selected Pages From The Signage And Wayfinding Schematic Design.pdf

d. (15 Minutes) Ordinance 530 Amending Ordinance 526, Relating To A $5.4M Bridge Loan To The Fraser Housing Authority For St. Louis Landing - Dalton

Documents:

Ordinance 530 Amending Ordinance 526 Relating To A 5.4M Bridge Loan To The FHA For St. Louis Landing.pdf
Exhibit A Amended And Restated Loan Agreement.pdf

e. (15 Minutes) Ordinance 531 Appropriating Additional Funds To The Fraser Housing Authority For St. Louis Landing - Dalton

Documents:

Ordinance 531 Appropriating Additional Funds To The Fraser Housing

Authority For St. Louis Landing.pdf
Exhibit A Second Interim Loan Agreement.pdf

7. **Fraser Housing Authority**

   a. (20 Minutes) FHA Resolution 2026-02-01 Fraser Housing Authority Resolution Amending Resolution 2025-09-02 $5.4M Bridge Loan For St. Louis Landing - Dalton

      Documents:

      FHA Resolution 2026-02-01 Fraser Housing Authority Resolution Amending Resolution 2025-09-02 5.4M Bridge Loan For St. Louis Landing.pdf
      Exhibit A Amended And Restated Loan Agreement.pdf

   b. (10 Minutes) FHA Resolution 2026-02-02 Authorizing Second Interim Loan For St. Louis Landing - Michael, Dalton

      Documents:

      FHA Resolution 2026-02-02 Authorizing Second Interim Loan For St. Louis Landing.pdf
      Exhibit A Second Interim Loan Agreement.pdf

8. **Discussion And Possible Action Regarding**

   a. (25 Minutes) Resolution 2026-02-02 Business Enhancement Grant Awards - Sarah C

      Documents:

      Resolution 2026-02-02 Business Enhancement Grant Awards.pdf
      Staff Briefing 2026 Business Enhancement Grant Applications.pdf
      2026 Business Enhancement Grant Applications Summary.pdf
      B. 2026 Colorado Corn Dog Form_Redacted.pdf
      B. 2026 Colorado Corndog Supporting Documents.pdf
      C. 2026 Fraser Fuel Form_Redacted.pdf
      C. 2026 Fraser Fuel Supporting Documents_Redacted.pdf
      D. 2026 Fraser Valley Arts Form_Redacted.pdf
      D. 2026 Fraser Valley Arts Supporting Documents_Redacted.pdf
      E. 2026 Fraser QuickStop Form_Redacted.pdf
      E. 2026 Fraser Quickstop Estimate_Redacted.pdf
      F. 2026 Winter Park Flyfisher Form_Redacted.pdf
      F. 2026 Winter Park Flyfisher Estimate.pdf
      G. 2026 Zerex40 Form_Redacted.pdf
      G. 2026 Zerex40 Support Docs_Redacted.pdf

   b. (25 Minutes) Resolution 2026-02-03 Approving Grand Park West Mountain Filing 1 (Planning Areas 10W And 11) Final Plat And FPDP - Garrett

      Documents:

      Resolution 2026-02-03 Approving Grand Park West Mountain Filing 1 (Planning Areas 10W And 11) Final Plat And FPDP.pdf

00 Staff Report_TF22-10 Grand Park WMF1 (PA 10W And 11W) Revised Final Plat And FPDP.pdf
01 West Mountain Filing 1_Final Plat (8th Submittal, Unreviewed).Pdf
02 West Mountain Filing 1_FPDP (8th Submittal, Unreviewed).Pdf
03 Final Civil Construction Documents_WMF (8th Submittal, Unreviewed).Pdf
04 Phase III Drainage Report_WMF 1 (8th Submittal, Unreviewed).Pdf
05 Wetland Exhibit_WMF 1 And 2.Pdf
06 Grand Park West Mountain TIS_January 2026.Pdf
07 Combined 7th Submittal Referral Review Comments.pdf
08 Applicant Response To 7th Submittal Planning Review Comments.pdf
09 Merrick Review Comments West Mountain Water System Construction Plans 8th Submittal.pdf
10 Proof Of Public Notice.pdf
11 Receipts For Mailed Notices.pdf
12 Adjacent Property Owners List.pdf
13 PC Resolution 2026-01-01 Recommending Approval Of Final Plat And FPDP For Grand Park West Mountain Filing No. 1 Planning Areas 10W And 11W.pdf

c. (15 Minutes) Ordinance 532 Adoption Of The Fraser Forward Comprehensive Plan - Garrett

Documents:

Fraser Forward Comprehensive Plan_February 2026 Final Draft For Adoption.pdf
Ordinance No. 532 Approving The Fraser Forward Comprehensive Plan.pdf

9. **Updates**

10. **Adjourn**

UPCOMING MEETING
WEDNESDAY MARCH 4, 2026 BOARD OF TRUSTEES

Board	Staff
Direct: Define the service, product or value to be delivered	Lead: Future focused planning
Protect: Establish the operational boundaries to be respected by Staff and monitored by the Board	Manage: Now focused policy and procedural guidance to ensure on time, on budget, and on target service delivery
Enable: Advocacy, resource development, and role discipline	Accomplish: Ensure the work defined by the direction of the Board of Trustees is accomplished

Please contact the Town Clerk to request accommodations to assist people with disabilities to participate in public meetings. Listening devices for people with hearing impairment are available upon request.

Town Clerk, Antoinette McVeigh 970-531-9943 or amcveigh@town.fraser.co.us

FRASER BOARD OF TRUSTEES
MINUTES

DATE: February 4, 2026

MEETING: Board of Trustees Regular Meeting

PLACE: Fraser Town Hall Board Room and Virtually

PRESENT

Board: Mayor Brian Cerkvenik, Mayor Pro-Tem Peggy Smith, Trustees; Adam Cwiklin (arrived at 6:20pm), Kaydee Fisher, Lewis Gregory, Katie Soles and Julie White

Staff: Town Manager, Michael Brack; Town Clerk, Antoinette McVeigh; Deputy Clerk, Wendy Bourn; Marketing and Communications Director, Sarah Wieck; Finance and Human Resources Director, Laurie Waters; Town Planner, Garrett Scott; Public Works Director, Paul Johnson; Police Chief, Glen Trainor

Others: See attached list; Virtually – Steve Fitzgerald, Izzy Wagner, Parnell Quinn and Jamie

Mayor Cerkvenik called the meeting to order at 6:00 p.m.

1. **Rollcall:** Mayor Brian Cerkvenik, Mayor Pro-Tem Peggy Smith, Trustees; Adam Cwiklin, Kaydee Fisher, Lewis Gregory, Katie Soles and Julie White

2. **Approval of Agenda:**
Trustee Smith moved, and Trustee White seconded the **motion** to approve the agenda. **Motion carried: 6-0.**

3. **Consent Agenda:**
a) Minutes January 21, 2026

Trustee Smith moved, and Trustee Soles seconded the **motion** to approve the consent agenda. **Motion carried: 6-0.**

4. **Open Forum:**

5. **Discussion and Possible Action:**
a) Purchase of Crescendo Sculpture at the Historic Church

Marketing and Communications Director Sarah Wieck presented. Steve Fitzgerald answered questions.

Trustee Soles moved, and Trustee Smith seconded the **motion** to approve the purchase of the Crescendo sculpture in the amount of $10,000, to be paid from the Art in Public Places fund. **Motion carried: 6-0.**

b) East Grand School District Overview and Update

East Grand Superintendent Brad Ray and East Grand Assistant Superintendent Courtney Lincoln presented.

c) Intergovernmental Agreement Concerning Land Dedications for Payments in Lieu for School Purposes

Town Manager Michael Brack and Town Planner Garrett Scott presented. East Grand Superintendent Brad Ray answered questions.

Trustee Smith moved, and Trustee White seconded the **motion** to approve the Intergovernmental Agreement concerning land dedication for payments in lieu of school for school purposes**. Motion carried: 7-0.**

d) Fraser Valley Arts Update

Steve Fitzgerald presented.

e) Fraser Valley Arts Memorandum Of Understanding, for payroll and Health Care Coverage

Finance and Human Resources Director, Laurie Waters presented. Steve Fitzgerald answered questions.

Trustee Smith moved, and Trustee White seconded the **motion** to approve the Fraser Valley Arts Memorandum of Understanding for payroll and healthcare services coverage. **Motion carried: 7-0.**

f) Opportunity Zone

Town Planner Garrett Scott presented. The town is not eligible for an opportunity zone at this time.

g) Public Woks Drop Attendant

Town Manager Michael Brack and Public Works Director Paul Johnson presented.

Trustee Smith moved, and Trustee White seconded the **motion** to approve staff briefing Drop Attendant proposal to a full-time position. **Motion carried: 7-0.**

6. <u>Updates:</u>

Town Manager Michael Brack announced that Fraser has been awarded the Congressional Directed Spending Funds of $2 million that will go toward phase 2 of St. Louis Landing, currently planned as 13 townhomes.

Mayor Brian Cerkvenick and Mayor Pro Tem Smith shared highlights of the CAST conference. It was attended by Mayor Brian Cerkvenick, Mayor Pro Tem Smith, Town Manager Michael Brack and Assistant Town Manager Sarah Catanzarite.

7. Executive Session:

a) Regarding Joint Facilities Oversite Committee Agenda Review

For the purpose of determining positions relative to matters that may be subject to negotiations, developing strategy for negotiations, and/or instructing negotiators, under C.R.S. Section 24-6-402(4)(e). Regarding Joint Facilities Oversite Committee Agenda Review.

Trustee Soles moved, and Trustee White seconded the **motion** to open the Executive Session Regarding Joint Facilities Oversite Committee Agenda Review. **Motion carried: 7-0.**

Trustee Smith moved, and Trustee White seconded the **motion** to close the Executive Session Regarding Joint Facilities Oversite Committee Agenda Review. **Motion carried: 7-0.**

8. Adjourn:

Trustee Smith moved, and Trustee White seconded the **motion** to adjourn. **Motion carried: 7-0.** Meeting adjourned at 7:54 p.m.

_____

Antoinette McVeigh, Town Clerk

TOWN BOARD REGULAR MEETING
REGISTRATION SHEET
February 4, 2026

The Public Forum is an opportunity for the public to present their concerns and recommendations regarding Town Government issues to the Town Board. Those wishing to address the Town Board will be allowed a three-minute presentation. If a topic that you wish to discuss has been scheduled for a formal Town Board Meeting, we would ask that you reserve your remarks for that specific date and time. Topics that are in litigation with the Town will not be heard during this forum. All presenters are urged to: (1) state the concern; and (2) list possible solutions. Please keep the following guidelines in mind:

- **Remarks that discriminate against anyone or adversely reflect upon the race, color, ancestry, religious creed, national origin, political affiliation, disability, sex, or marital status of any person are *out of order* and may end the speaker's privilege to address the Board.**
- **Defamatory or abusive remarks or profanity are *out of order* and will not be tolerated.**

Anyone attending Town Board meetings must sign in to ensure accurate records and minutes. Sign your name, address, and email on the sign in sheet. Thank you for your cooperation.

NAME	PHYSICAL ADDRESS	EMAIL
Lisa Steckler		lisa@grandparkco.com
Nora Bland		norabland@cushingterrell.com
Brian Kelly	Sun Song	
Braden Jay		Braden@grandpark
Brad Ray	Granby	brad_ray.74@gmail.com

NAME	PHYSICAL ADDRESS	EMAIL
Courtney Lincoln		courtney.lincoln@egsd.org
Mark Rydberg		mark.rydberg@EGSD.org

TOWN OF FRASER, COLORADO
RESOLUTION NO. 2026-02-01

A RESOLUTION AUTHORIZING SUBMISSION OF AN ENERGY AND MINERAL IMPACT ASSISTANCE FUND (EIAF) TIER II GRANT APPLICATION TO THE COLORADO DEPARTMENT OF LOCAL AFFAIRS FOR ELECTRICAL INFRASTRUCTURE AT THE NEW PUBLIC WORKS FACILITY

WHEREAS, the Town of Fraser ("Town") is a Colorado statutory municipality organized and existing under the laws of the State of Colorado; and

WHEREAS, the Town provides essential public works, water, and wastewater services to residents, businesses, and visitors; and

WHEREAS, the Town's existing Public Works facility is undersized, outdated, and inadequately configured to support current staffing levels, fleet size, storage needs, and operational demands of the current population and visitor levels; and

WHEREAS, the current facility is located within a residential neighborhood near to schools, a public park, a playground, and a school bus stop, creating ongoing public safety concerns due to heavy equipment and operational activity; and

WHEREAS, the Town has advanced the design and development of a new Public Works Facility located on County Road 72 to improve safety, operational efficiency, long-term infrastructure reliability, and service delivery; and

WHEREAS, Design Development Plans have been submitted for review and Big Valley Construction, LLC has been awarded the project through a competitive process, with plans to begin sitework spring 2026; and

WHEREAS, the Town intends to finance the majority of the project through Certificates of Participation (COPs) and has engaged Hilltop Securities and Butler Snow LLP to assist in the financing process; and

WHEREAS, the Town is simultaneously advancing other high-priority capital projects, including workforce housing and additional infrastructure improvements, and grant assistance will reduce the financial burden on the Town and its residents; and

WHEREAS, the Colorado Department of Local Affairs (DOLA) administers the Energy and Mineral Impact Assistance Fund (EIAF) program to assist communities impacted by energy and mineral development; and

WHEREAS, the Town desires to submit an application for EIAF Tier II funding in the amount of One Million Dollars ($1,000,000) to support the electrical infrastructure components of the new Public Works Facility.

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

1. The Board of Trustees hereby authorizes submission of an Energy and Mineral Impact Assistance Fund (EIAF) Tier II grant application to the Colorado Department of Local

Affairs in the amount of $1,000,000 for electrical infrastructure associated with the new Public Works Facility.

2. The Board affirms that the Town will provide the required local match of $1,000,000 through Certificates of Participation (COP) financing and/or other legally available funds.
3. The Board authorizes Town staff to execute all documents necessary for submission of the grant application and to provide any additional information required by DOLA.
4. If awarded, the Board authorizes the Town Manager to execute the grant agreement and related documents, and for Town staff to administer the grant in accordance with all applicable laws and regulations.
5. The Board certifies that the Town of Fraser is in compliance with all applicable State of Colorado laws and statutory requirements.

READ, PASSED ON ROLL CALL VOTE, AND ADOPTED BY THE BOARD OF TRUSTEES THIS 18th DAY OF FEBRUARY, 2026.

Votes in favor: ___
Votes opposed: ___
Abstained: ___

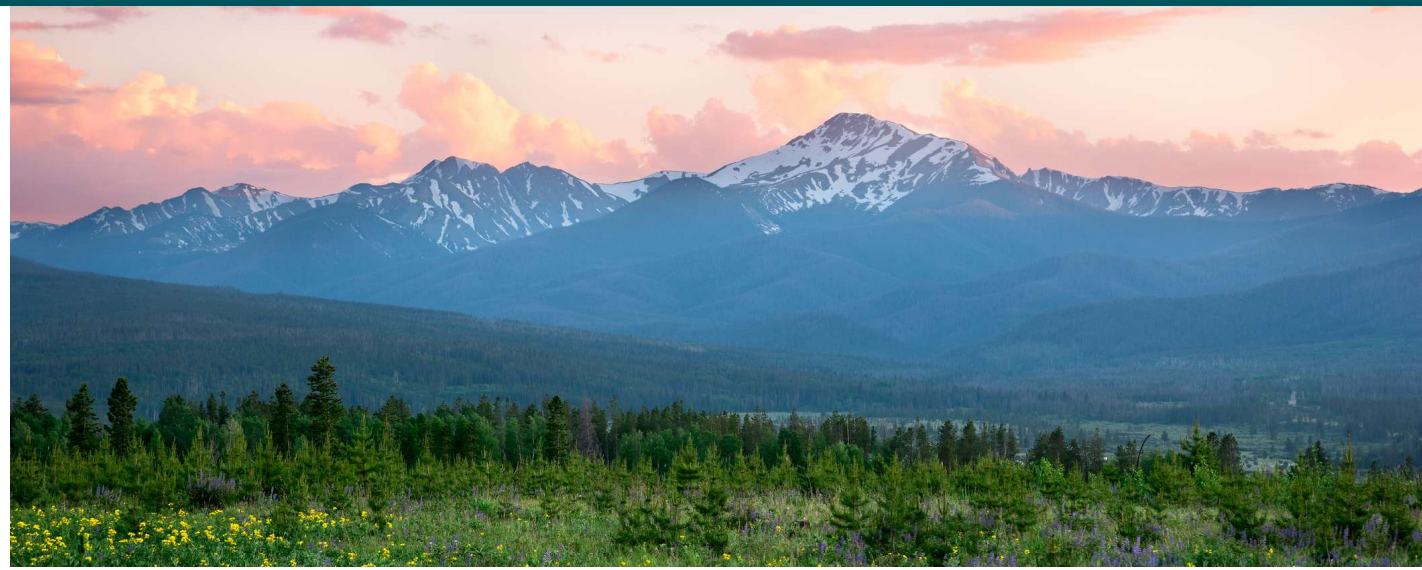
BOARD OF TRUSTEES OF THE
TOWN OF FRASER, COLORADO

BY: _____
Mayor

ATTEST:

(S E A L)

_____
Town Clerk



TREASURER'S REPORT

Laurie Waters

Finance Director

OVERVIEW

- Statement of Funds
- Sales Tax Revenue
- STR Tax Revenue
- Remote Sellers
- Budget Expenditure Analysis

2026 GF Reserves & Operating Position



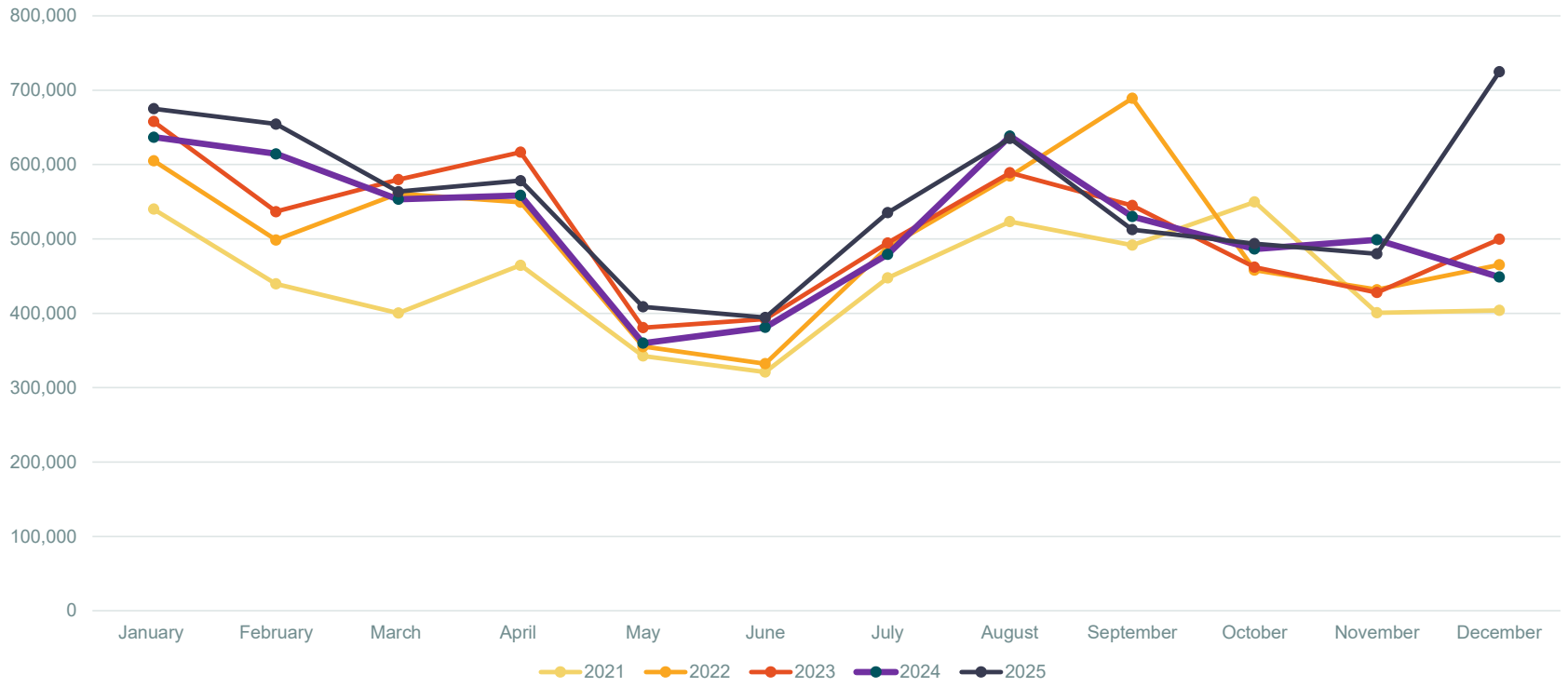
Fund Account Balances February 1, 2026

February 1, 2026			
Account	Fund	Cash Allocation	% of Cash Allocation
10-10100	General Fund	$8,350,377.64	12.26%
12-10100	Restricted Revenue Fund	$1,889,214.45	2.77%
20-10-100	Conservation Trust Fund	$64,193.64	0.09%
30-10-100	Capital Equipment Fund	$311,978.89	0.46%
32-10-100	Capital Asset Fund	($1,594,836.76)	-2.34%
35-10-100	CROS Fund	$1,293,486.58	1.90%
40-10-100	Debt Service Fund	$41,555.80	0.06%
50-10-100	Water Fund	$2,613,464.78	3.84%
55-10-100	Wastewater Fund	$5,130,746.20	80.96%
70-13010	DDA	$34,325.60	0.05%
		$18,100,181.22	100%

REVIEW & LOOKING FORWARD

- Anticipating the reimbursements from DOLA to offset the St Louis Landing Expenditures. Grants being approved currently total $1,402,352.
- We have also received an additional $350,000 in supplemental funds for the Strong Communities Grant.

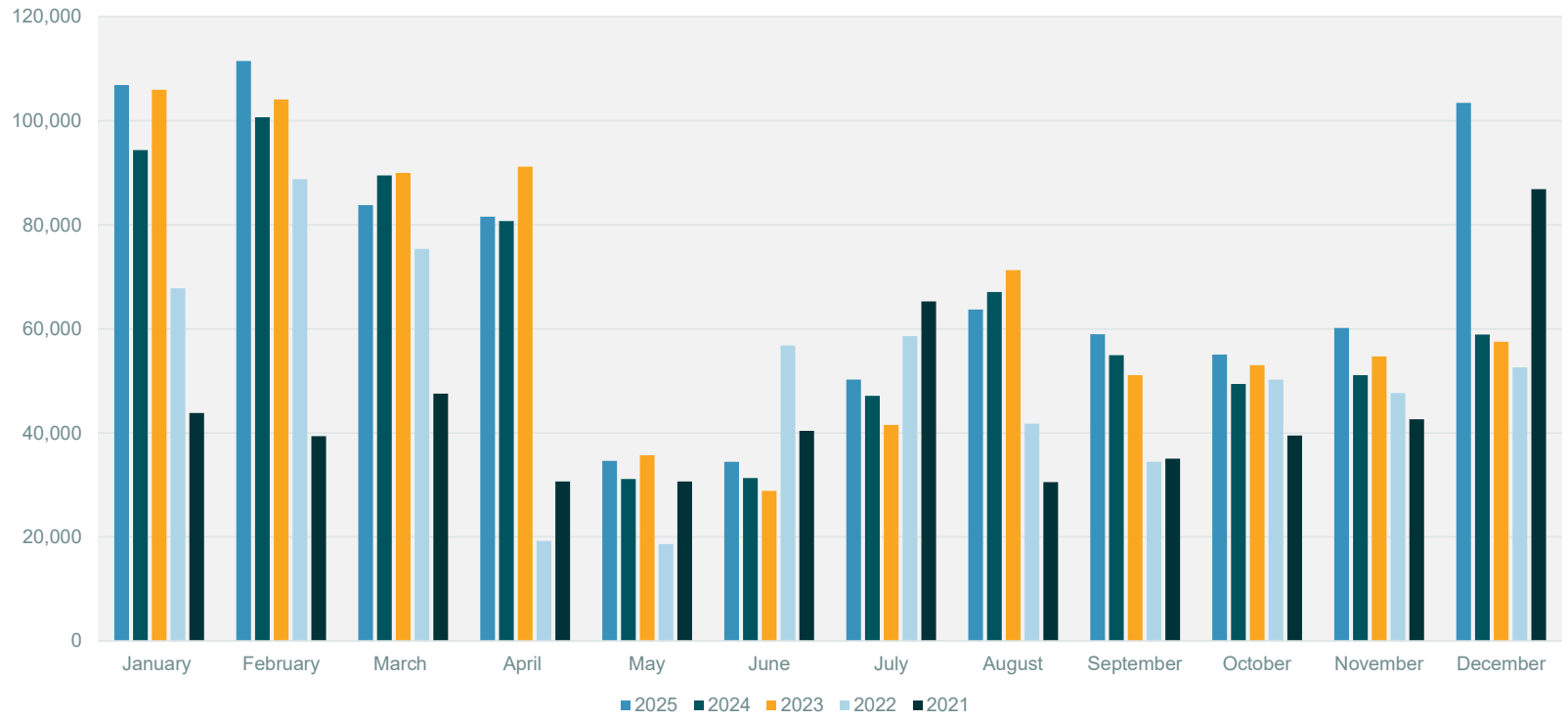
Sales Tax Revenue



REVIEW & LOOKING FORWARD

- February sales tax revenue is the January collection of December sales taxes
- December sales tax collection totaled $724,951. Wow!
- December is 38% Higher than December 2024.

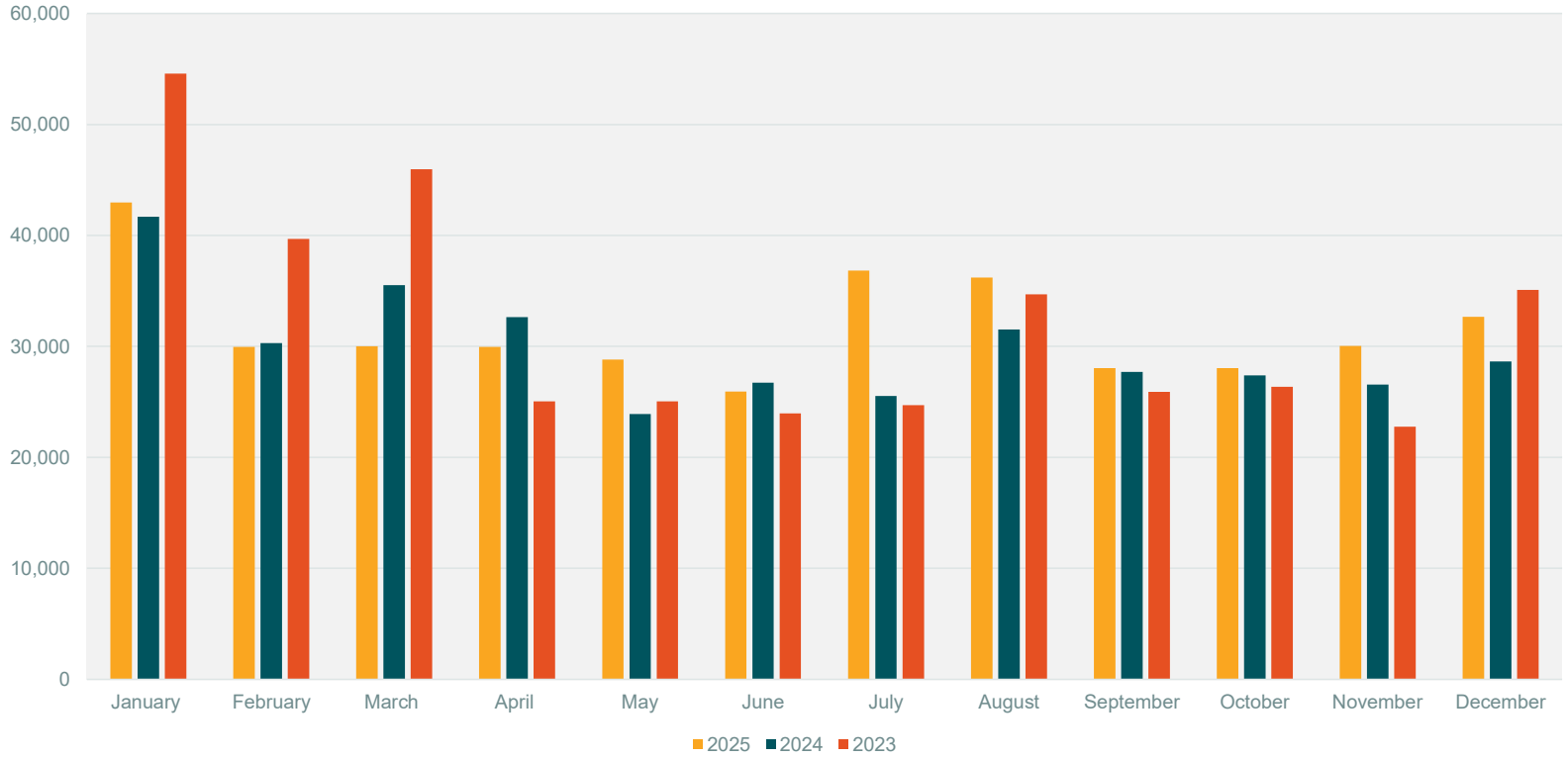
2021 – 2025 STR Tax Revenue



REVIEW & LOOKING FORWARD

- Short Term Rental Tax revenue is 14% of total revenue.
- December 2025 STR increased by 75% over December 2024.
- Wow!

Remote Sellers



REVIEW & LOOKING FORWARD



- Remote sellers are online purchases
- The sales are 5% of total revenue totaling $32,611 which is $4,026 higher than the prior year
- December revenue is 14% higher than December 2024

Budget Expenditure Analysis

January 31,2026

Budget Analysis January 31, 2026			
	2026 Budget	Actual 1/31/2026	%
General Fund Expenditures	14,860,967.00	1,375,219.00	9.3%
Restricted Revenue	1,611,169.00	0.00	0.0%
Capital Equip Replacement	238,800.00	0.00	0.0%
Capital Asset Fund	12,050,000.00	880,358.00	7.3%
Cozens Ranch Open Space	134,150.00	2,201.00	1.6%
Debt Service Fund	0.00	0.00	
Water Fund	3,349,897.00	256,987.00	7.7%
Wastewater Fund	2,217,135.00	91,540.00	4.1%
Fraser Housing Authority	18,526,460.00	0.00	0.0%

2025 GCWC SUMMARY

MITIGATION SUCCESSES

- Total Acres Mitigated: 730 Acres
- GCWC Funding Put on the Ground: almost $490,000
- Total Cash Match: almost $490,000
- Total In-Kind Match: $112,463
- **Totals: Almost $1.1 million and about 730 acres treated between cost share programs, large projects, and chipping.**

EDUCATION SUCCESSES

- Over 780 volunteer hours
- Over 700 contacts.
    - Public events, trainings, chipping days, Fire Restrictions education, Roads Safety Project Homeowner Education, PBS Documentaries, HOA Meetings, etc.

FUNDING SUCCESSES

- Total Funding Awarded to be Spent from 2025-2030: **about $2.85 million**
    - $2.5 million award - federal Community Wildfire Defense Grant funding
        - Mitigating about 800 acres near the Town of Granby from 2026-2030.
    - Continuing to apply for additional grants for programs, and projects, and capacity support.

Our goal for 2026 is to increase funding on the ground with more acreage treated.

GRAND COUNTY WILDFIRE COUNCIL

is ready to help you prepare and survive the next wildfire

Grand County Wildfire Council



Don't Wait. Mitigate!

Visit BeWildfireReady.org or call
970.627.7121

"Living with Fire" Lecture Series 2026 Lineup

Location: Grand Fire in Granby
Time: Fridays at 5:00 PM

- **May 15: Wildland-Urban Interface (WUI) Building Codes**
  Learn what's new and how it affects our communities
- **June 5: Preparing for Wildfire Season**
  Preparing your property, home and family before another fire occurs
- **June 26: Building a Fire-Adapted Grand County with GCWC Programs**
  Firewise USA, Chipping Days, Grants and Cost-Share Program information at the parcel and community levels
- **July 17: Property Insurance in the WUI**
  Updates, challenges and successes

Virtual option available via email:
BeWildfireReady@gmail.com

2026 FREE Community Chipping Days

Specific locations and accepted materials posted on our website and Facebook.

SATURDAYS FROM 9:00 AM - 2:00 PM

- **30 MAY, KREMMLING**
- **20 JUNE, GRAND FIRE**
- **11 JULY, EAST GRAND FIRE**
- **25 JULY, GFPD BUD WILSON**
- **22 AUGUST, GRAND LAKE**

NEED A HOME IGNITION ZONE / WILDFIRE RISK ASSESSMENT?

Scan this QR to fill out the request form on our website today!

WE ARE MOVING! Visit us in Tabernash at 72399 US Highway 40

JOIN US!

for a PBS documentary showing

With a special guest panel of fire professionals and subject matter experts. Brought to you in cooperation with the NOCO Fireshed Collaborative.



- **1 JULY, FOUNDRY THEATER IN WINTER PARK**
- **16 JULY, GRAND LAKE COMMUNITY HOUSE**
- **12 AUGUST, GRAND FIRE IN GRANBY**

"At its core, Fire Lives Here is a story of hope and ingenuity. Through sweat, science, and a willingness to see fire differently, these efforts are making a tangible impact. As a filmmaker, my goal was to bring audiences as close as possible to both the urgency and the possibility."
---Film Director, Aaron Colussi

DID YOU KNOW?

Fire professionals from the GCWC and your fire district will come to your community meetings!

- Rotary, Lions, Veterans Gatherings
- Home and Property Owner Association Meetings
- Library Events and Town Hall Meetings
- Industry and Professional Association Workshops
- School and Children's Programs
- Picnics and Parties in the Parks

Call 970.627.7121 to schedule

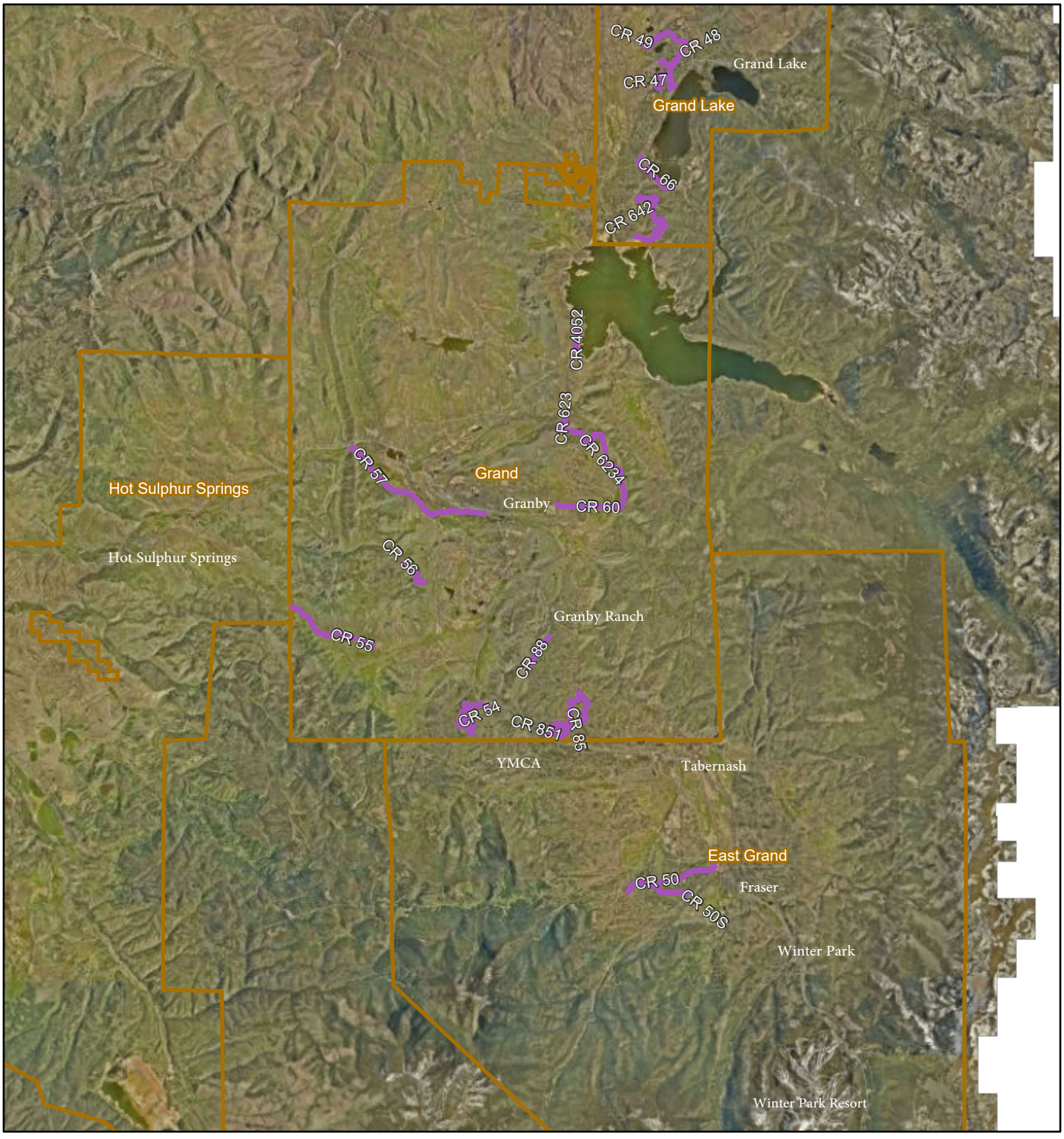
Our Cost-Share Grant Program helps our residents build neighborhood mitigation projects and become Firewise USA Communities!



Williams Fork Fire from Tabernash, Aug. 14, 2020
Photo credit: Lauren Demos

GRAND COUNTY WILDFIRE COUNCIL
PREVENT PREPARE SURVIVE
BEWILDFIREREADY.ORG

Roads Safety Project - Treated Roads (2024 & 2025)



2/13/2026

Roads Safety Project

Fire District

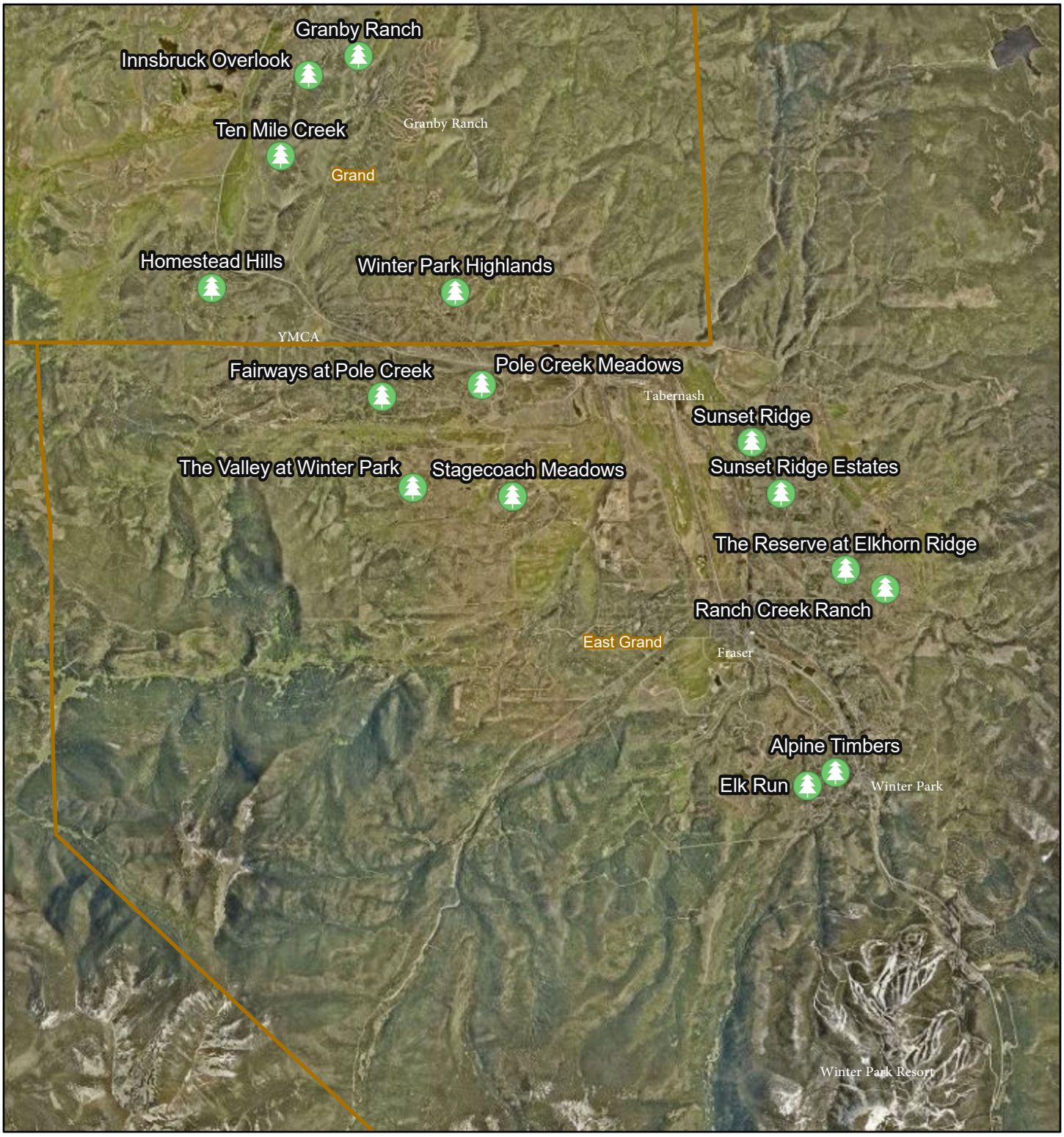
1:300,971

0 2 4 8 mi

0 3 6 12 km

GCWC

Firewise USA Sites - East Grand



2/13/2026

Firewise Communities

Fire District

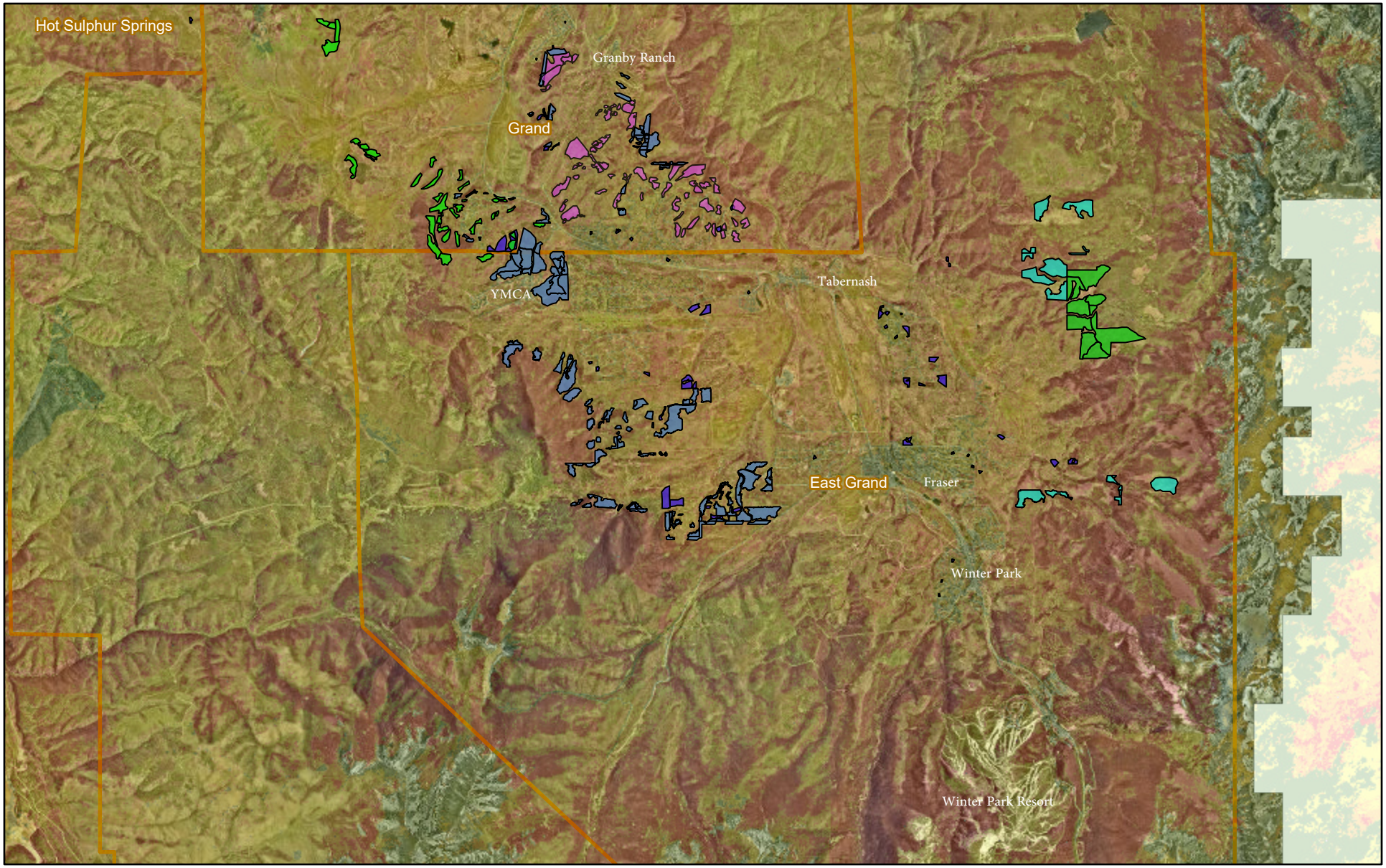
1:150,485

0 1 2 4 mi

0 1.5 3 6 km

GCWC

East Grand Fire District Fuels Reduction



2/13/2026

- COSWAP 26 Proposed
- CWDG Granby
- Water Board Road
- Rendezvous GNA
- Devils Thumb Proposed
- West Fraser Fuel Break
- COSWAP '22-'24
- Cost Share

Grand County CWPP Risk Assessment

- Low
- Moderate
- High
- Extreme
- Fire District

1:192,621

0 1.25 2.5 5 mi

0 2 4 8 km

GCWC

Town of Fraser
PO Box 370, Fraser, CO 80442 office: 970-726-5491 fax: 970-726-5518
www.frasercolorado.com

BOARD OF TRUSTEES Date Prepared: February 12, 2026
STAFF REPORT Meeting Date: February 18, 2026

RE: **Off-Premise Sign Request for Fraser Valley Arts**
To: Town of Fraser Board of Trustees
From: Garrett Scott, Town Planner
CC: Michael Brack, Town Manager
Alan Sielaff, Assistant Town Planner

MATTER BEFORE THE BOARD OF TRUSTEES
Discussion and action on a request from Fraser Valley Arts for an off-premise sign at 520 Zerex Street (the Fraser Post Office).

BACKGROUND AND SUMMARY OF REQUEST
One of the applications that was received with the 2026 cycle of Business Enhancement Grant requests is a proposal from Fraser Valley Arts (FVA) to replace the existing "Hilly's Hooker" towing service pole sign outside the Fraser Post Office building at 520 Zerex Street with a more attractive, modern, electronic sign. The new sign is proposed to be used to promote the FVA mission and events produced by FVA, as well as events produced by the Town. The grant request proposes to use the existing pole structure for the new sign and simply replace the sign face and update its electrical components. However, the grant request also contemplates replacing the pole structure with a more decorative base.

In evaluating the grant request, Town staff determined that the proposal meets the definition of an off-premise sign per Sec. 19-6-510, which is any sign used for promoting an interest other than that of a business, individual, product or service available on the premises where the sign is located. Per Sec. 19-6-320(a)(3), all off-premise signs require Board of Trustees approval. Town staff informed the applicant of this requirement, and the applicant submitted a sign permit application on February 9, 2026 so that the off-premise sign request could be reviewed and evaluated separately from the Business Enhancement Grant request.

For reference, Town staff is aware of two other off-premise signs that have been previously approved by the Board of Trustees. In 2009, the Board approved a sign for Sharky's Eatery within the Town-owned Goranson Station property, and this approval has been annually renewed via a license agreement. In 2012, the Board approved a sign for the Colorado Adventure Park (owned by Byers Peak Downhill Properties, LLC) on the Meyer Lot 1 property (owned by Cornerstone Winter Park Holdings, LLC).

EVALUATION OF REQUEST
Per the Town's sign code, an off-premise sign may be permitted on private property if the street frontage of the property to which it pertains is not on US 40. Additionally, a sign permit for on off-premise sign shall be approved if it is in compliance with the criteria listed in Sec. 19-6-320(a)(3). Those criteria, and staff's evaluation of each, are detailed below:

a. **The off-premise sign would not harm the public and would not impair the purpose and intent of this Article**

Criteria met: Staff believes that the proposed sign would not harm the public nor impair the purpose and intent of this Article (i.e., the Fraser sign code).

b. **The property to which the sign pertains is in an obscure location and not directly visible from U.S. 40, such that the off-premise sign is necessary to direct the public to the subject property**
Criteria met: The sign is intended to advertise the Fraser Valley Arts property (future location of the Fraser Center for the Creative Arts) which is not directly visible from US 40. Events that the sign would likely advertise are generally held in locations that are not necessarily visible from US 40.

c. **The property to which the sign pertains is located in the Town**
Criteria met: The Fraser Valley Arts property is located north of the intersection of Fraser Avenue and Clayton Court and is located within the Town. Events that the sign would likely advertise are generally held in locations that are within the Town of Fraser.

d. **The off-premise sign is counted against the sign allowance of the parcel on which it is displayed and is counted against the sign allowance of the property to which it pertains**
Criteria met: Both the Fraser Post Office and the Fraser Valley Arts property are zoned Riverwalk, which is a non-residential / mixed use zone district. Therefore, sign standards in Table 6.2 of Sec. 19-6-310 apply to both properties. Properties are allowed 1 pole sign per street frontage of the principal building / access point. Approval of this off-premise sign as proposed means that the FVA property will not be allowed to have a pole sign.

e. **The written consent of the off-premise property owner is obtained**
Criteria partially met: Fraser Valley Arts has received approval from the property owner of 520 Zerex Street (Deborah Culig of Zerex40, LLC) to construct and operate the proposed sign. However, in reviewing the location of the existing pole sign, Town staff has determined that it is located in the right-of-way for Park Avenue. If the existing pole structure is to be used, the Board of Trustees must approve a license agreement so that the sign can remain in its current location.

f. **The off-premise sign is limited to one (1) sign not to exceed twenty (20) square feet**
Criteria met: The sign is proposed to measure 5 feet wide by 4 feet tall, for a total sign area of 20 square feet.

g. **The off-premise sign would be subject to all other sign requirements of this Article.**
Criteria partially met: The changeable electronic message portion of the sign is proposed to comprise of 50% of the sign area, in compliance with Sec. 19-6-320(b)(1). Other requirements for changeable electronic message signs would be evaluated when final design details are provided. Per Sec. 19-6-320(g)(1), no portion of any pole sign shall encroach or project into the public right-of-way. As noted in criteria e, Town staff has determined that the existing pole sign is located within the right-of-way for Park Avenue.

Staff determined that the existing sign is located off the property of 520 Zerex Street by reviewing two site plans on file in the Town's records, both of which are provided in the packet for reference. The most recent site plan dates from 2017, which is when the Verizon cell tower in the rear (eastern) portion of the property was approved. This site plan shows that the existing sign is approximately two and a half

feet north of the property line within the Park Avenue right-of-way. The site plan for the Post Office's initial use of the building, which dates from 1989, shows the sign in the same approximate location as the 2017 plans. Therefore, the sign has existed in the Town's right-of-way for at least ~37 years.

CONCLUSION AND RECOMMENDATION

As noted in the evaluation of the off-premise sign criteria, the location of the existing sign within the Park Avenue right-of-way presents the main barrier to a straightforward approval of this off-premise sign. Staff presents two possible approval pathways for the Board to consider:

1. Remove the existing pole sign and construct a new sign that is wholly on the property of 520 Zerex Street and meets all other applicable provisions of the Town's sign code.

2. Allow for the existing pole sign structure to be utilized for the proposed sign through approval of a license agreement that is subject to annual renewals.

Either option will require further, formal approval by the Board of a resolution approving the off-premise sign, as well as a license agreement in the event that option 2 is pursued. At this time, staff is requesting that the Board make a motion that documents the Board's conceptual approval of the sign proposal and directs the applicant as to which option should be pursued. If the Board makes this motion indicating their conceptual approval of the sign proposal, it would allow the Board to approve the Business Enhancement Grant request related to this sign, if the Board chooses. The applicant could then proceed to finalize the details of their proposal and return for final approval of the off-premise sign from the Board.

Given that all off-premise sign criteria are met except for those that relate to the sign's existing location, staff recommends that the **Board provide their conceptual approval of the off-premise sign and do so by directing the applicant to construct a new sign on their property (i.e., Option 1)**. This will prevent the need for a license agreement and annual renewals of said agreement, as well as mitigate any potential conflicts from the sign being located within the Town's right-of-way. Staff recommends that the Board also direct the applicant to utilize the schematic designs that have been produced as part of the Winter Park – Fraser Signage and Wayfinding Plan as they work to finalize the design of their proposed sign. These schematic designs are provided in the packet for reference. The Board may also provide additional direction to the applicant as they see fit.

Attachments:

01 Sign Permit Application Materials
02 Verizon Cell Tower Site Plan (2017)
03 Fraser Post Office Site Plan (1989)
04 Selected pages from the Signage and Wayfinding Schematic Design

SIGN PERMIT APPLICATION

(Updated 11-7-2022)

Please fill out a separate application for each sign. All permits require a sketch of proposed signs as well as their location on the building or site.

APPLICANT NAME: Steve Fitzgerald PHONE NUMBER: 3035491792

APPLICANT EMAIL: sfitz88@me.com

MAILING ADDRESS: PO Box 2361 CITY Fraser STATE: CO ZIP CODE: 80442-2361

BUSINESS/PLACE SIGN IS FOR: Fraser Valley Arts Phone Number: 3035491792

LOCATION OF SIGN (STREET ADDRESS): 520 Zerex Street, Fraser

ZONING OF PROPERTY: Commercial

LOCATION ON SITE (Attach site plan) See photo and layout from Biz Enh Grant

SQ. FT. OF LANDSCAPING (Attach site plan) N/A

SIGN TYPE (Check One)

☐ Freestanding	☐ Projecting	☑ Ground/Monument (on pole)
☐ Wall	☐ Campaign	☐ Sandwich Board
☐ Banner	☐ Temporary	☐ Other

SIZE OF SIGN: (Height, Width, Total Sq. Ft.): Two panels, both 2'h x 5'w, lower digital, on pole.

MATERIALS: Alum frame, acrylic, digital COLORS: See images in grant application

TYPE OF LIGHTING TO BE USED: LED

TOTAL SQUARE FOOTAGE OF EXISTING SIGNAGE: Unsure, similar but looks a bit smaller.

TOTAL SQUARE FOOTAGE OF ALL SIGNAGE: 40

I hereby certify that all above information is correct to the best of my knowledge. I understand that any discrepancies in the above information may result in denial of this sign application by the Town of Fraser.

AUTHORIZED SIGNATURE* 2/8/26 DATE

*If other than owner, a letter authorizing agent on behalf of owner must be attached.

FOR TOWN USE ONLY

☐ Fee Paid ☐ Sign Sketch ☐ Sign Location Site Inspection: ☐ Pass ☐ Fail

PERMIT: ○ Approved ○ Denied ○ Appeal to Board Date:

ISSUED/DENIED BY: DATE:

Site Plan and Images:



Fraser Valley Arts - 2'h x 5'w Pole Mounted Sign Cabinet
US 40 and Park Avenue Fraser,CO

Some additional details:

1. In the photo, a wire that is currently on the site and exposed is depicted. That will not be the case with the new sign, **all electronics will be internal and hidden** from view (not to mention safety).
2. The sign is designed to be **changeable** (should a naming rights sponsor be secured for the Center) and **moveable** (should a future better location be secured, preferably south of Safeway as discussed with the Town).
3. **This is a 2026 project:** Lead time for the sign to be manufactured is 6-8 weeks. With approval of this grant FVA will work with the vendor and local contractors to schedule work for as soon as possible to erect the sign, ideally by late spring weather and contractor availability pending).
4. Vendor Estimate from minimal project (non-decorative post):

Garrett Scott

From: Steve Fitzgerald <honeyfitz88@gmail.com>
Sent: Friday, January 30, 2026 9:23 AM
To: Steve Fitzgerald
Subject: Fwd: Fraser Enhancement Grant for FVA v3

Cheers,

Steve

Begin forwarded message:

> **From:** Deb C <debculig@gmail.com>
> **Date:** January 15, 2026 at 10:06:09 AM MST
> **To:** steve Fitzgerald <honeyfitz88@gmail.com>
> **Subject: Fraser Enhancement Grant for FVA v3**
>
> Zerex40 LLC has given Fraser Valley Arts (FVA) consent to erecting and operate an electronic events sign on the property located at 520 Zerex Street in Fraser, Colorado (commonly known as the Fraser Post Office building).
>
> This will replace the “Hilly Hooker” sign currently at that site and be an enhancement/upgrade to the overall streetscape along the Hwy 40 corridor.
>
> It is our mutual expectation that this sign will help drive economic activity by promoting awareness of current events in and around the community.
>
> The agreement between FVA and Zerex40 LLC will be subject to a forthcoming Memorandum of Understanding between the parties and that document will govern the arrangement.
>
> Deborah A Culig
> Authorized Agent zero 40 LLC
> PO Box 1183
> Tabernash, Colorado 80478
> 303-810-8643

LESSOR'S LEGAL DESCRIPTION

LOTS 8, 9, 10, 11, 12, 13, 14, 15, 16 AND 17, BLOCK 10, FIRST ADDITION TO THE TOWN OF EASTOM ALSO KNOWN AS TOWN OF FRASER, EXCEPT THE EAST 12.50 FEET OF SAID LOT 17, AND ALSO EXCEPT THAT TRACT OF LAND AS CONVEYED TO GRAND COUNTY BY THE INSTRUMENT RECORDED SEPTEMBER 8, 1939, IN BOOK 87 AT PAGE 585, COUNTY OF GRAND, STATE OF COLORADO.

SCHEDULE B EXCEPTIONS

ITEMS 1 THRU 9 OF THE CLIENT PROVIDED TITLE REPORT DO NOT CONTAIN GRAPHICALLY PLOTTABLE EASEMENTS, SETBACKS, RESTRICTIONS OR OTHER ENCUMBRANCES. THE SURVEYOR CANNOT GUARANTEE THAT NON-PLOTTABLE ENCUMBRANCES DO NOT EXIST THAT MAY AFFECT THE SUBJECT LEASED PREMISES.

SURVEYOR NOTES

1. ALL TITLE INFORMATION IS BASED UPON A COMMITMENT FOR TITLE INSURANCE PREPARED BY GREAT AMERICAN TITLE AGENCY, ORDER NO.: 596-F0578021-381-LVT EFFECTIVE DATE: 04/03/2017.
2. SURVEYOR HAS NOT PERFORMED A SEARCH OF PUBLIC RECORDS TO DETERMINE ANY DEFECT IN TITLE.
3. THE BOUNDARY SHOWN HEREON IS PLOTTED FROM RECORD INFORMATION AND DOES NOT CONSTITUTE A BOUNDARY SURVEY OF THE PROPERTY.
4. SURVEYOR DOES NOT GUARANTEE THAT ALL UTILITIES ARE SHOWN OR THEIR LOCATIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND DEVELOPER TO CONTACT BLUE STAKE AND ANY OTHER INVOLVED AGENCIES TO LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION. REMOVAL, RELOCATION AND/ OR REPLACEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR.

FLOOD ZONE DESIGNATION

THE PROPOSED LEASE PREMISES SHOWN HEREON APPEAR TO BE WITHIN FLOOD ZONE "X" AS DELINEATED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM MAP NO. 08049C097C DATED 01/02/2008.

FLOOD ZONE "X" IS DEFINED AS: AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN; DETERMINED TO BE OUTSIDE THE 1% AND 0.2% ANNUAL CHANCE FLOODPLAINS.

PROJECT META DATA

1. ELEVATIONS SHOWN HEREON ARE REPRESENTED IN *NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)* ESTABLISHED FROM GPS DERIVED ELLIPSOID HEIGHTS, APPLYING GEOID 09 SEPARATIONS CONSTRAINING TO NGS CORS STATIONS PROVIDED IN THE "ONLINE POSITIONING USER SERVICE" (OPUS) SOLUTION FOR THIS SPECIFIC SITE.
2. BEARINGS SHOWED HEREON ARE BASED UPON U.S. STATE PLANE NAD83 COORDINATE SYSTEM *COLORADO STATE PLANE COORDINATE ZONE NORTH*, DETERMINED BY GPS OBSERVATIONS.
3. FIELD WORK FOR THIS PROJECT WAS PERFORMED ON 03/30/2017.

VERIZON WIRELESS LEASE AREA LEGAL DESCRIPTION

A PORTION OF LOTS 15, 16 AND 17, BLOCK 10, FIRST ADDITION TO THE TOWN OF EASTOM ALSO KNOWN AS TOWN OF FRASER, GRAND COUNTY COLORADO, DESCRIBED AS FOLLOWS;

COMMENCING AT THE NORTHEAST CORNER OF SAID BLOCK 10; THENCE NORTH 90°00'00" WEST ALONG THE NORTH LINE OF SAID BLOCK 10, 279.35 FEET; THENCE DEPARTING SAID NORTH LINE SOUTH 00°00'00" EAST, 8.95 FEET TO THE POINT OF BEGINNING.

THENCE SOUTH 00°09'04" WEST, 20.00 FEET; THENCE NORTH 89°48'12" WEST, 9.00 FEET; THENCE NORTH 89°52'34" WEST, 15.00 FEET; THENCE NORTH 00°09'04" EAST, 20.00 FEET; THENCE SOUTH 89°50'56" EAST, 24.00 FEET TO THE POINT OF BEGINNING.

VERIZON WIRELESS 15' WIDE ACCESS & UTILITY EASEMENT LEGAL DESCRIPTION

A PORTION OF LOTS 10, 11, 12, 13, 14,15, AND 16, BLOCK 10, FIRST ADDITION TO THE TOWN OF EASTOM ALSO KNOWN AS TOWN OF FRASER, GRAND COUNTY COLORADO, DESCRIBED AS FOLLOWS;

COMMENCING AT THE NORTHEAST CORNER OF SAID BLOCK 10; THENCE NORTH 90°00'00" WEST ALONG THE NORTH LINE OF SAID BLOCK 10, 279.35 FEET; THENCE DEPARTING SAID NORTH LINE SOUTH 00°00'00" EAST, 8.95 FEET; THENCE SOUTH 00°09'04" WEST, 20.00 FEET; THENCE NORTH 89°48'12" WEST, 9.00 FEET TO THE POINT OF BEGINNING;

THENCE SOUTH 00°05'59" WEST, 62.08 FEET; THENCE SOUTH 78°05'08" WEST, 143.44 FEET TO THE EASTER RIGHT OF WAY LINE OF ZEREX STREET; THENCE NORTH 28°32'30" WEST, 15.65 FEET ALONG SAID TIGHT OF WAY LINE; THENCE DEPARTING SAID RIGHT OF WAY LINE NORTH 78°05'08" EAST, 135.76 FEET; THENCE NORTH 00°07'26" EAST, 49.95 FEET; THENCE SOUTH 89°52'34" EAST, 15.00 FEET TO THE POINT OF BEGINNING.

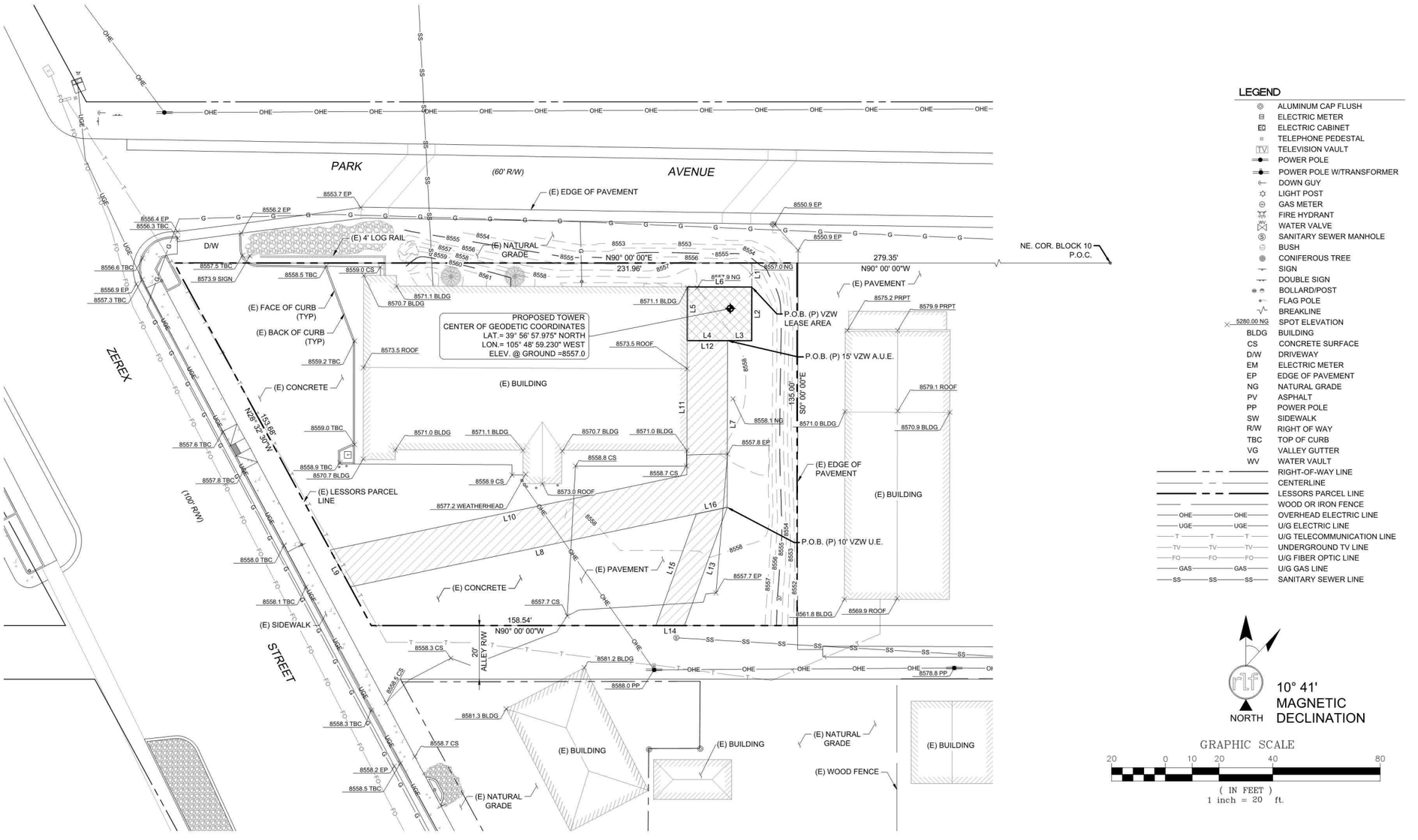
VERIZON WIRELESS 10' WIDE UTILITY EASEMENT LEGAL DESCRIPTION

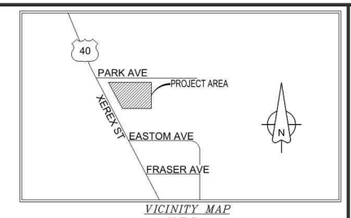
A PORTION OF LOTS 15 AND 16, BLOCK 10, FIRST ADDITION TO THE TOWN OF EASTOM ALSO KNOWN AS TOWN OF FRASER, GRAND COUNTY COLORADO, DESCRIBED AS FOLLOWS;

COMMENCING AT THE NORTHEAST CORNER OF SAID BLOCK 10; THENCE NORTH 90°00'00" WEST ALONG THE NORTH LINE OF SAID BLOCK 10, 279.35 FEET; THENCE DEPARTING SAID NORTH LINE SOUTH 00°00'00" EAST, 8.95 FEET; THENCE SOUTH 00°09'04" WEST, 20.00 FEET; THENCE NORTH 89°48'12" WEST, 9.00 FEET; THENCE SOUTH 00°05'59" WEST, 62.08 FEET TO THE POINT OF BEGINNING;

THENCE SOUTH 19°53'35" WEST, 46.80 FEET; THENCE NORTH 90°00'00" WEST, 10.63 FEET; THENCE NORTH 19°53'35" EAST, 44.22 FEET; THENCE NORTH 78°05'08" EAST, 11.77 FEET TO THE POINT OF BEGINNING.

LINE TABLE		
LINE	LENGTH	BEARING
L1	8.95	S0° 00' 00"E
L2	20.00	S0° 09' 04"W
L3	9.00	N89° 48' 12"W
L4	15.00	N89° 52' 34"W
L5	20.00	N0° 09' 04"E
L6	24.00	S89° 50' 56"E
L7	62.08	S0° 05' 59"W
L8	143.44	S78° 05' 08"W
L9	15.65	N28° 32' 30"W
L10	135.76	N78° 05' 08"E
L11	49.95	N0° 07' 26"E
L12	15.00	S89° 52' 34"E
L13	46.80	S19° 53' 35"W
L14	10.63	N90° 00' 00"W
L15	44.22	N19° 53' 35"E
L16	11.77	N78° 05' 08"E





VICINITY MAP
N.T.S.

LEGEND

- ALUMINUM CAP FLUSH
- ELECTRIC METER
- ELECTRIC CABINET
- TELEPHONE PEDESTAL
- TELEVISION VAULT
- POWER POLE
- POWER POLE W/TRANSFORMER
- DOWN GUY
- LIGHT POST
- GAS METER
- FIRE HYDRANT
- WATER VALVE
- SANITARY SEWER MANHOLE
- BUSH
- CONIFEROUS TREE
- SIGN
- DOUBLE SIGN
- BOLLARD/POST
- FLAG POLE
- BREAKLINE
- 5280.00 NG — SPOT ELEVATION
- BLDG — BUILDING
- CS — CONCRETE SURFACE
- D/W — DRIVEWAY
- EM — ELECTRIC METER
- EP — EDGE OF PAVEMENT
- NG — NATURAL GRADE
- PV — ASPHALT
- PP — POWER POLE
- SW — SIDEWALK
- R/W — RIGHT OF WAY
- TBC — TOP OF CURB
- VG — VALLEY GUTTER
- WV — WATER VAULT
- RIGHT-OF-WAY LINE
- CENTERLINE
- LESSORS PARCEL LINE
- WOOD OR IRON FENCE
- OHE — OVERHEAD ELECTRIC LINE
- UGE — U/G ELECTRIC LINE
- T — U/G TELECOMMUNICATION LINE
- TV — UNDERGROUND TV LINE
- FO — U/G FIBER OPTIC LINE
- GAS — U/G GAS LINE
- SS — SANITARY SEWER LINE

NORTH — 10° 41' MAGNETIC DECLINATION

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

verizon
126 W. GEMINI DR.
TEMPE, AZ 85283

CHARLES STECKLY ARCHITECTURE

RLF CONSULTING
LAND SURVEY • MAPPING SOLUTIONS
214 N. STADEM DR. • TEMPE AZ 85281
WWW.RLFCONSULTING.COM • 480-445-0180

FIELD BY:	JWS
DRAWN BY:	DLJ
CHECKED BY:	ABM

REVISIONS

NO.	DATE	DESCRIPTION
2	05/01/17	FINAL
1	04/06/17	PRELIMINARY

COLORADO LICENSED RYAN L. FIDLER 38207 05/01/17 PROFESSIONAL LAND SURVEYOR

REUSE OF DOCUMENT
THE IDEAS & DESIGN INCORPORATED HEREON, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF RLF CONSULTING, LLC & IS NOT TO BE USED FOR ANY OTHER PROJECT WITHOUT WRITTEN AUTHORIZATION OF RLF CONSULTING, LLC.

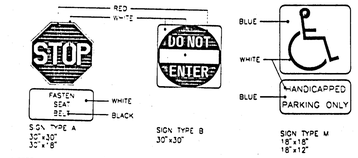
PROJECT No.
15010076

SITE NAME:
CO1 DT FRASER

SITE ADDRESS:
520 ZEREX STREET
FRASER, CO 80442

SHEET TITLE:
TOPOGRAPHIC SURVEY

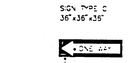
SHEET NO.	REVISION:
LS-1	0

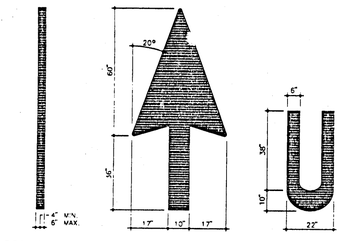


NOTES:
1. SET POSTS IN CONCRETE TO A MINIMUM DEPTH OF 3'-0". USE A U-TYPE FLANGED STEEL SECTIONS FOR SIGN POSTS. FABRICATE SIGN PANELS OF 18 GA. STEEL OR .063 ALUMINUM.

NO SCALE SD-11100-1e

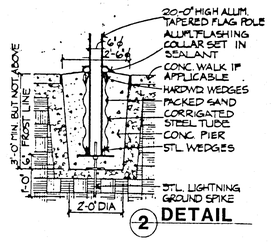
TRAFFIC SIGNS



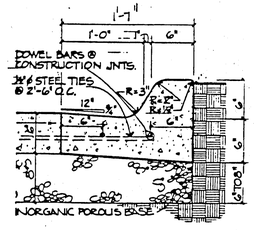


SCALE 1/2":1'-0" 0 1 2 3 SD-11100-1c

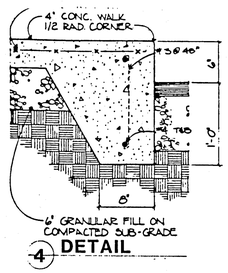
WHITE PAVEMENT MARKINGS



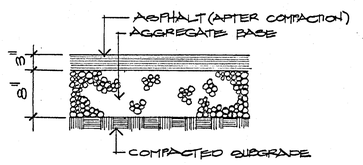
2 **DETAIL**



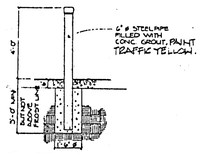
3 **DETAIL**



4 **DETAIL**



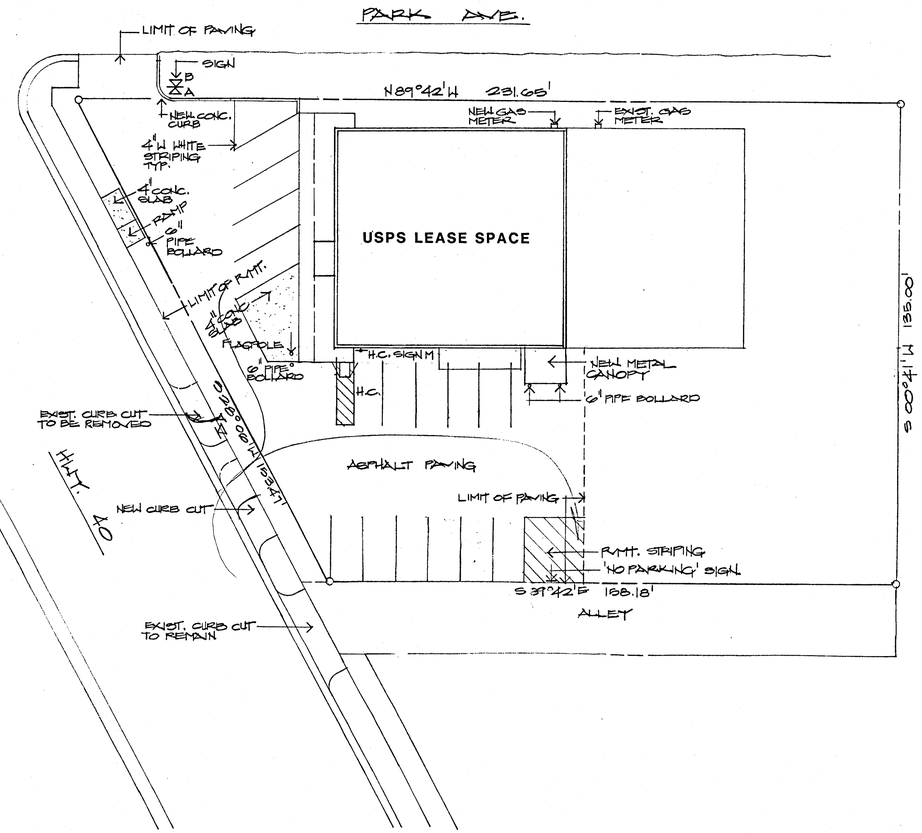
5 **SECTION - PAVEMENT**



6 PIPE GUARD 1'-0" 5"



7 **EXTERIOR SIGNAGE**
CENTER BOTH WAYS ON WEST BLDG FASCIA



NORTH

1 **SITE PLAN**
1":20'-0"

NOTES
1. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH USPS RE-4 HANDICAP RQMTS.
2. SITE PLAN IS FOR GENERAL LAYOUT INFORMATION ONLY. CONTRACTOR SHALL FURNISH TO THE USPS A TOPOGRAPHIC SITE PLAN INDICATING ALL IMPROVMENTS, FINAL GRADING, DIMENSIONS, ETC. FOR APPROVAL PRIOR TO ANY SITE WORK.

REVISIONS			
REV	DESCRIPTION	DATE	APPD

UNITED STATES POSTAL SERVICE
DENVER FACILITIES SERVICE OFFICE

DRAWN MRW
CHECKED
ARCHITECT/ENGINEER MRW
12/4/89 Date

PROJECT: FRASER, CO 80442
APPROVED ---------- Date

DRAWING TITLE: SITE PLAN
SCALE

DESIGN CONTRACT NO.
ENGINEERING JOB NO.
DRAWING NO. 1
SHEET 1 OF 11

131219

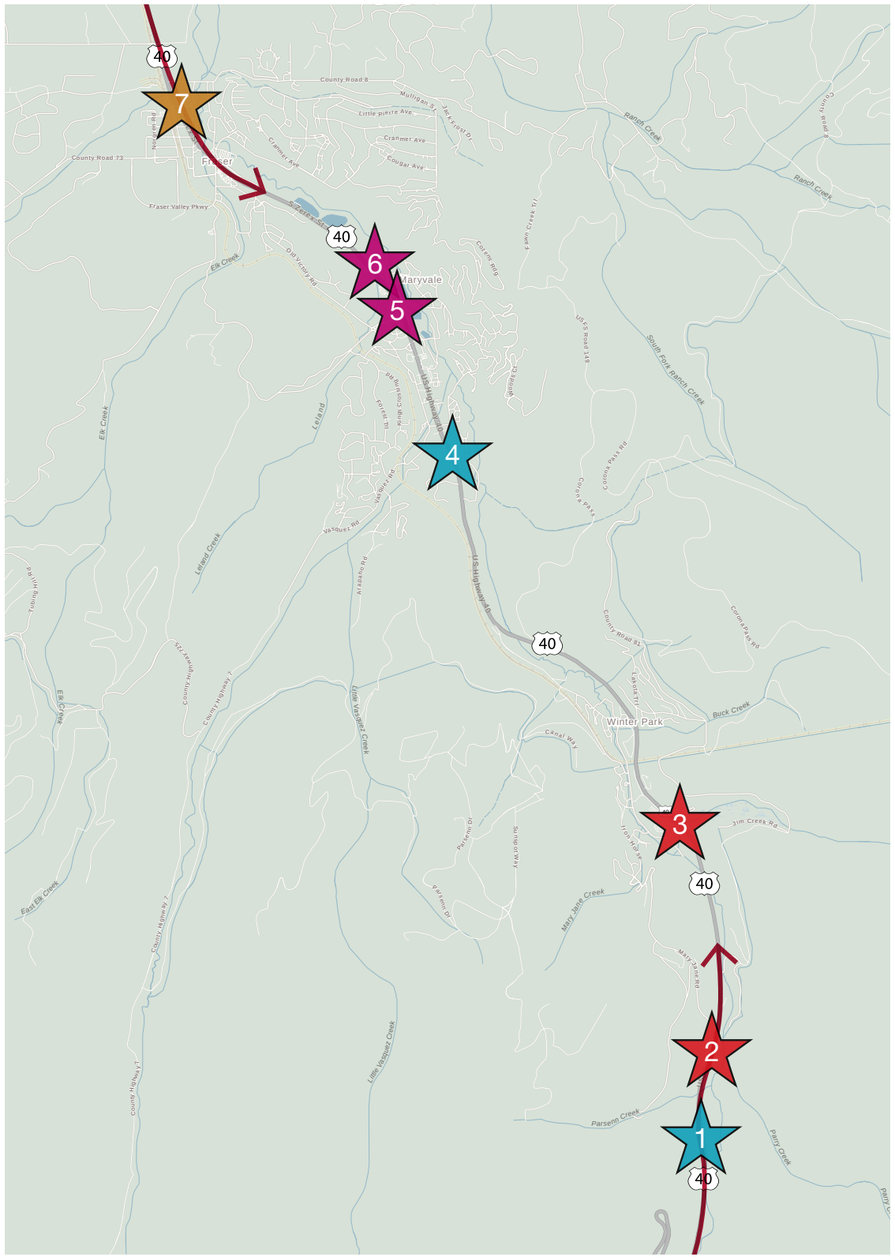
Winter Park, CO

Analysis Summary & Schematic Design

August 06, 2025

Winter Park & Fraser

Gateways



LEGEND

- Primary Entry
- Fraser
- Winter Park
- Winter Park Resort
- Proposed Gateway



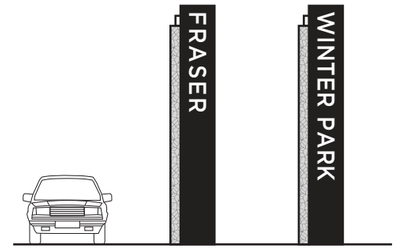
1



4



2



5 6

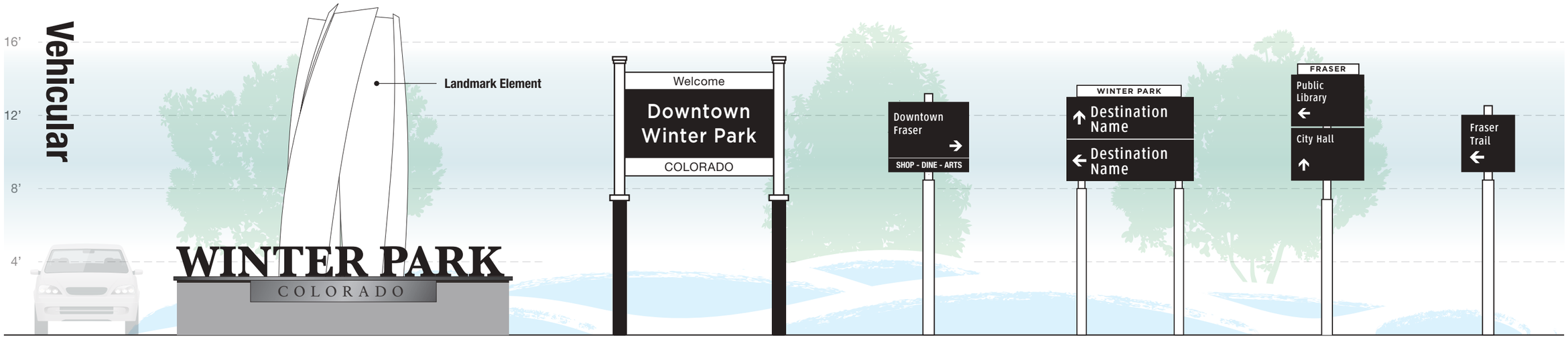


3

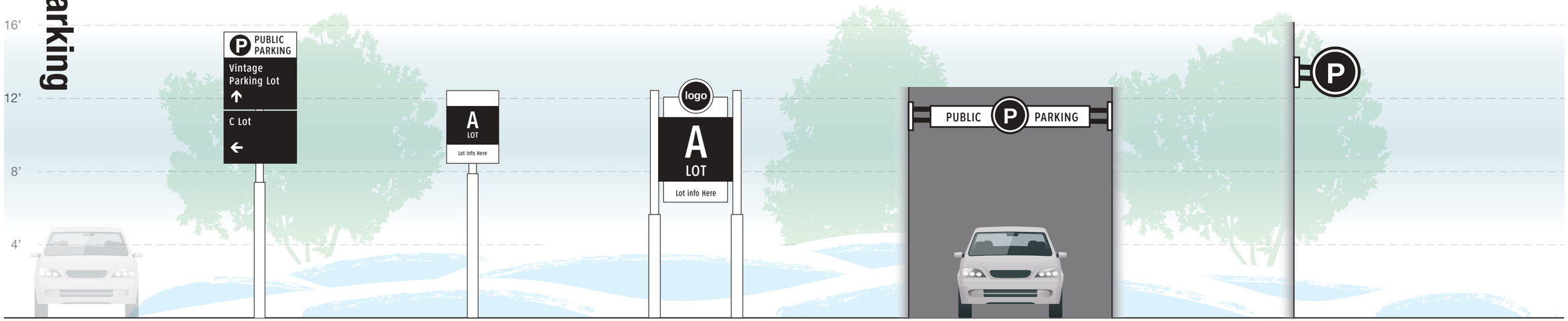


7

Generic Sign Types: Winter Park & Fraser

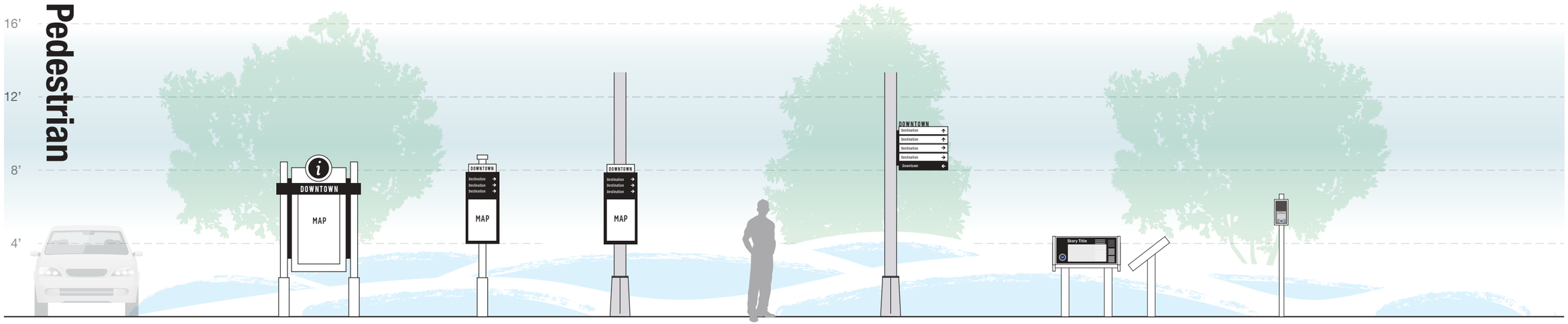


Landmark Gateway | Downtown / Secondary Gateway | Vehicular Trailblazer | Destination Directional (Over 25 mph) | Destination Directional (25 mph + under) | Park / Trail Trailblazer



Parking Trailblazer | Parking Lot ID - small | Parking Lot ID - Large | Parking Garage Walkway | Parking Garage Identification

Generic Sign Types: Winter Park & Fraser



Pedestrian Kiosk

Pedestrian Kiosk Small

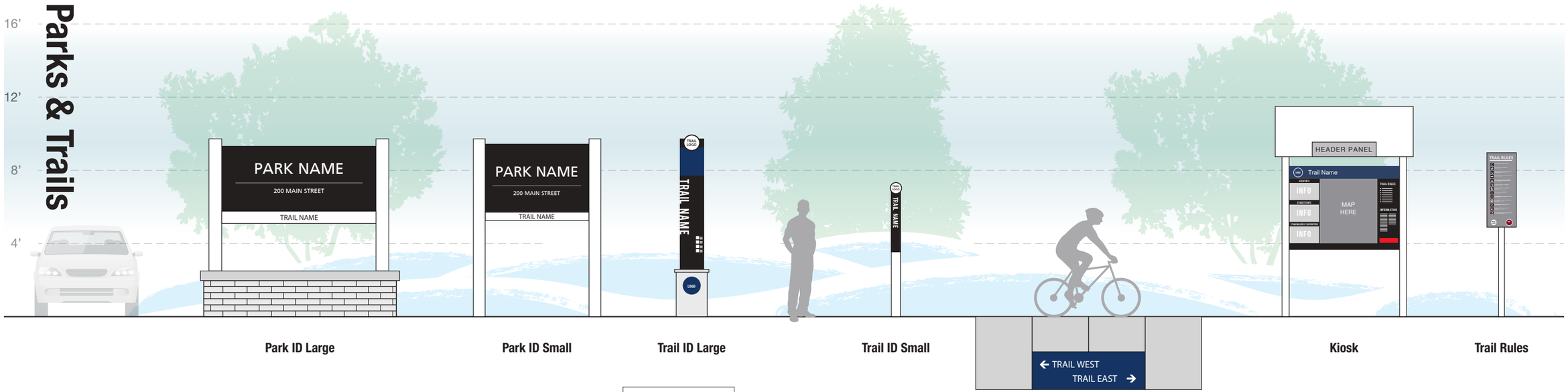
Pedestrian Kiosk Existing Pole

Pedestrian Directional

Interpretive Reader Rail

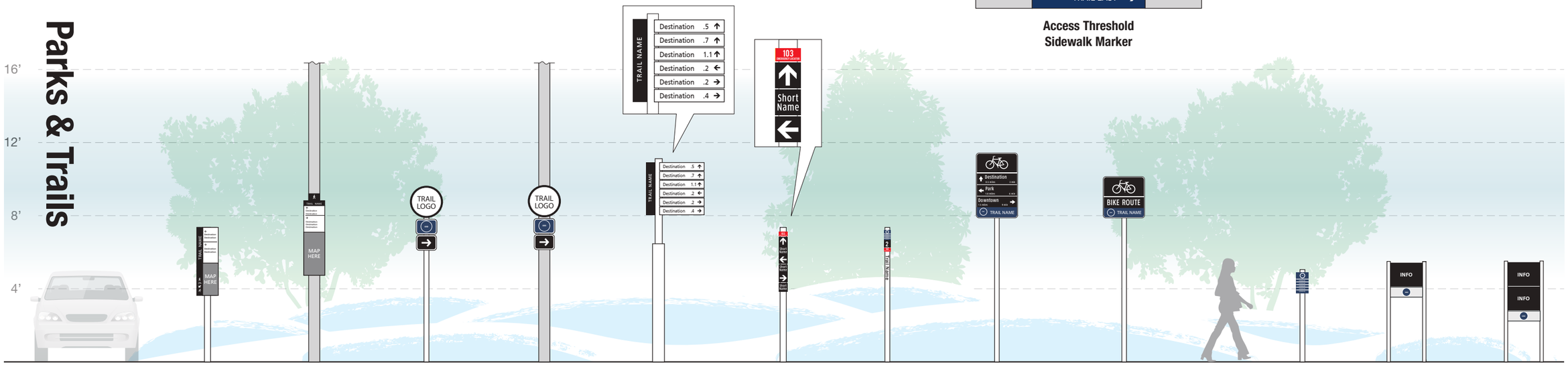
Interpretive

Generic Sign Types: Winter Park & Fraser



Park ID Large | Park ID Small | Trail ID Large | Trail ID Small | Kiosk | Trail Rules

Access Threshold
Sidewalk Marker



Kiosk Totem Directional | Kiosk Totem Existing Pole | Trail Access | Trail Access Existing Pole | Trail Directional Large | Trail Directional Medium | Trail Directional Small | Bike Directional | Bike Route | Trail Sponsor | General Info 1-Panel | General Info 2-Panel

Schematic Design

Brand / Logos

Winter Park COLORADO

FRASER

Winter Park RESORT

Connections & Collaborations



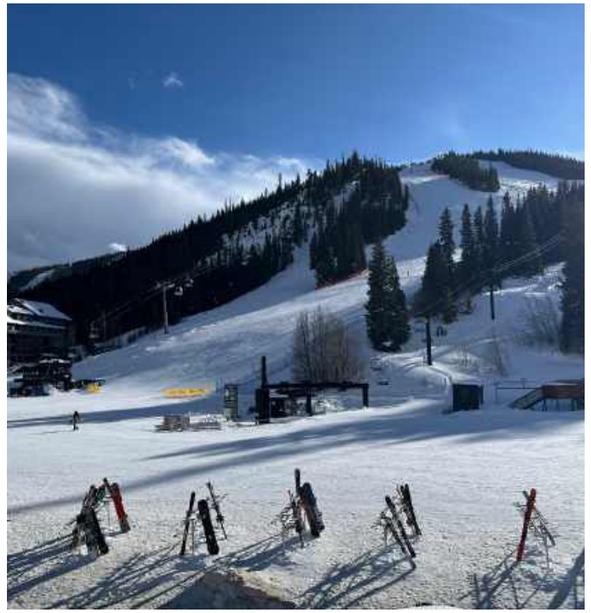
RENDEzVOUS COLORADO



Environment







Considerations

- Brand Forward
- Cohesive System / Municipality ID
- Sign Maintenance
- Protective Bases
- DOT & Engineering Requirements
- Off-the-Ground

Option 4 Winter Park, Fraser, & Winter Park Resort



Scale: 3/8"=1'-0"

VDIR.5
Vehicular Directional (Over 25 mph)

VDIR.5
Vehicular Directional (Over 25 mph)

VDIR.5
Vehicular Directional (Over 25 mph)

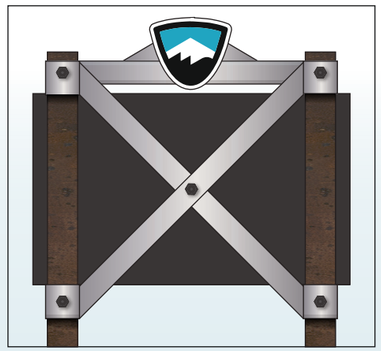
Option 4 Winter Park & Fraser

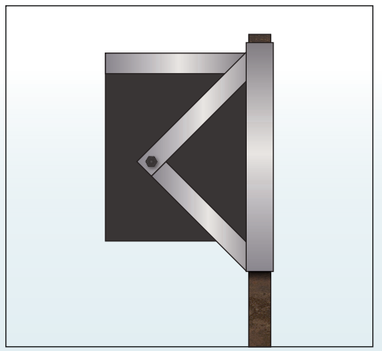






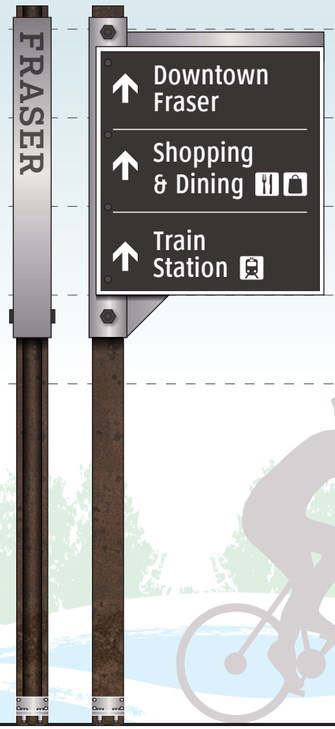


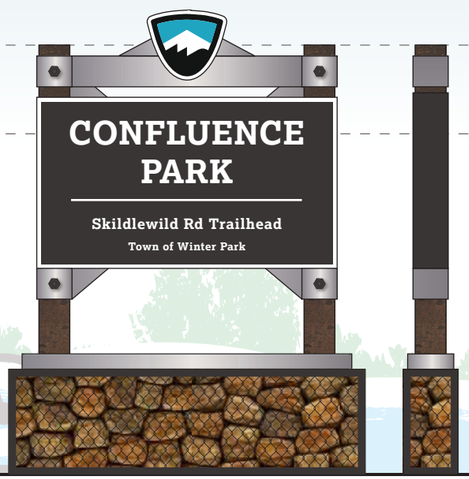




13'-6"
12'-0"
10'-6"
9'-0"
7'-6"
6'-0"

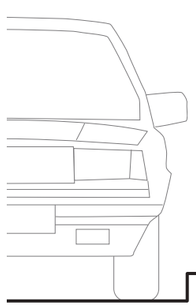












Scale: 3/8"=1'-0"

VDIR.5
Vehicular Directional (Over 25 mph)

VDIR.3
Vehicular Directional (25 mph & under)

PARK.ID.1
Park Identification

TRAIL.ID.1
Trail Identification

INT.1
Interpretive Sign

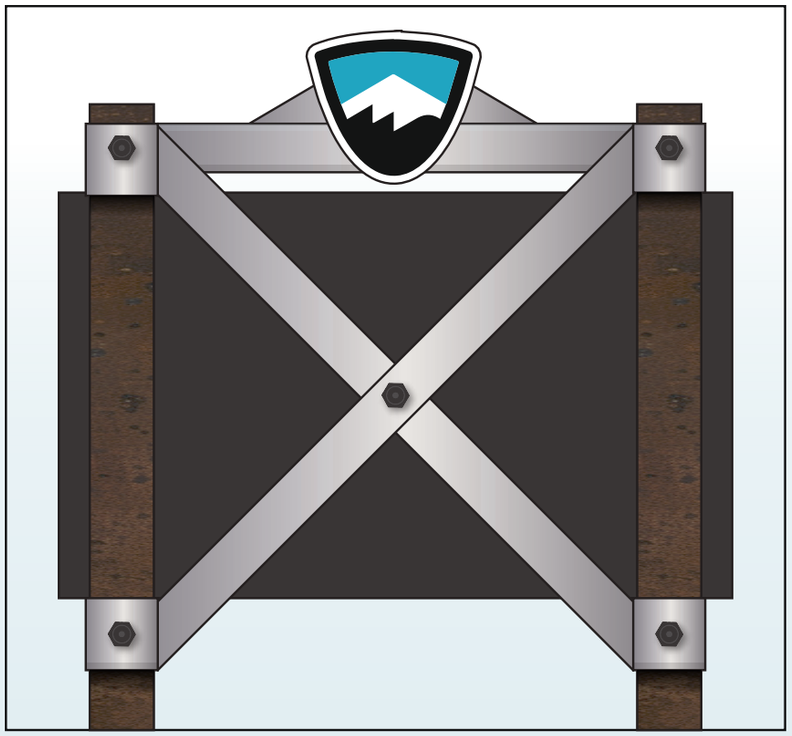


Scale: 3/8"=1'-0"

VDIR.5
Vehicular Directional (Over 25 mph)

VDIR.3
Vehicular Directional (25 mph & under)


FRASER
Adventure Park
Train Station





PARK.ID.1
Park Identification

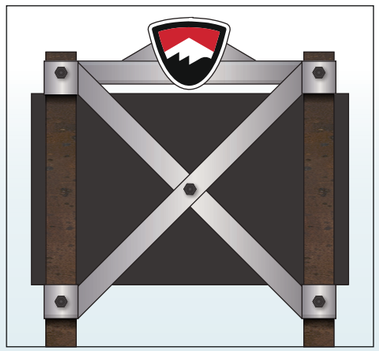
TRAIL.ID.1
Trail Identification

INT.1
Interpretive Sign

Option 4 Winter Park & Fraser

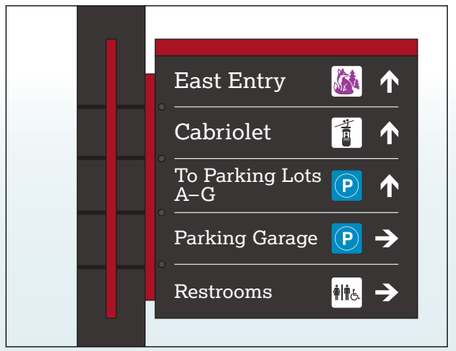


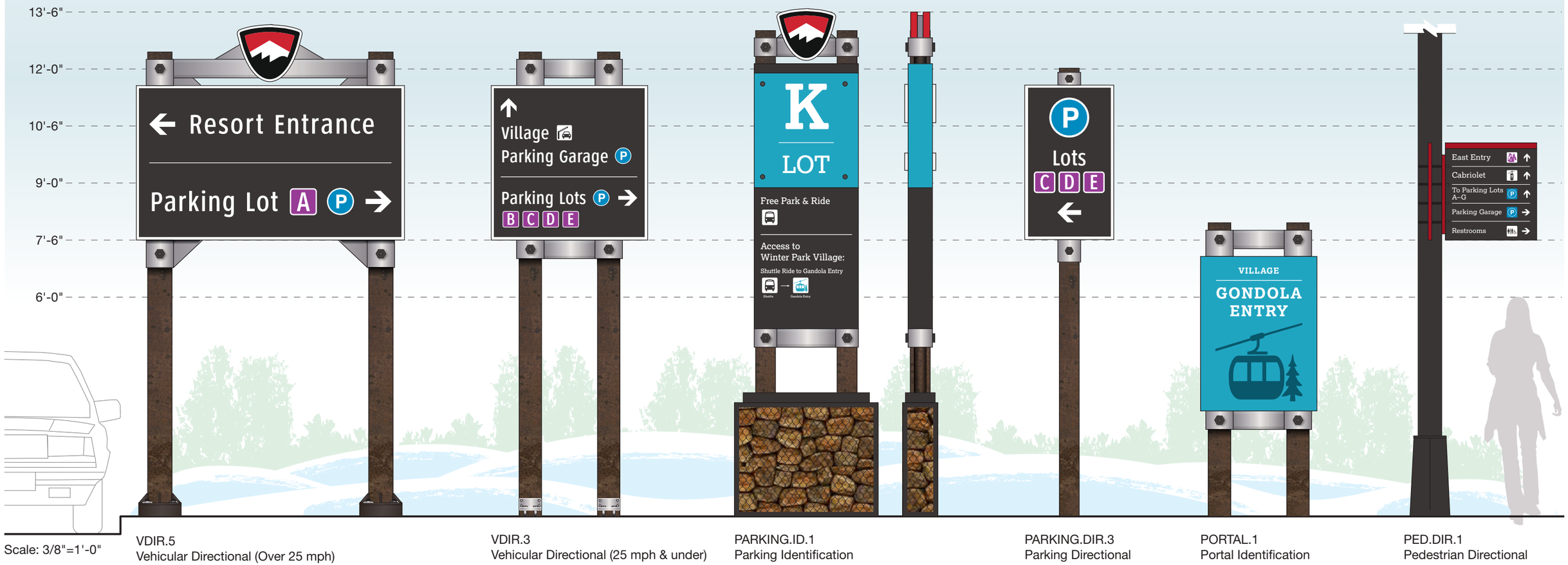












Scale: 3/8"=1'-0"

VDIR.5
Vehicular Directional (Over 25 mph)

VDIR.3
Vehicular Directional (25 mph & under)

PARKING.ID.1
Parking Identification

PARKING.DIR.3
Parking Directional

PORTAL.1
Portal Identification

PED.DIR.1
Pedestrian Directional

Town of Fraser
Ordinance NO. 530
Series 2026

AN ORDINANCE AMENDING ORDINANCE 526 FINALLY ADOPTED AND APPROVED ON SEPTEMBER 3, 2025, RELATING TO A LOAN OF FUNDS TO THE FRASER HOUSING AUTHORITY IN AN AMOUNT NOT TO EXCEED $5,400,000 TO FINANCE THE ACQUISITION AND CONSTRUCTION OF THE ST. LOUIS LANDING PROJECT; AND DECLARING AN EMERGENCY.

WHEREAS, the Town of Fraser, Colorado (the "Town"), is a municipal corporation duly organized and existing under the Constitution and laws of the State of Colorado (the "State"); and

WHEREAS, the Fraser Housing Authority, a public body corporate and politic of the State of Colorado (the "Authority") is authorized and empowered by the provisions of the Housing Authorities Law, being Part 2 of Article 4 of Title 29, Colorado Revised Statutes, as from time to time supplemented and amended (the "Act"), to issue revenue bonds for the purpose of acquiring and constructing buildings and improvements pursuant to a single plan or undertaking to provide dwelling accommodations on financial terms within the means of persons of low income; and

WHEREAS, on January 23, 2025, the Town entered into a Development Agreement (the "Development Agreement") with Mountain Affordable Housing Development LLC (the "Developer") for the construction of an affordable housing development known as the St. Louis Landing Project (the "Project"); and

WHEREAS, the Authority will issue its Housing facilities Revenue Bonds (St. Louis Landing Project) Series 2026 (the "Housing Revenue Bonds") in March or April of 2026 to finance the construction of the Project; and

WHEREAS, the Board of Trustees of the Town (the "Board") has issued a Notice to Proceed (as defined in the Development Agreement) in accordance with the terms of the Development Agreement so that construction can proceed on the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, on September 3, 2025, the Board adopted Ordinance 526 (the "Original Ordinance") which authorized the Town to make a loan to the Authority in an amount not to exceed $5,400,000 (the "First Interim Loan") to pay for costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, after the adoption of the Original Ordinance, the Colorado Housing Finance Authority ("CHFA") issued its Affordable Housing Financing Equity Program Equity Commitment (the "Equity Commitment"), which sets forth the terms upon which CHFA will make an investment in the Project of $12,900,000 (the "Investment"); and

WHEREAS, the terms of the Equity Commitment require the Authority to provide evidence satisfactory to CHFA that the maturity date of the First Interim Loan to the Project has been extended past the maturity date of the Housing Revenue Bonds and the expiration of the Investment Term (as defined in the Commitment); and

WHEREAS, additionally, the terms of the Equity Commitment require the Town to subordinate the First Interim Loan to the deed of trust securing the Investment; and

WHEREAS, in order to satisfy the terms of the Equity Commitment, the Board desires to amend the Original Ordinance to bring its terms into compliance with the requirements of the Equity Commitment; and

WHEREAS, pursuant to Section 31-16-105,C.R.S., because of the urgent need for financing for the Project in order to provide much needed for-rent housing offered at rental rates on financial terms within the means of persons of low income, and the need to secure the Investment for the Project, the Board determines that an emergency exists and that adoption of this Ordinance as an emergency measure on first and final reading is necessary for the immediate preservation of public property, health, welfare, peace and safety.

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF TRUSTEES OF THE TOWN OF FRASER, COLORADO, AS FOLLOWS:

Section 1: Recitals Incorporated; Ratification. The foregoing recitals are incorporated herein by reference and adopted as findings and determinations of the Board. All actions heretofore taken (not inconsistent with the provisions of the Original Ordinance or this Ordinance) by the Board and by the officers, agents or employees of the Board or the Town directed toward the creation of the Project Fund and the making of the First Interim Loan to the Authority are hereby ratified, approved, and confirmed.

Section 2: Amendments. Section 4 of the Original Ordinance is deleted in its entirety and replaced with the following:

"**Section 4:** Terms of the Interim Loan.

A. *Loan Term*. The final maturity date of the Interim Loan is December 31, 2066, subject to optional prepayment in accordance with Section 4.E. below (the "Loan Term").

B. *Interest Rate*. The Interim Loan shall bear interest calculated on the basis of a 360-day year of twelve 30-day months at a rate per annum equal to the average interest rate being earned on the Town's investment portfolio for the preceding twelve months, adjusted annually over the Loan Term.

C. *Principal Amount*. The principal amount of the Interim Loan shall not exceed $5,400,000. The Board hereby delegates to the Town Manager the authority to determine how much will be loaned to the

Authority from time to time in accordance with this ordinance; provided that such amount shall not exceed $5,400,000.

E. *Optional Prepayment*. The Interim Loan is subject to prepayment in full, or in part, at any time at the option of the Authority. The Authority may prepay the Interim Loan with amounts on deposit in the Project Fund, proceeds of the Housing Revenue Bonds, proceeds received from the sale of Middle-Income Housing Tax Credits, proceeds received from the sale of New Markets Tax Credits or with other legally available revenues of the Authority. Optional prepayment of the Interim Loan in full by the Authority shall satisfy and discharge the Interim Loan and shall end the Loan Term.

F. *Mandatory Prepayment*. Upon the payment of all costs of the Project (or the adequate provision of funds to pay any remaining costs of the Project) the Interim Loan shall be repaid with all available proceeds of the Housing Revenue Bonds, the proceeds received from the sale of the Middle-Income Housing Tax Credits and the proceeds received from the sale of New Markets Tax Credits.

G. *Maturity Payment*. Upon maturity, the Interim Loan shall be repaid in full with all available revenues of the Authority.

H. Notwithstanding anything contained herein to the contrary, the Board may choose, in its sole discretion, to forgive all or a part of the principal or interest due on the Interim Loan, or both.

I. The Town acknowledges that the Interim Loan is junior to the lien of the Mortgage and Indenture of Trust securing the Housing Revenue Bonds and subordinate to the lien of the deed of trust securing the Prop 123 Investment. The Town agrees to execute any and all documents deemed necessary to evidence such subordination."

Section 3: Continuing Effectiveness. Except as amended herein, the provisions of Ordinance 526 remain in full force and effect.

Section 4: Further Actions. The officers and employees of the Town are hereby independently authorized and directed to take all action necessary or appropriate to implement and effect the provisions of this Resolution, including executing the Amended and Restated Loan Agreement to set forth the terms of the Interim Loan. The execution of any document or instrument by the appropriate officers herein authorized shall be conclusive evidence of the approval by the Town of such agreement, document or instrument in accordance with the terms hereof.

Section 5: Declaration of Emergency. Pursuant to Section 31-16-105,C.R.S., because of the urgent need for financing for the Project in order to provide much needed for-rent housing offered at rental rates on financial terms within the means of persons of

low income, and the need to secure the Investment for the Project, the Board determines that an emergency exists and that adoption of this Ordinance as an emergency measure on first and final reading is necessary for the immediate preservation of public property, health, welfare, peace and safety and this Ordinance shall be in full force and effect immediately upon final passage on first reading and adoption upon Board approval.

Section 6: Effective Date. This Ordinance after its passage on first and final reading shall be numbered, recorded, published and posted and the adoption, posting, and publication shall be authenticated by the signature of the Mayor and the Town Clerk. This Ordinance shall become effective immediately.

READ, PASSED, ADOPTED AS AN EMERGENCY ORDINANCE AND ORDERED PUBLISHED BY THE BOARD OF TRUSTEES AND SIGNED THIS 18th DAY OF FEBRUARY, 2026.

Votes in favor: ____
Votes opposed: ____
Votes abstained: ____

BOARD OF TRUSTEES OF THE
TOWN OF FRASER, COLORADO

BY: _____
Mayor

(S E A L)

ATTEST: _____
Town Clerk

Published in the *Middle Park Times* on_____.

99502428.v1

AMENDED AND RESTATED LOAN AGREEMENT

This Amended and Restated Loan Agreement ("Loan Agreement") dated February 18, 2026, is between the TOWN OF FRASER, COLORADO ("Lender"), and FRASER HOUSING AUTHORITY ("Borrower"), and it amends and restates in full the Loan Agreement dated September 3, 2025 ("Effective Date"), between the Lender and the Borrower.

RECITALS

WHEREAS, the Lender, is a municipal corporation duly organized and existing under the Constitution and laws of the State of Colorado (the "State"); and

WHEREAS, the Borrower is authorized and empowered by the provisions of the Housing Authorities Law, being Part 2 of Article 4 of Title 29, Colorado Revised Statutes, as from time to time supplemented and amended (the "Act"), to issue revenue bonds for the purpose of acquiring and constructing buildings and improvements pursuant to a single plan or undertaking to provide dwelling accommodations on financial terms within the means of persons of low income; and

WHEREAS, on January 23, 2025, the Lender entered into a Development Agreement (the "Development Agreement") with Mountain Affordable Housing Development LLC (the "Developer") for the construction of an affordable housing development known as the St. Louis Landing Project (the "Project"); and

WHEREAS, the Borrower will issue revenue bonds (the "Housing Revenue Bonds") in March or April 2026 to finance the construction of the Project; and

WHEREAS, the Board of Trustees of the Lender (the "Board") has issued a Notice to Proceed (as defined in the Development Agreement) in accordance with the terms of the Development Agreement so that construction can proceed on the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, the Lender and the Borrower desire to make funds available to pay the costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued and the Prop 123 Investment being issued by entering into this Loan Agreement; and

WHEREAS, the obligation of the Borrower to repay this Loan shall be payable from all legally available revenue of the Borrower, which revenues may include the proceeds of the Housing Revenue Bonds, the proceeds received from the sale of Middle-Income Housing Tax Credits and the proceeds received from the sale of New Markets Tax Credits, and the full faith and credit of the Borrower is hereby pledged to the payment of the Loan; provided that this Loan and the pledge of revenue securing this Loan shall be in all respects subordinate to the Housing Revenue Bonds and the Prop 123 Investment.

The parties therefore agree as follows:

1. The Loan. The Lender hereby lends up to $5,400,000 to the Borrower (the "Loan"), and the Borrower borrows the Loan from the Lender, subject to the terms this Loan Agreement. The terms of the Loan shall be as follows:

A. *Loan Term*. The final maturity date of the Loan is December 31, 2066, subject to optional prepayment in accordance with Section 4.E. below (the "Loan Term").

B. *Interest Rate*. The Loan shall bear interest calculated on the basis of a 360-day year of twelve 30-day months at a rate per annum equal to the average interest rate being earned on the Lender's investment portfolio for the preceding twelve months, adjusted annually over the Loan Term.

C. *Principal Amount*. The principal amount of the Loan is not to exceed $5,400,000.

E. *Optional Prepayment*. The Loan is subject to prepayment in full, or in part, at any time at the option of the Borrower. The Borrower may prepay the Interim Loan with amounts on deposit in the St. Louis Landing Project Fund (the "Project Fund"), proceeds of the Housing Revenue Bonds, proceeds received from the sale of Middle-Income Housing Tax Credits or with other legally available revenues of the Borrower. Optional prepayment of the Interim Loan in full by the Borrower shall satisfy and discharge the Interim Loan and shall end the Loan Term.

F. *Mandatory Prepayment*. Upon the payment of all costs of the Project (or the adequate provision of funds to pay any remaining costs of the Project) the Loan shall be repaid with all available proceeds of the Housing Revenue Bonds, the proceeds received from the sale of the Middle-Income Housing Tax Credits and the proceeds received from the sale of New Markets Tax Credits.

G. *Maturity Payment*. Upon maturity, the Loan shall be repaid in full with all available revenues of the Authority.

H. *Subordination*. The Loan is a subordinate cashflow obligation of the Borrower. The Loan and the pledge of revenues securing payment of the Loan and the Note shall be subordinate in all respects to the Borrower's Housing Revenue Bonds and the lien on the Borrower's revenues securing the Housing Revenue Bonds and to the Prop 123 Investment and the lien of the Borrower's revenues securing the deed of trust securing the Investment.

I. Notwithstanding anything contained herein to the contrary, the Lender may choose, in its sole discretion, to forgive all or a part of the principal or interest due on the Loan, or both.

2. Disbursement. The Lender shall lend funds to Borrower pursuant to a Promissory Note in the original principal amount of not to exceed $5,400,000 (the "Note"). The Loan proceeds shall be deposited in the Project Fund to be used to finance costs of the Project incurred pursuant to the Development Agreement. This Loan Agreement and the Note are referred to as the "Loan Documents."

3. Events of Default. The following events, subject to the notice and cure requirements set forth below, will constitute an Event of Default:

(a) if the Borrower fails to duly and punctually perform its obligations under this Loan Agreement, or it violates the covenants contained in any of the Loan Documents in any material respect, and such failure remains uncured within ninety days of the Borrower's receipt of written notice from Lender;

(b) if the Borrower fails to pay the Note when due, and the Borrower fails to cure within thirty days of receiving written notice of such failure from Lender;

(c) if the Borrower makes a general assignment for the benefit of creditors, admits in writing its inability to pay its debts generally as they mature, files or has filed against it a petition in bankruptcy or a petition or answer seeking a reorganization, arrangement with creditors or other similar relief under the federal bankruptcy laws or under any other applicable law of the United States of America or any state, consents to the appointment of a trustee or receiver; or takes any action for the purpose of effecting or consenting to any of the foregoing; and

(d) if an order, judgment, or decree is entered appointing, without the Borrower's consent, a trustee or receiver for the Borrower or a substantial part of its property, or approving a petition filed against the Borrower seeking a reorganization, arrangement with creditors or other similar relief under the federal bankruptcy laws or under any other applicable law of the United States of America or any state, and such order, judgment, or decree is not be vacated, set aside, or stayed within ninety days from the date of entry.

Following the occurrence of an Event of Default, the Lender shall provide written notice to the Borrower.

The Borrower may cure any Event of Default within the timeframes provided in this Loan Agreement or any other Loan Document. If the Borrower fails to timely cure a default, then the Lender shall have all remedies as are set forth in the Loan Documents or otherwise at law.

4. Miscellaneous.

(a) This Loan Agreement binds and inures to the benefit of the successors and assigns of the parties. Subject to the Lender's consent, which the Lender shall not unreasonably withhold, condition, or delay, the Borrower may assign the Loan and the obligations and duties of the Borrower under the Loan Documents to any purchaser of the Property and Project if the purchaser agrees to be bound to the Loan Documents.

(b) Any amendment to this Loan Agreement requires a written agreement of the parties.

(c) No waiver of satisfaction of a condition or non-performance of an obligation under this Loan Agreement will be effective unless it is in writing and signed by the party granting the waiver.

(d) The laws of the state of Colorado, without giving effect to its principles of conflicts of law, govern all adversarial proceedings brought by the parties arising out of this Loan Agreement, whether their claims sound in contract, tort, or otherwise.

(e) This Loan Agreement will remain effective so long as there are sums remaining outstanding on the Note.

(f) The Borrower hereby pledges all available revenue of the Borrower and its full faith and credit for the payment of the principal of, the interest on, and any premiums due in connection with the Loan and the Loan Documents; such pledge and lien is subordinate in all respects to the Borrower's Housing Revenue Bonds and the lien on the Borrower's revenues securing the Housing Revenue Bonds and to the Prop 123 Investment and the lien of the Borrower's revenues securing the deed of trust securing the Prop 123 Investment. The creation, perfection, enforcement, and priority of the pledge of all available revenues and the full faith and credit of the Borrower to secure or pay the Loan provided herein shall be governed by Section 11-57-208, C.R.S. The available revenues as received by the Borrower shall immediately be subject to the lien of this pledge without any physical delivery thereof, any filing, or further act. The lien of such pledge shall be valid, binding, and enforceable as against all persons having claims of any kind in tort, contract, or otherwise against the Borrower irrespective of whether such persons have notice of such liens.

(g) Pursuant to Section 11-57-210 of the Supplemental Public Securities Act, the Interim Loan is incurred and the Loan Documents are executed pursuant to the Supplemental Public Securities Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Loan Documents after delivery for value.

(h) The parties shall give all notices, consents, demands, waivers, or approvals related to this Agreement in writing delivered by (i) personal delivery, (ii) a

nationally-recognized, next-day courier service, (iii) first-class certified mail, postage prepaid, or (iv) e-mail. A notice is deemed given on the other party's receipt of it, or if mailed, on the earlier of the other party's receipt of it and the fifth business day after its mailing. The parties may change their addresses for notice by notifying the other parties in the manner provided in this Section 5(f). The parties hereby designate their addresses as follows:

If to the Borrower:

Fraser Housing Authority
153 Fraser Ave
Fraser, Colorado 80442
Attention: Executive Director

If to the Lender:

The Town of Fraser, Colorado
153 Fraser Ave
Fraser, Colorado 80442
Attention: Town Manager

[*signature pages follow*]

The Borrower has executed this Loan Agreement as of the Effective Date.

FRASER HOUSING AUTHORITY

_____
Chair

ATTEST:

_____
Secretary

The Lender has executed this Loan Agreement as of the Effective Date.

TOWN OF FRASER, COLORADO

_____
Mayor

ATTEST:

_____
Town Clerk

AMENDED AND RESTATED PROMISSORY NOTE
FRASER HOUSING AUTHORITY LOAN

Principal amount: Not to Exceed $5,400,000 Original Date: September 3, 2025

Amended and Restated Date: February 18, 2026

FRASER HOUSING AUTHORITY, ("Borrower"), unconditionally promises to pay to the order of THE TOWN OF FRASER, COLORADO ("Payee"), the principal sum of $5,400,000, or so much as Payee has advanced under this Note, together with interest at the annual rate per annum equal to the average interest rate being earned on the Payees's investment portfolio for the preceding twelve months, adjusted annually over the Loan Term, in accordance with the terms of the Amended and Restated Loan Agreement dated February 18, 2026, between the Borrower and the Payee (the "Loan Agreement"). All unpaid principal shall remain outstanding until fully paid and discharged.

Each advance made by the Payee in accordance with the Loan Agreement and all payments and prepayments made on account of the principal thereof shall be recorded by Payee on the schedule attached to this Note as Schedule 1. Upon the advancement of the proceeds of the Loan in accordance with the terms of the Loan Agreement, the principal amount of this Note shall be deemed to be increased automatically in a principal amount equal to the amount so advanced and without further acts on the part of the Payee or the Borrower.

The final maturity date of this Note is December 31, 2066 (the "Loan Term"). Borrower may prepay this Note, either in whole or in part, at any time without premium or penalty and without the prior consent of the Payee.

This Note shall be subjected to mandatory prepayment with moneys on deposit in the Project Fund, and from the proceeds of the Authority's Housing Revenue Bonds, the proceeds received from the sale of Middle-Income Housing Tax Credits and the proceeds received from the sale of New Markets Tax Credits.

Upon maturity, this Note shall be repaid in full with all available moneys of the Authority.

This Note is a subordinate cashflow obligation of the Borrower. The Loan and the pledge of revenues securing payment of the Loan and the Note shall be subordinate in all respects to the Borrower's Housing Revenue Bonds and the lien on the Borrower's revenues securing the Housing Revenue Bonds and to the Prop 123 Investment and the lien of the Borrower's revenues securing the deed of trust securing the Prop 123 Investment.

If Borrower fails to pay any amount due under this Note, and Payee takes any action to collect the amount due, or if Payee brings any suit or proceeding for the recovery or for protection of the indebtedness, then Borrower shall pay on demand all

reasonable costs and expenses of the suit or proceeding and any appeal including, but not limited to, the fees and disbursements of Payee's attorneys and their staff.

Borrower hereby waives presentment, notice of dishonor, and protest. Borrower hereby assents to any extension of time with respect to any payment due under this Note, to any substitution or release of collateral, and to the addition or release of any party. No waiver of any payment or other right operates as a waiver of any other payment or right.

If any provision in this Note is held invalid, illegal, or unenforceable, all other provisions of this Note remain fully enforceable.

No delay or failure of the holder of this Note in the exercise of any right or remedy is to be deemed a waiver of such right, and no exercise of any right or remedy is to be deemed a waiver of any other right or remedy that the holder may have.

This Note is a nonrecourse obligation of Borrower.

Pursuant to Section 11-57-210 of the Supplemental Public Securities Act, this Note is executed pursuant to the Supplemental Public Securities Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Loan and the execution of this Note after delivery for value.

The parties shall give all notices related to this Note in writing, by hand delivery, overnight courier, or by certified or registered mail, return receipt requested, postage prepaid, addressed as follows:

If to the Borrower:

Fraser Housing Authority
153 Fraser Ave
Fraser, Colorado 80442
Attention: Executive Director

If to the Lender:

The Town of Fraser, Colorado
153 Fraser Ave
Fraser, Colorado 80442
Attention: Town Manager

Notices will be deemed effective when hand delivered, or one day after timely delivery to an overnight courier for next day delivery to Borrower (as evidenced by a receipt from the overnight courier), or three days after notice is deposited with the U.S. Postal Service.

Payee will not assign this Note or any interest in it without consent of Borrower.

The laws of the State of Colorado govern this Note without regard to principles of conflicts of laws.

The Borrower has executed this Promissory Note as of the day and year first written above.

BORROWER

FRASER HOUSING AUTHORITY

By: _____
Name:
Title: Chair

Schedule 1

99504257.v1

Date	Amount of Advance	Amount Paid or Prepaid	Outstanding Principal Amount

Town of Fraser
Ordinance No. 531
Series 2026

AN ORDINANCE ENACTING A SUPPLEMENTAL BUDGET AND APPROPRIATING AND LOANING FUNDS TO THE FRASER HOUSING AUTHORITY IN AN AMOUNT NOT TO EXCEED $3,300,000 TO FINANCE THE ACQUISITION AND CONSTRUCTION OF THE ST. LOUIS LANDING PROJECT; AND DECLARING AN EMERGENCY.

WHEREAS, the Town of Fraser, Colorado (the "Town"), is a municipal corporation duly organized and existing under the Constitution and laws of the State of Colorado (the "State"); and

WHEREAS, the Fraser Housing Authority, a public body corporate and politic of the State of Colorado (the "Authority") is authorized and empowered by the provisions of the Housing Authorities Law, being Part 2 of Article 4 of Title 29, Colorado Revised Statutes, as from time to time supplemented and amended (the "Act"), to issue revenue bonds for the purpose of acquiring and constructing buildings and improvements pursuant to a single plan or undertaking to provide dwelling accommodations on financial terms within the means of persons of low income; and

WHEREAS, on January 23, 2025, the Town entered into a Development Agreement (the "Development Agreement") with Mountain Affordable Housing Development LLC (the "Developer") for the construction of an affordable housing development known as the St. Louis Landing Project (the "Project"); and

WHEREAS, the Authority will issue its Housing facilities Revenue Bonds (St. Louis Landing Project) Series 2026 (the "Housing Revenue Bonds") in March or April of 2026 to finance the construction of the Project; and

WHEREAS, the Board of Trustees of the Town (the "Board") has issued a Notice to Proceed (as defined in the Development Agreement) in accordance with the terms of the Development Agreement so that construction can proceed on the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, on September 3, 2025, the Board adopted Ordinance 526 which authorized the Town to make a loan to the Authority in an amount not to exceed $5,400,000 (the "First Interim Loan") to pay for costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, the issuance of the Housing Revenue Bonds has been delayed due to the need of the Authority to finalize the terms with the various entities that are providing funding for the Project; and

WHEREAS, the Authority is on schedule to issue the Housing Revenue Bonds in March or April of 2026, but the Authority needs additional interim funds to pay for costs

incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the issuance of the Housing Revenue Bonds; and

WHEREAS, the Board desires to make additional funds available to the Authority pay the costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued by making a loan to the Authority in an amount not to exceed **$3,300,000**; and

WHEREAS, the Town has reserved funds in the General Fund not currently appropriated for any specific use; and

WHEREAS, the Board desires to authorize a loan (the "Second Interim Loan") from the Town General Fund to the Authority for deposit in the St. Louis Landing Project Fund (the "Project Fund"); and

WHEREAS, the proceeds of the Second Interim Loan shall be used by the Authority only to pay costs incurred in connection with the Project pursuant to the Development Authority; and

WHEREAS, the Board desires to authorize an appropriation from the Town General Fund and to make the Second Interim Loan to the Authority and to set forth other terms of the Second Interim Loan; and

WHEREAS, pursuant to Section 31-16-105,C.R.S., because of the urgent need for financing for the Project in order to provide much needed for-rent housing offered at rental rates on financial terms within the means of persons of low income and the costs associated with demobilization of the construction of the Project if work must stop due to the lack of availability of funds, the Board determines that an emergency exists and that adoption of this Ordinance as an emergency measure on first and final reading is necessary for the immediate preservation of public property, health, welfare, peace and safety.

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF TRUSTEES OF THE TOWN OF FRASER, COLORADO, AS FOLLOWS:

Section 1: Recitals Incorporated; Ratification. The foregoing recitals are incorporated herein by reference and adopted as findings and determinations of the Board. All actions heretofore taken (not inconsistent with the provisions of this Ordinance) by the Board and by the officers, agents or employees of the Board or the Town directed toward the creation of the Project Fund and the making of the Interim Loan to the Authority are hereby ratified, approved, and confirmed.

Section 2: Finding of Best Interests. The Board hereby finds and determines, pursuant to the Constitution, the laws of the State, and the Act, that adopting this Ordinance, making the Second Interim Loan, and financing a portion of the costs of the Project are necessary and convenient and in the best interest of the Town, and the Board hereby authorizes and approves the same.

Section 3: Appropriation. Reserves in an amount not to exceed $3,300,000 from the Town General Fund are hereby appropriated and loaned to the Authority for deposit in the Project Fund to be used to finance costs of the Project incurred pursuant to the Development Agreement. All monies loaned from the Town to the Authority shall be used exclusively to pay for costs incurred in connection with the Project under the Development Agreement.

Section 4: Repayment of the Second Interim Loan. The Second Interim Loan shall be paid in full by the Authority with proceeds of the Housing Revenue Bonds on the day of closing on the Housing Revenue Bonds.

Section 5: Further Actions. The officers and employees of the Town are hereby independently authorized and directed to take all action necessary or appropriate to implement and effect the provisions of this Resolution, including executing the Second Interim Loan Agreement to set forth the terms of the Second Interim Loan. The execution of any document or instrument by the appropriate officers herein authorized shall be conclusive evidence of the approval by the Town of such agreement, document or instrument in accordance with the terms hereof.

Section 6: Supplemental Act. The Board hereby elects to apply all of the provisions of the Supplemental Act to the Second Interim Loan. Pursuant to Section 11-57-212 of the Supplemental Act, no legal or equitable action brought with respect to any legislative acts or proceedings of the Town in connection with the authorization of the Second Interim Loan, including but not limited to the adoption of this Ordinance, shall be commenced more than thirty days after the adoption of this Ordinance.

Section 7: Declaration of Emergency. Pursuant to Section 31-16-105,C.R.S., because of the urgent need for financing for the Project in order to provide much needed for-rent housing offered at rental rates on financial terms within the means of persons of low income and the costs associated with demobilization of the construction of the Project if work must stop due to the lack of availability of funds, the Board determines that an emergency exists and that adoption of this Ordinance as an emergency measure on first and final reading is necessary for the immediate preservation of public property, health, welfare, peace and safety and this Ordinance shall be in full force and effect immediately upon final passage on first reading and adoption upon Board approval.

Section 7: Effective Date. This Ordinance after its passage on first and final reading shall be numbered, recorded, published and posted and the adoption, posting, and publication shall be authenticated by the signature of the Mayor and the Town Clerk. This Ordinance shall become effective immediately.

READ, PASSED, ADOPTED AS AN EMERGENCY ORDINANCE AND ORDERED PUBLISHED BY THE BOARD OF TRUSTEES AND SIGNED THIS 18th DAY OF FEBRUARY, 2026.

Votes in favor: ____
Votes opposed: ____
Votes abstained: ____

BOARD OF TRUSTEES OF THE
TOWN OF FRASER, COLORADO

BY: _____
Mayor

(S E A L)

ATTEST: _____
Town Clerk

Published in the *Middle Park Times* on_____.

SECOND INTERIM LOAN AGREEMENT

This Second Interim Loan Agreement ("Second Interim Loan Agreement"), dated February 18, 2026 ("Effective Date"), is between the TOWN OF FRASER, COLORADO ("Lender"), and FRASER HOUSING AUTHORITY ("Borrower").

RECITALS

WHEREAS, the Lender, is a municipal corporation duly organized and existing under the Constitution and laws of the State of Colorado (the "State"); and

WHEREAS, the Borrower is authorized and empowered by the provisions of the Housing Authorities Law, being Part 2 of Article 4 of Title 29, Colorado Revised Statutes, as from time to time supplemented and amended (the "Act"), to issue revenue bonds for the purpose of acquiring and constructing buildings and improvements pursuant to a single plan or undertaking to provide dwelling accommodations on financial terms within the means of persons of low income; and

WHEREAS, on January 23, 2025, the Lender entered into a Development Agreement (the "Development Agreement") with Mountain Affordable Housing Development LLC (the "Developer") for the construction of an affordable housing development known as the St. Louis Landing Project (the "Project"); and

WHEREAS, the Borrower will issue its Housing facilities Revenue Bonds (St. Louis Landing Project) Series 2026 (the "Housing Revenue Bonds") in March or April of 2026 to finance the construction of the Project; and

WHEREAS, the Board of Trustees of the Lender (the "Board") has issued a Notice to Proceed (as defined in the Development Agreement) in accordance with the terms of the Development Agreement so that construction can proceed on the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, on September 3, 2026, the Board adopted Ordinance 526 which authorized the Town to make a loan to the Authority in an amount not to exceed $5,400,000 (the "First Interim Loan") to pay for costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, the issuance of the Housing Revenue Bonds has been delayed due to the need of the Borrower to finalize the terms with the various entities that are providing funding for the Project; and

WHEREAS, the Borrower is on schedule to issue the Housing Revenue Bonds in March or April of 2026, but the Borrower needs additional interim funds to pay for costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the issuance of the Housing Revenue Bonds; and

WHEREAS, the Lender and the Borrower desire to make funds available to pay the costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued by entering into this Second Interim Loan Agreement; and

WHEREAS, the obligation of the Borrower to repay this Second Interim Loan Agreement shall be payable from the proceeds of the Housing Revenue Bonds.

The parties therefore agree as follows:

1. The Second Interim Loan. The Lender hereby lends up to $3,300,000 to the Borrower (the "Second Interim Loan"), and the Borrower borrows the Second Interim Loan from the Lender, subject to the terms this Second Interim Loan Agreement. The terms of the Second Interim Loan shall be as follows:

A. *Loan Term*. The final maturity date of the Second Interim Loan is the date the Housing Revenue Bonds are issued (the "Loan Term").

B. *Principal Amount*. The principal amount of the Second Interim Loan is not to exceed $3,300,000.

C. *Maturity Payment*. Upon maturity, the Second Interim Loan shall be repaid in full with proceeds of the Housing Revenue Bonds.

2. Disbursement. The Lender shall lend funds to Borrower pursuant to a Promissory Note in the original principal amount of not to exceed $3,300,000 (the "Note"). The Second Interim Loan proceeds shall be deposited in the Project Fund to be used to finance costs of the Project incurred pursuant to the Development Agreement. This Second Interim Loan Agreement and the Note are referred to as the "Second Interim Loan Documents."

3. Events of Default. The following events, subject to the notice and cure requirements set forth below, will constitute an Event of Default:

(a) if the Borrower fails to duly and punctually perform its obligations under this Second Interim Loan Agreement, or it violates the covenants contained in any of the Second Interim Loan Documents in any material respect, and such failure remains uncured within ninety days of the Borrower's receipt of written notice from Lender;

(b) if the Borrower fails to pay the Note when due, and the Borrower fails to cure within thirty days of receiving written notice of such failure from Lender;

(c) if the Borrower makes a general assignment for the benefit of creditors, admits in writing its inability to pay its debts generally as they mature, files or has filed against it a petition in bankruptcy or a petition or answer seeking

a reorganization, arrangement with creditors or other similar relief under the federal bankruptcy laws or under any other applicable law of the United States of America or any state, consents to the appointment of a trustee or receiver; or takes any action for the purpose of effecting or consenting to any of the foregoing; and

(d) if an order, judgment, or decree is entered appointing, without the Borrower's consent, a trustee or receiver for the Borrower or a substantial part of its property, or approving a petition filed against the Borrower seeking a reorganization, arrangement with creditors or other similar relief under the federal bankruptcy laws or under any other applicable law of the United States of America or any state, and such order, judgment, or decree is not be vacated, set aside, or stayed within ninety days from the date of entry.

Following the occurrence of an Event of Default, the Lender shall provide written notice to the Borrower.

The Borrower may cure any Event of Default within the timeframes provided in this Second Interim Loan Agreement or any other Second Interim Loan Document. If the Borrower fails to timely cure a default, then the Lender shall have all remedies as are set forth in the Second Interim Loan Documents or otherwise at law.

4. Miscellaneous.

(a) This Second Interim Loan Agreement binds and inures to the benefit of the successors and assigns of the parties. Subject to the Lender's consent, which the Lender shall not unreasonably withhold, condition, or delay, the Borrower may assign the Second Interim Loan and the obligations and duties of the Borrower under the Second Interim Loan Documents to any purchaser of the property and Project if the purchaser agrees to be bound to the Second Interim Loan Documents.

(b) Any amendment to this Second Interim Loan Agreement requires a written agreement of the parties.

(c) No waiver of satisfaction of a condition or non-performance of an obligation under this Second Interim Loan Agreement will be effective unless it is in writing and signed by the party granting the waiver.

(d) The laws of the state of Colorado, without giving effect to its principles of conflicts of law, govern all adversarial proceedings brought by the parties arising out of this Second Interim Loan Agreement, whether their claims sound in contract, tort, or otherwise.

(e) This Second Interim Loan Agreement will remain effective so long as there are sums remaining outstanding on the Note.

(f) The Borrower hereby pledges the proceeds of the Housing Revenue Bonds for the payment of the principal of, the interest on, and any premiums due in connection with the Second Interim Loan and the Second Interim Loan Documents. The creation, perfection, enforcement, and priority of the pledge of the proceeds of the Housing Revenue Bonds to secure or pay the Second Interim Loan provided herein shall be governed by Section 11-57-208, C.R.S. The proceeds of the Housing Revenue Bonds as received by the Borrower shall immediately be subject to the lien of this pledge without any physical delivery thereof, any filing, or further act. The lien of such pledge shall be valid, binding, and enforceable as against all persons having claims of any kind in tort, contract, or otherwise against the Borrower irrespective of whether such persons have notice of such liens.

(g) Pursuant to Section 11-57-210 of the Supplemental Public Securities Act, the Second Interim Loan is incurred and the Second Interim Loan Documents are executed pursuant to the Supplemental Public Securities Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Second Interim Loan Documents after delivery for value.

(h) The parties shall give all notices, consents, demands, waivers, or approvals related to this Agreement in writing delivered by (i) personal delivery, (ii) a nationally-recognized, next-day courier service, (iii) first-class certified mail, postage prepaid, or (iv) e-mail. A notice is deemed given on the other party's receipt of it, or if mailed, on the earlier of the other party's receipt of it and the fifth business day after its mailing. The parties may change their addresses for notice by notifying the other parties in the manner provided in this Section 5(f). The parties hereby designate their addresses as follows:

If to the Borrower:

Fraser Housing Authority
153 Fraser Ave
Fraser, Colorado 80442
Attention: Executive Director

If to the Lender:

The Town of Fraser, Colorado
153 Fraser Ave
Fraser, Colorado 80442
Attention: Town Manager

[*signature pages follow*]

The Borrower has executed this Second Interim Loan Agreement as of the Effective Date.

FRASER HOUSING AUTHORITY

_____
Chair

ATTEST:

_____
Secretary

The Lender has executed this Second Interim Loan Agreement as of the Effective Date.

TOWN OF FRASER, COLORADO

_____
Mayor

ATTEST:

_____
Town Clerk

PROMISSORY NOTE

FRASER HOUSING AUTHORITY SECOND INTERIM LOAN

Principal amount: Not to Exceed $3,300,000 February 18, 2026

FRASER HOUSING AUTHORITY, ("Borrower"), unconditionally promises to pay to the order of THE TOWN OF FRASER, COLORADO ("Payee"), the principal sum of $2,000,000, or so much as Payee has advanced under this Note, together with interest at the annual rate of zero per annum, in accordance with the terms of the Second Interim Loan Agreement dated February 18, 2026, between the Borrower and the Payee (the "Second Interim Loan Agreement"). All unpaid principal shall remain outstanding until fully paid and discharged.

Each advance made by the Payee in accordance with the Second Interim Loan Agreement and all payments and prepayments made on account of the principal thereof shall be recorded by Payee on the schedule attached to this Note as Schedule 1. Upon the advancement of the proceeds of the Second Interim Loan in accordance with the terms of the Second Interim Loan Agreement, the principal amount of this Note shall be deemed to be increased automatically in a principal amount equal to the amount so advanced and without further acts on the part of the Payee or the Borrower.

The final maturity date of this Note is the date that the Authority's Housing Revenue Bonds are issued (the "Loan Term").

Upon maturity, this Note shall be repaid in full with proceeds of the Authority's Housing Revenue Bonds.

If Borrower fails to pay any amount due under this Note, and Payee takes any action to collect the amount due, or if Payee brings any suit or proceeding for the recovery or for protection of the indebtedness, then Borrower shall pay on demand all reasonable costs and expenses of the suit or proceeding and any appeal including, but not limited to, the fees and disbursements of Payee's attorneys and their staff.

Borrower hereby waives presentment, notice of dishonor, and protest. Borrower hereby assents to any extension of time with respect to any payment due under this Note, to any substitution or release of collateral, and to the addition or release of any party. No waiver of any payment or other right operates as a waiver of any other payment or right.

If any provision in this Note is held invalid, illegal, or unenforceable, all other provisions of this Note remain fully enforceable.

No delay or failure of the holder of this Note in the exercise of any right or remedy is to be deemed a waiver of such right, and no exercise of any right or remedy is to be deemed a waiver of any other right or remedy that the holder may have.

This Note is a nonrecourse obligation of Borrower.

Pursuant to Section 11-57-210 of the Supplemental Public Securities Act, this Note is executed pursuant to the Supplemental Public Securities Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Second Interim Loan and the execution of this Note after delivery for value.

The parties shall give all notices related to this Note in writing, by hand delivery, overnight courier, or by certified or registered mail, return receipt requested, postage prepaid, addressed as follows:

If to the Borrower:

Fraser Housing Authority
153 Fraser Ave
Fraser, Colorado 80442
Attention: Executive Director

If to the Lender:

The Town of Fraser, Colorado
153 Fraser Ave
Fraser, Colorado 80442
Attention: Town Manager

Notices will be deemed effective when hand delivered, or one day after timely delivery to an overnight courier for next day delivery to Borrower (as evidenced by a receipt from the overnight courier), or three days after notice is deposited with the U.S. Postal Service.

Payee will not assign this Note or any interest in it without consent of Borrower.

The laws of the State of Colorado govern this Note without regard to principles of conflicts of laws.

The Borrower has executed this Promissory Note as of the day and year first written above.

BORROWER

FRASER HOUSING AUTHORITY

By: _____
Name:
Title: Chair

Schedule 1

99504270.v1

Date	Amount of Advance	Amount Paid or Prepaid	Outstanding Principal Amount

FRASER HOUSING AUTHORITY

RESOLUTION NO. 2026-02-01

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE FRASER HOUSING AUTHORITY AMENDING RESOLUTION NO. 2025-09-02 ADOPTED BY THE BOARD ON SEPTEMBER 3, 2025, AND AUTHORIZING THE HOUSING AUTHORITY TO MODIFY, AMEND AND RESTATE THE LOAN AGREEMENT DELIVERED IN CONNECTION WITH THE INCURRENCE OF AN INTERIM LOAN FROM THE TOWN OF FRASER

WHEREAS, the Fraser Housing Authority, a public body corporate and politic of the State of Colorado (the "Authority") is authorized and empowered by the provisions of the Housing Authorities Law, being Part 2 of Article 4 of Title 29, Colorado Revised Statutes, as from time to time supplemented and amended (the "Act"), to issue revenue bonds for the purpose of acquiring and constructing buildings and improvements pursuant to a single plan or undertaking to provide dwelling accommodations on financial terms within the means of persons of low income; and

WHEREAS, the members of the Board of Commissioners of the Authority (the "Board") have been duly appointed and qualified; and

WHEREAS, the Town of Fraser, Colorado (the "Town"), is a municipal corporation duly organized and existing under the Constitution and laws of the State of Colorado (the "State"); and

WHEREAS, on January 23, 2025, the Town entered into a Development Agreement (the "Development Agreement") with Mountain Affordable Housing Development LLC (the "Developer") for the construction of an affordable housing development known as the St. Louis Landing Project (the "Project"); and

WHEREAS, the Authority will issue its Housing facilities Revenue Bonds (St. Louis Landing Project) Series 2026 (the "Housing Revenue Bonds") in March or April of 2026 to finance the construction of the Project; and

WHEREAS, the Board of Trustees of the Town (the "Board of Trustees") has issued a Notice to Proceed (as defined in the Development Agreement) in accordance with the terms of the Development Agreement so that construction can proceed on the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, on September 3, 2025, the Board of Trustees adopted Ordinance 526 (the "Original Ordinance") which authorized the Town to make a loan to the Authority in an amount not to exceed $5,400,000 (the "First Interim Loan") to pay for costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, on September 3, 2025, the Board adopted Resolution No. 2025-09-02 (the "Original Resolution") authorizing the Authority to incur the First Interim Loan from the Town; and

WHEREAS, on September 3, 2025, the Authority entered into the Loan Agreement with the Town to incur the Interim Loan (the "Loan Agreement") and executed and delivered to the Town a promissory note (the "Note" and together with the Loan Agreement, the "Loan Documents") to evidence the First Interim Loan; and

WHEREAS, after the adoption of the Original Resolution, the Colorado Housing Finance Authority ("CHFA") issued its Affordable Housing Financing Equity Program Equity Commitment (the "Equity Commitment"), which sets forth the terms upon which CHFA will make an investment in the Project of $12,900,000 (the "Investment"); and

WHEREAS, the terms of the Equity Commitment require the Authority to provide evidence satisfactory to CHFA that the maturity date of the First Interim Loan to the Project has been extended past the maturity date of the Housing Revenue Bonds and the expiration of the Investment Term (as defined in the Commitment); and

WHEREAS, additionally, the terms of the Equity Commitment require the Town to subordinate the First Interim Loan to the deed of trust securing the Investment; and

WHEREAS, in order to satisfy the terms of the Equity Commitment, the Board desires to amend the Original Resolution and to modify, amend and restate the terms of the Loan Documents to bring the terms of the Original Resolution and the Loan Documents into compliance with the requirements of the Equity Commitment; and

WHEREAS, the Board desires to enter into the Amendment and Restated Loan Agreement in the form attached hereto as Exhibit A (the "Amended and Restated Loan Agreement") and to evidence the First Interim Loan by executing and delivering the Amended and Restated Promissory Note to the Town in the form attached hereto as Exhibit A (the "Amended and Restated Note"); and

WHEREAS, the Amended and Restated Loan Agreement and the Amended and Restated Note (the "Amended and Restated Loan Documents") shall be payable from all legally available revenue of the Authority, which revenues may include the proceeds of the Housing Revenue Bonds, the proceeds received from the sale of Middle-Income Housing Tax Credits and the proceeds from the sale of New Markets Tax Credits, and the full faith and credit of the Authority is hereby pledged to the payment of the Amended and Restated Loan Documents; and

WHEREAS, the forms of the Amended and Restated Loan Documents have been presented to the Board.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COMMISSIONERS OF THE FRASER HOUSING AUTHORITY:

Section 1: Recitals Incorporated; Ratification. The foregoing recitals are incorporated herein by reference and adopted as findings and determinations of the Authority. All actions heretofore taken to effect the approval of the First Interim Loan or the Amended and Restated Loan Documents (not inconsistent with the provisions of this Resolution) by the Board of Commissioners and by the officers, agents and employees of the Authority are hereby ratified, approved and confirmed.

Section 2: Approval of Amended and Restated Loan Documents. The Amended and Restated Loan Documents, in substantially the form attached hereto are in all respects approved, confirmed, and approved. The Chair of the Board of Commissioners (the "Chair") and the Secretary of the Authority (the "Secretary") are each individually hereby authorized to execute and deliver, when appropriate, the Amended and Restated Loan Documents and such other documents and certificates as may be necessary or appropriate in connection therewith, with such changes as are approved by the Chair and the Authority's attorney. The execution of Amended and Restated Loan Documents by the Chair shall be conclusive evidence of the approval by the Board of Commissioners of such documents in accordance with the terms hereof and thereof. The Secretary is hereby authorized and directed to affix the seal of Authority to and to attest the Amended and Restated Loan Documents.

Section 3: Amendments. Section 3 of the Original Resolution is deleted in its entirety and replaced with the following:

"**Section 3:** Authorization of Interim Loan; Delegation. The Board of Commissioners hereby authorizes the Authority to incur the Interim Loan and to execute and deliver the Loan Documents. Section 11-57-204 of the Supplemental Act provides that a public entity, including the Authority, may elect in an act of issuance to apply all or any of the provisions of the Supplemental Act. The Board of Commissioners hereby elects to apply all of the provisions of the Supplemental Act to the Loan Documents.

Section 11-57-205 of the Supplemental Act provides that a public entity may delegate to any member of the issuing authority, chief executive officer, or chief financial officer of the public entity the authority to sign a contract for the purchase of the securities or to accept a binding bid for the securities, such delegation to be effective for one year after adoption of the act of issuance. The Board of Commissioners hereby delegates and authorizes any member of the Board of Commissioners and the Executive Director, for one year from the date of this Resolution, to determine whether it is in the best interest of the Authority to incur and enter into the Loan Documents, subject to the following parameters and restrictions:

(i) The Note shall mature no later than December 31, 2066;
(ii) The aggregate principal amount of the Note shall not exceed $5,400,000;
(iii) The Note shall bear interest calculated on the basis of a 360-day year of twelve 30-day months at a rate per annum equal to the average interest rate being earned on the Town's investment portfolio for the preceding twelve

months, adjusted annually over the Loan Term."

Section 6 of the Original Resolution is deleted in its entirety and replaced with the following:

"**Section 6:** Pledge of Revenues; Subordination. The Authority hereby pledges all available revenue of the Authority and its full faith and credit for the payment of the principal of, the interest on, and any premiums due in connection with the Interim Loan and the Loan Documents; such pledge and lien to be subordinate in all respects to the Authority's Housing Revenue Bonds and the lien on the Authority's revenues securing the Housing Revenue Bonds and to the Prop 123 Investment and the lien of the deed of trust securing the Investment. The Executive Director is hereby authorized to execute any documents or certificates necessary to evidence the subordination of the Interim Loan to the Authority's Housing Revenue Bonds and the Prop 123 Investment. The creation, perfection, enforcement, and priority of the pledge of all available revenues and the full faith and credit of the Authority to secure or pay the Interim Loan provided herein shall be governed by Section 11-57-208, C.R.S. The available revenues as received by the Authority shall immediately be subject to the lien of this pledge without any physical delivery thereof, any filing, or further act. The lien of such pledge shall be valid, binding, and enforceable as against all persons having claims of any kind in tort, contract, or otherwise against the Authority irrespective of whether such persons have notice of such liens."

Section 4: Continuing Effectiveness. Except as amended herein, the provisions of Resolution 2025-09-02 remain in full force and effect.

Section 5: Further Actions. The officers and employees of the Authority are hereby independently authorized and directed to take all action necessary or appropriate to implement and effect the provisions of this Resolution and the Amended and Restated Loan Documents. The execution of any document or instrument by the appropriate officers herein authorized shall be conclusive evidence of the approval by the Authority of such agreement, document or instrument in accordance with the terms hereof.

Section 6: Supplemental Act. The Board of Commissioners hereby elects to apply all of the provisions of the Supplemental Act to the First Interim Loan and the Amended and Restated Loan Documents. Pursuant to Section 11-57-212 of the Supplemental Act, no legal or equitable action brought with respect to any legislative acts or proceedings of the Authority in connection with the authorization and incurrence of the First Interim Loan, including but not limited to the adoption of this Resolution, shall be commenced more than thirty days after the adoption of this Resolution.

Section 7: No Recourse Against Officers and Agents. Pursuant to Section 11-57-209 of the Supplemental Public Securities Act, if a member of the Board of Commissioners or any officer or agent of the Authority, acts in good faith, no civil recourse shall be available against such member, officer or agent for payment of the principal of and interest on the First Interim Loan. Such recourse shall not be available either directly or indirectly through the Board of Commissioners or the Authority, or otherwise, whether by virtue of any constitution, statute, rule of law, enforcement of penalty, or otherwise. By the acceptance

of the delivery of the Amended and Restated Loan Documents and as a part of the consideration for such transfer, any person purchasing or accepting the transfer of the obligation representing the First Interim Loan specifically waives any such recourse.

Section 8: Conclusive Recital. Pursuant to Section 11-57-210 of the Supplemental Public Securities Act, the First Interim Loan is incurred and the Amended and Restated Loan Documents are executed pursuant to the Supplemental Public Securities Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Amended and Restated Loan Documents after delivery for value.

Section 9: Effective Date of Resolution. This Resolution shall be effective as of the date of its adoption. PASSED, APPROVED AND ADOPTED this 18th day of February, 2026.

FRASER HOUSING AUTHORITY
TOWN OF FRASER, COLORADO

Votes in favor: ___
Opposed: ___
Abstained: ___

BY: _____
Fraser Housing Authority Chair

ATTEST:

(S E A L)

_____
Town Clerk

EXHIBIT A

(Attach Form of Amended and Restated Loan Agreement and Note)

AMENDED AND RESTATED LOAN AGREEMENT

This Amended and Restated Loan Agreement ("Loan Agreement") dated February 18, 2026, is between the TOWN OF FRASER, COLORADO ("Lender"), and FRASER HOUSING AUTHORITY ("Borrower"), and it amends and restates in full the Loan Agreement dated September 3, 2025 ("Effective Date"), between the Lender and the Borrower.

RECITALS

WHEREAS, the Lender, is a municipal corporation duly organized and existing under the Constitution and laws of the State of Colorado (the "State"); and

WHEREAS, the Borrower is authorized and empowered by the provisions of the Housing Authorities Law, being Part 2 of Article 4 of Title 29, Colorado Revised Statutes, as from time to time supplemented and amended (the "Act"), to issue revenue bonds for the purpose of acquiring and constructing buildings and improvements pursuant to a single plan or undertaking to provide dwelling accommodations on financial terms within the means of persons of low income; and

WHEREAS, on January 23, 2025, the Lender entered into a Development Agreement (the "Development Agreement") with Mountain Affordable Housing Development LLC (the "Developer") for the construction of an affordable housing development known as the St. Louis Landing Project (the "Project"); and

WHEREAS, the Borrower will issue revenue bonds (the "Housing Revenue Bonds") in March or April 2026 to finance the construction of the Project; and

WHEREAS, the Board of Trustees of the Lender (the "Board") has issued a Notice to Proceed (as defined in the Development Agreement) in accordance with the terms of the Development Agreement so that construction can proceed on the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, the Lender and the Borrower desire to make funds available to pay the costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued and the Prop 123 Investment being issued by entering into this Loan Agreement; and

WHEREAS, the obligation of the Borrower to repay this Loan shall be payable from all legally available revenue of the Borrower, which revenues may include the proceeds of the Housing Revenue Bonds, the proceeds received from the sale of Middle-Income Housing Tax Credits and the proceeds received from the sale of New Markets Tax Credits, and the full faith and credit of the Borrower is hereby pledged to the payment of the Loan; provided that this Loan and the pledge of revenue securing this Loan shall be in all respects subordinate to the Housing Revenue Bonds and the Prop 123 Investment.

The parties therefore agree as follows:

1. The Loan. The Lender hereby lends up to $5,400,000 to the Borrower (the "Loan"), and the Borrower borrows the Loan from the Lender, subject to the terms this Loan Agreement. The terms of the Loan shall be as follows:

A. *Loan Term*. The final maturity date of the Loan is December 31, 2066, subject to optional prepayment in accordance with Section 4.E. below (the "Loan Term").

B. *Interest Rate*. The Loan shall bear interest calculated on the basis of a 360-day year of twelve 30-day months at a rate per annum equal to the average interest rate being earned on the Lender's investment portfolio for the preceding twelve months, adjusted annually over the Loan Term.

C. *Principal Amount*. The principal amount of the Loan is not to exceed $5,400,000.

E. *Optional Prepayment*. The Loan is subject to prepayment in full, or in part, at any time at the option of the Borrower. The Borrower may prepay the Interim Loan with amounts on deposit in the St. Louis Landing Project Fund (the "Project Fund"), proceeds of the Housing Revenue Bonds, proceeds received from the sale of Middle-Income Housing Tax Credits or with other legally available revenues of the Borrower. Optional prepayment of the Interim Loan in full by the Borrower shall satisfy and discharge the Interim Loan and shall end the Loan Term.

F. *Mandatory Prepayment*. Upon the payment of all costs of the Project (or the adequate provision of funds to pay any remaining costs of the Project) the Loan shall be repaid with all available proceeds of the Housing Revenue Bonds, the proceeds received from the sale of the Middle-Income Housing Tax Credits and the proceeds received from the sale of New Markets Tax Credits.

G. *Maturity Payment*. Upon maturity, the Loan shall be repaid in full with all available revenues of the Authority.

H. *Subordination*. The Loan is a subordinate cashflow obligation of the Borrower. The Loan and the pledge of revenues securing payment of the Loan and the Note shall be subordinate in all respects to the Borrower's Housing Revenue Bonds and the lien on the Borrower's revenues securing the Housing Revenue Bonds and to the Prop 123 Investment and the lien of the Borrower's revenues securing the deed of trust securing the Investment.

I. Notwithstanding anything contained herein to the contrary, the Lender may choose, in its sole discretion, to forgive all or a part of the principal or interest due on the Loan, or both.

2. Disbursement. The Lender shall lend funds to Borrower pursuant to a Promissory Note in the original principal amount of not to exceed $5,400,000 (the "Note"). The Loan proceeds shall be deposited in the Project Fund to be used to finance costs of the Project incurred pursuant to the Development Agreement. This Loan Agreement and the Note are referred to as the "Loan Documents."

3. Events of Default. The following events, subject to the notice and cure requirements set forth below, will constitute an Event of Default:

(a) if the Borrower fails to duly and punctually perform its obligations under this Loan Agreement, or it violates the covenants contained in any of the Loan Documents in any material respect, and such failure remains uncured within ninety days of the Borrower's receipt of written notice from Lender;

(b) if the Borrower fails to pay the Note when due, and the Borrower fails to cure within thirty days of receiving written notice of such failure from Lender;

(c) if the Borrower makes a general assignment for the benefit of creditors, admits in writing its inability to pay its debts generally as they mature, files or has filed against it a petition in bankruptcy or a petition or answer seeking a reorganization, arrangement with creditors or other similar relief under the federal bankruptcy laws or under any other applicable law of the United States of America or any state, consents to the appointment of a trustee or receiver; or takes any action for the purpose of effecting or consenting to any of the foregoing; and

(d) if an order, judgment, or decree is entered appointing, without the Borrower's consent, a trustee or receiver for the Borrower or a substantial part of its property, or approving a petition filed against the Borrower seeking a reorganization, arrangement with creditors or other similar relief under the federal bankruptcy laws or under any other applicable law of the United States of America or any state, and such order, judgment, or decree is not be vacated, set aside, or stayed within ninety days from the date of entry.

Following the occurrence of an Event of Default, the Lender shall provide written notice to the Borrower.

The Borrower may cure any Event of Default within the timeframes provided in this Loan Agreement or any other Loan Document. If the Borrower fails to timely cure a default, then the Lender shall have all remedies as are set forth in the Loan Documents or otherwise at law.

4. Miscellaneous.

(a) This Loan Agreement binds and inures to the benefit of the successors and assigns of the parties. Subject to the Lender's consent, which the Lender shall not unreasonably withhold, condition, or delay, the Borrower may assign the Loan and the obligations and duties of the Borrower under the Loan Documents to any purchaser of the Property and Project if the purchaser agrees to be bound to the Loan Documents.

(b) Any amendment to this Loan Agreement requires a written agreement of the parties.

(c) No waiver of satisfaction of a condition or non-performance of an obligation under this Loan Agreement will be effective unless it is in writing and signed by the party granting the waiver.

(d) The laws of the state of Colorado, without giving effect to its principles of conflicts of law, govern all adversarial proceedings brought by the parties arising out of this Loan Agreement, whether their claims sound in contract, tort, or otherwise.

(e) This Loan Agreement will remain effective so long as there are sums remaining outstanding on the Note.

(f) The Borrower hereby pledges all available revenue of the Borrower and its full faith and credit for the payment of the principal of, the interest on, and any premiums due in connection with the Loan and the Loan Documents; such pledge and lien is subordinate in all respects to the Borrower's Housing Revenue Bonds and the lien on the Borrower's revenues securing the Housing Revenue Bonds and to the Prop 123 Investment and the lien of the Borrower's revenues securing the deed of trust securing the Prop 123 Investment. The creation, perfection, enforcement, and priority of the pledge of all available revenues and the full faith and credit of the Borrower to secure or pay the Loan provided herein shall be governed by Section 11-57-208, C.R.S. The available revenues as received by the Borrower shall immediately be subject to the lien of this pledge without any physical delivery thereof, any filing, or further act. The lien of such pledge shall be valid, binding, and enforceable as against all persons having claims of any kind in tort, contract, or otherwise against the Borrower irrespective of whether such persons have notice of such liens.

(g) Pursuant to Section 11-57-210 of the Supplemental Public Securities Act, the Interim Loan is incurred and the Loan Documents are executed pursuant to the Supplemental Public Securities Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Loan Documents after delivery for value.

(h) The parties shall give all notices, consents, demands, waivers, or approvals related to this Agreement in writing delivered by (i) personal delivery, (ii) a

nationally-recognized, next-day courier service, (iii) first-class certified mail, postage prepaid, or (iv) e-mail. A notice is deemed given on the other party's receipt of it, or if mailed, on the earlier of the other party's receipt of it and the fifth business day after its mailing. The parties may change their addresses for notice by notifying the other parties in the manner provided in this Section 5(f). The parties hereby designate their addresses as follows:

If to the Borrower:

Fraser Housing Authority
153 Fraser Ave
Fraser, Colorado 80442
Attention: Executive Director

If to the Lender:

The Town of Fraser, Colorado
153 Fraser Ave
Fraser, Colorado 80442
Attention: Town Manager

[*signature pages follow*]

The Borrower has executed this Loan Agreement as of the Effective Date.

FRASER HOUSING AUTHORITY

_____
Chair

ATTEST:

_____
Secretary

The Lender has executed this Loan Agreement as of the Effective Date.

TOWN OF FRASER, COLORADO

_____
Mayor

ATTEST:

_____
Town Clerk

AMENDED AND RESTATED PROMISSORY NOTE
FRASER HOUSING AUTHORITY LOAN

Principal amount: Not to Exceed $5,400,000 Original Date: September 3, 2025

Amended and Restated Date: February 18, 2026

FRASER HOUSING AUTHORITY, ("Borrower"), unconditionally promises to pay to the order of THE TOWN OF FRASER, COLORADO ("Payee"), the principal sum of $5,400,000, or so much as Payee has advanced under this Note, together with interest at the annual rate per annum equal to the average interest rate being earned on the Payees's investment portfolio for the preceding twelve months, adjusted annually over the Loan Term, in accordance with the terms of the Amended and Restated Loan Agreement dated February 18, 2026, between the Borrower and the Payee (the "Loan Agreement"). All unpaid principal shall remain outstanding until fully paid and discharged.

Each advance made by the Payee in accordance with the Loan Agreement and all payments and prepayments made on account of the principal thereof shall be recorded by Payee on the schedule attached to this Note as Schedule 1. Upon the advancement of the proceeds of the Loan in accordance with the terms of the Loan Agreement, the principal amount of this Note shall be deemed to be increased automatically in a principal amount equal to the amount so advanced and without further acts on the part of the Payee or the Borrower.

The final maturity date of this Note is December 31, 2066 (the "Loan Term"). Borrower may prepay this Note, either in whole or in part, at any time without premium or penalty and without the prior consent of the Payee.

This Note shall be subjected to mandatory prepayment with moneys on deposit in the Project Fund, and from the proceeds of the Authority's Housing Revenue Bonds, the proceeds received from the sale of Middle-Income Housing Tax Credits and the proceeds received from the sale of New Markets Tax Credits.

Upon maturity, this Note shall be repaid in full with all available moneys of the Authority.

This Note is a subordinate cashflow obligation of the Borrower. The Loan and the pledge of revenues securing payment of the Loan and the Note shall be subordinate in all respects to the Borrower's Housing Revenue Bonds and the lien on the Borrower's revenues securing the Housing Revenue Bonds and to the Prop 123 Investment and the lien of the Borrower's revenues securing the deed of trust securing the Prop 123 Investment.

If Borrower fails to pay any amount due under this Note, and Payee takes any action to collect the amount due, or if Payee brings any suit or proceeding for the recovery or for protection of the indebtedness, then Borrower shall pay on demand all

reasonable costs and expenses of the suit or proceeding and any appeal including, but not limited to, the fees and disbursements of Payee's attorneys and their staff.

Borrower hereby waives presentment, notice of dishonor, and protest. Borrower hereby assents to any extension of time with respect to any payment due under this Note, to any substitution or release of collateral, and to the addition or release of any party. No waiver of any payment or other right operates as a waiver of any other payment or right.

If any provision in this Note is held invalid, illegal, or unenforceable, all other provisions of this Note remain fully enforceable.

No delay or failure of the holder of this Note in the exercise of any right or remedy is to be deemed a waiver of such right, and no exercise of any right or remedy is to be deemed a waiver of any other right or remedy that the holder may have.

This Note is a nonrecourse obligation of Borrower.

Pursuant to Section 11-57-210 of the Supplemental Public Securities Act, this Note is executed pursuant to the Supplemental Public Securities Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Loan and the execution of this Note after delivery for value.

The parties shall give all notices related to this Note in writing, by hand delivery, overnight courier, or by certified or registered mail, return receipt requested, postage prepaid, addressed as follows:

If to the Borrower:

Fraser Housing Authority
153 Fraser Ave
Fraser, Colorado 80442
Attention: Executive Director

If to the Lender:

The Town of Fraser, Colorado
153 Fraser Ave
Fraser, Colorado 80442
Attention: Town Manager

Notices will be deemed effective when hand delivered, or one day after timely delivery to an overnight courier for next day delivery to Borrower (as evidenced by a receipt from the overnight courier), or three days after notice is deposited with the U.S. Postal Service.

Payee will not assign this Note or any interest in it without consent of Borrower.

The laws of the State of Colorado govern this Note without regard to principles of conflicts of laws.

The Borrower has executed this Promissory Note as of the day and year first written above.

BORROWER

FRASER HOUSING AUTHORITY

By: _____
Name:
Title: Chair

Schedule 1

99504257.v1

Date	Amount of Advance	Amount Paid or Prepaid	Outstanding Principal Amount

FRASER HOUSING AUTHORITY

RESOLUTION NO. 2026-02-02

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE FRASER HOUSING AUTHORITY AUTHORIZING THE HOUSING AUTHORITY TO INCUR A SECOND INTERIM LOAN FROM THE TOWN OF FRASER AND AUTHORIZING THE FORM OF THE SECOND INTERIM LOAN AGREEMENT AND OTHER DETAILS IN CONNECTION THEREWITH

WHEREAS, the Fraser Housing Authority, a public body corporate and politic of the State of Colorado (the "Authority") is authorized and empowered by the provisions of the Housing Authorities Law, being Part 2 of Article 4 of Title 29, Colorado Revised Statutes, as from time to time supplemented and amended (the "Act"), to issue revenue bonds for the purpose of acquiring and constructing buildings and improvements pursuant to a single plan or undertaking to provide dwelling accommodations on financial terms within the means of persons of low income; and

WHEREAS, the members of the Board of Commissioners of the Authority (the "Board") have been duly appointed and qualified; and

WHEREAS, the Town of Fraser, Colorado (the "Town"), is a municipal corporation duly organized and existing under the Constitution and laws of the State of Colorado (the "State"); and

WHEREAS, on January 23, 2025, the Town entered into a Development Agreement (the "Development Agreement") with Mountain Affordable Housing Development LLC (the "Developer") for the construction of an affordable housing development known as the St. Louis Landing Project (the "Project"); and

WHEREAS, the Authority will issue its Housing facilities Revenue Bonds (St. Louis Landing Project) Series 2026 (the "Housing Revenue Bonds") in March or April of 2026 to finance the construction of the Project; and

WHEREAS, the Board of Trustees of the Town (the "Board of Trustees") has issued a Notice to Proceed (as defined in the Development Agreement) in accordance with the terms of the Development Agreement so that construction can proceed on the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, on September 3, 2026, the Board adopted Ordinance 526 which authorized the Town to make a loan to the Authority in an amount not to exceed $5,400,000 (the "First Interim Loan") to pay for costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, the issuance of the Housing Revenue Bonds has been delayed due to the need of the Authority to finalize financing terms with the various entities that are providing funding for the Project; and

WHEREAS, the Authority is on schedule to issue the Housing Revenue Bonds in March or April of 2026, but the Authority needs additional interim funds to pay for costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the issuance of the Housing Revenue Bonds; and

WHEREAS, the Board of Trustees adopted Ordinance 531 on February 18, 2026, to make additional funds available to pay the costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued in an amount not to exceed **$3,300,000** (the "Second Interim Loan"); and

WHEREAS, the Board of Commissioners of the Authority (the "Board of Commissioners") desires to incur the Second Interim Loan from the Town and to enter into a Second Interim Loan Agreement with the Town in the form attached hereto as Exhibit A (the "Second Interim Loan Agreement") and to evidence the Second Interim Loan by executing and delivering a promissory note to the Town in the form attached hereto as Exhibit A (the "Note"); and

WHEREAS, the Second Interim Loan Agreement and the Note (the "Second Interim Loan Documents") shall be paid in full with proceeds of the Housing Revenue Bonds on the closing date of the Housing Revenue Bonds; and

WHEREAS, the forms of the Second Interim Loan Documents have been presented to the Board of Commissioners.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COMMISSIONERS OF THE FRASER HOUSING AUTHORITY:

Section 1: Recitals Incorporated; Ratification. The foregoing recitals are incorporated herein by reference and adopted as findings and determinations of the Authority. All actions heretofore taken to effect the approval of the Second Interim Second Interim Loan or the Second Interim Loan Documents (not inconsistent with the provisions of this Resolution) by the Board of Commissioners and by the officers, agents and employees of the Authority are hereby ratified, approved and confirmed.

Section 2: Approval of Second Interim Loan Documents. The Second Interim Loan Documents, in substantially the form attached hereto are in all respects approved, confirmed, and approved. The Chair of the Board of Commissioners (the "Chair") and the Secretary of the Authority (the "Secretary") are each individually hereby authorized to execute and deliver, when appropriate, the Second Interim Loan Documents and such other documents and certificates as may be necessary or appropriate in connection therewith, with such changes as are approved by the Chair and the Authority's attorney. The execution

of Second Interim Loan Documents by the Chair shall be conclusive evidence of the approval by the Board of Commissioners of such documents in accordance with the terms hereof and thereof. The Secretary is hereby authorized and directed to affix the seal of Authority to and to attest the Second Interim Loan Documents.

Section 3: Authorization of Second Interim Second Interim Loan; Delegation. The Board of Commissioners hereby authorizes the Authority to incur the Second Interim Second Interim Loan and to execute and deliver the Second Interim Loan Documents. Section 11-57-204 of the Supplemental Act provides that a public entity, including the Authority, may elect in an act of issuance to apply all or any of the provisions of the Supplemental Act. The Board of Commissioners hereby elects to apply all of the provisions of the Supplemental Act to the Second Interim Loan Documents.

Section 11-57-205 of the Supplemental Act provides that a public entity may delegate to any member of the issuing authority, chief executive officer, or chief financial officer of the public entity the authority to sign a contract for the purchase of the securities or to accept a binding bid for the securities, such delegation to be effective for one year after adoption of the act of issuance. The Board of Commissioners hereby delegates and authorizes any member of the Board of Commissioners and the Executive Director, for one year from the date of this Resolution, to determine whether it is in the best interest of the Authority to incur and enter into the Second Interim Loan Documents, subject to the following parameters and restrictions:

(i) The Note shall mature no later than the date that the Housing Revenue Bonds are issued;
(ii) The aggregate principal amount of the Note shall not exceed **$3,300,000**.

Section 4: Further Actions. The officers and employees of the Authority are hereby independently authorized and directed to take all action necessary or appropriate to implement and effect the provisions of this Resolution and the Second Interim Loan Documents. The execution of any document or instrument by the appropriate officers herein authorized shall be conclusive evidence of the approval by the Authority of such agreement, document or instrument in accordance with the terms hereof.

Section 5: Supplemental Act. The Board of Commissioners hereby elects to apply all of the provisions of the Supplemental Act to the Second Interim Loan and the Second Interim Loan Documents. Pursuant to Section 11-57-212 of the Supplemental Act, no legal or equitable action brought with respect to any legislative acts or proceedings of the Authority in connection with the authorization and incurrence of the Second Interim Loan, including but not limited to the adoption of this Resolution, shall be commenced more than thirty days after the adoption of this Resolution.

Section 6: Pledge of Revenues. The Authority hereby pledges the proceeds of the Housing Revenue Bonds to the payment of the Second Interim Loan and the Second Interim Loan Documents. The creation, perfection, enforcement, and priority of the pledge of the proceeds of the Housing Revenue Bonds to secure or pay the Second Interim Loan

provided herein shall be governed by Section 11-57-208, C.R.S. The proceeds of the Housing Revenue Bonds as received by the Authority shall immediately be subject to the lien of this pledge without any physical delivery thereof, any filing, or further act. The lien of such pledge shall be valid, binding, and enforceable as against all persons having claims of any kind in tort, contract, or otherwise against the Authority irrespective of whether such persons have notice of such liens.

Section 7: No Recourse Against Officers and Agents. Pursuant to Section 11-57-209 of the Supplemental Public Securities Act, if a member of the Board of Commissioners or any officer or agent of the Authority, acts in good faith, no civil recourse shall be available against such member, officer or agent for payment of the principal of and interest on the Second Interim Loan. Such recourse shall not be available either directly or indirectly through the Board of Commissioners or the Authority, or otherwise, whether by virtue of any constitution, statute, rule of law, enforcement of penalty, or otherwise. By the acceptance of the delivery of the Second Interim Loan Documents and as a part of the consideration for such transfer, any person purchasing or accepting the transfer of the obligation representing the Second Interim Loan specifically waives any such recourse.

Section 8: Conclusive Recital. Pursuant to Section 11-57-210 of the Supplemental Public Securities Act, the Second Interim Loan is incurred and the Second Interim Loan Documents are executed pursuant to the Supplemental Public Securities Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Second Interim Loan Documents after delivery for value.

Section 9: Effective Date of Resolution. This Resolution shall be effective as of the date of its adoption.

PASSED, APPROVED AND ADOPTED this 18th day of February, 2026.

FRASER HOUSING AUTHORITY
TOWN OF FRASER, COLORADO

Votes in favor: ___
Opposed: ___
Abstained: ___

BY: _____
Fraser Housing Authority Chair

ATTEST:

(S E A L)

_____
Town Clerk

EXHIBIT A

(Attach Form of Second Interim Loan Agreement and Note)

SECOND INTERIM LOAN AGREEMENT

This Second Interim Loan Agreement ("Second Interim Loan Agreement"), dated February 18, 2026 ("Effective Date"), is between the TOWN OF FRASER, COLORADO ("Lender"), and FRASER HOUSING AUTHORITY ("Borrower").

RECITALS

WHEREAS, the Lender, is a municipal corporation duly organized and existing under the Constitution and laws of the State of Colorado (the "State"); and

WHEREAS, the Borrower is authorized and empowered by the provisions of the Housing Authorities Law, being Part 2 of Article 4 of Title 29, Colorado Revised Statutes, as from time to time supplemented and amended (the "Act"), to issue revenue bonds for the purpose of acquiring and constructing buildings and improvements pursuant to a single plan or undertaking to provide dwelling accommodations on financial terms within the means of persons of low income; and

WHEREAS, on January 23, 2025, the Lender entered into a Development Agreement (the "Development Agreement") with Mountain Affordable Housing Development LLC (the "Developer") for the construction of an affordable housing development known as the St. Louis Landing Project (the "Project"); and

WHEREAS, the Borrower will issue its Housing facilities Revenue Bonds (St. Louis Landing Project) Series 2026 (the "Housing Revenue Bonds") in March or April of 2026 to finance the construction of the Project; and

WHEREAS, the Board of Trustees of the Lender (the "Board") has issued a Notice to Proceed (as defined in the Development Agreement) in accordance with the terms of the Development Agreement so that construction can proceed on the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, on September 3, 2026, the Board adopted Ordinance 526 which authorized the Town to make a loan to the Authority in an amount not to exceed $5,400,000 (the "First Interim Loan") to pay for costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued; and

WHEREAS, the issuance of the Housing Revenue Bonds has been delayed due to the need of the Borrower to finalize the terms with the various entities that are providing funding for the Project; and

WHEREAS, the Borrower is on schedule to issue the Housing Revenue Bonds in March or April of 2026, but the Borrower needs additional interim funds to pay for costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the issuance of the Housing Revenue Bonds; and

WHEREAS, the Lender and the Borrower desire to make funds available to pay the costs incurred pursuant to the Development Agreement in furtherance of the construction of the Project prior to the Housing Revenue Bonds being issued by entering into this Second Interim Loan Agreement; and

WHEREAS, the obligation of the Borrower to repay this Second Interim Loan Agreement shall be payable from the proceeds of the Housing Revenue Bonds.

The parties therefore agree as follows:

1. The Second Interim Loan. The Lender hereby lends up to $3,300,000 to the Borrower (the "Second Interim Loan"), and the Borrower borrows the Second Interim Loan from the Lender, subject to the terms this Second Interim Loan Agreement. The terms of the Second Interim Loan shall be as follows:

A. *Loan Term*. The final maturity date of the Second Interim Loan is the date the Housing Revenue Bonds are issued (the "Loan Term").

B. *Principal Amount*. The principal amount of the Second Interim Loan is not to exceed $3,300,000.

C. *Maturity Payment*. Upon maturity, the Second Interim Loan shall be repaid in full with proceeds of the Housing Revenue Bonds.

2. Disbursement. The Lender shall lend funds to Borrower pursuant to a Promissory Note in the original principal amount of not to exceed $3,300,000 (the "Note"). The Second Interim Loan proceeds shall be deposited in the Project Fund to be used to finance costs of the Project incurred pursuant to the Development Agreement. This Second Interim Loan Agreement and the Note are referred to as the "Second Interim Loan Documents."

3. Events of Default. The following events, subject to the notice and cure requirements set forth below, will constitute an Event of Default:

(a) if the Borrower fails to duly and punctually perform its obligations under this Second Interim Loan Agreement, or it violates the covenants contained in any of the Second Interim Loan Documents in any material respect, and such failure remains uncured within ninety days of the Borrower's receipt of written notice from Lender;

(b) if the Borrower fails to pay the Note when due, and the Borrower fails to cure within thirty days of receiving written notice of such failure from Lender;

(c) if the Borrower makes a general assignment for the benefit of creditors, admits in writing its inability to pay its debts generally as they mature, files or has filed against it a petition in bankruptcy or a petition or answer seeking

a reorganization, arrangement with creditors or other similar relief under the federal bankruptcy laws or under any other applicable law of the United States of America or any state, consents to the appointment of a trustee or receiver; or takes any action for the purpose of effecting or consenting to any of the foregoing; and

(d) if an order, judgment, or decree is entered appointing, without the Borrower's consent, a trustee or receiver for the Borrower or a substantial part of its property, or approving a petition filed against the Borrower seeking a reorganization, arrangement with creditors or other similar relief under the federal bankruptcy laws or under any other applicable law of the United States of America or any state, and such order, judgment, or decree is not be vacated, set aside, or stayed within ninety days from the date of entry.

Following the occurrence of an Event of Default, the Lender shall provide written notice to the Borrower.

The Borrower may cure any Event of Default within the timeframes provided in this Second Interim Loan Agreement or any other Second Interim Loan Document. If the Borrower fails to timely cure a default, then the Lender shall have all remedies as are set forth in the Second Interim Loan Documents or otherwise at law.

4. Miscellaneous.

(a) This Second Interim Loan Agreement binds and inures to the benefit of the successors and assigns of the parties. Subject to the Lender's consent, which the Lender shall not unreasonably withhold, condition, or delay, the Borrower may assign the Second Interim Loan and the obligations and duties of the Borrower under the Second Interim Loan Documents to any purchaser of the property and Project if the purchaser agrees to be bound to the Second Interim Loan Documents.

(b) Any amendment to this Second Interim Loan Agreement requires a written agreement of the parties.

(c) No waiver of satisfaction of a condition or non-performance of an obligation under this Second Interim Loan Agreement will be effective unless it is in writing and signed by the party granting the waiver.

(d) The laws of the state of Colorado, without giving effect to its principles of conflicts of law, govern all adversarial proceedings brought by the parties arising out of this Second Interim Loan Agreement, whether their claims sound in contract, tort, or otherwise.

(e) This Second Interim Loan Agreement will remain effective so long as there are sums remaining outstanding on the Note.

(f) The Borrower hereby pledges the proceeds of the Housing Revenue Bonds for the payment of the principal of, the interest on, and any premiums due in connection with the Second Interim Loan and the Second Interim Loan Documents. The creation, perfection, enforcement, and priority of the pledge of the proceeds of the Housing Revenue Bonds to secure or pay the Second Interim Loan provided herein shall be governed by Section 11-57-208, C.R.S. The proceeds of the Housing Revenue Bonds as received by the Borrower shall immediately be subject to the lien of this pledge without any physical delivery thereof, any filing, or further act. The lien of such pledge shall be valid, binding, and enforceable as against all persons having claims of any kind in tort, contract, or otherwise against the Borrower irrespective of whether such persons have notice of such liens.

(g) Pursuant to Section 11-57-210 of the Supplemental Public Securities Act, the Second Interim Loan is incurred and the Second Interim Loan Documents are executed pursuant to the Supplemental Public Securities Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Second Interim Loan Documents after delivery for value.

(h) The parties shall give all notices, consents, demands, waivers, or approvals related to this Agreement in writing delivered by (i) personal delivery, (ii) a nationally-recognized, next-day courier service, (iii) first-class certified mail, postage prepaid, or (iv) e-mail. A notice is deemed given on the other party's receipt of it, or if mailed, on the earlier of the other party's receipt of it and the fifth business day after its mailing. The parties may change their addresses for notice by notifying the other parties in the manner provided in this Section 5(f). The parties hereby designate their addresses as follows:

If to the Borrower:

Fraser Housing Authority
153 Fraser Ave
Fraser, Colorado 80442
Attention: Executive Director

If to the Lender:

The Town of Fraser, Colorado
153 Fraser Ave
Fraser, Colorado 80442
Attention: Town Manager

[*signature pages follow*]

The Borrower has executed this Second Interim Loan Agreement as of the Effective Date.

FRASER HOUSING AUTHORITY

_____
Chair

ATTEST:

_____
Secretary

The Lender has executed this Second Interim Loan Agreement as of the Effective Date.

TOWN OF FRASER, COLORADO

_____
Mayor

ATTEST:

_____
Town Clerk

PROMISSORY NOTE

FRASER HOUSING AUTHORITY SECOND INTERIM LOAN

Principal amount: Not to Exceed $3,300,000 February 18, 2026

FRASER HOUSING AUTHORITY, ("Borrower"), unconditionally promises to pay to the order of THE TOWN OF FRASER, COLORADO ("Payee"), the principal sum of $2,000,000, or so much as Payee has advanced under this Note, together with interest at the annual rate of zero per annum, in accordance with the terms of the Second Interim Loan Agreement dated February 18, 2026, between the Borrower and the Payee (the "Second Interim Loan Agreement"). All unpaid principal shall remain outstanding until fully paid and discharged.

Each advance made by the Payee in accordance with the Second Interim Loan Agreement and all payments and prepayments made on account of the principal thereof shall be recorded by Payee on the schedule attached to this Note as Schedule 1. Upon the advancement of the proceeds of the Second Interim Loan in accordance with the terms of the Second Interim Loan Agreement, the principal amount of this Note shall be deemed to be increased automatically in a principal amount equal to the amount so advanced and without further acts on the part of the Payee or the Borrower.

The final maturity date of this Note is the date that the Authority's Housing Revenue Bonds are issued (the "Loan Term").

Upon maturity, this Note shall be repaid in full with proceeds of the Authority's Housing Revenue Bonds.

If Borrower fails to pay any amount due under this Note, and Payee takes any action to collect the amount due, or if Payee brings any suit or proceeding for the recovery or for protection of the indebtedness, then Borrower shall pay on demand all reasonable costs and expenses of the suit or proceeding and any appeal including, but not limited to, the fees and disbursements of Payee's attorneys and their staff.

Borrower hereby waives presentment, notice of dishonor, and protest. Borrower hereby assents to any extension of time with respect to any payment due under this Note, to any substitution or release of collateral, and to the addition or release of any party. No waiver of any payment or other right operates as a waiver of any other payment or right.

If any provision in this Note is held invalid, illegal, or unenforceable, all other provisions of this Note remain fully enforceable.

No delay or failure of the holder of this Note in the exercise of any right or remedy is to be deemed a waiver of such right, and no exercise of any right or remedy is to be deemed a waiver of any other right or remedy that the holder may have.

This Note is a nonrecourse obligation of Borrower.

Pursuant to Section 11-57-210 of the Supplemental Public Securities Act, this Note is executed pursuant to the Supplemental Public Securities Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Second Interim Loan and the execution of this Note after delivery for value.

The parties shall give all notices related to this Note in writing, by hand delivery, overnight courier, or by certified or registered mail, return receipt requested, postage prepaid, addressed as follows:

If to the Borrower:

Fraser Housing Authority
153 Fraser Ave
Fraser, Colorado 80442
Attention: Executive Director

If to the Lender:

The Town of Fraser, Colorado
153 Fraser Ave
Fraser, Colorado 80442
Attention: Town Manager

Notices will be deemed effective when hand delivered, or one day after timely delivery to an overnight courier for next day delivery to Borrower (as evidenced by a receipt from the overnight courier), or three days after notice is deposited with the U.S. Postal Service.

Payee will not assign this Note or any interest in it without consent of Borrower.

The laws of the State of Colorado govern this Note without regard to principles of conflicts of laws.

The Borrower has executed this Promissory Note as of the day and year first written above.

BORROWER

FRASER HOUSING AUTHORITY

By: _____
Name:
Title: Chair

Schedule 1

99504270.v1

Date	Amount of Advance	Amount Paid or Prepaid	Outstanding Principal Amount

TOWN OF FRASER
RESOLUTION NO. 2026-02-02

A RESOLUTION BY THE TOWN BOARD OF THE TOWN OF FRASER, COLORADO, TO APPROVE BUSINESS ENHANCEMNT GRANT REQUESTS

WHEREAS, the Fraser Business Enhancement Grant program is intended to support current businesses and improve the economic vitality of Fraser by encouraging enhancements to the physical appearance of business properties, improvements of public infrastructure, amenities and gathering places, and increased ADA accessibility; and

WHEREAS, $125,000 was approved towards the program for the Town of Fraser 2026 annual budget; and

WHEREAS, the following entities applied for Business Enhancement Grants by the February 1st priority deadline; and

WHEREAS, the applications were reviewed by Town staff and a Business Enhancement Grant Review Committee that has deemed the applicants and projects eligible for the award amounts listed below.

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

1. The Town of Fraser approves the following awards, to be provided on a reimbursement basis, subject to the applicant meeting the requirements- including but not limited to, completion of scope of work, time frame, items eligible for reimbursement, submission of final reporting documents, and any conditions named by the Board- that will be set forth in a contract provided to each applicant.

Business	Project	Project Total	Award Amount
Colorado Corndog & Burger Company	window unit & serve tray	$4,530	$2,265
Fraser Fuel LLC	pavers, lighting, gas station electronic sign	$50,000+	$25,000
Fraser Valley Arts	electronic events sign	$36,850-$49,200	$25,000
Fraser Quickstop	repaint siding & roof	$30,170	$15,085
Winter Park Flyfisher	Winter Park Fly Shop electronic sign	$15,000	$7,500
Zerex 40 LLC	building façade renovations	$150,000-$250,000	$50,000
	Total Awards:		**$124,850**

READ, PASSED ON ROLL CALL VOTE, AND ADOPTED BY THE BOARD OF TRUSTEES THIS 18th DAY OF FEBRUARY 2026.

Votes in favor: ___
Votes opposed: ___
Abstained: ___

BOARD OF TRUSTEES OF THE
TOWN OF FRASER, COLORADO

BY: _____
Mayor

ATTEST:

(S E A L)

_____
Town Clerk

MEMO TO: Mayor Cerkvenik and Board of Trustees

FROM: Sarah Catanzarite, Assistant Town Manager

DATE: February 18th, 2026

SUBJECT: 2026 Fraser Business Enhancement Grant Applications

Matter before the Board:

Approval of Fraser Business Enhancement Grant Applications for funding.

Background:

The Fraser Business Enhancement Grant program is intended to support current businesses and improve the economic vitality of Fraser by encouraging enhancements to the physical appearance of business properties, improvements of public infrastructure, amenities and gathering places, and increased ADA accessibility. Maximum grant awards are $25,000 with a required match (minimum 50% of project total).

Applicant Eligibility:

- Must own or lease the commercial property slated for improvements
- Properties must be within Fraser's Riverwalk or Business Districts or in a commercial/mixed-use planned development
- Home occupations and standalone residences are not eligible
- Applicant must be in good standing with the Town, including required licenses
- Tenants must have written consent from property owners
- Single application may be submitted for multiple spaces or properties for a particular scope of work

Eligible Projects:
ADA improvements, publicly displayed art, landscaping and streetscape improvements, exterior decorations, building façade improvements/renovations, painting, signage, awnings, cornices, sidewalks, exterior lighting, gathering spaces, public amenities, patios, or other related exterior improvements

Ineligible Projects:

- New building construction, property acquisition, refinancing, interior remodels expansion, equipment, or fixtures (apart from ADA accessibility improvements)
- Residential properties or home occupations (unless part of a qualifying mixed-use property)
- Completed projects or costs incurred before grant approval

Evaluation Criteria:
Improvements that provide the most public benefit will be prioritized. This includes projects that increase ADA accessibility, provide gathering spaces and amenities for public use,

improve public infrastructure, and/ or contribute to the beautification and uniqueness of Fraser.

Fraser Business Enhancement Grants are considered as part of a competitive process and awarded at the sole discretion of the Fraser Board of Trustees. If an application is approved, grant funds are provided upon project completion and submission of certification of project expenses. All projects should be completed within the calendar year the award is granted, unless a written request for an extension to complete the project is received and approved. The grantee may be subject to receiving a Form 1099 under the Internal Revenue Service and therefore must fill out a W-9 form. All projects must comply with applicable laws, ordinances, building codes, and zoning requirements.

Application Submissions and Review:

7 applications were submitted by the February 1st priority deadline. The grant review committee included DiAnn Butler (Grand County Economic Development), Abbey Samuelson (DDA Board member, business owner, resident), Bill Palmer (DDA Board member, business owner, resident), Sarah Catanzarite (staff) and Garrett Scott (staff). The committee met February 3rd to review the applications. All applications were deemed to meet eligibility requirements. They were scored on the merits of project readiness, applicant's prior funding/ grant compliance, and community benefit. The accompanying Resolution includes the list of recommended awards based on the committee's evaluation.

Notes:

- The Public Arts Committee is planning to designate the Black Tie Ski Rental building for the Mural Fest mural commission so that request has been removed from the applications presented to the Board (will be funded by PAC).
- The committee recommended that Zerex 40 LLC (Fraser Post Office Building Façade Renovations Project) be awarded $50,000 of the $75,000 requested, based on the US Post Office and Fraser Winter Park Tire and Auto being located within the building to be improved.
- All awards will be subject to meeting outlined grant requirements including obtaining required permits.

Recommendation:

- Approval of Business Enhancement Grant applications is at the full discretion of the Board of Trustees. Town staff recommend the Board of Trustees approve award

amounts in line with the recommendations of the Business Enhancement Review Committee though the Board may choose to make their own determinations in the case of some or all awards. The Board may consider including certain conditions on grant awards such as improved ADA compliance in the case of the Post Office Building or requiring dark sky compliance for lighting and electronic signage.

Appendixes:
Resolution No. 2026-02-02
Business Enhancement Grant Applications Summary
Business Enhancement Grant Applications

2026 Town of Fraser Business Enhancement Grant Applications

Business	Project	Project Total	Request	Match	Project Description	Notes	Eligible	Previous	Readiness	Public Benefit	bonus (US 40)	Total Score	Recommended Award
Black Tie Ski Rentals of Winter Park	mural	$9,000	$4,500	$4,500	mural on south wall of building	Has received 2 previous grants- parking lot paving & siding. Came in under budget, completed all grant requirements- PAC will provide her the	Y	2	3	2	1	8	$0
Colorado Corndog & Burger Company	window unit & serve tray	$4,530	$2,265	$2,265	replace front window unit including deteriorating exterior serve tray on food trailer (currently a safety hazard)	Received grant last year for new wrap, completed all requirements. Provided itemized budget.	Y	2	3	1		6	$2,265
Fraser Fuel LLC	pavers, lighting, gas station sign	$50,000	$25,000	$25,000+	replace pavers to enhance safety/ ADA, improve lighting for dark sky, sign for gas station	Provided formal estimate for sign, with estimated ranges for other items. Total estimate is for $47,000-$77,000.	Y	3	2	1		6	$25,000
Fraser Valley Arts	electronic events sign	$36,850-$49,200	$18,425	$18,425+	sign outside the Fraser Post Office building with a modern, electronic sign to promote FVA events, as well as Town	initial commitment of $18,425 (50% of lower estimate) and a "true-up" after the project costs are finalized, with a cap of $25,000. FVA will pay the	Y	3	2	3	1	9	$25,000
Fraser Quickstop	Repaint Siding & Roof	$30,170	$15,085	$15,085	repaint siding and roof to maintain structural integrity of building & enhance appearance	Estimates provided from Mountain Homes (Granby) for all work.	Y	3	3	2	1	9	$15,085
Winter Park Flyfisher	Winter Park Fly Shop sign	$15,000	$7,500	$7,500	replace broken and antiquated sign on store front	Estimate provided from Lunsford Signs for dark sky, low voltage LED down lighting.	Y	3	2	2	1	8	$7,500
Zerex 40 LLC	Fraser Post Office building façade renovations	$150,000-$250,000	$75,000	$75,000 +	renovate and upgrade exterior facade. Subject to grant specifications and monies available, project will include siding, but enhancements to doors, windows, building of a northside	Requesting $25,000 per tenant (US Postal Service, Verizon and Winter Park-Fraser Tire and Auto). Provides various estimates ranging from $116,388-$214,579; Board may wish to require ADA improvements as part of grant funding	Y	3	3	3	1	10	$50,000
		Total:	**$147,775**									**Total Recommended Award:**	**$ 124,850**

Criteria Evaluated:

Applicant/ Project Eligible & In Good Standing	Y/N	Prior Funding/ Grant Compliance:	current grant open (not eligible); 1- have received prior funding/ issues with compliance; 2- previously received funding,
Project Readiness (formal estimate & plans, contractor, timeline, required permits, outside funding lined up)	1- low; 2- mostly there; 3- ready to go!	Community Benefit	1- minimal; 2-strong; 3- excellent

Fraser Business Enhancement Grant Application

Fraser Business Enhancement Grants are intended to support current businesses and improve the economic vitality of Fraser by encouraging enhancements to the physical appearance of business properties, improvement of public infrastructure, amenities and gathering places, and increased ADA accessibility. Grant requests of up to $25,000 per business space will be considered. 50% project match is generally required; lower project matches may be considered for projects providing a maximum public benefit. For priority consideration, applications must be submitted by February 1, 2026. If funding for projects remain after consideration of initial applications that meet the deadline, rolling application will be considered until grant program funding for the year is exhausted. See https://www.frasercolorado.com/467/Fraser-Business-Incentives-and-Grant-Pro for complete program and application details.

Business/Organization Name	Colorado Corndog & Burger Company
Business License Number	*Field not completed.*
Contact Person	Tonja Richards
Mailing Address	PO Box 1192
City	Grand Lake
State	CO
Zip Code	80447
Phone Number	[redacted]

Email Address	[redacted]
Project Name	Colorado Corndog Company Trailer Service Window & Serve Tray Replacement (Safety + Exterior Improvement)
Description of Project	Colorado Corndog & Burger Company is requesting Business Enhancement Grant funding to replace the failing front service window assembly and the deteriorating exterior serve tray on our food trailer located in a permanent operating site in Fraser. The current service window will no longer remain safely open and has become a safety hazard for staff and customers. This project will replace the full front window unit, including two smaller sliding/up-down windows and a larger center window, along with replacing the front serve tray to restore a safe, functional, and polished customer-facing service area.
Describe the benefits this project will provide to your business, the public, and the Town of Fraser?	This project provides immediate safety improvements by eliminating a hazardous service window that can slip or fall during use. Replacing the window assembly and serve tray will improve the customer experience by creating a safer, more efficient ordering and pickup point and reducing service bottlenecks. The improvements also enhance the exterior appearance of a highly visible local business operating within Fraser, contributing to a cleaner, more welcoming streetscape and strengthening Fraser's identity as a vibrant, visitor-friendly mountain community.
What benefits will this project provide to your business and to the community/ Town of Fraser?	Benefits to our business: Improves day-to-day operational safety for staff and customers Restores reliable service functionality, reducing delays and improving throughput Protects long-term viability of a Fraser-based small business by addressing critical equipment failure Enhances the professional appearance of our customer service frontageBenefits to the community/Town of Fraser: Improves public safety at a high-traffic service area Contributes to beautification and improved visual appeal in a

	public-facing business location Supports economic vitality by helping a locally operated business continue serving residents and visitors consistently Reinforces Fraser's reputation for well-maintained, unique small businesses that add to the community experience
Time Frame of Implementation	Upon award notification, we will order materials immediately and schedule installation as soon as vendor lead times allow. The project is expected to be completed within the same calendar year the funds are received, with installation anticipated within 30–90 days of approval (depending on fabrication/lead time), and no later than Q3 2026. (If you want it tighter/cleaner) Planned completion: Q2–Q3 2026 (within 90 days of award, pending lead times).
Total Estimated Cost of Project	$4,530.20
Upload Itemized Project Budget	Itemized_Project_Budget_Fraser_Grant_Colorado_Corndog_v3.docx
Requested Grant Amount	$2265.10
Matching Funds Amount	$2265.10
Source of Funding in Addition to Business Enhancement Grant	Business checking/savings
Would you like your project to be considered for a reduced grant match	No

award (less than 50%)?	
If you selected yes above, please explain.	*Field not completed*.
Supporting Documents	Fraser_Grant_Supporting_Documents_Packet_Colorado_Corndog.pdf
Electronic Signature Agreement	I agree.
Electronic Signature	Tonja D. Richards

Supporting Documents Packet

Project: Colorado Corndog & Burger Company Service Window & Concession Shelf Replacement (Safety + Exterior Improvement) Date: January 30, 2026

Tonja Richards
Colorado Corndog & Burger Company
Fraser, Colorado

January 30, 2026

Town of Fraser
Business Enhancement Grant Program
Fraser, Colorado

Re: Colorado Corndog Company Service Window & Concession Shelf Replacement (Safety + Exterior Improvement)

To the Town of Fraser Grant Review Committee:

Thank you for considering our application for the Fraser Business Enhancement Grant Program. Colorado Corndog & Burger Company operates from a permanent location in Fraser with property-owner permission, and we're requesting support to replace our failing front service window and concession shelf/serve tray area. The current service window will no longer stay safely open and has become a safety hazard for staff and customers during daily operations.

This project will replace the full front service window assembly (including the two smaller side windows and the larger center window) and replace the exterior concession shelf/serve tray to restore a safe, functional, and professional customer-facing service area. These improvements are highly visible and directly impact the customer experience for residents and visitors.

Public benefit is at the center of this request: eliminating a hazardous window improves safety at a high-traffic service point, and the refreshed frontage contributes to Fraser's goal of maintaining an attractive, welcoming business district. A safer, cleaner service area also supports smoother service flow and a better experience for the community.

The total estimated project cost is $4,530.15. We are requesting $2,265.08 in grant funds with a $2,265.07 match from Colorado Corndog Company. Installation will be completed within the same calendar year as funds are awarded, as soon as fabrication/shipping lead times allow.

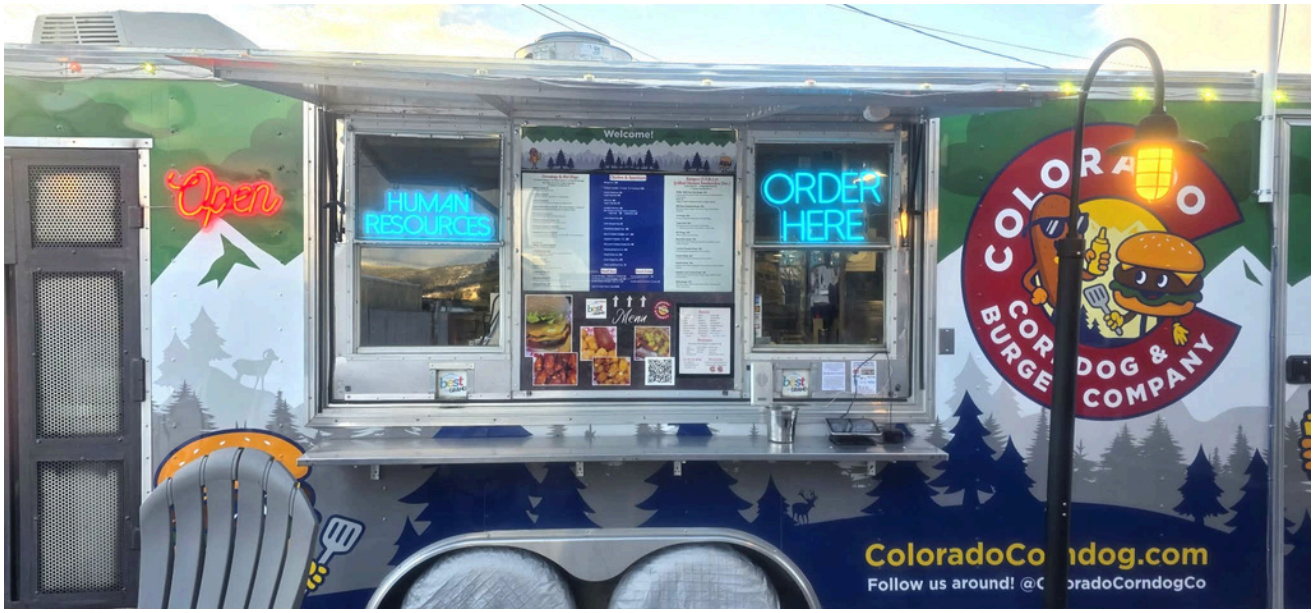
We appreciate the Town's continued investment in small businesses and the local economy. Please feel free to contact me if you have any questions or need additional documentation.

Sincerely,

Tonja Richards

Tonja Richards
Owner, Colorado Corndog Company

Project Photo (Current Condition)



Itemized Project Budget (Estimate)

Note: Installation labor is estimated as in-kind/fair market value for budgeting purposes.

Line Item	Cost (USD)
Service window assembly (including shipping)	$3,828.15
Concession shelf / serve tray replacement (estimated)	$200.00
Installation labor (2 people x 4 hours @ $50/hr each) – in-kind estimate	$400.00
Hardware & fasteners (estimated)	$50.00
Sealant/caulk & weatherproofing materials (estimated)	$12.00
Misc. installation materials (shims/trim/clean-up supplies) (estimated)	$40.00
Total Estimated Project Cost	**$4,530.15**
Requested Grant Amount (50%)	**$2,265.08**
Matching Funds Amount (50%)	**$2,265.07**

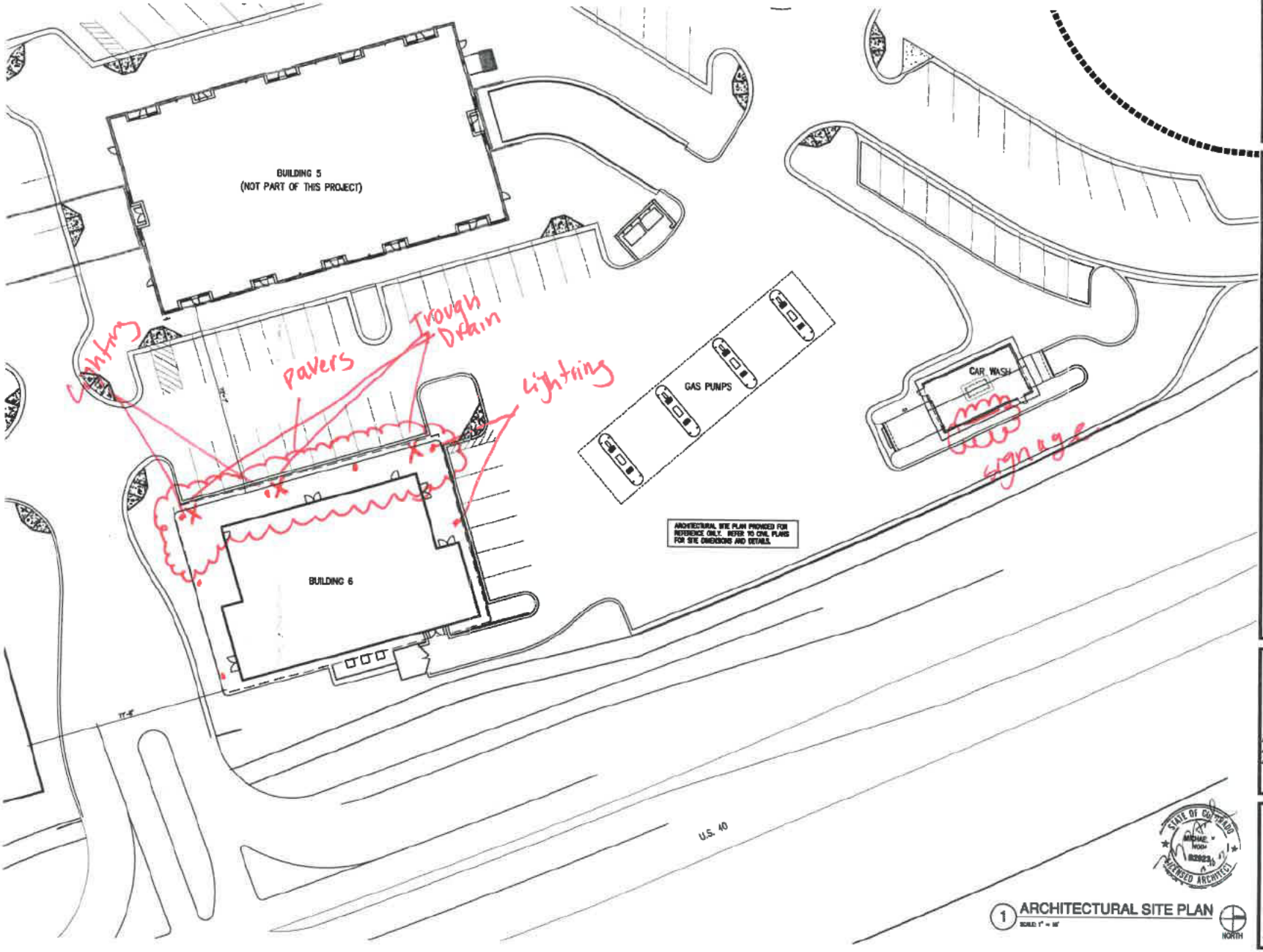
Fraser Business Enhancement Grant Application

Fraser Business Enhancement Grants are intended to support current businesses and improve the economic vitality of Fraser by encouraging enhancements to the physical appearance of business properties, improvement of public infrastructure, amenities and gathering places, and increased ADA accessibility. Grant requests of up to $25,000 per business space will be considered. 50% project match is generally required; lower project matches may be considered for projects providing a maximum public benefit. For priority consideration, applications must be submitted by February 1, 2026. If funding for projects remain after consideration of initial applications that meet the deadline, rolling application will be considered until grant program funding for the year is exhausted.
See https://www.frasercolorado.com/467/Fraser-Business-Incentives-and-Grant-Pro for complete program and application details.

Business/Organization Name	Frasr Fuel LLC
Business License Number	005500
Contact Person	Brandon jung
Mailing Address	po box 30
City	winter park
State	Colorado
Zip Code	80482
Phone Number	[redacted]

Email Address	[redacted]
Project Name	Fraser Fuel LLC
Description of Project	see cover letter
Describe the benefits this project will provide to your business, the public, and the Town of Fraser?	better ADA access, better aesthetics and accessibility, better lighting for dark sky requirements
What benefits will this project provide to your business and to the community/ Town of Fraser?	better ADA access, better aesthetics and accessibility, better lighting for dark sky requirements
Time Frame of Implementation	2-3 months
Total Estimated Cost of Project	50000
Upload Itemized Project Budget	Itemized_Project_Budget.pdf
Requested Grant Amount	25,000
Matching Funds Amount	25000
Source of Funding in Addition to Business Enhancement Grant	Fraser Fuel LLC
Would you like your project to be considered for a reduced grant match award (less than 50%)?	No
If you selected yes above, please explain.	*Field not completed.*

Supporting Documents	Fraser_Grant_Package_Combined.pdf
Electronic Signature Agreement	I agree.
Electronic Signature	brandon jung



1 ARCHITECTURAL SITE PLAN
SCALE: 1" = 10'

NORTH

OZ ARCHITECTURE
3012 Huron Street
Suite 100
[redacted]

GRAND PARK TOWN CENTER
GENERAL STORE - BUILDING 6, CAR WASH & GAS PUMP
Fraser, Colorado

PROJ. NO. 55091.02
DRAWN:
CHECKED: MN
CADD FILE: .dwg
DATE: 07/30/07
REVISIONS:
1 08.31.07 PERMIT REV
2 09.28.07 COORDINATION
3 12.14.07 ADDENDUM#004

©OZ ARCHITECTURE

Cornerstone
Permit Submittal
SHEET TITLE:
ARCHITECTURAL SITE PLAN

SCALE: 1/8" = 1'-0"
SHEET NUMBER:
A0.01

Fraser Business Enhancement Grant
Cover Letter – Project Description

This application requests support for exterior site improvements intended to correct deteriorated hardscape conditions, improve pedestrian safety and ADA accessibility, and enhance the physical appearance and functionality of a commercial property located within the Town of Fraser Business District.

Approximately 1,000 square feet of exterior pavers serving a publicly used pedestrian circulation area have shifted, separated, and become uneven due to repeated freeze thaw cycles. This paved area functions as a primary pedestrian route connecting parking areas, public sidewalks, and building entrances, and is regularly used by the general public. The primary cause of failure is inadequate drainage, which allows roof runoff and surface water to collect on the pavers. During winter conditions, water freezes on the surface, penetrates the paver joints during thaw periods, and refreezes beneath the pavers, displacing the base material and creating an uneven and potentially hazardous walking surface.

The proposed scope of work includes removal and resetting of the existing pavers with proper grading, base reconstruction, and compaction to restore a flat, stable, and durable pedestrian surface. Finished surfaces will be set to meet ADA standards for allowable vertical displacement and cross slope. A trough drain system will be installed to collect and redirect surface water, and roof gutter discharge will be routed underground via PVC piping to prevent future ponding and ice buildup. Curb modifications will be made as necessary to ensure positive drainage away from pedestrian areas while maintaining compliant pedestrian transitions. These improvements are intended to significantly reduce slip hazards, improve year round walkability, and maintain consistent ADA accessible conditions within the business district.

In addition, existing exterior gooseneck light fixtures will be removed and replaced with updated LED fixtures that are more energy efficient and compliant with Town dark sky standards. The lighting upgrade will improve illumination quality along pedestrian paths, reduce glare and light spill, and enhance nighttime safety while improving the overall visual appearance of the building exterior.

The project may also include limited improvements to existing building mounted exterior signage. Any signage work would consist of replacement or refinement of existing signage to improve durability, visibility, and consistency with Town design standards. All signage improvements would remain exterior in nature and subject to applicable Town permitting requirements.

This project directly aligns with the Fraser Business Enhancement Grant program goals by improving exterior site conditions, increasing ADA accessibility, enhancing pedestrian safety, upgrading exterior lighting and signage, and contributing to a more attractive and cohesive streetscape. The improvements provide clear public benefit through safer pedestrian circulation, improved winter accessibility, and an enhanced streetscape environment that supports ongoing economic vitality within the Town of Fraser.

The applicant meets all eligibility requirements and is in good standing with the Town. The proposed work is limited to eligible exterior improvements only. The project is intended to be constructed and completed within the 2026 calendar year, subject to permitting and seasonal conditions. A minimum 50 percent cash match will be provided by the applicant, and no grant funds will be used for ineligible costs or expenses incurred prior to grant approval. All work will comply with applicable Town ordinances, building codes, zoning requirements, and permitting standards.

Category	Description	Low Estimate ($)	High Estimate ($)
General Conditions	Mobilization, site protection, layout	$ 2,500.00	$ 4,000.00
Pavers	Remove and reset ~1,000 SF pavers	$ 12,000.00	$ 18,000.00
Drainage	Sawcut, trench, trough drain install	$ 8,500.00	$ 15,000.00
Lighting	Remove and reset gooseneck fixtures wth new fixtures, change to less lumens light	$ 4,000.00	$ 9,000.00
Electrical	Minor conduit and reconnects	$ 2,000.00	$ 4,000.00
Signange	New Sign for Car Wash	$ 12,000.00	$ 15,000.00
Cleanup	Final cleanup and power wash	$ 1,000.00	$ 2,000.00
Contingency	15–20% contingency	$ 5,000.00	$ 10,000.00
TOTAL		**$ 47,000.00**	**$ 77,000.00**

Average ($)	
	3250
	15000
	11750
	6500
	3000
	13500
	1500
	7500
$	**62,000.00**

ROM Budget – Custom-Carved HDU Internally Illuminated Wall Sign

Client: Grand Park

Project: Car Wash at the General Store

Contact: Kathy Schofield | [redacted]

Estimated Budget Range: $12,000 – $15,000

Final pricing dependent on level of carving detail, 70s-inspired styling, and internal illumination complexity.

Scope Overview

This ROM includes the design, fabrication, permitting coordination, and installation of a fully custom, carved HDU wall sign featuring push-through acrylic lettering and internal LED illumination. The sign will be designed with a retro 1970s aesthetic inspired by classic liquor store signage, while utilizing modern materials and LED technology. No neon tubing or exposed bulb lighting is included.

Sign Description

- Fully custom carved HDU wall sign with high level of detail
- Push-through acrylic lettering with internal LED illumination
- LED modules for even illumination and long-term reliability
- Retro 1970s-inspired liquor store aesthetic executed in a modern construction

Included in ROM

- Design development and production-ready artwork
- Fabrication of custom carved HDU sign and acrylic elements
- Internal LED lighting and assembly
- Installation of completed sign
- Permit procurement and coordination (permit fees not included)

Exclusions

- Permit fees billed separately at cost
- Electrical work not included; licensed electrician required to bring power to sign
- Final pricing subject to adjustment based on final approved design details

Thank you for the opportunity to provide this ROM budget. Please let us know if you have any questions or would like to move forward with next steps.

Fraser Business Enhancement Grant Application

Fraser Business Enhancement Grants are intended to support current businesses and improve the economic vitality of Fraser by encouraging enhancements to the physical appearance of business properties, improvement of public infrastructure, amenities and gathering places, and increased ADA accessibility. Grant requests of up to $25,000 per business space will be considered. 50% project match is generally required; lower project matches may be considered for projects providing a maximum public benefit. For priority consideration, applications must be submitted by February 1, 2026. If funding for projects remain after consideration of initial applications that meet the deadline, rolling application will be considered until grant program funding for the year is exhausted.
See https://www.frasercolorado.com/467/Fraser-Business-Incentives-and-Grant-Pro for complete program and application details.

Business/Organization Name	Fraser Valley Arts
Business License Number	*Field not completed.*
Contact Person	Steve Fitzgerald
Mailing Address	PO Box 2361
City	FRASER
State	Colorado
Zip Code	80442-2361
Phone Number	[redacted]

Email Address	[redacted]
Project Name	Electronic Events Sign
Description of Project	Thank you for considering Fraser Valley Art's application for a grant. Our project is to replace the dilapidated "Hilly Hooker" sign outside the Fraser Post Office building with a modern, electronic sign. We believe this is eligible under the ""...streetscape improvements...exterior decorations,...signage...exterior improvements" provisions of the grant criteria. It improves the beautification of Fraser at an important/visible community gathering spot that everyone in our community sees every day.
Describe the benefits this project will provide to your business, the public, and the Town of Fraser?	This sign will be used to promote the FVA mission and events (and those that benefit the Town). We have the permission of the property owner to erect and operate this sign (attached), and FVA will be responsible for the cost of construction and operation of the sign. According to CDOT surveys, over 14,000 vehicles a day pass this location, making the cost-per-impression much lower than other approaches (newspaper and so on) and being one of the most cost-effective ways to communicate with the residents and visitors to our Valley.
What benefits will this project provide to your business and to the community/ Town of Fraser?	With this grant, FVA would include events produced by the Town/DDA but not FVA (such as Fire and Ice, the Come Up Conference, the Fraser Mountain Mural Festival, and Picnic in the Park as examples). Fraser Valley Arts uses these events to promote our primary mission, the funding and construction of the Fraser Center for the Creative Arts. The economic impact of the Center has been estimated at over $2m a year beyond

	any monies spent on tickets or classes at the facility, including sales tax revenues for Fraser from meals, hotels, and retail associated with Center visitors. In short, an investment in this business enhancement is one that will deliver a financial return exponentially greater than the initial outlay to the Town, the Downtown Development Authority, and small businesses across the community.
Time Frame of Implementation	This is a 2026 project: Lead time for the sign to be manufactured is 6-8 weeks. With approval of this grant FVA will work with the vendor and local contractors to schedule work for as soon as possible to erect the sign, ideally by late spring (weather and contractor availability pending).
Total Estimated Cost of Project	$36,850-$49,200
Upload Itemized Project Budget	*Field not completed*.
Requested Grant Amount	50% of the final cost of the sign, with an initial commitment of $18,425 (50% of lower estimate) and a “true-up” after the project costs are finalized, with a cap of $25,000. FVA will pay the remainder.
Matching Funds Amount	$18,425-$25,000
Source of Funding in Addition to Business Enhancement Grant	FVA reserve funds.

Would you like your project to be considered for a reduced grant match award (less than 50%)?	Yes
If you selected yes above, please explain.	We would seek other grant funding to compensate for a reduced grant. It may delay the timing of construction.
Supporting Documents	Fraser Business Enhancement Grant Application -- FVA 2026.docx
Electronic Signature Agreement	I agree.
Electronic Signature	Steven S. Fitzgerald

FRASER VALLEY ARTS

Fraser Business Enhancement Grant Application

January 30,2026

Dear Business Enhancement Grant Committee:

Thank you for considering Fraser Valley Art's application for a grant. Our project is to replace the dilapidated "Hilly Hooker" sign outside the Fraser Post Office building with an attractive, modern, electronic sign. We believe this project is eligible for the grant under the ""...streetscape improvements...exterior decorations,...signage...exterior improvements" provisions of the grant criteria. It improves the beautification of Fraser at an important/visible community gathering spot that everyone in our community sees every day.

We have the permission of the property owner to erect and operate this sign (attached), and FVA will be responsible for the cost of construction and operation of the sign. According to CDOT surveys, over 14,000 vehicles a day pass this location, making the cost-per-impression much lower than other approaches (newspaper and so on) and being one of the most cost-effective ways to communicate with the residents and visitors to our Valley.

This sign will be used to promote the FVA mission and events and those that benefit the Town. With this grant, this would *include* events produced by the Town but not FVA (such as Fire and Ice, the Fraser Mountain Mural Festival, and Picnic in the Park as examples).

Fraser Valley Arts uses these events to promote our primary mission, the funding and construction of the Fraser Center for the Creative Arts. The economic impact of the Center has been estimated at over $2m a year *beyond* any monies spent on tickets or classes at the facility, including sales tax revenues for Fraser from meals, hotels, and retail

associated with Center visitors. In short, an investment in this business enhancement is one that will deliver a financial return exponentially greater than the initial outlay to the Town, the Downtown Development Authority, and small businesses across the community.

The total cost of the project is estimated to be $36,850 to $49,200, the variability simply being the desire for a more decorative base. If we secure adequate funding for this project, we would do that…if not, we would keep the more functional look depicted in the below photographs.

Grant Request: 50% of the final cost of the sign, with an initial commitment of $18,425 (50% of lower estimate) and a "true-up" after the project costs are finalized, with a cap of $25,000. FVA will pay the remainder.

Budget:

Formal estimate from Professional Sign Vendor	$25,650 - $38,000	Lower price is a minimal sign (depicted), higher is for a more decorative base (this is our preference; dependent on grant funding).
Site Prep and Excavation	$3500	Estimate (trench for power line, repairing the planting areas and curbs)
Electrical	$6500	Laying power line in ground, running it up pole (internal), installing a meter, etc
Software and Associated to operate sign	$1200	Initial and first year costs
	$36,850-49,200	Range reflects desire to have a more decorative base if grant funding is secured.

Thanks again for your consideration of support for this project, please reach out if you have any questions.

Steve Fitzgerald, President, Fraser Valley Arts ([redacted]

Site Plan and Images:



Fraser Valley Arts - 2'h x 5'w Pole Mounted Sign Cabinet
US 40 and Park Avenue Fraser,CO

Some additional details:

1. In the photo, a wire that is currently on the site and exposed is depicted. That will not be the case with the new sign, **all electronics will be internal and hidden** from view (not to mention safety).
2. The sign is designed to be **changeable** (should a naming rights sponsor be secured for the Center) and **moveable** (should a future better location be secured, preferably south of Safeway as discussed with the Town).
3. **This is a 2026 project:** Lead time for the sign to be manufactured is 6-8 weeks. With approval of this grant FVA will work with the vendor and local contractors to schedule work for as soon as possible to erect the sign, ideally by late spring weather and contractor availability pending).
4. Vendor Estimate from minimal project (non-decorative post):

SkySlate, LLC
420 NE 39th Ter
Oklahoma City, OK 73105
[redacted]
https://www.skyslate.com/

Quote

ADDRESS
Scott Fitzgerald
Fraser Valley Arts
Fraser, Colorado

QUOTE 20250403
DATE 12/02/2025
EXPIRATION DATE 01/01/2026

PRODUCT/SERVICE	DESCRIPTION	QTY	RATE	AMOUNT
Custom Product	Fraser Valley Arts SkySlate Digital Signs USA Manufactured and Serviced UHD 9mm SMD Digital Sign 2'h x 5'w Resolution - 96 px tall by 288 px wide 27,648 total pixels 11,500 nits maximum daylight brightness ScreenHub Cloud CMS for content management 5 year hardware warranty Manufacture & Install (1) D/F LED Illuminated Sign Cabinet - Thru Pole Mounted Cabinet Construction - Aluminum Square Tubing Frame - .090" Exterior Skin Illumination - Principal Qm2 Bright White LED Modules + Power Supplies Paint/Powder Coating - Black Ground/Stub Steel - Existing Facing - White Lexan Poly Carbonate with printed customer supplied graphics Installation, configuration and testing of the above signage unit onsite at customers location. Includes all necessary equipment and supplies to complete project utilizing existing pole/structure and customer provided electrical. All necessary electrical upgrades (if neccesary) to be completed by licensed electrician of clients choosing 1at actual sub-contractor cost.	1	28,500.00	28,500.00
Product Sales	Non Profit and Government Discount	1	-2,850.00	-2,850.00

Terms: 80% deposit at acceptance to start manufacturing of digital and static signage unit. 20% balance due upon completion.

Please sign below to acknowledge SOW approval

SUBTOTAL	25,650.00
TAX	0.00
TOTAL	**$25,650.00**

Fraser Business Enhancement Grant Application

Fraser Business Enhancement Grants are intended to support current businesses and improve the economic vitality of Fraser by encouraging enhancements to the physical appearance of business properties, improvement of public infrastructure, amenities and gathering places, and increased ADA accessibility. Grant requests of up to $25,000 per business space will be considered. 50% project match is generally required; lower project matches may be considered for projects providing a maximum public benefit. For priority consideration, applications must be submitted by February 1, 2026. If funding for projects remain after consideration of initial applications that meet the deadline, rolling application will be considered until grant program funding for the year is exhausted.
See https://www.frasercolorado.com/467/Fraser-Business-Incentives-and-Grant-Pro for complete program and application details.

Business/Organization Name	Fraser Quickstop
Business License Number	005288
Contact Person	Kimberly Hanna
Mailing Address	PO Box 603
City	Fraser
State	Colorado
Zip Code	80442
Phone Number	[redacted]

Email Address	[redacted]
Project Name	Fraser Quisckstop Painting Project
Description of Project	This project will consist of repainting the exterior siding and roof of an existing commercial building located in the Town of Fraser. The improvements are intended to maintain the structural integrity of the building while enhancing its overall appearance.Due to exposure to Fraser's harsh mountain climate, the building's exterior has experienced visible wear. Repainting the siding and roof will provide necessary protection against weather-related damage, extend the lifespan of the structure, and reduce long-term maintenance costs.
Describe the benefits this project will provide to your business, the public, and the Town of Fraser?	This project will directly support the Town of Fraser's goals of improving community aesthetics and strengthening the appearance of local commercial properties. A refreshed exterior will contribute to a cleaner, more inviting streetscape for residents and visitors while reinforcing economic vitality within the town.
What benefits will this project provide to your business and to the community/ Town of Fraser?	Repainting the building's siding and roof will provide long-term benefits to both the business and the Town of Fraser. For the business, the improvements will protect the structure from weather-related damage, reduce ongoing maintenance needs, and enhance the building's overall appearance. A well-maintained exterior creates a more welcoming environment for customers, supports positive first impressions, and helps the business remain competitive within the local commercial area. For the Town of Fraser, this project contributes to improved community aesthetics and a stronger, more cohesive streetscape. Enhancing the appearance of an established commercial property supports economic

	vitality, encourages continued investment in the downtown and surrounding areas, and reinforces pride of ownership. The project aligns with the town's goals of maintaining attractive, well-kept properties that positively reflect the community for residents and visitors alike
Time Frame of Implementation	We would like to start June 1st 2026, and be done by the 4th of July 2026
Total Estimated Cost of Project	$23,170
Upload Itemized Project Budget	*Field not completed*.
Requested Grant Amount	$23,170
Matching Funds Amount	$11,585
Source of Funding in Addition to Business Enhancement Grant	Fraser Quickstop LLC
Would you like your project to be considered for a reduced grant match award (less than 50%)?	No

If you selected yes above, please explain.	*Field not completed*.
Supporting Documents	estimate_635.pdf
Electronic Signature Agreement	I agree.
Electronic Signature	Kimberly C Hanna

MTN HOME RENOVATIONS
970 531 8472

Po Box 1584 Granby CO 80446
[redacted]

Mountain Home Renovations 'LLC.

Estimate

For: Kim
[redacted]
300 Eisenhower Dr, Fraser, CO 80442

Estimate No: 635
Date: 01/23/2026

Description	Quantity	Rate	Amount
materials paint for metal roofing plastic film masking tape degreaser etc..	1	$5,300.00	$5,300.00
paint roof on the main building apply degreaser on a metal roof and power wash protect fascia Windows Doors spray paint metal roof two coats	1	$13,500.00	$13,500.00

Parts Subtotal	$18,800.00
Subtotal	$18,800.00
TAX 0%	$0.00
Total	$18,800.00
Total	$18,800.00

MTN HOME RENOVATIONS
970 531 8472

Po Box 1584 Granby CO 80446
[redacted]

Mountain Home Renovations 'LLC.

Estimate

For: Kim
[redacted]
300 Eisenhower Dr, Fraser, CO 80442

Estimate No: 633
Date: 01/21/2026

Description	Quantity	Rate	Amount
materials paint plastic film caulking peel Bond masking tape etc..	1	$1,850.00	$1,850.00
power wash siding soffits fascia and trim	1	$9,520.00	$9,520.00
scrape and sand where necessary			
apply peel Bond or sealer			
repair cracks apply caulking around windows doors and joints			
spray paint siding soffits fascia			
paint guards around the pumps			
paint trim alternative color			

Parts Subtotal	$11,370.00
Subtotal	$11,370.00
TAX 0%	$0.00
Total	$11,370.00
Total	$11,370.00

Fraser Business Enhancement Grant Application

Fraser Business Enhancement Grants are intended to support current businesses and improve the economic vitality of Fraser by encouraging enhancements to the physical appearance of business properties, improvement of public infrastructure, amenities and gathering places, and increased ADA accessibility. Grant requests of up to $25,000 per business space will be considered. 50% project match is generally required; lower project matches may be considered for projects providing a maximum public benefit. For priority consideration, applications must be submitted by February 1, 2026. If funding for projects remain after consideration of initial applications that meet the deadline, rolling application will be considered until grant program funding for the year is exhausted.
See https://www.frasercolorado.com/467/Fraser-Business-Incentives-and-Grant-Pro for complete program and application details.

Business/Organization Name	Winter Park Flyfisher
Business License Number	02837791-0000
Contact Person	Jeff Ehlert
Mailing Address	PO Box 1268
City	Fraser
State	Colorado
Zip Code	80442
Phone Number	[redacted]
Email Address	[redacted]

Project Name	New Signage for store front
Description of Project	Replace broken and antiquated sign on store front.
Describe the benefits this project will provide to your business, the public, and the Town of Fraser?	A new sign will improve the look of our business and improve the look of the town as people pass by. It will hopefully make our shop more visible at the same time, making it easier for people to find us.
What benefits will this project provide to your business and to the community/ Town of Fraser?	Beautification of the business, community and town of Fraser.
Time Frame of Implementation	We would hope to get this going as soon as funds are allocated with Lunsford Signs in Hot Sulphur. Then it is up to their schedule.
Total Estimated Cost of Project	$15,000
Upload Itemized Project Budget	*Field not completed*.
Requested Grant Amount	$7,500.00
Matching Funds Amount	$7,500.00
Source of Funding in Addition to Business Enhancement Grant	We will fund the additional amount from the business.
Would you like your project to be considered for a reduced grant match award (less than 50%)?	No

If you selected yes above, please explain.	NA
Supporting Documents	Broken Fly Shop sign.jpeg
Electronic Signature Agreement	I agree.
Electronic Signature	Jeff R Ehlert

Invoice

Date: February 10, 2026
Client: WP Fly Fisher
C/O Jeff Ehlert
Phone: 970-531-9998

Address:
PO Box
Fraser, CO 80442
Fax/ Cell:

323 E. Grand Ave. • PO Box 85 • Hot Sulphur Springs, CO 80451
(P) 970-725-3925 • (C) 970-531-9096 • www.LunsfordSigns.com

Project Description: Business Identification Sign

Dark-Sky, Low Voltage, Exterior LED Down Lighting:
1 - LED lighting for the below sign option is included in the price below. INCLUDED

Initial Design Services:
2 - Creation of 2-3, full color graphic sign designs and a few design revisions based on the conversation with the client. Services to include superimposing the final design on a photograph of the client's wall location to replace the existing sign. Help with the sign permitting process and permits provided at cost (TBD by town) included. INCLUDED

Three-Dimensional Wall Sign, Approx. 24" x 144":
3 - The sign would be constructed from 1 1/2" thick wood alternative, laminated to an aluminum composite. It would have a recessed or projecting, and/or a hand textured background to look similar to carved wood. It would be painted with acrylic polyurethane and have an automotive clear coat for maximum durability. The graphics would be individually cut out, prismatically carved where possible, applied in separate layers to give the sign a true 3-D look. The sign would have a hidden/ welded aluminum mounting frame that attaches it to the building. Removal of the existing sign is included along with the installation of the new sign. $ 14,910.00

PROJECT TOTAL:	$ 14,910.00	PERMITTING:	TBD
SHIPPING:	N/A	SUB-TOTAL:	$ 15,113.77
TOTAL MATERIALS:	$ 2,485.00T	LESS SIGN DEPOSIT:	50% REQUIRED
TOTAL LABOR:	$ 12,425.00	AMOUNT DUE:	$ 7,556.89 ◀
4.2% S & C TAX:	$ 104.37	ORDER NUMBER:	TBD
4% CITY TAX:	$ 99.40	DELIVERY DATE:	TBD

The design, prices, specifications, and conditions as described are satisfactory and are hereby accepted. You are authorized to begin the above described work. The colors and sizes as shown above or in the accompanying design will be matched to our best ability, but due to varying material and paint compatibilities, may not match exactly. A 5% penalty/ month will be assessed on past due accounts after two weeks. All plans are the exclusive property of Lunsford Signs, and are submitted to your company for sign and/or design purchase consideration only. Rights to reproduce any and all artwork remain with Lunsford Signs unless otherwise specified. They may not be reproduced in any manner without written permission. In the event plagiarism or theft occurs, Lunsford Signs expects reimbursement up to $5,000/ sheet as compensation for time and effort entailed in creating these plans and/ or designs. Lunsford Signs retains ownership of all signage until the account is paid in full. The above described signage shall be considered at all times to be personal property of the seller, regardless of the manner in which the personal property is annexed or attached to the realty. In the event of payment default, seller may at once, and without process of law, take possession of and remove any of the above mentioned personal property. In the event Lunsford Signs performs repairs on signage not originally manufactured by our company, Lunsford Signs accepts no liability for damage to, or damage caused by the malfunctioning signage in question. Lunsford signs guarantees its' products for a period of one year from the date above to be free of any manufacturing defect as determined by us. We do not warrantee any product against vandalism, or environmental damage including UV rays and abnormally high wind. Any warranties on products sold herein, including internal and external components, are those made by the individual product manufacturer. The seller hereby expressly disclaims all warranties, either expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose in connection with the sale of said products.

SIGNATURE COMPANY TITLE DATE

Fraser Business Enhancement Grant Application

Fraser Business Enhancement Grants are intended to support current businesses and improve the economic vitality of Fraser by encouraging enhancements to the physical appearance of business properties, improvement of public infrastructure, amenities and gathering places, and increased ADA accessibility. Grant requests of up to $25,000 per business space will be considered. 50% project match is generally required; lower project matches may be considered for projects providing a maximum public benefit. For priority consideration, applications must be submitted by February 1, 2026. If funding for projects remain after consideration of initial applications that meet the deadline, rolling application will be considered until grant program funding for the year is exhausted.
See https://www.frasercolorado.com/467/Fraser-Business-Incentives-and-Grant-Pro for complete program and application details.

Business/Organization Name	Zerex40 LLC
Business License Number	39-2687770
Contact Person	Deb Culig
Mailing Address	PO Box 1183
City	Tabernash
State	CO
Zip Code	80478
Phone Number	[redacted]

Email Address	[redacted]
Project Name	Fraser Post Office Building
Description of Project	Renovate and upgrade exterior facade. Subject to grant specifications and monies available, project will include siding, but enhancements to doors, windows, building of a northside retaining wall, etc. could also be included. Each of the 3 itemized estimates attached show options being considered.
Describe the benefits this project will provide to your business, the public, and the Town of Fraser?	This building was purchased in June 2025.Previous owner had allowed the property to fall into a "less than desirable" state (see attached photos). Currently this location has three long-term tenants - the US Postal Service, Verizon and Winter Park-Fraser Tire and Auto. The property is highly visible and has high use. The location is directly off of Highway 40 and adjacent to the town's new Saint Louis Landing development. Exterior enhancements will benefit the Town of Fraser's Comprehensive Plan - the Clayton Court redevelopment, the Fraser Valley Arts proposed location, and the goal to enhance and beautify the Highway 40 corridor through Fraser, etc. Additionally, Zerex40 LLC is working diligently to give Grand County GC/contractors priority on this project to provide further benefit to the valley and its residents.
What benefits will this project provide to your business and to the community/ Town of Fraser?	same as above

Time Frame of Implementation	Early 2026 - this will be dependent on grant award timing. Three entities have been contacted and all have given 4-6 month timelines, dependent on weather and scope of work selected
Total Estimated Cost of Project	$150,000- $250,000
Upload Itemized Project Budget	*Field not completed.*
Requested Grant Amount	$75,000 - $25,000 for each of 3 tenants
Matching Funds Amount	$75,000-$125,000
Source of Funding in Addition to Business Enhancement Grant	self funded
Would you like your project to be considered for a reduced grant match award (less than 50%)?	No
If you selected yes above, please explain.	*Field not completed.*
Supporting Documents	Fraser PO Support Docs.pdf

Electronic Signature Agreement	I agree.
Electronic Signature	Deborah A Culig

Date: July 28,2025
Preliminary Pricing Estimate
Project: USPS Fraser

Description	Labor	Mat & Equip	Subcontract	Total	Notes/ Selections
Windows	$ 5,650.00	$ 10,895.20		$ 16,545.20	Replacement of existing windows with Anderson T 100 series
Doors		$ 4,040.64			Replacement of 4 existing doors with same steel door. Possibly omit east door in Mech garage
Siding		$ 40,000.00	$ 47,000.00	$ 87,000.00	LP Smart, Ridged Stack Lap with duo blend preimum diamond kote finish $5.11 Sq.Ft. Pricing based on 6000 sq ft
Demo			$ 25,000.00	$ 25,000.00	allowance only
Stone		$ 23,043.60		$ 23,043.60	Pricing based on $36.00 Sq.Ft allowance for labor and matterial, final matterial selections TBD
Gutters & Down spout			$ 3,200.00	$ 3,200.00	Standard K style gutter and down spout
Equiptment Rental		$ 2,300.00		$ 2,300.00	Misc tool rental and equiptment to move matterial
Electrical			$ 3,000.00	$ 3,000.00	Allowance only , this cost is based on working around electrical pannels
Plumbing/ Gas			$ 2,000.00	$ 2,000.00	Allowance only verifiy the gas meter is in good condition
General Labor	$ 17,500.00	$ 9,000.00		$ 26,500.00	Allowance only , not knowing what rot is behind the walls. Misc labor, insulation, window / door caulking and flashing.
Dumpster		$ 3,000.00		$ 3,000.00	30 yrd dumpster $925.00 per. dumpster 2-3
Management			$ 22,990.65	$ 22,990.65	Project Management 12%
Project Total	$ 23,150.00	$ 92,279.44	$ 103,190.65	**$ 214,579.45**	

Coreventure Exteriors
286 Claymoor CT
Castle Pines CO 80108
[redacted]

Company Representative
Nathan Smith
[redacted]

520 Zerex St - Sidings Estimate

10/31/2025
Claim Information

Deb Culig
520 Zerex Street
Fraser, CO 80446
[redacted]

Job: Deb Culig

Metal Siding Section

	Qty	Unit	
COR-TEN AZP Raw Metal Panel	420	SF	
Install Labor	420	SF	
			$7,636.36

Stone Siding Section

	Qty	Unit	
Stone Sidings	1397	SF	
Install Labor	1397	SF	
			$43,542.86

Hardi Siding Section

	Qty	Unit	
Pretreated Cedar	2327	SF	
Install Labor	2327	SF	
			$54,397.41

Siding Section

	Qty	Unit	
Removal of all siding	1	EA	
			$9,000.00

Sub Total	**$114,576.63**
Tax	$1,811.83
TOTAL	$116,388.46

Finance as much as $100,000 • Starting at **$1,025/month** with Acorn FINANCE • **APPLY**

COREVENTURE EXTERIORS
ADDITIONAL TERMS & CONDITIONS (New Construction Roofing / Gutters)

1. Entire Agreement & Changes

ESTIMATE

Cascade Construction LLC
PO Box 338
Tabernash, CO 80478 0206

[redacted]
https://cascadec.com

Bill to
Deb Culig
Fraser PO remodel

Estimate details
Estimate no.: 1002
Estimate date: 10/02/2025

#	Product or service	Description	Amount
1.	**Services**	Demo the existing siding.	$9,000.00
2.	**siding install**	Labor to install LP smart siding	$29,718.00
3.	**Services**	Siding material- allowance	$40,000.00
4.	**masonry**	Masonry selection TBD	$12,000.00
5.	**Services**	masonry labor	$16,800.00
6.	**Services**	replace and re install along the south side	$3,200.00
7.	**Services**		$1,000.00
8.	**Services**	Any electrical services needed to work around the electrical panels	$3,000.00
9.	**Services**	Any plumbing and gas service to clean up the meter on the north side.	$1,100.00
10.	**Services**	Allowance for misc. labor all general labor will be billed at $55.00 man/hour	$10,000.00
11.	**Services**	30 yrd dumpster 925.00 per. estimate 2-3	$2,775.00
12.	**Services**	Develop out the retaining wall near the marquee and establish the north side parking area. Final number TBD	$23,000.00
13.	**Project Management**		$18,191.16

Total	**$169,784.16**

Accepted date	**Accepted by**


UNITD STATES POST OFFICE
FRASER COORADO 30442




1993



TOWN OF FRASER
RESOLUTION NO. 2026-02-03

A RESOLUTION APPROVING A FINAL PLAT AND FINAL PLANNED DEVELOPMENT PLAN (FPDP) FOR A RESIDENTIAL DEVELOPMENT KNOWN AS GRAND PARK WEST MOUNTAIN FILING NO. 1, PLANNING AREAS 10W AND 11W, LOCATED NORTH OF A PROPOSED EXTENSION TO GRAND PARK DRIVE, LEGALLY DESCRIBED AS A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF THE SECTION 29 AND THE NORTH HALF OF SECTION 32, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO, CONTAINING AN AREA OF 47.838 ACRES, MORE OR LESS

WHEREAS, on June 5, 2024, Cornerstone Winter Park Holdings, LLC, a Colorado limited liability company, received approval by the Fraser Board of Trustees via Resolution 2024-06-04 for a Final Plat and Final Planned Development Plan (FPDP) for the development of 72 residential units within the boundaries of Planning Areas 10W and 11W of the Grand Park Planned Development District (PDD), known as West Mountain Filing No. 1; and

WHEREAS, on January 22, 2025, Cornerstone Winter Park Holdings, LLC, received approval by the Fraser Board of Trustees via Resolution 2025-01-09 for an Amended Final Plat and Final Planned Development Plan (FPDP) for an increase of 7 units for the development of 79 residential units within the boundaries of Planning Areas 10W and 11W of the Grand Park Planned Development District (PDD), known as West Mountain Filing No. 1; and

WHEREAS, since that time, Cornerstone Winter Park Holdings, LLC, has worked to address the conditions of approval in Resolution 2025-01-09, but has not yet recorded or executed any of the required land use approval documents; and

WHEREAS, on December 19, 2025, West Mountain Development, LLC, a Colorado limited liability company, through Cornerstone Winter Park Holdings, LLC, submitted a revised Final Plat and FPDP application that would rearrange the lots in the previously approved application, which is considered a major amendment to the approved FPDP and therefore should be reviewed and approved by the Fraser Planning Commission and Board of Trustees; and

WHEREAS, West Mountain Development, LLC, a Colorado limited liability company, is the current owner of the property; and

WHEREAS, following a review of the submitted plans and documents by Town Staff and applicable referral entities, the application was considered during a regular meeting of the Fraser Planning Commission held on January 28, 2026 through a properly noticed public hearing; and

WHEREAS, Town Staff has determined that this application is in compliance with the governing documents of the Grand Park PDD and applicable provisions of the Land Development Code of the Town of Faser when the conditions listed below have been addressed.

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

The Town of Fraser hereby approved the Final Plat and FPDP for the Grand Park West Mountain Filing 1 development subject to the following conditions:

1) Prior to recordation of the FPDP and Final Plat, the Applicant must address all outstanding review comments to the satisfaction of the Town and/or applicable entity and revise and resubmit all documents accordingly.

2) Prior to recordation of the FPDP and the Final Plat, the Applicant shall receive approval from the Town of Fraser of the West Mountain Water Master Plan and associated construction design drawings and reports, as stipulated in Articles 5.3, 5.5, and 5.6 of the 2003 Annexation Agreement.

3) Prior to Final Plat recordation, the Applicant shall execute an approved Development Improvements Agreement and provide the appropriate surety.

4) Prior to Final Plat recordation, the Applicant shall provide the Town with the following items as outlined in the Major Subdivision Final Plat Checklist:
    a. Proof of filing the applicable articles of incorporation with the Secretary of State and the executed originals of all legal documents, including a final executed DIA and any required collateral.
    b. Final plat Mylar with appropriate signatures
    c. A digital file of the approved final plat and 911 emergency system drawing / address map in both CAD and PDF format for the Town's Geographic Information System (GIS).

5) Concurrent with the recordation of the Final Plat or any portion/phase thereof, the Town shall record the corresponding Development Improvements Agreement (DIA) as well as the necessary HOA declaration, restrictive covenants, and bylaws

READ, PASSED ON ROLL CALL VOTE, AND ADOPTED BY THE BOARD OF TRUSTEES THIS 18TH DAY OF FEBRUARY 2026.

Votes in favor: ___
Votes opposed: ___
Abstained: ___

BOARD OF TRUSTEES OF THE
TOWN OF FRASER, COLORADO

BY: _____
Mayor

ATTEST:

_____

(S E A L)

Town Clerk

Town of Fraser
PO Box 370, Fraser, CO 80442 office: 970-726-5491 fax: 970-726-5518
www.frasercolorado.com

BOARD OF TRUSTEES Date Prepared: February 12, 2026
STAFF REPORT & REQUEST FOR BOARD ACTION Meeting Date: February 18, 2026

RE: Grand Park West Mountain Filing 1 (Planning Areas 10W and 11W) – Revised Final Plat and FPDP
To: Town of Fraser Board of Trustees
From: Garrett Scott, Town Planner
Project Number: TF22-10
Project Address: North of a proposed extension of Grand Park Drive, west of the UP railroad
Applicant: West Mountain Development, LLC
Property Owner: West Mountain Development, LLC
Zoning: Planned Development (PD)
CC: Michael Brack, Town Manager
Alan Sielaff, Assistant Town Planner

MATTER BEFORE THE BOARD OF TRUSTEES & ACTION REQUESTED:

Approval of a revision to the previously approved Final Plat and Final Planned Development Plan (FPDP) for the proposed West Mountain Filing No. 1 development, which maintains the previously approved 79 single-family residential units but reorients the street and lot arrangement to facilitate a new roundabout intersection intended to serve the next phase of development in Filing No. 2.

BACKGROUND

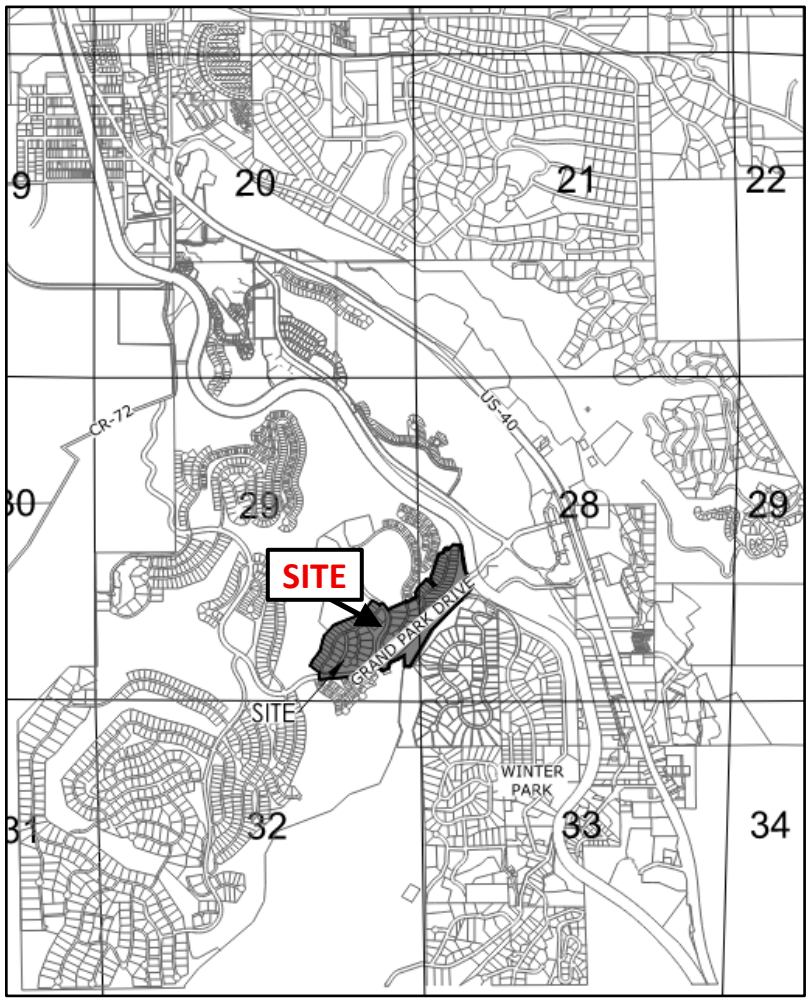
In 2005, the Fraser Board of Trustees approved the current Planned Development District Plan (PDDP) for the Grand Park Development. The PDDP encompasses approximately 1,311 acres of land divided into 27 planning areas. Each planning area is associated with an approximate acreage and a maximum allowed number of residential units, lodging (i.e., hotel) units, and commercial square footage. Pertaining to this proposal as the first phase of the West Mountain Development, the PDDP depicts Planning Area 10W as containing 40.8 acres while 11W contains 16.1 acres. The current approved Final Planned Development Plan (FPDP) and Final Plat proposes 79 detached residential units on 33.2 acres within these two planning areas, with additional development in 10W to be included in future development phases.

The initial West Mountain Filing 1 Preliminary Plat and Final Planned Development Plan (FPDP) applications were submitted to the Town in October of 2022. On March 22, 2023, through PC Resolution 2023-03-01, the Fraser Planning Commission approved the Preliminary Plat with conditions and recommended approval of the FPDP with conditions. The applicant then submitted a Final Plat application in February 2024. On May 22, 2024, the Fraser Planning Commission recommended approval of the Final Plat with conditions via PC Resolution 2024-05-02. The Board of Trustees then approved the Final Plat and FPDP on June 5, 2024 through Resolution 2024-06-04. In December 2024, the applicant submitted a revised Final Plat and FPDP application which was determined to be a major amendment requiring action by the Planning Commission and Board of Trustees. On January 15, 2025, the Fraser Planning Commission recommended approval of the Final Plat and FPDP with conditions via PC Resolution 2025-01-02. The Board of Trustees then approved the amended Final Plat and FPDP on January 22, 2025 through Resolution 2025-01-09. The applicant has since worked with Town staff on addressing the conditions of approval, particularly conditions 1 and 2 that relate to pending referral

review comments and the requirement of obtaining final approval of the West Mountain Water Master Plan and associated construction design drawings and reports as stipulated in Articles 5.3, 5.5, and 5.6 of the 2003 Annexation Agreement. Presently, neither the FPDP nor any phase of the Final Plat have been recorded given that the conditions of approval have not yet been fully met.

The applicant has now requested a second revision to the FPDP and Final Plat and proposes to reorient the street and lot arrangement while keeping the total unit count for West Mountain Filing 1 the same at 79 units. The applicant submitted materials on December 19, 2025 and upon review of the applicable provisions of the Fraser Municipal Code, including but not limited to Sec. 19-2-160 (PD Amendments) and in concurrence with the Town Attorney, staff determined that this modification, specifically a rearrangement of lots, blocks, and building tracts, and changes in the provision of common open spaces, is considered a major amendment to the approved FPDP and requires approval by the Planning Commission and Board of Trustees. While the proposed amendment does not alter the previously approved 79 units, it significantly adjusts the road network and lot arrangement by proposing a roundabout intersection on Grand Park Drive that connects to the future Outpost Club and mixed-use development proposed in West Mountain Filing 2. The current proposal for West Mountain Filing 1 also adds an additional (third) road connection into the development from Grand Park Drive.

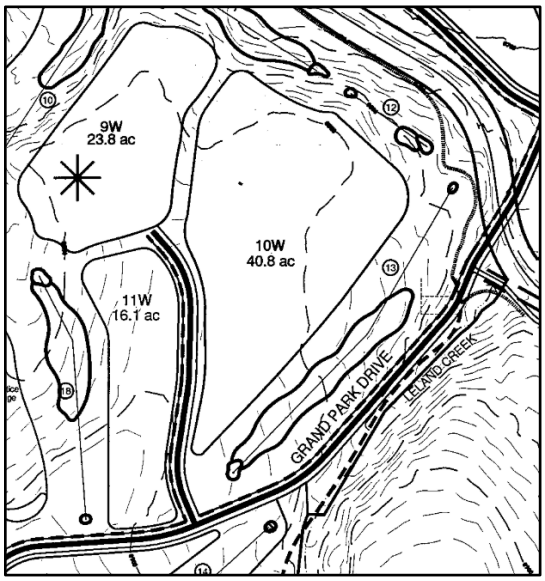
LOCATION MAP



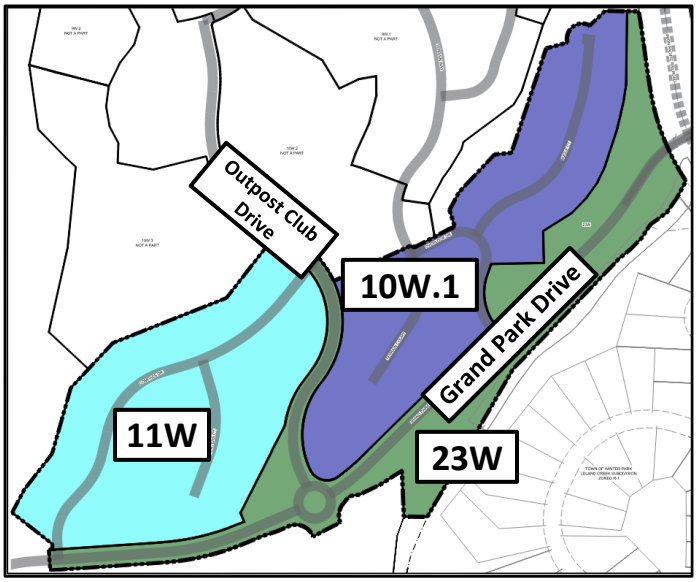
ZONING & LAND USE

The property is zoned Planned Development (PD) and regulated by the Grand Park PDDP. Planning Area 10W allows for 174 residential units, 350 lodging units, and 30,000 square feet of commercial space while 11W allows 41 residential units and 50 lodging units. The original FPDP approved in June 2024 proposed 72 residential units, which was then increased to 79 units (consisting of 47 units in 10W and 32 units in 11W) with the amendment approved in January 2025. The FPDP that is now under consideration does not change the total unit count but redistributes the units within the planning areas, proposing 38 units in 10W and 41 residential units in 11W. The January 2025 FPDP included a total acreage of 33.2 acres across Planning Areas 10W.1, 10W.2, and 11W. This proposed amendment increases the acreage for 10W.1 and 11W to 36.8, an increase of 3.6 acres, while now including 16.7 acres allocated to open space and major roads in Planning Area 23W, for a total FPDP area of 53.5 acres.

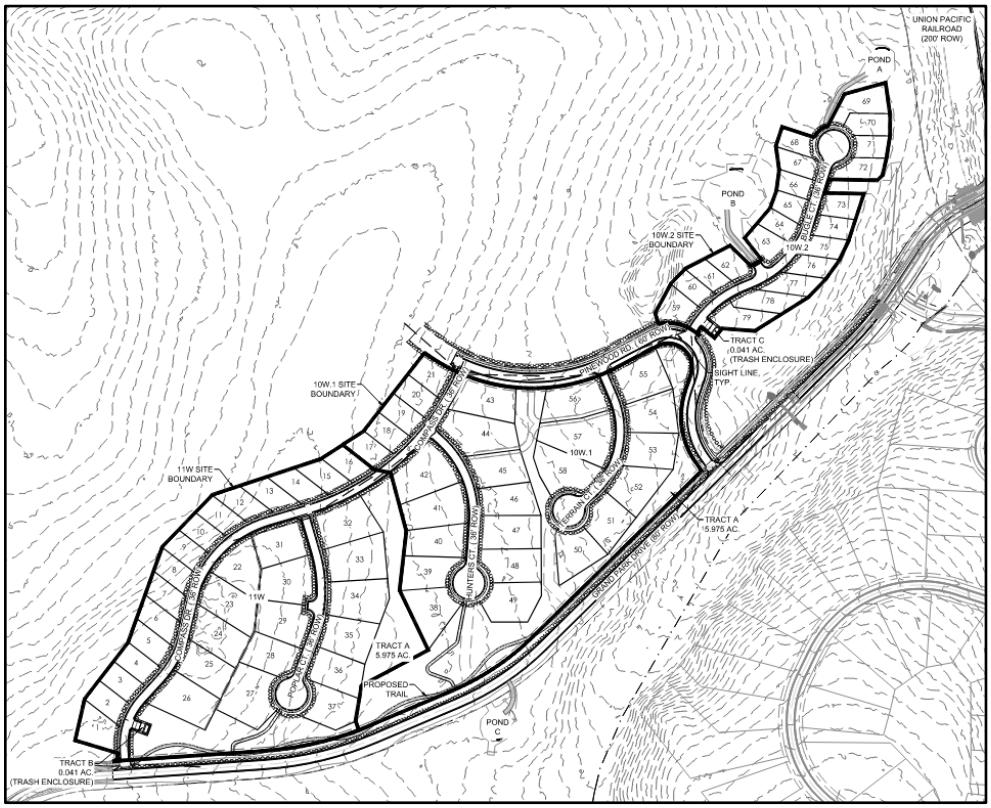
GRAND PARK PDDP



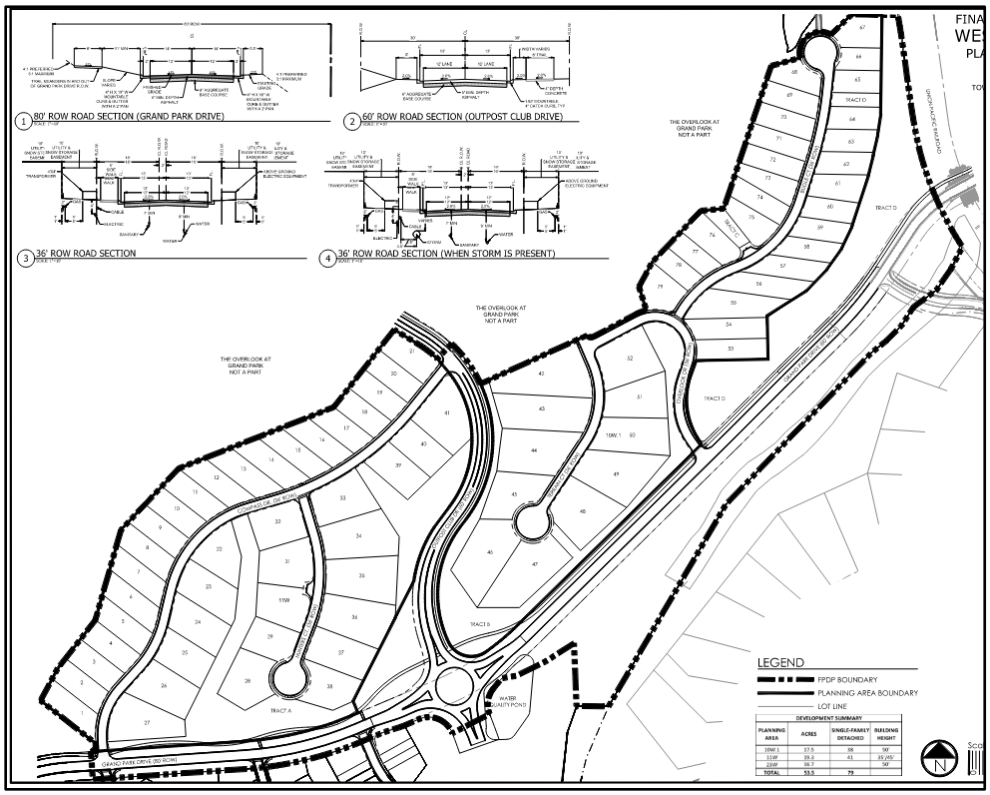
PROPOSED LAND USE MAP



EXISTING APPROVED WEST MOUNTAIN FILING 1



PROPOSED REVISION TO WEST MOUNTAIN FILING 1



SITE PLAN, PARKING, LANDSCAPING & SNOW STORAGE

As identified as the reason for the major amendment, the main revision proposed is the addition of a roundabout at the intersection of Grand Park Drive and the collector roadway (Outpost Club Drive) that serves both West Mountain Filing 1 and the proposed West Mountain Filing 2 development, which is anticipated to include the Outpost Club and additional commercial, lodging, and multifamily residential uses. The Planning Commission previously reviewed a Sketch Plan for West Mountain Filing 2 on April 23, 2025, and the applicant has since submitted an FPDP and Preliminary Plat for this development area consisting of Planning Areas 8Wb, 9W, 10W.2, 10W.3, and 23W. The Planning Commission will review this proposal at a future meeting; however, various submittal items (e.g., civil plans, drainage report, etc.) have been combined for both development areas and are provided in the packet for reference.

In terms of impacts to the Filing 1 development area, the collector road connection to Filing 2 was previously called Pinewood Drive and proposed as the first intersection along Grand Park Drive to the west of the railroad. A second local road connection, Compass Drive, was proposed further west along Grand Park Drive. In the current proposal, the first intersection west of the railroad is proposed to be a local road, Overlook Drive, serving 10W.1 and connecting into the Filing 2 area, followed by a larger roundabout intersection (Outpost Club Drive) which will serve as the main roadway access into Filing 2. A third, minor intersection follows to the west at Compass Drive, which serves Planning Area 11W. Following the submittal of this amendment to West Mountain Filing 1, the applicant has since provided a Traffic Impact Study (TIS) for the entire Grand Park West Mountain development area, which is currently under review. However, a preliminary review of this study indicates that the traffic generated by the Filing 2 development area warrants an improved roundabout intersection as is proposed with this FPDP. Because the Filing 1 area was previously approved at the current density, staff has no concerns about the proposal to increase the capacity of the Grand Park Drive / Outpost Club intersection as it pertains to Filing 1. Full review of the traffic study will be completed with the Filing 2 development review.

There are minimal to no changes to the proposed parking, landscaping, and snow storage requirements from the previous approval. For parking, the proposed development consists of both single-family detached and single-family attached residential dwelling units. Section 19-4-230 of the municipal code requires 2 off-street parking spaces for each unit. While no specific parking areas are depicted as part of the FPDP, each unit shall have at least two (2) off-street parking spaces and will be reviewed for compliance when a building permit is submitted.

Section 19-4-185 requires one (1) square foot of snow storage for every three (3) square feet of impervious surface area, or 33%. The applicant is proposing snow storage equal to 53% of the impervious surface area, i.e., the roadways proposed to serve the development. Additional snow storage for areas to be cleared on individual lots must be shown at the time of building permit application. It is noted that Mountain Parks Electric and Xcel Energy have consistently provided referral review comments that revisions to the plat notes and depicted snow storage areas are required in order to meet their operational needs. This item will continue to be tracked as part of the referral review process and is captured through proposed condition of approval #1, consistent with prior approval conditions.

Sheet 7 of the FPDP identifies the landscaping to be provided with the project, which only consists of revegetating all areas disturbed during construction with a native grass mix. This is consistent with the previous FPDP. Because this is a purely residential development within the Grand Park PDD, further landscaping is not required per Section 14-5-40.

REFERRAL REVIEW

The Final Plat and FPDP 7th submittal documents were sent out on referral on December 30, 2025, and referral agency comments and planning review comments were returned to the applicant on January 23, 2026. Due to the compressed timeline ahead of the requested public hearings, the applicant did not have the opportunity to provide a response to comments prior to the Planning Commission hearing on January 28, 2026. The review summary is included as an attachment to this staff report.

The following agencies/entities provided comments on the latest submittal (Major Amendment, 7th submittal overall). Addressing all comments to the satisfaction of that agency/entity, as well as any new comments provided as a result of any revisions, is recommended as a condition of approval for the Final Plat and Final Planned Development Plan (FPDP).

- Town of Fraser Engineering (Merrick) and Public Works – Greg Steed, Donna Barrentine, Jeanne Boyle, and Katherine Knight
- JVAM Law Firm, as Town Attorney – Cooper Gehle
- East Grand Fire Protection District No. 4 – Ryan Mowrey
- Xcel Energy – Julie Gittins
- Mountain Parks Electric, Inc. – Jessica Tain

An 8th submittal has since been received by the Town on February 9, 2026 and includes responses to the 7th submittal review. This 8th submittal has been sent out on referral. These materials will be included as an attachment to this staff report but final review comments on this most recent submittal will not be ready before the Board of Trustees meeting on this item.

PUBLIC NOTICE

Sec. 19-1-215 establishes the requirements for public notice when public hearings are required with land use review. For a Final Plat and Final Planned Development Plan (FPDP), a public hearing is required when the application is considered by the Planning Commission but not when considered by the Board of Trustees. Proper notice was provided for the Planning Commission meeting held on January 28, 2026 by both the Town and the applicant as was detailed in the staff report prepared for that meeting.

CONDITIONS OF FINAL PLAT AND FPDP APPROVAL – RESOLUTION 2025-01-09

On January 22, 2025, by Resolution 2025-01-09, the Board of Trustees voted to approve the first amended FPDP and Final Plat with five conditions. The following table lists the conditions of approval and current status.

Resolution 2025-01-09 Conditions of Approval	Status
1) Prior to FPDP and Final Plat recordation, the Applicant must address all outstanding review comments to the satisfaction of the Town and/or applicable entity and revise and resubmit all documents accordingly.	**Unresolved**

2) Prior to recordation of the FPDP and the Final Plat, the Applicant shall receive approval from the Town of Fraser of the West Mountain Water Master Plan and associated construction design drawings and reports, as stipulated in Articles 5.3, 5.5, and 5.6 of the 2003 Annexation Agreement.	**Unresolved**
3) Prior to Final Plat recordation, the Applicant shall execute an approved Development Improvements Agreement and provide the appropriate surety.	**Unresolved**
4) Prior to Final Plat recordation, the Applicant shall provide the Town with the following items as outlined in the Major Subdivision Final Plat Checklist: a. Proof of filing the applicable articles of incorporation with the Secretary of State and the executed originals of all legal documents, including a final executed SIA and any required collateral. b. Final plat Mylar with appropriate signatures c. A fourteen (14) inch by eighteen (18) inch black line Mylar for the purpose of incorporating the data into a 911 emergency system, containing the name and subdivision, the section, township and range in which the subdivision is located, all street names, lot numbers, street addressing numbers, and unit numbers (if applicable). d. A digital file of the approved final plat and 911 emergency system drawing in both CAD and PDF format for the Town's Geographic Information System (GIS).	**Unresolved**
5) Concurrent with Final Plat recordation, the Applicant shall record the Development Improvements Agreement (DIA) as well as the necessary HOA declaration, restrictive covenants, and bylaws.	**Unresolved**

The above conditions have generally been carried over and were the basis of the proposed conditions presented to the Planning Commission as part of the January 28, 2026 hearing. The Planning Commission voted to recommend approval of the application with conditions by a vote of 3-1 (2 Planning Commissioners were absent from the meeting and 1 position is currently vacant). The one vote against the Planning Commission resolution was due to the continued inclusion of condition #2 requiring that the West Mountain Water Master Plan be approved prior to recordation of the FPDP or any Final Plats. The commissioner explained that the vote was due to concerns about the legal ability of the Town to include this condition as based on the applicant's request for it to be removed and stated reasoning during the Planning Commission hearing.

At issue is disagreement whether mere **submittal** of the water master plan is sufficient or whether Town **approval** of the master plan is required. The applicable sections of the 2003 Rendezvous Annexation Agreement are cited below. While these sections begin with a statement of required submittal, they include additional language requiring approval bolded below:

> Section 5.3: "…Acceptance by Fraser of the [Water Source] facilities and ongoing operations and maintenance responsibilities shall be accomplished **at the time of FPDP or subdivision approval** pursuant to the Subdivision Regulations."

> Section 5.5: "Prior to approval of an FPDP or subdivision application Developer shall submit design drawing and text documents based upon the Master Water Plan for any Water Source Facilities and Water Local Facilities. Developer shall be responsible for all Water Source Facilities and Water Local Facilities required to supply water to the Rendezvous Property under the decree in Case No. 98CW41 – Water Division No.5…**No subdivision shall be approved, or approved with conditions**, unless Fraser has determined by a professional engineer with hydrologic expertise, that such water supply wells and system are capable both in quantity and quality of providing a physical and legal water supply for the subdivision and fully meet all requirements of the approved Augmentation Plan or other applicable water court decree."

At the January 2026 Planning Commission meeting, the applicant also produced an approval letter by Merrick as Town Engineer dated November 2024. This letter, however, only approved the construction documents as were submitted at that point in time; these construction documents have subsequently been revised by the applicant and at this time still require approval. The other critical element of the water master plan is the water study report, which identifies water source facilities and storage tank capacity. At this time, **the Town has not received an updated water study report**. Because the West Mountain Water Master Plan is still not finalized and submittals related to the master plan are either under review or have not been received, staff is recommending this condition be carried forward as it was included without protest during the original public hearings on this application in June 2024 and the first revision in January 2025.

Staff has additional concerns about the applicant's intent to fully address review comments as required through condition #1. Since the January 28, 2026 Planning Commission meeting, the applicant has provided an 8th submittal which includes responses to the comments provided by referral review agencies. Through 7 prior submittals of the final plat **over the span of 2 years**, utility referral agencies Mountain Parks Electric and Xcel Energy are still unable to provide approval of the final plat. This is due to the **continued unwillingness** of the applicant to provide the requested easements and plat notes necessary to serve the development with electric and natural gas service in conformance with the policies and standards of these utility providers. In multiple rounds of the final plat review, staff has cited Sec. 19-4-120 (Public right-of-way and easements) of the Town code to the applicant, which states the following:

> (a)(2) Easements shall be provided for all gas, electric, telephone and cable television utility lines, **in accordance with the requirements of the utility provider.**
>
> (b) Specifications. Refer to Chapter 14 of this Code, Design Criteria and Construction Standards. **For easements other than a Town-owned utility, refer to the individual gas, electric, telephone and/or cable television utility provider.**

The applicant's response to staff's citation of the Town code warrants highlighting, as they have defiantly stated "MPEI and Xcel Energy are not governing bodies that have any authority under the Fraser town Code, nor should the Town of Fraser let these for profit monopolies governed by the PUC of Colorado dictate how and what is platted in the Town of Fraser." Although the applicant later states in their response to the comments provided by these utility agencies that they are working to come up with mutually agreeable notes, this quoted statement from the applicant underscores why staff is carrying forward this condition of approval. Town staff will not approve any final plat documents without approval of referral utility agencies.

REQUEST: Approval of an amended Final Plat and FPDP for West Mountain Filing 1 (Planning Areas 10W and 11W) of Grand Park.

RECOMMENDATION: Staff recommends that the Planning Commission APPROVE the amended Final Plat and FPDP subject to the following conditions:

CONDITIONS:

1) Prior to Final Plat recordation, the Applicant must address all outstanding review comments to the satisfaction of the Town and/or applicable entity and revise and resubmit all documents accordingly.
2) Prior to recordation of the FPDP and the Final Plat, the Applicant shall receive approval of the West Mountain Water Master Plan and associated construction design drawings and reports from the Town of Fraser, as stipulated in Articles 5.3, 5.5, and 5.6 of the 2003 Annexation Agreement.
3) Prior to Final Plat recordation, the Applicant shall execute an approved Development Improvements Agreement and provide the appropriate surety.
4) Prior to Final Plat recordation, the Applicant shall provide the Town with the following items as outlined in the Major Subdivision Final Plat Checklist:
    a. Proof of filing the applicable articles of incorporation with the Secretary of State and the executed originals of all legal documents, including a final executed DIA and any required collateral.
    b. Final plat Mylar with appropriate signatures
    c. A digital file of the approved final plat and 911 emergency system drawing / address map in both CAD and PDF format for the Town's Geographic Information System (GIS).
5) Concurrent with Final Plat recordation, the Town shall record the Development Improvements Agreement (DIA) as well as the necessary HOA declaration, restrictive covenants, and bylaws.

Attachments:

01 West Mountain Filing 1 Final Plat (8th Submittal, unreviewed)
02 West Mountain Filing 1 FPDP (8th Submittal, unreviewed)
03 Final Civil Construction Documents WMF1 (8th Submittal, unreviewed)
04 Phase III Drainage Report WMF 1 (8th Submittal, unreviewed)
05 Wetland Exhibit West Mountain Filing 1 and 2
06 Grand Park West Mountain TIS (January 2026)
07 Combined 7th Submittal Referral Review Comments
08 Applicant Response to 7th Submittal Planning Review Comments
09 Merrick Review Comments – West Mountain Water System Construction Plans - 8th Submittal
10 Proof of Public Notice
11 Receipts for Mailed Notices
12 Adjacent Property Owners List
13 Planning Commission Resolution 2026-01-01

Resolution 2026-02-03

FINAL PLAT

WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 29 AND THE NORTH HALF OF SECTION 32, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.

DEDICATION AND NOTARY CLAUSE:

KNOW ALL PEOPLE BY THESE PRESENTS: THAT WEST MOUNTAIN DEVELOPMENT, LLC, A COLORADO LIMITED LIABILITY COMPANY, IS THE OWNER OF THAT REAL PROPERTY SITUATED IN THE TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 29 AND THE NORTH HALF OF SECTION 32, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, AND A PORTION OF PARCEL 2, GRAND PARK DRIVE EXEMPTION PLAT RECORDED AT RECEPTION NO. 2016002214 IN THE OFFICIAL RECORDS OF THE GRAND COUNTY, COLORADO CLERK AND RECORDER'S OFFICE, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE NORTH LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 29, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, WAS ASSUMED TO BEAR SOUTH 89°49'44" WEST, A DISTANCE OF 1,321.23 FEET, BEING MONUMENTED AT THE EAST QUARTER CORNER OF SAID SECTION 29 BY A 1-1/2" STEEL POST WITH 2-1/2" GLO BRASS CAP STAMPED "US GENERAL LAND OFFICE SURVEY 1/4 S29 S28 1933" AND AT THE CENTER-EAST SIXTEENTH CORNER OF SAID SECTION 29 BY A NO. 6 REBAR WITH 3-1/4" ALUMINUM CAP STAMPED "DEA INC. T1S R75W E 1/16 C-C S29 2014 PLS 34592".

COMMENCING AT SAID EAST QUARTER CORNER;

THENCE SOUTH 41°09'00" WEST, A DISTANCE OF 910.38 FEET TO THE SOUTHERLY BOUNDARY OF THE 200-FOOT-WIDE UNION PACIFIC RAILROAD RIGHT-OF-WAY AND THE POINT OF BEGINNING;

THENCE ALONG SAID SOUTHERLY BOUNDARY THE FOLLOWING TWO (2) COURSES:

1. SOUTH 07°48'24" EAST, A DISTANCE OF 294.34 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE EASTERLY HAVING A RADIUS OF 816.78 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 82°07'05" EAST;
2. SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 14°06'10", AN ARC LENGTH OF 201.04 FEET TO THE MOST NORTHERLY CORNER OF THAT SPECIAL WARRANTY DEED, EXHIBIT C (TOWN OF FRASER RIGHT-OF-WAY), RECORDED AT RECEPTION NO. 2022001003 IN SAID RECORDS AND THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 390.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 36°03'48" EAST;

THENCE ALONG THE NORTHWESTERLY AND SOUTHWESTERLY BOUNDARY OF SAID RIGHT-OF-WAY THE FOLLOWING THREE (3) COURSES:

1. SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 20°23'19", AN ARC LENGTH OF 138.78 FEET TO THE BEGINNING;
2. TANGENT TO SAID CURVE, SOUTH 33°32'54" WEST, A DISTANCE OF 185.00 FEET;
3. SOUTH 56°27'06" EAST, A DISTANCE OF 80.06 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 1,040.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 54°18'02" WEST;

THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 09°39'46", AN ARC LENGTH OF 175.39 FEET;

THENCE SOUTH 45°21'41" WEST, A DISTANCE OF 204.83 FEET;

THENCE SOUTH 44°52'10" WEST, A DISTANCE OF 200.03 FEET;

THENCE SOUTH 45°27'20" WEST, A DISTANCE OF 843.10 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 840.00 FEET;

THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 05°56'24", AN ARC LENGTH OF 87.09 FEET TO THE BEGINNING OF A REVERSE CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 50.00 FEET;

THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 09°39'58", AN ARC LENGTH OF 8.44 FEET;

THENCE SOUTH 41°43'46" WEST, A DISTANCE OF 83.60 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE EASTERLY HAVING A RADIUS OF 73.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 51°02'34" EAST;

THENCE SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 60°47'55", AN ARC LENGTH OF 77.46 FEET;

THENCE SOUTH 62°31'49" WEST, A DISTANCE OF 120.63 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHERLY HAVING A RADIUS OF 73.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 68°37'00" WEST;

THENCE WESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 92°24'02", AN ARC LENGTH OF 117.73 FEET;

THENCE SOUTH 68°38'59" WEST, A DISTANCE OF 170.87 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 1,040.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 23°00'41" WEST;

THENCE WESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 19°05'05", AN ARC LENGTH OF 346.41 FEET;

THENCE SOUTH 86°04'23" WEST, A DISTANCE OF 445.44 FEET;

THENCE NORTH 03°55'37" WEST, A DISTANCE OF 80.00 FEET;

THENCE NORTH 86°04'23" EAST, A DISTANCE OF 2.00 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 15.00 FEET;

THENCE NORTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 90°00'00", AN ARC LENGTH OF 23.56 FEET;

THENCE NORTH 03°55'37" WEST, A DISTANCE OF 8.26 FEET;

THENCE NORTH 52°12'55" WEST, A DISTANCE OF 200.13 FEET;

THENCE NORTH 27°58'25" EAST, A DISTANCE OF 102.73 FEET;

THENCE NORTH 37°47'05" EAST, A DISTANCE OF 178.77 FEET;

THENCE NORTH 15°51'37" EAST, A DISTANCE OF 268.33 FEET;

THENCE NORTH 43°06'31" EAST, A DISTANCE OF 242.12 FEET;

THENCE NORTH 68°25'25" EAST, A DISTANCE OF 480.75 FEET;

THENCE NORTH 37°55'55" EAST, A DISTANCE OF 282.21 FEET;

THENCE SOUTH 58°58'37" EAST, A DISTANCE OF 80.26 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 320.00 FEET;

THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 12°31'12", AN ARC LENGTH OF 69.92 FEET;

THENCE NORTH 43°32'35" EAST, A DISTANCE OF 60.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 380.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 43°32'35" WEST;

THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 21°35'44", AN ARC LENGTH OF 143.23 FEET;

THENCE NORTH 65°25'10" EAST, A DISTANCE OF 299.51 FEET;

THENCE NORTH 23°18'18" WEST, A DISTANCE OF 4.49 FEET;

THENCE NORTH 66°41'42" EAST, A DISTANCE OF 36.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 15.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 66°41'42" EAST;

THENCE EASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 94°34'40", AN ARC LENGTH OF 24.76 FEET;

THENCE NORTH 62°07'01" EAST, A DISTANCE OF 137.41 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHERLY HAVING A RADIUS OF 120.00 FEET;

THENCE EASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 15°51'46", AN ARC LENGTH OF 33.22 FEET;

THENCE NORTH 17°29'08" WEST, A DISTANCE OF 70.91 FEET;

THENCE NORTH 28°01'24" EAST, A DISTANCE OF 79.96 FEET;

THENCE NORTH 43°23'08" EAST, A DISTANCE OF 204.05 FEET;

THENCE NORTH 84°30'09" EAST, A DISTANCE OF 66.55 FEET;

THENCE NORTH 18°22'32" EAST, A DISTANCE OF 431.96 FEET;

THENCE NORTH 74°33'59" EAST, A DISTANCE OF 87.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 60.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 75°54'23" EAST;

THENCE NORTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 133°54'35", AN ARC LENGTH OF 140.23 FEET;

THENCE NORTH 46°00'10" EAST, A DISTANCE OF 83.14 FEET;

THENCE SOUTH 89°02'49" EAST, A DISTANCE OF 86.97 FEET;

THENCE SOUTH 72°11'31" EAST, A DISTANCE OF 52.67 FEET TO THE POINT OF BEGINNING.

CONTAINING AN AREA OF 47.984 ACRES, (2,090,176 SQUARE FEET), MORE OR LESS.

DEDICATION AND NOTARY CLAUSE CONTINUED:

IN WITNESS WHEREOF, WEST MOUNTAIN DEVELOPMENT, LLC., A COLORADO LIMITED LIABILITY COMPANY, HAS CAUSED ITS NAME TO BE HEREUNTO SUBSCRIBED THIS

_____ DAY OF _____, 20___.

BY: _____
C. CLARK LIPSCOMB, PRESIDENT

STATE OF COLORADO)
)SS
COUNTY OF GRAND)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___

BY: C. CLARK LIPSCOMB AS PRESIDENT OF WEST MOUNTAIN DEVELOPMENT, LLC.

WITNESS MY HAND AND OFFICIAL SEAL.

MY COMMISSION EXPIRES: _____

_____
NOTARY PUBLIC

MORTGAGEE'S CONSENT:

THE UNDERSIGNED, BEING THE AUTHORIZED REPRESENTATIVE OF U.S. BANK, N.A., THE HOLDER OF A BENEFICIAL INTEREST IN AND TO THE PROPERTY DESCRIBED ON THIS PLAT, UNDER DEED OF TRUST RECORDED JUNE 28, 2012 AT RECEPTION NO. 2012-005143 AND RECEPTION NO. 2012-005144 OF THE GRAND COUNTY, COLORADO REAL PROPERTY RECORDS, HEREBY CONSENTS TO THIS PLAT AND AGREES THAT THE LIEN OF THE DEED OF TRUST IS HEREBY SUBORDINATED TO THIS PLAT.

BY: _____

NAME: _____

TITLE: _____

STATE OF _____)
)SS
COUNTY OF _____)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___

BY _____ AS _____ OF U.S. BANK, N.A.

WITNESS MY HAND AND OFFICIAL SEAL.

MY COMMISSION EXPIRES: _____

_____
NOTARY PUBLIC

BOARD OF TRUSTEES APPROVAL:

APPROVED AND ALL PUBLIC DEDICATIONS ACCEPTED THIS _____ DAY OF _____, 20___ BY THE FRASER TOWN BOARD. THE TOWN OF FRASER DOES NOT ASSUME ANY RESPONSIBILITY FOR THE CORRECTNESS OR ACCURACY OF ANY INFORMATION DISCLOSED ON THIS PLAT NOR ANY REPRESENTATIONS OR INFORMATION PRESENTED TO THE TOWN OF FRASER WHICH INDUCED THE TOWN TO GIVE THIS CERTIFICATE.

BY: _____

_____
MAYOR, TOWN OF FRASER

GENERAL NOTES:

1. BASIS OF BEARINGS FOR THIS PLAT IS THE NORTH LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN WHICH WAS ASSUMED TO BEAR S89°49'44"W, AS MONUMENTED AS SHOWN HEREON.
2. SET 18" LONG #5 REBAR WITH 2" ALUMINUM CAP MARKED "PLS 38636" AT ALL EXTERIOR BOUNDARY CORNERS UNLESS OTHERWISE NOTED.
3. THIS PLAT DOES NOT CONSTITUTE A TITLE SEARCH BY AZTEC CONSULTANTS INC., TO DETERMINE OWNERSHIP, RIGHTS OF WAY OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS OF WAY AND TITLE OF RECORD, AZTEC CONSULTANTS INC., RELIED UPON TITLE COMPANY OF THE ROCKIES TITLE COMMITMENT NUMBER 0305192-C WITH AN EFFECTIVE DATE OF DECEMBER 20, 2024, 7:00 AM.
4. LEGAL DESCRIPTION PREPARED BY ANTHONY K. PEALL, AZTEC CONSULTANTS INC., 300 EAST MINERAL AVENUE, SUITE 1, LITTLETON, CO, 80122
5. THE U.S. SURVEY FOOT WAS USED FOR ALL MEASUREMENTS ON THIS SURVEY. PURSUANT TO C.R.S. 38-52.103(2) METRIC CONVERSION IS: ONE METER EQUALS 3937/1200 FEET.
6. TRACT USE SPECIFIED BELOW SHALL BE:

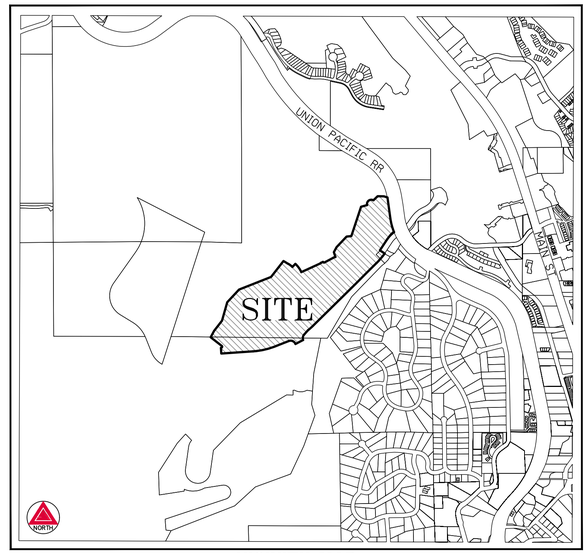
   TRACTS A, B, C, D, E, F & G ARE FOR OPEN SPACE, UTILITY, AND DRAINAGE PURPOSES.
   TRACTS A, B, C, D, E, F & G SHALL BE OWNED AND MAINTAINED BY GRAND PARK HOMEOWNER'S ASSOCIATION INC.
7. ONSITE EASEMENTS ARE HEREBY DEDICATED BY THIS PLAT IN THE LOCATIONS SHOWN HEREON.
8. FIRE PROTECTION SERVICES FOR WEST MOUNTAIN FILING 1 SHALL BE PROVIDED BY THE EAST GRAND FIRE PROTECTION DISTRICT NO. 4.
9. PERPETUAL NON-EXCLUSIVE 10-FOOT UTILITY EASEMENTS ARE HEREBY GRANTED AND SHALL APPLY UPON, ACROSS, ABOVE, OVER, UNDER AND THROUGH THE UTILITY EASEMENTS SHOWN ON THIS PLAT FOR THE PURPOSE OF INGRESS TO AND EGRESS FROM, AND THE INSTALLATION, REPAIR, REPLACEMENT, OPERATION AND MAINTENANCE OF ALL UTILITY LINES AND EQUIPMENT. ANY CONSTRUCTION AND PLACEMENT OF LINES, EQUIPMENT, OR BUILDING STRUCTURES OR CHANGES IN GRADE SHALL COMPLY WITH THE STANDARDS OF ALL UTILITY PROVIDERS UTILIZING THE EASEMENT. SNOW STORAGE IS NOT PERMITTED WITHIN 5 FEET OF ABOVE GROUND ELECTRICAL EQUIPMENT.
10. THE TOWN OF FRASER HEREBY AGREES ABOVE GROUND UTILITY EQUIPMENT SHALL BE ALLOWED IN THE FRASER TOWN RIGHT-OF-WAY AS DEPICTED HEREIN WHEN PLACED A MINIMUM OF 2' BEHIND THE SIDEWALK OR BEHIND THE CURB WHERE THERE ARE NO SIDEWALKS.
11. UPON COMPLETION OF ALL REQUIRED IMPROVEMENTS, AND IN ACCORDANCE WITH THE ACCEPTANCE PROCESS DETAILED IN THE SUBDIVISION REGULATIONS, ALL ROADS AND DRAINAGE IMPROVEMENTS SHALL BE PUBLIC AND MAINTAINED BY THE TOWN OF FRASER.
12. WHILE BUILDING PERMITS MAY BE ISSUED PRIOR TO FINAL COMPLETION OF SUBDIVISION IMPROVEMENTS, NO CERTIFICATE OF OCCUPANCY MAY BE ISSUED FOR A STRUCTURE ON ANY LOT, PARCEL OR TRACT UNTIL ALL SUCH IMPROVEMENTS, AS REQUIRED BY THE DIA, HAVE BEEN COMPLETED AND PRELIMINARILY ACCEPTED BY THE TOWN PURSUANT TO SECTION 19-3-445.
13. TRAIL/SIDEWALK EASEMENTS ARE HEREBY GRANTED TO THE PUBLIC ACROSS ANY TRACTS THAT CONTAINS TRAILS OR SIDEWALKS, SUCH TRAILS OR SIDEWALKS WILL BE CONSTRUCTED PER THE CONSTRUCTION PLANS FOR THE PURPOSE OF ACCESSING THE TRAIL SYSTEM. THE WIDTH AND LOCATION OF SAID EASEMENT WILL BE DEFINED BY THE WIDTH AND LOCATION OF SAID CONSTRUCTED TRAIL/SIDEWALK.
14. THE PROPERTY IS SUBJECT TO THE AMENDED AND RESTATED ANNEXATION AGREEMENT RECORDED DECEMBER 30, 2003 AT RECEPTION NO. 2003-016733, AS AMENDED; GRAND PARK PLANNED DEVELOPMENT DISTRICT PLAN RECORDED NOVEMBER 8, 2005 AT RECEPTION NO. 2005-012709; THE FINAL PLANNED DEVELOPMENT PLAN FOR WEST MOUNTAIN FILING NO. 1 RECORDED _____, 2025 AT RECEPTION NO. _____; THE COMMUNITY CHARTER FOR GRAND PARK RESIDENTIAL PROPERTY RECORDED DECEMBER 7, 2005 AT RECEPTION NO. 2005-13834, AS AMENDED AND SUPPLEMENTED; AND THE COVENANT FOR COMMUNITY ENHANCEMENT FEE RECORDED DECEMBER 7, 2007 AT RECEPTION NO. 2005-013836, AS AMENDED AND SUPPLEMENTED.
15. SETBACKS:

A. SINGLE FAMILY DETACHED ELIGIBLE IN 11W (LOTS 1-41):
FRONT: 10'
SIDE: 6'
REAR: 10'

SINGLE FAMILY DETACHED ELIGIBLE IN 10W (LOTS 42-52):
FRONT: 10'
SIDE: 6'
NON-ATTACHED SIDE: 6'
REAR: 10'

SINGLE FAMILY DETACHED AND ATTACHED ELIGIBLE IN 10W (LOTS 53-79)
FRONT: 10'
FRONT TO GARAGE: 20'
ATTACHED SIDE: 0'
DETACHED SIDE: MUST MEET BUILDING AND FIRE CODES
REAR: 10'

B. ALTERNATIVELY, ALL SINGLE-FAMILY ATTACHED ELIGIBLE (LOTS 53-79), CAN INCLUDE THE 6' NON-ATTACHED SIDE SETBACK AS LISTED ABOVE IN 11W FOR GREATER CONSISTENCY.



VICINITY MAP
SCALE 1" = 1000'

OWNER/DEVELOPER:
WEST MOUNTAIN DEVELOPMENT, LLC.
P.O. BOX 30
WINTER PARK, CO 80482
CLARK LIPSCOMB 970.948.1883

LAND PLANNER:
TERRACINA DESIGN
10200 E. GIRARD AVE. STE. A-314
DENVER, CO 80231
303-632-8867
DILLON COOK 303.968.4783

SURVEYOR:
AZTEC CONSULTANTS, INC.
300 E. MINERAL AVE., SUITE 1
LITTLETON, CO 80122
TONY PEALL, PLS 720.937.7939

DATE PREPARED:
DECEMBER 17, 2025

SURVEYOR'S CERTIFICATE:

I, ANTHONY K. PEALL, A DULY LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT OF WEST MOUNTAIN FILING NO. 2, TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT SAID PLAT COMPLIES WITH THE REQUIREMENTS OF TITLE 38, ARTICLE 51, COLORADO REVISED STATUTES, 1973, AND THE MONUMENTS REQUIRED BY SAID STATUTE AND BY THE TOWN OF FRASER SUBDIVISION REGULATIONS HAVE BEEN PLACED IN THE GROUND.

_____
ANTHONY K. PEALL, CO PLS 38636
AZTEC CONSULTANTS, INC.

FOR REVIEW
DO NOT RECORD

NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

NOTICE: PER THE STATE OF COLORADO BOARD OF LICENSURE FOR ARCHITECTS, PROFESSIONAL ENGINEERS, AND PROFESSIONAL LAND SURVEYORS RULE 1.6.B.2 THE WORD "CERTIFY" AS USED HEREON MEANS AN EXPRESSION OF PROFESSIONAL OPINION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTY, EXPRESSED OR IMPLIED. THE SURVEY REPRESENTED HEREON HAS BEEN PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE AND IS BASED UPON MY KNOWLEDGE, INFORMATION AND BELIEF.

LAST REVISED: 02/03/2026

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No.: 181122-01 Drawn By: BAM

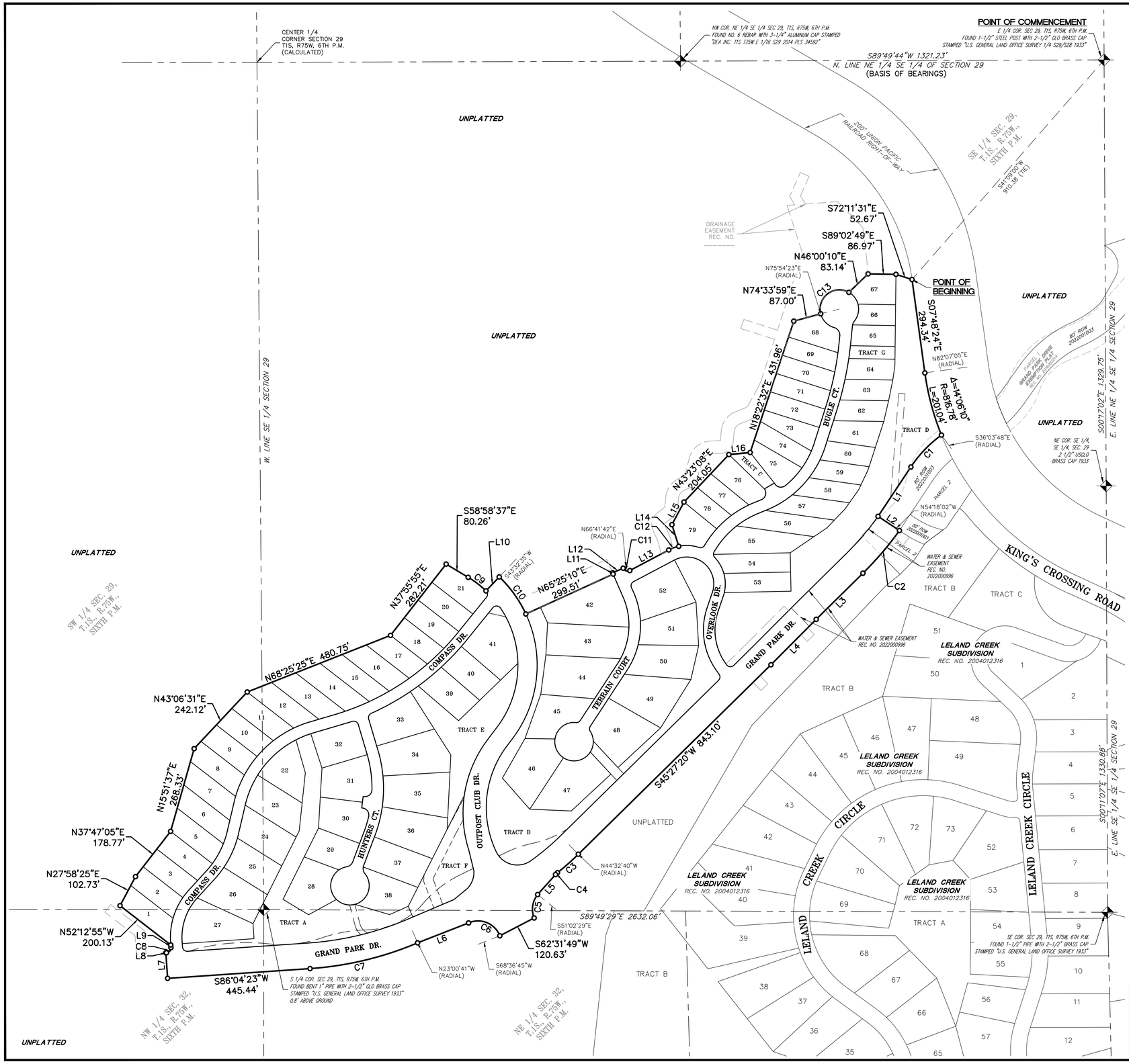
DEVELOPER
GRAND PARK DEVELOPMENT, LLC
P.O. BOX 30
WINTER PARK, COLORADO 80482
(970) 726-8600

DATE OF PREPARATION:	12-17-2025
SCALE:	N/A
SHEET 1 OF 7	

FINAL PLAT

WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND THE NORTHWEST QUARTER OF SECTION 32, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.



LINE TABLE		
LINE	BEARING	LENGTH
L1	S33°32'54"W	185.00'
L2	S56°27'06"E	80.06'
L3	S45°21'41"W	204.83'
L4	S44°52'10"W	200.03'
L5	S41°43'46"W	83.60'
L6	S68°38'59"W	170.87'
L7	N03°55'37"W	80.00'
L8	N86°04'23"E	2.00'
L9	N03°55'37"W	8.26'
L10	N43°32'35"E	60.00'
L11	N23°18'18"W	4.49'
L12	N66°41'42"E	36.00'
L13	N62°07'01"E	137.41'
L14	N17°29'08"W	70.91'
L15	N28°01'24"E	79.96'
L16	N84°30'09"E	66.55'
L17	N03°55'37"W	8.88'
L18	S03°55'37"E	17.14'
L19	S42°30'30"W	79.16'
L20	N42°30'30"E	79.16'
L21	N13°12'29"E	92.61'
L22	S13°12'29"W	92.61'
L23	N73°31'26"E	80.79'
L24	S16°28'34"E	102.14'
L25	N16°28'34"W	94.49'
L26	S83°00'34"E	2.77'
L27	N06°59'26"E	36.00'
L28	N83°00'34"W	2.77'
L29	N20°31'13"E	101.41'
L30	S20°31'13"W	101.41'
L31	N03°55'37"W	47.29'

LINE TABLE		
LINE	BEARING	LENGTH
L32	N65°56'02"E	63.74'
L33	N50°23'41"E	54.06'
L34	N13°46'23"W	67.20'
L35	N36°55'07"E	51.25'
L36	N36°55'07"E	30.40'
L37	S36°55'07"W	30.40'
L38	N45°23'05"E	83.57'
L39	N18°48'14"E	50.00'
L40	S18°48'14"W	50.00'
L41	S01°11'59"E	120.00'
L42	N67°39'10"E	26.25'
L43	S67°39'10"W	29.84'
L44	S67°39'10"W	29.84'
L45	N59°35'16"E	36.00'
L46	N30°24'13"W	2.56'
L47	S30°24'13"E	2.54'
L48	N17°37'41"E	120.32'
L49	S17°37'41"W	120.32'
L50	N05°49'49"E	22.08'
L51	S05°49'49"W	58.96'
L52	S08°15'55"W	45.37'
L53	S11°28'13"W	66.11'
L54	S13°09'04"W	66.50'
L55	S25°15'16"W	68.94'
L56	S35°16'34"W	74.05'
L57	S43°44'52"W	81.87'
L58	S84°10'11"E	27.97'
L59	N18°48'14"E	50.00'
L60	N35°19'15"W	15.62'
L61	N56°45'10"W	2.00'
L62	N23°00'41"W	36.38'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	20°23'19"	390.00'	138.78'
C2	9°39'46"	1040.00'	175.39'
C3	5°56'24"	840.00'	87.09'
C4	9°39'58"	50.00'	8.44'
C5	60°47'55"	73.00'	77.46'
C6	92°24'02"	73.00'	117.73'
C7	19°05'05"	1040.00'	346.41'
C8	90°00'00"	15.00'	23.56'
C9	12°31'12"	320.00'	69.92'
C10	21°35'44"	380.00'	143.23'
C11	94°34'40"	15.00'	24.76'
C12	15°51'46"	120.00'	33.22'
C13	133°54'35"	60.00'	140.23'
C14	90°00'00"	15.00'	23.56'
C15	46°26'06"	182.00'	147.50'
C16	46°26'06"	218.00'	176.68'
C17	29°18'01"	282.00'	144.21'
C18	29°18'01"	318.00'	162.62'
C19	60°18'57"	343.00'	361.08'
C20	60°18'57"	307.00'	323.18'
C21	90°00'00"	15.00'	23.56'
C22	82°13'10"	15.00'	21.52'
C23	17°05'14"	382.00'	113.92'
C24	36°59'47"	418.00'	269.91'
C25	96°22'46"	22.00'	37.01'
C26	96°22'46"	22.00'	37.01'
C27	7°09'02"	382.00'	47.67'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C28	59°36'36"	25.00'	26.01'
C29	59°36'36"	25.00'	26.01'
C30	107°12'19"	15.00'	28.07'
C31	85°26'45"	15.00'	22.37'
C32	47°44'41"	73.00'	60.83'
C33	103°42'07"	73.00'	132.13'
C34	8°42'13"	760.00'	115.45'
C35	80°46'35"	15.00'	21.15'
C36	97°33'33"	15.00'	25.54'
C37	62°04'59"	120.00'	130.03'
C38	73°18'05"	15.00'	19.19'
C39	77°52'28"	15.00'	20.39'
C40	37°07'38"	318.00'	206.06'
C41	37°37'49"	282.00'	185.21'
C42	98°03'23"	22.00'	37.65'
C43	98°50'59"	22.00'	37.96'
C44	50°01'29"	318.00'	277.64'
C45	33°07'07"	282.00'	163.00'
C46	11°47'52"	980.00'	201.79'
C47	11°47'52"	1016.00'	209.21'
C48	79°48'57"	25.00'	34.83'
C49	33°23'21"	25.00'	14.57'
C50	9°29'00"	960.00'	158.90'
C51	89°04'58"	15.00'	23.32'
C52	9°34'35"	1000.00'	167.14'
C53	65°35'08"	15.00'	17.17'
C54	62°10'55"	15.00'	16.28'

LEGEND

- FOUND ALIQUOT CORNER AS SHOWN HEREON
- SET NO. 5 X 18" REBAR WITH 1-1/4" PINK PLASTIC CAP STAMPED "AZTEC PLS 38636"
- U.E.* UTILITY EASEMENTS & SNOW STORAGE EASEMENT
- (ROW) RIGHT-OF-WAY
- (NR) DENOTES NON-RADIAL

FOR REVIEW
DO NOT RECORD

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.azteccconsultants.com

AzTec Proj. No.: 181122-01 Drawn By: BAM

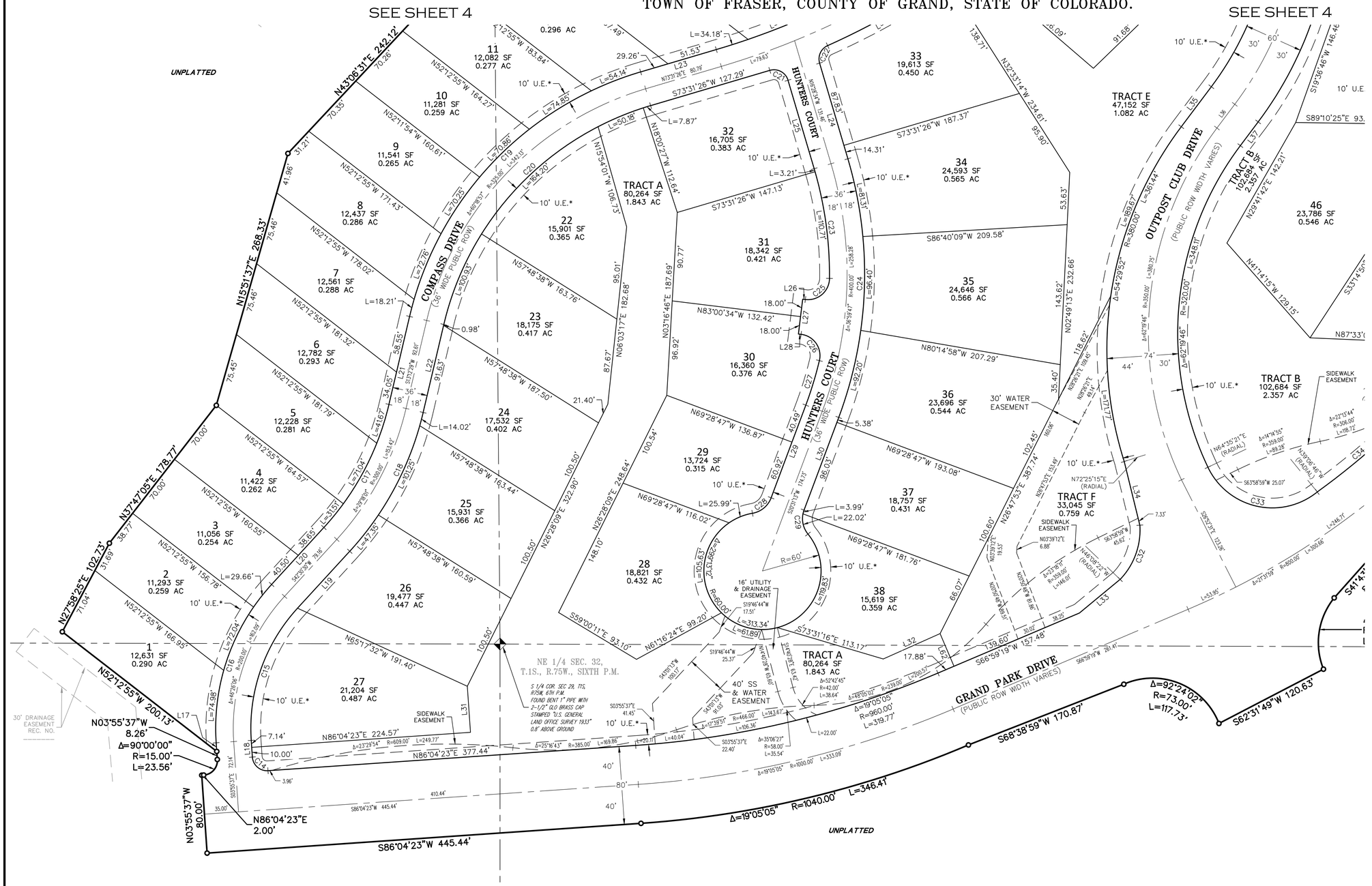
DEVELOPER
GRAND PARK DEVELOPMENT, LLC
P.O. BOX 30
WINTER PARK, COLORADO 80482
(970) 726-8600

DATE OF PREPARATION:	12-17-2025
SCALE:	1" = 150'
SHEET 2 OF 7	

FINAL PLAT

WEST MOUNTAIN FILING NO. 1

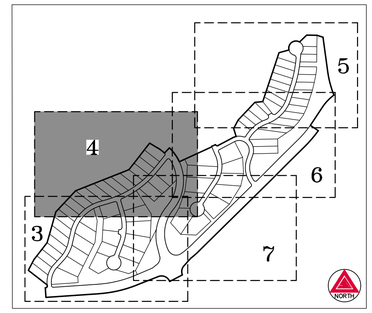
A PARCEL OF LAND LOCATED IN SECTION 29 AND
THE NORTHWEST QUARTER OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.


SEE SHEET 4
SEE SHEET 4
SEE SHEET 7
UNPLATTED
COMPASS DRIVE
(36' WIDE PUBLIC ROW)
HUNTERS COURT
(36' WIDE PUBLIC ROW)
OUTPOST CLUB DRIVE
(PUBLIC ROW WIDTH VARIES)
GRAND PARK DRIVE
(PUBLIC ROW WIDTH VARIES)
TRACT A
80,264 SF
1.843 AC
TRACT B
102,684 SF
2.357 AC
TRACT E
47,152 SF
1.082 AC
TRACT F
33,045 SF
0.759 AC
40' SS & WATER EASEMENT
30' WATER EASEMENT
16' UTILITY & DRAINAGE EASEMENT
SIDEWALK EASEMENT
NE 1/4 SEC. 32, T.1S., R.75W., SIXTH P.M.
S 1/4 COR. SEC 29, T1S, R75W, 6TH P.M. FOUND BENT 1" PIPE WITH 2-1/2" GLO BRASS CAP STAMPED "U.S. GENERAL LAND OFFICE SURVEY 1933" 0.8' ABOVE GROUND
30' DRAINAGE EASEMENT REC. NO.
N43°06'31"E 242.12'
N15°51'37"E 268.33'
N27°58'25"E 102.73'
N37°47'05"E 178.77'
N03°55'37"W 8.26'
Δ=90°00'00"
R=15.00'
L=23.56'
N03°55'37"W 80.00'
N86°04'23"E 2.00'
S86°04'23"W 445.44'
Δ=19°05'05" R=1040.00' L=346.41'
S68°38'59"W 170.87'
Δ=92°24'02"
R=73.00'
L=117.73'
S62°31'49"W 120.63'
N86°04'23"E 377.44'
N86°04'23"E 224.57'
N52°12'55"W 200.13'
S66°59'19"W 157.48'
S73°31'26"W 127.29'
S73°31'26"W 187.37'
S73°31'26"W 147.13'
N73°31'26"E 80.75'
N52°12'55"W 183.84'
N52°12'55"W 164.27'
N52°11'54"W 160.61'
N52°12'55"W 171.43'
N52°12'55"W 178.02'
N52°12'55"W 181.32'
N52°12'55"W 181.79'
N52°12'55"W 164.57'
N52°12'55"W 160.55'
N52°12'55"W 156.78'
N52°12'55"W 166.95'
N57°48'38"W 163.76'
N57°48'38"W 187.50'
N57°48'38"W 183.44'
N57°48'38"W 160.59'
N65°17'32"W 191.40'
N06°03'17"E 182.68'
N03°16'46"E 187.69'
N83°00'34"W 132.42'
N80°14'58"W 207.29'
N69°28'47"W 136.87'
N69°28'47"W 193.08'
N69°28'47"W 116.02'
N69°28'47"W 181.76'
N26°28'09"E 248.64'
N26°28'09"E 322.90'
N15°54'01"W 106.73'
N18°00'27"W 112.64'
N32°53'14"W 234.61'
N26°47'53"E 387.74'
N02°49'13"E 232.66'
N29°41'42"E 142.21'
N41°14'15"W 129.15'
S59°00'11"E 93.10'
N61°16'24"E 99.20'
S73°31'16"E 113.17'
S86°40'09"W 209.58'
S80°59'47"E 87.83'
S19°36'46"W 146.46'
S89°10'25"E 93.
S33°14'5
N87°33'(
1 12,631 SF 0.290 AC
2 11,293 SF 0.259 AC
3 11,056 SF 0.254 AC
4 11,422 SF 0.262 AC
5 12,228 SF 0.281 AC
6 12,782 SF 0.293 AC
7 12,561 SF 0.288 AC
8 12,437 SF 0.286 AC
9 11,541 SF 0.265 AC
10 11,281 SF 0.259 AC
11 12,082 SF 0.277 AC
0.296 AC
22 15,901 SF 0.365 AC
23 18,175 SF 0.417 AC
24 17,532 SF 0.402 AC
25 15,931 SF 0.366 AC
26 19,477 SF 0.447 AC
27 21,204 SF 0.487 AC
28 18,821 SF 0.432 AC
29 13,724 SF 0.315 AC
30 16,360 SF 0.376 AC
31 18,342 SF 0.421 AC
32 16,705 SF 0.383 AC
33 19,613 SF 0.450 AC
34 24,593 SF 0.565 AC
35 24,646 SF 0.566 AC
36 23,696 SF 0.544 AC
37 18,757 SF 0.431 AC
38 15,619 SF 0.359 AC
46 23,786 SF 0.546 AC
10' U.E.*
L=74.85'
L=54.14'
L=34.18'
L=50.18'
L=7.87'
L=3.21'
L=110.71'
L=96.40'
L=92.20'
L=106.63'
L=313.34'
L=61.89'
L=19.83'
L=14.02'
L=18.21'
L=29.66'
L=70.86'
L=70.25'
L=72.76'
L=20.93'
L=72.04'
L=74.98'
L=47.35'
L=40.50'
L=38.65'
L=31.51'
L=71.04'
L=101.25'
L=71.04'
L=53.43'
L=41.67'
L=54.05'
L=91.63'
L=58.55'
L=80.09'
L=80.09'
L=80.09

FINAL PLAT

WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND
THE NORTHWEST QUARTER OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.



KEY MAP
SCALE: 1" = 600'

SE 1/4 SEC. 29,
T.1S., R.75W., SIXTH P.M.

SW 1/4 SEC. 29,
T.1S., R.75W., SIXTH P.M.

UNPLATTED

UNPLATTED

UNPLATTED

N58°58'37"W 80.26'

Δ=12°31'12"
R=320.00'
L=69.92'

S43°32'35"W (RADIAL)

N43°32'35"E 60.00'

Δ=27°35'44"
R=380.00'
L=183.03'

N65°25'10"E 299.51'
249.41'

N23°18'18
4.

N57°55'55"E 282.21'
70.22

N68°25'25"E 480.75'
81.36'

N43°06'31"E 242.12'
70.30

N15°51'37"E 288.33'
75.46'

21
12,927 SF
0.297 AC

20
11,312 SF
0.260 AC

19
11,121 SF
0.255 AC

18
10,604 SF
0.243 AC

17
11,073 SF
0.254 AC

16
12,505 SF
0.287 AC

15
12,169 SF
0.279 AC

14
13,718 SF
0.315 AC

13
13,428 SF
0.308 AC

12
12,896 SF
0.296 AC

11
12,082 SF
0.277 AC

10
11,281 SF
0.259 AC

9
11,541 SF
0.265 AC

8
12,437 SF
0.286 AC

7
12,561 SF
0.288 AC

22
15,901 SF
0.365 AC

TRACT A
80,264 SF
1.843 AC

32
16,705 SF
0.383 AC

33
19,613 SF
0.450 AC

34
24,593 SF
0.565 AC

41
22,975 SF
0.527 AC

40
14,321 SF
0.329 AC

39
14,738 SF
0.338 AC

TRACT E
47,152 SF
1.082 AC

42
28,463
0.653 A

43
24,759 SF
0.568 AC

44
25,481 SF
0.585 AC

45
18,184 SF
0.417 AC

46
23,786 SF
0.546 AC

TRACT B
102,684 SF
2.357 AC

COMPASS DRIVE
(56' WIDE PUBLIC ROW)

HUNTERS COURT

OUTPOST CLUB DRIVE
(PUBLIC ROW WIDTH VARIES)

TERRAIN COURT
(56' WIDE PUBLIC ROW)

50' DRAINAGE EASEMENT SEC. NO.

S77°32'17"E 54.86'
DRAINAGE EASEMENT

10' U.E.*

N87°01'06"W 254

N87°01'06"W 232.87'

N07°23'09"E 124.12'

N85°17'28"W 168.22'

S19°36'46"W 146.46'

S89°10'25"E 93.45'

N29°41'42"E 142.21'

S45°56'09"W 257.36'

N32°33'14"W 234.61'

S73°31'26"W 187.37'

S73°31'26"W 127.29'

S73°31'26"W 147.13'

S86°40'09"W 209.58'

N15°54'01"W 106.73'

N18°00'27"W 112.64'

N38°59'20"W 126.98'

N38°59'20"E 139.67'

N52°12'55"W 160.46'

N52°12'55"W 156.25'

N52°12'55"W 145.63'

N52°12'55"W 169.61'

N52°12'55"W 186.42'

N52°12'55"W 194.84'

N52°12'55"W 195.48'

N52°12'55"W 187.49'

N52°12'55"W 183.84'

N52°12'55"W 164.27'

N52°11'54"W 160.61'

N52°12'55"W 171.43'

N52°12'55"W 178.02'

N49°16'25"W 166.09'

S49°16'25"E 161.36'

S49°16'25"E 158.56'

L=15.64'
L=79.68'
L=66.83'
L=61.55'
L=28.53'
L=70.85'
L=72.18'
L=70.15'
L=74.24'
L=70.07'
L=81.07'
L=34.18'
L=54.14'
L=74.85'
L=70.86'
L=70.25'
L=72.76'
L=100.93'
L=18.21'
L=50.18'
L=7.87'
L=3.21'
L=81.31'
L=110.71'
L=139.55'
L=90.21'
L=361.04'
L=92.71'
L=30.03'
L=211.87'
L=409.74'
L=91.37'
L=322.29'
L=90.22'
L=169.67'
L=380.00'
L=361.44'
L=552.97'
L=509.31'
L=30.07'
L=88.09'
L=79.68'

R=320.00'
R=780.00'
R=816.00'
R=350.00'
R=380.00'
R=60.00'

Δ=70°43'26"
Δ=34°32'06"
Δ=26°45'46"
Δ=45°27'23"
Δ=83°22'32"
Δ=30°46'03"

C19
C20
C21
C22
C23
C24
C25
C30

L23
L25
L35
L36
L37
L61

N

0' 25' 50' 100'
SCALE: 1" = 50'

SEE SHEET 2
FOR LINE &
CURVE TABLES

SEE SHEET 3

SEE SHEET 3

SEE SHEET 6

LEGEND

✦	FOUND ALIQUOT CORNER AS SHOWN HEREON
○	SET NO. 5 X 18" REBAR WITH 1-1/4" PINK PLASTIC CAP STAMPED "AZTEC PLS 38636"
U.E.*	UTILITY EASEMENTS & SNOW STORAGE EASEMENT
(ROW)	RIGHT-OF-WAY
(NR)	DENOTES NON-RADIAL

FOR REVIEW
DO NOT RECORD

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No.: 181122-01 Drawn By: BAM

DEVELOPER
GRAND PARK DEVELOPMENT, LLC

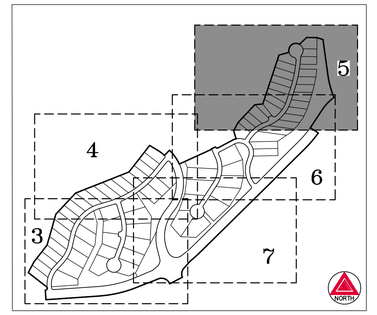
P.O. BOX 30
WINTER PARK, COLORADO 80482
(970) 726-8600

DATE OF PREPARATION:	12-17-2025
SCALE:	1" = 50'

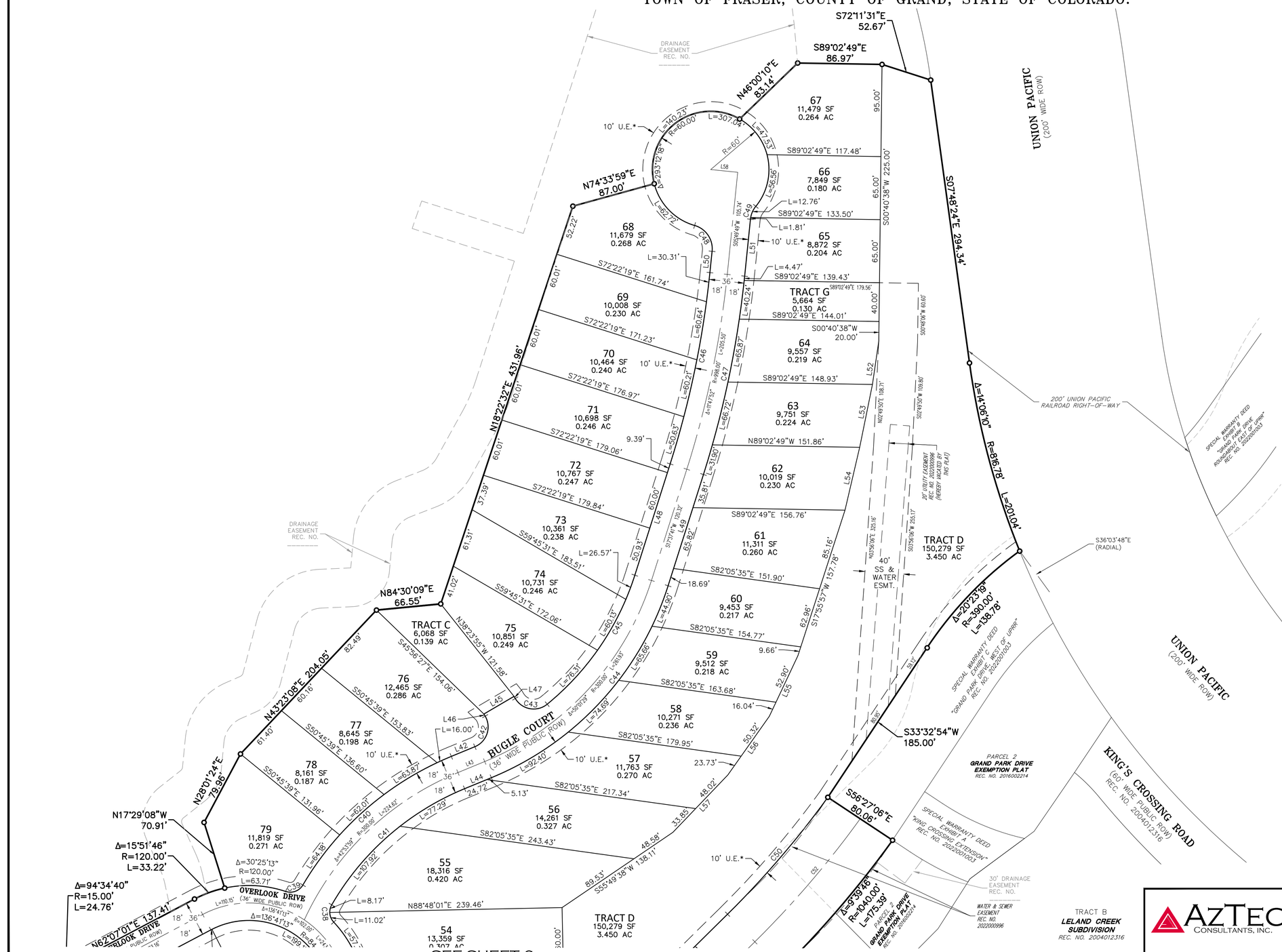
FINAL PLAT

WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND
THE NORTHWEST QUARTER OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.



KEY MAP
SCALE: 1" = 600'



LEGEND

✦	FOUND ALIQUOT CORNER AS SHOWN HEREON
○	SET NO. 5 X 18" REBAR WITH 1-1/4" PINK PLASTIC CAP STAMPED "AZTEC PLS 38636"
U.E.*	UTILITY EASEMENTS & SNOW STORAGE EASEMENT
(ROW)	RIGHT-OF-WAY
(NR)	DENOTES NON-RADIAL

SEE SHEET 2
FOR LINE &
CURVE TABLES

N
0' 25' 50' 100'
SCALE: 1" = 50'

FOR REVIEW
DO NOT RECORD

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No.: 181122-01 Drawn By: BAM

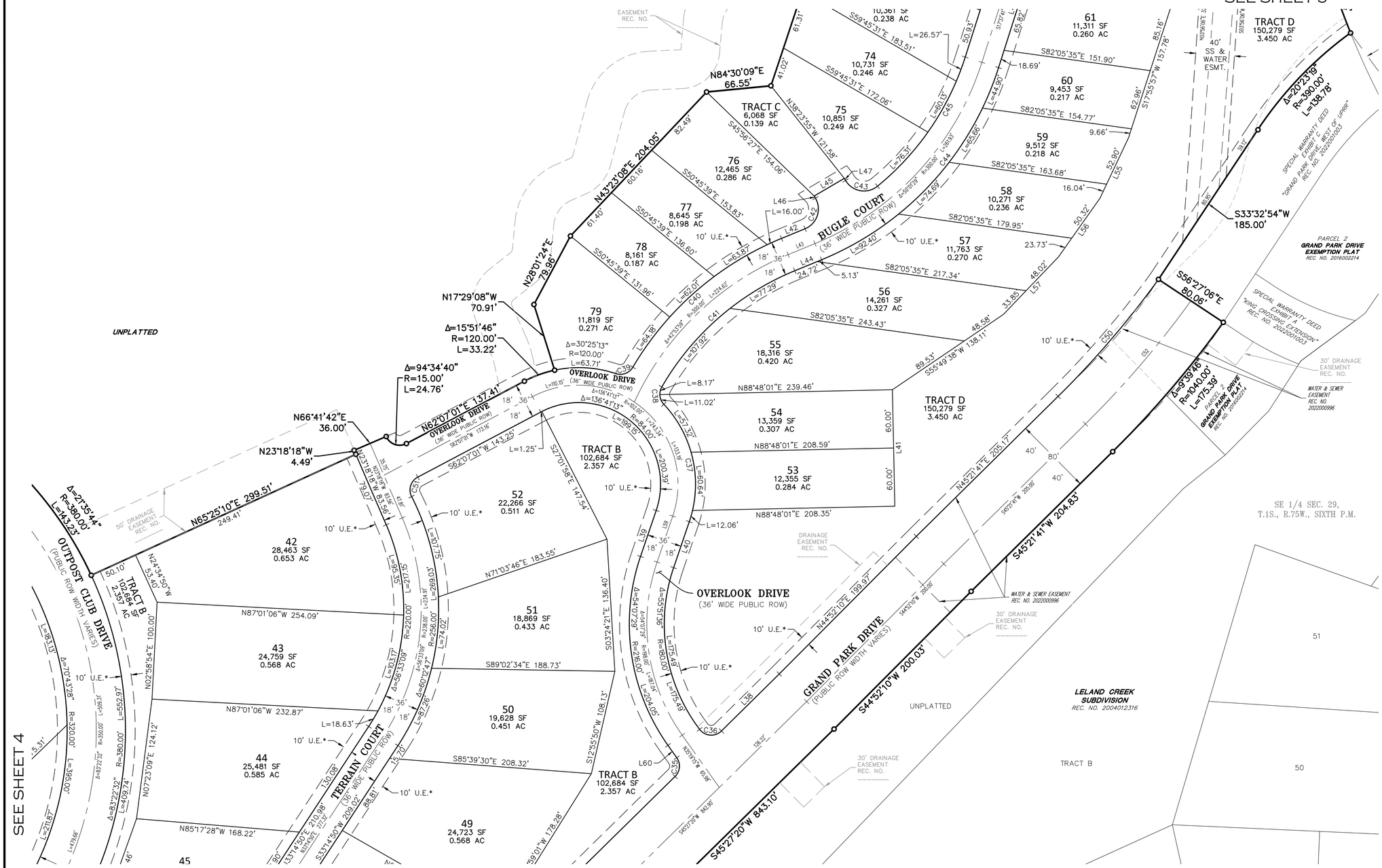
DEVELOPER
GRAND PARK DEVELOPMENT, LLC
P.O. BOX 30
WINTER PARK, COLORADO 80482
(970) 726-8600

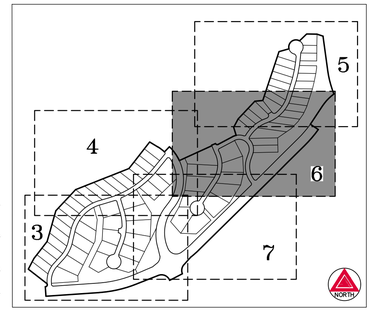
DATE OF PREPARATION:	12-17-2025
SCALE:	1" = 50'
SHEET 5 OF 7	

FINAL PLAT

WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND
THE NORTHWEST QUARTER OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.





KEY MAP
SCALE: 1" = 600'

LEGEND

✦	FOUND ALIQUOT CORNER AS SHOWN HEREON
○	SET NO. 5 X 18" REBAR WITH 1-1/4" PINK PLASTIC CAP STAMPED "AZTEC PLS 38636"
U.E.*	UTILITY EASEMENTS & SNOW STORAGE EASEMENT
(ROW)	RIGHT-OF-WAY
(NR)	DENOTES NON-RADIAL

SEE SHEET 2
FOR LINE &
CURVE TABLES

N
0' 25' 50' 100'
SCALE: 1" = 50'

FOR REVIEW
DO NOT RECORD

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AzTec CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No.: 181122-01 Drawn By: BAM

DEVELOPER
GRAND PARK DEVELOPMENT, LLC

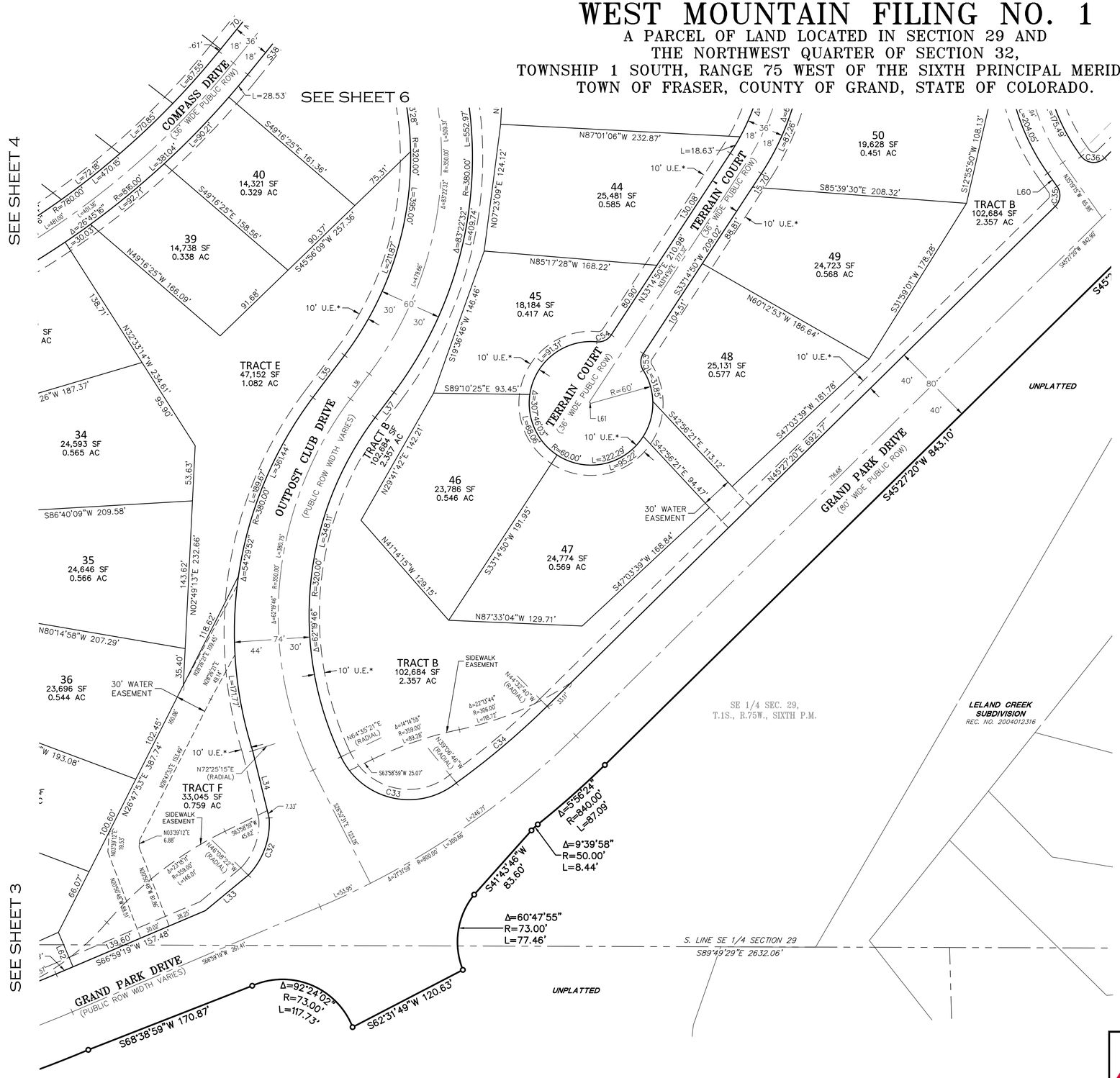
P.O. BOX 30
WINTER PARK, COLORADO 80482
(970) 726-8600

DATE OF PREPARATION:	12-17-2025
SCALE:	1" = 50'

FINAL PLAT

WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND
THE NORTHWEST QUARTER OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.


SEE SHEET 4
SEE SHEET 6
SEE SHEET 3
COMPASS DRIVE
(36' WIDE PUBLIC ROW)
OUTPOST CLUB DRIVE
(PUBLIC ROW WIDTH VARIES)
TERRAIN COURT
(36' WIDE PUBLIC ROW)
GRAND PARK DRIVE
(80' WIDE PUBLIC ROW)
GRAND PARK DRIVE
(PUBLIC ROW WIDTH VARIES)
40
14,321 SF
0.329 AC
39
14,738 SF
0.338 AC
34
24,593 SF
0.565 AC
35
24,646 SF
0.566 AC
36
23,696 SF
0.544 AC
TRACT E
47,152 SF
1.082 AC
TRACT B
102,684 SF
2.357 AC
TRACT F
33,045 SF
0.759 AC
45
18,184 SF
0.417 AC
44
25,481 SF
0.585 AC
50
19,628 SF
0.451 AC
49
24,723 SF
0.568 AC
48
25,131 SF
0.577 AC
46
23,786 SF
0.546 AC
47
24,774 SF
0.569 AC
30' WATER EASEMENT
SIDEWALK EASEMENT
10' U.E.*
UNPLATTED
LELAND CREEK SUBDIVISION
REC. NO. 2004012316
SE 1/4 SEC. 29,
T.1S., R.75W., SIXTH P.M.
S. LINE SE 1/4 SECTION 29
S89°49'29"E 2632.06'
S45°27'20"W 843.10'
N87°01'06"W 232.87'
N07°23'09"E 124.12'
N85°17'28"W 168.22'
S85°39'30"E 208.32'
N60°12'53"W 186.64'
S89°10'25"E 93.45'
S19°36'46"W 146.46'
S42°56'21"E 113.12'
S42°56'21"E 94.47'
S47°03'39"W 181.78'
S47°03'39"W 168.84'
S31°59'01"W 178.28'
S12°55'50"W 108.13'
S33°14'50"W 210.08'
S33°14'50"W 209.02'
N33°14'50"E 210.08'
N41°14'15"W 129.15'
S33°14'50"W 191.95'
N87°33'04"W 129.71'
N80°14'58"W 207.29'
S86°40'09"W 209.58'
N49°16'25"W 166.09'
S49°16'25"E 158.56'
S49°16'25"E 161.36'
S45°56'09"W 257.36'
N32°33'14"W 234.61'
N26°47'53"E 387.74'
S66°59'19"W 157.48'
S68°38'59"W 170.87'
S62°31'49"W 120.63'
S41°43'46"W 83.60'
Δ=5°56'24"
R=840.00'
L=87.09
Δ=9°39'58"
R=50.00'
L=8.44'
Δ=60°47'55"
R=73.00'
L=77.46'
Δ=92°24'02"
R=73.00'
L=117.73'
Δ=54°29'52"
R=380.00'
L=361.44'
Δ=26°45'16"
R=616.00'
L=287.71'
Δ=83°22'32"
R=380.00'
L=552.93'
Δ=62°29'46"
R=320.00'
L=348.11'
Δ=30°47'03"
R=60.00'
L=322.29'
Δ=30°47'03"
R=60.00'
L=96.22'
Δ=14°14'55"
R=359.00'
L=89.28'
Δ=22°10'14"
R=308.00'
L=119.22'
Δ=27°31'08"
R=600.00'
L=346.66'
L=53.90'
L=246.71'
L=211.87'
L=395.00'
L=91.31'
L=31.85'
L=68.09'
L=130.08'
L=97.76'
L=204.05'
L=775.49'
L=72.18'
L=470.15'
L=381.04'
L=90.21'
L=67.55'
L=70.85'
L=28.53'
L=18.63'
L=30.03'
L=92.71'
L=119.77'
L=478.68'
L=389.67'
L=348.11'
L=139.60'
L=102.45'
L=100.60'
L=66.07'
L=53.63'
L=138.71'
L=91.68'
L=90.37'
L=75.31'
L=104.51'
L=80.90'
L=118.62'
L=143.62'
L=35.40'
L=44.74'
L=74.30'
L=66.25'
L=7.33'
L=6.88'
L=38.25'
L=30.09'
L=30.00'
L=30.00'
L=30.00

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING NO. 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN THE SOUTH HALF OF SECTION 29
AND THE NORTH HALF OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO

LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 29 AND THE NORTH HALF OF SECTION 32, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, AND A PORTION OF PARCEL 2, GRAND PARK DRIVE EXEMPTION PLAT RECORDED AT RECEPTION NO. 2016002214 IN THE OFFICIAL RECORDS OF THE GRAND COUNTY, COLORADO CLERK AND RECORDER'S OFFICE, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE NORTH LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 29, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, WAS ASSUMED TO BEAR SOUTH 89°49'44" WEST, A DISTANCE OF 1,321.23 FEET, BEING MONUMENTED AT THE EAST QUARTER CORNER OF SAID SECTION 29 BY A 1-1/2" STEEL POST WITH 2-1/2" GLO BRASS CAP STAMPED "US GENERAL LAND OFFICE SURVEY 1/4 S29 S28 1933" AND AT THE CENTER-EAST SIXTEENTH CORNER OF SAID SECTION 29 BY A NO. 6 REBAR WITH 3-1/4" ALUMINUM CAP STAMPED "DEA INC. T1S R75W E 1/16 C-C S29 2014 PLS 34592".

COMMENCING AT SAID EAST QUARTER CORNER;

THENCE SOUTH 41°09'00" WEST, A DISTANCE OF 910.38 FEET TO THE SOUTHERLY BOUNDARY OF THE 200-FOOT-WIDE UNION PACIFIC RAILROAD RIGHT-OF-WAY AND THE **POINT OF BEGINNING**;

THENCE ALONG SAID SOUTHERLY BOUNDARY THE FOLLOWING TWO (2) COURSES:

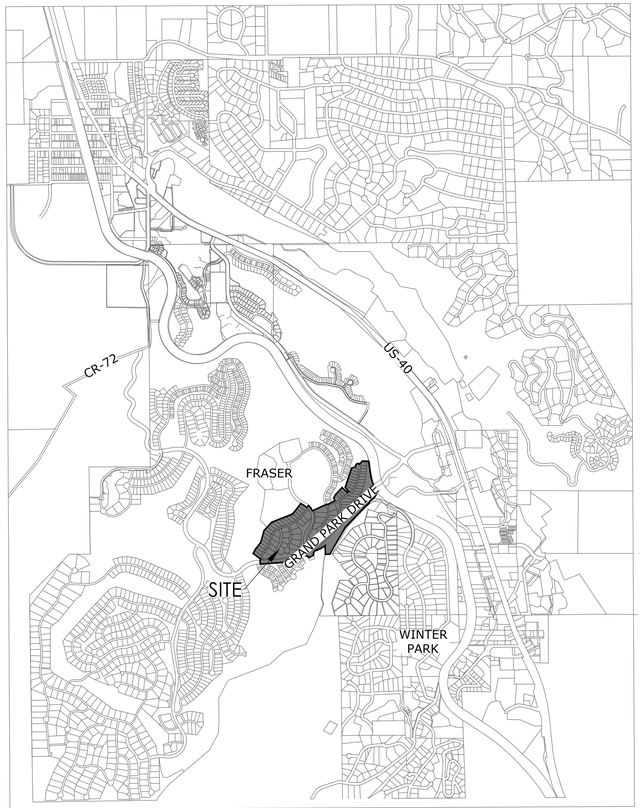
1. SOUTH 07°48'24" EAST, A DISTANCE OF 294.34 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE EASTERLY HAVING A RADIUS OF 816.78 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 82°07'05" EAST;
2. SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 14°06'10", AN ARC LENGTH OF 201.04 FEET TO THE MOST NORTHERLY CORNER OF THAT SPECIAL WARRANTY DEED, EXHIBIT C (TOWN OF FRASER RIGHT-OF-WAY), RECORDED AT RECEPTION NO. 2022001003 IN SAID RECORDS AND THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 390.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 36°03'48" EAST;

THENCE ALONG THE NORTHWESTERLY AND SOUTHWESTERLY BOUNDARY OF SAID RIGHT-OF-WAY THE FOLLOWING THREE (3) COURSES:

1. SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 20°23'19", AN ARC LENGTH OF 138.78 FEET TO THE BEGINNING;
2. TANGENT TO SAID CURVE, SOUTH 33°32'54" WEST, A DISTANCE OF 185.00 FEET;
3. SOUTH 56°27'06" EAST, A DISTANCE OF 80.06 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 1,040.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 54°18'02" WEST;

THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 09°39'46", AN ARC LENGTH OF 175.39 FEET;
THENCE SOUTH 45°21'41" WEST, A DISTANCE OF 204.83 FEET;
THENCE SOUTH 44°52'10" WEST, A DISTANCE OF 200.03 FEET;
THENCE SOUTH 45°27'20" WEST, A DISTANCE OF 843.10 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 840.00 FEET;
THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 05°56'24", AN ARC LENGTH OF 87.09 FEET TO THE BEGINNING OF A REVERSE CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 50.00 FEET;
THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 09°39'58", AN ARC LENGTH OF 8.44 FEET;
THENCE SOUTH 41°43'46" WEST, A DISTANCE OF 83.60 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE EASTERLY HAVING A RADIUS OF 73.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 51°02'34" EAST;
THENCE SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 60°47'55", AN ARC LENGTH OF 77.46 FEET;
THENCE SOUTH 62°31'49" WEST, A DISTANCE OF 120.63 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHERLY HAVING A RADIUS OF 73.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 68°37'00" WEST;
THENCE WESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 92°24'02", AN ARC LENGTH OF 117.73 FEET;
THENCE SOUTH 68°38'59" WEST, A DISTANCE OF 170.87 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 1,040.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 23°00'41" WEST;
THENCE WESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 19°05'05", AN ARC LENGTH OF 346.41 FEET;
THENCE SOUTH 86°04'23" WEST, A DISTANCE OF 445.44 FEET;
THENCE NORTH 03°55'37" WEST, A DISTANCE OF 80.00 FEET;
THENCE NORTH 86°04'23" EAST, A DISTANCE OF 2.00 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 15.00 FEET;
THENCE NORTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 90°00'00", AN ARC LENGTH OF 23.56 FEET;
THENCE NORTH 03°55'37" WEST, A DISTANCE OF 8.26 FEET;
THENCE NORTH 52°12'55" WEST, A DISTANCE OF 200.13 FEET;
THENCE NORTH 27°58'25" EAST, A DISTANCE OF 102.73 FEET;
THENCE NORTH 37°47'05" EAST, A DISTANCE OF 178.77 FEET;
THENCE NORTH 15°51'37" EAST, A DISTANCE OF 268.33 FEET;
THENCE NORTH 43°06'31" EAST, A DISTANCE OF 242.12 FEET;
THENCE NORTH 68°25'25" EAST, A DISTANCE OF 480.75 FEET;
THENCE NORTH 37°55'55" EAST, A DISTANCE OF 282.21 FEET;
THENCE SOUTH 58°58'37" EAST, A DISTANCE OF 80.26 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 320.00 FEET;
THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 12°31'12", AN ARC LENGTH OF 69.92 FEET;
THENCE NORTH 43°32'35" EAST, A DISTANCE OF 60.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 380.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 43°32'35" WEST;
THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 21°35'44", AN ARC LENGTH OF 143.23 FEET;
THENCE NORTH 65°25'10" EAST, A DISTANCE OF 299.51 FEET;
THENCE NORTH 23°18'18" WEST, A DISTANCE OF 4.49 FEET;
THENCE NORTH 66°41'42" EAST, A DISTANCE OF 36.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 15.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 66°41'42" EAST;
THENCE EASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 94°34'40", AN ARC LENGTH OF 24.76 FEET;
THENCE NORTH 62°07'01" EAST, A DISTANCE OF 137.41 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHERLY HAVING A RADIUS OF 120.00 FEET;
THENCE EASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 15°51'46", AN ARC LENGTH OF 33.22 FEET;
THENCE NORTH 17°29'08" WEST, A DISTANCE OF 70.91 FEET;
THENCE NORTH 28°01'24" EAST, A DISTANCE OF 79.96 FEET;
THENCE NORTH 43°23'08" EAST, A DISTANCE OF 204.05 FEET;
THENCE NORTH 84°30'09" EAST, A DISTANCE OF 66.55 FEET;
THENCE NORTH 18°22'32" EAST, A DISTANCE OF 431.96 FEET;
THENCE NORTH 74°33'59" EAST, A DISTANCE OF 87.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 60.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 75°54'23" EAST;
THENCE NORTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 133°54'35", AN ARC LENGTH OF 140.23 FEET;
THENCE NORTH 46°00'10" EAST, A DISTANCE OF 83.14 FEET;
THENCE SOUTH 89°02'49" EAST, A DISTANCE OF 86.97 FEET;
THENCE SOUTH 72°11'31" EAST, A DISTANCE OF 52.67 FEET TO THE **POINT OF BEGINNING**.

CONTAINING AN AREA OF 47.984 ACRES, (2,090,176 SQUARE FEET), MORE OR LESS



VICINITY MAP

GENERAL NOTES

1. LOCATIONS DEPICTED ON THIS PLAN ARE APPROXIMATE ONLY.
2. SETBACKS:
   - 2.1. LOTS 1-41 (SINGLE-FAMILY DETACHED IN 11W): 10' FRONT, 6' SIDE, 10' REAR.
   - 2.2. LOTS 42-52 (SINGLE-FAMILY DETACHED IN 10W): 10' FRONT, 6' SIDE, 10' REAR
   - 2.3. LOTS 53-79 (SINGLE-FAMILY DETACHED AND ATTACHED ELIGIBLE IN 10W): 10' FRONT, 20' FRONT TO GARAGE, 0' ATTACHED SIDE, DETACHED SIDE MUST MEET BUILDING AND FIRE CODES, 10' REAR.
   - 2.4. ALTERNATIVELY, ALL SINGLE-FAMILY ATTACHED ELIGIBLE (LOTS 53-79) CAN INCLUDE THE 6' NON-ATTACHED SIDE SETBACK AS LISTED ABOVE IN 11W FOR GREATER CONSISTENCY
3. LOTS 53-79 MAY BE DETACHED OR ATTACHED UNITS.
4. BUILDING HEIGHT SHALL NOT EXCEED 35'-0" IN 11W AND 50'-0" IN 10W, EXCLUDING CHIMNEYS, VENTILATORS, AND PIPES. BUILDING HEIGHTS SHALL BE MEASURED FROM THE AVERAGE FINISHED GRADE OF THE PRIMARY FOUR CORNERS OF THE STRUCTURE.
5. LANDSCAPING SHALL BE REQUIRED AND INSTALLED PER THE TOWN OF FRASER MUNICIPAL CODE AND THE GRAND PARK CC&R'S.
6. TO PROTECT AGAINST WILDFIRES AND ENHANCE FOREST HEALTH THE FOLLOWING WILDFIRE MITIGATION MEASURES ARE REQUIRED:
   A.) WATER HYDRANTS WILL BE SITED AT APPROPRIATE DISTANCES; AND
   B.) UTILITIES WILL BE CONSTRUCTED UNDERGROUND.
7. NO ROADS SHALL BE GATED.
8. ALL ROADS SHALL BE PUBLIC.
9. SIGNAGE DETAILS, INCLUDING MATERIALS, DIMENSIONS AND SIGN AREA WILL BE PROVIDED WITH BUILDING PERMIT. SIGNAGE SHALL COMPLY WITH GRAND PARK SIGNAGE PLAN.
10. IF THERE IS ANY CONFLICTING INFORMATION BETWEEN THIS FINAL PLAN AND THE FINAL PLAT, THE FINAL PLAT SHALL GOVERN.
11. FINAL ENGINEERING DOCUMENTS, CONSTRUCTION DRAWINGS AND A SITE SPECIFIC GEOTECHNICAL REPORT SHALL BE SUBMITTED AND APPROVED PRIOR TO BUILDING PERMIT ISSUANCE.
12. ALL LIGHT FIXTURES SHALL BE IN COMPLIANCE WITH THE TOWN OF FRASER MUNICIPAL CODE SECTION 14-5-30 AND 19-4-195 WHICH REGULATE EXTERIOR LIGHTING AND REQUIRE DARK SKY COMPLIANCE
13. TRACT D , TRACT F, GRAND PARK DRIVE, OUTPOST CLUB DRIVE AND A PORTION OF LELAND CREEK ARE IN 23W AS DEPICTED ON SHEET 3

CERTIFICATE FOR APPROVAL BY THE TOWN BOARD:

APPROVED AND ALL PUBLIC DEDICATIONS ACCEPTED THIS ____ DAY OF ____, BY THE FRASER TOWN BOARD. THE TOWN OF FRASER DOES NOT ASSUME ANY RESPONSIBILITY FOR THE CORRECTNESS OR ACCURACY OF ANY INFORMATION DISCLOSED ON THIS PLAN NOR ANY REPRESENTATIONS OR INFORMATION PRESENTED TO THE TOWN OF FRASER WHICH INDUCED THE TOWN TO GIVE THIS CERTIFICATE.

BY:_____
BRIAN CERKVENIK, MAYOR

MORTGAGEE'S CONSENT

THE UNDERSIGNED, BEING AN AUTHORIZED REPRESENTATIVE OF THE U.S. BANK, N.A., THE HOLDER OF A BENEFICIAL INTEREST AND TO THE PROPERTY DESCRIBED ON THIS PLAN, UNDER DEED OF TRUST RECORDED AT RECEPTION NO._____ OF THE GRAND COUNTY, COLORADO REAL PROPERTY RECORDS, HEREBY CONSENTS TO THIS PLAN AND AGREES THAT THE LIEN OF THE DEED OF TRUST IS HEREBY SUBORDINATED TO THIS PLAN.

U.S. BANK, N.A.

BY:_____
NAME:_____
TITLE:_____
NOTARY:
ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____. 20___, BY _____AS _____ OF U.S. BANK, N.A.
WITNESS MY HAND AND OFFICIAL SEAL.
MY COMMISSION EXPIRES:_____

NOTARY PUBLIC
MY COMMISSION EXPIRES:_____

OWNER CERTIFICATE

IN WITNESS WHEREOF, WEST MOUNTAIN DEVELOPMENT, LLC HAS CAUSED HIS/HER NAME TO BE HERE UNDER SUBSCRIBED THIS _____ DAY OF _____, 20__.

WEST MOUNTAIN DEVELOPMENT, LLC.
A COLORADO LIMITED LIABILITY COMPANY,

_____

PRESIDENT, CLARK LIPSCOMB

STATE OF COLORADO))
)SS.
COUNTY OF _____)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____DAY OF ____, 2026, BY _____ AS PRESIDENT ON BEHALF OF WEST MOUNTAIN DEVELOPMENT, LLC. A COLORADO LIMITED LIABILITY COMPANY.
WITNESS MY HAND AND OFFICIAL SEAL

_____
NOTARY PUBLIC
MY COMMISSION EXPIRES:_____

SHEET INDEX

COVER SHEET	1
SITE ANALYSIS	2
LAND USE PLAN	3
OVERALL SITE PLAN	4
SITE PLANS	5
OPEN SPACE PLAN	6
LANDSCAPE/REVEGETATION PLANS	7
PHASING PLAN	8
GRADING PLAN	9
UTILITY PLAN	10

OWNER
CLARK LIPSCOMB
WEST MOUNTAIN DEVELOPMENT, LLC.
PO BOX 30
WINTER PARK, CO 80482
(970) 726-8600

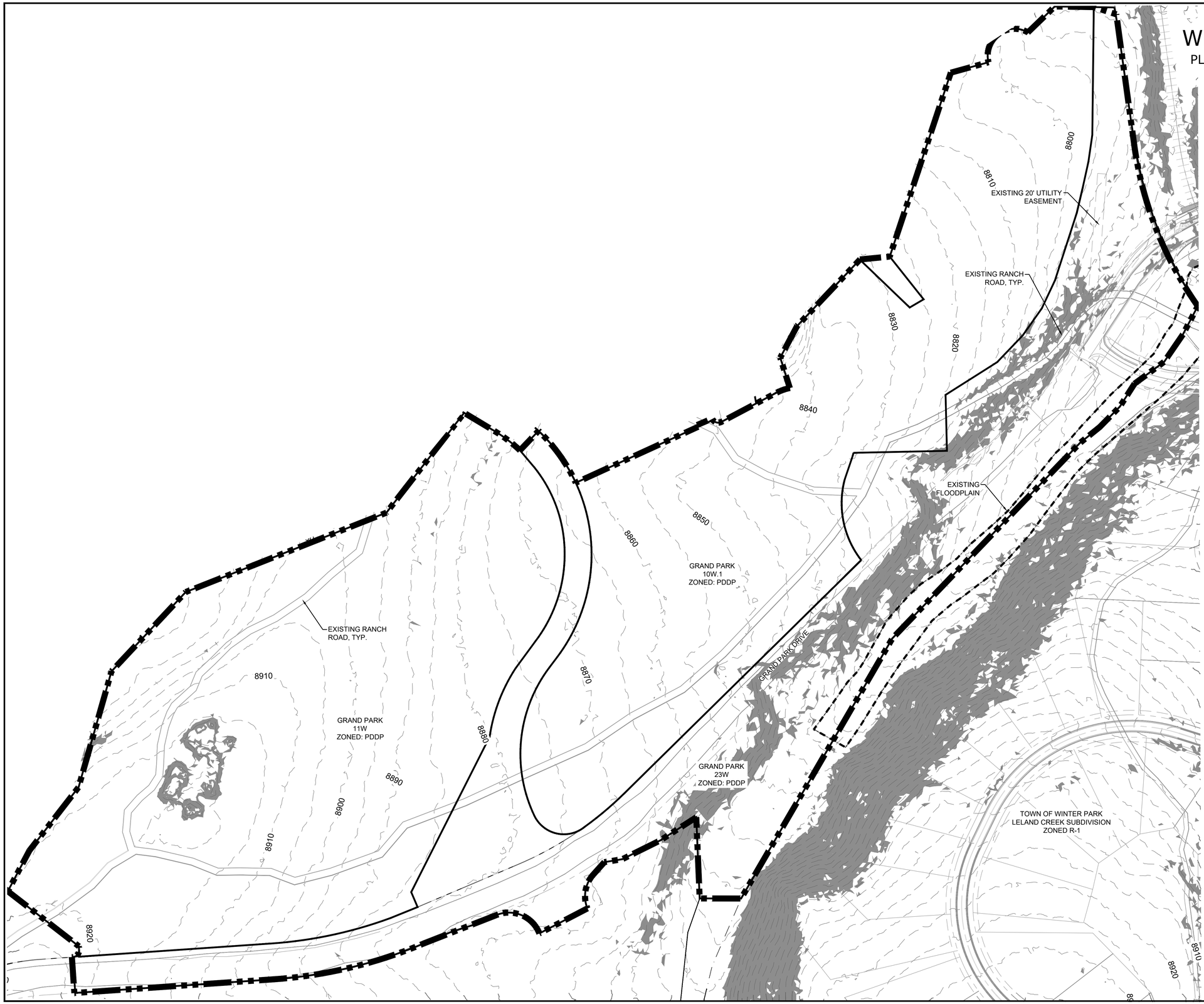
ENGINEER
MARTIN METSKER
TERRACINA DESIGN
10200 EAST GIRARD AVENUE
SUITE A-314
DENVER, CO 80231
(303) 632-8867

PLANNER
LAYLA ROSALES
TERRACINA DESIGN
10200 EAST GIRARD AVENUE
SUITE A-314
DENVER, CO 80231
(303) 632-8867

COVER SHEET
FEBRUARY 6, 2026
SHEET 1

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING NO. 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN THE SOUTH HALF OF SECTION 29
AND THE NORTH HALF OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



LEGEND

- FPDP BOUNDARY
- PLANNING AREA BOUNDARY
- 10' CONTOURS
- 30% OR GREATER SLOPES

Scale: 1"= 100'-0"

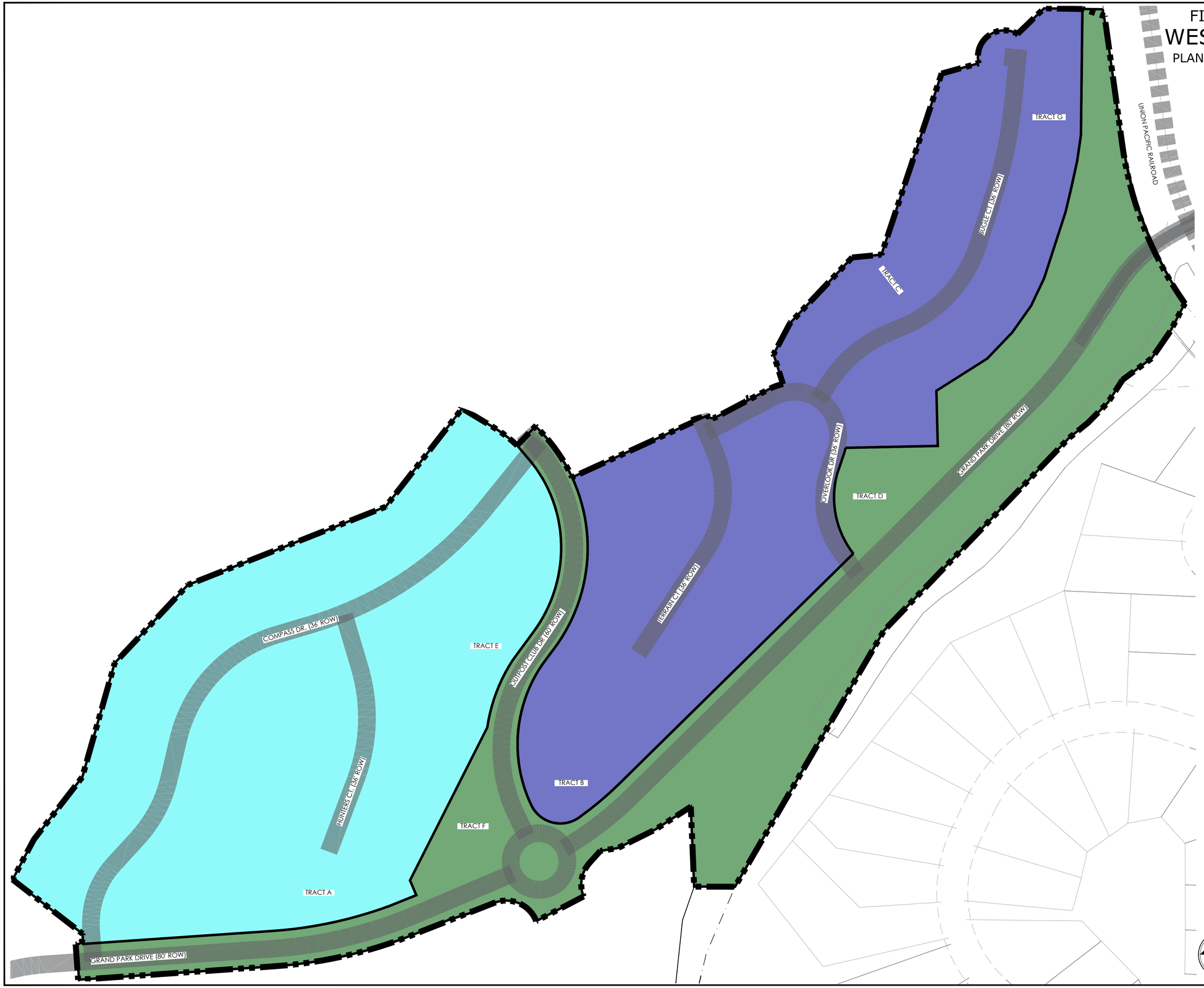
0 50 100 200

SITE ANALYSIS

FEBRUARY 6, 2026
SHEET 2

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING NO. 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN THE SOUTH HALF OF SECTION 29
AND THE NORTH HALF OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



LEGEND

- FPDP BOUNDARY
- PLANNING AREA BOUNDARY
- ROADWAY
- 10W.1
- 11W
- 23W

Land Use		PDDP Units	FPDP Units
Residential			
10W	**10W.1**	174	38
	10W.2 NOT A PART		(74)
	10W.3 NOT A PART		
Subtotal		**174**	**112**
11W	**11W**	41	41
	***Total**	**215**	**79**

Planning Area		PDDP Acres	FPDP Acres
10W	**10W.1**	40.8	17.5
	10W.2 NOT A PART		(25.2)
	10W.3 NOT A PART		
Subtotal		**40.8**	**42.7**
11W		16.1	19.3
Subtotal		**56.9**	**62.0**
23W			16.7
***Total**			**53.5**

* EXCLUDES 10W.2 & 10W.3

Scale: 1"= 200'-0"

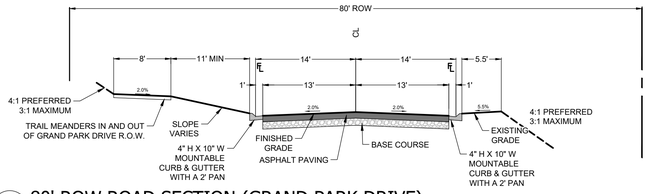
0 100 200 400

LAND USE PLAN

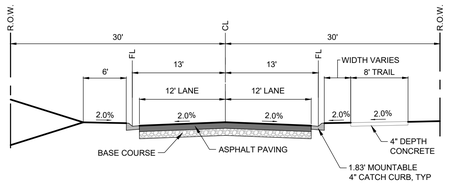
FEBRUARY 6, 2026
SHEET 3

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING NO. 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

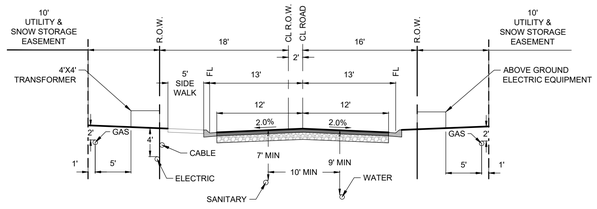
LOCATED IN THE SOUTH HALF OF SECTION 29
AND THE NORTH HALF OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



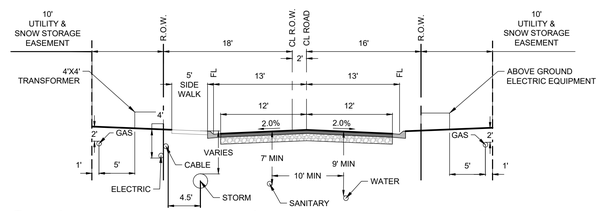
1 80' ROW ROAD SECTION (GRAND PARK DRIVE)
SCALE: 1"=10'



2 60' ROW ROAD SECTION (OUTPOST CLUB DRIVE)
SCALE: 1"=10'



3 36' ROW ROAD SECTION
SCALE: 1"=10'



4 36' ROW ROAD SECTION (WHEN STORM IS PRESENT)
SCALE: 1"=10'

LEGEND

- FPDP BOUNDARY
- PLANNING AREA BOUNDARY
- LOT LINE

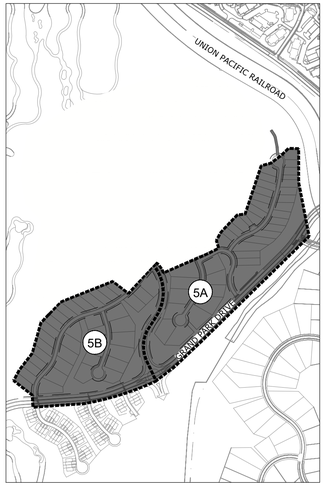
DEVELOPMENT SUMMARY			
PLANNING AREA	ACRES	SINGLE-FAMILY DETACHED	BUILDING HEIGHT
10W.1	17.5	38	50'
11W	19.3	41	35'
23W	16.7		50'
TOTAL	53.5	79	

Scale: 1"= 100'-0"
0 50 100 200

OVERALL SITE PLAN
FEBRUARY 6, 2026
SHEET 4

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING NO. 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN THE SOUTH HALF OF SECTION 29
AND THE NORTH HALF OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



KEY MAP

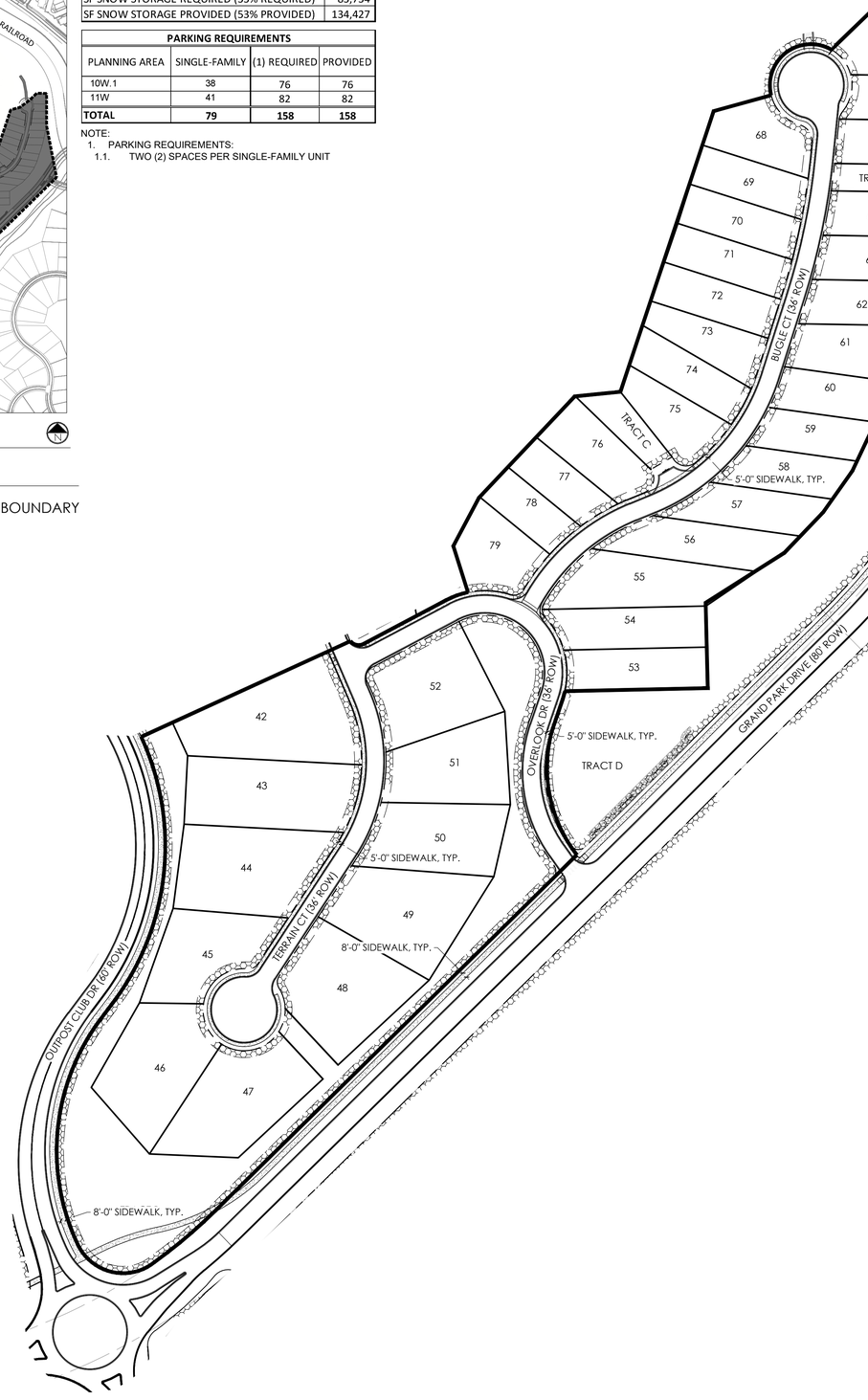
LEGEND

- PLANNING AREA BOUNDARY
- LOT LINE
- SNOW STORAGE

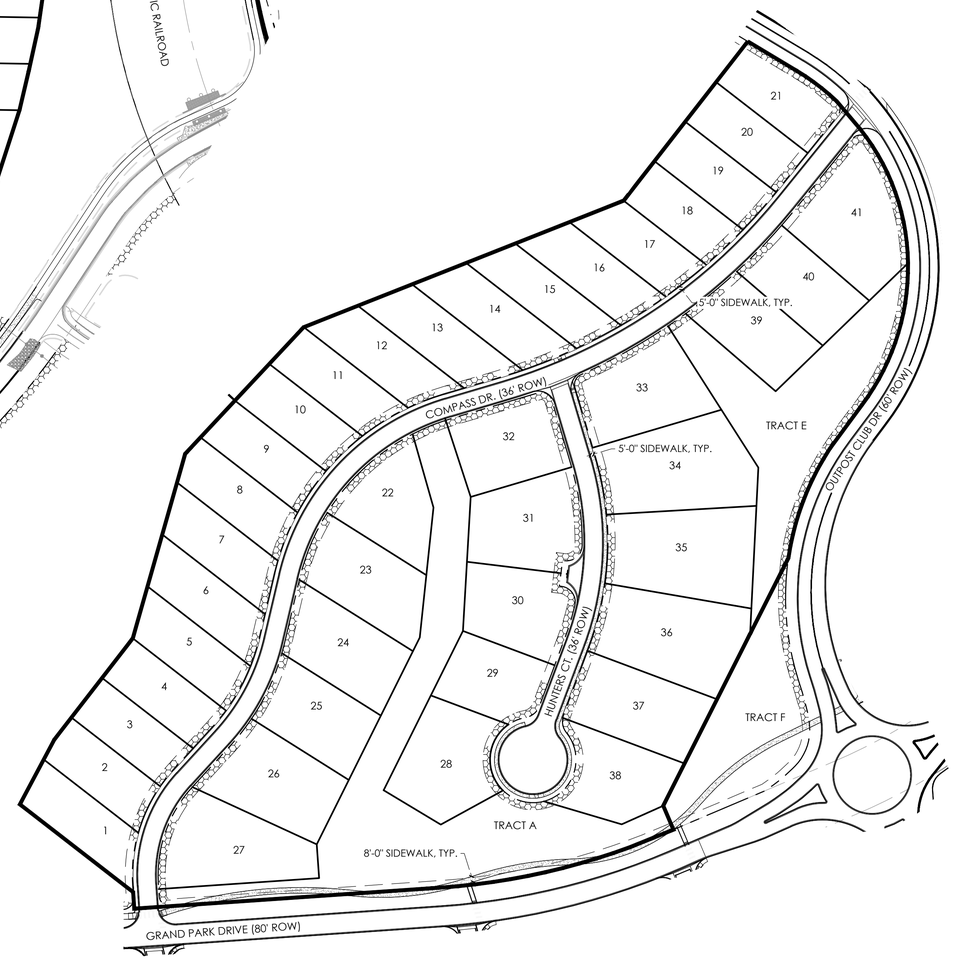
SNOW STORAGE REQUIREMENTS	
SF PAVED SURFACE	253,739
SF SNOW STORAGE REQUIRED (33% REQUIRED)	83,734
SF SNOW STORAGE PROVIDED (53% PROVIDED)	134,427

PARKING REQUIREMENTS			
PLANNING AREA	SINGLE-FAMILY	(1) REQUIRED	PROVIDED
10W.1	38	76	76
11W	41	82	82
TOTAL	**79**	**158**	**158**

NOTE:
1. PARKING REQUIREMENTS:
   1.1. TWO (2) SPACES PER SINGLE-FAMILY UNIT



A 10W.1
- SINGLE FAMILY DETACHED UNITS - 38



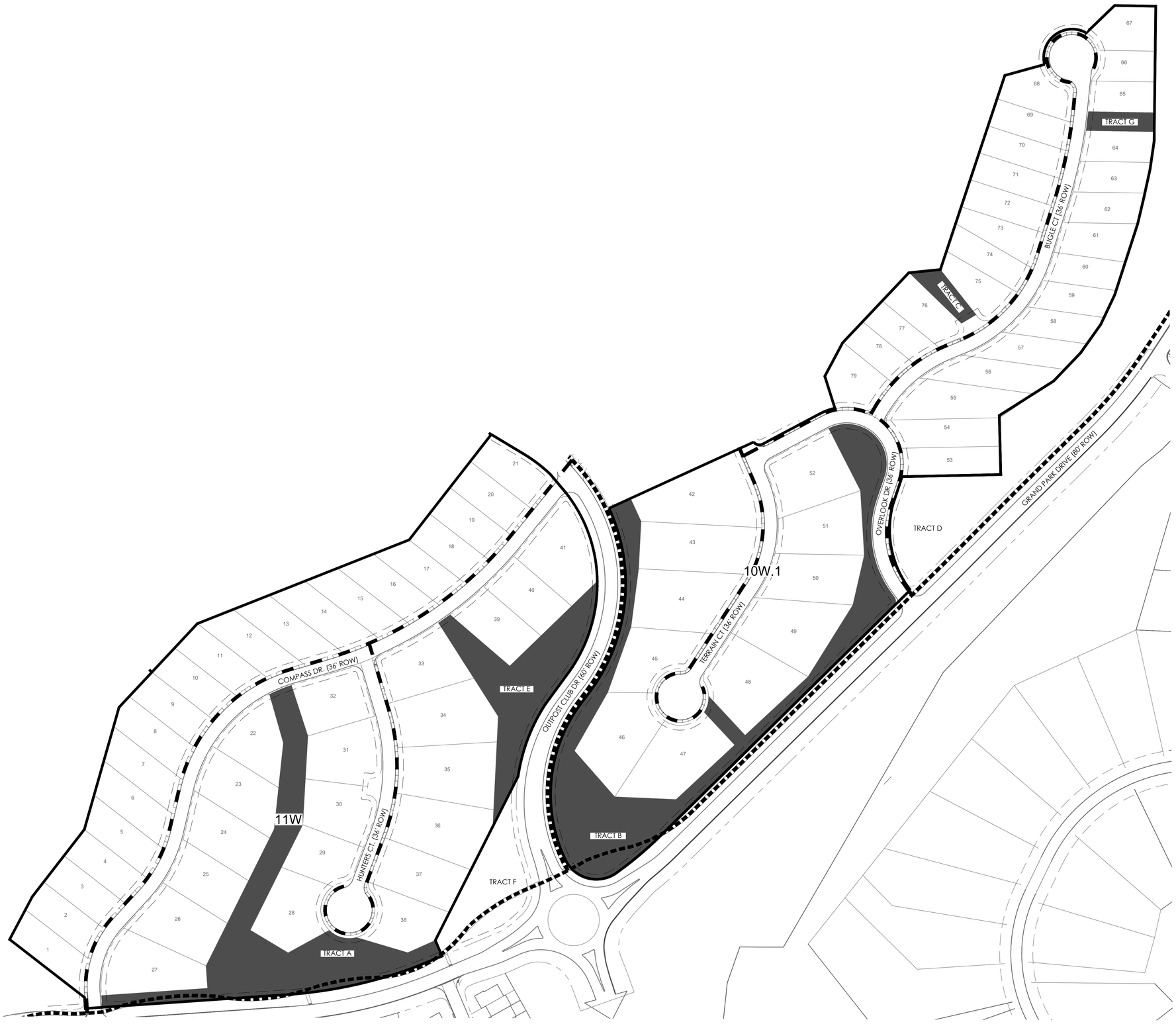
B 11W
- SINGLE-FAMILY DETACHED UNITS - 41

Scale: 1"= 100'-0"
0 50 100 200

SITE PLAN
FEBRUARY 6, 2026
SHEET 5

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING NO. 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN THE SOUTH HALF OF SECTION 29
AND THE NORTH HALF OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



LEGEND

- PLANNING AREA BOUNDARY
- 8' SIDEWALK
- 5' SIDEWALK
- OPEN SPACE

OPEN SPACE REQUIREMENTS			
PLANNING AREA	ACRES	*OPEN SPACE REQUIRED	OPEN SPACE PROVIDED
10W.1	17.5	2.6	2.6
11W	19.3	2.9	2.9

* OPEN SPACE REQUIREMENTS ARE 15% OF PLANNING AREA

Scale: 1"= 100'-0"

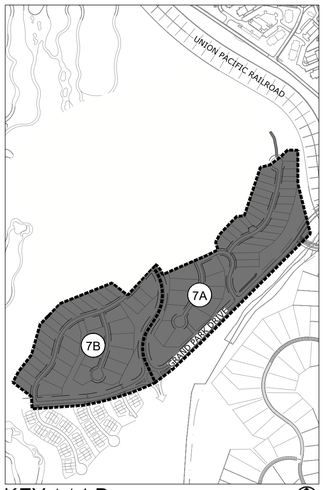
0 50 100 200

OPEN SPACE

FEBRUARY 6, 2026
SHEET 6

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING NO. 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN THE SOUTH HALF OF SECTION 29
AND THE NORTH HALF OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



KEY MAP

LEGEND

- PLANNING AREA BOUNDARY
- LOT LINE
- SEED MIX

EROSION CONTROL

BEST MANAGEMENT PRACTICES WILL BE INSTALLED AND MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION

NATIVE GRASS MIX

COMMON NAME	BOTANICAL NAME	% OF MIX	APPLICATION RATE
MANCHAR SMOOTH BROME	BROMUS INERMIS LEYSS	20%	10.0
POTOMAC ORCHARD	DACTYLIS GLOMERATA L.	20%	10.0
PUBESCENT WHEATGRASS	AGROPYRON TRICHOPHORUM	20%	10.0
PERENNIAL RYE	LOLIUM PERENNE L.	11%	5.5
REUBENS CANADA BLUE	POA COMPRESSA	10%	5.0
ANNUAL RYE	LOLIUM MULTIFLORUM LAM.	10%	5.0
TIMOTHY	PHLEUM PRATENSE	5%	2.5
CICER MILKVETCH	ASTRAGALUS CICER L.	2%	1.0
ALSIKE CLOVER	TRIFOLIUM HYBRIDUM	2%	1.0
TOTAL			50.0 LBS/PLS/ACRE

NOTE: ALL DISTURBED AREAS THAT ARE NOT PAVED SURFACE WILL BE SEEDED WITH NATIVE GRASS MIX SHOWN ABOVE.

1. SEED APPLICATION: DRILL SEED 0.25"-0.5" INTO THE SOIL. IN AREAS NOT ACCESSIBLE TO A DRILL HAND BROADCAST AT DOUBLE THE ABOVE RATE AND RAKE 0.25"-0.5" INTO THE SOIL. ON SLOPES STEEPER THAN 2:1 HYDROSEED AT DOUBLE THE RATE.
2. SOIL AMENDMENTS: PREPARE SOIL WITH SAND BASED GRANULAR HUMATE AT THE RATE OF 435 LBS. PER ACRE.
3. FERTILIZATION APPLICATION: APPLY BIOSOL ALL NATURAL ORGANIC FERTILIZER AT THE RATE OF 1,800 LBS. PER ACRE IN ALL SEEDING AREAS.
4. HYDROMULCH APPLICATION: HYDROMULCH SHALL CONSIST OF CELLULOSE FIBER MULCH AND MULCH TACKIFIER AND SHALL BE APPLIED AT THE RATES OF 2,000 LBS. PER ACRE AND 100 LBS. PER ACRE CONSECUTIVELY.



A 10W.1



B 11W

Scale: 1"= 100'-0"

0 50 100 200

LANDSCAPE PLAN

FEBRUARY 6, 2026
SHEET 7

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING NO. 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN THE SOUTH HALF OF SECTION 29
AND THE NORTH HALF OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



LEGEND

- I PHASE ONE
- II PHASE TWO
- III PHASE THREE
- PHASE LINE
- PLANNING AREA

NOTE: PHASES DO NOT NEED TO BE DEVELOPED IN ANY SPECIFIC ORDER AND WILL BE DEVELOPED BASED ON INFRASTRUCTURE AND MARKET DEMAND

Scale: 1"= 100'-0"

0 50 100 200

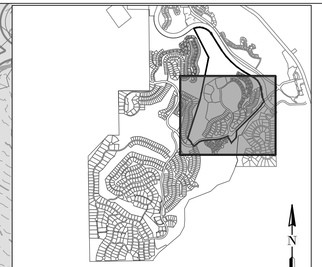
PHASING PLAN

FEBRUARY 6, 2026
SHEET 8

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO





KEY MAP
SCALE: 1" = 3000'

N
0 150' 300'
1 inch = 150'

LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- EASEMENT
- CENTERLINE
- LOT / TRACT / PARCEL BOUNDARY
- 4880 PROPOSED MAJOR CONTOUR
- 4879 PROPOSED MINOR CONTOUR
- 4880 PROPOSED MAJOR CONTOUR
- 4879 PROPOSED MINOR CONTOUR
- DRAINAGE SWALE
- SUBMITTAL AREA BOUNDARY
- FP FLOODPLAIN BOUNDARY
- EAST OF SITE - LELAND CREEK
  WEST OF SITE - ELK CREEK
- CONCRETE
- MAINTENANCE ACCESS
- NOT A PART
- C — COLLECTOR CURB & GUTTER (60' ROW, 26' FL-FL) SEE SHEET 3
- EA — EMERGENCY ACCESS (30' EASEMENT, 24' EOP-EOP) SEE SHEET 3
- L — LOCAL STREET TYPE "A" CURB & GUTTER (36' ROW, 26' FL-FL) SEE SHEET 3
- SD — SHARED DRIVE (30' EASEMENT, 20' FL-FL) SEE SHEET 3

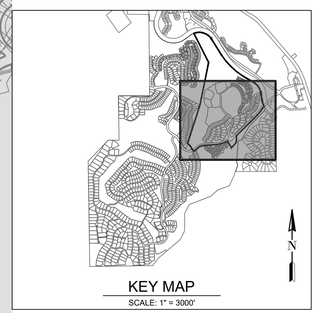
NOTES:

1. BUILDING / LODGING LOCATIONS ARE CONCEPTUAL AND WILL BE FINALIZED WITH FINAL CDS
2. SEE SHEET 4 FOR CREEK LOCATIONS & NAMES. PONDS DRAINING WEST OF PROPERTY DRAIN TO ELK CREEK & EAST OF PROPERTY TO LELAND CREEK.
3. CONTOUR INTERVALS ARE 2' & 10' .

GRADING PLAN
FEBRUARY 06, 2026
SHEET 9

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W
LOCATED IN SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO





N

0 150' 300'

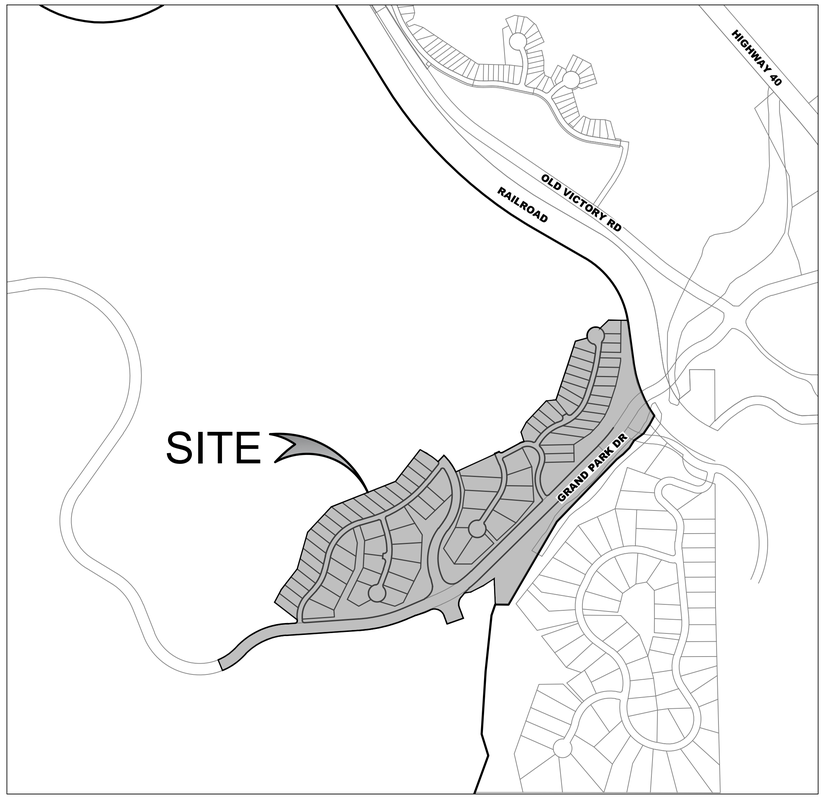
1 inch = 150'

LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- STORM (FES, MH, & INLET)
- SANITARY
- WATER (HYDRANT, VALVE, BEND, MH)
- PRESSURE REDUCING VALVE (PRV)
- X — EXISTING FENCE
- FO — EXISTING FIBER OPTIC
- G — EXISTING GAS
- W — EXISTING WATER
- EXISTING SWALE
- DRAINAGE SWALE
- SUBMITTAL AREA BOUNDARY
- FP — FLOODPLAIN BOUNDARY
- EAST OF SITE - LELAND CREEK / WEST OF SITE - ELK CREEK
- CONCRETE
- MAINTENANCE ACCESS
- RIPRAP
- NOT A PART

UTILITY PLAN
FEBRUARY 06, 2026
SHEET 10

FINAL CONSTRUCTION PLANS FOR
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO



VICINITY MAP

0 500' 1000'
1 inch = 500'

SHEET INDEX

NO	SHEET TITLE
1	COVER
2	GENERAL NOTES
3	TYPICAL SECTIONS
4	INDEX SHEET
5-7	SITE PLAN
8-10	GRADING PLAN
11-13	UTILITY PLAN
14	ROAD INDEX
15-27	ROAD P&P
28	SANITARY INDEX
29-38	SANITARY P&P
39	WATER INDEX
40-47	WATER P&P
48	STORM INDEX
49-56	STORM P&P
57-59	SIGNAGE & STRIPING PLAN
60-62	GESC INITIAL
63-65	GESC INTERIM
66-68	GESC FINAL
69-74	DETAILS
75-79	GESC DETAILS

CONTACT LIST

CURRENT LAND OWNER
WEST MOUNTAIN DEVELOPMENT LLC
P.O. BOX 30
WINTER PARK, COLORADO 80482
PHONE: 303.972.6633
CONTACT: CLARK LIPSCOMB

ENGINEER
TERRACINA DESIGN
10200 E. GIRARD AVE., SUITE A-314
DENVER, CO 80231
303-703-4444
CONTACT: MARTIN METSKER

GEOTECH
CTL THOMPSON, INC.
1790 AIRPORT ROAD, #2
POB 4928
BRECKENRIDGE, CO 80424
PHONE: 970-453-2047
CONTACT: GEORGE BENECKE III

TOWN OF FRASER
P.O. BOX 370
153 FRASER AVENUE
FRASER, CO 80442
PHONE: 970-726-5491, EXT. 205
CONTACT: PAUL JOHNSON

CONSULTING REVIEW ENGINEER
MERRICK & COMPANY
5250 HAHNS PEAK DR., SUITE 210
LOVELAND, CO 80538
PHONE: 970-744-3032
CONTACT: GREG STEED

EAST GRAND FIRE PROTECTION DISTRICT #4
POB 2967
WINTER PARK, COLORADO 80482
PHONE: 970-726-5824
CONTACT: TODD HOLZWARTH

MOUNTAIN PARKS ELECTRIC
POB 170
GRANBY, CO 80446
PHONE: 970-887-3378
CONTACT: TODD CLAUSEN

XCEL ENERGY
PHONE: 970-262-4055
CONTACT: KATHLEEN JACOBY

CENTURY LINK
PHONE: 970-879-3661
CONTACT: ANATASIA KENNER

COMCAST
POB 785
GRANBY, CO 80446
PHONE: 970-887-2676
CONTACT: TONY HILDRET

UTILITY NOTIFICATION CENTER OF COLORADO
2801 S YOUNGFIELD ST, SUITE 301
GOLDEN, CO 80401
PHONE: 811

BASIS OF BEARING
THE WEST LINE OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 28, TOWNSHIP 1 SOUTH, RANGE WEST OF THE SIXTH PRINCIPAL MERIDIAN WHICH WAS ASSUMED TO BEAR S00°14'02"E.

BENCHMARK STATEMENT
N.G.S. CONTROL POINT "N139" PID KK08971. THE STATION IS LOCATED 2.4 MILES BY ROAD, NORTH OF FRASER, BETWEEN THE RAILROAD AND U.S. HIGHWAY 40. NGVD 29 DATUM
ELEVATION = 8433.78

ENGINEERS STATEMENT
THESE CONSTRUCTION PLANS FOR GRAND PARK - FILING NO. 1 WERE PREPARED BY ME UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE REQUIREMENTS OF THESE STANDARDS.

BY: _____ _____
MARTIN METSKER DATE

TOWN OF FRASER APPROVAL BLOCK
THESE DESIGNS, PLANS, AND CONTRACT DOCUMENTS ARE REVIEWED FOR CONCEPT AND GENERAL CONFORMANCE TO THE TOWN'S MINIMUM STANDARDS ONLY, AND THE RESPONSIBILITY FOR DESIGN ADEQUACY SHALL REMAIN WITH THE ENGINEER OF RECORD. THIS REVIEW DOES NOT IMPLY RESPONSIBILITY BY EITHER THE TOWN OF FRASER OR THE TOWN'S ENGINEER FOR COMPLETENESS, ACCURACY OR CORRECTNESS OF CALCULATIONS. THE REVIEW DOES NOT IMPLY THAT QUANTITIES OF ITEMS INDICATED ON THE PLANS ARE THE FINAL QUANTITIES REQUIRED. THE REVIEW SHALL NOT BE CONSTRUED FOR ANY REASON AS ACCEPTANCE OF FINANCIAL RESPONSIBILITY BY THE TOWN OF FRASER OR ANY OF THE REVIEWING PARTIES FOR ADDITIONAL ITEMS AND ADDITIONAL QUANTITIES OF ITEMS SHOWN THAT MAY BE REQUIRED DURING THE CONSTRUCTION PHASE.

APPROVED FOR CONSTRUCTION WITHIN ONE YEAR OF THE EARLIEST OF THESE

BY: _____ _____
TOWN OF FRASER DATE

BY: _____ _____
TOWN OF FRASER DATE

BY: _____ _____
EAST GRAND F.P.D #4 DATE

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
COVER

Know what's below. Call before you dig. 811

2/6/2026 4:23 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS COVER - F1 - 16W.DWG 1

GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROMPTLY NOTIFYING THE ENGINEER OF ANY PROBLEMS OR POTENTIAL PROBLEMS IN CONFORMING TO THE DESIGN LINE AND GRADE FOR ANY ELEMENT OF THE CONSTRUCTION. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROMPTLY NOTIFYING THE ENGINEER OF SITE CONDITIONS THAT DIFFER FROM THOSE SHOWN ON THE APPROVED PLANS.
2. ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION OF PUBLIC IMPROVEMENTS SHALL MEET OR EXCEED THE STANDARDS AND SPECIFICATIONS SET FORTH IN THE LATEST MUNICIPAL CODE, APPLICABLE TECHNICAL MANUALS, AND APPLICABLE STATE AND FEDERAL REGULATIONS. WHERE THERE IS CONFLICT BETWEEN THESE PLANS AND THE TECHNICAL MANUAL OR ANY APPLICABLE STANDARDS, THE MORE STRINGENT STANDARD SHALL APPLY. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE CONSTRUCTION INSPECTOR.
3. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR COMPLETENESS OR ACCURACY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTENCE AND/OR LOCATION OF ALL UNDERGROUND UTILITIES AND PARTICIPATE IN THE RESOLUTION OF ANY CONFLICTS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY PERTINENT LOCATIONS AND ELEVATIONS, ESPECIALLY AT CONNECTION POINTS AND AT POTENTIAL UTILITY CONFLICTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS.
5. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE TOWN AND ALL UTILITY COMPANIES INVOLVED WITH REGARD TO RELOCATIONS OR ADJUSTMENTS OF EXISTING UTILITIES DURING CONSTRUCTION AND TO ASSURE THAT THE WORK IS ACCOMPLISHED IN A TIMELY FASHION AND WITH A MINIMUM DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PARTIES AFFECTED BY ANY DISRUPTION OF ANY UTILITY SERVICE.
6. CONTRACTOR SHALL PROVIDE A MINIMUM SEVENTY-TWO (72) HOURS NOTICE TO THE ON-SITE CONSTRUCTION INSPECTOR PRIOR TO MAKING ANY CONNECTIONS/TIE-INS TO EXISTING WATER, SANITARY SEWER, AND/OR STORM SEWER SYSTEMS PROVIDED THAT THE UTILITY TIE-IN DOES NOT DISRUPT SERVICE TO EXISTING WATER CUSTOMERS. ALL TOWN UTILITY TIE-INS MUST BE APPROVED BY THE WATER PROVIDER PRIOR TO COMMENCING WORK.
7. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS, ONE (1) COPY OF THE APPROPRIATE CRITERIA AND SPECIFICATIONS, AND A COPY OF ANY PERMITS AND EXTENSION AGREEMENTS NEEDED FOR THE JOB ONSITE AT ALL TIMES.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF SAFETY INCLUDING, BUT NOT LIMITED TO, EXCAVATION, TRENCHING, SHORING, TRAFFIC CONTROL, AND SECURITY.
9. IF DURING THE CONSTRUCTION PROCESS CONDITIONS ARE ENCOUNTERED WHICH COULD INDICATE A SITUATION THAT IS NOT IDENTIFIED IN THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE CONSTRUCTION INSPECTOR IMMEDIATELY.
10. ALL REFERENCES TO ANY PUBLISHED STANDARDS SHALL REFER TO THE LATEST REVISION OF SAID STANDARD UNLESS SPECIFICALLY STATED OTHERWISE.
11. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH MUTCD TO THE APPROPRIATE RIGHT-OF-WAY AUTHORITY (TOWN, COUNTY OR STATE) FOR APPROVAL PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN OR AFFECTING THE RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL TRAFFIC CONTROL DEVICES AS MAY BE REQUIRED BY THE CONSTRUCTION ACTIVITIES.
12. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR AND MATERIALS NECESSARY FOR THE COMPLETION OF THE INTENDED IMPROVEMENTS SHOWN ON THESE DRAWINGS OR AS DESIGNATED TO BE PROVIDED, INSTALLED, OR CONSTRUCTED UNLESS SPECIFICALLY NOTED OTHERWISE.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS-BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT ON THE CONSTRUCTION SITE AND AVAILABLE TO THE CONSTRUCTION INSPECTOR AT ALL TIMES.
14. DIMENSIONS FOR LAYOUT AND CONSTRUCTION ARE NOT TO BE SCALED FROM ANY DRAWING. IF PERTINENT DIMENSIONS ARE NOT SHOWN, CONTACT THE CONSULTANT ENGINEER FOR CLARIFICATION AND ANNOTATE THE DIMENSION ON THE AS-BUILT RECORD DRAWINGS.
15. ALL INITIAL SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PER THE TEMPORARY EROSION & SEDIMENT CONTROL (TESC) PLAN PRIOR TO ANY EARTH-DISTURBING ACTIVITY. ALL EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION AT ALL TIMES. REMOVAL OF CONTROL MEASURES SHALL NOT OCCUR WITHOUT THE APPROVAL OF THE STORMWATER INSPECTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADWAYS FREE AND CLEAR OF ALL CONSTRUCTION DEBRIS AND DIRT TRACKED FROM THE SITE. THE CONTRACTOR SHALL ALSO COMPLY WITH ALL TERMS AND CONDITIONS OF THE COLORADO CONSTRUCTION GENERAL PERMIT FOR STORMWATER DISCHARGES.
16. NO PORTIONS OF THE PROPERTY ARE LOCATED WITHIN A DESIGNATED 100-YEAR FLOODPLAIN ZONE PER FEMA FIRM PANEL NO. 08049C0991C DATED MARCH 16, 2016.
17. BENCHMARK NOTE: CONTROL POINT "N139" PID KK08971. THE STATION IS LOCATED 2.4 MILES BY ROAD, NORTH OF FRASER, BETWEEN THE RAILROAD AND U.S. HIGHWAY 40. NGVD 29 DATUM ELEVATION = 8433.78
18. ALL UTILITIES ARE REVIEWED FOR AREA OF PLACEMENT (LOCATION) INCLUDING, IN EASEMENT/ROW, HORIZONTAL AND VERTICAL CLEARANCES, AND CONFLICTS WITH OTHER UTILITIES PER THE TRANSPORTATION DESIGN CRITERIA MANUAL, WATER SYSTEM DESIGN CRITERIA MANUAL, WASTEWATER DESIGN CRITERIA MANUAL, STORM DRAINAGE DESIGN AND TECHNICAL CRITERIA MANUAL, AND ALL OTHER UTILITY OWNER AND OPERATOR CRITERIA.
19. FOR ALL UTILITY CUTS WITHIN RIGHT-OF-WAY, SEE FRASER MUNICIPAL CODE SECTION 14-5-210(C).
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFE, PASSABLE ACCESS TO PRIVATE PROPERTIES ADJACENT TO THE WORK THROUGHOUT THE PERIOD OF CONSTRUCTION.
21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE JOB SITE CONDITIONS THROUGHOUT THE DURATION OF CONSTRUCTION, INCLUDING SAFETY OF ALL PERSONS AND PROTECTION OF PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED ONLY TO WORKING HOURS. THE CONTRACTOR SHALL DEFEND INDEMNIFY AND HOLD THE OWNER, THE ENGINEER AND THE GOVERNING JURISDICTION HARMLESS FOR ANY AND ALL LIABILITY, IN CONNECTION WITH THE PERFORMANCE OF WORK, EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER, THE ENGINEER OR THE GOVERNING JURISDICTION.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING NEARBY PUBLIC OR PRIVATE STREETS OF MUD AND DEBRIS, DUE TO CONSTRUCTION ACTIVITIES, ON A DAILY BASIS OR AS DIRECTED BY THE APPLICANT.

STORM SEWER NOTES:

1. LOCATION OF EXISTING STORM SEWER (INCLUDING CULVERTS) SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO START OF CONSTRUCTION.
2. STORM SEWER SHALL BE RCP IN ACCORDANCE WITH CDOT STANDARD M-603-2.
3. ALL CULVERTS SHALL HAVE END SECTIONS ON BOTH THE UPSTREAM AND DOWNSTREAM ENDS OF THE PIPE UNLESS OTHERWISE NOTED ON THE PLANS.
4. STORM SEWER RCP SHALL HAVE BEDDING AND BACKFILL IN ACCORDANCE WITH CDOT STANDARD M-603-2 AND TOWN OF FRASER ROAD STANDARDS.
5. PIPE LENGTHS FOR STORM SEWER ARE APPROXIMATE HORIZONTAL DISTANCES FROM END SECTION TO END SECTION. THEREFORE, DISTANCES SHOWN ON THE PLANS ARE APPROXIMATE ONLY AND COULD VARY. END SECTIONS ARE INCLUDED IN THE PIPE LENGTH SHOWN ON THE PLANS. FINAL LENGTH OF STORM SEWER SHALL BE SUFFICIENT TO PROVIDE THE ROAD SHOULDERS AND SIDE SLOPES TO NOT BE STEEPER THAN SHOWN ON THE TYPICAL ROAD SECTION.
6. DRIVEWAYS FOR ADJACENT PARCELS AND CULVERTS UNDER THE DRIVEWAYS SHALL BE DESIGNED IN THE FUTURE IN CONJUNCTION WITH DESIGNS FOR THE ADJACENT PARCELS.
7. ALL STORM DRAINAGE PIPES SHALL HAVE A MINIMUM COVER OF 24" UNLESS LOAD CALCULATIONS ARE PROVIDED. UNDER NO CIRCUMSTANCES WILL ANY PIPE HAVE LESS THAN 18" COVER FROM THE FINISH SURFACE TO THE OUTSIDE WALL OF THE PIPE.
8. ALL STORM DRAINAGE TRENCHES SHALL BE SLOPED OR BRACED AND SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKERS AND THE PROTECTION OF OTHER UTILITIES AND IN COMPLIANCE WITH ALL APPLICABLE STATE AND FEDERAL REQUIREMENTS. ALL EXCAVATION OPERATION SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR.
9. ALL MANHOLE RIM ELEVATIONS GIVEN ON THESE PLANS ARE TO BE CONSIDERED APPROXIMATE. THE CONTRACTOR SHALL SET THE FINAL RIM ELEVATION BASED ON THE COMPLETED FINISH SURFACE.

STREET CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROMPTLY NOTIFYING THE ENGINEER OF ANY PROBLEMS OR POTENTIAL PROBLEMS IN CONFORMING TO THE DESIGN LINE AND GRADE FOR ANY ELEMENT OF THE CONSTRUCTION. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROMPTLY NOTIFYING THE ENGINEER OF SITE CONDITIONS THAT DIFFER FROM THOSE SHOWN ON THE APPROVED PLANS.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE TOWN OF FRASER STREET AND ROADWAY MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS DATED JANUARY 2015.
3. ALL STREET CONSTRUCTION IS SUBJECT TO THE GENERAL NOTES ON THE COVER SHEET OF THESE PLANS AS WELL AS THE STREET CONSTRUCTION NOTES LISTED HERE.
4. WHERE PROPOSED PAVING ADJOINS EXISTING ASPHALT, THE EXISTING ASPHALT SHALL BE SAW CUT A MINIMUM DISTANCE OF 12" FROM THE EXISTING EDGE TO CREATE A CLEAN CONSTRUCTION JOINT. THE DEVELOPER SHALL BE REQUIRED TO REMOVE EXISTING PAVEMENT TO A DISTANCE WHERE A CLEAN CONSTRUCTION JOINT CAN BE MADE.
5. STREET SUBGRADES SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 12" AND RE-COMPACTED PRIOR TO SUB-BASE INSTALLATION. NO BASE MATERIAL SHALL BE LAID UNTIL THE SUBGRADE HAS BEEN INSPECTED AND APPROVED BY THE CONSTRUCTION INSPECTOR.
6. VALVE BOXES ARE TO BE BROUGHT UP TO GRADE AT THE TIME OF PAVEMENT PLACEMENT OR OVERLAY. VALVE BOX ADJUSTING RINGS ARE NOT ALLOWED.
7. ALL STREET CUTS FOR UTILITY CONNECTIONS SHALL BE BACKFILLED WITH FLOWABLE FILL, PERIMETER SHALL BE SAW CUT AND EDGE MILLED PER CDOT REQUIREMENTS.
8. LIFTS IN FILL AREAS SHALL NOT EXCEED 8 INCHES IN COMPACTED DEPTH. MAXIMUM SLOPES OF ALL CUTS & FILLS SHALL BE 3:1 UNLESS OTHERWISE NOTED. FILL SHALL NOT BE PLACED ON EXISTING TOPSOIL OR ORGANIC MATERIAL. TOPSOIL AND ORGANIC MATERIAL SHALL BE STRIPPED AND REMOVED FROM THE FILL AREA AND NOT USED IN THE FILL. FILL SHALL ONLY BE PLACED ON SUITABLE EXISTING SUBGRADE FREE OF ANY TOPSOIL AND/OR ORGANIC MATERIAL.
9. PAVING SHALL NOT START UNTIL SUBGRADE COMPACTION TESTS ARE TAKEN MEETING THE REQUIREMENTS OF THE PLANS AND SPECS AND FINAL PAVEMENT DESIGN.THE PAVEMENT SECTION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT FOR THS PROJECT. THE MINIMUM DEPTH OF ASPHALT SHALL BE 5-INCHES.
10. ASPHALT PAVING SHALL BE IN ACCORDANCE WITH THE TOWN OF FRASER ROAD STANDARDS FINAL ASPHALT THICKNESS AND BASE COURSE THICKNESS SHALL BE IN ACCORDANCE WITH THE SOIL'S ENGINEER'S REPORT.
11. ROADWAY BASE COURSE AND FILL AREA COMPACTION SHALL CONFORM TO THE TOWN OF FRASER ROAD STANDARDS. THE BASE COURSE AND COMPACTION SHALL ALSO CONFORM TO THE GENERAL NOTES.
12. AT COMPLETION OF CONSTRUCTION, AS PART OF THE PRELIMINARY ACCEPTANCE, THE TOWN WILL SELECT REPRESENTATIVE LOCATIONS TO TAKE ASPHALT CORINGS AS CONFIRMATION OF ASPHALT DEPTH AND CONSISTENCY OF THE ASPHALT SECTION. THE TOWN WILL CONTRACT DIRECTLY WITH A COMPANY TO PERFORM THIS WORK AND WILL BACK CHARGE THE DEVELOPER FOR THE COST.

SIGNAGE AND STRIPING NOTES:

1. ALL SIGNAGE AND STRIPING IS SUBJECT TO THE GENERAL NOTES ON THE COVER SHEET OF THESE PLANS AS WELL AS THE SIGNAGE AND STRIPING NOTES LISTED HERE.
2. ALL PAINT SHALL BE 15 MIL THICK UPON INSTALLATION AND 8 MIL THICK WHEN DRY.
3. ALL PERMANENT LONGITUDINAL PAVEMENT STRIPING ON ASPHALT SURFACES (CENTERLINES, LANE LINES, BAY LINES, ETC.) SHALL BE INSTALLED USING AN APPROVED REFLECTIVE TRAFFIC PAINT OR PAVEMENT MARKING TAPE. REFLECTIVE BEADS SHALL BE APPLIED IN ACCORDANCE WITH CDOT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND THE MANUFACTURER'S REQUIREMENTS. WHEN TAPE IS USED ON AN ASPHALT STREET, IT SHALL BE "ROLLED" INTO THE FINAL LIFT. ON CONCRETE SURFACES TAPE SHALL BE UTILIZED WITH A CONTRASTING BLACK EDGE AND GROOVED INTO THE PAVEMENT.
4. THERMO-PLASTIC APPLICATIONS SHALL BE AS SPECIFIED IN THE PLANS AND/OR PER TOWN CRITERIA.
5. ALL SURFACES THAT ACCEPT PAINT/THERMO-PLASTIC STRIPING OR PRE-FORMED MARKINGS SHALL BE FIRST SANDBLASTED AND THOROUGHLY CLEANED PRIOR TO INSTALLATION OF STRIPING OR MARKINGS.
6. ALL ARROW MARKINGS SHALL BE PRE-FORMED TAPE, THERMO-PLASTIC OR EPOXY-PAINTED.
7. STOP BARS SHALL BE 90 MIL THERMO-PLASTIC.
8. ALL ROADWAY SIGNAGE SHALL CONFORM TO THE MUTCD AND/OR THE TOWN'S CRITERIA.
9. ALL SIGNPOSTS SHALL UTILIZE BREAKAWAY ASSEMBLIES AND FASTENERS.

FIRE NOTES:

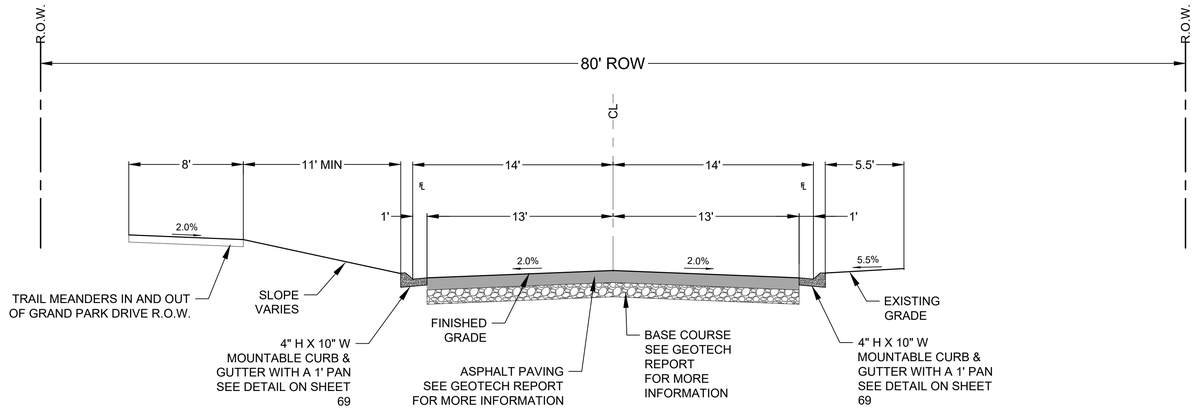
1. IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER TO MAINTAIN DRIVE LANES FOR EMERGENCY VEHICLE INGRESS AND EGRESS, INCLUDING SNOW REMOVAL.
2. EMERGENCY VEHICLE ACCESS ROAD IS REQUIRED TO ALLOW ACCESS WITHIN 150' OF ALL EXTERIOR OF THE BUILDING BY AN APPROVED ROUTE.
3. FIRE APPARATUS ACCESS ROADS SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS AND SHALL BE PROVIDED WITH A SURFACE SO AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES. ACCESS ROAD SHALL BE EITHER CONCRETE, ASPHALT, OR OTHER APPROVED ALTERNATIVE MATERIAL ACCOMPANIED WITH AN ENGINEER'S STAMP STATING THE MATERIAL WILL SUPPORT A 75,000 POUND IMPOSED LOAD.
4. FIRE HYDRANT(S) ARE REQUIRED TO BE INSTALLED AND MADE SERVICEABLE PRIOR TO COMBUSTIBLE MATERIALS BEING BROUGHT ONTO THE SITE AND DURING THE TIME OF VERTICAL CONSTRUCTION.
5. "NO PARKING FIRE LANE" SIGNS ARE REQUIRED IN AREAS THAT MEET THE FOLLOWING CRITERIA AND IN AREAS DESIGNATED BY THE FIRE PREVENTION BUREAU. SIGNS SHALL BE POSTED ON BOTH SIDES OF FIRE DEPARTMENT ACCESS ROADWAYS, PUBLIC OR PRIVATE ROADWAYS AND DRIVEWAYS LESS THAN 26 FEET WIDE. SIGNS SHALL BE POSTED ON ONE SIDE ONLY OF FIRE DEPARTMENT ACCESS ROADWAYS, PUBLIC OR PRIVATE ROADWAYS OR DRIVEWAYS BETWEEN 26 FEET WIDE AND 32 FEET WIDE. NO SIGNAGE IS REQUIRED FOR ACCESS ROADWAY FIRE DEPARTMENT ACCESS ROADWAYS, PUBLIC OR PRIVATE ROADWAYS OR DRIVEWAYS EXCEEDING 32 FEET WIDE.
6. WHEN FIRE APPARATUS ACCESS ROADS OR A WATER SUPPLY FOR FIRE PROTECTION IS REQUIRED TO BE INSTALLED, SUCH PROTECTION SHALL BE INSTALLED AND MADE SERVICEABLE PRIOR TO COMBUSTIBLE MATERIALS BEING BROUGHT ONTO THE SITE AND THE BUILDING CONSTRUCTION GOING VERTICAL.

SANITARY CONSTRUCTION NOTES:

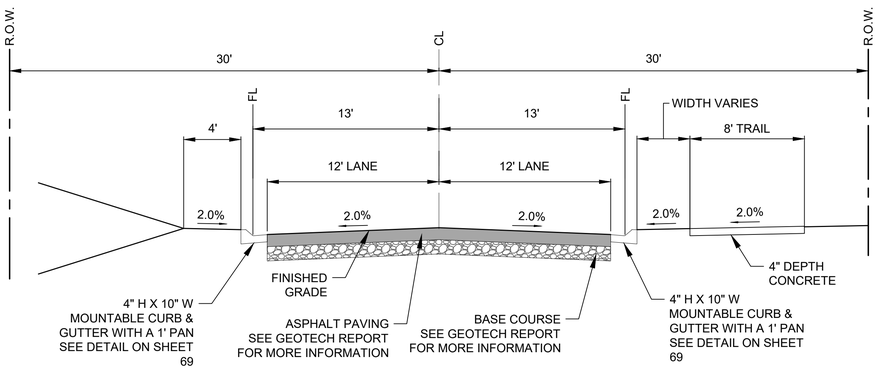
1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE FRASER CONSTRUCTION STANDARDS AND MINIMUM DESIGN CRITERIA.
2. ALL MANHOLE RIM ELEVATIONS GIVEN ON THESE PLANS ARE CONSIDERED APPROXIMATE. THE CONTRACTOR SHALL SET THE FINAL RIM ELEVATION BASED ON THE COMPLETE FINISH SURFACE.
3. ALL SANITARY SEWER LINE TRENCHES SHALL BE SLOPED OR BRACED AND SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKERS AND THE PROTECTION OF OTHER UTILITIES, IN COMPLIANCE WITH ALL APPLICABLE STATE AND FEDERAL REQUIREMENTS. ALL EXCAVATION OPERATION SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR.
4. MINIMUM COVER FOR SANITARY SEWER SERVICE LINES SHALL BE 7 FEET AND THE MINIMUM SLOPE SHALL BE 2.0%.
5. ALL SANITARY SEWER SERVICE LINES SHALL BE CONSTRUCTED ALONG THE SHORTEST AND STRAIGHTEST ROUTE POSSIBLE.
6. SIZING/CAPACITY. THE SIZE AND SLOPE OF THE BUILDING SERVICE SEWER SHALL BE SUBJECT TO THE APPROVAL OF THE TOWN, BUT IN NO EVENT SHALL THE DIAMETER BE LESS THAN FOUR (4) INCHES. MINIMUM GRADE AND SLOPES SHALL BE AS FOLLOWS: 4" 2.0% NORMAL; 1.0% MINIMUM, 6" 1.00%, 8" 0.60%.
7. WHERE PARALLEL OR APPROXIMATELY PARALLEL TO A STRUCTURAL WALL, THE SERVICE LINE SHALL BE AT LEAST FIVE (5) FEET FROM THE WALL. PENETRATIONS THROUGH STRUCTURES SHALL BE AT RIGHT ANGLES, OR CLOSE THERETO, THROUGH PVC SLEEVES AND SHALL PROVIDE FLEXIBILITY SUCH THAT THE SERVICE LINE WILL NOT BE DAMAGED BY SETTLEMENT OF THE STRUCTURES.
8. STATE REGULATIONS REQUIRE THAT SEWER AND WATER LINES SHALL HAVE TEN (10) FEET MINIMUM OF HORIZONTAL SEPARATION FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS. IN ALL CASES WHERE NONPOTABLE UTILITIES CROSS WITH POTABLE WATER A TWENTY-FOOT STICK OF PIPE SHALL BE INSTALLED, CENTERED ON THE CROSSING. IF A WATER LINE PASSES WITHIN EIGHTEEN (18) INCHES VERTICAL DISTANCE ABOVE OR BELOW A SEWER MAIN, SEWER SERVICE, OR NONPOTABLE WET UTILITY OR IF IT LIES WITHIN THE MINIMUM TEN (10) FEET HORIZONTAL SEPARATION FROM THE SEWER, SECONDARY CONTAINMENT IS REQUIRED PER ATTACHMENT A-23 - PIPE CROSSING DETAIL, ATTACHMENT A-24 - PIPE ENCASEMENT DETAIL, AND ATTACHMENT A-25 - BORE CASING DETAIL. WHERE SEWER PIPE OR NONPOTABLE WET UTILITY OVER THE WATER LINE IS LESS THAN EIGHTEEN (18) INCHES VERTICAL FROM A WATER LINE, SECONDARY CONTAINMENT METHODS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION. THESE METHODS MAY INCLUDE ENCASEMENT OF THE WATER LINE, CASING PIPE ON THE SEWER, PRESSURE PIPE CENTERED OVER THE CROSSING WITH RESTRAINED JOINT COUPLINGS (ROMAC ALPHA OR EQUIVALENT), OR APPROVED EQUIVALENT.
9. THE MINIMUM COVER SHALL BE SEVEN (7) FEET FROM TOP OF SEWER SERVICE LINE TO FINISHED GRADE. SERVICE LINES WITH LESS THAN SEVEN (7) FEET OF COVER WILL BE CONSIDERED BY THE TOWN WITH INSTALLATION OF TWO (2) INCHES OF PIPELINE INSULATION INSTALLED FOR EVERY ONE (1) FOOT OF COVER LESS THAN SEVEN (7) FEET. THE TOWN SHALL REVIEW AND APPROVE ALL LOCATIONS WHERE PIPE DEPTHS ARE LESS THAN SEVEN (7) FEET. IN NO CASE SHALL A SANITARY SEWER SERVICE LINE HAVE A DEPTH LESS THAN FIVE (5) FEET. SERVICE LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS PER ATTACHMENT A-38 – SEWER MAIN AND SERVICE LINE BEDDING & BACKFILL DETAIL.
10. WYE TAP SADDLES SHALL BE INSTALLED FOR CONNECTION OF EACH SANITARY SEWER SERVICE LINE TO THE SANITARY SEWER MAIN LINE. PRE-INSTALLED WYE FITTINGS MAY BE ALLOWED ON NEW SANITARY SEWER MAIN LINE CONSTRUCTION, AS AN ALTERNATIVE TO SADDLES, FOR CONNECTION OF THE SANITARY SEWER SERVICE LINES TO THE SANITARY SEWER MAIN LINE WITH PRIOR WRITTEN APPROVAL BY THE TOWN.
11. WARNING TAPE SHALL BE INSTALLED IN THE TRENCH ABOVE THE SEWER LINE. THE WARNING TAPE SHALL BE INSTALLED CONTINUOUSLY ABOVE THE SEWER LINE, A DISTANCE OF THIRTY (30) INCHES ABOVE THE PIPE. THE WARNING TAPE SHALL BE THREE (3) INCHES WIDE, GREEN IN COLOR WITH THE LEGEND "CAUTION BURIED SEWER LINE BELOW" IN BLACK AND EXTEND CONTINUOUSLY IN THE TRENCH. IF ANY EXISTING WARNING TAPE IS DAMAGED IN CONSTRUCTION ACTIVITIES, A SPLICE SHALL BE MADE USING ADDITIONAL WARNING TAPE TIED TO EACH END TO PROVIDE A CONTINUOUS WARNING TAPE ALONG THE SEWER LINE. WARNING TAPE SHALL BE INSTALLED ON SEWER SERVICE LINES FROM THE TAP AT THE MAIN TO THE EDGE OF THE RIGHT-OF-WAY, EASEMENT AND/OR CLEANOUTS.
12. EACH SERVICE LINE IS TO HAVE A FOUR-INCH CLEANOUT INSTALLED WITHIN TWENTY (20) FEET OF THE BUILDING SERVED, PER ATTACHMENT A-42 – SEWER SERVICE LINE CONNECTION DETAIL, ATTACHMENT A-43 SEWER SERVICE LINE CLEANOUT DETAIL – UNPAVED LOCATION AND ATTACHMENT A-44 – SEWER CLEANOUT COLLAR DETAIL – PAVED LOCATION. CLEANOUTS ARE REQUIRED FOR ANY FORTY-FIVE-DEGREE BEND IN SERVICE LINE DIRECTION AND AT INTERVALS OF NO GREATER THAN NINETY (90) FEET.
13. CLEANOUTS LOCATED WITHIN PAVED AREAS SHALL BE RAISED TO FINAL GRADE WITH EITHER ASPHALT SURFACING INSTALLED ADJACENT TO THE CLEANOUT OR WITH A CONCRETE COLLAR. IF THE CLEANOUT IS SET AT FINAL GRADE DURING THE ASPHALT PAVING PROCESS, THE FOLLOWING PROCEDURE SHALL BE FOLLOWED:
    - 13.1. INSTALLATION OF THE BOTTOM LIFT OF ASPHALT SHALL BE PLACED OVER THE TOP OF THE CLEANOUT.
    - 13.2. THE CLEANOUT SHALL BE EXPOSED AND SET TO ITS FINAL GRADE AT ONE-HALF (½) INCH LOWER THAN THE GRADE OF THE FINAL ASPHALT SURFACE. ANY VOID CREATED IN THE BOTTOM LIFT OF ASPHALT BY EXPOSING AND RAISING THE CLEANOUT SHALL BE FILLED WITH COMPACTED HOT MIX ASPHALT PRIOR TO PLACEMENT OF THE TOP LIFT OF ASPHALT.
    - 13.3. INSTALLATION OF THE TOP LIFT OF ASPHALT SHALL BE PLACED AND COMPACTED, MAINTAINING THE REQUIRED VERTICAL DISTANCE FROM THE PAVEMENT SURFACE TO THE TOP OF THE CLEANOUT. THE CLEANOUT SHALL REMAIN VERTICAL AND PLUMB.
    - 13.4. IF A CONCRETE COLLAR IS THE SELECTED METHOD USED TO RAISE THE CLEANOUT TO FINAL GRADE, IT SHALL BE INSTALLED AFTER THE TOP LIFT OF ASPHALT IS PLACED AND IN ACCORDANCE WITH ATTACHMENT A-43 – SEWER SERVICE LINE CLEANOUT COLLAR DETAIL – UNPAVED LOCATION AND ATTACHMENT A-44 – SEWER CLEANOUT COLLAR DETAIL - PAVED LOCATION.
14. SEWER SERVICE PIPE SHALL BE PVC AND SHALL EITHER BE SDR 26 OR C900 PIPE. WHERE A DIFFERENT PIPE MATERIAL IS ENCOUNTERED AT THE CONNECTION POINT TO THE SANITARY SEWER MAIN, A FLEXIBLE COUPLER SHALL BE USED. THE FLEXIBLE COUPLER SHALL BE MADE OF AN ELASTOMERIC COMPOUND AND SHALL BE CONNECTED AT EACH END WITH A STAINLESS STEEL CLAMP. THE COUPLER SHALL BE LEAK-PROOF, ROOT-PROOF AND RESISTANT TO CHEMICALS, UV RAYS AND NORMAL SEWER GASES.
15. THE COUPLER SHALL BE:
    - 15.1. FERNCO, PART NO. 1051-44
    - 15.2. AN APPROVED EQUAL
16. WHEN PRE-APPROVED BY THE TOWN, WHERE SEWER SERVICE LINES OF TWO (2) DIFFERENT PIPE TYPES ARE BEING CONNECTED TOGETHER, THE WATERTIGHT CONNECTOR FITTING SHALL BE A MANUFACTURED FITTING SPECIFICALLY FOR CONNECTION OF THAT SIZE AND TYPE OF PIPE.
17. INTERCEPTORS. GREASE INTERCEPTORS SHALL CONFORM TO THE SPECIFICATIONS IN THE INTERNATIONAL PLUMBING CODE AS ADOPTED BY THE TOWN AND THIS CODE. GREASE INTERCEPTOR LAYOUT AND DETAIL SHALL BE SUBMITTED TO THE TOWN FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION OR INSTALLATION.
18. SEPARATORS. OIL AND SAND SEPARATORS SHALL CONFORM TO THE SPECIFICATIONS IN THE INTERNATIONAL PLUMBING CODE AS ADOPTED BY THE TOWN AND THIS CODE. OIL AND SAND SEPARATOR LAYOUT AND DETAIL SHALL BE SUBMITTED TO THE TOWN FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION OR INSTALLATION. (ORD.389 PART 1.1, 2012)

WATER CONSTRUCTION NOTES:

1. ALL WATER LINE CONSTRUCTION IS SUBJECT TO THE GENERAL NOTES ON THE COVER SHEET OF THESE PLANS AS WELL AS THE WATER LINE CONSTRUCTION NOTES LISTED HEREIN.
2. ALL WATER LINES SHALL BE BEDDED IN ACCORDANCE WITH TOWN STANDARDS.
3. DISTANCES FOR WATER LINES ARE HORIZONTAL DISTANCE FROM THE CENTER OF THE FITTING TO CENTER OF THE FITTING. THEREFORE, DISTANCES SHOWN ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND FITTING DIMENSIONS.
4. WATER LINE TRENCHES SHALL BE SLOPED OR BRACED AND SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKERS AND THE PROTECTION OF OTHER UTILITIES, IN COMPLIANCE WITH ALL APPLICABLE STATE AND FEDERAL REQUIREMENTS. FOR ALL EXCAVATION OPERATIONS, SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. MAXIMUM DEFLECTION FOR WATER MAINS SHALL NOT EXCEED ONE-HALF OF THE MANUFACTURER'S MAXIMUM ALLOWABLE DEFLECTION OR 2.5 DEGREES, WHICHEVER IS LESS.
6. SERVICE CONNECTIONS SHALL BE INSTALLED PER ATTACHMENT A-34 – WATER SERVICE LINE AND CURB STOP AND ATTACHMENT A-35 – WATER METER ASSEMBLY INSTALLATION. NO CONNECTION BETWEEN THE WATER SYSTEM OF THE TOWN AND THE WATER FACILITIES OF THE OWNER MAY BE MADE EXCEPT IN A PUBLIC STREET ADEQUATE TO ACCOMMODATE THIS CONNECTION OR IN A LOCATION WHICH PROVIDES ADEQUATE ACCESS FOR TOWN PERSONNEL AND WHICH IS SUITABLE FOR BURIED PIPES.
7. WHERE PARALLEL OR APPROXIMATELY PARALLEL TO A STRUCTURAL WALL, THE SERVICE LINE SHALL BE AT LEAST FIVE (5) FEET FROM THE WALL. PENETRATIONS THROUGH STRUCTURES SHALL BE AT RIGHT ANGLES, OR CLOSE THERETO, THROUGH PVC SLEEVES, AND SHALL PROVIDE FLEXIBILITY SUCH THAT THE SERVICE LINE WILL NOT BE DAMAGED BY SETTLEMENT OF THE STRUCTURES.
8. THE WATER SERVICE SHALL BE LAID AT UNIFORM GRADE AND IN STRAIGHT ALIGNMENT. A REFERENCE MARK SHALL BE PLACED ON THE CURB ABOVE THE SERVICE LINE.
9. WATER AND SEWER SERVICE LINES SHALL HAVE TEN (10) FEET MINIMUM HORIZONTAL SEPARATION MEASURED FROM OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS. IF A WATER SERVICE LINE CROSSES A

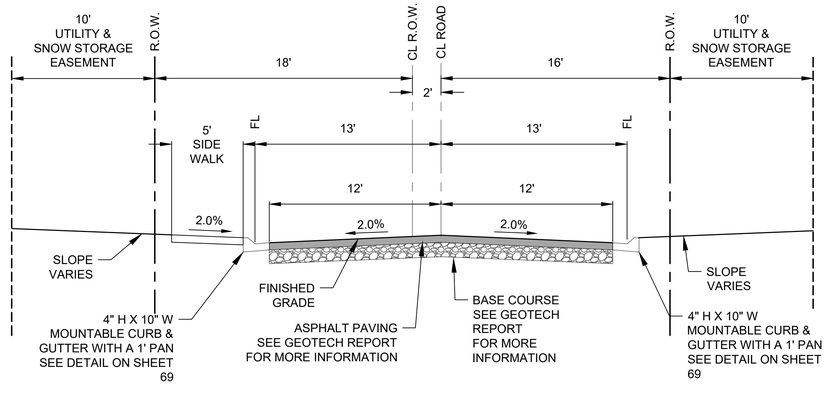


GRAND PARK DRIVE (28' FL-FL)



COLLECTOR (26' FL-FL) C

OUTPOST CLUB DR - STA:15+65.18 TO 26+38.15



LOCAL 36' ROW (26' FL-FL) L

COMPASS DR - STA:10+40.00 TO 26+82.41
HUNTERS CT - STA:10+86.07 TO 15+85.97
TERRAIN CT - STA:33+75.88 TO 39+52.31
OVERLOOK DR - STA:10+25.00 TO 17+40.12
BUGLE CT - STA:10+50.00 TO 19+28.29

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
TYPICAL SECTIONS

Know what's **below.** **Call** before you dig. 811

2/6/2026 4:23 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10'\FINAL PLANS TYPICAL SECTIONS - F1 - 10'F.DWG 1

RAILROAD

OLD VICTORY RD

BUGLE CT

OVERLOOK DR

COMPASS DR

OUTPOST CLUB DR

TERRAIN CT

HUNTERS CT

GRAND PARK DR

LELAND CREEK CT

SITE PLAN: 7
GRADING PLAN: 10
UTILITY PLAN: 13

SITE PLAN: 6
GRADING PLAN: 9
UTILITY PLAN: 12

SITE PLAN: 5
GRADING PLAN: 8
UTILITY PLAN: 11



KEY MAP
SCALE: 1" = 2000'

N

0 150' 300'

1 inch = 150'

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
INDEX SHEET

Know what's **below.**
Call before you dig.
811

SHEET
4 OF 79

2/6/2026 4:23 PM, X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS INDEX SHEET - F1 - 10W.DWG 1

SEE SHEET 6

SEE SHEET 6

COMPASS DR

HUNTERS CT

GRAND PARK DR

TRACT A

TRACT E

TRACT F

LINE OF SIGHT BASED UPON 230' TRAVEL PATH

8' CROSSPAN

ADA CURB RAMP

36' ROW

10' UTILITY & SNOW STORAGE EASEMENT

HAMMERHEAD FIRE ACCESS TURNAROUND

26' FL-FL

5' WALK

4" MOUNTABLE CURB & GUTTER

30' WATER EASEMENT

R25' ROW

R25' FL

R47' EOP

R48' FL

R60' ROW

SEE TOWN OF FRASER STANDARD CUL DE SAC DETAIL A-12

5' CURB CUT

8' TRAIL

SIDEWALK EASEMENT

TO BE BUILT WITH ADJACENT DEVELOPMENT

16' DRAINAGE EASEMENT

30' DRAINAGE EASEMENT

40' WATER & SANITARY EASEMENT

LINE OF SIGHT BASED UPON 340' TRAVEL PATH

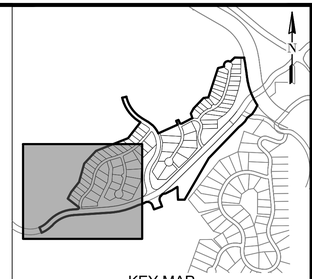
28' FL-FL

80' ROW

WETLANDS (TYP.)

END OF ROADWAY IMPROVEMENTS

23W



KEY MAP

SCALE: 1" = 1000'

N

0 60' 120'

1 inch = 60'

LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- EASEMENT
- CENTERLINE
- LOT / TRACT / PARCEL BOUNDARY
- 1 LOT NUMBER
- EXISTING FENCE
- DRAINAGE SWALE
- LELAND CREEK
- CONCRETE
- MAINTENANCE ACCESS
- WETLAND
- C COLLECTOR CURB & GUTTER (60' ROW, 26' FL-FL) SEE SHEET 3
- L LOCAL STREET TYPE "A" CURB & GUTTER (36' ROW, 26' FL-FL) SEE SHEET 3

NOTES:

1. SEE SHEET 3 FOR TYP. SECTION & 4 FOR ROAD CLASSIFICATION.
2. BUILDING / LODGING LOCATIONS ARE CONCEPTUAL AND WILL BE FINALIZED WITH FINAL CDS.
3. DESIGN SPEED FOR LOCAL ROADS IS 20 MPH.
4. DESIGN SPEED FOR COLLECTOR ROADS IS 30 MPH.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
SITE PLAN (1 OF 3)

Know what's **below.** **Call** before you dig. 811

2/6/2026 4:23 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS DETAILED SITE PLAN - F1 - 10W.DWG 1

SEE SHEET 7

SEE SHEET 5

SEE SHEET 5

COMPASS DR

OVERLOOK DR

TERRAIN CT

OUTPOST CLUB DR

GRAND PARK DR

HUNTERS CT

LELAND CREEK CT

TRACT D

TRACT E

TRACT F

TRACT B

21 20 19 18 17 16 15 14 13 33 32 31 30 29 28 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54

30' WATER EASEMENT

8' CROSSPAN

ADA CURB RAMP

26' FL-FL

DRAINAGE EASEMENT

36' ROW

4" MOUNTABLE CURB & GUTTER

5' WALK

10' UTILITY & SNOW STORAGE EASEMENT

LINE OF SIGHT BASED UPON 230' TRAVEL PATH

LINE OF SIGHT BASED UPON 368.5' TRAVEL PATH

40' UTILITY & DRAINAGE EASEMENT

40' DRAINAGE EASEMENT

50' SANITARY & DRAINAGE EASEMENT

20' DRAINAGE EASEMENT

30' DRAINAGE EASEMENT

28' FL-FL

WETLANDS (TYP.)

R15' ROW

R25' FL

R60' ROW

R48' FL

R47' EOP

SEE TOWN OF FRASER STANDARD CUL DE SAC DETAIL A-12

8' WALK

10' UTILITY & SNOW STORAGE EASEMENT

ROUNDABOUT DESIGNED BY OTHERS

8' TRAIL

SIDEWALK EASEMENT

TO BE BUILT WITH ADJACENT DEVELOPMENT

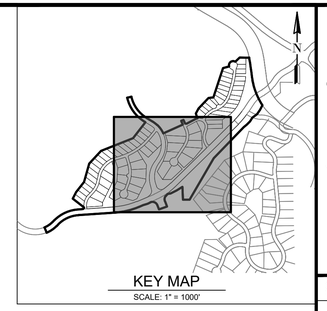
5' CURB CUT

16' DRAINAGE EASEMENT

40' WATER & SANITARY EASEMENT

80' ROW

HAMMERHEAD FIRE ACCESS TURNAROUND



KEY MAP

SCALE: 1" = 1000'

N

0 60' 120'

1 inch = 60'

LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- EASEMENT
- CENTERLINE
- LOT / TRACT / PARCEL BOUNDARY
- 1 LOT NUMBER
- EXISTING FENCE
- DRAINAGE SWALE
- LELAND CREEK
- CONCRETE
- MAINTENANCE ACCESS
- WETLAND
- C COLLECTOR CURB & GUTTER (60' ROW, 26' FL-FL) SEE SHEET 3
- L LOCAL STREET TYPE "A" CURB & GUTTER (36' ROW, 26' FL-FL) SEE SHEET 3

NOTES:

1. SEE SHEET 3 FOR TYP. SECTION & 4 FOR ROAD CLASSIFICATION.
2. BUILDING / LODGING LOCATIONS ARE CONCEPTUAL AND WILL BE FINALIZED WITH FINAL CDS.
3. DESIGN SPEED FOR LOCAL ROADS IS 20 MPH.
4. DESIGN SPEED FOR COLLECTOR ROADS IS 30 MPH.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

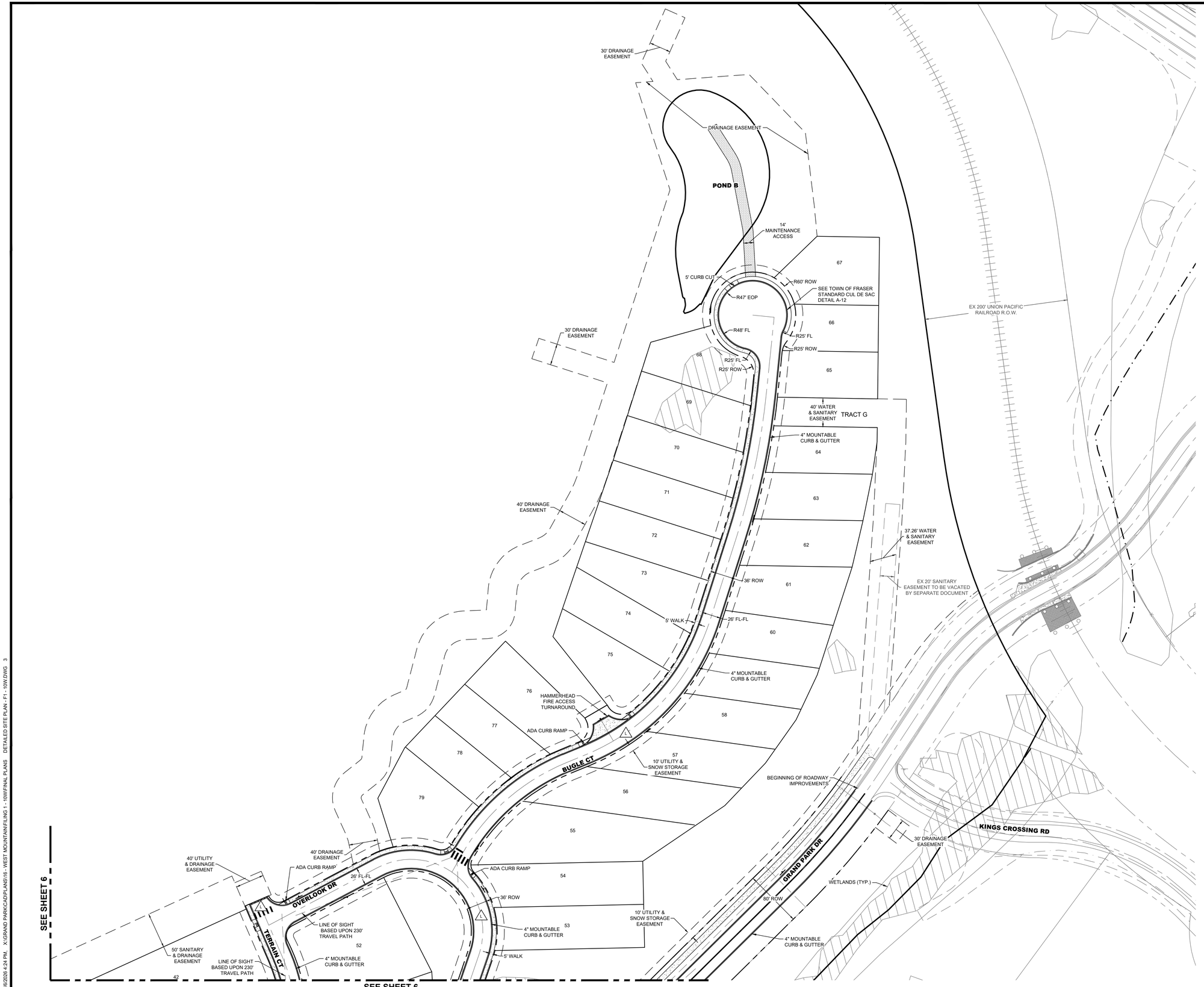
GRAND PARK - FILING NO. 1

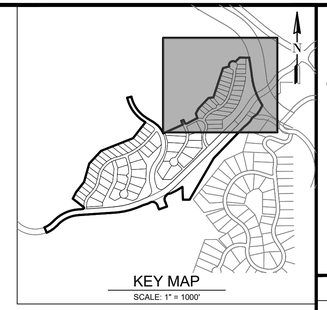
TOWN OF FRASER, COLORADO

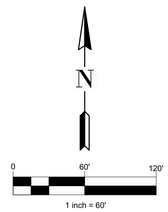
FINAL CONSTRUCTION PLANS
SITE PLAN (2 OF 3)

Know what's below. Call before you dig. 811

2/6/2026 4:24 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS DETAILED SITE PLAN - F1 - 10W.DWG 2







LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- EASEMENT
- CENTERLINE
- LOT / TRACT / PARCEL BOUNDARY
- 1 — LOT NUMBER
- EXISTING FENCE
- DRAINAGE SWALE
- LELAND CREEK
- CONCRETE
- MAINTENANCE ACCESS
- WETLAND
- C — COLLECTOR CURB & GUTTER (60' ROW, 26' FL-FL) SEE SHEET 3
- L — LOCAL STREET TYPE "A" CURB & GUTTER (36' ROW, 26' FL-FL) SEE SHEET 3

NOTES:

1. SEE SHEET 3 FOR TYP. SECTION & 4 FOR ROAD CLASSIFICATION.
2. BUILDING / LODGING LOCATIONS ARE CONCEPTUAL AND WILL BE FINALIZED WITH FINAL CDS.
3. DESIGN SPEED FOR LOCAL ROADS IS 20 MPH.
4. DESIGN SPEED FOR COLLECTOR ROADS IS 30 MPH.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
SITE PLAN (3 OF 3)

Know what's below. Call before you dig. 811

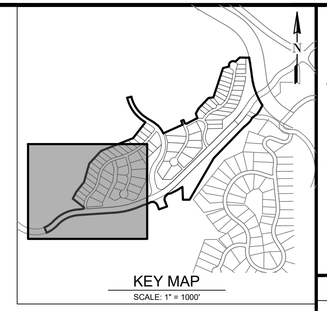
2/6/2026 4:24 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS DETAILED SITE PLAN - F1 - 10W.DWG 3

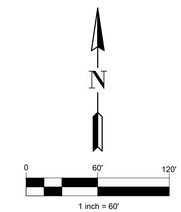


TURNAROUND 1

SCALE 1"=20'

SEE SHEET 9



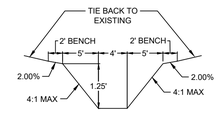


LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- EASEMENT
- CENTERLINE
- LOT / TRACT / PARCEL BOUNDARY
- 4880 PROPOSED MAJOR CONTOUR
- 4879 PROPOSED MINOR CONTOUR
- 4880 PROPOSED MAJOR CONTOUR
- 4879 PROPOSED MINOR CONTOUR
- DRAINAGE SWALE
- SUBMITTAL AREA BOUNDARY
- FP FLOODPLAIN BOUNDARY
- EAST OF SITE - LELAND CREEK
  WEST OF SITE - ELK CREEK
- CONCRETE
- MAINTENANCE ACCESS
- NOT A PART
- C COLLECTOR CURB & GUTTER (60' ROW, 26' FL-FL) SEE SHEET 3
- EA EMERGENCY ACCESS (30' EASEMENT, 24' EOP-EOP) SEE SHEET 3
- L LOCAL STREET TYPE "A" CURB & GUTTER (36' ROW, 28' FL-FL) SEE SHEET 3
- SD SHARED DRIVE (30' EASEMENT, 20' FL-FL) SEE SHEET 3

NOTES:

1. BUILDING / LODGING LOCATIONS ARE CONCEPTUAL AND WILL BE FINALIZED WITH FINAL CDS
2. SEE SHEET 4 FOR CREEK LOCATIONS & NAMES. PONDS DRAINING WEST OF PROPERTY DRAIN TO ELK CREEK & EAST OF PROPERTY TO LELAND CREEK.



SECTION 1
4' WIDE CHANNEL
(N.T.S)

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
GRADING PLAN (1 OF 3)

Know what's below. Call before you dig. 811

SHEET 8 OF 79

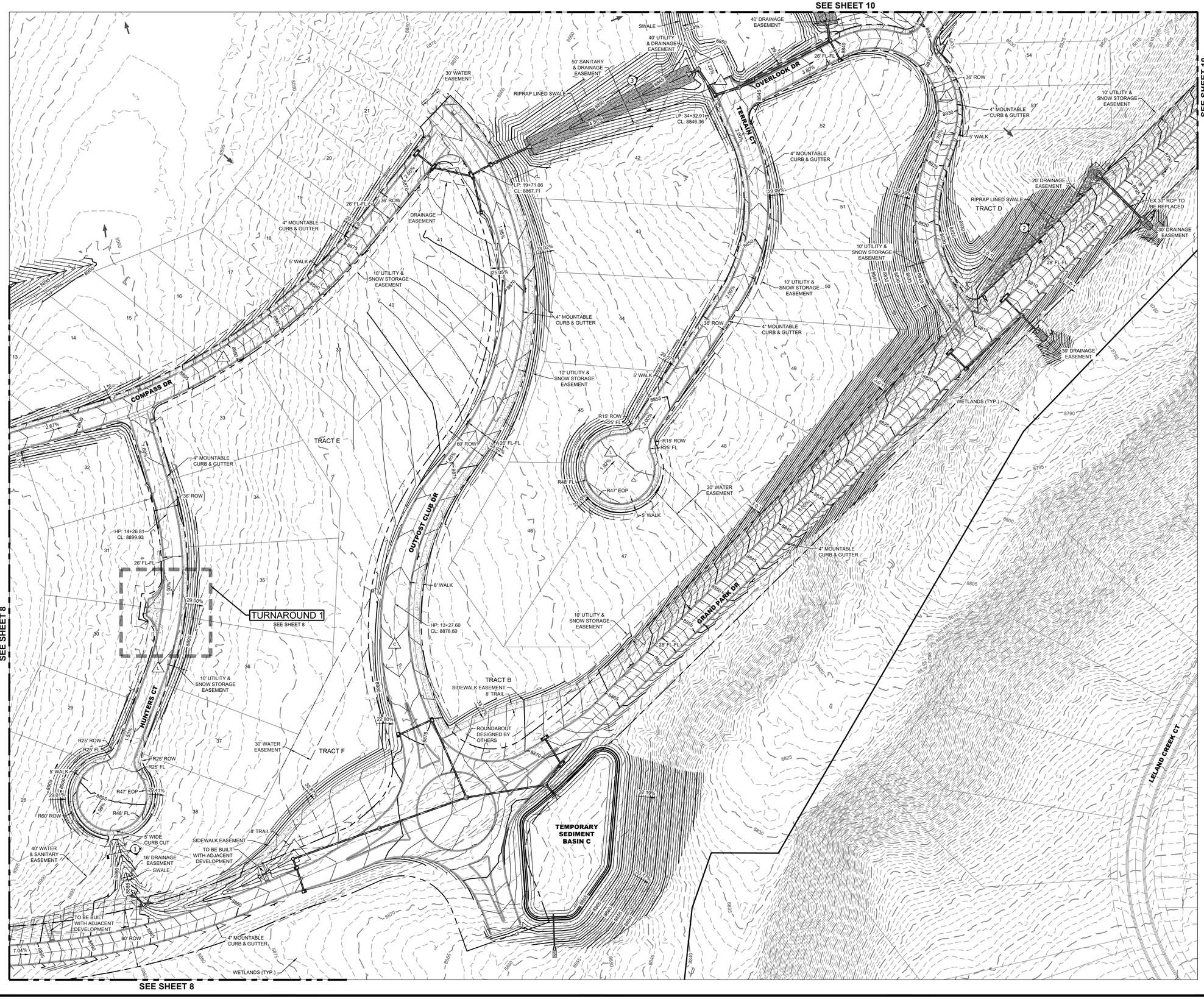
2/6/2026 4:24 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS DETAILED GRADING PLAN, F1 - 16W.DWG 1

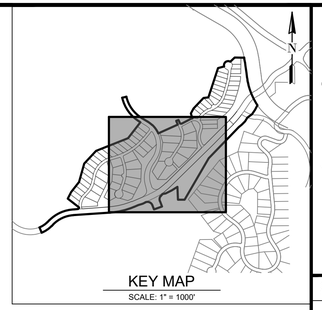
SEE SHEET 10

SEE SHEET 10

SEE SHEET 8

SEE SHEET 8





N

0 60' 120'

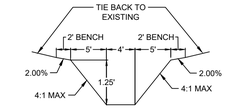
1 inch = 60'

LEGEND

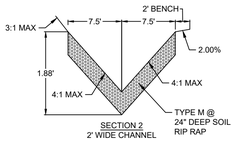
- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- EASEMENT
- CENTERLINE
- LOT / TRACT / PARCEL BOUNDARY
- 4880 PROPOSED MAJOR CONTOUR
- 4879 PROPOSED MINOR CONTOUR
- 4880 PROPOSED MAJOR CONTOUR
- 4879 PROPOSED MINOR CONTOUR
- DRAINAGE SWALE
- SUBMITTAL AREA BOUNDARY
- FP FLOODPLAIN BOUNDARY
- EAST OF SITE - LELAND CREEK
  WEST OF SITE - ELK CREEK
- CONCRETE
- MAINTENANCE ACCESS
- NOT A PART
- C COLLECTOR CURB & GUTTER (60' ROW, 28' FL-FL) SEE SHEET 3
- EA EMERGENCY ACCESS (30' EASEMENT, 24' EOP-EOP) SEE SHEET 3
- L LOCAL STREET TYPE "A" CURB & GUTTER (36' ROW, 26' FL-FL) SEE SHEET 3
- SD SHARED DRIVE (30' EASEMENT, 20' FL-FL) SEE SHEET 3

NOTES:

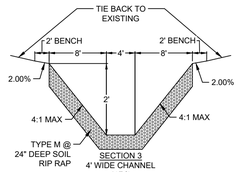
1. BUILDING / LODGING LOCATIONS ARE CONCEPTUAL AND WILL BE FINALIZED WITH FINAL CDS
2. SEE SHEET 4 FOR CREEK LOCATIONS & NAMES. PONDS DRAINING WEST OF PROPERTY DRAIN TO ELK CREEK & EAST OF PROPERTY TO LELAND CREEK.



SECTION 1
4' WIDE CHANNEL
(N.T.S)



SECTION 2
2' WIDE CHANNEL
(N.T.S)



SECTION 3
4' WIDE CHANNEL
(N.T.S)

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

Know what's **below.** **Call** before you dig. 811

GRAND PARK - FILING NO. 1

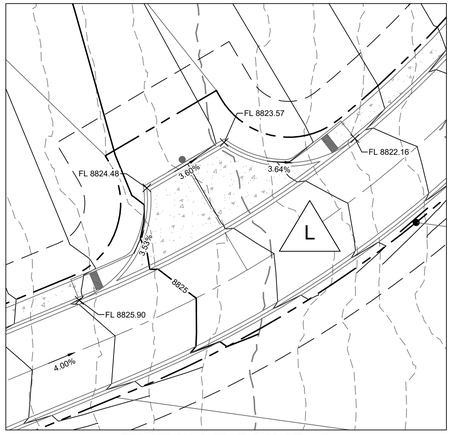
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
GRADING PLAN (2 OF 3)

SHEET 9 OF 79

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

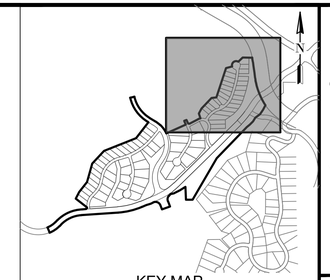
2/6/2026 4:24 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS DETAILED GRADING PLAN - F1 - 10W.DWG 2



TURNAROUND 2

SCALE 1"=20'





N

0 60' 120'

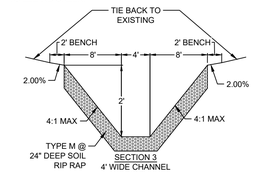
1 inch = 60'

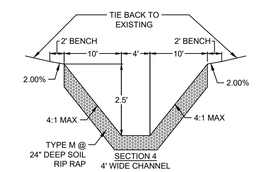
LEGEND

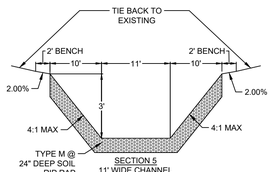
- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- EASEMENT
- CENTERLINE
- LOT / TRACT / PARCEL BOUNDARY
- 4880 PROPOSED MAJOR CONTOUR
- 4879 PROPOSED MINOR CONTOUR
- 4880 PROPOSED MAJOR CONTOUR
- 4879 PROPOSED MINOR CONTOUR
- DRAINAGE SWALE
- SUBMITTAL AREA BOUNDARY
- FP FLOODPLAIN BOUNDARY
- EAST OF SITE - LELAND CREEK WEST OF SITE - ELK CREEK
- CONCRETE
- MAINTENANCE ACCESS
- NOT A PART
- C COLLECTOR CURB & GUTTER (60' ROW, 26' FL-FL) SEE SHEET 3
- EA EMERGENCY ACCESS (30' EASEMENT, 24' EOP-EOP) SEE SHEET 3
- L LOCAL STREET TYPE "A" CURB & GUTTER (36' ROW, 26' FL-FL) SEE SHEET 3
- SD SHARED DRIVE (30' EASEMENT, 20' FL-FL) SEE SHEET 3

NOTES:

1. BUILDING / LODGING LOCATIONS ARE CONCEPTUAL AND WILL BE FINALIZED WITH FINAL CDS
2. SEE SHEET 4 FOR CREEK LOCATIONS & NAMES. PONDS DRAINING WEST OF PROPERTY DRAIN TO ELK CREEK & EAST OF PROPERTY TO LELAND CREEK.







terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

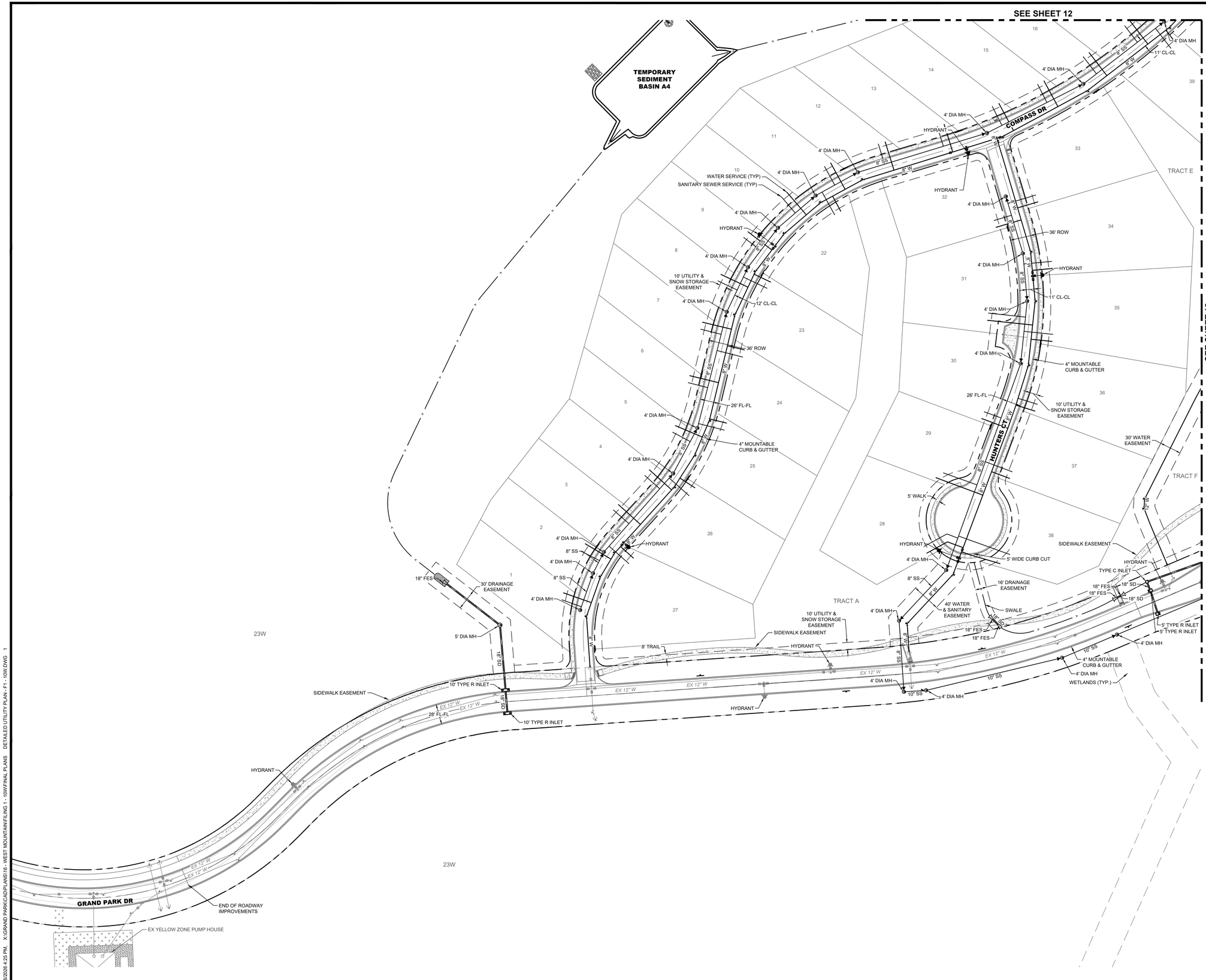
GRAND PARK - FILING NO. 1

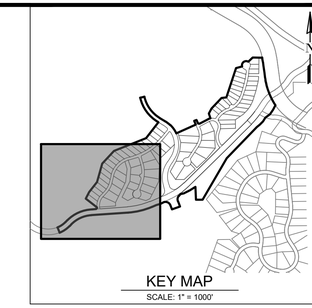
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
GRADING PLAN (3 OF 3)

Know what's below. Call before you dig. 811

2/6/2026 4:25 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS DETAILED GRADING PLAN - F1 - 10W.DWG 3





N

0 60' 120'

1 inch = 60'

LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- STORM (FES, MH, & INLET)
- SANITARY
- WATER (HYDRANT, VALVE, BEND, MH)
- EXISTING FENCE
- EXISTING FIBER OPTIC
- EXISTING GAS
- EXISTING WATER
- EXISTING SWALE
- DRAINAGE SWALE
- LELAND CREEK
- CONCRETE
- MAINTENANCE ACCESS
- RIPRAP

NOTES:

1. ALL MAIN WATER LINES SHALL USE C900
2. AWWA C900 PVC REQUIRED IF SOILS ARE DETERMINED TO BE CORROSIVE.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
UTILITY PLAN (1 OF 3)

Know what's below. Call before you dig.

811

2/6/2026 4:25 PM, X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS DETAILED UTILITY PLAN - F1 - 10W.DWG 1

SEE SHEET 13

SEE SHEET 11

SEE SHEET 11

SEE SHEET 13

OVERLOOK DR

TERRAIN CT

COMPASS DR

HUNTERS CT

OUTPOST CLUB DR

GRAND PARK DR

LELAND CREEK CT

TRACT D
RIPRAP LINED SWALE

TRACT E

TRACT F

TRACT B
SIDEWALK EASEMENT
8' TRAIL

TEMPORARY SEDIMENT BASIN C

40' UTILITY & DRAINAGE EASEMENT
30' WATER EASEMENT
50' SANITARY & DRAINAGE EASEMENT
DRAINAGE EASEMENT
10' UTILITY & SNOW STORAGE EASEMENT
20' DRAINAGE EASEMENT
30' DRAINAGE EASEMENT
16' DRAINAGE EASEMENT
40' WATER & SANITARY EASEMENT
SIDEWALK EASEMENT

SWALE
60' ROW
36' ROW
5' WIDE CURB CUT
5' WALK
ROUNDABOUT DESIGNED BY OTHERS
WATER SERVICE (TYP)
SANITARY SEWER SERVICE (TYP)
WETLANDS (TYP.)

4' DIA MH
4' DIA MH FLAT TOP
5' DIA MH
6' DIA MH
12" PLUG
HYDRANT
EX HYDRANT
TIE INTO EX 12" WATER LINE
TIE INTO EX 4' DIA MH
4" MOUNTABLE CURB & GUTTER
10' TYPE R INLET
5' TYPE R INLET
15' TYPE R INLET
TYPE C INLET
6" RISER PIPE
6" FES
18" FES
24" FES
30" FES
30" SD
18" SD
16" SD
10" SS
8" SS
8" W
12" W
EX 12" W
26' FL-FL
28' FL-FL
11' CL-CL
13.76' CL-CL

KEY MAP
SCALE: 1" = 1000'

0 60' 120'
1 inch = 60'

LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- STORM (FES, MH, & INLET)
- SANITARY
- WATER (HYDRANT, VALVE, BEND, MH)
- EXISTING FENCE
- EXISTING FIBER OPTIC
- EXISTING GAS
- EXISTING WATER
- EXISTING SWALE
- DRAINAGE SWALE
- LELAND CREEK
- CONCRETE
- MAINTENANCE ACCESS
- RIPRAP

NOTES:

1. ALL MAIN WATER LINES SHALL USE C900
2. AWWA C900 PVC REQUIRED IF SOILS ARE DETERMINED TO BE CORROSIVE.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

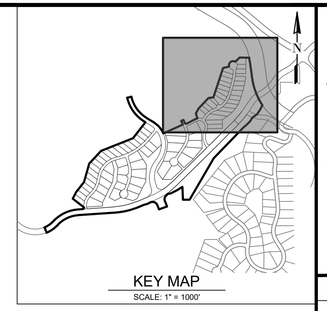
NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
UTILITY PLAN (2 OF 3)

Know what's below. Call before you dig. 811

2/6/2026 4:25 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS DETAILED UTILITY PLAN - F1 - 10W.DWG 2





N

0 60' 120'

1 inch = 60'

LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- STORM (FES, MH, & INLET)
- SANITARY
- WATER (HYDRANT, VALVE, BEND, MH)
- EXISTING FENCE
- EXISTING FIBER OPTIC
- EXISTING GAS
- EXISTING WATER
- EXISTING SWALE
- DRAINAGE SWALE
- LELAND CREEK
- CONCRETE
- MAINTENANCE ACCESS
- RIPRAP

NOTES:

1. ALL MAIN WATER LINES SHALL USE C900
2. AWWA C900 PVC REQUIRED IF SOILS ARE DETERMINED TO BE CORROSIVE.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

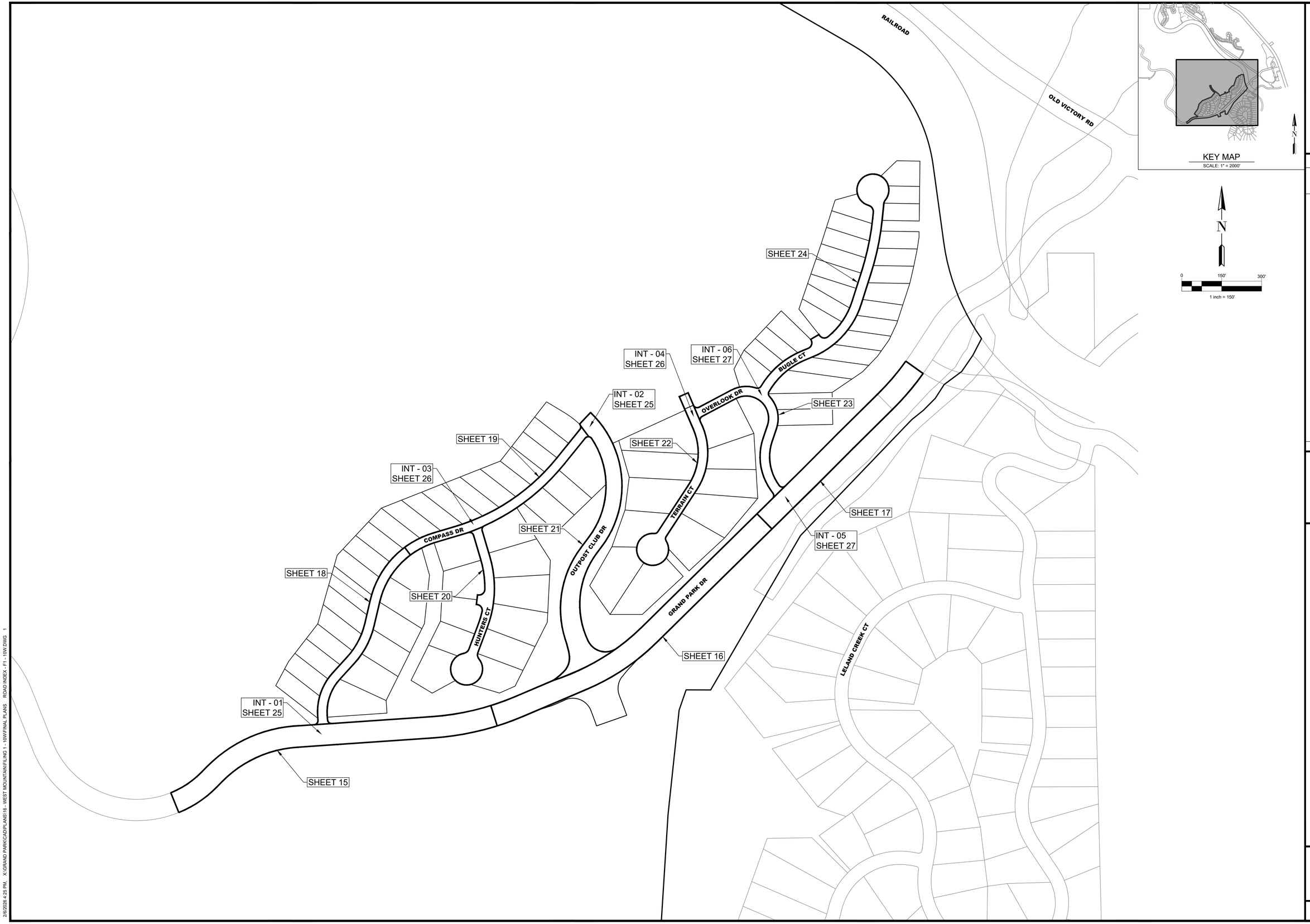
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
UTILITY PLAN (3 OF 3)

Know what's below. Call before you dig. 811

SHEET 13 OF 79

2/6/2026 4:25 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS DETAILED UTILITY PLAN - F1 - 10W.DWG 3



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

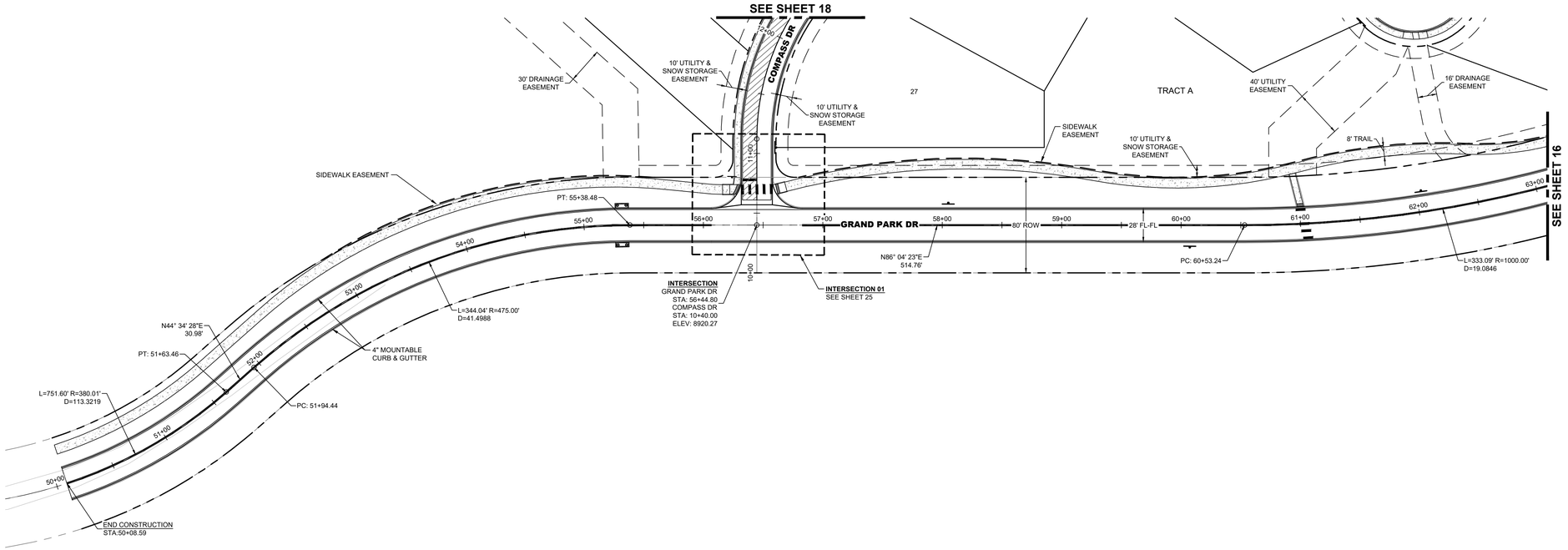
FINAL CONSTRUCTION PLANS

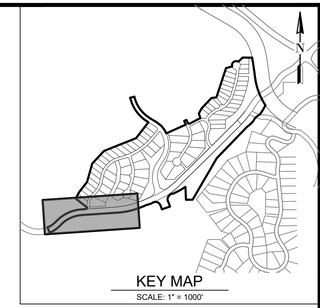
ROAD INDEX

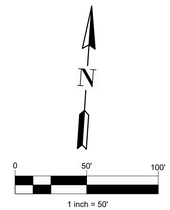
Know what's below. Call before you dig. 811

SHEET 14 OF 79

2/6/2026 4:25 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS ROAD INDEX - F1 - 16W.DWG 1





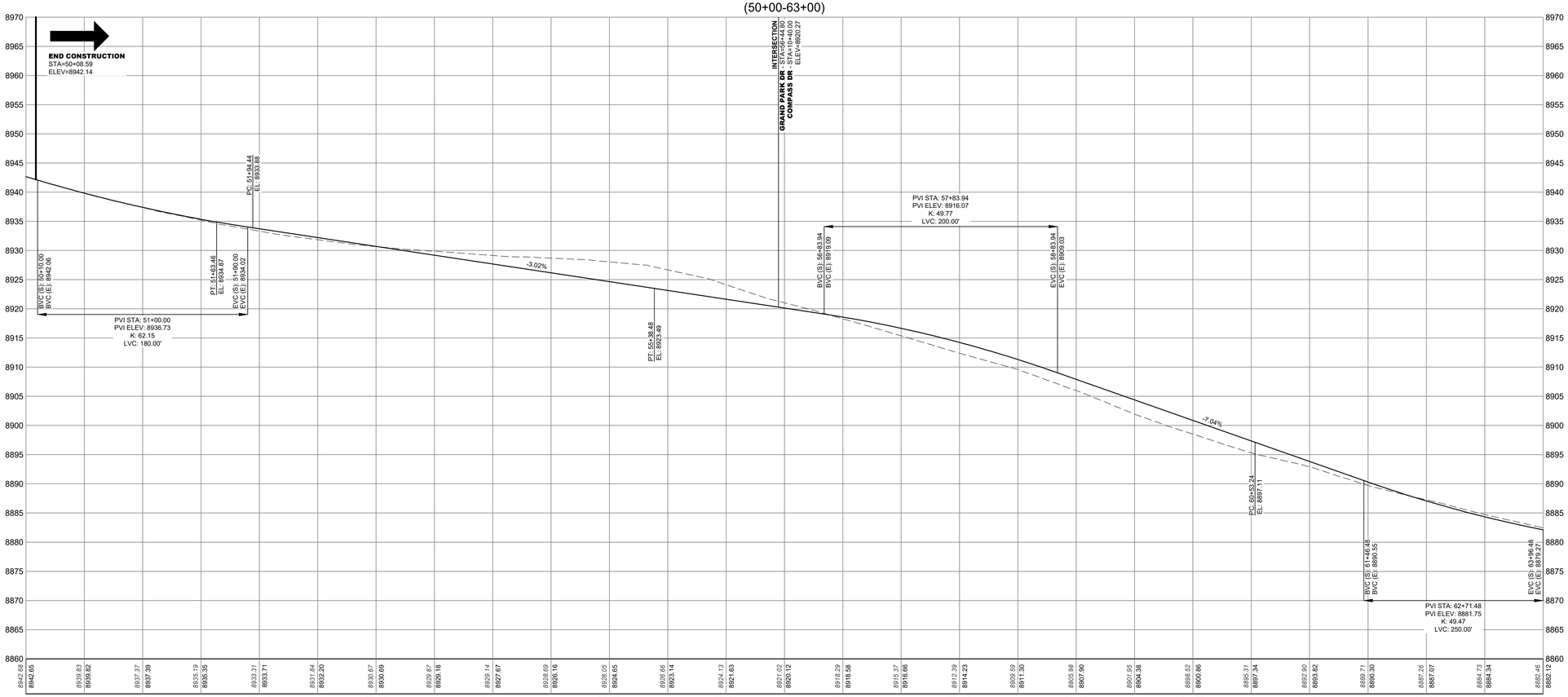


PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

GRAND PARK DR

(50+00-63+00)



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

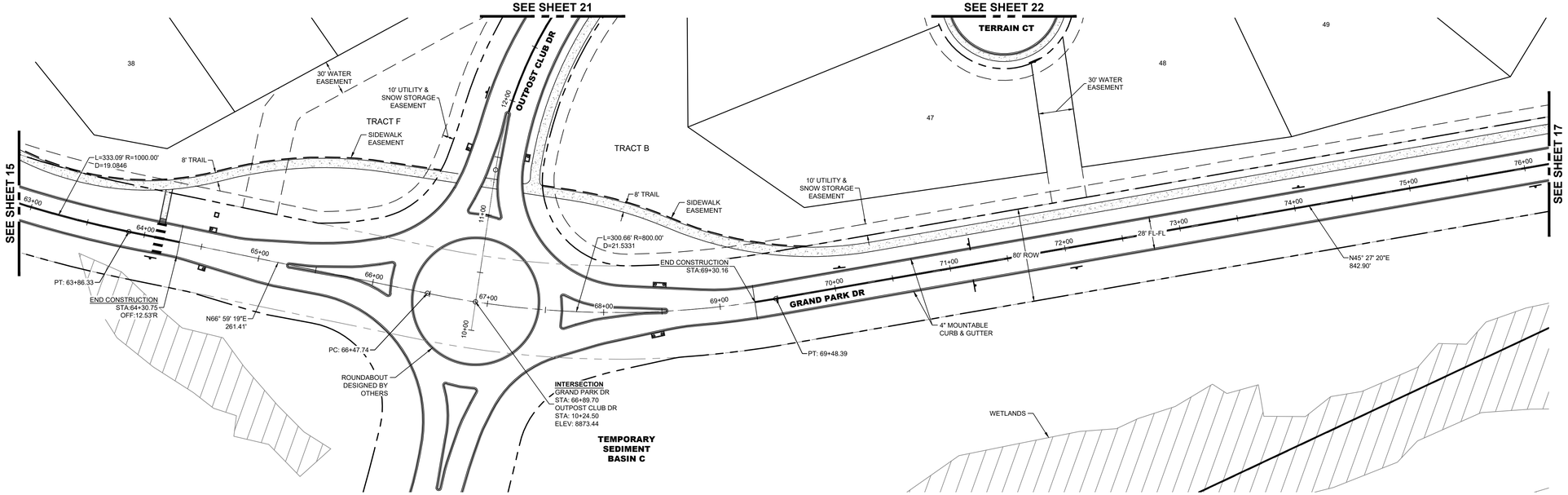
FINAL CONSTRUCTION PLANS
ROAD P&P - GRAND PARK DR

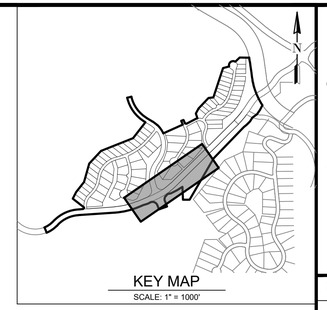
Know what's **below.** **Call** before you dig. 811

SHEET
15 OF 79

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

2/6/2026 4:26 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS ROAD P&P\S 2 - F1 - 10W.DWG 01





0 50' 100'

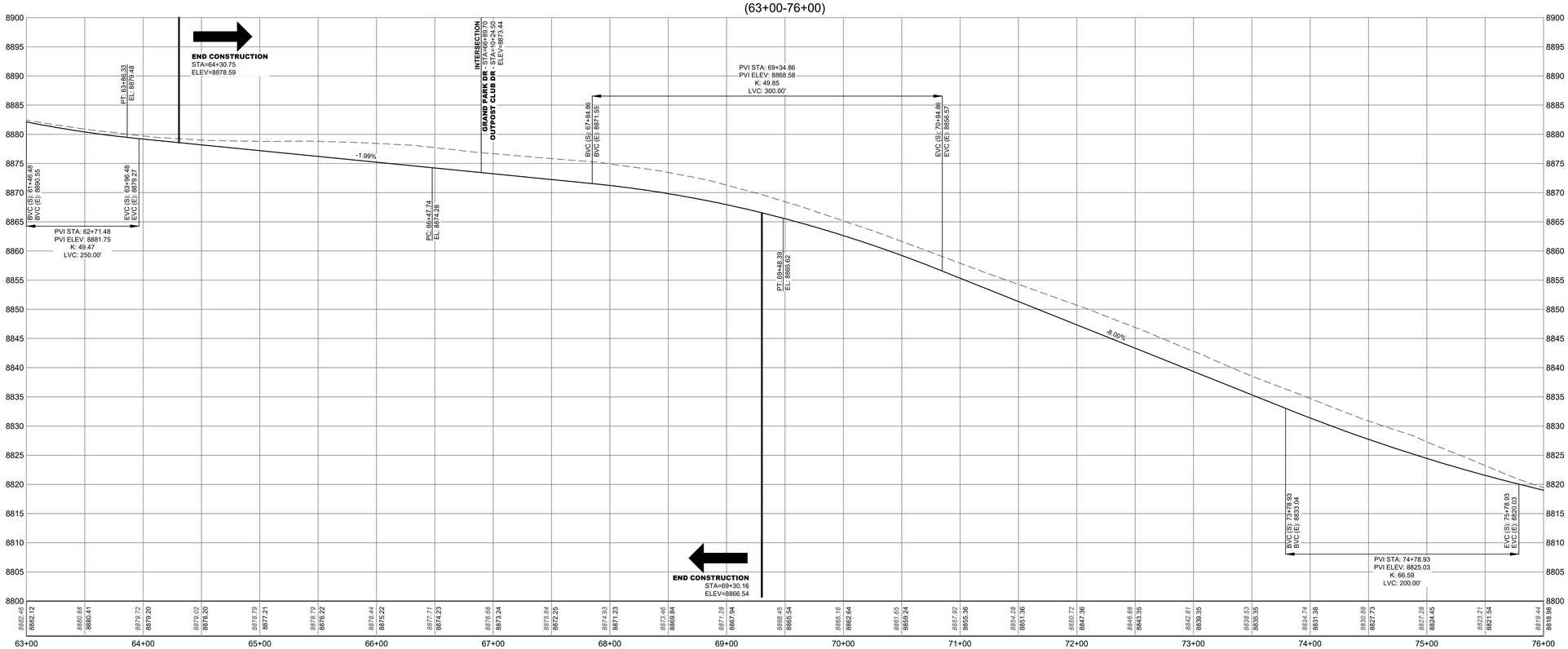
1 inch = 50'

PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

GRAND PARK DR

(63+00-76+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

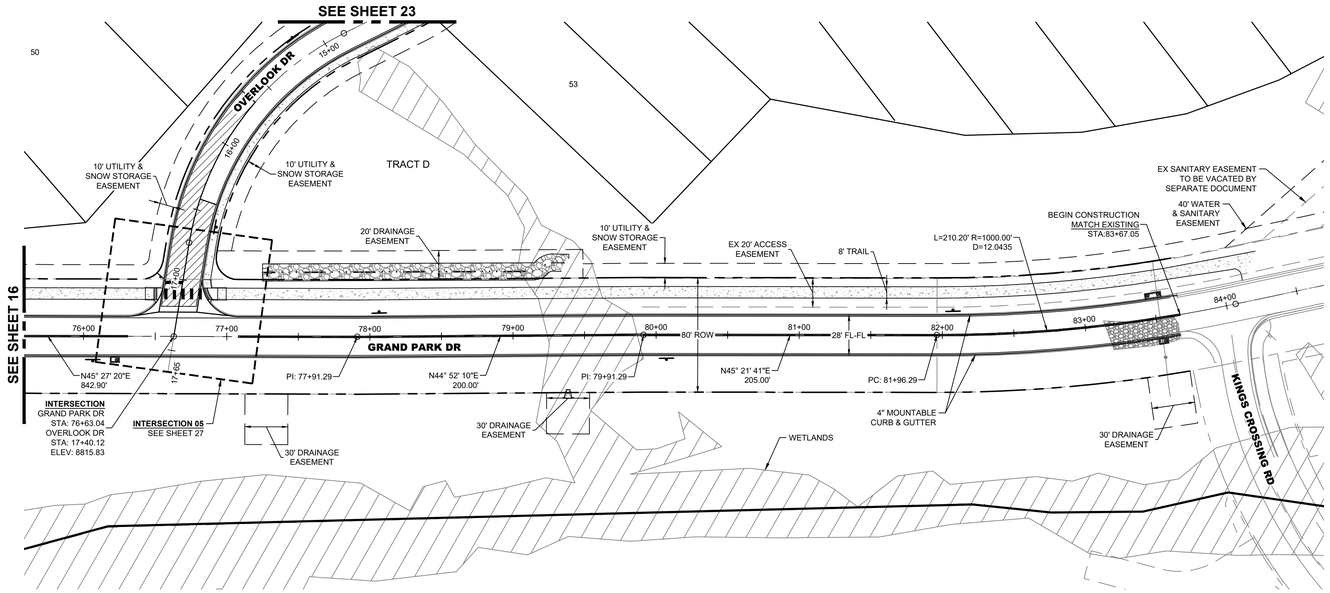
NOT FOR CONSTRUCTION

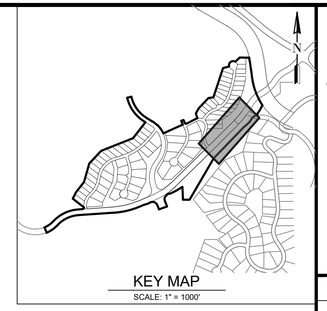
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

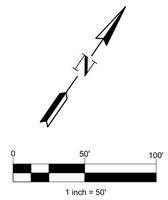
FINAL CONSTRUCTION PLANS
ROAD P&P - GRAND PARK DR

Know what's **below.** **Call** before you dig. 811

2/6/2026 4:26 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS ROAD P&PS 2 - F1 - 16W.DWG 02





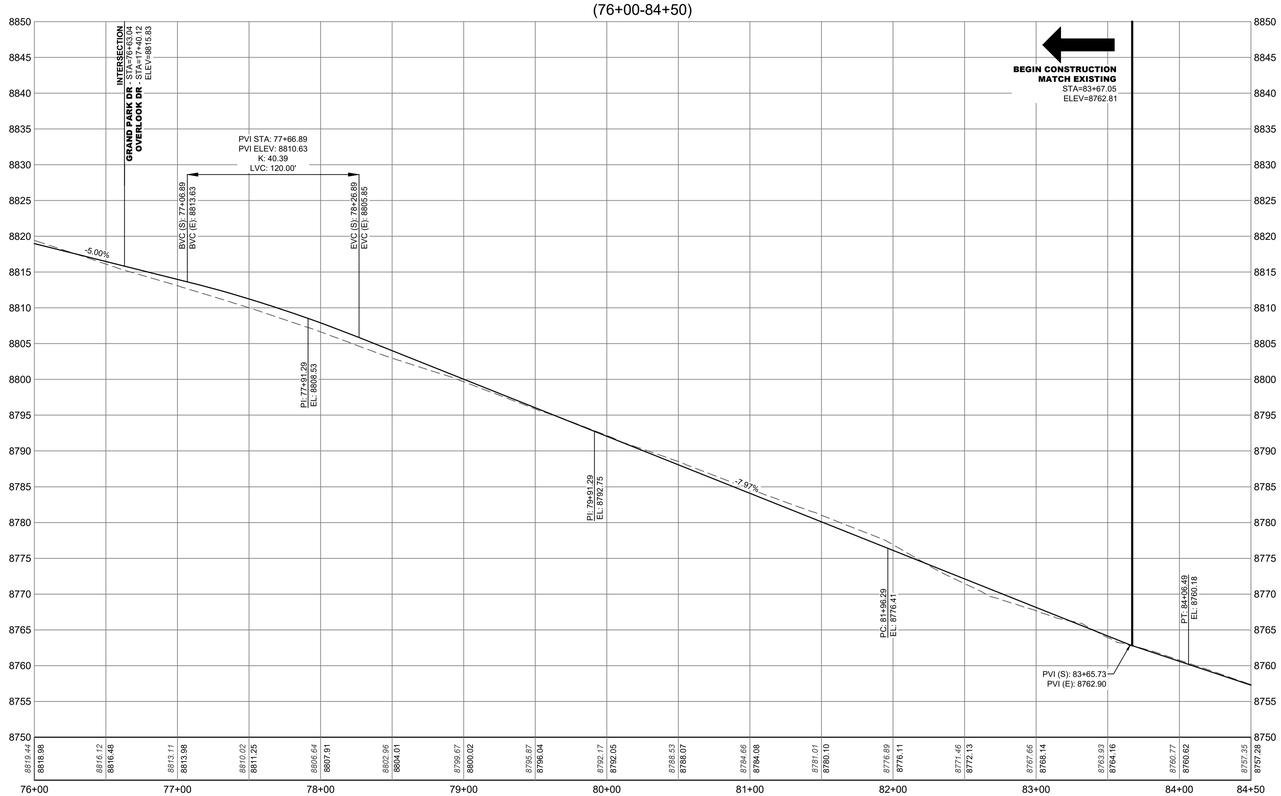


PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

GRAND PARK DR

(76+00-84+50)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

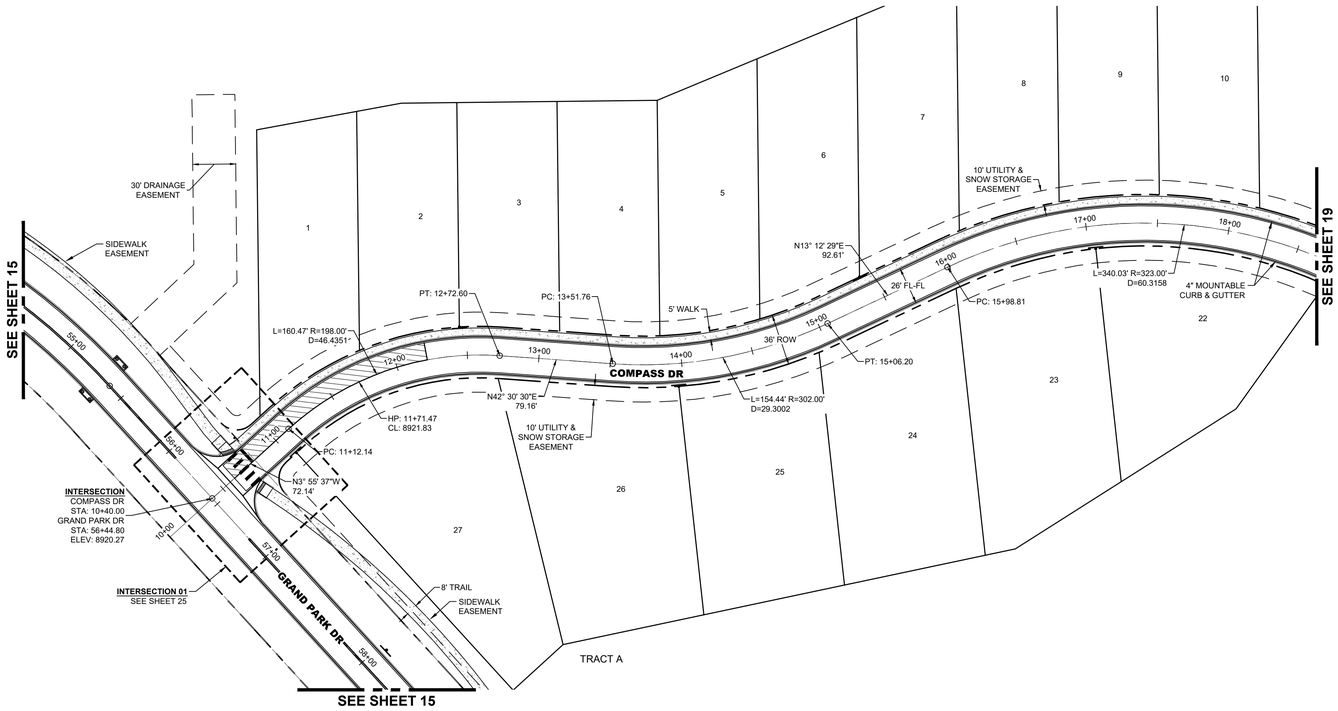
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

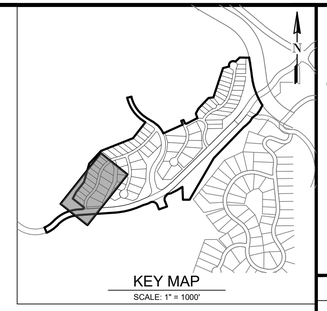
FINAL CONSTRUCTION PLANS
ROAD P&P - GRAND PARK DR

Know what's **below.** **Call** before you dig.
811

SHEET
17 OF 79

2/6/2026 4:26 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS ROAD P&PS 2 - F1 - 16W.DWG 03





0 50' 100'

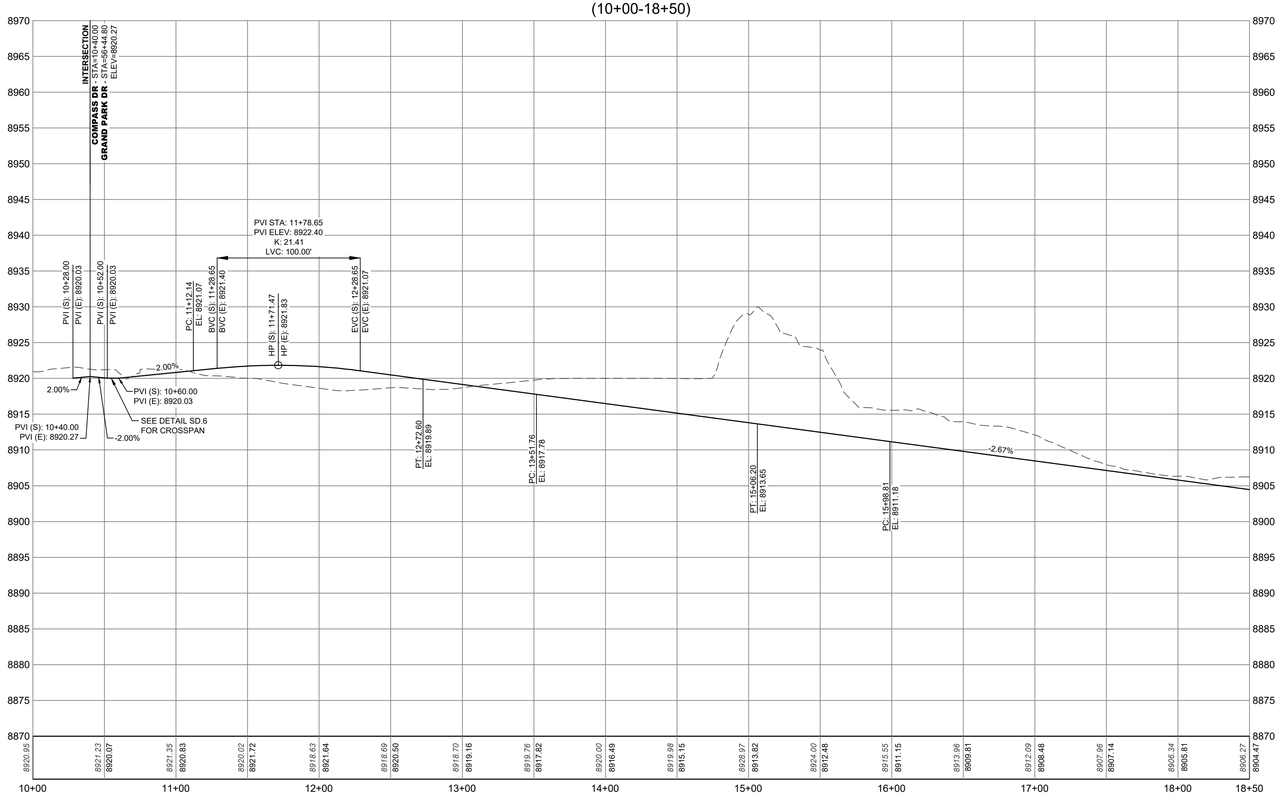
1 inch = 50'

PROFILE LEGEND

EXIST GRADE
PROP GRADE
1"=50' (HORZ) 1"=10' (VERT)

COMPASS DR

(10+00-18+50)



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

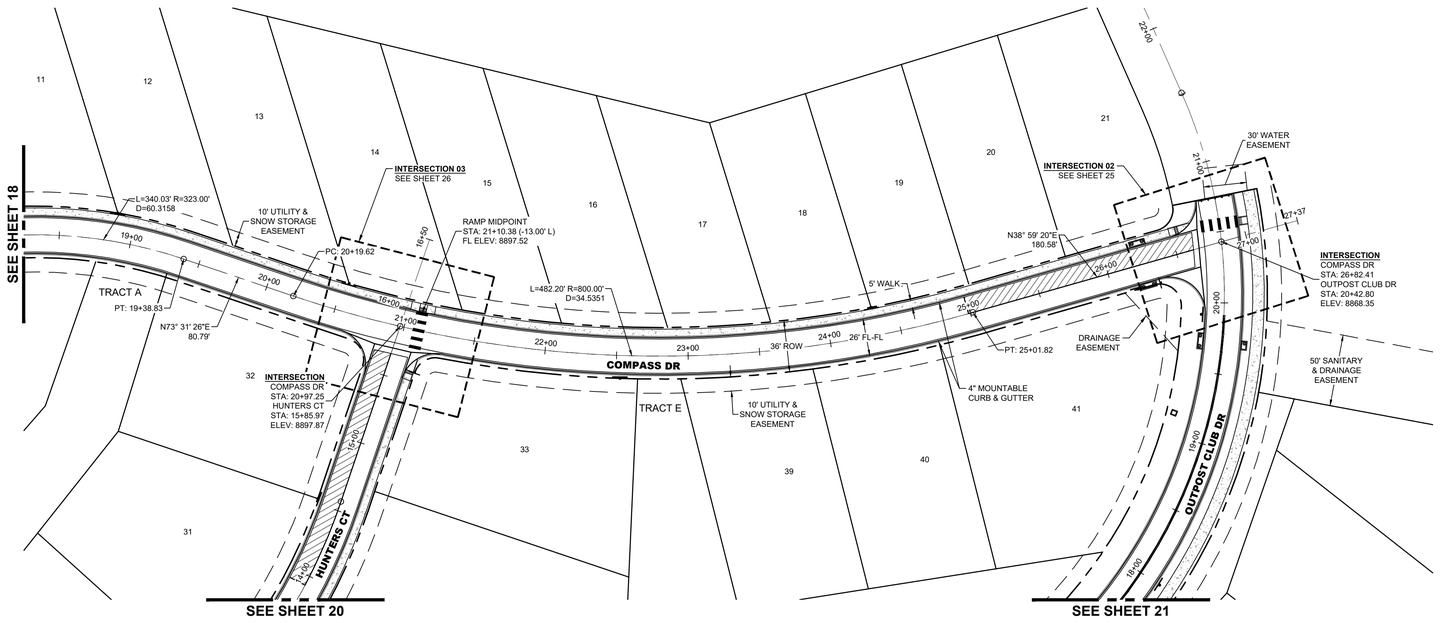
FINAL CONSTRUCTION PLANS
ROAD P&P - COMPASS DR

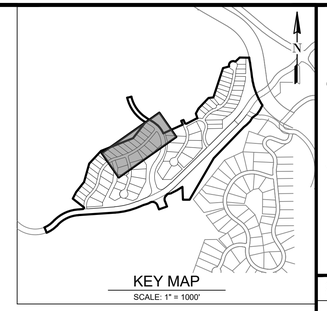
Know what's **below.** **Call** before you dig. 811

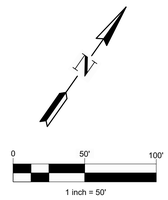
SHEET 18 OF 79

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

2/6/2026 4:27 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS ROAD P&PS - F1 - 10W.DWG 01





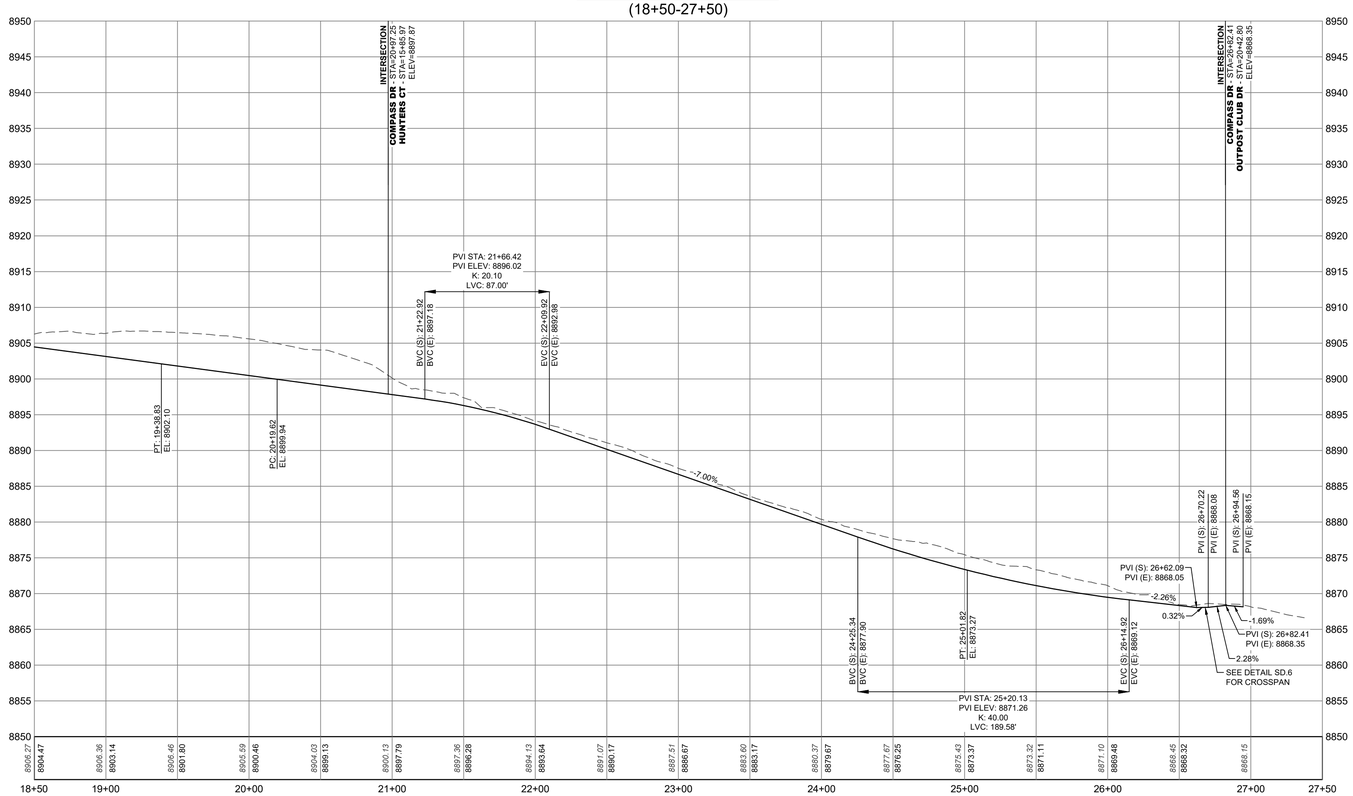


PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

COMPASS DR

(18+50-27+50)



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

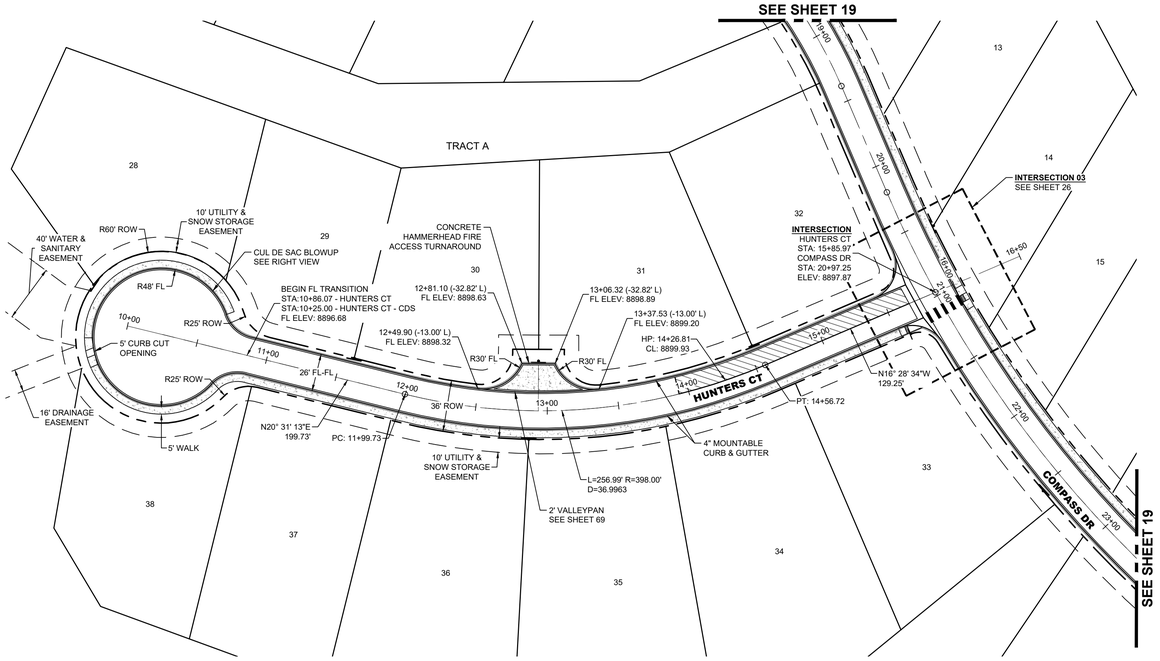
FINAL CONSTRUCTION PLANS
ROAD P&P - COMPASS DR

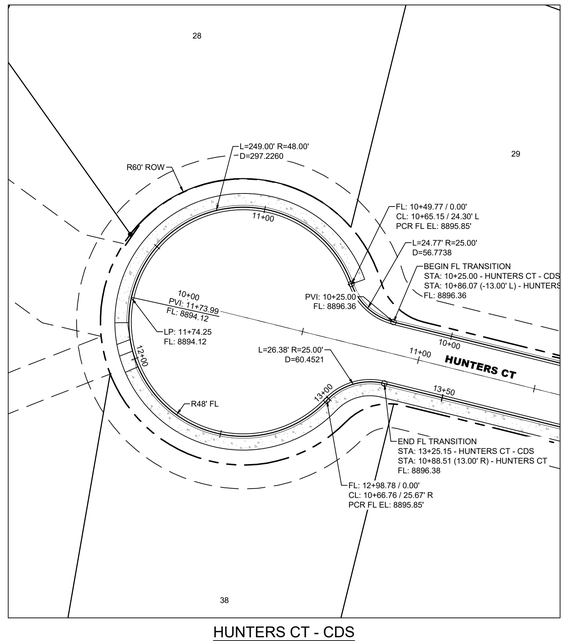
Know what's **below.** **Call** before you dig. 811

SHEET
19 OF 79

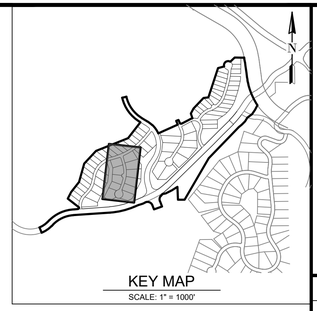
terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

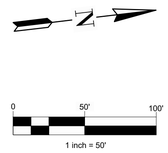
2/6/2026 4:27 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS ROAD P&P\S - F1 - 10W.DWG 02





HUNTERS CT - CDS
SCALE: 1"=30'

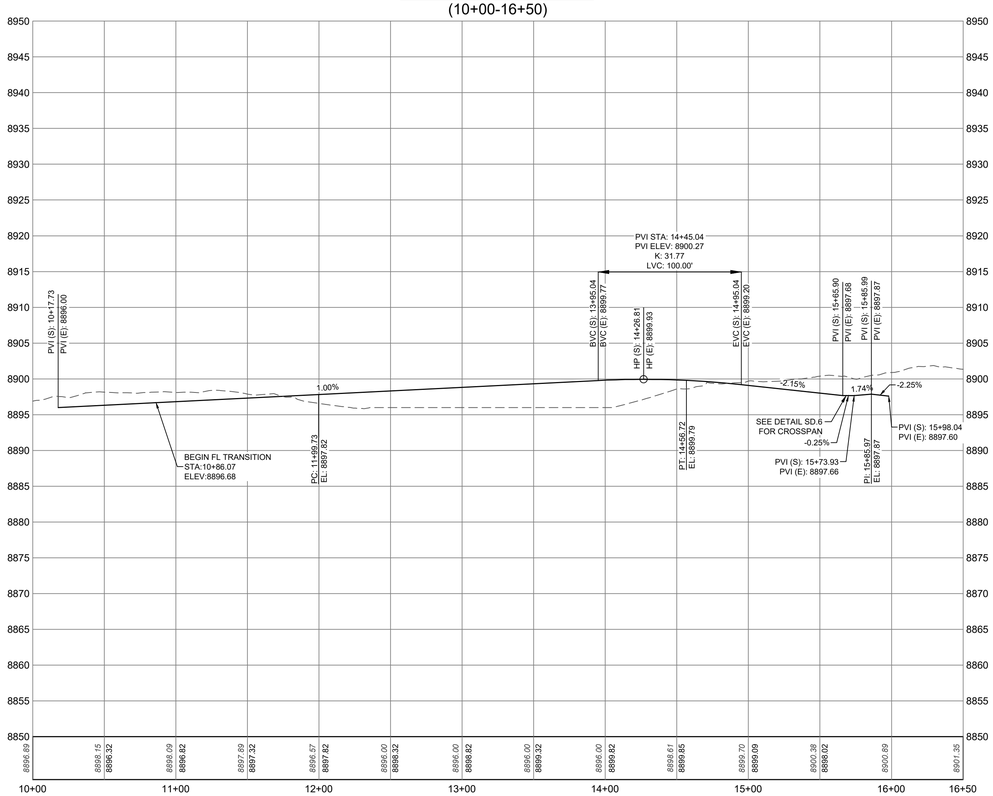




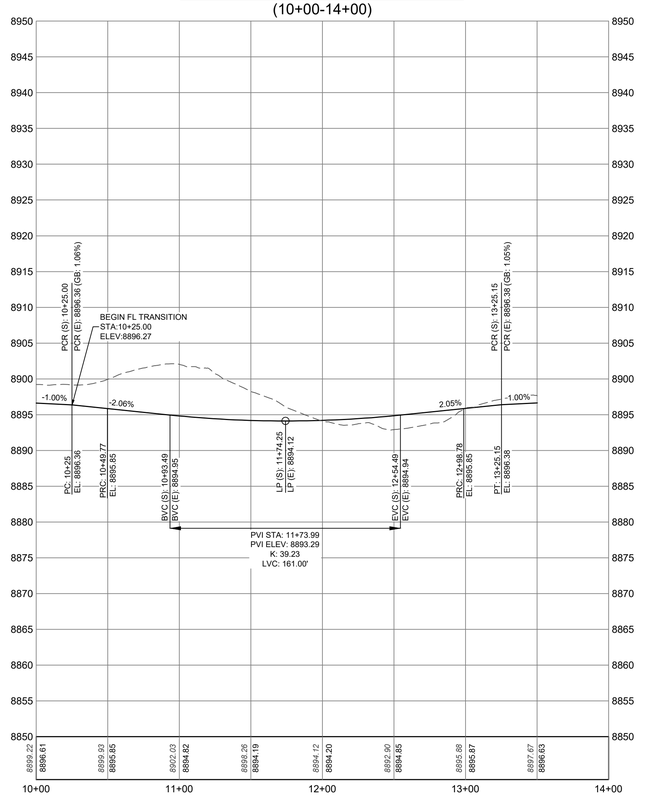
PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

HUNTERS CT
(10+00-16+50)



HUNTERS CT - CDS
(10+00-14+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

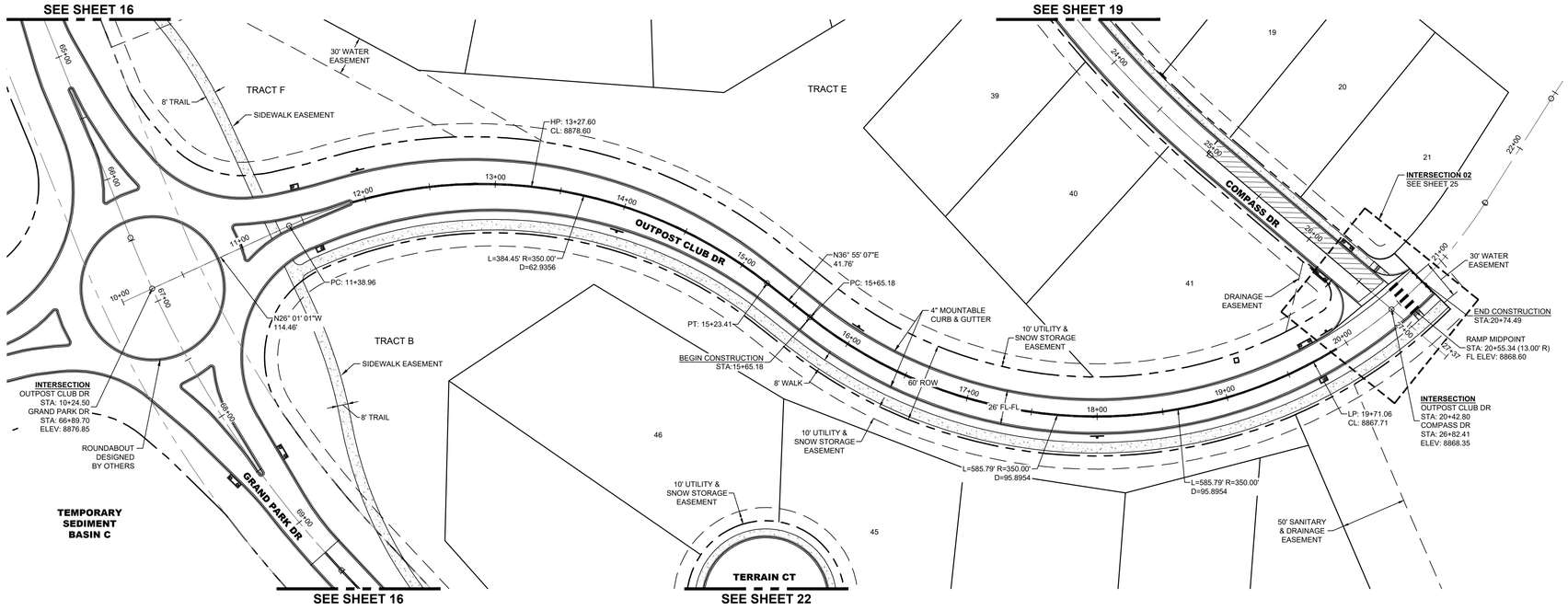
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

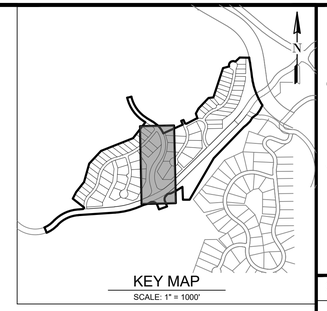
FINAL CONSTRUCTION PLANS
ROAD P&P - HUNTERS CT

Know what's **below.** **Call** before you dig.
811

SHEET
20 OF 79

2/6/2026 4:27 PM, X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS ROAD P&PS - F1 - 16W.DWG 03





0 50' 100'

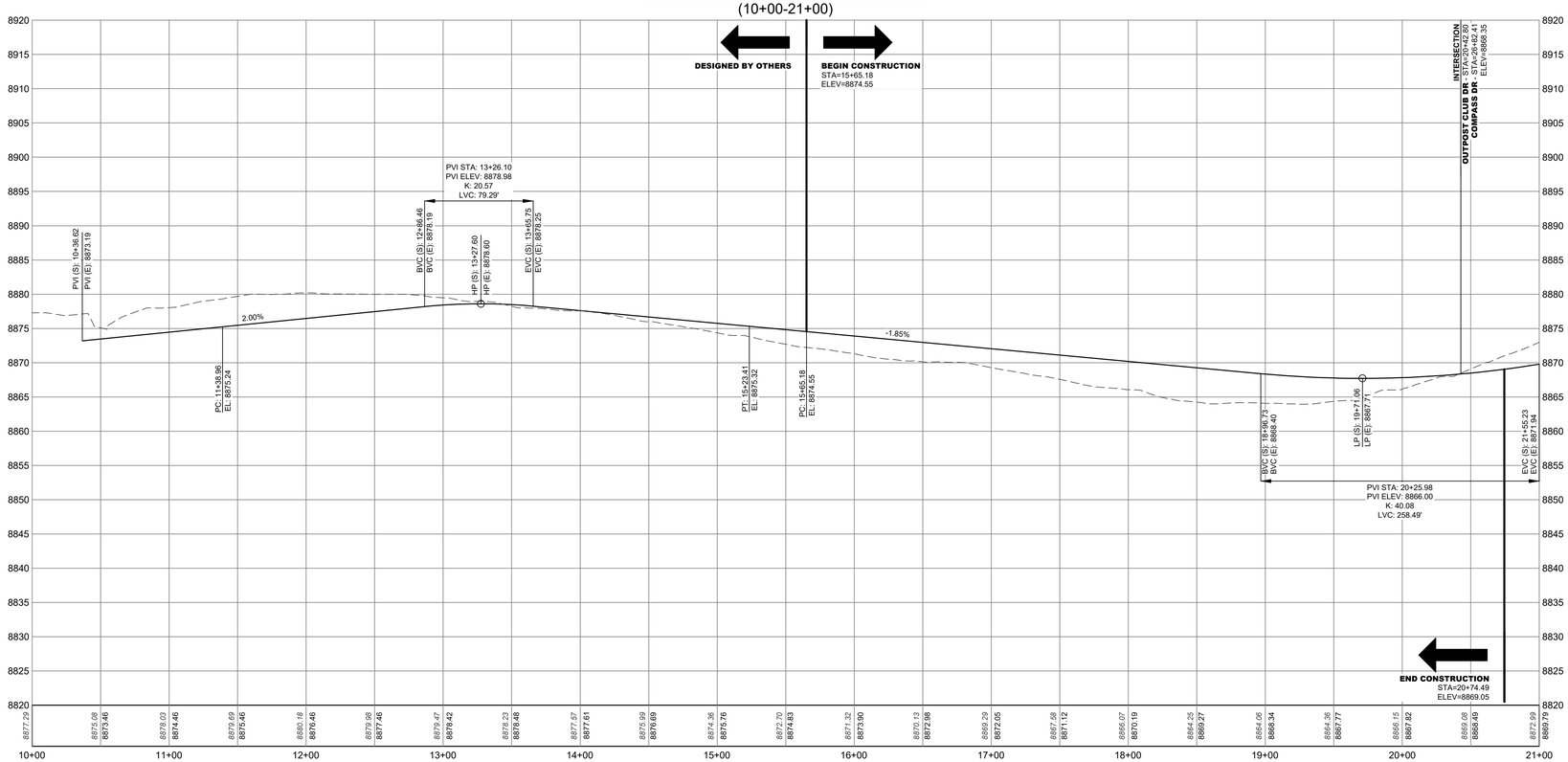
1 inch = 50'

PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

OUTPOST CLUB DR

(10+00-21+00)



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

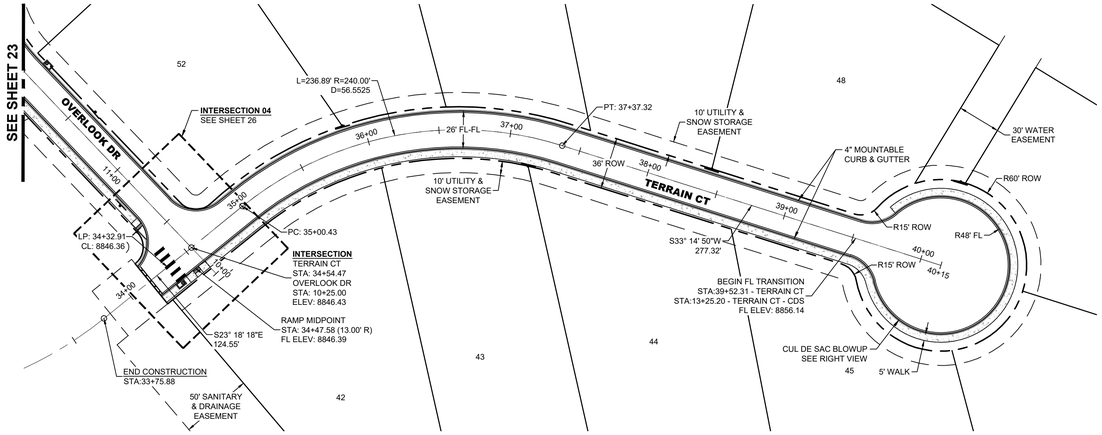
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

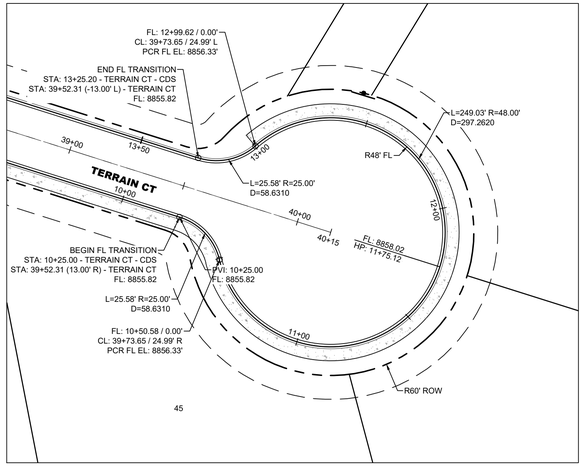
FINAL CONSTRUCTION PLANS
ROAD P&P - OUTPOST CLUB DR

Know what's **below.** **Call** before you dig. 811

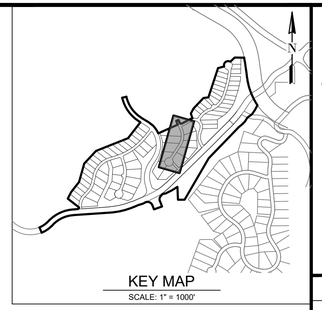
SHEET 21 OF 79

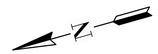
2/6/2026 4:28 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS ROAD P&P'S - F1 - 10W.DWG 04





TERRAIN CT - CDS
SCALE: 1"=30'

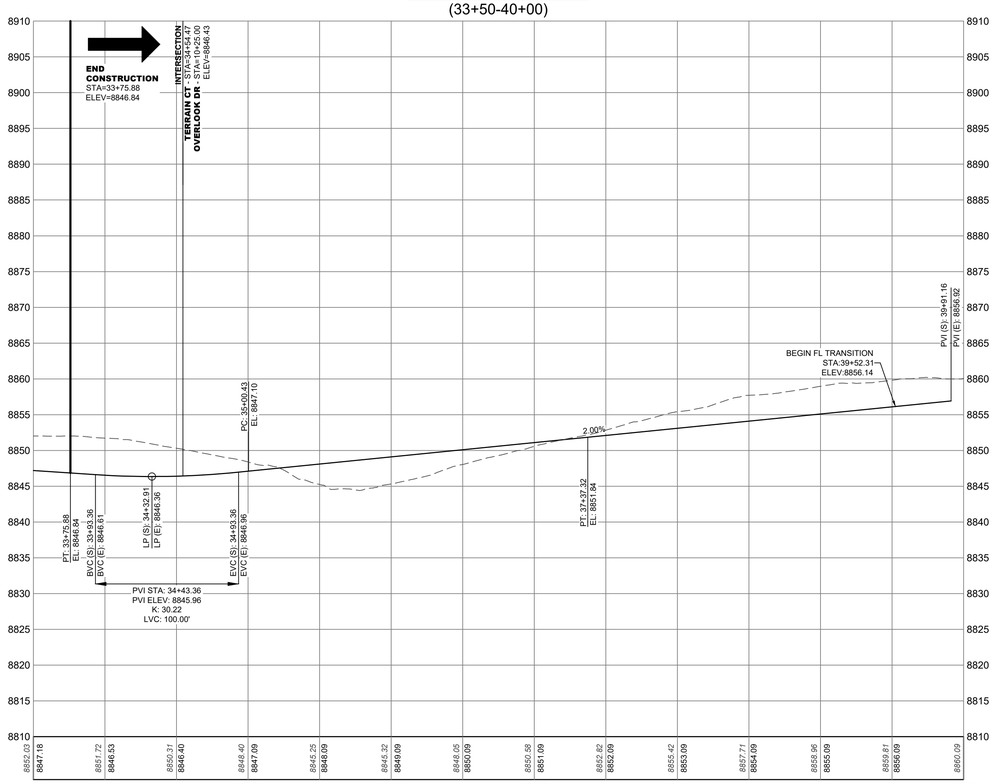




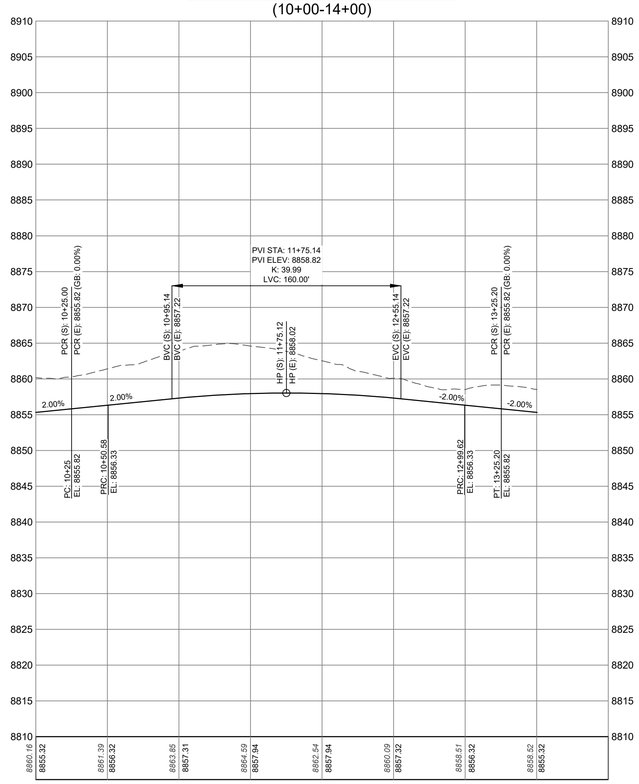
PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

TERRAIN CT
(33+50-40+00)



TERRAIN CT - CDS
(10+00-14+00)



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

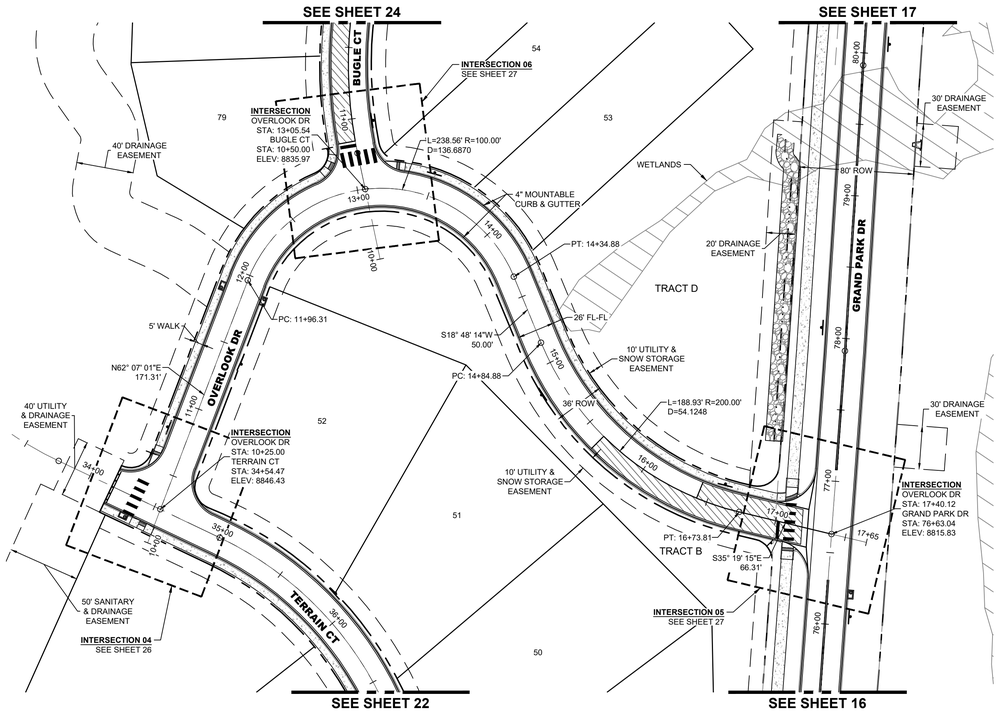
FINAL CONSTRUCTION PLANS
ROAD P&P - TERRAIN CT

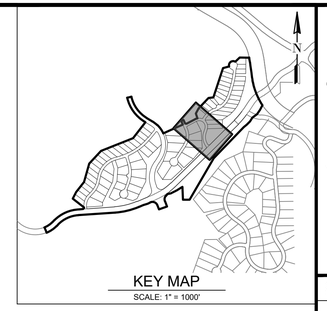
Know what's **below.** **Call** before you dig. 811

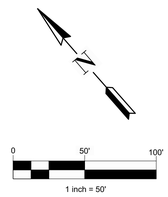
SHEET
22 OF 79

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

2/6/2026 4:26 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS ROAD P&PS - F1 - 10W.DWG 06





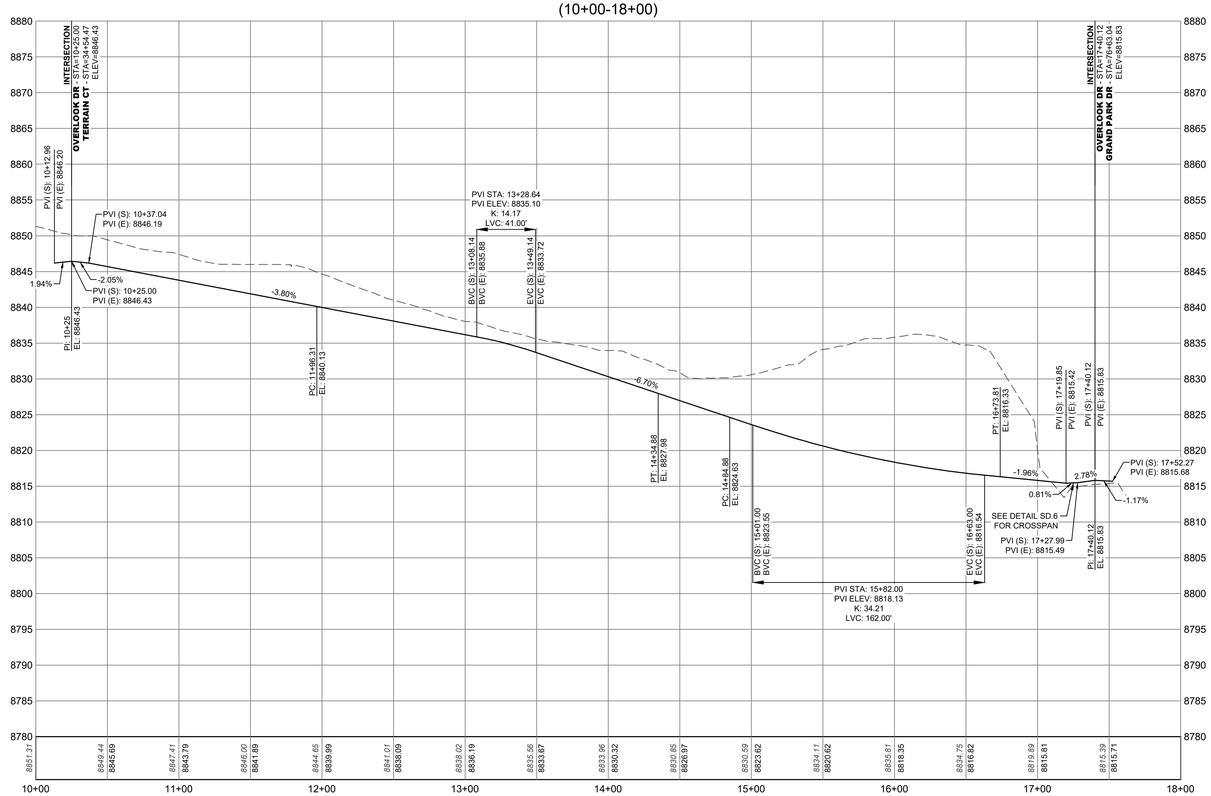


PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

OVERLOOK DR

(10+00-18+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

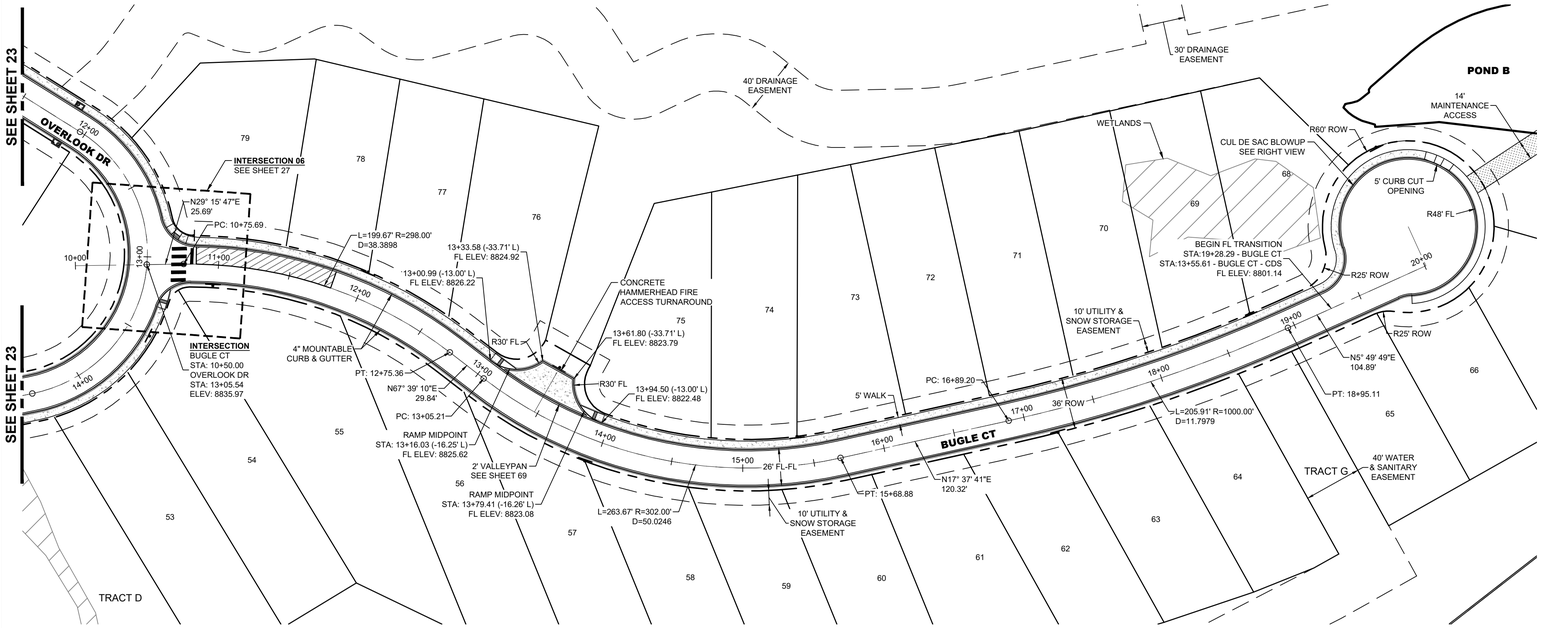
NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

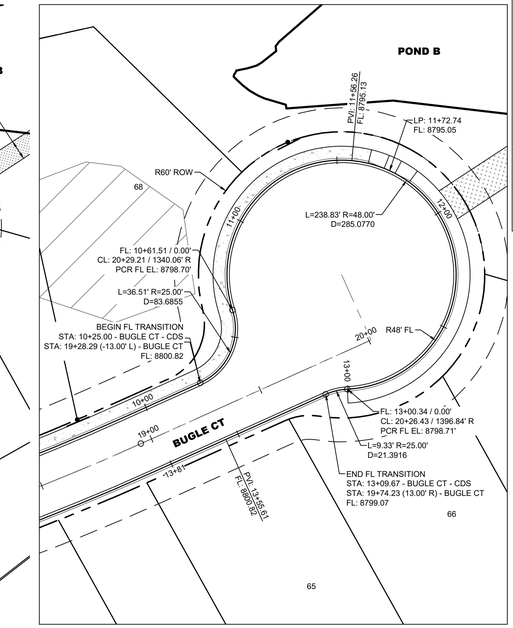
FINAL CONSTRUCTION PLANS
ROAD P&P - OVERLOOK DR

Know what's **below.** **Call** before you dig. 811

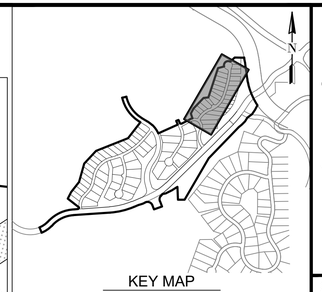
2/6/2026 4:29 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS ROAD P&P\S - F1 - 10W.DWG 07

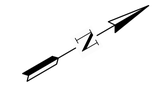


BUGLE CT



BUGLE CT - CDS
SCALE: 1"=30'

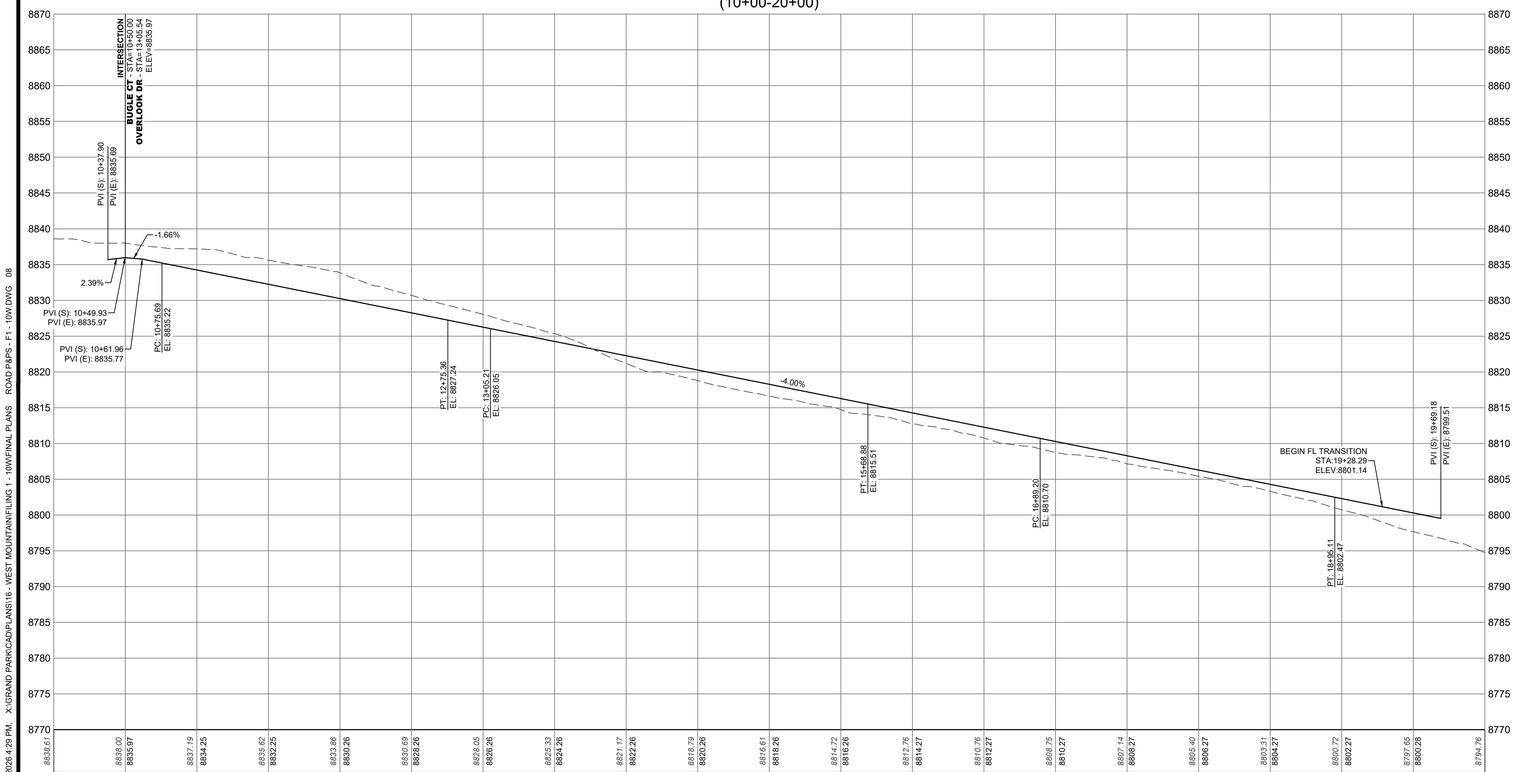




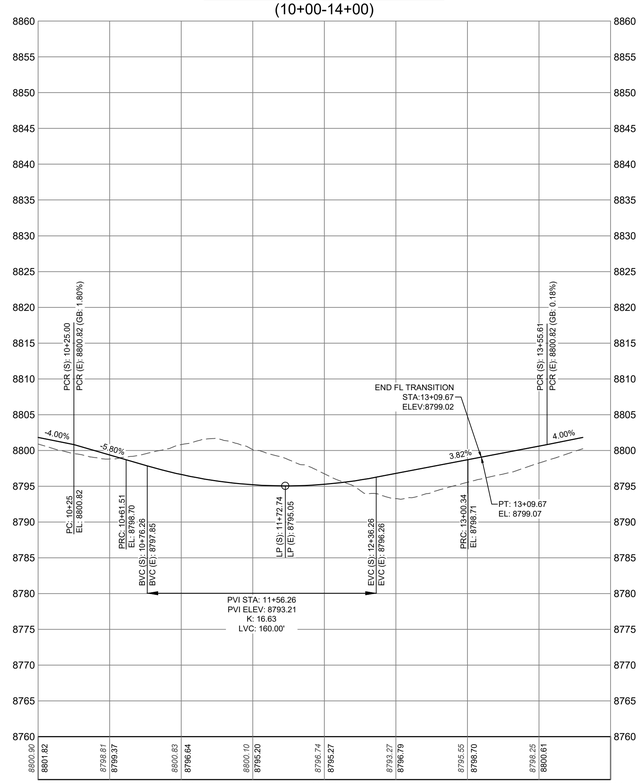
PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

BUGLE CT
(10+00-20+00)



BUGLE CT - CDS
(10+00-14+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

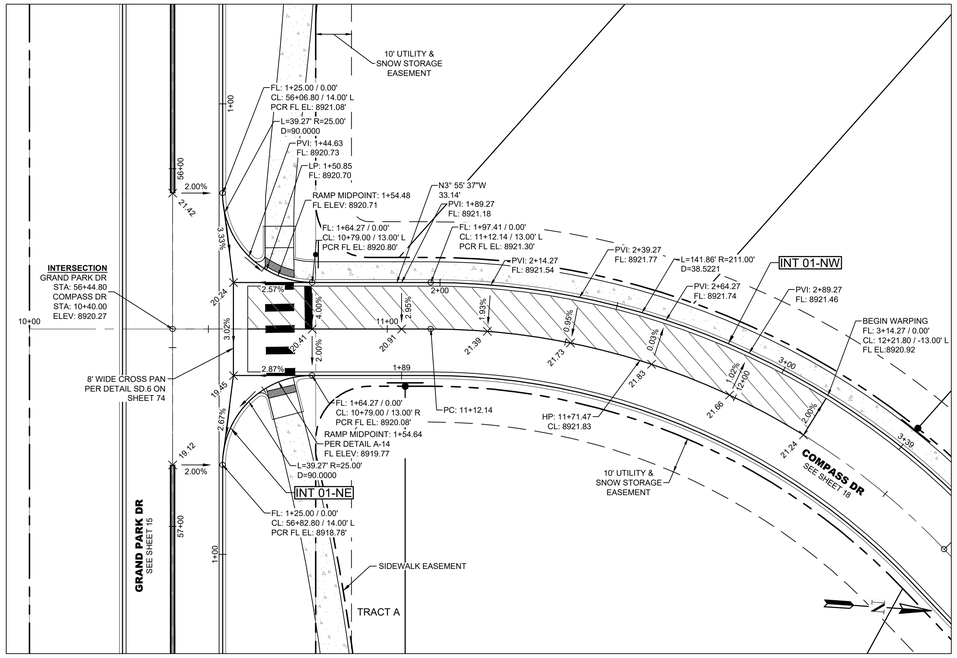
NOT FOR CONSTRUCTION

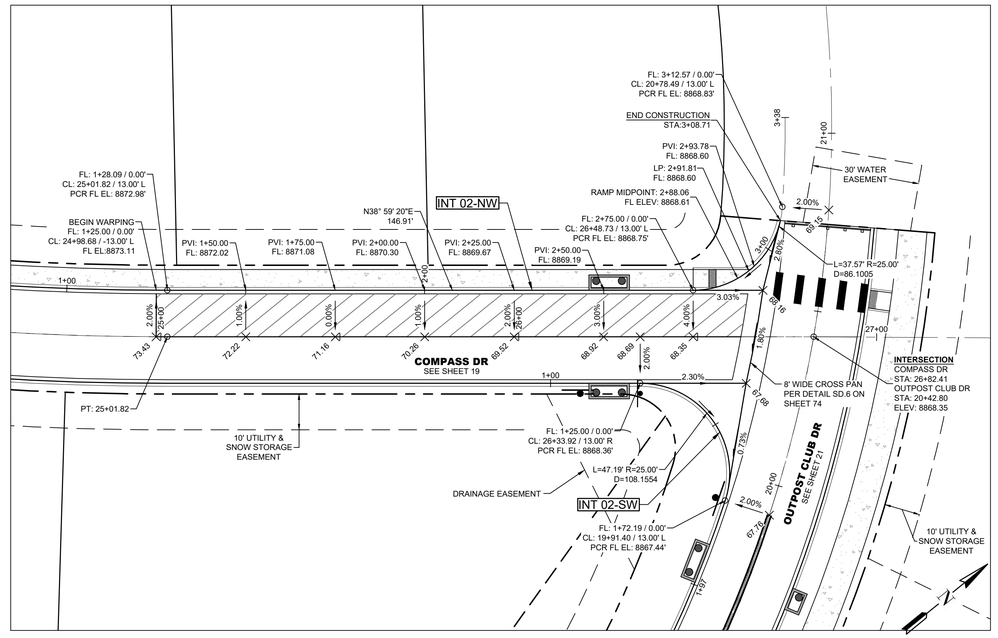
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

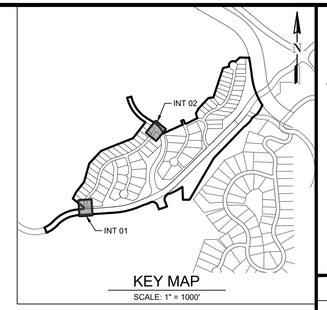
FINAL CONSTRUCTION PLANS
ROAD P&P - BUGLE CT

Know what's **below.**
Call before you dig.
811

2/6/2026 4:29 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS ROAD P&P'S - F1 - 10W.DWG 08







KEY MAP

SCALE: 1" = 1000'

0 20' 40'

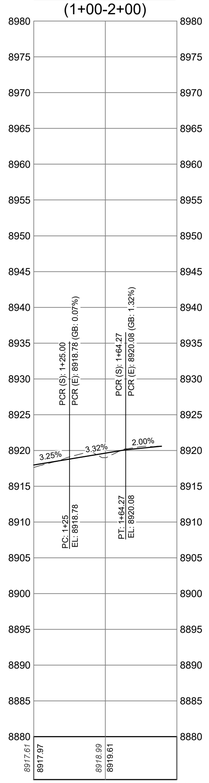
1 inch = 20'

PROFILE LEGEND

EXIST GRADE
PROP GRADE
1"=50' (HORZ) 1"=10' (VERT)

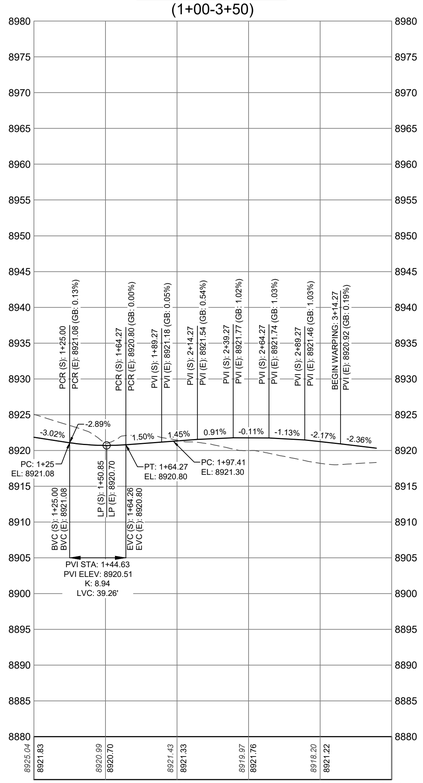
INT 01-NE

(1+00-2+00)



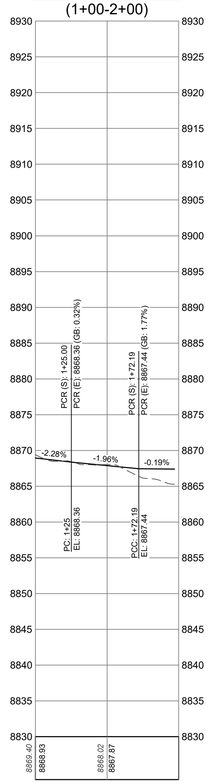
INT 01-NW

(1+00-3+50)



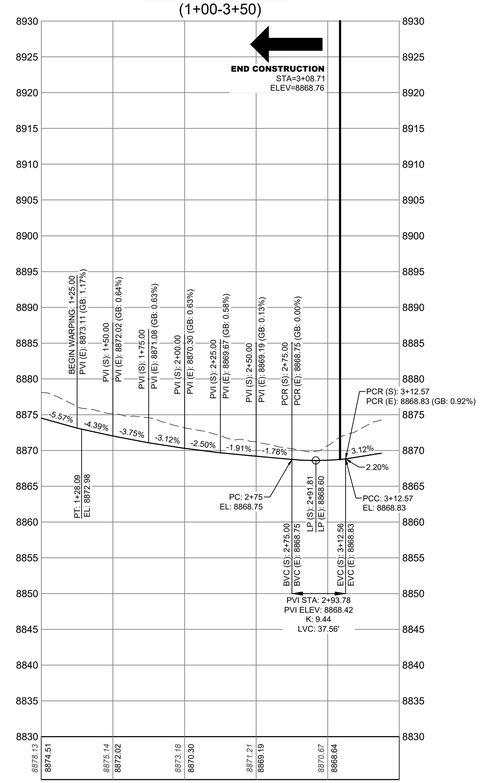
INT 02-SW

(1+00-2+00)



INT 02-NW

(1+00-3+50)



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

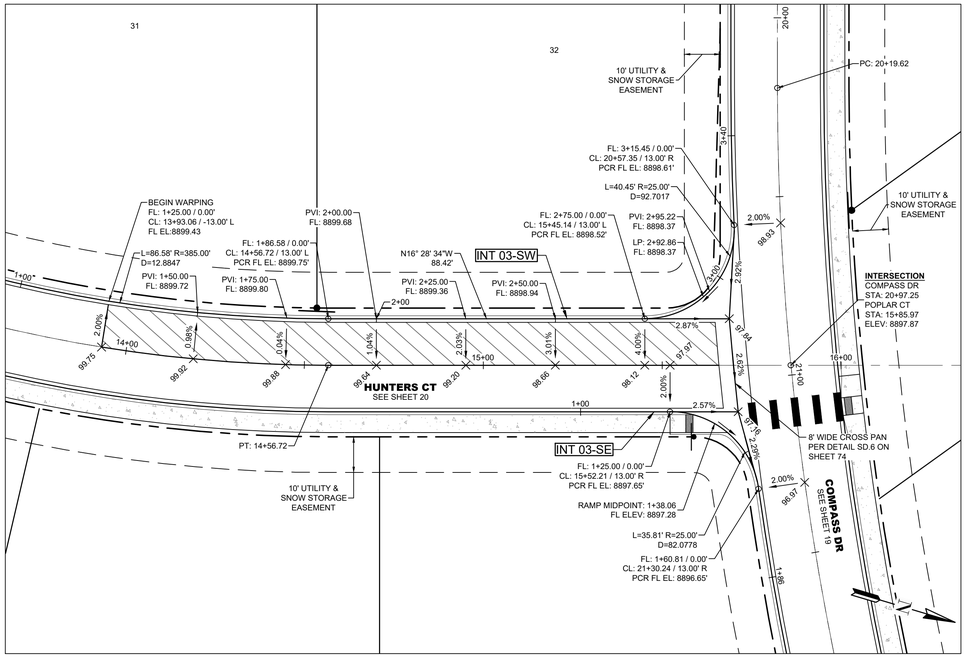
FINAL CONSTRUCTION PLANS
ROAD P&P - INT 01 & 02

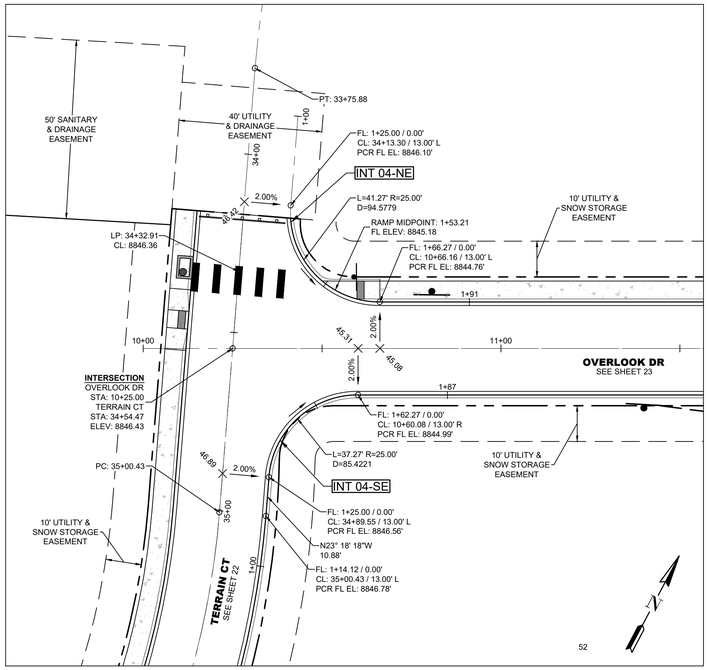
Know what's **below.** **Call** before you dig. 811

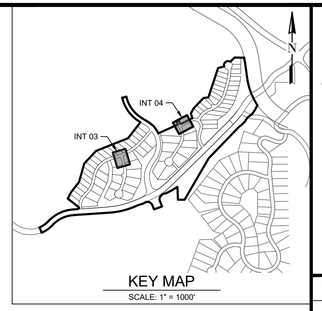
SHEET 25 OF 79

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

2/6/2026 4:30 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS ROAD P&P\PS 2 - F1 - 16W.DWG 04







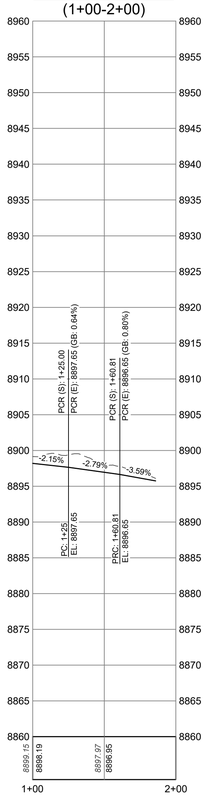
0 20' 40'

1 inch = 20'

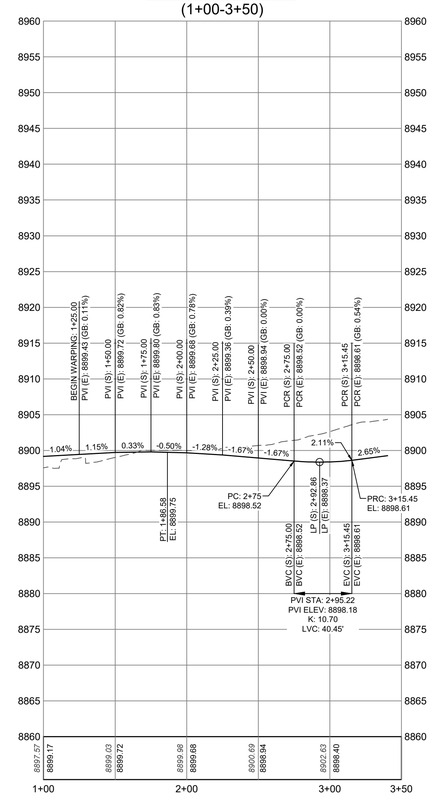
PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

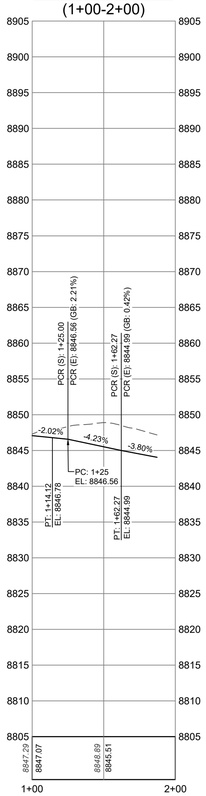
INT 03-SE
(1+00-2+00)



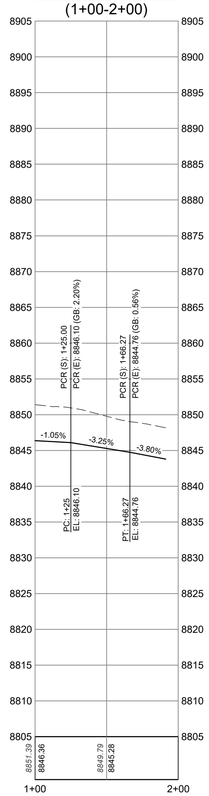
INT 03-SW
(1+00-3+50)



INT 04-SE
(1+00-2+00)



INT 04-NE
(1+00-2+00)



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

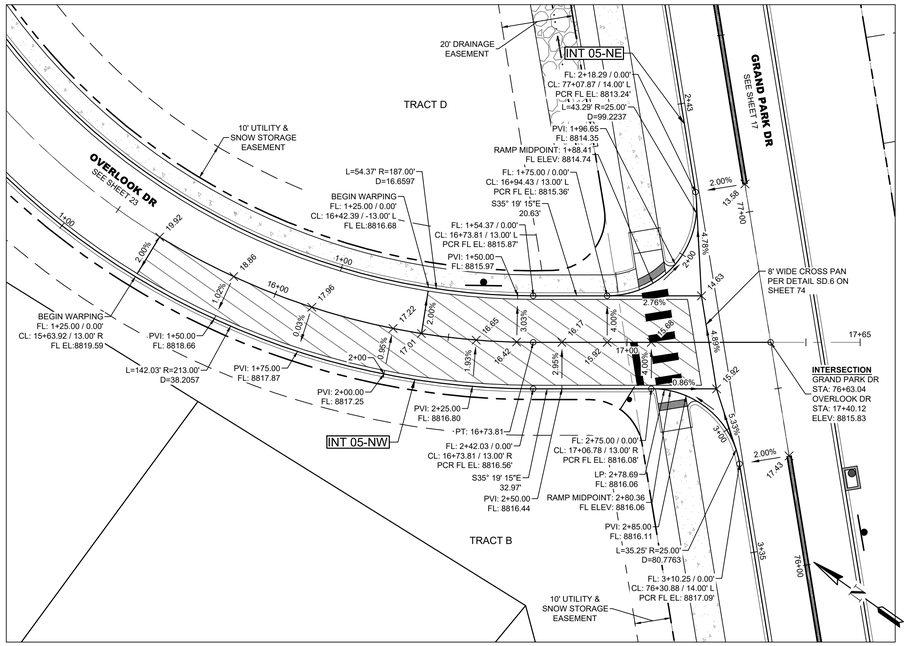
FINAL CONSTRUCTION PLANS
ROAD P&P - INT 03 & 04

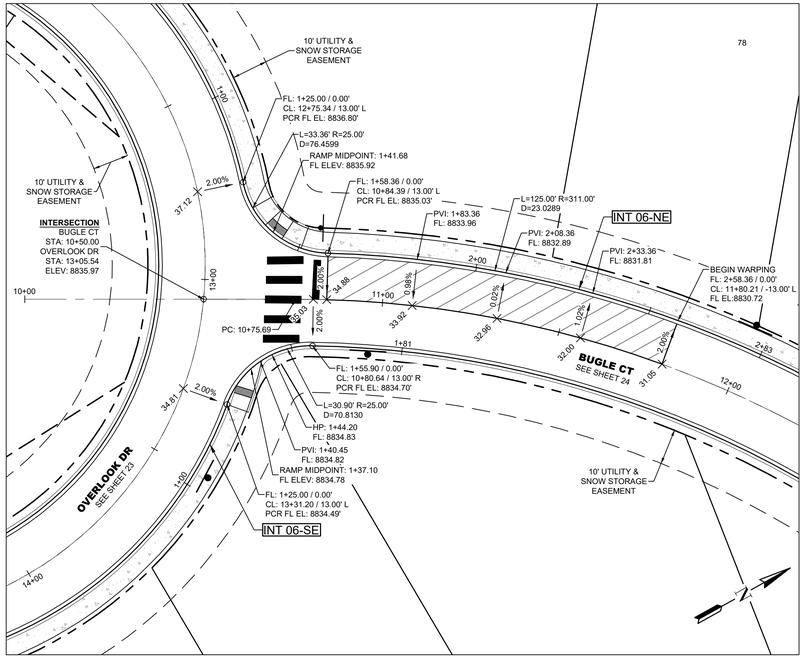
Know what's **below.** **Call** before you dig. 811

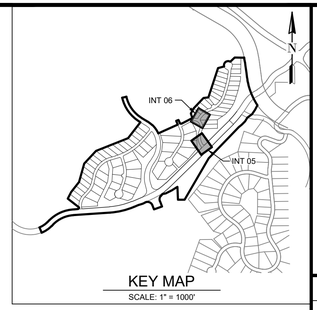
SHEET
26 OF 79

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

2/6/2026 4:30 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS ROAD P&P'S 2 - F1 - 16W.DWG 05







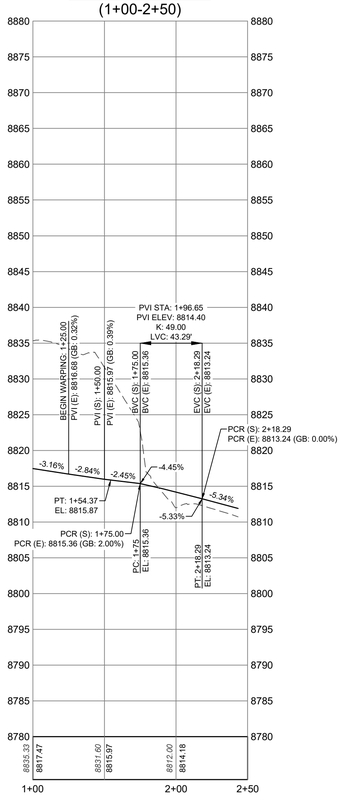
0 20' 40'

1 inch = 20'

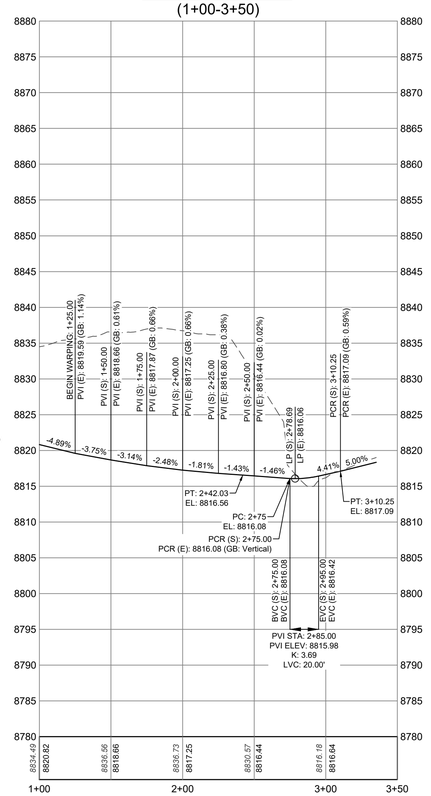
PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

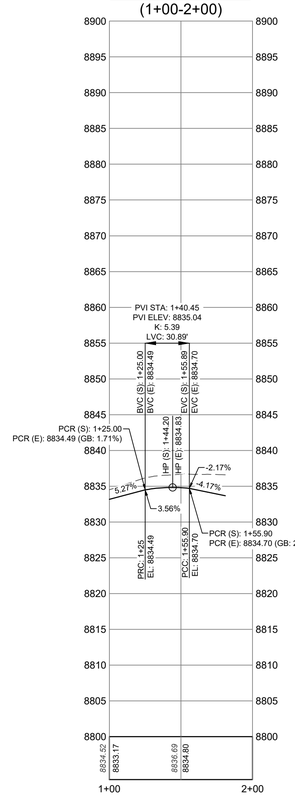
INT 05-NE
(1+00-2+50)



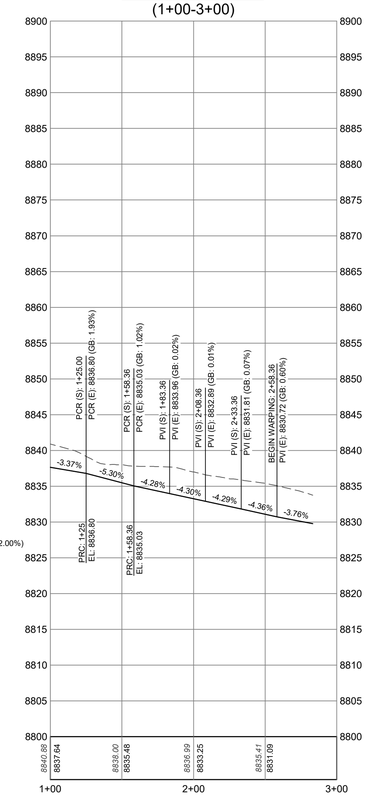
INT 05-NW
(1+00-3+50)



INT 06-SE
(1+00-2+00)



INT 06-NE
(1+00-3+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

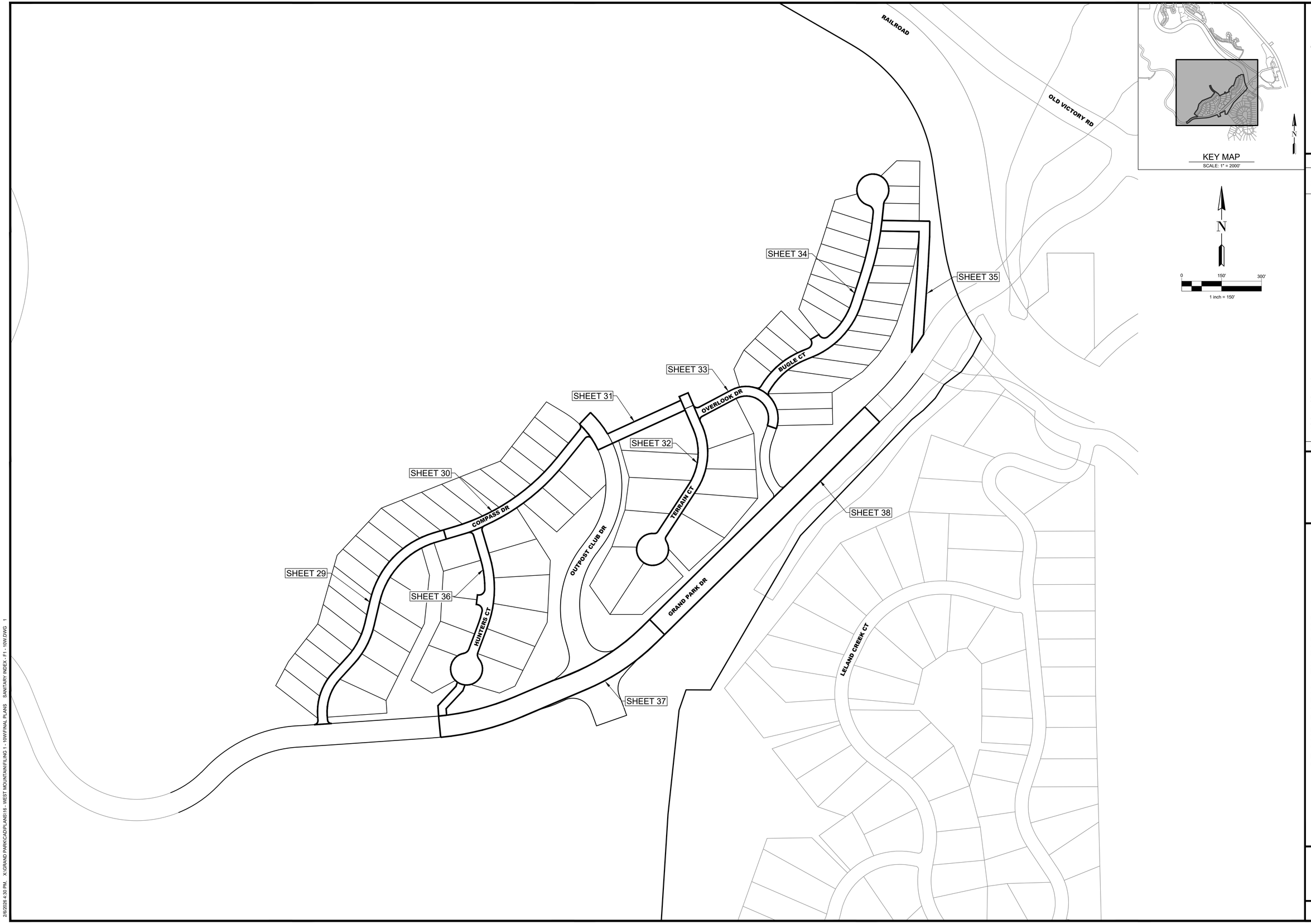
NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
ROAD P&P - INT 05 & 06

Know what's **below.** **Call** before you dig. 811

SHEET
27 OF 79

2/6/2026 4:30 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS ROAD P&PS 2 - F1 - 16W.DWG 06



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

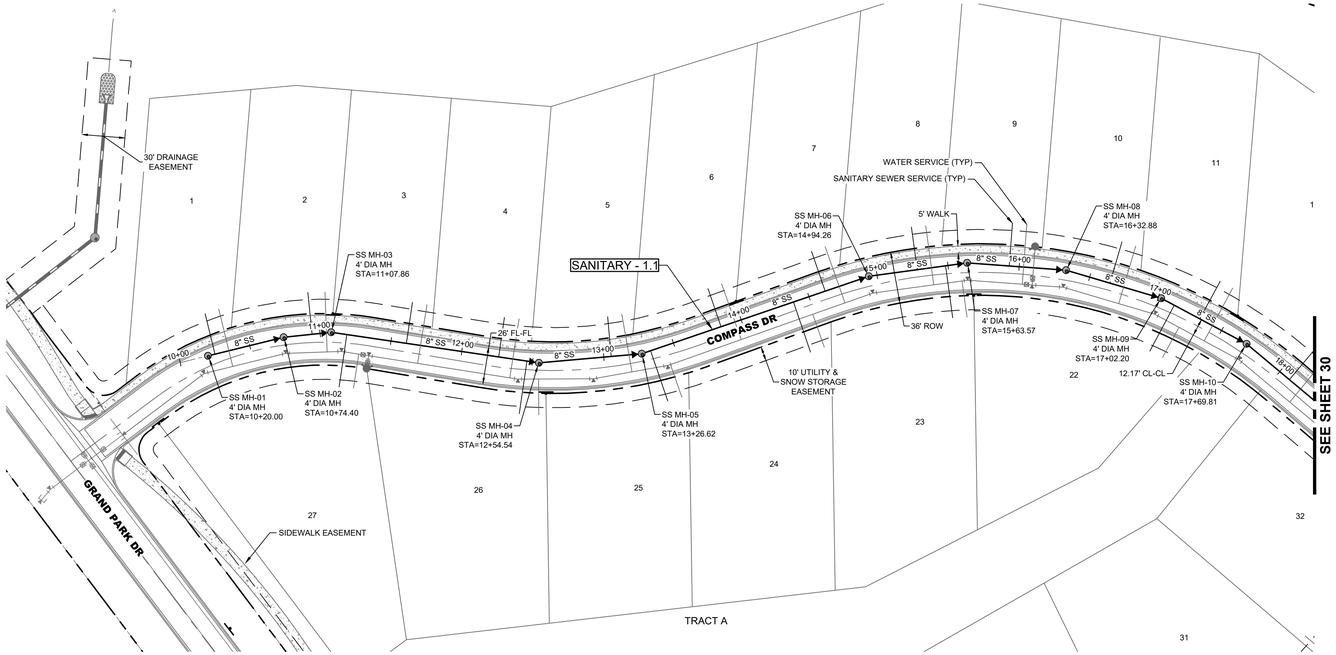
NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
SANITARY INDEX

Know what's **below.** **Call** before you dig. 811

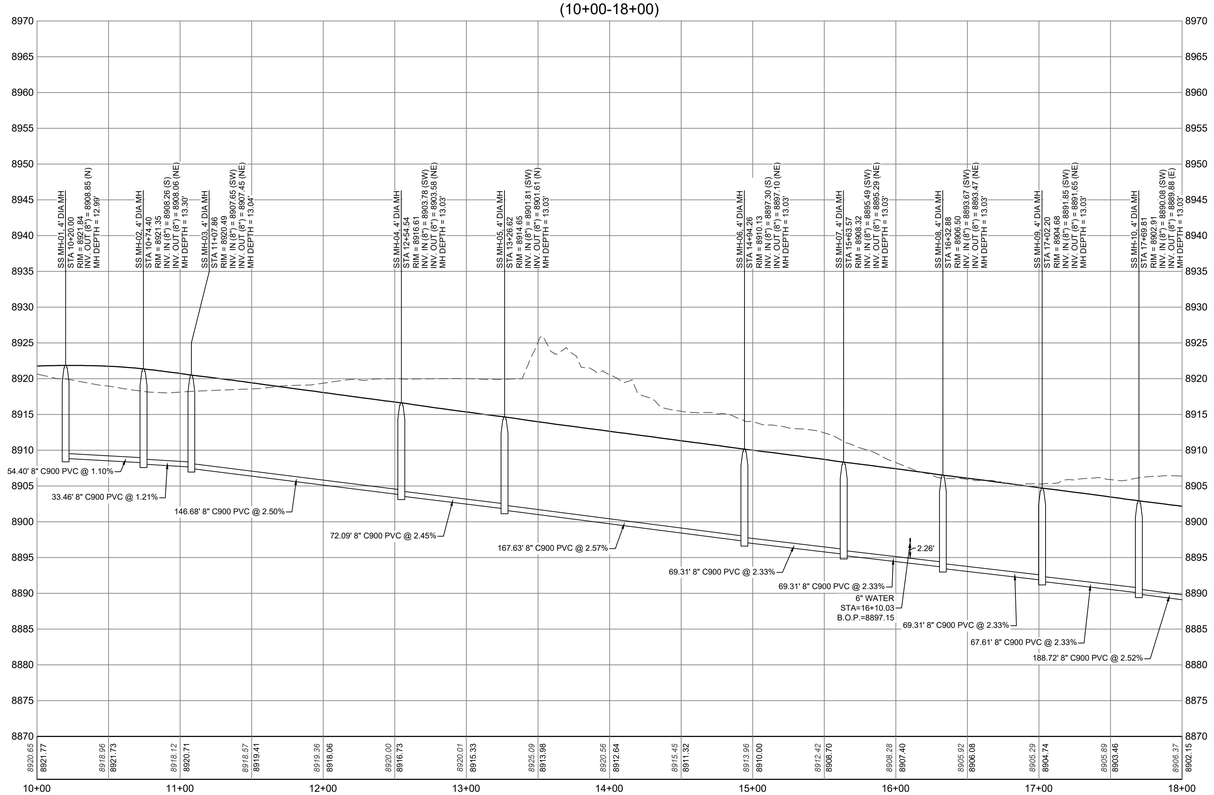
SHEET 28 OF 79

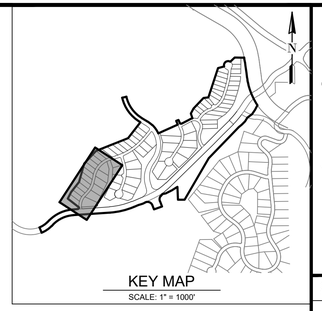
2/6/2026 4:30 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16\W\FINAL PLANS SANITARY INDEX - F1 - 16W.DWG 1

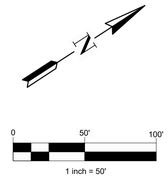


SANITARY - 1.1

(10+00-18+00)







PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

NOTES:

1. REFERENCE TOWN OF FRASER STANDARD DETAIL A-5, FROM THE *DESIGN CRITERIA AND CONSTRUCTION STANDARDS MANUAL*, FOR SANITARY SEWER PIPES THAT EXCEED DEPTHS GREATER THAN 7 FEET FOR TRENCH BOX SIZING.

2. STATE REGULATIONS REQUIRE THAT SEWER AND WATER LINES SHALL HAVE TEN (10) FEET MINIMUM OF HORIZONTAL SEPARATION FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS. IN ALL CASES WHERE NONPOTABLE UTILITIES CROSS WITH POTABLE WATER A TWENTY-FOOT STICK OF PIPE SHALL BE INSTALLED, CENTERED ON THE CROSSING. IF A WATER LINE PASSES WITHIN EIGHTEEN (18) INCHES VERTICAL DISTANCE ABOVE OR BELOW A SEWER MAIN, SEWER SERVICE, OR NONPOTABLE WET UTILITY OR IF IT LIES WITHIN THE MINIMUM TEN (10) FEET HORIZONTAL SEPARATION FROM THE SEWER, SECONDARY CONTAINMENT IS REQUIRED PER ATTACHMENT A-23 - PIPE CROSSING DETAIL, ATTACHMENT A-24 - PIPE ENCASEMENT DETAIL, AND ATTACHMENT A-25 - BORE CASING DETAIL. WHERE SEWER PIPE OR NONPOTABLE WET UTILITY OVER THE WATER LINE IS LESS THAN EIGHTEEN (18) INCHES VERTICAL FROM A WATER LINE, SECONDARY CONTAINMENT METHODS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION. THESE METHODS MAY INCLUDE ENCASEMENT OF THE WATER LINE, CASING PIPE ON THE SEWER, PRESSURE PIPE. CENTERED OVER THE CROSSING WITH RESTRAINED JOINT COUPLINGS (ROMAC ALPHA OR EQUIVALENT), OR APPROVED EQUIVALENT.

3. ALL SANITARY PIPE INSTALLATION SHALL BE CONSTRUCTED USING C900 PVC PRESSURE PIPE.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

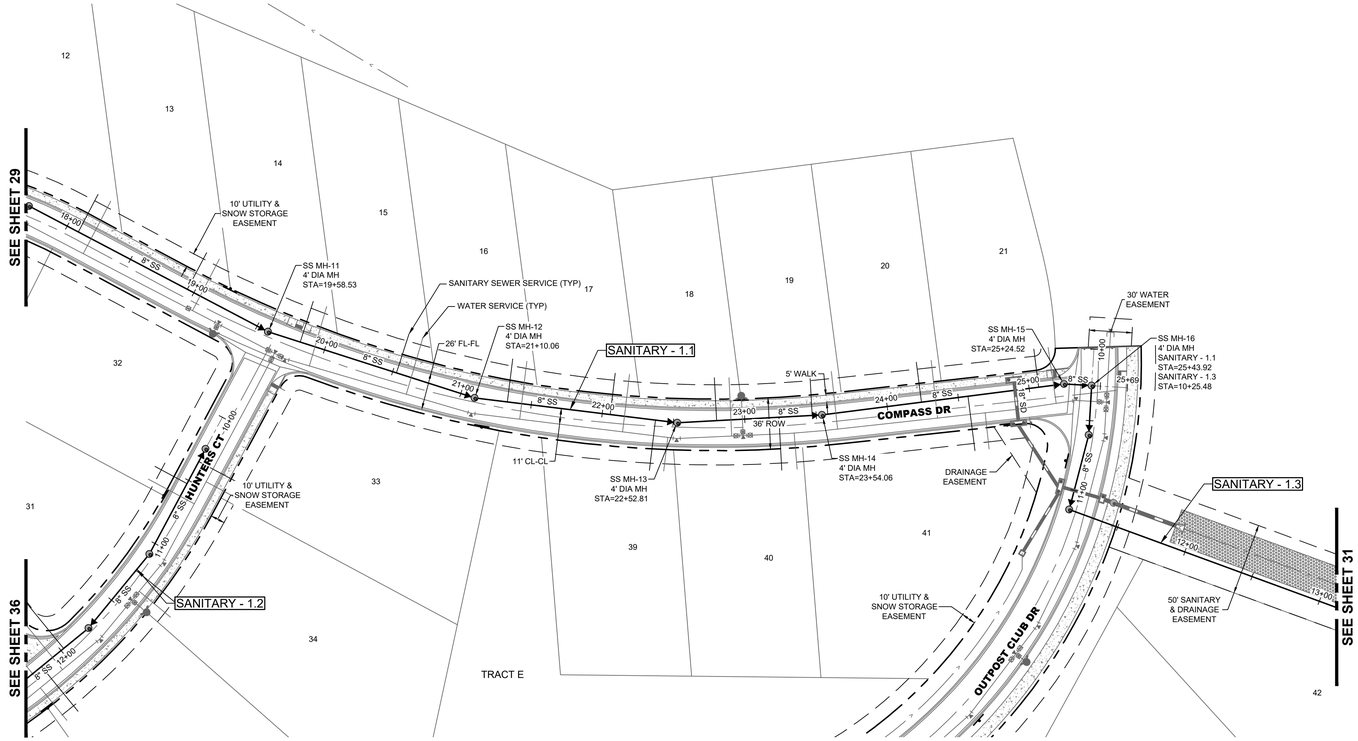
NOT FOR CONSTRUCTION

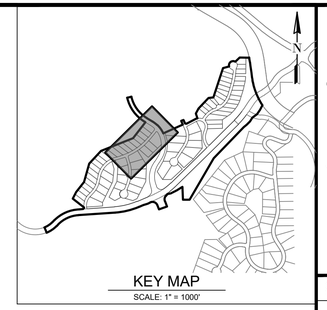
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

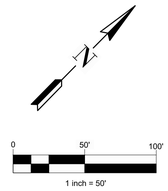
FINAL CONSTRUCTION PLANS
SANITARY P&P - LINE 1.1

Know what's **below.** **Call** before you dig. 811

2/6/2026 4:31 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS SANITARY PAPS - F1 - 16W.DWG 01







PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

NOTES:

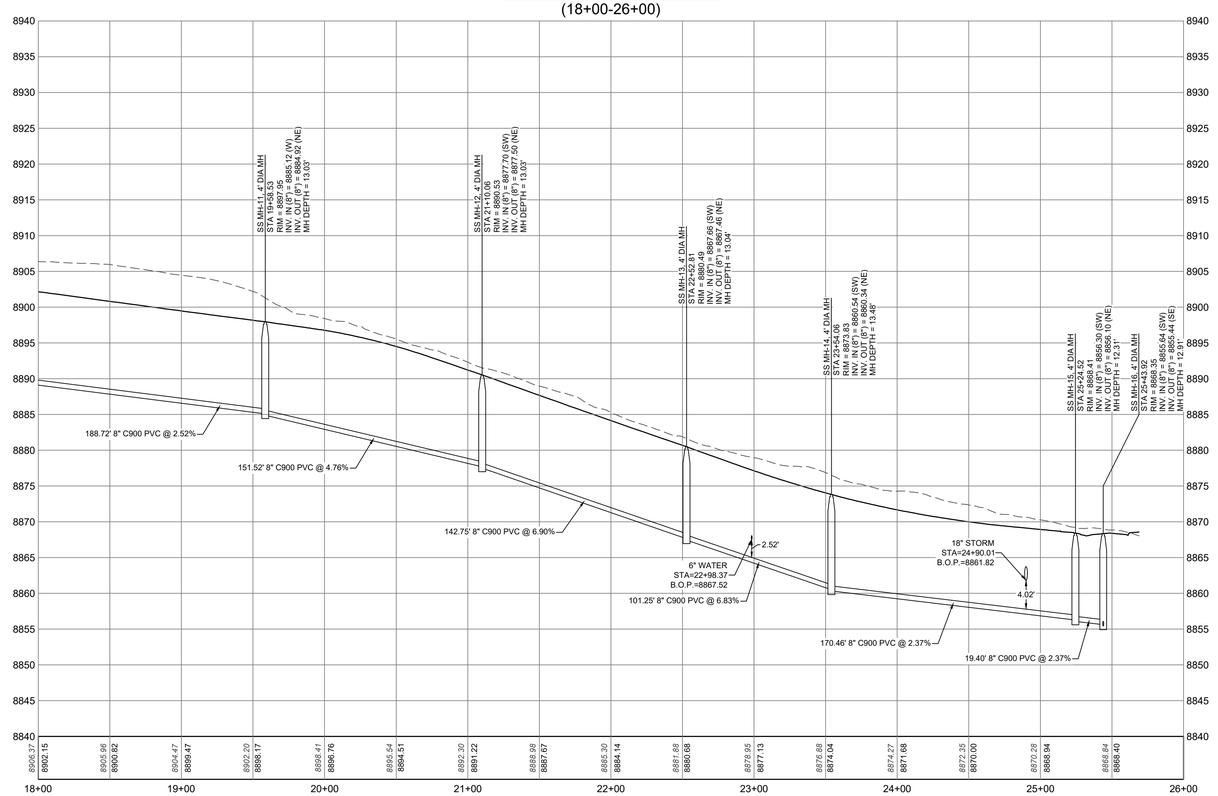
1. REFERENCE TOWN OF FRASER STANDARD DETAIL A-5, FROM THE *DESIGN CRITERIA AND CONSTRUCTION STANDARDS MANUAL*, FOR SANITARY SEWER PIPES THAT EXCEED DEPTHS GREATER THAN 7 FEET FOR TRENCH BOX SIZING.

2. STATE REGULATIONS REQUIRE THAT SEWER AND WATER LINES SHALL HAVE TEN (10) FEET MINIMUM OF HORIZONTAL SEPARATION FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS. IN ALL CASES WHERE NONPOTABLE UTILITIES CROSS WITH POTABLE WATER A TWENTY-FOOT STICK OF PIPE SHALL BE INSTALLED, CENTERED ON THE CROSSING. IF A WATER LINE PASSES WITHIN EIGHTEEN (18) INCHES VERTICAL DISTANCE ABOVE OR BELOW A SEWER MAIN, SEWER SERVICE, OR NONPOTABLE WET UTILITY OR IF IT LIES WITHIN THE MINIMUM TEN (10) FEET HORIZONTAL SEPARATION FROM THE SEWER, SECONDARY CONTAINMENT IS REQUIRED PER ATTACHMENT A-23 - PIPE CROSSING DETAIL, ATTACHMENT A-24 - PIPE ENCASEMENT DETAIL, AND ATTACHMENT A-25 - BORE CASING DETAIL. WHERE SEWER PIPE OR NONPOTABLE WET UTILITY OVER THE WATER LINE IS LESS THAN EIGHTEEN (18) INCHES VERTICAL FROM A WATER LINE, SECONDARY CONTAINMENT METHODS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION. THESE METHODS MAY INCLUDE ENCASEMENT OF THE WATER LINE, CASING PIPE ON THE SEWER, PRESSURE PIPE CENTERED OVER THE CROSSING WITH RESTRAINED JOINT COUPLINGS (ROMAC ALPHA OR EQUIVALENT), OR APPROVED EQUIVALENT.

3. ALL SANITARY PIPE INSTALLATION SHALL BE CONSTRUCTED USING C900 PVC PRESSURE PIPE.

SANITARY - 1.1

(18+00-26+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

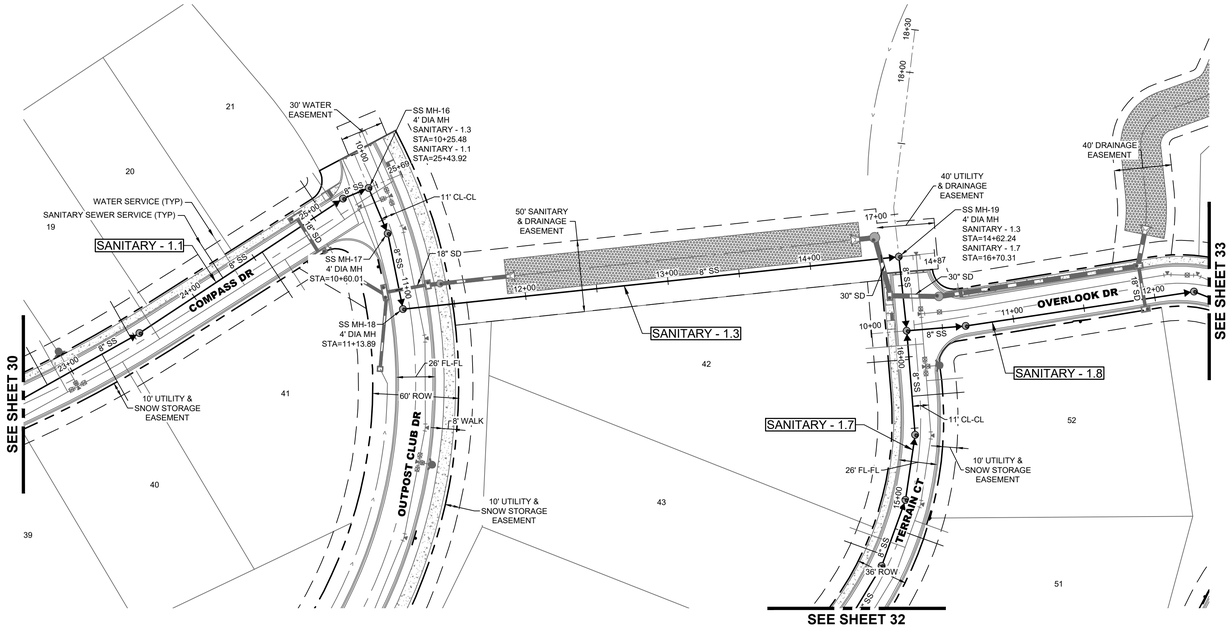
NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
SANITARY P&P - LINE 1.1

Know what's below. Call before you dig. 811

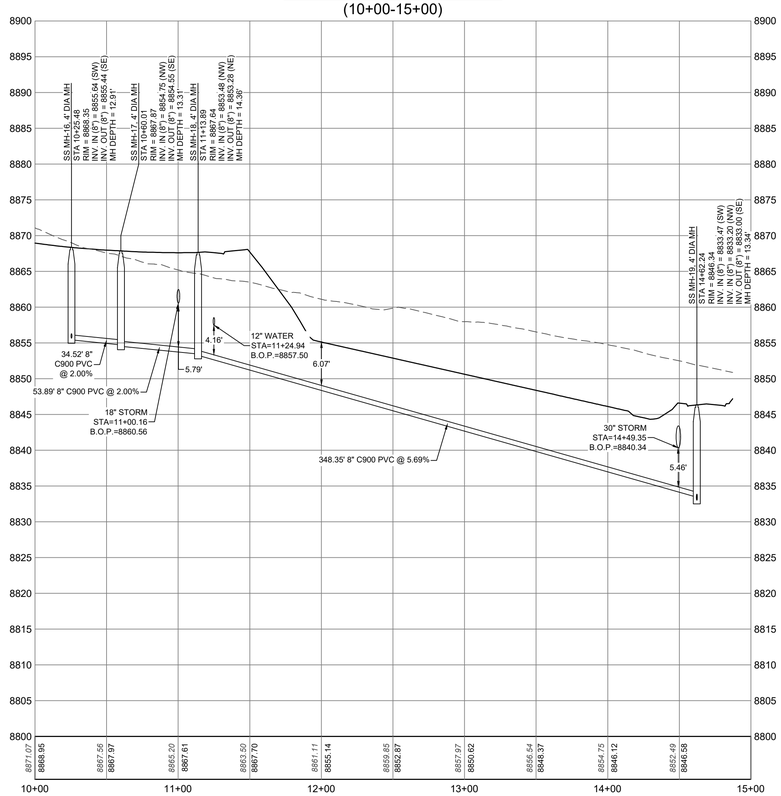
SHEET 30 OF 79

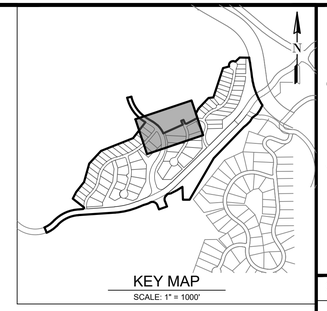
2/6/2026 4:31 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS SANITARY P&P'S - F1 - 16W.DWG 02



SANITARY - 1.3

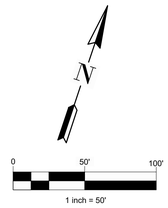
(10+00-15+00)





KEY MAP

SCALE: 1" = 1000'



PROFILE LEGEND

EXIST GRADE
PROP GRADE
1"=50' (HORZ) 1"=10' (VERT)

NOTES:

1. REFERENCE TOWN OF FRASER STANDARD DETAIL A-5, FROM THE *DESIGN CRITERIA AND CONSTRUCTION STANDARDS MANUAL*, FOR SANITARY SEWER PIPES THAT EXCEED DEPTHS GREATER THAN 7 FEET FOR TRENCH BOX SIZING.

2. STATE REGULATIONS REQUIRE THAT SEWER AND WATER LINES SHALL HAVE TEN (10) FEET MINIMUM OF HORIZONTAL SEPARATION FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS. IN ALL CASES WHERE NONPOTABLE UTILITIES CROSS WITH POTABLE WATER A TWENTY-FOOT STICK OF PIPE SHALL BE INSTALLED, CENTERED ON THE CROSSING. IF A WATER LINE PASSES WITHIN EIGHTEEN (18) INCHES VERTICAL DISTANCE ABOVE OR BELOW A SEWER MAIN, SEWER SERVICE, OR NONPOTABLE WET UTILITY OR IF IT LIES WITHIN THE MINIMUM TEN (10) FEET HORIZONTAL SEPARATION FROM THE SEWER, SECONDARY CONTAINMENT IS REQUIRED PER ATTACHMENT A-23 - PIPE CROSSING DETAIL, ATTACHMENT A-24 - PIPE ENCASEMENT DETAIL, AND ATTACHMENT A-25 - BORE CASING DETAIL. WHERE SEWER PIPE OR NONPOTABLE WET UTILITY OVER THE WATER LINE IS LESS THAN EIGHTEEN (18) INCHES VERTICAL FROM A WATER LINE, SECONDARY CONTAINMENT METHODS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION. THESE METHODS MAY INCLUDE ENCASEMENT OF THE WATER LINE, CASING PIPE ON THE SEWER, PRESSURE PIPE. CENTERED OVER THE CROSSING WITH RESTRAINED JOINT COUPLINGS (ROMAC ALPHA OR EQUIVALENT), OR APPROVED EQUIVALENT.

3. ALL SANITARY PIPE INSTALLATION SHALL BE CONSTRUCTED USING C900 PVC PRESSURE PIPE.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

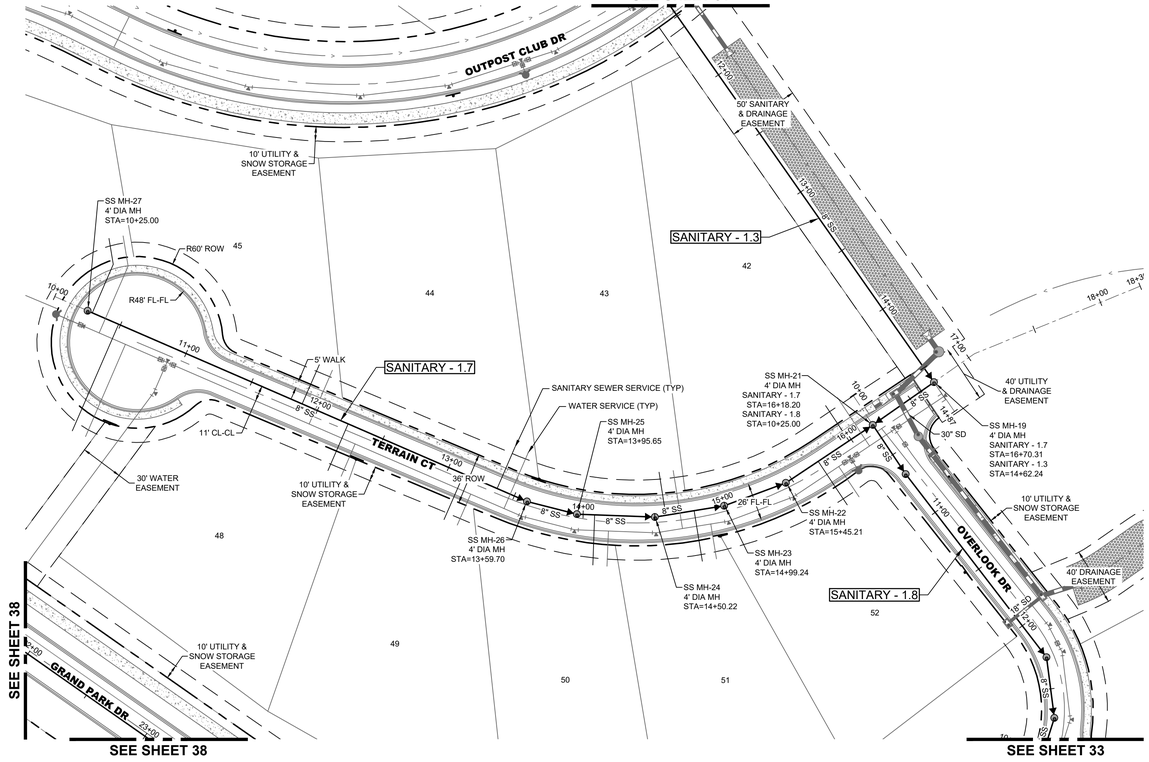
NOT FOR CONSTRUCTION

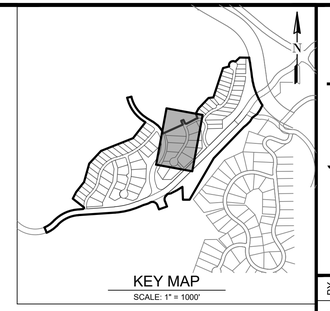
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

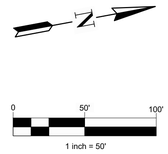
FINAL CONSTRUCTION PLANS
SANITARY P&P - LINE 1.3

Know what's **below.** **Call** before you dig. 811

2/6/2026 4:31 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS SANITARY P&P'S - F1 - 16W.DWG 03







PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

NOTES:

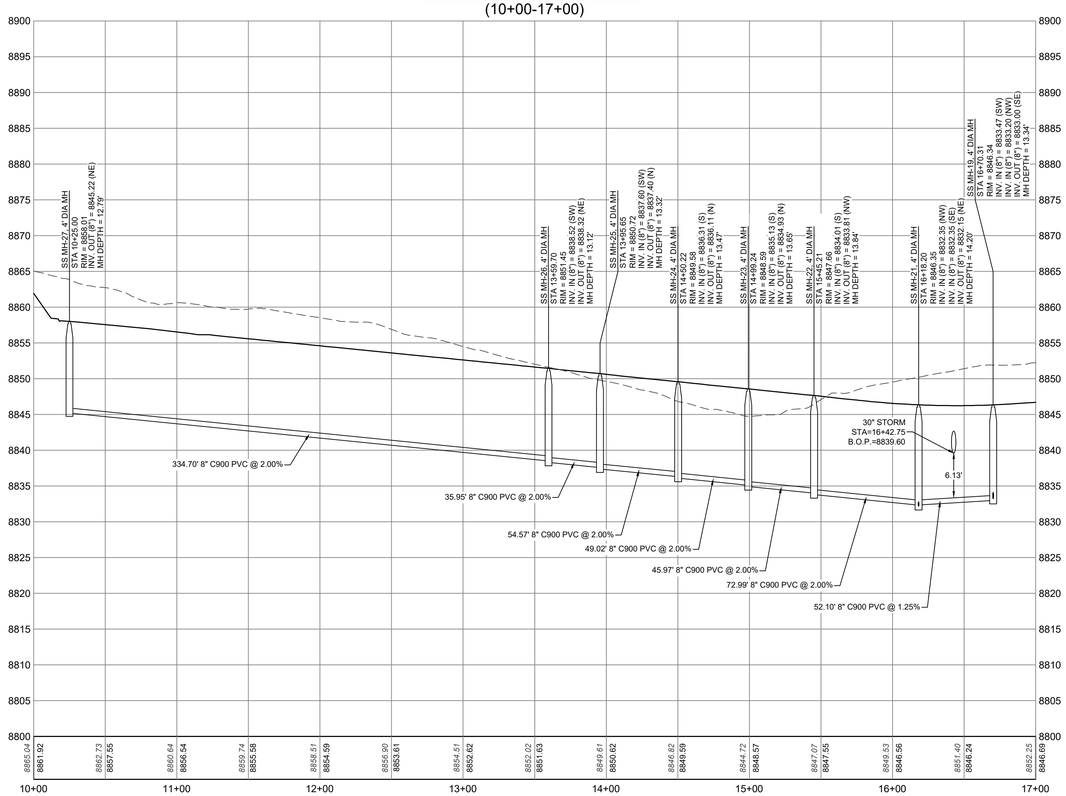
1. REFERENCE TOWN OF FRASER STANDARD DETAIL A-5, FROM THE *DESIGN CRITERIA AND CONSTRUCTION STANDARDS MANUAL*, FOR SANITARY SEWER PIPES THAT EXCEED DEPTHS GREATER THAN 7 FEET FOR TRENCH BOX SIZING.

2. STATE REGULATIONS REQUIRE THAT SEWER AND WATER LINES SHALL HAVE TEN (10) FEET MINIMUM OF HORIZONTAL SEPARATION FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS. IN ALL CASES WHERE NONPOTABLE UTILITIES CROSS WITH POTABLE WATER A TWENTY-FOOT STICK OF PIPE SHALL BE INSTALLED, CENTERED ON THE CROSSING. IF A WATER LINE PASSES WITHIN EIGHTEEN (18) INCHES VERTICAL DISTANCE ABOVE OR BELOW A SEWER MAIN, SEWER SERVICE, OR NONPOTABLE WET UTILITY OR IF IT LIES WITHIN THE MINIMUM TEN (10) FEET HORIZONTAL SEPARATION FROM THE SEWER, SECONDARY CONTAINMENT IS REQUIRED PER ATTACHMENT A-23 - PIPE CROSSING DETAIL, ATTACHMENT A-24 - PIPE ENCASEMENT DETAIL, AND ATTACHMENT A-25 - BORE CASING DETAIL. WHERE SEWER PIPE OR NONPOTABLE WET UTILITY OVER THE WATER LINE IS LESS THAN EIGHTEEN (18) INCHES VERTICAL FROM A WATER LINE, SECONDARY CONTAINMENT METHODS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION. THESE METHODS MAY INCLUDE ENCASEMENT OF THE WATER LINE, CASING PIPE ON THE SEWER, PRESSURE PIPE CENTERED OVER THE CROSSING WITH RESTRAINED JOINT COUPLINGS (ROMAC ALPHA OR EQUIVALENT), OR APPROVED EQUIVALENT.

3. ALL SANITARY PIPE INSTALLATION SHALL BE CONSTRUCTED USING C900 PVC PRESSURE PIPE.

SANITARY - 1.7

(10+00-17+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

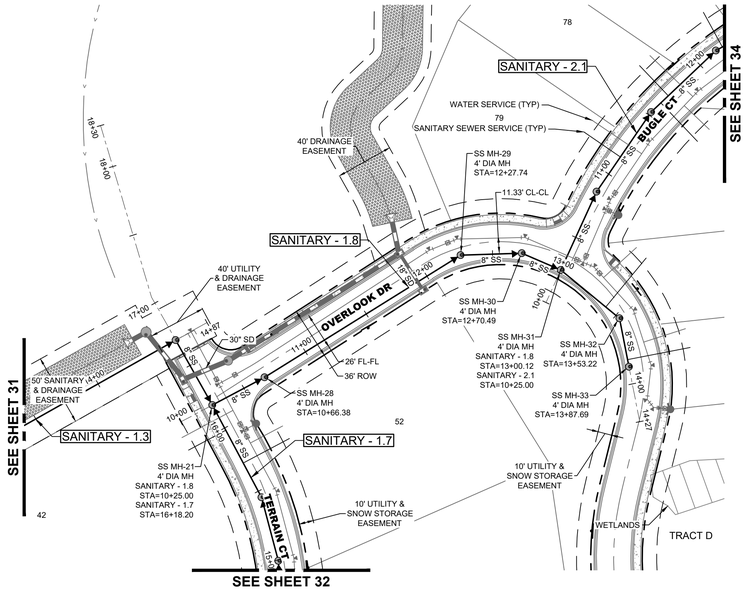
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
SANITARY P&P - LINE 1.7

Know what's **below.** **Call** before you dig. 811

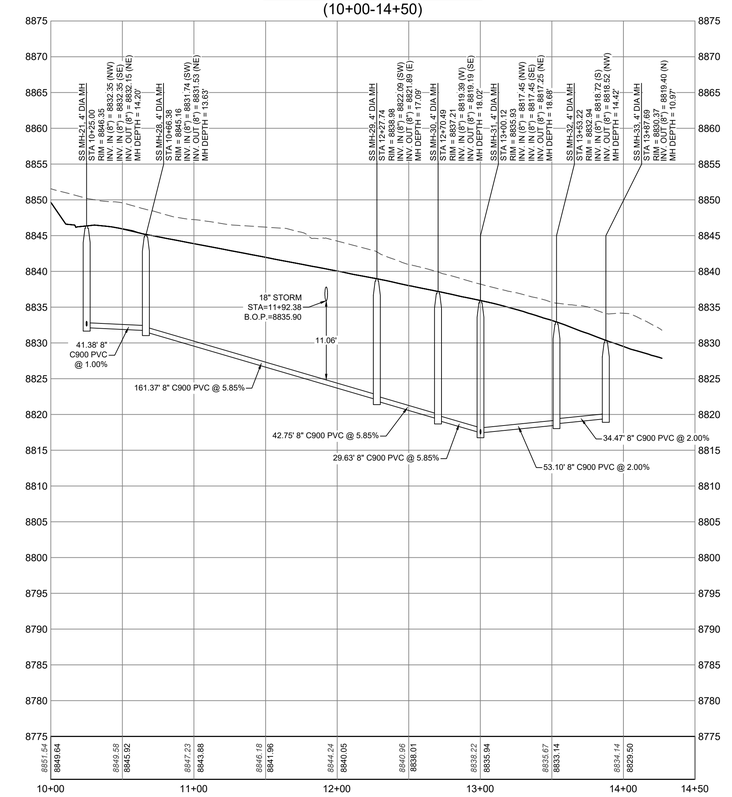
SHEET 32 OF 79

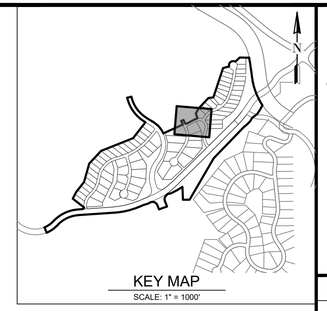
2/6/2026 4:31 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS SANITARY PAPS - F1 - 10W.DWG 04

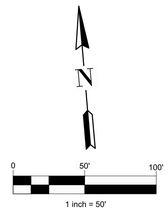


SANITARY - 1.8

(10+00-14+50)







PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

NOTES:

1. REFERENCE TOWN OF FRASER STANDARD DETAIL A-5, FROM THE *DESIGN CRITERIA AND CONSTRUCTION STANDARDS MANUAL*, FOR SANITARY SEWER PIPES THAT EXCEED DEPTHS GREATER THAN 7 FEET FOR TRENCH BOX SIZING.

2. STATE REGULATIONS REQUIRE THAT SEWER AND WATER LINES SHALL HAVE TEN (10) FEET MINIMUM OF HORIZONTAL SEPARATION FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS. IN ALL CASES WHERE NONPOTABLE UTILITIES CROSS WITH POTABLE WATER A TWENTY-FOOT STICK OF PIPE SHALL BE INSTALLED, CENTERED ON THE CROSSING. IF A WATER LINE PASSES WITHIN EIGHTEEN (18) INCHES VERTICAL DISTANCE ABOVE OR BELOW A SEWER MAIN, SEWER SERVICE, OR NONPOTABLE WET UTILITY OR IF IT LIES WITHIN THE MINIMUM TEN (10) FEET HORIZONTAL SEPARATION FROM THE SEWER, SECONDARY CONTAINMENT IS REQUIRED PER ATTACHMENT A-23 - PIPE CROSSING DETAIL, ATTACHMENT A-24 - PIPE ENCASEMENT DETAIL, AND ATTACHMENT A-25 - BORE CASING DETAIL. WHERE SEWER PIPE OR NONPOTABLE WET UTILITY OVER THE WATER LINE IS LESS THAN EIGHTEEN (18) INCHES VERTICAL FROM A WATER LINE, SECONDARY CONTAINMENT METHODS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION. THESE METHODS MAY INCLUDE ENCASEMENT OF THE WATER LINE, CASING PIPE ON THE SEWER, PRESSURE PIPE. CENTERED OVER THE CROSSING WITH RESTRAINED JOINT COUPLINGS (ROMAC ALPHA OR EQUIVALENT), OR APPROVED EQUIVALENT.

3. ALL SANITARY PIPE INSTALLATION SHALL BE CONSTRUCTED USING C900 PVC PRESSURE PIPE.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

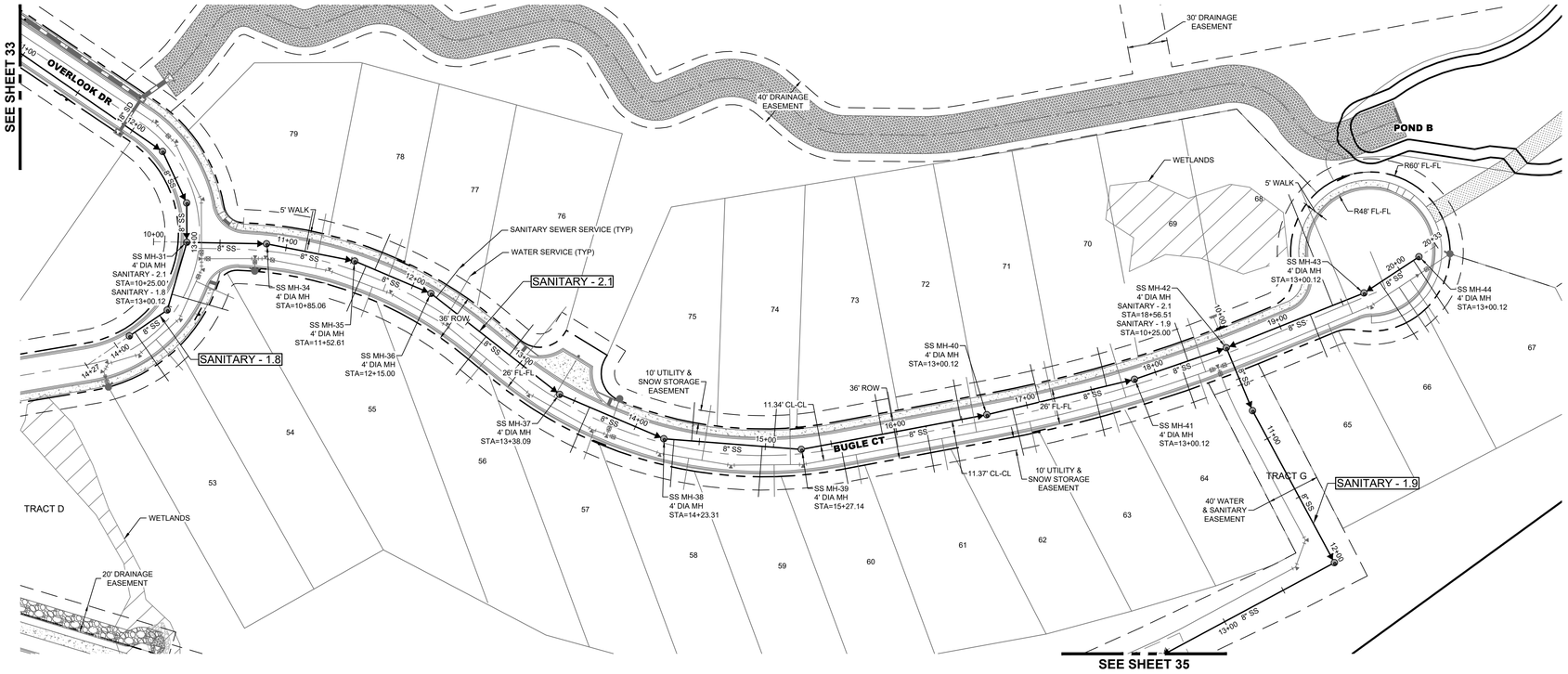
NOT FOR CONSTRUCTION

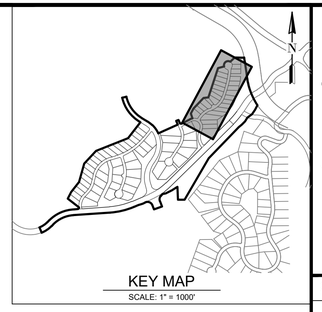
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

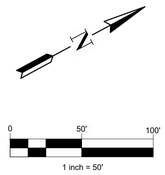
FINAL CONSTRUCTION PLANS
SANITARY P&P - LINE 1.8

Know what's **below.** **Call** before you dig. 811

2/6/2026 4:31 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS SANITARY P&PS - F1 - 16W.DWG 05







PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

NOTES:

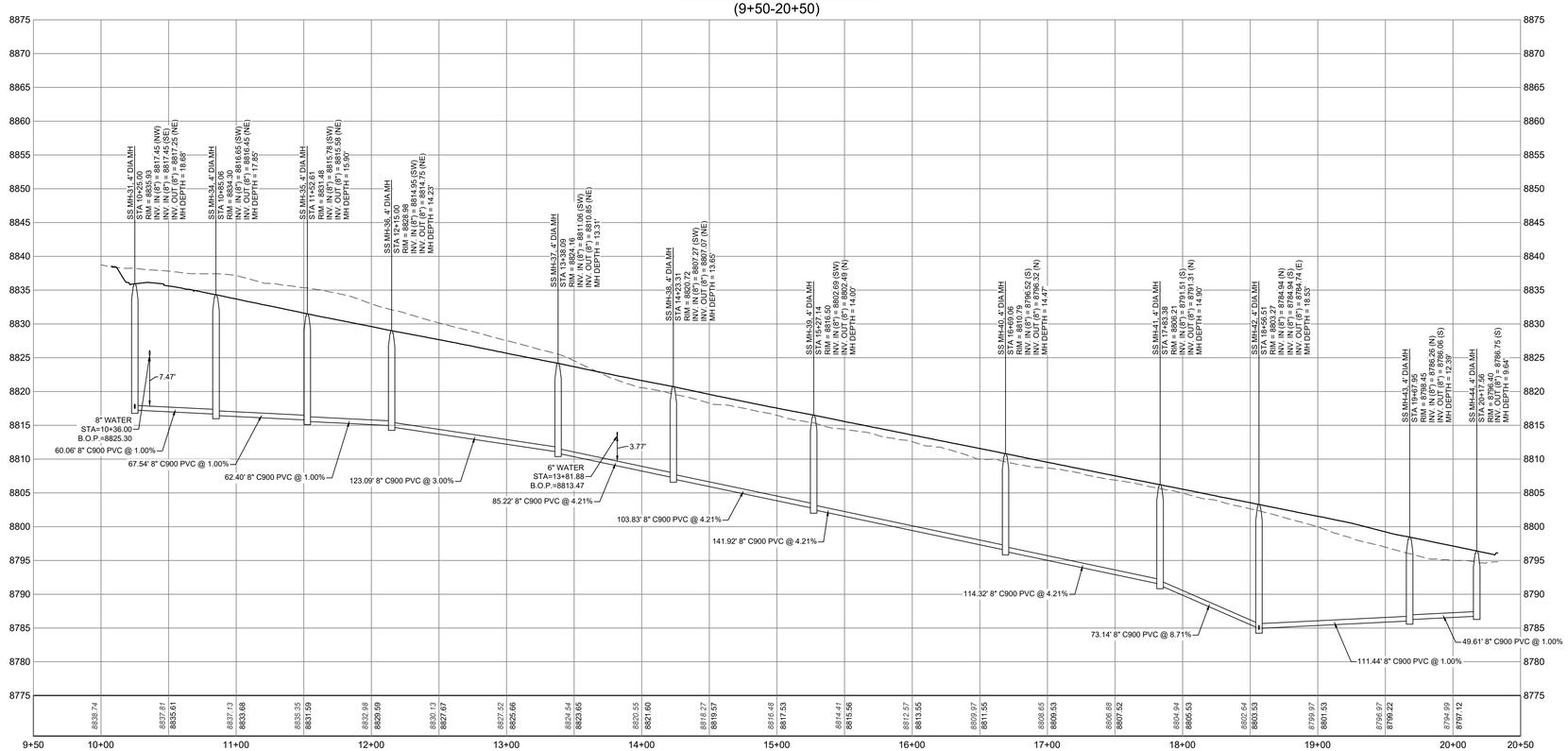
1. REFERENCE TOWN OF FRASER STANDARD DETAIL A-5, FROM THE *DESIGN CRITERIA AND CONSTRUCTION STANDARDS MANUAL*, FOR SANITARY SEWER PIPES THAT EXCEED DEPTHS GREATER THAN 7 FEET FOR TRENCH BOX SIZING.

2. STATE REGULATIONS REQUIRE THAT SEWER AND WATER LINES SHALL HAVE TEN (10) FEET MINIMUM OF HORIZONTAL SEPARATION FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS. IN ALL CASES WHERE NONPOTABLE UTILITIES CROSS WITH POTABLE WATER A TWENTY-FOOT STICK OF PIPE SHALL BE INSTALLED, CENTERED ON THE CROSSING. IF A WATER LINE PASSES WITHIN EIGHTEEN (18) INCHES VERTICAL DISTANCE ABOVE OR BELOW A SEWER MAIN, SEWER SERVICE, OR NONPOTABLE WET UTILITY OR IF IT LIES WITHIN THE MINIMUM TEN (10) FEET HORIZONTAL SEPARATION FROM THE SEWER, SECONDARY CONTAINMENT IS REQUIRED PER ATTACHMENT A-23 - PIPE CROSSING DETAIL, ATTACHMENT A-24 - PIPE ENCASEMENT DETAIL, AND ATTACHMENT A-25 - BORE CASING DETAIL. WHERE SEWER PIPE OR NONPOTABLE WET UTILITY OVER THE WATER LINE IS LESS THAN EIGHTEEN (18) INCHES VERTICAL FROM A WATER LINE, SECONDARY CONTAINMENT METHODS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION. THESE METHODS MAY INCLUDE ENCASEMENT OF THE WATER LINE, CASING PIPE ON THE SEWER, PRESSURE PIPE. CENTERED OVER THE CROSSING WITH RESTRAINED JOINT COUPLINGS (ROMAC ALPHA OR EQUIVALENT), OR APPROVED EQUIVALENT.

3. ALL SANITARY PIPE INSTALLATION SHALL BE CONSTRUCTED USING C900 PVC PRESSURE PIPE.

SANITARY - 2.1

(9+50-20+50)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

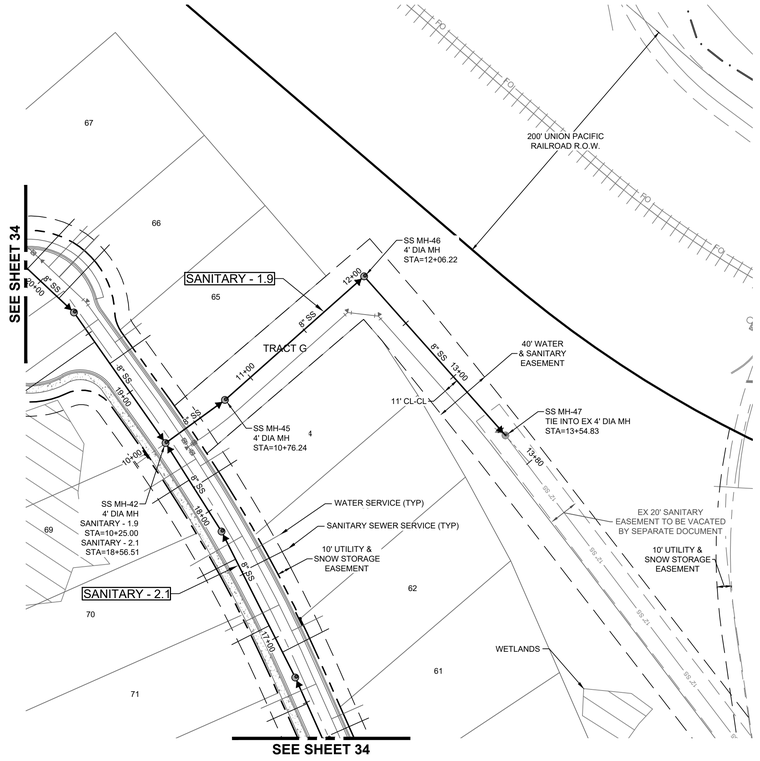
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
SANITARY P&P - LINE 2.1

Know what's **below.** **Call** before you dig. 811

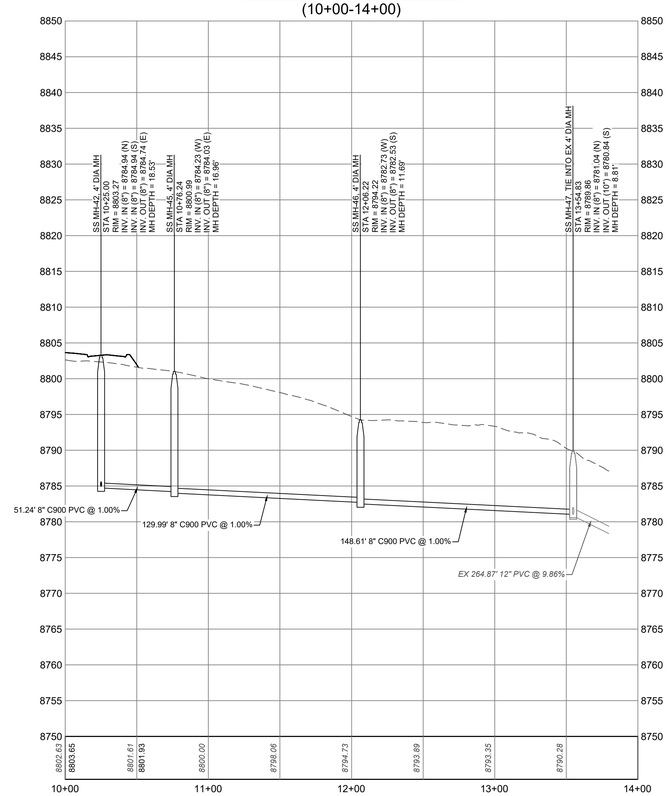
SHEET 34 OF 79

2/6/2026 4:31 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS SANITARY P&P'S - F1 - 10W.DWG 05 (2)



SANITARY - 1.9

(10+00-14+00)





0 50' 100'

1 inch = 50'

PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

NOTES:

1. REFERENCE TOWN OF FRASER STANDARD DETAIL A-5, FROM THE *DESIGN CRITERIA AND CONSTRUCTION STANDARDS MANUAL*, FOR SANITARY SEWER PIPES THAT EXCEED DEPTHS GREATER THAN 7 FEET FOR TRENCH BOX SIZING.
2. STATE REGULATIONS REQUIRE THAT SEWER AND WATER LINES SHALL HAVE TEN (10) FEET MINIMUM OF HORIZONTAL SEPARATION FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS. IN ALL CASES WHERE NONPOTABLE UTILITIES CROSS WITH POTABLE WATER A TWENTY-FOOT STICK OF PIPE SHALL BE INSTALLED, CENTERED ON THE CROSSING. IF A WATER LINE PASSES WITHIN EIGHTEEN (18) INCHES VERTICAL DISTANCE ABOVE OR BELOW A SEWER MAIN, SEWER SERVICE, OR NONPOTABLE WET UTILITY OR IF IT LIES WITHIN THE MINIMUM TEN (10) FEET HORIZONTAL SEPARATION FROM THE SEWER, SECONDARY CONTAINMENT IS REQUIRED PER ATTACHMENT A-23 - PIPE CROSSING DETAIL, ATTACHMENT A-24 - PIPE ENCASEMENT DETAIL, AND ATTACHMENT A-25 - BORE CASING DETAIL. WHERE SEWER PIPE OR NONPOTABLE WET UTILITY OVER THE WATER LINE IS LESS THAN EIGHTEEN (18) INCHES VERTICAL FROM A WATER LINE, SECONDARY CONTAINMENT METHODS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION. THESE METHODS MAY INCLUDE ENCASEMENT OF THE WATER LINE, CASING PIPE ON THE SEWER, PRESSURE PIPE CENTERED OVER THE CROSSING WITH RESTRAINED JOINT COUPLINGS (ROMAC ALPHA OR EQUIVALENT), OR APPROVED EQUIVALENT.
3. ALL SANITARY PIPE INSTALLATION SHALL BE CONSTRUCTED USING C900 PVC PRESSURE PIPE.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

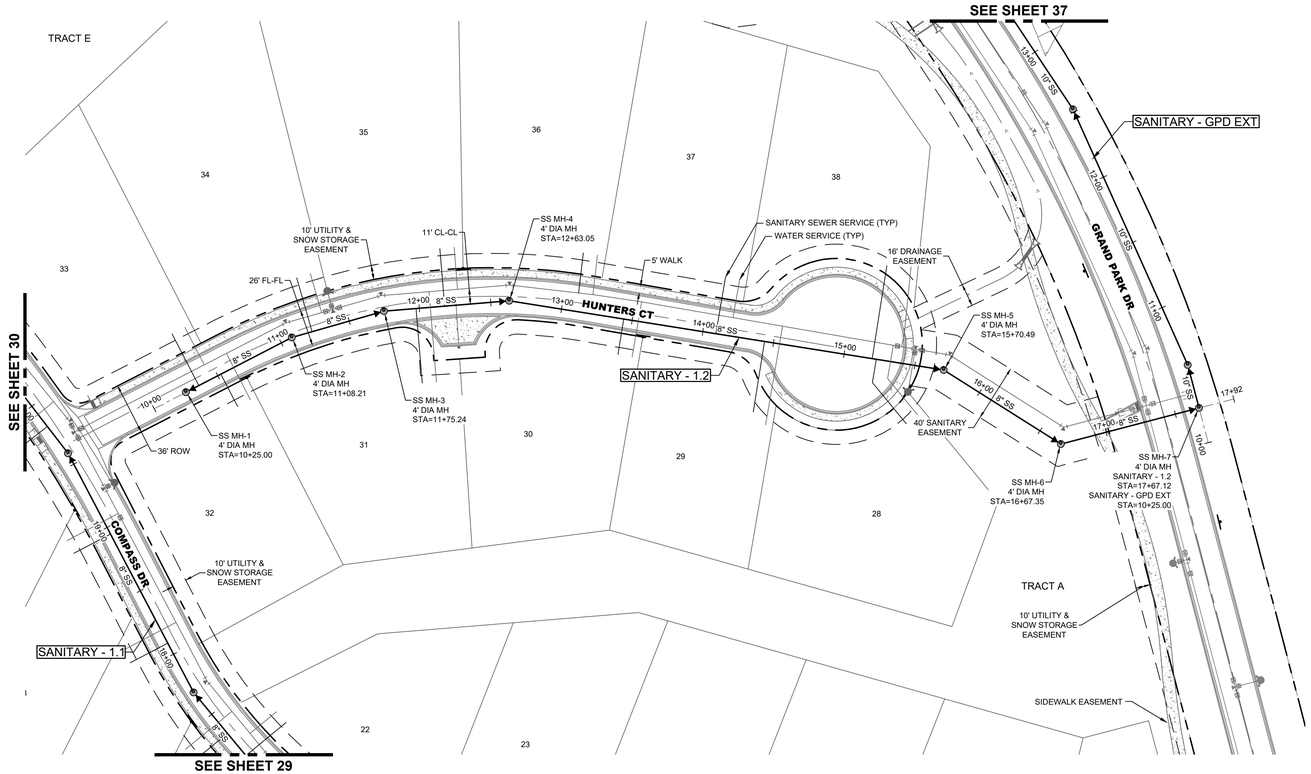
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

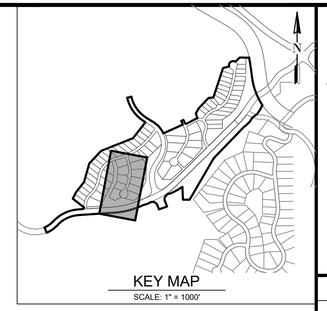
FINAL CONSTRUCTION PLANS
SANITARY P&P - LINE 1.9

Know what's **below.** **Call** before you dig. 811

SHEET 35 OF 79

2/6/2026 4:32 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS SANITARY P&P'S - F1 - 16W.DWG 06





0 50' 100'

1 inch = 50'

PROFILE LEGEND

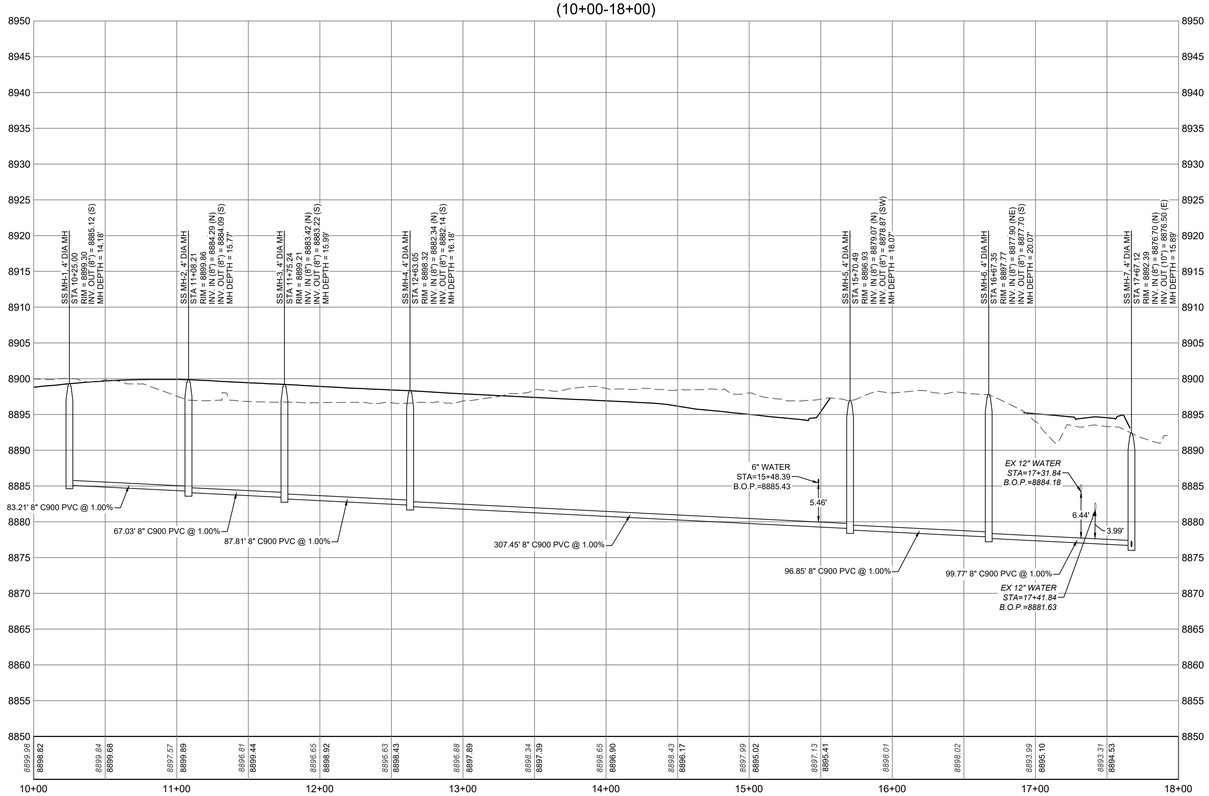
EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

NOTES:

1. REFERENCE TOWN OF FRASER STANDARD DETAIL A-5, FROM THE *DESIGN CRITERIA AND CONSTRUCTION STANDARDS MANUAL*, FOR SANITARY SEWER PIPES THAT EXCEED DEPTHS GREATER THAN 7 FEET FOR TRENCH BOX SIZING.
2. STATE REGULATIONS REQUIRE THAT SEWER AND WATER LINES SHALL HAVE TEN (10) FEET MINIMUM OF HORIZONTAL SEPARATION FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS. IN ALL CASES WHERE NONPOTABLE UTILITIES CROSS WITH POTABLE WATER A TWENTY-FOOT STICK OF PIPE SHALL BE INSTALLED, CENTERED ON THE CROSSING. IF A WATER LINE PASSES WITHIN EIGHTEEN (18) INCHES VERTICAL DISTANCE ABOVE OR BELOW A SEWER MAIN, SEWER SERVICE, OR NONPOTABLE WET UTILITY OR IF IT LIES WITHIN THE MINIMUM TEN (10) FEET HORIZONTAL SEPARATION FROM THE SEWER, SECONDARY CONTAINMENT IS REQUIRED PER ATTACHMENT A-23 - PIPE CROSSING DETAIL, ATTACHMENT A-24 - PIPE ENCASEMENT DETAIL, AND ATTACHMENT A-25 - BORE CASING DETAIL. WHERE SEWER PIPE OR NONPOTABLE WET UTILITY OVER THE WATER LINE IS LESS THAN EIGHTEEN (18) INCHES VERTICAL FROM A WATER LINE, SECONDARY CONTAINMENT METHODS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION. THESE METHODS MAY INCLUDE ENCASEMENT OF THE WATER LINE, CASING PIPE ON THE SEWER, PRESSURE PIPE CENTERED OVER THE CROSSING WITH RESTRAINED JOINT COUPLINGS (ROMAC ALPHA OR EQUIVALENT), OR APPROVED EQUIVALENT.
3. ALL SANITARY PIPE INSTALLATION SHALL BE CONSTRUCTED USING C900 PVC PRESSURE PIPE.

SANITARY - 1.2

(10+00-18+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

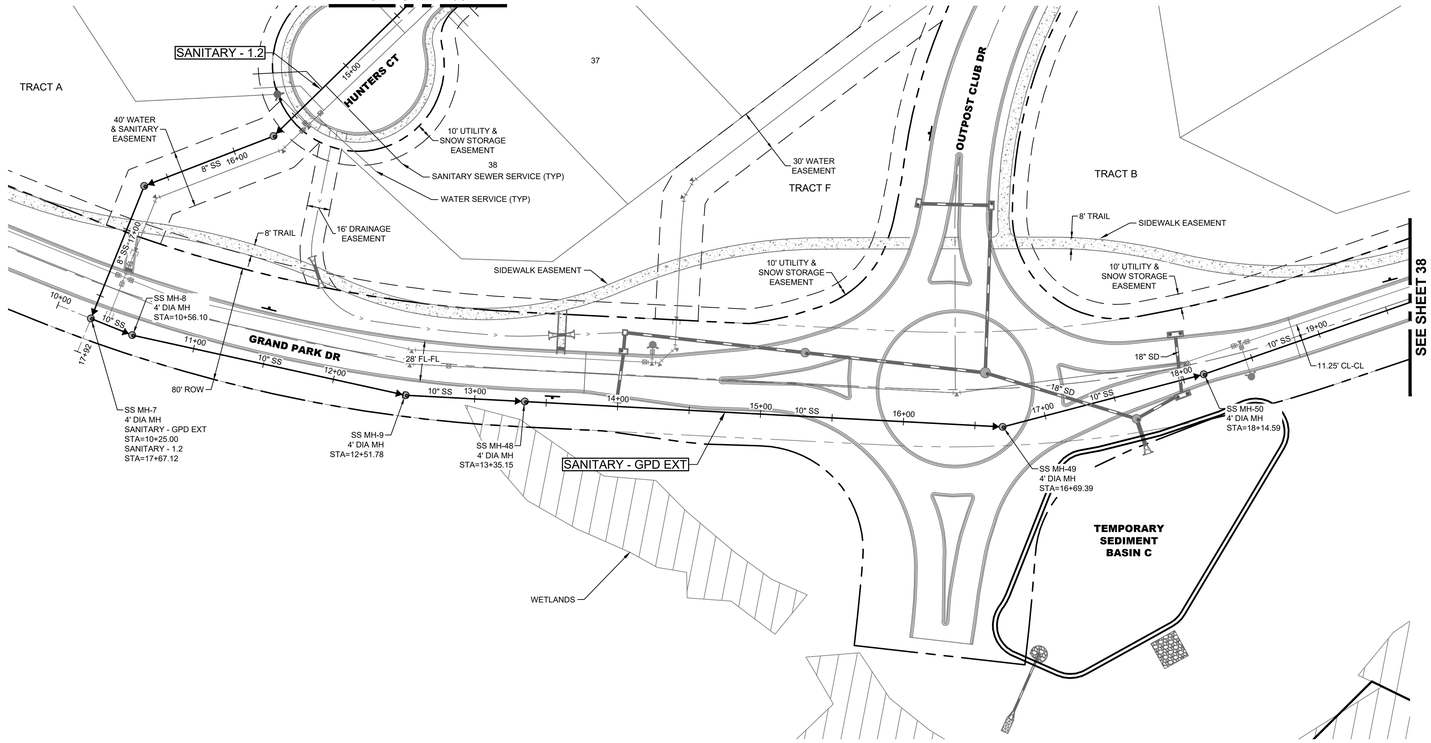
NOT FOR CONSTRUCTION

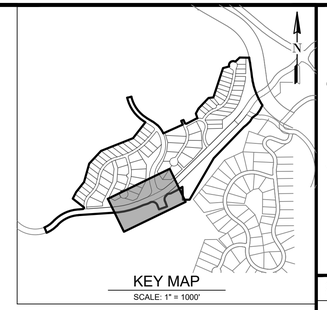
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
SANITARY P&P - LINE 1.2

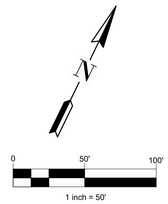
Know what's **below.** **Call** before you dig. 811

SHEET 36 OF 79

2/6/2026 4:32 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16\W\FINAL PLANS SANITARY P&P'S - F1 - 16W.DWG 07







PROFILE LEGEND

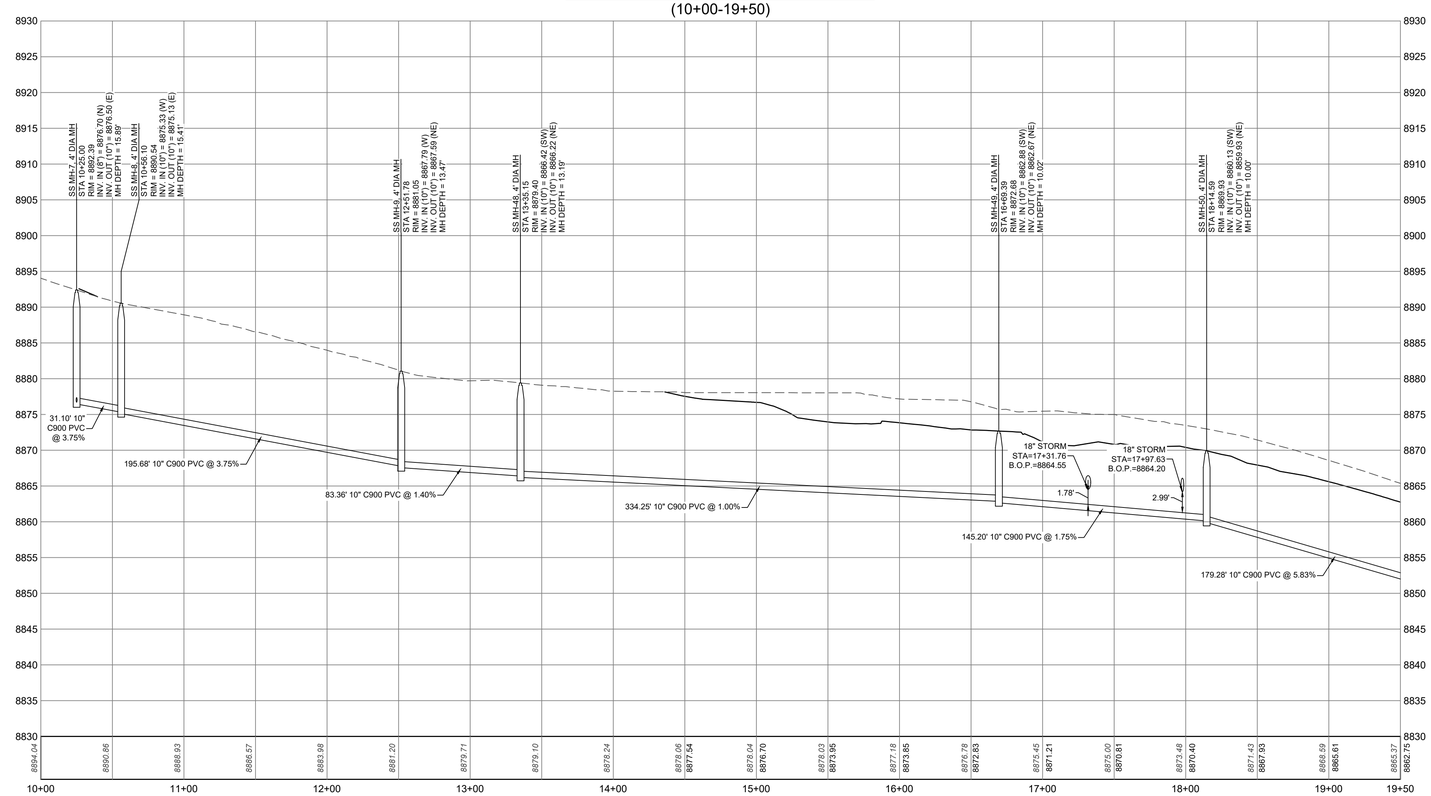
EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

NOTES:

1. REFERENCE TOWN OF FRASER STANDARD DETAIL A-5, FROM THE *DESIGN CRITERIA AND CONSTRUCTION STANDARDS MANUAL*, FOR SANITARY SEWER PIPES THAT EXCEED DEPTHS GREATER THAN 7 FEET FOR TRENCH BOX SIZING.
2. STATE REGULATIONS REQUIRE THAT SEWER AND WATER LINES SHALL HAVE TEN (10) FEET MINIMUM OF HORIZONTAL SEPARATION FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS. IN ALL CASES WHERE NONPOTABLE UTILITIES CROSS WITH POTABLE WATER A TWENTY-FOOT STICK OF PIPE SHALL BE INSTALLED, CENTERED ON THE CROSSING. IF A WATER LINE PASSES WITHIN EIGHTEEN (18) INCHES VERTICAL DISTANCE ABOVE OR BELOW A SEWER MAIN, SEWER SERVICE, OR NONPOTABLE WET UTILITY OR IF IT LIES WITHIN THE MINIMUM TEN (10) FEET HORIZONTAL SEPARATION FROM THE SEWER, SECONDARY CONTAINMENT IS REQUIRED PER ATTACHMENT A-23 - PIPE CROSSING DETAIL, ATTACHMENT A-24 - PIPE ENCASEMENT DETAIL, AND ATTACHMENT A-25 - BORE CASING DETAIL. WHERE SEWER PIPE OR NONPOTABLE WET UTILITY OVER THE WATER LINE IS LESS THAN EIGHTEEN (18) INCHES VERTICAL FROM A WATER LINE, SECONDARY CONTAINMENT METHODS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION. THESE METHODS MAY INCLUDE ENCASEMENT OF THE WATER LINE, CASING PIPE ON THE SEWER, PRESSURE PIPE. CENTERED OVER THE CROSSING WITH RESTRAINED JOINT COUPLINGS (ROMAC ALPHA OR EQUIVALENT), OR APPROVED EQUIVALENT.
3. ALL SANITARY PIPE INSTALLATION SHALL BE CONSTRUCTED USING C900 PVC PRESSURE PIPE.

SANITARY - GPD EXT

(10+00-19+50)



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

NOT FOR CONSTRUCTION

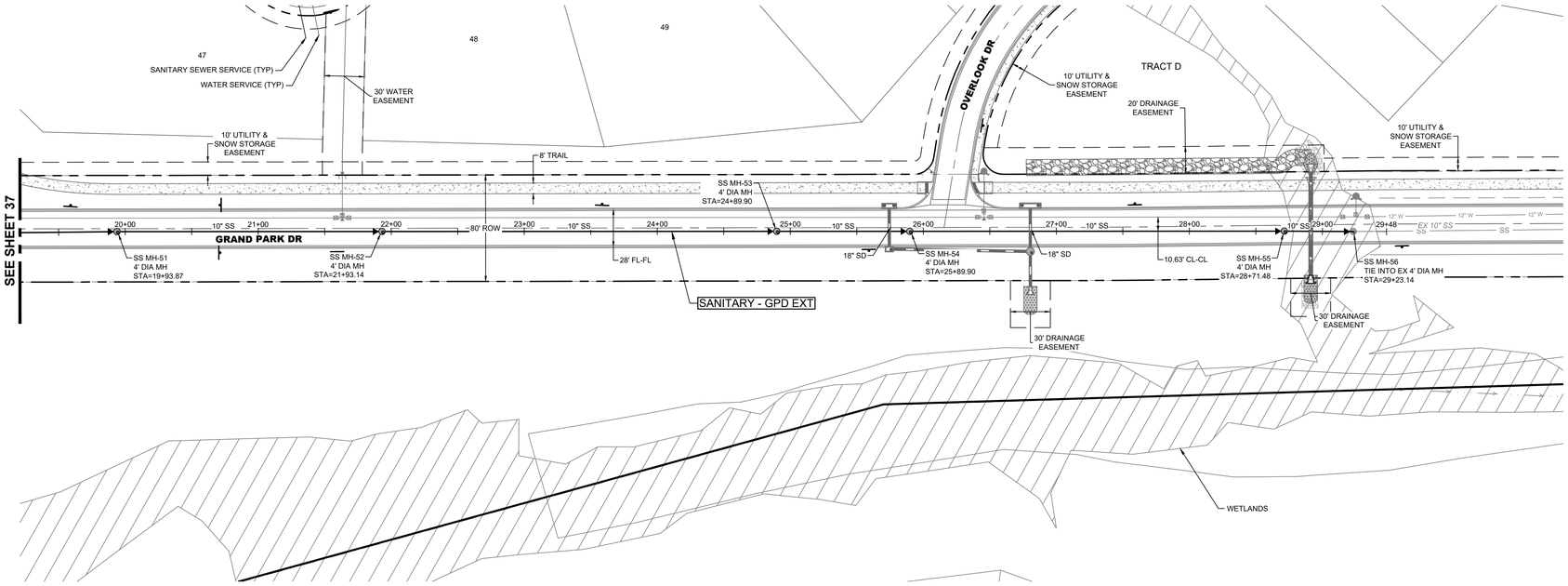
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

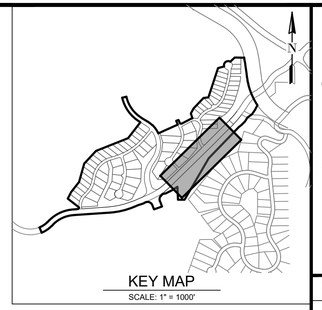
FINAL CONSTRUCTION PLANS
SANITARY P&P - LINE GPD EXT

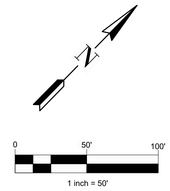
Know what's **below.** **Call** before you dig. 811

SHEET 37 OF 79

2/6/2026 4:32 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16\W\FINAL PLANS SANITARY P&P'S - F1 - 16W.DWG 08







PROFILE LEGEND

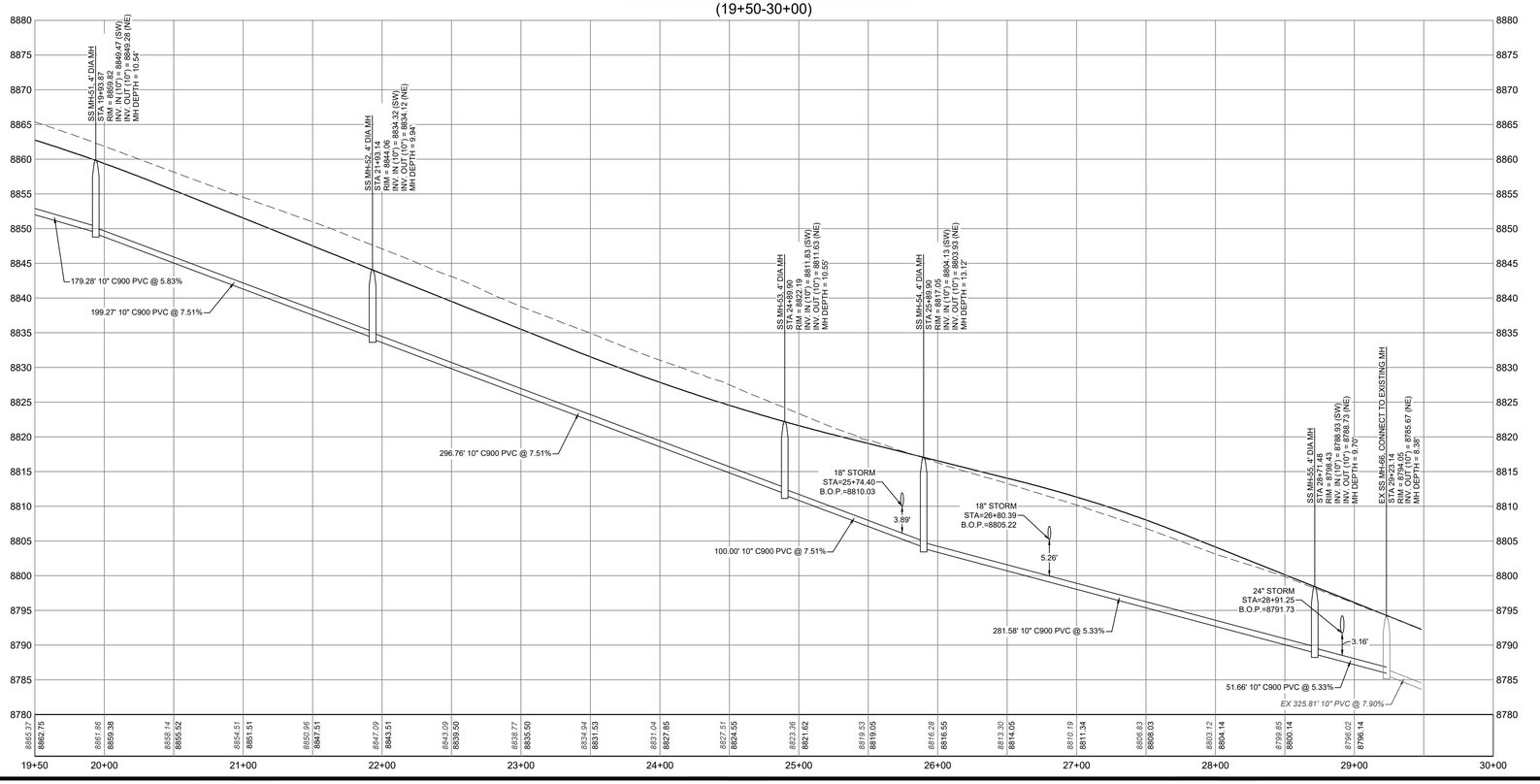
EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=10' (VERT)

NOTES:

1. REFERENCE TOWN OF FRASER STANDARD DETAIL A-5, FROM THE *DESIGN CRITERIA AND CONSTRUCTION STANDARDS MANUAL*, FOR SANITARY SEWER PIPES THAT EXCEED DEPTHS GREATER THAN 7 FEET FOR TRENCH BOX SIZING.
2. STATE REGULATIONS REQUIRE THAT SEWER AND WATER LINES SHALL HAVE TEN (10) FEET MINIMUM OF HORIZONTAL SEPARATION FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS. IN ALL CASES WHERE NONPOTABLE UTILITIES CROSS WITH POTABLE WATER A TWENTY-FOOT STICK OF PIPE SHALL BE INSTALLED, CENTERED ON THE CROSSING. IF A WATER LINE PASSES WITHIN EIGHTEEN (18) INCHES VERTICAL DISTANCE ABOVE OR BELOW A SEWER MAIN, SEWER SERVICE, OR NONPOTABLE WET UTILITY OR IF IT LIES WITHIN THE MINIMUM TEN (10) FEET HORIZONTAL SEPARATION FROM THE SEWER, SECONDARY CONTAINMENT IS REQUIRED PER ATTACHMENT A-23 - PIPE CROSSING DETAIL, ATTACHMENT A-24 - PIPE ENCASEMENT DETAIL, AND ATTACHMENT A-25 - BORE CASING DETAIL. WHERE SEWER PIPE OR NONPOTABLE WET UTILITY OVER THE WATER LINE IS LESS THAN EIGHTEEN (18) INCHES VERTICAL FROM A WATER LINE, SECONDARY CONTAINMENT METHODS SHALL BE APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION. THESE METHODS MAY INCLUDE ENCASEMENT OF THE WATER LINE, CASING PIPE ON THE SEWER, PRESSURE PIPE. CENTERED OVER THE CROSSING WITH RESTRAINED JOINT COUPLINGS (ROMAC ALPHA OR EQUIVALENT), OR APPROVED EQUIVALENT.
3. ALL SANITARY PIPE INSTALLATION SHALL BE CONSTRUCTED USING C900 PVC PRESSURE PIPE.

SANITARY - GPD EXT

(19+50-30+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

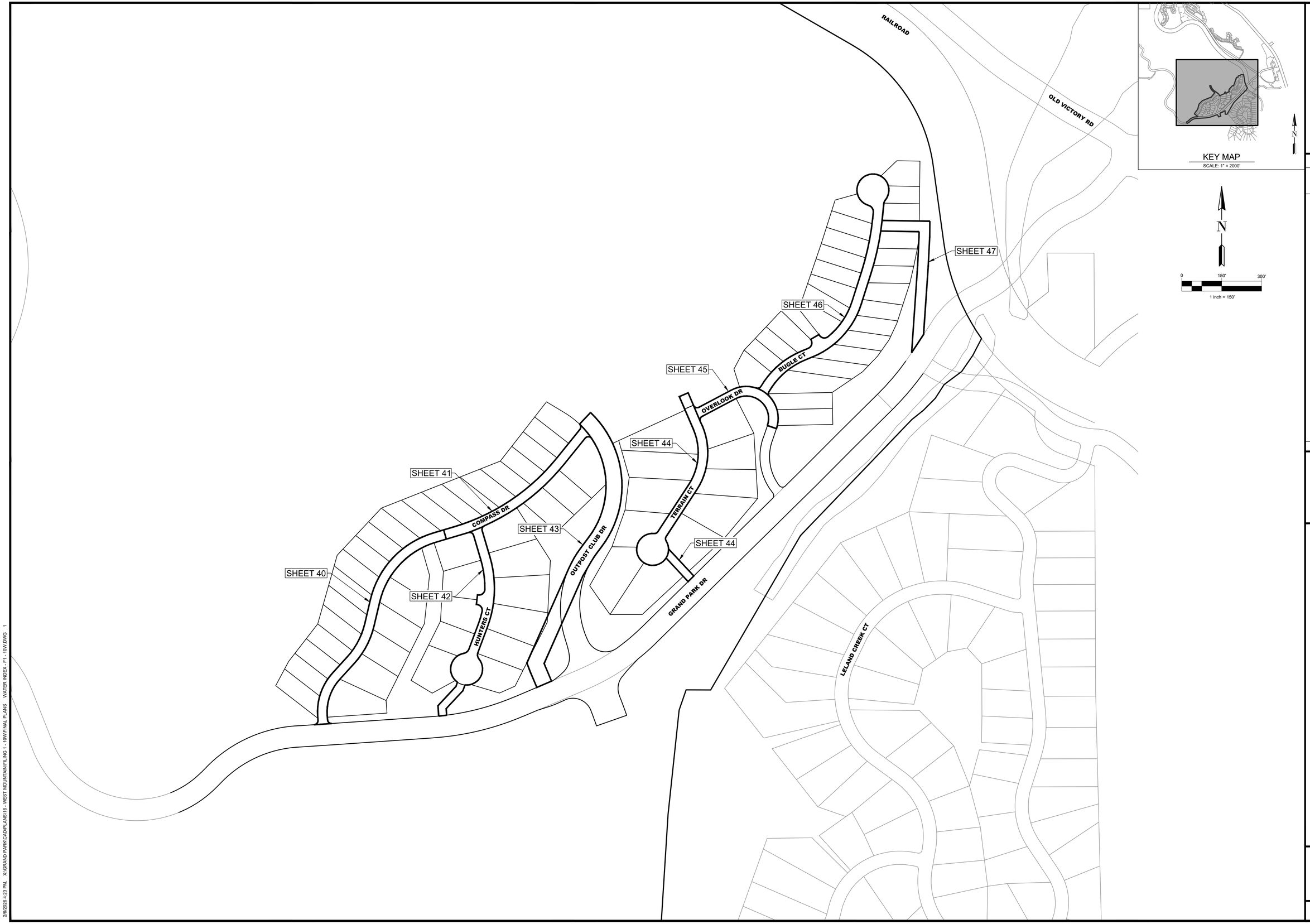
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
SANITARY P&P - LINE GPD EXT

Know what's below. Call before you dig. 811

SHEET 38 OF 79

2/6/2026 4:32 PM, X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS SANITARY P&P'S - F1 - 16W.DWG 09



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

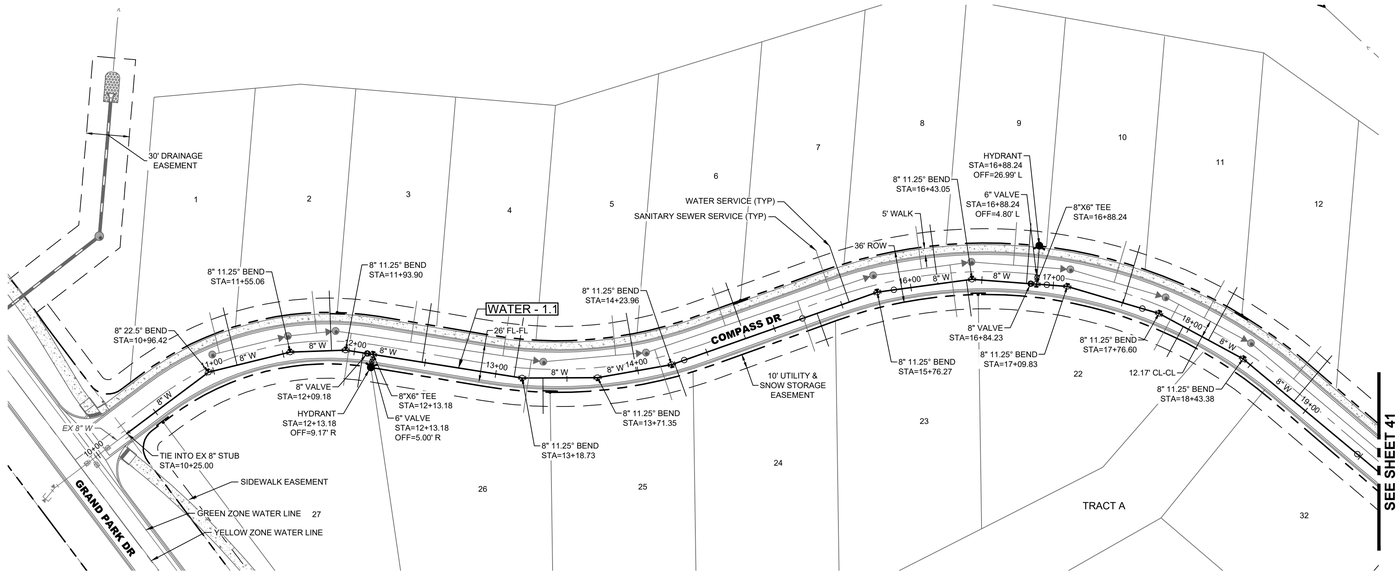
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
WATER INDEX

Know what's below. Call before you dig. 811

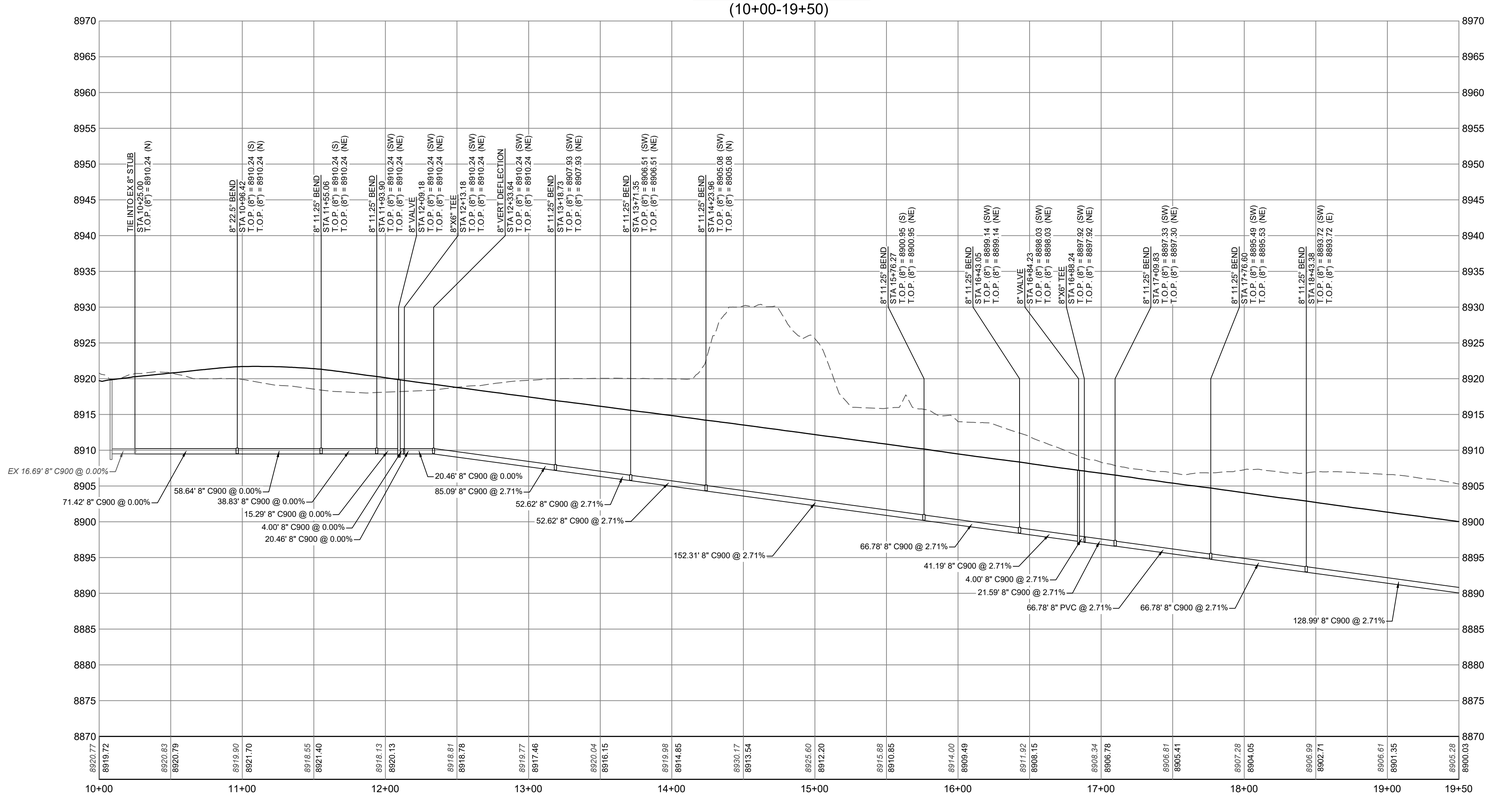
SHEET 39 OF 79

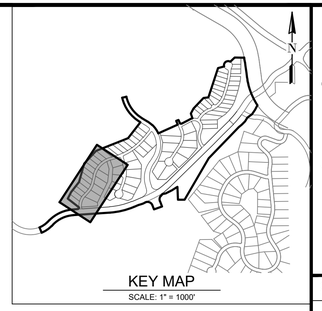
2/6/2026 4:23 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS WATER INDEX - F1 - 10W.DWG 1

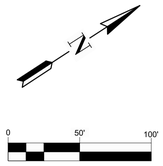


WATER - 1.1

(10+00-19+50)







PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=5' (VERT)

NOTES

1. ALL MAIN WATER LINES SHALL USE C900.
2. AWWA C900 PVC IS REQUIRED IF SOILS ARE DETERMINED TO BE CORROSIVE.
3. HYDRANTS INTENDED TO SERVE AS AIR RELEASE SHALL BE PAINTED PURPLE.
4. SLOPE ANCHORS SHALL BE DESIGNED/CONSTRUCTED FOR WATERLINES EXCEEDING 20% SLOPE.
5. WATER AND SEWER SERVICE LINES SHALL HAVE TEN (10) FEET MINIMUM HORIZONTAL SEPARATION MEASURED FROM OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS. IF A WATER SERVICE LINE CROSSES A SEWER MAIN OR SEWER SERVICE, THE WATER LINE SHALL BE PROTECTED PER ATTACHMENT A-23 – PIPE CROSSING DETAIL.
6. WHEN WATER PIPE CROSSES BELOW STORM PIPE WATER PIPE SHALL BEW INCASE IN 20FT STEEL PIPE CENTERED ON CROSSING, ACCORDING TO ATTACHMENT A-25.
7. TOWN PREFERS THE USE OF THE MULLER CENTURION NO. A-423 FIRE HYDRANT.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

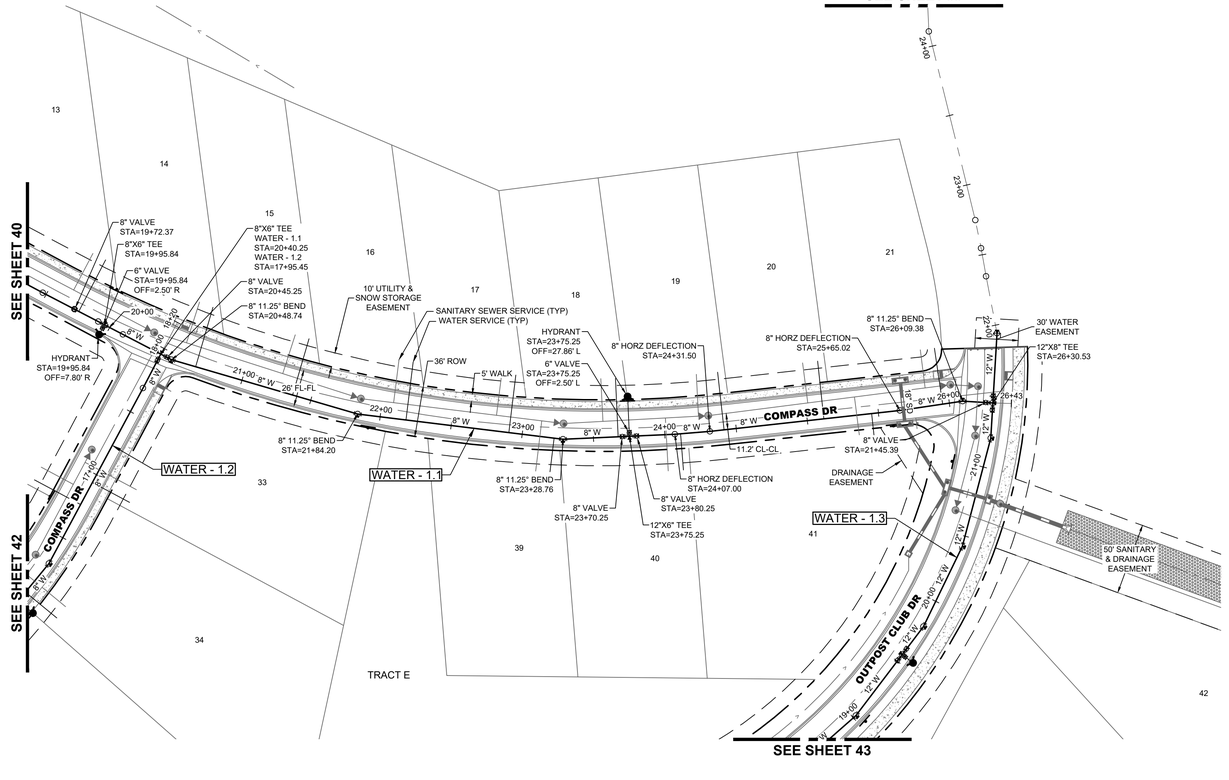
NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
WATER P&P - LINE 1.1

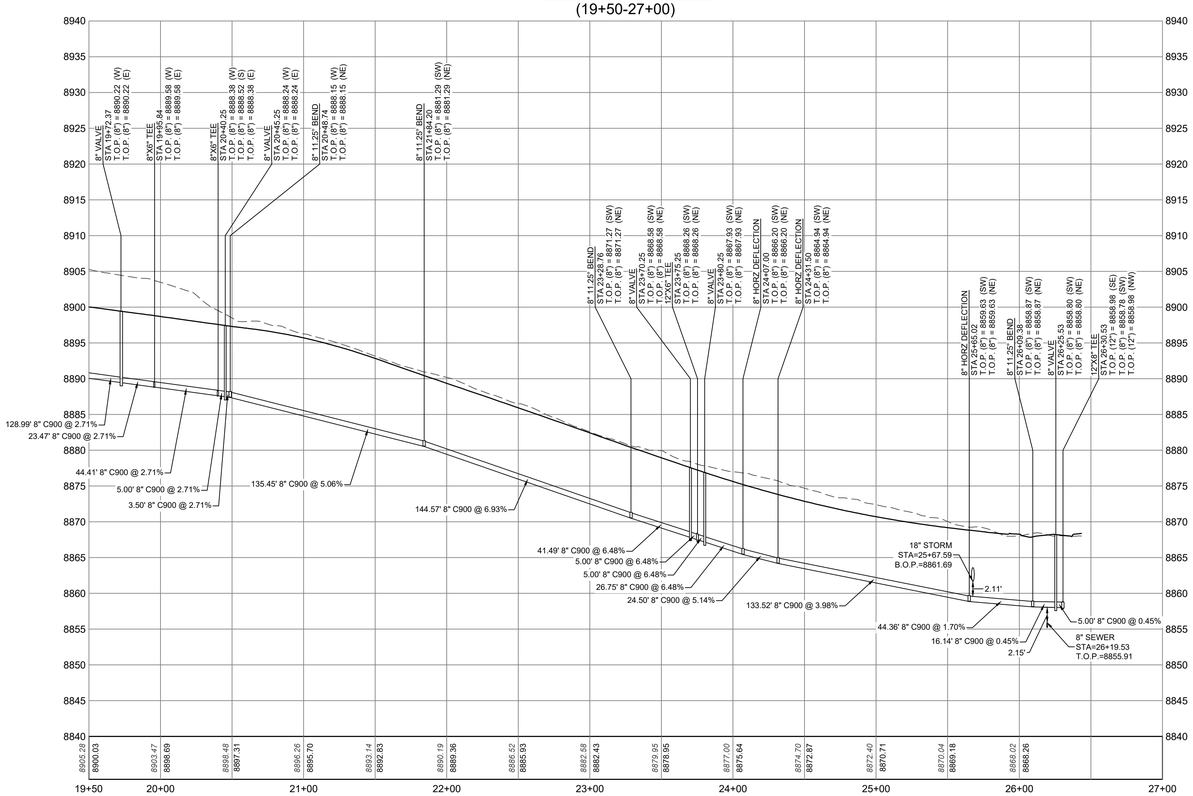
Know what's **below.** **Call** before you dig. 811

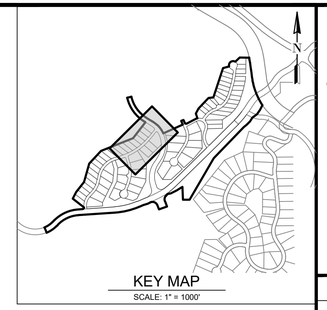
2/6/2026 4:25 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS WATER R&PS - F1 - 10W.DWG 01

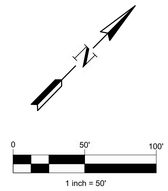


WATER - 1.1

(19+50-27+00)







PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=5' (VERT)

NOTES

1. ALL MAIN WATER LINES SHALL USE C900.
2. AWWA C900 PVC IS REQUIRED IF SOILS ARE DETERMINED TO BE CORROSIVE.
3. HYDRANTS INTENDED TO SERVE AS AIR RELEASE SHALL BE PAINTED PURPLE.
4. SLOPE ANCHORS SHALL BE DESIGNED/CONSTRUCTED FOR WATERLINES EXCEEDING 20% SLOPE.
5. WATER AND SEWER SERVICE LINES SHALL HAVE TEN (10) FEET MINIMUM HORIZONTAL SEPARATION MEASURED FROM OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS. IF A WATER SERVICE LINE CROSSES A SEWER MAIN OR SEWER SERVICE, THE WATER LINE SHALL BE PROTECTED PER ATTACHMENT A-23 – PIPE CROSSING DETAIL.
6. WHEN WATER PIPE CROSSES BELOW STORM PIPE WATER PIPE SHALL BEW INCASE IN 20FT STEEL PIPE CENTERED ON CROSSING, ACCORDING TO ATTACHMENT A-25.
7. TOWN PREFERS THE USE OF THE MULLER CENTURION NO. A-423 FIRE HYDRANT.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

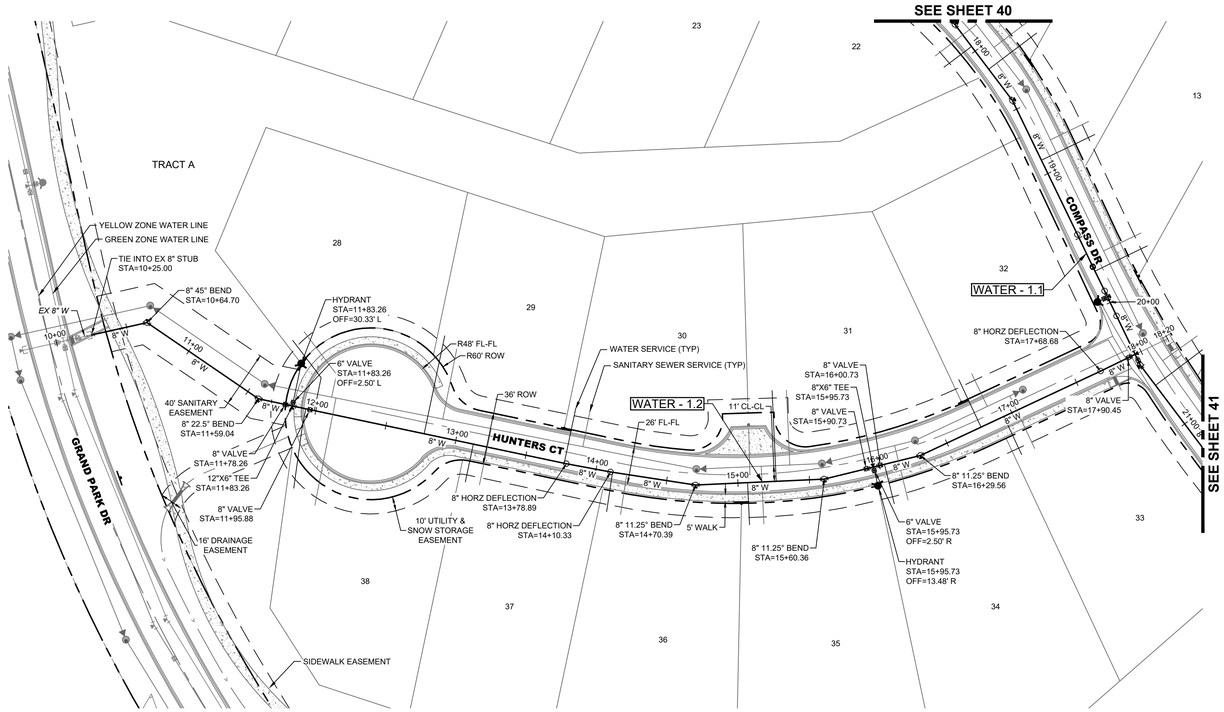
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

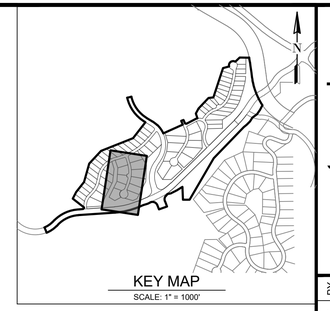
FINAL CONSTRUCTION PLANS
WATER P&P - LINE 1.1

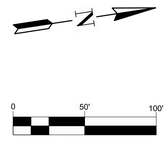
Know what's **below.** **Call** before you dig. 811

SHEET 41 OF 79

2/6/2026 4:25 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS WATER P&P\S - F1 - 10W.DWG 02







PROFILE LEGEND

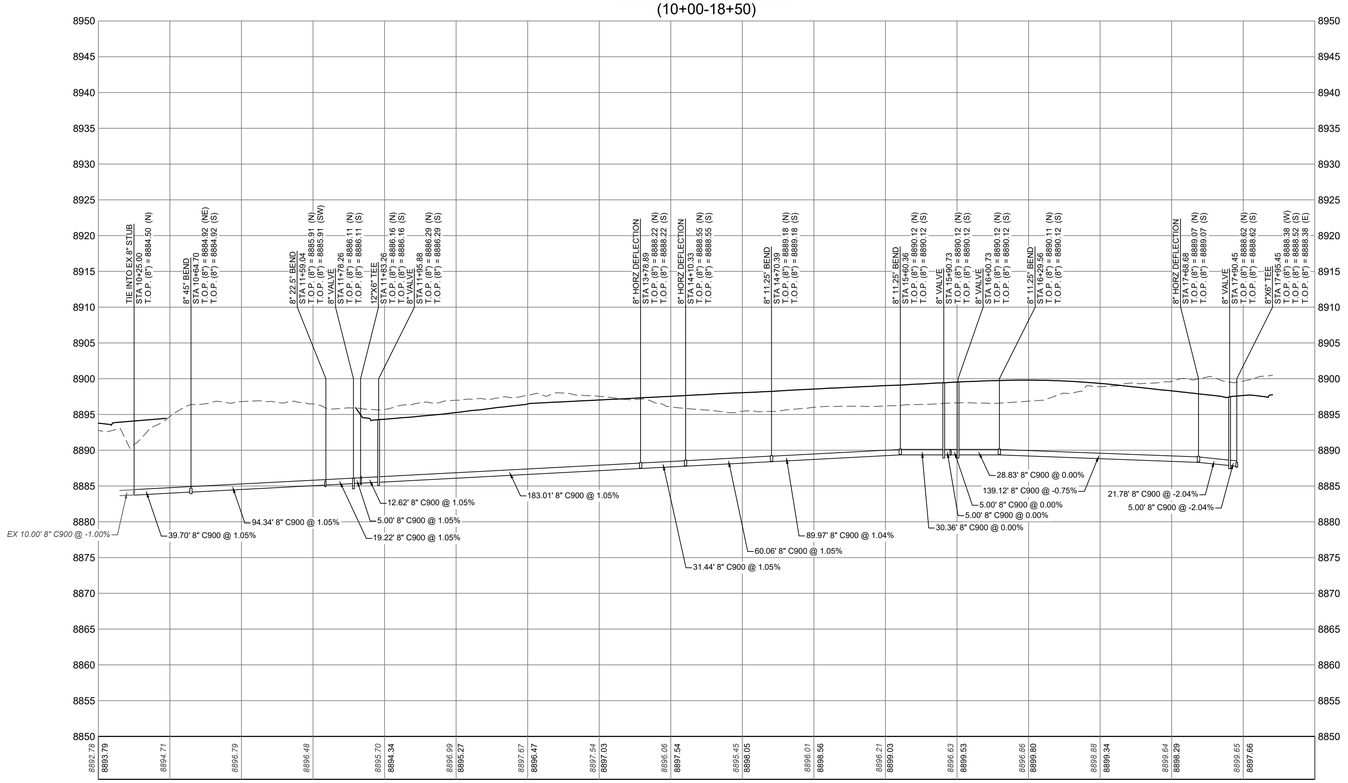
EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=5' (VERT)

NOTES

1. ALL MAIN WATER LINES SHALL USE C900.
2. AWWA C900 PVC IS REQUIRED IF SOILS ARE DETERMINED TO BE CORROSIVE.
3. HYDRANTS INTENDED TO SERVE AS AIR RELEASE SHALL BE PAINTED PURPLE.
4. SLOPE ANCHORS SHALL BE DESIGNED/CONSTRUCTED FOR WATERLINES EXCEEDING 20% SLOPE.
5. WATER AND SEWER SERVICE LINES SHALL HAVE TEN (10) FEET MINIMUM HORIZONTAL SEPARATION MEASURED FROM OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS. IF A WATER SERVICE LINE CROSSES A SEWER MAIN OR SEWER SERVICE, THE WATER LINE SHALL BE PROTECTED PER ATTACHMENT A-23 – PIPE CROSSING DETAIL.
6. WHEN WATER PIPE CROSSES BELOW STORM PIPE WATER PIPE SHALL BEW INCASE IN 20FT STEEL PIPE CENTERED ON CROSSING, ACCORDING TO ATTACHMENT A-25.
7. TOWN PREFERS THE USE OF THE MULLER CENTURION NO. A-423 FIRE HYDRANT.

WATER - 1.2

(10+00-18+50)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

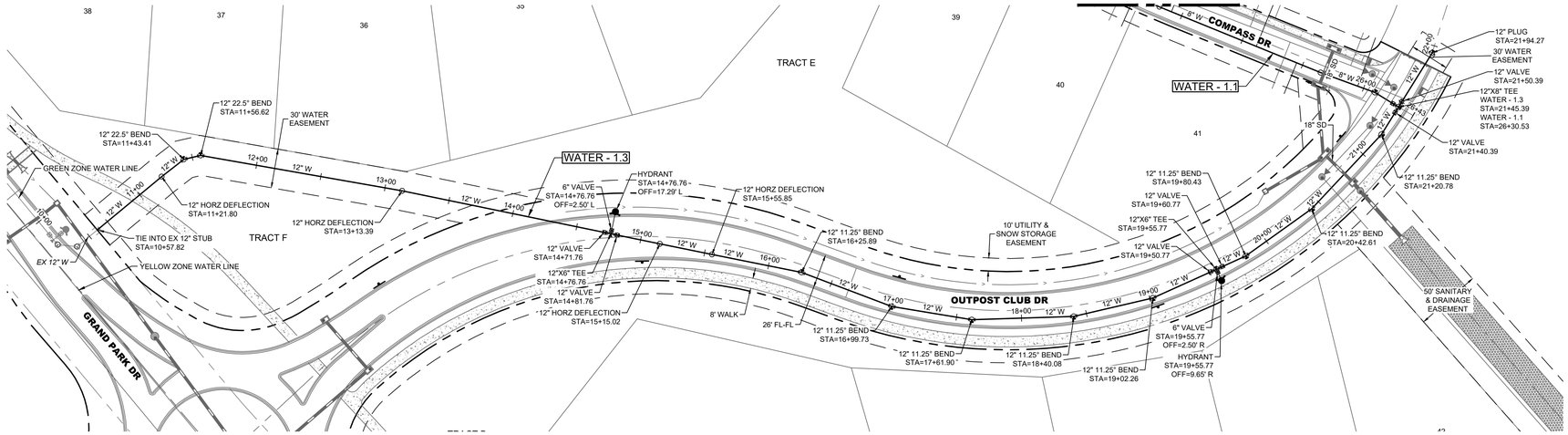
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

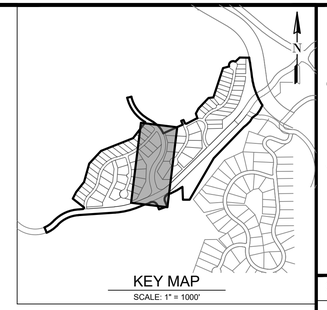
FINAL CONSTRUCTION PLANS
WATER P&P - LINE 1.2

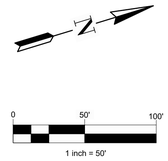
Know what's **below.** **Call** before you dig. 811

SHEET 42 OF 79

2/6/2026 4:25 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS WATER R&PS - F1 - 10W.DWG 03







PROFILE LEGEND

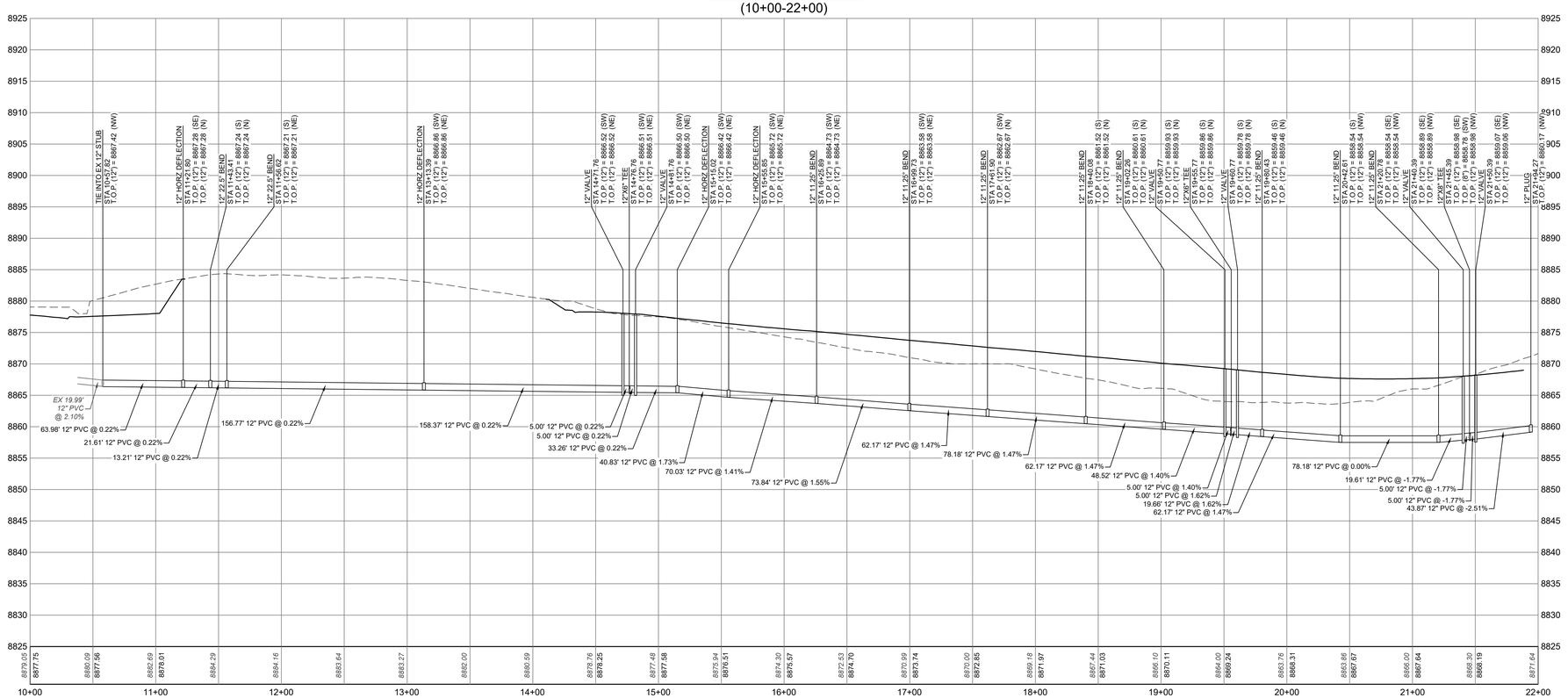
EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=5' (VERT)

NOTES

1. ALL MAIN WATER LINES SHALL USE C900.
2. AWWA C900 PVC IS REQUIRED IF SOILS ARE DETERMINED TO BE CORROSIVE.
3. HYDRANTS INTENDED TO SERVE AS AIR RELEASE SHALL BE PAINTED PURPLE.
4. SLOPE ANCHORS SHALL BE DESIGNED/CONSTRUCTED FOR WATERLINES EXCEEDING 20% SLOPE.
5. WATER AND SEWER SERVICE LINES SHALL HAVE TEN (10) FEET MINIMUM HORIZONTAL SEPARATION MEASURED FROM OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS. IF A WATER SERVICE LINE CROSSES A SEWER MAIN OR SEWER SERVICE, THE WATER LINE SHALL BE PROTECTED PER ATTACHMENT A-23 – PIPE CROSSING DETAIL.
6. WHEN WATER PIPE CROSSES BELOW STORM PIPE WATER PIPE SHALL BEW INCASE IN 20FT STEEL PIPE CENTERED ON CROSSING, ACCORDING TO ATTACHMENT A-25.
7. TOWN PREFERS THE USE OF THE MULLER CENTURION NO. A-423 FIRE HYDRANT.

WATER - 1.3

(10+00-22+00)



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

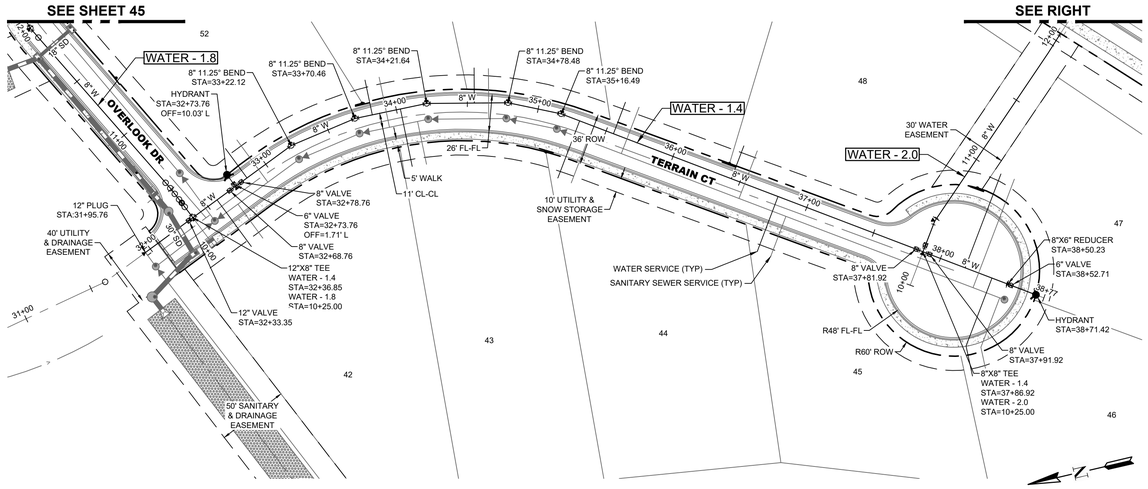
NOT FOR CONSTRUCTION

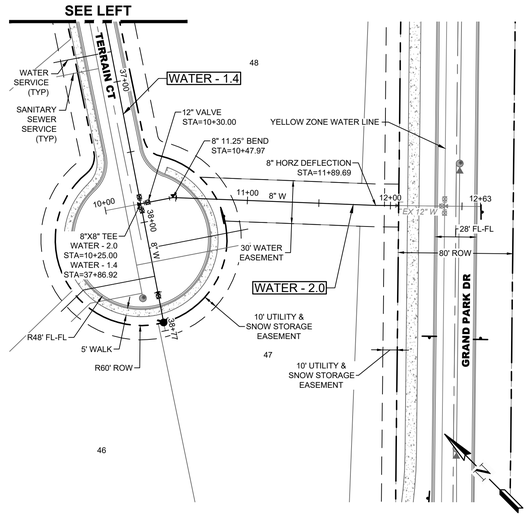
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

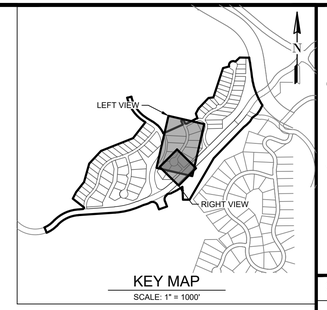
FINAL CONSTRUCTION PLANS
WATER P&P - LINE 1.3

Know what's **below.** **Call** before you dig.

2/6/2026 4:26 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS WATER R&PS - F1 - 10W.DWG 04







KEY MAP

SCALE: 1" = 1000'

0 50' 100'

1 inch = 50'

PROFILE LEGEND

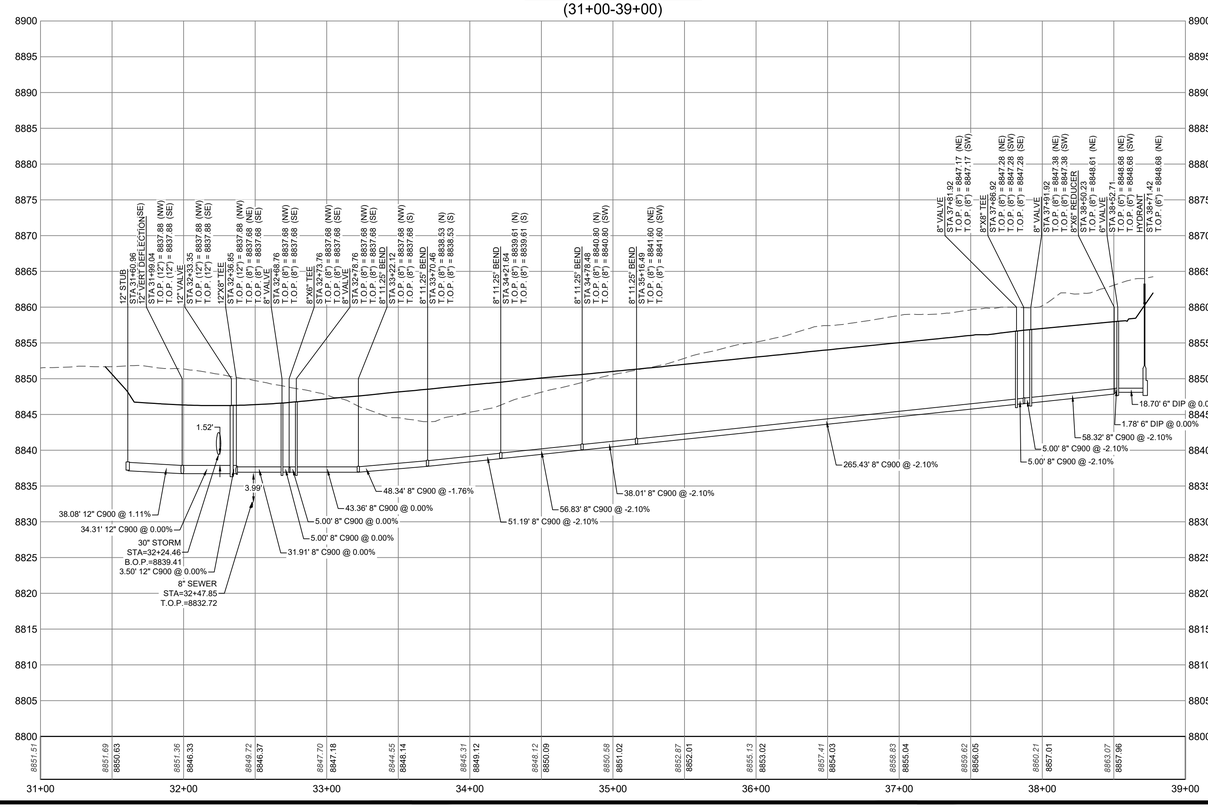
EXIST GRADE
PROP GRADE
1"=50' (HORZ) 1"=5' (VERT)

NOTES

1. ALL MAIN WATER LINES SHALL USE C900.
2. AWWA C900 PVC IS REQUIRED IF SOILS ARE DETERMINED TO BE CORROSIVE.
3. HYDRANTS INTENDED TO SERVE AS AIR RELEASE SHALL BE PAINTED PURPLE.
4. SLOPE ANCHORS SHALL BE DESIGNED/CONSTRUCTED FOR WATERLINES EXCEEDING 20% SLOPE.
5. WATER AND SEWER SERVICE LINES SHALL HAVE TEN (10) FEET MINIMUM HORIZONTAL SEPARATION MEASURED FROM OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS. IF A WATER SERVICE LINE CROSSES A SEWER MAIN OR SEWER SERVICE, THE WATER LINE SHALL BE PROTECTED PER ATTACHMENT A-23 – PIPE CROSSING DETAIL.
6. WHEN WATER PIPE CROSSES BELOW STORM PIPE WATER PIPE SHALL BEW INCASE IN 20FT STEEL PIPE CENTERED ON CROSSING, ACCORDING TO ATTACHMENT A-25.
7. TOWN PREFERS THE USE OF THE MULLER CENTURION NO. A-423 FIRE HYDRANT.

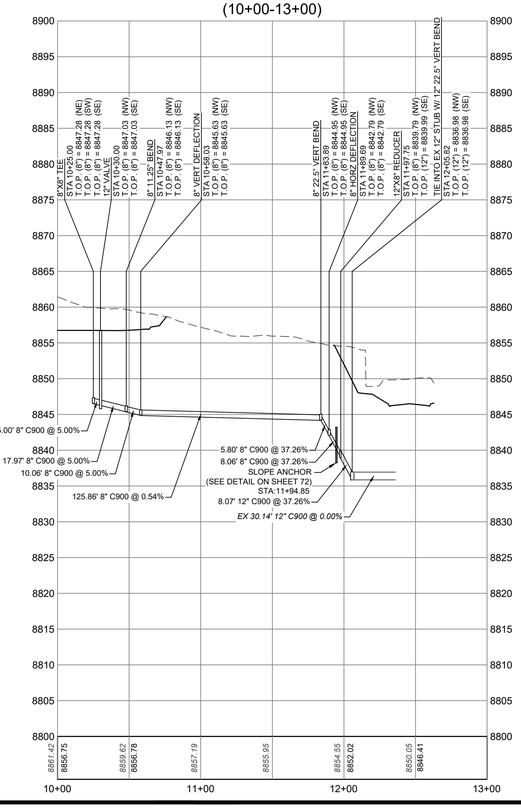
WATER - 1.4

(31+00-39+00)



WATER - 2.0

(10+00-13+00)



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

NOT FOR CONSTRUCTION

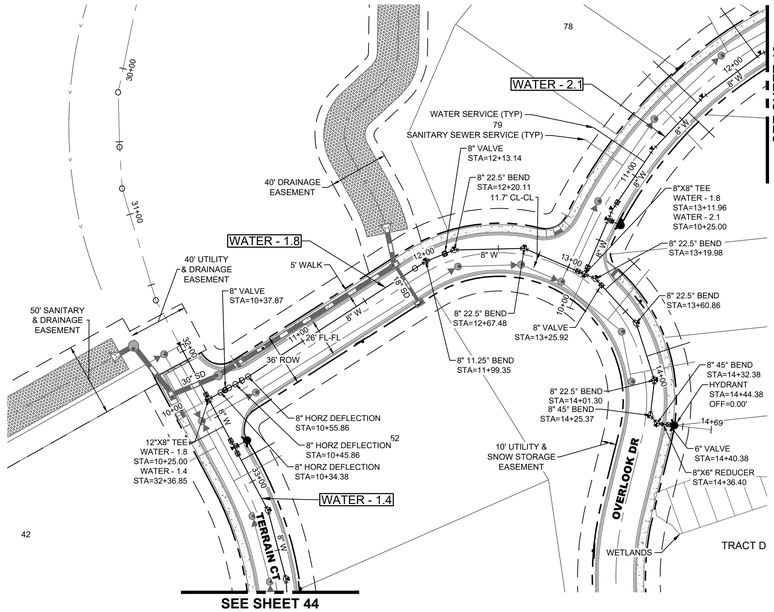
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
WATER P&P - LINE 1.4 & 2.0

Know what's below. Call before you dig. 811

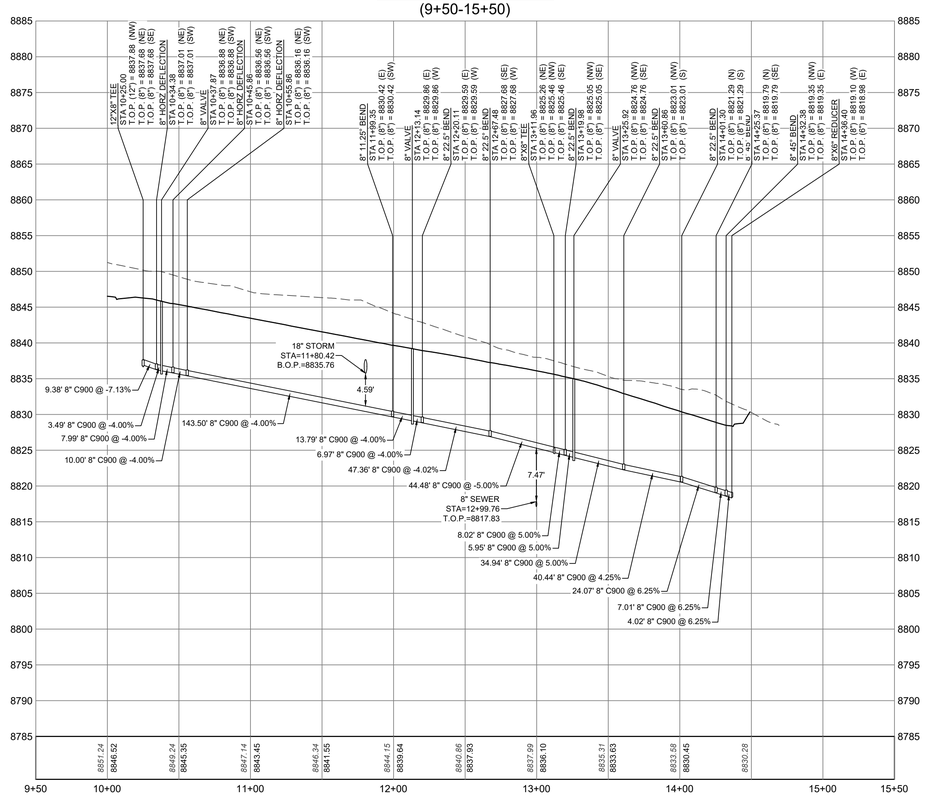
SHEET 44 OF 79

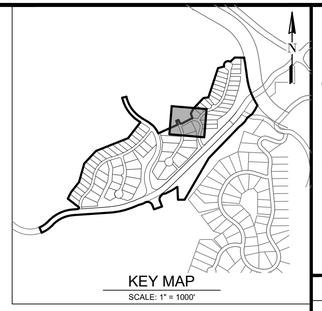
2/6/2026 4:26 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS WATER P&P\S - F1 - 10W.DWG 06 (2)

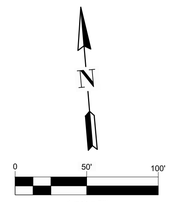


WATER - 1.8

(9+50-15+50)







PROFILE LEGEND

EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=5' (VERT)

NOTES

1. ALL MAIN WATER LINES SHALL USE C900.
2. AWWA C900 PVC IS REQUIRED IF SOILS ARE DETERMINED TO BE CORROSIVE.
3. HYDRANTS INTENDED TO SERVE AS AIR RELEASE SHALL BE PAINTED PURPLE.
4. SLOPE ANCHORS SHALL BE DESIGNED/CONSTRUCTED FOR WATERLINES EXCEEDING 20% SLOPE.
5. WATER AND SEWER SERVICE LINES SHALL HAVE TEN (10) FEET MINIMUM HORIZONTAL SEPARATION MEASURED FROM OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS. IF A WATER SERVICE LINE CROSSES A SEWER MAIN OR SEWER SERVICE, THE WATER LINE SHALL BE PROTECTED PER ATTACHMENT A-23 – PIPE CROSSING DETAIL.
6. WHEN WATER PIPE CROSSES BELOW STORM PIPE WATER PIPE SHALL BEW INCASE IN 20FT STEEL PIPE CENTERED ON CROSSING, ACCORDING TO ATTACHMENT A-25.
7. TOWN PREFERS THE USE OF THE MULLER CENTURION NO. A-423 FIRE HYDRANT.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

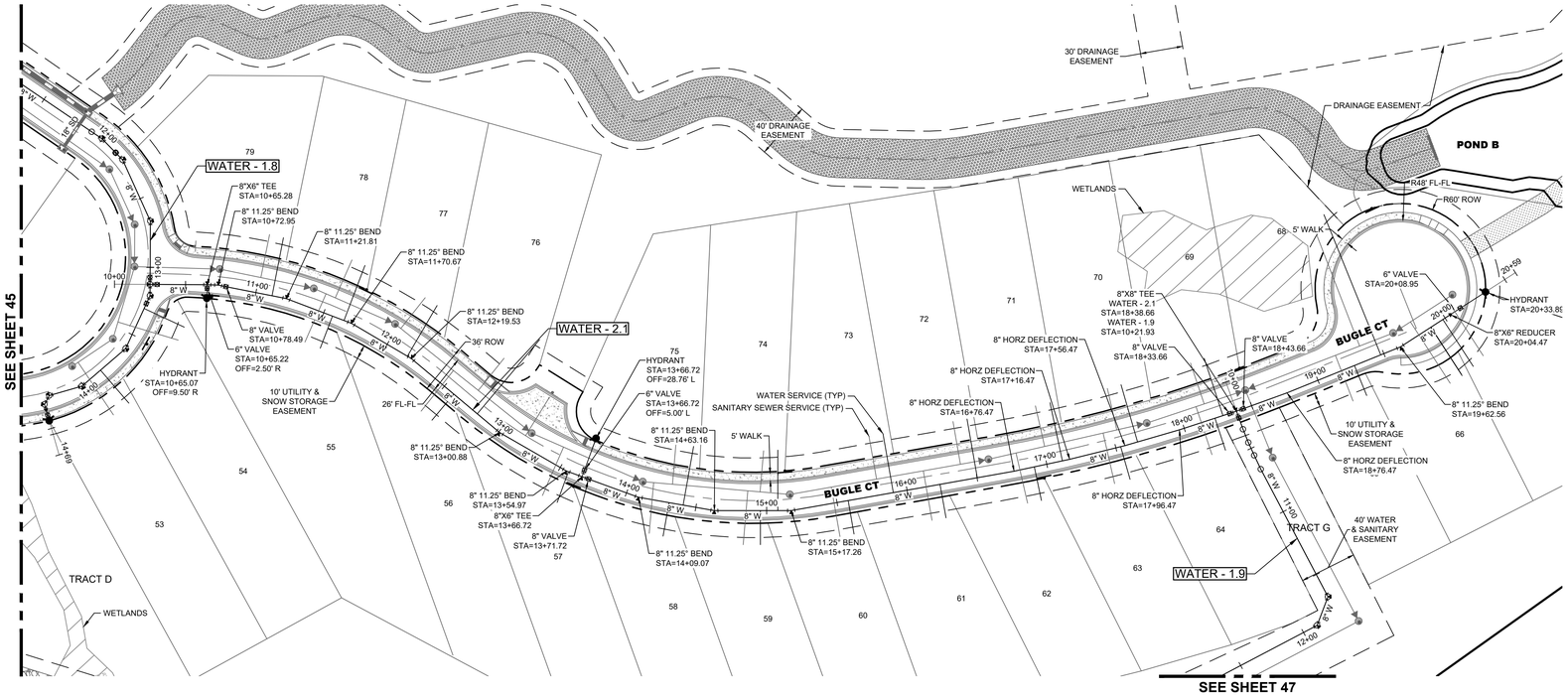
NOT FOR CONSTRUCTION

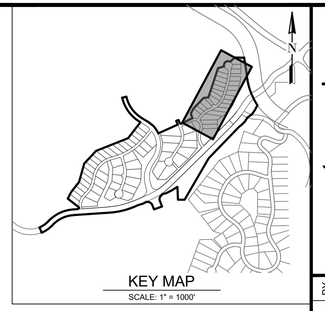
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

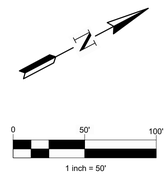
FINAL CONSTRUCTION PLANS
WATER P&P - LINE 1.8

Know what's **below.** **Call** before you dig. 811

2/6/2026 4:27 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS WATER R&PS - F1 - 16W.DWG 07







PROFILE LEGEND

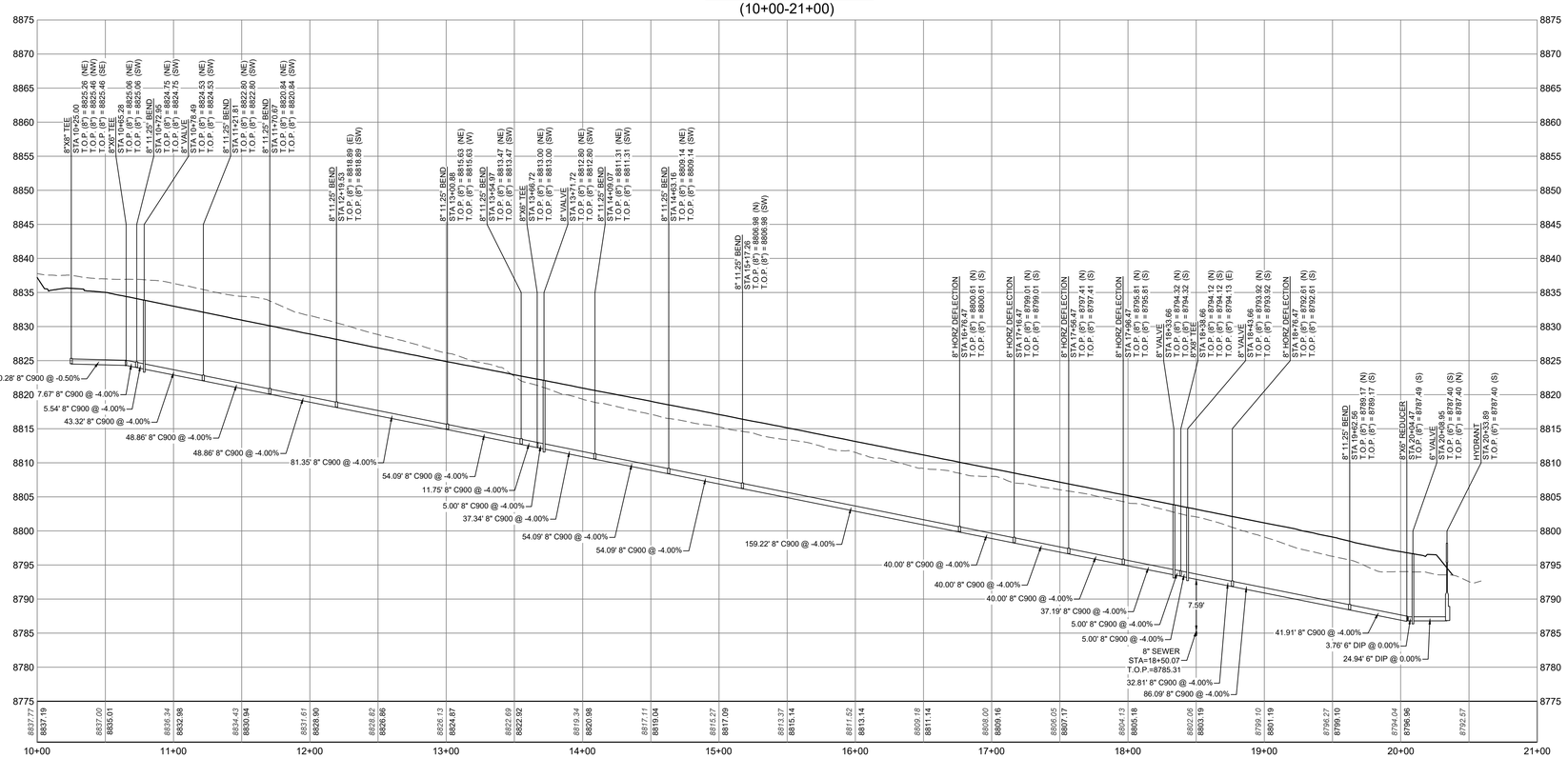
	EXIST GRADE
	PROP GRADE
1"=50' (HORZ)	1"=5' (VERT)

NOTES

1. ALL MAIN WATER LINES SHALL USE C900.
2. AWWA C900 PVC IS REQUIRED IF SOILS ARE DETERMINED TO BE CORROSIVE.
3. HYDRANTS INTENDED TO SERVE AS AIR RELEASE SHALL BE PAINTED PURPLE.
4. SLOPE ANCHORS SHALL BE DESIGNED/CONSTRUCTED FOR WATERLINES EXCEEDING 20% SLOPE.
5. WATER AND SEWER SERVICE LINES SHALL HAVE TEN (10) FEET MINIMUM HORIZONTAL SEPARATION MEASURED FROM OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS. IF A WATER SERVICE LINE CROSSES A SEWER MAIN OR SEWER SERVICE, THE WATER LINE SHALL BE PROTECTED PER ATTACHMENT A-23 – PIPE CROSSING DETAIL.
6. WHEN WATER PIPE CROSSES BELOW STORM PIPE WATER PIPE SHALL BEW INCASE IN 20FT STEEL PIPE CENTERED ON CROSSING, ACCORDING TO ATTACHMENT A-25.
7. TOWN PREFERS THE USE OF THE MULLER CENTURION NO. A-423 FIRE HYDRANT.

WATER - 2.1

(10+00-21+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

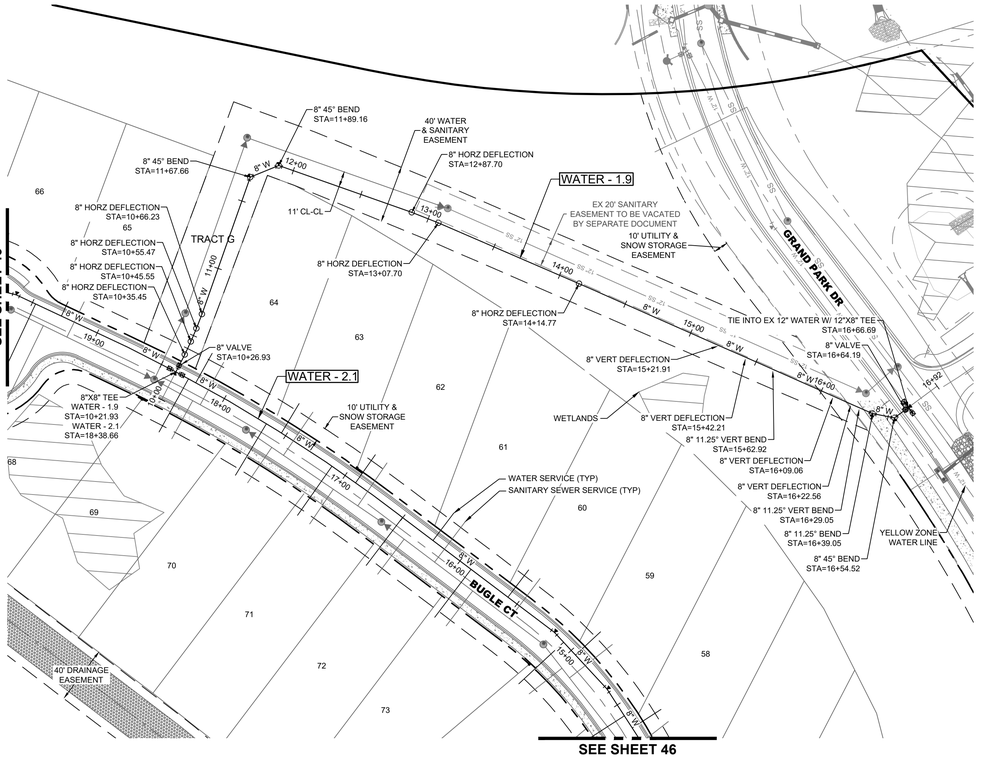
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
WATER P&P - LINE 2.1

Know what's **below.** **Call** before you dig.
811

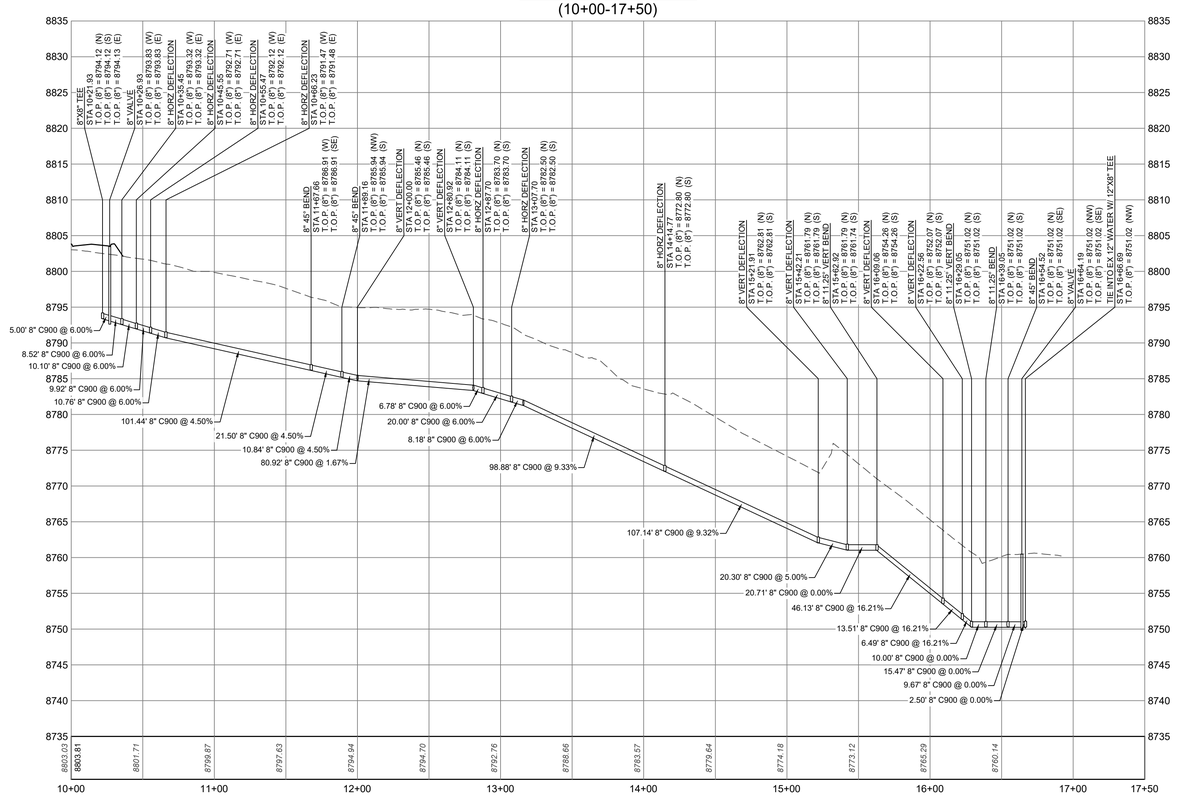
SHEET
46 OF 79

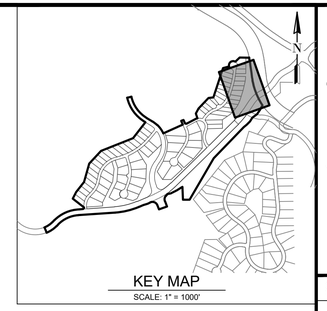
2/6/2026 4:27 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS WATER P&P\S - F1 - 10W.DWG 07 (2)



WATER - 1.9

(10+00-17+50)





0 50' 100'

1 inch = 50'

PROFILE LEGEND

EXIST GRADE
PROP GRADE
1"=50' (HORZ) 1"=5' (VERT)

NOTES

1. ALL MAIN WATER LINES SHALL USE C900.
2. AWWA C900 PVC IS REQUIRED IF SOILS ARE DETERMINED TO BE CORROSIVE.
3. HYDRANTS INTENDED TO SERVE AS AIR RELEASE SHALL BE PAINTED PURPLE.
4. SLOPE ANCHORS SHALL BE DESIGNED/CONSTRUCTED FOR WATERLINES EXCEEDING 20% SLOPE.
5. WATER AND SEWER SERVICE LINES SHALL HAVE TEN (10) FEET MINIMUM HORIZONTAL SEPARATION MEASURED FROM OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE. WHERE THIS SEPARATION IS IMPRACTICAL, THE TOWN MAY PERMIT OTHER SEPARATION REQUIREMENTS IN ACCORDANCE WITH APPLICABLE STANDARDS. IF A WATER SERVICE LINE CROSSES A SEWER MAIN OR SEWER SERVICE, THE WATER LINE SHALL BE PROTECTED PER ATTACHMENT A-23 – PIPE CROSSING DETAIL.
6. WHEN WATER PIPE CROSSES BELOW STORM PIPE WATER PIPE SHALL BEW INCASE IN 20FT STEEL PIPE CENTERED ON CROSSING, ACCORDING TO ATTACHMENT A-25.
7. TOWN PREFERS THE USE OF THE MULLER CENTURION NO. A-423 FIRE HYDRANT.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

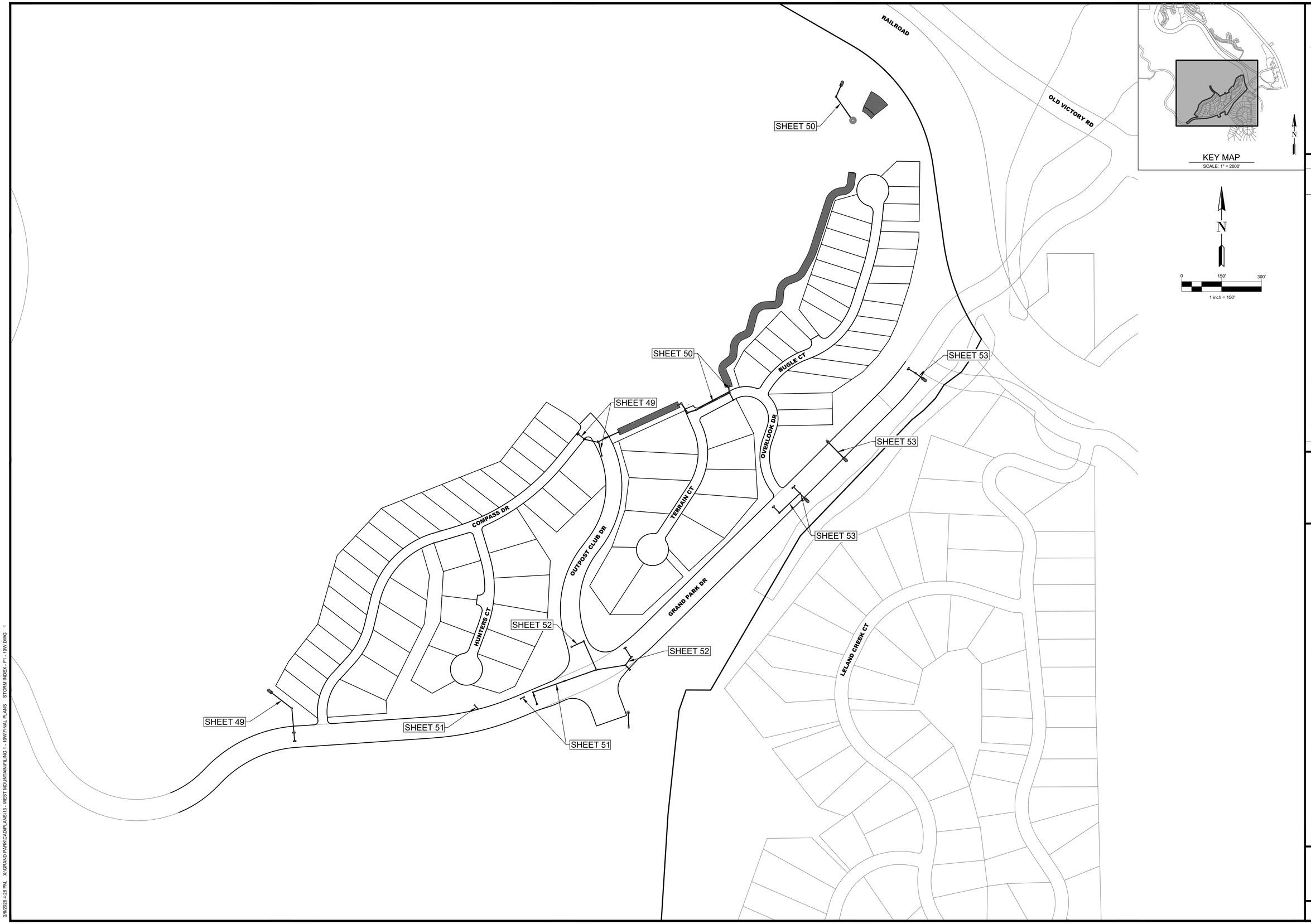
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
WATER P&P - LINE 1.9

Know what's **below.** **Call** before you dig. 811

SHEET 47 OF 79

2/6/2026 4:27 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS WATER P&P\S - F1 - 10W.DWG 08 (2)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

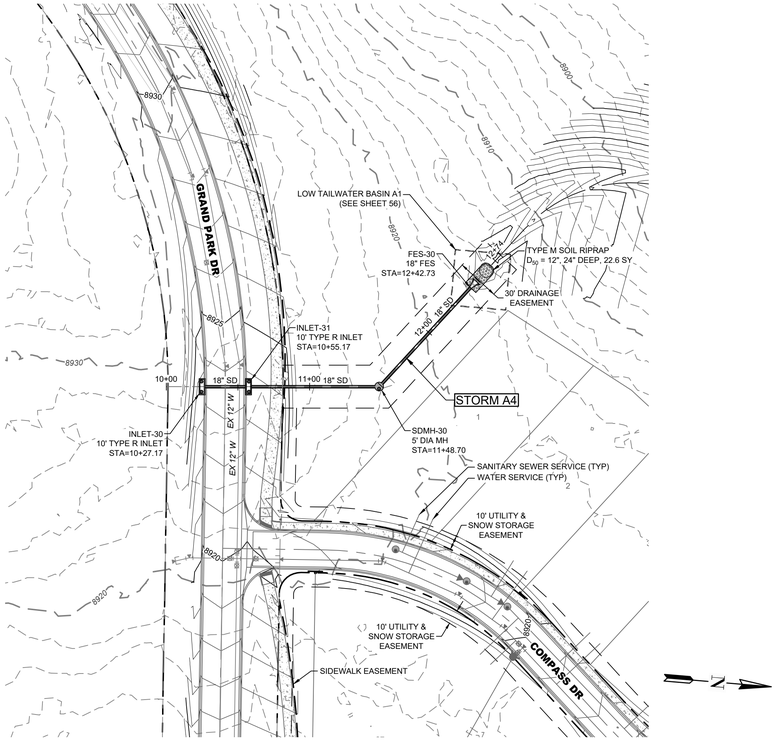
TOWN OF FRASER, COLORADO

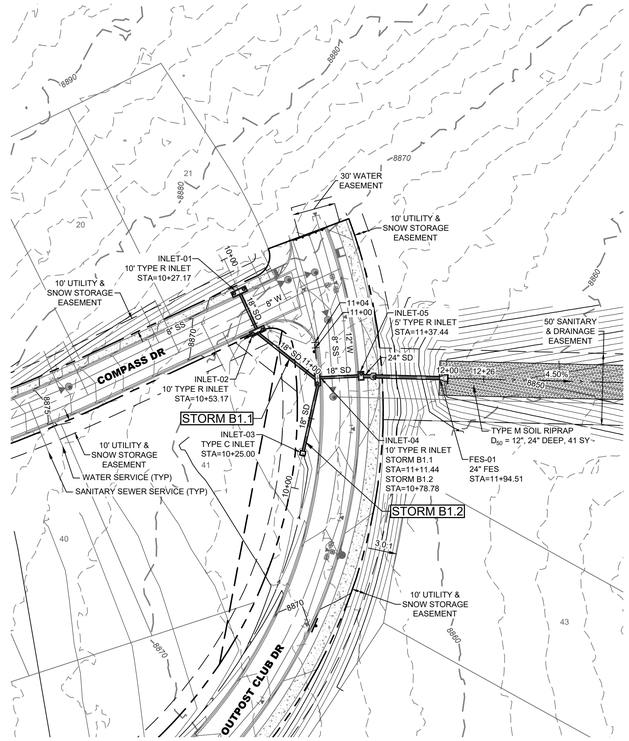
FINAL CONSTRUCTION PLANS
STORM INDEX

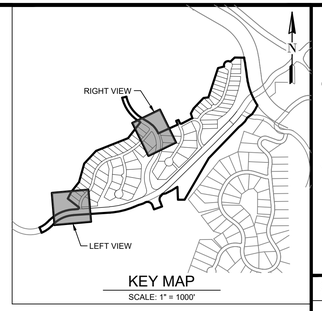
Know what's **below.**
Call before you dig.
811

SHEET
48 OF 79

2/6/2026 4:28 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN FILING 1 - 10W\FINAL PLANS STORM INDEX - F1 - 10W.DWG 1







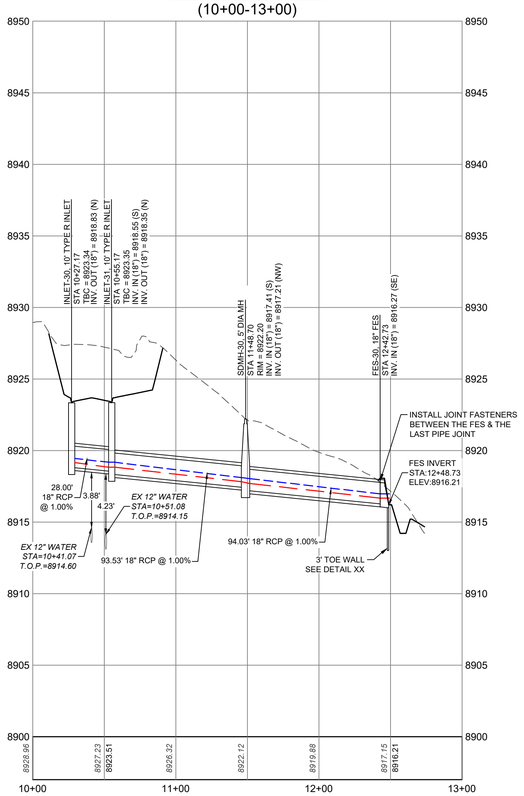
0 50' 100'

1 inch = 50'

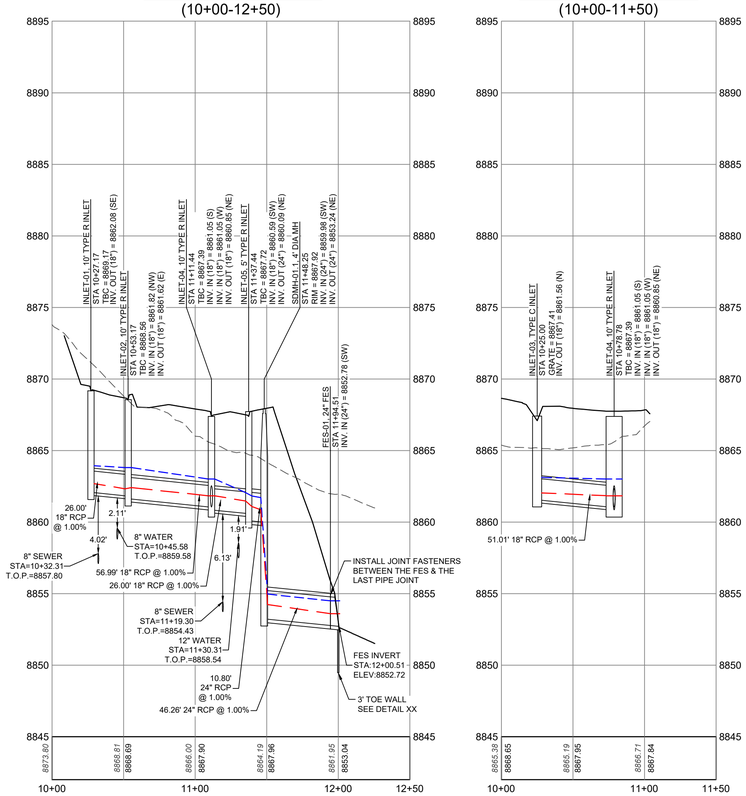
PROFILE LEGEND

100-YR HGL	
5-YR HGL	
EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=5' (VERT)

STORM A4
(10+00-13+00)



STORM B1.1
(10+00-12+50)



STORM B1.2
(10+00-11+50)

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

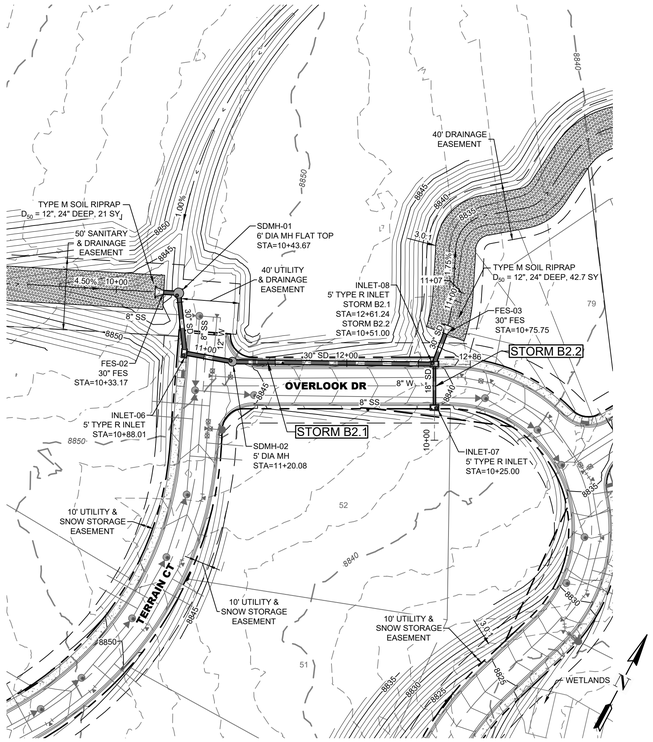
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

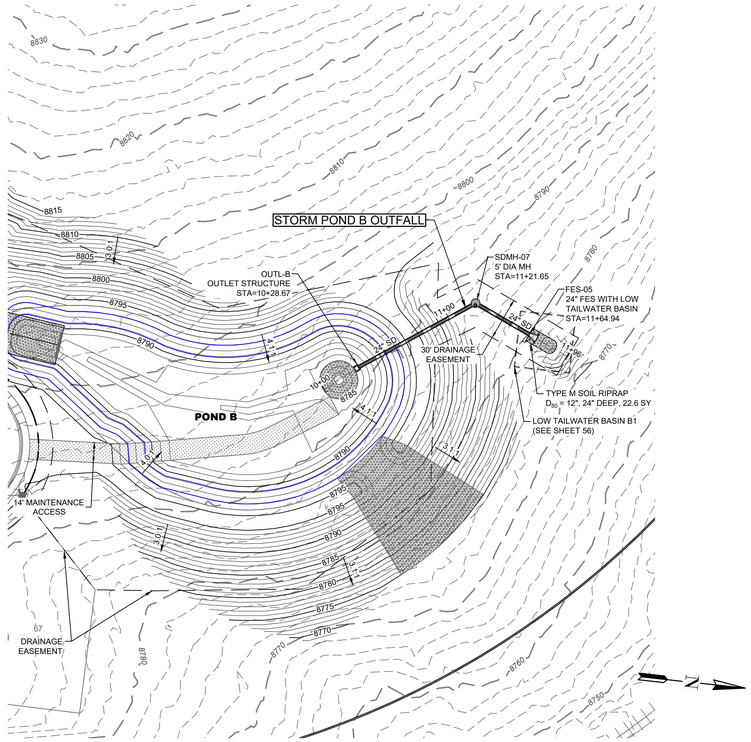
FINAL CONSTRUCTION PLANS
STORM P&P - STORM A4 & B1

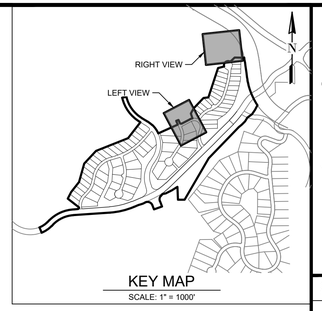
Know what's **below.**
Call before you dig.
811

SHEET
49 OF 79

2/6/2026 4:29 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS STORM P&P\S - F1 - 16W.DWG 01







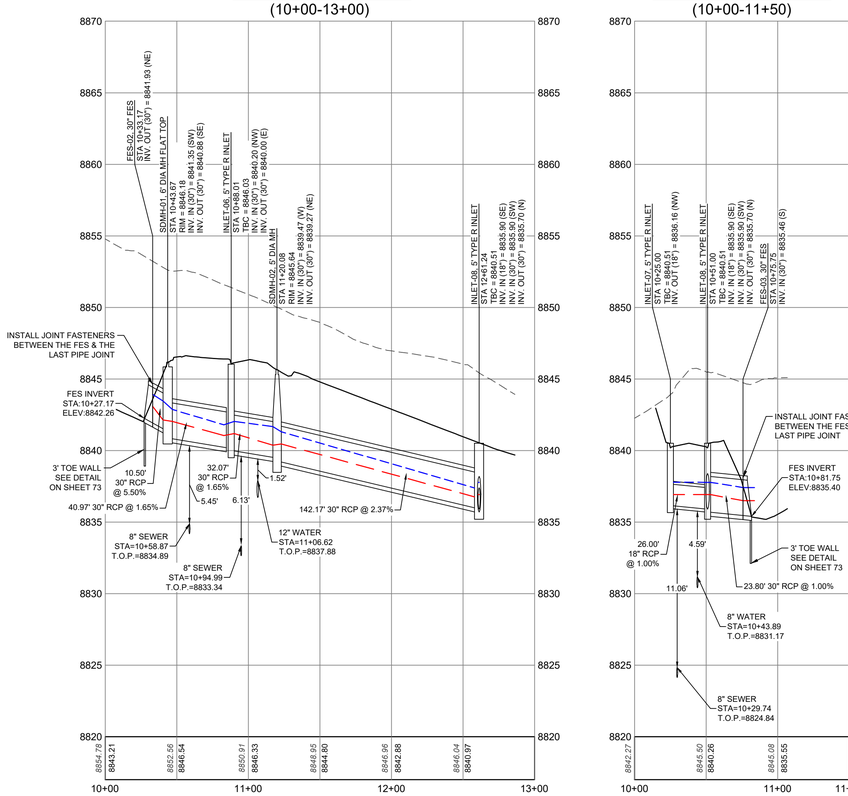
KEY MAP
SCALE: 1" = 1000'

0 50' 100'
1 inch = 50'

PROFILE LEGEND

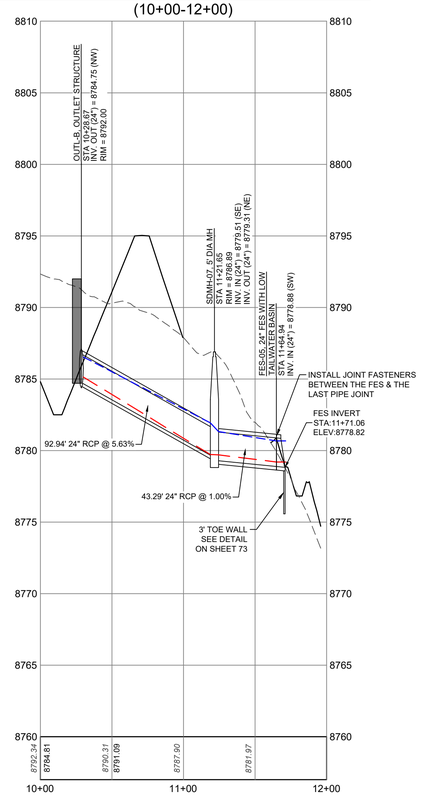
100-YR HGL	
5-YR HGL	
EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=5' (VERT)

STORM B2.1
(10+00-13+00)



STORM B2.2
(10+00-11+50)

STORM POND B OUTFALL
(10+00-12+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

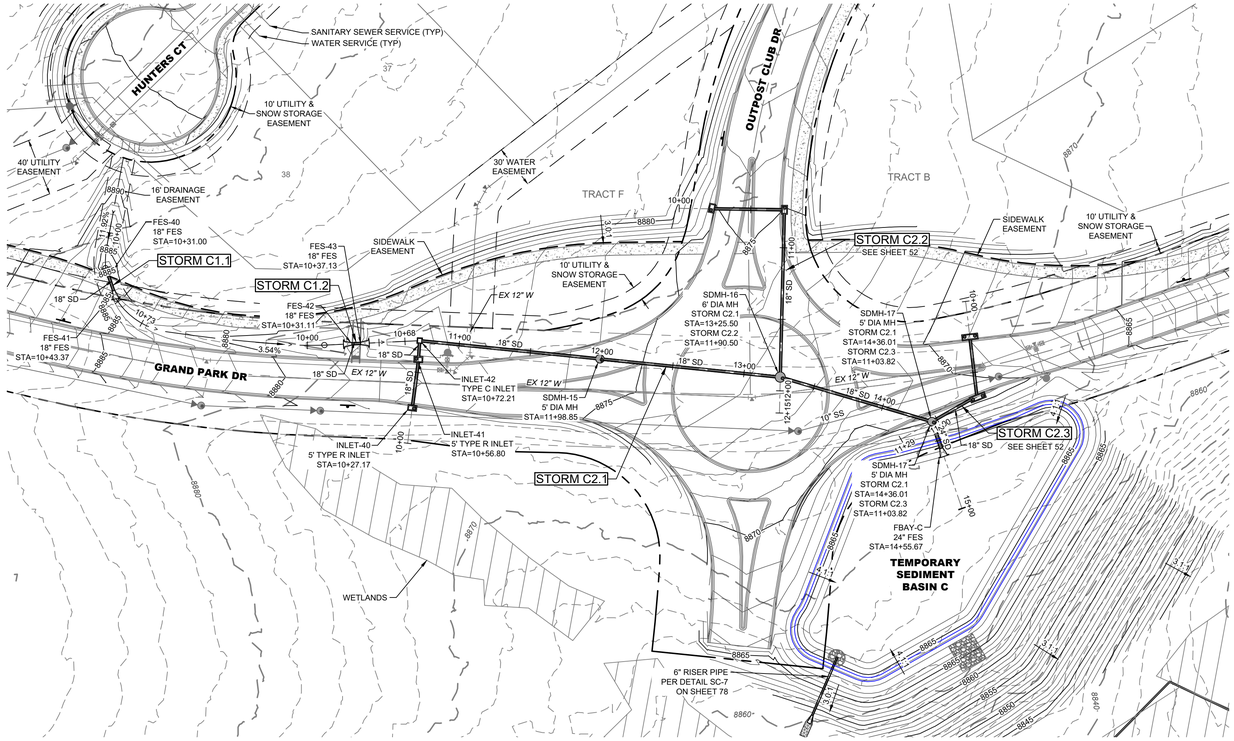
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

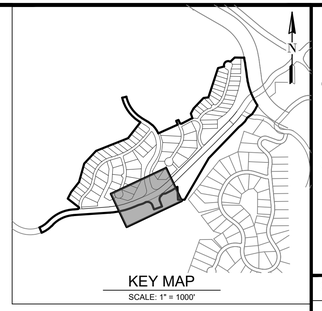
FINAL CONSTRUCTION PLANS
STORM P&P - STORM B2

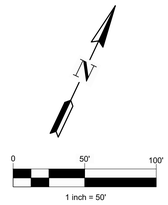
Know what's **below.** **Call** before you dig. 811

SHEET
50 OF 79

2/6/2026 4:29 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS STORM P&P\S- F1 - 10W.DWG 02



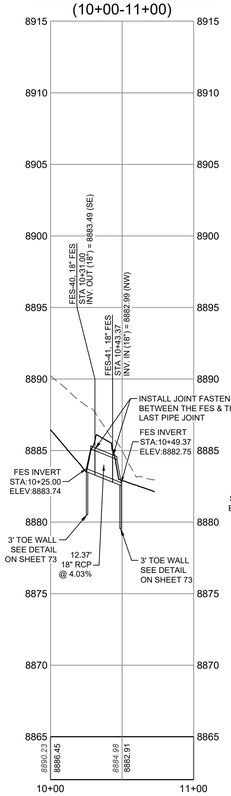




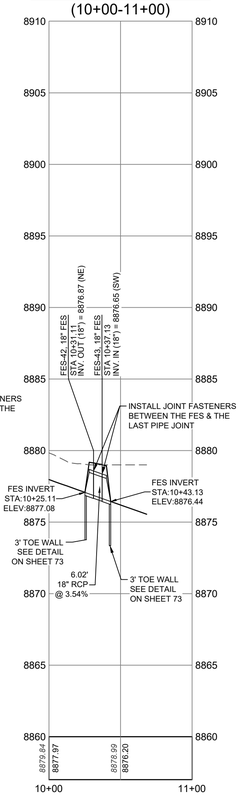
PROFILE LEGEND

100-YR HGL	
5-YR HGL	
EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=5' (VERT)

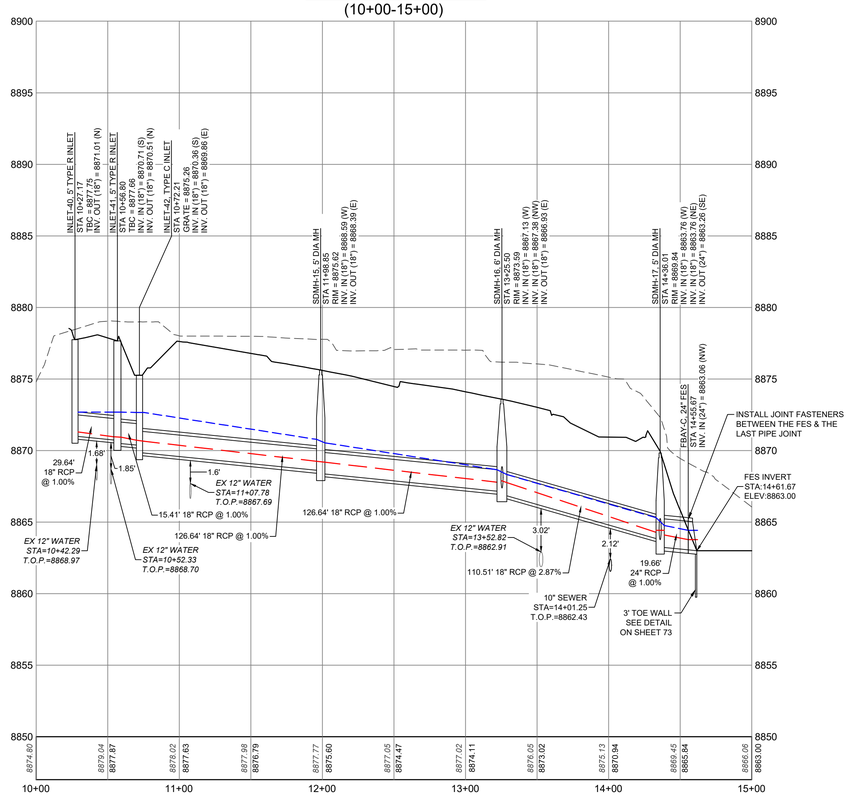
STORM C1.1
(10+00-11+00)



STORM C1.2
(10+00-11+00)



STORM C2.1
(10+00-15+00)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

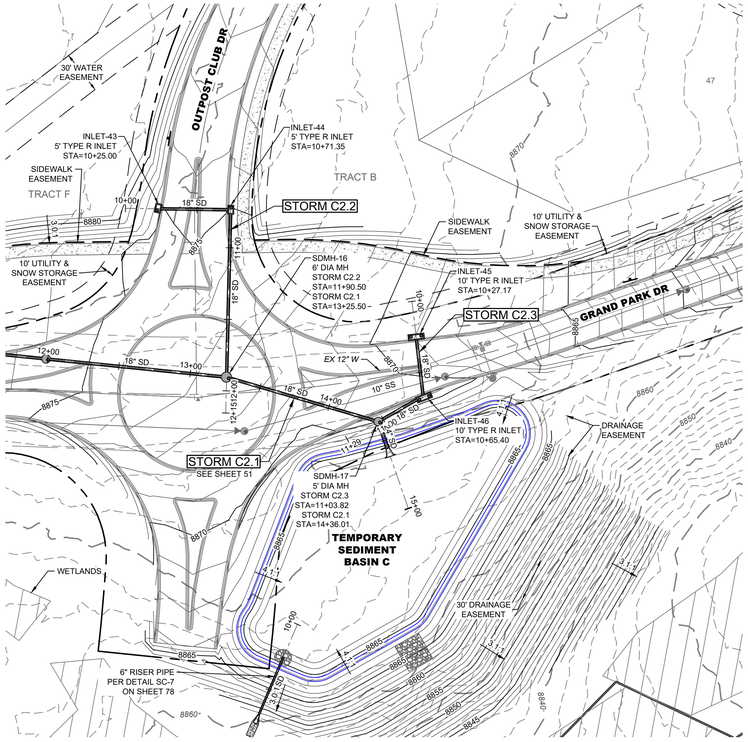
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

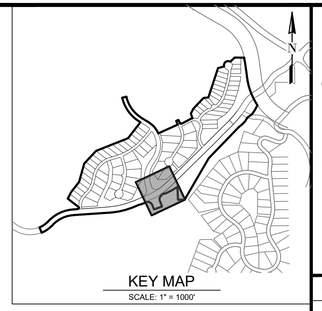
FINAL CONSTRUCTION PLANS
STORM P&P - STORM C1 & C2

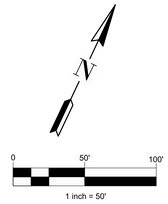
Know what's **below.** **Call** before you dig.
811

SHEET
51 OF 79

2/6/2026 4:30 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10'\FINAL PLANS STORM P&P\S - F1 - 10'\F-10'.DWG 03



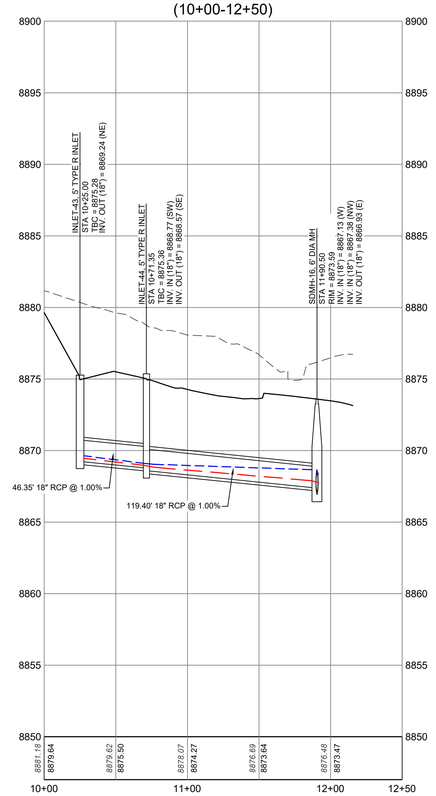




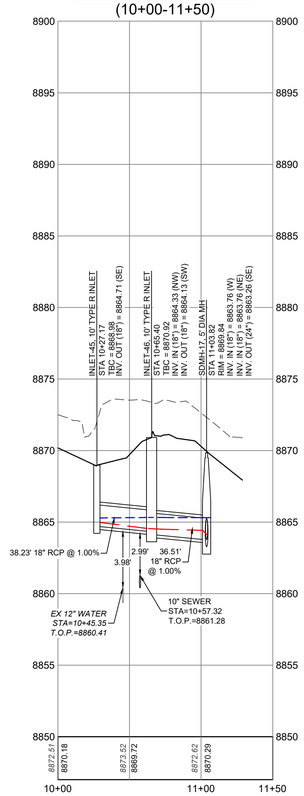
PROFILE LEGEND

100-YR HGL	
5-YR HGL	
EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=5' (VERT)

STORM C2.2
(10+00-12+50)



STORM C2.3
(10+00-11+50)



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

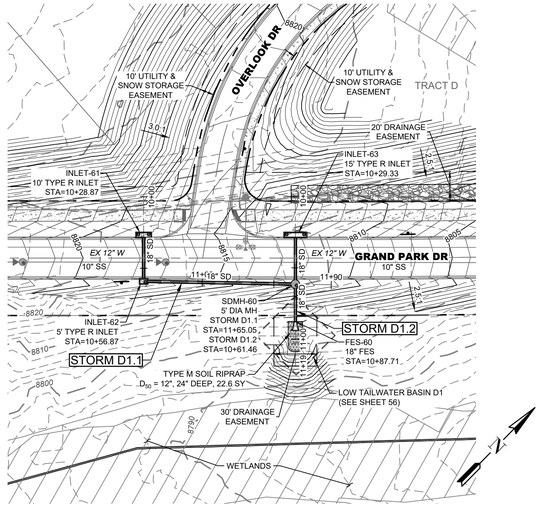
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

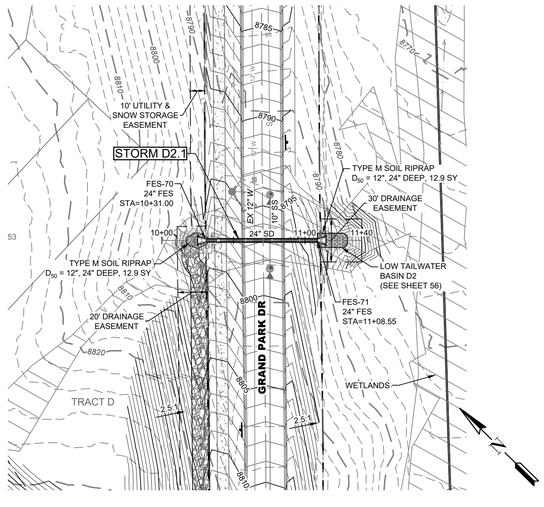
FINAL CONSTRUCTION PLANS
STORM P&P - STORM C2

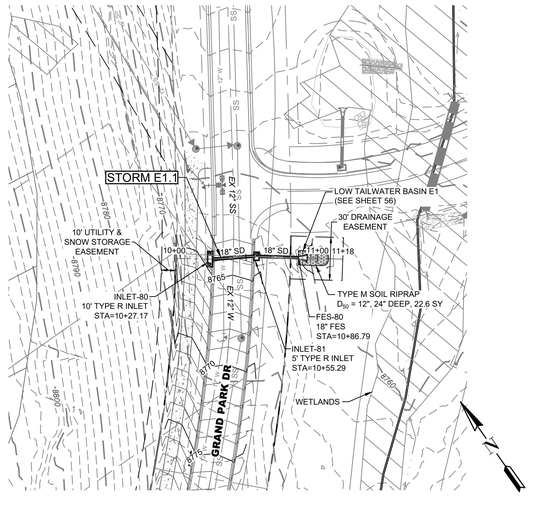
Know what's **below.** **Call** before you dig. 811

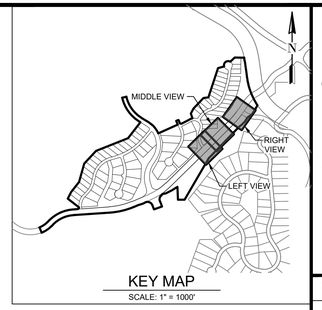
SHEET 52 OF 79

2/6/2026 4:30 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS STORM P&P\S- F1 - 10W.DWG 04









KEY MAP

SCALE: 1" = 1000'

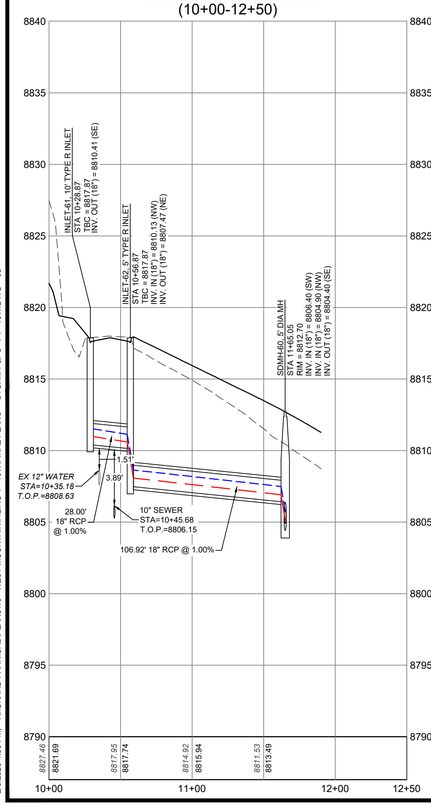
0 50' 100'

1 inch = 50'

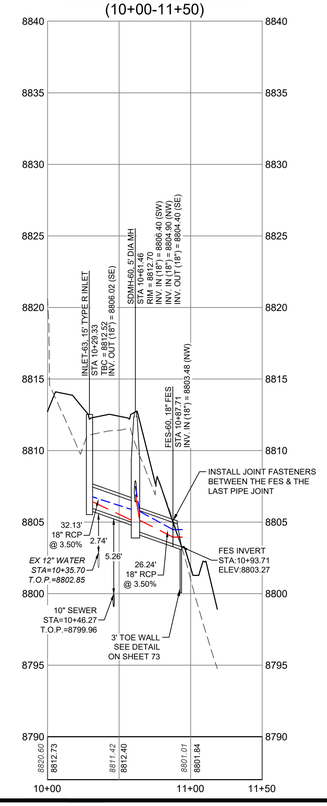
PROFILE LEGEND

100-YR HGL
5-YR HGL
EXIST GRADE
PROP GRADE
1"=50' (HORZ) 1"=5' (VERT)

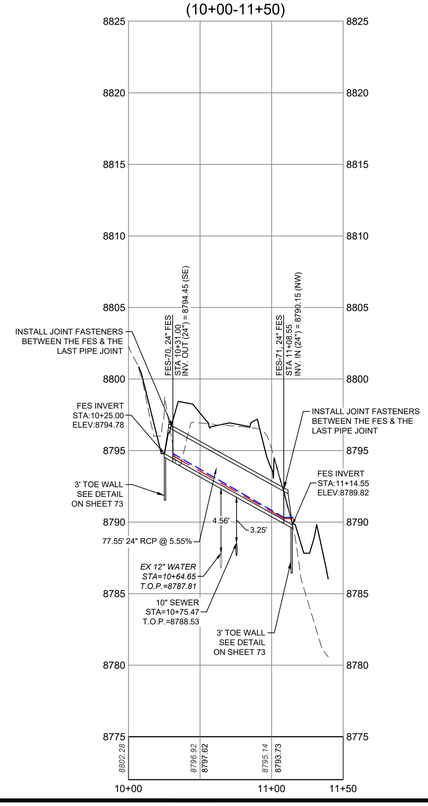
STORM D1.1
(10+00-12+50)



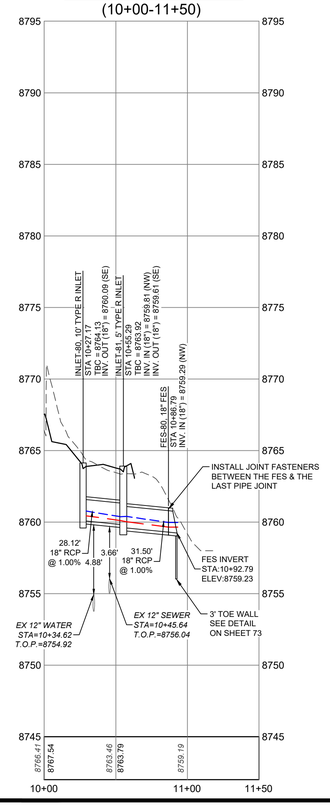
STORM D1.2
(10+00-11+50)



STORM D2.1
(10+00-11+50)



STORM E1.1
(10+00-11+50)



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

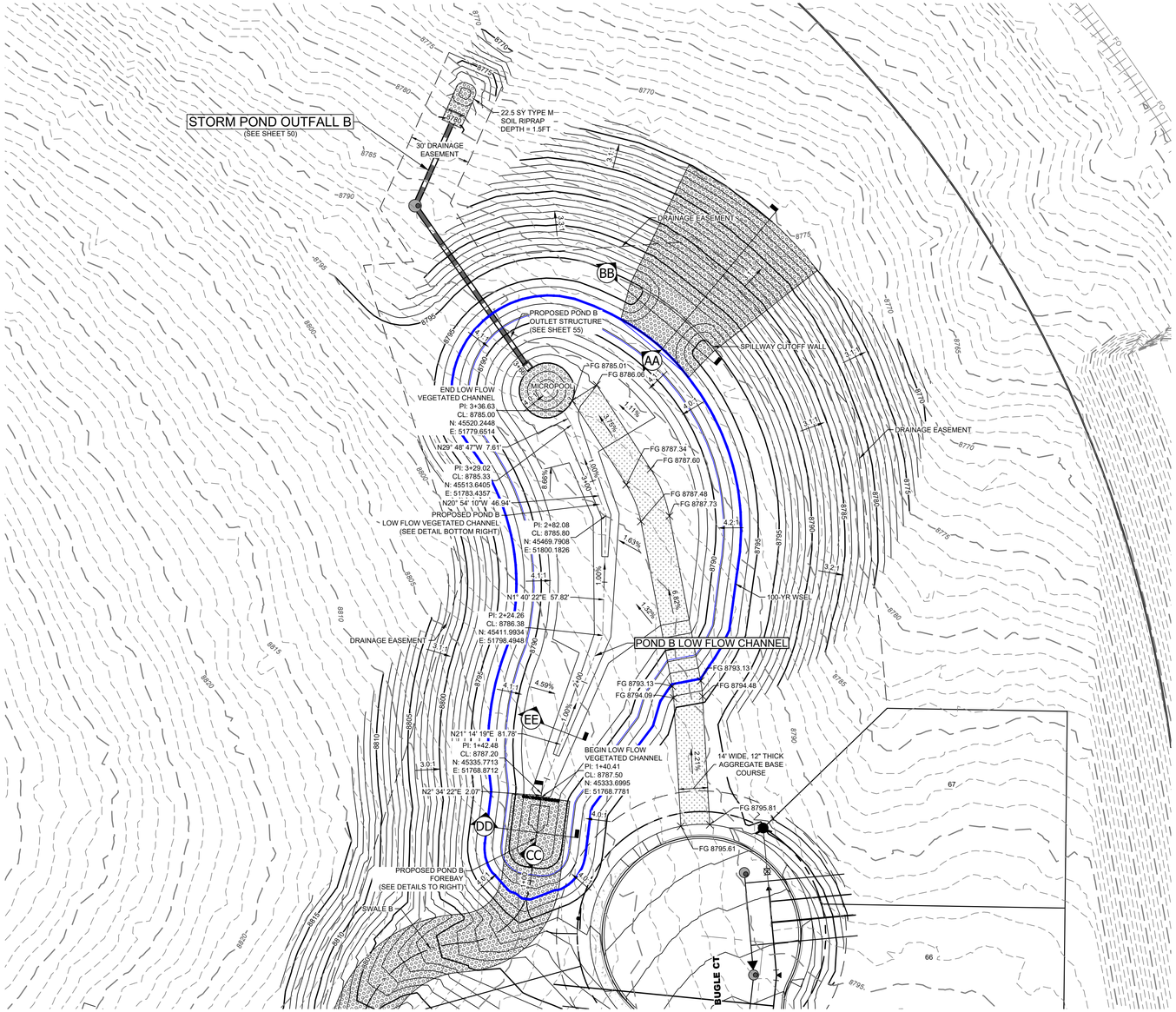
FINAL CONSTRUCTION PLANS
STORM P&P - STORM D1, D2, & E1

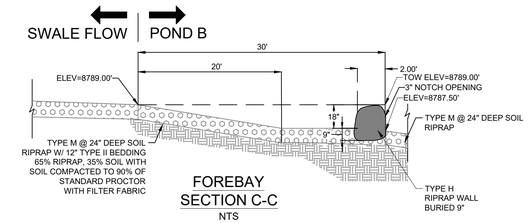
Know what's **below.** **Call** before you dig. 811

SHEET 53 OF 79

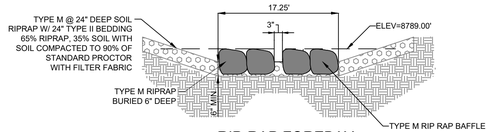
terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

2/6/2026 4:30 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS STORM P&P\S - F1 - 16W.DWG 05

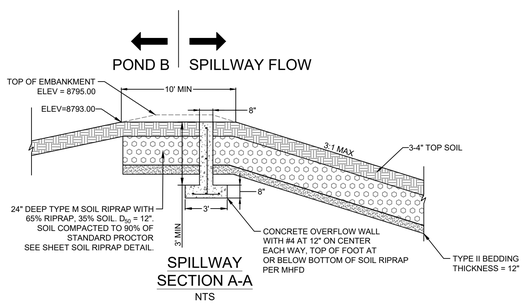




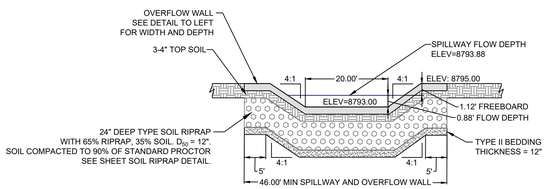
FOREBAY
SECTION C-C
NTS



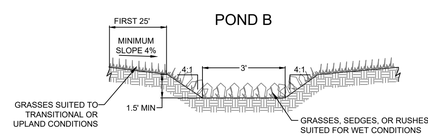
RIP-RAP FOREBAY
SECTION D-D
NTS



SPILLWAY
SECTION A-A
NTS



SPILLWAY
SECTION B-B
NTS



LOW FLOW VEGETATED CHANNEL
SECTION E-E
NTS

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

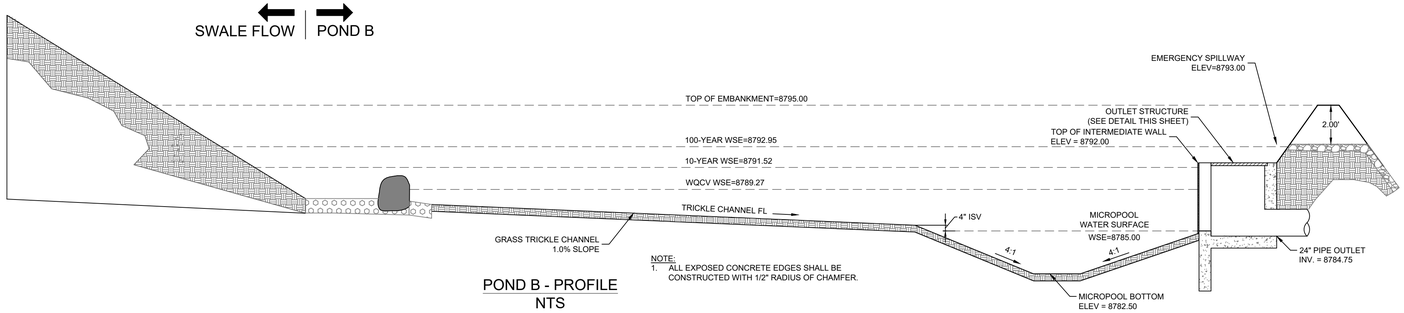
NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
STORM P&P - POND B

Know what's **below.** **Call** before you dig. 811

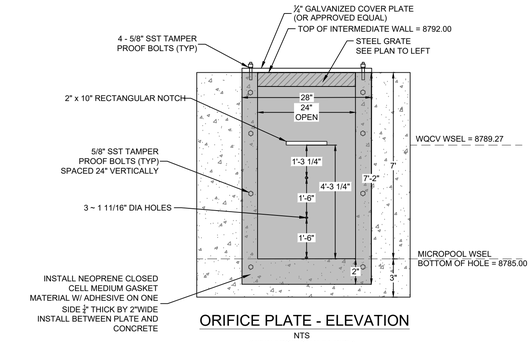
SHEET
54 OF 79

2/6/2026 4:31 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS POND B - F1 - 10W.DWG 1

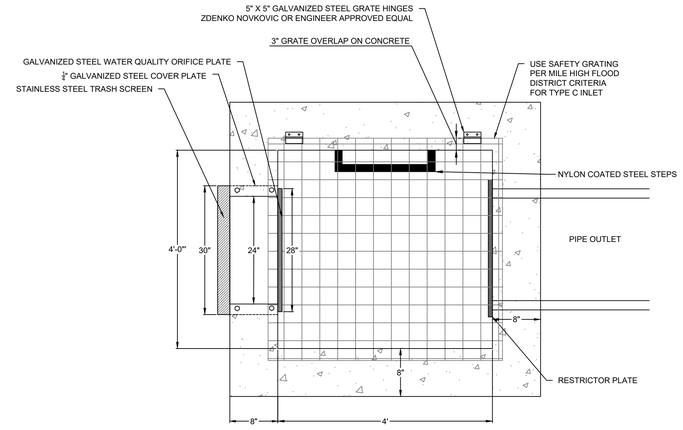


NOTE:
1. ALL EXPOSED CONCRETE EDGES SHALL BE CONSTRUCTED WITH 1/2" RADIUS OF CHAMFER.

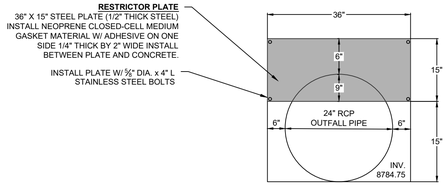
POND B - PROFILE
NTS



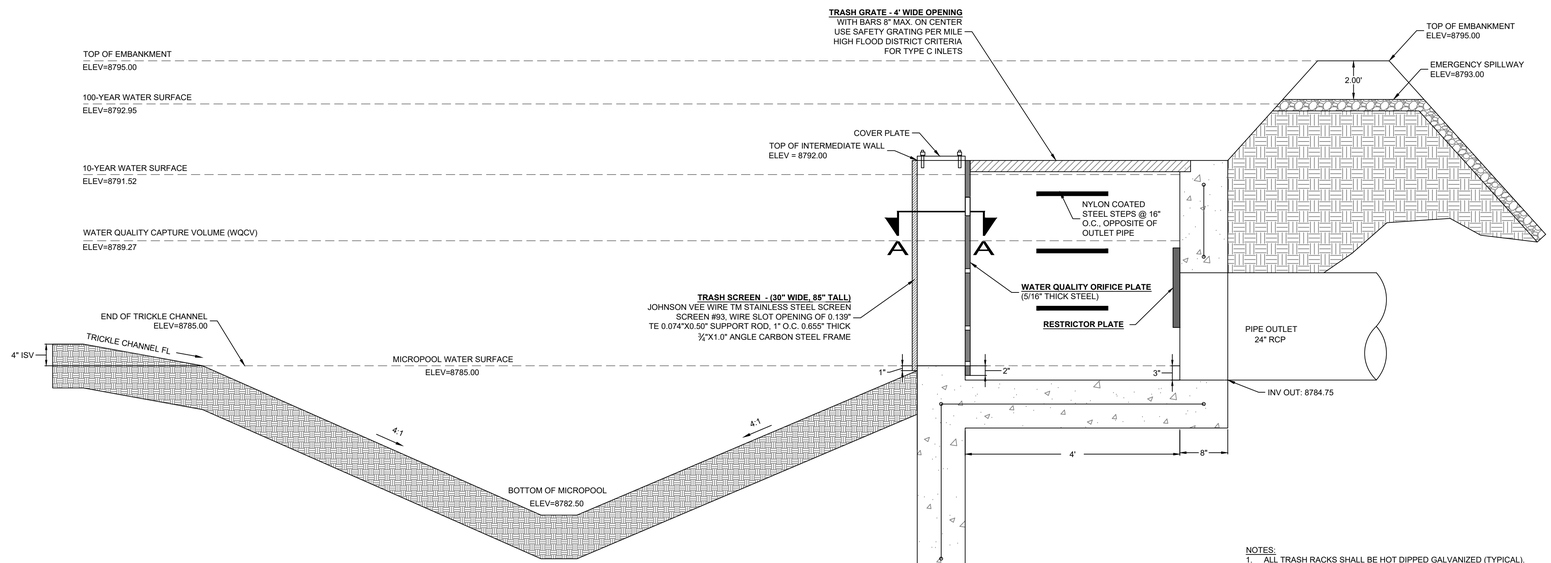
ORIFICE PLATE - ELEVATION
NTS
(VIEW FROM OUTLET PIPE)



POND B - OUTLET STRUCTURE PLAN
NTS

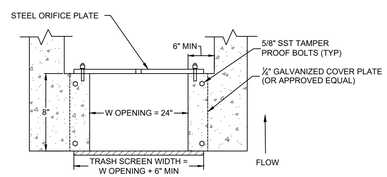


OUTLET STRUCTURE
WITH
RESTRICTOR PLATE



NOTES:
1. ALL TRASH RACKS SHALL BE HOT DIPPED GALVANIZED (TYPICAL).

POND B - OUTLET STRUCTURE SECTION
NTS



TRASH SCREEN/ORIFICE PLATE SECTION (A)
NTS

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

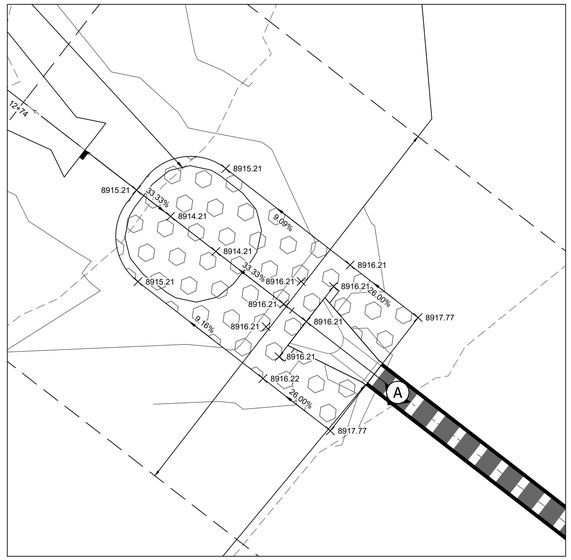
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
STORM P&P - POND B OUTLET STRUCTURE

Know what's below. Call before you dig. 811

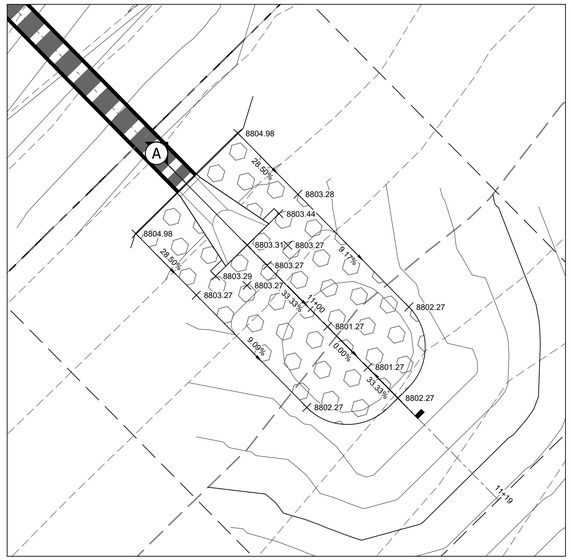
SHEET
55 OF 79

2/6/2026 4:31 PM, X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS POND B - F1 - 10W.DWG 1 (2)



LOW TAIL WATER BASIN A1

SCALE 1"=5'



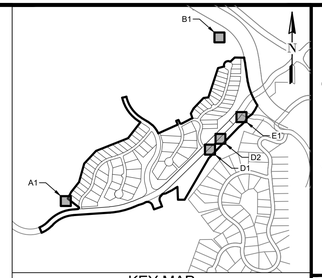
LOW TAIL WATER BASIN D1

SCALE 1"=5'



LOW TAIL WATER BASIN D2

SCALE 1"=5'



KEY MAP

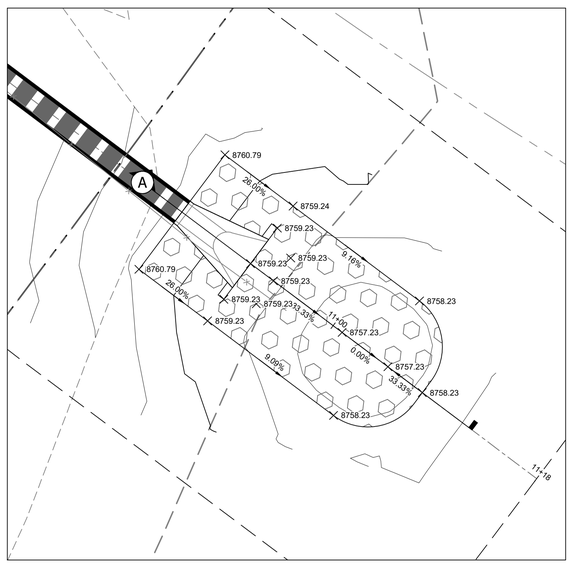
SCALE: 1" = 1000'

0 50' 100'

1 inch = 50'

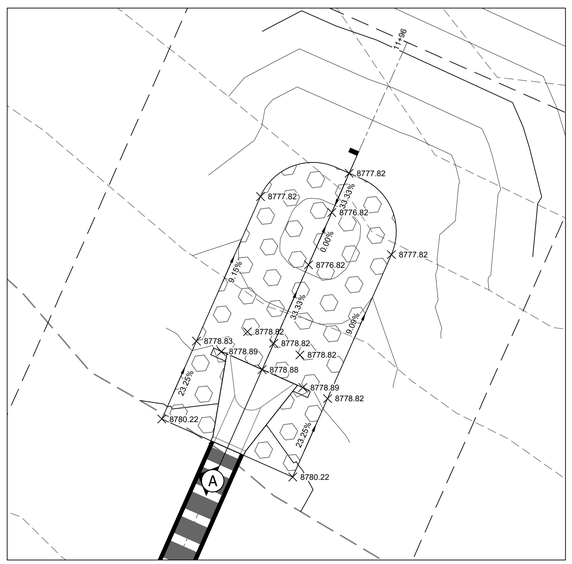
PROFILE LEGEND

100-YR HGL	
5-YR HGL	
EXIST GRADE	
PROP GRADE	
1"=50' (HORZ)	1"=5' (VERT)



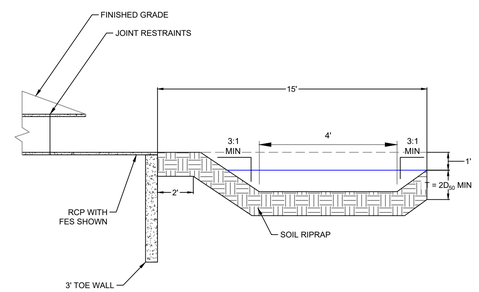
LOW TAIL WATER BASIN E1

SCALE 1"=5'



LOW TAIL WATER BASIN B1

SCALE 1"=5'



LOW TAILWATER BASIN SECTION A

NTS

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS

STORM P&P - LOW TAILWATER BASINS

NOT FOR CONSTRUCTION

Know what's **below.** **Call** before you dig. 811

SHEET 56 OF 79

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

2/6/2026 4:32 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS STORM P&P\S- F1 - 10W.DWG 06

SEE SHEET 58

SEE SHEET 58

COMPASS DR

HUNTERS CT

GRAND PARK DR

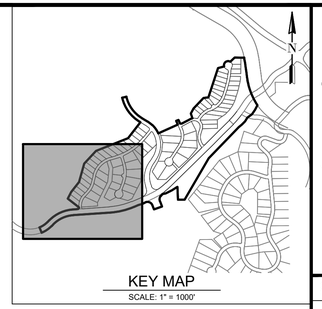
TRACT A

TRACT E

TRACT F

23W

23W



N

0 60' 120'

1 inch = 60'

LEGEND

1. NO PARKING SIGN (R7-1, 12"x18")
2. STOP SIGN W/ ROAD NAME (R1-1, 30"X30")
3. END OF ROAD SIGN (OM4-1, 30"X30")
4. ROAD CLOSED SIGN (R11-2, 48"X30")
5. 8'X2' PEDESTRIAN CROSSWALK STRIPING
6. TYPE III BARRICADE
7. 6" DOUBLE SOLID YELLOW LINE
8. SPEED LIMIT SIGN (R2-1, 24" X30")
9. STOP BAR

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
SIGNAGE & STRIPING PLAN (1 OF 3)

Know what's **below.**
Call before you dig.
811

SHEET
57 OF 79

2/6/2026 4:33 PM, X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS SIGNAGE & STRIPING PLAN - F1 - 10W.DWG 1

SEE SHEET 59

SEE SHEET 57

SEE SHEET 57

OVERLOOK DR

TERRAIN CT

COMPASS DR

OUTPOST CLUB DR

GRAND PARK DR

HUNTERS CT

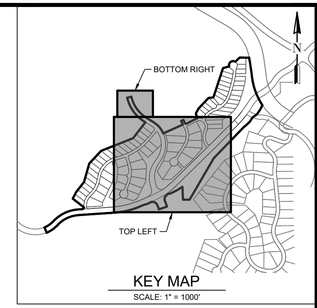
LELAND CREEK CT

TRACT D

TRACT E

TRACT B

TRACT F



KEY MAP

SCALE: 1" = 1000'

N

0 60' 120'

1 inch = 60'

LEGEND

1. NO PARKING SIGN (R7-1, 12"x18")
2. STOP SIGN W/ ROAD NAME (R1-1, 30"X30")
3. END OF ROAD SIGN (OM4-1, 30"X30")
4. ROAD CLOSED SIGN (R11-2, 48"X30")
5. 8'X2' PEDESTRIAN CROSSWALK STRIPING
6. TYPE III BARRICADE
7. 6" DOUBLE SOLID YELLOW LINE
8. SPEED LIMIT SIGN (R2-1, 24" X30")
9. STOP BAR

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

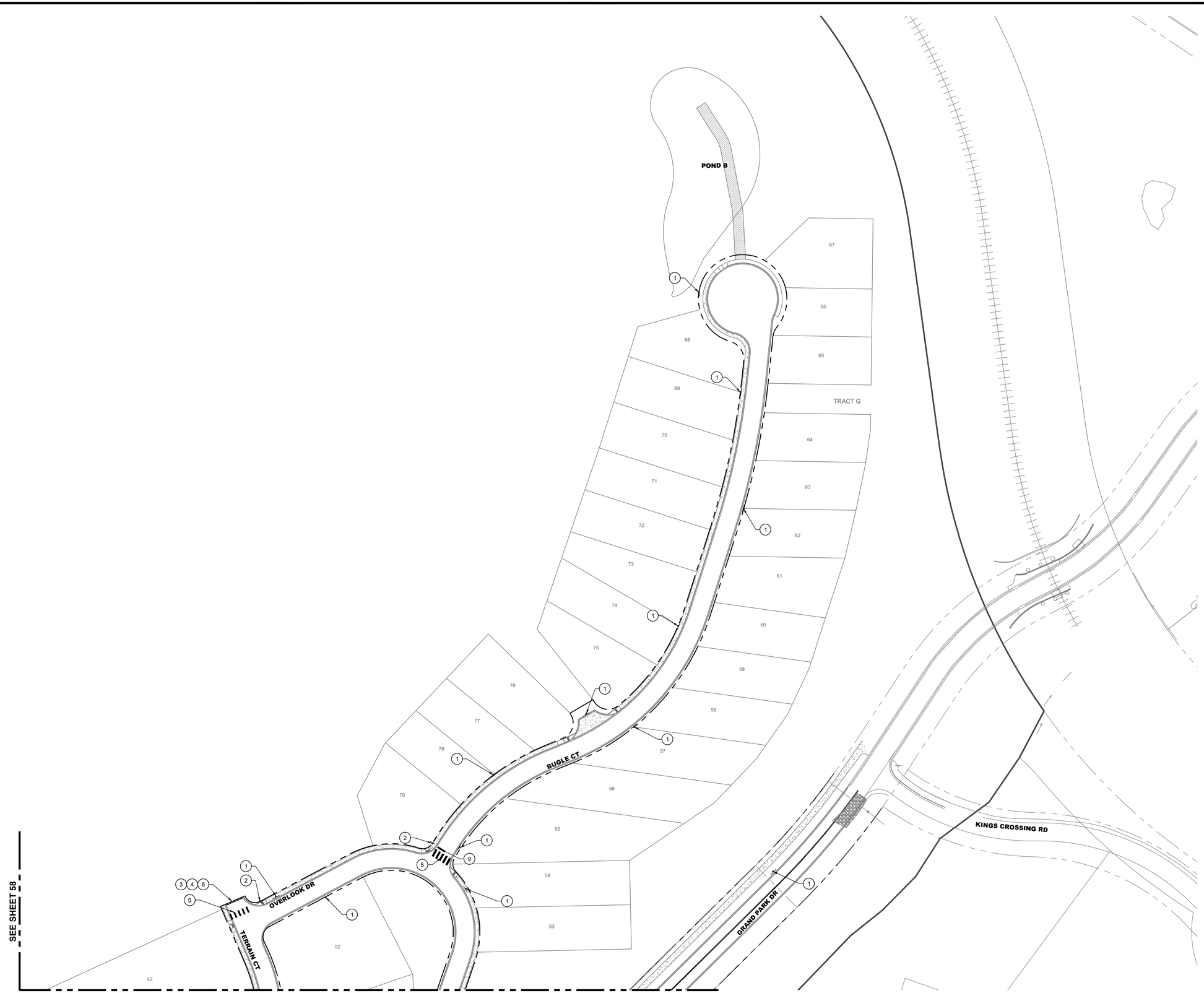
TOWN OF FRASER, COLORADO

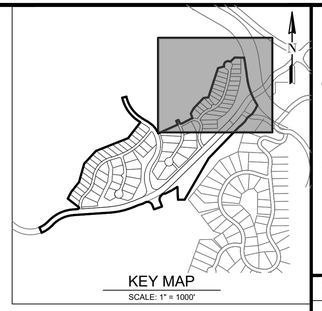
FINAL CONSTRUCTION PLANS
SIGNAGE & STRIPING PLAN (2 OF 3)

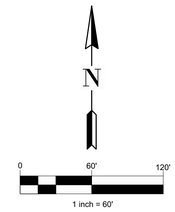
Know what's **below.** **Call** before you dig. 811

SHEET 58 OF 79

2/6/2026 4:33 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS SIGNAGE & STRIPING PLAN - F1 - 10W.DWG 2







LEGEND

1. NO PARKING SIGN (R7-1, 12"x18")
2. STOP SIGN W/ ROAD NAME (R1-1, 30"X30")
3. END OF ROAD SIGN (OM4-1, 30"X30")
4. ROAD CLOSED SIGN (R11-2, 48"X30")
5. 8'X2' PEDESTRIAN CROSSWALK STRIPING
6. TYPE III BARRICADE
7. 6" DOUBLE SOLID YELLOW LINE
8. SPEED LIMIT SIGN (R2-1, 24" X30")
9. STOP BAR

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

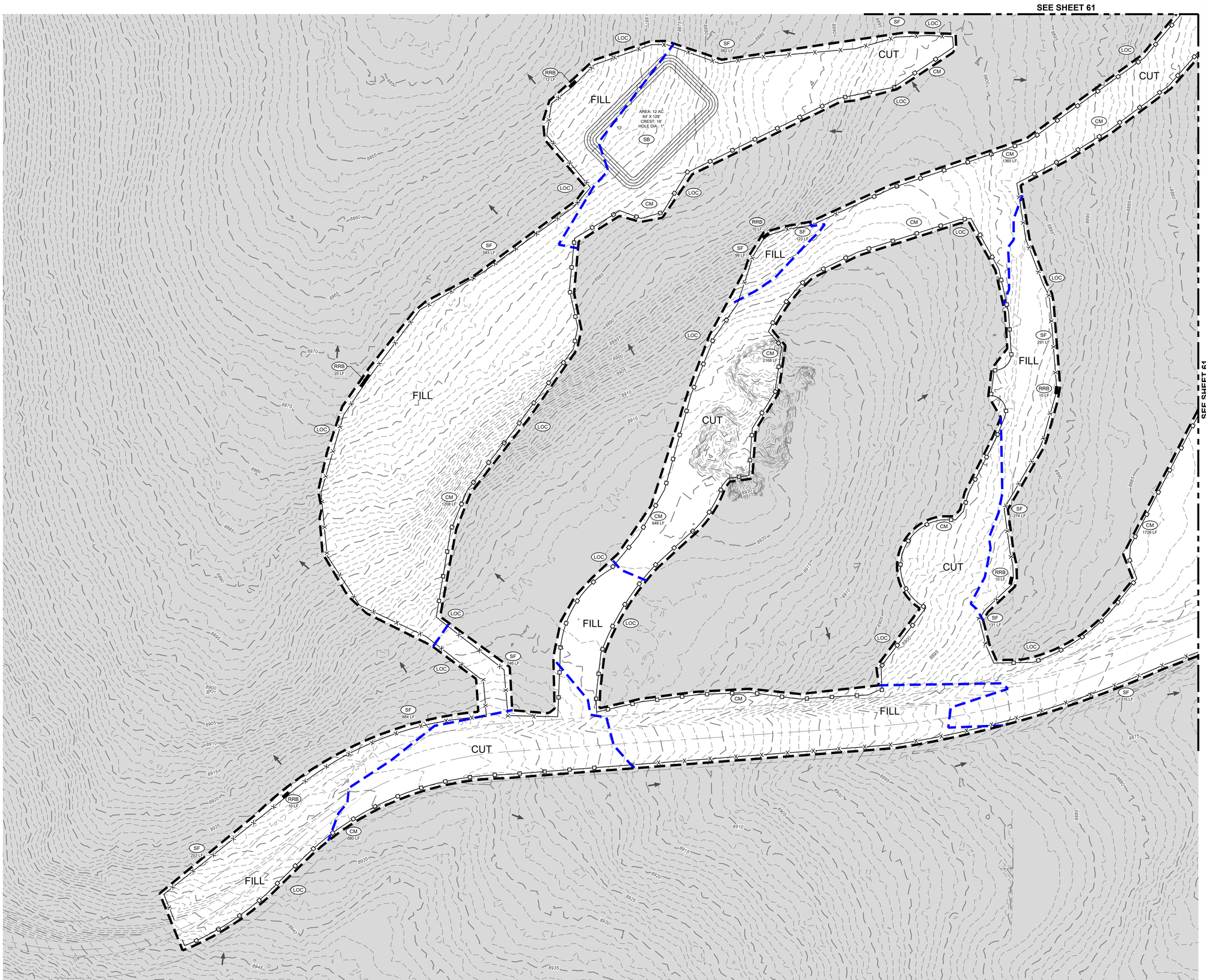
TOWN OF FRASER, COLORADO

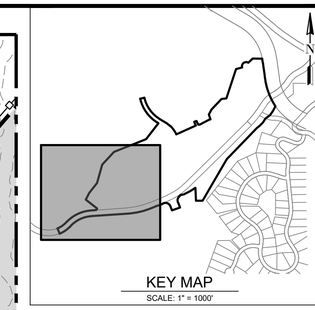
FINAL CONSTRUCTION PLANS
SIGNAGE & STRIPING PLAN (3 OF 3)

Know what's **below.** **Call** before you dig. 811

SHEET
59 OF 79

2/6/2026 4:33 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS SIGNAGE & STRIPING PLAN - F1 - 10W.DWG 3





N

0 60' 120'

1 inch = 60'

LEGEND

- OUTSIDE LIMITS OF CONSTRUCTION
- CWA CONCRETE WASHOUT AREA
- CM CONSTRUCTION MARKER
- CS CURB SOCK / ROCK SOCK
- DD DIVERSION DITCH
- ECB EROSION CONTROL BLANKET
- IP INLET PROTECTION
- RRB REINFORCED ROCK BERM
- RRC REINFORCED ROCK BERM FOR CULVERT PROTECTION
- SB TEMPORARY SEDIMENT BASIN
- SCL SEDIMENT CONTROL LOG
- SF SILT FENCE
- SM SEEDING AND MULCHING
- SSA STABILIZED STAGING AREA
- VTC VEHICLE TRACKING CONTROL
- LOC LIMITS OF CONSTRUCTION
- CUT / FILL BOUNDARY

NOTES:

1. SEE SHEETS 75-79 FOR GESC DETAILS.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

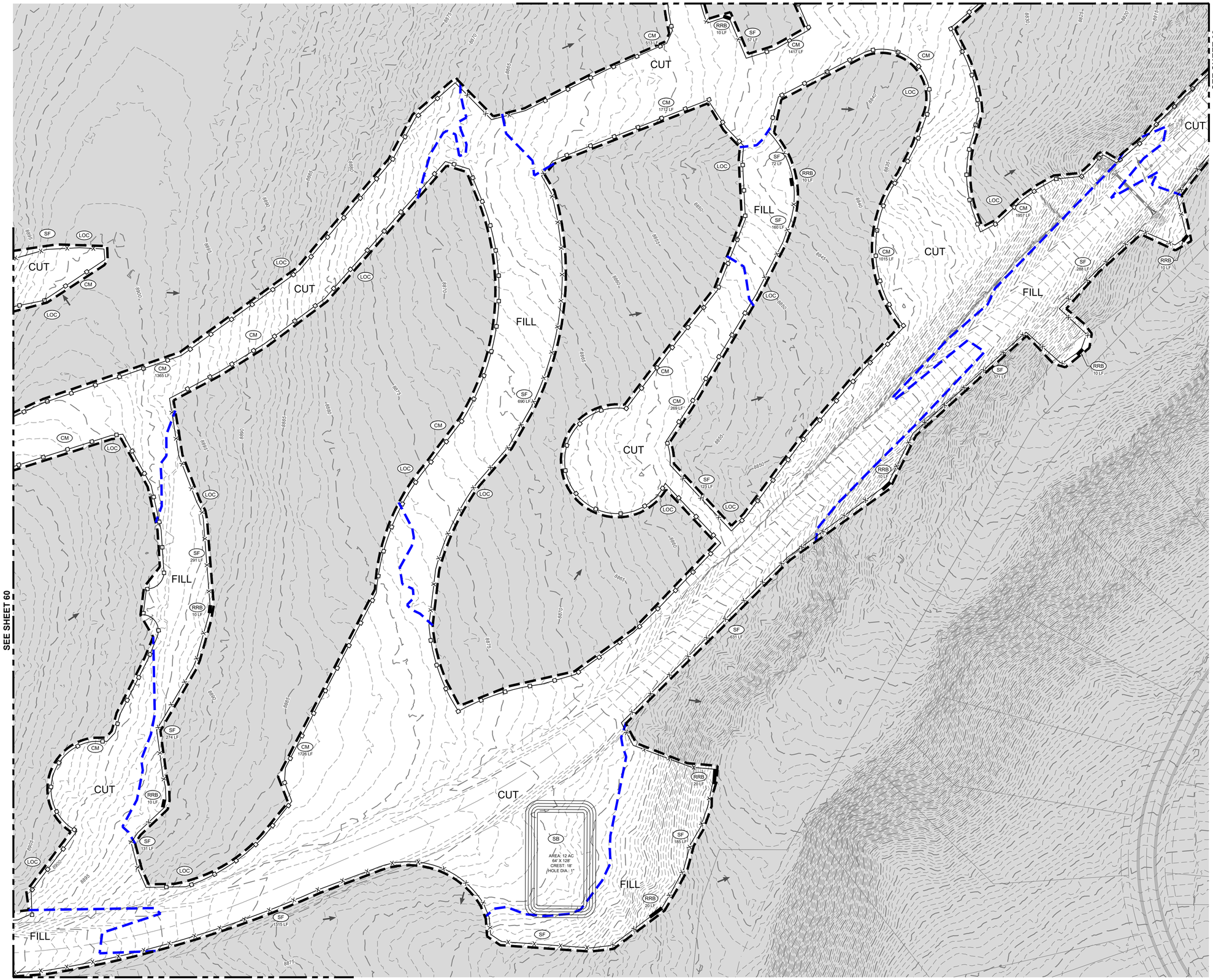
GRAND PARK - FILING NO. 1

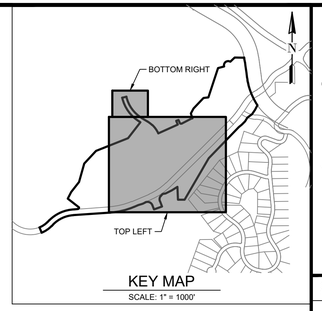
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
GESC INITIAL (1 OF 3)

Know what's below. Call before you dig.
811

2/6/2026 4:33 PM, X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS GESC - INITIAL - F1 - 10W.DWG 1





KEY MAP
SCALE: 1" = 1000'

N

0 60' 120'

1 inch = 60'

LEGEND

- OUTSIDE LIMITS OF CONSTRUCTION
- CWA — CONCRETE WASHOUT AREA
- CM — CONSTRUCTION MARKER
- CS — CURB SOCK / ROCK SOCK
- DD — DIVERSION DITCH
- ECB — EROSION CONTROL BLANKET
- IP — INLET PROTECTION
- RRB — REINFORCED ROCK BERM
- RRC — REINFORCED ROCK BERM FOR CULVERT PROTECTION
- SB — TEMPORARY SEDIMENT BASIN
- SCL — SEDIMENT CONTROL LOG
- SF — SILT FENCE
- SM — SEEDING AND MULCHING
- SSA — STABILIZED STAGING AREA
- VTC — VEHICLE TRACKING CONTROL
- LOC — LIMITS OF CONSTRUCTION
- CUT / FILL BOUNDARY

NOTES:

1. SEE SHEETS 75-79 FOR GESC DETAILS.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

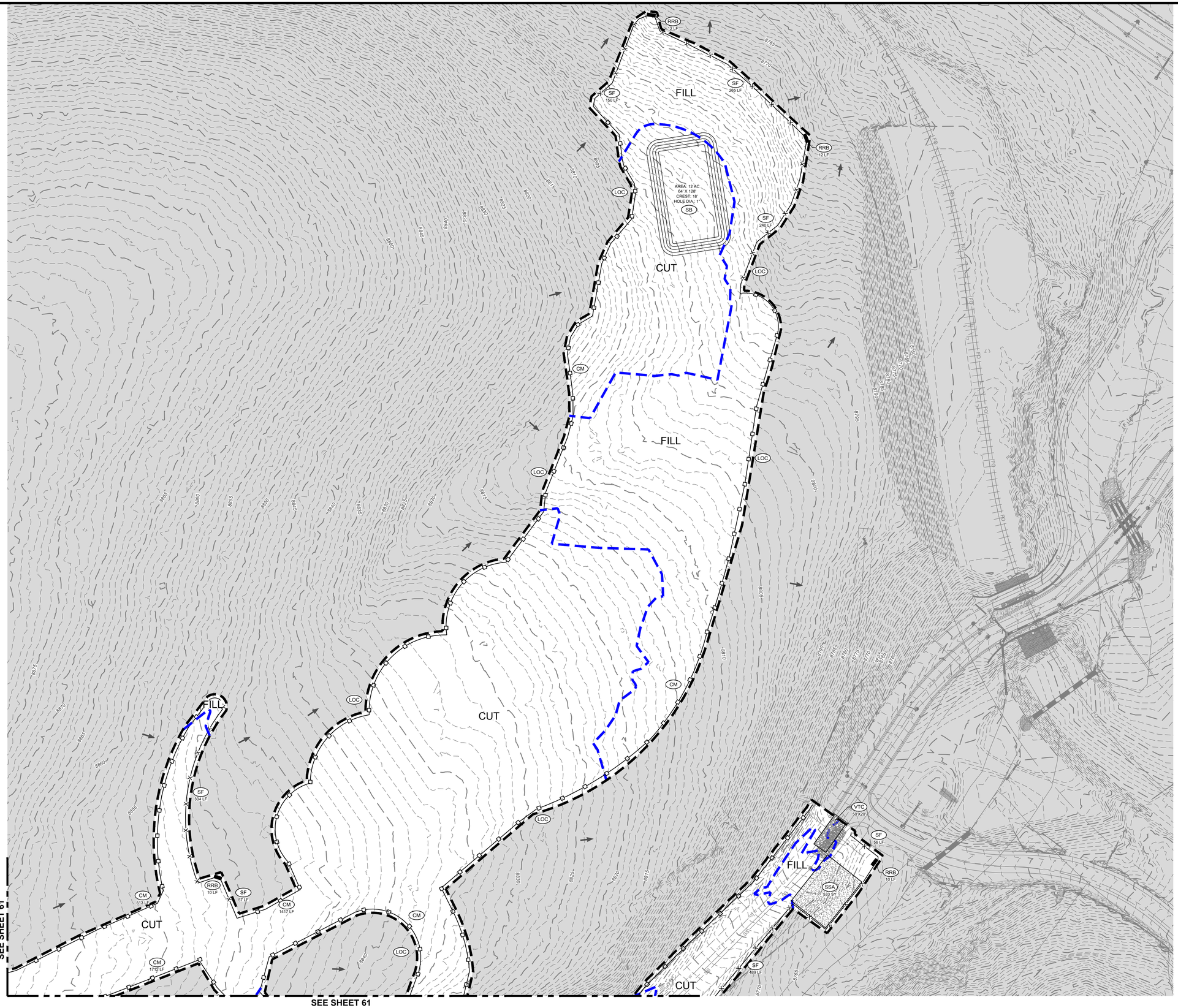
TOWN OF FRASER, COLORADO

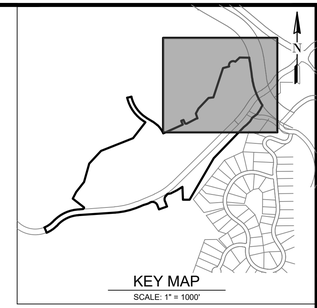
FINAL CONSTRUCTION PLANS
GESC INITIAL (2 OF 3)

Know what's below. Call before you dig. 811

SHEET
61 OF 79

2/6/2026 4:33 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10'\FINAL PLANS GESC - INITIAL - F1 - 10'\! DWG 2





N

0 60' 120'

1 inch = 60'

LEGEND

- OUTSIDE LIMITS OF CONSTRUCTION
- CWA — CONCRETE WASHOUT AREA
- CM — CONSTRUCTION MARKER
- CS — CURB SOCK / ROCK SOCK
- DD — DIVERSION DITCH
- ECB — EROSION CONTROL BLANKET
- IP — INLET PROTECTION
- RRB — REINFORCED ROCK BERM
- RRC — REINFORCED ROCK BERM FOR CULVERT PROTECTION
- SB — TEMPORARY SEDIMENT BASIN
- SCL — SEDIMENT CONTROL LOG
- SF — SILT FENCE
- SM — SEEDING AND MULCHING
- SSA — STABILIZED STAGING AREA
- VTC — VEHICLE TRACKING CONTROL
- LOC — LIMITS OF CONSTRUCTION
- CUT / FILL BOUNDARY

NOTES:

1. SEE SHEETS 75-79 FOR GESC DETAILS.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

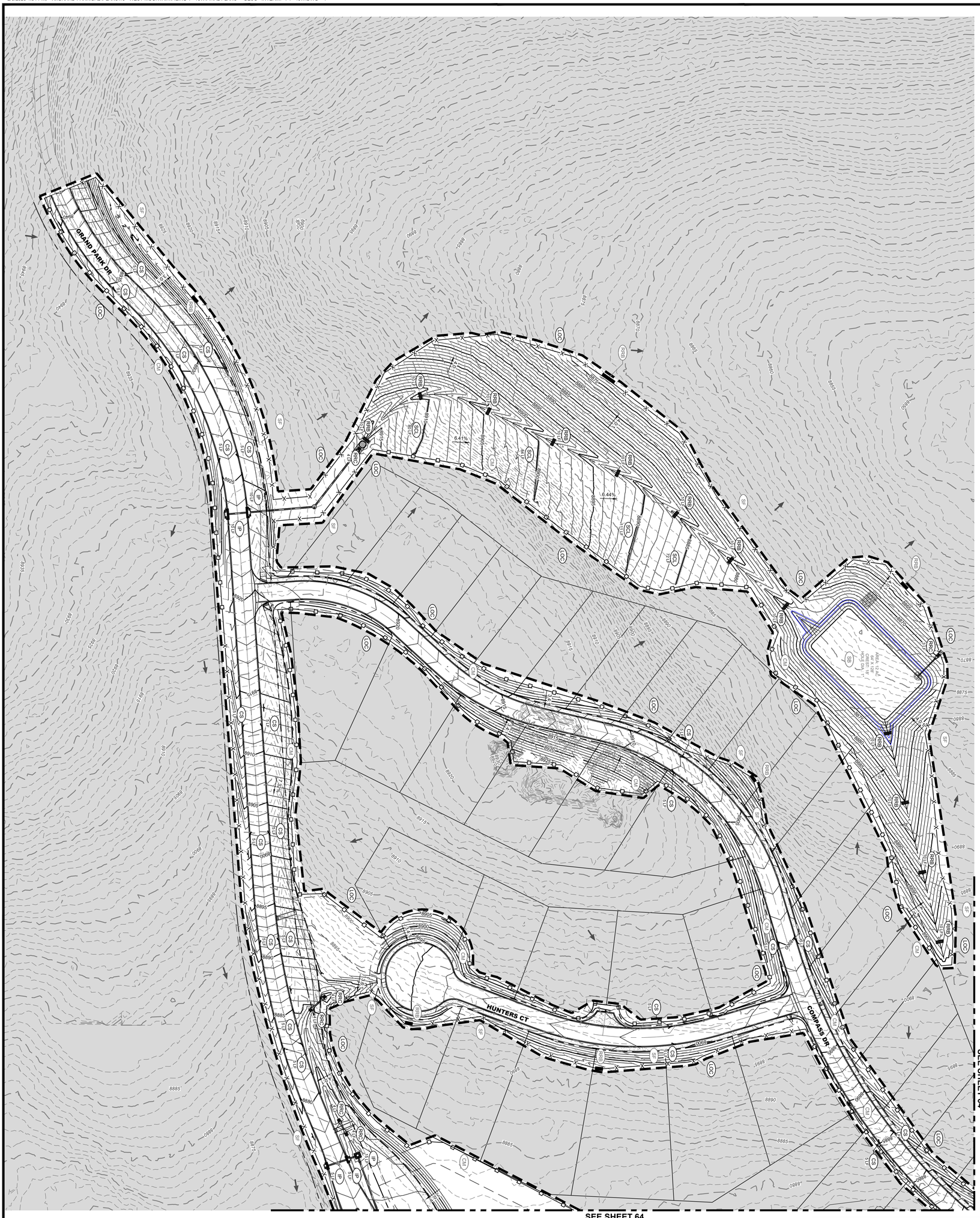
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
GESC INITIAL (3 OF 3)

Know what's **below.** **Call** before you dig. 811

SHEET
62 OF 79

2/6/2026 4:34 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10%\FINAL PLANS GESC - INITIAL_F1 - 10%.DWG 3



NOTES:

1. SEE SHEETS 75-79 FOR GESC DETAILS.

LEGEND

- LOC — LIMITS OF CONSTRUCTION
- VTC — VEHICLE TRACKING CONTROL
- SSA — STABILIZED STAGING AREA
- SM — SEEDING AND MULCHING
- SF — SILT FENCE
- SCL — SEDIMENT CONTROL LOG
- SB — TEMPORARY SEDIMENT BASIN
- RRC — REINFORCED ROCK BERM FOR CULVERT PROTECTION
- RRB — REINFORCED ROCK BERM
- IP — INLET PROTECTION
- ECB — EROSION CONTROL BLANKET
- DD — DIVERSION DITCH
- CS — CURB SOCK / ROCK SOCK
- CM — CONSTRUCTION MARKER
- CWA — CONCRETE WASHOUT AREA
- OUTSIDE LIMITS OF CONSTRUCTION

1 inch = 60'

0 60' 120'

KEY MAP
SCALE: 1" = 1000'

811 Know what's below. Call before you dig.

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
GESC INTERIM (1 OF 3)

NOT FOR CONSTRUCTION

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

SEE SHEET 65

SEE SHEET 63

SEE SHEET 63

COMPASS DR

TERRAIN CT

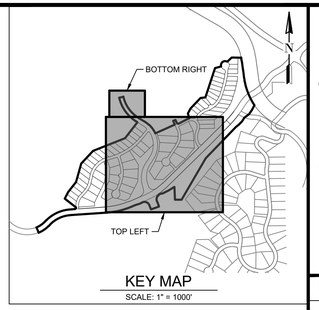
OVERLOOK DR

OUTPOST CLUB DR

HUNTERS CT

GRAND PARK DR

LELAND CREEK CT



KEY MAP

SCALE: 1" = 1000'

N

0 60' 120'

1 inch = 60'

LEGEND

- OUTSIDE LIMITS OF CONSTRUCTION
- CWA — CONCRETE WASHOUT AREA
- CM — CONSTRUCTION MARKER
- CS — CURB SOCK / ROCK SOCK
- DD — DIVERSION DITCH
- ECB — EROSION CONTROL BLANKET
- IP — INLET PROTECTION
- RRB — REINFORCED ROCK BERM
- RRC — REINFORCED ROCK BERM FOR CULVERT PROTECTION
- SB — TEMPORARY SEDIMENT BASIN
- SCL — SEDIMENT CONTROL LOG
- SF — SILT FENCE
- SM — SEEDING AND MULCHING
- SSA — STABILIZED STAGING AREA
- VTC — VEHICLE TRACKING CONTROL
- LOC — LIMITS OF CONSTRUCTION

NOTES:

1. SEE SHEETS 75-79 FOR GESC DETAILS.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

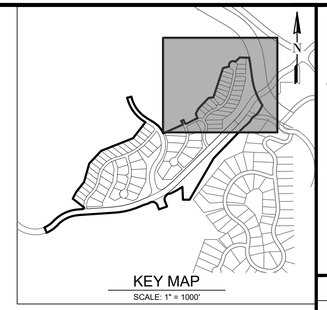
FINAL CONSTRUCTION PLANS
GESC INTERIM (2 OF 3)

Know what's below. Call before you dig. 811

SHEET 64 OF 79

2/6/2026 4:34 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10%\FINAL PLANS GESC - INTERIM - F1 - 10%.DWG 2





N

0 60' 120'

1 inch = 60'

LEGEND

- OUTSIDE LIMITS OF CONSTRUCTION
- CWA — CONCRETE WASHOUT AREA
- CM — CONSTRUCTION MARKER
- CS — CURB SOCK / ROCK SOCK
- DD — DIVERSION DITCH
- ECB — EROSION CONTROL BLANKET
- IP — INLET PROTECTION
- RRB — REINFORCED ROCK BERM
- RRC — REINFORCED ROCK BERM FOR CULVERT PROTECTION
- SB — TEMPORARY SEDIMENT BASIN
- SCL — SEDIMENT CONTROL LOG
- SF — SILT FENCE
- SM — SEEDING AND MULCHING
- SSA — STABILIZED STAGING AREA
- VTC — VEHICLE TRACKING CONTROL
- LOC — LIMITS OF CONSTRUCTION

NOTES:

1. SEE SHEETS 75-79 FOR GESC DETAILS.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
GESC INTERIM (3 OF 3)

Know what's **below.** **Call** before you dig. 811

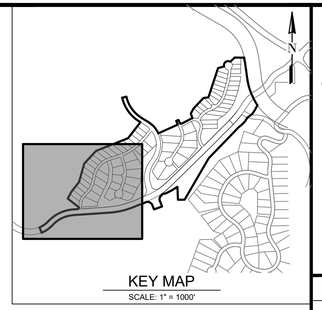
SHEET 65 OF 79

2/6/2026 4:35 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS GESC - INTERIM - F1 - 10W.DWG 3

SEE SHEET 67

SEE SHEET 67





N

0 60' 120'

1 inch = 60'

LEGEND

- OUTSIDE LIMITS OF CONSTRUCTION
- CWA — CONCRETE WASHOUT AREA
- CM — CONSTRUCTION MARKER
- CS — CURB SOCK / ROCK SOCK
- DD — DIVERSION DITCH
- ECB — EROSION CONTROL BLANKET
- IP — INLET PROTECTION
- RRB — REINFORCED ROCK BERM
- RRC — REINFORCED ROCK BERM FOR CULVERT PROTECTION
- SB — TEMPORARY SEDIMENT BASIN
- SCL — SEDIMENT CONTROL LOG
- SF — SILT FENCE
- SM — SEEDING AND MULCHING
- SSA — STABILIZED STAGING AREA
- VTC — VEHICLE TRACKING CONTROL
- LOC — LIMITS OF CONSTRUCTION

NOTES:

1. SEE SHEETS 75-79 FOR GESC DETAILS.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

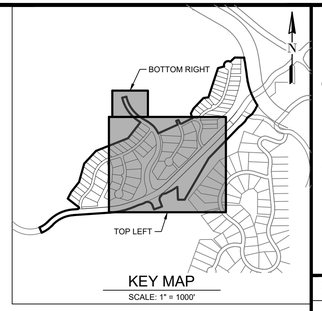
FINAL CONSTRUCTION PLANS
GESC FINAL (1 OF 3)

Know what's **below.** **Call** before you dig. 811

SHEET
66 OF 79

2/6/2026 4:35 PM, X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS GESC_FINAL_F1 - 10W.DWG 1





KEY MAP
SCALE: 1" = 1000'

N

0 60' 120'

1 inch = 60'

LEGEND

- OUTSIDE LIMITS OF CONSTRUCTION
- CWA CONCRETE WASHOUT AREA
- CM CONSTRUCTION MARKER
- CS CURB SOCK / ROCK SOCK
- DD DIVERSION DITCH
- ECB EROSION CONTROL BLANKET
- IP INLET PROTECTION
- RRB REINFORCED ROCK BERM
- RRC REINFORCED ROCK BERM FOR CULVERT PROTECTION
- SB TEMPORARY SEDIMENT BASIN
- SCL SEDIMENT CONTROL LOG
- SF SILT FENCE
- SM SEEDING AND MULCHING
- SSA STABILIZED STAGING AREA
- VTC VEHICLE TRACKING CONTROL
- LOC LIMITS OF CONSTRUCTION

NOTES:

1. SEE SHEETS 75-79 FOR GESC DETAILS.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

TOWN OF FRASER, COLORADO

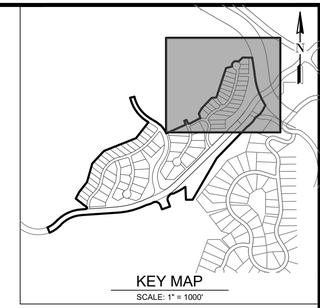
FINAL CONSTRUCTION PLANS
GESC FINAL (2 OF 3)

Know what's below. Call before you dig. 811

SHEET 67 OF 79

2/6/2026 4:35 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10'\FINAL PLANS GESC - FINAL - F1 - 10W.DWG 2





N

0 60' 120'

1 inch = 60'

LEGEND

- OUTSIDE LIMITS OF CONSTRUCTION
- CWA — CONCRETE WASHOUT AREA
- CM — CONSTRUCTION MARKER
- CS — CURB SOCK / ROCK SOCK
- DD — DIVERSION DITCH
- ECB — EROSION CONTROL BLANKET
- IP — INLET PROTECTION
- RRB — REINFORCED ROCK BERM
- RRC — REINFORCED ROCK BERM FOR CULVERT PROTECTION
- SB — TEMPORARY SEDIMENT BASIN
- SCL — SEDIMENT CONTROL LOG
- SF — SILT FENCE
- SM — SEEDING AND MULCHING
- SSA — STABILIZED STAGING AREA
- VTC — VEHICLE TRACKING CONTROL
- LOC — LIMITS OF CONSTRUCTION

NOTES:

1. SEE SHEETS 75-79 FOR GESC DETAILS.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1

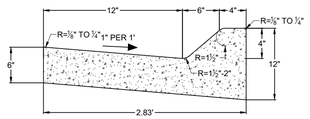
TOWN OF FRASER, COLORADO

FINAL CONSTRUCTION PLANS
GESC FINAL (3 OF 3)

Know what's below. Call before you dig. 811

SHEET 68 OF 79

2/6/2026 4:35 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS GESC - FINAL - F1 - 10W.DWG 3

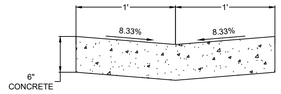


MODIFIED TOWN OF FRASER
MOUNTABLE CATCH CURB

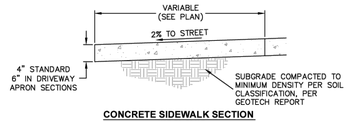
1. IF A SIDEWALK IS PLACED BEHIND THE CURB BUT IS NOT PLACED MONOLOTHICALLY, EXPANSION JOINT MATERIAL AND A SILICONE BASE SEALER MUST BE APPLIED BETWEEN THE SIDEWALK AND THE CURB.

2. GUTTER THICKNESS SHALL BE INCREASE TO MATCH CONCRETE PAVEMENT THICKENSS.

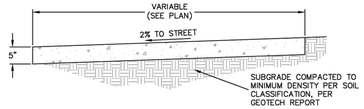
3. TOWN OF FRASER ATTACHMENT A-11 HAS BEEN MODIFIED TO A 4" CURB HEIGHT AND A 2' PAN.



2' VALLEY PAN



CONCRETE SIDEWALK SECTION
NOT TO SCALE



DETACHED TRAIL SECTION
NOT TO SCALE

TRAIL SURFACING SHALL BE CONSTRUCTED OF EITHER CONCRETE OR ASPHALT. ALTERNATE SURFACE MATERIAL MAY BE CONSIDERED BY THE TOWN.

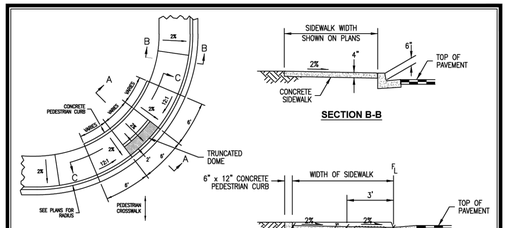
GENERAL NOTES

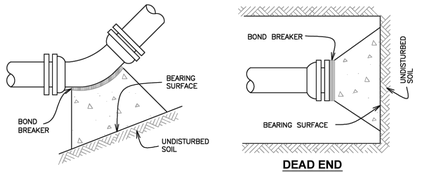
EXPANSION JOINTS SHALL BE INSTALLED WHEN ABUTTING EXISTING CONCRETE OR FIXED STRUCTURE. EXPANSION JOINT MATERIAL SHALL BE 1/2 IN. THICK AND SHALL EXTEND THE FULL DEPTH OF CONTACT SURFACE. EXPANSION JOINT SHALL BE PLACED EVERY ONE HUNDRED (100) FEET MEASURED ALONG THE SIDEWALK (OR CONCRETE TRAIL) AND AT ALL CHANGES IN DIRECTION.

Sidewalks and Trails

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

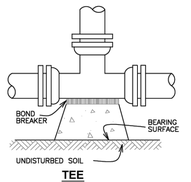
Town of Fraser
Attachment A-13 **Revised January 2015**


A
B
C
2%
5'
4'
4'
4

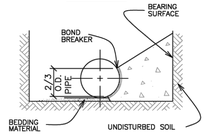


11 ¼°, 22 ½°, 45° AND 90° BENDS

DEAD END



TEE



TYPICAL CROSS SECTION

MINIMUM BEARING SURFACE AREA
(IN SQUARE FEET)

SIZE OF PIPE	BENDS				TEE OR DEAD END
	11¼°	22½°	45°	90°	
6"	1.00	1.25	2.25	5.70	3.00
8"	1.00	2.00	4.00	10.20	5.25
10"	1.75	3.25	6.50	15.60	8.25
12"	2.25	4.50	8.75	22.40	11.25
14"	3.00	6.00	11.75	30.50	15.25
16"	3.75	7.50	14.50	33.70	19.00
18"	4.50	8.75	17.00	42.70	22.00
20"	5.00	10.00	19.50	52.70	25.00

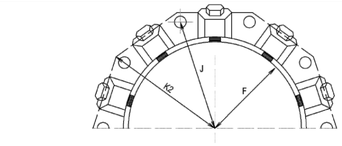
NOTES:

1. BEARING SURFACES SHOWN IN CHART ARE MINIMUM.
2. BASED ON 150 PSI INTERNAL PIPE PRESSURE PLUS WATER HAMMER. 4",6",8" AND 12" WATER HAMMER = 110 P.S.I. 16",20" AND 24" WATER HAMMER = 70 P.S.I.
3. BASED ON UNDISTURBED SOIL 3,000 PSF BEARING CAPACITY AND VERTICAL BEARING SURFACES.
4. FOR HORIZONTAL PIPE FORCES.

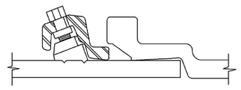
Concrete Thrustblocks

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

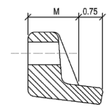
Town of Fraser
Attachment A-20 **Revised January 2015**



DIP MECHANICAL JOINT RESTRAINT



WEDGE DETAIL



BOLT HOLE DETAIL

DIMENSIONS

	NOMINAL PIPE SIZE	NO. OF BOLTS	NO. OF WEDGES	K2 INCHES	J INCHES	F INCHES	M INCHES
D I P	6"	6	3	11.12	9.50	7.00	0.88
	8"	6	4	13.37	11.75	9.15	1.00
	10"	8	6	15.62	14.00	11.20	1.00
	12"	8	8	17.88	16.25	13.30	1.25

DIP NOTES:

1. AS MANUFACTURED BY EBBA IRON INC. (SERIES 1100 AND BELL JOINT SERIES 1700)
2. DIMENSIONS FOR 16" AND 20" D.I. PIPE NOT SHOWN.
3. OTHER MECHANICAL JOINT RESTRAINT DEVICES MUST BE APPROVED BEFORE INSTALLATION.

C-900/905 NOTES:

1. AS MANUFACTURED BY SMITH BLAIR (BELL JOINT LEAK CLAMP 274). OR EBBA IRON INC. (SERIES 2000 AND BELL JOINT SERIES 1500)
2. DIMENSIONS FOR 16" AND 20" D.I. PIPE NOT SHOWN
3. OTHER MECHANICAL JOINT RESTRAINT DEVICES MUST BE APPROVED BEFORE INSTALLATION.

Mechanical Joint Restraint Details

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

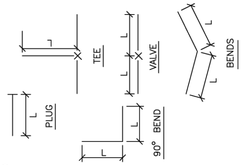
Town of Fraser
Attachment A-21 **Revised October 2024**

LENGTH OF RESTRAINED PIPE

PIPE SIZE		6"	8"	10"	12"	14"	16"	18"	20"
FITTING		L	L	L	L	L	L	L	L
90° BEND TEE, PLUG		45'	60'	74'	86'	98'	108'	120'	132'
VALVE		—	—	—	—	—	108'	120'	132'
45° BEND		13'	18'	22'	25'	29'	32'	36'	39'
22½° BEND		4'	5'	6'	7'	8'	8'	9'	10'
11¼° BEND		—	1'	2'	2'	2'	2'	3'	3'

NOTES:

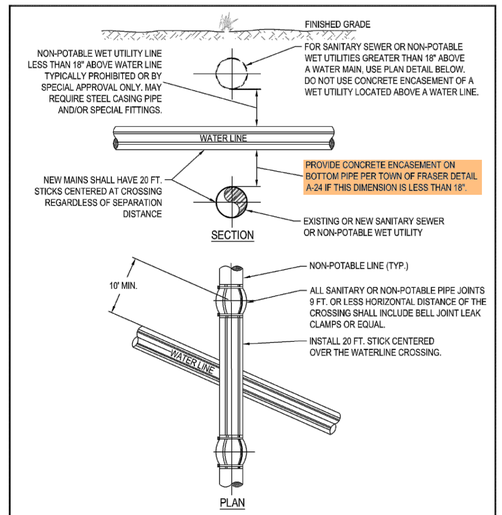
1) LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2) LENGTHS IN MEGALUGS NOT ALLOWED FOR 24" & LARGER PIPES.
3) D=DIAMETER, L=LENGTH, C=GRADE, M.S.=MILD STEEL, H.S.=HIGH STRENGTH.
4) BASED ON 150 PSI INTERNAL PRESSURE.
5) LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINED BEYOND THE FITTING. THE TOTAL LENGTH OF JOINT RESTRAINT FOR MEGALUGS, OR OTHER RESTRAINT SYSTEMS.
6) LENGTH OF RESTRAINED PIPE CHART IS ALSO FOR THE LENGTH OF JOINT RESTRAINT FOR MEGALUGS, OR OTHER RESTRAINT SYSTEMS.
7) CROSSES AND TEES MUST BE RESTRAINED IN ALL APPLICABLE DIRECTIONS.
8) 12" AND SMALLER RESTRAINED AS SPECIFIED WHEN USING A MECHANICAL JOINT RESTRAINT DEVICE ON EACH SIDE OF THE FITTING OR VALVE.
9) IF A VALVE IS WITHIN DISTANCE "L" OF A FITTING, THE VALVE MUST BE RESTRAINED AS WELL.
10) A SECOND VALVE WILL BE REQUIRED TO BE CLOSED WHEN EXCAVATING NEXT TO EXISTING VALVE.
11) E.J. PIPE SHALL BE FACTORY WRAPPED, TIE RODS ARE TO BE ENCLOSED INSIDE THE WRAP.



Length of Restrained Pipe

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-22 **Revised January 2015**

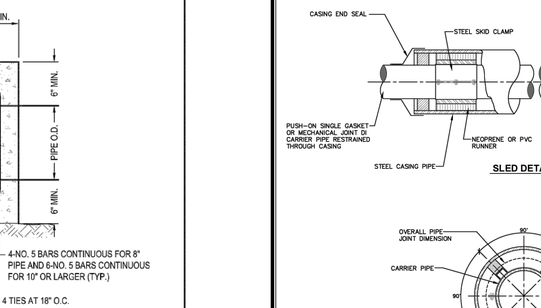


UTILITY ENCROACHMENT AND CROSSING PROTECTION METHODS VARY WIDELY DEPENDING ON NEW WATER VS. NEW SEWER INSTALLATION AND CROSSINGS VS PARALLEL ENCROACHMENTS. ALL WET UTILITY ENCROACHMENTS WITH POTABLE WATER MAINS SHOULD BE REVIEWED AND APPROVED BY THE TOWN PRIOR TO IMPLEMENTATION AND INSPECTED UPON COMPLETION.

Sewer Service Line Connection Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-23 **Revised October 2024**



PIPE ENCASEMENT DETAIL

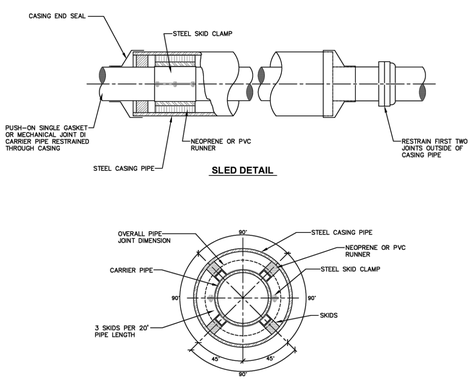
NOTE:

1. CONCRETE SHALL NOT BE LEANER THAN 1 CEMENT; 2-1/2 SAND; 5 STONE AND SHALL NOT HAVE LESS THAN 3,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. PLACE CONCRETE AGAINST EITHER SOLID FORMWORK OR UNDISTURBED SOIL.
3. USE ONLY IF SANITARY SEWER IS BELOW THE WATER LINE.
4. REINFORCEMENT REQUIRED ONLY WHERE ENCASEMENT PIPE REQUIRES BRIDGING CAPACITY OR IS UNDER A WATERWAY CROSSING. USE GR. 40 REINFORCING BARS.

Pipe Encasement Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-24 **Revised October 2024**

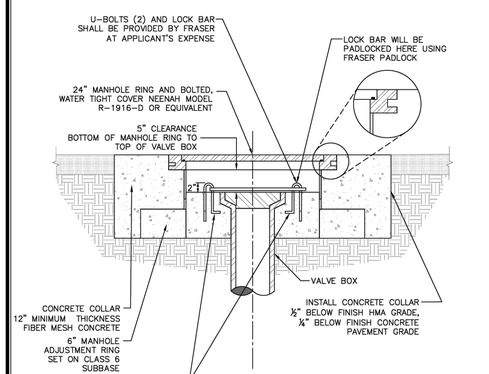


NOTE:
TRENCH LAID CASINGS SHALL BE DESIGNED AND INSTALLED TO CONDUIT STANDARDS.

Bore Casing Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

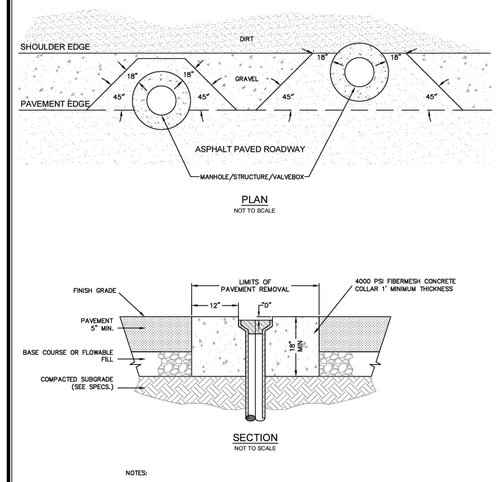
Town of Fraser
Attachment A-25 **Revised January 2015**



Locking Valve Box Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-26 **Revised January 2015**



NOTES:

1. "D" = 3" FOR H.M.A. PAVEMENT OVERLAYS OR SURFACE TREATMENTS
2. "D" = 7" FOR H.M.A. PAVEMENT RECONSTRUCTION OR NEW CONSTRUCTION
3. "D" = 7" FOR CONCRETE STREETS
4. THIS DETAIL APPLIES TO BOTH ASPHALT AND CONCRETE STREETS
5. RING AND COVER TO MATCH SLOPE OF FINISHED STREET

Manhole/Structure/Valve Box Placement -Shoulder Area

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-27 **Revised January 2015**

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

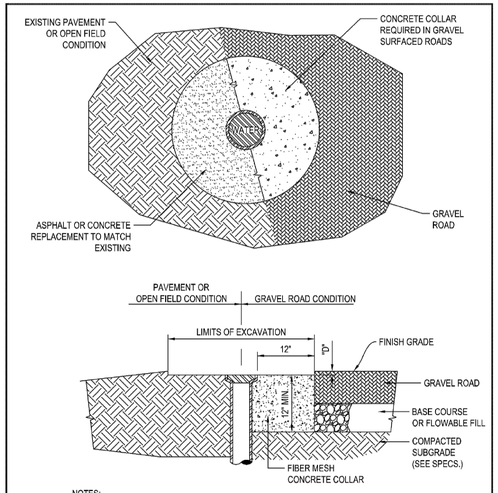
NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
DETAILS (2 OF 6)

Know what's below. Call before you dig. 811

SHEET 70 OF 79

2/6/2026 4:36 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS DETAILS - F1 - 16W.DWG 2

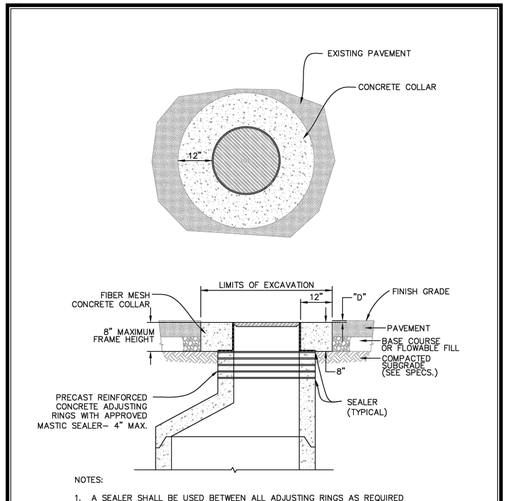


NOTES:
1. "D" = 1/2" FOR H.M.A. PAVEMENT OVERLAYS OR SURFACE TREATMENTS
2. "D" = 1/2" FOR H.M.A. PAVEMENT RECONSTRUCTION OR NEW CONSTRUCTION
3. "D" = 1/4" FOR CONCRETE STREETS
4. VALVE BOX MUST BE PLUMB AND CENTERED OVER THE VALVE NUT
5. THIS DETAIL APPLIES TO BOTH ASPHALT AND CONCRETE STREETS
6. USE FIBER MESH CONCRETE. NO REINFORCEMENT REBAR.

Valve Box Concrete Collar Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-28 **Revised October 2024**

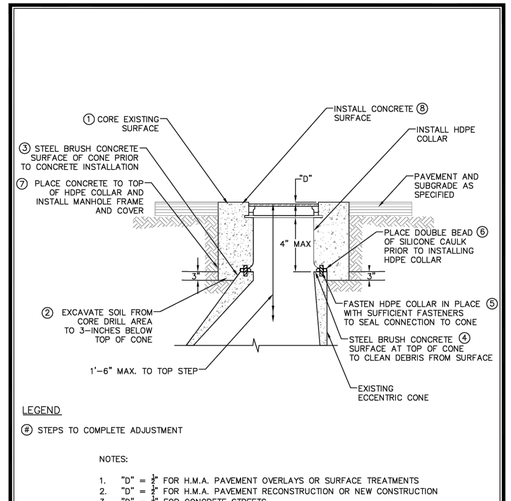


NOTES:
1. A SEALER SHALL BE USED BETWEEN ALL ADJUSTING RINGS AS REQUIRED
2. DROP–IN RISER RINGS NOT ALLOWED
3. SET AND TILT RING AND COVER TO MATCH SLOPE OF FINISHED STREET
4. "D" = 3/4" FOR H.M.A. PAVEMENT OVERLAYS OR SURFACE TREATMENTS
5. "D" = 3" FOR H.M.A. PAVEMENT RECONSTRUCTION OR NEW CONSTRUCTION
6. "D" = 1" FOR CONCRETE STREETS
7. THIS DETAIL APPLIES TO BOTH ASPHALT AND CONCRETE STREETS

Structure/Manhole Concrete Collar Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-29 **Revised January 2015**



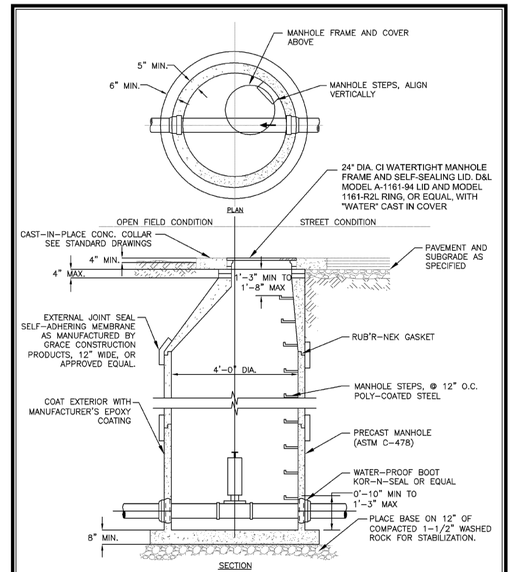
LEGEND
④ STEPS TO COMPLETE ADJUSTMENT

NOTES:
1. "D" = 3/4" FOR H.M.A. PAVEMENT OVERLAYS OR SURFACE TREATMENTS
2. "D" = 3" FOR H.M.A. PAVEMENT RECONSTRUCTION OR NEW CONSTRUCTION
3. "D" = 1" FOR CONCRETE STREETS
4. THIS DETAIL APPLIES TO BOTH ASPHALT AND CONCRETE STREETS
5. RING AND COVER TO MATCH SLOPE OF FINISHED STREET

Optional Manhole / Structure Adjustment Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-30 **Revised January 2015**

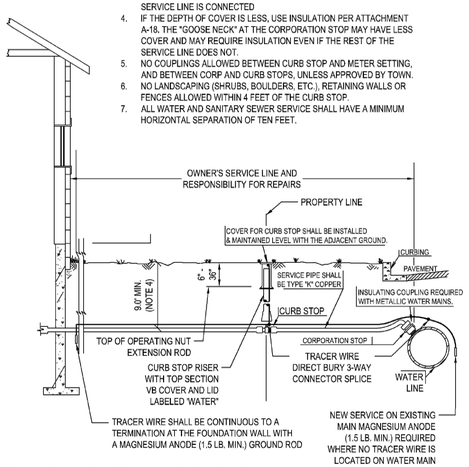


Air Release Valve Structure

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-31 **Revised October 2024**

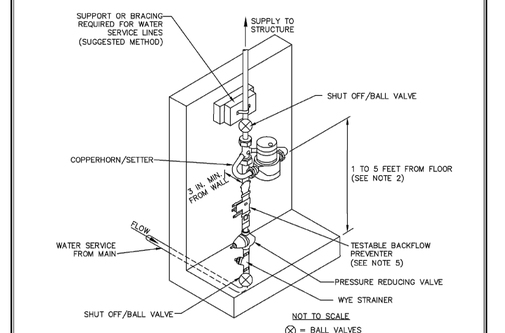
NOTES:
1. PLACEMENT OF CURB STOP IS TO BE ON THE PROPERTY/RIGHT-OF-WAY LINE (UNLESS OTHERWISE APPROVED).
2. OWNER'S RESPONSIBILITY FOR REPAIRS EXTENDS TO THE CORPORATION STOP AT THE WATER MAIN
3. TOWN OF FRASER IS NOT RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR DUE TO A LEAK ON A SERVICE LINE. THIS IS THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY TO WHICH THE SERVICE LINE IS CONNECTED
4. IF THE DEPTH OF COVER IS LESS, USE INSULATION PER ATTACHMENT A-18. THE "GOOSE NECK" AT THE CORPORATION STOP MAY HAVE LESS COVER AND MAY REQUIRE INSULATION EVEN IF THE REST OF THE SERVICE LINE DOES NOT.
5. NO COUPLINGS ALLOWED BETWEEN CURB STOP AND METER SETTING, AND BETWEEN CORP AND CURB STOPS, UNLESS APPROVED BY TOWN.
6. NO LANDSCAPING (SHRUBS, BOULDERS, ETC.), RETAINING WALLS OR FENCES ALLOWED WITHIN 4 FEET OF THE CURB STOP.
7. ALL WATER AND SANITARY SEWER SERVICE SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF TEN FEET.



Water Service Line and Curb Stop

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-34 **Revised October 2024**

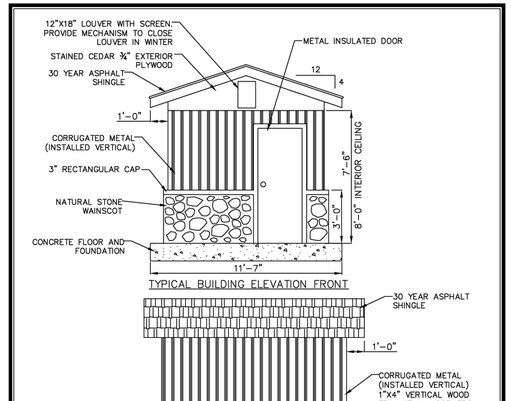


NOTES:
1. PROVIDE CLEAR AND UNOBSTRUCTED 4 FT. BY 4 FT. MINIMUM ACCESS TO THE METER ASSEMBLY.
2. ENTIRE METER ASSEMBLY SHALL NOT BE INSTALLED BELOW GRADE OR WHERE THE POTENTIAL FOR SUBMERSION EXISTS.
3. METER SHALL BE INSTALLED IN A HORIZONTAL POSITION WITH DISPLAY FACING UP.
4. WYE–STRAINER MUST BE INSTALLED IMMEDIATELY AFTER FIRST SHUT OFF VALVE.
5. BACKFLOW DEVICE TYPE SHALL BE DETERMINED BY HAZARD LEVEL AND CONFORM TO THE STANDARDS REFERENCED IN THE 2021 INTERNATIONAL PLUMBING CODE. ALL COMMERCIAL, INDUSTRIAL AND MIXED USE PROPERTIES SHALL HAVE A REDUCED PRESSURE ZONE BACKFLOW UNIT.
6. WATER METER SHALL BE OF A METRON–FARNIER DESIGN READABLE BY THE WATERSCOPE SYSTEM AND OF THE APPROPRIATE SIZE FOR ACCURATE MEASUREMENT OF FLOW.

Water Meter Assembly Installation

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND THE 2015 INTERNATIONAL PLUMBING CODE FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-35 **Revised October 2024**

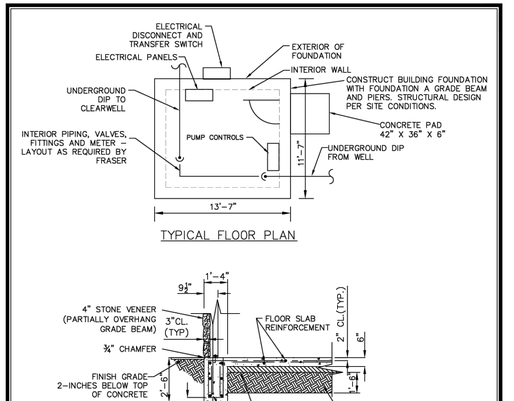


NOTES:
1. INTERIOR WALLS AND CEILING SHALL BE 3/4" EXTERIOR PLYWOOD PAINTED WHITE.
2. ALL WALLS AND CEILING SHALL BE INSULATED WITH R–19 FIBERGLASS, 23".
3. FRAMING SHALL BE 2" X 6" – 24" O.C. WOOD FRAMING.

Water Well Meter House Elevations

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-36 **Revised January 2015**



NOTES:
1. INTERIOR SHALL INCLUDE ONE FOUR BULB FLOURESCENT WITH LIGHT SWITCH, TWO SINGLE GANG OUTLETS, AND ONE 60" BASEBOARD HEATER WITH T–STAT; 120V.
2. INTERIOR COMPONENTS MAY BE REORIENTED TO FIT SITE, BUT SHALL BE ACCESSIBLE FROM ENTRY DOOR.

Water Well Meter House Floor Plan and Foundation

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-37 **Revised January 2015**

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

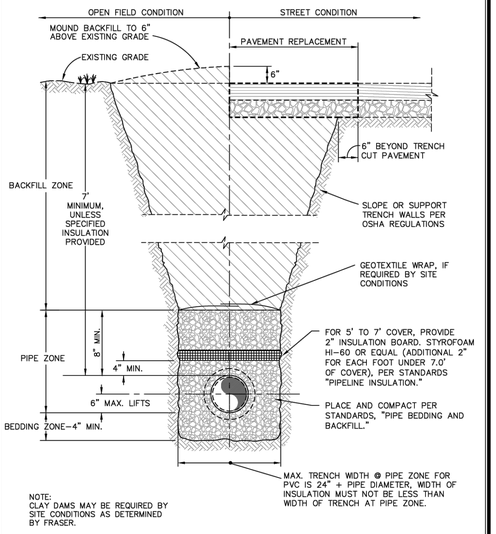
NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
DETAILS (3 OF 6)

Know what's below. Call before you dig. 811

SHEET 71 OF 79

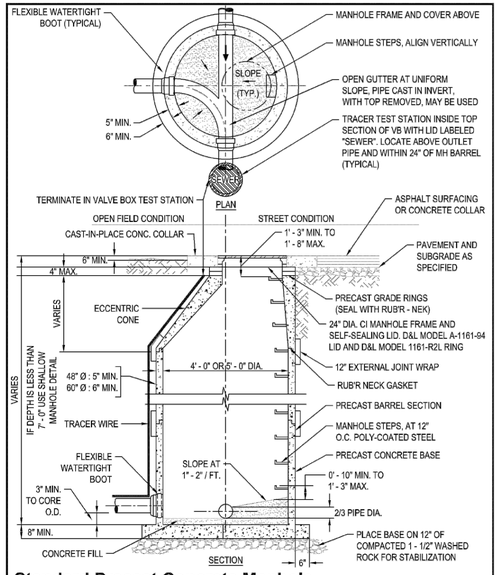
2/6/2026 4:36 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16\WF\FINAL PLANS DETAILS - F1 - 16W.DWG 3



Sewer Main and Service Line Bedding & Backfill Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

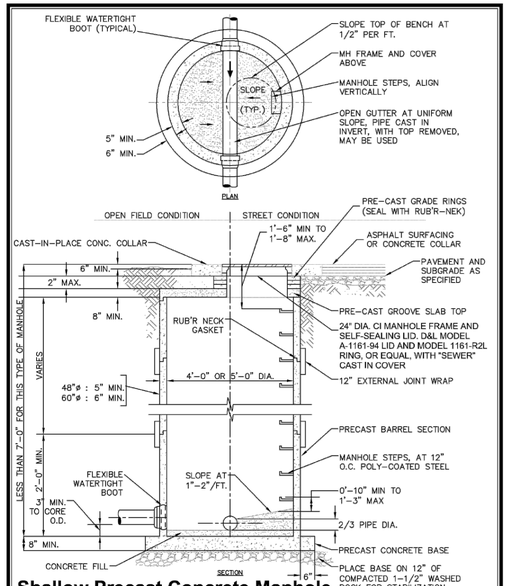
Town of Fraser
Attachment A-38 **Revised January 2015**



Standard Precast Concrete Manhole

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

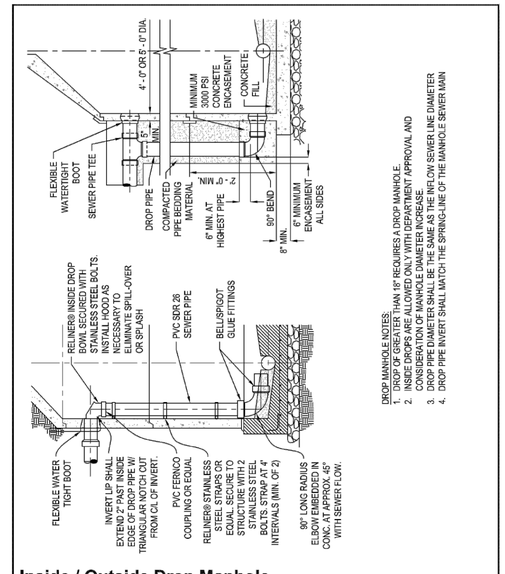
Town of Fraser
Attachment A-39 **Revised October 2024**



Shallow Precast Concrete Manhole

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

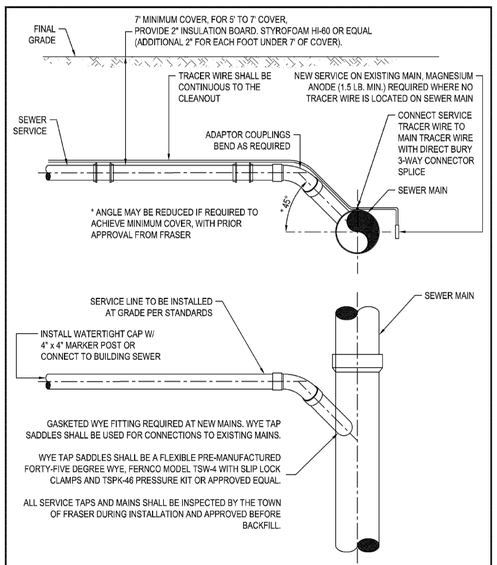
Town of Fraser
Attachment A-40 **Revised October 2024**



Inside / Outside Drop Manhole

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

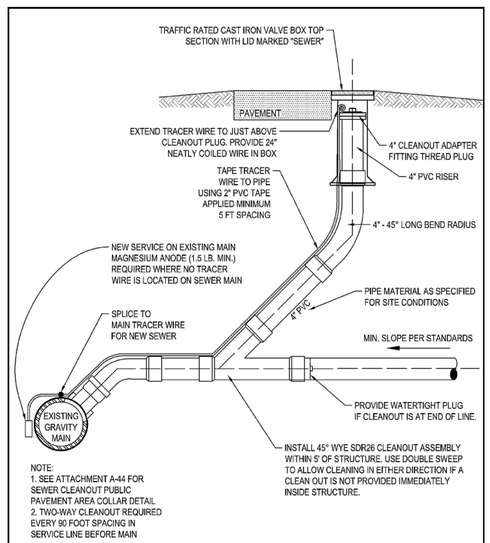
Town of Fraser
Attachment A-41 **Revised October 2024**



Sewer Service Line Connection Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

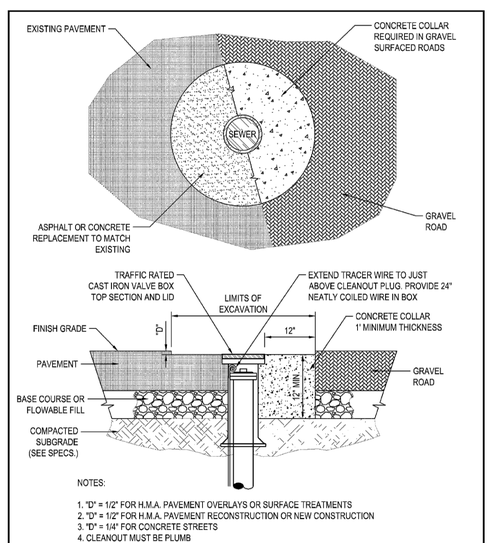
Town of Fraser
Attachment A-42 **Revised October 2024**



Sewer Service Line Cleanout Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-43 **Revised October 2024**

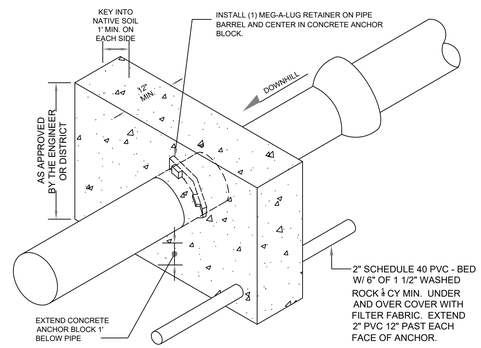


Sewer Cleanout Collar Detail - Public Pavement Location

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS. REFER TO TOWN OF FRASER MINIMUM DESIGN CRITERIA AND CONSTRUCTION STANDARDS FOR SPECIFIC MATERIAL AND INSTALLATION REQUIREMENTS.

Town of Fraser
Attachment A-44 **Revised October 2024**

CONCRETE ANCHOR FOR WATER MAINS IN STEEP SLOPES



NOTES:

1. HILLHOLDER PIPE ANCHORS REQUIRED ON SLOPES MORE THAN 20%.
2. SPACING EVERY 35' FOR SLOPES 20% TO 35%. ANCHOR SPACING EVERY 25' FOR SLOPES GREATER THAN 35%.
3. C900 PVC PIPE REQUIRED ON SLOPES OVER 20%.
4. LOCATE PIPE ANCHOR / SLOPE RETAINER ON DOWN HILL SIDE OF PIPE BELL WHEN PRACTICAL.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

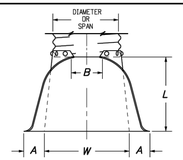
GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
DETAILS (4 OF 6)

Know what's below. Call before you dig. 811

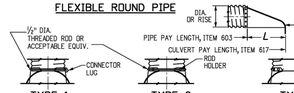
SHEET 72 OF 79

2/6/2026 4:36 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS DETAILS - F1 - 16W.DWG 4

PIPE DIA.	THICKNESS	DIMENSIONS					
		A	B	H	L	W	T
		IN.					
12	0.064	6	6	6	21	24	34
18	0.064	8	10	6	31	36	46
21	0.064	9	12	6	36	42	52
24	0.064	10	13	6	41	48	58
30	0.079	12	16	8	51	60	70
36	0.079	14	19	9	60	72	94
42	0.109	16	22	11	69	84	106
48	0.109	18	27	12	78	90	112
54	0.109	18	30	12	84	102	124
60	0.109	18	33	12	87	114	136
66	0.109	18	36	12	87	120	142
72	0.109	18	39	12	87	126	148
78	0.109	18	42	12	87	132	154
84	0.109	18	45	12	87	138	160



FLEXIBLE ROUND PIPE



PLAN VIEW

TYPE 1

FOR 18 IN. THRU 24 IN. ROUND PIPE WITH ANNULAR CORRUGATIONS. NOT TO BE USED ON HELICALLY-FORMED PIPE UNLESS RECORRUGATED.

TYPE 2

FOR 30 IN. THRU 36 IN. ROUND PIPE WITH ANNULAR CORRUGATIONS. NOT TO BE USED ON HELICALLY-FORMED PIPE UNLESS RECORRUGATED.

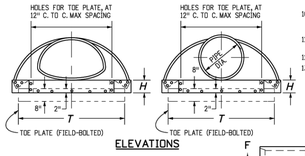
TYPE 3

FOR 42 IN. THRU 84 IN. ROUND PIPE WITH ANNULAR CORRUGATIONS AND ALL SIZES WITH HELICAL CORRUGATIONS AND FOR ALL METAL PIPE ARCH CULVERTS: SHOP ATTACH A 24 IN. MIN. LENGTH OF ANNULAR PIPE WITH GALV. RIVETS OR BOLTS, SPOT WELDS, OR 2 IN. LONG SKIP WELDS ON 8 IN. CTRS. REPAIR BURNT GALVANIZING IN ACCORDANCE WITH SUBSECTION 707.09.

TYPICAL CONNECTIONS

PIPE ARCH SPAN x RISE	THICK-NESS	DIMENSIONS					
		A (41°)	B (MAX.)	H (31°)	L (41.5°)	W (62°)	T
		IN.					
21 x 15	0.064	7	10	6	23	36	46
24 x 18	0.064	8	12	6	28	42	52
28 x 20	0.064	9	14	6	32	48	58
35 x 24	0.079	10	16	6	39	60	70
42 x 29	0.079	12	18	8	46	75	85
49 x 33	0.109	13	21	9	53	85	103
57 x 38	0.109	18	26	12	63	90	108
64 x 43	0.109	18	30	12	70	102	120
71 x 47	0.109	18	33	12	77	114	132

FLEXIBLE PIPE ARCH

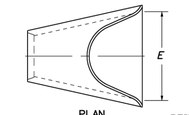


ELEVATIONS

GENERAL NOTES

1. DIMENSIONS OF END SECTIONS MAY VARY SLIGHTLY FROM THOSE SHOWN ON THE TABLES DUE TO DIFFERENT MANUFACTURERS' CONFIGURATIONS.
2. CONCRETE END SECTIONS SHALL BE FURNISHED WITH TONGUE OR GROOVE AS REQUIRED.
3. DESIGN LENGTH OF PIPE OR SIDE DRAIN IS BASED ON LENGTH OF END SECTION SHOWN IN TABLE. ANY ADDITIONAL PIPE REQUIRED TO PROVIDE THE DESIGN LENGTH SHALL BE FURNISHED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT.
4. THE INSIDE CONFIGURATION AND THE JOINT OF CONCRETE END SECTION AND PIPE SHALL MATCH.
5. END SECTIONS FOR CMP ARCH PIPE SHALL MATCH THE DIMENSIONS OF THE PIPE SHOWN ON THE PLANS.
6. GALVANIZED TOE PLATE AS SHOWN IS REQUIRED ON END SECTIONS FOR CORRUGATED STEEL PIPE AND SHALL BE THE SAME THICKNESS AS END SECTIONS. TOE PLATE SHALL BE FIELD-BOLTED TO END SECTION WITH ⅜" DIA. IN. GALVANIZED BOLTS, NUTS AND WASHERS.
7. GALVANIZED STEEL SHALL CONFORM TO AASHTO M 111, M 218 OR M 232.
8. FOR TYPE SD END SECTIONS, BARS SHALL BE FABRICATED FROM NPS-3 GALVANIZED STEEL SCHEDULE 40 PIPE WHICH SHALL CONFORM TO ASTM A 53.
9. FOR A TYPE SD END SECTION, THE INSTALLATION OF ALTERNATIVE 1 OR ALTERNATIVE 2 END SECTION SHALL BE THE CONTRACTOR'S OPTION.
10. CONCRETE PIPE JOINT FASTENERS, WHERE SHOWN ON PLANS, SHALL BE INSTALLED SO THAT A MINIMUM OF 15 LINEAR FEET OF THE OUTLET END OF THE PIPE ARE MECHANICALLY LOCKED TOGETHER. END SECTION LENGTHS WHEN USED, SHALL BE INCREASED IN THE 15 LF REQUIREMENT.
11. CONNECTIONS OF METAL END SECTIONS TO PLASTIC PIPE SHALL BE APPROVED BY THE ENGINEER. PLASTIC END SECTIONS SHALL NOT BE USED.
12. THE END SECTION STYLE, EITHER REGULAR OR SAFETY, SHALL BE AS SHOWN ON THE PLANS.
13. AT THE OPTION OF THE CONTRACTOR AND APPROVAL OF THE CDOT PROJECT ENGINNER, REINFORCED CONCRETE END SECTIONS MAY BE MADE WITH SYNTHETIC FIBERS INSTEAD OF STEEL FOR PIPES 36 INCHES IN DIAMETER AND SMALLER, AND CONFORM TO AASHTO M 86 AND SUBSECTION 601.03.

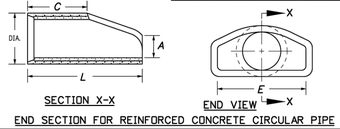
END SECTION AND CONNECTION DETAILS FOR ROUND AND ARCH METAL PIPES



PIPE I.D.	DIMENSIONS			
	A	C	L	E
	IN.			
18	10	48	78	36
24	10	48	78	48
30	14	36	96	60
36	18	36	96	72
42	24	36	96	78
48	28	24	96	84
54	30	36	96	90
60	36	36	96	96
72	34	20	96	108

PLAN

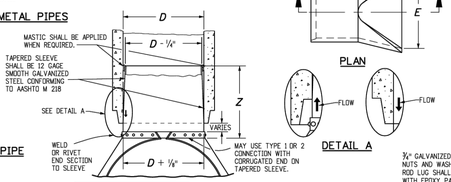
REINFORCED CONCRETE CIRCULAR PIPE



SECTION X-X

END VIEW

END SECTION FOR REINFORCED CONCRETE CIRCULAR PIPE



D	Z (MIN.)
IN.	
18 - 24	12
30 AND 36	16
42 AND LARGER	24

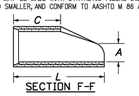
NOTE: METAL END SECTION SHALL BE FIRMLY WEDGED INTO PIPE END BEFORE BACKFILLING.

STEEL END SECTION FOR CONCRETE CIRCULAR PIPE

(ALTERNATIVE FOR CONCRETE END SECTION)

PLAN

DETAIL A



SECTION F-F

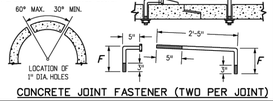
END VIEW

EQUIVALENT CIRCULAR DIA.	DIMENSIONS			
	NOMINAL SPAN x RISE	A	C	L	E
	IN.				
24	30 19	9	33	72	48
30	38 24	10	18	72	60
36	45 29	12	24	84	72
42	53 34	16	36	96	78
48	60 38	21	36	96	84
54	68 43	26	36	96	90
60	76 48	30	36	96	96

END SECTION FOR REINFORCED CONCRETE ELLIPTICAL PIPE

PIPE DIAMETER IN.	F
18 - 30	5
36 - 42	6
48 - 60	7
72 - 84	9

¾" GALVANIZED ANCHOR BOLTS, NUTS AND WASHERS, MILD STEEL, ASTM A 307. ROD LUG SHALL BE GALVANIZED OR COATED WITH EPOXY PAINT OR APPROVED EQUAL.



CONCRETE JOINT FASTENER (TWO PER JOINT)

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: JBK		Date:	Comments
Last Modification Date: 05/01/18 Initials: LTA	(ECX)	5/01/18	Added General Note 13.
Full Path: www.codot.gov/business/designsupport	(ECX)		
Drawing File Name: 6010100102.dgn	(ECX)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(ECX)		

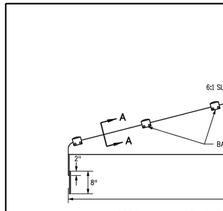
Colorado Department of Transportation
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
Division of Project Support JBK/LTA

CONCRETE AND METAL END SECTIONS

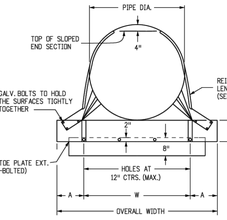
Issued By: Project Development Branch July 4, 2012

STANDARD PLAN NO. M-603-10

Sheet No. 1 of 2



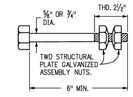
SIDE VIEW OF END SECTION - ALTERNATIVE 1



FRONT VIEW - ALTERNATIVE 1

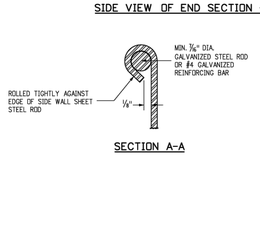
(BARS NOT SHOWN)

NOTE: ALL CUT OR WELDED SURFACES SHALL BE PROTECTED WITH ONE FULL BRUSH COAT OF ZINC RICH PAINT IN ACCORDANCE WITH SUBSECTION 707.09.



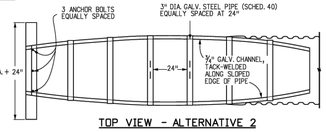
TYPICAL ANCHOR BOLT

(GALVANIZED)



SECTION A-A

ALTERNATIVE 1



TOP VIEW - ALTERNATIVE 2

END SECTIONS FOR CIRCULAR PIPES

PIPE DIA. (IN.)	MIN. THICK (IN.)	DIMENSION (IN.)						
		A	H	W	OVERALL WIDTH	SLOPE	LENGTH (L)	
15	.064	8	6	21	37	6:1	30	
18	.064	8	6	24	40	6:1	48	
21	.064	8	6	27	43	6:1	66	
24	.079	8	6	30	46	6:1	84	
30	.079	12	9	36	60	6:1	120	
36	.109	12	9	42	66	6:1	156	

TYPE SD END SECTIONS FOR SIDE DRAIN



BAR END DETAILS

(FOR ALTERNATIVE 1)



SIDE VIEW OF END SECTION - ALTERNATIVE 2

BAR END DETAIL

(FOR ALTERNATIVE 2)

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: JBK		Date:	Comments
Last Modification Date: 05/01/18 Initials: LTA	(ECX)		
Full Path: www.coddot.gov/business/designsupport	(ECX)		
Drawing File Name: 6030100202.dgn	(ECX)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(ECX)		

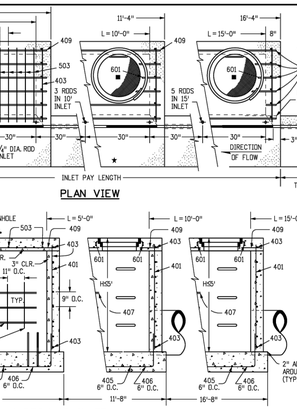
Colorado Department of Transportation
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
Division of Project Support JBK/LTA

CONCRETE AND METAL END SECTIONS

Issued By: Project Development Branch July 4, 2012

STANDARD PLAN NO. M-603-10

Sheet No. 2 of 2

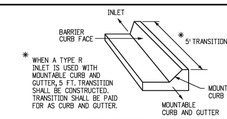


★ FOR LENGTH (L) 10 FT. OR MORE, PROVIDE MAINTENANCE ACCESS AT BOTH ENDS WITH AN ADDITIONAL MANHOLE RING AND COVER. CUT REINFORCEMENT BAR ACCORDINGLY.

✦ STATION POINT AT MIDPOINT OF INLET ALONG FLOWLINE

GENERAL NOTES:

SEE SHEET 2.

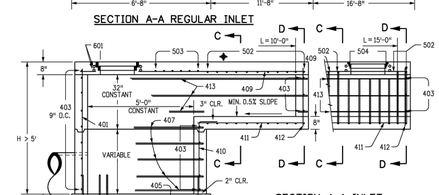


✱ WHEN A TYPE R INLET IS USED WITH MOUNTABLE CURB AND GUTTER, 5 FT. TRANSITION SHALL BE CONSTRUCTED. TRANSITION SHALL BE PAID FOR AS CURB AND GUTTER.

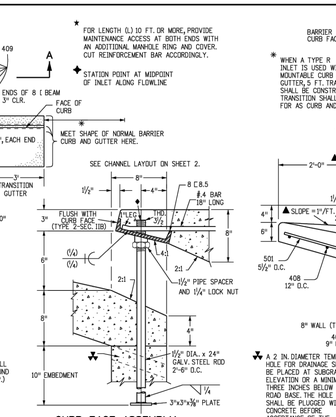
TRANSITION CURB

▲ = FOR A 1'-0" PAN SLOPE 2" PER FT.

SECTION A-A REGULAR INLET



SECTION A-A INLET WITH DROP BOX ~ H>5 FT.



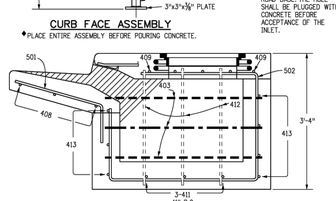
CURB FACE ASSEMBLY

✦ PLACE ENTIRE ASSEMBLY BEFORE POURING CONCRETE.

SECTION B-B END VIEW

✦ A 2 IN. DIAMETER TEMPORARY HOLE FOR DRAINAGE SHALL BE PLACED AT SUBGRADE ELEVATION OR A MINIMUM THREE INCHES BELOW ROAD BASE. THE HOLE SHALL BE PLUGGED WITH CONCRETE BEFORE ACCEPTANCE OF THE INLET.

NOTE: MANHOLE RING AND COVER, STATION POINT AND OUTFLOW PIPE SHALL BE LOCATED AT THE SAME END OF THE INLET.



SECTIONS C-C & D-D (DOTTED BARS ARE IN SECTION D-D)

MARK	BAR # OR SIZE	O.C. SPACING	TYPE	ALL INLETS		INLETS: H ≤ 5 FT.				INLETS: H > 5 FT.			
				L = 5 FT.		L = 10 FT.		L = 15 FT.		L = 10 FT.		L = 15 FT.	
				NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH
401	4	11"	II	15	✱	21	✱	26	✱	11	✱	11	✱
402	4	11"	II	7	✱	13	✱	18	✱	7	✱	7	✱
403	4	9"	II	✱	4'-0"	✱	4'-0"	✱	4'-0"	✱	4'-0"	✱	4'-0"
405	4	6"	VI	11	6'-10"	21	6'-10"	31	6'-10"	11	6'-10"	11	6'-10"
406	4	6"	VIII	7	8'-10"	7	13'-10"	7	18'-10"	7	8'-10"	7	8'-10"
407	4	9"	II	✱	5'-10"	✱	10'-10"	✱	15'-10"	✱	5'-10"	✱	5'-10"
408	4	12"	II	3	6'-10"	3	11'-10"	3	16'-0"	3	11'-10"	3	16'-0"
409	4	8"	II	6	5'-10"	6	10'-10"	6	15'-10"	6	10'-10"	6	15'-10"
410	4	11"	VII							3		3	✱
411	4	11"	II							3	5'-2"	3	10'-2"
412	4	11"	II							3	2'-9"	3	2'-9"
413	4	9"	II							7	10'-10"	7	15'-10"
501	5	5½"	IV	11	3'-4"	22	3'-4"	33	3'-4"	22	3'-4"	33	3'-4"
502	5	5½"	III							11	11'-5"	17	11'-5"
503	5	5½"	II	5	3'-6"	16	3'-6"	27	3'-6"	6	3'-6"	6	3'-6"
504	5	5½"	IX									5	8'-4"
601	6	2½"	V	2	8'-10"	2	8'-10"	2	8'-10"	2	8'-10"	4	8'-10"
■ BEB.5				1	5'-10"	1	10'-10"	1	15'-10"	1	10'-10"	1	15'-10"
				2 BARS, 1 RODS	——	4 BARS, 3 RODS	——	6 BARS, 5 RODS	——	4 BARS, 3 RODS	——	6 BARS, 5 RODS	——

✱ VARIABLE REFER TO TABLE TWO.

■ INCLUDE #4,18 IN. BARS (SEE CHANNEL LAYOUT).

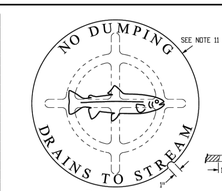
REGULAR INLETS DROP BOX INLETS

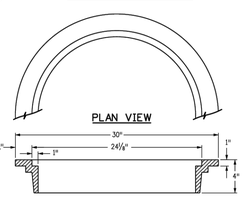
TABLE ONE ~ BAR LIST FOR CURB INLETS, TYPE "R"

"H"	LENGTH			NO. REQ'D. REGULAR		NO. REQ'D. DROP BOX		L = 5 FT.		L = 10 FT.		L = 15 FT.	
	401	402	410	403	407	403	407	CONC. CU. YDS.	STEEL LBS.	CONC. CU. YDS.	STEEL LBS.	CONC. CU. YDS.	STEEL LBS.
3'-0"	2'-8"	1'-8"		10	7			3.2	285	5.3	497	7.4	706
3'-6"	3'-0"	2'-0"		10	7			3.4	305	5.7	528	7.9	747
4'-0"	3'-8"	2'-8"		12	9			3.7	326	6.0	559	8.4	786
4'-6"	4'-2"	3'-2"		12	9			3.9	334	6.4	571	8.8	803
5'-0"	4'-8"	3'-8"		14	11			4.1	354	6.7	602	9.3	844
5'-6"	5'-2"	4'-2"	3'-5"	16	13	15	6	4.4	375	6.0	607	7.4	850
6'-0"	5'-8"	4'-8"	3'-11"	16	13	16	6	4.6	382	6.2	616	7.6	860
6'-6"	6'-2"	5'-2"	4'-5"	18	15	18	8	4.8	402	6.4	637	7.8	880
7'-0"	6'-8"	5'-8"	4'-11"	20	17	19	10	5.0	423	6.6	654	8.0	897
7'-6"	7'-2"	6'-2"	5'-5"	20	17	20	10	5.3	430	6.9	664	8.3	907
8'-0"	7'-8"	6'-8"	5'-11"	22	19	22	12	5.5	451	7.1	684	8.5	927
8'-6"	8'-2"	7'-2"	6'-5"	24	21	23	14	5.7	471	7.3	702	8.7	944
9'-0"	8'-8"	7'-8"	6'-11"	24	21	24	14	6.0	479	7.6	711	9.0	954
9'-6"	9'-2"	8'-2"	7'-5"	26	23	26	16	6.2	499	7.8	732	9.2	974
10'-0"	9'-8"	8'-8"	7'-11"	28	25	27	18	6.4	520	8.0	749	9.4	992
10'-6"	10'-2"	9'-2"	8'-5"	28	25	28	18	6.7	527	8.3	759	9.7	1003
11'-0"	10'-8"	9'-8"	8'-11"	30	27	30	20	6.9	547	8.5	779	9.9	1022

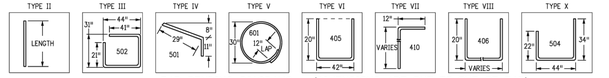
NOTES: FOR L = 5 FT., L = 10 FT., AND L = 15 FT.
REGULAR INLETS: TOTAL QUANTITIES NEEDED ARE OUTSIDE THE HEAVY BLACK LINE.
DROP BOX INLETS: TOTAL QUANTITIES NEEDED ARE INSIDE THE HEAVY BLACK LINE.
STEEL WEIGHTS DO NOT INCLUDE STRUCTURAL STEEL CHANNEL.

TABLE TWO ~ BARS AND QUANTITIES VARIABLE WITH "H"





WEIGHTS: COVER = 125 LBS.
+ RING = 135 LBS.
TOTAL = 260 LBS.



BAR BENDING DIAGRAMS ~ (DIMENSIONS ARE OUT-TO-OUT OF BAR)

GENERAL NOTES

1. CONCRETE SHALL BE CLASS B. INLET MAY BE CAST-IN-PLACE OR PRECAST.
2. CONCRETE WALLS SHALL BE FORMED ON BOTH SIDES AND SHALL BE 8 IN. THICK.
3. INLET STEPS SHALL BE IN CONFORMANCE WITH AASHTO M 199.
4. CURB FACE ASSEMBLY SHALL BE GALVANIZED AFTER WELDING.
5. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED ¾ IN. CURB AND GUTTER CORNERS SHALL BE FINISHED TO MATCH THE EXISTING CURB AND GUTTER BEYOND THE TRANSITION GUTTER.
6. REINFORCING BARS SHALL BE DEFORMED AND SHALL HAVE A 2 IN. MINIMUM CLEARANCE. ALL REINFORCING BARS SHALL BE EPOXY COATED.
7. DIMENSIONS AND WEIGHTS OF TYPICAL MANHOLE RING AND COVER ARE NOMINAL.
8. MATERIAL FOR MANHOLE RINGS AND COVERS SHALL BE GRAY OR DUCTILE CAST IRON IN ACCORDANCE WITH SUBSECTION 712.06.
9. SINCE PIPE ENTERS INTO THE INLET ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK. QUANTITIES INCLUDE VOLUMES OCCUPIED BY PIPES.
10. STRUCTURAL STEEL SHALL BE GALVANIZED AND SHALL BE IN ACCORDANCE WITH SUBSECTION 712.06.
11. ALL MANHOLE COVERS SHALL BE CAST WITH A "NO DUMPING DRAINS TO STREAM" MESSAGE AND A FISH SYMBOL. THE SURFACE OF THE MANHOLE COVER SHALL HAVE A NON-SLIP PATTERN.



CHANNEL LAYOUT DETAILS

SEE CURB FACE ASSEMBLY ON SHEET 1.

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: DD		Date:	Comments
Last Modification Date: 07/04/12 Initials: LTA	(ECX)		
Full Path: www.coddot.info/business/designsupport	(ECX)		
Drawing File Name: 6040120202.dgn	(ECX)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(ECX)		

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9083
Fax: (303) 757-9820
Project Development Branch DD/LTA

CURB INLET TYPE R

Issued By: Project Development Branch July 4, 2012

STANDARD PLAN NO. M-604-12

Sheet No. 1 of 2

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: DD		Date:	Comments
Last Modification Date: 07/04/12 Initials: LTA	(ECX)		
Full Path: www.coddot.info/business/designsupport	(ECX)		
Drawing File Name: 6040120202.dgn	(ECX)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(ECX)		

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9083
Fax: (303) 757-9820
Project Development Branch DD/LTA

CURB INLET TYPE R

Issued By: Project Development Branch July 4, 2012

STANDARD PLAN NO. M-604-12

Sheet No. 2 of 2

terracina design
10200 E. Girard Ave. A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

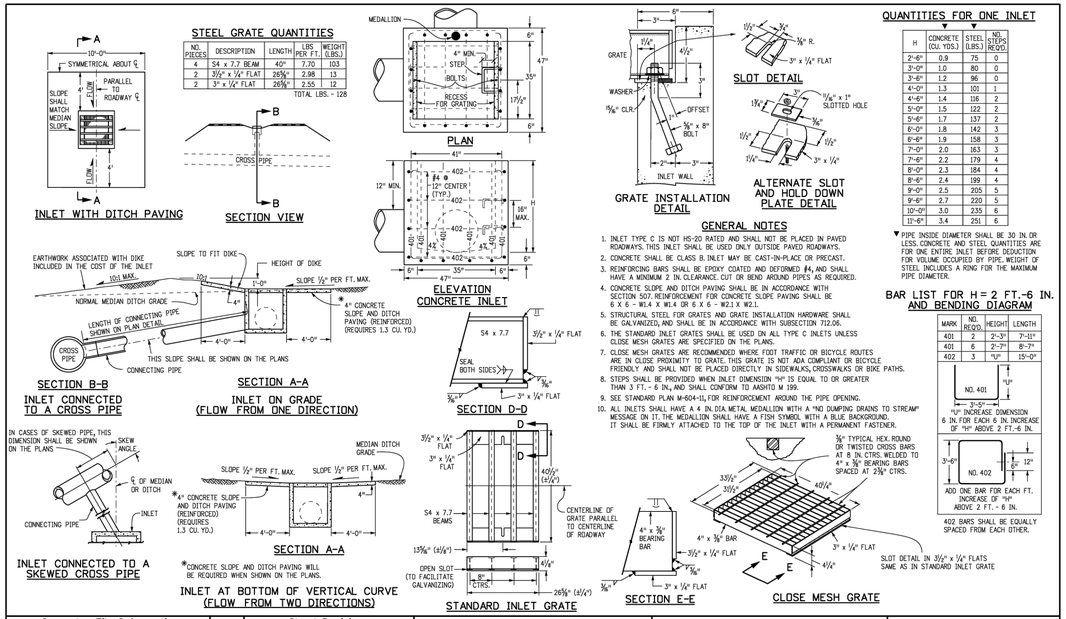
NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
DETAILS (5 OF 6)

Know what's below. Call before you dig. 811

SHEET 73 OF 79

2/6/2026 4:36 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS DETAILS - F1 - 10W.DWG 5



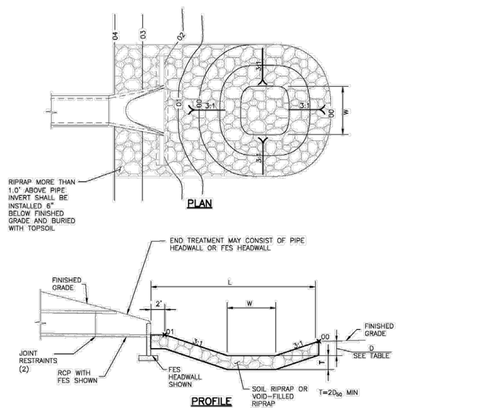
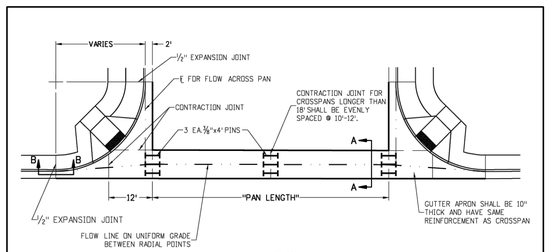
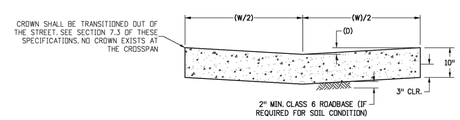
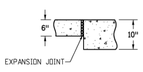


Figure 9-37. Low tailwater riprap basin







WIDTH (W)	DEPTH (D)	THICKNESS (T)
8'	2"	10"
10'	2½"	10"

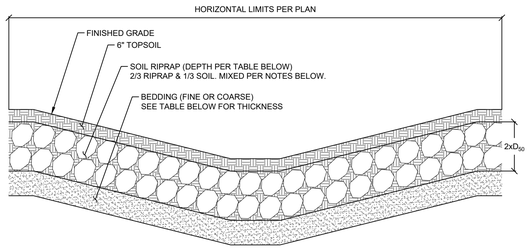
NOTE: LOCAL STREET INTERSECTIONS REQUIRE AN 8' CROSSPAN. COLLECTOR STREET INTERSECTIONS REQUIRE AN 10' CROSSPAN. CROSSPANS ARE NOT ALLOWED AT ANY ARTERIAL STREET INTERSECTION.

CROSSPAN

Issued: 6/15/2022

Revised:

Standard Drawing No. SD.6



SOIL RIPRAP
NTS

NOTES:

1. WHERE "SOIL RIPRAP" IS DESIGNATED ON THE CONTRACT DRAWINGS, RIPRAP VOIDS ARE TO BE FILLED WITH NATIVE SOIL. THE RIPRAP SHALL BE PRE-MIXED WITH THE NATIVE SOIL AT THE FOLLWING PROPORTIONS BY VOLUME: 65 PERCENT RIPRAP AND 35 PERCENT SOIL. THE SOIL USED FOR MIXING SHALL BE NATIVE TOPSOIL AND SHALL HAVE A MINIMUM FINES CONTENT OF 15 PERCENT. THE SOIL RIPRAP SHALL BE INSTALLED IN A MANNER THAT RESULTS IN A DENSE, INTERLOCKED LAYER OF RIPRAP WITH RIPRAP VOIDS FILLED COMPLETELY WITH SOIL. SEGREGATION OF MATERIALS SHALL BE AVOIDED AND IN NO CASE SHALL THE COMBINED MATERIAL CONSIST PRIMARILY OF SOIL; THE DENSITY AND INTERLOCKING NATURE OF RIPRAP IN THE MIXED MATERIAL SHALL ESSENTIALLY BE THE SAME AS IF THE RIPRAP WAS PLACED WITH WITHOUT SOIL.
2. WHERE SPECIFIED (TYPICALLY AS "BURIED SOIL RIPRAP"), A SURFACE LAYER OF TOPSOIL SHALL BE PLACED OVER THE SOIL RIPRAP ACCORDING TO THE THICKNESS SPECIFIED ON THE CONTRACT DRAWINGS. THE TOPSOIL SURFACE LAYER SHALL BE COMPACTED TO APPROXIMATELY 85% OF MAXIMUM DENSITY AND WITHIN TWO PERCENTAGE POINTS OF OPTIMUM MOISTURE IN ACCORDANCE WITH ASTM D698. TOPSOIL SHALL BE ADDED TO ANY AREAS THAT SETTLE.

THICKNESS REQUIREMENTS FOR GRANULAR BEDDING			
RIPRAP DESIGNATION	MINIMUM BEDDING THICKNESS (INCHES)		
	FINE-GRAINED SOILS [1]		COARSE-GRAINED SOILS [2]
	TYPE I (LOWER LAYER)	TYPE II (UPPER LAYER)	TYPE II
VL (D_{50} = 6 IN)	4	4	6
L (D_{50} = 9 IN)	4	4	6
M (D_{50} = 12 IN)	4	4	6
H (D_{50} = 18 IN)	4	6	8
VH (D_{50} = 24 IN)	4	8	8

NOTES:
1. MAY SUBSTITUTE ONE 12-INCH LAYER OF TYPE II BEDDING. THE SUBSTITUTION OF ONE LAYER OF TYPE II BEDDING SHALL NOT BE PERMITTED AT DROP STRUCTURES. THE USE OF A COMBINATION OF FILTER FABRIC AND TYPE II BEDDING AT DROP STRUCTURES IS ACCEPTABLE.
2. FIFTY PERCENT OR MORE BY WEIGHT RETAINED ON THE #40 SIEVE.

RIPRAP	D_{50}*	DEPTH D_{50}x2
TYPE VL	6"	12"
TYPE L	9"	18"
TYPE M	12"	24"
TYPE H	18"	36"
TYPE VH	24"	48"

*D_{50} = MEAN RIPRAP SIZE

* SUMMARY OF PAGES 8-76 THROUGH 8-78 OF MHFD CHAPTER 8 OPEN CHANNELS.

terracina design
10200 E. Girard Ave. A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
DETAILS (6 OF 6)

Know what's below. Call before you dig. 811

SHEET 74 OF 79

2/6/2026 4:36 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS DETAILS - F1 - 10W.DWG 6

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Species[a] (Common name)	Growth Season[b]	Pounds of Pure Live Seed (PLS)/acre[c]	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Winter wheat	Cool	20–35	1 - 2
7. Winter barley	Cool	20–35	1 - 2
8. Winter rye	Cool	20–35	1 - 2
9. Triticale	Cool	25–40	1 - 2

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

[b] See Table TS/PS-2 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

[c] Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

Table TS/PS-2. Seeding Dates for Annual and Perennial Grasses

	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
Seeding Dates	**Warm**	**Cool**	**Warm**	**Cool**
January 1–March 15			✓	✓
March 16–April 30		1,2,3	✓	✓
May 1–May 15			✓	
May 16–June 30	5			
July 1–July 15	5			
July 16–August 31				
September 1–September 30		6, 7, 8, 9		
October 1–December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the USDCM Volume 2 *Revegetation* Chapter and Volume 3 Mulching BMP Fact Sheet (EC-04) for additional guidance.

Maintenance and Removal

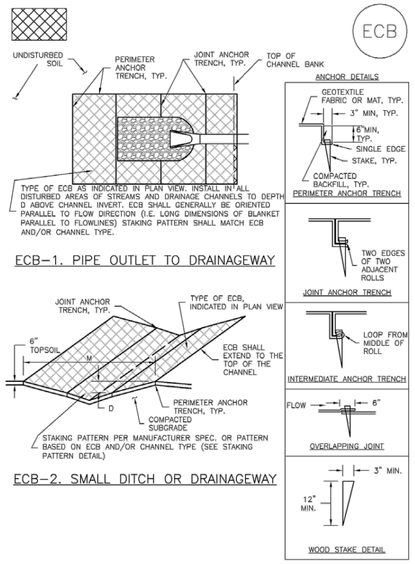
Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

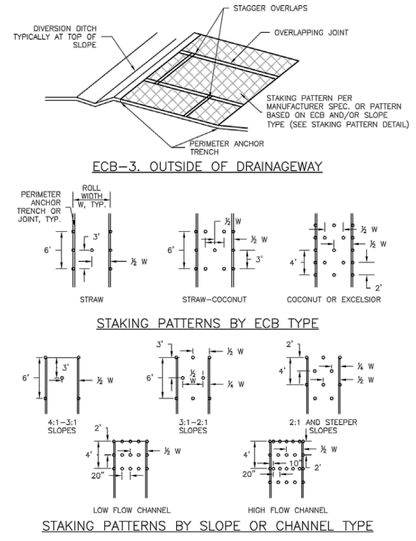
If a temporary annual seed was planted, the area should be reseeded with the desired perennial mix when there will be no further work in the area. To minimize competition between annual and perennial species, the annual mix needs time to mature and die before seeding the perennial mix. To increase success of the perennial mix, it should be seeded during the appropriate seeding dates the second year after the temporary annual mix was seeded. Alternatively, if this timeline is not feasible, the annual mix seed heads should be removed and then the area seeded with the perennial mix.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.





EROSION CONTROL BLANKET INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF ECB.
   –TYPE OF ECB (STRAW, STRAW–COCONUT, COCONUT, OR EXCELSIOR).
   –AREA, A, IN SQUARE YARDS OF EACH TYPE OF ECB.

2. 100% NATURAL AND BIODEGRADABLE MATERIALS ARE PREFERRED FOR RECPs, ALTHOUGH SOME JURISDICTIONS MAY ALLOW OTHER MATERIALS IN SOME APPLICATIONS.

3. IN AREAS WHERE ECBs ARE SHOWN ON THE PLANS, THE PERMITTEE SHALL PLACE TOPSOIL AND PERFORM FINAL GRADING, SURFACE PREPARATION, AND SEEDING AND MULCHING. SUBGRADE SHALL BE SMOOTH AND MOIST PRIOR TO ECB INSTALLATION AND THE ECB SHALL BE IN FULL CONTACT WITH SUBGRADE. NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.

4. PERIMETER ANCHOR TRENCH SHALL BE USED ALONG THE OUTSIDE PERIMETER OF ALL BLANKET AREAS.

5. JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL ECBs EXCEPT STRAW WHICH MAY USE AN OVERLAPPING JOINT.

6. INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE–HALF ROLL LENGTH FOR COCONUT AND EXCELSIOR ECBs.

7. OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER FOR ECBs ON SLOPES.

8. MATERIAL SPECIFICATIONS OF ECBs SHALL CONFORM TO TABLE ECB–1.

9. ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING ECBS SHALL BE RESEEDED AND MULCHED.

10. DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM THOSE SHOWN HERE.

TABLE ECB–1. ECB MATERIAL SPECIFICATIONS

TYPE	COCONUT CONTENT	STRAW CONTENT	EXCELSIOR CONTENT	RECOMMENDED NETTING**
STRAW*	–	100%	–	DOUBLE/ NATURAL
STRAW–COCONUT	30% MIN	70% MAX	–	DOUBLE/ NATURAL
COCONUT	100%	–	–	DOUBLE/ NATURAL
EXCELSIOR	–	–	100%	DOUBLE/ NATURAL

*STRAW ECBs MAY ONLY BE USED OUTSIDE OF STREAMS AND DRAINAGE CHANNEL.
**ALTERNATE NETTING MAY BE ACCEPTABLE IN SOME JURISDICTIONS

EROSION CONTROL BLANKET MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

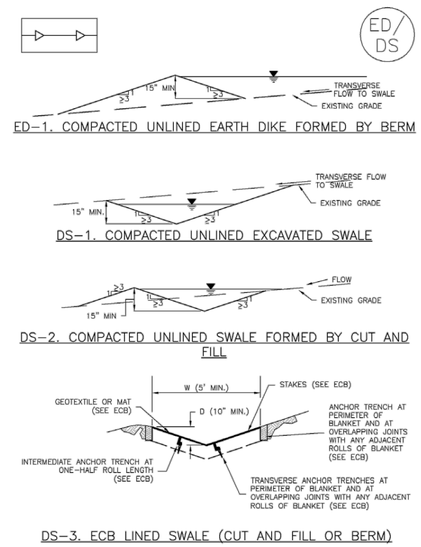
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

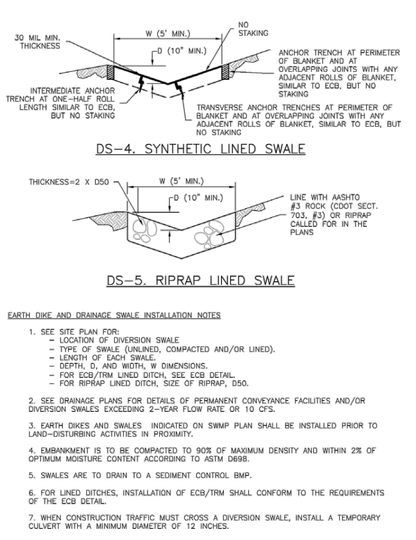
4. ECBs SHALL BE LEFT IN PLACE TO EVENTUALLY BIODEGRADE, UNLESS REQUESTED TO BE REMOVED BY THE LOCAL JURISDICTION.

5. ANY ECB PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE REPAIRED OR REINSTALLED. ANY SUBGRADE AREAS BELOW THE GEOTEXTILE THAT HAVE ERODED TO CREATED A VOID UNDER THE BLANKET, OR THAT REMAIN DEVOID OF GRASS SHALL BE REPAIRED, RESEEDED AND MULCHED AND THE ECB REINSTALLED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO AND TOWN OF PARKER COLORADO, NOT AVAILABLE IN AUTOCAD)





EARTH DIKE AND DRAINAGE SWALE INSTALLATION NOTES

1. SEE SITE PLAN FOR:
   – LOCATION OF DIVERSION SWALE.
   – TYPE OF SWALE (UNLINED, COMPACTED AND/OR LINED).
   – LENGTH OF EACH SWALE.
   – DEPTH, D, AND WIDTH, W DIMENSIONS.
   – FOR ECB/TRM LINED DITCH, SEE ECB DETAIL.
   – FOR RIPRAP LINED DITCH, SIZE OF RIPRAP, D50.

2. SEE DRAINAGE PLANS FOR DETAILS OF PERMANENT CONVEYANCE FACILITIES AND/OR DIVERSION SWALES EXCEEDING 2–YEAR FLOW RATE OR 10 CFS.

3. EARTH DIKES AND SWALES INDICATED ON SWMP PLAN SHALL BE INSTALLED PRIOR TO LAND–DISTURBING ACTIVITIES IN PROXIMITY.

4. EMBANKMENT IS TO BE COMPACTED TO 90% OF MAXIMUM DENSITY AND WITHIN 2% OF OPTIMUM MOISTURE CONTENT ACCORDING TO ASTM D698.

5. SWALES ARE TO DRAIN TO A SEDIMENT CONTROL BMP.

6. FOR LINED DITCHES, INSTALLATION OF ECB/TRM SHALL CONFORM TO THE REQUIREMENTS OF THE ECB DETAIL.

7. WHEN CONSTRUCTION TRAFFIC MUST CROSS A DIVERSION SWALE, INSTALL A TEMPORARY CULVERT WITH A MINIMUM DIAMETER OF 12 INCHES.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
GESC DETAILS (1 OF 5)

Know what's below. Call before you dig. 811

SHEET 75 OF 79

2/6/2026 4:36 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS GESC DETAILS F1 - 10W.DWG 1

EARTH DIKE AND DRAINAGE SWALE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

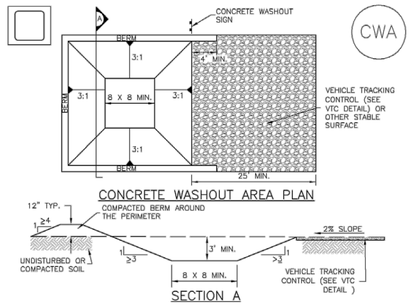
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SWALES SHALL REMAIN IN PLACE UNTIL THE END OF CONSTRUCTION; IF APPROVED BY LOCAL JURISDICTION, SWALES MAY BE LEFT IN PLACE.

5. WHEN A SWALE IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF COLORADO SPRINGS, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



CWA–1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –CWA INSTALLATION LOCATION.

2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.

3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.

4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.

5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.

6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.

7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.

8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

CWA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.

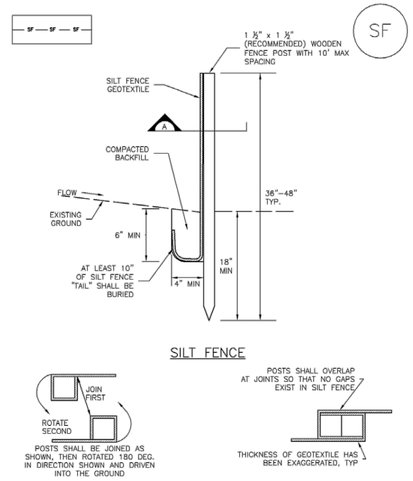
5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER–TIGHT CONTAINER AND DISPOSED OF PROPERLY.

6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.

7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD).

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



SF–1. SILT FENCE

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2–5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.

2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.

3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.

4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.

5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.

6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J–HOOK." THE "J–HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' – 20').

7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".

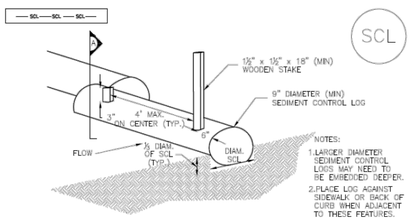
5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.

6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.

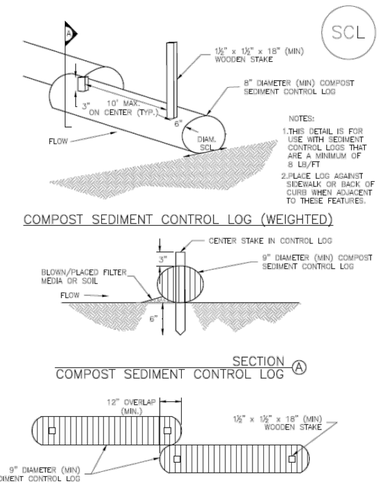
7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

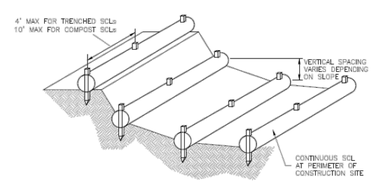
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



SCL–1. TRENCHED SEDIMENT CONTROL LOG



SCL–2. COMPOST SEDIMENT CONTROL LOG (WEIGHTED)



SCL–3. SEDIMENT CONTROL LOGS TO CONTROL SLOPE LENGTH

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
GESC DETAILS (2 OF 5)

Know what's below. Call before you dig. 811

SHEET 76 OF 79

2/6/2026 4:36 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS GESC DETAILS F1 - 10W.DWG 2

SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.

2. SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADIENT LAND-DISTURBING ACTIVITIES.

3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.

4. SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES. HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS.

5. IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY ⅓ OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING. COMPOST LOGS THAT ARE 8 LB/FT DO NOT NEED TO BE TRENCHED.

6. THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL OR FILTER MATERIAL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL OR WEIGHTED LAWN ROLLER OR BLOWN IN PLACE.

7. FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED. COMPOST LOGS SHOULD BE STAKED 10' ON CENTER.

SEDIMENT CONTROL LOG MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

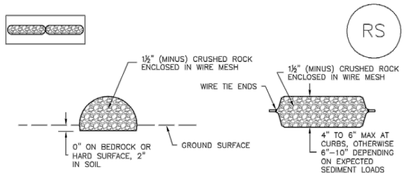
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.

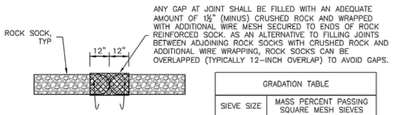
5. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION.COMPOST FROM COMPOST LOGS MAY BE LEFT IN PLACE AS LONG AS BAGS ARE REMOVED AND THE AREA SEEDED. IF DISTURBED AREAS EXIST AFTER REMOVAL, THEY SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, JEFFERSON COUNTY, COLORADO, DOUGLAS COUNTY, COLORADO, AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



ROCK SOCK SECTION ROCK SOCK PLAN



ROCK SOCK JOINTING

GRADATION TABLE	
SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	NO. 4
2"	100
1½"	90 – 100
1"	20 – 55
¾"	0 – 15
⅜"	0 – 5
MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.	

ROCK SOCK INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION(S) OF ROCK SOCKS.

2. CRUSHED ROCK SHALL BE 1½" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1½" MINUS).

3. WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF ½". RECOMMENDED MINIMUM ROLL WIDTH OF 48".

4. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.

5. SOME MUNICIPALITIES MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE MESH FOR THE ROCK ENCLOSURE.

RS–1. ROCK SOCK PERIMETER CONTROL

ROCK SOCK MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.

5. SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE ROCK SOCK.

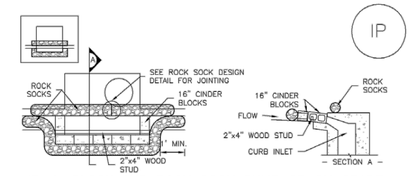
6. ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

7. WHEN ROCK SOCKS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF ROCK SOCK INSTALLATION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY OTHER SIMILAR PROPRIETARY PRODUCTS ON THE MARKET. UDFCD NEITHER NDORSES NOR DISCOURAGES USE OF PROPRIETARY PROTECTION PRODUCTS; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.



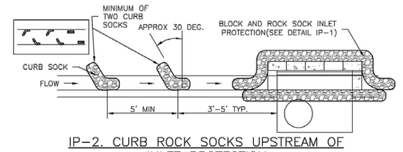
IP–1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.

3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP–2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

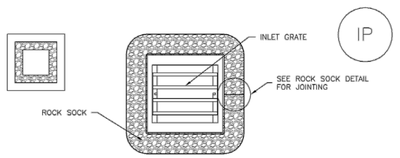
CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.

2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.

3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.

4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON–GRADE INLETS.

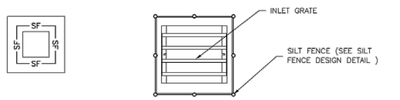


IP–3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



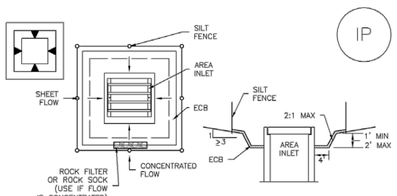
IP–4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



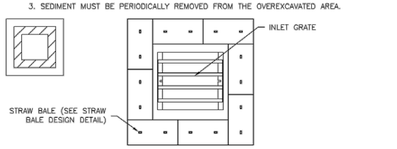
IP–5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.

2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.

3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.

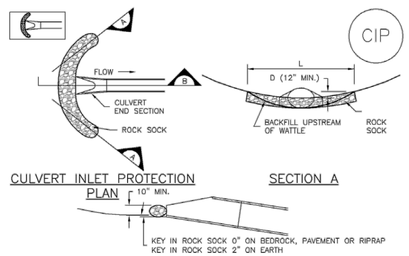


IP–6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.



CIP–1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF CULVERT INLET PROTECTION.

2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS ½ THE HEIGHT OF THE ROCK SOCK.

5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF INLET PROTECTION.
   –TYPE OF INLET PROTECTION (IP.1, IP.2, IP.3, IP.4, IP.5, IP.6)

2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.

3. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¼ OF THE HEIGHT FOR STRAW BALES.

5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.

6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
GESC DETAILS (3 OF 5)

Know what's below. Call before you dig. 811

2/6/2026 4:37 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 16W\FINAL PLANS GESC_DETAILS_F1 - 16W.DWG 3

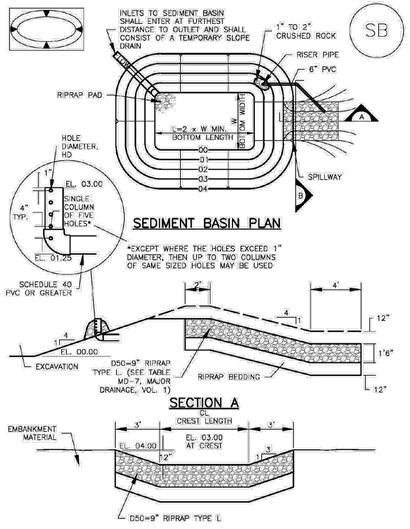


TABLE SB-1. SIZING INFORMATION FOR STANDARD SEDIMENT BASIN

Upstream Drainage Area (rounded to nearest acre), (ac)	Basin Bottom Width (W), (ft)	Spillway Crest Length (CL), (ft)	Hole Diameter (HD), (in)
1	12 ½	2	9/32
2	21	3	13/64
3	28	5	5/16
4	33 ½	6	9/16
5	38 ½	8	23/32
6	43	9	27/32
7	47 ¼	11	29/32
8	51	12	27/32
9	55	13	7/8
10	58 ¾	15	15/16
11	61	16	29/32
12	64	18	1
13	67 ½	19	1 1/16
14	70 ½	21	1 3/16
15	73 ¼	22	1 5/16

SEDIMENT BASIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF SEDIMENT BASIN.
   –TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
   –FOR STANDARD BASIN, BOTTOM WIDTH W, CREST LENGTH CL, AND HOLE DIAMETER, HD.
   –FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT H, NUMBER OF COLUMNS N, HOLE DIAMETER HD AND PIPE DIAMETER D.

2. FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.

3. SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND–DISTURBING ACTIVITY THAT RELIES ON ON BASINS AS AS A STORMWATER CONTROL.

4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.

5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.

6. PIPE SCH 40 OR GREATER SHALL BE USED.

7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.

SEDIMENT BASIN MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

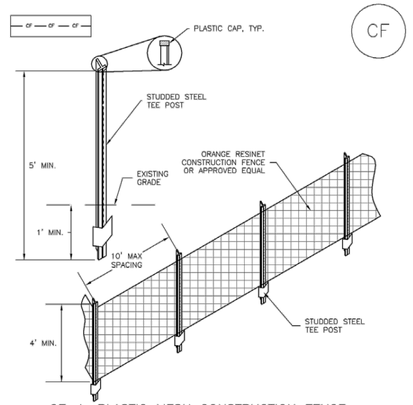
4. SEDIMENT ACCUMULATED IN BASIN SHALL BE REMOVED AS NEEDED TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN SEDIMENT DEPTH REACHES ONE FOOT (I.E., TWO FEET BELOW THE SPILLWAY CREST).

5. SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE LOCAL JURISDICTION.

6. WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



CF–1. PLASTIC MESH CONSTRUCTION FENCE

CONSTRUCTION FENCE INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF CONSTRUCTION FENCE.

2. CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR–GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.

4. STUDDED STEEL TEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POSTS SHALL BE 10'.

5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.

CONSTRUCTION FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

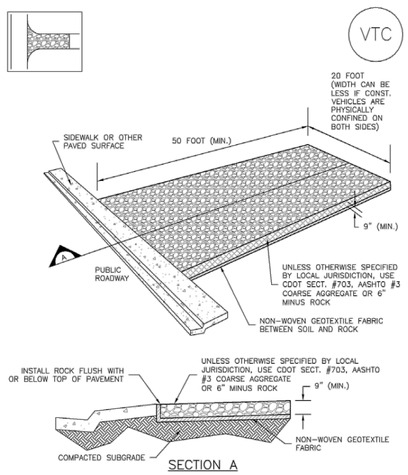
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. CONSTRUCTION FENCE SHALL BE REPAIRED OR REPLACED WHEN THERE ARE SIGNS OF DAMAGE SUCH AS RIPS OR SAGS. CONSTRUCTION FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

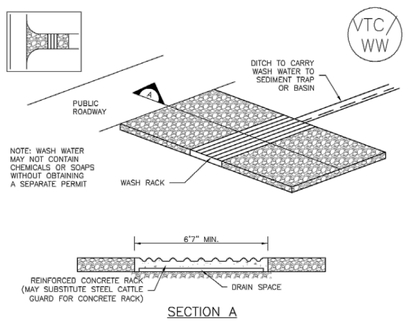
5. WHEN CONSTRUCTION FENCES ARE REMOVED, ALL DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE FENCE SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

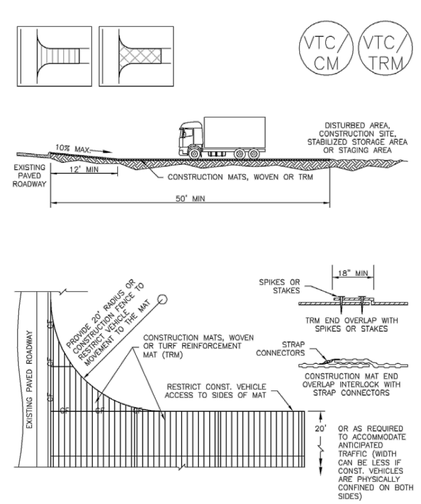
(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)



VTC–1. AGGREGATE VEHICLE TRACKING CONTROL



VTC–2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK



VTC–3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
GESC DETAILS (4 OF 5)

Know what's below. Call before you dig. 811

SHEET 78 OF 79

2/6/2026 4:37 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10W\FINAL PLANS GESC DETAILS F1 - 10W.DWG 4

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   –TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).

2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT–OF–WAYS.

4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

5. A NON–WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

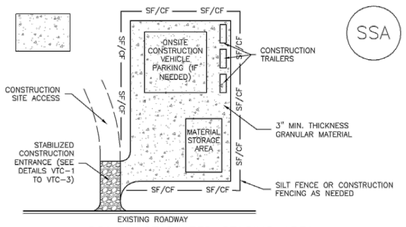
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.

5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)



SSA–1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF STAGING AREA(S).
   –CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.

3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.

4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.

5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

STABILIZED STAGING AREA MAINTENANCE NOTES

5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.

6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE–ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

in accordance with the *Major Drainage* chapter in Volume 1.

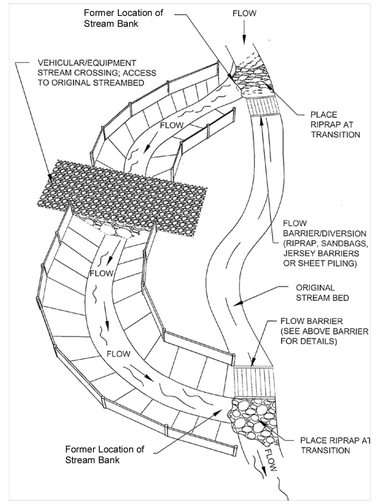


Figure TDM-1. Typical Temporary Diversion Channel

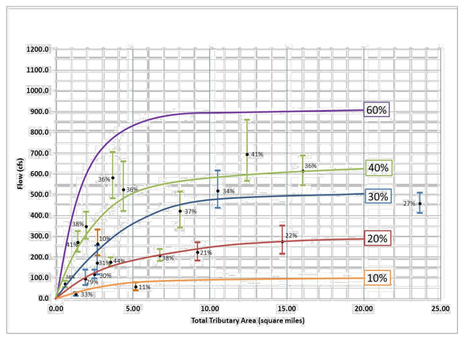
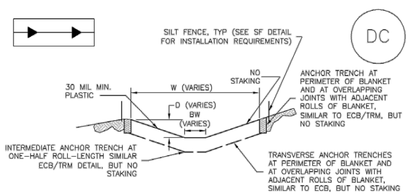
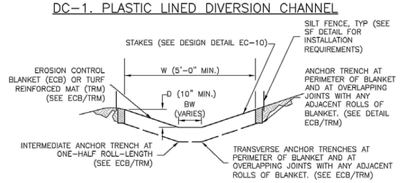


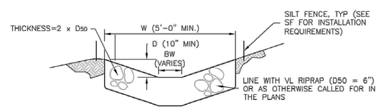
Figure TDM-2. Temporary Diversion Facility Sizing Nomograph for Long Duration Projects (Duration in excess of three months) Based on 2-year Peak Flows - Denver Metropolitan and Adjacent Areas, Updated April 2012



DC–1. PLASTIC LINED DIVERSION CHANNEL



DC–2. GEOTEXTILE OR MAT LINED DIVERSION CHANNEL



DC–3. RIPRAP LINED DIVERSION CHANNEL

CHANNEL DIVERSION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF DIVERSION CHANNEL
   –TYPE OF CHANNEL (UNLINED, GEOTEXTILE OR MAT LINED, PLASTIC LINE, OR RIPRAP LINED).
   –LENGTH OF EACH TYPE OF CHANNEL.
   –DEPTH, D, WIDTH, W, AND BOTTOM WIDTH, BW.
   –FOR RIPRAP LINED CHANNEL, SIZE OF RIPRAP, D50, SHALL BE SHOWN ON PLANS.

2. SEE DRAINAGE PLANS FOR DETAILS OF PERMANENT CONVEYANCE FACILITIES.

3. DIVERSION CHANNELS INDICATED ON THE SWMP PLAN SHALL BE INSTALLED PRIOR TO WORK IN DOWNGRADIENT AREAS OR NATURAL CHANNELS.

4. FOR GEOTEXTILE OR MAT LINED CHANNELS, INSTALLATION OF GEOTEXTILE OR MAT SHALL CONFORM TO THE REQUIREMENTS OF DETAIL ECB. FOR PLASTIC LINED CHANNELS, INSTALLATION OF ANCHOR TRENCHES SHALL CONFORM TO THE REQUIREMENTS OF DETAIL ECB.

5. WHERE CONSTRUCTION TRAFFIC MUST CROSS A DIVERSION CHANNEL, THE PERMITTEE SHALL INSTALL A TEMPORARY STREAM CROSSING CONFORMING TO THE REQUIREMENTS OF DETAIL TSC.

DIVERSION CHANNEL MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. DIVERSION CHANNELS ARE TO REMAIN IN PLACE UNTIL WORK IN THE DOWNGRADIENT AREA OR NATURAL CHANNEL IS NO LONGER REQUIRED. IF APPROVED BY LOCAL JURISDICTION DIVERSION CHANNEL MAY BE LEFT IN PLACE.

5. IF DIVERSION CHANNELS ARE REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/06/2026	MM

NOT FOR CONSTRUCTION

GRAND PARK - FILING NO. 1
TOWN OF FRASER, COLORADO
FINAL CONSTRUCTION PLANS
GESC DETAILS (5 OF 5)

Know what's below. Call before you dig. 811

SHEET 79 OF 79

2/6/2026 4:37 PM X:\GRAND PARK\CAD\PLANS\16 - WEST MOUNTAIN\FILING 1 - 10\W\FINAL PLANS GESC_DETAILS_F1 - 10W.DWG 5

PHASE III DRAINAGE REPORT
FOR
GRAND PARK – WEST MOUNTAIN -
PLANNING AREA 10W.1 & 11W

PREPARED FOR:

GRAND PARK DEVELOPMENT COMPANY
P.O. BOX 30
WINTER PARK, COLORADO 80482
CONTACT: CLARK LIPSCOMB
PHONE: 970-726-8600

PREPARED BY:

TERRACINA DESIGN, LLC
10200 E. GIRARD AVENUE
BUILDING A, SUITE 314
DENVER, CO 80231
PHONE: 303-632-8867
CONTACT: MARTIN METSKER

FEBRUARY 2026

Engineer's Statement:

This report was prepared by me, or under my direct supervision, in accordance per the Town of Fraser Storm Drainage Design and Technical Criteria which references the Grand County Storm Drainage Design and Technical Criteria Manual, dated August 1st, 2006, and it was designed to comply with the provisions thereof. I understand that Town of Fraser does not and will not assume liability for drainage facilities designed by others.

_____

Martin Metsker, P.E.
Colorado Professional Engineer
License #41743

Owner/Developer's Statement:

I, Grand Park Development Company, hereby certify that the drainage facilities for planning areas 10W.1 and 11W shall be constructed according to the design presented in this report. I understand that the Town of Fraser does not and will not assume liability for drainage facilities designed or reviewed by my engineer. I also understand that the Town of Fraser relies on the representations of others to establish that drainage facilities are designed and built in compliance with applicable guidelines, standards and specifications. Review by the Town of Fraser can therefore in no way limit or diminish any liability which I or any other party may have with respect to the design or construction of such facilities.

_____

Grand Park Development Company

_____

Printed Name

TABLE OF CONTENTS

I. GENERAL LOCATION AND DESCRIPTION 5

A. SITE LOCATION 5
B. DESCRIPTION OF SITE 5

II. DRAINAGE BASINS AND SUB-BASINS 5

A. MAJOR DRAINAGE BASINS 5
B. SUB-BASIN DESCRIPTION 6

III. DRAINAGE DESIGN CRITERIA 7

A. REGULATIONS 7
B. DEVELOPMENT OF BASIC DATA AND CONSTRAINTS 7
C. HYDROLOGICAL CRITERIA 7
D. HYDRAULIC CRITERIA 8
E. STORMWATER QUALITY CRITERIA 9
F. VARIANCES FROM CRITERIA 9

IV. DRAINAGE FACILITY DESIGN 9

A. GENERAL CONCEPTS 9
B. SPECIFIC DETAILS 9

V. CONCLUSIONS 17

A. COMPLIANCE WITH STANDARDS 17
B. DRAINAGE CONCEPT 17

VI. REFERENCES 18

Appendices

Appendix A - General Maps

Vicinity Map
Soil Map
Firm Map
Precipitation Data

Appendix B - Hydrologic Calculations

Existing Curve Number Calculations
Existing Curve Number Adjustment Calculations
Existing Lag Time Calculations
Existing Reach Time of Concentration Calculations
Proposed Curve Number Calculations
Proposed Curve Number Adjustment Calculations
Proposed Lag Time Calculations
Proposed Reach Time of Concentration Calculations
HEC-HMS Flow Results

Appendix C - Hydraulic Calculations

Street Capacity Inlet Calculations – MHFD_Inlet_v6.00
Area Inlet Capacity Calculations – Hydraflow Express
Curb Cut Capacity Calculations – Hydraflow Express
Swale Calculations – Hydraflow Express
Culvert Capacity Calculation – Hydraflow Express
StormCAD Key Map
StormCAD Output Tables

Appendix D - Extended Detention Basin/Water Quality Enhancement BMP's

Pond Percent Imperviousness Calculations
Temporary Sediment Basin A4 Exhibit and Stage-Storage-Discharge Calculations
Pond B Detention Sizing – Modified FAA Method
Pond B HEC-HMS Inflow Results
Pond B Outlet Structure Design – MHFD-Detention_V4.07
Temporary Sediment Basin C Exhibit and Stage-Storage-Discharge Calculations

Appendix E - Reference Materials

Storm Drainage Master Plan for Grand Park by High Country Engineering, Inc.

A Pragmatic Slope-Adjusted Curve Number Model to Reduce Uncertainty in Predicting Flood Runoff from Steep Watershed by Ajmal, Wassem, Kim, & Kim.

Sediment Basin Details from MHFD's Urban Storm Drainage Criteria Manual vol. 3.

Appendix F - Drainage Maps

HEC-HMS Basin Model Map
HEC-HMS Map
Proposed Drainage Maps

I. GENERAL LOCATION AND DESCRIPTION

A. Site Location

This Phase III Drainage Report provides remediation for changes in the drainage patterns resulting from the construction of the major infrastructure components for Grand Park 10W.1 & 11W in Fraser, CO, from here on known as the "Site". The Site is currently undeveloped and future development will include single and multi-family lots, open space, and the associated roadway and utility infrastructure. The intent of the report and the Site is to establish drainage patterns for 79 detached residential units. Future areas have been taken into consideration that also will include single family attached and multi-family lots, lodging units, and commercial space.

The Site is approximately 46.1 acres and the inspected drainage area is 78.3 acres. The Site is bound to the west by Spring Meadow drainageway and open space, to the north by planning areas 8W, 9W, and 10W.2, to the east by the Union Pacific Railroad, and to the south by Grand Park Drive. The Site is a part of the northwest quarter of Section 29 and northwest quarter of Section 32, Township 1 South, Range 75 West of the 6th Principal Meridian, Town of Fraser, County of Grand, State of Colorado. A vicinity map for the site can be found in Appendix A.

B. Description of Site

The Site is currently undeveloped with existing native vegetation, and the land uses according to the approved PD are residential, clubhouse and open space containing approximately 46.1 acres. The Site has naturally occurring slopes ranging from 6 to 45 percent, generally slopes from the southwest to the northeast towards the Union Pacific Railroad. The soils within the Site include Cowdrey loam and Frisco-Peeler gravelly sandy loams, and the soil primarily consists of hydrologic soil groups B and C. A soils map has been provided and can be found in Appendix A.

The Site is adjacent to an existing floodplain, and lies within Zone X, "Areas determined to be outside the 0.2% annual chance floodplain," as depicted on the FEMA Flood Insurance Rates Map 08049C0991C Effective January 2, 2008, found in Appendix A. The Site does lie near Leland Creek which is a major drainageway. The Site will not propose modifications or improvements to the floodplain. The Site drainage will not adversely impact the surrounding existing drainage infrastructure.

Historically, discharge from the Site primarily sheet flows northeast to an existing 24-inch culvert that conveys the runoff across the railroad. Ultimately all runoff generated within the Site will be conveyed to the northeast, across US40 and into the Fraser River.

The intent of this project is to construct the necessary roadways and utility infrastructure to begin developing the lots within planning areas 10W.1 and 11W. This report details the general drainage patterns that the planning areas will follow in the final developed conditions.

II. DRAINAGE BASINS AND SUB-BASINS

A. Major Drainage Basins

The Site contributes to three major drainage basins: Leland Creek Basin, Grand Park Meadow Basin, and Spring Meadow Basin. See the vicinity map in Appendix A. Runoff generated within the Site will generally follow historic drainage patterns. After being conveyed across the Union Pacific Railroad via various existing culverts, the flows will be conveyed north, under US Highway 40, where it discharges into the Fraser River, which eventually discharges into the Colorado River. Basins C, D, E, OS1, and OS2 contribute to the Leland Creek basin. Runoff generated within Basin C will be conveyed to a temporary sediment basin which will treat the flows before releasing them into Leland Creek Basin.

Basin B and basin OS3 contribute to the Grand Park Meadow basin. Runoff will generally be conveyed to the northeast to Pond B before being discharged towards an existing culvert that will convey the runoff across the railroad. The Grand Park Meadow Basin is bound to the north by US-40, to the east by Grand Park Village and US-40, to the south by Grand Park Drive, and to the west by Outpost Club Drive.

Basin A4 falls within the Spring Meadow Basin, formerly known as No Name basin in the Storm Drainage Master Plan for Grand Park by High Country Engineering dated February 17, 2006 (Ref. H). Spring Meadow Basin includes part of Filing 1 within the West Mountain development. Runoff will generally be conveyed to the north to temporary sediment basin A4 which will treat the flows before releasing them to the north into Spring Meadow Basin. The runoff will then be conveyed to the northeast to an existing 48-inch culvert that will convey the flows across the railroad. The flows will then be conveyed into various existing ponds located in the meadow to the northwest before being conveyed across US-40 by an existing culvert.

The Site falls within Zone X, as sh
Insurance Rate Map (FIRM) panel 080
designation where there are "Areas de
development will not influence the Zon

As development increases within the Spring Meadow Basin, the temporary sediment basin will be removed and a DB (Pond A) will be constructed upstream of the existing 48-inch culvert to reduce the increased runoff from the basin (insert name of the drainage report here).

There are no existing or proposed irrig

The "Storm Drainage Master Plan for Grand Park" by High Country Engineering, dated February 2006 (Ref. H) analyzes the drainage patterns throughout the West Mountain subdivision, and this drainage report depicts Spring Meadow Basin (formerly No Name Basin) and Leland Creek Basin as major basins associated with the Site.

B. Sub-basin Description

Minor Drainage Basins for the Site have been delineated using the proposed site layout and grading. Roadway grading within planning areas 10W.1 and 11W will be finalized with this submittal package; however, the grading within the lots of these planning areas represents general drainage patterns. Further grading will be required during the plot plan or individual lot development phase. Overall, the proposed drainage patterns for the sub-basins will generally follow the historic patterns prior to development. For sub-basins within the Site, runoff will drain towards low points in the roadways and other design points. The developed minor basins will include overland flow and storm sewer collection systems which will direct stormwater to a detention basin (DB) or a temporary sediment basin that can account for developed runoff from the Site.

Basin A4 in its fully developed conditions will consist of roadways, single-family housing, a temporary sediment basin, and open space. Runoff generated within the basin will be captured by proposed storm infrastructure and conveyed to a temporary sediment basin where it will be treated. The temporary sediment basin will outfall into Spring Meadow Basin towards an existing 48-inch culvert located under the Union Pacific Railroad. This temporary sediment basin was sized according to Table SB-1 in the Sediment Basin Section of the Mile High Flood District (MHFD) Storm Drainage Criteria Manual volume 3 (Ref. E), and this section of the manual has been included in Appendix E. An exhibit has been included in Appendix D showing the methodology used to size this temporary sediment basin. Hydraulic calculations have been included for the stage-storage discharge relationship for the temporary sediment basin and these calculations can also be found in Appendix D.

Basin B in its fully developed conditions will include roadways, single and multi-family housing areas, a DB, and open space. All runoff generated within Basin B will drain to the northeast to the proposed DB pond to the east of the Site. This DB outfalls to the north, where the runoff will be conveyed across the Union Pacific Railroad via an existing 24-inch culvert.

Basin C includes roadways, single family housing areas, a temporary sediment basin, and open space. All runoff generated within Basin C will drain to the south to temporary sediment basin C. This temporary sediment basin will outfall to the south into Leland Creek which conveys flow to an existing 60-inch storm culvert located under the Union Pacific Railroad. This temporary sediment basin will remain in place until the next phase of construction for the development commences. This temporary sediment basin was sized according to Table SB-1 in the Sediment Basin Section of the Mile High Flood District (MHFD) Storm Drainage Criteria Manual volume 3 (Ref. E). See Appendix D for an exhibit showing the methodology used to size this temporary sediment basin. Hydraulic calculations have been included in Appendix D for the stage-storage discharge relationship for the temporary sediment basin.

All D, E, and OS basins will drain to their respective design points and leave the site undetained into the Leland Creek or Grand Park Meadow Basin. These basins will not receive treatment or be detained because DB ponds are not feasible within these basins due to existing site constraints.

III. DRAINAGE DESIGN CRITERIA

A. Regulations

The Town of Fraser has adopted Grand County Storm Drainage Design and Technical Criteria Manual (Ref. A).

This Phase III Report is in accordance with Grand County's Storm Drainage Design and Technical Criteria Manual (Ref. A), Fraser's Municipal Code (Ref. B) and the Mile High Flood District (MHFD) Storm Drainage Criteria Manual (Ref. C, D and E). These manuals were used as a basis of design for the Site. The report will analyze the minor (5-year) and major (100-year) storm events. The 5-year storm was used for the minor storm event because there will be curb and gutter throughout the Site which is the criteria for the minor storm to be considered the 5-year storm event per Grand County's Storm Drainage Design and Technical Criteria Manual (Ref. A). All applicable figures, tables, and graphs from these manuals have been included in the Appendices.

The drainage design of the Site adheres to the requirements of Section 404 of the Clean Water Act, Section 106 of the National Historic Preservation Act of 1966 and the Endangered Species Act. Additionally, the drainage design conforms to all applicable local, state, and federal requirements for drainage design and stormwater discharge.

B. Development of Basic Data and Constraints

The "Storm Drainage Master Plan for Grand Park" by High Country Engineering, dated February 2006 (Ref. H) analyzes the runoff generated to the southwest of the railroad and the culvert capacities of all railroad crossings within the West Mountain development. This Phase III drainage report will conform to the culvert capacities established in this previously approved drainage report.

The proposed drainage conditions discussed herein will have no adverse impact to surrounding developments or properties.

C. Hydrological Criteria

HEC-HMS is a software developed by US Army Corps of Engineers, and it will be used to generate and route hydrographs for all basins within the Site. The sub-basins were delineated based on the existing and proposed topography developed for the Site. All hydrologic calculations can be found in Appendix B. A proposed drainage map and a map of the HEC-HMS Basin Model Map for the Site can be found in Appendix F.

The intensity-frequency curves used in the hydrologic calculations were taken from Grand County's Storm Drainage Design and Technical Criteria Manual (Ref. A) and NOAA ATLAS 14 Point Precipitation Frequency Estimates, which can be found in Appendix A. All drainage infrastructure was analyzed and designed for both the minor (5-year) and major (100-year) storm events. The 5-year storm was used for the minor storm event because there will be curb and gutter throughout the Site which is the criteria for the minor storm to be considered the 5-year storm event per Grand County's Storm Drainage Design and Technical Criteria Manual (Ref. A). All applicable figures, tables, and graphs from these manuals have been included in the Appendices.

The SCS Curve Number Loss method was used in HEC-HMS to evaluate how much precipitation will infiltrate before generating runoff. The central assumption made when using the SCS Curve Number Loss method is that the soil will infiltrate up to 20% of the soil's maximum potential retention before producing runoff. We adjusted this assumption to begin producing runoff after only 5% of the soils maximum potential retention has been infiltrated. This assumption makes this analysis a more conservative estimate for the runoff produced within the Site. Modifying this assumption is supported by Ajmal, et. al. (2020) (Ref. J) for steep slopes, forested regions, or mountainous areas because the SCS Curve Number Loss Method was developed for relatively flat agricultural areas which allow significantly more infiltration. See Appendix E for excerpts supporting this modification to the analysis. All curve number and lag time calculations, HEC-HMS inputs, and HEC-HMS outputs can be found in Appendix B. A picture from the HEC-HMS basin model as well as a map showing all elements in the HEC-HMS model and their existing and proposed flow rates have been included in Appendix F.

The proposed DB within Basin B has been provided for water quality treatment and stormwater detention as defined in Grand County's Storm Drainage Design and Technical Criteria Manual (Ref. A). The modified FAA procedure was used to size the DB, following section 10.2.2 of the Grand County Storm Drainage Design and Technical Criteria Manual (Ref. A), because the HEC-HMS software was used for hydrologic calculations instead of the rational method. When sizing the required detention volume for the DB, the 10-year storm event was used for the minor storm because section 10.2 of Grand County's Storm Drainage Design and Technical Criteria Manual specifies "For detention purposes, the minor storm event shall be the 10-year recurrence interval, and the major storm event shall be the 100-year recurrence interval." Results for the detention pond sizing can be found in Appendix D.

MHFD's Outlet Structure Design worksheet was used to design the DB's outlet structure to restore developed stormwater flows to their historic conditions before releasing flows to the existing downstream storm infrastructure. No floodplain limits will be adversely impacted by the development of the Site, and downstream properties will not be negatively impacted by the developed stormwater.

D. Hydraulic Criteria

Hydraulic calculations for detention pond sizing were based on the modified FAA method. Hydraulic calculations for the DB outlet structure design were based on the MHFD outlet structure spreadsheet (a part of the MHFD-detention_v4.07 spreadsheet). The results from both of these spreadsheets for Pond B can be found in Appendix D. Temporary sediment basins will be used to treat the runoff generated within Basins A4 and C before being discharged into Spring Meadow Basin or Leland Creek Basin. An exhibit as well as stage storage discharge tables for these temporary sediment basins can be found in Appendix D.

Street and inlet capacity designs were performed and based on Grand County's Storm Drainage Design and Technical Criteria Manual (Ref. A) and design spreadsheets provided by MHFD which can be found in Appendix C. Curb cuts will be used to drain the end of two cul de sacs, so hydraulic calculations were performed for the curb cut's capacity using Hydraflow Express and these calculations have been included in Appendix C. Hydraulic calculations for swale capacity and velocity, area inlet Capacities, and culvert capacities were performed using the Hydraflow Express add-on for the Civil3D program,

and the results can be found in Appendix C. Hydraflow Express uses the Manning's equation to compute flow at a known depth or a depth at a known flow.

Hydraulic grade lines and storm pipe capacities were designed and modeled using StormCAD. StormCAD uses the routed hydrograph method and the Manning's equation to compute the hydraulic grade line throughout a pipe network. See Appendix C for the StormCAD Output Tables and keymap.

E. Stormwater Quality Criteria

Water quality measures have been provided with the designs of the proposed DB, forebay, and outlet structure for proposed detention Pond B. The DB will have been designed to incorporate a structure that releases flows for the water quality capture volume (WQCV), minor (10-year) storm event, and the major (100-year) storm event. Please see the Proposed Drainage Map found in Appendix F of this report for basin flow information.

F. Variances from Criteria

No variances are being requested at this time.

IV. DRAINAGE FACILITY DESIGN

A. General Concepts

Low Impact Development (LID) practices and strategies have been applied to the comprehensive land planning and engineering design approach to managing stormwater runoff. The primary objective of these concepts is the preservation of the natural features of the property by arranging the development to minimize Site grading, impacts to existing vegetation and wetlands, as well as providing open space areas. The drainage design will generally maintain the historic drainage patterns and release rates for the Site. The DB for the Site has been located to minimize subsurface systems and control the developed discharge prior to entering the established waterways thus reducing the impact to the surrounding tributaries.

Runoff will be captured by 5-foot, 10-foot, and 15-foot Type R inlets that are on-grade or in sump locations, along with Type C and D inlets for area drains. The runoff will then be conveyed via grass-lined or riprap-lined swales or proposed subsurface storm infrastructure towards its proposed DB or temporary sediment basin. The DB will discharge less than historic rates via a pipe from the outlet structure to an existing storm infrastructure that will convey the flows across the Union Pacific Railroad.

B. Specific Details

Sub-basin A4.1

Sub-basin A4.1 is 2.11 acres comprised of paved area and open space. Runoff generated within the basin will drain northeast to Design Point A4.1 where it will be captured by a proposed on-grade Type-R Inlet. After being captured, the flows will be conveyed to the north to temporary sediment basin A4 via proposed storm infrastructure and a grass lined swale. After being treated by the temporary sediment basin, the flows will be discharged to the north into Spring Meadow Basin which will drain to an existing forty-eight (48") storm pipe that will convey the flows across the Union Pacific Railroad. If the inlet were to get clogged, the runoff would continue east along Grand Park Drive until it is captured by Inlet-40 at Design Point C2.

Sub-basin A4.2
Sub-basin A4.2 is 0.48 acres comprised of paved area. Runoff generated within the basin will drain east to Design Point A4.2 where it will be captured by a proposed on-grade Type-R Inlet. After being captured, the flows will be conveyed to the north to temporary sediment basin A4 via proposed storm infrastructure and a grass lined swale. After being treated by the temporary sediment basin, the flows will be discharged to the north into Spring Meadow Basin which will drain to an existing forty-eight (48") storm pipe that will convey the flows across the Union Pacific Railroad. If the inlet were to get clogged, the runoff would continue east along Grand Park Drive until it is captured by Inlet-41 at Design Point C2.1.

Sub-basin A4.3
Sub-basin A4.3 is 7.33 acres comprised of single-family lots and paved area. Runoff generated within the basin will drain northwest where it will be conveyed by grass lined swales to Design Point A4.3 where it will enter temporary sediment basin A4. After being treated by the temporary sediment basin, the flows will be discharged to the north into Spring Meadow Basin which will drain to an existing forty-eight (48") storm pipe that will convey the flows across the Union Pacific Railroad.

This temporary sediment basin was sized according to Table SB-1 in the Sediment Basin Section of the Mile High Flood District (MHFD) Storm Drainage Criteria Manual volume 3 (Ref. E). An exhibit has been included in Appendix D showing the methodology used to size this temporary sediment basin. Hydraulic calculations have been included for the stage-storage discharge relationship for the temporary sediment basin and these calculations can be found in Appendix D. This temporary sediment basin will remain in place until the next phase of construction for the development commences.

Sub-basin B
Sub-basin B is 5.63 ac
open space. The runof
will convey the flows to
be discharged to the nc
four (24") inch culvert tl

As development increases within the Spring Meadow Basin, the temporary sediment basin will be removed and a DB (Pond A) will be constructed upstream of the existing 48-inch culvert to reduce the increased runoff from the basin (insert name of the drainage report here).

l, and
which
off will
enty-

Pond B has a total required detention volume of 1.947 acre-feet using the modified FAA which is equal to the combined minor and major required detention volumes. The graded volume of Pond B has 3.737 acre-feet at a depth of 10 feet. The MHFD Outlet Structure Design spreadsheet (MHFD-Detention, Version 4.07, June 2025) was used to design the outlet structure for Pond B. In the 10-year storm, Pond B will detain a maximum volume of 1.635 acre-feet at a depth of 6.52 feet, and in the 100-year storm, Pond B will detain a maximum volume of 2.396 acre-feet at a depth of 7.95 feet. Per the HEC-HMS hydrologic model, the 100-year storm predeveloped peak flow is 37.0 cfs. The pond outlet structure has been designed to release the flows at a peak rate of 26.3 cfs. This pond's release rate is approximately 70% of the predeveloped peak flow rate to account for Basin OS3 being released undetained. The modified FAA method and MHFD Outlet Structure Design spreadsheet output files for DB Pond B have been included in Appendix D.

Sub-basin B1.1
Sub-basin B1.1 is 2.49 acres comprised of roadways and single-family lots. Runoff generated within the basin will drain northeast to a proposed on-grade type R inlet at Design Point B1.1. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure and proposed riprap lined swales until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would drain south along Outpost Club Drive until it is captured by Inlet-04 at Design Point B1.4.

Sub-basin B1.2
Sub-basin B1.2 is 1.74 acres comprised of roadways, single-family lots, and open space. Runoff generated within the basin will drain northeast to a proposed on-grade type R inlet at Design Point B1.2. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure and proposed riprap-lined swales until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would drain south along Outpost Club Drive until it is captured by Inlet-04 at Design Point B1.4.

Sub-basin B1.3
Sub-basin B1.3 is 4.02 acres comprised of single-family lots and open space. Runoff generated within the basin will sheet flow to the east where it will be captured by a proposed grass lined swale that will convey the runoff to a proposed type C inlet at Design Point B1.3. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure and proposed riprap-lined swales until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would pond until it can flow into Outpost Club Drive where it will be captured by Inlet-04 at Design Point B1.4.

Sub-basin B1.4
Sub-basin B1.4 is 0.89 acres comprised of roadways, single-family lots, and open space. Runoff generated within the basin will drain along Outpost Club Drive to a proposed sump type R inlet at Design Point B1.4. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure and proposed riprap-lined swales until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would overtop the crown of the road and it will be captured by Inlet-05 at Design Point B1.5.

Sub-basin B1.5
Sub-basin B1.5 is 1.19 acres comprised of roadways, multi-family lots, and open space. Runoff generated within the basin will drain along Outpost Club Drive to a proposed sump type R inlet at Design Point B1.5. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure and proposed riprap-lined swales until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would overtop the curb and it will be captured by FES-02 at Design Point B2.1.

Sub-basin B2.1
Sub-basin B2.1 is 7.77 acres comprised of single and multi-family lots and open space. Runoff generated within the basin will drain east to a proposed type C inlet at Design Point B2.1. After being captured, the runoff will be conveyed to the northeast via proposed storm infrastructure and a proposed riprap-lined swale until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would pond until it can flow into Terrain Way where it will be captured by Inlet-06 at Design Point B2.2.

Sub-basin B2.2

Sub-basin B2.2 is 0.52 acres comprised of roadways. Runoff generated within the basin will drain north or south to a proposed sump type R inlet at Design Point B2.2. After being captured, the runoff will be conveyed to the northeast via proposed storm infrastructure and a proposed riprap-lined swale until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would overtop the crown of the road and it will be captured by Inlet-08 at Design Point B2.4.

Sub-basin B2.3

Sub-basin B2.3 is 0.20 acres comprised of roadways. Runoff generated within the basin will drain south and east to a proposed on-grade type R inlet at Design Point B2.3. After being captured, the runoff will be conveyed to the northeast via proposed storm infrastructure and a proposed riprap-lined swale until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would follow the road's flowline from Overlook Drive onto Bugle Court where the runoff will flow into DB Pond B via a cul de sac curb cut at Design Point B4.

Sub-basin B2.4

Sub-basin B2.4 is 0.40 acres comprised of roadways. Runoff generated within the basin will drain north to a proposed on-grade type R inlet at Design Point B2.4. After being captured, the runoff will be conveyed to the northeast via proposed storm infrastructure and a proposed grass lined swale until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Overlook Drive's flowline until it intersects Grand Park Drive, where the runoff will be conveyed to the northeast and captured by Inlet-63 at Design Point D1.2.

Sub-basin B3.1

Sub-basin B3.1 is 3.54 acres comprised of future multi-family lots. Runoff generated within the basin will sheet flow to the east where it will be captured by a proposed grass lined swale that will convey the runoff to a proposed type C inlet at Design Point B3.1. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure and a proposed riprap-lined swale until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would pond until it can flow into Terrain Way where it will be captured by Inlet-10 at Design Point B3.3.

Sub-basin B3.2

Sub-basin B3.2 is 3.04 acres comprised of future multi-family lots. Runoff generated within the basin will sheet flow to the east where it will be captured by a proposed grass lined swale that will convey the runoff to a proposed type C inlet at Design Point B3.2. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure and a proposed riprap-lined swale until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would pond until it can flow into Terrain Way where it will be captured by Inlet-10 at Design Point B3.3.

Sub-basin B3.3
Sub-basin B3.3 is 0.33 acres comprised of future roadways. Runoff generated within the basin will drain to the north or south where it will be captured by a proposed sump Type R Inlet at Design Point B3.3. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure and a proposed riprap-lined swale until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would overtop the crown of the road and it will be captured by Inlet-11 at Design Point B3.4.

Sub-basin B3.4
Sub-basin B3.4 is 0.28 acres comprised of future roadways. Runoff generated within the basin will drain to the north or south where it will be captured by a proposed sump Type R Inlet at Design Point B3.4. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure and a proposed riprap-lined swale until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would pond until it can be conveyed along Road A where it will captured by Inlet-13 at Design Point B3.6.

Sub-basin B3.5
Sub-basin B3.5 is 1.13 acres comprised of future roadways, future multi-family lots, and open space. Runoff generated within the basin will drain to the east where it will be captured by a proposed on-grade Type R Inlet at Design Point B3.5. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure and a proposed riprap-lined swale until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Road A until it is captured by future inlets within the cul de sac at the end of Road A.

Sub-basin B3.6
Sub-basin B3.6 is 0.15 acres comprised of future roadways. Runoff generated within the basin will drain to the east where it will be captured by a proposed on-grade Type R Inlet at Design Point B3.6. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure and a proposed riprap-lined swale until it is eventually discharged into DB Pond B at design point B. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Road A until it is captured by future inlets within the cul de sac at the end of Road A.

Sub-basin B4
Sub-basin B4 is 4.45 acres comprised of roadways, single-family lots, and open space. Runoff generated within the basin will drain to the north where it will be conveyed into DB Pond B via a cul de sac curb cut at Design Point B4. After being detained in DB Pond B, the runoff will be discharged to the north to design point OS3, where the runoff will be captured by an existing twenty-four (24") inch culvert that will convey the runoff across the Union Pacific railroad. A Hydraflow Express calculation has been performed to analyze the capacity of the curb cut at the end of the cul de sac and this calculation can be found in Appendix C.

Sub-basin C

Sub-basin C is 1.71 acres comprised of a temporary sediment basin and open space. Runoff generated within the basin will drain into the temporary sediment basin at Design Point C. After being held in temporary sediment basin C, the runoff will be discharged to the east into Leland Creek. The runoff will be conveyed to the northeast via Leland Creek and the existing storm infrastructure that will convey the runoff across the Union Pacific railroad. This temporary sediment basin was sized according to Table SB-1 in the Sediment Basin Section of the Mile High Flood District (MHFD) Storm Drainage Criteria Manual volume 3 (Ref. E). An exhibit has been included in Appendix D showing the methodology used to size this temporary sediment basin. Hydraulic calculations have been included for the stage-storage discharge relationship for the temporary sediment basin and these calculations can be found in Appendix D. This temporary sediment basin will remain in place until the next phase of construction for the development commences.

Sub-basin C1

Sub-basin C1 is 2.92 acres comprised of roadways, single-family lots, and open space. Runoff generated within the basin will drain to the southeast where it will be conveyed into sub-basin C2.3 via a cul de sac curb cut at Design Point C1. The runoff will then be conveyed through a couple 18-inch culverts before being captured by a proposed Type C inlet at Design Point C2.3. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure to proposed temporary sediment basin C at design point C. After being held in temporary sediment basin C, the runoff will be discharged to the east into Leland Creek. The runoff will be conveyed to the northeast via Leland Creek and the existing storm infrastructure that will convey the runoff across the Union Pacific railroad. A Hydraflow Express calculation has been performed to analyze the capacity of the curb cut at the end of the cul de sac and this calculation can be found in Appendix C.

Sub-basin C2.1

Sub-basin C2.1 is 0.78 acres comprised of roadways and open space. Runoff generated within the basin will drain to the east where it will be captured by a proposed on-grade Type R Inlet at Design Point C2.1. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure to proposed temporary sediment basin C at design point C. After being held in temporary sediment basin C, the runoff will be discharged to the east into Leland Creek. The runoff will be conveyed to the northeast via Leland Creek and the existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Grand Park Drive until it is captured by Inlet-45 at Design Point C2.6.

Sub-basin C2.2

Sub-basin C2.2 is 0.41 acres comprised of roadways and open space. Runoff generated within the basin will drain to the east where it will be captured by a proposed on-grade Type R Inlet at Design Point C2.2. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure to proposed temporary sediment basin C at design point C. After being held in temporary sediment basin C, the runoff will be discharged to the east into Leland Creek. The runoff will be conveyed to the northeast via Leland Creek and the existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Grand Park Drive until it is captured by Inlet-46 at Design Point C2.7.

Sub-basin C2.3

Sub-basin C2.3 is 3.44 acres comprised of roadways, single-family lots, and open space. Runoff generated within the basin will drain to the east where it will be conveyed through a couple 18-inch culverts and ultimately captured by a proposed Type C Inlet at Design Point C2.3. After being captured, the runoff will be conveyed to the east via proposed storm infrastructure to proposed temporary sediment basin C at design point C. After being held in temporary sediment basin C, the runoff will be discharged to the east into Leland Creek. The runoff will be conveyed to the northeast via Leland Creek and the existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the

inlet were to get clogged, the runoff would pond until it can be conveyed along Grand Park Drive where it would be captured by Inlet-45 at Design Point C2.6.

Sub-basin C2.4
Sub-basin C2.4 is 1.05 acres comprised of roadways, single-family lots and open space. Runoff generated within the basin will drain to the east where it will be captured by a proposed on-grade Type R Inlet at Design Point C2.4. After being captured, the runoff will be conveyed to the southeast via proposed storm infrastructure to proposed temporary sediment basin C at design point C. After being held in temporary sediment basin C, the runoff will be discharged to the east into Leland Creek. The runoff will be conveyed to the northeast via Leland Creek and the existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would enter the roundabout and continue to the east along Grand Park Drive until it is captured by Inlet-45 at Design Point C2.6.

Sub-basin C2.5
Sub-basin C2.5 is 0.16 acres comprised of roadways and open space. Runoff generated within the basin will drain to the east where it will be captured by a proposed on-grade Type R Inlet at Design Point C2.5. After being captured, the runoff will be conveyed to the southeast via proposed storm infrastructure to proposed temporary sediment basin C at design point C. After being held in temporary sediment basin C, the runoff will be discharged to the east into Leland Creek. The runoff will be conveyed to the northeast via Leland Creek and the existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would enter the roundabout and continue to the east along Grand Park Drive until it is captured by Inlet-45 at Design Point C2.6.

Sub-basin C2.6
Sub-basin C2.6 is 1.38 acres comprised of roadways, single-family lots, and open space. Runoff generated within the basin will drain to the east where it will be captured by a proposed on-grade Type R Inlet at Design Point C2.6. After being captured, the runoff will be conveyed to the south via proposed storm infrastructure to proposed temporary sediment basin C at design point C. After being held in temporary sediment basin C, the runoff will be discharged to the east into Leland Creek. The runoff will be conveyed to the northeast via Leland Creek and the existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Grand Park Drive until it is captured by Inlet-61 at Design Point D1.1.

Sub-basin C2.7
Sub-basin C2.7 is 0.48 acres comprised of roadways and open space. Runoff generated within the basin will drain to the east where it will be captured by a proposed on-grade Type R Inlet at Design Point C2.7. After being captured, the runoff will be conveyed to the south via proposed storm infrastructure to proposed temporary sediment basin C at design point C. After being held in temporary sediment basin C, the runoff will be discharged to the east into Leland Creek. The runoff will be conveyed to the northeast via Leland Creek and the existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Grand Park Drive until it is captured by Inlet-62 at Design Point D2.

Sub-basin D1.1
Sub-basin D1.1 is 3.92 acres comprised of roadways, single-family lots, and open space. Runoff generated within the basin will drain east to an on-grade Type R inlets at Design Point D1.1. After being captured, the runoff will be conveyed to the south into a low tailwater basin before being discharged into Leland Creek via proposed subsurface infrastructure. The runoff will be conveyed to the northeast via Leland Creek and existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Grand Park Drive until it is captured by Inlet-63 at Design Point D1.2.

Sub-basin D1.2
Sub-basin D1.2 is 2.74 acres comprised of roadways, single-family lots, and open space. Runoff generated within the basin will drain southeast to an on-grade Type R inlets at Design Point D1.2. After being captured, the runoff will be conveyed to the south into a low tailwater basin before being discharged into Leland Creek via proposed subsurface infrastructure. The runoff will be conveyed to the northeast via Leland Creek and existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Grand Park Drive until it is captured by Inlet-80 at Design Point E1.1.

Sub-basin D2
Sub-basin D2 is 0.32 acres comprised of roadways and open space. Runoff generated within the basin will drain east to an on-grade Type R inlet at Design Point D2. After being captured, the runoff will be conveyed to the south into a low tailwater basin before being discharged into Leland Creek via proposed subsurface infrastructure. The runoff will then be conveyed to the northeast via Leland Creek and existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Grand Park Drive until it is captured by Inlet-81 at Design Point E1.2.

Sub-basin E1.1
Sub-basin E1.1 is 2.58 acres comprised of roadways, single-family lots, and open space. Runoff generated within the basin will drain south to an on-grade Type R at Design Point E1.1. After being captured, the runoff will be conveyed to the south into a low tailwater basin before being discharged into Leland Creek via proposed subsurface infrastructure. The runoff will then be conveyed to the northeast via Leland Creek and existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Grand Park Drive until it is captured by existing inlets on the west side of the railroad underpass.

Sub-basin E1.2
Sub-basin E1.2 is 0.30 acres comprised of roadways and open space. Runoff generated within the basin will drain south to an on-grade Type R at Design Point E1.1. After being captured, the runoff will be conveyed to the south into a low tailwater basin before being discharged into Leland Creek via proposed subsurface infrastructure. The runoff will then be conveyed to the northeast via Leland Creek and existing storm infrastructure that will convey the runoff across the Union Pacific railroad. If the inlet were to get clogged, the runoff would continue along Grand Park Drive until it is captured by existing inlets on the west side of the railroad underpass.

Sub-basin OS1
Sub-basin OS1 is 0.93 acres comprised of single-family lots and open space. Runoff generated within the basin will drain south to a proposed 24-inch culvert at Design Point OS1. After being captured, the runoff will be conveyed to the south to Leland Creek via proposed subsurface infrastructure. The runoff will be conveyed to the northeast via Leland Creek and existing storm infrastructure that will convey the runoff across the Union Pacific railroad.

Sub-basin OS2
Sub-basin OS2 is 2.42 acres comprised of single-family lots. Runoff generated within the basin will drain southeast to the back of lots where it will follow historic drainage patterns.

Sub-basin OS3
Sub-basin OS3 is 4.11 acres comprised of future multi-family lots and open space. Runoff generated within the basin will drain north to design point OS3, where the runoff will be captured by an existing twenty-four (24”) inch culvert that will convey the runoff across the Union Pacific railroad.

V. CONCLUSIONS

A. Compliance with Standards

The drainage design for the Site conforms to Grand County's Storm Drainage Design and Technical Criteria Manual (Ref. A) and the Mile High Flood District (MHFD) Storm Drainage Criteria Manual where applicable. The report outlines the required design and construction of offline water quality basins within each applicable sub-basin.

B. Drainage Concept

The HEC-HMS software was used to create and route hydrographs to determine the historic and developed runoff values for the minor drainage basins throughout the Site. These basins were delineated based on the natural Site topography and the developed Site plan. The proposed DB pond was sized to detain the minor (10-year) and major (100-year) storm events as well as the WQCV. The proposed DB pond will release the developed flows below historic rates. The storm sewer system has been designed to capture the minor (5-year) and major (100-year) storm events. Temporary sediment basins will be used to treat runoff generated by basins whose DB pond has yet to be constructed. These temporary sediment basins will be removed as DB ponds are constructed due to the development entering the next phase of construction. This report has been written as a standalone report.

VI. REFERENCES

A) Grand County Storm Drainage Design and Technical Criteria Manual, August 1st, 2006

B) Fraser Municipal Code, Chapter 14: Town of Fraser Design and Construction Standards, 2007, revised 2024.

C) MHFD (Mile High Flood District). 1969. Urban Storm Drainage Criteria Manual. Volume 1: Management, Hydrology and Hydraulics. Revised March 2024. https://mhfd.org/resources/criteria-manual.

D) MHFD. 1969. Urban Storm Drainage Criteria Manual. Volume 2: Structures, Storage and Recreation. Revised January 2016. https://mhfd.org/resources/criteria-manual.

E) MHFD. 1992. Urban Storm Drainage Criteria Manual. Volume 3: Stormwater Best Management Practices. Revised March 2024. https://mhfd.org/resources/criteria-manual.

F) National Flood Hazard Layer FIRMette Map – 08049C0991C Effective Date January 2, 2008

G) USDA NRCS Soil Maps – Updated May 7, 2025

H) Storm Drainage Master Plan For Grand Park, High Country Engineering, February 17, 2006

I) HEC-HMS Technical Reference Manual. U.S. Army Corps of Engineers, Hydrologic Engineering Center. 2025.

J) A Pragmatic Slope-Adjusted Curve Number Model to Reduce Uncertainty in Predicting Flood Runoff from Steep Watersheds. Ajmal, M. Wassem, M., Kim, D., & Kim, T. 2020.

K) Computer Programs:

AutoCAD Civil3D Hydraflow Express Extension by Autodesk Inc. April 2010.

Detention Basin Design Workbook by MHFD, V.7, July 2022

Detention Volume by the Modified FAA Method by Urban Drainage and Flood Control District, V2.35, January 2015

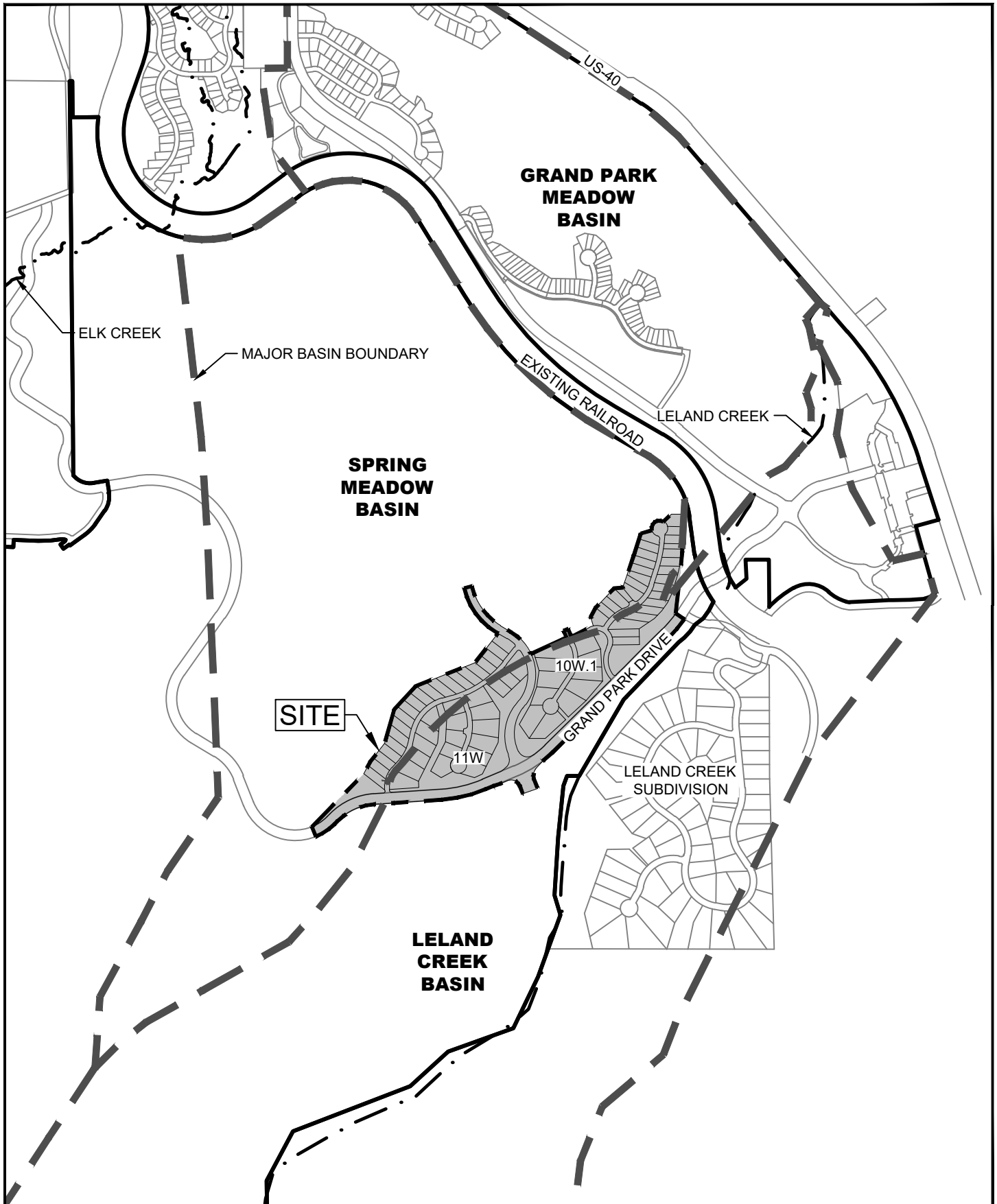
Hydrologic Engineering Center – Hydrologic Modeling System by USACE, V.4.13, July 2025.

OpenFlows StormCAD CONNECT Edition 4 by Bentley Systems. February 2023.

Street and Inlet Hydraulics Workbook by MHFD, V.6 August 2025

APPENDIX A
GENERAL MAPS

Vicinity Map
Soil Map
Firm Map
Precipitation Data



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

WEST MOUTAIN 10W.1 & 11W

VICINITY MAP

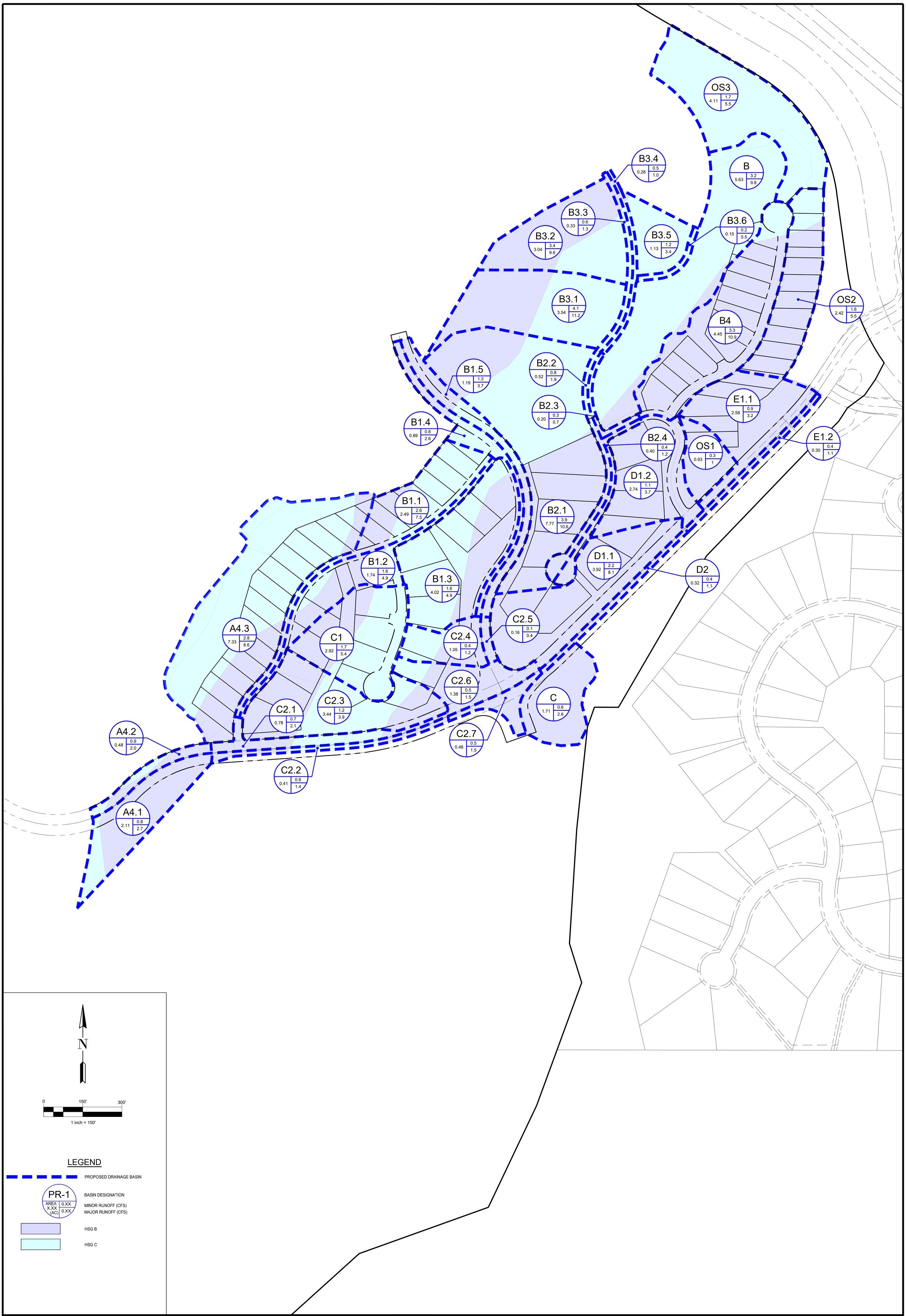
TOWN OF FRASER, CO DATE: 12/15/2025

0 1000'

1" = 1000'

N

1/29/2026 1:18 PM ; X:\GRAND PARK\DOCUMENTS\REPORTS\DRAINAGE\16.1 - FILING 1 - 8WB, 9W, 10W, 11W\PHASE 3 - 10WA1 - MAPS (VIC-FEMA-SOILS)\VICINITY MAP - WM 10W.1 & 11W.DWG;



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

GRAND PARK - WEST MOUNTAIN - 10W.1 & 11W

OVERALL BASIN SOILS MAP

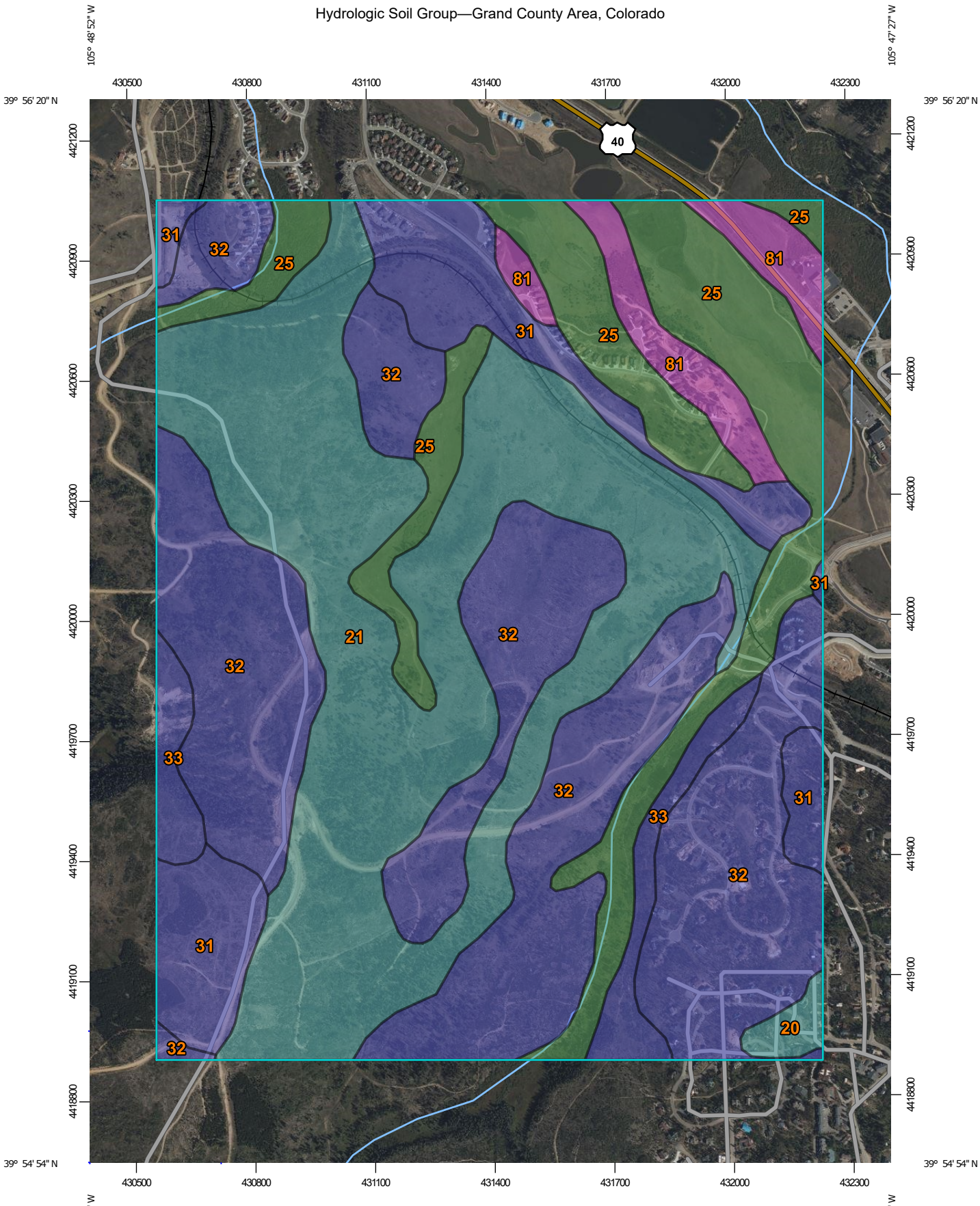
DATE: 01/09/2026

CREATED BY: JNS

SHEET 1

1/30/2026 12:26 PM ; X:\GRAND PARK\DOCUMENTS\REPORTS\DRAINAGE\16.1 - FILING 1 - 8WB, 9W, 10W, 11W\PHASE 3 - 10WA1 - MAPS (VIC-FEMA-SOILS)\SITE SOIL MAP.DWG;

Hydrologic Soil Group—Grand County Area, Colorado



Map Scale: 1:12,900 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Grand County Area, Colorado
Survey Area Data: Version 18, Aug 29, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 25, 2021—Sep 5, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
20	Cowdrey loam, 6 to 15 percent slopes	C	6.1	0.7%
21	Cowdrey loam, 15 to 45 percent slopes	C	288.8	32.4%
25	Cumulic Cryaquolls, nearly level	A/D	137.1	15.4%
31	Frisco-Peeler gravelly sandy loams, 2 to 6 percent slopes	B	81.8	9.2%
32	Frisco-Peeler gravelly sandy loams, 6 to 25 percent slopes	B	310.8	34.9%
33	Frisco-Peeler gravelly sandy loams, 25 to 65 percent slopes	B	28.9	3.2%
81	Tine gravelly sandy loam, 0 to 3 percent slopes	A	36.5	4.1%
Totals for Area of Interest			**890.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

NOTES TO USERS

use in administering the National Flood Insurance Program. It arily identify all areas subject to flooding, particularly from local e of small size. The **community map repository** should be ssible updated or additional flood hazard information.

detailed information in areas where **Base Flood Elevations** oodways have been determined, users are encouraged to consult es and Floodway Data and/or Summary of Stillwater Elevations within the Flood Insurance Study (FIS) report that accompanies rs should be aware that BFEs shown on the FIRM represent foot elevations. These BFEs are intended for flood insurance only and should not be used as the sole source of flood tion. Accordingly, flood elevation data presented in the FIS be utilized in conjunction with the FIRM for purposes of or floodplain management.

Flood Elevations shown on this map apply only landward American Vertical Datum of 1988 (NAVD 88). Users of this aware that coastal flood elevations are also provided in the llwater Elevations table in the Flood Insurance Study report on. Elevations shown in the Summary of Stillwater Elevations used for construction and/or floodplain management purposes igher than the elevations shown on this FIRM.

floodways were computed at cross sections and interpolated ections. The floodways were based on hydraulic considerations quirements of the National Flood Insurance Program. Floodway er pertinent floodway data are provided in the Flood Insurance this jurisdiction.

t in Special Flood Hazard Areas may be protected by **flood es.** Refer to Section 2.4 "Flood Protection Measures" of nce Study report for information on flood control structures n.

used in the preparation of this map was Universal Transverse zone 13. The **horizontal datum** was NAD83, GRS1980 nces in datum, spheroid, projection or UTM zones used in l FIRMs for adjacent jurisdictions may result in slight positional ap features across jurisdiction boundaries. These differences accuracy of this FIRM.

on this map are referenced to the North American Vertical . These flood elevations must be compared to structure and s referenced to the same **vertical datum.** For information rsion between the National Geodetic Vertical Datum of 1929 American Vertical Datum of 1988, visit the National Geodetic at http://www.ngs.noaa.gov/ or contact the National Geodetic llowing address:

Services

Survey

Highway
20910-3282

elevation, description, and/or location information for **bench marks** map, please contact the Information Services Branch of the tic Survey at **(301) 713-3242,** or visit its website at oaa.gov/.

ation shown on this FIRM was provided in digital format by the partment of Agriculture/ Service Center Agencies; produced from Quadrangles at a scale of 1:12,000, dated 2005 or later as a part of ultural Imagery Program.

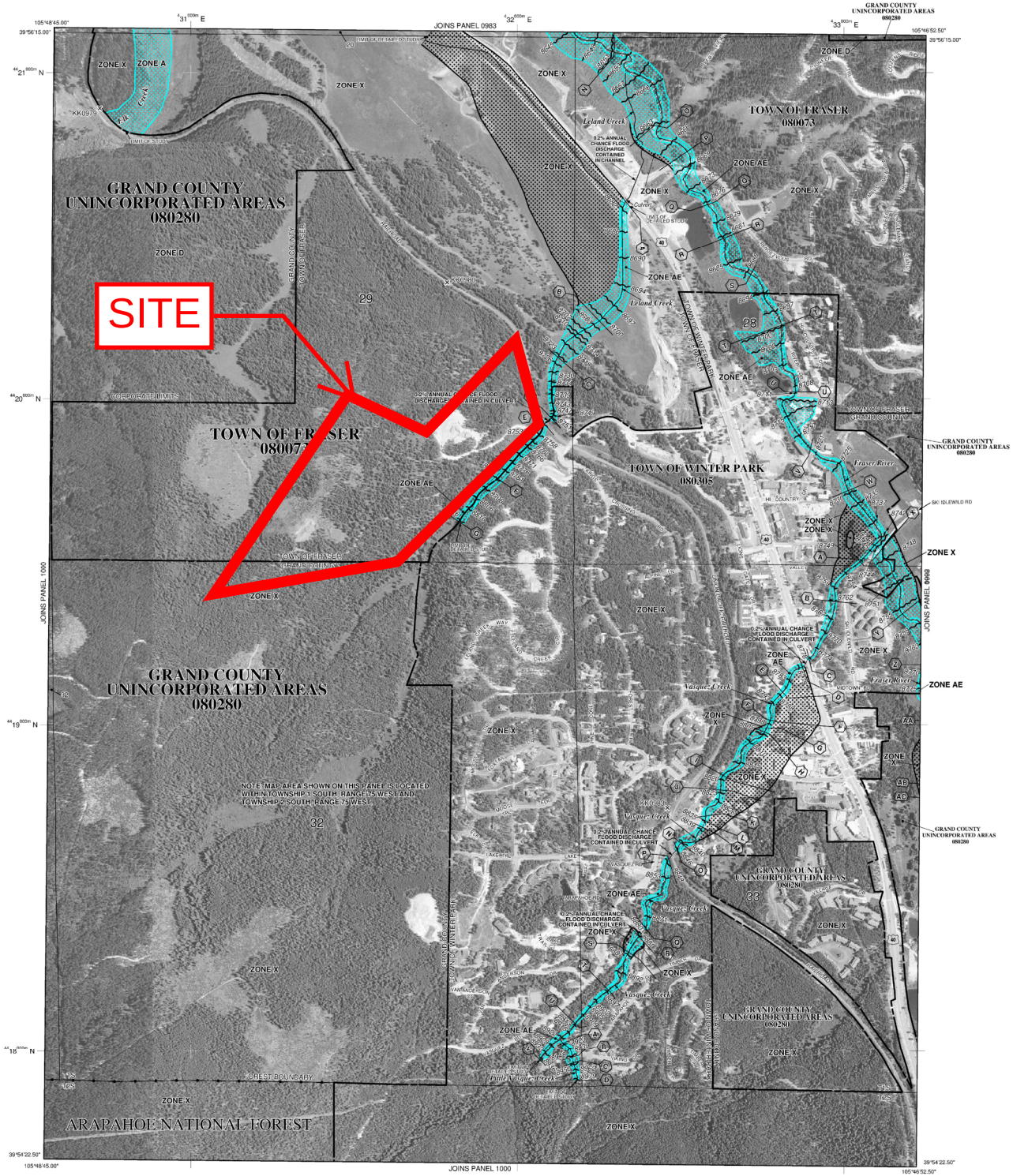
more detailed and up-to-date **stream channel configurations** n on the previous FIRM for this jurisdiction. The floodplains hat were transferred from the previous FIRM may have been nform to these new stream channel configurations. As a d Profiles and Floodway Data tables *in the Flood Insurance* hich contains authoritative *hydraulic data*) may reflect stream s that differ from what is shown on this map.

s shown on this map are based on the best data available blication. Because changes due to annexations or de-annexations rred after this map was published, map users should contact munity officials to verify current corporate limit locations.

he separately printed **Map Index** for an overview map of the the layout of map panels; community map repository addresses; Communities table containing National Flood Insurance Program community as well as a listing of the panels on which each ated.

MA Map Service Center at 1-800-358-9616 for information on ts associated with this FIRM. Available products may include d Letters of Map Change, a *Flood Insurance Study report*, rsions of this map. The FEMA Map Service Center may also be at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

estions about this map or questions concerning the National Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) A website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referred to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 13
- 6000000 M — 5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
January 2, 2008
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0991C

FIRM
FLOOD INSURANCE RATE MAP
GRAND COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 991 OF 1200
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GRAND COUNTY	080280	0991	C
FRASER, TOWN OF	080073	0991	C
WINTER PARK, TOWN OF	080305	0991	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
08049C0991C

EFFECTIVE DATE
JANUARY 2, 2008

Federal Emergency Management Agency

NOAA Atlas 14, Volume 8, Version 2
Location name: Fraser, Colorado, USA*
Latitude: 39.9249°, Longitude: -105.8001°
Elevation: 8873.92 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.169** (0.130-0.219)	**0.202** (0.156-0.263)	**0.262** (0.201-0.342)	**0.317** (0.242-0.416)	**0.401** (0.300-0.559)	**0.472** (0.344-0.668)	**0.548** (0.387-0.800)	**0.632** (0.428-0.953)	**0.751** (0.490-1.17)	**0.848** (0.537-1.34)
10-min	**0.247** (0.191-0.321)	**0.296** (0.228-0.385)	**0.383** (0.294-0.500)	**0.464** (0.354-0.609)	**0.587** (0.439-0.819)	**0.691** (0.504-0.977)	**0.803** (0.566-1.17)	**0.925** (0.627-1.40)	**1.10** (0.717-1.72)	**1.24** (0.786-1.96)
15-min	**0.301** (0.233-0.392)	**0.360** (0.278-0.469)	**0.467** (0.359-0.610)	**0.566** (0.432-0.743)	**0.715** (0.536-0.999)	**0.842** (0.614-1.19)	**0.979** (0.690-1.43)	**1.13** (0.764-1.70)	**1.34** (0.875-2.09)	**1.51** (0.958-2.39)
30-min	**0.385** (0.297-0.500)	**0.460** (0.354-0.598)	**0.595** (0.457-0.778)	**0.720** (0.550-0.946)	**0.910** (0.681-1.27)	**1.07** (0.780-1.52)	**1.24** (0.877-1.81)	**1.43** (0.970-2.16)	**1.70** (1.11-2.65)	**1.92** (1.21-3.02)
60-min	**0.476** (0.367-0.618)	**0.559** (0.430-0.727)	**0.711** (0.546-0.929)	**0.855** (0.653-1.12)	**1.08** (0.807-1.50)	**1.26** (0.924-1.79)	**1.47** (1.04-2.15)	**1.70** (1.15-2.57)	**2.02** (1.32-3.16)	**2.29** (1.45-3.61)
2-hr	**0.567** (0.443-0.728)	**0.658** (0.513-0.846)	**0.827** (0.643-1.07)	**0.989** (0.764-1.28)	**1.24** (0.944-1.72)	**1.46** (1.08-2.05)	**1.70** (1.21-2.46)	**1.96** (1.35-2.94)	**2.35** (1.55-3.63)	**2.66** (1.70-4.15)
3-hr	**0.640** (0.503-0.817)	**0.728** (0.572-0.930)	**0.900** (0.704-1.15)	**1.07** (0.832-1.38)	**1.34** (1.03-1.85)	**1.58** (1.18-2.21)	**1.84** (1.33-2.66)	**2.14** (1.48-3.19)	**2.57** (1.71-3.96)	**2.93** (1.89-4.55)
6-hr	**0.805** (0.641-1.01)	**0.889** (0.707-1.12)	**1.07** (0.847-1.35)	**1.26** (0.991-1.60)	**1.58** (1.23-2.17)	**1.87** (1.42-2.61)	**2.21** (1.61-3.17)	**2.59** (1.82-3.84)	**3.16** (2.13-4.83)	**3.64** (2.36-5.59)
12-hr	**1.02** (0.825-1.27)	**1.11** (0.895-1.39)	**1.32** (1.06-1.65)	**1.55** (1.24-1.95)	**1.96** (1.56-2.69)	**2.34** (1.80-3.24)	**2.79** (2.07-3.98)	**3.31** (2.35-4.87)	**4.08** (2.79-6.20)	**4.75** (3.12-7.21)
24-hr	**1.25** (1.02-1.54)	**1.38** (1.12-1.70)	**1.66** (1.35-2.05)	**1.98** (1.60-2.46)	**2.52** (2.03-3.42)	**3.03** (2.36-4.14)	**3.62** (2.71-5.10)	**4.30** (3.09-6.26)	**5.32** (3.67-7.99)	**6.18** (4.10-9.29)
2-day	**1.46** (1.21-1.78)	**1.66** (1.37-2.02)	**2.07** (1.70-2.53)	**2.50** (2.04-3.07)	**3.21** (2.61-4.28)	**3.86** (3.03-5.20)	**4.60** (3.48-6.38)	**5.43** (3.94-7.80)	**6.68** (4.64-9.90)	**7.72** (5.18-11.5)
3-day	**1.62** (1.35-1.95)	**1.84** (1.53-2.22)	**2.29** (1.90-2.78)	**2.76** (2.28-3.37)	**3.55** (2.90-4.69)	**4.26** (3.37-5.69)	**5.06** (3.86-6.98)	**5.97** (4.36-8.52)	**7.32** (5.13-10.8)	**8.46** (5.71-12.5)
4-day	**1.76** (1.47-2.11)	**1.99** (1.66-2.38)	**2.46** (2.05-2.96)	**2.94** (2.44-3.57)	**3.75** (3.08-4.94)	**4.49** (3.57-5.97)	**5.33** (4.08-7.31)	**6.28** (4.60-8.90)	**7.68** (5.41-11.3)	**8.87** (6.01-13.1)
7-day	**2.14** (1.81-2.54)	**2.37** (2.00-2.82)	**2.85** (2.40-3.40)	**3.34** (2.80-4.01)	**4.17** (3.45-5.41)	**4.92** (3.95-6.46)	**5.77** (4.46-7.83)	**6.74** (4.99-9.47)	**8.18** (5.80-11.9)	**9.38** (6.42-13.7)
10-day	**2.47** (2.11-2.92)	**2.72** (2.31-3.21)	**3.21** (2.72-3.80)	**3.71** (3.13-4.42)	**4.53** (3.77-5.81)	**5.27** (4.25-6.86)	**6.11** (4.75-8.21)	**7.05** (5.24-9.82)	**8.45** (6.03-12.2)	**9.61** (6.62-14.0)
20-day	**3.39** (2.93-3.94)	**3.72** (3.21-4.34)	**4.33** (3.72-5.07)	**4.89** (4.18-5.76)	**5.75** (4.79-7.16)	**6.47** (5.25-8.21)	**7.26** (5.67-9.52)	**8.11** (6.07-11.1)	**9.32** (6.70-13.2)	**10.3** (7.18-14.8)
30-day	**4.15** (3.61-4.79)	**4.59** (3.99-5.31)	**5.34** (4.63-6.21)	**6.00** (5.16-7.01)	**6.94** (5.79-8.50)	**7.70** (6.27-9.63)	**8.49** (6.67-11.0)	**9.33** (7.01-12.6)	**10.5** (7.56-14.7)	**11.4** (7.97-16.2)
45-day	**5.13** (4.50-5.88)	**5.72** (5.01-6.56)	**6.69** (5.84-7.70)	**7.49** (6.50-8.69)	**8.61** (7.22-10.4)	**9.48** (7.76-11.7)	**10.4** (8.17-13.3)	**11.3** (8.49-15.0)	**12.4** (9.02-17.2)	**13.4** (9.41-18.9)
60-day	**5.98** (5.27-6.81)	**6.70** (5.90-7.64)	**7.87** (6.91-9.02)	**8.83** (7.71-10.2)	**10.1** (8.54-12.2)	**11.2** (9.16-13.7)	**12.2** (9.63-15.5)	**13.2** (9.98-17.4)	**14.5** (10.5-19.9)	**15.5** (11.0-21.8)

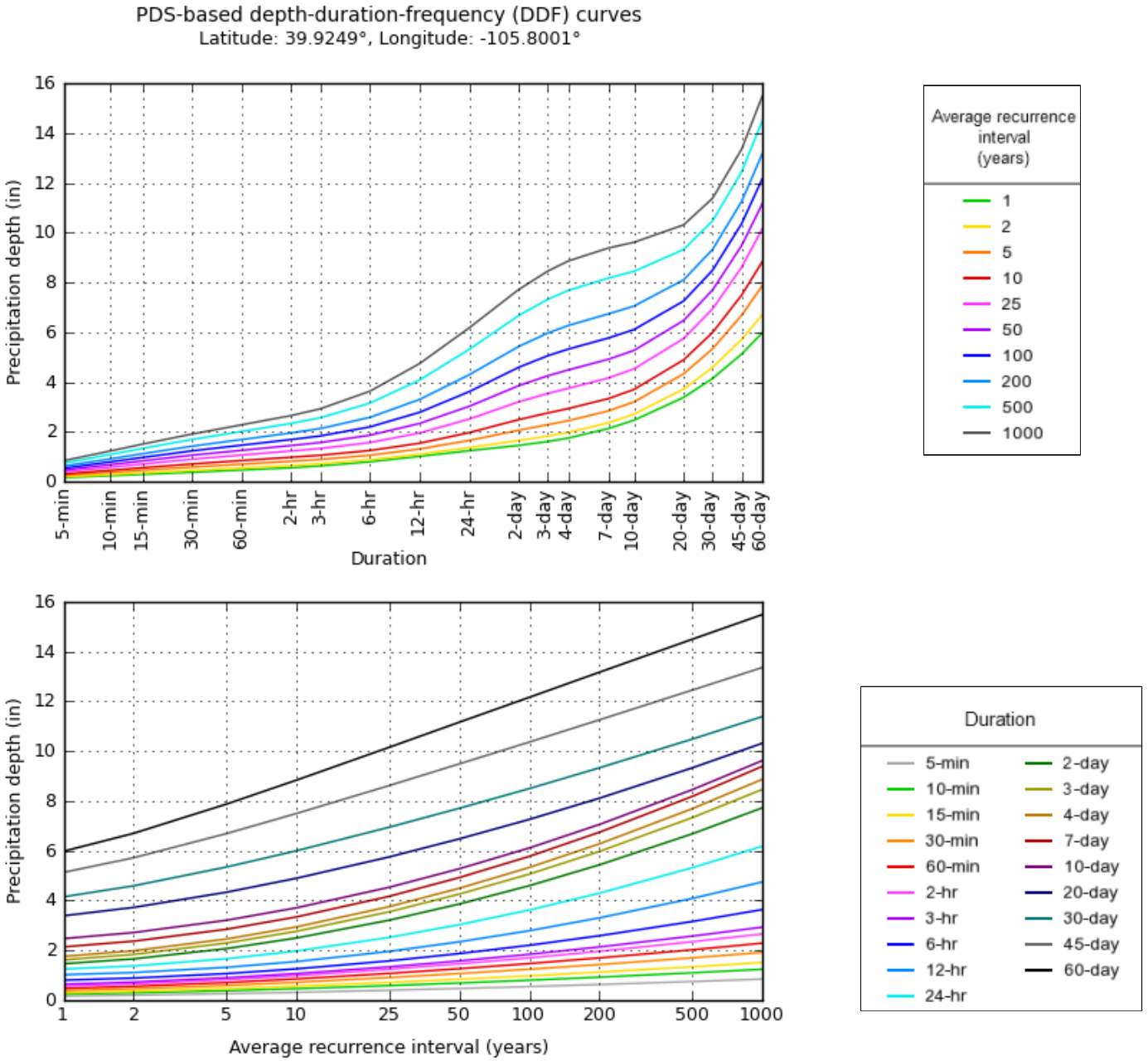
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



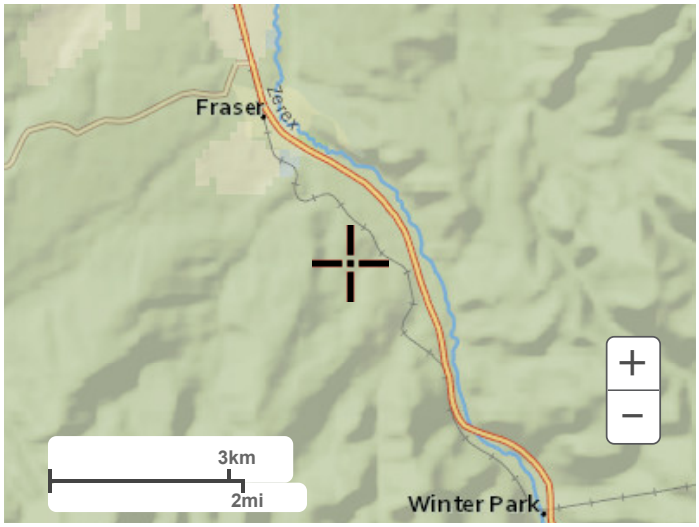
NOAA Atlas 14, Volume 8, Version 2

Created (GMT): Tue Jun 28 20:11:21 2022

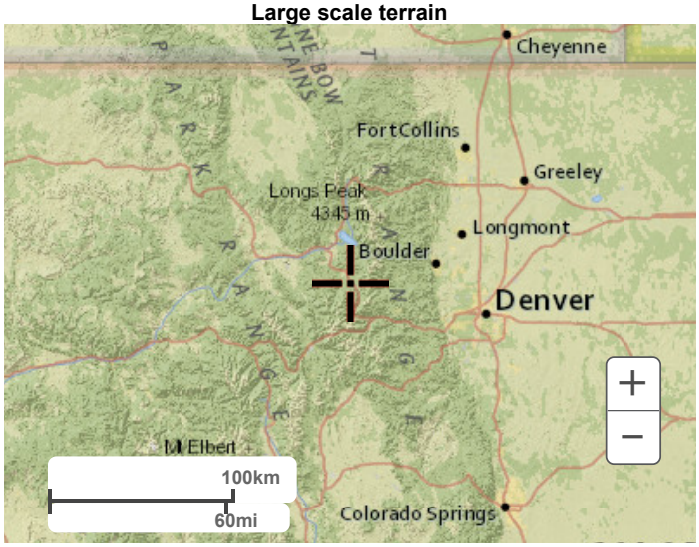
Back to Top

Maps & aerials

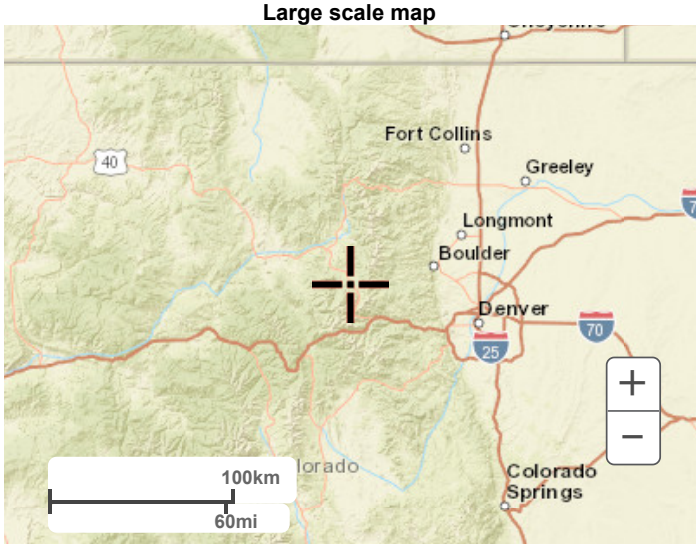
Small scale terrain



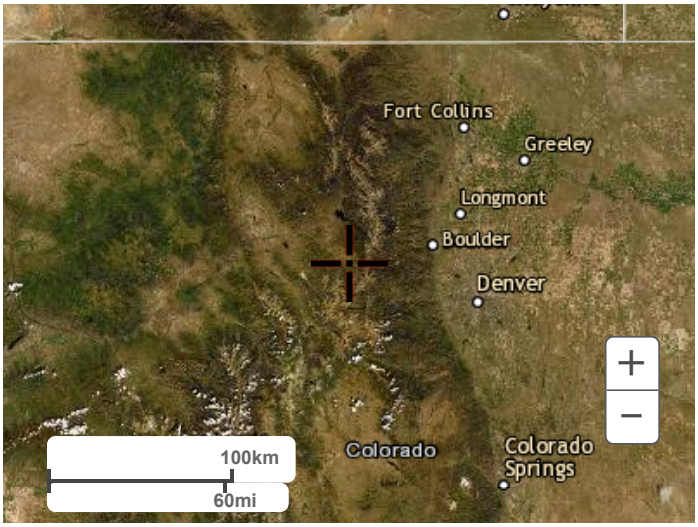
Large scale terrain



Large scale map



Large scale aerial



Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX B
HYDROLOGIC CALCULATIONS

Existing Curve Number Calculation
Existing Curve Number Adjustment Calculations
Existing Lag Time Calculations
Existing Reach Time of Concentration Calculations

Proposed Curve Number Calculation
Proposed Curve Number Adjustment Calculations
Proposed Lag Time Calculations
Proposed Reach Time of Concentration Calculations

HEC-HMS Flow Results

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - Filing 1 - Existing
Prepared By: JNS

Curve Number Calculations

Curve Number calculations based on the CN Tables provided in the USACE HEC-HMS Technical Reference Manual and the section of this manual dedicated to the SCS Curve Number Loss Model

Land Use CN Values

HSG	Land Use					
	Historic (Good Brush)	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density (1/4 acre lots)	MFH/SFH - High Density
A	30	98	76	89	61	77
B	48	98	85	92	75	85
C	65	98	89	94	83	90
D	73	98	91	95	87	92
C/D	69	98	90	94.5	85	91

Basin Id	Precent Imperviousness (%)	Soil Type by Percent of Basin			Land Use by Percent of Basin						(Land Use CN Value)*(Soil Type by Percent of Basin)*(Land Use by Percent of Basin)							Sum of CN Values by Soil Number		Composite CN Value
		A	B	C/D	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density	Soil Type	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density			
A4.1	5	0.0%	81.9%	18.1%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	39.32	0.00	0.00	0.00	0.00	0.00	B	39.32	51.80
											C/D	12.48	0.00	0.00	0.00	0.00	0.00	C/D	12.48	
A4.2	5	0.00%	65.08%	34.92%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	31.24	0.00	0.00	0.00	0.00	0.00	B	31.24	55.33
											C/D	24.10	0.00	0.00	0.00	0.00	0.00	C/D	24.10	
A4.3	5	0.00%	22.98%	77.02%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	11.03	0.00	0.00	0.00	0.00	0.00	B	11.03	64.17
											C/D	53.14	0.00	0.00	0.00	0.00	0.00	C/D	53.14	
B	5	0.00%	9.70%	90.30%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	4.65	0.00	0.00	0.00	0.00	0.00	B	4.65	66.96
											C/D	62.31	0.00	0.00	0.00	0.00	0.00	C/D	62.31	
B1.1	5	0.00%	34.93%	65.07%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	16.76	0.00	0.00	0.00	0.00	0.00	B	16.76	61.67
											C/D	44.90	0.00	0.00	0.00	0.00	0.00	C/D	44.90	
B1.2	5	0.00%	62.05%	37.95%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	29.79	0.00	0.00	0.00	0.00	0.00	B	29.79	55.97
											C/D	26.18	0.00	0.00	0.00	0.00	0.00	C/D	26.18	
B1.3	5	0.00%	37.77%	62.23%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	18.13	0.00	0.00	0.00	0.00	0.00	B	18.13	61.07
											C/D	42.94	0.00	0.00	0.00	0.00	0.00	C/D	42.94	
B1.4	5	0.00%	53.04%	46.96%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	25.46	0.00	0.00	0.00	0.00	0.00	B	25.46	57.86
											C/D	32.40	0.00	0.00	0.00	0.00	0.00	C/D	32.40	
B1.5	5	0.00%	72.43%	27.57%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	34.77	0.00	0.00	0.00	0.00	0.00	B	34.77	53.79
											C/D	19.02	0.00	0.00	0.00	0.00	0.00	C/D	19.02	
B2.1	5	0.00%	55.65%	44.35%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	26.71	0.00	0.00	0.00	0.00	0.00	B	26.71	57.31
											C/D	30.60	0.00	0.00	0.00	0.00	0.00	C/D	30.60	
B2.2	5	0.00%	72.38%	27.62%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	34.74	0.00	0.00	0.00	0.00	0.00	B	34.74	53.80
											C/D	19.05	0.00	0.00	0.00	0.00	0.00	C/D	19.05	
B2.3	5	0.00%	46.56%	53.44%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	22.35	0.00	0.00	0.00	0.00	0.00	B	22.35	59.22
											C/D	36.87	0.00	0.00	0.00	0.00	0.00	C/D	36.87	

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - Filing 1 - Existing
Prepared By: JNS

Curve Number Calculations

Curve Number calculations based on the CN Tables provided in the USACE HEC-HMS Technical Reference Manual and the section of this manual dedicated to the SCS Curve Number Loss Model

Land Use CN Values

HSG	Land Use					
	Historic (Good Brush)	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density (1/4 acre lots)	MFH/SFH - High Density
A	30	98	76	89	61	77
B	48	98	85	92	75	85
C	65	98	89	94	83	90
D	73	98	91	95	87	92
C/D	69	98	90	94.5	85	91

Basin Id	Precent Imperviousness (%)	Soil Type by Percent of Basin			Land Use by Percent of Basin						(Land Use CN Value)*(Soil Type by Percent of Basin)*(Land Use by Percent of Basin)							Sum of CN Values by Soil Number		Composite CN Value
		A	B	C/D	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density	Soil Type	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density			
B2.4	5	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	48.00	0.00	0.00	0.00	0.00	0.00	B	48.00	48.00
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
B3.1	5	0.00%	49.26%	50.74%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	23.64	0.00	0.00	0.00	0.00	0.00	B	23.64	58.66
											C/D	35.01	0.00	0.00	0.00	0.00	0.00	C/D	35.01	
B3.2	5	0.00%	67.34%	32.66%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	32.32	0.00	0.00	0.00	0.00	0.00	B	32.32	54.86
											C/D	22.54	0.00	0.00	0.00	0.00	0.00	C/D	22.54	
B3.3	5	0.00%	18.84%	81.16%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	9.04	0.00	0.00	0.00	0.00	0.00	B	9.04	65.04
											C/D	56.00	0.00	0.00	0.00	0.00	0.00	C/D	56.00	
B3.4	5	0.00%	18.91%	81.09%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	9.08	0.00	0.00	0.00	0.00	0.00	B	9.08	65.03
											C/D	55.95	0.00	0.00	0.00	0.00	0.00	C/D	55.95	
B3.5	5	0.00%	1.37%	98.63%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	0.66	0.00	0.00	0.00	0.00	0.00	B	0.66	68.71
											C/D	68.06	0.00	0.00	0.00	0.00	0.00	C/D	68.06	
B3.6	5	0.00%	0.00%	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	0.00	0.00	0.00	0.00	0.00	0.00	B	0.00	69.00
											C/D	69.00	0.00	0.00	0.00	0.00	0.00	C/D	69.00	
B4	5	0.00%	91.58%	8.42%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	43.96	0.00	0.00	0.00	0.00	0.00	B	43.96	49.77
											C/D	5.81	0.00	0.00	0.00	0.00	0.00	C/D	5.81	
C	5	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	48.00	0.00	0.00	0.00	0.00	0.00	B	48.00	48.00
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
C1	5	0.00%	38.51%	61.49%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	18.48	0.00	0.00	0.00	0.00	0.00	B	18.48	60.91
											C/D	42.43	0.00	0.00	0.00	0.00	0.00	C/D	42.43	
C2.1	5	0.00%	59.83%	40.17%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	28.72	0.00	0.00	0.00	0.00	0.00	B	28.72	56.44
											C/D	27.72	0.00	0.00	0.00	0.00	0.00	C/D	27.72	
C2.2	5	0.00%	64.65%	35.35%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	31.03	0.00	0.00	0.00	0.00	0.00	B	31.03	55.42
											C/D	24.39	0.00	0.00	0.00	0.00	0.00	C/D	24.39	
C2.3	5	0.00%	58.74%	41.26%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	28.20	0.00	0.00	0.00	0.00	0.00	B	28.20	56.66
											C/D	28.47	0.00	0.00	0.00	0.00	0.00	C/D	28.47	

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - Filing 1 - Existing
Prepared By: JNS

Curve Number Calculations

Curve Number calculations based on the CN Tables provided in the USACE HEC-HMS Technical Reference Manual and the section of this manual dedicated to the SCS Curve Number Loss Model

Land Use CN Values

HSG	Land Use					
	Historic (Good Brush)	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density (1/4 acre lots)	MFH/SFH - High Density
A	30	98	76	89	61	77
B	48	98	85	92	75	85
C	65	98	89	94	83	90
D	73	98	91	95	87	92
C/D	69	98	90	94.5	85	91

Basin Id	Precent Imperviousness (%)	Soil Type by Percent of Basin			Land Use by Percent of Basin						(Land Use CN Value)*(Soil Type by Percent of Basin)*(Land Use by Percent of Basin)							Sum of CN Values by Soil Number		Composite CN Value
		A	B	C/D	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density	Soil Type	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density			
C2.4	5	0.00%	59.84%	40.16%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	28.72	0.00	0.00	0.00	0.00	0.00	B	28.72	56.43
											C/D	27.71	0.00	0.00	0.00	0.00	0.00	C/D	27.71	
C2.5	5	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	48.00	0.00	0.00	0.00	0.00	0.00	B	48.00	48.00
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
C2.6	5	0.00%	84.48%	15.52%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	40.55	0.00	0.00	0.00	0.00	0.00	B	40.55	51.26
											C/D	10.71	0.00	0.00	0.00	0.00	0.00	C/D	10.71	
C2.7	5	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	48.00	0.00	0.00	0.00	0.00	0.00	B	48.00	48.00
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
D1.1	5	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	48.00	0.00	0.00	0.00	0.00	0.00	B	48.00	48.00
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
D1.2	5	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	48.00	0.00	0.00	0.00	0.00	0.00	B	48.00	48.00
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
D2	5	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	48.00	0.00	0.00	0.00	0.00	0.00	B	48.00	48.00
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
E1.1	5	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	48.00	0.00	0.00	0.00	0.00	0.00	B	48.00	48.00
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
E1.2	5	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	48.00	0.00	0.00	0.00	0.00	0.00	B	48.00	48.00
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
OS1	5	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	48.00	0.00	0.00	0.00	0.00	0.00	B	48.00	48.00
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
OS2	5	0.00%	83.20%	16.80%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	39.94	0.00	0.00	0.00	0.00	0.00	B	39.94	51.53
											C/D	11.59	0.00	0.00	0.00	0.00	0.00	C/D	11.59	
OS3	5	0.00%	0.00%	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	0.00	0.00	0.00	0.00	0.00	0.00	B	0.00	69.00
											C/D	69.00	0.00	0.00	0.00	0.00	0.00	C/D	69.00	

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

Project Name: West Mountain - Filing 1 - Existing
Prepared By: JNS

Curve Number and Initial Abstraction Adjustment Calculations

Curve Number adjustment calculations based on the Calculations presented in "A Pragmatic Slope-Adjusted Curve Number Model to Reduce Uncertainty in Predicting Flood Runoff from Steep Watershed" by Ajmal, et .al., dated May 21, 2020

Sub-Basin Data		Default SCS Calculation (20% initial abstraction)			Adjusted SCS Calculations (5% initial abstraction		
Basin Id	Basin Area (mi^2)	CN	Maximum Potential Retention, S (in)	Initial Abstraction (in)	CN	Maximum Potential Retention, S (in)	Initial Abstraction (in)
A4.1	0.003289	51.80	9.306	1.861	83.16	2.025	0.101
A4.2	0.000757	55.33	8.072	1.614	84.20	1.876	0.094
A4.3	0.011452	64.17	5.583	1.117	86.92	1.505	0.075
B	0.008799	66.96	4.933	0.987	87.82	1.388	0.069
B1.1	0.003897	61.67	6.217	1.243	86.13	1.610	0.081
B1.2	0.002715	55.97	7.867	1.573	84.39	1.849	0.092
B1.3	0.006273	61.07	6.375	1.275	85.95	1.635	0.082
B1.4	0.001397	57.86	7.283	1.457	84.96	1.770	0.088
B1.5	0.001852	53.79	8.591	1.718	83.75	1.941	0.097
B2.1	0.012140	57.31	7.448	1.490	84.80	1.793	0.090
B2.2	0.000816	53.80	8.588	1.718	83.75	1.940	0.097
B2.3	0.000307	59.22	6.885	1.377	85.38	1.713	0.086
B2.4	0.000622	48.00	10.833	2.167	82.07	2.184	0.109
B3.1	0.005536	58.66	7.049	1.410	85.20	1.736	0.087
B3.2	0.004751	54.86	8.229	1.646	84.06	1.896	0.095
B3.3	0.000523	65.04	5.374	1.075	87.20	1.468	0.073
B3.4	0.000437	65.03	5.378	1.076	87.19	1.469	0.073
B3.5	0.001763	68.71	4.553	0.911	88.39	1.314	0.066
B3.6	0.000241	69.00	4.493	0.899	88.48	1.302	0.065
B4	0.006949	49.77	10.093	2.019	82.58	2.110	0.105
C	0.002679	48.00	10.833	2.167	82.07	2.184	0.109
C1	0.004562	60.91	6.417	1.283	85.90	1.642	0.082
C2.1	0.001224	56.44	7.719	1.544	84.53	1.830	0.091
C2.2	0.000634	55.42	8.043	1.609	84.23	1.872	0.094
C2.3	0.005373	56.66	7.648	1.530	84.60	1.820	0.091
C2.4	0.001647	56.43	7.720	1.544	84.53	1.830	0.091
C2.5	0.000242	48.00	10.833	2.167	82.07	2.184	0.109
C2.6	0.002163	51.26	9.508	1.902	83.01	2.047	0.102
C2.7	0.000755	48.00	10.833	2.167	82.07	2.184	0.109
D1.1	0.006129	48.00	10.833	2.167	82.07	2.184	0.109
D1.2	0.004279	48.00	10.833	2.167	82.07	2.184	0.109
D2	0.000501	48.00	10.833	2.167	82.07	2.184	0.109
E1.1	0.004034	48.00	10.833	2.167	82.07	2.184	0.109
E1.2	0.000470	48.00	10.833	2.167	82.07	2.184	0.109
OS1	0.001447	48.00	10.833	2.167	82.07	2.184	0.109
OS2	0.003786	51.53	9.407	1.881	83.09	2.036	0.102
OS3	0.006417	69.00	4.493	0.899	88.48	1.302	0.065

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - Filing 1 - Existing
Prepared By: JNS

Lag Time Calculations (TLag)

100-year 24-hr Precipitation Depth (P_2)= 1.36

Sub-Basin Data		Initial or Overland Flow Time					Channelized Flow Time					Overall Flow Time		
Basin Id	Basin Area (Ac)	Roughness Coefficient	Length (ft)	Elev Change	Slope (%)	T_i (min)	Length (ft)	Elev Change	Slope (%)	Velocity (FPS)	T_t (min)	Comp. T_c	Lag Time	$Final\ T_{Lag}$ (min)
A4.1	2.11	0.240	300	40	13.2	24.78	545	25	4.6	3.46	2.6	27.4	16.4	16.4
A4.2	0.48	0.011	37	2	6.1	0.54	495	17	3.4	2.99	2.8	3.3	2.0	5.0
A4.3	7.33	0.240	300	19	6.3	33.24	566	36	6.4	4.07	2.3	35.6	21.3	21.3
B	5.63	0.240	153	12	7.8	17.81	1043	46	4.4	3.39	5.1	22.9	13.8	13.8
B1.1	2.49	0.011	17	1	3.0	0.37	1452	52	3.5	3.04	8.0	8.3	5.0	5.0
B1.2	1.74	0.011	17	1	3.0	0.37	1440	52	3.6	3.05	7.9	8.2	4.9	5.0
B1.3	4.02	0.240	270	16	5.9	31.38	566	15	2.7	2.63	3.6	35.0	21.0	21.0
B1.4	0.89	0.011	13	0	3.1	0.31	645	23	3.6	3.07	3.5	3.8	2.3	5.0
B1.5	1.19	0.011	13	0	3.1	0.31	644	23	3.5	3.04	3.5	3.8	2.3	5.0
B2.1	7.77	0.240	300	14	4.7	37.56	392	35	8.9	4.82	1.4	38.9	23.4	23.4
B2.2	0.52	0.011	61	2	3.3	1.03	525	9	1.7	2.11	4.1	5.2	3.1	5.0
B2.3	0.20	0.011	16	0	1.3	0.52	453	10	2.2	2.40	3.1	3.7	2.2	5.0
B2.4	0.40	0.011	75	2	2.7	1.32	640	15	2.3	2.47	4.3	5.6	3.4	5.0
B3.1	3.54	0.011	300	5	1.7	4.81	700	43	6.1	4.00	2.9	7.7	4.6	5.0
B3.2	3.04	0.011	300	9	3.0	3.81	545	30	5.5	3.79	2.4	6.2	3.7	5.0
B3.3	0.33	0.011	19	1	2.6	0.44	434	21	4.8	3.55	2.0	2.5	1.5	5.0
B3.4	0.28	0.011	19	1	2.6	0.44	452	21	4.6	3.48	2.2	2.6	1.6	5.0
B3.5	1.13	0.011	260	36	13.8	1.84	10	1	5.0	3.61	0.0	1.9	1.1	5.0
B3.6	0.15	0.011	16	1	3.1	0.36	325	20	6.0	3.95	1.4	1.7	1.0	5.0
B4	4.45	0.011	248	9	3.7	3.00	846	34	4.0	3.21	4.4	7.4	4.4	5.0
C	1.71	0.240	41	6	14.6	4.84	71	8	11.3	5.42	0.2	5.1	3.0	5.0
C1	2.92	0.240	156	11	6.7	19.23	422	35	8.3	4.65	1.5	20.7	12.4	12.4
C2.1	0.78	0.011	24	1	4.2	0.44	894	45	5.0	3.60	4.1	4.6	2.7	5.0
C2.2	0.41	0.011	24	1	4.2	0.44	904	44	4.8	3.54	4.3	4.7	2.8	5.0
C2.3	3.44	0.240	300	20	6.7	32.57	460	27	5.9	3.91	2.0	34.5	20.7	20.7
C2.4	1.05	0.240	286	19	6.6	31.39	177	3	1.7	2.10	1.4	32.8	19.7	19.7
C2.5	0.16	0.011	22	0	1.4	0.65	156	3	2.1	2.31	1.1	1.8	1.1	5.0
C2.6	1.38	0.240	282	17	6.0	32.27	387	7	1.8	2.17	3.0	35.2	21.1	21.1
C2.7	0.48	0.011	26	1	1.9	0.64	410	6	1.3	1.87	3.7	4.3	2.6	5.0
D1.1	3.92	0.011	300	17	5.7	2.95	482	41	8.5	4.71	1.7	4.7	2.8	5.0
D1.2	2.74	0.240	253	24	9.5	24.68	281	11	3.9	3.17	1.5	26.2	15.7	15.7
D2	0.32	0.011	36	1	2.8	0.72	731	55	7.5	4.41	2.8	3.5	2.1	5.0
E1.1	2.58	0.240	300	42	14.0	24.20	369	30	8.1	4.60	1.3	25.5	15.3	15.3
E1.2	0.30	0.011	25	2	6.0	0.40	702	52	7.4	4.39	2.7	3.1	1.8	5.0
OS1	0.93	0.240	198	16	8.1	21.63	110	24	21.8	7.54	0.2	21.9	13.1	13.1
OS2	2.42	0.240	96	9	8.9	11.66	93	15	16.6	6.57	0.2	11.9	7.1	7.1
OS3	4.11	0.240	300	36	12.0	25.74	620	26	4.2	3.30	3.1	28.9	17.3	17.3

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - Filing 1 - Existing
Prepared By: JNS

Reach Time of Concentration Calculations (Tc)

Element Information		Channelized Flow Path 1						Overall Flow Time
Element ID	**Notes**	**Length (ft)**	**Elev Change**	**Slope (%)**	**Paved?**	**Velocity (FPS)**	**T_c (min)**	**Comp. T_c (min)**
SWALE B	Swale conveying B1.1, B1.2, B1.3, B1.4, B1.5, B2.1, B2.2, B2.3, and B2.4 runoff to Pond B	1043	46	4.41%	N	3.39	5.1	5.1
SWALE B2.1	Swale conveying B1.1, B1.2, B1.3, B1.4, B1.5 runoff to DP B2.3	277	22	7.94%	N	4.55	1.0	1.0

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - F1 - 10W
Prepared By: JNS

Curve Number Calculations

Curve Number calculations based on the CN Tables provided in the USACE HEC-HMS Technical Reference Manual and the section of this manual dedicated to the SCS Curve Number Loss Model

Land Use CN Values						
HSG	Land Use					
	Historic (Good Brush)	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density (1/4 acre lots)	MFH/SFH - High Density
A	30	98	76	89	61	77
B	48	98	85	92	75	85
C	65	98	89	94	83	90
D	73	98	91	95	87	92
C/D	69	98	90	94.5	85	91

Basin Id	Percent Imperviousness (%)	Soil Type by Percent of Basin			Land Use by Percent of Basin						(Land Use CN Value)*(Soil Type by Percent of Basin)*(Land Use by Percent of Basin)							Sum of CN Values by Soil Number		Composite CN Value
		A	B	C/D	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density	Soil Type	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density			
A4.1	42.8	0.0%	81.9%	18.1%	47.62%	28.98%	0.00%	0.00%	23.40%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	71.04
											B	18.73	23.26	0.00	0.00	14.38	0.00	B	56.37	
											C/D	5.94	5.13	0.00	0.00	3.60	0.00	C/D	14.67	
A4.2	95.0	0.00%	65.08%	34.92%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	98.00
											B	0.00	63.78	0.00	0.00	0.00	0.00	B	63.78	
											C/D	0.00	34.22	0.00	0.00	0.00	0.00	C/D	34.22	
A4.3	32.0	0.00%	22.98%	77.02%	48.53%	0.00%	0.00%	0.00%	51.47%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	73.71
											B	5.35	0.00	0.00	0.00	8.87	0.00	B	14.22	
											C/D	25.79	0.00	0.00	0.00	33.70	0.00	C/D	59.49	
B	47.0	0.00%	9.70%	90.30%	38.14%	0.00%	1.14%	0.00%	3.18%	57.55%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	81.26
											B	1.77	0.00	0.09	0.00	0.23	4.74	B	6.84	
											C/D	23.77	0.00	0.92	0.00	2.44	47.29	C/D	74.42	
B1.1	64.8	0.00%	34.93%	65.07%	0.69%	25.42%	0.00%	0.00%	73.89%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	85.56
											B	0.12	8.70	0.00	0.00	19.35	0.00	B	28.17	
											C/D	0.31	16.21	0.00	0.00	40.87	0.00	C/D	57.39	
B1.2	51.6	0.00%	62.05%	37.95%	11.12%	33.16%	0.00%	0.00%	55.72%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	82.62
											B	3.31	20.17	0.00	0.00	25.93	0.00	B	49.41	
											C/D	2.91	12.33	0.00	0.00	17.97	0.00	C/D	33.22	
B1.3	25.6	0.00%	37.77%	62.23%	31.44%	0.00%	0.00%	0.00%	68.56%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	74.89
											B	5.70	0.00	0.00	0.00	19.42	0.00	B	25.12	
											C/D	13.50	0.00	0.00	0.00	36.27	0.00	C/D	49.77	
B1.4	61.6	0.00%	53.04%	46.96%	27.50%	50.79%	0.00%	0.00%	21.71%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	82.99
											B	7.00	26.40	0.00	0.00	8.64	0.00	B	42.04	
											C/D	8.91	23.37	0.00	0.00	8.67	0.00	C/D	40.95	
B1.5	70.6	0.00%	72.43%	27.57%	20.45%	55.75%	0.00%	0.00%	0.00%	23.79%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	86.26
											B	7.11	39.58	0.00	0.00	0.00	14.65	B	61.34	
											C/D	3.89	15.06	0.00	0.00	0.00	5.97	C/D	24.92	
B2.1	55.7	0.00%	55.65%	44.35%	4.25%	0.00%	0.00%	0.00%	32.96%	62.79%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	83.66
											B	1.14	0.00	0.00	0.00	13.75	29.70	B	44.59	
											C/D	1.30	0.00	0.00	0.00	12.42	25.34	C/D	39.07	
B2.2	87.3	0.00%	72.38%	27.62%	8.58%	91.42%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	94.21
											B	2.98	64.85	0.00	0.00	0.00	0.00	B	67.83	
											C/D	1.64	24.74	0.00	0.00	0.00	0.00	C/D	26.38	
B2.3	86.0	0.00%	46.56%	53.44%	10.02%	89.98%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	94.11
											B	2.24	41.06	0.00	0.00	0.00	0.00	B	43.29	
											C/D	3.70	47.12	0.00	0.00	0.00	0.00	C/D	50.82	

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - F1 - 10W
Prepared By: JNS

Curve Number Calculations

Curve Number calculations based on the CN Tables provided in the USACE HEC-HMS Technical Reference Manual and the section of this manual dedicated to the SCS Curve Number Loss Model

Land Use CN Values						
HSG	Land Use					
	Historic (Good Brush)	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density (1/4 acre lots)	MFH/SFH - High Density
A	30	98	76	89	61	77
B	48	98	85	92	75	85
C	65	98	89	94	83	90
D	73	98	91	95	87	92
C/D	69	98	90	94.5	85	91

Basin Id	Percent Imperviousness (%)	Soil Type by Percent of Basin			Land Use by Percent of Basin						(Land Use CN Value)*(Soil Type by Percent of Basin)*(Land Use by Percent of Basin)							Sum of CN Values by Soil Number		Composite CN Value
		A	B	C/D	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density	Soil Type	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density			
B2.4	77.0	0.00%	100.00%	0.00%	20.03%	79.97%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	9.61	78.37	0.00	0.00	0.00	0.00	B	87.99	87.99
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
B3.1	70.0	0.00%	49.26%	50.74%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	0.00	0.00	0.00	0.00	0.00	41.87	B	41.87	88.04
											C/D	0.00	0.00	0.00	0.00	0.00	46.18	C/D	46.18	
B3.2	70.0	0.00%	67.34%	32.66%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	0.00	0.00	0.00	0.00	0.00	57.24	B	57.24	86.96
											C/D	0.00	0.00	0.00	0.00	0.00	29.72	C/D	29.72	
B3.3	95.0	0.00%	18.84%	81.16%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	0.00	18.46	0.00	0.00	0.00	0.00	B	18.46	98.00
											C/D	0.00	79.54	0.00	0.00	0.00	0.00	C/D	79.54	
B3.4	95.0	0.00%	18.91%	81.09%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	0.00	18.53	0.00	0.00	0.00	0.00	B	18.53	98.00
											C/D	0.00	79.47	0.00	0.00	0.00	0.00	C/D	79.47	
B3.5	52.0	0.00%	1.37%	98.63%	31.13%	9.01%	0.00%	0.00%	0.00%	59.86%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	0.20	0.12	0.00	0.00	0.00	0.69	B	1.02	84.64
											C/D	21.19	8.71	0.00	0.00	0.00	53.73	C/D	83.62	
B3.6	95.0	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	0.00	0.00	0.00	0.00	0.00	0.00	B	0.00	98.00
											C/D	0.00	98.00	0.00	0.00	0.00	0.00	C/D	98.00	
B4	54.7	0.00%	91.58%	8.42%	17.59%	21.31%	0.00%	0.00%	61.10%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	7.73	19.12	0.00	0.00	41.97	0.00	B	68.82	75.98
											C/D	1.02	1.76	0.00	0.00	4.37	0.00	C/D	7.16	
C	11.7	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	48.00	0.00	0.00	0.00	0.00	0.00	B	48.00	48.00
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
C1	39.7	0.00%	38.51%	61.49%	17.97%	16.80%	0.00%	0.00%	65.22%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	3.32	6.34	0.00	0.00	18.84	0.00	B	28.50	80.34
											C/D	7.63	10.13	0.00	0.00	34.09	0.00	C/D	51.84	
C2.1	57.8	0.00%	59.83%	40.17%	41.36%	58.64%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	11.88	34.38	0.00	0.00	0.00	0.00	B	46.26	80.81
											C/D	11.46	23.08	0.00	0.00	0.00	0.00	C/D	34.55	
C2.2	84.7	0.00%	64.65%	35.35%	11.39%	88.61%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	3.54	56.14	0.00	0.00	0.00	0.00	B	59.68	93.15
											C/D	2.78	30.70	0.00	0.00	0.00	0.00	C/D	33.47	
C2.3	25.4	0.00%	58.74%	41.26%	40.96%	4.46%	0.00%	0.00%	54.59%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	
											B	11.55	2.57	0.00	0.00	24.05	0.00	B	38.16	70.77
											C/D	11.66	1.80	0.00	0.00	19.14	0.00	C/D	32.60	

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - F1 - 10W
Prepared By: JNS

Curve Number Calculations

Curve Number calculations based on the CN Tables provided in the USACE HEC-HMS Technical Reference Manual and the section of this manual dedicated to the SCS Curve Number Loss Model

Land Use CN Values						
HSG	Land Use					
	Historic (Good Brush)	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density (1/4 acre lots)	MFH/SFH - High Density
A	30	98	76	89	61	77
B	48	98	85	92	75	85
C	65	98	89	94	83	90
D	73	98	91	95	87	92
C/D	69	98	90	94.5	85	91

Basin Id	Percent Imperviousness (%)	Soil Type by Percent of Basin			Land Use by Percent of Basin						(Land Use CN Value)*(Soil Type by Percent of Basin)*(Land Use by Percent of Basin)							Sum of CN Values by Soil Number		Composite CN Value
		A	B	C/D	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density	Soil Type	Historic	Paved Area	Gravel	Commercial	SFH - Rural/Medium Density	MFH/SFH - High Density			
C2.4	30.1	0.00%	59.84%	40.16%	33.60%	8.59%	0.00%	0.00%	57.80%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	73.06
											B	9.65	5.04	0.00	0.00	25.94	0.00	B	40.63	
											C/D	9.31	3.38	0.00	0.00	19.73	0.00	C/D	32.43	
C2.5	75.4	0.00%	100.00%	0.00%	21.79%	78.21%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	87.11
											B	10.46	76.65	0.00	0.00	0.00	0.00	B	87.11	
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
C2.6	34.5	0.00%	84.48%	15.52%	50.65%	24.44%	0.00%	0.00%	24.91%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	68.99
											B	20.54	20.24	0.00	0.00	15.78	0.00	B	56.55	
											C/D	5.42	3.72	0.00	0.00	3.29	0.00	C/D	12.43	
C2.7	70.3	0.00%	100.00%	0.00%	27.41%	72.59%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	84.29
											B	13.16	71.14	0.00	0.00	0.00	0.00	B	84.29	
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
D1.1	30.2	0.00%	100.00%	0.00%	38.13%	10.99%	0.00%	0.00%	50.88%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	67.23
											B	18.30	10.77	0.00	0.00	38.16	0.00	B	67.23	
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
D1.2	36.5	0.00%	100.00%	0.00%	24.30%	14.35%	0.00%	0.00%	61.36%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	71.74
											B	11.66	14.06	0.00	0.00	46.02	0.00	B	71.74	
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
D2	79.4	0.00%	100.00%	0.00%	17.35%	82.65%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	89.32
											B	8.33	80.99	0.00	0.00	0.00	0.00	B	89.32	
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
E1.1	40.3	0.00%	100.00%	0.00%	39.39%	12.59%	0.00%	0.00%	48.02%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	67.26
											B	18.91	12.34	0.00	0.00	36.01	0.00	B	67.26	
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
E1.2	79.1	0.00%	100.00%	0.00%	17.65%	82.35%	0.00%	0.00%	0.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	89.18
											B	8.47	80.71	0.00	0.00	0.00	0.00	B	89.18	
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
OS1	19.5	0.00%	100.00%	0.00%	70.99%	0.00%	0.00%	0.00%	29.01%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	55.83
											B	34.08	0.00	0.00	0.00	21.76	0.00	B	55.83	
											C/D	0.00	0.00	0.00	0.00	0.00	0.00	C/D	0.00	
OS2	55.0	0.00%	83.20%	16.80%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	76.68
											B	0.00	0.00	0.00	0.00	62.40	0.00	B	62.40	
											C/D	0.00	0.00	0.00	0.00	14.28	0.00	C/D	14.28	
OS3	22.6	0.00%	0.00%	100.00%	72.93%	0.00%	0.19%	0.00%	0.00%	26.88%	A	0.00	0.00	0.00	0.00	0.00	0.00	A	0.00	74.95
											B	0.00	0.00	0.00	0.00	0.00	0.00	B	0.00	
											C/D	50.32	0.00	0.17	0.00	0.00	24.46	C/D	74.95	

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - F1 - 10W
Prepared By: JNS

Curve Number and Initial Abstraction Adjustment Calculations

Curve Number adjustment calculations based on the Calculations presented in "A Pragmatic Slope-Adjusted Curve Number Model to Reduce Uncertainty in Predicting Flood Runoff from Steep Watershed" by Ajmal, et .al., dated May 21, 2020

Sub-Basin Data		Default SCS Calculation (20% initial abstraction)			Adjusted SCS Calculations (5% initial abstraction		
Basin Id	Basin Area (mi^2)	CN	Maximum Potential Retention, S (in)	Initial Abstraction (in)	CN	Maximum Potential Retention, S (in)	Initial Abstraction (in)
A4.1	0.003289	71.04	4.077	0.815	89.16	1.216	0.061
A4.2	0.000757	98.00	0.204	0.041	99.17	0.084	0.004
A4.3	0.011452	73.71	3.566	0.713	90.06	1.104	0.055
B	0.008799	81.26	2.306	0.461	92.70	0.787	0.039
B1.1	0.003897	85.56	1.688	0.338	94.28	0.606	0.030
B1.2	0.002715	82.62	2.103	0.421	93.20	0.730	0.036
B1.3	0.006273	74.89	3.354	0.671	90.46	1.055	0.053
B1.4	0.001397	82.99	2.050	0.410	93.33	0.715	0.036
B1.5	0.001852	86.26	1.593	0.319	94.54	0.577	0.029
B2.1	0.012140	83.66	1.953	0.391	93.58	0.686	0.034
B2.2	0.000816	94.21	0.615	0.123	97.62	0.243	0.012
B2.3	0.000307	94.11	0.625	0.125	97.59	0.247	0.012
B2.4	0.000622	87.99	1.365	0.273	95.20	0.505	0.025
B3.1	0.005536	88.04	1.358	0.272	95.22	0.502	0.025
B3.2	0.004751	86.96	1.500	0.300	94.81	0.548	0.027
B3.3	0.000523	98.00	0.204	0.041	99.17	0.084	0.004
B3.4	0.000437	98.00	0.204	0.041	99.17	0.084	0.004
B3.5	0.001763	84.64	1.814	0.363	93.94	0.645	0.032
B3.6	0.000241	98.00	0.204	0.041	99.17	0.084	0.004
B4	0.006949	75.98	3.162	0.632	90.84	1.009	0.050
C	0.002679	48.00	10.833	2.167	82.07	2.184	0.109
C1	0.004562	80.34	2.447	0.489	92.37	0.826	0.041
C2.1	0.001224	80.81	2.375	0.475	92.54	0.806	0.040
C2.2	0.000634	93.15	0.735	0.147	97.20	0.288	0.014
C2.3	0.005373	70.77	4.131	0.826	89.06	1.228	0.061
C2.4	0.001647	73.06	3.688	0.738	89.83	1.132	0.057
C2.5	0.000242	87.11	1.480	0.296	94.86	0.542	0.027
C2.6	0.002163	68.99	4.496	0.899	88.47	1.303	0.065
C2.7	0.000755	84.29	1.863	0.373	93.81	0.660	0.033
D1.1	0.006129	67.23	4.874	0.975	87.90	1.376	0.069
D1.2	0.004279	71.74	3.939	0.788	89.39	1.187	0.059
D2	0.000501	89.32	1.195	0.239	95.71	0.448	0.022
E1.1	0.004034	67.26	4.867	0.973	87.91	1.375	0.069
E1.2	0.000470	89.18	1.214	0.243	95.65	0.455	0.023
OS1	0.001447	55.83	7.911	1.582	84.35	1.855	0.093
OS2	0.003786	76.68	3.041	0.608	91.08	0.979	0.049
OS3	0.006417	74.95	3.342	0.668	90.48	1.052	0.053

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - F1 - 10W
Prepared By: JNS

Lag Time Calculations (TLag)

100-year 24-hr Precipitation Depth (P_2)= 1.36

Sub-Basin Data		Initial or Overland Flow Time					Channelized Flow Time					Overall Flow Time		
Basin Id	Basin Area (Ac)	Roughness Coefficient	Length (ft)	Elev Change	Slope (%)	T_i (min)	Length (ft)	Elev Change	Slope (%)	Velocity (FPS)	T_t (min)	Comp. T_c	Lag Time	$Final\ T_{Lag}$ (min)
A4.1	2.11	0.240	300	40	13.2	24.78	545	25	4.6	3.46	2.6	27.4	16.4	16.4
A4.2	0.48	0.011	37	2	6.1	0.54	495	17	3.4	2.99	2.8	3.3	2.0	5.0
A4.3	7.33	0.240	300	19	6.3	33.24	566	36	6.4	4.07	2.3	35.6	21.3	21.3
B	5.63	0.240	153	12	7.8	17.81	1043	46	4.4	3.39	5.1	22.9	13.8	13.8
B1.1	2.49	0.011	17	1	3.0	0.37	1452	52	3.5	3.04	8.0	8.3	5.0	5.0
B1.2	1.74	0.011	17	1	3.0	0.37	1440	52	3.6	3.05	7.9	8.2	4.9	5.0
B1.3	4.02	0.240	270	16	5.9	31.38	566	15	2.7	2.63	3.6	35.0	21.0	21.0
B1.4	0.89	0.011	13	0	3.1	0.31	645	23	3.6	3.07	3.5	3.8	2.3	5.0
B1.5	1.19	0.011	13	0	3.1	0.31	644	23	3.5	3.04	3.5	3.8	2.3	5.0
B2.1	7.77	0.240	300	14	4.7	37.56	392	35	8.9	4.82	1.4	38.9	23.4	23.4
B2.2	0.52	0.011	61	2	3.3	1.03	525	9	1.7	2.11	4.1	5.2	3.1	5.0
B2.3	0.20	0.011	16	0	1.3	0.52	453	10	2.2	2.40	3.1	3.7	2.2	5.0
B2.4	0.40	0.011	75	2	2.7	1.32	640	15	2.3	2.47	4.3	5.6	3.4	5.0
B3.1	3.54	0.011	300	5	1.7	4.81	700	43	6.1	4.00	2.9	7.7	4.6	5.0
B3.2	3.04	0.011	300	9	3.0	3.81	545	30	5.5	3.79	2.4	6.2	3.7	5.0
B3.3	0.33	0.011	19	1	2.6	0.44	434	21	4.8	3.55	2.0	2.5	1.5	5.0
B3.4	0.28	0.011	19	1	2.6	0.44	452	21	4.6	3.48	2.2	2.6	1.6	5.0
B3.5	1.13	0.011	260	36	13.8	1.84	10	1	5.0	3.61	0.0	1.9	1.1	5.0
B3.6	0.15	0.011	16	1	3.1	0.36	325	20	6.0	3.95	1.4	1.7	1.0	5.0
B4	4.45	0.011	248	9	3.7	3.00	846	34	4.0	3.21	4.4	7.4	4.4	5.0
C	1.71	0.240	41	6	14.6	4.84	71	8	11.3	5.42	0.2	5.1	3.0	5.0
C1	2.92	0.240	156	11	6.7	19.23	422	35	8.3	4.65	1.5	20.7	12.4	12.4
C2.1	0.78	0.011	24	1	4.2	0.44	894	45	5.0	3.60	4.1	4.6	2.7	5.0
C2.2	0.41	0.011	24	1	4.2	0.44	904	44	4.8	3.54	4.3	4.7	2.8	5.0
C2.3	3.44	0.240	300	20	6.7	32.57	460	27	5.9	3.91	2.0	34.5	20.7	20.7
C2.4	1.05	0.240	286	19	6.6	31.39	177	3	1.7	2.10	1.4	32.8	19.7	19.7
C2.5	0.16	0.011	22	0	1.4	0.65	156	3	2.1	2.31	1.1	1.8	1.1	5.0
C2.6	1.38	0.240	282	17	6.0	32.27	387	7	1.8	2.17	3.0	35.2	21.1	21.1
C2.7	0.48	0.011	26	1	1.9	0.64	410	6	1.3	1.87	3.7	4.3	2.6	5.0
D1.1	3.92	0.011	300	17	5.7	2.95	482	41	8.5	4.71	1.7	4.7	2.8	5.0
D1.2	2.74	0.240	253	24	9.5	24.68	281	11	3.9	3.17	1.5	26.2	15.7	15.7
D2	0.32	0.011	36	1	2.8	0.72	731	55	7.5	4.41	2.8	3.5	2.1	5.0
E1.1	2.58	0.240	300	42	14.0	24.20	369	30	8.1	4.60	1.3	25.5	15.3	15.3
E1.2	0.30	0.011	25	2	6.0	0.40	702	52	7.4	4.39	2.7	3.1	1.8	5.0
OS1	0.93	0.240	198	16	8.1	21.63	110	24	21.8	7.54	0.2	21.9	13.1	13.1
OS2	2.42	0.240	96	9	8.9	11.66	93	15	16.6	6.57	0.2	11.9	7.1	7.1
OS3	4.11	0.240	300	36	12.0	25.74	620	26	4.2	3.30	3.1	28.9	17.3	17.3

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - Filing 1 - Proposed
Prepared By: JNS

Reach Time of Concentration Calculations (Tc)

Element Information		Channelized Flow Path 1						Overall Flow Time
Element ID	**Notes**	**Length (ft)**	**Elev Change**	**Slope (%)**	**Paved?**	**Velocity (FPS)**	**T_c (min)**	**Comp. T_c (min)**
SWALE B	Swale conveying B1.1, B1.2, B1.3, B1.4, B1.5, B2.1, B2.2, B2.3, and B2.4 runoff to Pond B	1043	46	4.4%	N	3.39	5.1	5.1
SWALE B2.1	Swale conveying B1.1, B1.2, B1.3, B1.4. and B1.5 runoff to DP B2.3	277	22	7.9%	N	4.55	1.0	1.0

Project: West Mountain - F1 - 10W
Prepared by: JNS
Date: 1/12/2026

HEC-HMS Flow results

Existing Conditions				
Element	Area (Ac)	Percent Imperviousness	Q5 (CFS)	Q100 (CFS)
A4.1	2.11	5%	0.5	1.9
A4.2	0.48	5%	0.2	0.9
A4.3	7.33	5%	2.2	7.2
B	5.63	5%	2.1	7.4
B1.1	2.49	5%	1.2	4.7
B1.2	1.74	5%	0.7	3.0
B1.3	4.02	5%	1.1	3.8
B1.4	0.89	5%	0.4	1.6
B1.5	1.19	5%	0.5	2.0
B2.1	7.77	5%	1.9	6.4
B2.2	0.52	5%	0.2	0.8
B2.3	0.20	5%	0.1	0.3
B2.4	0.40	5%	0.1	0.6
B3.1	3.54	5%	1.6	6.3
B3.2	3.04	5%	1.3	5.2
B3.3	0.33	5%	0.2	0.6
B3.4	0.28	5%	0.1	0.5
B3.5	1.13	5%	0.7	2.5
B3.6	0.15	5%	0.1	0.3
B4	4.45	5%	1.6	6.9
C	1.71	5%	0.6	2.6
C1	2.92	5%	1.0	3.6
C2.1	0.78	5%	0.3	1.3
C2.2	0.41	5%	0.2	0.7
C2.3	3.44	5%	0.9	3.0
C2.4	1.05	5%	0.3	0.9
C2.5	0.16	5%	0.0	0.2
C2.6	1.38	5%	0.3	1.1
C2.7	0.48	5%	0.2	0.8
D1.1	3.92	5%	1.4	5.9
D1.2	2.74	5%	0.6	2.5
D2	0.32	5%	0.1	0.5
E1.1	2.58	5%	0.6	2.3
E1.2	0.30	5%	0.1	0.5
OS1	0.93	5%	0.2	0.9
OS2	2.42	5%	0.8	3.4
OS3	4.11	5%	1.5	4.9

Proposed Conditions				
Element	Area (Ac)	Percent Imperviousness	Q5 (CFS)	Q100 (CFS)
A4.1	2.11	42.8%	0.8	2.7
A4.2	0.48	95.0%	0.9	2.0
A4.3	7.33	32.0%	2.8	8.6
B	5.63	47.0%	3.2	9.8
B1.1	2.49	64.8%	2.6	7.5
B1.2	1.74	51.6%	1.6	4.9
B1.3	4.02	25.6%	1.6	4.9
B1.4	0.89	61.6%	0.8	2.6
B1.5	1.19	70.6%	1.3	3.7
B2.1	7.77	55.7%	3.9	10.6
B2.2	0.52	87.3%	0.8	1.9
B2.3	0.20	86.0%	0.3	0.7
B2.4	0.40	77.0%	0.4	1.2
B3.1	3.54	70.0%	4.1	11.2
B3.2	3.04	70.0%	3.4	9.6
B3.3	0.33	95.0%	0.6	1.3
B3.4	0.28	95.0%	0.5	1.0
B3.5	1.13	52.0%	1.2	3.4
B3.6	0.15	95.0%	0.2	0.5
B4	4.45	54.7%	3.3	10.9
C	1.71	11.7%	0.6	2.6
C1	2.92	39.7%	1.7	5.4
C2.1	0.78	57.8%	0.7	2.1
C2.2	0.41	84.7%	0.6	1.4
C2.3	3.44	25.4%	1.2	3.9
C2.4	1.05	30.1%	0.4	1.2
C2.5	0.16	75.4%	0.1	0.4
C2.6	1.38	34.5%	0.5	1.5
C2.7	0.48	70.3%	0.5	1.5
D1.1	3.92	30.2%	2.2	8.1
D1.2	2.74	36.5%	1.1	3.7
D2	0.32	79.4%	0.4	1.1
E1.1	2.58	40.3%	0.9	3.2
E1.2	0.30	79.1%	0.4	1.1
OS1	0.93	19.5%	0.3	1
OS2	2.42	55.0%	1.6	5.5
OS3	4.11	22.6%	1.7	5.5

Project: West Mountain - F1 - 10W
Prepared by: JNS
Date: #########

OUTFALL ELEMENT

HEC-HMS Flow results

Existing Conditions

Element	Area (Ac)	Percent Imperviousness	Q5 (CFS)	Q100 (CFS)
A4_OUT	-	-	2.8	9.3
A4.1	2.11	5%	0.5	1.9
A4.2	0.48	5%	0.2	0.9
A4.3	7.33	5%	2.2	7.2
B	5.63	5%	2.1	7.4
B1.1	2.49	5%	1.2	4.7
B1.2	1.74	5%	0.7	3.0
B1.3	4.02	5%	1.1	3.8
B1.4	0.89	5%	0.4	1.6
B1.5	1.19	5%	0.5	2.0
B2.1	7.77	5%	1.9	6.4
B2.2	0.52	5%	0.2	0.8
B2.3	0.20	5%	0.1	0.3
B2.4	0.40	5%	0.1	0.6
B3.1	3.54	5%	1.6	6.3
B3.2	3.04	5%	1.3	5.2
B3.3	0.33	5%	0.2	0.6
B3.4	0.28	5%	0.1	0.5
B3.5	1.13	5%	0.7	2.5
B3.6	0.15	5%	0.1	0.3
B4	4.45	5%	1.6	6.9
C	1.71	5%	0.6	2.6
C1	2.92	5%	1.0	3.6
C2.1	0.78	5%	0.3	1.3
C2.2	0.41	5%	0.2	0.7
C2.3	3.44	5%	0.9	3.0
C2.4	1.05	5%	0.3	0.9
C2.5	0.16	5%	0.0	0.2
C2.6	1.38	5%	0.3	1.1
C2.7	0.48	5%	0.2	0.8
DP_A4.3	-	-	3.3	11.4
DP_B1.5	-	-	3.1	12.4
DP_B2.3	-	-	5.0	15.1
DP_B3.6	-	-	3.9	15.4
D1.1	3.92	5%	1.4	5.9
D1.2	2.74	5%	0.6	2.5
D2	0.32	5%	0.1	0.5
E1.1	2.58	5%	0.6	2.3
E1.2	0.30	5%	0.1	0.5
LELAND CREEK	-	-	5.6	20
OS1	0.93	5%	0.2	0.9
OS2	2.42	5%	0.8	3.4
OS2_OUT	-	-	0.8	3.4
OS3	4.11	5%	1.5	4.9
OS3_OUT	-	-	11.5	40.8
POND_B	-	-	10.1	37
POND_C	-	-	3.1	10.6
SWALE B	-	-	5.0	15.1
SWALE B2.1	-	-	2.9	11.8

Proposed Conditions

Element	Area (Ac)	Percent Imperviousness	Q5 (CFS)	Q100 (CFS)
A4_OUT	-	-	0.0	4.0
A4.1	2.11	42.8%	0.8	2.7
A4.2	0.48	95.0%	0.9	2.0
A4.3	7.33	32.0%	2.8	8.6
B	5.63	47.0%	3.2	9.8
B1.1	2.49	64.8%	2.6	7.5
B1.2	1.74	51.6%	1.6	4.9
B1.3	4.02	25.6%	1.6	4.9
B1.4	0.89	61.6%	0.8	2.6
B1.5	1.19	70.6%	1.3	3.7
B2.1	7.77	55.7%	3.9	10.6
B2.2	0.52	87.3%	0.8	1.9
B2.3	0.20	86.0%	0.3	0.7
B2.4	0.40	77.0%	0.4	1.2
B3.1	3.54	70.0%	4.1	11.2
B3.2	3.04	70.0%	3.4	9.6
B3.3	0.33	95.0%	0.6	1.3
B3.4	0.28	95.0%	0.5	1.0
B3.5	1.13	52.0%	1.2	3.4
B3.6	0.15	95.0%	0.2	0.5
B4	4.45	54.7%	3.3	10.9
C	1.71	11.7%	0.6	2.6
C1	2.92	39.7%	1.7	5.4
C2.1	0.78	57.8%	0.7	2.1
C2.2	0.41	84.7%	0.6	1.4
C2.3	3.44	25.4%	1.2	3.9
C2.4	1.05	30.1%	0.4	1.2
C2.5	0.16	75.4%	0.1	0.4
C2.6	1.38	34.5%	0.5	1.5
C2.7	0.48	70.3%	0.5	1.5
DP_A4.3	-	-	0.1	5.3
DP_B1.5	-	-	6.8	20.3
DP_B2.3	-	-	8.9	26.5
DP_B3.6	-	-	9.9	27
D1.1	3.92	30.2%	2.2	8.1
D1.2	2.74	36.5%	1.1	3.7
D2	0.32	79.4%	0.4	1.1
E1.1	2.58	40.3%	0.9	3.2
E1.2	0.30	79.1%	0.4	1.1
LELAND CREEK	-	-	4.1	14.5
OS1	0.93	19.5%	0.3	1
OS2	2.42	55.0%	1.6	5.5
OS2_OUT	-	-	1.6	5.5
OS3	4.11	22.6%	1.7	5.5
OS3_OUT	-	-	2.6	28.8
POND_B	-	-	1.3	25.8
POND_C	-	-	0.1	7.2
SWALE B	-	-	8.9	26.5
SWALE B2.1	-	-	6.5	19.6

APPENDIX C
HYDRAULIC CALCULATIONS

Street Inlet Calculations – MHFD_Inlet_v6.00

Area Inlet Capacity Calculations - Hydraflow Express
Curb Cut Capacity Calculations - Hydraflow Express
Swale Calculations - Hydraflow Express
Culvert Capacity Calculations - Hydraflow Express

StormCAD Key Map
StormCAD Output Tables

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Grand Park - 10W
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	Inlet A4.1	Inlet A4.2
Inlet Application (Street or Area)	STREET	STREET
Hydraulic Condition	On Grade	On Grade
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening
Number of Inlet Units	2	2

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	0.80	0.90
Major Peak Flow, Q (cfs)	2.70	2.00

Bypass (Carry-Over) Flow from Upstream Inlets must be organized from upstream (left) to downstream (right) in order for bypass

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received
Bypass Flow Description (Optional):		
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00

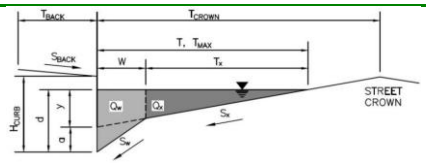
CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	0.80	0.90
Major Total Design Peak Flow, Q (cfs)	2.70	2.00
Minor Inlet Interception Capacity, Q_a (cfs)	0.80	0.90
Major Inlet Interception Capacity, Q_a (cfs)	2.70	2.00
Minor Flow Bypassed Downstream, Qb (cfs)	0.00	0.00
Major Flow Bypassed Downstream, Qb (cfs)	0.00	0.00
Minor Flow Capture Percentage, C%	100%	100%
Major Flow Capture Percentage, C%	100%	100%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Grand Park - 10W**
Inlet ID: **Inlet A4.1**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	26.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	14.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.030	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

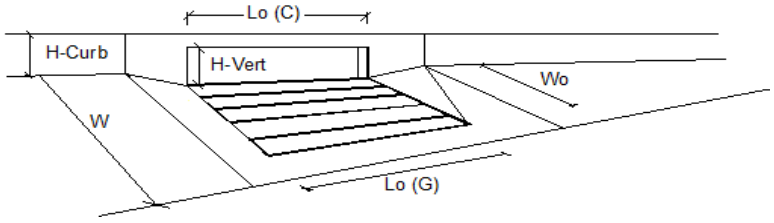
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	14.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	10.2	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**4.2**	**13.0**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.80 cfs on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design peak flow of 2.70 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



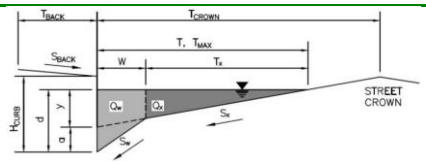
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (CDOT Type R Curb Opening)	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.8**	**2.7**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Grand Park - 10W**
Inlet ID: **Inlet A4.2**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	26.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	14.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.030	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

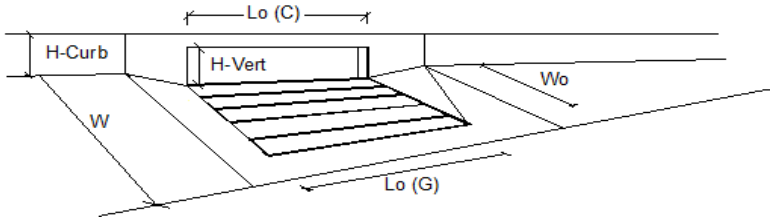
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	14.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	10.2	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**4.2**	**13.0**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.90 cfs on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design peak flow of 2.00 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet (CDOT Type R Curb Opening)	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.9**	**2.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Grand Park - 10W
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	Inlet B1.1	Inlet B1.2	Inlet B1.4
Inlet Application (Street or Area)	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	In Sump
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening
Number of Inlet Units	2	2	2

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	2.60	1.60	0.80
Major Peak Flow, Q (cfs)	7.50	4.90	2.60

Bypass (Carry-Over) Flow from Upstream Inlets must be organized from upstream (left) to downstream (right) in order for bypass flows to be linked.

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	User-Defined
Bypass Flow Description (Optional):			B1.1 & B1.2
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00	1.64

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	2.60	1.60	0.80
Major Total Design Peak Flow, Q (cfs)	7.50	4.90	4.24
Minor Inlet Interception Capacity, Q_a (cfs)	2.60	1.60	3.93
Major Inlet Interception Capacity, Q_a (cfs)	6.02	4.73	5.84
Minor Flow Bypassed Downstream, Qb (cfs)	0.00	0.00	N/A
Major Flow Bypassed Downstream, Qb (cfs)	1.48	0.17	N/A
Minor Flow Capture Percentage, C%	100%	100%	100%
Major Flow Capture Percentage, C%	80%	97%	100%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Grand Park - 10W
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	Inlet B1.5	Inlet B2.2	Inlet B2.3
Inlet Application (Street or Area)	STREET	STREET	STREET
Hydraulic Condition	In Sump	In Sump	On Grade
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening
Number of Inlet Units	1	1	1

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	1.30	0.80	0.30
Major Peak Flow, Q (cfs)	3.70	1.90	0.70

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received
Bypass Flow Description (Optional):			
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	1.30	0.80	0.30
Major Total Design Peak Flow, Q (cfs)	3.70	1.90	0.70
Minor Inlet Interception Capacity, Q_a (cfs)	2.76	2.76	0.30
Major Inlet Interception Capacity, Q_a (cfs)	9.87	5.37	0.70
Minor Flow Bypassed Downstream, Qb (cfs)	N/A	N/A	0.00
Major Flow Bypassed Downstream, Qb (cfs)	N/A	N/A	0.00
Minor Flow Capture Percentage, C%	100%	100%	100%
Major Flow Capture Percentage, C%	100%	100%	100%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Grand Park - 10W
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	Inlet B2.4	Inlet B3.3	Inlet B3.4
Inlet Application (Street or Area)	STREET	STREET	STREET
Hydraulic Condition	On Grade	In Sump	In Sump
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening
Number of Inlet Units	1	1	1

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	0.40	0.60	0.50
Major Peak Flow, Q (cfs)	1.20	1.30	1.00

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received
Bypass Flow Description (Optional):			
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	0.40	0.60	0.50
Major Total Design Peak Flow, Q (cfs)	1.20	1.30	1.00
Minor Inlet Interception Capacity, Q_a (cfs)	0.40	2.76	2.76
Major Inlet Interception Capacity, Q_a (cfs)	1.20	5.37	3.81
Minor Flow Bypassed Downstream, Qb (cfs)	0.00	N/A	N/A
Major Flow Bypassed Downstream, Qb (cfs)	0.00	N/A	N/A
Minor Flow Capture Percentage, C%	100%	100%	100%
Major Flow Capture Percentage, C%	100%	100%	100%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Grand Park - 10W
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	Inlet B3.5	Inlet B3.6
Inlet Application (Street or Area)	STREET	STREET
Hydraulic Condition	On Grade	On Grade
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening
Number of Inlet Units	2	1

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	0.80	0.20
Major Peak Flow, Q (cfs)	2.20	0.50

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received
Bypass Flow Description (Optional):		
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00

CALCULATED OUTPUT

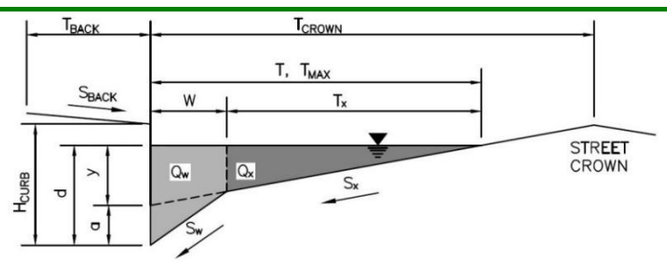
Minor Total Design Peak Flow, Q (cfs)	0.80	0.20
Major Total Design Peak Flow, Q (cfs)	2.20	0.50
Minor Inlet Interception Capacity, Q_a (cfs)	0.80	0.20
Major Inlet Interception Capacity, Q_a (cfs)	2.20	0.50
Minor Flow Bypassed Downstream, Qb (cfs)	0.00	0.00
Major Flow Bypassed Downstream, Qb (cfs)	0.00	0.00
Minor Flow Capture Percentage, C%	100%	100%
Major Flow Capture Percentage, C%	100%	100%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet B1.1



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	7.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.015	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.7	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

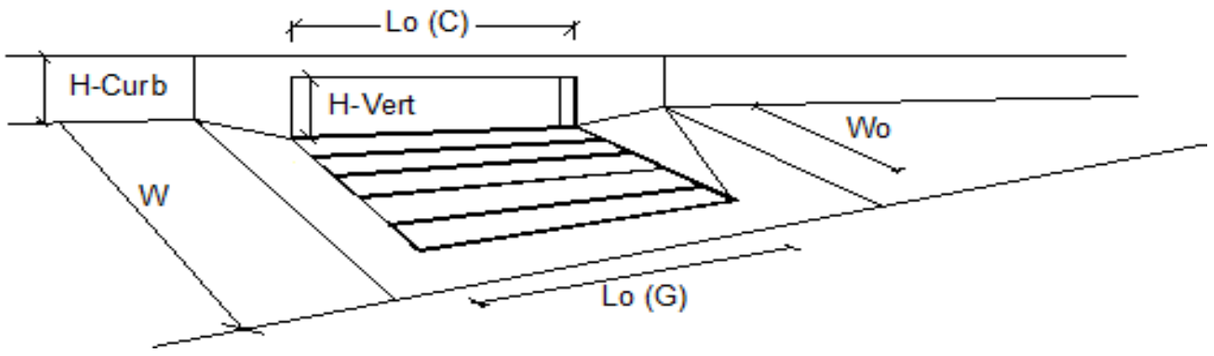
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**7.6**	**7.6**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.60 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 7.50 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

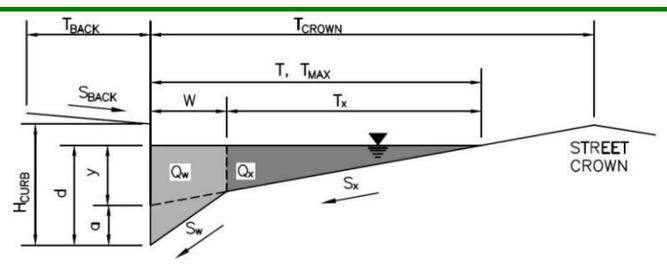
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.6**	**6.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.5**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**80**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet B1.2



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	3.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.014	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	4.7	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

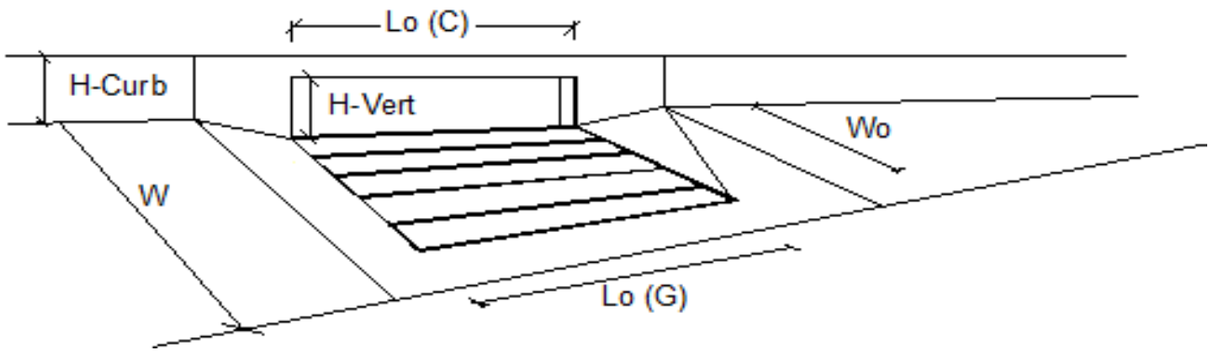
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**4.9**	**8.2**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.60 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.90 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

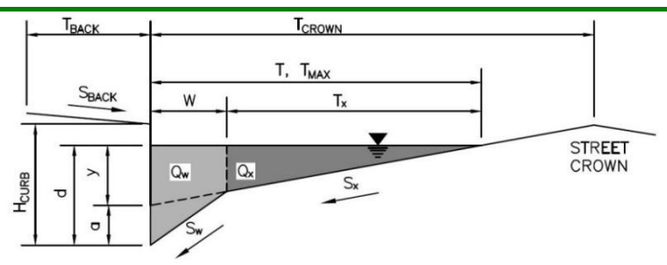
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.6**	**4.7**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.2**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**97**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet B1.4



Gutter Geometry:

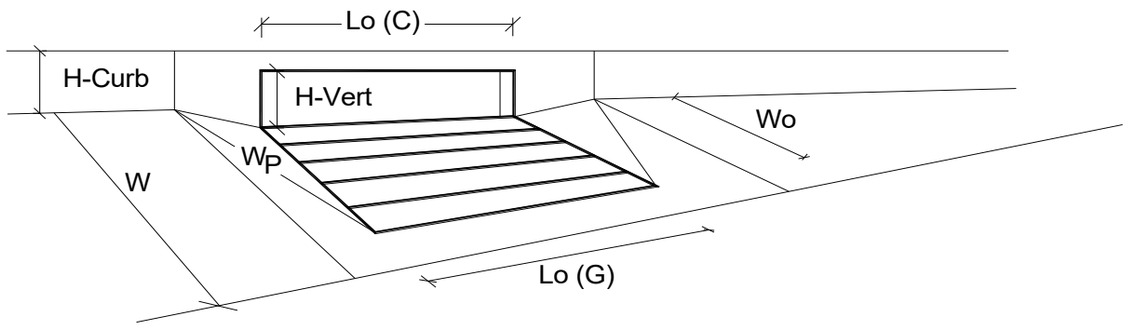
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	3.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	4.7	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is not applicable to Sump Condition				
MAJOR STORM Allowable Capacity is not applicable to Sump Condition	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	2	2	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	4.7	inches

Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	

Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	1.00	1.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.25	0.31	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	0.79	0.85	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	

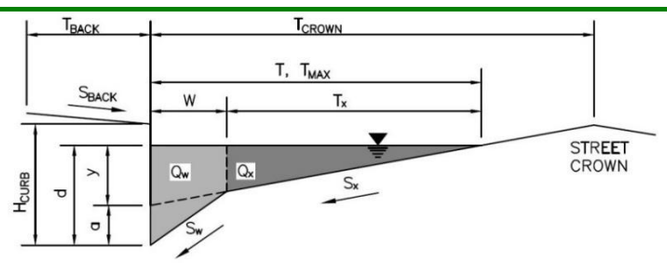
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**3.9**	**5.8**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	0.8	4.2	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet B1.5



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	17.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	8.1	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

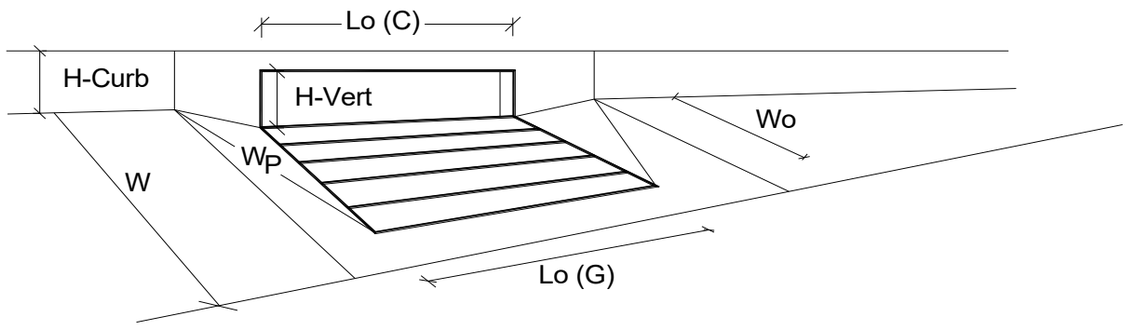
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

	Minor Storm	Major Storm	
Q_{allow} =	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	8.1	inches

Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	

Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	1.00	1.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.25	0.59	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	

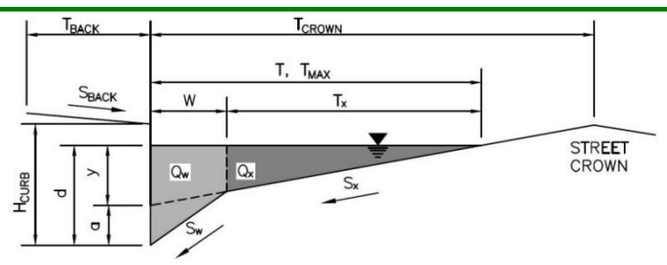
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.8**	**9.9**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	1.3	3.7	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet B2.2



Gutter Geometry:

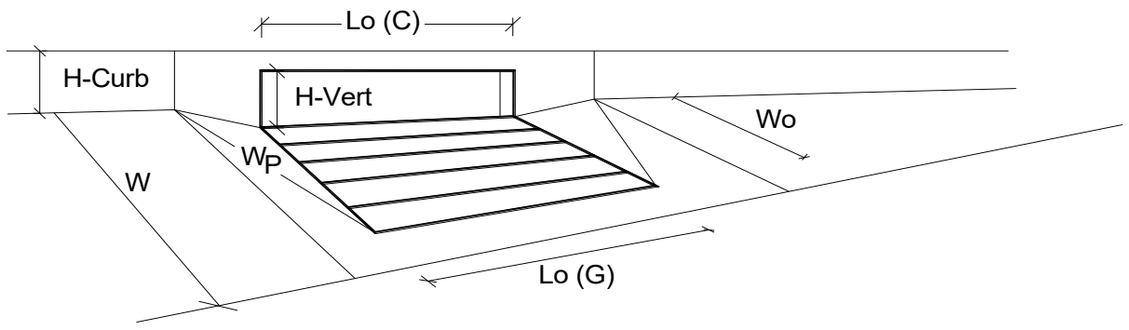
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	7.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.7	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is not applicable to Sump Condition				
MAJOR STORM Allowable Capacity is not applicable to Sump Condition	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	5.7	inches

Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	

Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	1.00	1.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.25	0.39	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	

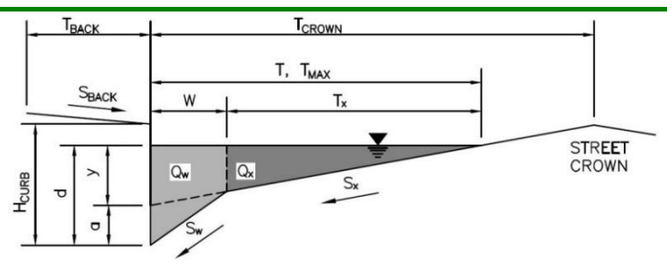
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.8**	**5.4**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	0.8	1.9	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet B2.3



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	7.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.040	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.7	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

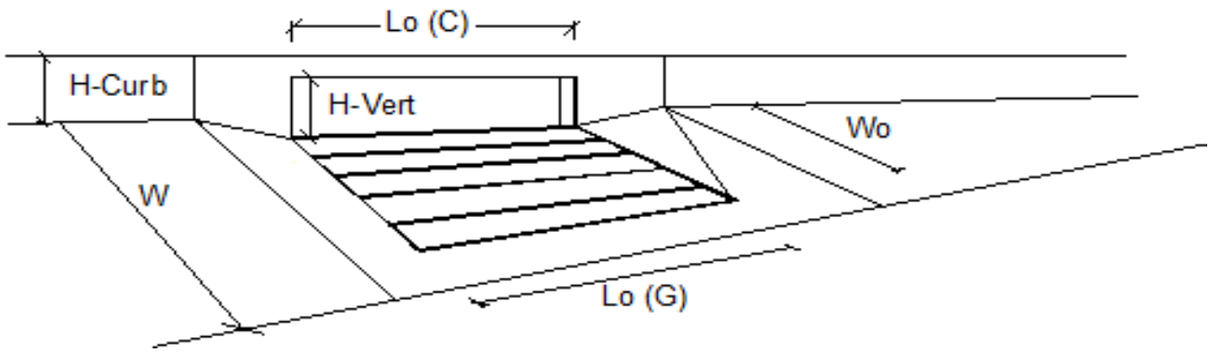
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**12.4**	**12.4**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.30 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 0.70 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

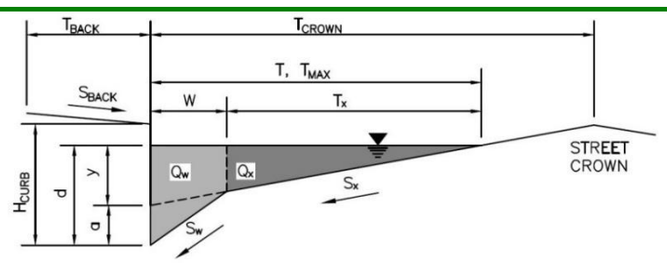
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.3**	**0.7**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet B2.4



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	3.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.040	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	4.7	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

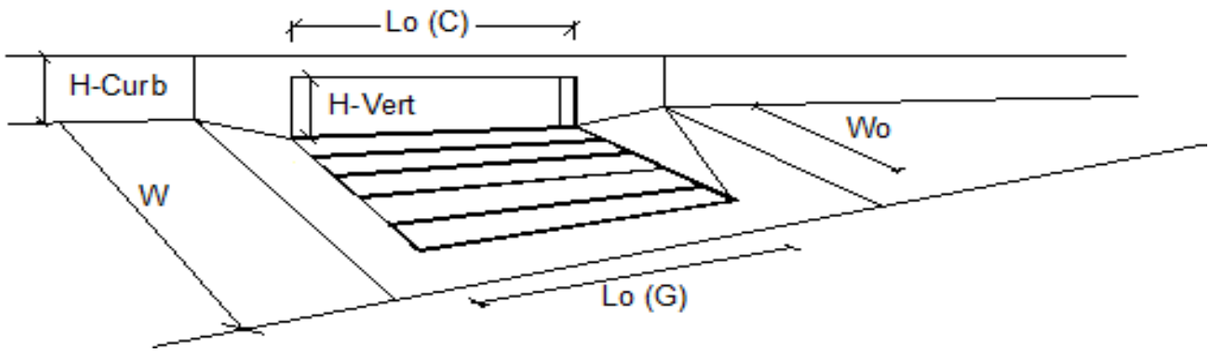
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**12.4**	**12.4**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.40 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 1.20 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

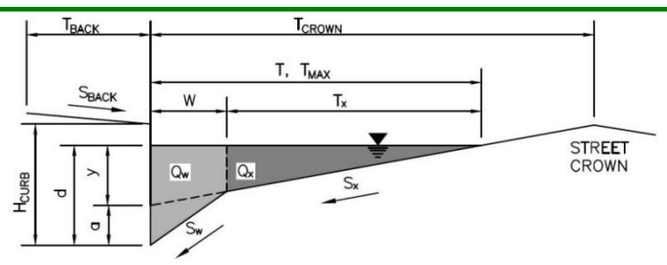
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.4**	**1.2**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet B3.3



Gutter Geometry:

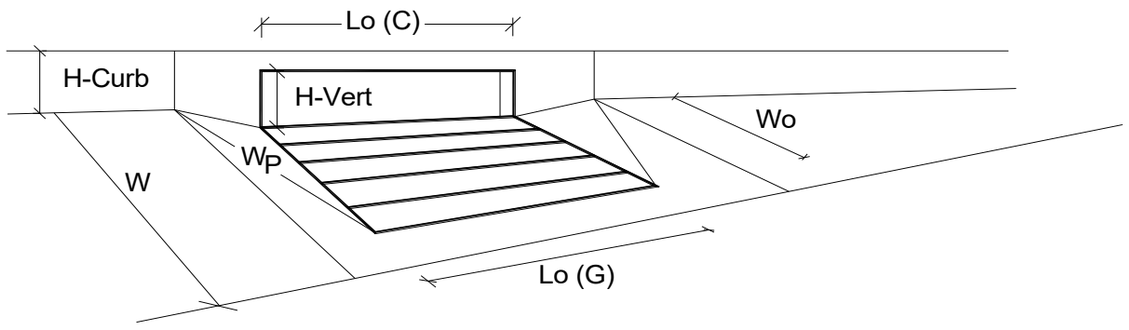
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	7.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.7	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is not applicable to Sump Condition				
MAJOR STORM Allowable Capacity is not applicable to Sump Condition	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



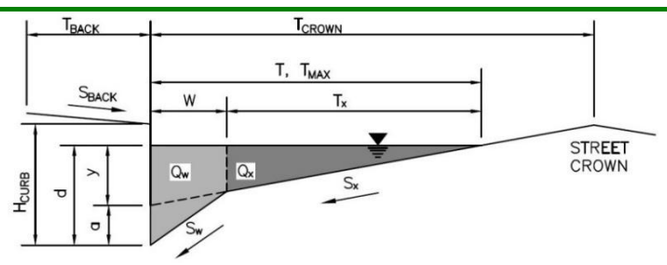
Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	5.7	inches
Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	1.00	1.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.25	0.39	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.8**	**5.4**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	0.6	1.3	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet B3.4



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	3.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	4.7	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

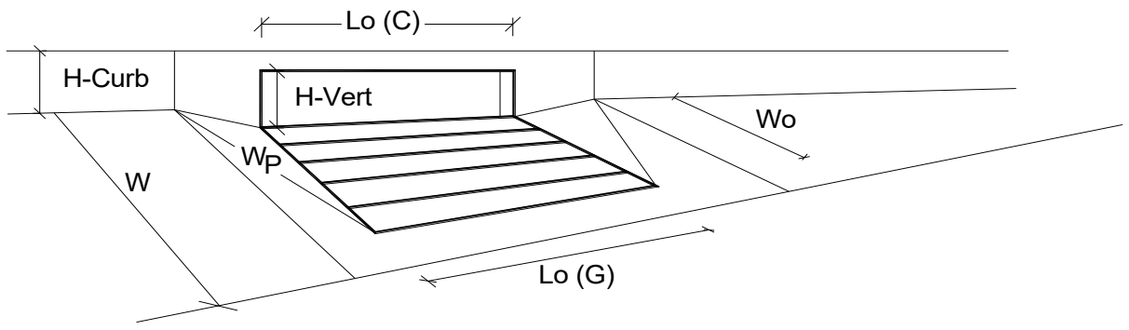
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

	Minor Storm	Major Storm	
Q_{allow} =	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	4.7	inches

Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	

Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	1.00	1.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.25	0.31	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	

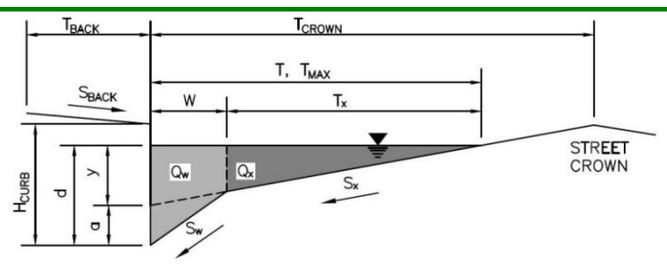
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.8**	**3.8**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	0.5	1.0	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet B3.5



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	3.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.040	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	4.7	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

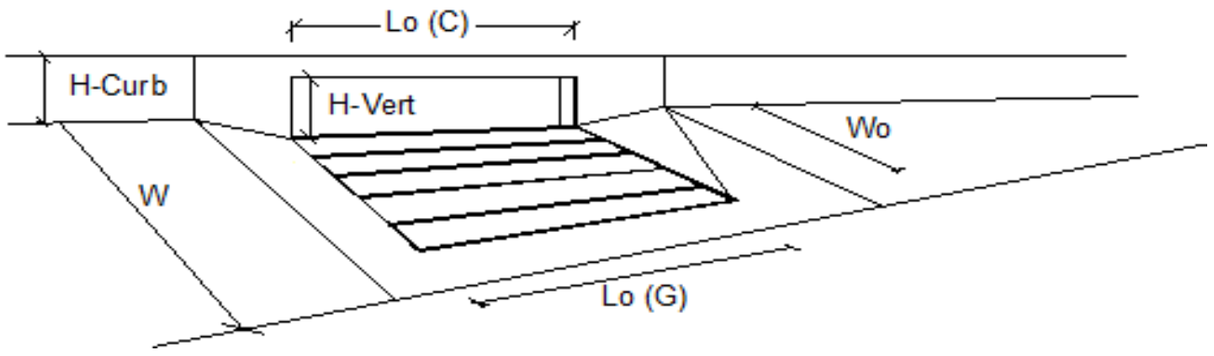
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**12.4**	**12.4**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.80 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 2.20 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

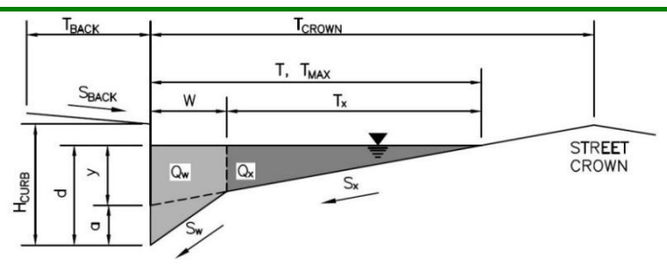
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.8**	**2.2**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet B3.6



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	7.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.040	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.7	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

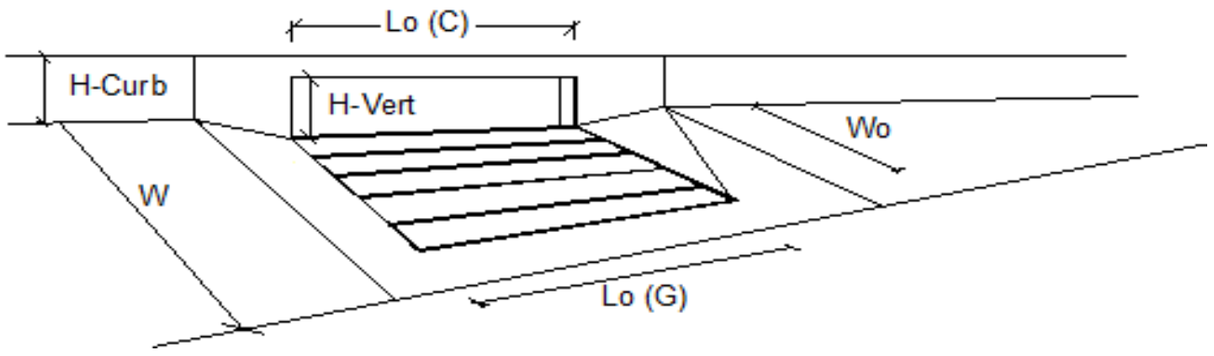
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**12.4**	**12.4**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.20 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 0.50 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.2**	**0.5**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Grand Park - 10W
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	Inlet C2.1	Inlet C2.2	Inlet C2.4
Inlet Application (Street or Area)	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening
Number of Inlet Units	1	1	1

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	0.70	0.60	0.70
Major Peak Flow, Q (cfs)	2.10	1.40	2.40

Bypass (Carry-Over) Flow from Upstream Inlets must be organized from upstream (left) to downstream (right) in order for bypass flows to be linked.

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received
Bypass Flow Description (Optional):			
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	0.70	0.60	0.70
Major Total Design Peak Flow, Q (cfs)	2.10	1.40	2.40
Minor Inlet Interception Capacity, Q_a (cfs)	0.70	0.60	0.70
Major Inlet Interception Capacity, Q_a (cfs)	1.83	1.37	1.98
Minor Flow Bypassed Downstream, Qb (cfs)	0.00	0.00	0.00
Major Flow Bypassed Downstream, Qb (cfs)	0.27	0.03	0.42
Minor Flow Capture Percentage, C%	100%	100%	100%
Major Flow Capture Percentage, C%	87%	98%	82%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Grand Park - 10W
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	Inlet C2.5	Inlet C2.6	Inlet C2.7
Inlet Application (Street or Area)	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening
Number of Inlet Units	1	2	2

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	0.10	0.80	0.50
Major Peak Flow, Q (cfs)	0.40	3.00	1.50

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	User-Defined	Inlet C2.2
Bypass Flow Description (Optional):		Inlets C2.1, C2.4, and C2.5	
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	0.00	0.45	0.03

CALCULATED OUTPUT

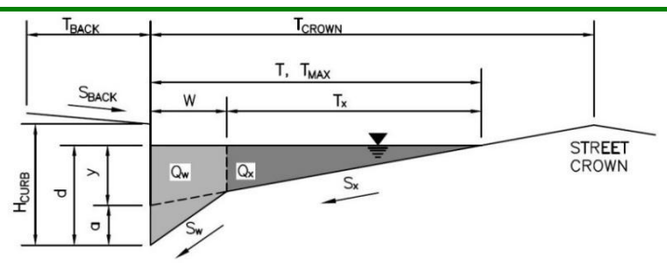
Minor Total Design Peak Flow, Q (cfs)	0.10	0.80	0.50
Major Total Design Peak Flow, Q (cfs)	0.40	3.45	1.53
Minor Inlet Interception Capacity, Q_a (cfs)	0.10	0.80	0.50
Major Inlet Interception Capacity, Q_a (cfs)	0.40	3.45	1.53
Minor Flow Bypassed Downstream, Qb (cfs)	0.00	0.00	0.00
Major Flow Bypassed Downstream, Qb (cfs)	0.00	0.00	0.00
Minor Flow Capture Percentage, C%	100%	100%	100%
Major Flow Capture Percentage, C%	100%	100%	100%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet C2.1



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	1.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	14.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.020	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	14.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	4.2	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

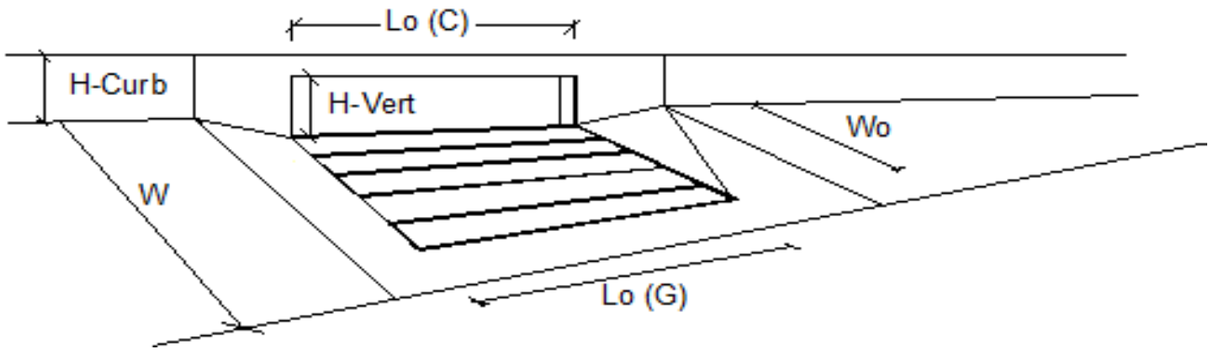
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.4**	**10.6**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.70 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 2.10 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

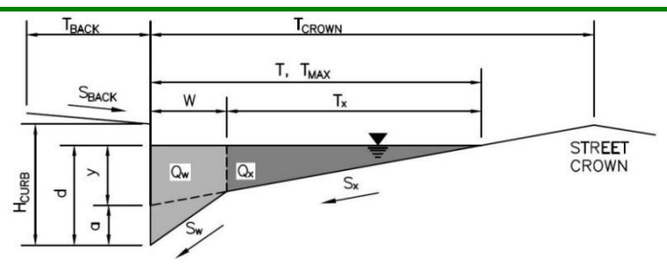
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.7**	**1.8**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.3**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**87**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet C2.2



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	26.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	14.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.020	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	14.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	10.2	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

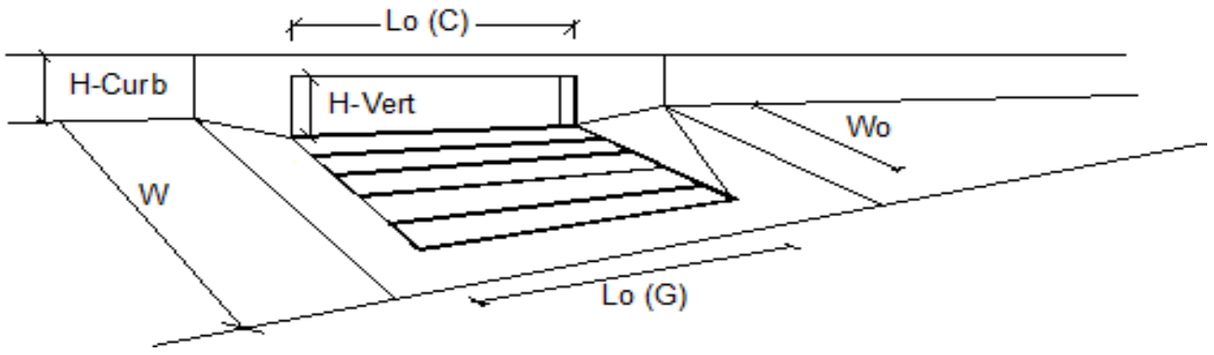
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.4**	**10.6**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.60 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 1.40 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

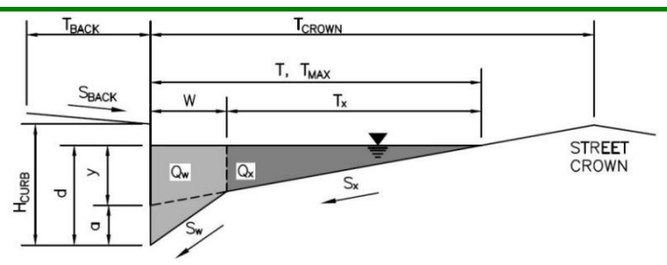
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.6**	**1.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**98**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet C2.4



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	17.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.020	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	8.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	8.1	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

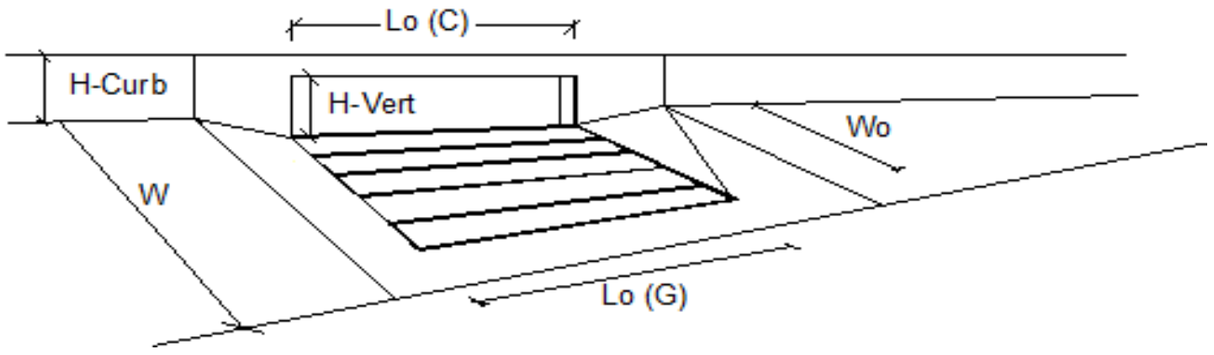
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**2.6**	**8.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.70 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 2.40 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

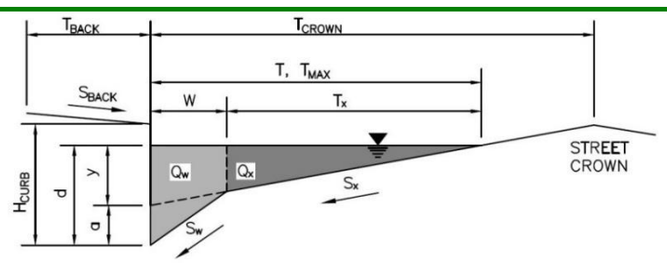
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.7**	**2.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.4**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**82**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet C2.5



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	17.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.020	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	8.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	8.1	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

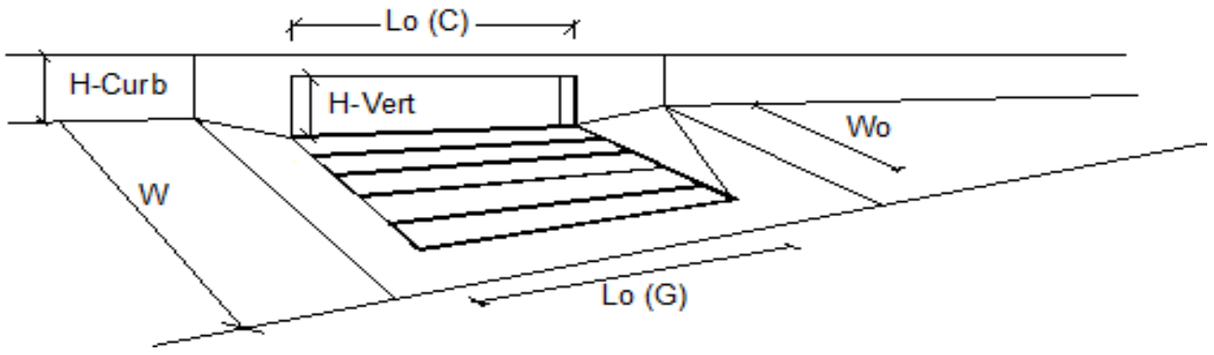
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**2.6**	**8.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.10 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 0.40 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

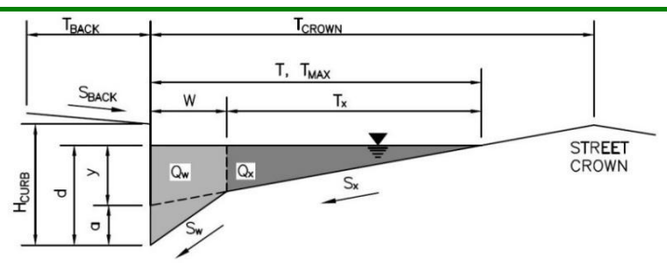
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.1**	**0.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet C2.6



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	1.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.020	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	8.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	8.1	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

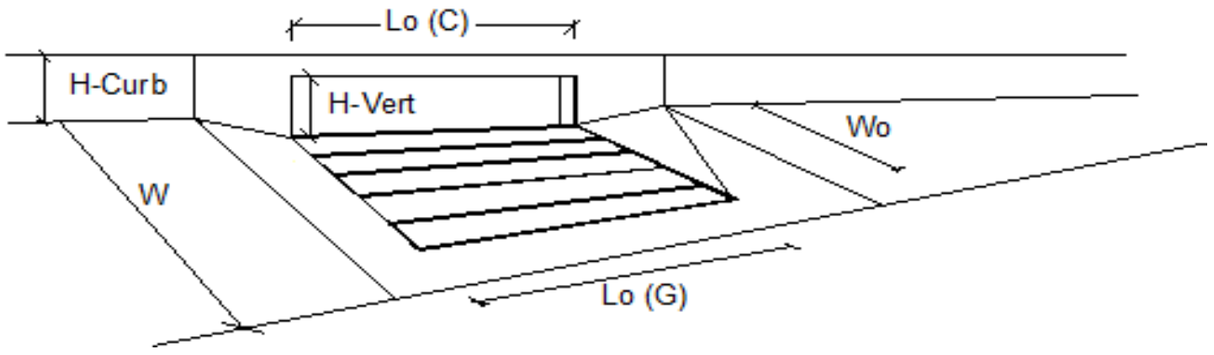
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**2.6**	**8.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.80 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 3.45 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

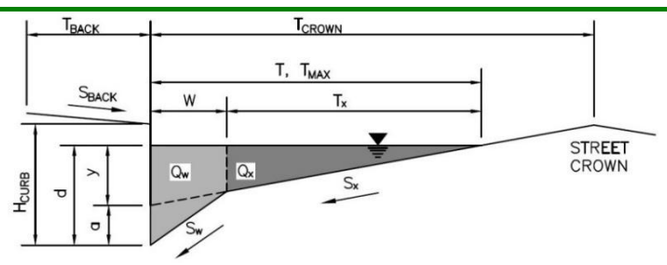
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.8**	**3.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Grand Park - 10W

Inlet ID: Inlet C2.7



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	1.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	13.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.020	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	8.1	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

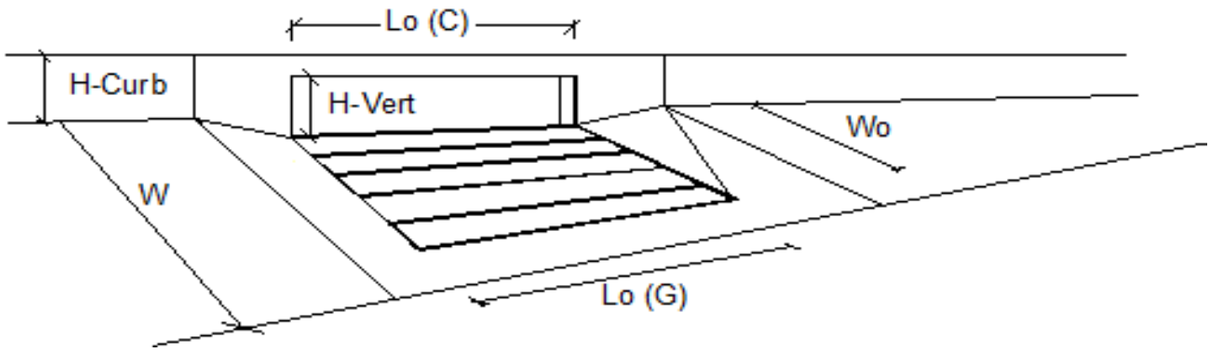
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.4**	**8.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.50 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 1.53 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.5**	**1.5**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Grand Park - 10W
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	Inlet D1.1	Inlet D1.2
Inlet Application (Street or Area)	STREET	STREET
Hydraulic Condition	On Grade	On Grade
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening
Number of Inlet Units	2	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	2.20	1.10
Major Peak Flow, Q (cfs)	8.10	3.70

Bypass (Carry-Over) Flow from Upstream Inlets must be organized from upstream (left) to downstream (right) in order for I

Receive Bypass Flow from:	No Bypass Flow Received	Inlet D1.1
Bypass Flow Description (Optional):		
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	0.00	1.71

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	2.20	1.10
Major Total Design Peak Flow, Q (cfs)	8.10	5.41
Minor Inlet Interception Capacity, Q_a (cfs)	2.20	1.10
Major Inlet Interception Capacity, Q_a (cfs)	6.39	5.41
Minor Flow Bypassed Downstream, Qb (cfs)	0.00	0.00
Major Flow Bypassed Downstream, Qb (cfs)	1.71	0.00
Minor Flow Capture Percentage, C%	100%	100%
Major Flow Capture Percentage, C%	79%	100%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

roject: Grand Park - 10W
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	Inlet D2	Inlet E1.1	Inlet E1.2
Inlet Application (Street or Area)	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening
Number of Inlet Units	1	2	1

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	0.40	0.90	0.40
Major Peak Flow, Q (cfs)	1.10	3.20	1.10

Bypass (Carry-Over) Flow from Upstream bypass flows to be linked.

Receive Bypass Flow from:	No Bypass Flow Received	Inlet D1.2	Inlet D2
Bypass Flow Description (Optional):		0	
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00

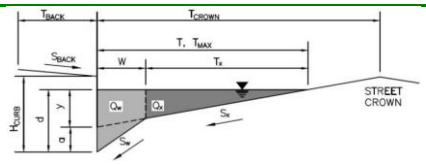
CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	0.40	0.90	0.40
Major Total Design Peak Flow, Q (cfs)	1.10	3.20	1.10
Minor Inlet Interception Capacity, Q_a (cfs)	0.40	0.90	0.40
Major Inlet Interception Capacity, Q_a (cfs)	1.10	3.20	1.10
Minor Flow Bypassed Downstream, Qb (cfs)	0.00	0.00	0.00
Major Flow Bypassed Downstream, Qb (cfs)	0.00	0.00	0.00
Minor Flow Capture Percentage, C%	100%	100%	100%
Major Flow Capture Percentage, C%	100%	100%	100%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Grand Park - 10W**
Inlet ID: **Inlet D1.1**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	26.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	14.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.050	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

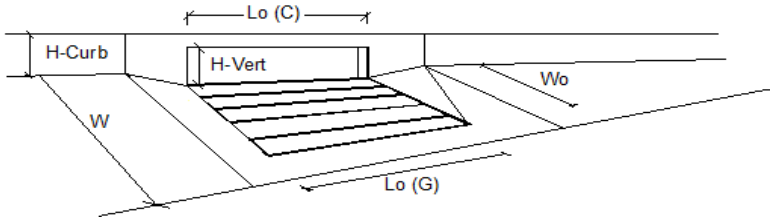
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	14.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	10.2	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**5.4**	**16.8**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.20 cfs on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design peak flow of 8.10 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



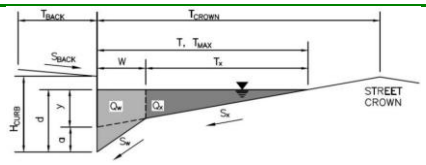
Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.2**	**6.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.7**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**79**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Grand Park - 10W**
Inlet ID: **Inlet D1.2**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	26.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	14.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.050	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

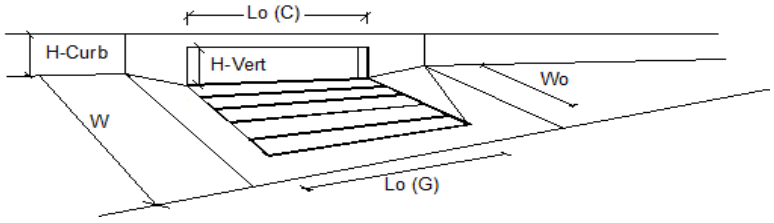
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	14.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	10.2	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**5.4**	**16.8**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.10 cfs on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design peak flow of 5.41 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



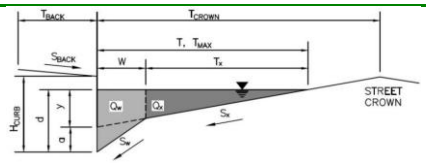
Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.1**	**5.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Grand Park - 10W**
Inlet ID: **Inlet D2**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	5.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	14.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.050	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

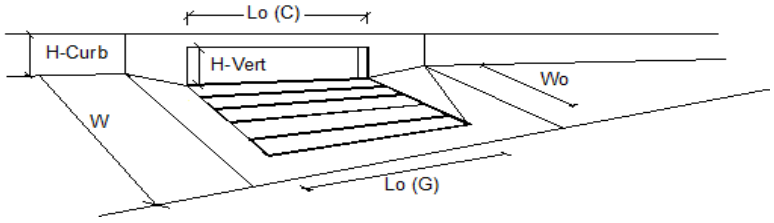
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	14.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.2	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**5.4**	**16.8**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.40 cfs on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design peak flow of 1.10 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



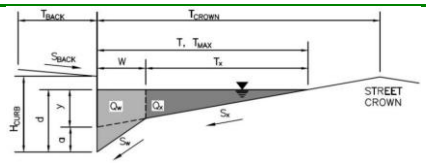
Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.4**	**1.1**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Grand Park - 10W**
Inlet ID: **Inlet E1.1**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	26.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	14.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.080	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

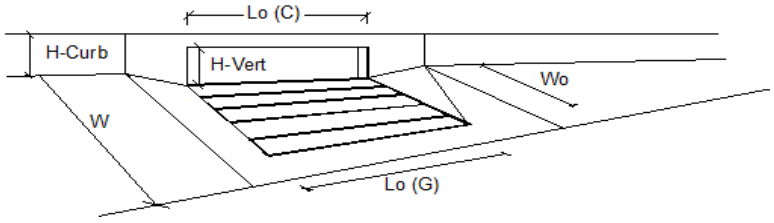
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	14.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	10.2	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**6.9**	**21.2**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.90 cfs on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design peak flow of 3.20 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



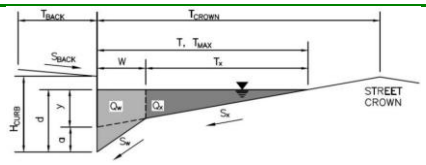
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (CDOT Type R Curb Opening)	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.9**	**3.2**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Grand Park - 10W**
Inlet ID: **Inlet E1.2**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	5.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	14.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.080	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

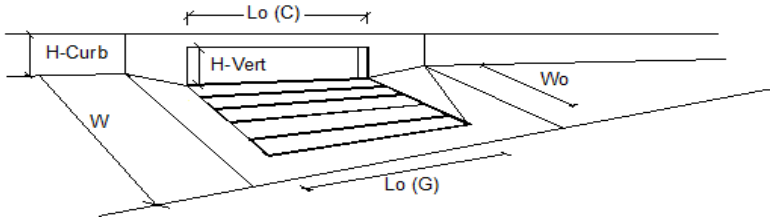
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	9.0	14.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	10.2	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**6.9**	**21.2**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.40 cfs on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design peak flow of 1.10 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.4**	**1.1**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**100**	**%**

Inlet Report

Inlet B1.3 Capacity Calculation

Drop Grate Inlet

Location	= Sag
Curb Length (ft)	= -0-
Throat Height (in)	= -0-
Grate Area (sqft)	= 4.50
Grate Width (ft)	= 3.00
Grate Length (ft)	= 3.00

Gutter

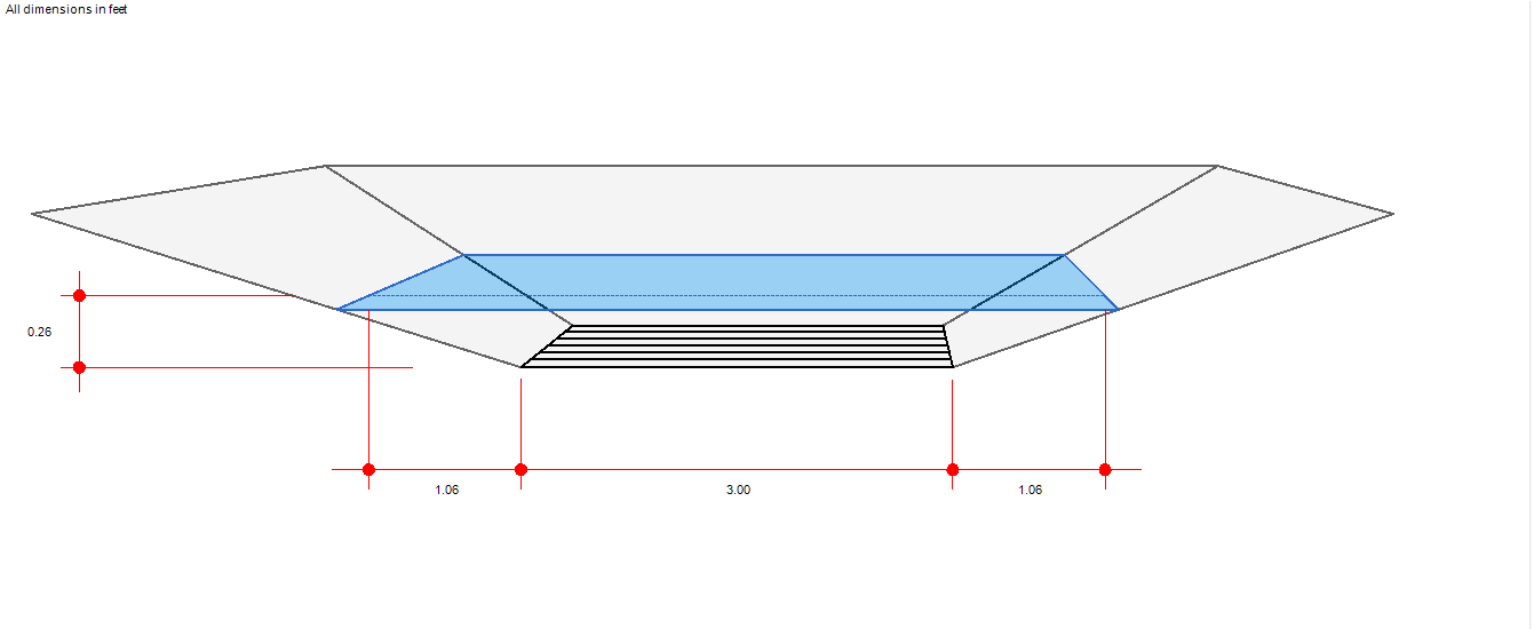
Slope, Sw (ft/ft)	= 0.250
Slope, Sx (ft/ft)	= 0.250
Local Depr (in)	= -0-
Gutter Width (ft)	= 3.00
Gutter Slope (%)	= -0-
Gutter n-value	= -0-

Calculations

Compute by:	Known Q
Q (cfs)	= 4.90

Highlighted

Q Total (cfs)	= 4.90
Q Capt (cfs)	= 4.90
Q Bypass (cfs)	= -0-
Depth at Inlet (in)	= 3.17
Efficiency (%)	= 100
Gutter Spread (ft)	= 5.12
Gutter Vel (ft/s)	= -0-
Bypass Spread (ft)	= -0-
Bypass Depth (in)	= -0-



Inlet Report

Inlet B3.1 & B3.2 Capacity Calculation

Drop Grate Inlet

Location	= Sag
Curb Length (ft)	= -0-
Throat Height (in)	= -0-
Grate Area (sqft)	= 4.50
Grate Width (ft)	= 3.00
Grate Length (ft)	= 3.00

Gutter

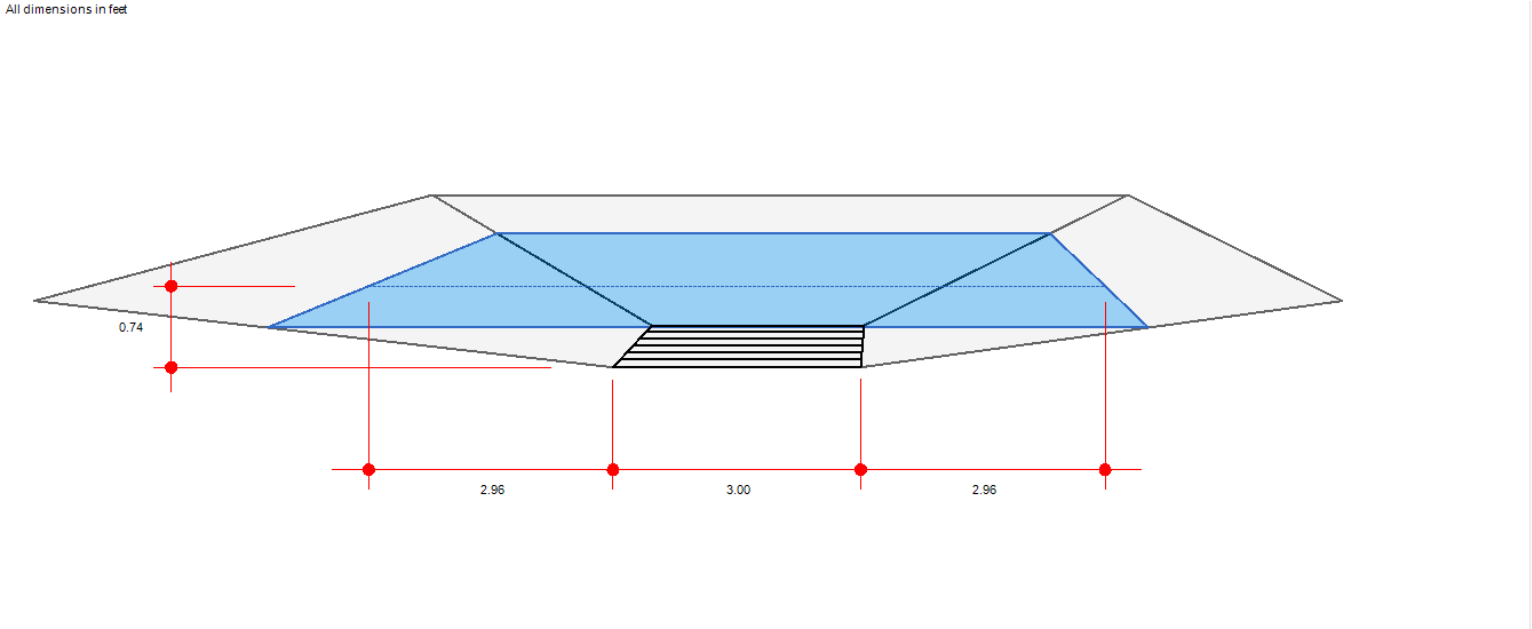
Slope, Sw (ft/ft)	= 0.250
Slope, Sx (ft/ft)	= 0.250
Local Depr (in)	= -0-
Gutter Width (ft)	= 3.00
Gutter Slope (%)	= -0-
Gutter n-value	= -0-

Calculations

Compute by:	Known Q
Q (cfs)	= 20.80

Highlighted

Q Total (cfs)	= 20.80
Q Capt (cfs)	= 20.80
Q Bypass (cfs)	= -0-
Depth at Inlet (in)	= 8.88
Efficiency (%)	= 100
Gutter Spread (ft)	= 8.92
Gutter Vel (ft/s)	= -0-
Bypass Spread (ft)	= -0-
Bypass Depth (in)	= -0-



Inlet Report

Inlet C2.3 Capacity Calculation

Drop Grate Inlet

Location	= Sag
Curb Length (ft)	= -0-
Throat Height (in)	= -0-
Grate Area (sqft)	= 4.50
Grate Width (ft)	= 3.00
Grate Length (ft)	= 3.00

Gutter

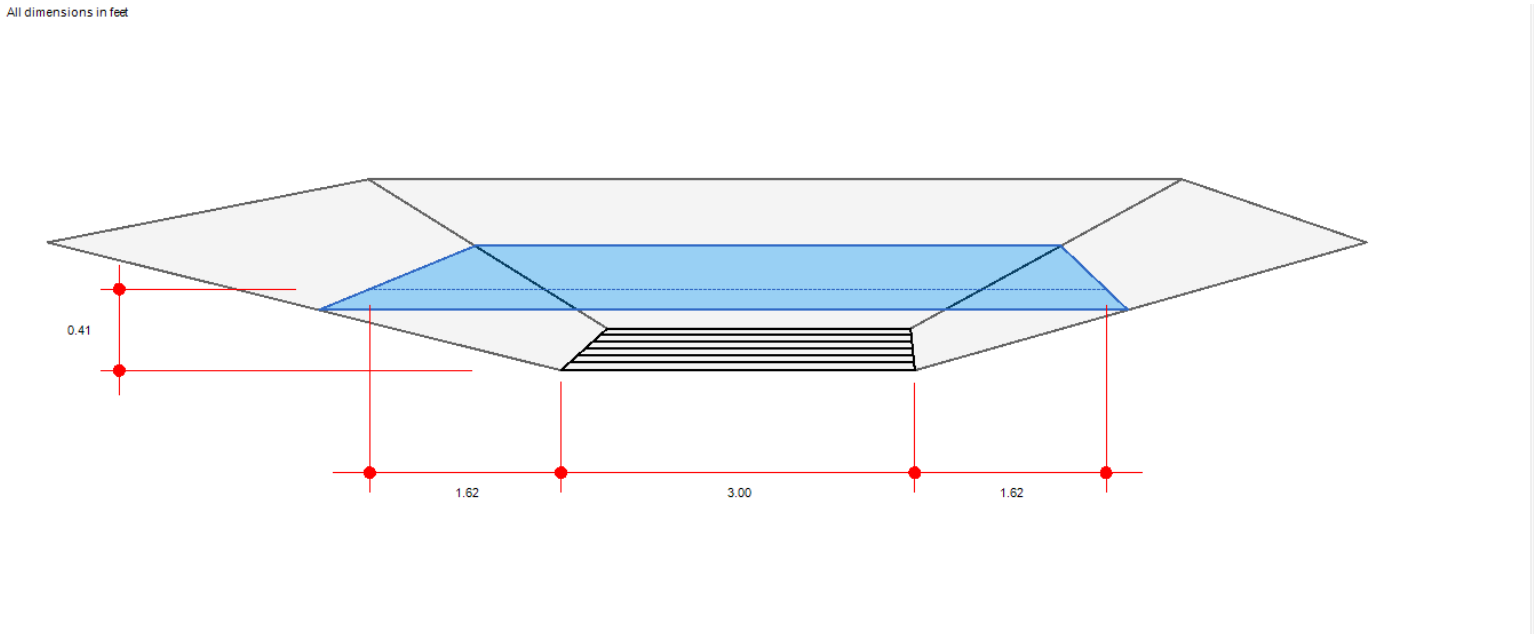
Slope, Sw (ft/ft)	= 0.250
Slope, Sx (ft/ft)	= 0.250
Local Depr (in)	= -0-
Gutter Width (ft)	= 3.00
Gutter Slope (%)	= -0-
Gutter n-value	= -0-

Calculations

Compute by:	Known Q
Q (cfs)	= 9.30

Highlighted

Q Total (cfs)	= 9.30
Q Capt (cfs)	= 9.30
Q Bypass (cfs)	= -0-
Depth at Inlet (in)	= 4.87
Efficiency (%)	= 100
Gutter Spread (ft)	= 6.24
Gutter Vel (ft/s)	= -0-
Bypass Spread (ft)	= -0-
Bypass Depth (in)	= -0-



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Jan 8 2026

Cul De Sac Curb Cut Capacity Calculation

Trapezoidal

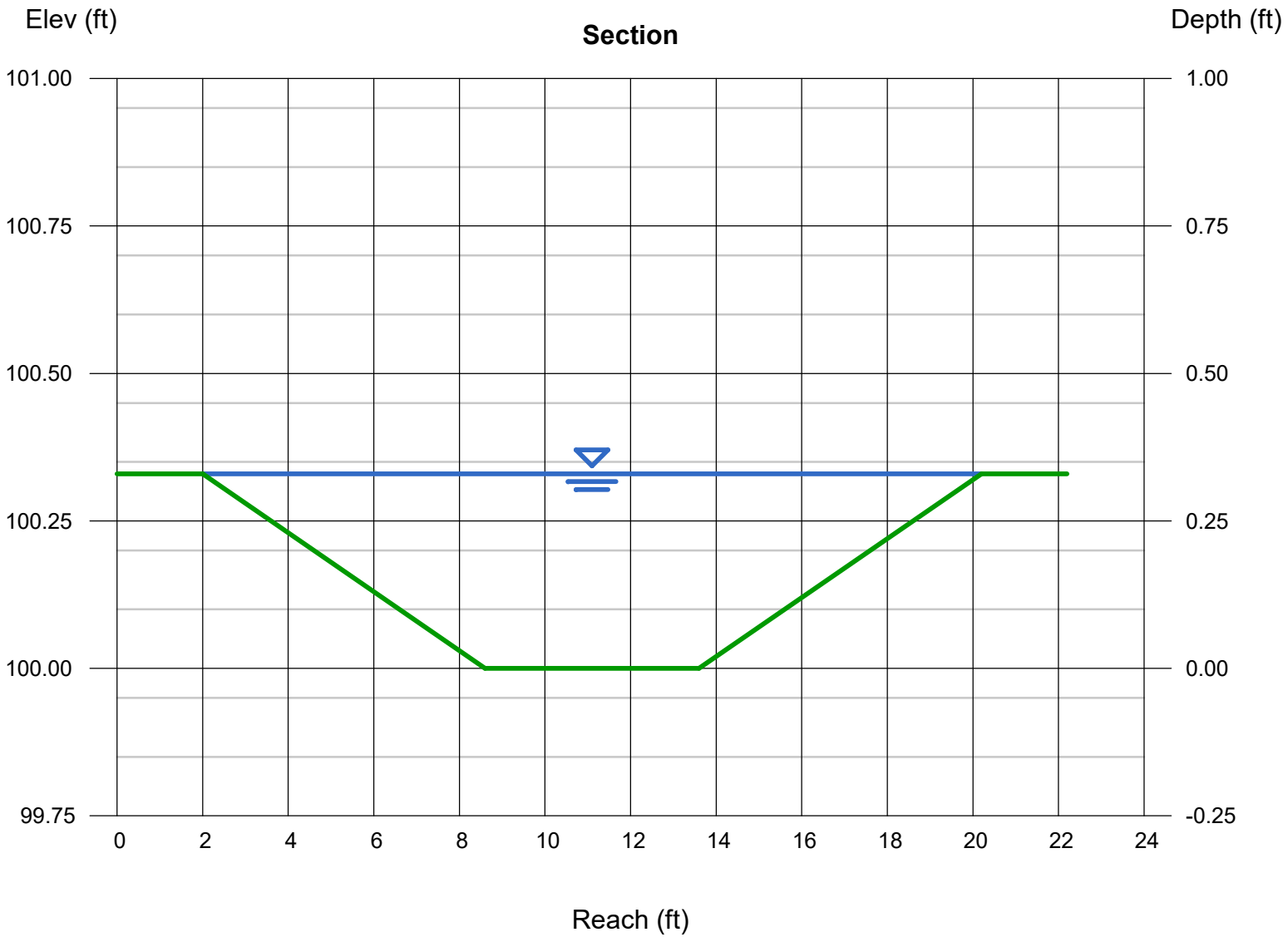
Bottom Width (ft)	= 5.00
Side Slopes (z:1)	= 20.00, 20.00
Total Depth (ft)	= 0.33
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.013

Calculations

Compute by:	Q vs Depth
No. Increments	= 10

Highlighted

Depth (ft)	= 0.33
Q (cfs)	= 15.46
Area (sqft)	= 3.83
Velocity (ft/s)	= 4.04
Wetted Perim (ft)	= 18.22
Crit Depth, Yc (ft)	= 0.33
Top Width (ft)	= 18.20
EGL (ft)	= 0.58



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B1.3 - 1.85% - 5 YR

Triangular

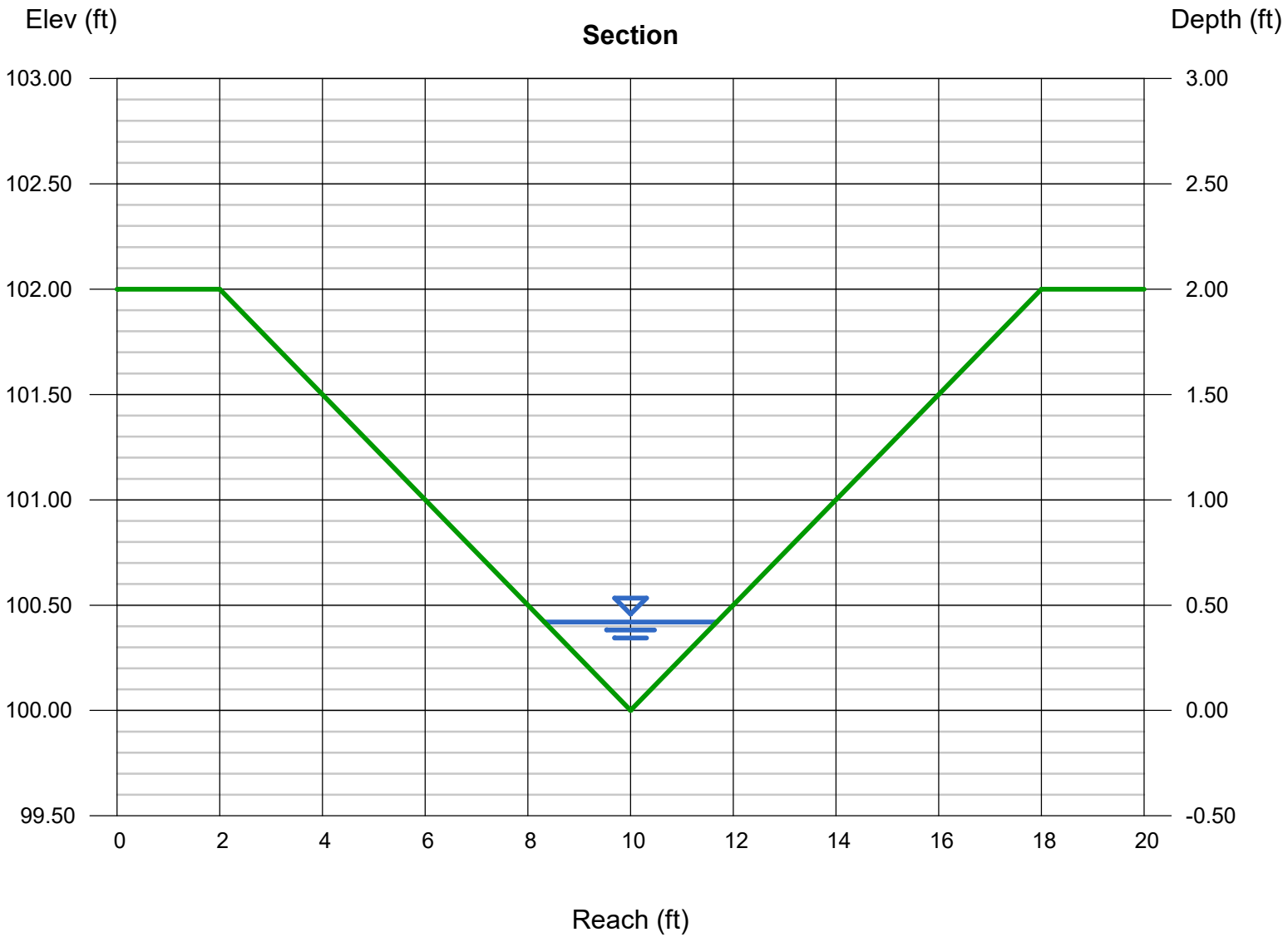
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 1.85
N-Value	= 0.030

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.60

Highlighted

Depth (ft)	= 0.42
Q (cfs)	= 1.600
Area (sqft)	= 0.71
Velocity (ft/s)	= 2.27
Wetted Perim (ft)	= 3.46
Crit Depth, Yc (ft)	= 0.40
Top Width (ft)	= 3.36
EGL (ft)	= 0.50



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B1.3 - 1.85% - 100 YR

Triangular

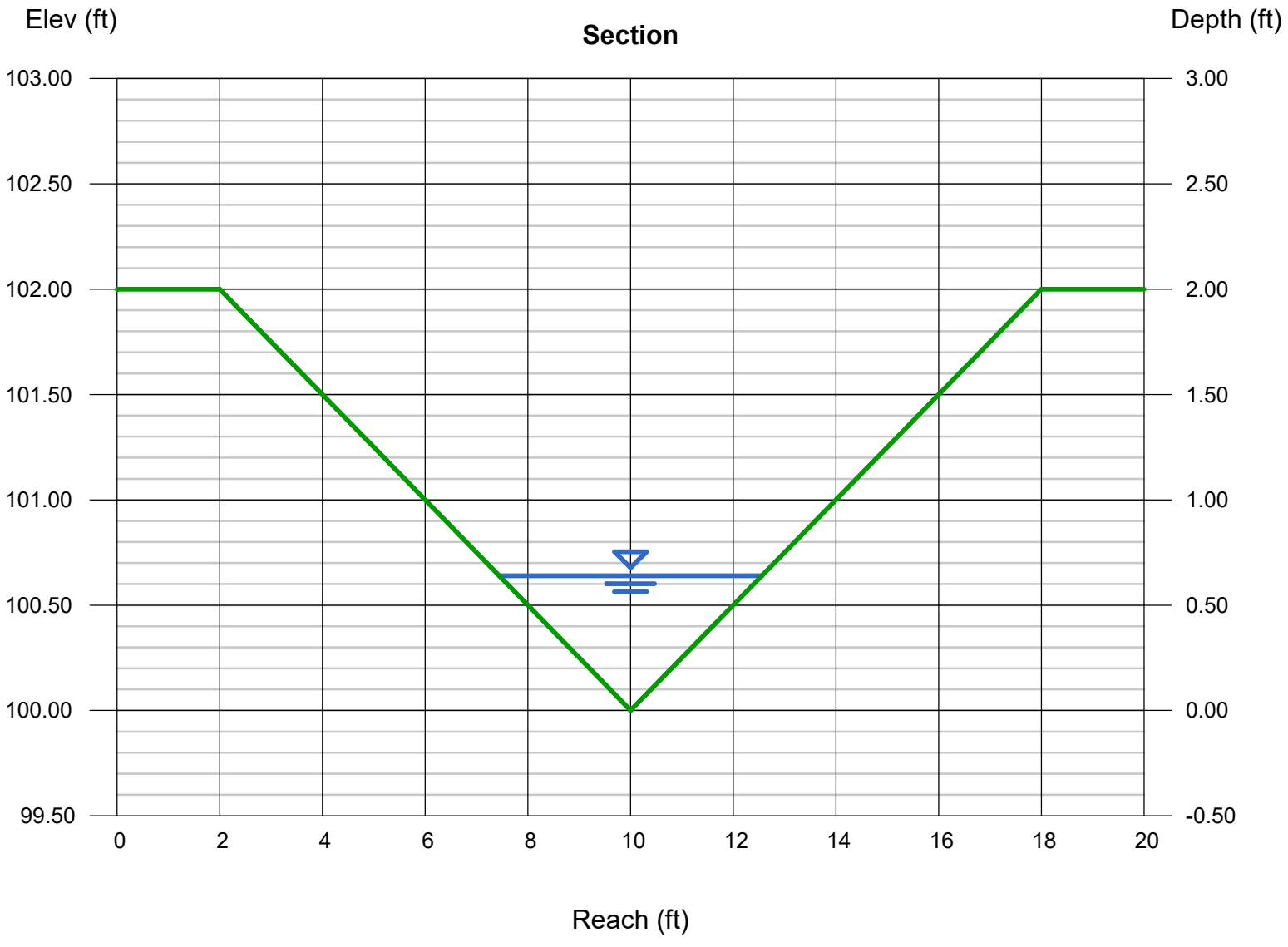
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 1.85
N-Value	= 0.030

Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.90

Highlighted

Depth (ft)	= 0.64
Q (cfs)	= 4.900
Area (sqft)	= 1.64
Velocity (ft/s)	= 2.99
Wetted Perim (ft)	= 5.28
Crit Depth, Yc (ft)	= 0.63
Top Width (ft)	= 5.12
EGL (ft)	= 0.78



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B2.1 - 4.5% 4FT BOTTOM - 5 YR

Trapezoidal

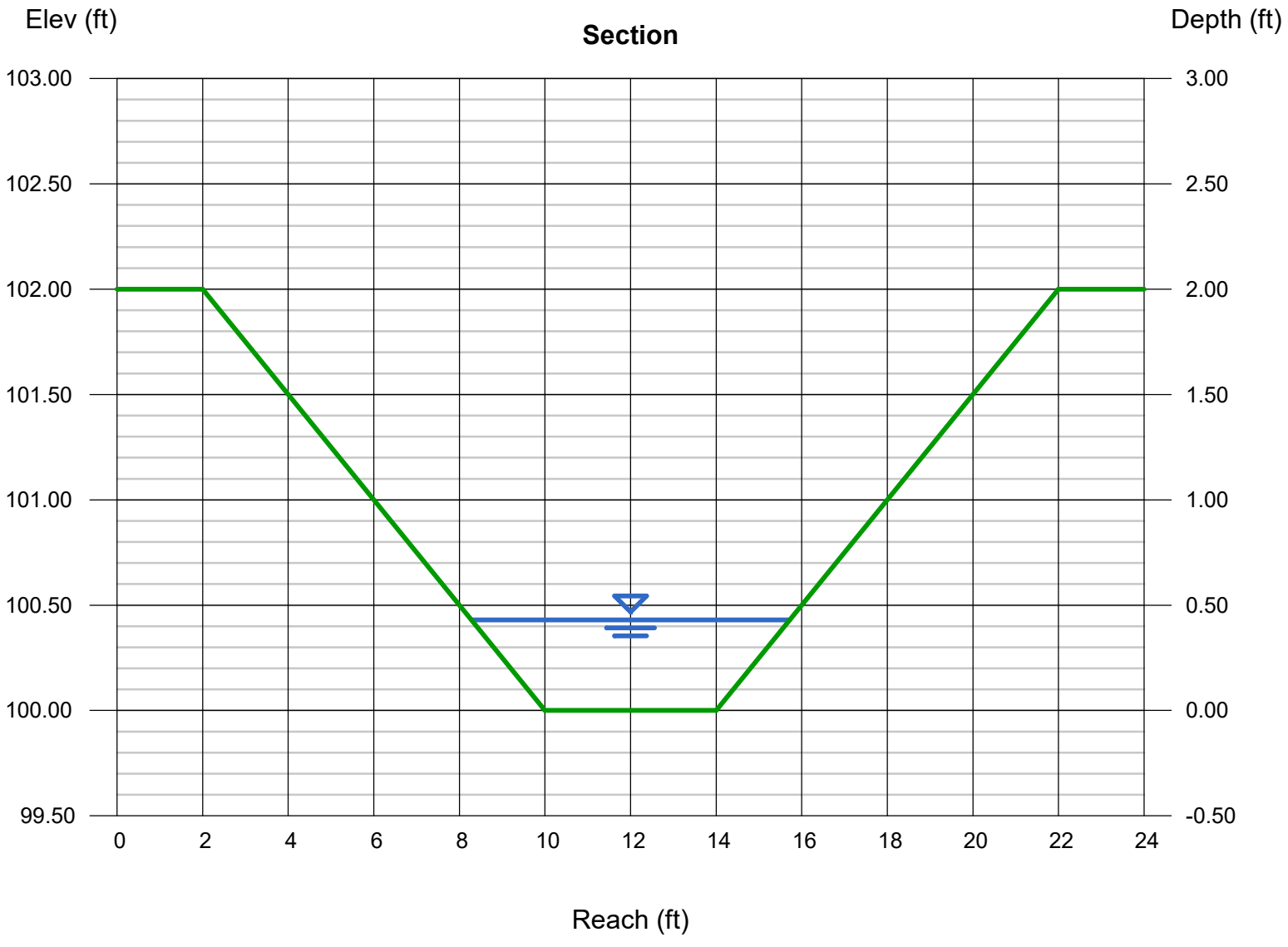
Bottom Width (ft)	= 4.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 4.50
N-Value	= 0.030

Calculations

Compute by:	Known Q
Known Q (cfs)	= 11.80

Highlighted

Depth (ft)	= 0.43
Q (cfs)	= 11.80
Area (sqft)	= 2.46
Velocity (ft/s)	= 4.80
Wetted Perim (ft)	= 7.55
Crit Depth, Yc (ft)	= 0.54
Top Width (ft)	= 7.44
EGL (ft)	= 0.79



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B2.1 - 4.5% 4FT BOTTOM - 100 YR

Trapezoidal

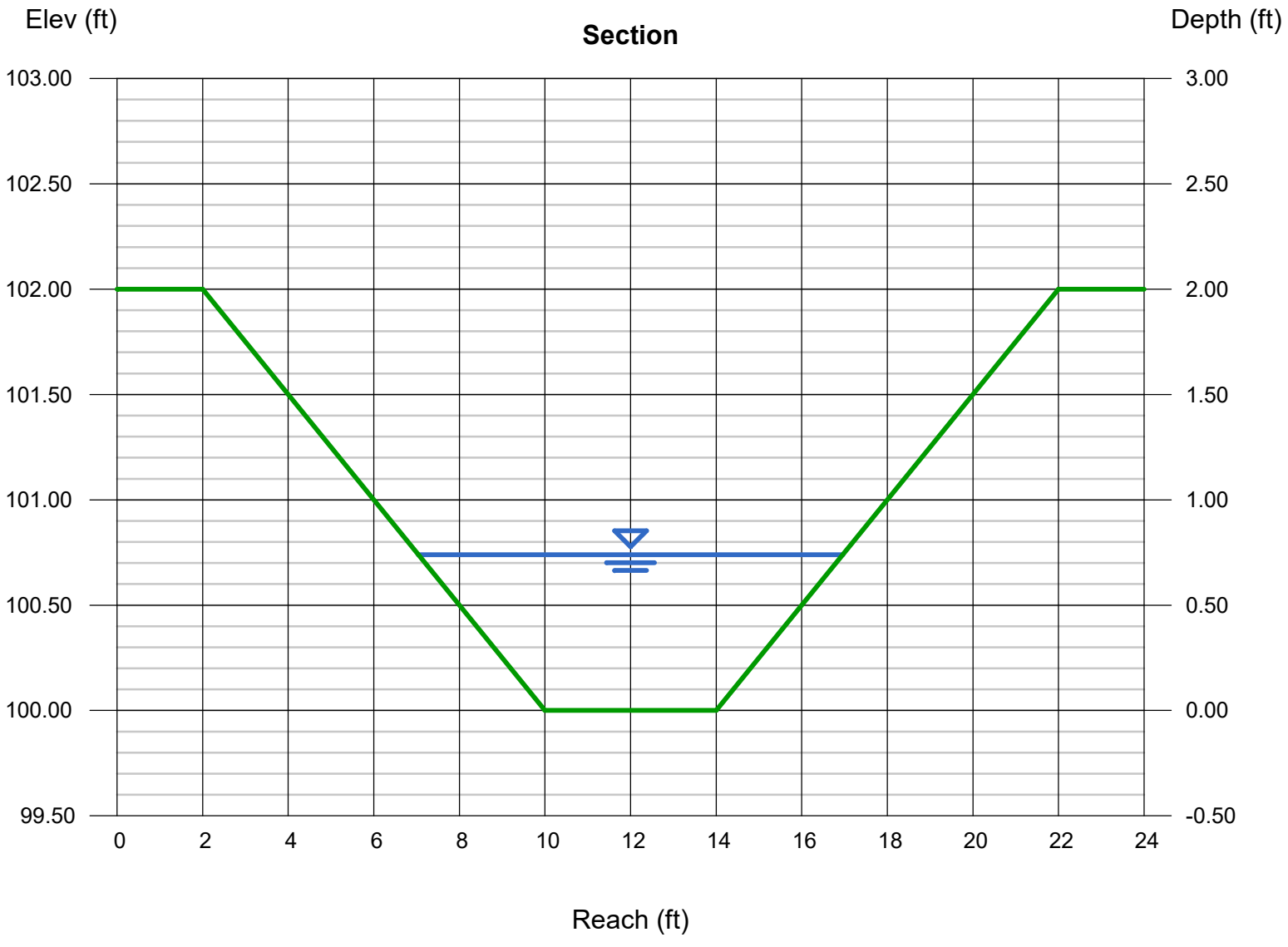
Bottom Width (ft)	= 4.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 4.50
N-Value	= 0.030

Calculations

Compute by:	Known Q
Known Q (cfs)	= 34.20

Highlighted

Depth (ft)	= 0.74
Q (cfs)	= 34.20
Area (sqft)	= 5.15
Velocity (ft/s)	= 6.64
Wetted Perim (ft)	= 10.10
Crit Depth, Yc (ft)	= 0.96
Top Width (ft)	= 9.92
EGL (ft)	= 1.43



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B3.1 - 1% 2FT BOTTOM - 5 YR

Trapezoidal

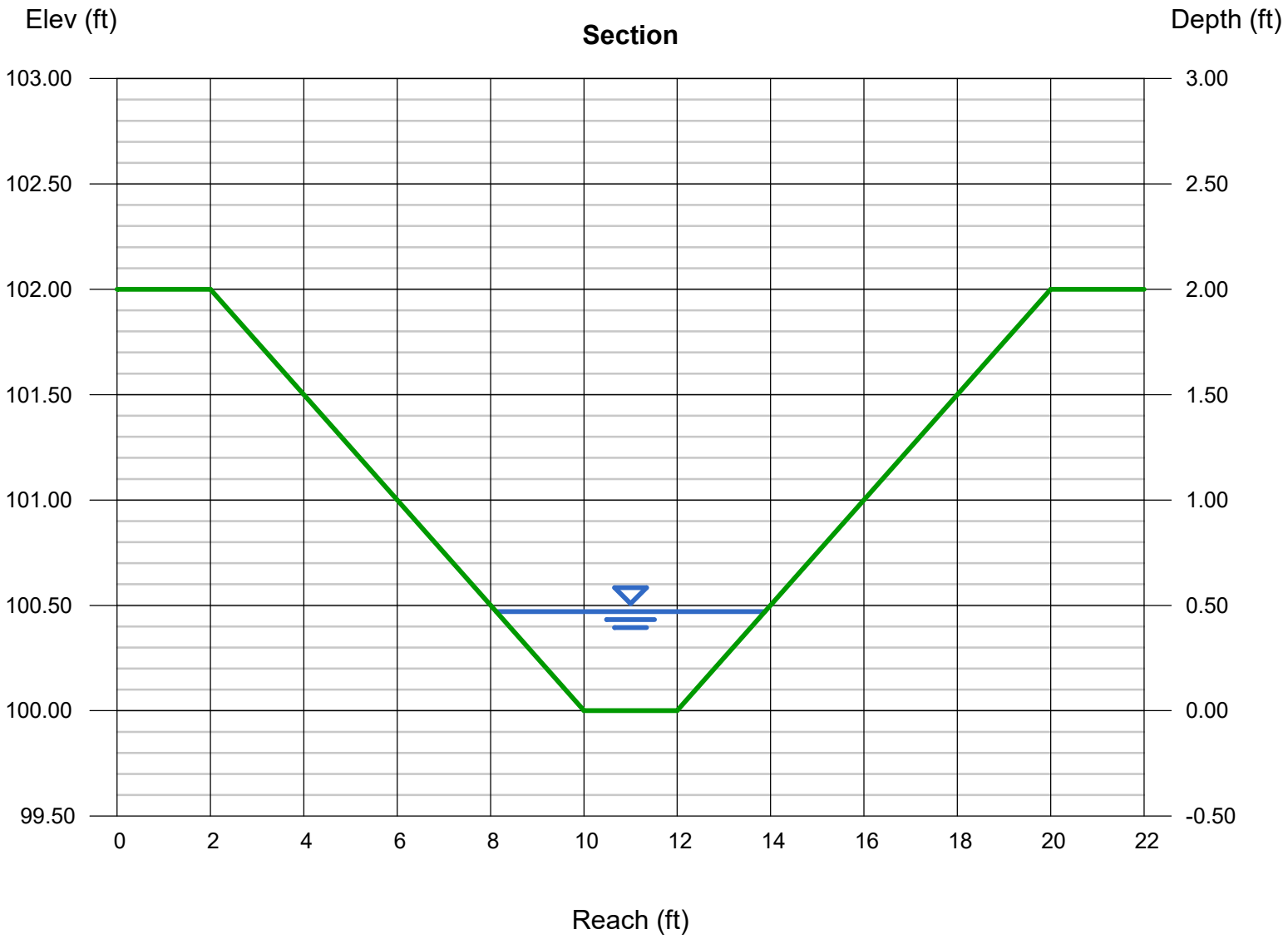
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.030

Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.10

Highlighted

Depth (ft)	= 0.47
Q (cfs)	= 4.100
Area (sqft)	= 1.82
Velocity (ft/s)	= 2.25
Wetted Perim (ft)	= 5.88
Crit Depth, Yc (ft)	= 0.39
Top Width (ft)	= 5.76
EGL (ft)	= 0.55



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B3.1 - 1% 2FT BOTTOM - 100 YR

Trapezoidal

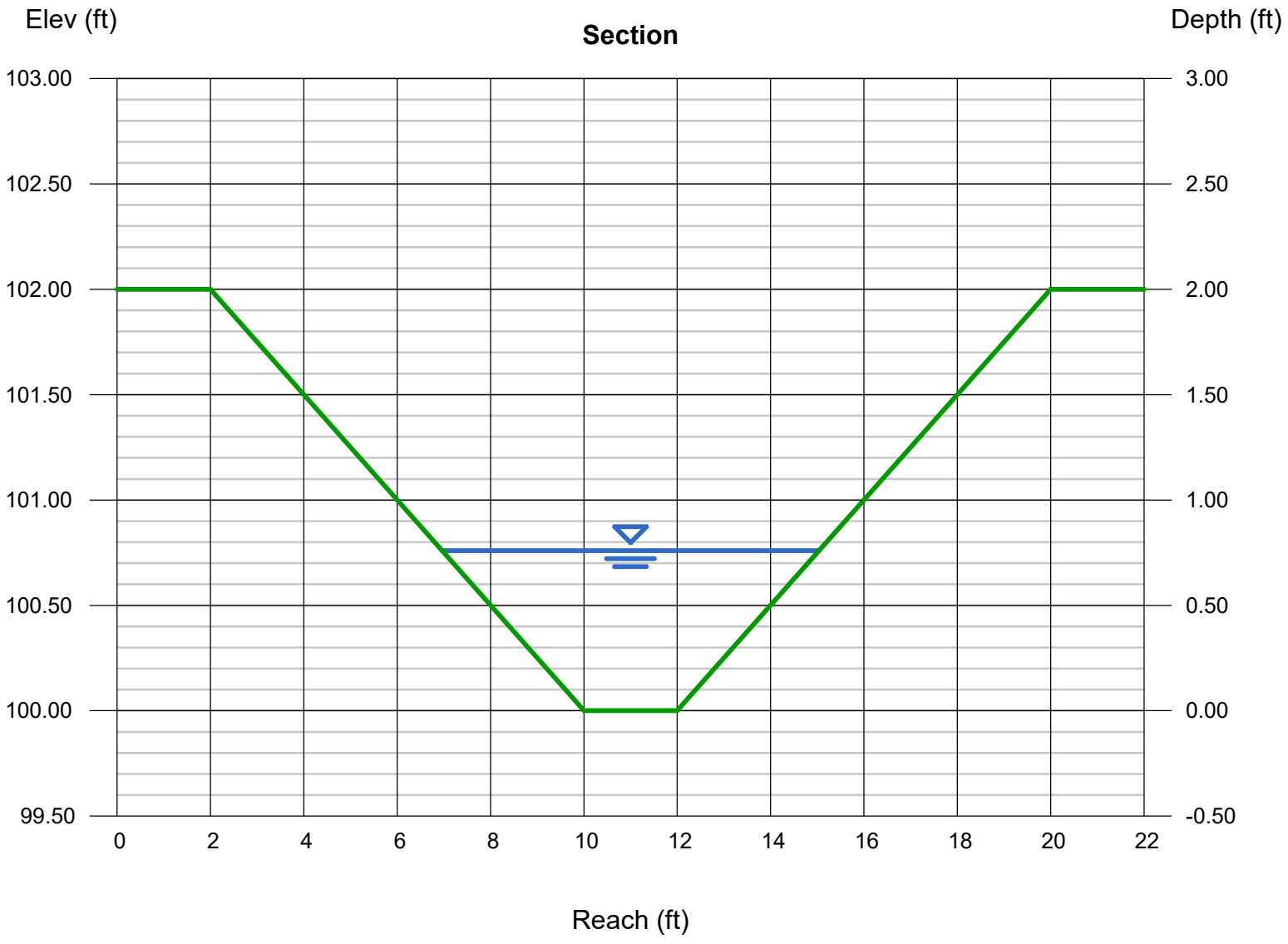
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.030

Calculations

Compute by:	Known Q
Known Q (cfs)	= 11.20

Highlighted

Depth (ft)	= 0.76
Q (cfs)	= 11.20
Area (sqft)	= 3.83
Velocity (ft/s)	= 2.92
Wetted Perim (ft)	= 8.27
Crit Depth, Yc (ft)	= 0.66
Top Width (ft)	= 8.08
EGL (ft)	= 0.89



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B3.2 - 6.25% 2FT BOTTOM - 5 YR

Trapezoidal

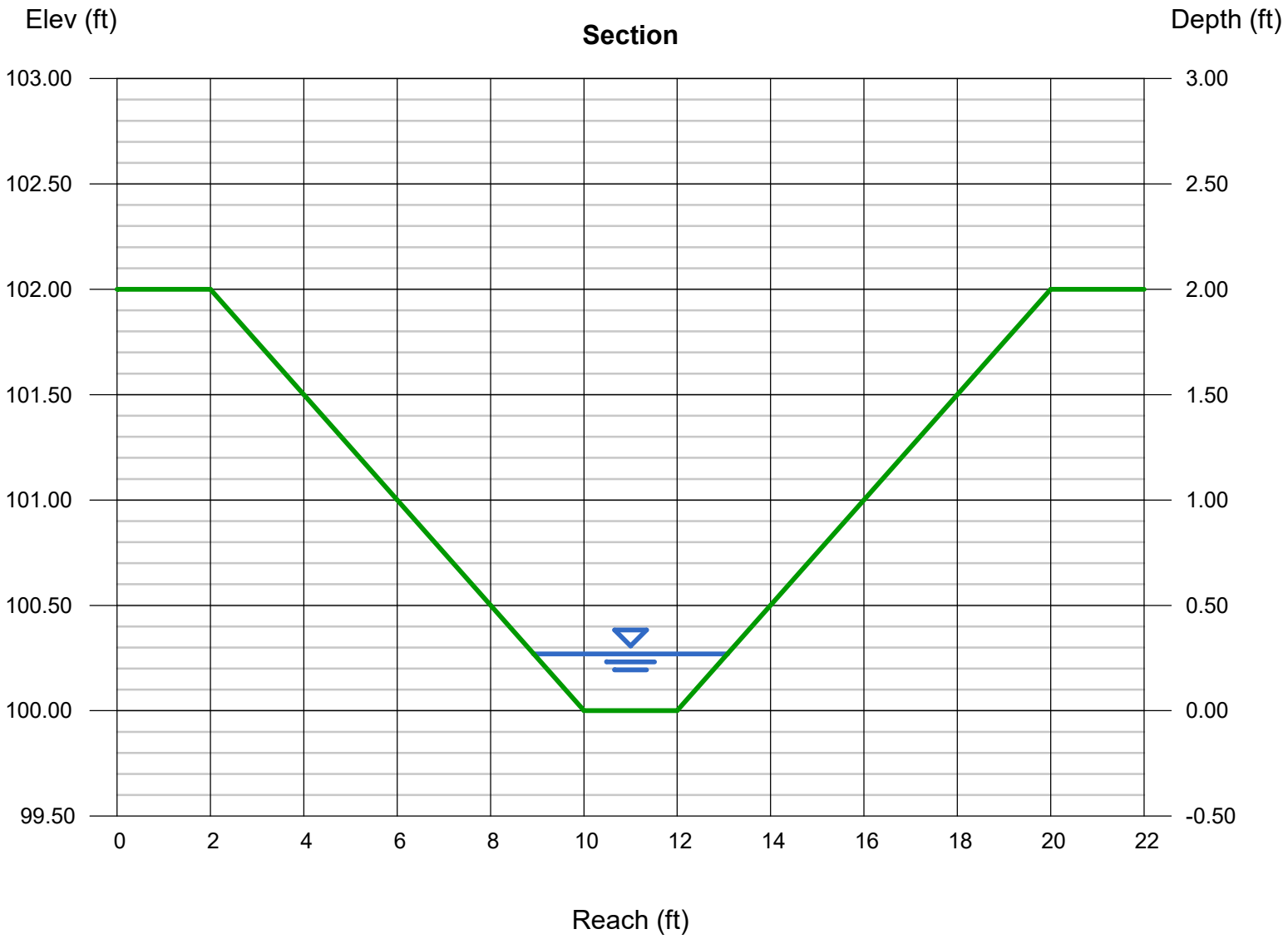
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 6.25
N-Value	= 0.030

Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.40

Highlighted

Depth (ft)	= 0.27
Q (cfs)	= 3.400
Area (sqft)	= 0.83
Velocity (ft/s)	= 4.09
Wetted Perim (ft)	= 4.23
Crit Depth, Yc (ft)	= 0.36
Top Width (ft)	= 4.16
EGL (ft)	= 0.53



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B3.2 - 6.25% 2FT BOTTOM - 100YR

Trapezoidal

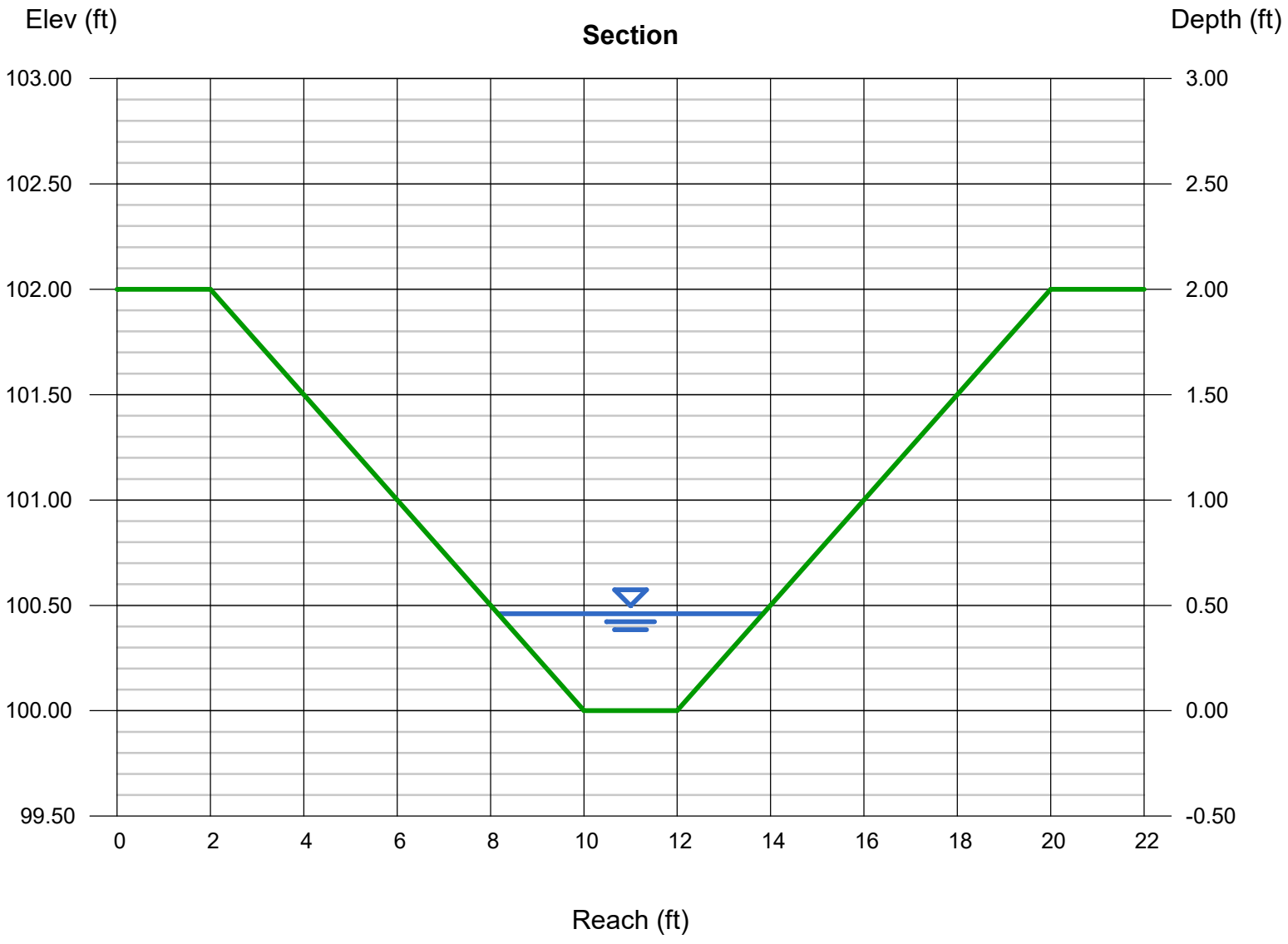
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 6.25
N-Value	= 0.030

Calculations

Compute by:	Known Q
Known Q (cfs)	= 9.60

Highlighted

Depth (ft)	= 0.46
Q (cfs)	= 9.600
Area (sqft)	= 1.77
Velocity (ft/s)	= 5.43
Wetted Perim (ft)	= 5.79
Crit Depth, Yc (ft)	= 0.61
Top Width (ft)	= 5.68
EGL (ft)	= 0.92



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B BEFORE B3 BASINS - 1.75% 4FT BOTTOM - 5 YR

Trapezoidal

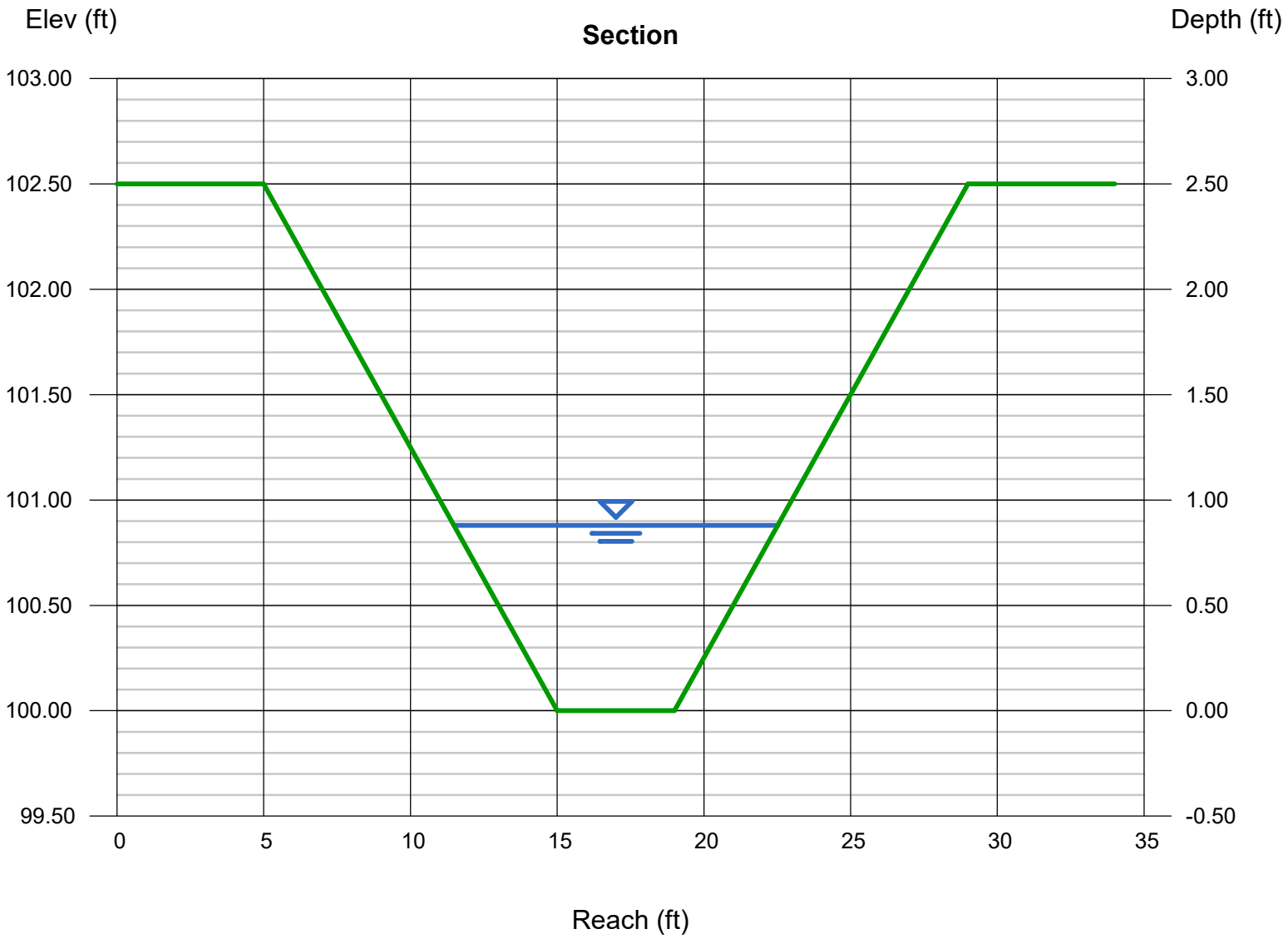
Bottom Width (ft)	= 4.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.75
N-Value	= 0.055

Calculations

Compute by:	Known Q
Known Q (cfs)	= 16.50

Highlighted

Depth (ft)	= 0.88
Q (cfs)	= 16.50
Area (sqft)	= 6.62
Velocity (ft/s)	= 2.49
Wetted Perim (ft)	= 11.26
Crit Depth, Yc (ft)	= 0.65
Top Width (ft)	= 11.04
EGL (ft)	= 0.98



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B BEFORE B3 BASINS - 1.75% 4FT BOTTOM - 100 YR

Trapezoidal

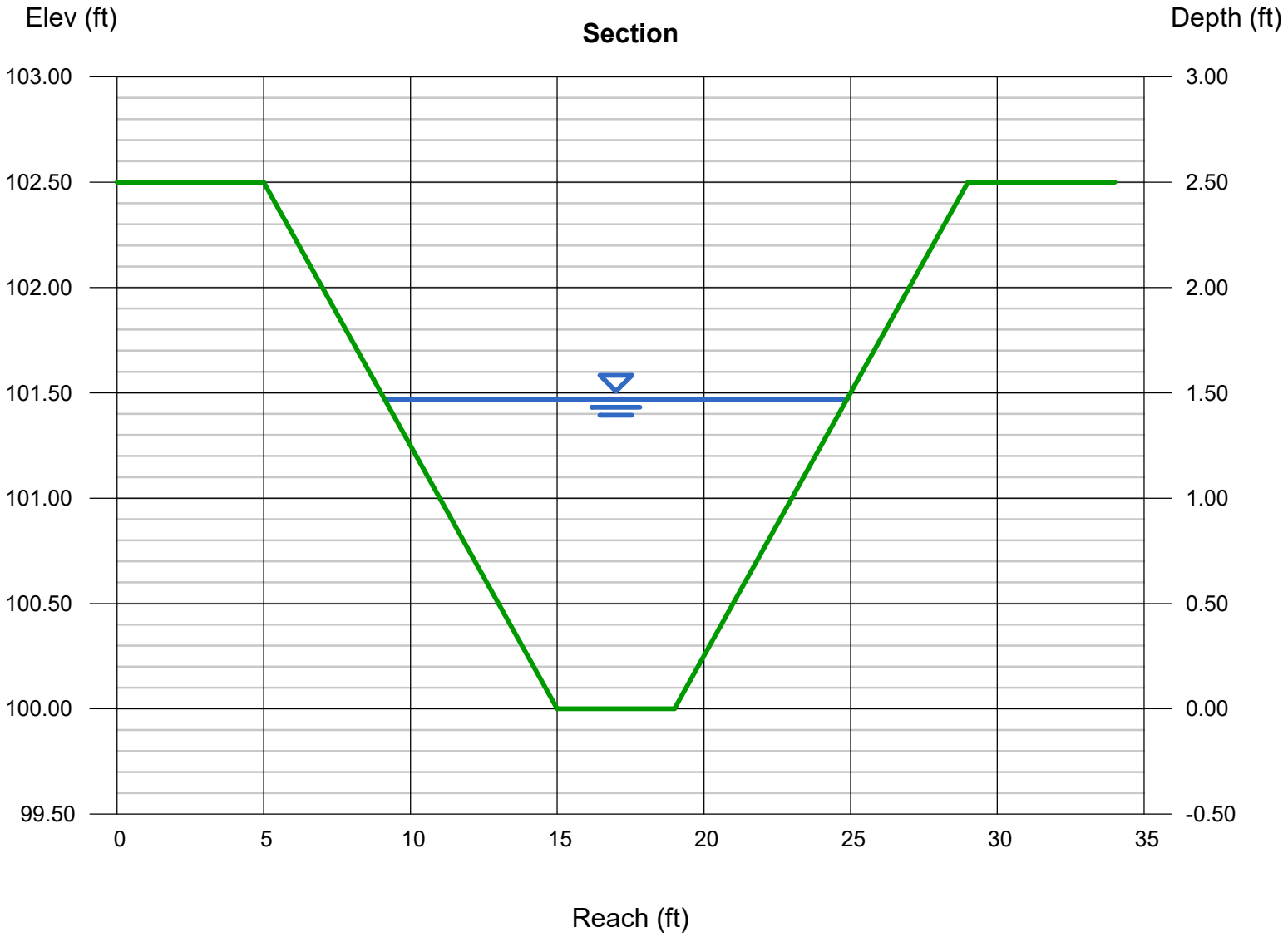
Bottom Width (ft)	= 4.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.75
N-Value	= 0.055

Calculations

Compute by:	Known Q
Known Q (cfs)	= 47.80

Highlighted

Depth (ft)	= 1.47
Q (cfs)	= 47.80
Area (sqft)	= 14.52
Velocity (ft/s)	= 3.29
Wetted Perim (ft)	= 16.12
Crit Depth, Yc (ft)	= 1.15
Top Width (ft)	= 15.76
EGL (ft)	= 1.64



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B BEFORE B3 BASINS - 4.4% 4FT BOTTOM - 5 YR

Trapezoidal

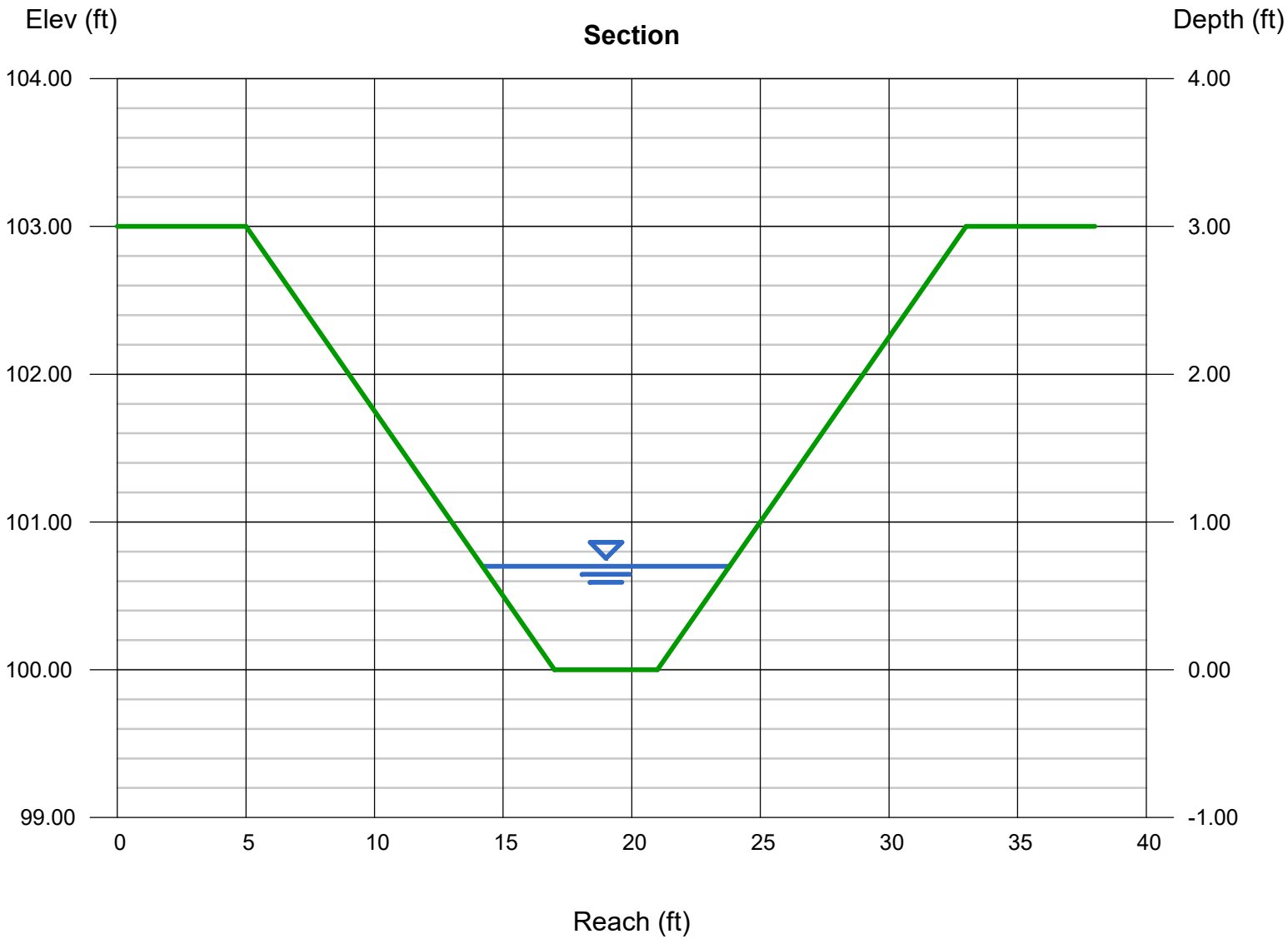
Bottom Width (ft)	= 4.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 4.40
N-Value	= 0.055

Calculations

Compute by:	Known Q
Known Q (cfs)	= 16.50

Highlighted

Depth (ft)	= 0.70
Q (cfs)	= 16.50
Area (sqft)	= 4.76
Velocity (ft/s)	= 3.47
Wetted Perim (ft)	= 9.77
Crit Depth, Yc (ft)	= 0.65
Top Width (ft)	= 9.60
EGL (ft)	= 0.89



Channel Report

SWALE B BEFORE B3 BASINS - 4.4% 4FT BOTTOM - 100 YR

Trapezoidal

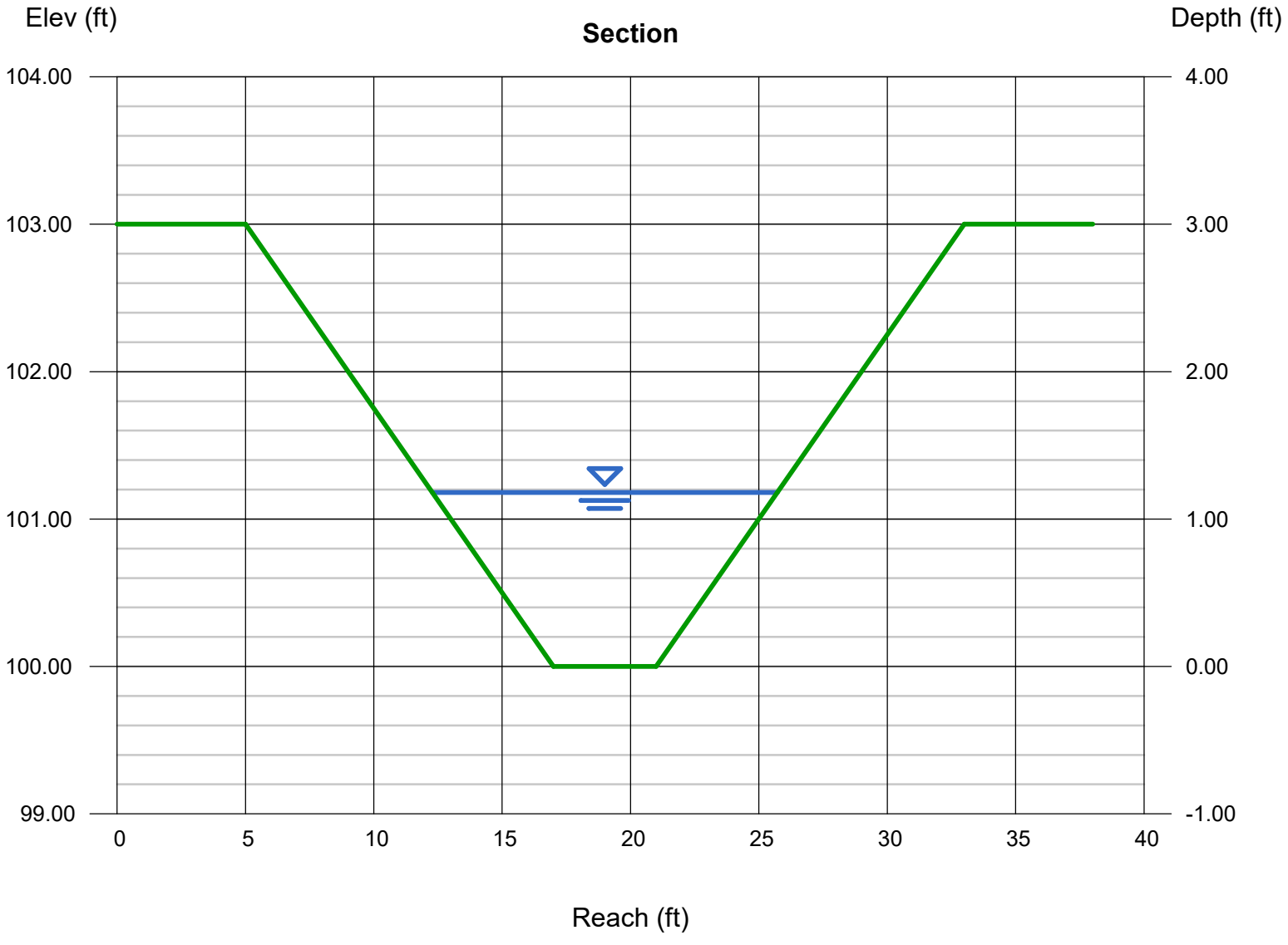
Bottom Width (ft)	= 4.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 4.40
N-Value	= 0.055

Calculations

Compute by:	Known Q
Known Q (cfs)	= 47.80

Highlighted

Depth (ft)	= 1.18
Q (cfs)	= 47.80
Area (sqft)	= 10.29
Velocity (ft/s)	= 4.65
Wetted Perim (ft)	= 13.73
Crit Depth, Yc (ft)	= 1.15
Top Width (ft)	= 13.44
EGL (ft)	= 1.52



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B AFTER B3 BASINS - 10.75% 11FT BOTTOM - 5 YR

Trapezoidal

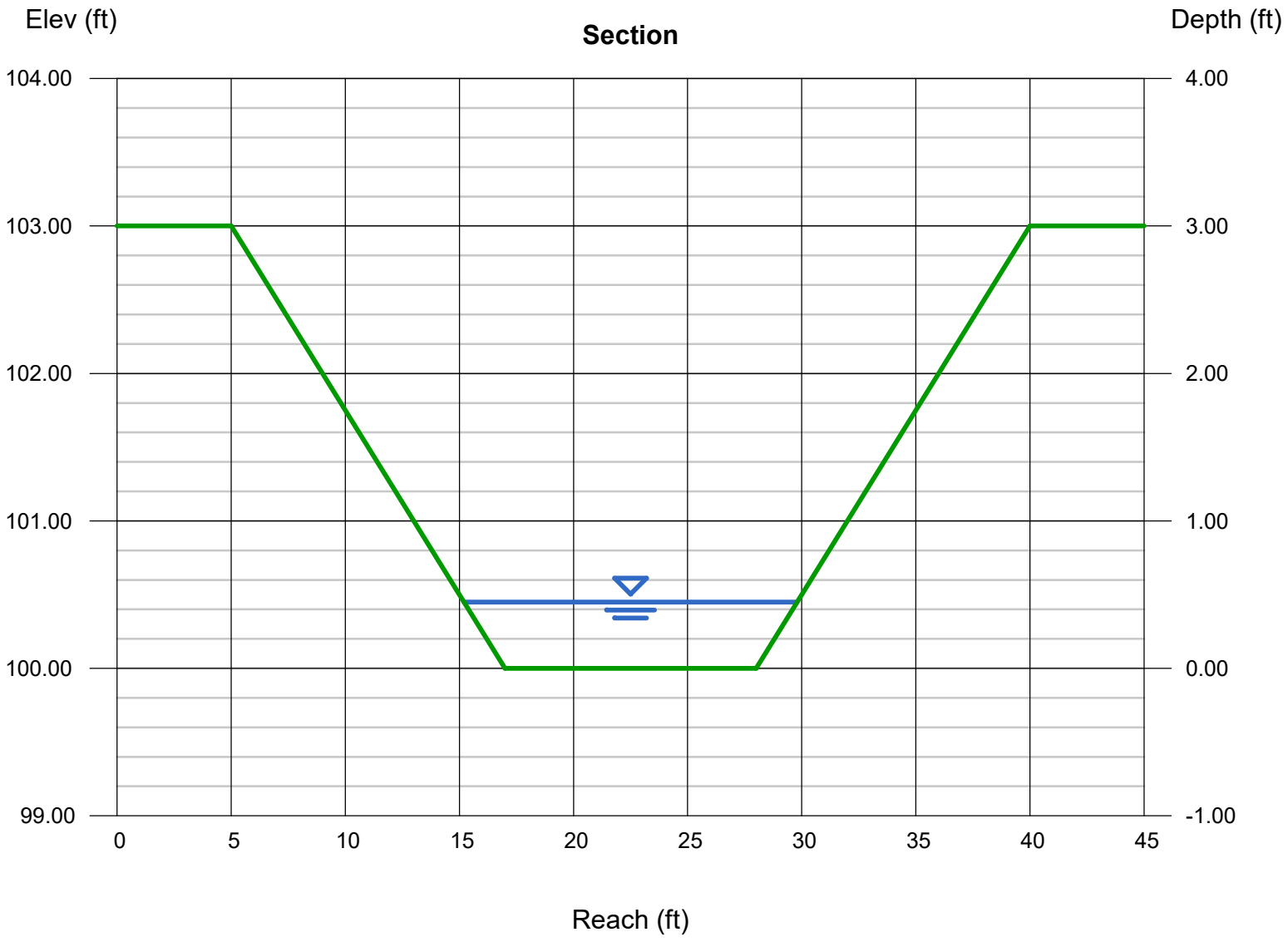
Bottom Width (ft)	= 11.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 10.75
N-Value	= 0.055

Calculations

Compute by:	Known Q
Known Q (cfs)	= 26.50

Highlighted

Depth (ft)	= 0.45
Q (cfs)	= 26.50
Area (sqft)	= 5.76
Velocity (ft/s)	= 4.60
Wetted Perim (ft)	= 14.71
Crit Depth, Yc (ft)	= 0.53
Top Width (ft)	= 14.60
EGL (ft)	= 0.78



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 16 2026

SWALE B AFTER B3 BASINS - 10.75% 11FT BOTTOM - 100 YR

Trapezoidal

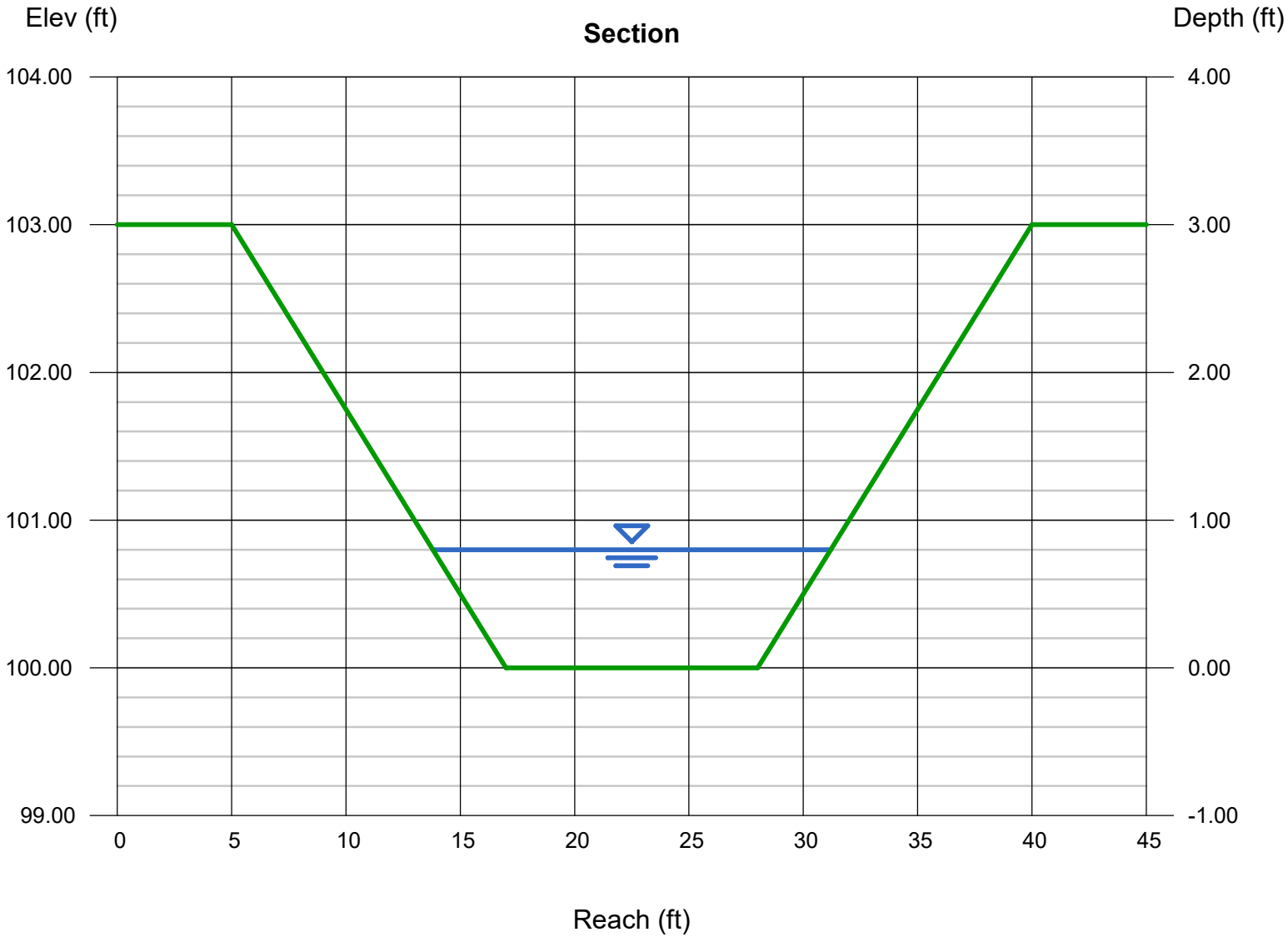
Bottom Width (ft)	= 11.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 10.75
N-Value	= 0.055

Calculations

Compute by:	Known Q
Known Q (cfs)	= 74.80

Highlighted

Depth (ft)	= 0.80
Q (cfs)	= 74.80
Area (sqft)	= 11.36
Velocity (ft/s)	= 6.58
Wetted Perim (ft)	= 17.60
Crit Depth, Yc (ft)	= 1.00
Top Width (ft)	= 17.40
EGL (ft)	= 1.47



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 30 2026

Culvert B2.1

Invert Elev Dn (ft)	=	8841.35
Pipe Length (ft)	=	10.50
Slope (%)	=	5.52
Invert Elev Up (ft)	=	8841.93
Rise (in)	=	30.0
Shape	=	Circular
Span (in)	=	30.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

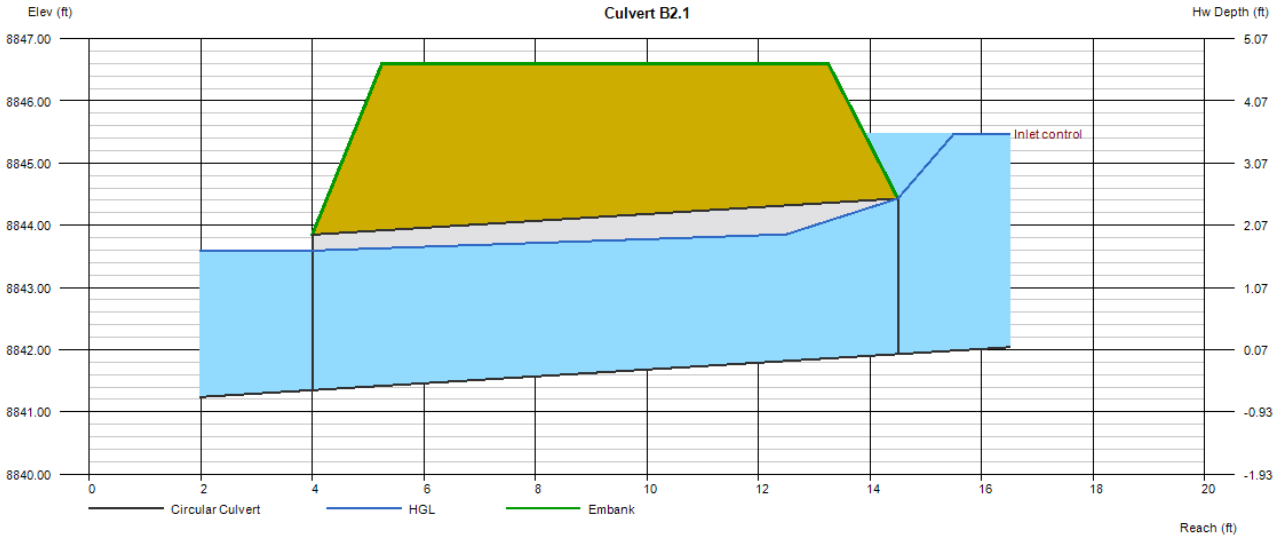
Top Elevation (ft)	=	8846.60
Top Width (ft)	=	8.00
Crest Width (ft)	=	20.00

Calculations

Qmin (cfs)	=	0.00
Qmax (cfs)	=	34.20
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	34.20
Qpipe (cfs)	=	34.20
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	7.37
Veloc Up (ft/s)	=	8.18
HGL Dn (ft)	=	8843.59
HGL Up (ft)	=	8843.92
Hw Elev (ft)	=	8845.47
Hw/D (ft)	=	1.42
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Jan 12 2026

CULVERT C1

Invert Elev Dn (ft)	=	8884.08
Pipe Length (ft)	=	22.58
Slope (%)	=	9.08
Invert Elev Up (ft)	=	8886.13
Rise (in)	=	18.0
Shape	=	Circular
Span (in)	=	18.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

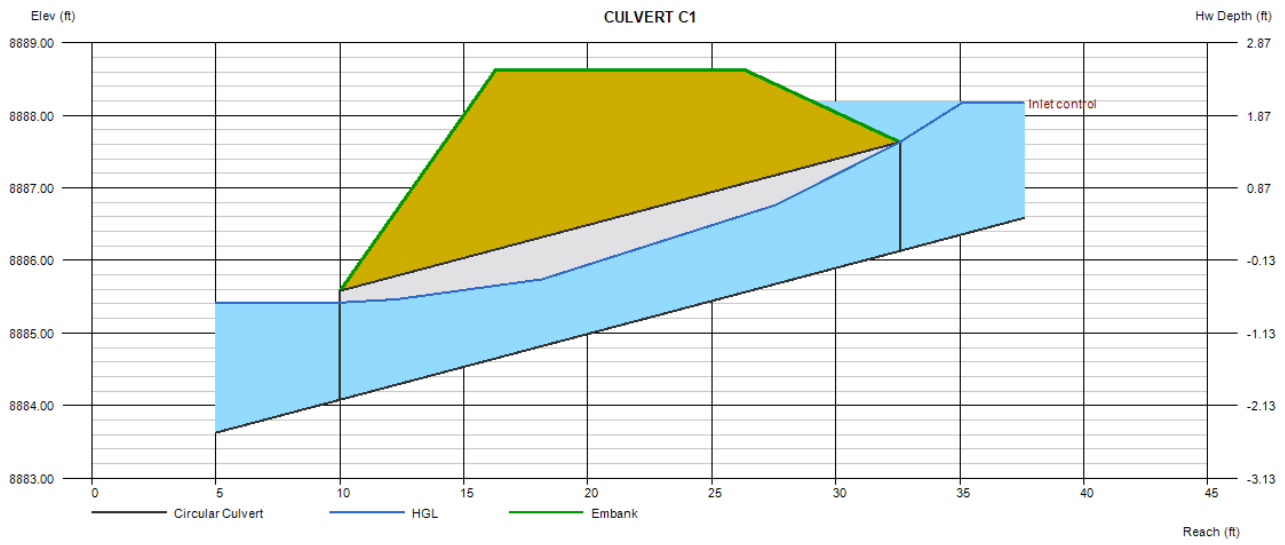
Top Elevation (ft)	=	8888.63
Top Width (ft)	=	10.00
Crest Width (ft)	=	10.00

Calculations

Qmin (cfs)	=	0.00
Qmax (cfs)	=	9.30
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	9.30
Qpipe (cfs)	=	9.30
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	5.59
Veloc Up (ft/s)	=	6.25
HGL Dn (ft)	=	8885.42
HGL Up (ft)	=	8887.31
Hw Elev (ft)	=	8888.17
Hw/D (ft)	=	1.36
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Jan 12 2026

CULVERT C2

Invert Elev Dn (ft)	=	8877.37
Pipe Length (ft)	=	18.02
Slope (%)	=	1.66
Invert Elev Up (ft)	=	8877.67
Rise (in)	=	18.0
Shape	=	Circular
Span (in)	=	18.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

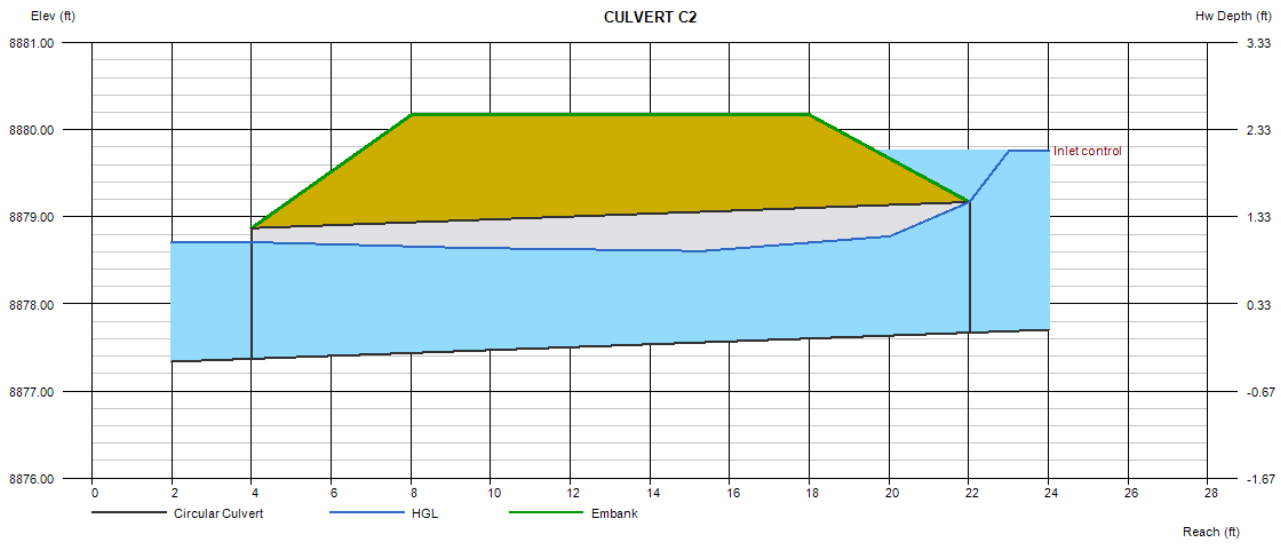
Top Elevation (ft)	=	8880.17
Top Width (ft)	=	10.00
Crest Width (ft)	=	10.00

Calculations

Qmin (cfs)	=	0.00
Qmax (cfs)	=	9.30
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	9.30
Qpipe (cfs)	=	9.30
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	5.59
Veloc Up (ft/s)	=	6.25
HGL Dn (ft)	=	8878.71
HGL Up (ft)	=	8878.85
Hw Elev (ft)	=	8879.77
Hw/D (ft)	=	1.40
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 30 2026

Culvert OS1

Invert Elev Dn (ft)	=	8790.15
Pipe Length (ft)	=	77.55
Slope (%)	=	5.54
Invert Elev Up (ft)	=	8794.45
Rise (in)	=	24.0
Shape	=	Circular
Span (in)	=	24.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

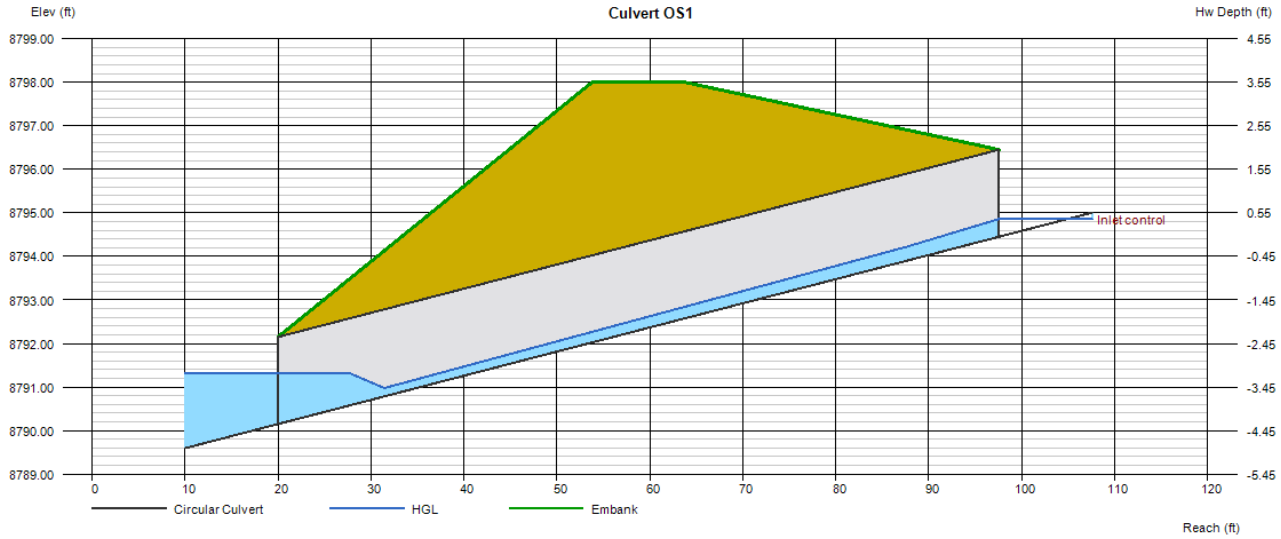
Top Elevation (ft)	=	8798.00
Top Width (ft)	=	10.00
Crest Width (ft)	=	55.00

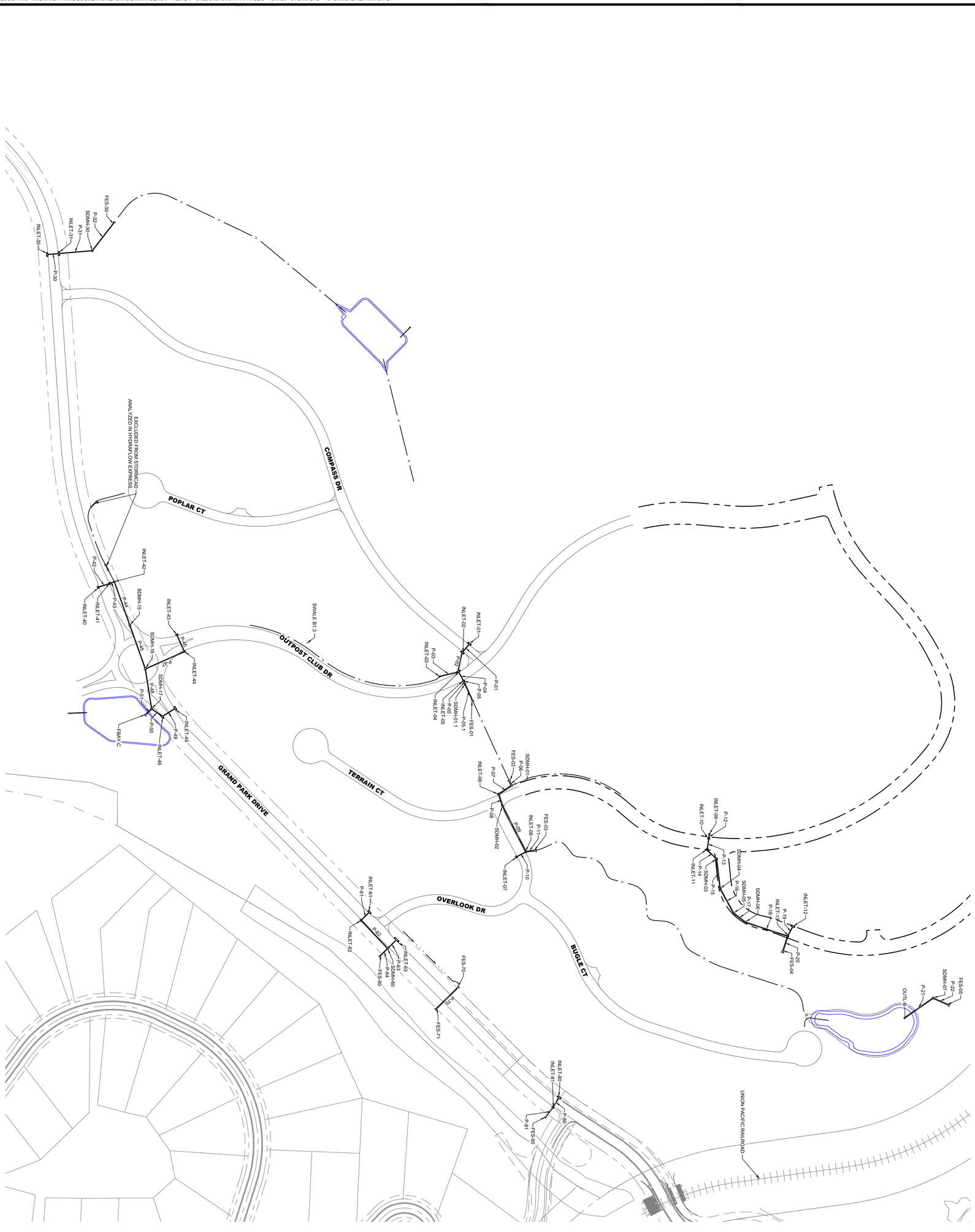
Calculations

Qmin (cfs)	=	0.00
Qmax (cfs)	=	1.00
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	1.00
Qpipe (cfs)	=	1.00
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	0.52
Veloc Up (ft/s)	=	2.77
HGL Dn (ft)	=	8791.32
HGL Up (ft)	=	8794.79
Hw Elev (ft)	=	8794.86
Hw/D (ft)	=	0.20
Flow Regime	=	Inlet Control





811 Know what's below. Call before you dig.

GRAND PARK - WEST MOUNTAIN - FILING 1 - 10W

TOWN OF FRASER, COLORADO

PHASE III DRAINAGE REPORT
STORMCAD KEYMAP

NOT FOR CONSTRUCTION

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	01/16/2026	MJG

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

STORMCAD OUTPUT TABLES
West Mountain - 10W - 5-Year

STORMCAD OUTPUT TABLES

West Mountain - 10W - 5-Year

Catch Basin Table - Time: 0.00 hours

Label	Rim (ft)	Invert (ft)	Flow (cfs)	HGL (In) (ft)	HGL (Out) (ft)	Inlet Location	Notes
FES-02 (B2.1+B1)	8,846.29	8,843.79	11.80	8,843.08	8,843.08	In Sag	30" FES
FES-70 (OS1)	8,797.34	8,794.47	0.30	8,794.64	8,794.64	In Sag	30" FES
INLET-01 (B1.1)	8,869.47	8,862.10	2.60	8,862.69	8,862.69	In Sag	10' TYPE R INLET
INLET-02 (B1.2)	8,869.47	8,861.64	4.20	8,862.41	8,862.41	In Sag	10' TYPE R INLET
INLET-03 (B1.3)	8,865.53	8,861.58	1.60	8,862.04	8,862.04	In Sag	TYPE C INLET
INLET-04 (B1.4)	8,867.34	8,860.57	6.60	8,861.84	8,861.84	In Sag	10' TYPE R INLET
INLET-05 (B1.5)	8,867.68	8,860.11	7.90	8,861.09	8,861.09	In Sag	5' TYPE R INLET
INLET-06 (B2.2)	8,846.76	8,840.02	12.60	8,841.19	8,841.19	In Sag	5' TYPE R INLET
INLET-07 (B2.4)	8,840.75	8,836.18	0.40	8,836.92	8,836.92	In Sag	5' TYPE R INLET
INLET-08 (B2.3)	8,840.75	8,835.72	13.30	8,836.92	8,836.92	In Sag	5' TYPE R INLET
INLET-09 (B3.1+B3.2)	8,845.79	8,842.00	7.50	8,842.95	8,842.95	In Sag	TYPE C INLET
INLET-10 (B3.3)	8,847.66	8,840.70	8.10	8,841.69	8,841.69	In Sag	5' TYPE R INLET
INLET-11 (B3.4)	8,847.66	8,837.18	8.60	8,838.21	8,838.21	In Sag	5' TYPE R INLET
INLET-12 (B3.5)	8,827.46	8,823.96	1.20	8,824.35	8,824.35	In Sag	10' TYPE R INLET
INLET-13 (B3.6)	8,827.70	8,821.03	10.00	8,822.15	8,822.15	In Sag	5' TYPE R INLET
INLET-30 (A4.1)	8,923.30	8,918.84	0.80	8,919.16	8,919.16	In Sag	10' TYPE R INLET
INLET-31 (A4.2)	8,923.30	8,918.36	1.70	8,918.84	8,918.84	In Sag	10' TYPE R INLET
INLET-40 (C2.2)	8,877.77	8,871.03	0.60	8,871.30	8,871.30	In Sag	5' TYPE R INLET
INLET-41 (C2.1)	8,877.68	8,870.53	1.30	8,870.94	8,870.94	In Sag	5' TYPE R INLET
INLET-42 (C1+C2.3)	8,875.28	8,869.88	4.20	8,870.65	8,870.65	In Sag	TYPE C INLET
INLET-43 (C2.4)	8,875.29	8,869.26	0.40	8,869.47	8,869.47	In Sag	5' TYPE R INLET
INLET-44 (C2.5)	8,875.38	8,868.59	0.50	8,868.83	8,868.83	In Sag	5' TYPE R INLET
INLET-45 (C2.6)	8,869.00	8,864.80	0.50	8,864.97	8,864.97	In Sag	10' TYPE R INLET
INLET-46 (C2.7)	8,870.93	8,864.21	1.00	8,864.50	8,864.50	In Sag	10' TYPE R INLET
INLET-61 (D1.1)	8,817.83	8,810.43	2.20	8,810.97	8,810.97	In Sag	10' TYPE R INLET
INLET-62 (D2)	8,817.83	8,807.49	2.60	8,808.08	8,808.08	In Sag	5' TYPE R INLET
INLET-63 (D1.2)	8,812.47	8,806.04	1.10	8,806.42	8,806.42	In Sag	15' TYPE R INLET
INLET-80 (E1.1)	8,764.09	8,760.11	0.90	8,760.44	8,760.44	In Sag	10' TYPE R INLET
INLET-81 (E1.2)	8,763.87	8,759.63	1.30	8,760.03	8,760.03	In Sag	5' TYPE R INLET
OUTL-B	8,792.00	8,784.75	1.30	8,785.14	8,785.14	In Sag	OUTLET STRUCTURE

Manhole Table - Time: 0.00 hours

Label	Flow (cfs)	Headloss (ft)	Elevation (Rim) (ft)	HGL (In) (ft)	HGL (Out) (ft)	Notes	Headloss Method	AASHTO Shaping Method
SDMH-01	11.80	0.35	8,847.40	8,842.38	8,842.03	6' DIA MH FLAT TOP	AASHTO	Full
SDMH-02	12.60	0.17	8,846.49	8,840.63	8,840.46	6' DIA MH	AASHTO	Full
SDMH-03	8.60	0.00	8,846.98	8,834.97	8,834.97	5' DIA MH	AASHTO	Full
SDMH-04	8.60	0.00	8,843.79	8,831.33	8,831.33	5' DIA MH	AASHTO	Full
SDMH-05	8.60	0.00	8,838.80	8,827.79	8,827.79	5' DIA MH	AASHTO	Full
SDMH-06	8.60	0.00	8,836.26	8,824.97	8,824.97	5' DIA MH	AASHTO	Full
SDMH-07	1.30	0.13	8,786.91	8,779.83	8,779.70	5' DIA MH	AASHTO	Full
SDMH-15	4.20	0.11	8,875.64	8,869.29	8,869.18	5' DIA MH	AASHTO	Full
SDMH-16	4.70	0.12	8,873.61	8,867.89	8,867.76	6' DIA MH	AASHTO	Full
SDMH-17	5.70	0.31	8,869.97	8,864.42	8,864.10	6' DIA MH	AASHTO	Full
SDMH-30	1.70	0.13	8,922.22	8,917.83	8,917.70	5' DIA MH	AASHTO	Full
SDMH-60	3.70	0.08	8,812.65	8,805.22	8,805.13	5' DIA MH	AASHTO	Full

STORMCAD OUTPUT TABLES

West Mountain - 10W - 5-Year

Conduit Table - Time: 0.00 hours

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (ft)	Slope (%)	Dia. (in)	Mann.	Flow (cfs)	Velo. (ft/s)	Depth (ft)	Capacity (cfs)	Froude Number	HGL (In) (ft)	HGL (Out) (ft)
P-01	INLET-01 (B1.1)	INLET-02 (B1.2)	8,862.08	8,861.82	26.0	1.00	18.0	0.013	2.60	4.93	0.61	10.50	1.425	8,862.69	8,862.33
P-02	INLET-02 (B1.2)	INLET-04 (B1.4)	8,861.62	8,861.05	57.0	1.00	18.0	0.013	4.20	5.61	0.79	10.50	1.395	8,862.41	8,861.84
P-03	INLET-03 (B1.3)	INLET-04 (B1.4)	8,861.56	8,861.05	51.0	1.00	18.0	0.013	1.60	4.29	0.48	10.50	1.426	8,862.04	8,861.84
P-04	INLET-04 (B1.4)	INLET-05 (B1.5)	8,860.85	8,860.59	26.0	1.00	18.0	0.013	6.60	6.28	0.99	10.50	1.315	8,861.84	8,861.47
P-05	INLET-05 (B1.5)	SDMH-01.1	8,860.09	8,859.98	10.8	1.00	24.0	0.013	7.90	6.55	1.00	22.58	1.474	8,861.09	8,860.86
P-06	FES-02 (B2.1+ B1)	SDMH-01	8,841.93	8,841.35	10.5	5.50	30.0	0.013	11.80	13.30	1.15	96.21	3.627	8,843.08	8,842.13
P-07	SDMH-01	INLET-06 (B2.2)	8,840.88	8,840.20	41.0	1.65	30.0	0.013	11.80	8.65	1.15	52.66	1.995	8,842.03	8,841.05
P-08	INLET-06 (B2.2)	SDMH-02	8,840.00	8,839.47	32.1	1.65	30.0	0.013	12.60	8.82	1.19	52.73	1.996	8,841.19	8,840.37
P-09	SDMH-02	INLET-08 (B2.3)	8,839.27	8,835.90	142.2	2.37	30.0	0.013	12.60	10.04	1.19	63.15	2.394	8,840.46	8,836.66
P-10	INLET-07 (B2.4)	INLET-08 (B2.3)	8,836.16	8,835.90	26.0	1.00	18.0	0.013	0.40	2.86	0.23	10.50	1.359	8,836.92	8,836.92
P-11	INLET-08 (B2.3)	FES-03	8,835.70	8,835.46	23.8	1.00	30.0	0.013	13.30	7.46	1.23	40.98	1.537	8,836.92	8,836.50
P-12	INLET-09 (B3.1+ B3.2)	INLET-10 (B3.3)	8,841.98	8,841.68	15.0	2.00	24.0	0.013	7.50	8.32	0.97	31.99	2.117	8,842.95	8,842.43
P-13	INLET-10 (B3.3)	INLET-11 (B3.4)	8,840.68	8,840.16	26.0	2.00	24.0	0.013	8.10	8.49	1.01	31.99	2.113	8,841.69	8,840.91
P-14	INLET-11 (B3.4)	SDMH-03	8,837.16	8,836.43	36.9	2.00	24.0	0.013	8.60	8.64	1.05	32.01	2.112	8,838.21	8,837.17
P-15	SDMH-03	SDMH-04	8,833.93	8,832.28	82.3	2.00	24.0	0.013	8.60	8.64	1.05	31.99	2.111	8,834.97	8,832.99
P-16	SDMH-04	SDMH-05	8,830.28	8,828.74	76.8	2.00	24.0	0.013	8.60	8.64	1.05	32.02	2.113	8,831.33	8,829.45
P-17	SDMH-05	SDMH-06	8,826.74	8,825.92	41.1	2.00	24.0	0.013	8.60	8.63	1.05	31.97	2.109	8,827.79	8,826.66
P-18	SDMH-06	INLET-13 (B3.6)	8,823.92	8,821.52	120.2	2.00	24.0	0.013	8.60	8.63	1.05	31.97	2.109	8,824.97	8,822.23
P-19	INLET-12 (B3.5)	INLET-13 (B3.6)	8,823.94	8,823.68	26.3	1.00	18.0	0.013	1.20	3.95	0.41	10.50	1.418	8,824.35	8,824.02

STORMCAD OUTPUT TABLES

West Mountain - 10W - 5-Year

Conduit Table - Time: 0.00 hours

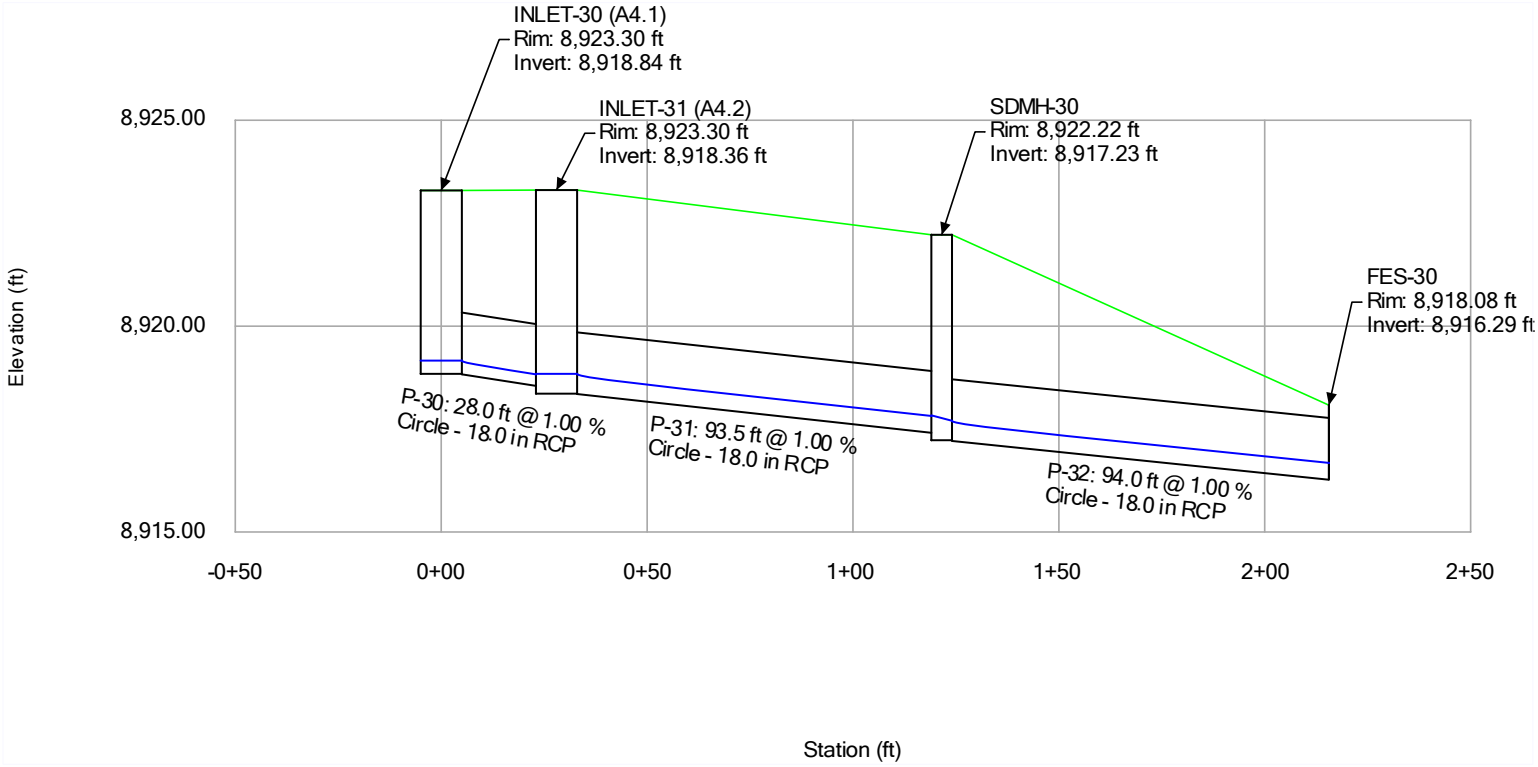
Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (ft)	Slope (%)	Dia. (in)	Mann.	Flow (cfs)	Velo. (ft/s)	Depth (ft)	Capacity (cfs)	Froude Number	HGL (In) (ft)	HGL (Out) (ft)
P-20	INLET-13 (B3.6)	FES-04	8,821.02	8,820.58	43.7	1.00	24.0	0.013	10.00	6.97	1.13	22.59	1.450	8,822.15	8,821.53
P-21	OUTL-B	SDMH-07	8,784.75	8,779.51	92.9	5.63	24.0	0.013	1.30	7.16	0.39	53.69	3.300	8,785.14	8,779.72
P-22	SDMH-07	FES-05	8,779.31	8,778.88	43.3	1.00	24.0	0.013	1.30	3.91	0.39	22.65	1.455	8,779.70	8,779.20
P-30	INLET-30 (A4.1)	INLET-31 (A4.2)	8,918.83	8,918.55	28.0	1.00	18.0	0.013	0.80	3.51	0.33	10.50	1.403	8,919.16	8,918.83
P-31	INLET-31 (A4.2)	SDMH-30	8,918.35	8,917.41	93.5	1.00	18.0	0.013	1.70	4.38	0.49	10.53	1.431	8,918.84	8,917.82
P-32	SDMH-30	FES-30	8,917.21	8,916.27	94.0	1.00	18.0	0.013	1.70	4.37	0.49	10.50	1.427	8,917.70	8,916.68
P-42	INLET-40 (C2.2)	INLET-41 (C2.1)	8,871.01	8,870.71	29.6	1.00	18.0	0.013	0.60	3.22	0.29	10.50	1.384	8,871.30	8,870.96
P-43	INLET-41 (C2.1)	INLET-42 (C1 +C2.3)	8,870.51	8,870.36	15.4	1.00	18.0	0.013	1.30	4.04	0.43	10.49	1.418	8,870.94	8,870.72
P-44	INLET-42 (C1 +C2.3)	SDMH-15	8,869.86	8,868.59	126.6	1.00	18.0	0.013	4.20	5.62	0.79	10.52	1.397	8,870.65	8,869.25
P-45	SDMH-15	SDMH-16	8,868.39	8,867.13	126.6	1.00	18.0	0.013	4.20	5.60	0.79	10.48	1.392	8,869.18	8,867.79
P-46	INLET-43 (C2.4)	INLET-44 (C2.5)	8,869.24	8,868.77	46.4	1.00	18.0	0.013	0.40	2.86	0.23	10.51	1.360	8,869.47	8,868.97
P-47	INLET-44 (C2.5)	SDMH-16	8,868.57	8,867.38	119.4	1.00	18.0	0.013	0.50	3.05	0.26	10.49	1.371	8,868.83	8,867.89
P-48	SDMH-16	SDMH-17	8,866.93	8,863.76	110.5	2.87	18.0	0.013	4.70	8.50	0.83	17.79	2.410	8,867.76	8,864.29
P-49	INLET-45 (C2.6)	INLET-46 (C2.7)	8,864.71	8,864.33	38.2	1.00	18.0	0.013	0.50	3.05	0.26	10.50	1.373	8,864.97	8,864.55
P-50	INLET-46 (C2.7)	SDMH-17	8,864.13	8,863.76	36.5	1.00	18.0	0.013	1.00	3.74	0.37	10.50	1.410	8,864.50	8,864.42
P-51	SDMH-17	FBAY-C	8,863.26	8,863.06	19.7	1.00	24.0	0.013	5.70	6.01	0.84	22.66	1.497	8,864.10	8,863.77
P-61	INLET-61 (D1.1)	INLET-62 (D2)	8,810.41	8,810.13	28.0	1.00	18.0	0.013	2.20	4.70	0.56	10.50	1.428	8,810.97	8,810.60
P-62	INLET-62 (D2)	SDMH-60	8,807.47	8,806.40	106.9	1.00	18.0	0.013	2.60	4.93	0.61	10.51	1.426	8,808.08	8,806.91
P-63	INLET-63 (D1.2)	SDMH-60	8,806.02	8,804.90	32.1	3.50	18.0	0.013	1.10	5.99	0.39	19.66	2.589	8,806.42	8,805.14
P-64	SDMH-60	FES-60	8,804.40	8,803.48	26.2	3.50	18.0	0.013	3.70	8.53	0.73	19.65	2.671	8,805.13	8,803.95
P-70	FES-70 (OS1)	FES-71	8,794.45	8,790.15	77.6	5.55	24.0	0.013	0.30	4.56	0.19	53.30	2.983	8,794.64	8,790.25

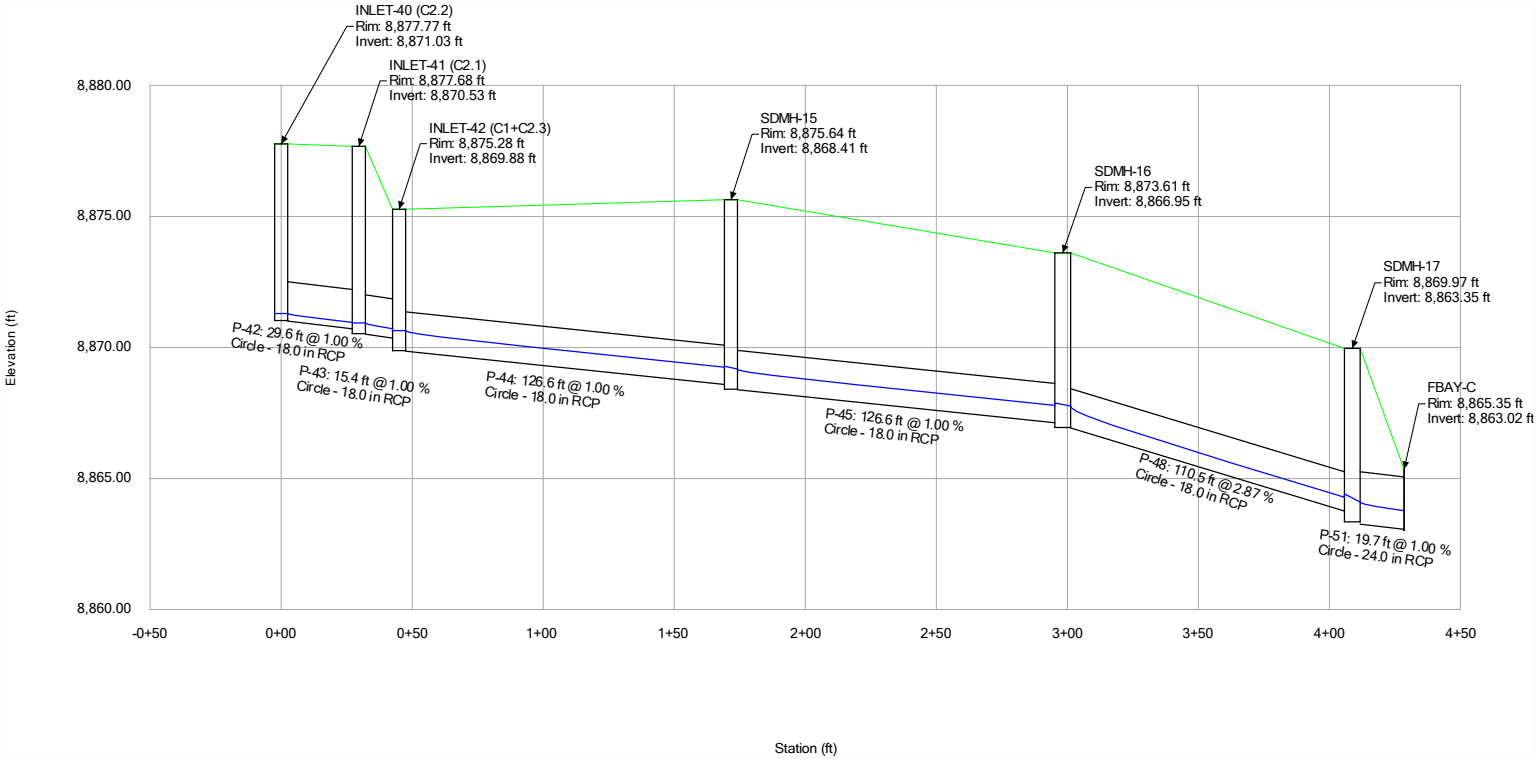
STORMCAD OUTPUT TABLES

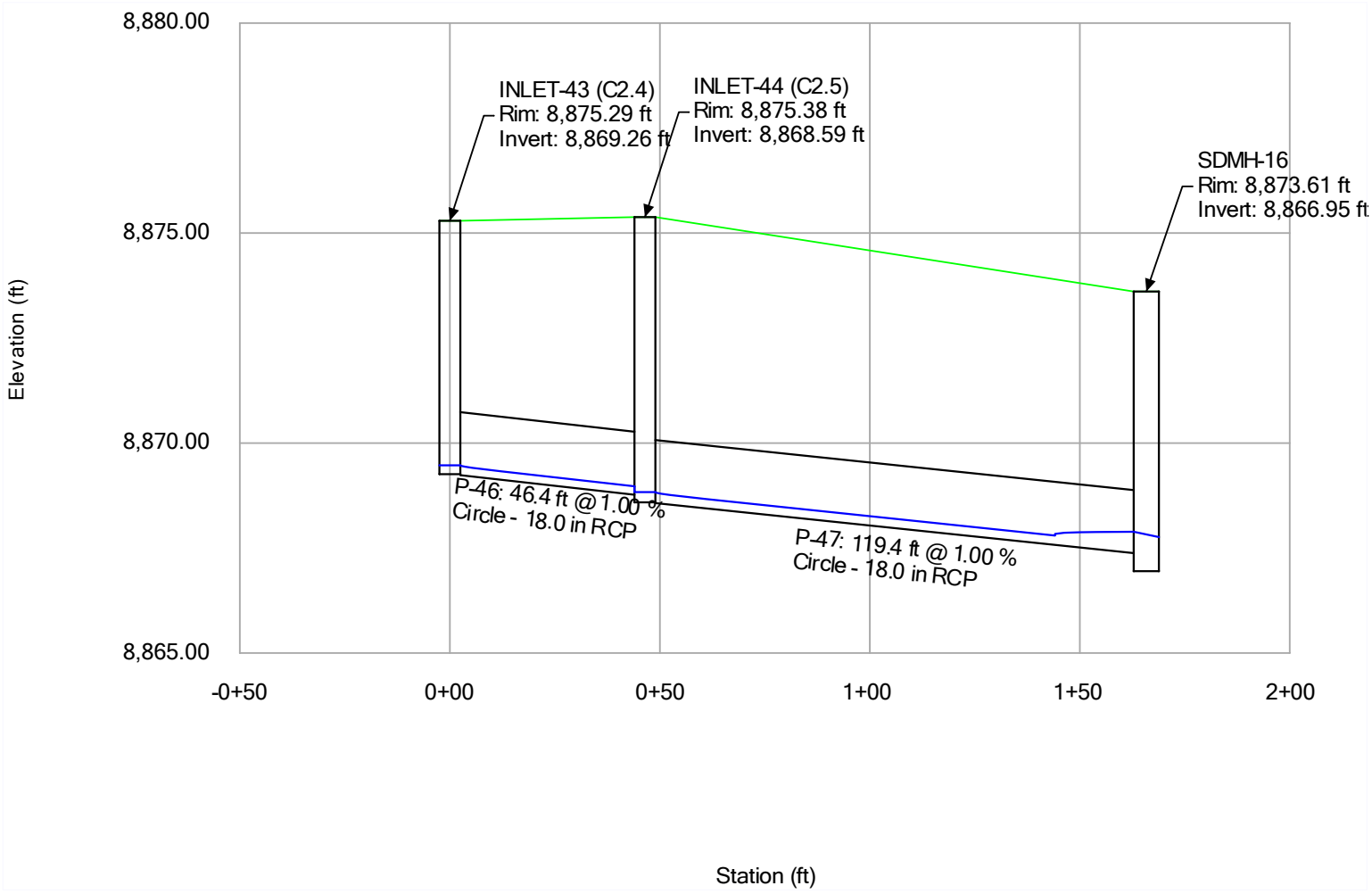
West Mountain - 10W - 5-Year

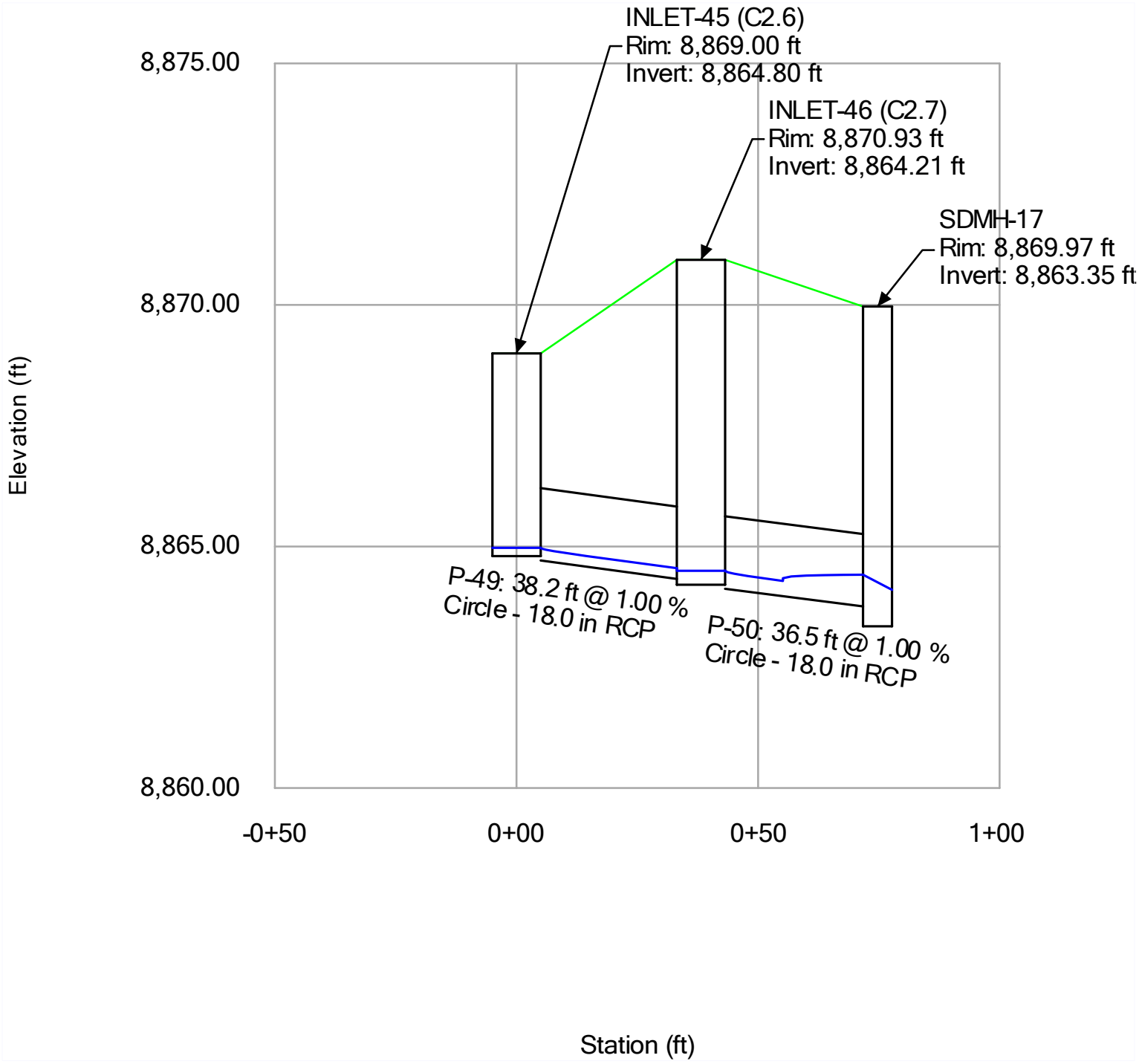
Conduit Table - Time: 0.00 hours

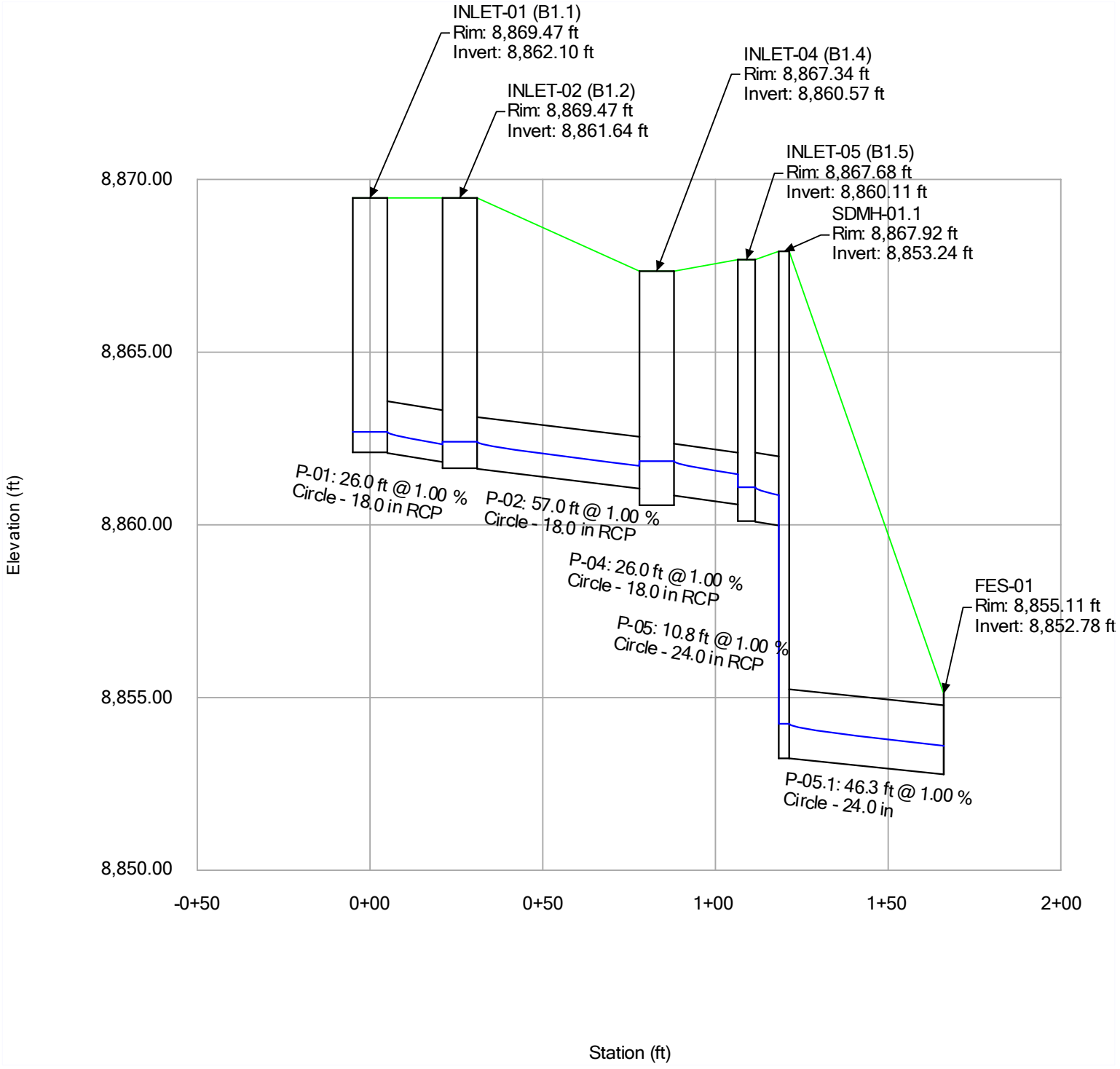
Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (ft)	Slope (%)	Dia. (in)	Mann.	Flow (cfs)	Velo. (ft/s)	Depth (ft)	Capacity (cfs)	Froude Number	HGL (In) (ft)	HGL (Out) (ft)
P-80	INLET-80 (E1.1)	INLET-81 (E1.2)	8,760.09	8,759.81	28.1	1.00	18.0	0.013	0.90	3.63	0.35	10.48	1.404	8,760.44	8,760.11
P-81	INLET-81 (E1.2)	FES-80	8,759.61	8,759.29	31.5	1.00	18.0	0.013	1.30	4.04	0.43	10.50	1.419	8,760.03	8,759.65

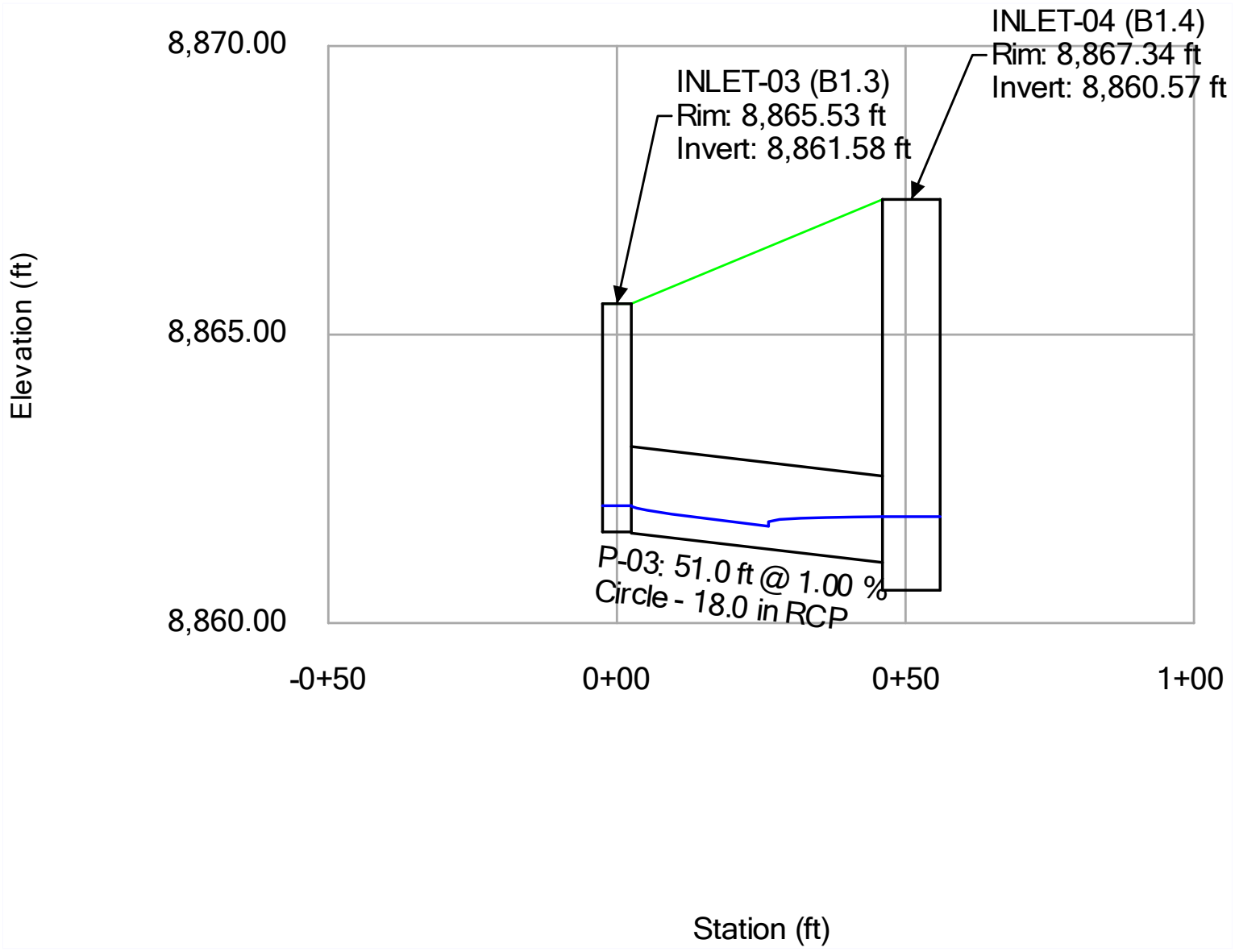

INLET-30 (A4.1)
Rim: 8,923.30 ft
Invert: 8,918.84 ft
INLET-31 (A4.2)
Rim: 8,923.30 ft
Invert: 8,918.36 ft
SDMH-30
Rim: 8,922.22 ft
Invert: 8,917.23 ft
FES-30
Rim: 8,918.08 ft
Invert: 8,916.29 ft
P-30: 28.0 ft @ 1.00 %
Circle - 18.0 in RCP
P-31: 93.5 ft @ 1.00 %
Circle - 18.0 in RCP
P-32: 94.0 ft @ 1.00 %
Circle - 18.0 in RCP
8,925.00
8,920.00
8,915.00
Elevation (ft)
-0+50
0+00
0+50
1+00
1+50
2+00
2+50
Station (ft)

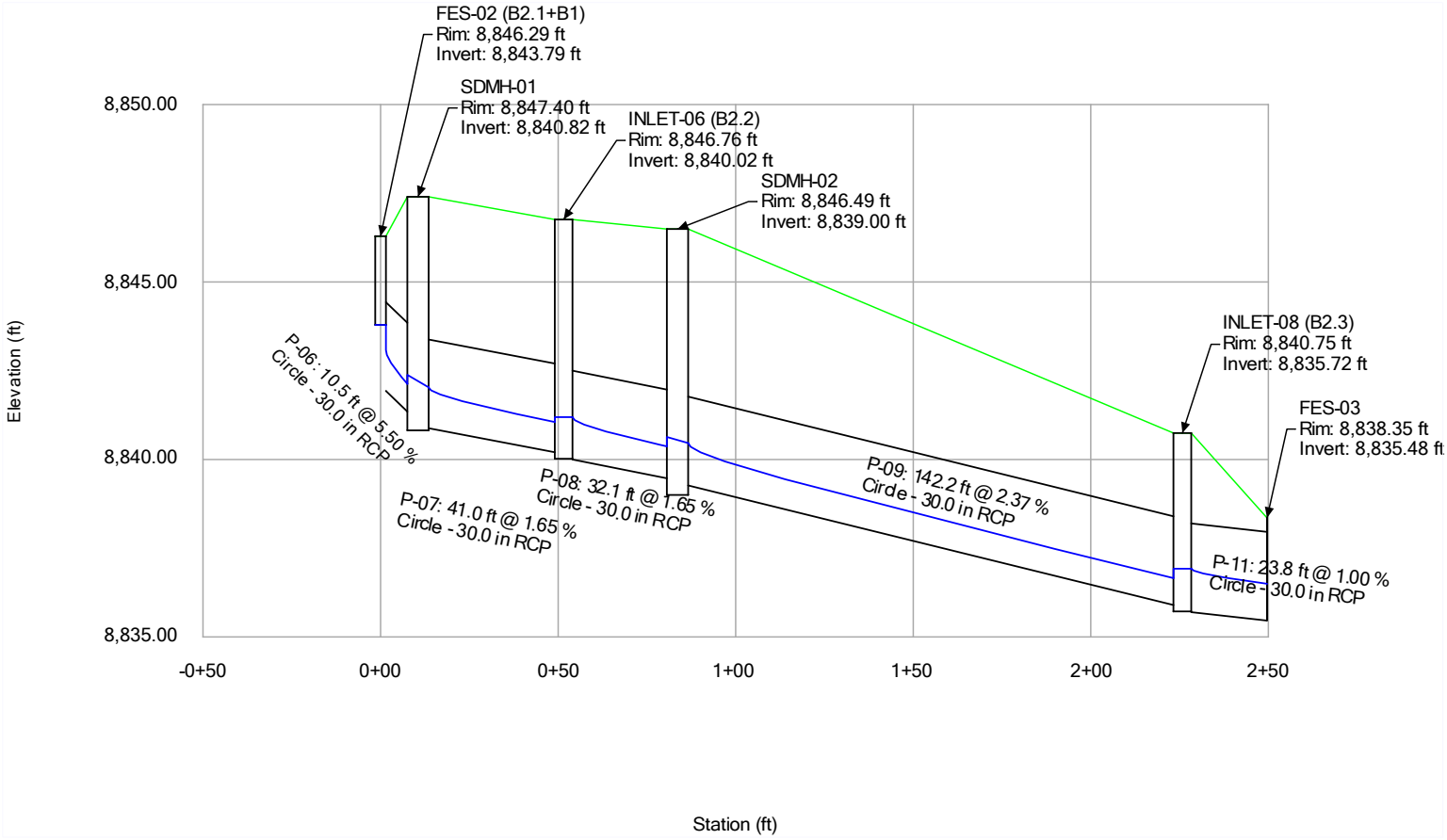

INLET-40 (C2.2)
Rim: 8,877.77 ft
Invert: 8,871.03 ft
INLET-41 (C2.1)
Rim: 8,877.68 ft
Invert: 8,870.53 ft
INLET-42 (C1+C2.3)
Rim: 8,875.28 ft
Invert: 8,869.88 ft
SDMH-15
Rim: 8,875.64 ft
Invert: 8,868.41 ft
SDMH-16
Rim: 8,873.61 ft
Invert: 8,866.95 ft
SDMH-17
Rim: 8,869.97 ft
Invert: 8,863.35 ft
FBAY-C
Rim: 8,865.35 ft
Invert: 8,863.02 ft
P-42: 29.6 ft @ 1.00 %
Circle - 18.0 in RCP
P-43: 15.4 ft @ 1.00 %
Circle - 18.0 in RCP
P-44: 126.6 ft @ 1.00 %
Circle - 18.0 in RCP
P-45: 126.6 ft @ 1.00 %
Circle - 18.0 in RCP
P-48: 110.5 ft @ 2.87 %
Circle - 18.0 in RCP
P-51: 19.7 ft @ 1.00 %
Circle - 24.0 in RCP
8,880.00
8,875.00
8,870.00
8,865.00
8,860.00
Elevation (ft)
-0+50
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
4+50
Station (ft)

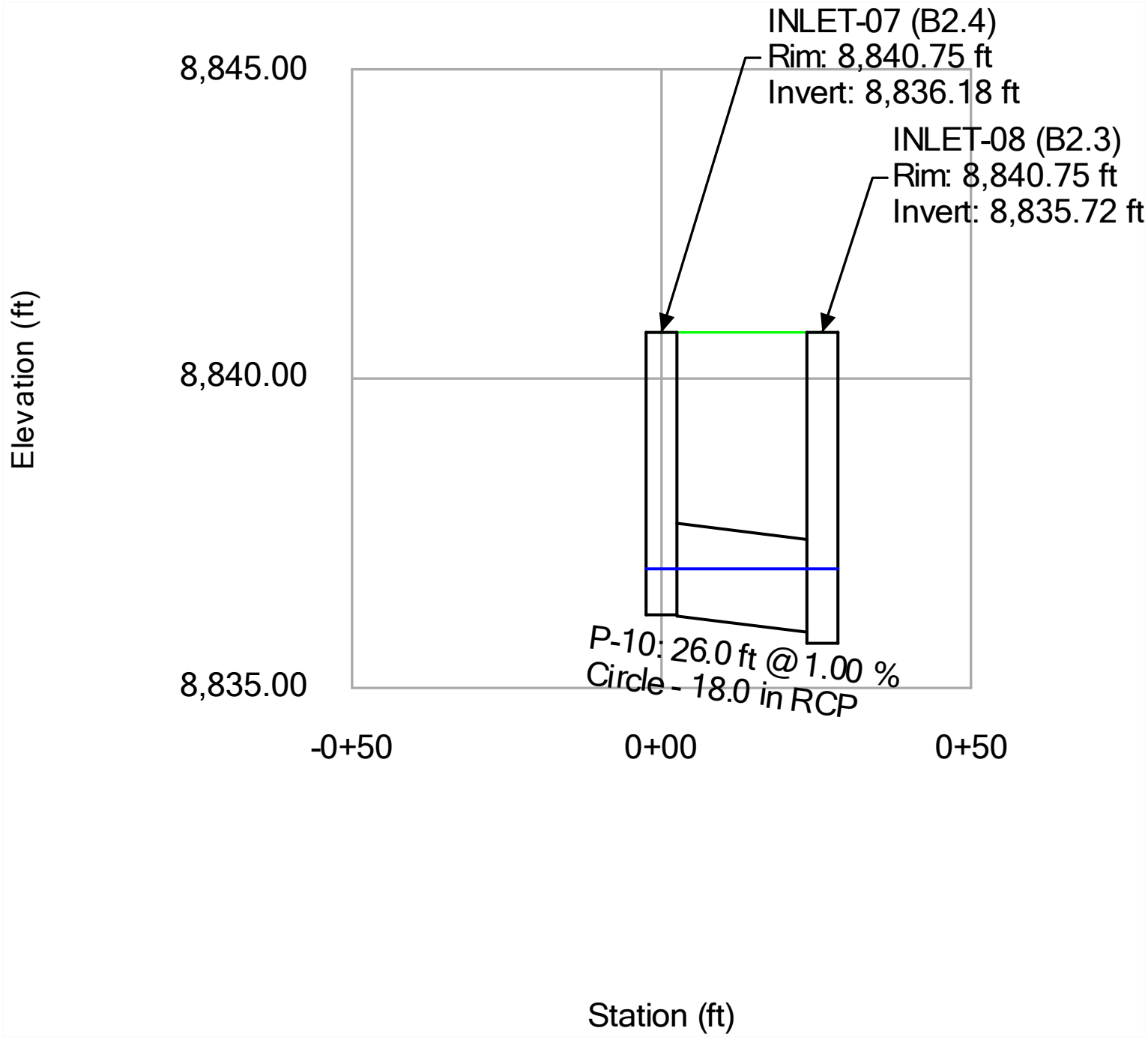

8,880.00
8,875.00
8,870.00
8,865.00
Elevation (ft)
INLET-43 (C2.4)
Rim: 8,875.29 ft
Invert: 8,869.26 ft
INLET-44 (C2.5)
Rim: 8,875.38 ft
Invert: 8,868.59 ft
SDMH-16
Rim: 8,873.61 ft
Invert: 8,866.95 ft
P-46: 46.4 ft @ 1.00 %
Circle - 18.0 in RCP
P-47: 119.4 ft @ 1.00 %
Circle - 18.0 in RCP
-0+50
0+00
0+50
1+00
1+50
2+00
Station (ft)

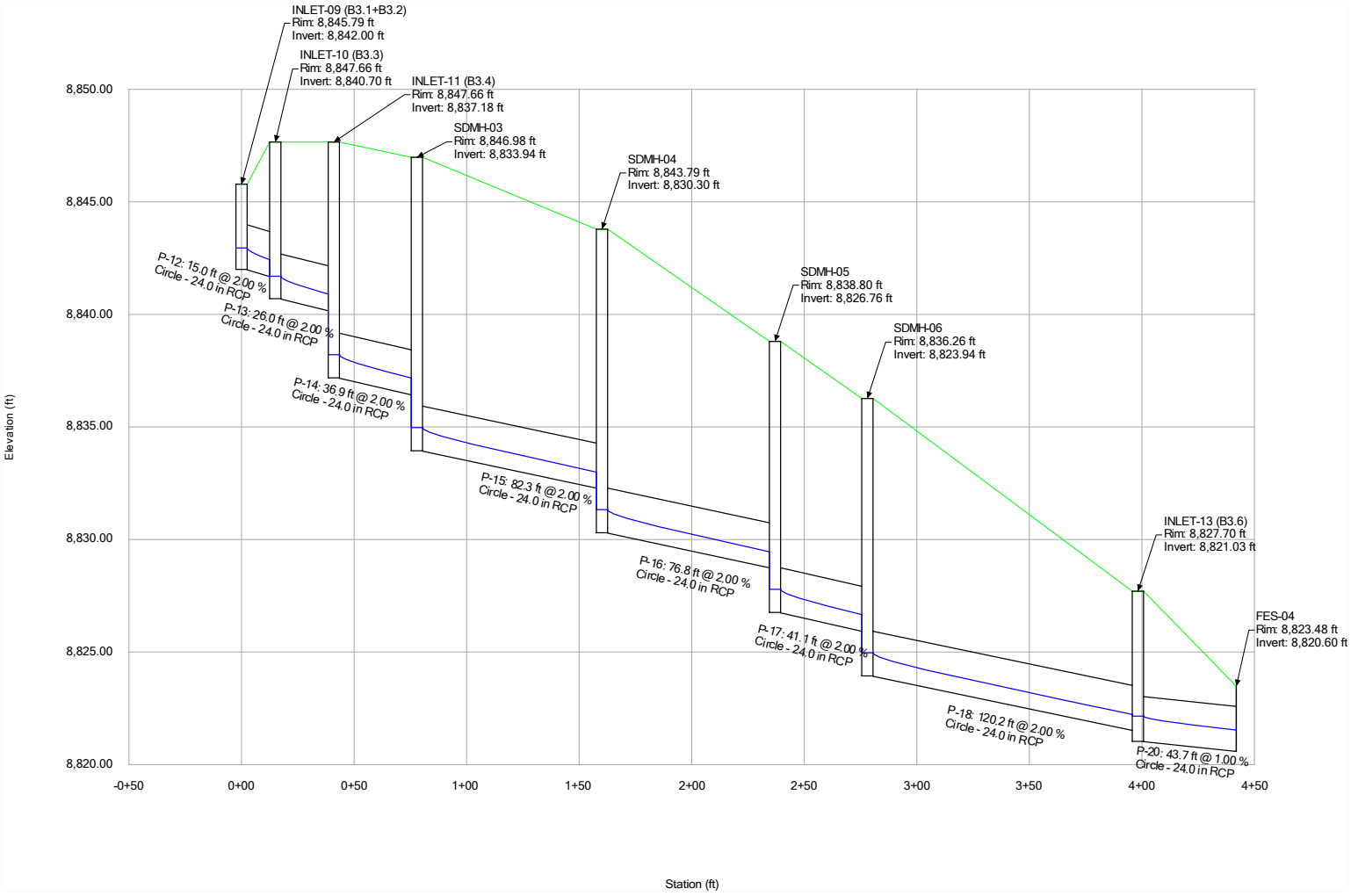

INLET-45 (C2.6)
Rim: 8,869.00 ft
Invert: 8,864.80 ft
INLET-46 (C2.7)
Rim: 8,870.93 ft
Invert: 8,864.21 ft
SDMH-17
Rim: 8,869.97 ft
Invert: 8,863.35 ft
P-49: 38.2 ft @ 1.00 %
Circle - 18.0 in RCP
P-50: 36.5 ft @ 1.00 %
Circle - 18.0 in RCP
8,875.00
8,870.00
8,865.00
8,860.00
Elevation (ft)
-0+50
0+00
0+50
1+00
Station (ft)

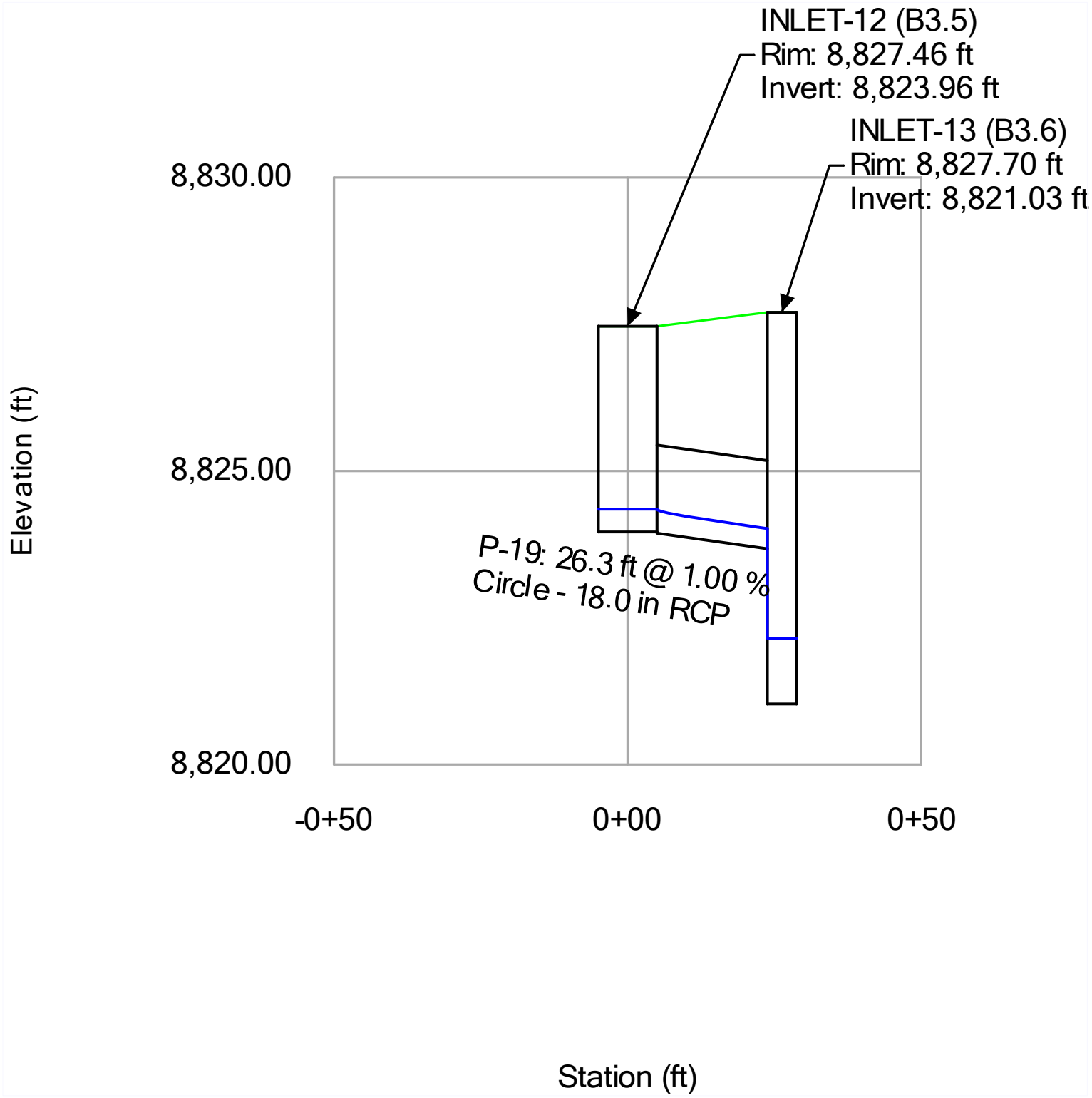

INLET-01 (B1.1)
Rim: 8,869.47 ft
Invert: 8,862.10 ft
INLET-02 (B1.2)
Rim: 8,869.47 ft
Invert: 8,861.64 ft
INLET-04 (B1.4)
Rim: 8,867.34 ft
Invert: 8,860.57 ft
INLET-05 (B1.5)
Rim: 8,867.68 ft
Invert: 8,860.11 ft
SDMH-01.1
Rim: 8,867.92 ft
Invert: 8,853.24 ft
FES-01
Rim: 8,855.11 ft
Invert: 8,852.78 ft
P-01: 26.0 ft @ 1.00 %
Circle - 18.0 in RCP
P-02: 57.0 ft @ 1.00 %
Circle - 18.0 in RCP
P-04: 26.0 ft @ 1.00 %
Circle - 18.0 in RCP
P-05: 10.8 ft @ 1.00 %
Circle - 24.0 in RCP
P-05.1: 46.3 ft @ 1.00 %
Circle - 24.0 in
8,870.00
8,865.00
8,860.00
8,855.00
8,850.00
Elevation (ft)
-0+50
0+00
0+50
1+00
1+50
2+00
Station (ft)

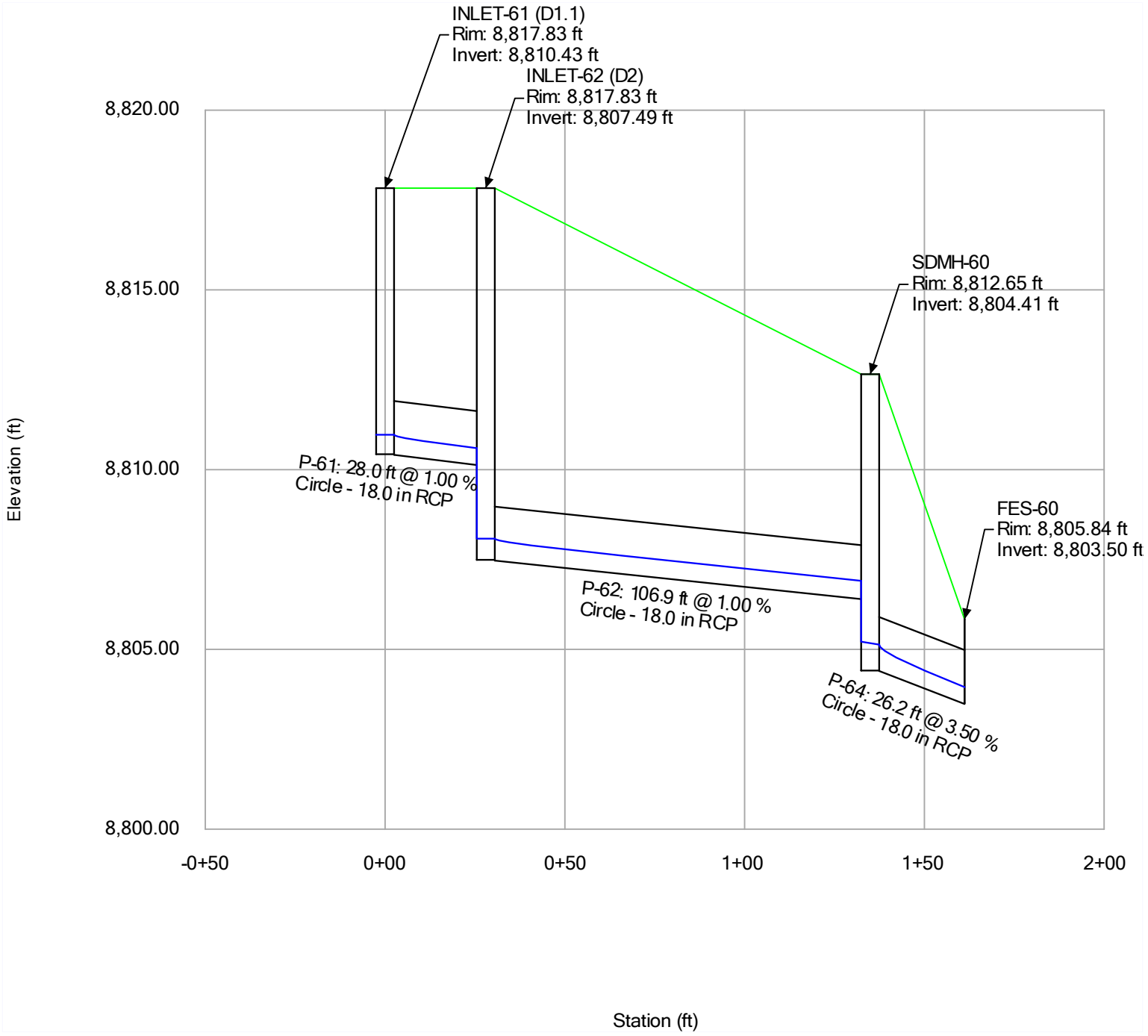

8,870.00
8,865.00
8,860.00
Elevation (ft)
INLET-04 (B1.4)
Rim: 8,867.34 ft
Invert: 8,860.57 ft
INLET-03 (B1.3)
Rim: 8,865.53 ft
Invert: 8,861.58 ft
P-03: 51.0 ft @ 1.00 %
Circle - 18.0 in RCP
-0+50
0+00
0+50
1+00
Station (ft)

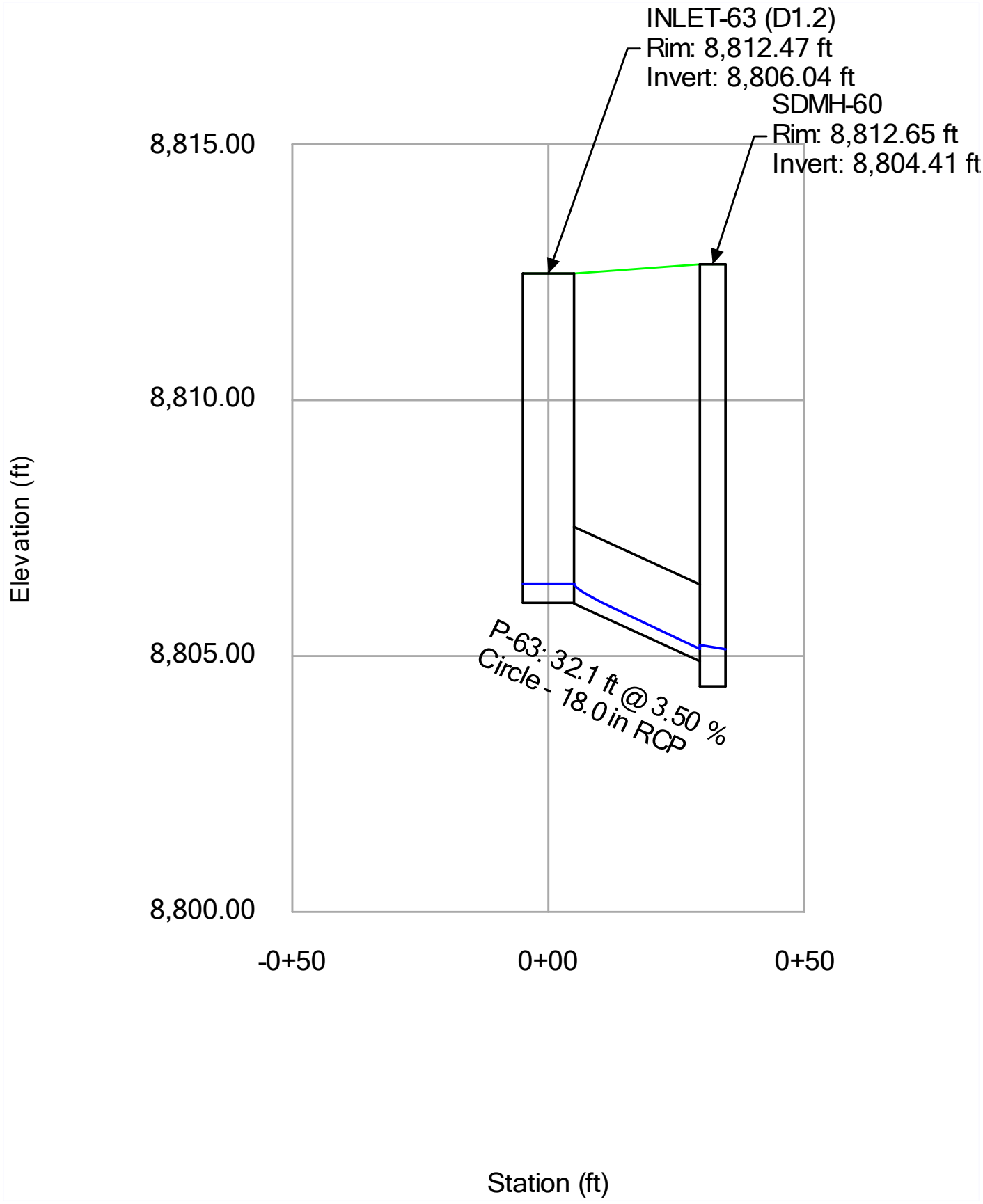

FES-02 (B2.1+B1)
Rim: 8,846.29 ft
Invert: 8,843.79 ft
SDMH-01
Rim: 8,847.40 ft
Invert: 8,840.82 ft
INLET-06 (B2.2)
Rim: 8,846.76 ft
Invert: 8,840.02 ft
SDMH-02
Rim: 8,846.49 ft
Invert: 8,839.00 ft
INLET-08 (B2.3)
Rim: 8,840.75 ft
Invert: 8,835.72 ft
FES-03
Rim: 8,838.35 ft
Invert: 8,835.48 ft
P-06: 10.5 ft @ 5.50 %
Circle - 30.0 in RCP
P-07: 41.0 ft @ 1.65 %
Circle - 30.0 in RCP
P-08: 32.1 ft @ 1.65 %
Circle - 30.0 in RCP
P-09: 142.2 ft @ 2.37 %
Circle - 30.0 in RCP
P-11: 23.8 ft @ 1.00 %
Circle - 30.0 in RCP
8,850.00
8,845.00
8,840.00
8,835.00
Elevation (ft)
-0+50
0+00
0+50
1+00
1+50
2+00
2+50
Station (ft)

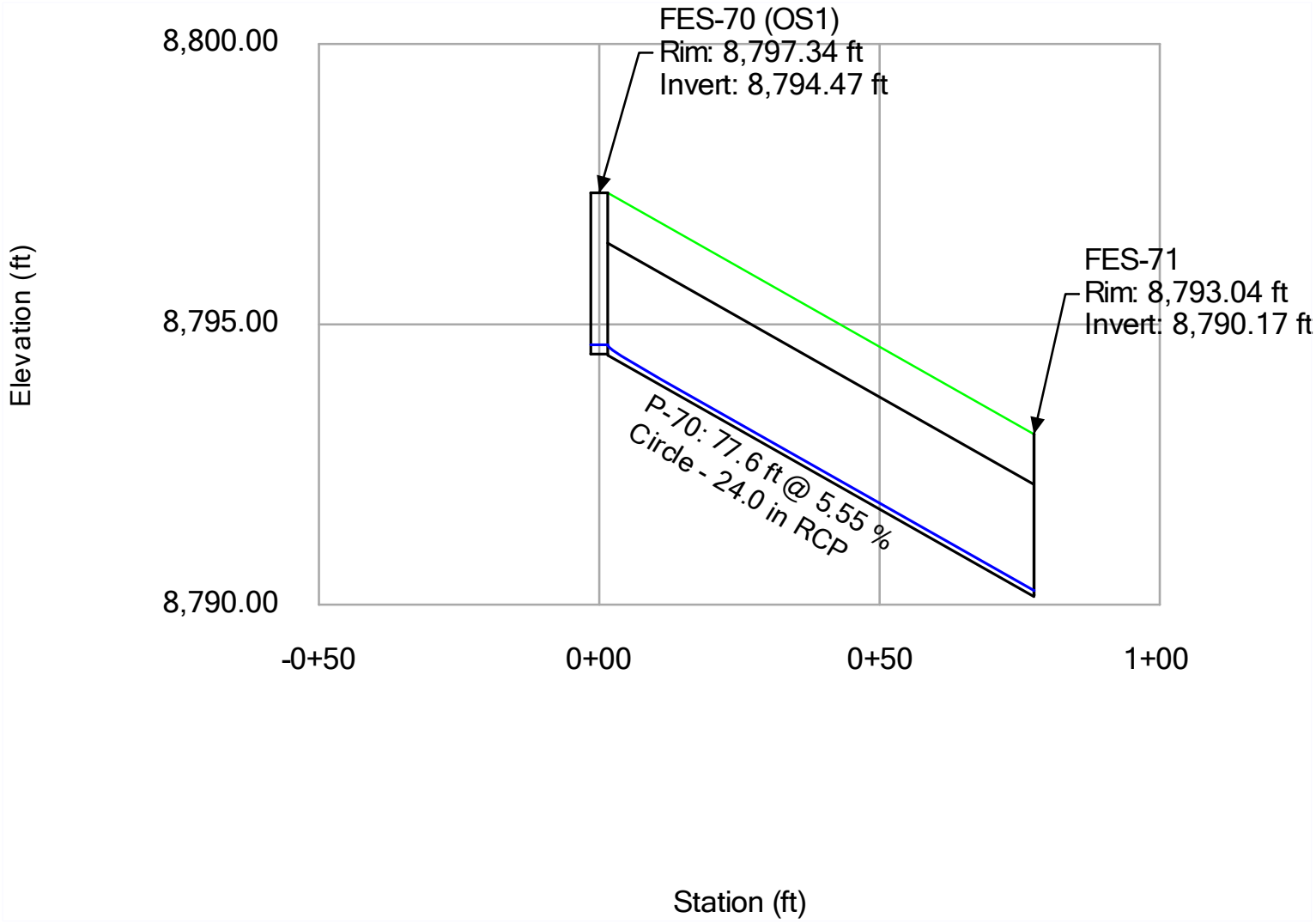

INLET-07 (B2.4)
Rim: 8,840.75 ft
Invert: 8,836.18 ft
INLET-08 (B2.3)
Rim: 8,840.75 ft
Invert: 8,835.72 ft
8,845.00
8,840.00
8,835.00
Elevation (ft)
P-10: 26.0 ft @ 1.00 %
Circle - 18.0 in RCP
-0+50
0+00
0+50
Station (ft)

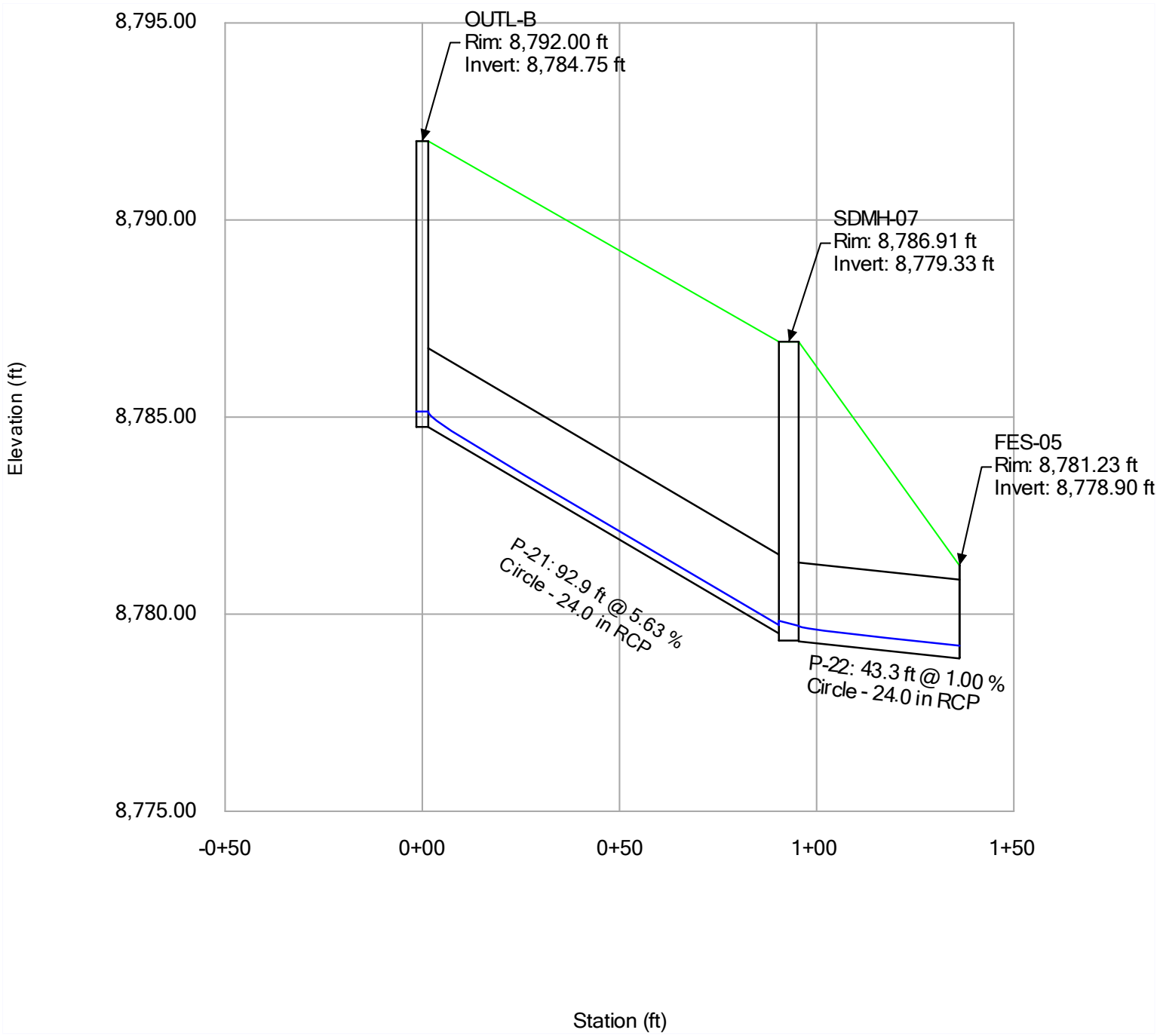

INLET-09 (B3.1+B3.2)
Rim: 8,845.79 ft
Invert: 8,842.00 ft
INLET-10 (B3.3)
Rim: 8,847.66 ft
Invert: 8,840.70 ft
INLET-11 (B3.4)
Rim: 8,847.66 ft
Invert: 8,837.18 ft
SDMH-03
Rim: 8,846.98 ft
Invert: 8,833.94 ft
SDMH-04
Rim: 8,843.79 ft
Invert: 8,830.30 ft
SDMH-05
Rim: 8,838.80 ft
Invert: 8,826.76 ft
SDMH-06
Rim: 8,836.26 ft
Invert: 8,823.94 ft
INLET-13 (B3.6)
Rim: 8,827.70 ft
Invert: 8,821.03 ft
FES-04
Rim: 8,823.48 ft
Invert: 8,820.60 ft
P-12: 15.0 ft @ 2.00 %
Circle - 24.0 in RCP
P-13: 26.0 ft @ 2.00 %
Circle - 24.0 in RCP
P-14: 36.9 ft @ 2.00 %
Circle - 24.0 in RCP
P-15: 82.3 ft @ 2.00 %
Circle - 24.0 in RCP
P-16: 76.8 ft @ 2.00 %
Circle - 24.0 in RCP
P-17: 41.1 ft @ 2.00 %
Circle - 24.0 in RCP
P-18: 120.2 ft @ 2.00 %
Circle - 24.0 in RCP
P-20: 43.7 ft @ 1.00 %
Circle - 24.0 in RCP
8,850.00
8,845.00
8,840.00
8,835.00
8,830.00
8,825.00
8,820.00
Elevation (ft)
-0+50
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
4+50
Station (ft)

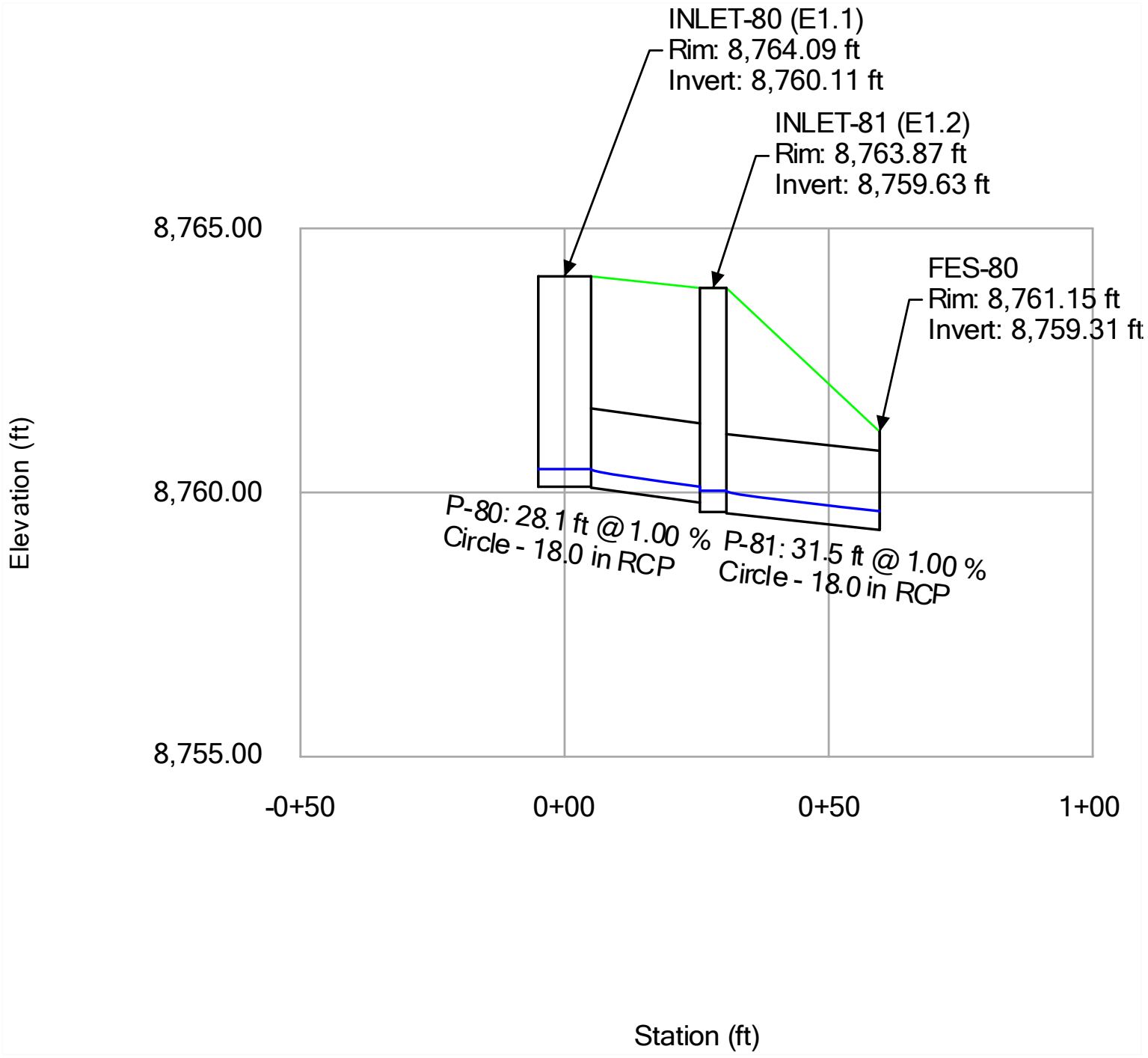

INLET-12 (B3.5)
Rim: 8,827.46 ft
Invert: 8,823.96 ft
INLET-13 (B3.6)
Rim: 8,827.70 ft
Invert: 8,821.03 ft
8,830.00
8,825.00
8,820.00
Elevation (ft)
P-19: 26.3 ft @ 1.00 %
Circle - 18.0 in RCP
-0+50
0+00
0+50
Station (ft)


INLET-61 (D1.1)
Rim: 8,817.83 ft
Invert: 8,810.43 ft
INLET-62 (D2)
Rim: 8,817.83 ft
Invert: 8,807.49 ft
SDMH-60
Rim: 8,812.65 ft
Invert: 8,804.41 ft
FES-60
Rim: 8,805.84 ft
Invert: 8,803.50 ft
P-61: 28.0 ft @ 1.00 %
Circle - 18.0 in RCP
P-62: 106.9 ft @ 1.00 %
Circle - 18.0 in RCP
P-64: 26.2 ft @ 3.50 %
Circle - 18.0 in RCP
8,820.00
8,815.00
8,810.00
8,805.00
8,800.00
Elevation (ft)
-0+50
0+00
0+50
1+00
1+50
2+00
Station (ft)


INLET-63 (D1.2)
Rim: 8,812.47 ft
Invert: 8,806.04 ft
SDMH-60
Rim: 8,812.65 ft
Invert: 8,804.41 ft
8,815.00
8,810.00
8,805.00
8,800.00
Elevation (ft)
P-63: 32.1 ft @ 3.50 %
Circle - 18.0 in RCP
-0+50
0+00
0+50
Station (ft)


FES-70 (OS1)
Rim: 8,797.34 ft
Invert: 8,794.47 ft
FES-71
Rim: 8,793.04 ft
Invert: 8,790.17 ft
P-70: 77.6 ft @ 5.55 %
Circle - 24.0 in RCP
8,800.00
8,795.00
8,790.00
Elevation (ft)
-0+50
0+00
0+50
1+00
Station (ft)


8,795.00
8,790.00
8,785.00
8,780.00
8,775.00
Elevation (ft)
-0+50
0+00
0+50
1+00
1+50
Station (ft)
OUTL-B
Rim: 8,792.00 ft
Invert: 8,784.75 ft
SDMH-07
Rim: 8,786.91 ft
Invert: 8,779.33 ft
FES-05
Rim: 8,781.23 ft
Invert: 8,778.90 ft
P-21: 92.9 ft @ 5.63 %
Circle - 24.0 in RCP
P-22: 43.3 ft @ 1.00 %
Circle - 24.0 in RCP


INLET-80 (E1.1)
Rim: 8,764.09 ft
Invert: 8,760.11 ft
INLET-81 (E1.2)
Rim: 8,763.87 ft
Invert: 8,759.63 ft
FES-80
Rim: 8,761.15 ft
Invert: 8,759.31 ft
P-80: 28.1 ft @ 1.00 %
Circle - 18.0 in RCP
P-81: 31.5 ft @ 1.00 %
Circle - 18.0 in RCP
8,765.00
8,760.00
8,755.00
Elevation (ft)
-0+50
0+00
0+50
1+00
Station (ft)

STORMCAD OUTPUT TABLES
West Mountain - 10W - 100-Year

STORMCAD OUTPUT TABLES

West Mountain - 10W - 100-Year

Catch Basin Table - Time: 0.00 hours

Label	Rim (ft)	Invert (ft)	Flow (cfs)	HGL (In) (ft)	HGL (Out) (ft)	Inlet Location	Notes
FES-02 (B2.1+B1)	8,846.29	8,843.79	34.20	8,843.92	8,843.92	In Sag	30" FES
FES-70 (OS1)	8,797.34	8,794.47	1.00	8,794.79	8,794.79	In Sag	30" FES
INLET-01 (B1.1)	8,869.47	8,862.10	7.50	8,863.94	8,863.94	In Sag	10' TYPE R INLET
INLET-02 (B1.2)	8,869.47	8,861.64	12.40	8,863.81	8,863.81	In Sag	10' TYPE R INLET
INLET-03 (B1.3)	8,865.53	8,861.58	4.90	8,863.12	8,863.12	In Sag	TYPE C INLET
INLET-04 (B1.4)	8,867.34	8,860.57	19.90	8,863.01	8,863.01	In Sag	10' TYPE R INLET
INLET-05 (B1.5)	8,867.68	8,860.11	23.60	8,861.83	8,861.83	In Sag	5' TYPE R INLET
INLET-06 (B2.2)	8,846.76	8,840.02	36.10	8,842.04	8,842.04	In Sag	5' TYPE R INLET
INLET-07 (B2.4)	8,840.75	8,836.18	1.20	8,837.79	8,837.79	In Sag	5' TYPE R INLET
INLET-08 (B2.3)	8,840.75	8,835.72	38.00	8,837.78	8,837.78	In Sag	5' TYPE R INLET
INLET-09 (B3.1+B3.2)	8,845.79	8,842.00	20.80	8,843.62	8,843.62	In Sag	TYPE C INLET
INLET-10 (B3.3)	8,847.66	8,840.70	22.10	8,842.36	8,842.36	In Sag	5' TYPE R INLET
INLET-11 (B3.4)	8,847.66	8,837.18	23.10	8,838.87	8,838.87	In Sag	5' TYPE R INLET
INLET-12 (B3.5)	8,827.46	8,823.96	3.40	8,824.64	8,824.64	In Sag	10' TYPE R INLET
INLET-13 (B3.6)	8,827.70	8,821.03	27.00	8,823.10	8,823.10	In Sag	5' TYPE R INLET
INLET-30 (A4.1)	8,923.30	8,918.84	2.70	8,919.45	8,919.45	In Sag	10' TYPE R INLET
INLET-31 (A4.2)	8,923.30	8,918.36	4.70	8,919.18	8,919.18	In Sag	10' TYPE R INLET
INLET-40 (C2.2)	8,877.77	8,871.03	1.40	8,872.68	8,872.68	In Sag	5' TYPE R INLET
INLET-41 (C2.1)	8,877.68	8,870.53	3.50	8,872.68	8,872.68	In Sag	5' TYPE R INLET
INLET-42 (C1+C2.3)	8,875.28	8,869.88	12.80	8,872.66	8,872.66	In Sag	TYPE C INLET
INLET-43 (C2.4)	8,875.29	8,869.26	1.20	8,869.64	8,869.64	In Sag	5' TYPE R INLET
INLET-44 (C2.5)	8,875.38	8,868.59	1.60	8,869.04	8,869.04	In Sag	5' TYPE R INLET
INLET-45 (C2.6)	8,869.00	8,864.80	1.50	8,865.29	8,865.29	In Sag	10' TYPE R INLET
INLET-46 (C2.7)	8,870.93	8,864.21	3.00	8,865.32	8,865.32	In Sag	10' TYPE R INLET
INLET-61 (D1.1)	8,817.83	8,810.43	8.10	8,811.51	8,811.51	In Sag	10' TYPE R INLET
INLET-62 (D2)	8,817.83	8,807.49	9.20	8,808.64	8,808.64	In Sag	5' TYPE R INLET
INLET-63 (D1.2)	8,812.47	8,806.04	3.70	8,806.76	8,806.76	In Sag	15' TYPE R INLET
INLET-80 (E1.1)	8,764.09	8,760.11	3.20	8,760.77	8,760.77	In Sag	10' TYPE R INLET
INLET-81 (E1.2)	8,763.87	8,759.63	4.30	8,760.40	8,760.40	In Sag	5' TYPE R INLET
OUTL-B	8,792.00	8,784.75	26.20	8,786.54	8,786.54	In Sag	OUTLET STRUCTURE

Manhole Table - Time: 0.00 hours

Label	Flow (cfs)	Headloss (ft)	Elevation (Rim) (ft)	HGL (In) (ft)	HGL (Out) (ft)	Notes	Headloss Method	AASHTO Shaping Method
SDMH-01	34.20	0.60	8,847.40	8,843.46	8,842.87	6' DIA MH FLAT TOP	AASHTO	Full
SDMH-02	36.10	0.36	8,846.49	8,841.67	8,841.31	6' DIA MH	AASHTO	Full
SDMH-03	23.10	0.00	8,846.98	8,835.63	8,835.63	5' DIA MH	AASHTO	Full
SDMH-04	23.10	0.00	8,843.79	8,831.99	8,831.99	5' DIA MH	AASHTO	Full
SDMH-05	23.10	0.00	8,838.80	8,828.45	8,828.45	5' DIA MH	AASHTO	Full
SDMH-06	23.10	0.00	8,836.26	8,825.63	8,825.63	5' DIA MH	AASHTO	Full
SDMH-07	26.20	0.61	8,786.91	8,781.94	8,781.32	5' DIA MH	AASHTO	Full
SDMH-15	12.80	0.24	8,875.64	8,870.78	8,870.54	5' DIA MH	AASHTO	Full
SDMH-16	14.40	0.34	8,873.61	8,868.66	8,868.32	6' DIA MH	AASHTO	Full
SDMH-17	17.40	0.54	8,869.97	8,865.31	8,864.76	6' DIA MH	AASHTO	Full
SDMH-30	4.70	0.19	8,922.22	8,918.23	8,918.04	5' DIA MH	AASHTO	Full
SDMH-60	12.90	0.14	8,812.65	8,805.89	8,805.75	5' DIA MH	AASHTO	Full

STORMCAD OUTPUT TABLES

West Mountain - 10W - 100-Year

Conduit Table - Time: 0.00 hours

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (ft)	Slope (%)	Dia. (in)	Mann.	Flow (cfs)	Velo. (ft/s)	Depth (ft)	Capacity (cfs)	Froude Number	HGL (In) (ft)	HGL (Out) (ft)
P-01	INLET-01 (B1.1)	INLET-02 (B1.2)	8,862.08	8,861.82	26.0	1.00	18.0	0.013	7.50	4.24	1.06	10.50	1.273	8,863.94	8,863.81
P-02	INLET-02 (B1.2)	INLET-04 (B1.4)	8,861.62	8,861.05	57.0	1.00	18.0	0.013	12.40	7.02	1.33	10.50	1.010	8,863.81	8,863.01
P-03	INLET-03 (B1.3)	INLET-04 (B1.4)	8,861.56	8,861.05	51.0	1.00	18.0	0.013	4.90	2.77	0.85	10.50	1.377	8,863.12	8,863.01
P-04	INLET-04 (B1.4)	INLET-05 (B1.5)	8,860.85	8,860.59	26.0	1.00	18.0	0.013	19.90	11.26	1.47	10.50	1.621	8,863.01	8,862.06
P-05	INLET-05 (B1.5)	SDMH-01.1	8,860.09	8,859.98	10.8	1.00	24.0	0.013	23.60	8.15	1.72	22.58	0.984	8,861.83	8,861.71
P-06	FES-02 (B2.1+ B1)	SDMH-01	8,841.93	8,841.35	10.5	5.50	30.0	0.013	34.20	17.94	1.99	96.21	3.593	8,843.92	8,843.46
P-07	SDMH-01	INLET-06 (B2.2)	8,840.88	8,840.20	41.0	1.65	30.0	0.013	34.20	11.42	1.99	52.66	1.825	8,842.87	8,841.80
P-08	INLET-06 (B2.2)	SDMH-02	8,840.00	8,839.47	32.1	1.65	30.0	0.013	36.10	11.57	2.04	52.73	1.804	8,842.04	8,841.67
P-09	SDMH-02	INLET-08 (B2.3)	8,839.27	8,835.90	142.2	2.37	30.0	0.013	36.10	13.29	2.04	63.15	2.245	8,841.31	8,837.28
P-10	INLET-07 (B2.4)	INLET-08 (B2.3)	8,836.16	8,835.90	26.0	1.00	18.0	0.013	1.20	0.68	0.41	10.50	1.418	8,837.79	8,837.78
P-11	INLET-08 (B2.3)	FES-03	8,835.70	8,835.46	23.8	1.00	30.0	0.013	38.00	9.48	2.08	40.98	1.219	8,837.78	8,837.41
P-12	INLET-09 (B3.1+ B3.2)	INLET-10 (B3.3)	8,841.98	8,841.68	15.0	2.00	24.0	0.013	20.80	10.84	1.63	31.99	1.936	8,843.62	8,843.04
P-13	INLET-10 (B3.3)	INLET-11 (B3.4)	8,840.68	8,840.16	26.0	2.00	24.0	0.013	22.10	10.99	1.68	31.99	1.907	8,842.36	8,841.52
P-14	INLET-11 (B3.4)	SDMH-03	8,837.16	8,836.43	36.9	2.00	24.0	0.013	23.10	11.10	1.71	32.01	1.885	8,838.87	8,837.79
P-15	SDMH-03	SDMH-04	8,833.93	8,832.28	82.3	2.00	24.0	0.013	23.10	11.09	1.71	31.99	1.883	8,835.63	8,833.58
P-16	SDMH-04	SDMH-05	8,830.28	8,828.74	76.8	2.00	24.0	0.013	23.10	11.10	1.71	32.02	1.886	8,831.99	8,830.04
P-17	SDMH-05	SDMH-06	8,826.74	8,825.92	41.1	2.00	24.0	0.013	23.10	11.09	1.71	31.97	1.882	8,828.45	8,827.27
P-18	SDMH-06	INLET-13 (B3.6)	8,823.92	8,821.52	120.2	2.00	24.0	0.013	23.10	11.08	1.71	31.97	1.881	8,825.63	8,822.79
P-19	INLET-12 (B3.5)	INLET-13 (B3.6)	8,823.94	8,823.68	26.3	1.00	18.0	0.013	3.40	5.30	0.70	10.50	1.413	8,824.64	8,824.27

STORMCAD OUTPUT TABLES

West Mountain - 10W - 100-Year

Conduit Table - Time: 0.00 hours

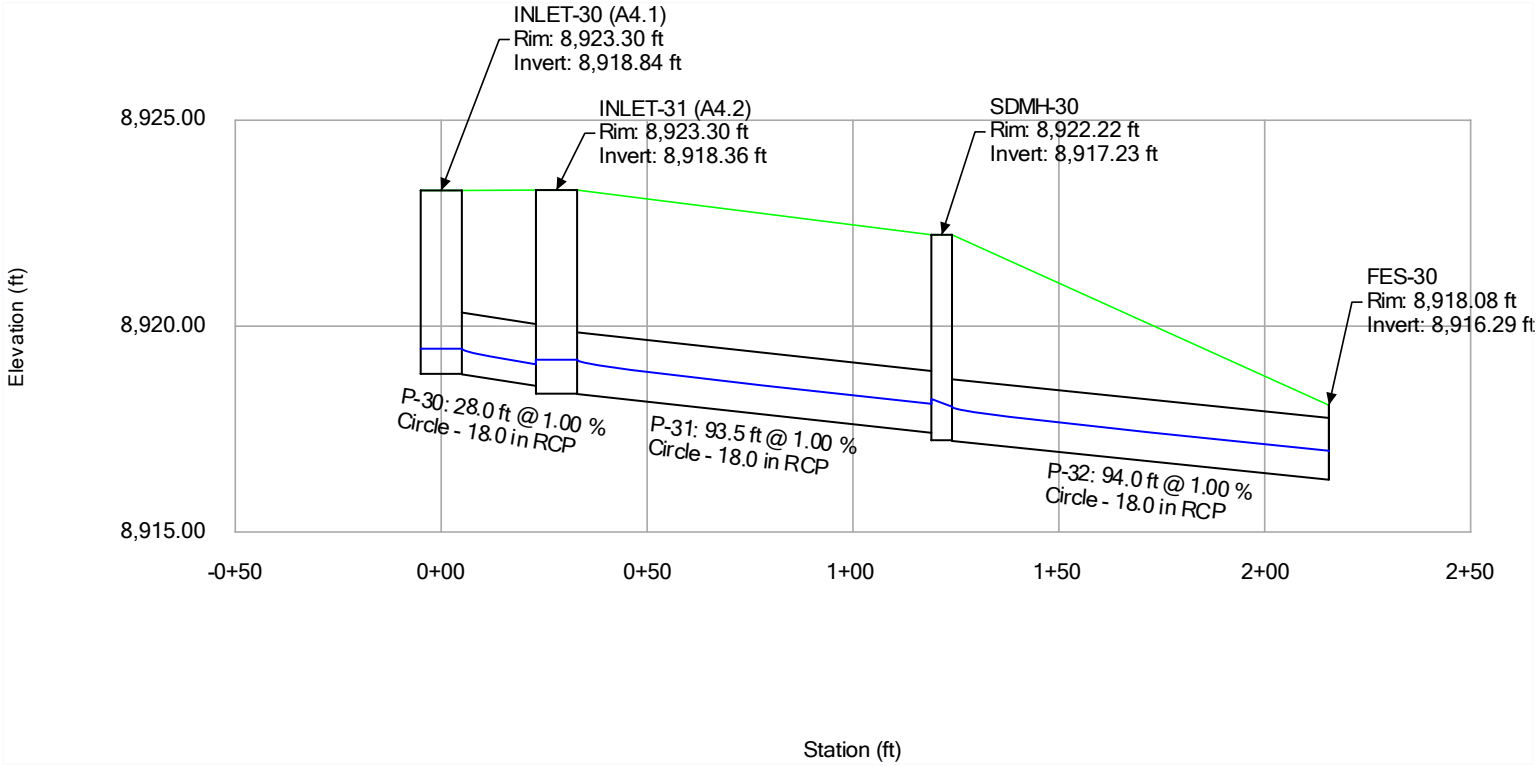
Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (ft)	Slope (%)	Dia. (in)	Mann.	Flow (cfs)	Velo. (ft/s)	Depth (ft)	Capacity (cfs)	Froude Number	HGL (In) (ft)	HGL (Out) (ft)
P-20	INLET-13 (B3.6)	FES-04	8,821.02	8,820.58	43.7	1.00	24.0	0.013	27.00	8.59	1.81	22.59	1.071	8,823.10	8,822.39
P-21	OUTL-B	SDMH-07	8,784.75	8,779.51	92.9	5.63	24.0	0.013	26.20	16.98	1.79	53.69	3.408	8,786.54	8,781.94
P-22	SDMH-07	FES-05	8,779.31	8,778.88	43.3	1.00	24.0	0.013	26.20	8.34	1.79	22.65	1.040	8,781.32	8,780.67
P-30	INLET-30 (A4.1)	INLET-31 (A4.2)	8,918.83	8,918.55	28.0	1.00	18.0	0.013	2.70	4.98	0.62	10.50	1.424	8,919.45	8,919.18
P-31	INLET-31 (A4.2)	SDMH-30	8,918.35	8,917.41	93.5	1.00	18.0	0.013	4.70	5.79	0.83	10.53	1.386	8,919.18	8,918.11
P-32	SDMH-30	FES-30	8,917.21	8,916.27	94.0	1.00	18.0	0.013	4.70	5.78	0.83	10.50	1.383	8,918.04	8,916.97
P-42	INLET-40 (C2.2)	INLET-41 (C2.1)	8,871.01	8,870.71	29.6	1.00	18.0	0.013	1.40	0.79	0.44	10.50	1.422	8,872.68	8,872.68
P-43	INLET-41 (C2.1)	INLET-42 (C1 +C2.3)	8,870.51	8,870.36	15.4	1.00	18.0	0.013	3.50	1.98	0.71	10.49	1.409	8,872.68	8,872.66
P-44	INLET-42 (C1 +C2.3)	SDMH-15	8,869.86	8,868.59	126.6	1.00	18.0	0.013	12.80	7.24	1.34	10.52	1.043	8,872.66	8,870.78
P-45	SDMH-15	SDMH-16	8,868.39	8,867.13	126.6	1.00	18.0	0.013	12.80	7.24	1.34	10.48	1.043	8,870.54	8,868.66
P-46	INLET-43 (C2.4)	INLET-44 (C2.5)	8,869.24	8,868.77	46.4	1.00	18.0	0.013	1.20	3.95	0.41	10.51	1.419	8,869.64	8,869.11
P-47	INLET-44 (C2.5)	SDMH-16	8,868.57	8,867.38	119.4	1.00	18.0	0.013	1.60	4.29	0.48	10.49	1.424	8,869.04	8,868.66
P-48	SDMH-16	SDMH-17	8,866.93	8,863.76	110.5	2.87	18.0	0.013	14.40	11.21	1.39	17.79	2.060	8,868.32	8,865.31
P-49	INLET-45 (C2.6)	INLET-46 (C2.7)	8,864.71	8,864.33	38.2	1.00	18.0	0.013	1.50	4.22	0.46	10.50	1.425	8,865.29	8,865.32
P-50	INLET-46 (C2.7)	SDMH-17	8,864.13	8,863.76	36.5	1.00	18.0	0.013	3.00	5.12	0.66	10.50	1.419	8,865.32	8,865.31
P-51	SDMH-17	FBAY-C	8,863.26	8,863.06	19.7	1.00	24.0	0.013	17.40	7.95	1.50	22.66	1.306	8,864.76	8,864.42
P-61	INLET-61 (D1.1)	INLET-62 (D2)	8,810.41	8,810.13	28.0	1.00	18.0	0.013	8.10	6.56	1.10	10.50	1.241	8,811.51	8,811.13
P-62	INLET-62 (D2)	SDMH-60	8,807.47	8,806.40	106.9	1.00	18.0	0.013	9.20	6.70	1.17	10.51	1.168	8,808.64	8,807.49
P-63	INLET-63 (D1.2)	SDMH-60	8,806.02	8,804.90	32.1	3.50	18.0	0.013	3.70	8.54	0.73	19.66	2.673	8,806.76	8,805.89
P-64	SDMH-60	FES-60	8,804.40	8,803.48	26.2	3.50	18.0	0.013	12.90	11.86	1.35	19.65	2.435	8,805.75	8,804.48
P-70	FES-70 (OS1)	FES-71	8,794.45	8,790.15	77.6	5.55	24.0	0.013	1.00	6.59	0.34	53.30	3.230	8,794.79	8,790.33

STORMCAD OUTPUT TABLES

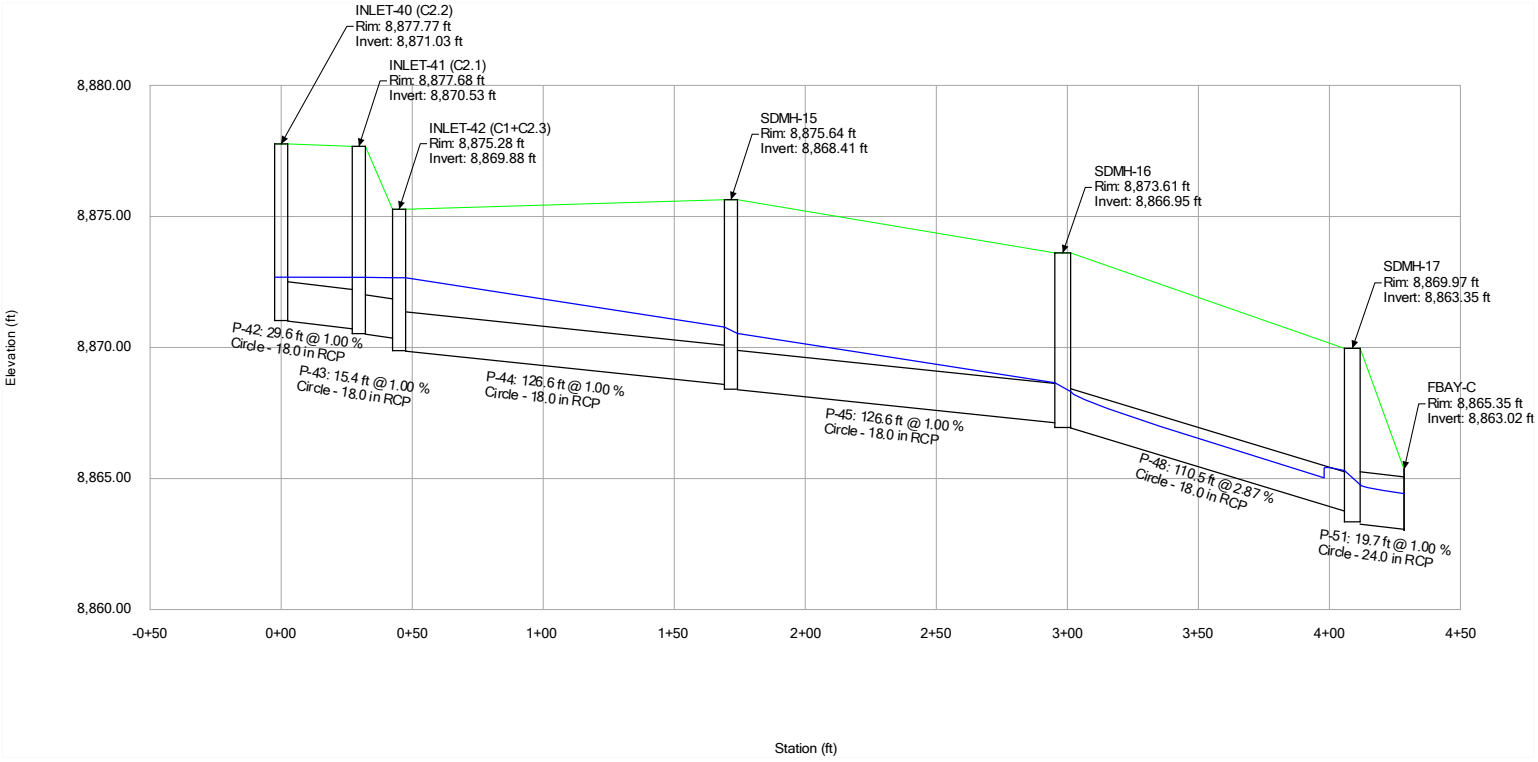
West Mountain - 10W - 100-Year

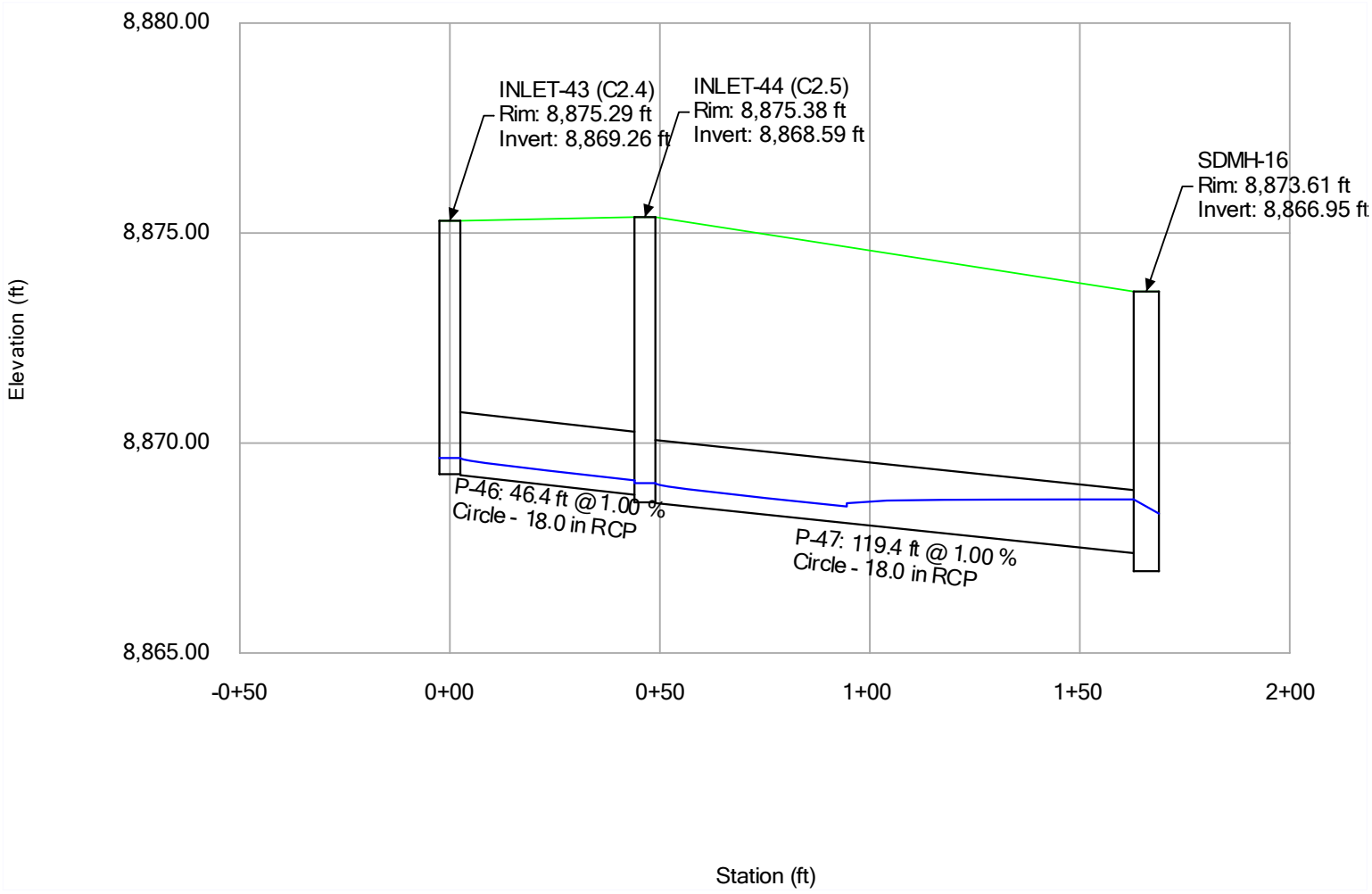
Conduit Table - Time: 0.00 hours

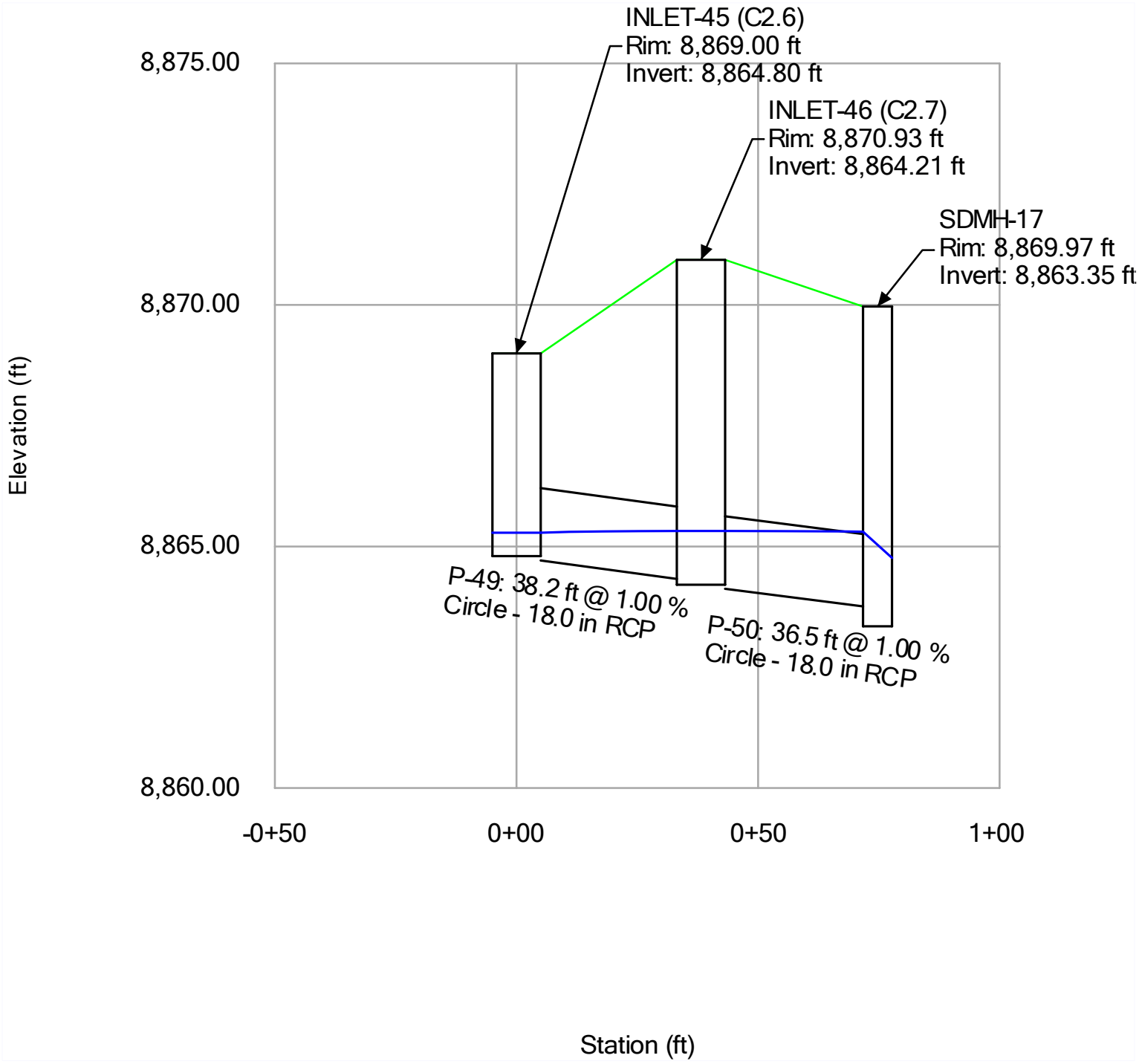
Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (ft)	Slope (%)	Dia. (in)	Mann.	Flow (cfs)	Velo. (ft/s)	Depth (ft)	Capacity (cfs)	Froude Number	HGL (In) (ft)	HGL (Out) (ft)
P-80	INLET-80 (E1.1)	INLET-81 (E1.2)	8,760.09	8,759.81	28.1	1.00	18.0	0.013	3.20	5.21	0.68	10.48	1.415	8,760.77	8,760.38
P-81	INLET-81 (E1.2)	FES-80	8,759.61	8,759.29	31.5	1.00	18.0	0.013	4.30	5.64	0.80	10.50	1.392	8,760.40	8,759.97

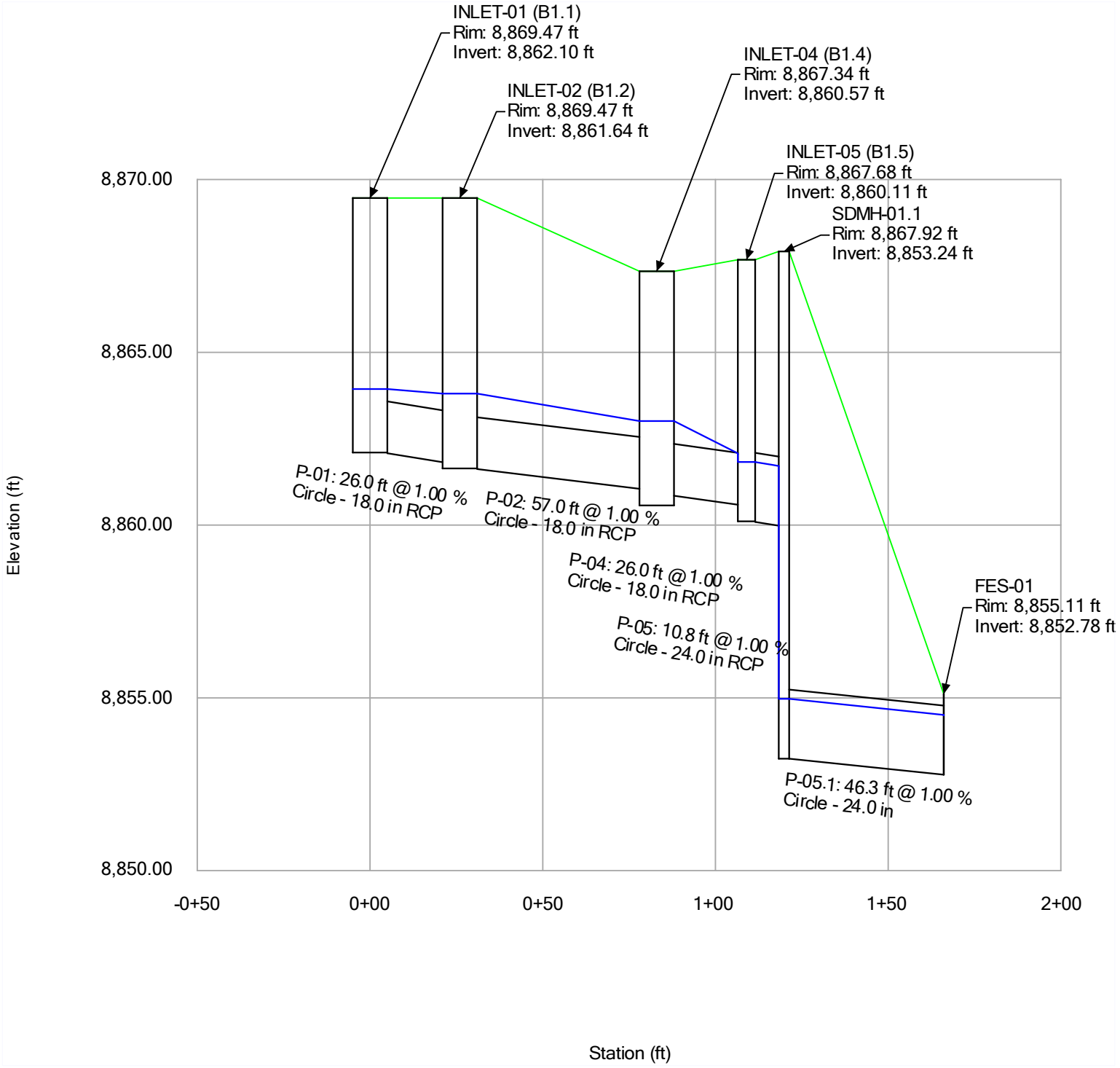

INLET-30 (A4.1)
Rim: 8,923.30 ft
Invert: 8,918.84 ft
INLET-31 (A4.2)
Rim: 8,923.30 ft
Invert: 8,918.36 ft
SDMH-30
Rim: 8,922.22 ft
Invert: 8,917.23 ft
FES-30
Rim: 8,918.08 ft
Invert: 8,916.29 ft
P-30: 28.0 ft @ 1.00 %
Circle - 18.0 in RCP
P-31: 93.5 ft @ 1.00 %
Circle - 18.0 in RCP
P-32: 94.0 ft @ 1.00 %
Circle - 18.0 in RCP
8,925.00
8,920.00
8,915.00
Elevation (ft)
-0+50
0+00
0+50
1+00
1+50
2+00
2+50
Station (ft)

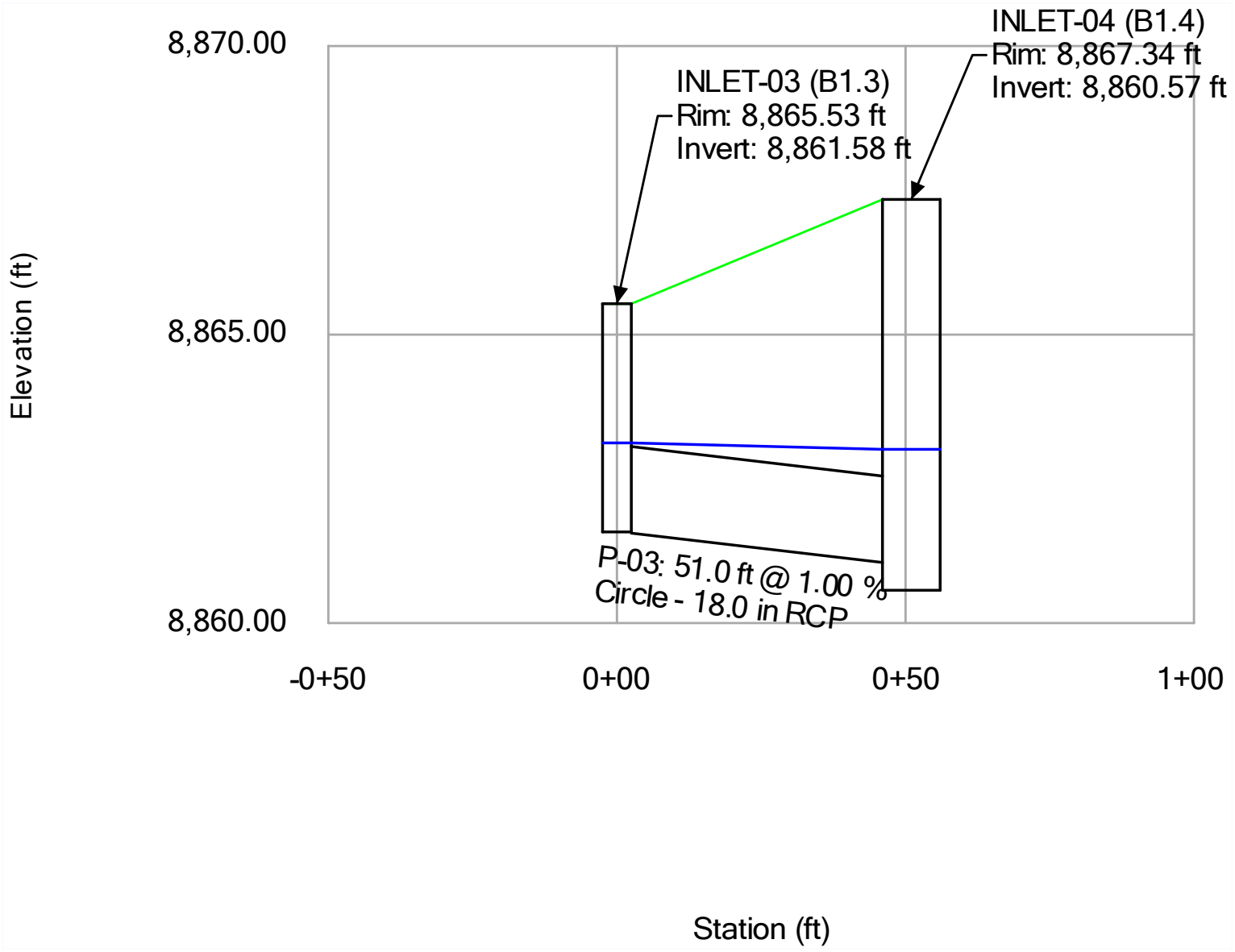
STORMCAD OUTPUT TABLES
West Mountain - 10W - 100-Year



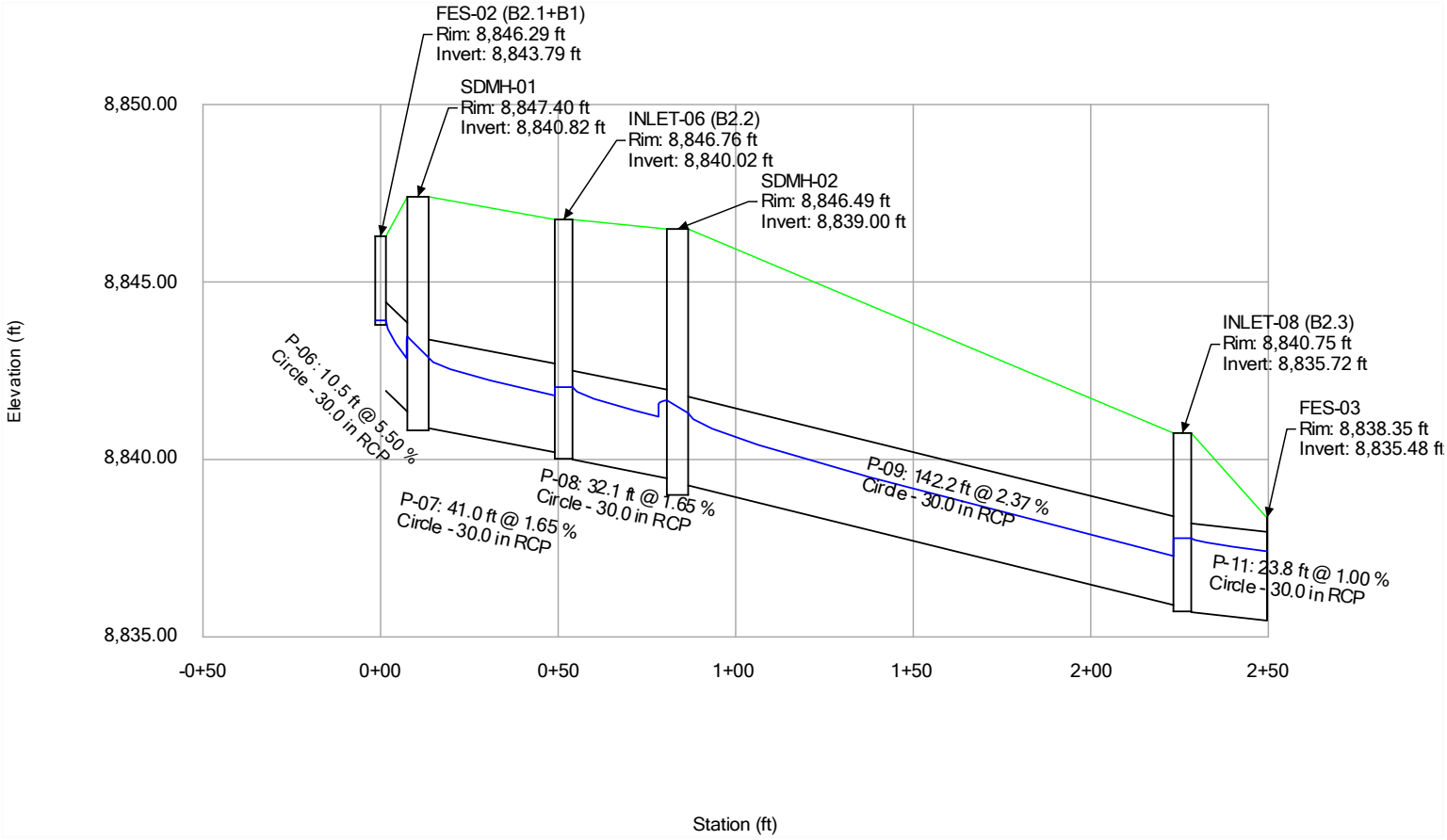

8,880.00
8,875.00
8,870.00
8,865.00
Elevation (ft)
INLET-43 (C2.4)
Rim: 8,875.29 ft
Invert: 8,869.26 ft
INLET-44 (C2.5)
Rim: 8,875.38 ft
Invert: 8,868.59 ft
SDMH-16
Rim: 8,873.61 ft
Invert: 8,866.95 ft
P-46: 46.4 ft @ 1.00 %
Circle - 18.0 in RCP
P-47: 119.4 ft @ 1.00 %
Circle - 18.0 in RCP
-0+50
0+00
0+50
1+00
1+50
2+00
Station (ft)

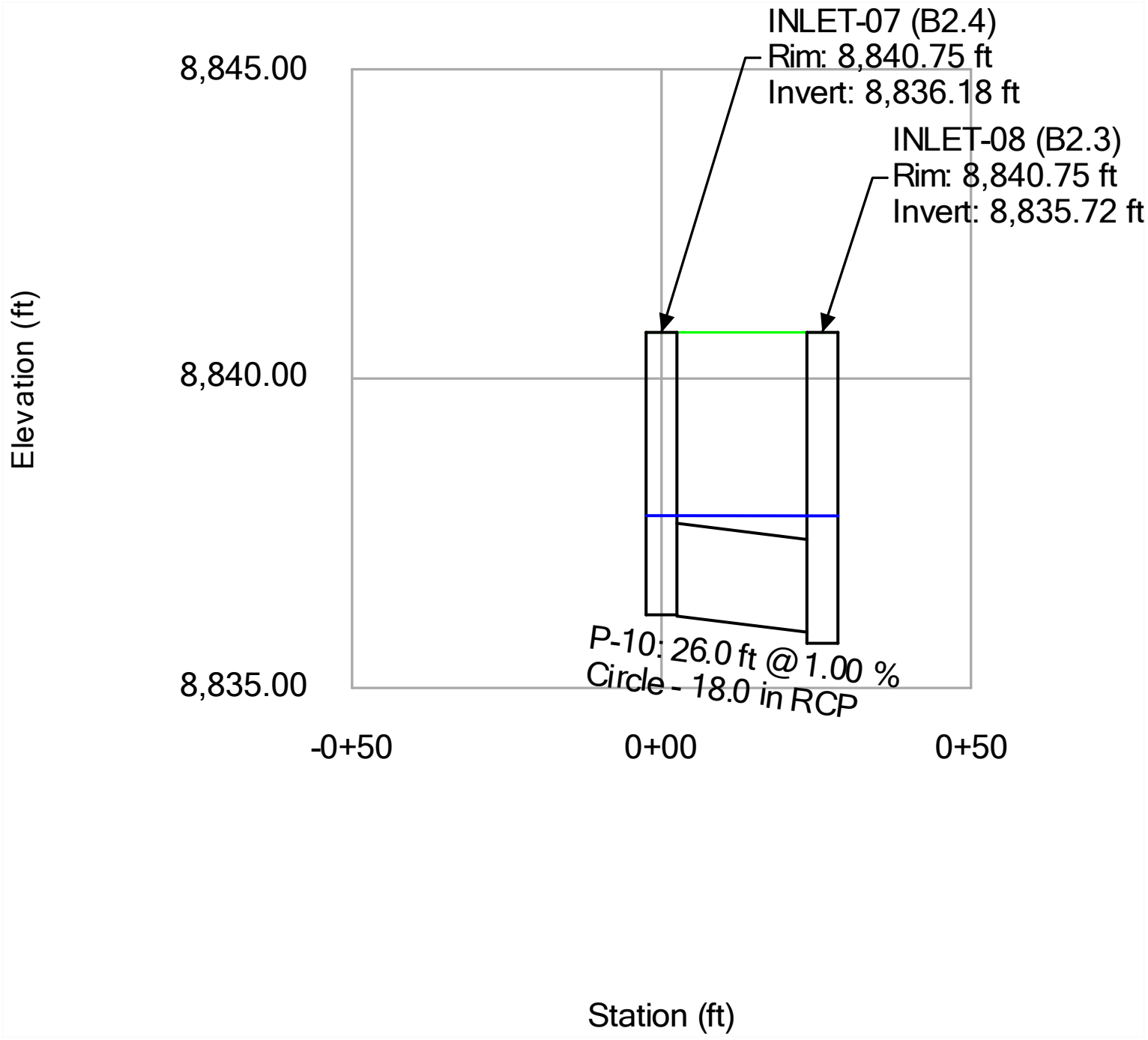

INLET-45 (C2.6)
Rim: 8,869.00 ft
Invert: 8,864.80 ft
INLET-46 (C2.7)
Rim: 8,870.93 ft
Invert: 8,864.21 ft
SDMH-17
Rim: 8,869.97 ft
Invert: 8,863.35 ft
P-49: 38.2 ft @ 1.00 %
Circle - 18.0 in RCP
P-50: 36.5 ft @ 1.00 %
Circle - 18.0 in RCP
8,875.00
8,870.00
8,865.00
8,860.00
Elevation (ft)
-0+50
0+00
0+50
1+00
Station (ft)


INLET-01 (B1.1)
Rim: 8,869.47 ft
Invert: 8,862.10 ft
INLET-02 (B1.2)
Rim: 8,869.47 ft
Invert: 8,861.64 ft
INLET-04 (B1.4)
Rim: 8,867.34 ft
Invert: 8,860.57 ft
INLET-05 (B1.5)
Rim: 8,867.68 ft
Invert: 8,860.11 ft
SDMH-01.1
Rim: 8,867.92 ft
Invert: 8,853.24 ft
FES-01
Rim: 8,855.11 ft
Invert: 8,852.78 ft
P-01: 26.0 ft @ 1.00 %
Circle - 18.0 in RCP
P-02: 57.0 ft @ 1.00 %
Circle - 18.0 in RCP
P-04: 26.0 ft @ 1.00 %
Circle - 18.0 in RCP
P-05: 10.8 ft @ 1.00 %
Circle - 24.0 in RCP
P-05.1: 46.3 ft @ 1.00 %
Circle - 24.0 in
8,870.00
8,865.00
8,860.00
8,855.00
8,850.00
Elevation (ft)
-0+50
0+00
0+50
1+00
1+50
2+00
Station (ft)

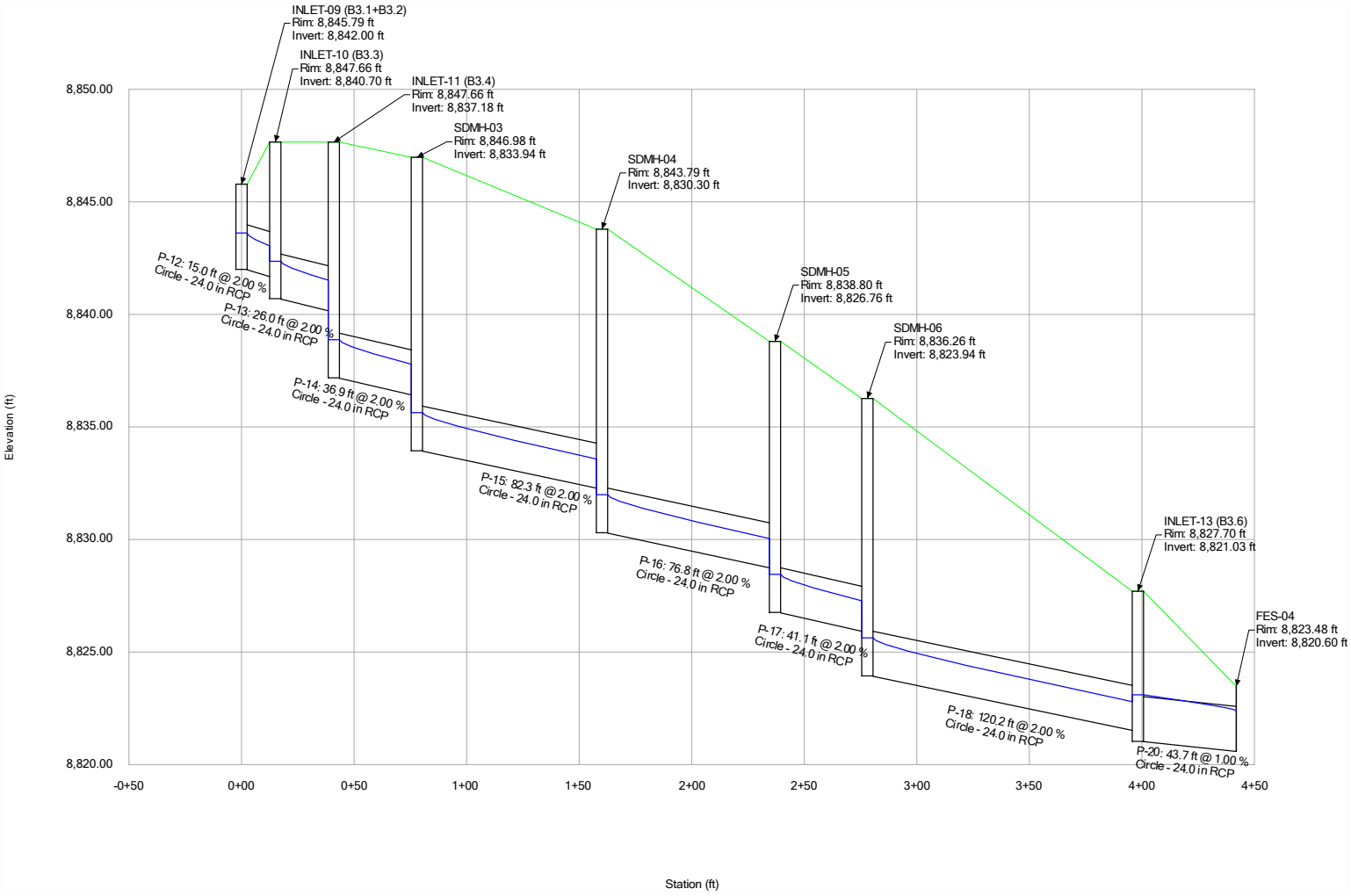

8,870.00
8,865.00
8,860.00
Elevation (ft)
INLET-04 (B1.4)
Rim: 8,867.34 ft
Invert: 8,860.57 ft
INLET-03 (B1.3)
Rim: 8,865.53 ft
Invert: 8,861.58 ft
P-03: 51.0 ft @ 1.00 %
Circle - 18.0 in RCP
-0+50
0+00
0+50
1+00
Station (ft)

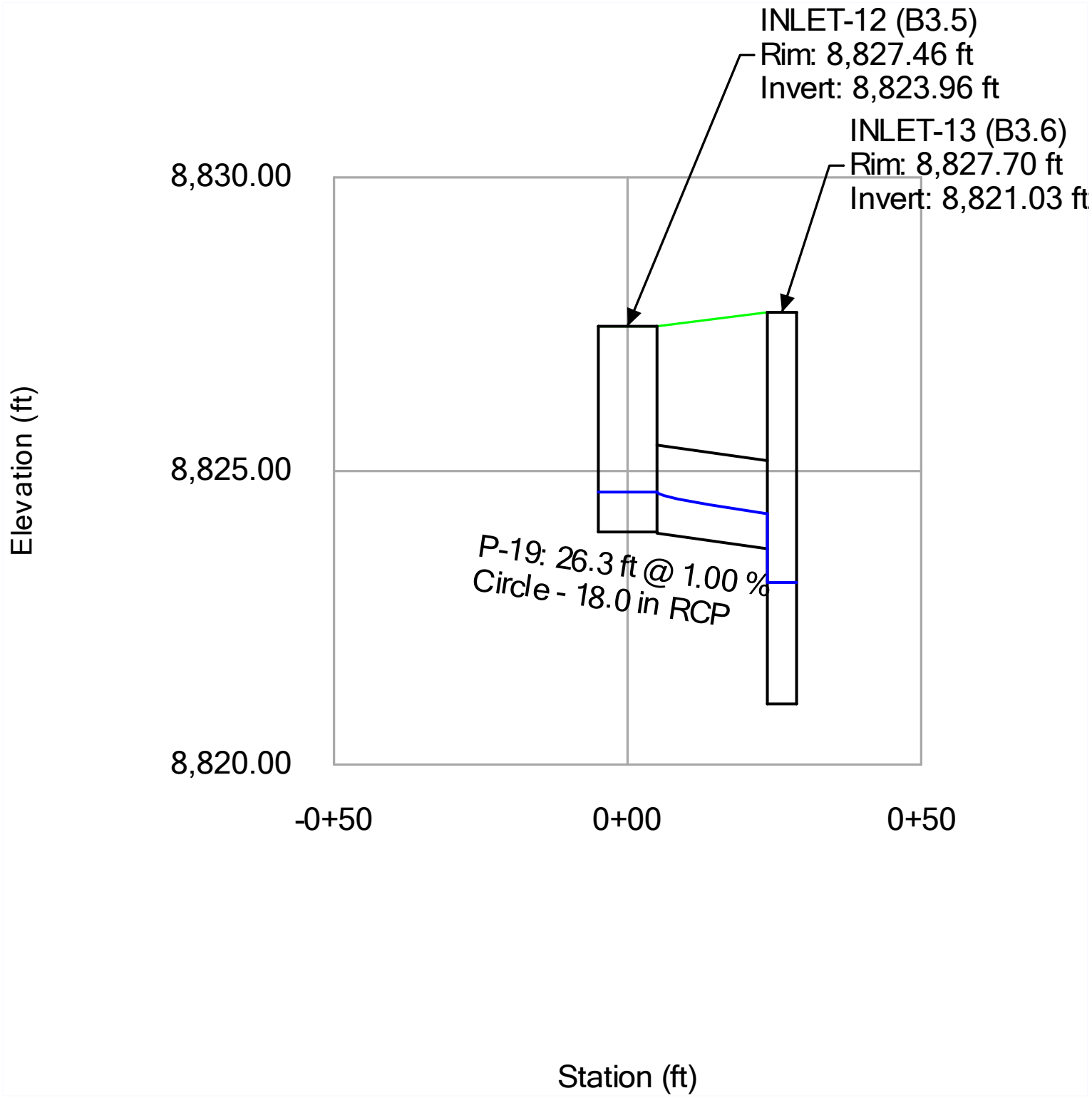
STORMCAD OUTPUT TABLES
West Mountain - 10W - 100-Year

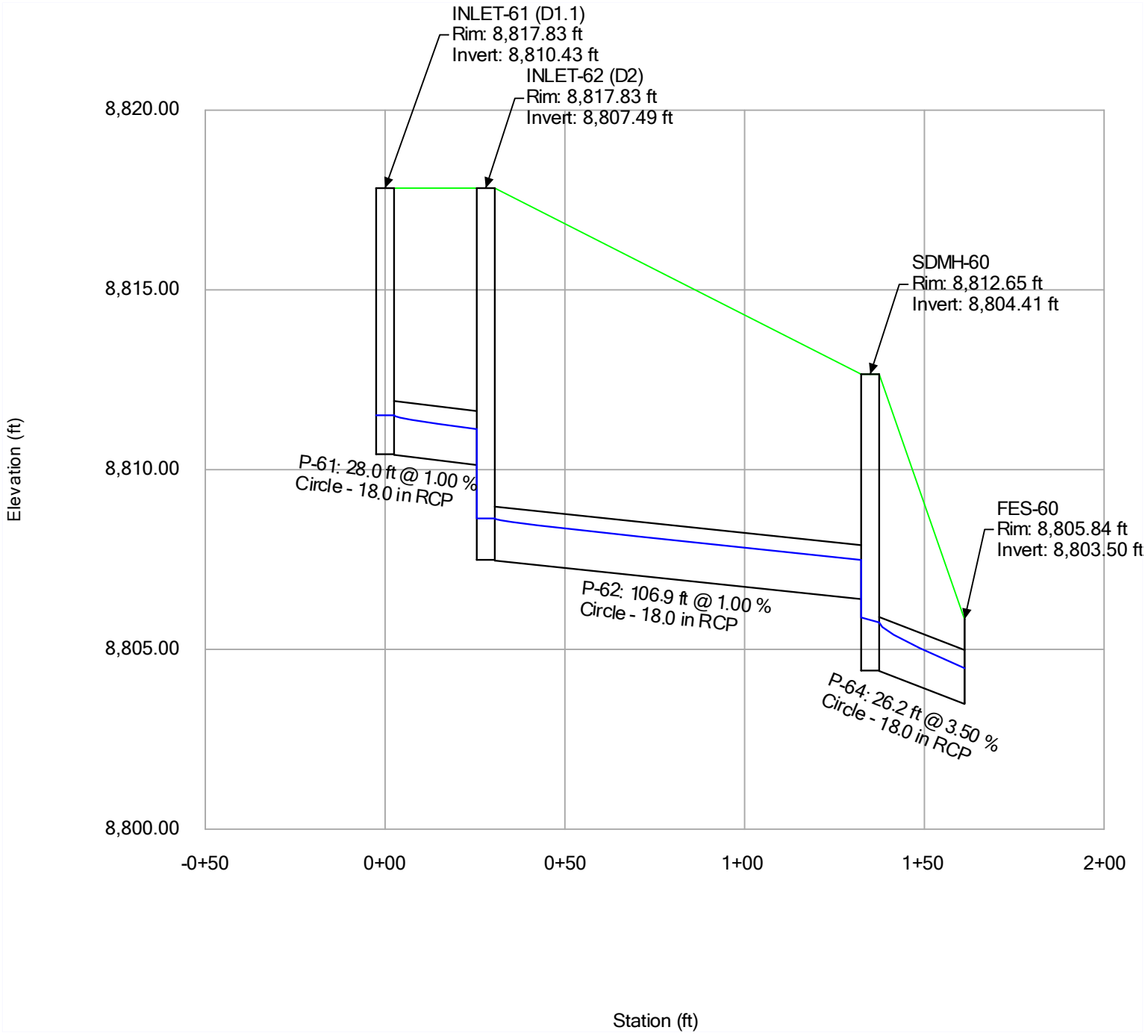


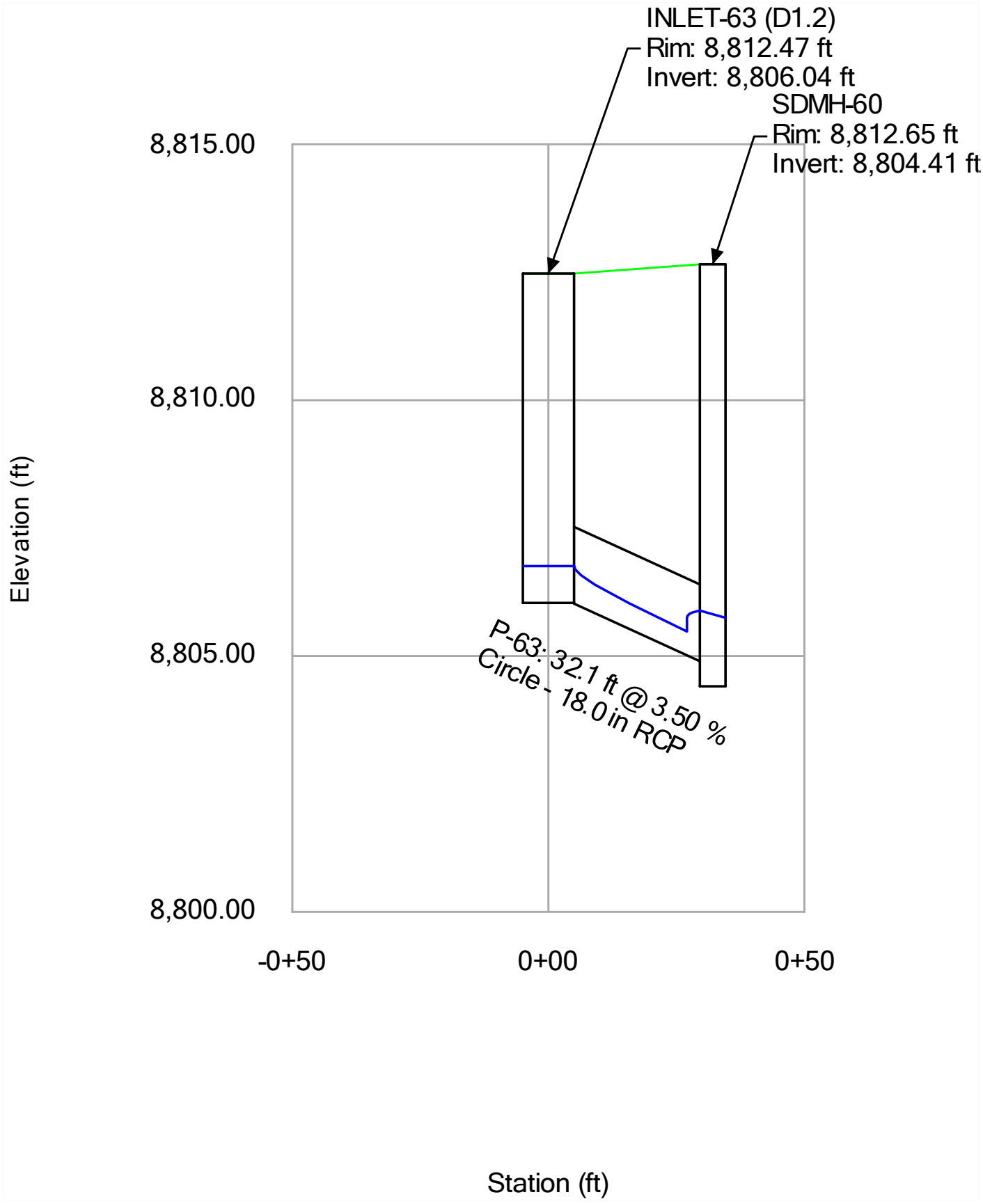

INLET-07 (B2.4)
Rim: 8,840.75 ft
Invert: 8,836.18 ft
INLET-08 (B2.3)
Rim: 8,840.75 ft
Invert: 8,835.72 ft
8,845.00
8,840.00
8,835.00
Elevation (ft)
P-10: 26.0 ft @ 1.00 %
Circle - 18.0 in RCP
-0+50
0+00
0+50
Station (ft)

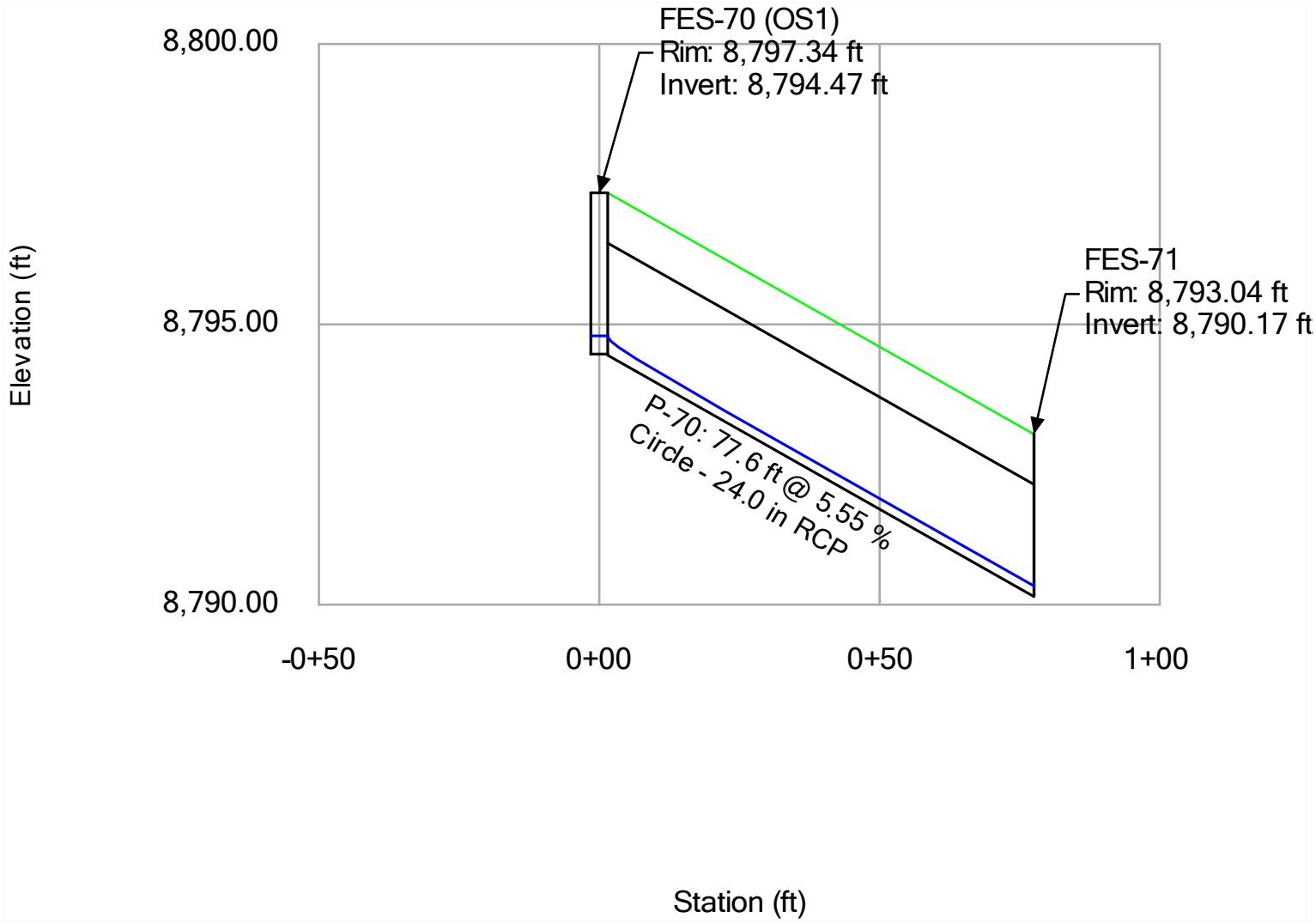
STORMCAD OUTPUT TABLES
West Mountain - 10W - 100-Year

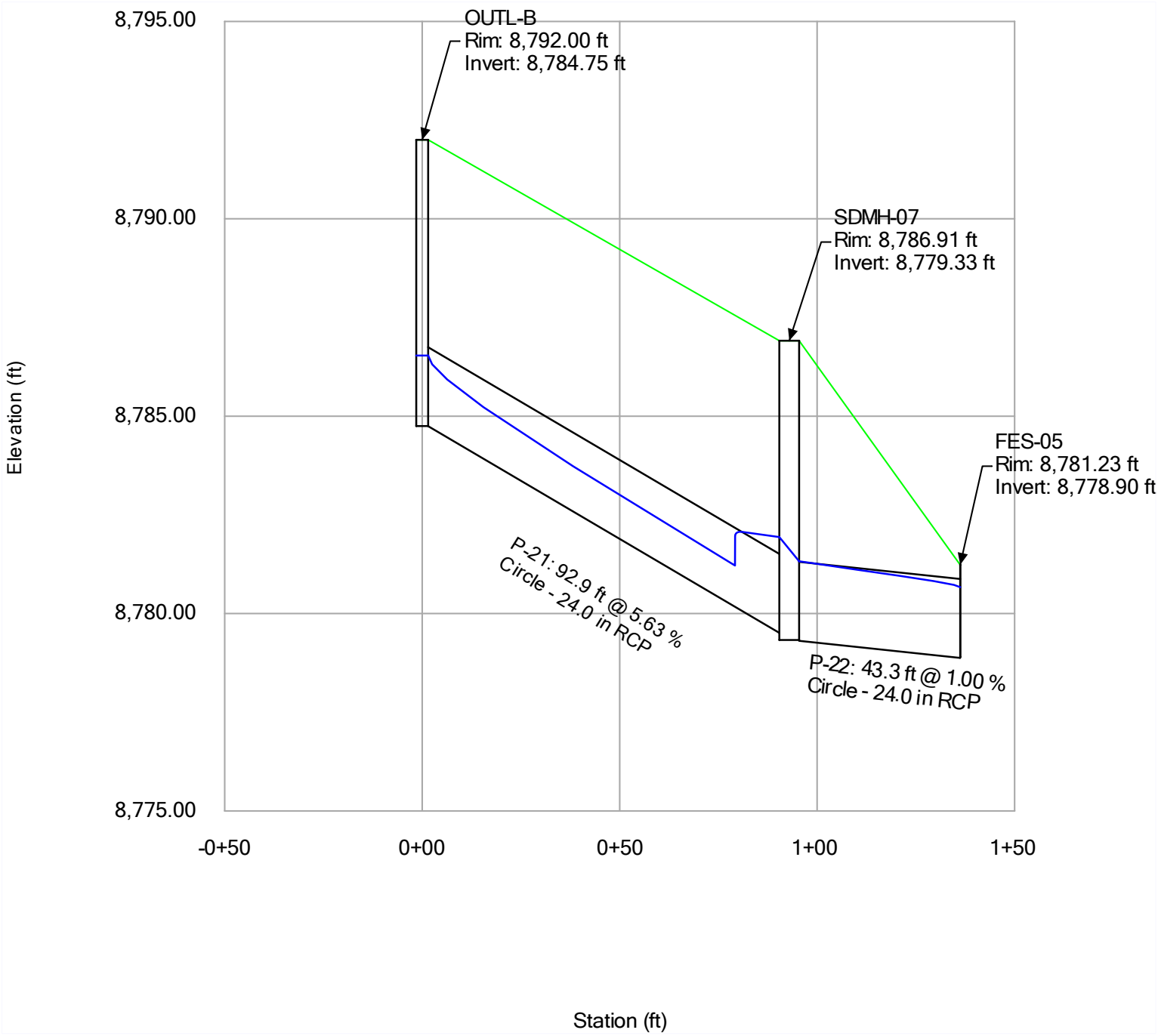


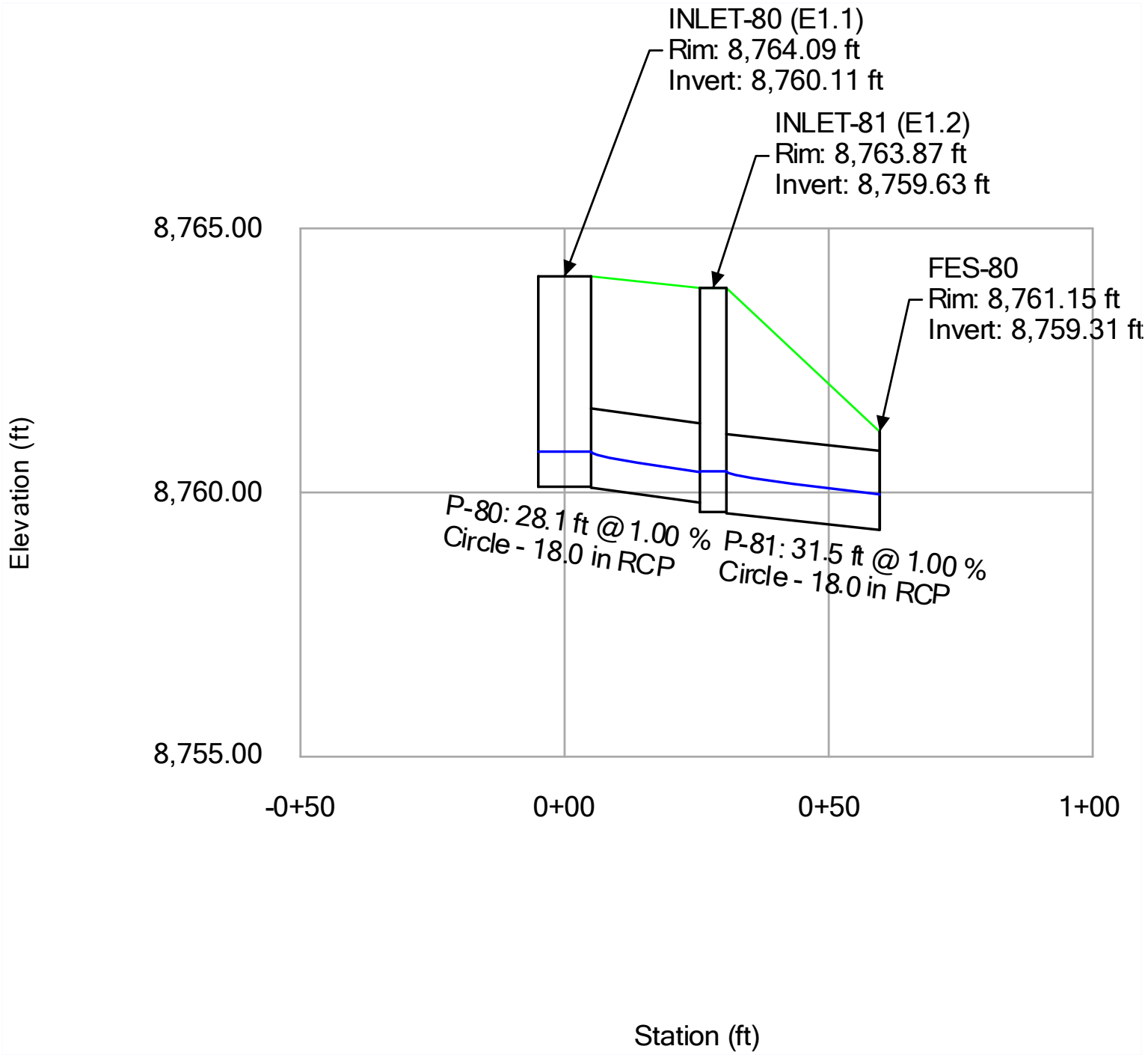

INLET-12 (B3.5)
Rim: 8,827.46 ft
Invert: 8,823.96 ft
INLET-13 (B3.6)
Rim: 8,827.70 ft
Invert: 8,821.03 ft
8,830.00
8,825.00
8,820.00
Elevation (ft)
P-19: 26.3 ft @ 1.00 %
Circle - 18.0 in RCP
-0+50
0+00
0+50
Station (ft)


INLET-61 (D1.1)
Rim: 8,817.83 ft
Invert: 8,810.43 ft
INLET-62 (D2)
Rim: 8,817.83 ft
Invert: 8,807.49 ft
SDMH-60
Rim: 8,812.65 ft
Invert: 8,804.41 ft
FES-60
Rim: 8,805.84 ft
Invert: 8,803.50 ft
P-61: 28.0 ft @ 1.00 %
Circle - 18.0 in RCP
P-62: 106.9 ft @ 1.00 %
Circle - 18.0 in RCP
P-64: 26.2 ft @ 3.50 %
Circle - 18.0 in RCP
8,820.00
8,815.00
8,810.00
8,805.00
8,800.00
Elevation (ft)
-0+50
0+00
0+50
1+00
1+50
2+00
Station (ft)


INLET-63 (D1.2)
Rim: 8,812.47 ft
Invert: 8,806.04 ft
SDMH-60
Rim: 8,812.65 ft
Invert: 8,804.41 ft
8,815.00
8,810.00
8,805.00
8,800.00
Elevation (ft)
P-63: 32.1 ft @ 3.50 %
Circle - 18.0 in RCP
-0+50
0+00
0+50
Station (ft)


FES-70 (OS1)
Rim: 8,797.34 ft
Invert: 8,794.47 ft
FES-71
Rim: 8,793.04 ft
Invert: 8,790.17 ft
P-70: 77.6 ft @ 5.55 %
Circle - 24.0 in RCP
8,800.00
8,795.00
8,790.00
Elevation (ft)
-0+50
0+00
0+50
1+00
Station (ft)


8,795.00
8,790.00
8,785.00
8,780.00
8,775.00
Elevation (ft)
-0+50
0+00
0+50
1+00
1+50
Station (ft)
OUTL-B
Rim: 8,792.00 ft
Invert: 8,784.75 ft
SDMH-07
Rim: 8,786.91 ft
Invert: 8,779.33 ft
FES-05
Rim: 8,781.23 ft
Invert: 8,778.90 ft
P-21: 92.9 ft @ 5.63 %
Circle - 24.0 in RCP
P-22: 43.3 ft @ 1.00 %
Circle - 24.0 in RCP


INLET-80 (E1.1)
Rim: 8,764.09 ft
Invert: 8,760.11 ft
INLET-81 (E1.2)
Rim: 8,763.87 ft
Invert: 8,759.63 ft
FES-80
Rim: 8,761.15 ft
Invert: 8,759.31 ft
P-80: 28.1 ft @ 1.00 %
Circle - 18.0 in RCP
P-81: 31.5 ft @ 1.00 %
Circle - 18.0 in RCP
8,765.00
8,760.00
8,755.00
Elevation (ft)
-0+50
0+00
0+50
1+00
Station (ft)

APPENDIX D

DETENTION BASIN/
WATER QUALITY ENHANCEMENT BMP'S

Pond Percent Imperviousness Calculations

Temporary Sediment Basin A4 Exhibit
Temporary Sediment Basin A4 Stage-Storage Discharge Calculations
Temporary Sediment Basin A4 Stage Storage Discharge Table

Pond B – FAA Method Detention Sizing
Pond B HEC-HMS Inflow Results
Pond B – MHFD-Detention_v4.07
Pond B Stage Storage Discharge Table

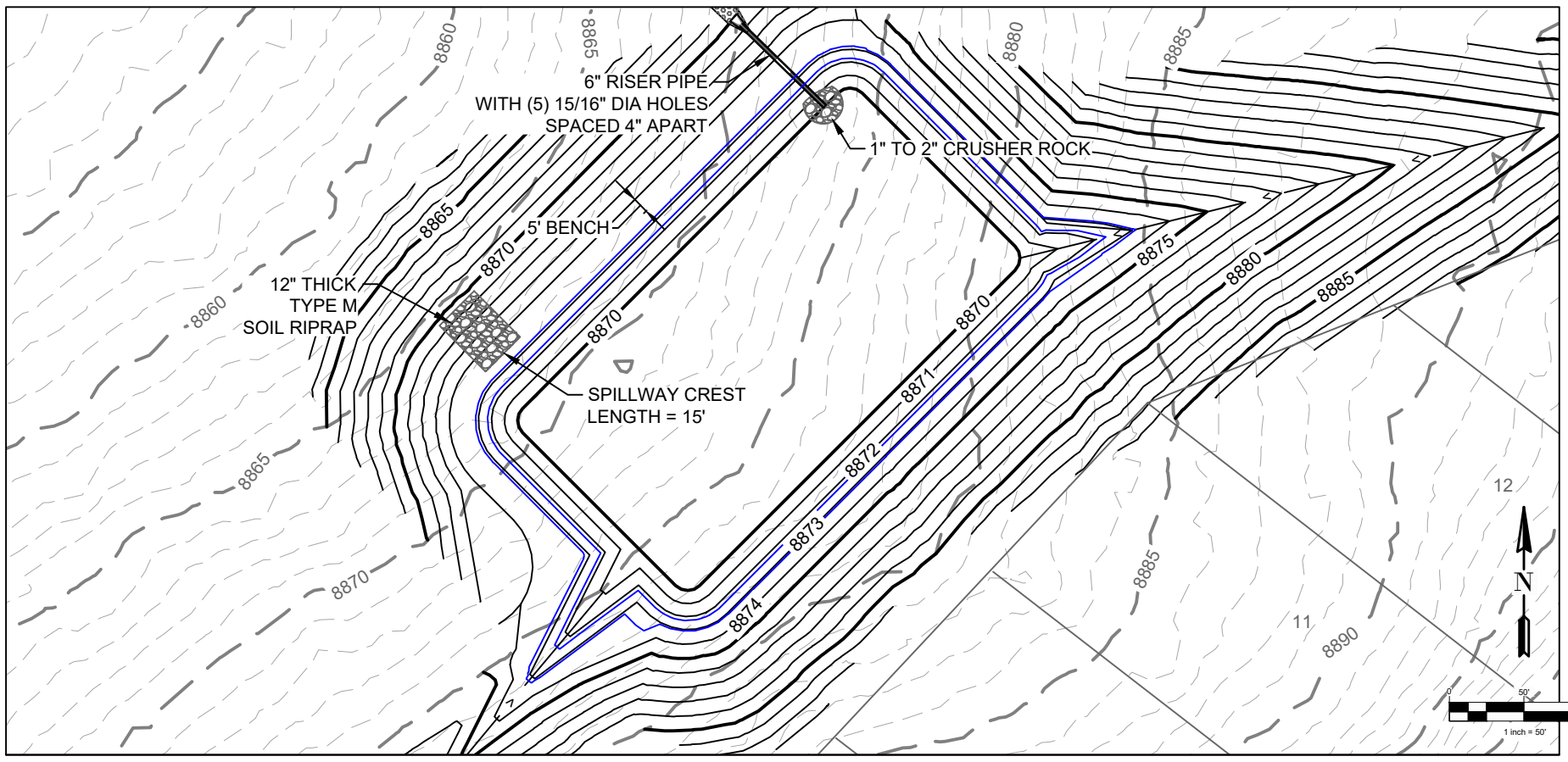
Temporary Sediment Pond C Exhibit
Temporary Sediment Pond C Stage-Storage Discharge Calculations
Temporary Sediment Basin C Stage Storage Discharge Table

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - F1 - 10W
Prepared By: JNS

Pond Percent Impervious Calculations

Basin Id	Design Point	Basin Area (Ac)	Historic Flow Area	Paved Street, Roof, Drives, Walks Area	Single Family Lot Area	Single Family Lot Area	Multi-family Lots Area	Gravel Maint Access Area	EDBs Area	Weighted % Impervious
			5%	95%	35%	55%	70%	60%	25%	
A4.1	A4.1	2.11	1.00	0.61		0.49				42.8%
A4.2	A4.2	0.48		0.48						95.0%
A4.3	A4.3	7.33	3.09			3.77			0.47	32.0%
Temp Sed Pond A4		9.92	4.09	1.09		4.27			0.47	37.4%
B	B	5.63	1.48			0.18	3.24	0.06	0.67	47.0%
B1.1	B1.1	2.49	0.02	0.63		1.84				64.8%
B1.2	B1.2	1.74	0.19	0.58	0.97					51.6%
B1.3	B1.3	4.02	1.26		2.75					25.6%
B1.4	B1.4	0.89	0.25	0.45		0.19				61.6%
B1.5	B1.5	1.19	0.24	0.66			0.28			70.6%
B2.1	B2.1	7.77	0.33		2.56		4.88			55.7%
B2.2	B2.2	0.52	0.04	0.48						87.3%
B2.3	B2.3	0.20	0.02	0.18						86.0%
B2.4	B2.4	0.40	0.08	0.32						77.0%
B3.1	B3.1	3.54					3.54			70.0%
B3.2	B3.2	3.04					3.04			70.0%
B3.3	B3.3	0.33		0.33						95.0%
B3.4	B3.4	0.28		0.28						95.0%
B3.5	B3.5	1.13	0.35	0.10			0.68			52.0%
B3.6	B3.6	0.15		0.15						95.0%
B4	B4	4.45	0.78	0.95		2.72				54.7%
Pond B		37.77	5.05	5.12	6.28	4.93	15.66	0.06	0.67	56.1%
C	C	1.71	1.14						0.57	11.7%
C1	C1	2.92	0.52	0.49	1.90					39.7%
C2.1	C2.1	0.78	0.32	0.46						57.8%
C2.2	C2.2	0.41	0.05	0.36						84.7%
C2.3	C2.3	3.44	1.41	0.15	1.88					25.4%
C2.4	C2.4	1.05	0.35	0.09	0.61					30.1%
C2.5	C2.5	0.16	0.03	0.12						75.4%
C2.6	C2.6	1.38	0.70	0.34	0.34					34.5%
C2.7	C2.7	0.48	0.13	0.35						70.3%
Temp Sed Pond C		12.34	4.67	2.36	4.74				0.57	34.7%



TEMP SED BASIN VOLUME CALCULATION PER MHFD DETAIL SC-7

BASINS	DEVELOPED?	AREA (AC)	IMPERVIOUSNESS	ADDITIONAL VOLUME PER TABLE SB-1 (FT^3/AC)	VOLUME REQ (FT^3)
A4.1	Y	2.11	43%	2030	4283
A4.2	Y	0.48	95%	6460	3101
A4.3	Y	7.33	32%	1600	11728
TOTAL DEVELOPED AREA		9.92	-	3600	35712
				TOTAL REQUIRED VOLUME	54824

Elev	Stage	Notes	Area		Volume		
					Incr.	Total	Total
			[SF]	[AC]	[CF]	[CF]	[AC-FT]
8870.00	0.00		11312	0.2597	0	0	0
8870.25	0.25		11759	0.2699	2884	2884	0.0662
8870.50	0.50		12218	0.2805	2997	5881	0.1350
8870.75	0.75		12710	0.2918	3116	8997	0.2065
8871.00	1.00		13218	0.3034	3241	12238	0.2809
8871.25	1.25		13728	0.3152	3368	15606	0.3583
8871.50	1.50		14254	0.3272	3498	19104	0.4386
8871.58	1.58	Orifice 1	14425	0.3312	1147	20251	0.4649
8871.75	1.75		14793	0.3396	2484	22735	0.5219
8871.91	1.91	Orifice 2	15146	0.3477	2395	25130	0.5769
8872.00	2.00		15330	0.3519	1371	26501	0.6084
8872.24	2.24	Orifice 3	15892	0.3648	3747	30248	0.6944
8872.25	2.25		15915	0.3654	159	30407	0.6980
8872.50	2.50	10-Year Max Depth	16494	0.3787	4051	34458	0.7910
8872.57	2.57	Orifice 4	16658	0.3824	1160	35618	0.8177
8872.75	2.75		17082	0.3921	3037	38655	0.8874
8872.90	2.90	Orifice 5	17435	0.4003	2589	41244	0.9468
8873.00	3.00	Riser Pipe Opening/Spillway Invert	17674	0.4057	1755	42999	0.9871
8873.10	3.10	100-Year Max Depth	18181	0.4174	1793	44792	1.0283
8873.25	3.25		18345	0.4211	2739	47531	1.0912
8873.50	3.50		18996	0.4361	4668	52199	1.1983
8873.75	3.75		19667	0.4515	4833	57032	1.3093
8874.00	4.00		20243	0.4647	4989	62021	1.4238

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

WEST MOUNTAIN - F1
10W.1 & 11W

TEMPORARY SEDIMENT BASIN
A4

DATE: 02/02/2026
CREATED BY: JNS
SHEET 1

2/2/2026 9:08 AM - X:\GRAND PARK\DOCUMENTS\REPORTS\DRAINAGE\16.1 - FILING 1 - 8WB, 9W, 10W, 11W\PHASE 3 - 10W\D - POND & WQ CALCS\POND A\TEMP SEDIMENT POND EXHIBIT - POND A4.DWG;

Project Name: West Mountain - F1 - 10W.1 & 11W
Prepared By: JNS

Temporary Sediment Basin A4 - Stage-Storage Discharge Calculations

User Input	Orifice Diameter (in) =	0.9375
	Spillway Width (ft) =	15
	Bottom Elevation (ft) =	8870

Pond C - Pond Volume Calculations							Cicular Orifice 1		Cicular Orifice 2		Cicular Orifice 3		Cicular Orifice 4		Cicular Orifice 5		Riser Pipe Opening		Spillway		Total Flow
							Cd = 0.6		Cd = 0.6		Cd = 0.6		Cd = 0.6		Cd = 0.6		Cd = 0.6				
							Diameter (in) = 0.9375		Diameter (in) = 0.9375		Diameter (in) = 0.9375		Diameter (in) = 0.9375		Diameter (in) = 0.9375		Diameter (in) = 8		Length (ft) = 15		
							CL = 8871.29		CL = 8871.63		CL = 8871.96		CL = 8872.29		CL = 8872.63		CL = 8872.00		Cbcw = 3		
							FL = 8871.25		FL = 8871.583333		FL = 8871.916667		FL = 8872.25		FL = 8872.583333		FL = 8873		Z = 4		
Elev	Stage	Notes	Area		Volume			A(sf) = 0.00616		A(sf) = 0.00616		A(sf) = 0.00616		A(sf) = 0.00616		A(sf) = 0.00616		A(sf) = 0.19635		Invert = 8873	
					Incr.	Total	Total	H	Q	H	Q	H	Q	H	Q	H	Q	H	Q	H	Q	Q
			[SF]	[AC]	[CF]	[CF]	[AC-FT]	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(cfs)
8870.00	0.00		11312	0.2597	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8870.25	0.25		11759	0.2699	2884	2884	0.0662	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8870.50	0.50		12218	0.2805	2997	5881	0.1350	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8870.75	0.75		12710	0.2918	3116	8997	0.2065	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8871.00	1.00		13218	0.3034	3241	12238	0.2809	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8871.25	1.25		13728	0.3152	3368	15606	0.3583	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8871.50	1.50		14254	0.3272	3498	19104	0.4386	0.21	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
8871.58	1.58	Orifice 1	14425	0.3312	1147	20251	0.4649	0.29	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
8871.75	1.75		14793	0.3396	2484	22735	0.5219	0.46	0.02	0.12	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
8871.91	1.91	Orifice 2	15146	0.3477	2395	25130	0.5769	0.62	0.02	0.28	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
8872.00	2.00		15330	0.3519	1371	26501	0.6084	0.71	0.02	0.37	0.02	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
8872.24	2.24	Orifice 3	15892	0.3648	3747	30248	0.6944	0.95	0.03	0.61	0.02	0.28	0.02	0.00	0.00	0.00	0.00	0.24	0.46	0.00	0.00	0.53
8872.25	2.25		15915	0.3654	159	30407	0.6980	0.96	0.03	0.62	0.02	0.29	0.02	0.00	0.00	0.00	0.00	0.25	0.47	0.00	0.00	0.54
8872.50	2.50	10-Year Max Depth	16494	0.3787	4051	34458	0.7910	1.21	0.03	0.87	0.03	0.54	0.02	0.21	0.01	0.00	0.00	0.50	0.67	0.00	0.00	0.76
8872.57	2.57	Orifice 4	16658	0.3824	1160	35618	0.8177	1.28	0.03	0.94	0.03	0.61	0.02	0.28	0.02	0.00	0.00	0.57	0.71	0.00	0.00	0.81
8872.75	2.75		17082	0.3921	3037	38655	0.8874	1.46	0.04	1.12	0.03	0.79	0.03	0.46	0.02	0.12	0.01	0.75	0.82	0.00	0.00	0.94
8872.90	2.90	Orifice 5	17435	0.4003	2589	41244	0.9468	1.61	0.04	1.27	0.03	0.94	0.03	0.61	0.02	0.27	0.02	0.90	0.90	0.00	0.00	1.04
8873.00	3.00	Riser Pipe Opening/Spillway Invert	17674	0.4057	1755	42999	0.9871	1.71	0.04	1.37	0.03	1.04	0.03	0.71	0.02	0.37	0.02	1.00	0.95	0.00	0.00	1.09
8873.10	3.10	100-Year Max Depth	18181	0.4174	1793	44792	1.0283	1.81	0.04	1.47	0.04	1.14	0.03	0.81	0.03	0.47	0.02	1.10	0.99	0.10	1.45	2.60
8873.25	3.25		18345	0.4211	2739	47531	1.0912	1.96	0.04	1.62	0.04	1.29	0.03	0.96	0.03	0.62	0.02	1.25	1.06	0.25	5.93	7.15
8873.50	3.50		18996	0.4361	4668	52199	1.1983	2.21	0.04	1.87	0.04	1.54	0.04	1.21	0.03	0.87	0.03	1.50	1.16	0.50	17.61	18.95
8873.75	3.75		19667	0.4515	4833	57032	1.3093	2.46	0.05	2.12	0.04	1.79	0.04	1.46	0.04	1.12	0.03	1.75	1.25	0.75	33.90	35.35
8874.00	4.00		20243	0.4647	4989	62021	1.4238	2.71	0.05	2.37	0.05	2.04	0.04	1.71	0.04	1.37	0.03	2.00	1.34	1.00	54.60	56.15

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - F1 - 10W.1 & 11W
Prepared By: JNS

Temp Sed Basin A4 Stage Storage Discharge Table

Temp Sed Basin A4 Area-Elevation-Discharge Table			
Stage (ft)	Elevation (ft)	Area (ft^2)	Discharge (cfs)
0	8870	11312	0.0
0.25	8870.25	11759	0.0
0.5	8870.5	12218	0.0
0.75	8870.75	12710	0.0
1	8871	13218	0.0
1.25	8871.25	13728	0.0
1.5	8871.5	14254	0.0
1.58	8871.58	14425	0.0
1.75	8871.75	14793	0.0
1.91	8871.91	15146	0.0
2	8872	15330	0.0
2.24	8872.24	15892	0.5
2.25	8872.25	15915	0.5
2.5	8872.5	16494	0.8
2.57	8872.57	16658	0.8
2.75	8872.75	17082	0.9
2.9	8872.9	17435	1.0
3	8873	17674	1.1
3.1	8873.1	18181	2.6
3.25	8873.25	18345	7.1
3.5	8873.5	18996	18.9
3.75	8873.75	19667	35.4
4	8874	20243	56.1

DETENTION VOLUME BY THE MODIFIED FAA METHOD

Project: West Mountain - F1 - 10W

Basin ID: Pond B

(For catchments less than 160 acres only. For larger catchments, use hydrograph routing method)

(NOTE: for catchments larger than 90 acres, CUHP hydrograph and routing are recommended)

Determination of MINOR Detention Volume Using Modified FAA Method

Design Information (Input):

Catchment Drainage Imperviousness	I_a =	56.00	percent
Catchment Drainage Area	A =	37.710	acres
Predevelopment NRCS Soil Group	Type =	D	A, B, C, or D
Return Period for Detention Control	T =	10	years (2, 5, 10, 25, 50, or 100)
Time of Concentration of Watershed	Tc =	21	minutes
Allowable Unit Release Rate	q =	0.38	cfs/acre
One-hour Precipitation	P_1 =	1.01	inches
Design Rainfall IDF Formula $i = C_1 * P_1/(C_2+T_c)^{C_3}$			
Coefficient One	C_1 =	28.50	
Coefficient Two	C_2 =	10	
Coefficient Three	C_3 =	0.786	

Determination of Average Outflow from the Basin (Calculated):

Runoff Coefficient	C =	0.49	
Inflow Peak Runoff	Qp-in =	36.14	cfs
Allowable Peak Outflow Rate	Qp-out =	**14.29**	cfs
Mod. FAA Minor Storage Volume =		33,605	**cubic feet**
Mod. FAA Minor Storage Volume =		**0.771**	**acre-ft**

1 <- Enter Rainfall Duration Incremental Increase Value Here (e.g. 5 for 5-Minutes)

Rainfall Duration minutes (input)	Rainfall Intensity inches / hr (output)	Inflow Volume acre-feet (output)	Adjustment Factor "m" (output)	Average Outflow cfs (output)	Outflow Volume acre-feet (output)	Storage Volume acre-feet (output)
0	0.00	0.000	0.00	0.00	0.000	0.000
1	4.37	0.111	1.00	14.29	0.020	0.092
2	4.08	0.208	1.00	14.29	0.039	0.168
3	3.83	0.293	1.00	14.29	0.059	0.234
4	3.62	0.368	1.00	14.29	0.079	0.289
5	3.43	0.436	1.00	14.29	0.098	0.338
6	3.26	0.497	1.00	14.29	0.118	0.379
7	3.10	0.553	1.00	14.29	0.138	0.415
8	2.97	0.604	1.00	14.29	0.157	0.447
9	2.84	0.652	1.00	14.29	0.177	0.474
10	2.73	0.695	1.00	14.29	0.197	0.499
11	2.63	0.736	1.00	14.29	0.217	0.520
12	2.54	0.774	1.00	14.29	0.236	0.538
13	2.45	0.810	1.00	14.29	0.256	0.554
14	2.37	0.844	1.00	14.29	0.276	0.568
15	2.29	0.875	1.00	14.29	0.295	0.580
16	2.22	0.905	1.00	14.29	0.315	0.590
17	2.16	0.934	1.00	14.29	0.335	0.599
18	2.10	0.961	1.00	14.29	0.354	0.607
19	2.04	0.987	1.00	14.29	0.374	0.613
20	1.99	1.011	1.00	14.29	0.394	0.618
21	1.94	1.035	0.99	14.16	0.410	0.625
22	1.89	1.057	0.97	13.84	0.419	0.638
23	1.84	1.079	0.95	13.55	0.429	0.650
24	1.80	1.100	0.93	13.28	0.439	0.661
25	1.76	1.120	0.91	13.04	0.449	0.671
26	1.72	1.139	0.90	12.81	0.459	0.680
27	1.68	1.158	0.88	12.60	0.469	0.689
28	1.65	1.176	0.87	12.41	0.478	0.697
29	1.62	1.193	0.86	12.22	0.488	0.705
30	1.58	1.210	0.84	12.06	0.498	0.712
31	1.55	1.226	0.83	11.90	0.508	0.718
32	1.53	1.242	0.82	11.75	0.518	0.724
33	1.50	1.257	0.81	11.61	0.528	0.730
34	1.47	1.272	0.80	11.48	0.538	0.735
35	1.44	1.287	0.79	11.35	0.547	0.739
36	1.42	1.301	0.79	11.24	0.557	0.744
37	1.40	1.315	0.78	11.13	0.567	0.748
38	1.37	1.328	0.77	11.02	0.577	0.751
39	1.35	1.341	0.76	10.92	0.587	0.754
40	1.33	1.354	0.76	10.83	0.597	0.757
41	1.31	1.366	0.75	10.74	0.606	0.760
42	1.29	1.378	0.75	10.65	0.616	0.762
43	1.27	1.390	0.74	10.57	0.626	0.764
44	1.25	1.402	0.73	10.49	0.636	0.766
45	1.23	1.413	0.73	10.42	0.646	0.767
46	1.22	1.424	0.72	10.35	0.656	0.769
47	1.20	1.435	0.72	10.28	0.665	0.770
48	1.18	1.446	0.71	10.21	0.675	0.770
49	1.17	1.456	0.71	10.15	0.685	0.771
50	1.15	1.466	0.71	10.09	0.695	0.771
51	1.14	1.476	0.70	10.03	0.705	0.771
52	1.12	1.486	0.70	9.98	0.715	0.771
53	1.11	1.496	0.69	9.92	0.725	0.771
54	1.10	1.505	0.69	9.87	0.734	0.771
55	1.08	1.515	0.69	9.82	0.744	0.770
56	1.07	1.524	0.68	9.78	0.754	0.770
57	1.06	1.533	0.68	9.73	0.764	0.769
58	1.04	1.542	0.68	9.69	0.774	0.768
59	1.03	1.550	0.67	9.64	0.784	0.767
60	1.02	1.559	0.67	9.60	0.793	0.765

Mod. FAA Minor Storage Volume (cubic ft.) = 33,605

Mod. FAA Minor Storage Volume (acre-ft.) = 0.7715

Determination of MAJOR Detention Volume Using Modified FAA Method

Design Information (Input):

Catchment Drainage Imperviousness	I_a =	56.00	percent
Catchment Drainage Area	A =	37.710	acres
Predevelopment NRCS Soil Group	Type =	D	A, B, C, or D
Return Period for Detention Control	T =	100	years (2, 5, 10, 25, 50, or 100)
Time of Concentration of Watershed	Tc =	21	minutes
Allowable Unit Release Rate	q =	1.02	cfs/acre
One-hour Precipitation	P_1 =	1.64	inches
Design Rainfall IDF Formula $i = C_1 * P_1/(C_2+T_c)^{C_3}$			
Coefficient One	C_1 =	28.50	
Coefficient Two	C_2 =	10	
Coefficient Three	C_3 =	0.786	

Determination of Average Outflow from the Basin (Calculated):

Runoff Coefficient	C =	0.62	
Inflow Peak Runoff	Qp-in =	74.24	cfs
Allowable Peak Outflow Rate	Qp-out =	**38.46**	cfs
Mod. FAA Major Storage Volume =		51,236	**cubic feet**
Mod. FAA Major Storage Volume =		**1.176**	**acre-ft**

Rainfall Duration minutes (input)	Rainfall Intensity inches / hr (output)	Inflow Volume acre-feet (output)	Adjustment Factor "m" (output)	Average Outflow cfs (output)	Outflow Volume acre-feet (output)	Storage Volume acre-feet (output)
0	0.00	0.000	0.00	0.00	0.000	0.000
1	7.10	0.229	1.00	38.46	0.053	0.176
2	6.63	0.427	1.00	38.46	0.106	0.321
3	6.22	0.601	1.00	38.46	0.159	0.442
4	5.87	0.756	1.00	38.46	0.212	0.545
5	5.56	0.896	1.00	38.46	0.265	0.631
6	5.29	1.022	1.00	38.46	0.318	0.704
7	5.04	1.136	1.00	38.46	0.371	0.766
8	4.82	1.242	1.00	38.46	0.424	0.818
9	4.62	1.339	1.00	38.46	0.477	0.862
10	4.44	1.429	1.00	38.46	0.530	0.899
11	4.27	1.513	1.00	38.46	0.583	0.930
12	4.12	1.591	1.00	38.46	0.636	0.955
13	3.98	1.664	1.00	38.46	0.689	0.976
14	3.84	1.733	1.00	38.46	0.742	0.992
15	3.72	1.799	1.00	38.46	0.795	1.004
16	3.61	1.860	1.00	38.46	0.848	1.012
17	3.50	1.919	1.00	38.46	0.901	1.018
18	3.41	1.974	1.00	38.46	0.954	1.021
19	3.31	2.027	1.00	38.46	1.007	1.021
20	3.23	2.078	1.00	38.46	1.060	1.018
21	3.14	2.126	0.99	38.11	1.102	1.024
22	3.07	2.173	0.97	37.25	1.129	1.044
23	2.99	2.217	0.95	36.47	1.155	1.062
24	2.92	2.260	0.93	35.75	1.182	1.078
25	2.86	2.301	0.91	35.09	1.208	1.093
26	2.80	2.341	0.90	34.48	1.235	1.106
27	2.74	2.379	0.88	33.91	1.261	1.118
28	2.68	2.416	0.87	33.39	1.288	1.128
29	2.62	2.451	0.86	32.90	1.314	1.137
30	2.57	2.486	0.84	32.44	1.341	1.145
31	2.52	2.519	0.83	32.02	1.367	1.152
32	2.48	2.552	0.82	31.62	1.394	1.158
33	2.43	2.583	0.81	31.24	1.420	1.163
34	2.39	2.614	0.80	30.89	1.447	1.167
35	2.35	2.644	0.79	30.56	1.473	1.171
36	2.31	2.673	0.79	30.24	1.500	1.173
37	2.27	2.701	0.78	29.94	1.526	1.175
38	2.23	2.729	0.77	29.66	1.553	1.176
39	2.19	2.755	0.76	29.40	1.579	1.176
40	2.16	2.781	0.76	29.14	1.606	1.176
41	2.13	2.807	0.75	28.90	1.632	1.175
42	2.09	2.832	0.75	28.67	1.659	1.173
43	2.06	2.856	0.74	28.45	1.685	1.171
44	2.03	2.880	0.73	28.24	1.712	1.168
45	2.00	2.903	0.73	28.04	1.738	1.165
46	1.98	2.926	0.72	27.85	1.765	1.162
47	1.95	2.948	0.72	27.67	1.791	1.157
48	1.92	2.970	0.71	27.49	1.818	1.153
49	1.90	2.992	0.71	27.32	1.844	1.148
50	1.87	3.013	0.71	27.16	1.870	1.142
51	1.85	3.033	0.70	27.00	1.897	1.136
52	1.82	3.053	0.70	26.85	1.923	1.130
53	1.80	3.073	0.69	26.71	1.950	1.123
54	1.78	3.093	0.69	26.57	1.976	1.116
55	1.76	3.112	0.69	26.44	2.003	1.109
56	1.74	3.131	0.68	26.31	2.029	1.101
57	1.72	3.149	0.68	26.19	2.056	1.093
58	1.70	3.167	0.68	26.07	2.082	1.085
59	1.68	3.185	0.67	25.95	2.109	1.076
60	1.66	3.203	0.67	25.84	2.135	1.067

Mod. FAA Major Storage Volume (cubic ft.) = 51,236

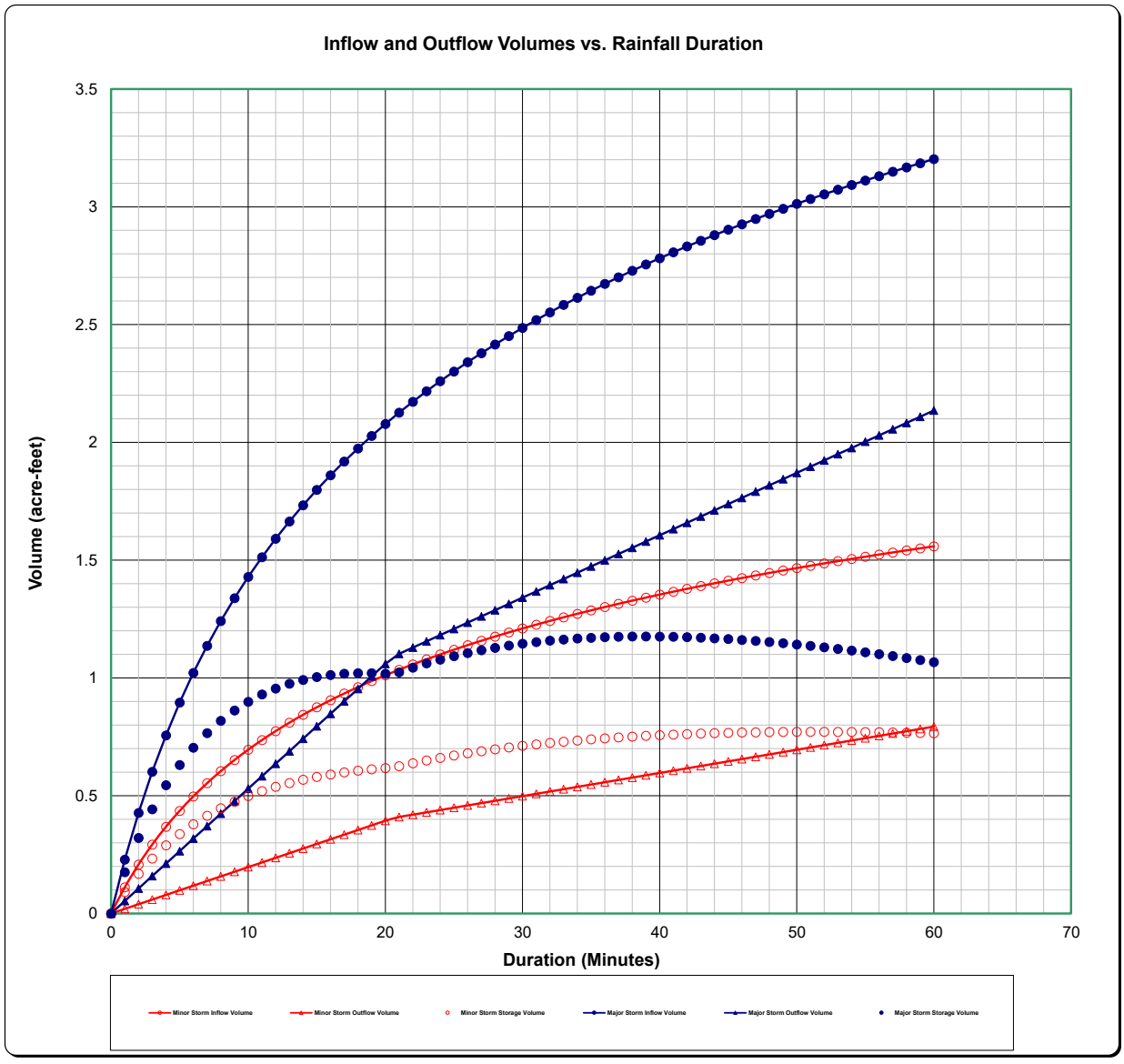
Mod. FAA Major Storage Volume (acre-ft.) = 1.1762

UDFCD DETENTION BASIN VOLUME ESTIMATING WORKBOOK Version 2.35, Released January 2015

DETENTION VOLUME BY THE MODIFIED FAA METHOD

Project: West Mountain - F1 - 10W

Basin ID: Pond B



Project: West Mountain - F1 - 10W
Prepared by: JNS
Date: 1/12/2026

Pond B HEC-HMS Inflow results

Existing Conditions Inflow Time-Series Results

Peak Flow Rate (cfs)	Storm Return Interval (yr)					
	Q2	Q5	Q10	Q25	Q50	Q100
	5.5	10.1	13.9	21.5	28.7	37
Time (hr:min)	Storm Return Interval (yr)					
	Q2	Q5	Q10	Q25	Q50	Q100
0:00	0.0	0.0	0.0	0.0	0.0	0.0
0:05	0.0	0.0	0.0	0.0	0.0	0.0
0:10	0.0	0.0	0.0	0.1	0.1	0.3
0:15	0.2	0.5	0.8	1.7	2.5	3.6
0:20	2.4	4.5	6.9	11.3	15.6	20.7
0:25	5.0	8.8	13.1	20.7	27.9	36.4
0:30	5.5	9.5	13.9	21.5	28.7	37.0
0:35	5.0	9.1	12.9	18.4	24.3	32.5
0:40	4.4	9.3	12.5	15.5	20.3	29.5
0:45	4.0	9.7	12.4	13.7	17.7	27.8
0:50	3.7	10.0	12.4	12.4	15.9	26.6
0:55	3.5	10.1	12.3	11.2	14.2	25.2
1:00	3.2	10.1	11.9	10.0	12.6	23.5
1:05	2.7	8.7	10.2	8.1	10.1	19.6
1:10	2.0	6.5	7.5	5.9	7.4	14.4
1:15	1.4	4.7	5.5	4.3	5.4	10.4
1:20	1.1	3.5	4.1	3.2	4.0	7.8
1:25	0.8	2.7	3.1	2.4	3.0	5.9
1:30	0.6	2.0	2.3	1.7	2.2	4.4
1:35	0.4	1.5	1.7	1.3	1.6	3.2
1:40	0.3	1.0	1.2	0.9	1.1	2.2
1:45	0.2	0.7	0.8	0.6	0.8	1.6
1:50	0.2	0.5	0.6	0.5	0.6	1.1
1:55	0.1	0.4	0.4	0.3	0.4	0.8
2:00	0.1	0.3	0.3	0.2	0.3	0.6
2:05	0.1	0.2	0.2	0.2	0.2	0.4
2:10	0.0	0.1	0.2	0.1	0.2	0.3
2:15	0.0	0.1	0.1	0.1	0.1	0.2
2:20	0.0	0.1	0.1	0.1	0.1	0.2
2:25	0.0	0.0	0.1	0.0	0.0	0.1
2:30	0	0	0	0	0	0.1
2:35	0	0	0	0	0	0
2:40	0	0	0	0	0	0
2:45	0	0	0	0	0	0
2:50	0	0	0	0	0	0
2:55	0	0	0	0	0	0
3:00	0	0	0	0	0	0
3:05	0	0	0	0	0	0
3:10	0	0	0	0	0	0
3:15	0	0	0	0	0	0
3:20	0	0	0	0	0	0
3:25	0	0	0	0	0	0
3:30	0	0	0	0	0	0
3:35	0	0	0	0	0	0
3:40	0	0	0	0	0	0
3:45	0	0	0	0	0	0
3:50	0	0	0	0	0	0
3:55	0	0	0	0	0	0
4:00	0	0	0	0	0	0
4:05	0	0	0	0	0	0
4:10	0	0	0	0	0	0
4:15	0	0	0	0	0	0
4:20	0	0	0	0	0	0
4:25	0	0	0	0	0	0
4:30	0	0	0	0	0	0
4:35	0	0	0	0	0	0
4:40	0	0	0	0	0	0
4:45	0	0	0	0	0	0
4:50	0	0	0	0	0	0
4:55	0	0	0	0	0	0
5:00	0	0	0	0	0	0
5:05	0	0	0	0	0	0
5:10	0	0	0	0	0	0
5:15	0	0	0	0	0	0
5:20	0	0	0	0	0	0
5:25	0	0	0	0	0	0
5:30	0	0	0	0	0	0
5:35	0	0	0	0	0	0
5:40	0	0	0	0	0	0
5:45	0	0	0	0	0	0
5:50	0	0	0	0	0	0
5:55	0	0	0	0	0	0
6:00	0	0	0	0	0	0

Proposed Conditions Inflow Time-Series Results

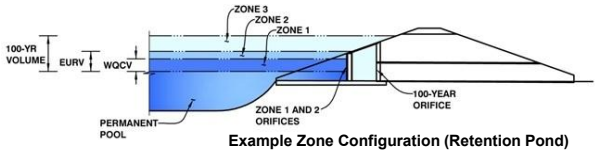
Peak Flow Rate (cfs)	Storm Return Interval (yr)					
	Q2	Q5	Q10	Q25	Q50	Q100
	13.8	21.2	28.6	40.7	51.5	63.4
Time (hr:min)	Storm Return Interval (yr)					
	Q2	Q5	Q10	Q25	Q50	Q100
0:00	0.0	0.0	0.0	0.0	0.0	0.0
0:05	0.0	0.0	0.1	0.1	0.2	0.3
0:10	0.2	0.4	0.6	1.0	1.5	2.0
0:15	1.6	2.8	4.0	6.3	8.4	10.9
0:20	8.2	12.8	17.6	25.6	32.8	40.8
0:25	13.8	21.2	28.6	40.7	51.5	63.4
0:30	13.5	20.5	27.5	38.7	48.7	59.6
0:35	11.0	17.9	23.5	31.1	38.8	49.3
0:40	9.2	17.2	21.6	25.2	31.3	43.1
0:45	8.1	17.2	20.8	21.7	26.7	39.7
0:50	7.4	17.1	20.2	19.3	23.7	37.2
0:55	6.7	16.9	19.4	17.2	21.0	34.6
1:00	6.1	16.4	18.5	15.1	18.2	31.7
1:05	4.9	13.9	15.5	12.0	14.5	26.1
1:10	3.6	10.1	11.2	8.7	10.5	19.0
1:15	2.5	7.2	8.1	6.3	7.5	13.7
1:20	1.9	5.4	6.0	4.6	5.6	10.2
1:25	1.4	4.1	4.6	3.5	4.2	7.7
1:30	1.0	3.1	3.4	2.6	3.1	5.7
1:35	0.8	2.2	2.5	1.8	2.2	4.1
1:40	0.5	1.6	1.8	1.3	1.6	2.9
1:45	0.4	1.1	1.2	0.9	1.1	2.1
1:50	0.3	0.8	0.9	0.7	0.8	1.5
1:55	0.2	0.6	0.6	0.5	0.6	1.1
2:00	0.1	0.4	0.5	0.3	0.4	0.8
2:05	0.1	0.3	0.3	0.3	0.3	0.6
2:10	0.1	0.2	0.2	0.2	0.2	0.4
2:15	0.1	0.2	0.2	0.1	0.2	0.3
2:20	0.0	0.1	0.1	0.1	0.1	0.2
2:25	0.0	0.1	0.1	0.1	0.1	0.1
2:30	0	0.1	0.1	0	0	0.1
2:35	0	0	0	0	0	0.1
2:40	0	0	0	0	0	0
2:45	0	0	0	0	0	0
2:50	0	0	0	0	0	0
2:55	0	0	0	0	0	0
3:00	0	0	0	0	0	0
3:05	0	0	0	0	0	0
3:10	0	0	0	0	0	0
3:15	0	0	0	0	0	0
3:20	0	0	0	0	0	0
3:25	0	0	0	0	0	0
3:30	0	0	0	0	0	0
3:35	0	0	0	0	0	0
3:40	0	0	0	0	0	0
3:45	0	0	0	0	0	0
3:50	0	0	0	0	0	0
3:55	0	0	0	0	0	0
4:00	0	0	0	0	0	0
4:05	0	0	0	0	0	0
4:10	0	0	0	0	0	0
4:15	0	0	0	0	0	0
4:20	0	0	0	0	0	0
4:25	0	0	0	0	0	0
4:30	0	0	0	0	0	0
4:35	0	0	0	0	0	0
4:40	0	0	0	0	0	0
4:45	0	0	0	0	0	0
4:50	0	0	0	0	0	0
4:55	0	0	0	0	0	0
5:00	0	0	0	0	0	0
5:05	0	0	0	0	0	0
5:10	0	0	0	0	0	0
5:15	0	0	0	0	0	0
5:20	0	0	0	0	0	0
5:25	0	0	0	0	0	0
5:30	0	0	0	0	0	0
5:35	0	0	0	0	0	0
5:40	0	0	0	0	0	0
5:45	0	0	0	0	0	0
5:50	0	0	0	0	0	0
5:55	0	0	0	0	0	0
6:00	0	0	0	0	0	0

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.07 (June 2025)

Project: **West Mountain - F1 - 10W**

Basin ID: **Pond B**



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	4.27	0.702	Orifice Plate
Zone 2 (User)	4.47	0.069	Rectangular Orifice
Zone 3 (User)	7.13	1.176	Weir&Pipe (Restrict)
Total (all zones)		1.947	

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration SCM)

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)	Underdrain Orifice Area =	N/A	ft²
Underdrain Orifice Diameter =	N/A	inches	Underdrain Orifice Centroid =	N/A	feet

Calculated Parameters for Underdrain

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation SCM)

Centroid of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	1.563E-02	ft²
Depth at top of Zone using Orifice Plate =	4.27	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	18.00	inches	Elliptical Slot Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	2.25	sq. inches (diameter = 1-11/16 inches)	Elliptical Slot Area =	N/A	ft²

Calculated Parameters for Plate

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.50	3.00					
Orifice Area (sq. inches)	2.25	2.25	2.25					

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Zone 2 Rectangular	Not Selected		Zone 2 Rectangular	Not Selected	
Invert of Vertical Orifice =	4.27	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	0.14	N/A	ft²
Depth at top of Zone using Vertical Orifice =	4.47	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	0.08	N/A	feet
Vertical Orifice Height =	2.00	N/A	inches				
Vertical Orifice Width =	10.00		inches				

Calculated Parameters for Vertical Orifice

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir and No Outlet Pipe)

	Zone 3 Weir	Not Selected		Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	7.00	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	7.00	N/A	feet
Overflow Weir Front Edge Length =	4.00	N/A	feet	Overflow Weir Slope Length =	4.00	N/A	feet
Overflow Weir Grate Slope =	0.00	N/A	H:V	Grate Open Area / 100-yr Orifice Area =	6.13	N/A	
Horiz. Length of Weir Sides =	4.00	N/A	feet	Overflow Grate Open Area w/o Debris =	12.66	N/A	ft²
Overflow Grate Type =	Close Mesh Grate	N/A		Overflow Grate Open Area w/ Debris =	6.33	N/A	ft²
Debris Clogging % =	50%	N/A	%				

Calculated Parameters for Overflow Weir

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 3 Restrictor	Not Selected		Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	0.25	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	2.07	N/A	ft²
Outlet Pipe Diameter =	24.00	N/A	inches	Outlet Orifice Centroid =	0.71	N/A	feet
Restrictor Plate Height Above Pipe Invert =	15.00		inches	Half-Central Angle of Restrictor Plate on Pipe =	1.82	N/A	radians

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	8.00	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.88	feet
Spillway Crest Length =	20.00	feet	Stage at Top of Freeboard =	9.88	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.72	acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	3.65	acre-ft

Calculated Parameters for Spillway

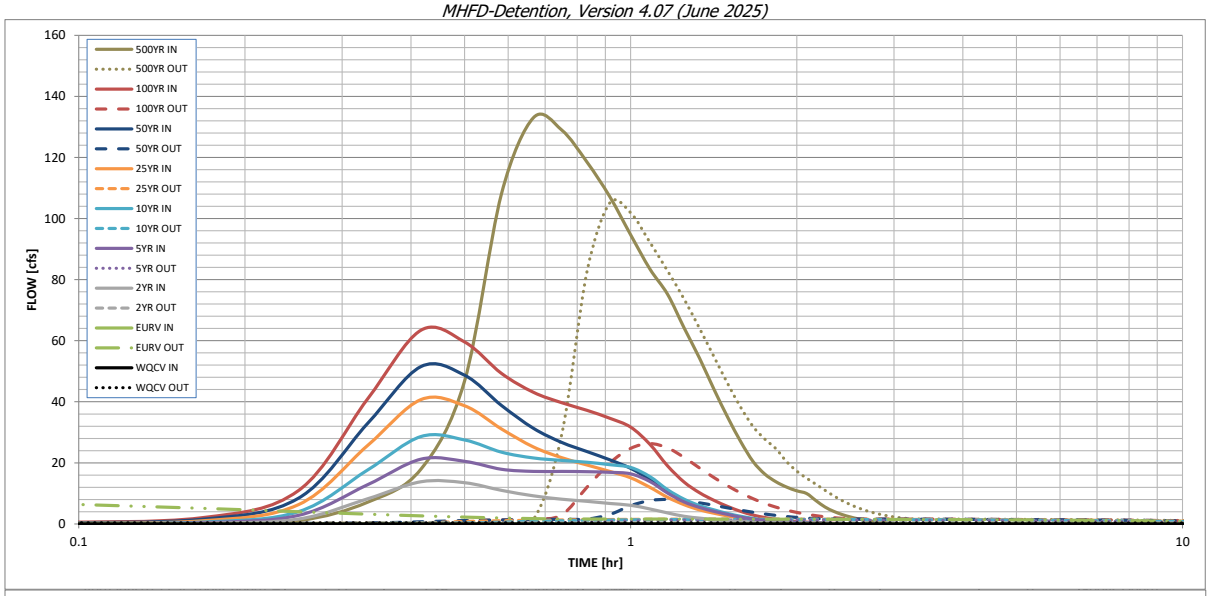
Routed Hydrograph Results

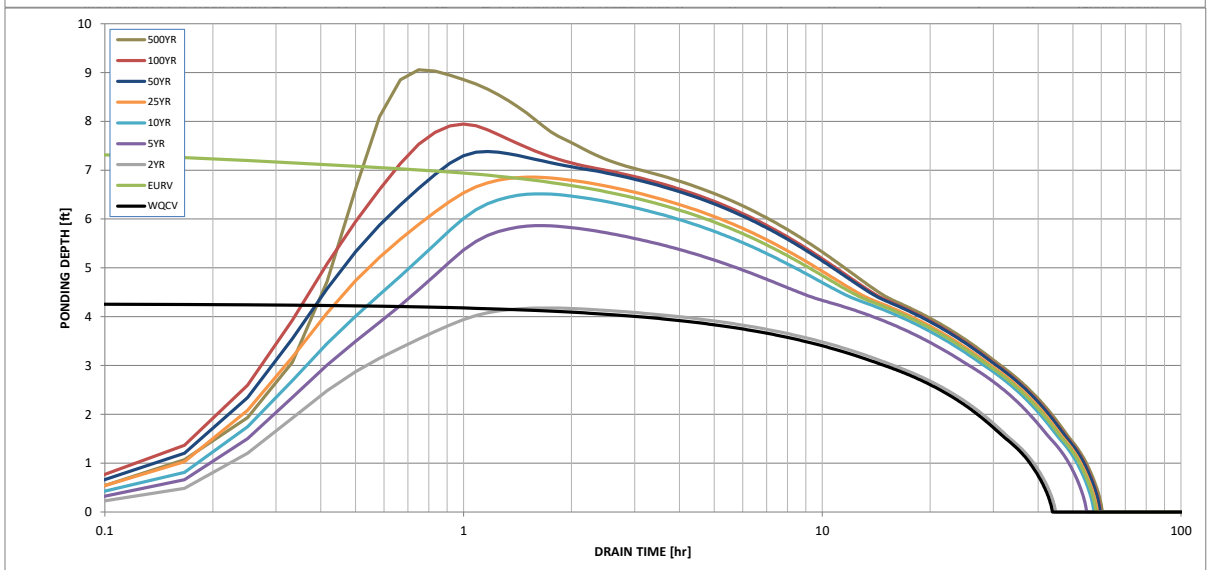
The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

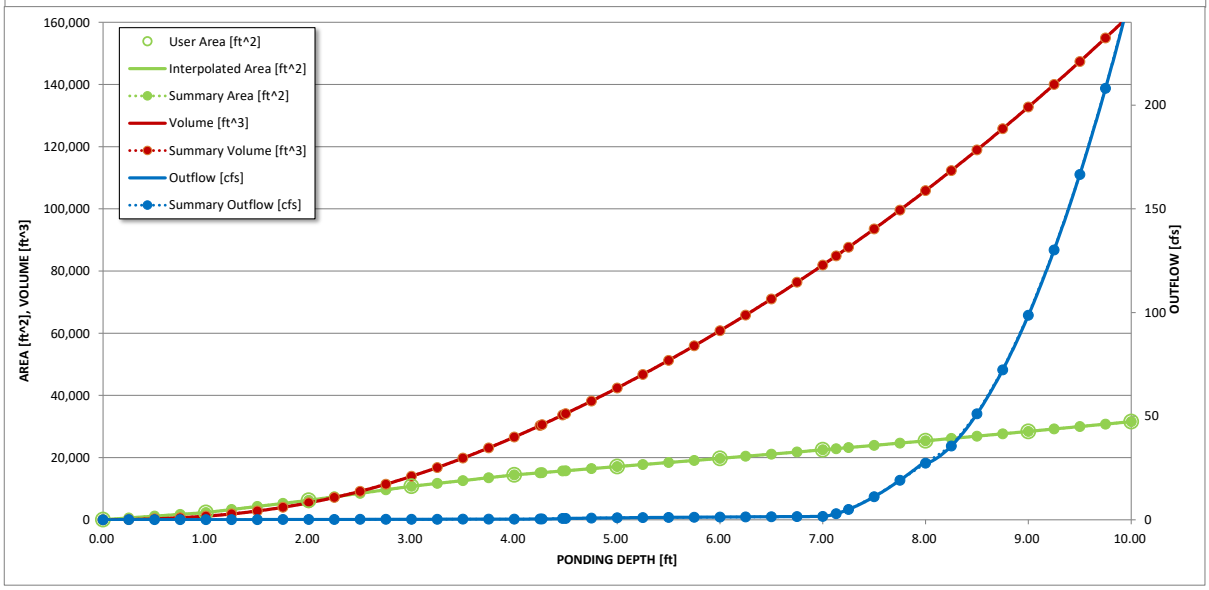
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	0.56	0.88	1.01	1.08	1.26	1.64	3.14
CUHP Runoff Volume (acre-ft) =	0.702	2.144	0.802	1.417	1.686	1.961	2.497	3.767	8.657
User Override Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.714	1.459	1.789	1.970	2.450	3.508	8.657
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.1	0.8	1.1	4.3	9.5	21.6	65.7
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A	5.5	10.1	13.9	21.5	28.7	37.0	
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.15	0.27	0.37	0.57	0.76	0.98	1.74
Peak Inflow Q (cfs) =	N/A	N/A	13.8	21.2	28.6	40.7	51.5	63.4	133.0
Peak Outflow Q (cfs) =	0.4	9.4	0.4	1.3	1.5	1.6	8.0	26.3	105.1
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.1	0.1	0.1	0.3	0.7	1.6
Structure Controlling Flow =	Vertical Orifice 1	Overflow Weir 1	Plate	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Overflow Weir 1	Overflow Weir 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	0.74	N/A	N/A	N/A	N/A	0.5	1.9	2.1
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	39	47	40	46	48	48	47	45	35
Time to Drain 99% of Inflow Volume (hours) =	**42**	53	43	51	53	54	54	53	47
Maximum Ponding Depth (ft) =	4.27	7.50	4.18	5.86	6.52	6.86	7.38	7.95	9.05
Area at Maximum Ponding Depth (acres) =	0.35	0.55	0.34	0.44	0.49	0.51	0.54	0.58	0.66
Maximum Volume Stored (acre-ft) =	0.702	2.147	0.668	1.333	1.635	1.804	2.082	2.396	3.081

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.07 (June 2025)







S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename: _____

Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

	SOURCE	CUHP	CUHP	USER	USER	USER	USER	USER	USER	CUHP
Time Interval	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.00 min	0:00:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0	0.00	0.00	0.00	0.10	0.10	0.20	0.30	0.00
	0:10:00	0	0.00	0.20	0.40	0.60	1.00	1.50	2.00	1.07
	0:15:00	0	0.00	1.60	2.80	4.00	6.30	8.40	10.90	7.07
	0:20:00	0	0.00	8.20	12.80	17.60	25.60	32.80	40.80	17.88
	0:25:00	0	0.00	13.80	21.20	28.60	40.70	51.50	63.40	46.72
	0:30:00	0	0.00	13.50	20.50	27.50	38.70	48.70	59.60	108.05
	0:35:00	0	0.00	11.00	17.90	23.50	31.10	38.80	49.30	133.03
	0:40:00	0	0.00	9.20	17.20	21.60	25.20	31.30	43.10	129.00
	0:45:00	0	0.00	8.10	17.20	20.80	21.70	26.70	39.70	118.52
	0:50:00	0	0.00	7.40	17.10	20.20	19.30	23.70	37.20	107.17
	0:55:00	0	0.00	6.70	16.90	19.40	17.20	21.00	34.60	94.68
	1:00:00	0	0.00	6.10	16.40	18.50	15.10	18.20	31.70	83.51
	1:05:00	0	0.00	4.90	13.90	15.50	12.00	14.50	26.10	75.19
	1:10:00	0	0.00	3.60	10.10	11.20	8.70	10.50	19.00	64.18
	1:15:00	0	0.00	2.50	7.20	8.10	6.30	7.50	13.70	54.23
	1:20:00	0	0.00	1.90	5.40	6.00	4.60	5.60	10.20	43.98
	1:25:00	0	0.00	1.40	4.10	4.60	3.50	4.20	7.70	34.83
	1:30:00	0	0.00	1.00	3.10	3.40	2.60	3.10	5.70	26.91
	1:35:00	0	0.00	0.80	2.20	2.50	1.80	2.20	4.10	20.43
	1:40:00	0	0.00	0.50	1.60	1.80	1.30	1.60	2.90	16.34
	1:45:00	0	0.00	0.40	1.10	1.20	0.90	1.10	2.10	13.81
	1:50:00	0	0.00	0.30	0.80	0.90	0.70	0.80	1.50	12.07
	1:55:00	0	0.00	0.20	0.60	0.60	0.50	0.60	1.10	10.85
	2:00:00	0	0.00	0.10	0.40	0.50	0.30	0.40	0.80	9.96
	2:05:00	0	0.00	0.10	0.30	0.30	0.30	0.30	0.60	7.63
	2:10:00	0	0.00	0.10	0.20	0.20	0.20	0.20	0.40	5.54
	2:15:00	0	0.00	0.10	0.20	0.20	0.10	0.20	0.30	4.12
	2:20:00	0	0.00	0.00	0.10	0.10	0.10	0.10	0.20	3.07
	2:25:00	0	0.00	0.00	0.10	0.10	0.10	0.10	0.10	2.28
	2:30:00	0	0.00	0.00	0.10	0.10	0.00	0.00	0.10	1.66
	2:35:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.10	1.21
	2:40:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87
	2:45:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59
	2:50:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
	2:55:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
	3:00:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
	3:05:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	3:10:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:15:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:20:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:25:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:30:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:35:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:40:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:00:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.07 (June 2025)

Summary Stage-Area-Volume-Discharge Relationships

The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically.
The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

Stage - Storage Description	Stage [ft]	Elevation [ft]	Area [ft²]	Area [acres]	Volume [ft³]	Volume [ac-ft]	Total Outflow [cfs]
Orifice 1	0.00	8785.00	35	0.001	0	0.000	0.00
	0.25	8785.25	605	0.014	80	0.002	0.04
	0.50	8785.50	1176	0.027	303	0.007	0.05
	0.75	8785.75	1746	0.040	668	0.015	0.07
	1.00	8786.00	2316	0.053	1175	0.027	0.08
	1.25	8786.25	3302	0.076	1878	0.043	0.08
Orifice 2	1.50	8786.50	4288	0.098	2826	0.065	0.09
	1.75	8786.75	5273	0.121	4021	0.092	0.14
	2.00	8787.00	6259	0.144	5463	0.125	0.16
	2.25	8787.25	7391	0.170	7169	0.165	0.18
	2.50	8787.50	8523	0.196	9158	0.210	0.19
	2.75	8787.75	9655	0.222	11431	0.262	0.21
Orifice 3	3.00	8788.00	10787	0.248	13986	0.321	0.22
	3.25	8788.25	11701	0.269	16797	0.386	0.27
	3.50	8788.50	12615	0.290	19837	0.455	0.30
	3.75	8788.75	13530	0.311	23105	0.530	0.32
	4.00	8789.00	14444	0.332	26601	0.611	0.34
	4.25	8789.25	15112	0.347	30296	0.696	0.36
Zone 1 / Rectangular Orifice	4.27	8789.27	15166	0.348	30599	0.702	0.37
Zone 2	4.47	8789.47	15701	0.360	33685	0.773	0.61
	4.50	8789.50	15781	0.362	34158	0.784	0.64
	4.75	8789.75	16449	0.378	38186	0.877	0.82
	5.00	8790.00	17118	0.393	42382	0.973	0.95
	5.25	8790.25	17772	0.408	46744	1.073	1.06
	5.50	8790.50	18427	0.423	51269	1.177	1.16
	5.75	8790.75	19081	0.438	55957	1.285	1.25
	6.00	8791.00	19736	0.453	60809	1.396	1.33
	6.25	8791.25	20426	0.469	65830	1.511	1.41
	6.50	8791.50	21115	0.485	71022	1.630	1.48
	6.75	8791.75	21805	0.501	76387	1.754	1.55
Overflow Weir Rim	7.00	8792.00	22495	0.516	81925	1.881	1.61
Zone 3	7.13	8792.13	22871	0.525	84874	1.948	2.89
	7.25	8792.25	23219	0.533	87639	2.012	5.00
	7.50	8792.50	23942	0.550	93534	2.147	11.13
	7.75	8792.75	24666	0.566	99610	2.287	19.06
Spillway	8.00	8793.00	25390	0.583	105867	2.430	27.31
	8.25	8793.25	26148	0.600	112310	2.578	35.56
	8.50	8793.50	26905	0.618	118941	2.731	51.12
	8.75	8793.75	27663	0.635	125762	2.887	72.29
	9.00	8794.00	28421	0.652	132773	3.048	98.67
	9.25	8794.25	29206	0.670	139976	3.213	130.11
	9.50	8794.50	29992	0.689	147376	3.383	166.59
	9.75	8794.75	30777	0.707	154972	3.558	208.11
	10.00	8795.00	31563	0.725	162765	3.737	254.73

For best results, include the stages of all grade slope changes (e.g. ISV and Floor) from the S-A-V table on Sheet 'Basin'.

Also include the inverts of all outlets (e.g. vertical orifice, overflow grate, and spillway, where applicable).

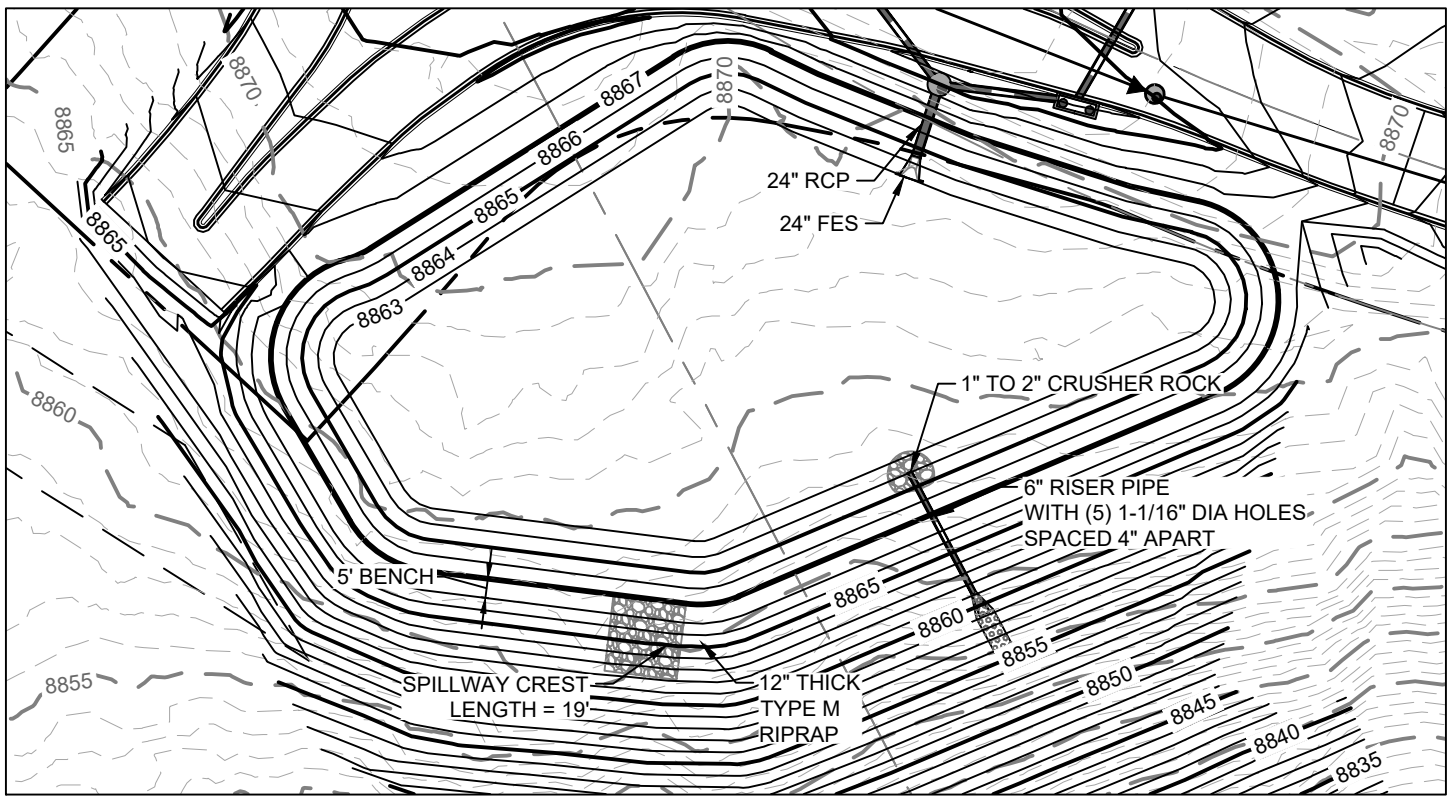
terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - F1 - 10W.1 & 11W
Prepared By: JNS

Pond B Stage Storage Discharge Tables

Pond B Area-Elevation-Discharge Table

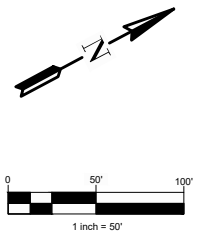
Stage (ft)	Elevation (ft)	Area (ft^2)	Incremental Volume (ft^3)	Volume (ft^3)	Volume (Ac-ft)	Discharge (cfs)
0	8785	35	0	0	0.00	0
0.25	8785.25	605	80	80	0.00	0.04
0.5	8785.5	1176	223	303	0.01	0.05
0.75	8785.75	1746	365	668	0.02	0.07
1	8786	2316	508	1176	0.03	0.08
1.25	8786.25	3302	702	1878	0.04	0.08
1.5	8786.5	4288	949	2827	0.06	0.09
1.75	8786.75	5273	1195	4022	0.09	0.14
2	8787	6259	1442	5463	0.13	0.16
2.25	8787.25	7391	1706	7170	0.16	0.18
2.5	8787.5	8523	1989	9159	0.21	0.19
2.75	8787.75	9655	2272	11431	0.26	0.21
3	8788	10787	2555	13986	0.32	0.22
3.25	8788.25	11701	2811	16797	0.39	0.27
3.5	8788.5	12615	3040	19837	0.46	0.3
3.75	8788.75	13530	3268	23105	0.53	0.32
4	8789	14444	3497	26602	0.61	0.34
4.25	8789.25	15112	3695	30296	0.70	0.36
4.27	8789.27	15166	303	30599	0.70	0.37
4.47	8789.47	15701	3087	33686	0.77	0.61
4.5	8789.5	15781	472	34158	0.78	0.64
4.75	8789.75	16449	4029	38187	0.88	0.82
5	8790	17118	4196	42382	0.97	0.95
5.25	8790.25	17772	4361	46744	1.07	1.06
5.5	8790.5	18427	4525	51269	1.18	1.16
5.75	8790.75	19081	4689	55957	1.28	1.25
6	8791	19736	4852	60809	1.40	1.33
6.25	8791.25	20426	5020	65829	1.51	1.41
6.5	8791.5	21115	5193	71022	1.63	1.48
6.75	8791.75	21805	5365	76387	1.75	1.55
7	8792	22495	5538	81925	1.88	1.61
7.13	8792.13	22871	2949	84873	1.95	2.89
7.25	8792.25	23219	2765	87639	2.01	5.00
7.5	8792.5	23942	5895	93534	2.15	11.13
7.75	8792.75	24666	6076	99610	2.29	19.06
8	8793	25390	6257	105867	2.43	27.31
8.25	8793.25	26148	6442	112309	2.58	35.56
8.5	8793.5	26905	6632	118941	2.73	51.12
8.75	8793.75	27663	6821	125762	2.89	72.29
9	8794	28421	7011	132772	3.05	98.67
9.25	8794.25	29206	7203	139976	3.21	130.11
9.5	8794.5	29992	7400	147375	3.38	166.59
9.75	8794.75	30777	7596	154972	3.56	208.11
10	8795	31563	7793	162764	3.74	254.73



TEMP SED POND VOLUME CALCULATION PER MHFD DETAIL SC-7

BASINS	DEVELOPED?	AREA (AC)	IMPERVIOUSNESS	ADDITIONAL VOLUME PER TABLE SB-1 (FT^3/AC)	VOLUME REQ. (FT^3)
C	Y	1.71	12%	800	1372
C1	Y	2.92	40%	2030	5927
C2.1	Y	0.78	58%	2980	2334
C2.2	Y	0.41	85%	4360	1769
C2.3	Y	3.44	25%	1600	5502
C2.4	Y	1.05	30%	1600	1686
C2.5	Y	0.16	75%	4360	676
C2.6	Y	1.38	34%	1600	2215
C2.7	Y	0.48	70%	3560	1721
TOTAL DEVELOPED AREA		12.34	-	3600	44420
				TOTAL REQUIRED VOLUME	67318

STAGE STORAGE TABLE						
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)	CONIC INC. VOL. (cu. ft.)	CONIC TOTAL VOL. (cu. ft.)
8,863.00	15,310.80	N/A	N/A	0.00	N/A	0.00
8,864.00	17,546.28	1.00	16428.54	16428.54	16415.85	16415.85
8,865.00	19,887.36	1.00	18716.82	35145.36	18704.61	35120.46
8,866.00	22,334.08	1.00	21110.72	56256.09	21098.90	56219.36
8,867.00	24,886.35	1.00	23610.22	79866.30	23598.71	79818.07



terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

WEST MOUNTAIN - F1
10W.1 & 11W

TEMPORARY SEDIMENT BASIN
POND C

DATE: 02/02/2026
CREATED BY: JNS
SHEET 1

2/2/2026 9:06 AM - X:\GRAND PARK\DOCUMENTS\REPORTS\DRAINAGE\16.1 - FILING 1 - 8WB, 9W, 10W, 11W\PHASE 3 - 10W\D - POND & WQ CALCS\TEMP SEDIMENT POND EXHIBIT.DWG;

Project Name: **West Mountain - F1 - 10W.1 & 11W**
Prepared By: **JNS**

Temporary Sediment Basin C - Stage-Storage Discharge Calculations

User Input		
	Orifice Diameter (in) =	1.0625
	Spillway Width (ft) =	19
	Bottom Elevation (ft) =	8863

Pond C - Pond Volume Calculations							Cicular Orifice 1		Cicular Orifice 2		Cicular Orifice 3		Cicular Orifice 4		Cicular Orifice 5		Riser Pipe Opening		Spillway		Total Flow
							Cd =	0.6	Cd =	0.6	Cd =	0.6	Cd =	0.6	Cd =	0.6	Cd =	0.6			
							Diameter (in) =	1.0625	Diameter (in) =	1.0625	Diameter (in) =	1.0625	Diameter (in) =	1.0625	Diameter (in) =	1.0625	Diameter (in) =	8	Length (ft)	19	
							CL =	8864.29	CL =	8864.63	CL =	8864.96	CL =	8865.29	CL =	8865.63	CL =	8866.00	Cbcw =	3	
							FL =	8864.25	FL =	8864.58	FL =	8864.92	FL =	8865.25	FL =	8865.58	FL =	8866.00	Z =	4	
Elev	Stage	Notes	Area		Volume			A(sf) =	0.00616	A(sf) =	0.00616	A(sf) =	0.00616	A(sf) =	0.00616	A(sf) =	0.00616	A(sf) =	0.196349541	Invert =	8866	
					Incr.	Total	Total	H	Q	H	Q	H	Q	H	Q	H	Q	H	Q	H	Q	Q
			[SF]	[AC]	[CF]	[CF]	[AC-FT]	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(ft)	(cfs)	(cfs)
8863.00	0.00		15311	0.3515	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8863.25	0.25		15861	0.3641	3897	3897	0.0895	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8863.50	0.50		16417	0.3769	4035	7931	0.1821	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8863.75	0.75		16978	0.3898	4174	12106	0.2779	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8864.00	1.00		17546	0.4028	4316	16421	0.3770	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8864.25	1.25		18123	0.4160	4459	20880	0.4793	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8864.50	1.50		18705	0.4294	4604	25483	0.5850	0.21	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
8864.58	1.58	Orifice 1	18893	0.4337	1504	26987	0.6195	0.29	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
8864.75	1.75		19293	0.4429	3246	30233	0.6941	0.46	0.02	0.12	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
8864.91	1.91	Orifice 2	19673	0.4516	3117	33350	0.7656	0.62	0.02	0.28	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
8865.00	2.00		19887	0.4565	1780	35130	0.8065	0.71	0.02	0.37	0.02	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
8865.24	2.24	Orifice 3	20466	0.4698	4842	39973	0.9176	0.95	0.03	0.61	0.02	0.28	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
8865.25	2.25		20491	0.4704	205	40178	0.9224	0.96	0.03	0.62	0.02	0.29	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
8865.50	2.50		21100	0.4844	5199	45376	1.0417	1.21	0.03	0.87	0.03	0.54	0.02	0.21	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.10
8865.57	2.57	Orifice 4	21271	0.4883	1483	46859	1.0757	1.28	0.03	0.94	0.03	0.61	0.02	0.28	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.10
8865.70	2.70	10-Year Max Depth	21591	0.4957	2786	49645	1.1397	1.41	0.04	1.07	0.03	0.74	0.03	0.41	0.02	0.07	0.01	0.00	0.00	0.00	0.00	0.12
8865.75	2.75		21714	0.4985	1083	50728	1.1646	1.46	0.04	1.12	0.03	0.79	0.03	0.46	0.02	0.12	0.01	0.00	0.00	0.00	0.00	0.12
8865.90	2.90	Orifice 5	22085	0.5070	3285	54013	1.2400	1.61	0.04	1.27	0.03	0.94	0.03	0.61	0.02	0.27	0.02	0.00	0.00	0.00	0.00	0.14
8866.00	3.00	Riser Pipe Opening/Spillway Invert	22334	0.5127	2221	56234	1.2910	1.71	0.04	1.37	0.03	1.04	0.03	0.71	0.02	0.37	0.02	0.00	0.00	0.00	0.00	0.15
8866.20	3.20	100-Year Max Depth	22838	0.5243	4517	60751	1.3947	1.91	0.04	1.57	0.04	1.24	0.03	0.91	0.03	0.57	0.02	0.20	0.42	0.20	5.27	5.85
8866.25	3.25		22964	0.5272	1145	61896	1.4209	1.96	0.04	1.62	0.04	1.29	0.03	0.96	0.03	0.62	0.02	0.25	0.47	0.25	7.43	8.06
8866.50	3.50		23600	0.5418	5821	67717	1.5546	2.21	0.04	1.87	0.04	1.54	0.04	1.21	0.03	0.87	0.03	0.50	0.67	0.50	21.85	22.70
8866.75	3.75		24240	0.5565	5980	73697	1.6918	2.46	0.05	2.12	0.04	1.79	0.04	1.46	0.04	1.12	0.03	0.75	0.82	0.75	41.70	42.71
8867.00	4.00		24886	0.5713	6141	79837	1.8328	2.71	0.05	2.37	0.05	2.04	0.04	1.71	0.04	1.37	0.03	1.00	0.95	1.00	66.60	67.76

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph. 303.632.8867

Project Name: West Mountain - F1 - 10W.1 & 11W
Prepared By: JNS

Temp Sed Basin C Stage Storage Discharge Table

Temp Sed Basin C Area-Elevation-Discharge Table			
Stage (ft)	Elevation (ft)	Area (ft^2)	Discharge (cfs)
0	8863	15311	0.0
0.25	8863.25	15861	0.0
0.5	8863.5	16417	0.0
0.75	8863.75	16978	0.0
1	8864	17546	0.0
1.25	8864.25	18123	0.0
1.5	8864.5	18705	0.0
1.58	8864.58	18893	0.0
1.75	8864.75	19293	0.0
1.91	8864.91	19673	0.0
2	8865	19887	0.0
2.24	8865.24	20466	0.1
2.25	8865.25	20491	0.1
2.5	8865.5	21100	0.1
2.57	8865.57	21271	0.1
2.7	8865.7	21591	0.1
2.75	8865.75	21714	0.1
2.9	8865.9	22085	0.1
3	8866	22334	0.1
3.2	8866.2	22838	5.9
3.25	8866.25	22964	8.1
3.5	8866.5	23600	22.7
3.75	8866.75	24240	42.7
4	8867	24886	67.8

APPENDIX E
REFERENCES

Storm Drainage Master Plan for Grand Park by High Country Engineering, Inc. Dated February 17, 2006.

A Pragmatic Slope-Adjusted Curve Number Model to Reduce Uncertainty in Predicting Flood Runoff from Steep Watersheds. Ajmal, Wassem, Kim, & Kim. 2020.

Sediment Basin Details from MHFD's *Urban Storm Drainage Criteria Manual vol. 3*, 2010 (Revised March 2024), pp. 486-492.

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

EXCERPTS FROM
STORM DRAINAGE MASTER PLAN

FOR

GRAND PARK

FRASER, COLORADO

October 10, 2005
Revised February 17, 2006

PREPARED FOR:

Cornerstone Winter Park Holdings, LLC

HCE JOB NO. 2052014.00

Prepared by:

Leslie A. Hope, P.E.
High Country Engineering, Inc.
14 Inverness Drive East, Suite F-120
Englewood, CO 80112

COLORADO REGISTERED PROFESSIONAL ENGINEER
LESLIE ANN HOPE
32951
2/17/06

Excerpt from High Country Engineering Final
Drainage Report for Town Center at Grand Park

TABLE OF CONTENTS

SECTION PAGE

1.0 EXECUTIVE SUMMARY 2
2.0 INTRODUCTION 4
2.1 GENERAL 4
2.2 PURPOSE 4
2.3 MASTER PLAN – GENERAL 4
2.4 PROPOSED LAND USE 5
3.0 HYDROLOGY / HYDRAULIC ANALYSIS 7
3.1 GENERAL 7
3.2 DESIGN RAINFALL 7
3.3 BASIN CHARACTERISTICS 7
3.4 CURVE NUMBER "CN" 8
3.5 EXISTING FACILITIES 8
4.0 PROPOSED DRAINAGE IMPROVEMENTS 11
4.1 GENERAL 11
4.2 DESIGN BASIS 13
4.3 MINOR DRAINAGE SYSTEMS 14
4.4 PHASING OF IMPROVEMENTS 14
4.5 FEMA FIRM MAPPING 14
5.0 REFERENCES 16

LIST OF FIGURES
FIGURE 1 VICINITY MAP 3
FIGURE 2 SCS SURVEY 9
FIGURE 3 EXISTING DRAINAGE MAP 10
FIGURE 4 PROPOSED DRAINAGE BASIN MAP 12
FIGURE 5 FIRM MAP 15

APPENDIX A: HYDROLOGIC INPUT

APPENDIX B: HYDROLOGIC OUTPUT

APPENDIX C: CULVERT CALCULATIONS

Excerpt from High Country Engineering Final
Drainage Report for Town Center at Grand Park

1.0 EXECUTIVE SUMMARY

The "Grand Park Storm Drainage Master Plan" was prepared for Cornerstone Winterpark Holdings LLC. The purpose of this report is to identify regional drainage facilities required to safely convey the developed storm events, up to the 100 year storm, to the historic receiving basins while improving the water quality of the developed flows prior to discharging to the receiving streams. These facilities will consist of regional detention ponds / water quality facilities to reduce the developed flow rates to historic rates and recommendations for proposed culverts and channels.

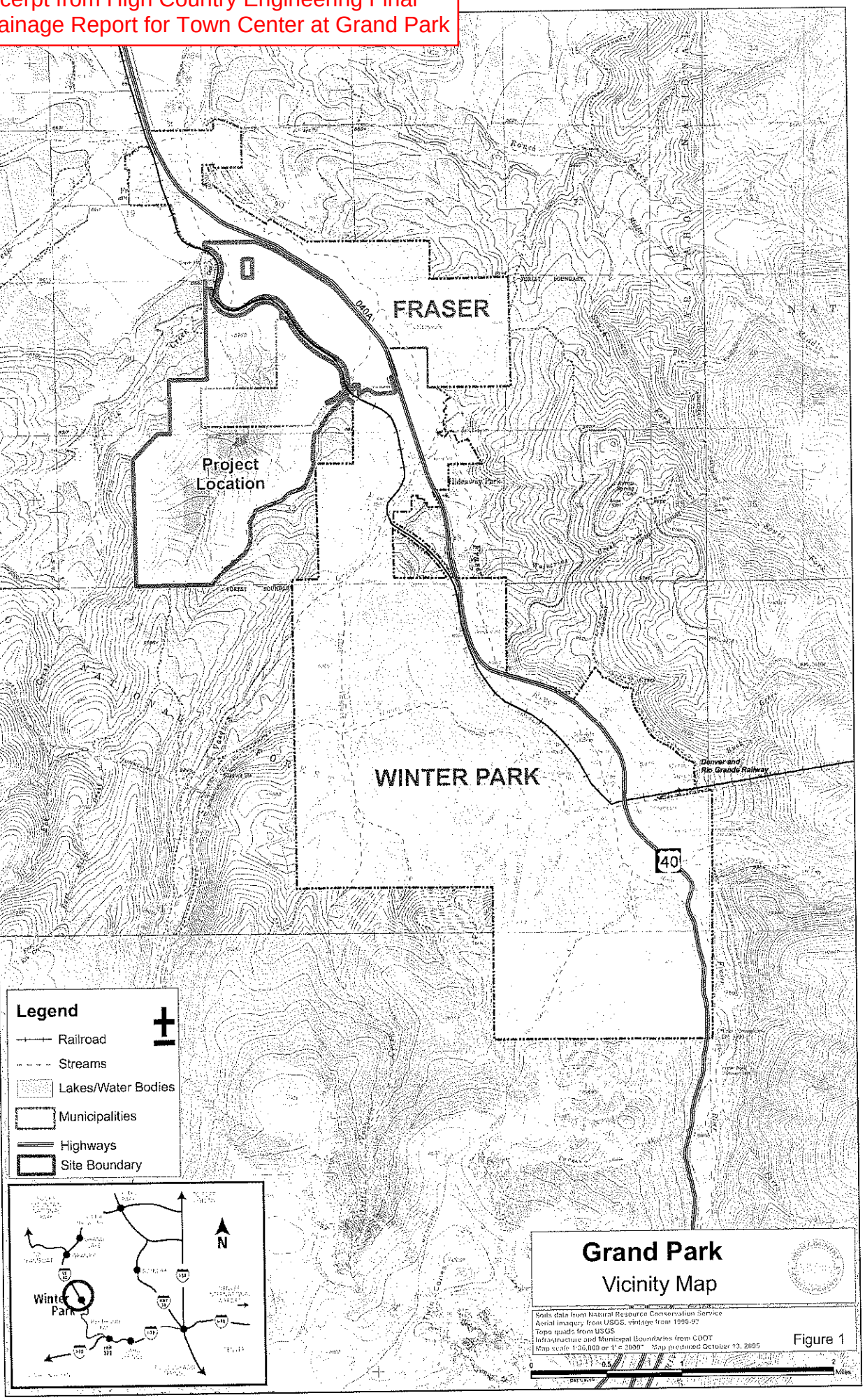
The results of this study are: identifying the historic and developed drainage basin boundaries, determining the respective 2 year and 100 year stormwater flow rates and volumes, determining sizing of the detention facilities to reduce the peak flow rates, and providing designs for water quality features to be incorporated in the regional facilities and proposed developments. Structural and non-structural water quality enhancement measures were incorporated based on the guidelines provided in the Urban Drainage Criteria Manual, Volume III.

The overall drainage of the Grand Park area has been divided into two major subareas: drainage to Elk Creek and drainage to Leland Creek; see Figure 1. The land generally flows from the south toward the Denver and Rio Grande Railroad and ultimate discharge to the Fraser River.

Under the existing conditions, the Denver and Rio Grande Railroad embankment attenuates stormwater flows prior to discharging to the Fraser Draw. There are three existing culverts located under the Denver and Rio Grande Railroad within the project limits: one on the east side for Elk Creek, one in the middle of the development for a no-name drainage way, and a third on the east side for Leland Creek. The Leland Creek and Fraser River are a part of a FEMA designated floodplain. This report does not address any potential FEMA CLOMR applications.

For proposed conditions, the existing culverts will be used to convey flows under the Railroad, from the regional detention ponds located south of the railroad to the plateau between US 40 and the Railroad. The plateau area contains wetland areas that will not be disturbed with the proposed development. At this time, no pipe borings under the railroad or US 40 are being proposed. Discharge from the development, in general, will be to the north toward the Fraser River. Conveyance of stormwater will be accommodated via a combination of storm drainage pipes, grass-lined swales, regional detention facilities, and potentially check dams and drop structures. Water quality enhancement features will be incorporated into the design of the swales and detention facilities. These facilities will be constructed to accommodate up to the 100 year developed flows.

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park



Excerpt from High Country Engineering Final
Drainage Report for Town Center at Grand Park

2.0 INTRODUCTION

2.1 GENERAL

The Grand Park Storm Drainage Master Plan has been prepared to provide an overall guide to the management of stormwater associated with the proposed development of Grand Park and tributary drainage areas. This Master Plan is a dynamic document and should be revised periodically to reflect changes from conceptual to actual. The Master Drainage Plan presents the results of hydrologic and hydraulic analyses evaluating the effects of the proposed development on the historic runoff patterns, based on current available information. Grand County Storm Drainage Design Criteria and the Urban Drainage and Flood Control District criteria were utilized for the development of this report.

The Grand Park subdivision is located in Grand County, and is approximately 1,311-acres of land. Grand Park is located in Sections 20, 28, 29, 30, 31, 32, Township 1 South, Range 75 West of the Sixth Principal Meridian, Town of Fraser, Grand County, Colorado. The proposed development is a Planned Unit Development consisting of a wide range of single family, multi-family, commercial, lodging, and open space uses.

2.2 PURPOSE

The purpose of this study is to prepare a master drainage study for the Grand Park development area. The Master Plan includes:

1. Development and evaluation of the results of a hydrologic model for the basins.
2. Determine the sizes of major culverts, and detention structures.
3. Establish design criteria for water quality treatment and stormwater management.

2.3 MASTER PLAN – GENERAL

Due to the substantial size of Grand Park, long-term planning for the phased development of Grand Park is essential. Paramount to the planning is the phased development of the infrastructure necessary to serve Grand Park.

It was anticipated that the planning for infrastructure to service Grand Park would be done in three stages: 1. Master Plans, 2. Preliminary Plans, 3. Final Subdivision Platting.

1. Master Plans. The first stage of planning is to be comprised of the development and approval of the "Storm Drainage Master Plan" for Grand Park. The Master Plan is intended to serve as conceptual preliminary long-term planning and forecasting document, and may be updated, from time to time, as development actually occurs. It is anticipated that the Storm

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Drainage Master Plan would address the necessary regional storm drainage facilities for Grand Park.

2. Preliminary Plans. The second stage of planning is to consist of the development and approval of Preliminary Plans for the individual phases of Grand Park.

In preparing Phased Preliminary Plans, if upstream development occurs prior to the construction of downstream storm drainage improvements, it is contemplated that the upstream property will cause to be constructed necessary downstream storm drainage improvements as reflected in this Storm Drainage Master Plan. As all property in Grand Park is developed, the property will be required to establish or set aside such land areas as may be necessary to accomplish upstream and downstream drainage and water quality mitigation, in general accordance with this Storm Drainage Master Plan.

The precise boundaries of the basins are subject to modification as more accurate topographic information becomes available, or as the subject land is graded for final development. Lands located in one basin as reflected in the Proposed Drainage Basin Map (Figure 5) may be later graded to drain into a different basin, provided appropriate measures are taken to accommodate such modifications. The grading and basin utilization patterns of a particular parcel of land shall be set forth in the Phased Preliminary Plan(s) and Final plat(s) affecting the parcel of land.

Each Phased Preliminary Plan shall set forth the development assumptions under which it was prepared (regarding land uses and densities) and will address: the impact of the development of the Phased Area on other Phase Areas already developed or approved; (2) the estimated timing of the improvements to be installed; and (3) phasing of improvements

3. Final Subdivision Platting. The third and final stage of planning is to be comprised of the development and approval of plats. The platting process shall be conducted consistent with the then-existing City ordinances, rules, regulations and guidelines for platting, amended, as appropriate, by any applicable Annexation Agreements affecting the land to be platted.

2.4 PROPOSED LAND USE

The land usage is outlined in the Grand Park Planned Unit Development Master Land Use Plan. A list of the land usage by area is presented in Table 1.

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Table 1. Master Plan Areas

Designation	Type	Density (Units per Acre)
1Wa	Multi-family Attached, Lodging Units, Commercial	7.6 units / acre
1Wb	Multi- Family Attached	6.8 units / acre
2W	Single Family, Multi-family Attached, Lodging Units, Commercial	7.6 units / acre
3Wa	Multi- Family Attached	13.1 units / acre
3Wb	Single Family, Multi-family Attached	4.7 units / acre
3Wc	Multi-family Attached, Commercial	5.2 units / acre
4W	Multi-family Attached, Commercial	9.3 units / acre
5W	Single Family, Multi-family Attached	4.5 units / acre
6W	Public Site	
7W	Single Family, Multi-family Attached	8.1 units / acre
8Wa	Single Family, Multi-family Attached	2.0 units / acre
8Wb	Multi- Family Attached	2.2 units / acre
9W	Single Family, Multi-family Attached, Lodging Units, Commercial	4.7 units / acre
10W	Single Family, Multi-family Attached, Lodging Units, Commercial	4.7 units / acre
11W	Single Family, Multi-family Attached, Lodging Units	2.6 units / acre
12W	Multi-family Attached, Lodging Units	3.5 units / acre
13Wa	Single family	1.4 units / acre
13Wb	Single family	0.6 units / acre
14W	Single family	1.5 units / acre
15W	Single family	0.5 units / acre
16W	Single family	1.0 units / acre
17W	Single family	0.5 units / acre
18W	Single family	2.5 units / acre
19W	Single Family, Multi-family Attached	3.1 units / acre
20W	Single Family, Multi-family Attached	2.1 units / acre
21W	Single Family, Multi-family Attached	5.1 units / acre

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

3.0 HYDROLOGY / HYDRAULIC ANALYSIS

3.1 GENERAL

A hydrologic analysis was performed on the study area to define the peak runoff flows and volumes for the 2- and 100-year, 24 hour design storm frequencies. The peak flow information obtained from the analysis was used to evaluate existing drainage facilities, identify potential drainage problems, and to design drainage improvements.

The computer program HEC-HMS was used to determine runoff quantities for each basin. Runoff hydrographs were developed for each basin. The basin parameter required for HEC-HMS input include:

- Area,
- Flow length,
- Slope,
- Time of Concentration / Lag Time,
- Percent Impervious,
- Runoff coefficient
- Rainfall Hyetograph.

Appendix A provides the parameters used in the existing and proposed conditions in the HEC-HMS model.

3.2 DESIGN RAINFALL

Rainfall depths for each storm frequency were taken from the NOAA Atlas:

Table 2. Storm Duration Precipitation Depths

2 Year – 6 Hour	0.98 inch
2 Year – 24 Hour	1.32 inches
100 Year – 6 Hour	2.17 inches
100 Year – 24 Hour	2.98 inches

3.3 BASIN CHARACTERISTICS

The amount of impervious area within each basin was estimated for existing and future development conditions. These values are presented in Appendix A. Impervious percentages were calculated using values from Volume I of the Urban Drainage and Flood Control District Criteria Manual (2001). The soils types within the onsite and offsite drainage basins consist of:

Cowdrey Loam (15 – 45% slope)	Hydrologic Group: C
Cumilic Cryaquolis	Hydrologic Group: D

Excerpt from High Country Engineering Final
Drainage Report for Town Center at Grand Park

Frisco Peeler Gravelly Sandy Loam (2 – 6%)	Hydrologic Group: B
Frisco Peeler Gravelly Sandy Loam (6 – 25%)	Hydrologic Group: B
Frisco Peeler Gravelly Sandy Loam (25 – 65%)	Hydrologic Group: B
Scott Cobbly Sandy Loam (15 – 65%)	Hydrologic Group: B
Tine Gravelly Sandy Loam (0 – 3%)	Hydrologic Group: A

The basin soil type is predominantly representative of Soils Group B in accordance with the National Resources Conservation Service (NRCS) soils classifications. See Figure 2 – Soils Survey.

3.4 CURVE NUMBER "CN"

The National Resources Conservation Service (SCS Method) was used in this study to approximate peak runoff. The curve number is based on the soils type, the land usage and the vegetative cover.

3.5 EXISTING FACILITIES

Denver and Rio Grande Culvert Crossing Analysis

Based on the results of field observations by High Country Engineering, Inc., three major culvert crossings under the Denver and Rio Grande Railroad were identified. These major crossings are Design Point 4 – Elk Creek, Design Point 6 – No name drainage, Design Point 9 – Leland Creek. A summary of their hydraulic properties is presented below.

Design Point	Description	2 yr – 24 hr Existing Flow (cfs)	100 yr – 24 hr Existing Flow (cfs)
4	Elk Creek at Railroad	2.4	39.6
6	No name drainage at Railroad	0.75	19.3
9	Leland Creek at Railroad	9.2	182
8	Elk Creek at US 40	6.9	145
7	No name drainage at US 40	2.9	50.5
11	Leland Creek at US 40	9.5	189

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

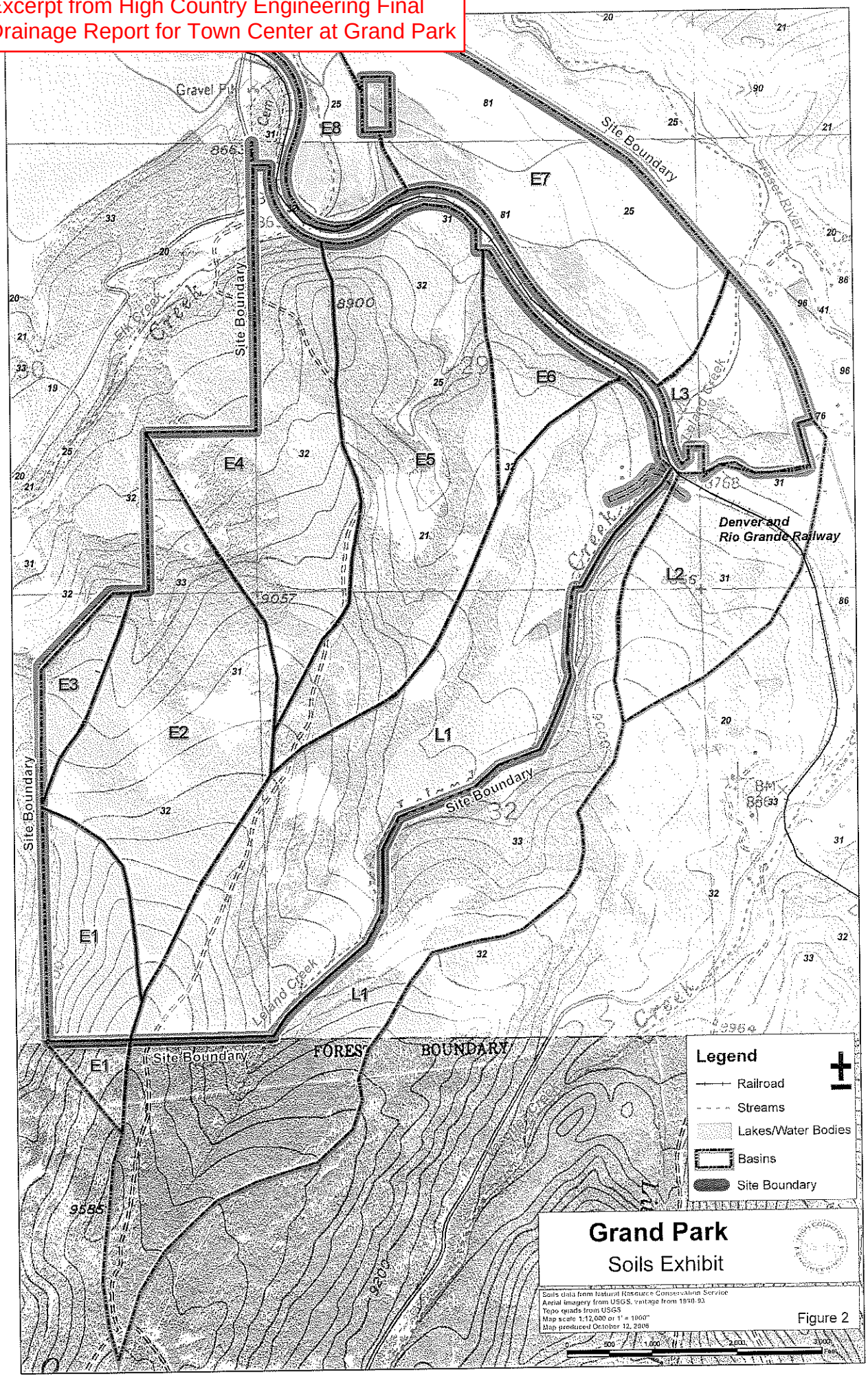
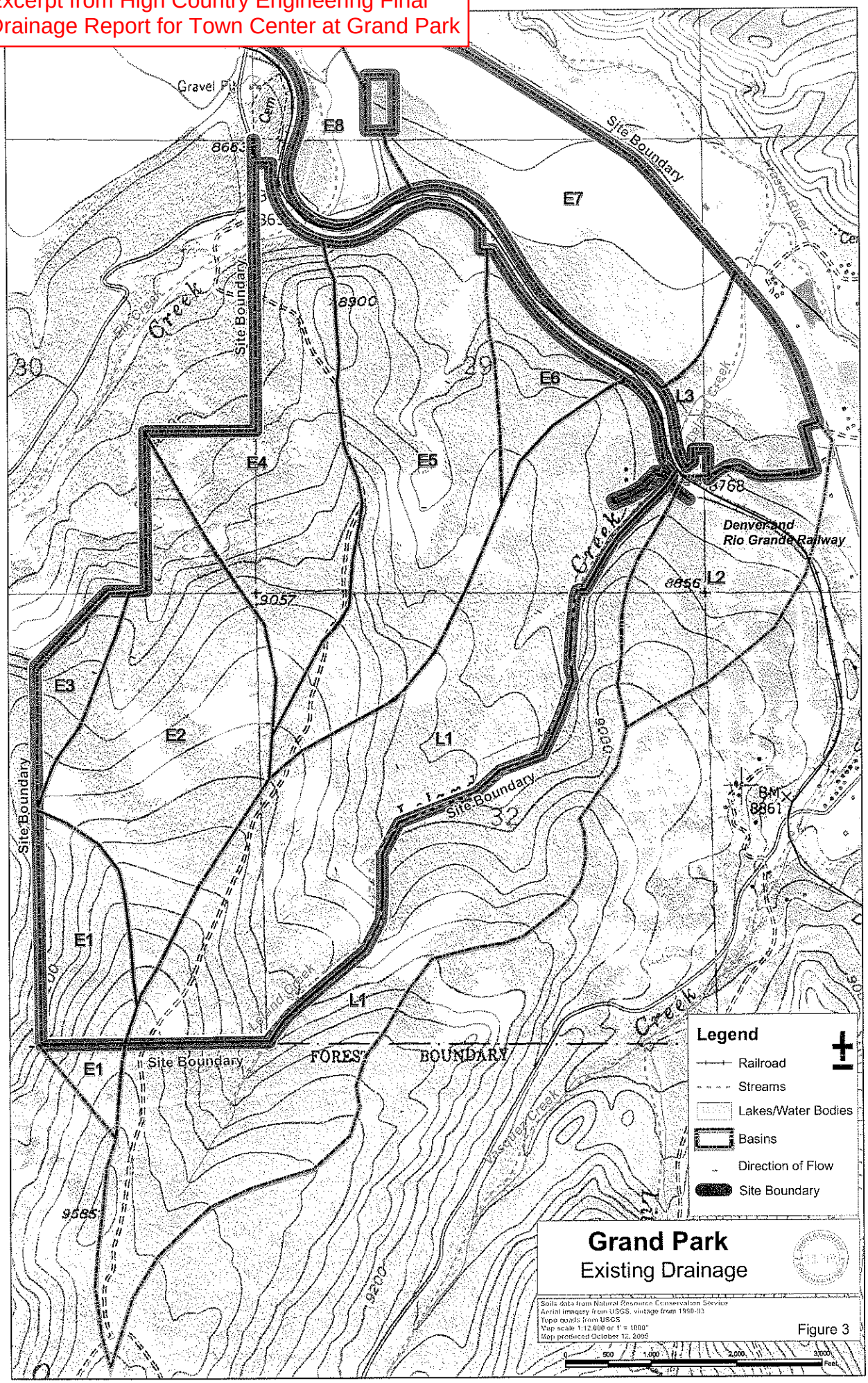


Figure 2

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park



Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

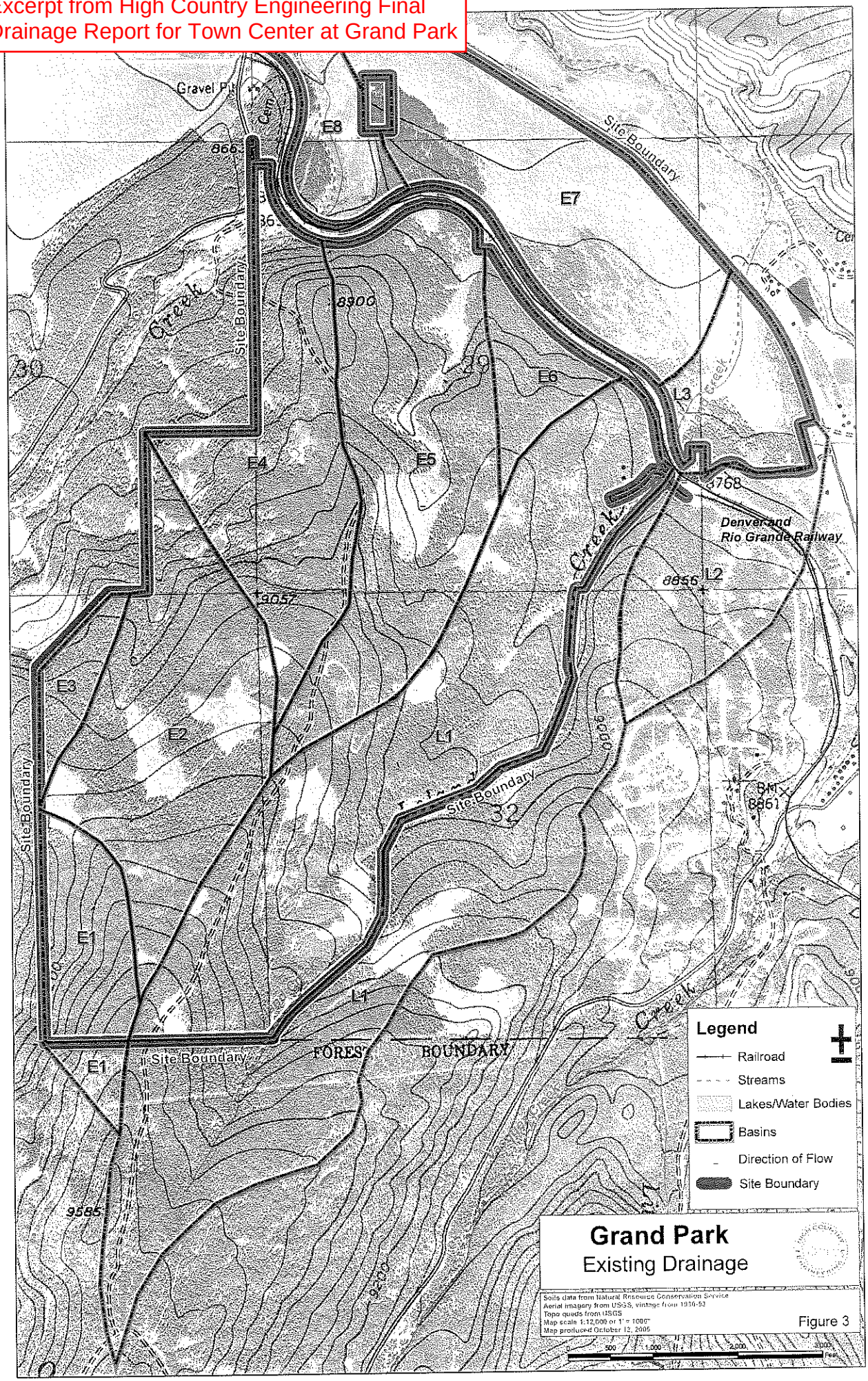


Figure 3

Excerpt from High Country Engineering Final
Drainage Report for Town Center at Grand Park

These culvert crossings are constructed with reinforced concrete pipe or corrugated metal pipe. The capacity of these culverts was determined using the top of the rail elevation and also at three feet below the top of rail (bottom of ballast elevation). Capacity analysis of the major stormwater culverts was performed using Autocad Hydrology, which utilizes the FHWA's HY-8 program. The software uses headwater elevation, tailwater elevation and pipe friction for capacity analysis. The results are shown in Table 3.

Table 3. Existing Culvert Capacities

Design Point	Size (ft)	Quantity	Invert	Max. Water Surface Elevation	Estimated Capacity (cfs)
Elk Creek	3.5	1	8634	8652.75	196
No name	4.0	1	8692.7	8698.8	56.5
Leland Creek	4.0	1	8760.0	8765.0	237.2

4.0 PROPOSED DRAINAGE IMPROVEMENTS

4.1 GENERAL

Proposed drainage improvements were developed for each drainage basin, utilizing Grand County Storm Drainage Criteria and Urban Drainage and Flood Control District's criteria.

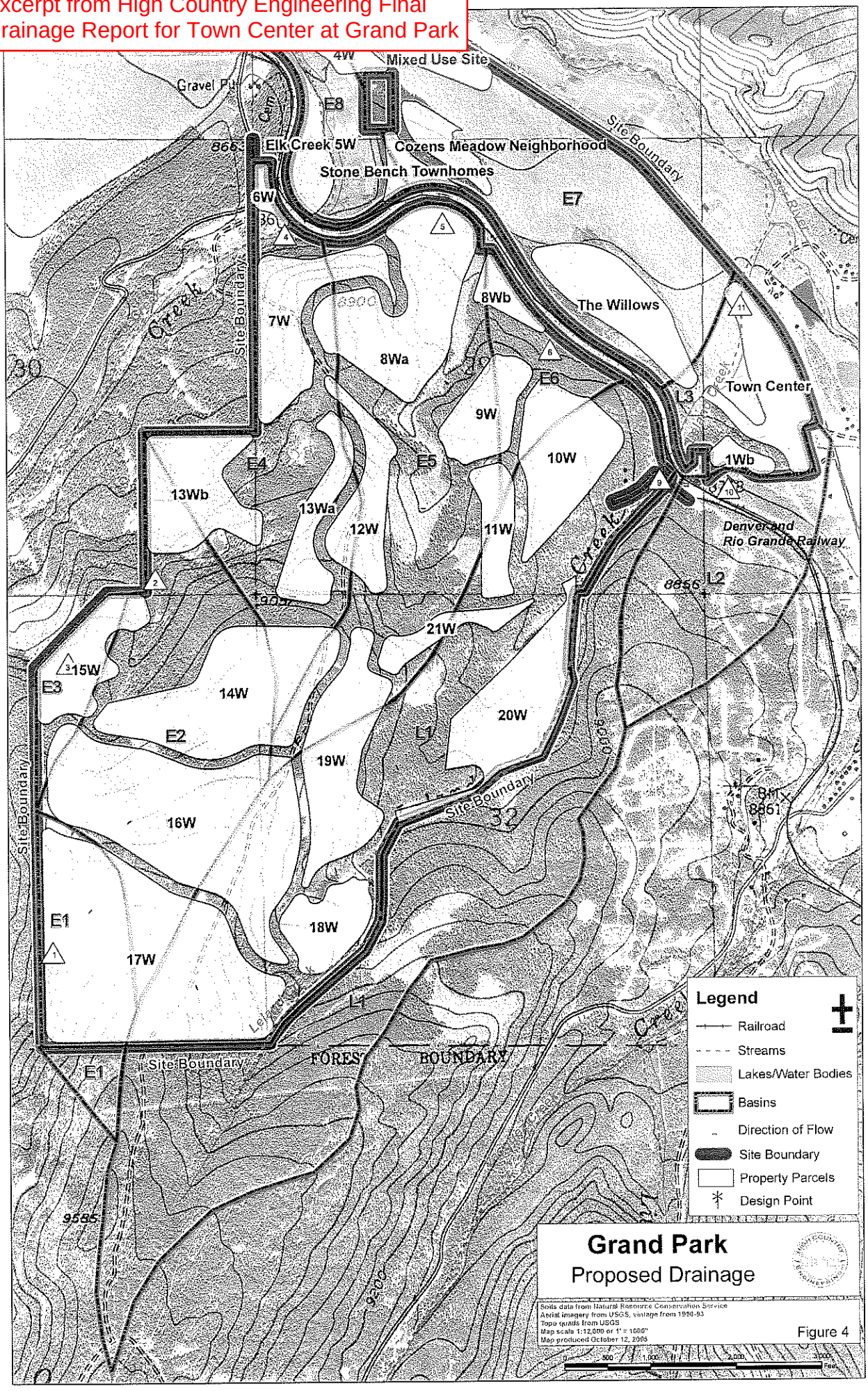
This study did not attempt to forecast lot-specific drainage improvements, but limited itself to the overall stormwater management of each drainage basin.

The proposed drainage improvements were evaluated based on the stormwater routing results and consists of the following:

1. Grass-lined swales and stormwater conveyance channels,
2. Local and regional detention facilities,
3. Culvert crossings (reinforced concrete pipes and box culverts).

Grass-lined swales and channels will be used to convey flows to detention facilities. Storm runoff will be detained in detention facilities for all storm frequencies up to and including the 100-year event. The size and discharge from these detention facilities will be determined based on the capacities of downstream drainage facilities and land availability. Improved channels with drop structures and check dams will be sized to convey the peak 100 year discharges based on fully developed conditions or detained flows, as applicable. The 100 year detention volumes were

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park



Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

calculated using both the SCS Tabular Method and the UDFCD's equation V=K*A. The results of the analysis are included in the Appendix.

The proposed channels will in general, be grass-lined trapezoidal type channels with a variable width bottom and side slopes typically designed at a maximum ratio of three (horizontal) to one (vertical) ratio. The longitudinal slope is adjusted to limit the velocities to a maximum of 5 feet per second during the 100 year event. Some of the large grass-lined channels are proposed to include grade control structures (drop structures) to reduce the amount of earthwork required to construct the channel. Of note, in areas where deep excavations would be required to construct a channel, utilization of storm drain pipe was also considered, to avoid excavating larger areas of land that would be taken up by the side-slopes of the channel excavations.

Below is a summary of developed flows prior to entering the proposed detention facilities:

Design Point	Description	2 yr – 24 hr Proposed Flow (cfs)	100 yr – 24 hr Proposed Flow (cfs)
4	Elk Creek at Railroad	6.2	104
6	No name drainage at Railroad	7.4	56.5
9	Leland Creek at Railroad	8.2	186
8	Elk Creek at US 40	44.1	371
7	No name drainage at US 40	90.4	389
11	Leland Creek at US 40	16.6	197

Water quality enhancement features will be incorporated into the swales, channels, and detention facilities to enhance the water quality resulting from the impacts of future urbanization, on the drainage basins.

1.1 DESIGN BASIS

Preliminary and final design of proposed facilities will be performed in accordance with Town of Fraser's and Grand County's requirements. Detention ponds will incorporate multi-level outlets to control 10-year and 100-year storm events, as well as less frequent events. The applicable Best Management (BMP) of Volume III of the UDFCD Criteria Manual will be used during final design to mitigate potential adverse water quality impacts resulting from development. Detention pond and cell layouts as well as configuration of outlet structures will be established during the Preliminary Design phase, at which time a design report will be prepared presenting development of design concepts. Design reports will include preliminary plans and profiles of channels, storm sewers and culverts.

Excerpt from High Country Engineering Final
Drainage Report for Town Center at Grand Park

Railroad culvert capacities and US 40 capacities or historic discharge rates, which ever is less. Discharges from areas south of US 40 are proposed to be detained discharges to ensure that discharges to off-site areas are at or below historic discharge rates.

4.3 MINOR DRAINAGE SYSTEMS

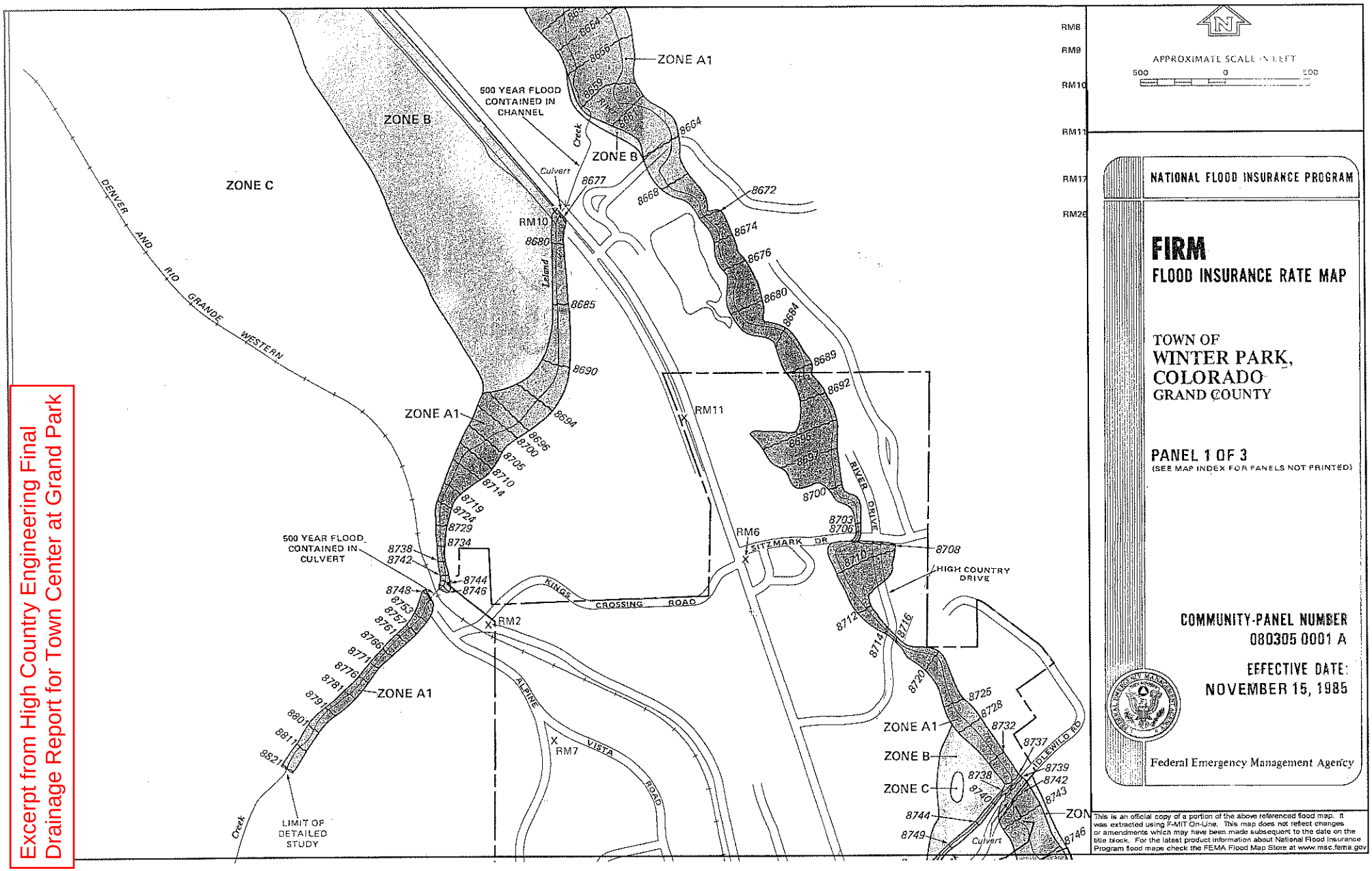
Minor drainage systems will be designed and implemented in accordance with this study during the platting phase of development throughout Grand Park.

4.4 PHASING OF IMPROVEMENTS

Phasing of the stormwater management system will depend on the timing of various developments throughout Grand Park. Regional drainage facilities will be implemented as demand warrants. It is anticipated that each Phased Preliminary Plan to be prepared for Grand Park, will provide design and construction details concerning the drainage facilities to be constructed in such Phase Area, or which may need to be constructed outside of the Phase Area, as a result of the Phase Area development.

4.5 FEMA FIRM MAPPING

The proposed development is contained within the FEMA FIRM map, 080305 001A – Town of Winter Park, Colorado, (Effective Date November 15, 1985). The FIRM map provides 100 year water surface elevations for Leland Creek and the Fraser River. A portion of the site adjacent to US Highway 40 is contained within Zone B – areas subject to 500 year flooding. The remainder of the development is outside the 500 year flooding limits.



Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Excerpt from High Country Engineering Final
Drainage Report for Town Center at Grand Park

5.0 REFERENCES

1. Soil Survey of Grand County Area, Colorado, U.S. Department of Agriculture, Natural Resource Conservation Service, Denver, Colorado.

2. Urban Storm Drainage Criteria Manual, Urban Drainage & Flood Control District (UD&FCD), prepared by Wright – McLaughlin Engineers, March 1969, Revised June 2001.

3. Grand County Storm Drainage Design and Criteria Manual.

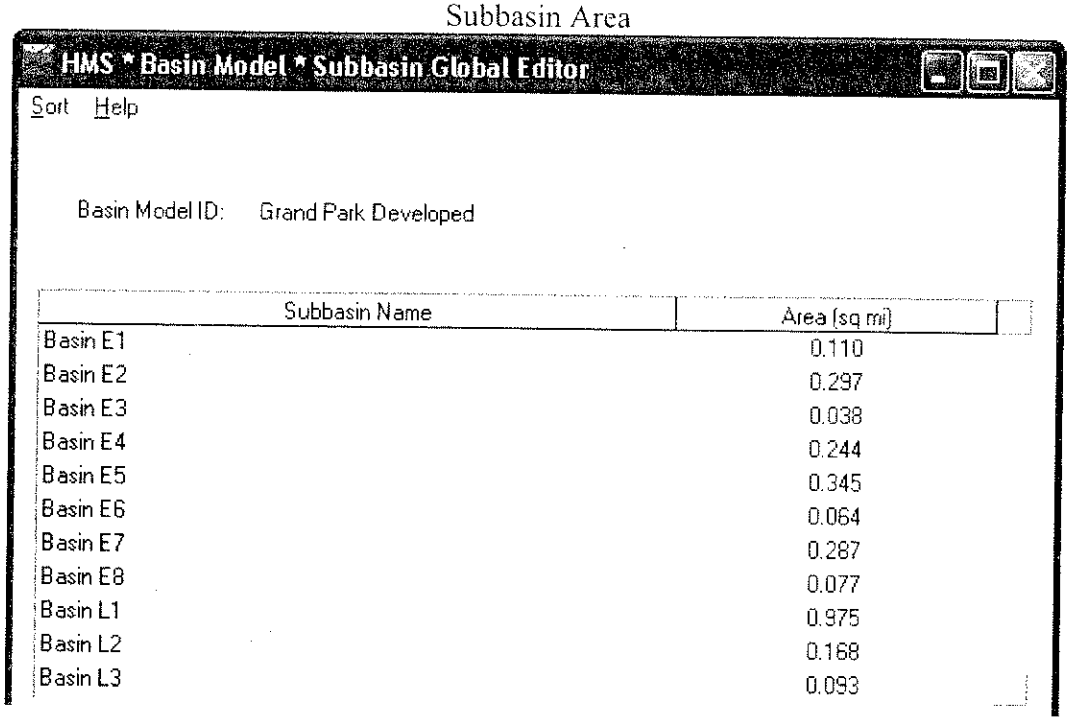
4. NOAA Atlas No. 2, "Precipitation - Frequency Atlas of the Western United Stated, Volume III - Colorado", Miller, J. F., R. H. Frederick, R. J. Tracy, National Weather Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 1976.

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

APPENDIX A – HYDROLOGIC INPUT

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Subbasin Area



Subbasin Name	Area (sq mi)
Basin E1	0.110
Basin E2	0.297
Basin E3	0.038
Basin E4	0.244
Basin E5	0.345
Basin E6	0.064
Basin E7	0.287
Basin E8	0.077
Basin L1	0.975
Basin L2	0.168
Basin L3	0.093

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Reach Parameters – Developed Conditions

HMS * Basin Model * Kinematic Wave Routing

Sort Help

Basin Model ID: Grand Park Developed

Reach Name	Cross Section Shape	Reach Length (ft)	Energy Slope (ft/ft)	Bottom Width or Diameter (ft)	Side Slope (xH:1V)	Manning's n	Min Num. Route Incs.
Reach-1	TRAPEZOID	2417	0.033	100	20	0.03	50
Reach-2	TRAPEZOID	2847	0.039	100	20	0.03	50
Reach-3	TRAPEZOID	3257	0.43	100	20	0.02	50
Reach-4	TRAPEZOID	4519	0.027	100	20	0.02	50
Reach-5	TRAPEZOID	610	0.0164	50	10	0.030	50

Reach Parameters – Existing Conditions

HMS * Basin Model * Kinematic Wave Routing

Sort Help

Basin Model ID: Grand Park

Reach Name	Cross Section Shape	Reach Length (ft)	Energy Slope (ft/ft)	Bottom Width or Diameter (ft)	Side Slope (xH:1V)	Manning's n	Min Num. Route Incs.
Reach-1	TRAPEZOID	2417	0.033	100	20	0.030	50
Reach-2	TRAPEZOID	2847	0.039	100	20	0.03	50
Reach-3	TRAPEZOID	3257	0.43	100	20	0.03	50
Reach-4	TRAPEZOID	4519	0.027	100	20	0.03	50
Reach-5	TRAPEZOID	610	0.0164	50	10	0.030	50

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Precipitation Frequency Data Output

NOAA Atlas 2
Colorado 39.90199?N 105.77495?W
Site-specific Estimates

Map	Precipitation (inches)	Precipitation Intensity (in/hr)
2-year 6-hour	0.98	0.16
2-year 24-hour	1.32	0.06
100-year 6-hour	2.17	0.36
100-year 24-hour	2.98	0.12

Hydrometeorological Design Studies Center - NOAA/National Weather Service
1325 East-West Highway - Silver Spring, MD 20910 - (301) 713-1669
Fri Oct 14 11:58:44 2005

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Region 2

2-Year Rainfall

Y_2 = 2-yr 1-hr estimated value
X_1 = 0.98 = (6-hr)
X_2 = 1.32 = (24-hr)

$Y_2 = 0.011 + 0.942\,[(X_1)(X_1/X_2)]$
$= 0.011 + 0.942\,[0.98\,(0.98/1.32)]$
$= 0.696 = (1\text{-hr})$

2hr = 0.341(6-hr) + 0.659(1-hr) = 0.793
3hr = 0.569(6-hr) + 0.431(1-hr) = 0.858
12hr = 1.2 (from figure 17)

5min = 0.29(1-hr) = 0.202
10min = 0.45(1-hr) = 0.313
15min = 0.57(1-hr) = 0.397
30min = 0.79(1-hr) = 0.550

10-Year Rainfall

Y_{10} = 10-yr 1-hr estimated value
X_1 = 6-hr = 1.40
X_2 = 24-hr = 1.98

100-Year Rainfall

$Y_{100} = 0.494 + 0.755\,[(X_3)(X_3/X_4)]$
X_3 = 2.17 = (6-hr)
X_4 = 2.98 = (24-hr)

$Y_{100} = 0.494 + 0.755\,[(2.17)(2.17/2.98)]$
$= 1.687 = (1\text{-hr})$

2hr = 0.341(6-hr) + 0.659(1-hr) = 1.851
3hr = 0.569(6-hr) + 0.431(1-hr) = 1.962
12hr ≈ 2.5 (from figure 17)

5min = 0.29(1-hr) = 0.489
10min = 0.45(1-hr) = 0.759
15min = 0.57(1-hr) = 0.962
30min = 0.79(1-hr) = 1.333

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Colorado

Discussion of Maps

Figures 20 through 43 present precipitation-frequency maps for Colorado for 6- and 24-hr durations. Figures 20 through 31 are for annual (or all-season) values for the 2-, 5-, 10-, 25-, 50, and 100-yr return periods. Figures 32 through 43 are for the May through October season and are for probabilities of 0.50, 0.20, 0.10, 0.04, 0.02, and 0.01. The isopluvial maps represent the 360- and 1,440-min durations for the partial-duration series. Data were tabulated for clock and observation-day intervals for the annual series and were adjusted by the empirical factors given in the ANALYSIS section.

Isoline interval. The isoline interval selected was designed to provide a reasonably complete description of the isopluvial pattern in various regions of the state. The isoline interval over most of the state on maps for the 24-hr duration is 0.2 in. for precipitation-frequency values below 3.0 in., 0.4 in. between 3.0 in. and 5.0 in., and 0.5 in. at values greater than 5.0 in. However, in southwestern Colorado along the San Juan Mountains, the annual maps use an isoline interval of 0.2 in. below precipitation-frequency values of 2.0 in., and 0.5 in. for values over 2.0 in. On the maps for the 6-hr duration, the interval is 0.1 in. for precipitation-frequency values under 1.2 in. at the 2-yr and 0.50 and 0.20 probability level (on maps for the May through October season). At longer return periods (or lower probabilities), the upper limit of the 0.1-in. isoline interval increases in order to maintain the isopluvial gradient and degree of detail. On all maps for the 6-hr duration, the isoline interval changes from 0.2 in. below 3.0 in. to 0.4 in. over 3.0-in. precipitation-frequency values. Dashed intermediate lines have been placed between widely separated isolines and in regions where a linear interpolation between the normal isopluvial interval would lead to erroneous interpolation. "Lows" that close within the boundaries of a particular map have been hatched on the low-valued side of the isoline.

Importance of snow in precipitation-frequency values. The annual maps in this Atlas represent frequency values of precipitation regardless of type. For many hydrologic purposes, precipitation falling as rain must be treated in a different manner from that falling as snow. The contribution of snow amounts to precipitation-frequency values in Colorado and the Rocky Mountain States (roughly Montana, Wyoming, Colorado, New Mexico, and Utah) was investigated. In this area, there were about 50 stations per state having 10 to 15 yrs of observation of snowfall as part of the precipitation observing program. For each such station, two data series were formed as discussed under Interpretation of Results, Importance of Snow in Estimating Frequency Values.

A ratio was formed of the 2-yr 24-hr value for the series containing maximum annual events without regard to the type of precipitation and the 2-yr 24-hr value for the series with snow occurrences eliminated. A plot of this ratio vs latitude (fig. 15) shows that the ratio tends to be at a maximum in the latitude of Colorado and Utah. Over all of Colorado, the all-precipitation series tends to average about 10 percent higher than the series with snow eliminated. However, examination of the data shows that in the relatively flat areas east of a smoothed 6,000-ft contour the differences between the two series are minor. With data from this area eliminated, the difference between the two series averages about 15 percent, with some individual differences as large as 40 to 50 percent. About half the stations have differences greater than 10 percent. These differences indicate that frequency values computed from an annual series of rainfall amounts only would be different from those composed of all-precipitation values, and two separate sets of precipitation-frequency maps were needed.

Snowfall observations are made at only about 15 percent of the precipitation stations used in this study. For this reason, a rainfall-frequency study could not be made by direct methods. Since most snowfall occurs during the colder half of the year, a series containing only values for the May to October season was compared with the series that was based on rainfall only. The two series were in good agreement, except for a slight bias toward higher values for the May to October season. This bias results from some large amounts in late October and early May occurring as snow and thus excluded from the rainfall-only series. The average difference is only about 4 percent, with no consistent preference toward higher elevations or particular geographic regions.

Two sets of maps were prepared for Colorado. The first set consists of annual maps based on precipitation data from all months of the year without regard to the type of precipitation, rain, rain and snow mixed, all snow, hail, etc. The second series takes precipitation values from the month May to October. No attempt was made in this second series to differentiate between types of precipitation occurring within these months, but the investigations mentioned in the preceding paragraph indicate that these maps will approximate the values that would be obtained by using a data series made up of precipitation events that are exclusively rain. Since data for only part of the year were used, these maps have been labeled with the appropriate probabilities rather than with a return period in years (figs. 32–43).

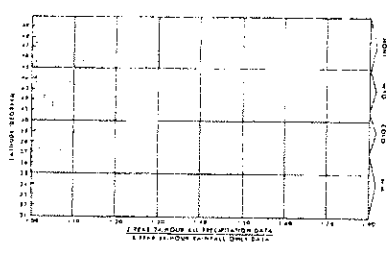


Figure 15. *Ratio of 2-yr 24-hr value for all data to 2-yr 24-hr value for rainfall only vs latitude.*

Table 11. *Equations for estimating 1-hr values in Colorado with statistical parameters for each equation*

Region of applicability*	Equation	Corr. coeff.	No. of stations	Mean of computed stn. values (inches)	Standard error of estimate (inches)
South Platte, Republican, Arkansas, and Cimarron River Basins (1)	$Y_2 = 0.218 + 0.709[(X_3)(X_1/X_2)]$	0.94	75	1.91	0.074
	$Y_{100} = 1.897 + 0.439[(X_4)(X_4/X_3)] - 0.008Z$	.84	75	2.68	.317
San Juan, Upper Rio Grande, Upper Colorado, and Gunnison River Basins and Green River Basin below confluence with the Yampa River (2)	$Y_2 = -0.011 + 0.942[(X_3)(X_1/X_2)]$	.95	86	0.72	.085
	$Y_{100} = 0.494 + 0.755[(X_4)(X_4/X_3)]$	.90	85	1.96	.290
Yampa and Green River Basins above confluence of Green and Yampa Rivers (3)	$Y_2 = 0.019 + 0.711[(X_3)(X_1/X_2)] + 0.001Z$	.82	98	0.40	.031
	$Y_{100} = 0.338 + 0.670[(X_4)(X_4/X_3)] + 0.001Z$	.80	79	1.04	.141
North Platte (4)	$Y_2 = 0.028 + 0.890[(X_3)(X_1/X_2)]$	.93	90	0.60	.062
	$Y_{100} = 0.671 + 0.757[(X_4)(X_4/X_3)] - 0.003Z$	.91	86	1.71	.236

* Numbers in parentheses refer to geographic regions shown in figure 19. See text for more complete description.

List of variables
- Y_2 = 2-yr 1-hr estimated value
- Y_{100} = 100-yr 1-hr estimated value
- X_1 = 2-yr 6-hr value from precipitation-frequency maps
- X_3 = 2-yr 24-hr value from precipitation-frequency maps
- X_5 = 100-yr 6-hr value from precipitation-frequency maps
- X_4 = 100-yr 24-hr value from precipitation-frequency maps
- Z = point elevation in hundreds of feet

Table 12. *Adjustment factors to obtain 5-min estimates from 1-hr values*

Duration (min)	5	10	15	30
Ratio to 1-hr	0.29	0.45	0.57	0.79

(Adopted from *U.S. Weather Bureau Technical Paper* No. 40, 1961.)

Procedures for Estimating Values for Durations Other Than 6 and 24 Hrs

The isopluvial maps in this Atlas are for 6- and 24-hr durations. For many hydrologic purposes, values for other durations are necessary. Such values can be estimated using the 6- and 24-hr maps and the empirical methods outlined in the following sections. The procedures detailed below for obtaining 1-, 2-, and 3-hr estimates were developed specifically for this Atlas. The procedures for obtaining estimates for less than 1-hr duration and for 12-hr duration were adopted from *Weather Bureau Technical Paper* No. 40 (U.S. Weather Bureau 1961) only after investigation demonstrated their applicability to data from the area covered by this Atlas.

Procedures for estimating 1-hr (60-min) precipitation-frequency values. Multiple-regression screening techniques were used to develop equations for estimating 1-hr duration values. Factors considered in the screening process were restricted to those that could be determined easily from the maps of this Atlas or from generally available topographic maps.

The 11 western states were separated into several geographic regions. The regions were chosen on the basis of meteorological and climatological homogeneity and are generally combinations of river basins separated by prominent divides. Four of these geographic regions are partially within Colorado. For convenience and use as an overlay on the precipitation-frequency maps, these regions are outlined on figure 19. The first Colorado region is part of the region that lies to the east of the Continental Divide and the crest of the Sangre de Cristo and Sacramento Mountains and is south of the divide separating the drainage basins of the North and South Platte Rivers. It consists of that portion of Colorado drained by the South Platte, Republican, Arkansas, and Cimarron Rivers (Region 1, fig. 19). The second region consists of the area drained by the San Juan, Upper Rio Grande, Upper Colorado, and Gunnison Rivers and by the Green River below its confluence with the Yampa River (Region 2, fig. 19). This is part of a larger region that extends from southwestern Colorado, westward to the Wasatch Mountains of Utah, and southward through Arizona and the western half of New Mexico. The third region is the mountainous portion of the area between the Continental Divide and the crest of the Cascade Range. The portion that lies within Colorado is the northwestern portion of the State that is drained by the Yampa River and the Green River above its confluence with the Yampa (Region 3, fig. 19). A small portion of Colorado drained by the North Platte is Region 4, figure 19. The larger region of which this is a part includes that portion of Wyoming and Montana east of the Continental Divide. Equations to provide estimates for the 1-hr duration for 2- and 100-yr return periods are shown in table 11. Also listed are the statistical parameters associated with each equation. In these equations, the variable $(X_1)(X_1/X_2)$ or

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

$\{(X_3)(X_6/X_3)\}$ can be regarded as the 6-hr value times the slope of the line connecting the 6- and 24-hr values for the appropriate return period.

As with any separation into regions, the boundary can only be regarded as the sharpest portion of a zone of transition between regions. These equations have been tested for boundary discontinuities by computing values using equations from both sides of the boundary. Differences were found to be mostly under 15 percent. However, it is suggested that when computing estimates along or within a few miles of a regional boundary computations be made using equations applicable to each region and that the average of such computations be adopted.

Estimates of 1-hr precipitation-frequency values for return periods between 2 and 100 yrs. The 1-hr values for the 2- and 100-yr return periods can be plotted on the nomogram of figure 6 to obtain values for return periods greater than 2 yrs or less than 100 yrs. Draw a straight line connecting the 2- and 100-yr values and read the desired return-period value from the nomogram.

Estimates for 2- and 3-hr (120- and 180-min) precipitation-frequency values. To obtain estimates of precipitation-frequency values for 2 or 3 hrs, plot the 1- and 6-hr values from the Atlas on the appropriate nomogram of figure 16. Draw a straight line connecting the 1- and 6-hr values, and read the 2- and 3-hr values from the nomogram. This nomogram is independent of return period. It was developed using data from the same regions used to develop the 1-hr equations.

The mathematical solution from the data used to develop figure 16 gives the following equations for estimating the 2- and 3-hr values:

For Region 1, figure 19	2-hr = 0.342 (6-hr) + 0.658 (1-hr)	(3)
	3-hr = 0.597 (6-hr) + 0.403 (1-hr)	(4)
For Region 2, figure 19	2-hr = 0.341 (6-hr) + 0.659 (1-hr)	(5)
	3-hr = 0.569 (6-hr) + 0.431 (1-hr)	(6)
For Regions 3 and 4, figure 19	2-hr = 0.250 (6-hr) + 0.750 (1-hr)	(7)
	3-hr = 0.467 (6-hr) + 0.533 (1-hr)	(8)

Estimates for 12-hr (720-min) precipitation-frequency values. To obtain estimates for the 12-hr duration, plot values from the 6- and 24-hr maps on figure 17. Read the 12-hr estimates at the intersection of the line connecting these points with the 12-hr duration line of the nomogram.

Estimates for less than 1 hr. To obtain estimates for durations of less than 1 hr, apply the values in table 12 to the 1-hr value for the return period of interest.

	1-hr	2-hr	3-hr	6-hr	24-hr
2-yr	*0.71*	*0.83*	*0.91*	1.05	1.58
5-yr				1.38	1.99
10-yr				1.59	2.27
25-yr				1.90	2.65
50-yr				2.19	2.95
100-yr	*1.86*			2.39	3.35

Table 13. *Precipitation data for depth-frequency atlas computation point 106°00′ W., 39°00′ N.*

Illustration of Use of Precipitation-Frequency Maps, Diagrams, and Equations

To illustrate the use of these maps, values were read from figures 20 to 31 for the point at 39°00′ N. and 106°00′ W. These values are shown in boldface type in table 13. The values read from the maps should be plotted on the return-period diagram of figure 6 because (1) not all points are as easy to locate on a series of maps as are latitude-longitude intersections, (2) there may be some slight registration differences in printing, and (3) precise interpolation between isolines is difficult. This has been done for the 24-hr values in table 13 (fig. 18a) and a line of best fit has been drawn subjectively. On this nomogram, the line fits the data rather well. Had any points deviated noticeably from the line, the value would have been reread from the line and the new value substituted in table 13 and adopted in preference to the original readings.

The 2- and 100-yr 1-hr values for the point were computed from the equations applicable to Region 1, figure 19 (table 11), since the point is east of the Continental Divide. The 2-yr 1-hr value is estimated at 0.71 in. (2-yr 6- and 24-hr values from table 13), the estimated 100-yr 1-hr value is 1.86 in. (100-yr 6- and 24-hr values from table 13 and elevation of 9,500 ft). By plotting these 1-hr values on figure 6 and connecting them with a straight line, one can obtain estimates for return periods of 5, 10, 25, and 50 yrs.

The 2- and 3-hr values can be estimated by using the nomogram of figure 16 or equations (3) and (4). The 1- and 6-hr values for the desired return period are obtained as above. Plot these points on the nomogram of figure 16 and connect them with a straight line. Read the estimates for 2 or 3 hrs at the intersections of the connecting line and the 2- and 3-hr vertical lines. An example is shown in figure 18b for the 2-yr return period. The 2-yr 2-hr (0.83 in.) and 2-yr 3-hr (0.91 in.) values are in italics on table 13.

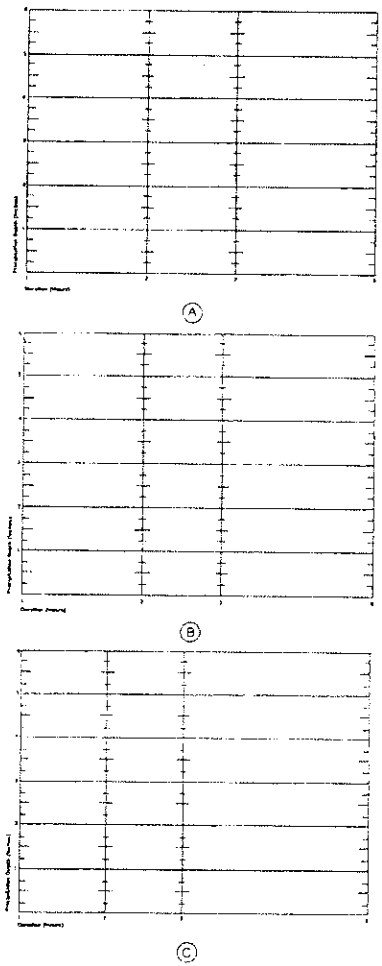
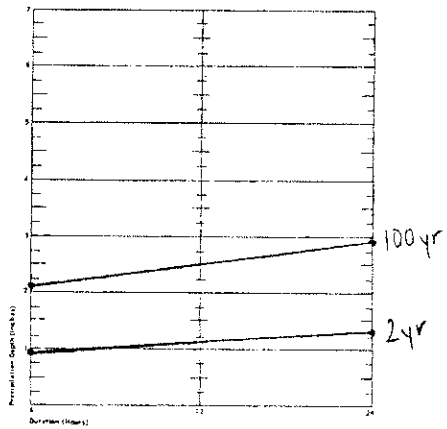


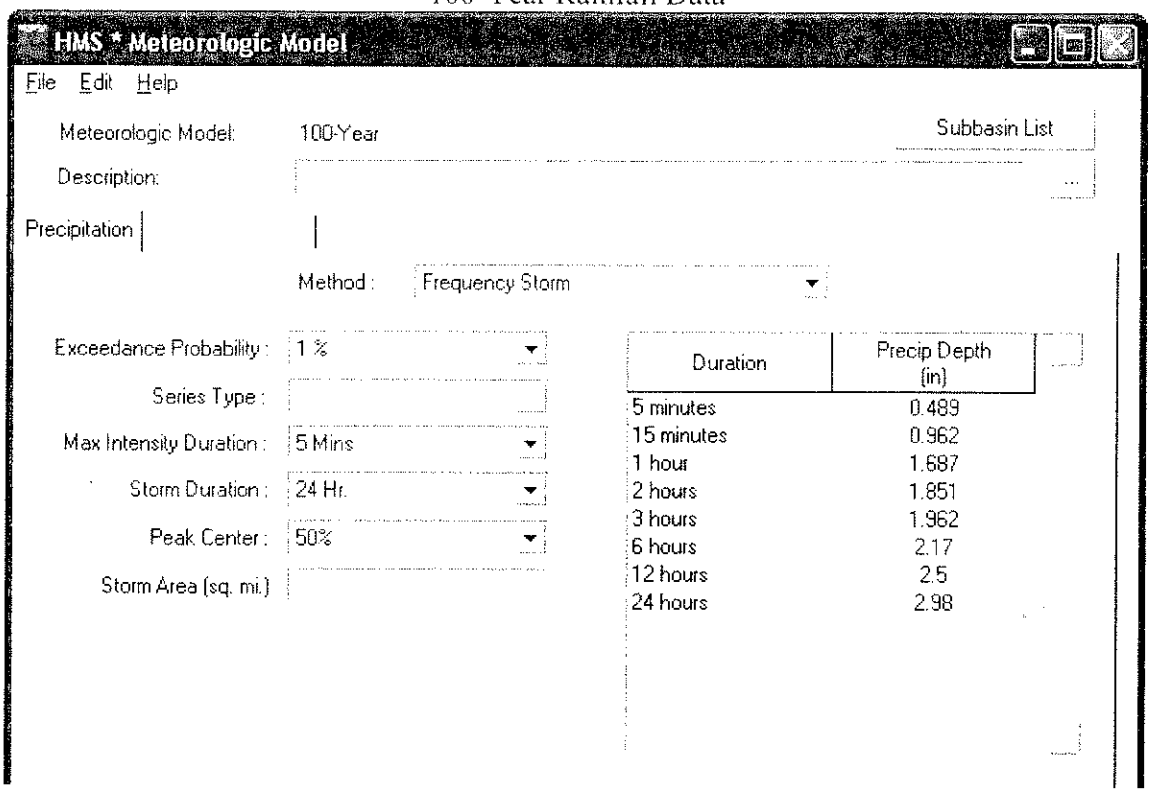
Figure 18. *Precipitation depth-duration diagram (1- to 6-hr)*
a. South Platte, Republican, Arkansas, and Cimarron River Basins (Region 1, fig. 19).
b San Juan, Upper Rio Grande, Upper Colorado, and Gunnison River Basins and Green River Basin below its confluence with the Yampa River (Region 2, fig. 19).
c Yampa and Green River Basins above confluence of Green and Yampa Rivers (Region 3, fig. 19) and North Platte Drainage (Region 4, fig. 19).

Figure 17. *Precipitation depth-duration diagram (6- to 24-hr)*

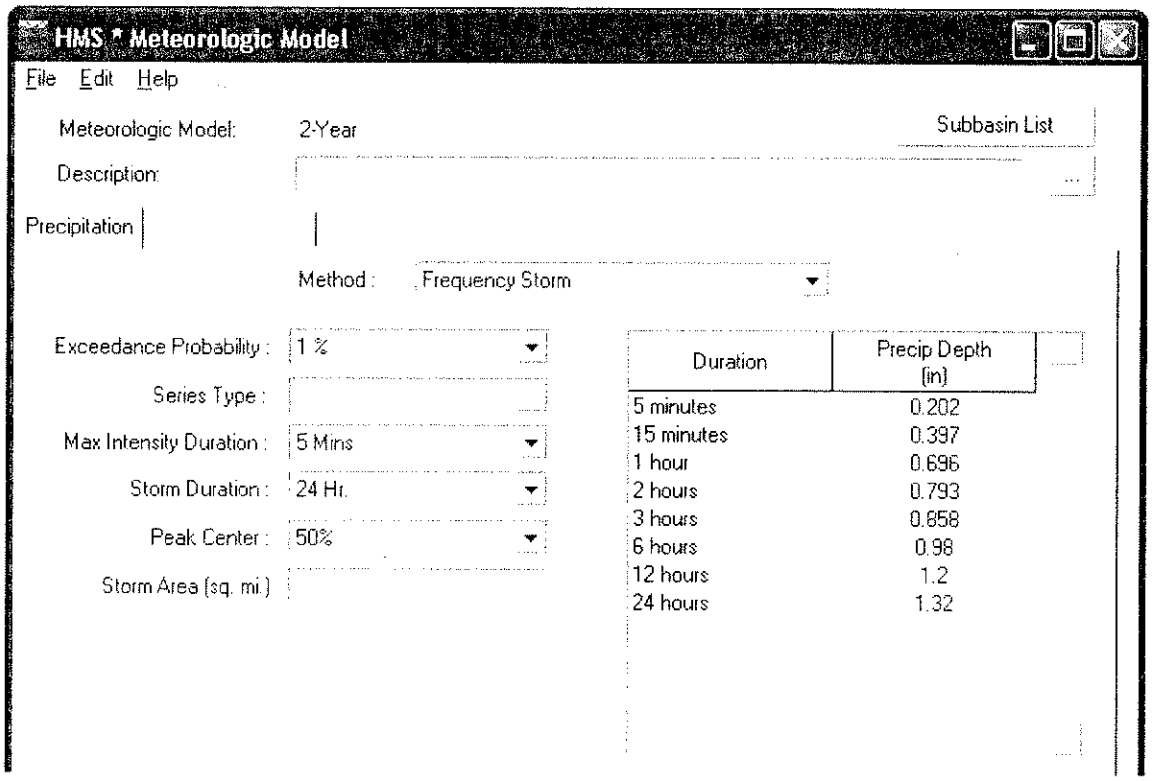


Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

100-Year Rainfall Data



2-Year Rainfall Data



Grand Park - Existing Conditions
HCE Project No. 2052014.00
Soils Classification for Runoff Coefficient

Basin	Total Area	Total Area	Type B	Type C or D	Type A	Type B	Type C or D	Type A	% Imperv.	$C_{5\text{ - Type B}}$	$C_{100\text{ - Type B}}$	$C_{5\text{ - Type C/D}}$	$C_{100\text{ - Type C/D}}$	$C_{5\text{ - Type A}}$	$C_{100\text{ - Type A}}$	C_5	C_{100}
	(ac)	(mi^2)	Area (ac)	Area (ac)	Area (ac)	(%)	(%)	(%)	(Runoff Co.)	(Table RO-5)	(Table RO-5)	(Table RO-5)	(Table RO-5)	(Table RO-5)	(Table RO-5)	composite	composite
E1	70.5	0.110	70.5	0.0	0.0	100%	0%	0%	2%	0.088	0.362	0.162	0.508	0.008	0.216	**0.088**	**0.362**
E2	190.7	0.297	190.7	0.0	0.0	100%	0%	0%	2%	0.088	0.362	0.162	0.508	0.008	0.216	**0.088**	**0.362**
E3	24.1	0.038	24.1	0.0	0.0	100%	0%	0%	2%	0.088	0.362	0.162	0.508	0.008	0.216	**0.088**	**0.362**
E4	156.6	0.244	122.9	33.7	0.0	78%	22%	0%	2%	0.088	0.362	0.162	0.508	0.008	0.216	**0.104**	**0.393**
E5	221.0	0.345	57.3	163.7	0.0	26%	74%	0%	2%	0.088	0.362	0.162	0.508	0.008	0.216	**0.143**	**0.470**
E6	41.0	0.064	15.7	25.3	0.0	38%	62%	0%	2%	0.088	0.362	0.162	0.508	0.008	0.216	**0.134**	**0.452**
E7	184.0	0.287	31.2	98.6	54.2	17%	54%	29%	2%	0.088	0.362	0.162	0.508	0.008	0.216	**0.104**	**0.397**
E8	49.5	0.077	11.8	36.5	1.1	24%	74%	2%	2%	0.088	0.362	0.162	0.508	0.008	0.216	**0.141**	**0.466**
L1	624.8	0.975	468.2	156.5	0.0	75%	25%	0%	2%	0.088	0.362	0.162	0.508	0.008	0.216	**0.107**	**0.399**
L2	107.7	0.168	107.5	0.6	0.0	100%	1%	0%	2%	0.088	0.362	0.162	0.508	0.008	0.216	**0.089**	**0.364**
L3	59.4	0.093	24.2	34.1	1.0	41%	58%	2%	2%	0.088	0.362	0.162	0.508	0.008	0.216	**0.129**	**0.444**

Grand Park - Developed Conditions
HCE Project No. 2052014.00
Soils Classification for Runoff Coefficient

Basin	Total Area	Total Area	Type B	Type C or D	Type A	Type B	Type C or D	Type A	% Imperv.	$C_{5\text{ - Type B}}$	$C_{100\text{ - Type B}}$	$C_{5\text{ - Type C/D}}$	$C_{100\text{ - Type C/D}}$	$C_{5\text{ - Type A}}$	$C_{100\text{ - Type A}}$	C_5	C_{100}
	(ac)	(mi^2)	Area (ac)	Area (ac)	Area (ac)	(%)	(%)	(%)	(Runoff Co.)	(Table RO-5)	(Table RO-5)	(Table RO-5)	(Table RO-5)	(Table RO-5)	(Table RO-5)	composite	composite
E1	70.5	0.110	70.5	0.0	0.0	100%	0%	0%	15%	0.170	0.420	0.240	0.540	0.100	0.280	**0.170**	**0.420**
E2	190.7	0.297	190.7	0.0	0.0	100%	0%	0%	15%	0.170	0.420	0.240	0.540	0.100	0.280	**0.170**	**0.420**
E3	24.1	0.038	24.1	0.0	0.0	100%	0%	0%	14%	0.165	0.415	0.235	0.545	0.095	0.275	**0.165**	**0.415**
E4	156.6	0.244	122.9	33.7	0.0	78%	22%	0%	26%	0.225	0.465	0.280	0.560	0.165	0.352	**0.237**	**0.485**
E5	221.0	0.345	57.3	163.7	0.0	26%	74%	0%	36%	0.275	0.485	0.335	0.570	0.225	0.390	**0.319**	**0.548**
E6	41.0	0.064	15.7	25.3	0.0	38%	62%	0%	41%	0.305	0.505	0.355	0.580	0.255	0.410	**0.336**	**0.551**
E7	184.0	0.287	31.2	98.6	54.2	17%	54%	29%	73%	0.525	0.640	0.555	0.695	0.475	0.585	**0.526**	**0.653**
E8	49.5	0.077	11.8	36.5	1.1	24%	74%	2%	32%	0.260	0.470	0.315	0.570	0.200	0.375	**0.299**	**0.541**
L1	624.8	0.975	468.2	156.5	0.0	75%	25%	0%	15%	0.170	0.420	0.240	0.540	0.100	0.280	**0.188**	**0.450**
L2	107.7	0.168	107.5	0.6	0.0	100%	1%	0%	2%	0.088	0.365	0.160	0.510	0.010	0.220	**0.089**	**0.367**
L3	59.4	0.093	24.2	34.1	1.0	41%	58%	2%	47%	0.340	0.513	0.380	0.595	0.285	0.455	**0.362**	**0.559**

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Soil Types by Basin			Cowdrey loam	Cumulic Cryaquolls	Frisco-Peeler Gravelly sandy loam	Frisco-Peeler Gravelly sandy loam	Frisco-Peeler Gravelly sandy loam	Scout cobbly Sandy loam	Tine Gravelly sandy loam	Outside Soil Study
Areas in Acres			15-45% Slope	nearly level	2-6%	6-25%	25-65%	15-65%	0-3%	(blank)
Basin	Basin_Area	Location	21	25	31	32	33	76	81	
E1	12.469	Offsite				0.525	0.067			11.843
	57.985	Onsite				48.938	9.044			
E1 Total	70.454					49.463	9.110			11.843
E2	190.678	Onsite			40.509	125.723	24.435			
E3	24.086	Onsite				19.076	4.999			
E4	156.640	Onsite	31.052	2.731	12.512	71.293	39.051			
E5	220.972	Onsite	145.454	18.265	18.729	38.518				
E6	41.025	Onsite	25.238	0.039	0.138	15.610				
E7	183.955	Onsite	2.184	96.375	31.168				54.228	
E8	49.483	Onsite	5.948	30.576	2.374	9.442			1.132	
L1	299.307	Offsite		29.642		47.194	90.185			132.257
	325.489	Onsite	113.384	13.492	0.065	198.542				
L1 Total	624.797		113.384	43.135	0.065	245.736	90.185			132.257
L2	107.729	Offsite		0.260	25.132	77.017	1.136	4.184		
L3	59.356	Onsite	0.951	33.190	12.712	2.490		9.024	0.988	

PARCELS BY BASIN

Area in Acres			Parcels/Land Use																							
			10W	11W	12W	13Wa	13Wb	14W	15W	16W	17W	18W	19W	1Wb	20W	21W	4W	6W	7W	8Wa	6Wb	9W	Cozans Meadow Neighborhood	Elk Creek 5W	Mixed Use Site	Stone Bench Townhomes	The Willows	Tc Ce
BASIN	BASIN_AREA	LOCATION	34.644	13.593	22.419	17.970	33.154	60.281	22.600	96.556	110.109	18.181	40.055	4.208	40.049	9.914	7.491	3.197	32.200	52.410	6.553	19.145	9.696	13.578	10.073	6.554	29.668	2
E1	12.469	Offsite																										
	57.985	Onsite									52.075																	
E1 Total	70.454										52.075																	
E2	190.678	Onsite					11.445	43.033	4.170	62.149	15.755																	
E3	24.086	Onsite							17.784	2.153																		
E4	156.640	Onsite			5.963	16.924	21.711	10.243										3.182	26.162	3.323								
E5	220.972	Onsite		4.758	16.457	1.047		7.016		0.922			14.705			6.070			6.020	49.084	1.019	12.525						
E6	41.025	Onsite	8.111	0.886																	5.535	6.621						
E7	183.955	Onsite															3.662						127.334		10.074	4.597	28.600	
E8	49.483	Onsite															3.858							13.579		1.954		
L1	299.307	Offsite													0.019													
	325.489	Onsite	26.536	7.950						31.399	42.348	18.182	25.353		40.033	3.845												
L1 Total	624.797		26.536	7.950						31.399	42.348	18.182	25.353		40.052	3.845												
L2	107.729	Offsite																										
L3	59.356	Onsite												4.208													1.070	2

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Table 2-2a.—Runoff curve numbers for urban areas[1]

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1]Average runoff condition, and $I_a = 0.2S$.
[2]The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3]CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4]Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5]Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Table 2-2c.—Runoff curve numbers for other agricultural lands[1]

Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing.[2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element.[3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	[4]30	48	65	73
Woods—grass combination (orchard or tree farm).[5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods.[6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	[4]30	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

[1]Average runoff condition, and $I_a = 0.2S$.

[2]*Poor:* <50% ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: >75% ground cover and lightly or only occasionally grazed.

[3]*Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

[4]Actual curve number is less than 30; use CN = 30 for runoff computations.

[5]CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

[6]*Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Loss Rate – Developed Conditions

HMS * Basin Model * SCS Curve Number

Sort Help

Basin Model ID: Grand Park Developed

Subbasin Name	SCS Curve Number	Initial Abstraction (in)	Imperviousness (%)
Basin E6	80		2
Basin E5	82		2
Basin E4	73		2
Basin E3	65		2
Basin E2	65		2
Basin E1	65		2
Basin L2	60		2
Basin L1	68		2
Basin L3	83		2
Basin E8	80		2
Basin E7	89		2

Loss Rate – Existing Conditions

HMS * Basin Model * SCS Curve Number

Sort Help

Basin Model ID: Grand Park

Subbasin Name	SCS Curve Number	Initial Abstraction (in)	Imperviousness (%)
Basin E6	68		2
Basin E5	69.6		2
Basin E4	63		2
Basin E3	60		2
Basin E2	60		2
Basin E1	60		2
Basin L2	60		2
Basin L1	70		2
Basin L3	68		2
Basin E8	69		2
Basin E7	60		2

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Grand Park - Developed Conditions
HCE Project No. 2052014.00
% Imperviousness & Curve Number

Basin	Total Area	Composite	Type B	Type C or D	Type A	Type B	Type C or D	Type A	Composite
	(ac)	% Imp.	(%)	(%)	(%)	CN	CN	CN	CN
E1	70.5	15%	100%	0%	0%	65	78	50	65
E2	190.7	15%	100%	0%	0%	65	78	50	65
E3	24.1	14%	100%	0%	0%	65	78	50	65
E4	156.6	26%	78%	22%	0%	70	82	54	73
E5	221.0	36%	26%	74%	0%	74	85	60	82
E6	41.0	41%	38%	62%	0%	76	83	62	80
E7	184.0	73%	17%	54%	29%	89	92	82	89
E8	49.5	32%	24%	74%	2%	72	83	57	80
L1	624.8	15%	75%	25%	0%	65	78	50	68
L2	107.7	2%	100%	1%	0%	60	75	36	60
L3	59.4	47%	41%	58%	2%	80	85	72	83

Planning	Average	Type B	Type C or D	Type A
Area	% Imperv	CN	CN	CN
10W	80	90	93	87
11W	65	85	91	77
12W	80	90	93	87
13Wa	30	72	83	57
13Wb	25	70	82	54
14W	25	70	82	54
15W	17	67	80	50
16W	15	65	78	50
17W	20	68	83	51
18W	25	70	82	54
19W	60	81	85	72
1Wb	75	89	92	82
20W	65	85	91	77
21W	65	85	91	77
4W	90	94	95	90
6W	90	94	95	90
7W	65	85	91	77
8Wa	65	85	91	77
8Wb	70	87	90	80
9W	80	90	93	87

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Grand Park - Existing Conditions
HCE Project No. 2052014.00
Time of Concentration

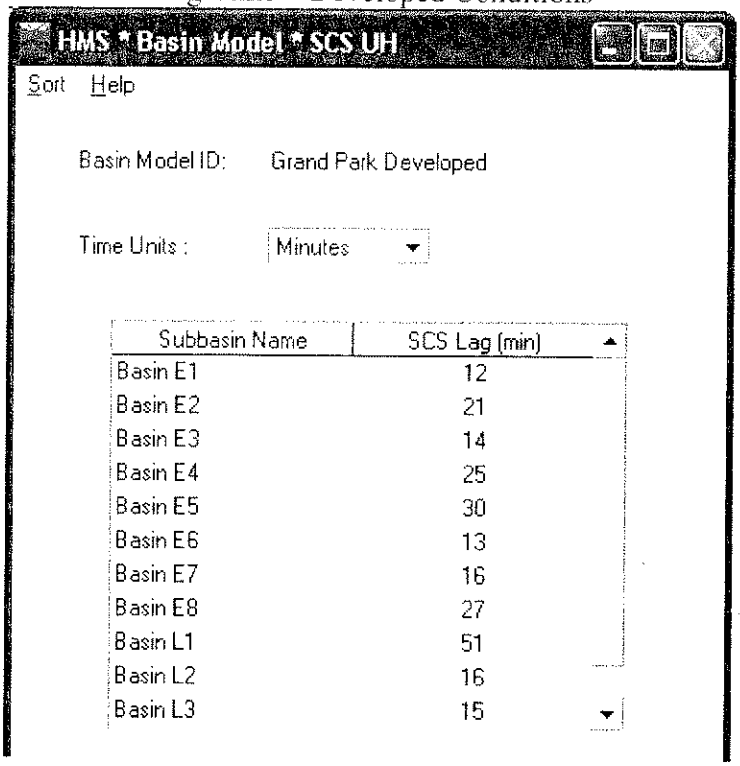
Sub-Basin Data			Overland Flow (t_i)					Travel Time (t_t)					Time of Concentration	
Designation	Area (acres)	C_5	Length (ft)	Δelev.	Slope (ft/ft)	Velocity (ft/s)	t_i (min)	Length (ft)	Δelev.	Slope (ft/ft)	Velocity (ft/s)	t_t (min)	t_c (min)	Lag Time(min)
E1	70.5	0.088	500	40	0.0800	2.8284	20.57	1800	380	0.2111	4.5947	6.53	27.10	16.26
E2	190.7	0.088	500	50	0.1000	3.1623	19.11	4800	650	0.1354	3.6799	21.74	40.85	24.51
E3	24.1	0.088	500	45	0.0900	3.0000	19.79	2000	160	0.0800	2.8284	11.79	31.57	18.94
E4	156.6	0.104	500	25	0.0500	2.2361	23.64	5300	480	0.0906	3.0094	29.35	53.00	31.80
E5	221.0	0.143	500	45	0.0900	3.0000	18.71	6800	550	0.0809	2.8440	39.85	58.56	35.14
E6	41.0	0.134	500	10	0.0200	1.4142	31.04	1600	160	0.1000	3.1623	8.43	39.47	23.68
E7	184.0	0.104	500	31	0.0620	2.4900	22.02	2400	40	0.0167	1.2910	30.98	53.00	31.80
E8	49.5	0.141	500	40	0.0800	2.8284	19.50	5700	110	0.0193	1.3892	68.39	87.88	52.73
L1	624.8	0.107	500	15	0.0300	1.7321	27.91	13000	1000	0.0769	2.7735	78.12	106.03	63.62
L2	107.7	0.089	500	15	0.0300	1.7321	28.41	2600	225	0.0865	2.9417	14.73	43.14	25.89
L3	59.4	0.129	500	40	0.0800	2.8284	19.73	2120	54	0.0255	1.5960	22.14	41.87	25.12

Grand Park - Developed Conditions
HCE Project No. 2052014.00
Time of Concentration

Sub-Basin Data			Overland Flow (t_i)					Travel Time (t_t)					Time of Concentration			
Designation	Area (acres)	C_5	Length (ft)	Δelev.	Slope (ft/ft)	Velocity (ft/s)	t_i (min)	Length (ft)	Δelev.	Slope (ft/ft)	Velocity (ft/s)	t_t (min)	t_c (min)	Urban Check	Lower t_c	Lag Time
E1	70.5	0.170	300	35	0.1167	3.4157	12.93	2000	385	0.1925	4.3875	7.60	20.53	22.78	20.53	12.32
E2	190.7	0.170	300	35	0.1167	3.4157	12.93	5000	665	0.1330	3.6469	22.85	35.78	39.44	35.78	21.47
E3	24.1	0.165	300	20	0.0667	2.5820	15.63	2200	185	0.0841	2.8998	12.64	28.28	23.89	23.89	14.33
E4	156.6	0.237	300	15	0.0500	2.2361	15.87	5500	490	0.0891	2.9848	30.71	46.58	42.22	42.22	25.33
E5	221.0	0.319	300	25	0.0833	2.8868	12.12	7000	570	0.0814	2.8536	40.88	53.01	50.56	50.56	30.33
E6	41.0	0.336	300	5	0.0167	1.2910	20.19	1800	165	0.0917	3.0277	9.91	30.10	21.67	21.67	13.00
E7	184.0	0.526	300	10	0.0333	1.8257	12.06	2600	61	0.0235	1.5317	28.29	40.35	26.11	26.11	15.67
E8	49.5	0.299	300	40	0.1333	3.6515	10.65	5900	110	0.0186	1.3654	72.02	82.67	44.44	44.44	26.67
L1	624.8	0.188	300	10	0.0333	1.8257	19.18	13200	1005	0.0761	2.7593	79.73	98.91	85.00	85.00	51.00
L2	107.7	0.089	300	9	0.0300	1.7321	22.01	2800	231	0.0825	2.8723	16.25	38.26	27.22	27.22	16.33
L3	59.4	0.362	300	24	0.0800	2.8284	11.62	2320	70	0.0302	1.7370	22.26	33.88	24.56	24.56	14.73

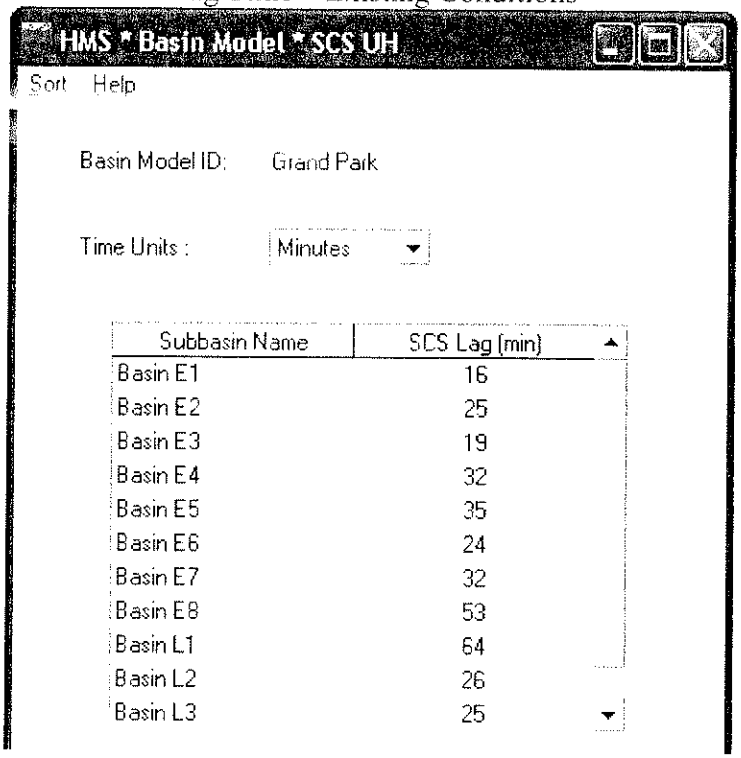
Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Lag Time – Developed Conditions



Subbasin Name	SCS Lag (min)
Basin E1	12
Basin E2	21
Basin E3	14
Basin E4	25
Basin E5	30
Basin E6	13
Basin E7	16
Basin E8	27
Basin L1	51
Basin L2	16
Basin L3	15

Lag Time – Existing Conditions



Subbasin Name	SCS Lag (min)
Basin E1	16
Basin E2	25
Basin E3	19
Basin E4	32
Basin E5	35
Basin E6	24
Basin E7	32
Basin E8	53
Basin L1	64
Basin L2	26
Basin L3	25

No Baseflow for All Basins

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

TABLE RO-3

Recommended Percentage Imperviousness Values

Land Use or Surface Characteristics	Percentage Imperviousness
Business:	
Commercial areas	95
Neighborhood areas	85
Residential:	
Single-family	*
Multi-unit (detached)	60
Multi-unit (attached)	75
Half-acre lot or larger	*
Apartments	80
Industrial:	
Light areas	80
Heavy areas	90
Parks, cemeteries	5
Playgrounds	10
Schools	50
Railroad yard areas	15
Undeveloped Areas:	
Historic flow analysis	2
Greenbelts, agricultural	2
Off-site flow analysis (when land use not defined)	45 *
Streets:	
Paved	100
Gravel (packed)	40
Drive and walks	90
Roofs	90
Lawns, sandy soil	0
Lawns, clayey soil	0

* See Figures RO-3 through RO-5 for percentage imperviousness.

Based in part on the data collected by the District since 1969, an empirical relationship between C and the percentage imperviousness for various storm return periods was developed. Thus, values for C can be determined using the following equations (Urbonas, Guo and Tucker 1990).

$$C_A = K_A + \left(1.31i^3 - 1.44i^2 + 1.135i - 0.12\right) \text{ for } C_A \geq 0, \text{ otherwise } C_A = 0 \qquad \text{(RO-6)}$$

$$C_{CD} = K_{CD} + \left(0.858i^3 - 0.786i^2 + 0.774i + 0.04\right) \qquad \text{(RO-7)}$$

$$C_B = \left(C_A + C_{CD}\right)/2$$

in which:

i = % imperviousness/100 expressed as a decimal (see Table RO-3)

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

TABLE RO-5

Runoff Coefficients, *C*

Percentage Imperviousness	Type C and D NRCS Hydrologic Soil Groups					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
0%	0.04	0.15	0.25	0.37	0.44	0.50
5%	0.08	0.18	0.28	0.39	0.46	0.52
10%	0.11	0.21	0.30	0.41	0.47	0.53
15%	0.14	0.24	0.32	0.43	0.49	0.54
20%	0.17	0.26	0.34	0.44	0.50	0.55
25%	0.20	0.28	0.36	0.46	0.51	0.56
30%	0.22	0.30	0.38	0.47	0.52	0.57
35%	0.25	0.33	0.40	0.48	0.53	0.57
40%	0.28	0.35	0.42	0.50	0.54	0.58
45%	0.31	0.37	0.44	0.51	0.55	0.59
50%	0.34	0.40	0.46	0.53	0.57	0.60
55%	0.37	0.43	0.48	0.55	0.58	0.62
60%	0.41	0.46	0.51	0.57	0.60	0.63
65%	0.45	0.49	0.54	0.59	0.62	0.65
70%	0.49	0.53	0.57	0.62	0.65	0.68
75%	0.54	0.58	0.62	0.66	0.68	0.71
80%	0.60	0.63	0.66	0.70	0.72	0.74
85%	0.66	0.68	0.71	0.75	0.77	0.79
90%	0.73	0.75	0.77	0.80	0.82	0.83
95%	0.80	0.82	0.84	0.87	0.88	0.89
100%	0.89	0.90	0.92	0.94	0.95	0.96
	Type B NRCS Hydrologic Soils Group					
0%	0.02	0.08	0.15	0.25	0.30	0.35
5%	0.04	0.10	0.19	0.28	0.33	0.38
10%	0.06	0.14	0.22	0.31	0.36	0.40
15%	0.08	0.17	0.25	0.33	0.38	0.42
20%	0.12	0.20	0.27	0.35	0.40	0.44
25%	0.15	0.22	0.30	0.37	0.41	0.46
30%	0.18	0.25	0.32	0.39	0.43	0.47
35%	0.20	0.27	0.34	0.41	0.44	0.48
40%	0.23	0.30	0.36	0.42	0.46	0.50
45%	0.26	0.32	0.38	0.44	0.48	0.51
50%	0.29	0.35	0.40	0.46	0.49	0.52
55%	0.33	0.38	0.43	0.48	0.51	0.54
60%	0.37	0.41	0.46	0.51	0.54	0.56
65%	0.41	0.45	0.49	0.54	0.57	0.59
70%	0.45	0.49	0.53	0.58	0.60	0.62
75%	0.51	0.54	0.58	0.62	0.64	0.66
80%	0.57	0.59	0.63	0.66	0.68	0.70
85%	0.63	0.66	0.69	0.72	0.73	0.75
90%	0.71	0.73	0.75	0.78	0.80	0.81
95%	0.79	0.81	0.83	0.85	0.87	0.88
100%	0.89	0.90	0.92	0.94	0.95	0.96

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

TABLE RO-5 (CONTINUED)

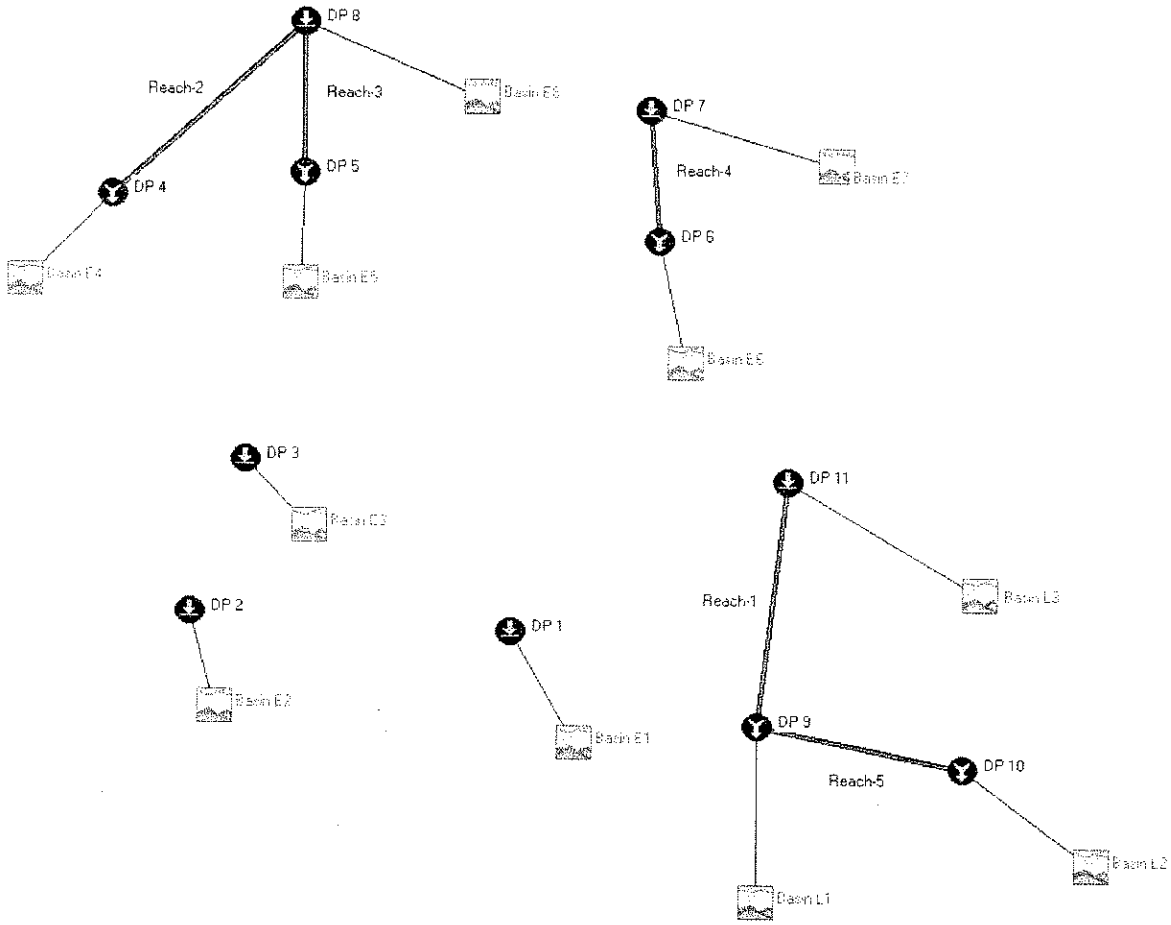
Runoff Coefficients, *C*

Percentage Imperviousness	Type A NRCS Hydrologic Soils Group					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
0%	0.00	0.00	0.05	0.12	0.16	0.20
5%	0.00	0.02	0.10	0.16	0.20	0.24
10%	0.00	0.06	0.14	0.20	0.24	0.28
15%	0.02	0.10	0.17	0.23	0.27	0.30
20%	0.06	0.13	0.20	0.26	0.30	0.33
25%	0.09	0.16	0.23	0.29	0.32	0.35
30%	0.13	0.19	0.25	0.31	0.34	0.37
35%	0.16	0.22	0.28	0.33	0.36	0.39
40%	0.19	0.25	0.30	0.35	0.38	0.41
45%	0.22	0.27	0.33	0.37	0.40	0.43
50%	0.25	0.30	0.35	0.40	0.42	0.45
55%	0.29	0.33	0.38	0.42	0.45	0.47
60%	0.33	0.37	0.41	0.45	0.47	0.50
65%	0.37	0.41	0.45	0.49	0.51	0.53
70%	0.42	0.45	0.49	0.53	0.54	0.56
75%	0.47	0.50	0.54	0.57	0.59	0.61
80%	0.54	0.56	0.60	0.63	0.64	0.66
85%	0.61	0.63	0.66	0.69	0.70	0.72
90%	0.69	0.71	0.73	0.76	0.77	0.79
95%	0.78	0.80	0.82	0.84	0.85	0.86
100%	0.89	0.90	0.92	0.94	0.95	0.96

Excerpt from High Country Engineering Final
Drainage Report for Town Center at Grand Park

APPENDIX B– HYDROLOGIC OUTPUT

Grand Park Master Drainage Plan



Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

ummary of Results

100-yr Existing Conditions

Hydrologic Element	Discharge Peak	Time of Peak	Volume (ac	Drainage Area
Basin E6	19.324		2.2342	0.064
DP 6	19.324		2.2342	0.064
Reach-4	19.148		2.1672	0.064
Basin E7	33.958		5.6703	0.287
DP 7	50.463		7.8376	0.351
Basin E4	39.604		6.0580	0.244
DP 4	39.604		6.0580	0.244
Reach-2	39.456		5.9452	0.244
Basin E5	93.513		13.188	0.345
DP 5	93.513		13.188	0.345
Reach-3	93.055		13.103	0.345
Basin E8	14.739		2.8117	0.077
DP 8	144.80		21.860	0.666
Basin E3	5.9553		0.75839	0.038
DP 3	5.9553		0.75839	0.038
Basin E2	40.212		5.8967	0.297
DP 2	40.212		5.8967	0.297
Basin [illegible]	18.510		2.1992	0.110
DP 1	18.510		2.1992	0.110
Basin L2	22.406		3.3349	0.168
DP 10	22.406		3.3349	0.168
Reach-5	22.211		3.3140	0.168
Basin L1	172.59		37.471	0.975
DP 9	182.22		40.785	1.143
Reach-1	182.13		40.424	1.143
Basin L3	27.551		3.2445	0.093
DP 11	189.24		43.668	1.236

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

ummary of Results

2-yr Existing Conditions

Hydrologic Element	Discharge Peak	Time of Peak	Volume (ac	Drainage Area
Basin E6	0.74542		0.18222	0.064
DP 6	0.74542		0.18222	0.064
Reach-4	0.73971		0.17154	0.064
Basin E7	2.8198		0.40225	0.287
DP 7	2.8510		0.57379	0.351
Basin E4	2.3979		0.38328	0.244
DP 4	2.3979		0.38328	0.244
Reach-2	2.3772		0.37110	0.244
Basin E5	3.9164		1.2088	0.345
DP 5	3.9164		1.2088	0.345
Reach-3	3.9070		1.1925	0.345
Basin E8	0.65430		0.24698	0.077
DP 8	6.9324		1.8106	0.666
Basin E3	0.49955			0.038
DP 3	0.49955			0.038
Basin E2	3.3527		0.41665	0.297
DP 2	3.3527		0.41665	0.297
Basin E1	1.5772		0.15453	0.110
DP 1	1.5772		0.15453	0.110
Basin L2	1.8632		0.23569	0.168
DP 10	1.8632		0.23569	0.168
Reach-5	1.8544		0.23475	0.168
Basin L1	8.6585		3.5367	0.975
DP 9	9.1755		3.7714	1.143
Reach-1	9.1722		3.7080	1.143
Basin L3	1.0660		0.26461	0.093
DP 11	9.5213		3.9726	1.236

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

mmary of Results

Project : Grand Park Run Name : Run 2

100-year Developed Conditions

Hydrologic Element	Discharge Peak	Time of Peak	Volume (ac	Drainage Area
Basin E6	58.514		4.3100	0.064
DP 6	58.514		4.3100	0.064
Reach-4	58.266		4.1881	0.064
Basin E7	369.67		28.966	0.287
DP 7	389.07		33.154	0.351
Basin E4	104.03		11.402	0.244
DP 4	104.03		11.402	0.244
Reach-2	103.96		11.289	0.244
Basin E5	224.62		25.350	0.345
DP 5	224.62		25.350	0.345
Reach-3	222.28		25.248	0.345
Basin E8	48.024		5.1549	0.077
DP 8	371.66		41.692	0.666
Basin E3	11.596		1.0982	0.038
DP 3	11.596		1.0982	0.038
Basin E2	74.579		8.5401	0.297
DP 2	74.579		8.5401	0.297
Basin E1	36.219		3.1821	0.110
DP 1	36.219		3.1821	0.110
Basin L2	28.249		3.3581	0.168
DP 10	28.249		3.3581	0.168
Reach-5	27.823		3.3345	0.168
Basin L1	176.12		33.408	0.975
DP 9	186.02		36.743	1.143
Reach-1	185.60		36.398	1.143
Basin L3	94.340		7.2045	0.093
DP 11	196.72		43.602	1.236

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

mmary of Results

Project : Grand Park Run Name : Run 4

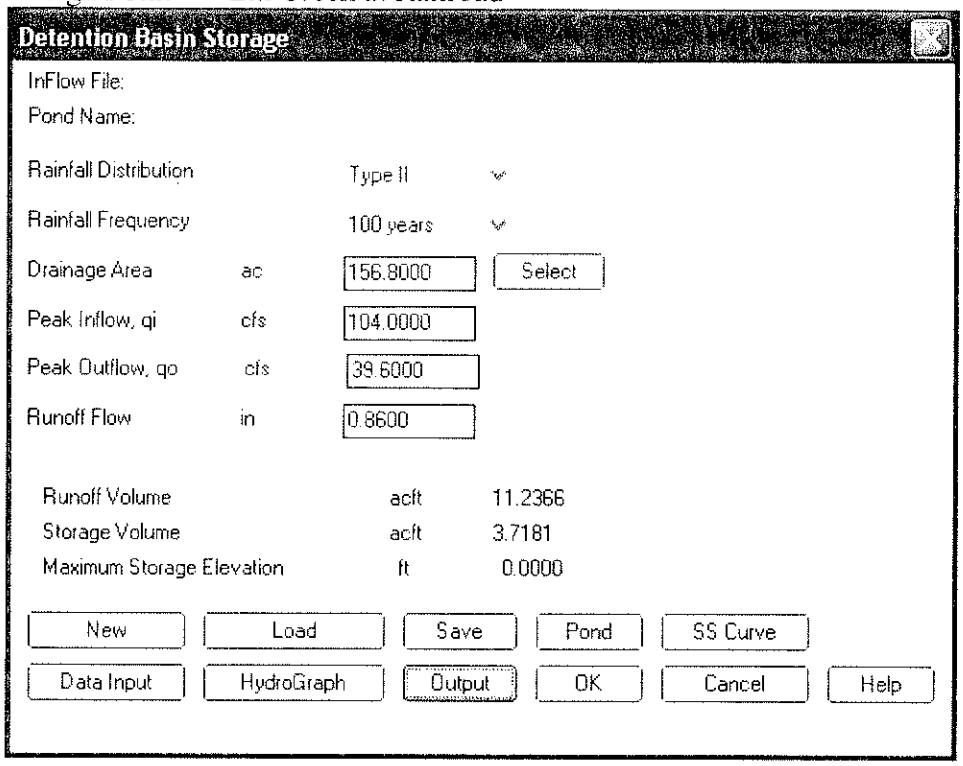
2-year Developed Conditions

Hydrologic Element	Discharge Peak	Time of Peak	Volume (ac	Drainage Area
Basin E6	7.4256		0.76401	0.064
DP 6	7.4256		0.76401	0.064
Reach-4	7.2605		0.78619	0.064
Basin E7	90.356		7.8460	0.287
DP 7	90.390		8.6321	0.351
Basin E4	6.2238		1.3307	0.244
DP 4	6.2238		1.3307	0.244
Reach-2	6.1836		1.2996	0.244
Basin E5	34.032		4.9823	0.345
DP 5	34.032		4.9823	0.345
Reach-3	33.888		4.9611	0.345
Basin E8	6.1455		0.91482	0.077
DP 8	44.126		7.1755	0.666
Basin E3	0.57987			0.038
DP 3	0.57987			0.038
Basin E2	3.7038		0.57448	0.297
DP 2	3.7038		0.57448	0.297
Basin E1	1.8115		0.21388	0.110
DP 1	1.8115		0.21388	0.110
Basin L2	2.4079		0.23600	0.168
DP 10	2.4079		0.23600	0.168
Reach-5	2.3886		0.23524	0.168
Basin L1	7.4891		2.7233	0.975
DP 9	8.2402		2.9585	1.143
Reach-1	8.2230		2.9043	1.143
Basin L3	15.280		1.4853	0.093
DP 11	16.616		4.3897	1.236

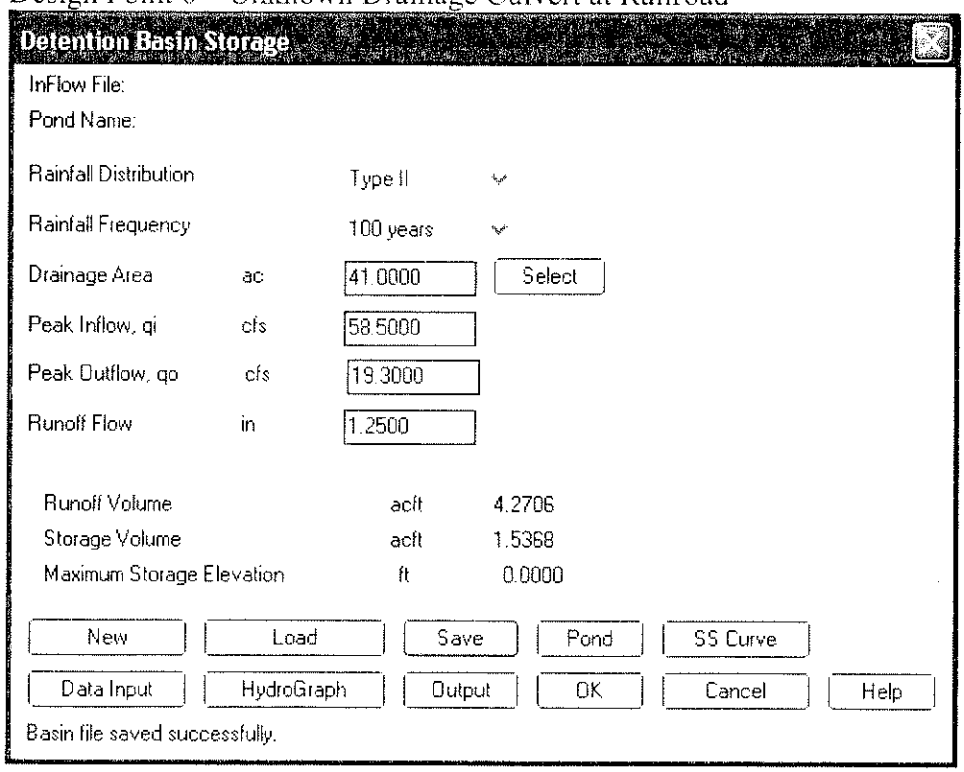
Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Detention Calculations – AutoCAD Hydrology Method

Design Point 4 – Elk Creek at Railroad

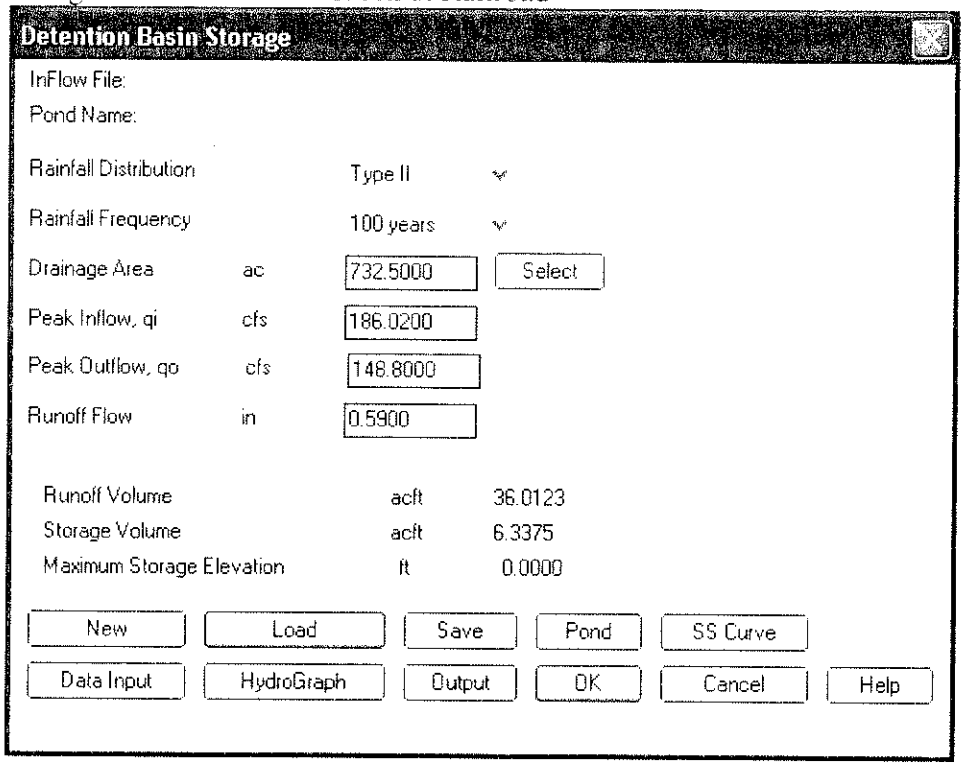


Design Point 6 – Unknown Drainage Culvert at Railroad

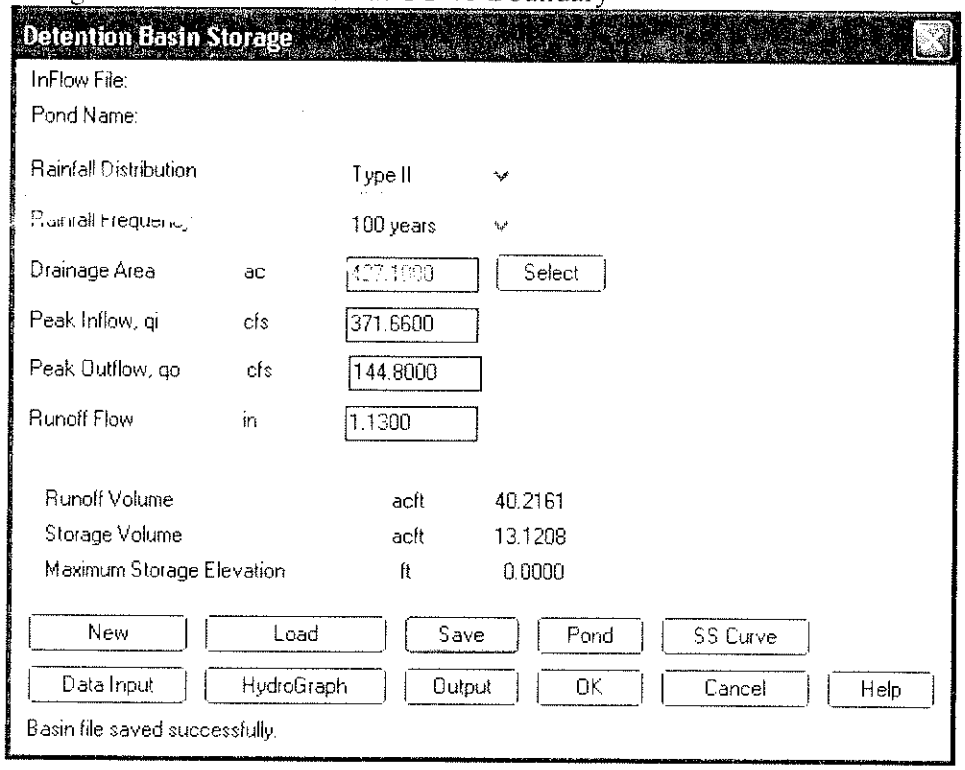


Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Design Point 9 – Leland Creek at Railroad

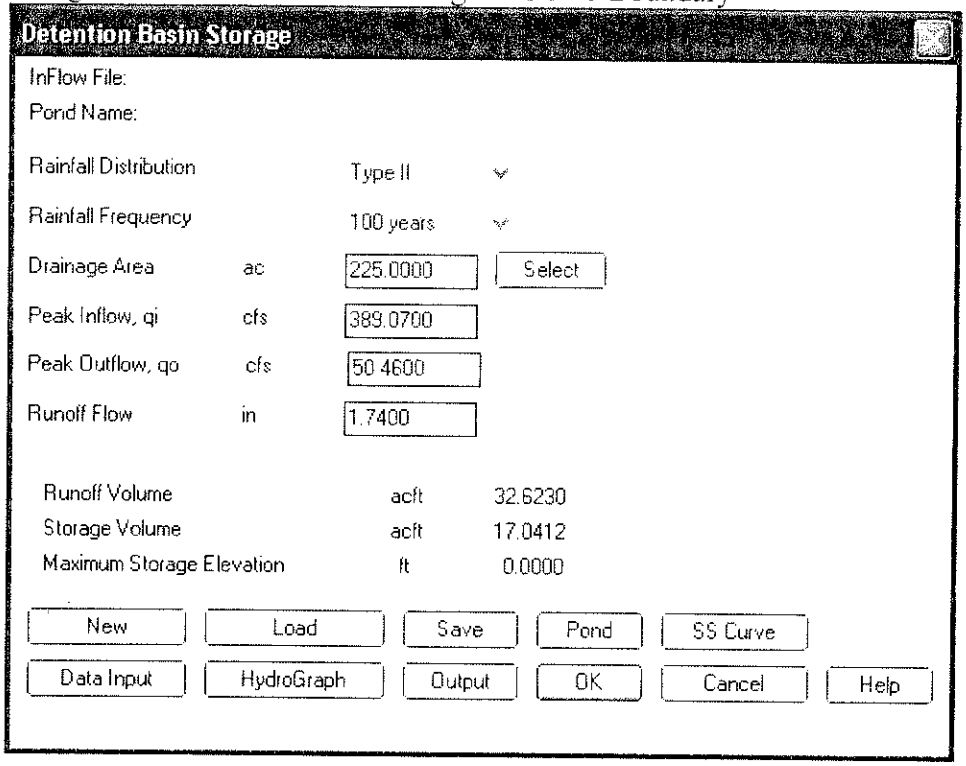


Design Point 8 – Elk Creek at US 40 Boundary

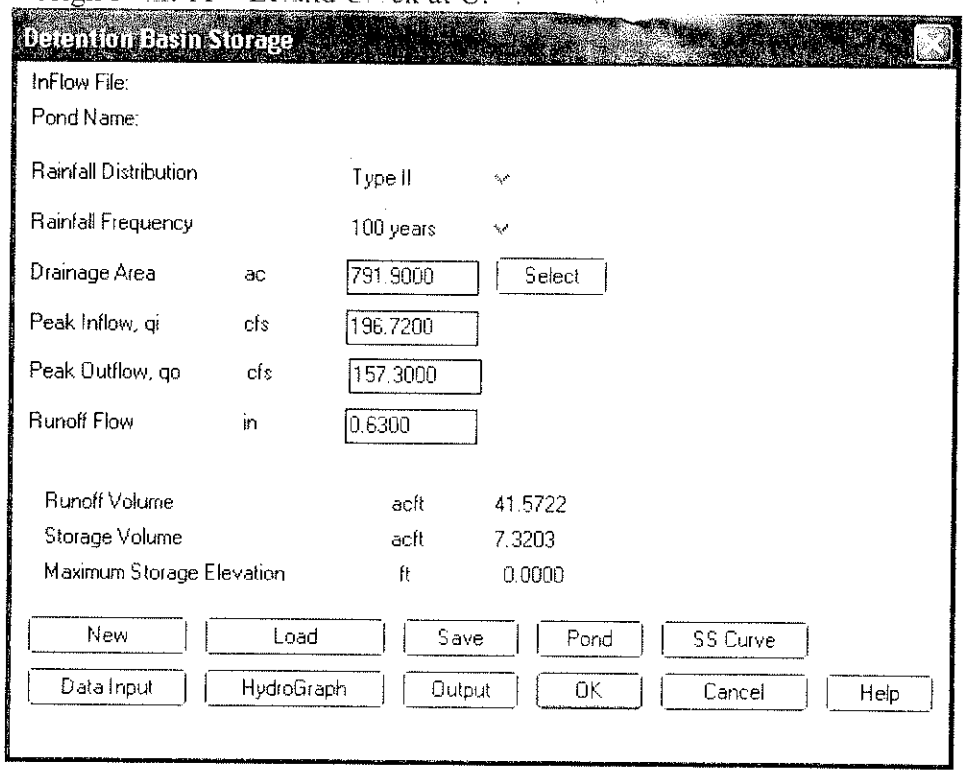


Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Design Point 7 – Unknown Drainage at US 40 Boundary



Design Point 11 – Leland Creek at US 40 Boundary



Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Grand Park - Existing Conditions
HCE Project No. 2052014.00
Detention Volumes and Release Rates

Design Point 4 - Elk Creek at Railroad

Basin	Area (acres)	% Imperviousness	Type B	Type C
E4	156.6	26%	78%	22%

UDCFD Volume 2, Section3.2.2 Empirical Equations for Sizing On-site Detention Storage Volumes

$$V_i = K_i * A$$

$$K_{100} = \frac{(1.78I - 0.002I^2 - 3.56)}{900}$$

$$K_{10} = \frac{(0.95I - 1.90)}{1000}$$

I = 26.00 total ratio
Area = 156.6 acres

K_{100} = 0.046
K_{10} = 0.023

V_{100} = 7.198 acre-feet
V_{10} = 3.570 acre-feet

UDCFD Volume 2, Section 3.2.1 Allowable Release Rates

From Table SO-1 Maximum Allowable Unit Flow Release Rates:

	Soil Group B	C & D
10 year Flow	0.305	0.365
100 year Flow	0.460	0.560

10 yr Release Rate = 49.83 cfs
100 yr Release Rate = 75.48 cfs

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Grand Park - Existing Conditions
HCE Project No. 2052014.00
Detention Volumes and Release Rates

Design Point 6 - Unknown Drainage Culvert

Basin	Area (acres)	% Imperviousness	Type B	Type C
E6	41	41%	38%	62%

UDCFD Volume 2, Section3.2.2 Empirical Equations for Sizing On-site Detention Storage Volumes

$$V_i = K_i * A$$

$$K_{100} = \frac{(1.78I - 0.002I^2 - 3.56)}{900}$$

$$K_{10} = \frac{(0.95I - 1.90)}{1000}$$

I = 41.00 total ratio
Area = 41 acres

K_{100} = 0.073
K_{10} = 0.037

V_{100} = 3.009 acre-feet
V_{10} = 1.519 acre-feet

UDCFD Volume 2, Section 3.2.1 Allowable Release Rates

From Table SO-1 Maximum Allowable Unit Flow Release Rates:

	Soil Group B	C & D
10 year Flow	0.365	0.425
100 year Flow	0.500	0.580

10 yr Release Rate = 16.49 cfs
100 yr Release Rate = 22.53 cfs

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Grand Park - Existing Conditions
HCE Project No. 2052014.00
Detention Volumes and Release Rates

Design Point 9 - Leland Creek at Railroad

Basin	Area (acres)	% Imperviousness	A*I	(A*I)/ΣA	Type B	Type C
L1	624.8	15%	93.72	12.79%	75%	25%
L2	107.7	2%	2.1546	0.29%	100%	0%
Total	732.5			13.09%		

UDCFD Volume 2, Section3.2.2 Empirical Equations for Sizing On-site Detention Storage Volumes

$$V_i = K_i * A$$

$$K_{100} = \frac{(1.78I - 0.002I^2 - 3.56)}{900}$$

$$K_{10} = \frac{(0.95I - 1.90)}{1000}$$

I = 13.09 total ratio
Area = 732.5 acres

K_{100} = 0.022
K_{10} = 0.011

V_{100} = 15.785 acre-feet
V_{10} = 7.716 acre-feet

UDCFD Volume 2, Section 3.2.1 Allowable Release Rates

From Table SO-1 Maximum Allowable Unit Flow Release Rates:

	Soil Group B	C & D
10 year Flow	0.230	0.310
100 year Flow	0.410	0.535

10 yr Release Rate = 180.94 cfs
100 yr Release Rate = 319.78 cfs

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Grand Park - Existing Conditions
HCE Project No. 2052014.00
Detention Volumes and Release Rates

Design Point 8 - Elk Creek at US 40 Boundary

Basin	Area (acres)	% Imperviousness	A*I	(A*I)/ΣA	Type B	Type C	Type A
E4	156.6	26%	40.7264	9.54%	78%	22%	0.00%
E5	221.0	36%	79.5492	18.62%	26%	74%	0.00%
E8	49.5	32%	15.84	3.71%	24%	74%	2%
Total	427.1			28.16%			

UDCFD Volume 2, Section3.2.2 Empirical Equations for Sizing On-site Detention Storage Volumes

$$V_i = K_i * A$$

$$K_{100} = \frac{(1.78I - 0.002I^2 - 3.56)}{900}$$

$$K_{10} = \frac{(0.95I - 1.90)}{1000}$$

I = 28.16 total ratio
Area = 427.1 acres

K_{100} = 0.050
K_{10} = 0.025

V_{100} = 21.346 acre-feet
V_{10} = 10.615 acre-feet

UDCFD Volume 2, Section 3.2.1 Allowable Release Rates

From Table SO-1 Maximum Allowable Unit Flow Release Rates:

	Soil Group B	C & D	A
10 year Flow	0.325	0.385	0.260
100 year Flow	0.475	0.570	0.375

10 yr Release Rate = 152.75 cfs
100 yr Release Rate = 224.96 cfs

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Grand Park - Existing Conditions
HCE Project No. 2052014.00
Detention Volumes and Release Rates

Design Point 7 - Unknown Drainage at US 40 Boundary

Basin	Area (acres)	% Imperviousness	A*I	(A*I)/ΣA	Type B	Type C	Type A
E6	41.0	41%	16.8182	7.48%	38%	62%	0%
E7	184.0	73%	134.2835	59.69%	17%	54%	29%
Total	225.0			67.17%			

UDCFD Volume 2, Section3.2.2 Empirical Equations for Sizing On-site Detention Storage Volumes

$V_i = K_i * A$

$$K_{100} = \frac{(1.78I - 0.002I^2 - 3.56)}{900}$$

$$K_{10} = \frac{(0.95I - 1.90)}{1000}$$

I = 67.17 total ratio
Area = 225.0 acres

K_{100} = 0.119
K_{10} = 0.062

V_{100} = 26.739 acre-feet
V_{10} = 13.927 acre-feet

UDCFD Volume 2, Section 3.2.1 Allowable Release Rates

From Table SO-1 Maximum Allowable Unit Flow Release Rates:

	Soil Group B	C & D	A
10 year Flow	0.510	0.555	0.470
100 year Flow	0.605	0.665	0.545

10 yr Release Rate = 118.15 cfs
100 yr Release Rate = 140.30 cfs

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Grand Park - Existing Conditions
HCE Project No. 2052014.00
Detention Volumes and Release Rates

Design Point 11 - Leland Creek at US 40 Boundary

Basin	Area (acres)	% Imperviousness	A*I	(A*I)/ΣA	Type B	Type C	Type A
L1	624.8	15%	93.72	11.84%	75%	25%	0.00%
L2	107.7	2%	2.1546	0.27%	100%	0%	0.00%
L3	59.4	47%	27.89727	3.52%	41%	58%	2%
Total	791.9			15.63%			

UDCFD Volume 2, Section3.2.2 Empirical Equations for Sizing On-site Detention Storage Volumes

$$V_i = K_i * A$$

$$K_{100} = \frac{(1.78I - 0.002I^2 - 3.56)}{900}$$

$$K_{10} = \frac{(0.95I - 1.90)}{1000}$$

I = 15.63 total ratio
Area = 791.9 acres

K_{100} = 0.026
K_{10} = 0.013

V_{100} = 20.917 acre-feet
V_{10} = 10.254 acre-feet

UDCFD Volume 2, Section 3.2.1 Allowable Release Rates

From Table SO-1 Maximum Allowable Unit Flow Release Rates:

	Soil Group B	C & D	A
10 year Flow	0.250	0.240	0.170
100 year Flow	0.420	0.540	0.300

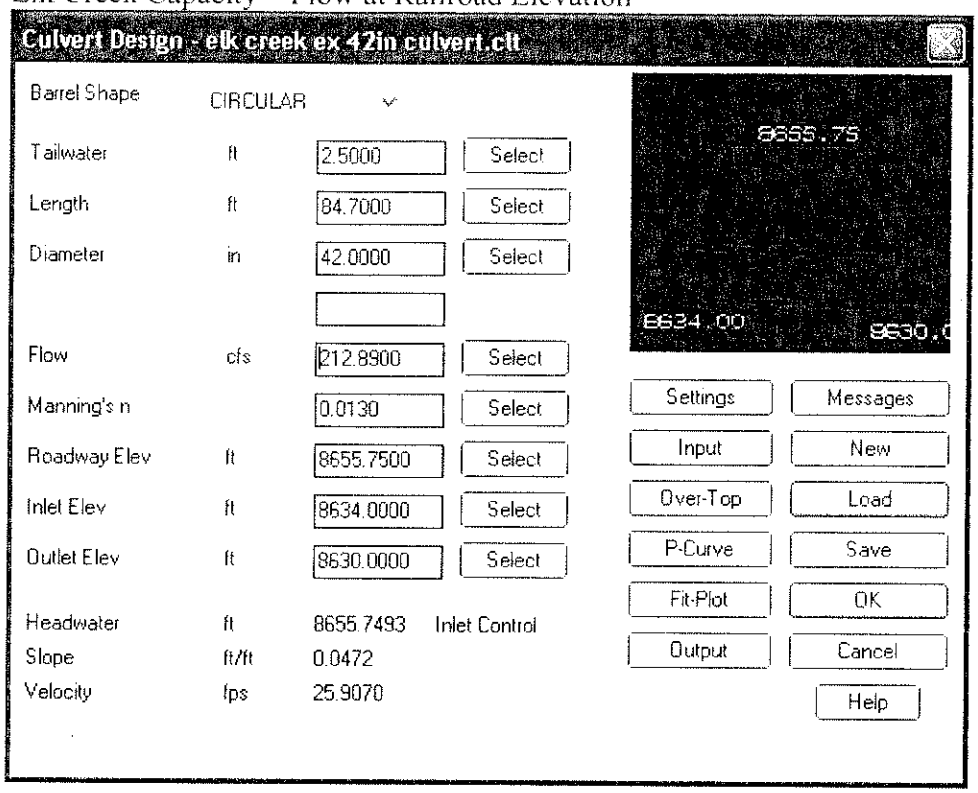
10 yr Release Rate = 195.91 cfs
100 yr Release Rate = 355.23 cfs

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

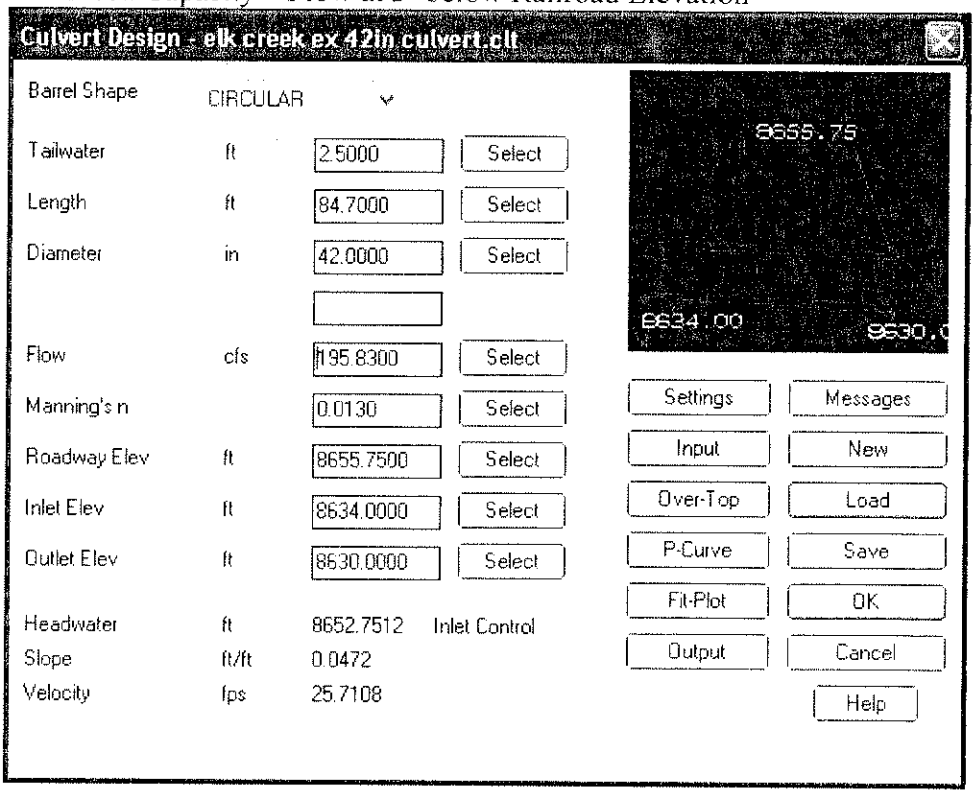
APPENDIX C – CULVERT CALCULATIONS

Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Elk Creek Capacity – Flow at Railroad Elevation

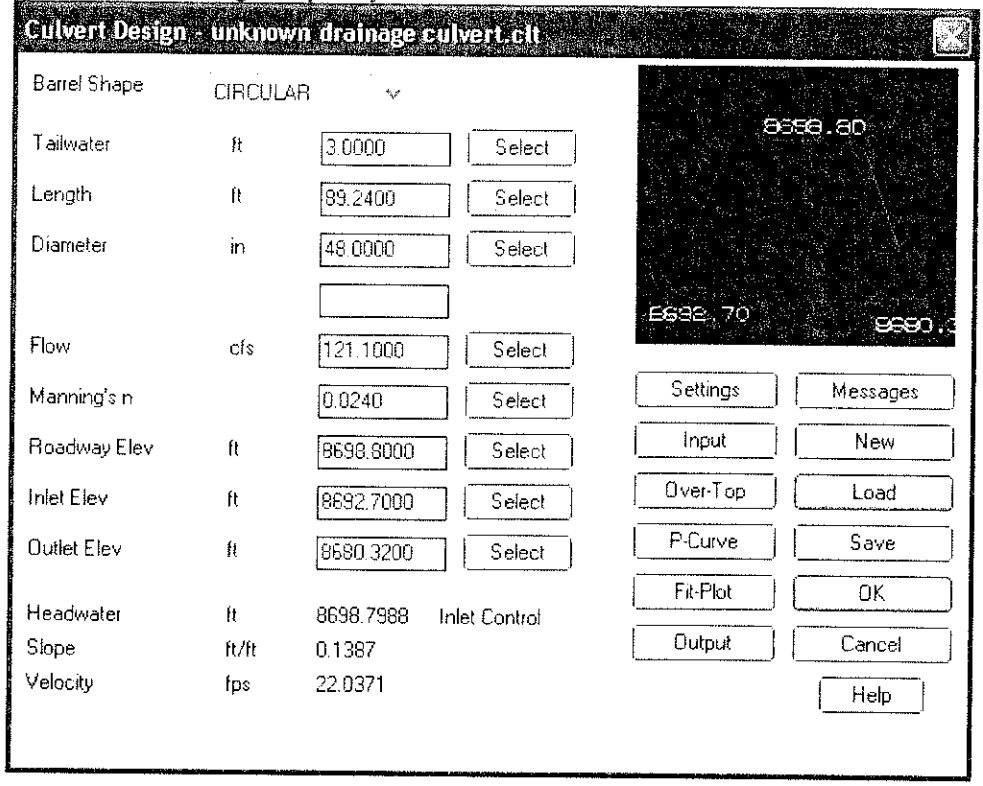


Elk Creek Capacity – Flow at 3' below Railroad Elevation

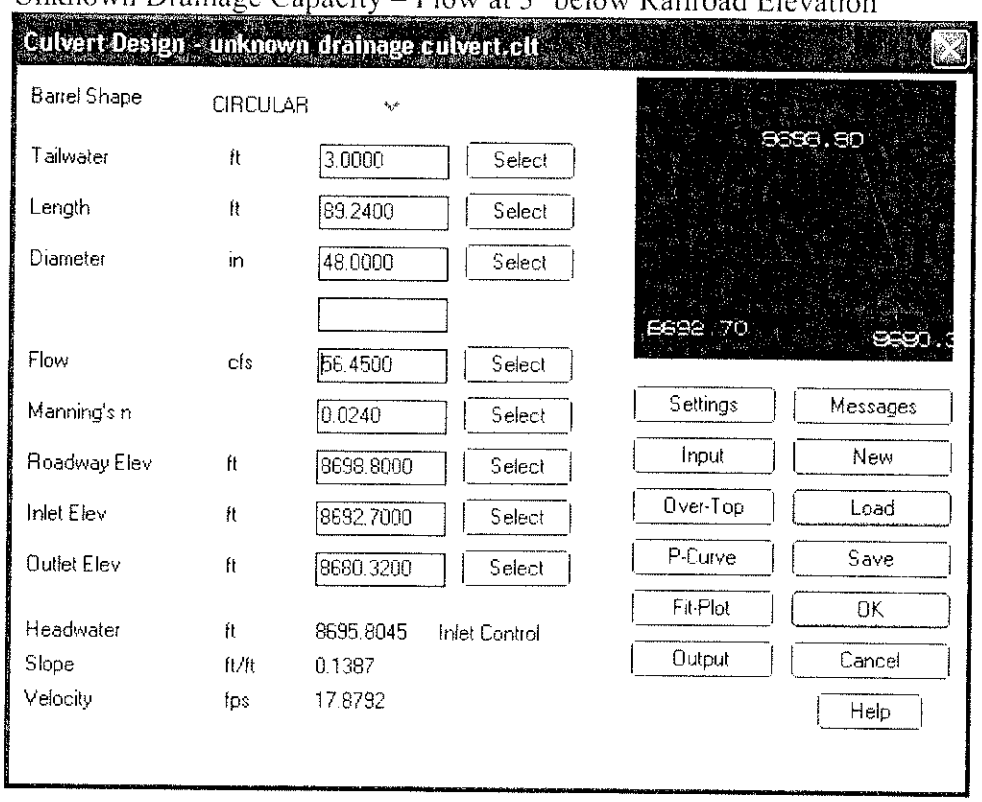


Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Unknown Drainage Capacity – Flow at Railroad Elevation

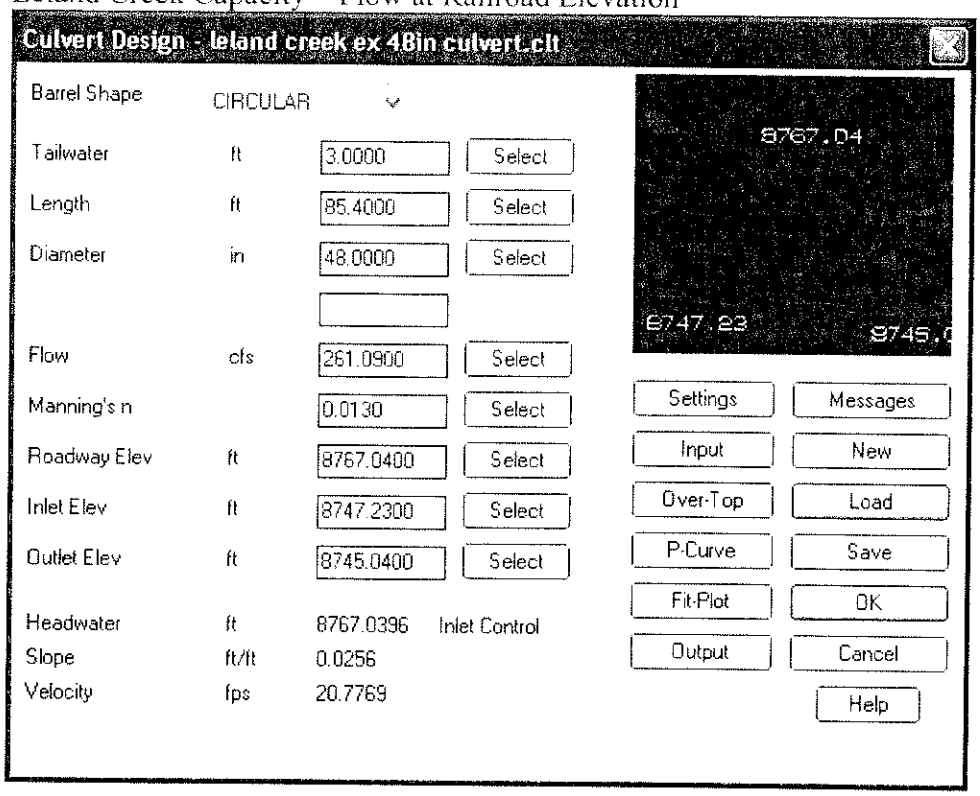


Unknown Drainage Capacity – Flow at 3' below Railroad Elevation

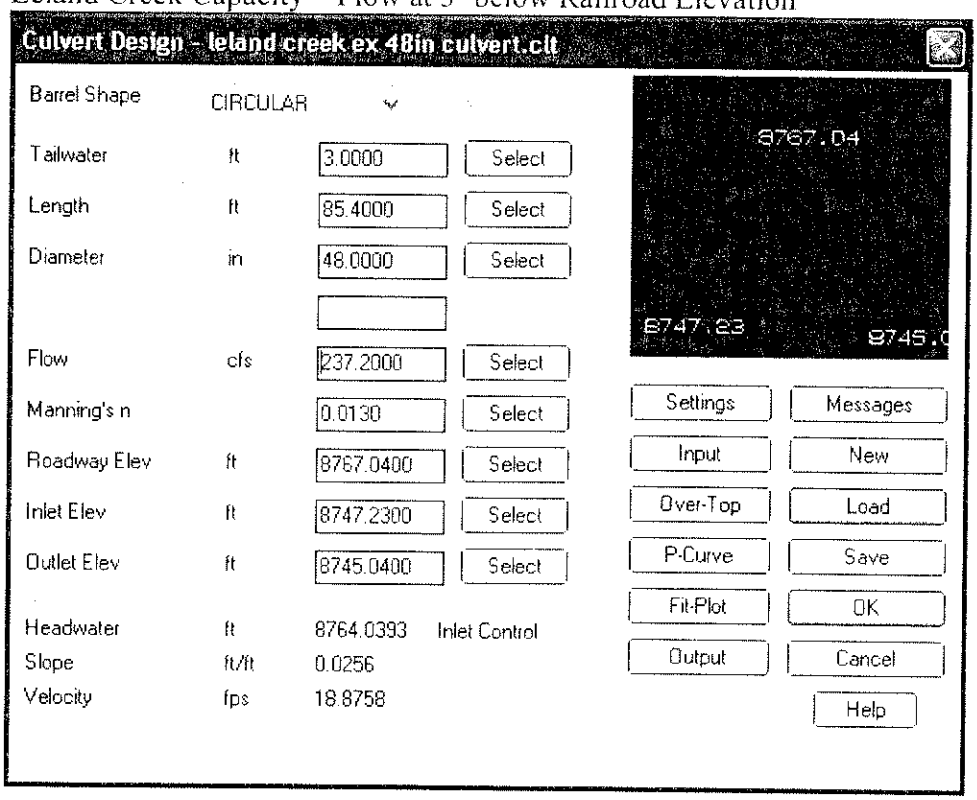


Excerpt from High Country Engineering Final Drainage Report for Town Center at Grand Park

Leland Creek Capacity – Flow at Railroad Elevation



Leland Creek Capacity – Flow at 3' below Railroad Elevation



water

MDPI

Article

A Pragmatic Slope-Adjusted Curve Number Model to Reduce Uncertainty in Predicting Flood Runoff from Steep Watersheds

Muhammad Ajmal [1], Muhammad Waseem [2], Dongwook Kim [3] and Tae-Woong Kim [4,*]

[1] Department of Agricultural Engineering, University of Engineering and Technology, Peshawar 25120, Pakistan; engr_ajmal@uetpeshawar.edu.pk
[2] Center of Excellence in Water Resources, University of Engineering and Technology, Lahore 54890, Pakistan; waseem.jatoi@cewre.edu.pk
[3] Department of Civil and Environmental System Engineering, Hanyang University, Seoul 04763, Korea; midas515@hanyang.ac.kr
[4] Department of Civil and Environmental Engineering, Hanyang University, Ansan 15588, Korea
* Correspondence: twkim72@hanyang.ac.kr; Tel.: +82-31-400-5184

Received: 26 April 2020; Accepted: 19 May 2020; Published: 21 May 2020

Abstract: The applicability of the curve number (CN) model to estimate runoff has been a conundrum for years, among other reasons, because it presumes an uncertain fixed initial abstraction coefficient ($\lambda = 0.2$), and because choosing the most suitable watershed CN values is still debated across the globe. Furthermore, the model is widely applied beyond its originally intended purpose. Accordingly, there is a need for more case-specific adjustments of the CN values, especially in steep-slope watersheds with diverse natural environments. This study scrutinized the λ and watershed slope factor effect in estimating runoff. Our proposed slope-adjusted CN ($CN_{II\alpha}$) model used data from 1779 rainstorm–runoff events from 39 watersheds on the Korean Peninsula (1402 for calibration and 377 for validation), with an average slope varying between 7.50% and 53.53%. To capture the agreement between the observed and estimated runoff, the original CN model and its seven variants were evaluated using the root mean square error (RMSE), Nash–Sutcliffe efficiency (NSE), percent bias (PB), and 1:1 plot. The overall lower RMSE, higher NSE, better PB values, and encouraging 1:1 plot demonstrated good agreement between the observed and estimated runoff by one of the proposed variants of the CN model. This plausible goodness-of-fit was possibly due to setting $\lambda = 0.01$ instead of 0.2 or 0.05 and practically sound slope-adjusted CN values to our proposed modifications. For more realistic results, the effects of rainfall and other runoff-producing factors must be incorporated in CN value estimation to accurately reflect the watershed conditions.

Keywords: initial abstraction coefficient; slope-adjusted curve number; rainfall; precise runoff; model accuracy

1. Introduction

There is plethora of process-based hydrological models, but they require extensive data, which is a limitation in ungauged watersheds. These process-based models are broadly used to estimate and/or predict hydrologic processes across landscapes and to assess the corresponding impacts of land use/cover changes [1]. Rainfall-runoff modeling is among the most fundamental concepts in hydrology, providing a starting point to estimate flood peaks and design structures. The rainfall-runoff process is a dynamic and complex hydrological phenomenon affected by different physical factors and their interactions [2]. Due to the non-linear relationship between rainfall and runoff, the development of a robust model to predict runoff in ungauged watersheds is difficult and time-consuming [3]. The least

complex model that reliably meets the anticipated application is often preferable [4]. The advantages of the Natural Resources Conservation Service (NRCS) curve number (CN) [1] model are its simplicity, predictability, and dependence on only one parameter. The CN model has well-documented data, has been globally tested, and has a rich literature. The CN is a function of soil permeability/infiltration capacity, land use/cover, and other runoff-producing conditions of a watershed; it quantifies direct runoff, requiring only the cumulative rainfall depth and the watershed's CN [5]. The initial abstraction coefficient (λ) and the CN in the CN model are vital to accurately estimate runoff from a watershed [6].

1.1. The CN Model Framework

The CN model is structured to quantify runoff depth (Q) using the cumulative rainstorm depth (P) and maximum potential water retention amount (S), a measure of the ability of a watershed to abstract and retain storm precipitation. Here, P, S, and Q are measured in millimeters.

$$Q = \frac{(P - \lambda S)^2}{P + (1 - \lambda)S} \text{ for } P \geq \lambda SQ = 0 \text{ otherwise} \quad (1)$$

The initial abstraction is the rainstorm depth required before runoff begins. Originally, it was taken as $I_a = \lambda S = 0.2S$; here, S (mm) is related to CN via

$$CN = 100\left(\frac{x}{x + S}\right) \text{ or } S = x\left(\frac{100}{CN} - 1\right) \text{ for } x = 254 \text{ mm (or 10 in)} \quad (2)$$

The dimensionless CN varies from 0 to 100 [5]. Handbook tables for CN selection are based on soil types and land use/land cover. The threshold of $\lambda = 0.2$ is being actively debated across the globe for its inconsistent watershed runoff estimation because $\lambda = 0.05$ has been found to be much more representative [2]. Nevertheless, essentially all handbook CN table values correspond to $\lambda = 0.2$. The corresponding *S* for $\lambda = 0.05$ is different from that for $\lambda = 0.2$ and, hence, the resulted runoff values are different. The adjustment of CN from $\lambda = 0.2$ to $\lambda = 0.05$ has recently been adopted by the Task Group on Curve Number Hydrology [5], which recommends a new relation as $S_{0.05} = 1.42S_{0.2}$, and leads to

$$CN_{0.05} = \frac{100}{1.42 - 0.0042CN_{0.2}} \quad (3)$$

Several studies have shown considerable differences between handbook-tabulated CN values based on land cover/use and those estimated from watershed observations of rainfall–runoff events [2,5,7–10]. The differences are more prominent with smaller CN values and land types not clearly described in the CN tables [5]. Different studies have evidenced runoff prediction from different biomes using $\lambda < 0.2$ values [2,10–16], suggesting λ in the range of 0.01 to 0.05.

1.2. Effect of Slope on CN and Runoff Estimation

There is no handbook convention but, intuitively, higher-sloped watersheds should have higher CN values. Several CN-based models have documented positive slope-adjustment techniques [10,17–24]. However, some mild negative relationships for limited data are also available [5]. Steep slopes generally give a higher potential for runoff [25], but the impact of slope steepness on runoff generation is a debatable topic. Researchers from different biomes have reported increases in runoff that were attributed to a decrease in infiltration, less detention storage and ponding depth, and high flow velocity [10,19–22,25,26]. Some researchers have captured reduced runoff generation per unit of slope length from steep-slope watersheds with pronounced decreasing storm duration, which might be due to thinning and/or disruption of the crust, differential soil cracking, formation of rills, and more ponding depth [27–33]. However, other studies [34,35] found insignificant effects of slope steepness on runoff. These discrepancies are possibly due to contradiction in experimental settings, as well as land cover and use differences.

To accurately estimate runoff, the CN values found in handbook tables are more effective for rain-fed agricultural watersheds, are less efficient for semi-arid watersheds, and are least successful for forested watersheds [36]. The CN model has a spotty and inconsistent performance history for some forested watersheds (i.e., those in which infiltration potential usually exceeds the rainfall intensities), and for frequent, low-volume, and low-intensity rainfalls. Some researchers found notable problems associated with the tabulated CN values for heavy land cover and humid, forested watersheds, suggesting that the model is inapplicable for runoff estimation in such watersheds [2,9]. For many years, the CN values obtained from handbook tables have been problematic and may need case-specific adjustment when applied in regions with more complex natural environments. The accuracy of the CN value is vital in runoff estimation [37]. The objective of this study was to frame a practically sound slope-adjusted CN equation that could follow the CN theoretical limits (0, 100) and enhance the runoff prediction capability of the CN model from rainstorm events in steep-sloped watersheds.

2. Materials and Methods

2.1. Study Area Description and Climate

South Korea is typical of regions largely influenced by complicated geographical features. Its precipitation patterns have diverse seasonal and regional variability [38]. The elevation (area) of the watersheds included in this study vary from 26 m (42.32 km^2) to 911 m (879.10 km^2) above mean sea level. The average slope of the watershed ranges between 7.50% and 53.53%. The majority of the land cover (about 70.50%) is upland forests, followed by 20.26% agricultural land, urban areas (5.22%), grassland (1.56%), and other land cover distribution (2.45%). The dominant soil types are loam and sandy loam, with some fractions of silt loam. The location of watersheds is shown in Figure 1, and other details can be found in [10].

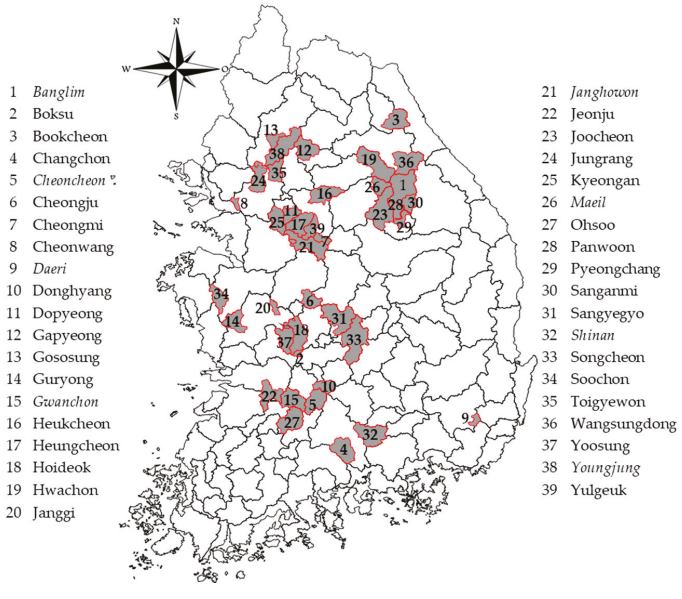


Figure 1. Location of watersheds in the study area. The watersheds in italics were used for validation.

The climatic patterns over the study area are quite variable due to the Asian monsoon. Winter is extremely dry and cold, and summer is warm and moist with frequent heavy rainstorms [38]. The mean annual precipitation (from 1970 to 2000) ranged between 1000 and 1800 mm from the central to the

southern regions. Approximately 50% to 60% of this precipitation falls at a high intensity and short duration from July to September [10].

2.2. Data Collection and Interpretation

Continuous rainfall and discharge data (from 2005 to 2012) for this study were collected from the Hydrological Survey Center (HSC) of South Korea. The straight-line hydrograph approach was used to separate direct runoff from the total discharge [10]. For any rain event, the prior five days' cumulative rainfall (P_5) was used to identify the watershed antecedent moisture [10,20,22,39]. The watershed weighted curve number (CN_{II}) corresponding to the normal conditions were derived from the documented tables on the basis of land use/cover and soil types. The CN_I (CN_{III}) for dry (wet) conditions were adjusted as recommended by Mishra et al. [40].

2.3. Slope-Adjusted Curve Number Considerations and Development

Although the CN model is extensively used for predicting runoff from ungauged watersheds, one study found considerable uncertainties when tabulated CN values were applied to estimate runoff from 10 mountainous, forested watersheds in the eastern United States [9]. Similarly, another study [41] observed substantial change in the watershed CN values, ranging from 55 to 70. Moreover, the use of hydrologic soil group D (and its corresponding CN) for forested, mountainous watersheds is incompatible with the National Engineering Handbook [42] guidelines. Although very limited attention has been given to incorporate slope factors in the existing CN models [43], one study reported that adjusting handbook CN values for slope factors significantly enhanced the predicted runoff [26]. To better capture the watershed response in runoff prediction, a slope-adjusted CN is required for steep-slope, mountainous watersheds [10].

Assuming that the handbook CN value is appropriate for a 5% slope [10,17,19,20,22,23], it needs to be adjusted for steep-slope watersheds. To improve the runoff prediction capability of the CN model, the slope-adjusted CN suggested by Sharpley and Williams [17] is generally expressed as

$$CN_{II\alpha} = a(CN_{III} - CN_{II})(1 - be^{-c\times\alpha}) + CN_{II} \quad (4)$$

where $CN_{II\alpha}$ is the slope-adjusted CN for the antecedent runoff condition representing the watershed normal moisture (ARC-II), CN_{II} and CN_{III} are the handbook CN values obtained from watershed characteristics for ARC-II and ARC-III (wet condition), and α is the watershed average soil slope (m/m). The approach of Sharpley and Williams [17] has three empirical parameters—a, b, and c—with optimized values of 1/3, 2, and 13.86, respectively. Their adjusted relationship leads to

$$CN_{II\alpha} = \left(\frac{CN_{III} - CN_{II}}{3}\right)(1 - 2e^{-13.86\alpha}) + CN_{II} \quad (5)$$

Retaining the assumption of Sharpley and Williams [17] for CN_{II} values applicable to a 5% average slope, another study [23] developed the following relationship to adjust CN values for other slopes:

$$S_{II\alpha} = S_{II}\left(1.1 - \frac{\alpha}{\alpha + e^{(3.7+0.02117\alpha)}}\right) \quad (6)$$

where S_{II} and $S_{II\alpha}$ are the S values for normal moisture condition and slope-adjusted normal moisture conditions, respectively, and α is the watershed mean slope in percentage. The slope-adjusted CN can be obtained from the above equation using the general S and CN interrelationship as it is found in Equation (2). According to Huang et al. [19], the approach in Sharpley and Williams [17] has not been intensively verified in the field. Hence, they adopted a simplified approach for the $CN_{II\alpha}$ determination

on the basis of their experiments for soil slopes ranging between 0.14 and 1.40, and proposed the following relationship:

$$CN_{II\alpha} = CN_{II}\left(\frac{322.79+15.63\alpha}{\alpha+323.52}\right) \quad (7)$$

However, this relationship is unstable because it does not follow the CN theoretical limits.

An investigation by Garg et al. [26] showed that the differences between the tabulated CN values and those calculated from the approach in Huang et al. [19] were very small when compared to that of Sharpley and Williams [17]. This is why the approach in Huang et al. [19] depicted modest improvement in estimating large as well as small runoff events and produced results very close to the original CN model with handbook CN values. Any underestimation of the runoff events using the approach in Huang et al. [19] can be attributed to the empirically selected numerical constants of Equation (7), and needs validation using the measured rainfall-runoff data.

In another study, Ajmal et al. [10] developed a slope-adjusted average CN relationship using data from 39 mountainous watersheds. They calibrated the $CN_{II\alpha}$ using 1402 measured rainfall-runoff events from 31 watersheds and validated this with 377 rainfall–runoff events from the remaining eight watersheds. This is represented as

$$CN_{II\alpha} = CN_{II}\left[\frac{1.9274\alpha+2.13273}{\alpha+2.1791}\right] \quad (8)$$

The above relationship was derived on the basis of data from watersheds with an average slope between 7.50% and 53.53%, where, besides other typical watershed geophysical characteristics, most of the area (approximately 70.50%) was covered with upland forests. However, their approach was also inconsistent with the CN theoretical limits on the basis of the presumption that the CN tables were originally developed with a 5% average slope in their experimental plots [10,17,19]. Knowing CN_{II}, CN_{III}, and α as the mean slope of a watershed, the proposed slope-adjusted CN ($CN_{II\alpha}$) in its general form is presented as

$$CN_{II\alpha} = \left(\frac{CN_{III} - CN_{II}}{2}\right)\left[1 - e^{-b\times(\alpha-0.05)}\right]+CN_{II} \quad (9)$$

2.4. Steps of Slope-Adjusted CN Parameter Optimization

1. Data pertaining to 39 watersheds in which 1779 rainstorms events occurred provided the known values of the rainstorm events, P; the observed runoff, Q_o; and the optimized CNs for each watershed. The least squares nonlinear orthogonal distance regression objective function in Origin Pro 9.6 software produced the optimized CN values from the following equation.

$$\sum_{i=1}^{n}(Q_o - Q_e)^2 = \sum\left\{Q_o - \left[\frac{\left(P - 0.2\times\left(\frac{25400}{CN} - 254\right)\right)^2}{P+0.8\times\left(\frac{25400}{CN} - 254\right)}\right]\right\}^2 = \text{Minimum} \quad (10)$$

2. To optimize parameter b in Equation (9), the CNs obtained for the 39 watersheds from Equation (10) were divided into two sets, those of 31 watersheds (1402 rainstorm–runoff events) for calibration and those of 8 watersheds (377 rainstorm-runoff events) for validation. For calibration, the optimized CNs in step 1 were set as the target values challenging the right side of Equation (9) using the nonlinear regression least squares Levenberg–Marquardt algorithm in SPSS v.25 software. To take into account the individual watersheds' effects on parameter b optimization, the leave-one-out (LOOV) technique was adopted. The average of 31 calibrations repetitions was the value of b = 7.125. This led to recasting the proposed $CN_{II\alpha}$ as

$$CN_{II\alpha} = \left(\frac{CN_{III} - CN_{II}}{2}\right)\left[1 - e^{-7.125\times(\alpha-0.05)}\right]+CN_{II} \quad (11)$$

This can also be represented as

$$CN_{II\alpha} = (0.5 - 0.714e^{-7.125\alpha})(CN_{III} - CN_{II}) + CN_{II} \quad (12)$$

Introducing the CN_{III} conversion from CN_{II} after a suggestion in Mishra et al. [40] gives

$$CN_{III} = \frac{CN_{II}}{0.430 + 0.0057CN_{II}} \quad (13)$$

Imputing Equation (13) into Equation (11) and simplifying it, the proposed relationship can be recast as

$$CN_{II\alpha} = \left[\frac{CN_{II}(50 - 0.5CN_{II})}{CN_{II} + 75.43}\right] \times \left[1 - e^{-7.125(\alpha - 0.05)}\right] + CN_{II} \quad (14)$$

This proposed $CN_{II\alpha}$ relationship has twofold advantages over the previous three suggested relationships. The proposed model has only one parameter to be optimized compared to three in Sharpley and Williams [17] and Williams and Izaurralde [23], and two in Huang et al. [19], if the suggested parameter values are not applicable. Our proposed $CN_{II\alpha}$ works within the theoretical limits (i.e., 0 to 100), unlike that in Huang et al. [19], which loses its effectiveness after CN_{II} = 94.27 using the highest average slope of their watersheds. Similarly, the adjustment in Williams and Izaurralde [23] and Ajmal et al. [10] also fails to follow the CN theoretical limits. The different variants of the CN model are shown in Table 1.

Table 1. Models and their descriptions.

Parameters			
Model Identity	λ	**CN ($CN_{II\alpha}$)**	**Model Expression**
M1	0.20	*NEH-4 Tables	Equations (1) and (2)
M2	0.05	NEH-4 Tables	Equations (1)–(3)
M3	0.20	Sharpley and Williams [17]	Equations (1), (2) and (5)
M4	0.20	Huang et al. [19]	Equations (1), (2) and (7)
M5	0.20	Ajmal et al. [10]	Equations (1), (2) and (8)
M6	0.20	Proposed	Equations (1), (2) and (12)
M7	0.05	Proposed	Equations (1)–(3) and (12)
M8	0.01	Proposed	Equations (1), (2) and (12)

*NEH-4: National Engineering Handbook Section-4 [42].

3. Statistical Analysis for Model Performance Evaluation

This study estimated the agreement between a series of observed and estimated runoffs using the root mean square error (RMSE), Nash–Sutcliffe efficiency (NSE), percent bias (PB) [34], and/or graphical assessments augmented with model performance ratings [44]. Mathematically, these indicators are

$$RMSE = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(Q_{oi} - Q_{ei})^2} \quad (15)$$

$$NSE = 1 - \left[\frac{\sum_{I=1}^{n}(Q_{oi} - Q_{ei})^2}{\sum_{I=1}^{n}(Q_{oi} - \overline{Q}_o)^2}\right] \quad (16)$$

$$PB = \left[\frac{\sum_{I=1}^{n}(Q_{oi} - Q_{ei})}{\sum_{I=1}^{n}Q_{oi}}\right] \times 100 \quad (17)$$

where Q_{oi} and Q_{ei} are the observed and estimated runoff values for rainstorm events 1 to n, and $\overline{Q_O}$ is the mean observed runoff in each watershed. The RMSE (0 to ∞) values closer to zero depict more appropriateness of the model to estimate runoff. The NSE (−∞ to 1) illustrates how well a plot of observed vs. estimated runoff fits a 1:1 line (i.e., a perfect fit) [39]. The PB (optimum = 0) describes the average tendency of estimated values to be larger or smaller than their observed ones. Positive (negative) values indicate underestimation (overestimation) bias [44]. It is notable that perfect agreement of the estimated vs. observed data does not essentially indicate a perfect model, because observed data could have uncertainties [39]. However, we are confident about the good quality of the data used in this study. Performance evaluation of different statistical indicators and their suggested ratings [44,45] are given Table 2.

Table 2. Statistical indicators and associated performance ratings [44,45].

Performance Rating	NSE [44]	NSE [45]	PB (%)
Very good	0.75 < NSE ≤ 1.00	0.90 < NSE ≤ 1.00	−10 < PB < +10
Good	0.65 < NSE ≤ 0.75	0.80 ≤ NSE ≤ 0.90	±10 ≤ PB < ±15
Satisfactory	0.50 < NSE ≤ 0.65	0.65 ≤ NSE < 0.80	±15 ≤ PB < ±25
Unsatisfactory	NSE ≤ 0.50	NSE ≤ 0.65	PB ≥ ±25

4. Results and Discussion

The performance evaluation of the existing models (M1–M5) and our proposed approach (M6–M8) was accomplished in two steps. First, the basic statistics of the observed runoff were compared to the models' estimated runoff both for the calibration and validation watersheds. In the second step, commonly used statistical indicators were used to check the model's predictive credibility [20,34,44] in conjunction with a 1:1 plot graphical judgement between the observed and modeled runoff values [46].

4.1. Models' Analysis Based on Descriptive Statistics

The basic descriptive statistics (Table 3) favor the M8 model using the $CN_{II\alpha}$ and lower λ = 0.01 followed by the M6 and M5 models. However, the M6 model was preferred over the M5 due to its practically sound $CN_{II\alpha}$ to follow the CN theoretical bounds (0–100). In estimating runoff, the M2 model was not plausibly different from the M1 model. Therefore, lowering λ from 0.2 to 0.05, along with its corresponding CN adjustment using Equation (3), produced only modest changes in the estimated runoff values. Nonetheless, using λ = 0.05 and retaining handbook CN values without adjustment can improve the model's runoff predictive capability, which is not shown in the assessment but is reflected in the comparison of the M6 and M7 models. The majority of the existing CN model variants underestimated the runoff in different watersheds. Nevertheless, it can be inferred that the watershed CN was not the only important parameter; selecting the proper λ also played a crucial role in estimating accurate runoff. Additionally, the prominent response of CNs to the rainstorm depth was vital in runoff depth estimation [1].

Table 3. Summary statistic of rainfall (P), observed runoff (Q_o), and modeled runoff (M1–M8) in the calibration and validation watersheds.

Calibration Watersheds (1402 Rainstorm–Runoff Events)						
Parameter/Model	**Mean**	**Minimum**	**First Quartile (Q1)**	**Median**	**Third Quartile (Q3)**	**Maximum**
P	80.96	12.10	39.92	59.09	98.27	519.68
Q_o	**38.60**	**0.17**	**8.23**	**19.61**	**49.04**	**348.46**
M1	25.57	0.00	1.49	6.13	27.03	415.63
M2	23.56	0.00	1.14	7.26	25.79	**383.27**
M3	28.79	0.00	1.30	7.95	32.94	436.28
M4	26.06	0.00	1.52	6.31	28.33	419.65
M5	30.06	0.00	1.35	8.83	35.39	443.28
M6	30.26	0.00	1.23	9.38	35.34	445.73
M7	28.98	0.00	2.54	10.77	34.57	417.11
M8	**39.67**	**0.53**	**7.93**	**20.13**	**49.30**	458.55

Table 3. *Cont.*

Validation Watersheds (377 Rainstorm–Runoff Events)						
P	75.22	20.52	40.97	57.05	86.95	376.86
Q_o	**35.03**	**0.24**	**8.30**	**19.10**	**43.20**	**364.38**
M1	22.04	0.00	1.48	6.35	20.35	294.27
M2	19.85	0.00	0.85	5.55	19.93	265.59
M3	24.75	0.00	1.52	6.27	25.99	309.31
M4	22.49	0.00	1.39	6.63	21.48	296.26
M5	26.48	0.00	2.03	7.87	30.12	309.72
M6	26.07	0.00	1.71	6.66	29.04	314.48
M7	24.98	0.00	2.10	9.43	26.71	293.91
M8	**34.77**	**0.87**	**7.70**	**17.91**	**40.12**	**325.07**

Note: The highlighted values show the good agreement between the observed and the estimated runoff.

4.2. Model Performance Evaluation in Watersheds Used for Calibration

We evaluated the runoff predictability performance of the existing CN models (M1 to M5) and the proposed variants (M6 to M8) for the calibration watersheds (Figure 2). Because of minimal difference in the $CN_{II\alpha}$ values proposed by Williams and Izaurralde [23] and Sharpley and Williams [17], we compared only the latter with the other approaches. As mentioned earlier, the RMSE can vary from 0 to ∞, and a value close to zero indicates a nearly perfect fit [15,20,34]. On the basis of the RMSE (mean, median) values, the M2 (23.90, 21.91) and M3 (24.30, 21.90) models exhibited similar but improved runoff estimation compared to the M1 (26.49, 24.02) model. The mean value for all of the statistical indicators is shown on each box plot through connected lines. The M2 model's enhanced runoff estimation could be attributed to the lower λ = 0.05 [2], whereas the M3 model's improved predictability could be ascribed to $CN_{Ii\alpha}$, which was comparatively higher than the tabulated CN [17]. The M4 model (26.08, 23.78) showed almost no improvement compared to the M1 model. Comparatively better runoff prediction was found for the M5 model (23.53, 21.15), and that of the M6 model (23.23, 20.79) was almost equal in the calibration watersheds. However, the runoff predictive capabilities of the M7 model (21.06, 19.29) and M8 model (18.59, 16.87) were better, as was also evident from their overall RMSE values (Figure 2a). It can be inferred that setting a lower λ and a comparatively higher $CN_{Ii\alpha}$, as was the case in model M8, possibly reduces the infiltration and surface water retention capacity.

Following the model performance ratings shown in Table 2 and the box plot statistics (Figure 2b), the NSE (mean, median) for the M1 model (0.58, 0.63) and the M4 model (0.59, 0.64) were the smallest among the eight variants of the CN model. It must be kept in mind that the Gusosung watershed statistics were excluded, meaning the mean and median values were calculated for the remaining 30 calibration watersheds. In that particular watershed, only the M8 model showed a reasonable runoff prediction, whereas the rest of the models' performance indicators ratings were unsatisfactory. The M3 model (0.64, 0.68) results showed modest improvement, followed by the M2 (0.66, 0.71) and M5 (0.66, 0.71) models. However, the M6 (0.67, 0.72) and M7 (0.74, 0.77) models exhibited significantly improved results compared to the M1 model. In addition, the M8 model (0.80, 0.82) outperformed all the other models in the majority of the watersheds. The best performance of the M8 model is also evident from Figure 2b, followed by the M7 and M6 models, in that order. The lack of effectiveness of the M1 and M4 models could be attributed to the fixed and higher λ = 0.2 and inconsistent watershed tabulated CN values [10,15]. Similarly, on the basis of the PB performance ratings (Table 2), the accuracy runoff predictability of the different CN model variants is shown in Figure 2c. Using PB (mean, median), the order for accurately estimating runoff was M8 (−2.43, 0.67) > M7 (19.47, 18.06) > M6 (22.37, 22.51) > M5 (23.22, 21.93) > M3 (25.93, 24.46) > M2 (31.86, 31.26) > M4 (32.93, 32.41) > M1 (34.19, 33.14). In addition, Figure 2c shows that the PB values obtained from the M8 model in estimating runoff in the study area, except for two watersheds, were rated either very good, good, or at least satisfactory.

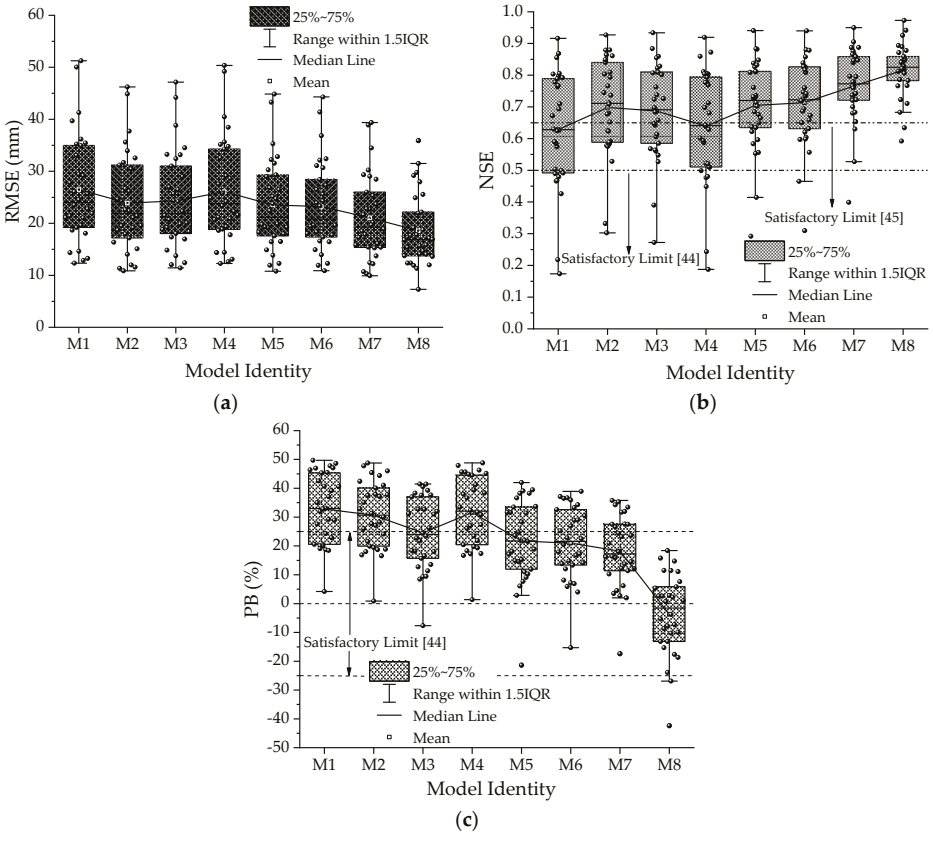


Figure 2. (**a**) Root mean square error (RMSE), (**b**) Nash–Sutcliffe efficiency (NSE), and (**c**) percent bias (PB) for eight variants of the CN model using data of 30 out of 31 calibration watersheds.

4.3. Models' Performance Evaluation in Watersheds Used for Validation

The performance of the CN model variants in the validation watersheds using the RMSE, NSE, and PB is shown in Figure 3. The superior performance of the M8 model is evident, whereas the least efficient was the M1 model with its RMSE, NSE, and PB (mean, median) values of (24.56, 22.73), (0.57, 0.60), and (36.73, 33.18), respectively. The corresponding best runoff prediction by the M8 model was recorded with RMSE (17.25, 16.07), NSE (0.80, 0.78), and PB (−0.35, −3.35). Similarly, the higher PB positive values by the M1 model in the majority of the watersheds indicated underestimation and were in the unsatisfactory range, as found by other researchers [10,20,34,44]. Nevertheless, the M8 model overestimated runoff in the majority of the watersheds, but, was within the acceptable performance range. In addition, among the remaining six variants of the CN model, the M7 model predicted more accurate runoff, followed by the M5, M6, M2, M3, and M4 models, in that order. On the basis of the PB values (Figure 3), the M8 model predicted runoff well in all the watersheds except one.

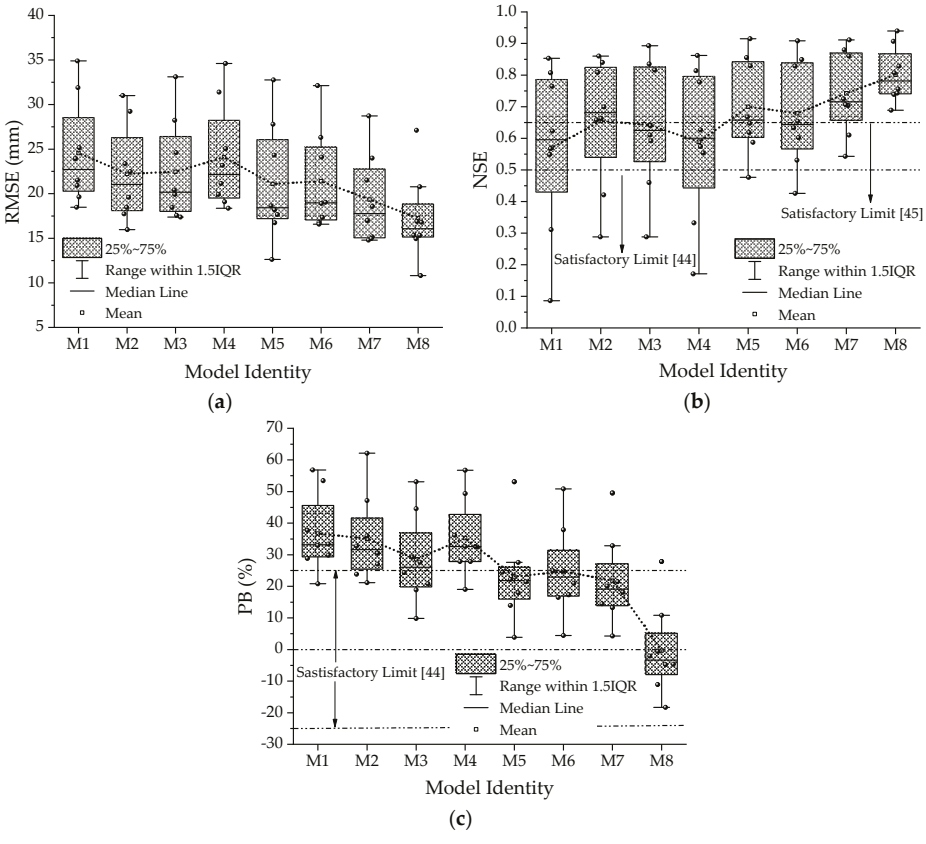


Figure 3. (**a**) RMSE, (**b**) NSE, and (**c**) PB for eight variants of the CN model using data of eight validation watersheds.

4.4. Overall Performance of Models and Comparison Based on 1:1 Plot

Table 4 summarizes the credibility of the eight variants of the CN model in estimating runoff from rainstorm events in different watersheds. It is obvious that the M8 model exhibited more accurate results for a very good performance rating based on NSE (PB) in 30 (19) out of 39 watersheds. The corresponding goodness-of-fit ratting for the M1 model was found only in 14 (1) watershed(s). Applying the model evaluation criteria recommended by Ritter and Muñoz-Carpena [45], the M1 and M4 model predictions were "satisfactorily" to "very good" in only 43.6% of the watersheds, followed by the M3, M5, M2, M6, and M7 models with their corresponding values of 53.9%, 61.5%, 64.1%, 66.7%, and 84.6% of the watersheds, respectively. The more plausible model for efficiently predicting runoff was M8 in 92.3% (36 out of 39) watersheds. It is notable that the majority of the runoff was underestimated by the M1 model, as has also been reported for rangeland and cropland in Montana and Wyoming [47], Mississippi [48], the Loess Plateau of China [19], India [20,22,26,43], South Korea [10,15], and Poland [49]. After M8, the M7 and M6 models predicted runoff more coincident with the observed values. The M4 model's inferior performance could possibly be linked to very little difference in the $CN_{II\alpha}$ and the handbook CN values ($CN_{II\alpha}$–CN), which varied in the range of 0.73 to 1.46. The corresponding CN differences for the M3, M5, and M6 models were in the range of 1.37 to 6.52, 0.73 to 11.28, and 1.15 to 9.48, respectively. It is notable that the M6 and M8 models used the same $CN_{II\alpha}$ values. The M8 model's outperformance in predicting runoff was probably because of

its lower λ = 0.01, as suggested for Korean steep-slope watersheds [10], and its comparatively higher $CN_{II\alpha}$ values.

Table 4. Performance of the CN model and its variants in 39 watersheds in the study area.

	M1	M2	M3	M4	M5	M6	M7	M8
Performance Criteria				**NSE [44]**				
0.75 < NSE ≤ 1.00	14	15	14	14	14	14	20	30
0.65 < NSE ≤ 0.75	3	10	7	3	10	12	13	6
0.50 < NSE ≤ 0.65	10	9	13	13	11	9	4	2
NSE ≤ 0.50	12	5	5	9	4	4	2	1
				NSE [45]				
0.90 < NSE ≤ 1.00	1	1	1	1	2	2	3	5
0.80 ≤ NSE ≤ 0.90	6	12	12	8	11	11	11	20
0.65 ≤ NSE < 0.80	10	12	8	8	11	13	19	11
NSE ≤ 0.65	22	14	18	22	15	13	6	3
				PB (%)				
−10 < PB < +10	1	1	5	1	5	6	6	19
±10 ≤ PB < ±15	0	0	3	0	6	5	8	9
±15 ≤ PB < ±25	10	11	12	10	13	12	12	7
PB ≥ ±25	28	27	19	28	15	16	13	4

We further compared the different CN model variants on the basis of cumulative observed and estimated runoff from the 39 watersheds using the 1:1 plot and the coefficient of determination, R^2. The moderately high R^2 value supported better runoff prediction capability of the M2 model compared to the M1 model. However, deviation of the observed–estimated runoff best-fit-regression line from the 1:1 plot shows that both the M1 and M2 models underestimated the majority of the runoff events (Figure 4). Although the M2 model R^2 value was comparatively high, the runoff predictability of the M1, M2, and M4 models was almost indistinguishable. Nevertheless, the closeness of data points around the 1:1 plot and the higher R^2 values of the M5 through M8 models favored these models for comparatively better runoff prediction. The best agreement between the observed and estimated runoff was evidenced by applying the M8 model, as shown in Figure 4. It should be noted that the R^2 statistics used for model evaluation could mislead practitioners. These statistics are oversensitive to extremely high values and insensitive to additive and proportional differences between model predictions and measured data [44]. The overall promising results of the M8 model support its suitability for runoff prediction in the steep-slope watersheds. Therefore, the original CN model and the majority of its variants discussed here do not well represent complex watershed characteristics, and thus the abstraction coefficient, the CN values from watershed, and the CN model itself need to be revised for general application. A very recent and comprehensive review by the NRCS Task Group on Curve Number Hydrology [5] also suggested changes to update the handbook and its associated procedures on the basis of lessons learned from global experiences and additional data analyses. To avoid jumps in runoff estimation, the CN model could be made to be more robust by not fixing the initial abstraction coefficient and considering the effect of rainfall as well as the spatial and temporal variability while estimating the watershed CN values.

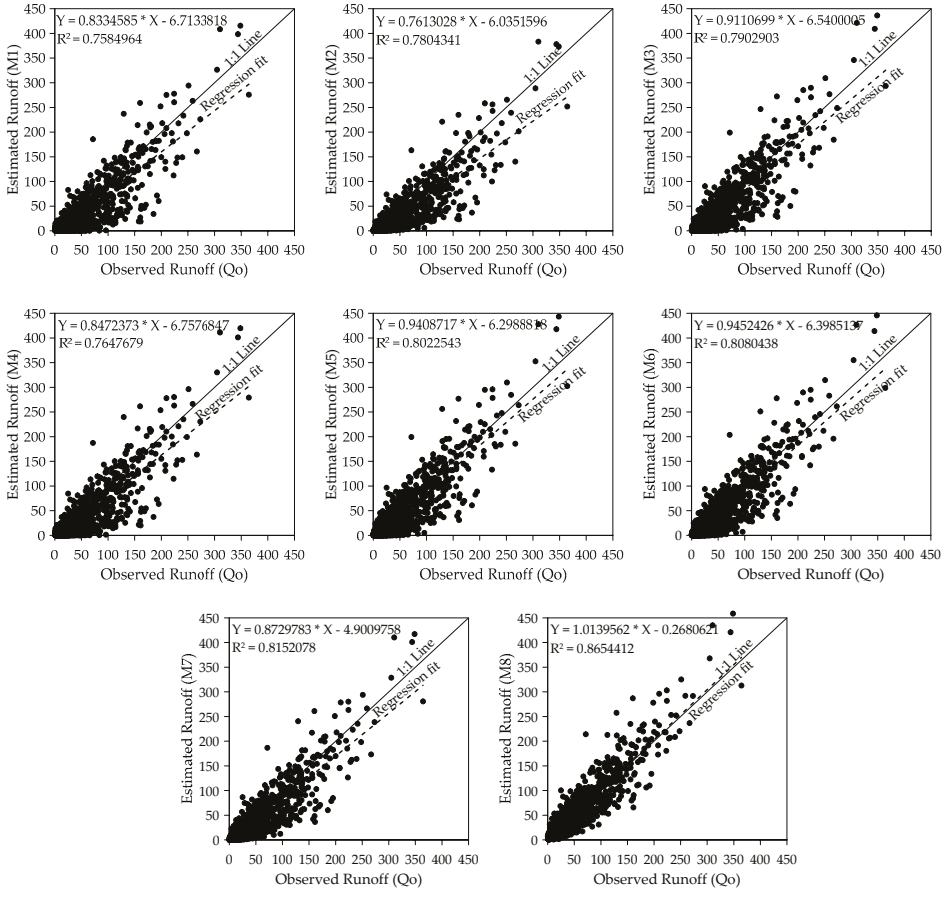


Figure 4. Observed and estimated runoff comparison for eight variants of the CN model using cumulative data of all 39 watersheds.

There is an evidence that the CN tables that were documented a few decades back that were based on soils and land use/cover are often wide of the mark and not supported by real ground data or by critical analyses [10,15,50]. The original CN model response demonstrated in different studies is very sensitive in selecting the watershed-representative CN. Moreover, the runoff response from some watersheds were found to be very erratic, leading to great discrepancies between the modeled data and reality [50]. Like our findings, various studies have reported underestimated runoff in the steep-slope watersheds using the original CN methodology [10,17–23], and slope adjustment for CN was proposed to capture the watershed response in predicting runoff [10,17–19,21–24]. Application of the suggested approach by Sharpley and Williams [17] was criticized for being tested with very limited data in the field [19]. To support the findings of Williams et al. [18], two other slope-adjusted CN approaches were developed by Ajmal et al. [10] and Sharpley and Williams [17], but they were not structurally sound due to incapability to follow the CN theoretical limits. Because of the plausible response in replicating the watershed runoff, the slope-adjusted CN approach proposed in this study was not only structurally sound in terms of following the theoretical bounds of the CN, but also in supporting its application for better runoff prediction. However, the model results could be further improved by introducing the effects of spatial variability in CN for the soil–cover complex along watersheds [51,52].

5. Conclusions and Practical Implications

The CN model is being updated continuously on the basis of new measured rainfall–runoff data and innovation in research. When handbook CN values are used, the inconsistent runoff prediction capability of this model has led researchers to adjust the CN values using the effect of rainfall magnitudes [2,5] and watershed slope [10,17–19,24,26]. However, some researchers agree that the handbook CN values are fit for runoff estimation from watersheds with a maximum 5% average slope. Hence, there is a room for further refinement in determining CN values. This study investigated and proposed a practically sound slope-adjusted CN ($CN_{II\alpha}$) approach to improve the runoff prediction capability of the CN model in steep-slope watersheds in order to reduce possible uncertainties. The proposed $CN_{II\alpha}$ not only followed the theoretical limits (0, 100) [17], but in addition, unlike other existing $CN_{II\alpha}$ approaches [10,19,23], it provided a promising runoff prediction capability in the study area. The use of $\lambda = 0.05$ in place of $\lambda = 0.2$ and their adjusted $CN_{0.05}$ values modestly improved the CN model runoff predictability, but not well enough for runoff estimation from steep-slope watersheds. On the basis of different performance indicators, we found that the proposed $CN_{II\alpha}$ had a positive impact on the CN model runoff prediction. Users of the CN model should know the limitations in its procedures and assumptions because the model produces diverse responses when applied to different land types and watersheds [5]. Assuming a fixed λ value and its associated three fixed values of initial abstraction for dry, normal, and wet conditions are among the major limitations of the original CN model and variants used in this study. The model needs an overhaul for various compelling reasons to circumvent the fixed λ value, as well as unjustified sudden jumps in CN values and its associated estimated runoff. In this era of cutting-edge technology, researchers of different biomes have introduced new parameters in the model to improve its runoff prediction capability. However, inculcating new parameters has increased the model complexity and restricted its application in ungauged watersheds. The CN methodology must be overhauled using experiences from the modern hydrologic engineering without losing the simplicity rule.

Author Contributions: Conceptualization, methodology, and writing—original draft, M.A.; validation, M.W.; visualization and writing—review and editing, D.K.; project administration and resources, T.-W.K. All authors have read and agreed to the published version of the manuscript.

Funding: This research was supported by a grant (2020-MOIS33-006) from the Lower-level and Core Disaster-Safety Technology Development Program funded by the Ministry of Interior and Safety (MOIS, Korea).

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Muche, M.E.; Hutchinson, S.L.; Hutchinson, J.S.; Johnston, J.M. Phenology-adjusted dynamic curve number for improved hydrologic modeling. *J. Environ. Manag.* **2019**, *235*, 403–413. [CrossRef] [PubMed]
2. Hawkins, R.H.; Ward, T.J.; Woodward, D.E.; Van Mullem, J.A. *ASCE EWRI Task Committee Report on State of the Practice in Curve Number Hydrology*; ASCE: Reston, VA, USA, 2009; Volume 106.
3. Fan, F.; Deng, Y.; Hu, X.; Weng, Q. Estimating composite curve number using an improved SCS-CN method with remotely sensed variables in Guangzhou, China. *Remote Sens.* **2013**, *5*, 1425–1438. [CrossRef]
4. Beck, H.E.; van Dijk, A.I.; de Roo, A.; Dutra, E.; Fink, G.; Orth, R.; Schellekens, J. Global evaluation of runoff from ten state-of-the-art hydrological models. *Hydrol. Earth Sys. Sci.* **2017**, *21*, 2881–2903. [CrossRef]
5. Hawkins, R.H.; Theurer, F.D.; Rezaeianzadeh, M. Understanding the basis of the curve number method for watershed models and TMDLs. *J. Hydrol. Eng.* **2019**, *24*, 06019003. [CrossRef]
6. Ling, L.; Yusop, Z.; Chow, M.F. Urban flood depth estimate with a new calibrated curve number runoff prediction model. *IEEE Access* **2020**, *8*, 10915–10923. [CrossRef]
7. Pandit, A.; Heck, H.H. Estimations of soil conservation service curve numbers for concrete and asphalt. *J. Hydrol. Eng.* **2009**, *14*, 335–345. [CrossRef]
8. Stewart, D.; Canfield, E.; Hawkins, R. Curve number determination methods and uncertainty in hydrologic soil groups from semiarid watershed data. *J. Hydrol. Eng.* **2012**, *17*, 1180–1187. [CrossRef]

9. Tedela, N.H.; McCutcheon, S.C.; Rasmussen, T.C.; Hawkins, R.H.; Swank, W.T.; Campbell, J.L.; Adams, M.B.; Jackson, C.R.; Tollner, E.W. Runoff curve numbers for 10 small forested watersheds in the mountains of the eastern United States. *J. Hydrol. Eng.* **2012**, *17*, 1188–1198. [CrossRef]
10. Ajmal, M.; Waseem, M.; Ahn, J.-H.; Kim, T.-W. Runoff estimation using the NRCS slope-adjusted curve number in mountainous watersheds. *J. Irrig. Drain. Eng.* **2016**, *142*, 04016002. [CrossRef]
11. Fu, S.; Zhang, G.; Wang, N.; Luo, L. Initial abstraction ratio in the SCS-CN method in the Loess Plateau of China. *Trans. ASABE* **2011**, *54*, 163–169. [CrossRef]
12. D'Asaro, F.; Grillone, G. Empirical investigation of curve number method parameters in the Mediterranean area. *J. Hydrol. Eng.* **2012**, *17*, 1141–1152. [CrossRef]
13. D'Asaro, F.; Grillone, G.; Hawkins, R.H. Curve number: Empirical evaluation and comparison with curve number handbook tables in Sicily. *J. Hydrol. Eng.* **2014**, *19*, 04014035. [CrossRef]
14. Singh, P.K.; Mishra, S.K.; Berndtsson, R.; Jain, M.K.; Pandey, R.P. Development of a modified SMA based MSCS-CN model for runoff estimation. *Water Res. Manag.* **2015**, *29*, 4111–4127. [CrossRef]
15. Ajmal, M.; Kim, T.-W. Quantifying excess stormwater using SCS-CN–based rainfall runoff models and different curve number determination methods. *J. Irrig. Drain. Eng.* **2015**, *141*, 04014058. [CrossRef]
16. Baltas, E.; Dervos, N.; Mimikou, M. Determination of the SCS initial abstraction ratio in an experimental watershed in Greece. *Hydrol. Earth Sys. Sci.* **2007**, *11*, 1825–1829. [CrossRef]
17. Sharpley, A.; Williams, J. *Epic—Erosion/Productivity Impact Calculator: I. Model Documentation. II: User Manual*; Technical Bulletin, No. 1768 1990; United State Department of Agriculture: Washington, DC, USA, 1990.
18. Williams, J.R.; Izaurralde, R.C.; Steglich, E.M. Agricultural policy/environmental extender model. *Theor. Doc. Version* **2008**, *604*, 2008–2017.
19. Huang, M.; Gallichand, J.; Wang, Z.; Goulet, M. A modification to the soil conservation service curve number method for steep slopes in the Loess Plateau of China. *Hydrol. Process.* **2006**, *20*, 579–589. [CrossRef]
20. Deshmukh, D.S.; Chaube, U.C.; Hailu, A.E.; Gudeta, D.A.; Kassa, M.T. Estimation and comparision of curve numbers based on dynamic land use land cover change, observed rainfall-runoff data and land slope. *J. Hydrol.* **2013**, *492*, 89–101. [CrossRef]
21. Ebrahimian, M.; Nuruddin, A.A.B.; Soom, M.A.B.M.; Sood, A.M.; Neng, L.J. Runoff estimation in steep slope watershed with standard and slope-adjusted curve number methods. *Pol. J. Environ. Stud.* **2012**, *21*, 1191–1202.
22. Mishra, S.K.; Chaudhary, A.; Shrestha, R.K.; Pandey, A.; Lal, M. Experimental verification of the effect of slope and land use on scs runoff curve number. *Water Res. Manag.* **2014**, *28*, 3407–3416. [CrossRef]
23. Williams, J.; Izaurralde, R. The APEX model. In *Watershed Models*; CRC Press: Boca Raton, FL, USA, 2005.
24. Williams, J.; Kannan, N.; Wang, X.; Santhi, C.; Arnold, J. Evolution of the SCS runoff curve number method and its application to continuous runoff simulation. *J. Hydrol. Eng.* **2012**, *17*, 1221–1229. [CrossRef]
25. Fang, H.; Cai, Q.; Chen, H.; Li, Q. Effect of rainfall regime and slope on runoff in a gullied loess region on the Loess Plateau in China. *Environ. Manag.* **2008**, *42*, 402–411. [CrossRef] [PubMed]
26. Garg, V.; Nikam, B.R.; Thakur, P.K.; Aggarwal, S. Assessment of the effect of slope on runoff potential of a watershed using NRCS-CN method. *Int. J. Hydrol. Sci.* **2013**, *3*, 141–159. [CrossRef]
27. Slattery, M.C.; Bryan, R.B. Hydraulic conditions for rill incision under simulated rainfall: A laboratory experiment. *Earth Surf. Process. Landf.* **1992**, *17*, 127–146. [CrossRef]
28. Govers, G. A field study on topographical and topsoil effects on runoff generation. *Catena* **1991**, *18*, 91–111. [CrossRef]
29. Fox, D.; Bryan, R.; Price, A. The influence of slope angle on final infiltration rate for interrill conditions. *Geoderma* **1997**, *80*, 181–194. [CrossRef]
30. Van de Giesen, N.; Stomph, T.J.; de Ridder, N. Surface runoff scale effects in west African watersheds: Modeling and management options. *Agric. Water Manag.* **2005**, *72*, 109–130. [CrossRef]
31. Joel, A.; Messing, I.; Seguel, O.; Casanova, M. Measurement of surface water runoff from plots of two different sizes. *Hydrol. Process.* **2002**, *16*, 1467–1478. [CrossRef]
32. Stomph, T.; De Ridder, N.; Steenhuis, T.; Van de Giesen, N. Scale effects of hortonian overland flow and rainfall-runoff dynamics: Laboratory validation of a process-based model. *Earth Surf. Process. Landf.* **2002**, *27*, 847–855. [CrossRef]
33. Esteves, M.; Lapetite, J.M. A multi-scale approach of runoff generation in a sahelian gully catchment: A case study in Niger. *Catena* **2003**, *50*, 255–271. [CrossRef]

34. Lal, M.; Mishra, S.; Pandey, A.; Pandey, R.; Meena, P.; Chaudhary, A.; Jha, R.K.; Shreevastava, A.K.; Kumar, Y. Evaluation of the soil conservation service curve number methodology using data from agricultural plots. *Hydrogeol. J.* **2017**, *25*, 151–167. [CrossRef]
35. Mah, M.; Douglas, L.; Ringrose-Voase, A. Effects of crust development and surface slope on erosion by rainfall. *Soil Sci.* **1992**, *154*, 37–43. [CrossRef]
36. Kowalik, T.; Walega, A. Estimation of CN parameter for small agricultural watersheds using asymptotic functions. *Water* **2015**, *7*, 939–955. [CrossRef]
37. Lian, H.; Yen, H.; Huang, C.; Feng, Q.; Qin, L.; Bashir, M.A.; Wu, S.; Zhu, A.-X.; Luo, J.; Di, H. CN-China: Revised runoff curve number by using rainfall-runoff events data in China. *Water Res.* **2020**, *177*, 115767. [CrossRef] [PubMed]
38. Qiu, L.; Im, E.-S.; Hur, J.; Shim, K.-M. Added value of very high resolution climate simulations over South Korea using WRF modeling system. *Clim. Dyn.* **2019**, *54*, 173–189. [CrossRef]
39. Isik, S.; Kalin, L.; Schoonover, J.E.; Srivastava, P.; Lockaby, B.G. Modeling effects of changing land use/cover on daily streamflow: An artificial neural network and curve number based hybrid approach. *J. Hydrol.* **2013**, *485*, 103–112. [CrossRef]
40. Mishra, S.K.; Jain, M.K.; Suresh Babu, P.; Venugopal, K.; Kaliappan, S. Comparison of AMC-dependent CN-conversion formulae. *Water Res. Manag.* **2008**, *22*, 1409–1420. [CrossRef]
41. McCutcheon, S.; Tedela, N.; Adams, M.; Swank, W.; Campbell, J.; Hawkins, R.; Dye, C. *Rainfall-Runoff Relationships for Selected Eastern us Forested Mountain Watersheds: Testing of the Curve Number Method for Flood Analysis*; West Virginia Division of Forestry: Charleston, WV, USA, 2006.
42. NRCS (Natural Resources Conservation Service). *National Engineering Handbook Section-4, Part 630, Hydrology*; NRCS: Washington, DC, USA, 2001.
43. Lal, M.; Mishra, S.K.; Pandey, A. Physical verification of the effect of land features and antecedent moisture on runoff curve number. *Catena* **2015**, *133*, 318–327. [CrossRef]
44. Moriasi, D.N.; Arnold, J.G.; Van Liew, M.W.; Bingner, R.L.; Harmel, R.D.; Veith, T.L. Model evaluation guidelines for systematic quantification of accuracy in watershed simulations. *Trans. ASABE* **2007**, *50*, 885–900. [CrossRef]
45. Ritter, A.; Muñoz-Carpena, R. Performance evaluation of hydrological models: Statistical significance for reducing subjectivity in goodness-of-fit assessments. *J. Hydrol.* **2013**, *480*, 33–45. [CrossRef]
46. Harmel, R.; Smith, P.; Migliaccio, K.; Chaubey, I.; Douglas-Mankin, K.; Benham, B.; Shukla, S.; Muñoz-Carpena, R.; Robson, B.J. Evaluating, interpreting, and communicating performance of hydrologic/water quality models considering intended use: A review and recommendations. *Environ. Model. Softw.* **2014**, *57*, 40–51. [CrossRef]
47. Van Mullem, J. Runoff and peak discharges using Green-Ampt infiltration model. *J. Hydraul. Eng.* **1991**, *117*, 354–370. [CrossRef]
48. King, K.W.; Arnold, J.; Bingner, R. Comparison of Green-Ampt and curve number methods on Goodwin Creek watershed using SWAT. *Trans. ASAE* **1999**, *42*, 919. [CrossRef]
49. Walega, A.; Salata, T. Influence of land cover data sources on estimation of direct runoff according to SCS-CN and modified SME methods. *Catena* **2019**, *172*, 232–242. [CrossRef]
50. Hawkins Richard, H. Curve Number Method: Time to Think Anew? *J. Hydrol. Eng.* **2014**, *19*, 1059. [CrossRef]
51. Soulis, K.X.; Valiantzas, J.D. Identification of the SCS-CN parameter spatial distribution using rainfall-runoff data in heterogeneous watersheds. *Water Res. Manag.* **2013**, *27*, 1737–1749. [CrossRef]
52. Soulis, K.X. Estimation of SCS curve number variation following forest fires. *Hydrol. Sci. J.* **2018**, *63*, 1332–1346. [CrossRef]



© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).

Sediment Basin (SB) SC-7

Description

A sediment basin is a temporary pond built on a construction site to capture eroded or disturbed soil transported in storm runoff prior to discharge from the site. Sediment basins are designed to capture site runoff and slowly release it to allow time for settling of sediment prior to discharge. Sediment basins are often constructed in locations that will later be modified to serve as post-construction stormwater basins.



Photograph SB-1. Sediment basin at the toe of a slope. Photo courtesy of WWE.

Appropriate Uses

Most large construction sites (typically greater than 2 acres) will require one or more sediment basins for effective management of construction site runoff. On linear construction projects, sediment basins may be impractical; instead, sediment traps or other combinations of BMPs may be more appropriate.

Sediment basins should not be used as stand-alone sediment controls. Erosion and other sediment controls should also be implemented upstream.

When feasible, the sediment basin should be installed in the same location where a permanent post-construction detention pond will be located.

Design and Installation

The design procedure for a sediment basin includes these steps:

- **Basin Storage Volume**: Provide a storage volume of at least 3,600 cubic feet per acre of drainage area. To the extent practical, undisturbed and/or off-site areas should be diverted around sediment basins to prevent "clean" runoff from mixing with runoff from disturbed areas. For undisturbed areas (both on-site and off-site) that cannot be diverted around the sediment basin, provide a minimum of 500 ft^3/acre of storage for undeveloped (but stable) off-site areas in addition to the 3,600 ft^3/acre for disturbed areas. For stable, developed areas that cannot be diverted around the sediment basin, storage volume requirements are summarized in Table SB-1.

- **Basin Geometry:** Design basin with a minimum length-to-width ratio of 2:1 (L:W). If this cannot be achieved because of site space constraints, baffling may be required to extend the effective distance between the inflow point(s) and the outlet to minimize short-circuiting.

- **Dam Embankment**: It is recommended that embankment slopes be 4:1 (H:V) or flatter and no steeper than 3:1 (H:V) in any location.

Sediment Basins	
Functions	
Erosion Control	No
Sediment Control	Yes
Site/Material Management	No

- **Inflow Structure**: For concentrated flow entering the basin, provide energy dissipation at the point of inflow.

Table SB-1. Additional Volume Requirements for Undisturbed and Developed Tributary Areas Draining through Sediment Basins

Imperviousness (%)	Additional Storage Volume (ft^3) Per Acre of Tributary Area
Undeveloped	500
10	800
20	1230
30	1600
40	2030
50	2470
60	2980
70	3560
80	4360
90	5300
100	6460

- **Outlet Works**: The outlet pipe shall extend through the embankment at a minimum slope of 0.5 percent. Outlet works can be designed using one of the following approaches:

  - **Riser Pipe (Simplified Detail):** Detail SB-1 provides a simplified design for basins treating no more than 15 acres.

  - **Orifice Plate or Riser Pipe**: Follow the design criteria for Full Spectrum Detention outlets in the EDB Fact Sheet provided in Chapter 4 of this manual for sizing of outlet perforations with an emptying time of approximately 72 hours. In lieu of the trash rack, pack uniformly sized 1½ - to 2-inch gravel in front of the plate or surrounding the riser pipe. This gravel will need to be cleaned out frequently during the construction period as sediment accumulates within it. The gravel pack will need to be removed and disposed of following construction to reclaim the basin for use as a permanent detention facility. If the basin will be used as a permanent extended detention basin for the site, a trash rack will need to be installed once contributing drainage areas have been stabilized and the gravel pack and accumulated sediment have been removed.

  - **Floating Skimmer**: If a floating skimmer is used, install it using manufacturer's recommendations. Illustration SB-1 provides an illustration of a Faircloth Skimmer Floating Outlet™, one of the more commonly used floating skimmer outlets. A skimmer should be designed to release the design volume in no less than 48 hours. The use of a floating skimmer outlet can increase the sediment capture efficiency of a basin significantly. A floating outlet continually decants cleanest water off the surface of the pond and releases cleaner water than would discharge from a perforated riser pipe or plate.

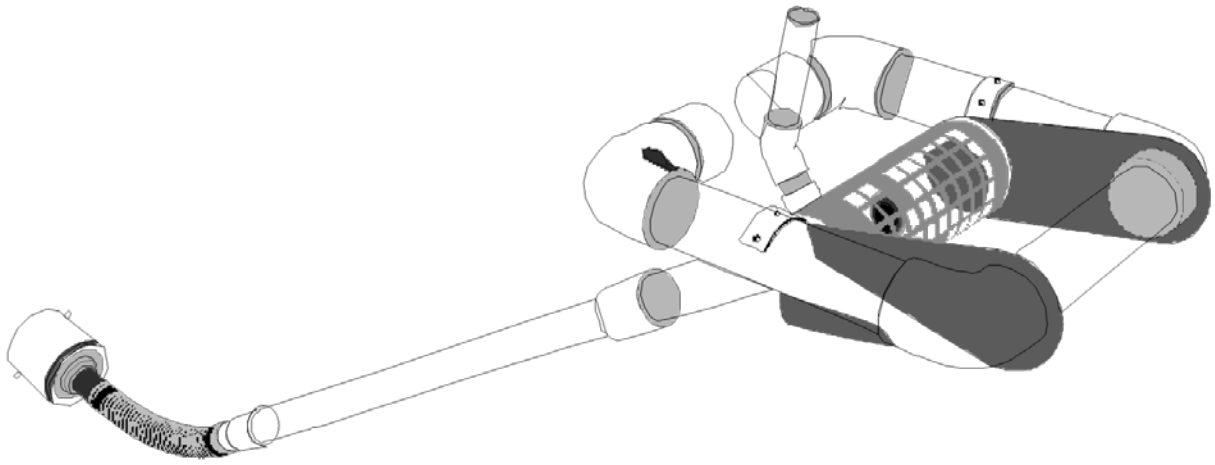


Illustration SB-1. Outlet structure for a temporary sediment basin - Faircloth Skimmer Floating Outlet. Illustration courtesy of J. W. Faircloth & Sons, Inc., FairclothSkimmer.com.

- **Outlet Protection and Spillway:** Consider all flow paths for runoff leaving the basin, including protection at the typical point of discharge as well as overtopping.
  - **Outlet Protection:** Outlet protection should be provided where the velocity of flow will exceed the maximum permissible velocity of the material of the waterway into which discharge occurs. This may require the use of a riprap apron at the outlet location and/or other measures to keep the waterway from eroding.
  - **Emergency Spillway:** Provide a stabilized emergency overflow spillway for rainstorms that exceed the capacity of the sediment basin volume and its outlet. Protect basin embankments from erosion and overtopping. If the sediment basin will be converted to a permanent detention basin, design and construct the emergency spillway(s) as required for the permanent facility. If the sediment basin will not become a permanent detention basin, it may be possible to substitute a heavy polyvinyl membrane or properly bedded rock cover to line the spillway and downstream embankment, depending on the height, slope, and width of the embankments.

Maintenance and Removal

Maintenance activities include the following:

- Dredge sediment from the basin, as needed to maintain BMP effectiveness, typically when the design storage volume is no more than one-third filled with sediment.
- Inspect the sediment basin embankments for stability and seepage.
- Inspect the inlet and outlet of the basin, repair damage, and remove debris. Remove, clean and replace the gravel around the outlet on a regular basis to remove the accumulated sediment within it and keep the outlet functioning.
- Be aware that removal of a sediment basin may require dewatering and associated permit requirements.
- Do not remove a sediment basin until the upstream area has been stabilized with vegetation.

Final disposition of the sediment basin depends on whether the basin will be converted to a permanent post-construction stormwater basin or whether the basin area will be returned to grade. For basins being converted to permanent detention basins, remove accumulated sediment and reconfigure the basin and outlet to meet the requirements of the final design for the detention facility. If the sediment basin is not to be used as a permanent detention facility, fill the excavated area with soil and stabilize with vegetation.

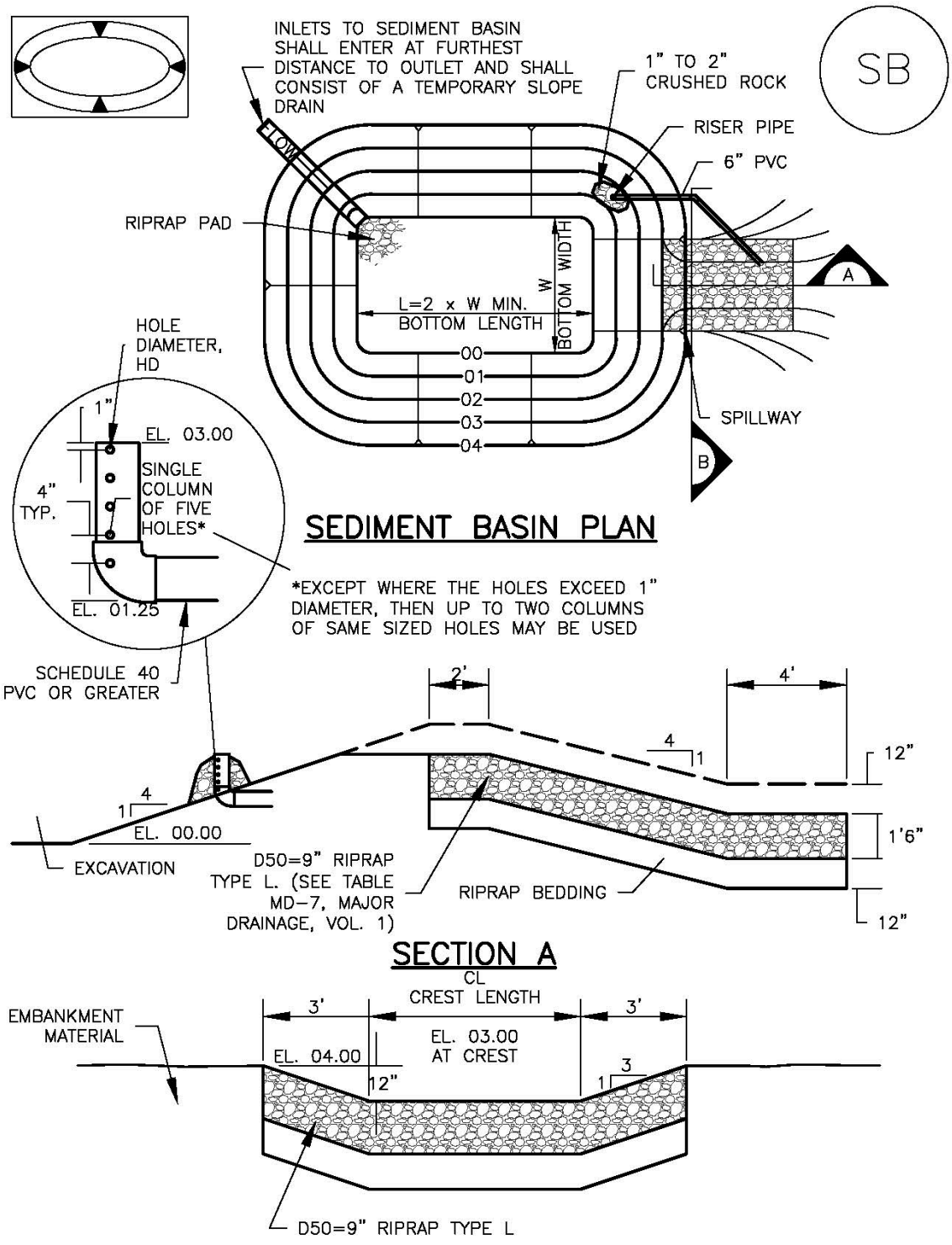

SB
INLETS TO SEDIMENT BASIN SHALL ENTER AT FURTHEST DISTANCE TO OUTLET AND SHALL CONSIST OF A TEMPORARY SLOPE DRAIN
FLOW
1" TO 2" CRUSHED ROCK
RISER PIPE
6" PVC
RIPRAP PAD
W BOTTOM WIDTH
L=2 x W MIN. BOTTOM LENGTH
00
01
02
03
04
A
B
SPILLWAY
HOLE DIAMETER, HD
1"
EL. 03.00
4" TYP.
SINGLE COLUMN OF FIVE HOLES*
EL. 01.25
SCHEDULE 40 PVC OR GREATER
SEDIMENT BASIN PLAN
*EXCEPT WHERE THE HOLES EXCEED 1" DIAMETER, THEN UP TO TWO COLUMNS OF SAME SIZED HOLES MAY BE USED
2'
4'
4
1
12"
4
1
EL. 00.00
1'6"
EXCAVATION
D50=9" RIPRAP TYPE L. (SEE TABLE MD-7, MAJOR DRAINAGE, VOL. 1)
RIPRAP BEDDING
12"
SECTION A
CL
CREST LENGTH
3'
3'
EMBANKMENT MATERIAL
EL. 04.00
EL. 03.00 AT CREST
12"
3
1
D50=9" RIPRAP TYPE L

TABLE SB–1. SIZING INFORMATION FOR STANDARD SEDIMENT BASIN			
Upstream Drainage Area (rounded to nearest acre), (ac)	Basin Bottom Width (W), (ft)	Spillway Crest Length (CL), (ft)	Hole Diameter (HD), (in)
1	12 ½	2	9/32
2	21	3	13/16
3	28	5	½
4	33 ½	6	9/16
5	38 ½	8	21/32
6	43	9	21/32
7	47 ¼	11	25/32
8	51	12	27/32
9	55	13	⅞
10	58 ¼	15	15/16
11	61	16	31/32
12	64	18	1
13	67 ½	19	1 1/16
14	70 ½	21	1 ⅛
15	73 ¼	22	1 3/16

SEDIMENT BASIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - –LOCATION OF SEDIMENT BASIN.
   - –TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
   - –FOR STANDARD BASIN, BOTTOM WIDTH W, CREST LENGTH CL, AND HOLE DIAMETER, HD.
   - –FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT H, NUMBER OF COLUMNS N, HOLE DIAMETER HD AND PIPE DIAMETER D.

2. FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.

3. SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND–DISTURBING ACTIVITY THAT RELIES ON ON BASINS AS AS A STORMWATER CONTROL.

4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.

5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.

6. PIPE SCH 40 OR GREATER SHALL BE USED.

7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.

SEDIMENT BASIN MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED IN BASIN SHALL BE REMOVED AS NEEDED TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN SEDIMENT DEPTH REACHES ONE FOOT (I.E., TWO FEET BELOW THE SPILLWAY CREST).

5. SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE LOCAL JURISDICTION.

6. WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

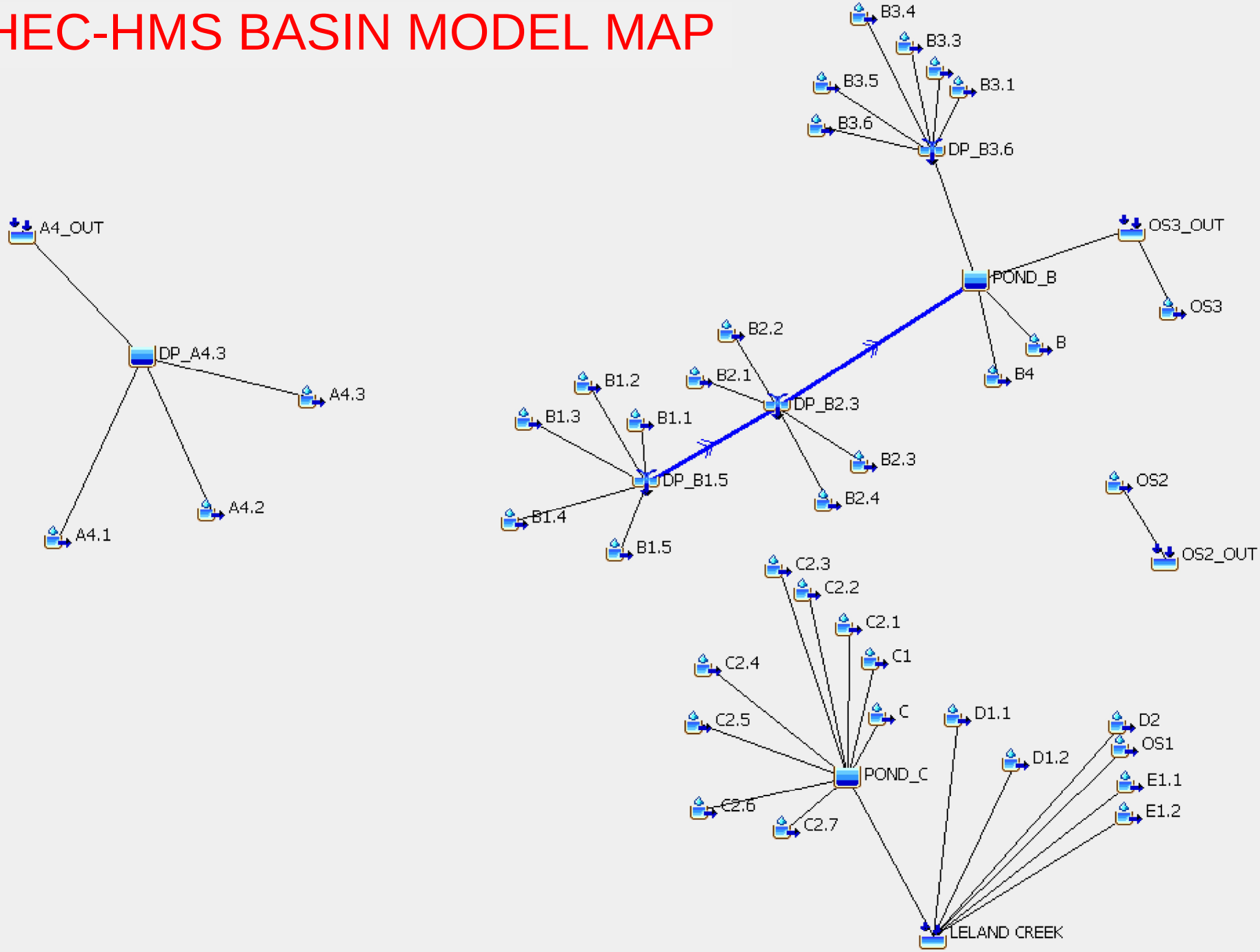
APPENDIX F
DRAINAGE MAPS

HEC-HMS Basin Model Map

HEC-HMS Map

Proposed Drainage Map

HEC-HMS BASIN MODEL MAP

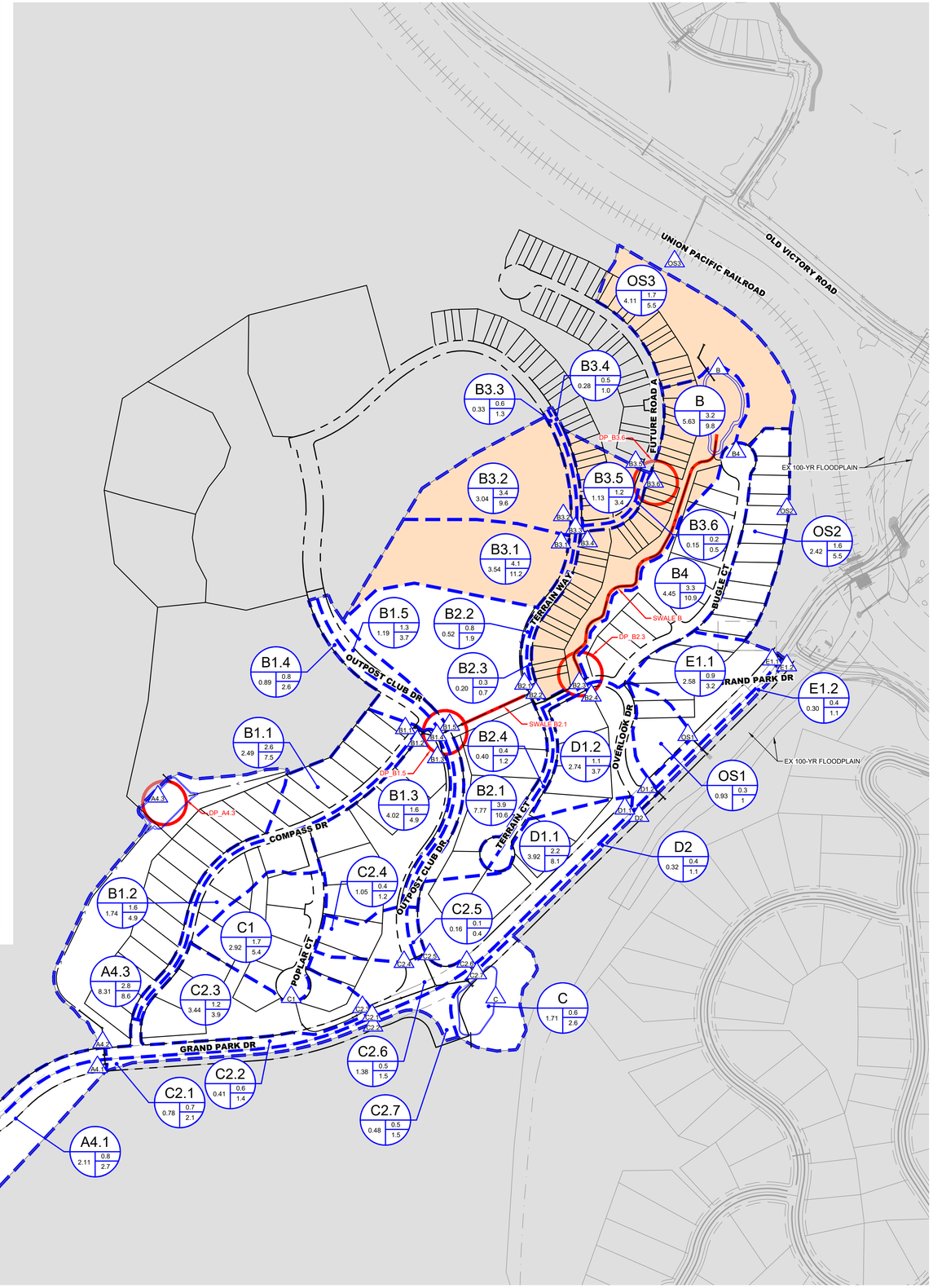


Existing Conditions

Element	Area (Ac)	Percent Imperviousness	Q5 (CFS)	Q100 (CFS)
A4_OUT	-	-	2.8	9.3
A4.1	2.11	5%	0.5	1.9
A4.2	0.48	5%	0.2	0.9
A4.3	7.33	5%	2.2	7.2
B	5.63	5%	2.1	7.4
B1.1	2.49	5%	1.2	4.7
B1.2	1.74	5%	0.7	3.0
B1.3	4.02	5%	1.1	3.8
B1.4	0.89	5%	0.4	1.6
B1.5	1.19	5%	0.5	2.0
B2.1	7.77	5%	1.9	6.4
B2.2	0.52	5%	0.2	0.8
B2.3	0.20	5%	0.1	0.3
B2.4	0.40	5%	0.1	0.6
B3.1	3.54	5%	1.6	6.3
B3.2	3.04	5%	1.3	5.2
B3.3	0.33	5%	0.2	0.6
B3.4	0.28	5%	0.1	0.5
B3.5	1.13	5%	0.7	2.5
B3.6	0.15	5%	0.1	0.3
B4	4.45	5%	1.6	6.9
C	1.71	5%	0.6	2.6
C1	2.92	5%	1.0	3.6
C2.1	0.78	5%	0.3	1.3
C2.2	0.41	5%	0.2	0.7
C2.3	3.44	5%	0.9	3.0
C2.4	1.05	5%	0.3	0.9
C2.5	0.16	5%	0.0	0.2
C2.6	1.38	5%	0.3	1.1
C2.7	0.48	5%	0.2	0.8
DP_A4.3	-	-	3.3	11.4
DP_B1.5	-	-	3.1	12.4
DP_B2.3	-	-	5.0	15.1
DP_B3.6	-	-	3.9	15.4
D1.1	3.92	5%	1.4	5.9
D1.2	2.74	5%	0.6	2.5
D2	0.32	5%	0.1	0.5
E1.1	2.58	5%	0.6	2.3
E1.2	0.30	5%	0.1	0.5
LELAND CREEK	-	-	5.6	20
OS1	0.93	5%	0.2	0.9
OS2	2.42	5%	0.8	3.4
OS2_OUT	-	-	0.8	3.4
OS3	4.11	5%	1.5	4.9
OS3_OUT	-	-	11.5	40.8
POND_B	-	-	10.1	37
POND_C	-	-	3.1	10.6
SWALE B	-	-	5.0	15.1
SWALE B2.1	-	-	2.9	11.8

Proposed Conditions

Element	Area (Ac)	Percent Imperviousness	Q5 (CFS)	Q100 (CFS)
A4_OUT	-	-	0.0	4.0
A4.1	2.11	42.8%	0.8	2.7
A4.2	0.48	95.0%	0.9	2.0
A4.3	7.33	32.0%	2.8	8.6
B	5.63	47.0%	3.2	9.8
B1.1	2.49	64.8%	2.6	7.5
B1.2	1.74	51.6%	1.6	4.9
B1.3	4.02	25.6%	1.6	4.9
B1.4	0.89	61.6%	0.8	2.6
B1.5	1.19	70.6%	1.3	3.7
B2.1	7.77	55.7%	3.9	10.6
B2.2	0.52	87.3%	0.8	1.9
B2.3	0.20	86.0%	0.3	0.7
B2.4	0.40	77.0%	0.4	1.2
B3.1	3.54	70.0%	4.1	11.2
B3.2	3.04	70.0%	3.4	9.6
B3.3	0.33	95.0%	0.6	1.3
B3.4	0.28	95.0%	0.5	1.0
B3.5	1.13	52.0%	1.2	3.4
B3.6	0.15	95.0%	0.2	0.5
B4	4.45	54.7%	3.3	10.9
C	1.71	11.7%	0.6	2.6
C1	2.92	39.7%	1.7	5.4
C2.1	0.78	57.8%	0.7	2.1
C2.2	0.41	84.7%	0.6	1.4
C2.3	3.44	25.4%	1.2	3.9
C2.4	1.05	30.1%	0.4	1.2
C2.5	0.16	75.4%	0.1	0.4
C2.6	1.38	34.5%	0.5	1.5
C2.7	0.48	70.3%	0.5	1.5
DP_A4.3	-	-	0.1	5.3
DP_B1.5	-	-	6.8	20.3
DP_B2.3	-	-	8.9	26.5
DP_B3.6	-	-	9.9	27
D1.1	3.92	30.2%	2.2	8.1
D1.2	2.74	36.5%	1.1	3.7
D2	0.32	79.4%	0.4	1.1
E1.1	2.58	40.3%	0.9	3.2
E1.2	0.30	79.1%	0.4	1.1
LELAND CREEK	-	-	4.1	14.5
OS1	0.93	19.5%	0.3	1
OS2	2.42	55.0%	1.6	5.5
OS2_OUT	-	-	1.6	5.5
OS3	4.11	22.6%	1.7	5.5
OS3_OUT	-	-	2.6	28.8
POND_B	-	-	1.3	25.8
POND_C	-	-	0.1	7.2
SWALE B	-	-	8.9	26.5
SWALE B2.1	-	-	6.5	19.6





N

0 200' 400'

1 inch = 200'

LEGEND

- PROPOSED MAJOR CONTOUR (10')
- PROPOSED MINOR CONTOUR (2')
- PROPOSED MAJOR CONTOUR (10')
- PROPOSED MINOR CONTOUR (2')
- PROPOSED DRAINAGE BASIN
- NOT A PART
- BASINS FOR FUTURE BASINS
- STORM (FES, MH, & INLET)
- PR-1 — BASIN DESIGNATION; AREA X.XX (AC); MINOR RUNOFF (CFS) 0.XX; MAJOR RUNOFF (CFS) 0.XX
- DIRECTIONAL FLOW ARROW
- DESIGN POINT
- EMERGENCY OVERFLOW ROUTE
- DRAINAGE SWALE
- REACH
- JUNCTION

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	01/16/2026	MJG

NOT FOR CONSTRUCTION

GRAND PARK - WEST MOUNTAIN - FILING 1 - 10W

TOWN OF FRASER, COLORADO

PHASE III DRAINAGE REPORT

HEC-HMS DRAINAGE MAP

Know what's below. Call before you dig. 811

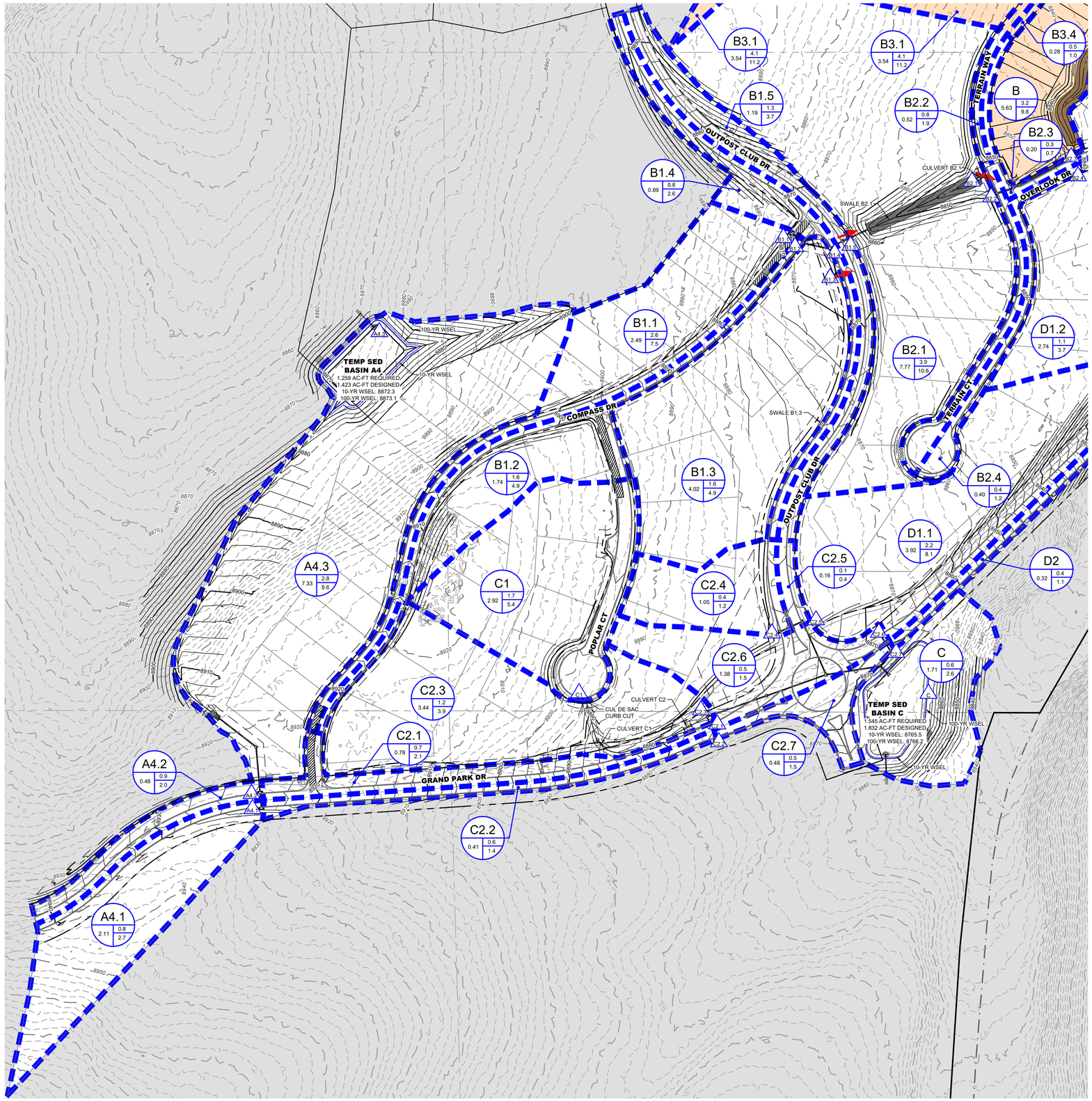
1/30/2026 3:01 PM X:\GRAND PARK\DOCUMENTS\REPORTS\DRAINAGE\16.1 - FILING 1 - 8WB, 9W, 10W, 11W\PHASE 3 - 10W\F - DRAINAGE MAPS PROPOSED HEC-HMS MAP.DWG 1

EXISTING RUNOFF SUMMARY TABLE

BASIN ID	DESIGN POINT	BASIN AREA (AC)	IMPERVIOUSNESS (%)	5-YEAR RUNOFF (CFS)	100-YEAR RUNOFF (CFS)
A4.1	A4.1	2.11	5.0%	0.5	1.9
A4.2	A4.2	0.48	5.0%	0.2	0.9
A4.3	A4.3	7.33	5.0%	2.2	7.2
B	B	5.63	5.0%	2.1	7.4
B1.1	B1.1	2.49	5.0%	1.2	4.7
B1.2	B1.2	1.74	5.0%	0.7	3.0
B1.3	B1.3	4.02	5.0%	1.1	3.8
B1.4	B1.4	0.89	5.0%	0.4	1.6
B1.5	B1.5	1.19	5.0%	0.5	2.0
B2.1	B2.1	7.77	5.0%	1.9	6.4
B2.2	B2.2	0.52	5.0%	0.2	0.8
B2.3	B2.3	0.20	5.0%	0.1	0.3
B2.4	B2.4	0.40	5.0%	0.1	0.6
B3.1	B3.1	3.54	5.0%	1.6	6.3
B3.3	B3.3	0.33	5.0%	0.2	0.6
B3.4	B3.4	0.28	5.0%	0.1	0.5
B4	B4	4.45	5.0%	1.6	6.9
C	C	1.71	5.0%	0.6	2.6
C1	C1	2.92	5.0%	1.0	3.6
C2.1	C2.1	0.78	5.0%	0.3	1.3
C2.2	C2.2	0.41	5.0%	0.2	0.7
C2.3	C2.3	3.44	5.0%	0.9	3.0
C2.4	C2.4	1.05	5.0%	0.3	0.9
C2.5	C2.5	0.16	5.0%	0.0	0.2
C2.6	C2.6	1.38	5.0%	0.3	1.1
C2.7	C2.7	0.48	5.0%	0.2	0.8
D1.1	D1.1	3.92	5.0%	1.4	5.9
D1.2	D1.2	2.74	5.0%	0.6	2.5

PROPOSED RUNOFF SUMMARY TABLE

BASIN ID	DESIGN POINT	BASIN AREA (AC)	IMPERVIOUSNESS (%)	5-YEAR RUNOFF (CFS)	100-YEAR RUNOFF (CFS)
A4.1	A4.1	2.11	42.8%	0.8	2.7
A4.2	A4.2	0.48	95.0%	0.9	2.0
A4.3	A4.3	7.33	32.0%	2.8	8.6
B	B	5.63	47.0%	3.2	9.8
B1.1	B1.1	2.49	64.8%	2.6	7.5
B1.2	B1.2	1.74	51.6%	1.6	4.9
B1.3	B1.3	4.02	25.6%	1.6	4.9
B1.4	B1.4	0.89	61.6%	0.8	2.6
B1.5	B1.5	1.19	70.6%	1.3	3.7
B2.1	B2.1	7.77	55.7%	3.9	10.6
B2.2	B2.2	0.52	87.3%	0.8	1.9
B2.3	B2.3	0.20	86.0%	0.3	0.7
B2.4	B2.4	0.40	77.0%	0.4	1.2
B3.1	B3.1	3.54	70.0%	4.1	11.2
B3.3	B3.3	0.33	95.0%	0.6	1.3
B3.4	B3.4	0.28	95.0%	0.5	1.0
B4	B4	4.45	54.7%	3.3	10.9
C	C	1.71	11.7%	0.6	2.6
C1	C1	2.92	39.7%	1.7	5.4
C2.1	C2.1	0.78	57.8%	0.7	2.1
C2.2	C2.2	0.41	84.7%	0.6	1.4
C2.3	C2.3	3.44	25.4%	1.2	3.9
C2.4	C2.4	1.05	30.1%	0.4	1.2
C2.5	C2.5	0.16	75.4%	0.1	0.4
C2.6	C2.6	1.38	34.5%	0.5	1.5
C2.7	C2.7	0.48	70.3%	0.5	1.5
D1.1	D1.1	3.92	30.2%	2.2	8.1
D1.2	D1.2	2.74	36.5%	1.1	3.7





KEY MAP
SCALE: 1" = 2000'

N

0 100' 200'
1 inch = 100'

LEGEND

- PROPOSED MAJOR CONTOUR (10')
- PROPOSED MINOR CONTOUR (2')
- PROPOSED MAJOR CONTOUR (10')
- PROPOSED MINOR CONTOUR (2')
- PROPOSED DRAINAGE BASIN
- NOT A PART
- BASINS FOR FUTURE BASINS
- STORM (FES, MH, & INLET)
- PR-1 — BASIN DESIGNATION
- AREA X.XX (AC) 0.XX — MINOR RUNOFF (CFS) / MAJOR RUNOFF (CFS)
- DIRECTIONAL FLOW ARROW
- PR-1 — DESIGN POINT
- EMERGENCY OVERFLOW ROUTE
- DRAINAGE SWALE

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	01/16/2026	MJG

NOT FOR CONSTRUCTION

GRAND PARK - WEST MOUNTAIN - FILING 1 - 10W

TOWN OF FRASER, COLORADO

PHASE III DRAINAGE REPORT

PROPOSED DRAINAGE MAP

Know what's **below.** **Call** before you dig. 811

SHEET 1 OF 2

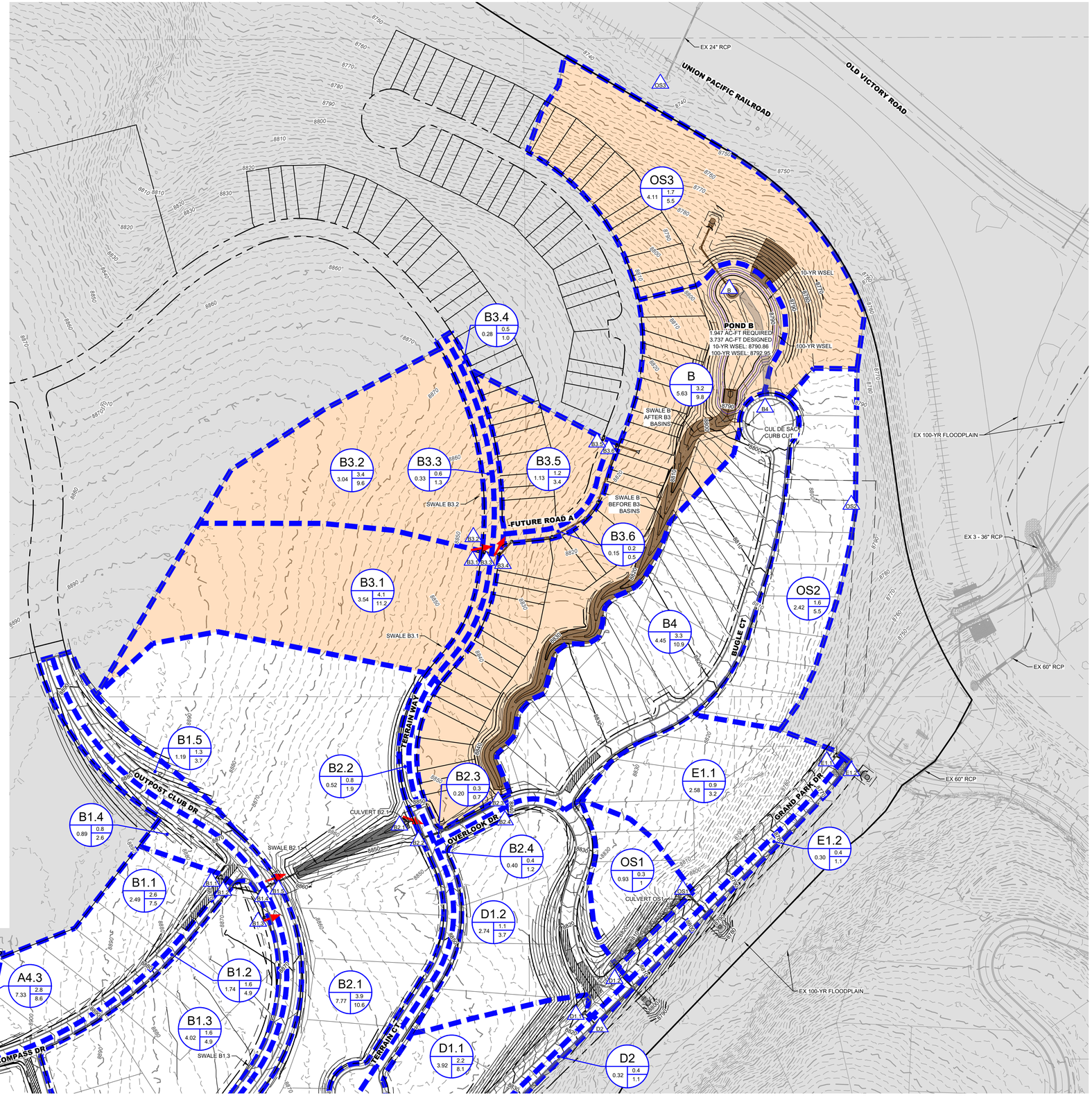
1/30/2026 3:03 PM X:\GRAND PARK\DOCUMENTS\REPORTS\DRAINAGE\16-1 - FILING 1 - 6WB, 8W, 10W, 11W\PHASE 3 - 10W\F - DRAINAGE MAPS\ PROPOSED DRAINAGE MAP.DWG 2

EXISTING RUNOFF SUMMARY TABLE

BASIN ID	DESIGN POINT	BASIN AREA (AC)	IMPERVIOUSNESS (%)	5-YEAR RUNOFF (CFS)	100-YEAR RUNOFF (CFS)
A4.3	A4.3	7.33	5.0%	2.2	7.2
B	B	5.63	5.0%	2.1	7.4
B1.1	B1.1	2.49	5.0%	1.2	4.7
B1.2	B1.2	1.74	5.0%	0.7	3.0
B1.3	B1.3	4.02	5.0%	1.1	3.8
B1.4	B1.4	0.89	5.0%	0.4	1.6
B1.5	B1.5	1.19	5.0%	0.5	2.0
B2.1	B2.1	7.77	5.0%	1.9	6.4
B2.2	B2.2	0.52	5.0%	0.2	0.8
B2.3	B2.3	0.20	5.0%	0.1	0.3
B2.4	B2.4	0.40	5.0%	0.1	0.6
B3.1	B3.1	3.54	5.0%	1.6	6.3
B3.2	B3.2	3.04	5.0%	1.3	5.2
B3.3	B3.3	0.33	5.0%	0.2	0.6
B3.4	B3.4	0.28	5.0%	0.1	0.5
B3.5	B3.5	1.13	5.0%	0.7	2.5
B3.6	B3.6	0.15	5.0%	0.1	0.3
B4	B4	4.45	5.0%	1.6	6.9
D1.1	D1.1	3.92	5.0%	1.4	5.9
D1.2	D1.2	2.74	5.0%	0.6	2.5
D2	D2	0.32	5.0%	0.1	0.5
E1.1	E1.1	2.58	5.0%	0.6	2.3
E1.2	E1.2	0.30	5.0%	0.1	0.5
OS1	OS1	0.93	5.0%	0.2	0.9
OS2	OS2	2.42	5.0%	0.8	3.4
OS3	OS3	4.11	5.0%	1.5	4.9

PROPOSED RUNOFF SUMMARY TABLE

BASIN ID	DESIGN POINT	BASIN AREA (AC)	IMPERVIOUSNESS (%)	5-YEAR RUNOFF (CFS)	100-YEAR RUNOFF (CFS)
A4.3	A4.3	7.33	32.0%	2.8	8.6
B	B	5.63	47.0%	3.2	9.8
B1.1	B1.1	2.49	64.8%	2.6	7.5
B1.2	B1.2	1.74	51.6%	1.6	4.9
B1.3	B1.3	4.02	25.6%	1.6	4.9
B1.4	B1.4	0.89	61.6%	0.8	2.6
B1.5	B1.5	1.19	70.6%	1.3	3.7
B2.1	B2.1	7.77	55.7%	3.9	10.6
B2.2	B2.2	0.52	87.3%	0.8	1.9
B2.3	B2.3	0.20	86.0%	0.3	0.7
B2.4	B2.4	0.40	77.0%	0.4	1.2
B3.1	B3.1	3.54	70.0%	4.1	11.2
B3.2	B3.2	3.04	70.0%	3.4	9.6
B3.3	B3.3	0.33	95.0%	0.6	1.3
B3.4	B3.4	0.28	95.0%	0.5	1.0
B3.5	B3.5	1.13	52.0%	1.2	3.4
B3.6	B3.6	0.15	95.0%	0.2	0.5
B4	B4	4.45	54.7%	3.3	10.9
D1.1	D1.1	3.92	30.2%	2.2	8.1
D1.2	D1.2	2.74	36.5%	1.1	3.7
D2	D2	0.32	79.4%	0.4	1.1
E1.1	E1.1	2.58	40.3%	0.9	3.2
E1.2	E1.2	0.30	79.1%	0.4	1.1
OS1	OS1	0.93	19.5%	0.3	1
OS2	OS2	2.42	55.0%	1.6	5.5
OS3	OS3	4.11	22.6%	1.7	5.5





KEY MAP
SCALE: 1" = 2000'

N

0 100' 200'
1 inch = 100'

LEGEND

- PROPOSED MAJOR CONTOUR (10')
- PROPOSED MINOR CONTOUR (2')
- PROPOSED MAJOR CONTOUR (10')
- PROPOSED MINOR CONTOUR (2')
- PROPOSED DRAINAGE BASIN
- NOT A PART
- BASINS FOR FUTURE BASINS
- STORM (FES, MH, & INLET)
- PR-1 (AREA X.XX (AC)) — BASIN DESIGNATION; 0.XX MINOR RUNOFF (CFS); 0.XX MAJOR RUNOFF (CFS)
- DIRECTIONAL FLOW ARROW
- PR-1 — DESIGN POINT
- EMERGENCY OVERFLOW ROUTE
- DRAINAGE SWALE

terracina design
10200 E. Girard Ave, A-314
Denver, CO 80231
ph: 303.632.8867

#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	01/16/2026	MJG

NOT FOR CONSTRUCTION

GRAND PARK - WEST MOUNTAIN - FILING 1 - 10W

TOWN OF FRASER, COLORADO

PHASE III DRAINAGE REPORT

PROPOSED DRAINAGE MAP

Know what's below. Call before you dig. 811

SHEET 2 OF 2

1/20/2026 3:04 PM X:\GRAND PARK\DOCUMENTS\REPORTS\DRAINAGE\16.1 - FILING 1 - 8WB, 8W, 10W, 11W\PHASE 3 - 10W\F - DRAINAGE MAPS PROPOSED DRAINAGE MAP.DWG 3

NO NAME DRAINAGEWAY

NOT A PART

OLD VICTORY RD

AMERICAN WILLOW DRIVE

UNION PACIFIC RAILROAD
(200' ROW)

ROAD C

8WB

9W.1

9W.2
CLUBHOUSE

23W

10W.2

TERRAIN WAY

BUGLE CT

NOT A PART

OUTPOST CLUB DR

10W.3

OVERLOOK DR

TERRAIN COURT

10W.1

GRAND PARK DRIVE

11W

COMPASS DR

HUNTERS CT

POND F

ROAD A

EXISTING FLOODPLAIN

LEGEND

- FPDP BOUNDARY
- 25' SNOW STORAGE SETBACK
- SNOW STORAGE
- EXISTING JURISDICTIONAL WETLANDS

PLANNING AREAS 8WB, 9W.1, 9W.2, 10W.1, 10W.2, 10W.3 & 11W WETLAND EXHIBIT

DECEMBER 18, 2025

WEST MOUNTAIN

FRASER, CO

terracina design
URBAN PLANNING | CIVIL ENGINEERING | LANDSCAPE ARCHITECTURE

Scale: 1"= 100'-0"

0 50 100 200

GRAND PARK WEST

Buildout Intersection and Roadway Assessment

Prepared for:

Cornerstone Winter Park Holdings, LLC
PO Box 30
Winter Park, CO 80482



1-12-26

Prepared by:

Felsburg Holt & Ullevig
6400 S Fiddlers Green Circle, Suite 1500
Greenwood Village, CO 80111
303.721.1440

Project Manager:

Lyle E. DeVries, PE, PTOE

Project Engineer:

Kate Brusoe, EI

FELSBURG HOLT & ULLEVIG
connecting & enhancing communities

FHU Reference No. 125152-01

January 2026

Table of Contents

Page

I. INTRODUCTION 1
I.A Overview 1
I.B Prior Traffic Studies 1
I.C Site Location and Study Area Boundaries 2
II. CONDITIONS WITHOUT DEVELOPMENT 6
II.A Land Use and Roadway Network 6
II.B Traffic Volumes 6
II.C Traffic Operations 8
III. PROPOSED DEVELOPMENT 9
III.A Land Use 9
III.B Trip Generation 11
III.C Trip Assignment 13
V. BUILDOUT CONDITIONS 15
V.A Traffic Volumes 15
V.B Traffic Operations 15
V.C Road Classification 17
VI. TRANSIT 18
VI.A Transit Vision and Role in Grand Park West 18
VI.B Regional Transit Integration – The Lift Transportation System 18
VI.C Internal Transit Network Structure 18
VI.D Transit Stop Locations and Spacing 19
VI.E Long-Term Ski Area Connectivity Opportunity 22
VII. SUMMARY 23

Appendices

Appendix A. Level of Service Worksheets – Background Condition
Appendix B. Trip Generation Conformance Review
Appendix C. Level of Service Worksheets - Buildout Total Condition

List of Figures

Page

Figure 1. Vicinity Map 3
Figure 2. Grand Park West Overall Site Plan 5
Figure 3. Grand Park West Buildout Background Traffic Conditions 7
Figure 4. Grand Park West Land Use Plan and Roadway Network 10
Figure 5. Grand Park West Site Generated Traffic and Trip Distribution 14
Figure 6. Grand Park West Buildout Total Traffic Conditions 16
Figure 7. Potential Future Transit Stops 20

List of Tables

Table 1. Grand Park West Land Use Plan 9
Table 2. Grand Park West Estimated Trip Generation 11
Table 3. Trip Generation Rates *Trip Generation* (11th Edition) 12

I. INTRODUCTION

I.A Overview

This report provides an assessment of roadway and intersection conditions associated with completion of development within the western portion of the Grand Park development in Fraser, Colorado and is intended to supplement the prior traffic studies approved by the Town of Fraser for the Grand Park Development. Prepared to address items raised by the Town of Fraser, this report further analyzes the transportation needs associated with buildout of the site, including intersection laneage and traffic control and road classification. Buildout of this site will likely require decades, and individual planning areas within the site will be developed progressively over time.

The residential and commercial site generated traffic volumes estimated in this study are based on trip rates derived from national data from general U.S. suburban and urban neighborhoods as recorded in ITE's Trip Generation Manual (11th Edition). Inherent in these data is the assumption of consistent high levels of full time residential occupancy, likely in the 90-100 percent range. However, data published in the Draft *Town of Fraser Comprehensive Plan* (available online as of January 2026), drawing from the US Census Bureau 2022 Five-Year American Community Survey, indicates that this assumption does not reflect actual conditions in Fraser. According to the Census data, only approximately 39 percent of homes in Fraser are occupied year-round, while approximately 58 percent are classified as seasonal or vacation homes. As a result, actual residential occupancy — and corresponding daily and peak-hour traffic generation — is substantially lower than what would occur under a full-time occupancy scenario.

If these published occupancy rates were applied, residential-based traffic trips could be reduced by as much as 40 to 60 percent on an annual average basis, with higher volumes occurring only during limited peak holiday and winter weekend periods. Consequently, the trip generation and intersection volumes presented in this study should be understood as highly conservative, representing a theoretical maximum condition rather than typical or even frequent operating conditions. It is important that roadway infrastructure not be overbuilt to accommodate a 100 percent occupancy scenario that is inconsistent with documented resort-market statistics, as doing so could introduce urban-scale roadway elements into a rural resort environment. Nonetheless, the conservative nature of this analysis provides long-term assurance that the transportation system would remain adequate even under a hypothetical future scenario in which Fraser evolves into a fully year-round, suburban community.

This assessment provides an understanding of overall needs at buildout that can be phased and constructed over time as needed to serve individual portions of the development. Separate conformance analyses may be required as individual planning areas within the site are developed to ensure that each provides the infrastructure necessary to accommodate transportation needs.

I.B Prior Traffic Studies

The proposed development of the study area was previously evaluated in the following transportation studies:

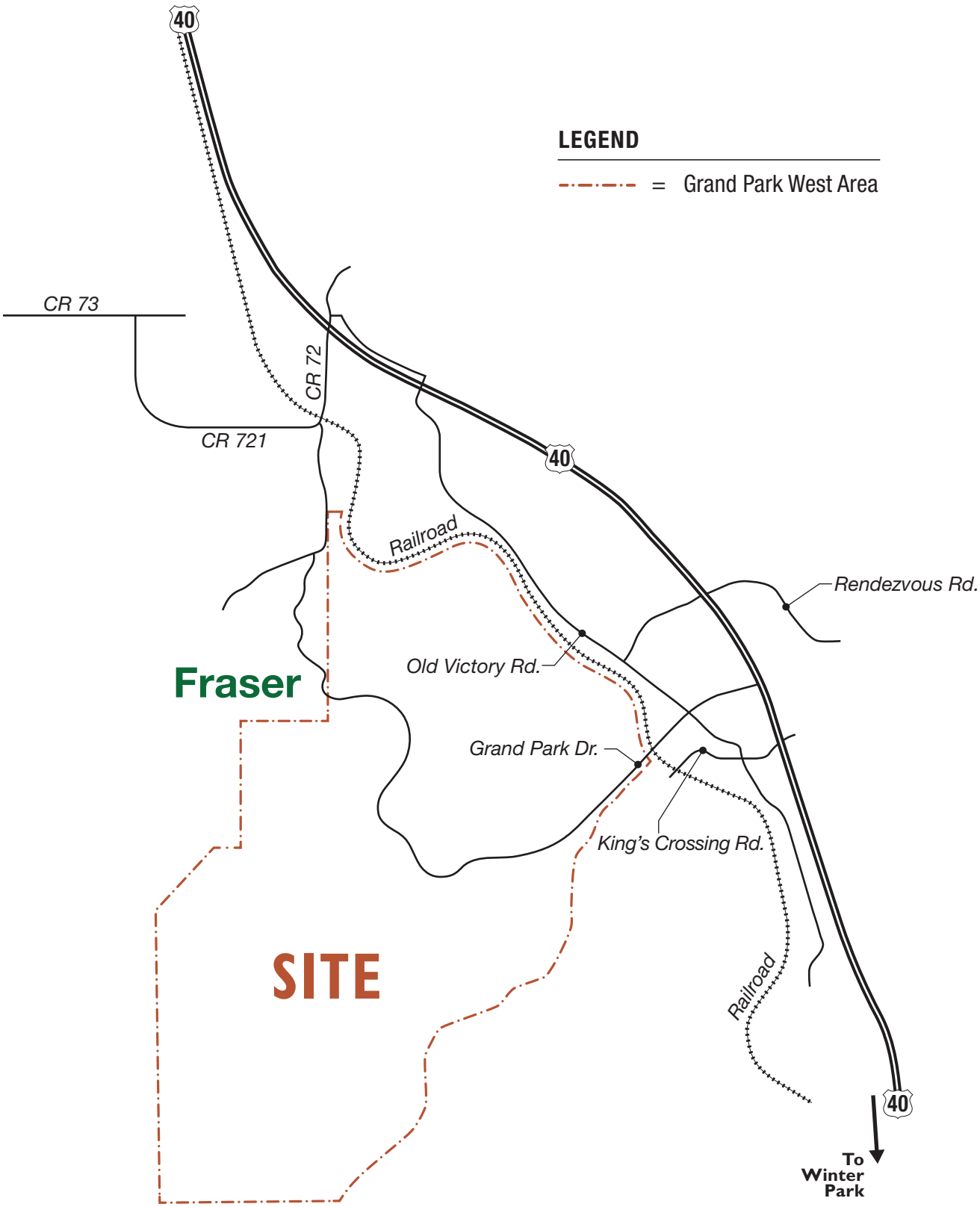
- **2004 RENDEzVOUS Traffic Impact Analysis (Master TIA).** For the study area, the Master TIA evaluated potential impacts of the development. This study addressed anticipated site access to US Highway 40 (US 40) and included traffic volume projections for roadways and intersections throughout the study area.

- **2013 Grand Park Traffic Impact Analysis**. This report was developed to address updates to proposed access to US 40 and the associated access permitting process through the Colorado Department of Transportation (CDOT). This study evaluated similar land use types and magnitudes to the Master TIA.
- **CDOT US Highway 40 Study**. In 2020, CDOT completed a study of US 40 addressing anticipated development-related growth throughout the Fraser River valley. The study incorporated development densities for all of Grand Park West and addressed impacts to intersections along US 40.

Taken together, these studies provide a reliable assessment of projected transportation conditions associated with development of Grand Park at large and Grand Park West as a portion. Over time, the infrastructure measures identified in the studies have been implemented alongside development of Grand Park as documentation has demonstrated consistency of each part with the Master TIA.

I.C Site Location and Study Area Boundaries

The Grand Park Community is located in the Upper Fraser Valley of Colorado to the west of US Highway 40 (US 40). Shown on **Figure 1**, The proposed development site lies within the portion of the Grand Park Community west of the Union Pacific Railroad (UPRR) line. The site covers approximately 1,018 Acres and proposed development types include a mix of residential, lodging/resort and commercial retail.



NORTH

FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

FIGURE 1
Vicinity Map

Grand Park West - REPORT JAN_26 125152-01 1/9/26

At buildout, Grand Park West is expected to include 1,527 residential dwellings, 630 lodgings and 65,000 square feet of commercial development.

The site plan is depicted on **Figure 2**. As shown and also on **Figure 1**, vehicular access to and through the site would be provided via Grand Park Drive, which passes under the UPRR tracks via a recently constructed underpass, then extends east to provide direct access to Old Victory Road, American Willow Drive and US 40. At the northwest end of the site, Grand Park Drive extends north to connect with County Road (CR) 72, which extends farther north to CR 721, eventually also connecting under the UPRR tracks to US 40.



NORTH

FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

FIGURE 2

Grand Park West Overall Site Plan

II. CONDITIONS WITHOUT DEVELOPMENT

This assessment includes a review of background (without development of Grand Park West) conditions at the time of buildout of surrounding development without any development complete within Grand Park West.

II.A Land Use and Roadway Network

Key land use activity in the vicinity of Grand Park West includes the following:

- Grand Park (East): The portion of Grand Park located east of the UPRR tracks is partially developed with commercial and residential uses including the Village at Grand Park mixed use development and Willows, Cozens Meadow, Cozens Pointe Condominiums, Elk Creek Condominiums, Elk Creek and Meadows residential neighborhoods.
- Byers Peak Ranch: The Byers Peak Ranch (BPR) development site is located on acreage north of the site and also west of the UPRR tracks. At buildout, the BPR site is expected to include nearly 1,900 dwelling and lodging units plus commercial and recreational uses. At the time of this assessment, development activity was centered on the northeastern portion of the site with the vast majority of the site yet to be developed.

The roadway network within Grand Park West as envisioned in **Figure 2** is currently incomplete, though rough unpaved roadway alignments were present at the time of this assessment. It is anticipated that Grand Park Drive through the site will serve only Grand Park West traffic as it would not provide efficient connectivity through and beyond the site.

II.B Traffic Volumes

Four intersections have been identified for analysis in this assessment, listed as follows:

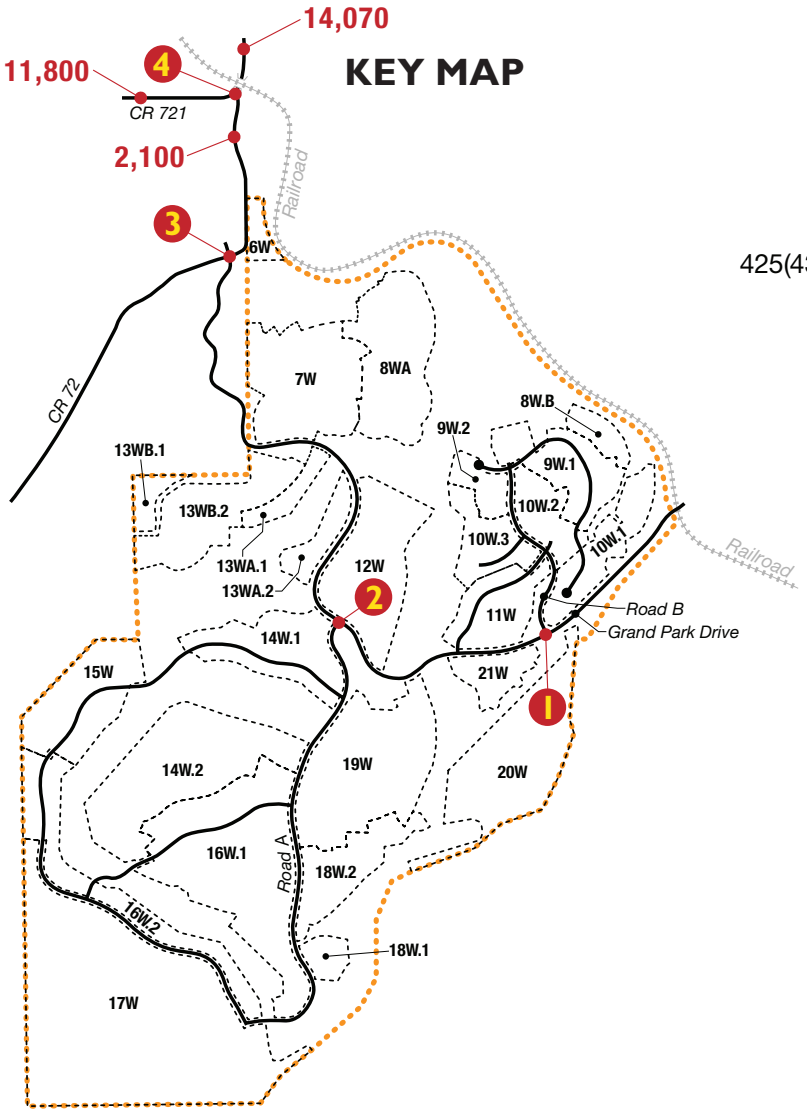
To be constructed with Grand Park West development:

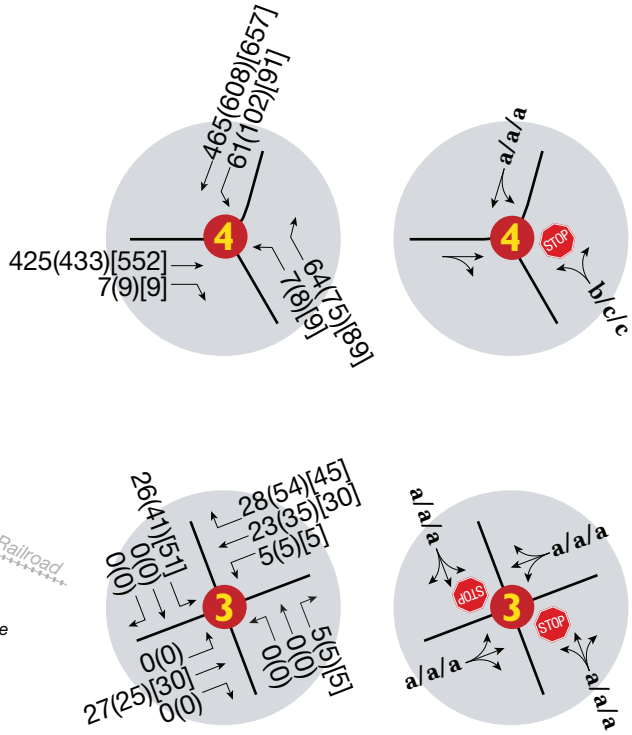
1. Grand Park Dr/Road B
2. Grand Park Dr/Road A

Currently in place:

3. Grand Park Dr/CR 72
4. CR 72/CR 721

For the purposes of projecting background traffic volumes, it was assumed that Byers Peak Ranch would be complete when buildout of Grand Park West is reached. Because intersections 1 and 2 would not exist apart from development of Grand Park West and are not expected to serve external traffic, background traffic volumes were only projected for intersections 3 and 4. **Figure 3** depicts buildout daily and peak hour background traffic volumes. Peak hours evaluated include the weekday midday and PM peak hours and the Saturday peak hour, consistent with the *Byers Peak Ranch Traffic Impact Study* completed in May of 2025. Long term future traffic volumes included in this TIS were also used to inform background projections for intersections 3 and 4.





LEGEND

XXX(XXX)[XXX]	=	Midday(PM)[Saturday] Peak Hour Traffic Volumes
XXXX	=	Daily Traffic Volumes (Weekday)
x/x/x	=	Midday/AM/PM Peak Hour Unsignalized Movement Level of Service
STOP	=	Stop Sign

NORTH

FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

FIGURE 3

Grand Park West

Buildout Background Traffic Conditions

II.C Traffic Operations

Background traffic operations within the study area were evaluated according to techniques documented in the Highway Capacity Manual, 6th Edition, and executed using Trafficware's Synchro v.11 software. Operations were evaluated using the existing traffic volumes and intersection geometry. Level of Service (LOS) is a qualitative measure of traffic operational conditions based on roadway capacity and vehicle delay. LOS is described by a letter designation ranging from A to F, with LOS A representing almost free-flow travel, while LOS F represents congested conditions. For signalized intersections, LOS is reported as an average for the entire intersection.

As shown on **Figure 3**, all movements at intersections 3 and 4 are expected to operate at LOS C or better in the background condition. **Appendix A** provides the background condition LOS worksheets.

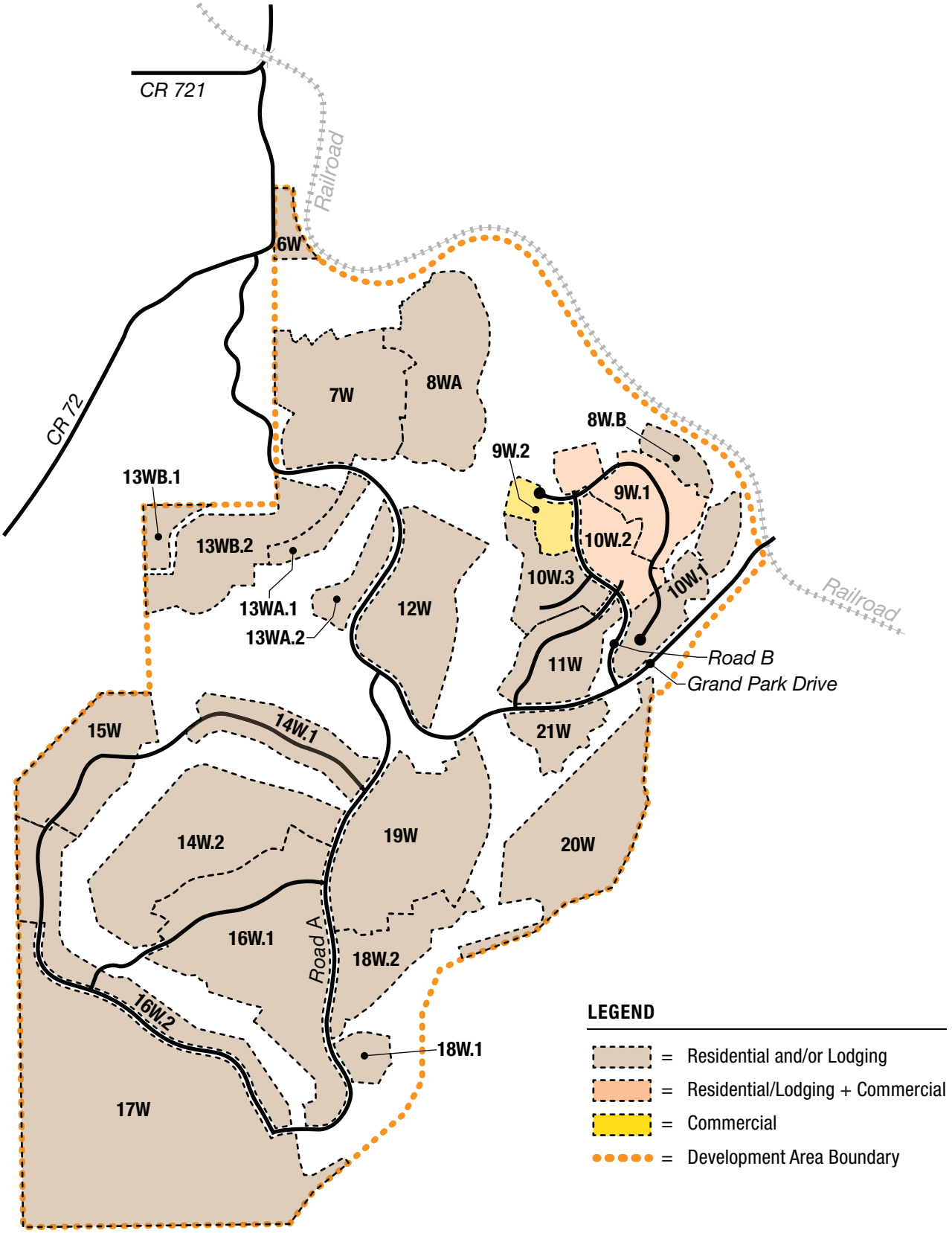
III. PROPOSED DEVELOPMENT

III.A Land Use

The plan for development of Grand Park West consists of 20 planning areas, enumerated 6W through 22W. **Figure 4** depicts the planning area layout throughout Grand Park West. Proposed commercial development lies primarily within the easternmost portion of the site in Planning Areas 8W through 11W. Proposed Single Family Detached homes are concentrated farther west. **Table 1** provides a summary of planning areas and proposed land use totals.

Table 1. Grand Park West Land Use Plan

Planning Area	Residential Units			Lodging Units	Commercial 1,000 Square Feet (KSF)
	Single Family Detached	Single Family Attached	Multifamily		
6W					
7W	78	28	72		
8Wa	95	104			
8Wb		44			
9W.1		56		250	6
9W.2					20
10W.1	38				
10W.2		4		238	39
10W.3			70	12	
11W	41				
12W	80			130	
13Wa.1	16				
13Wa.2	21				
13Wb.1	5				
13Wb.2	47				
14W.1	40				
14W.2	95				
15W	15				
16W.1	79				
16W.2	38				
17W	130				
18W	56				
19W	129				
20W	82				
21W		64			
TOTALS	1085	300	142	630	65



FELSBURG HOLT & ULLEVIG

NORTH

NOTE: Drawing Not to Scale

FIGURE 4

Grand Park West Land Use Plan and Roadway Network

Grand Park West - REPORT JAN_25 125152-01 1/9/26

III.B Trip Generation

The proposed development of Grand Park West would generate additional vehicle-trips along the surrounding roadway network. Trip generation estimates were completed using trip generation information from the Institute of *Transportation Engineers Trip Generation Manual (11th Edition)*.

The residential and commercial site generated traffic volumes estimated in this study are based on trip rates derived from national data from general U.S. suburban and urban neighborhoods as recorded in ITE's Trip Generation Manual. Inherent in these data is the assumption of consistent high levels of full time residential occupancy, likely in the 90-100 percent range. However, data published in the Draft *Town of Fraser Comprehensive Plan* (available online as of January 2026), drawing from the US Census Bureau 2022 Five-Year American Community Survey, indicates that this assumption does not reflect actual conditions in Fraser. According to the Census data, only approximately 39 percent of homes in Fraser are occupied year-round, while approximately 58 percent are classified as seasonal or vacation homes. As a result, actual residential occupancy — and corresponding daily and peak-hour traffic generation — is typically substantially lower than what would occur under a full-time occupancy scenario.

If these published occupancy rates were applied, residential-based traffic trips could be reduced by as much as 40 to 60 percent on an annual average basis, with higher volumes occurring only during limited peak holiday and winter weekend periods. Consequently, the trip generation and intersection volumes presented in this study should be understood as conservative, representing a theoretical maximum condition rather than typical or even frequent operating conditions. It is important that roadway infrastructure not be overbuilt to accommodate a 100 percent occupancy scenario that is inconsistent with documented resort-market statistics, as doing so could introduce urban-scale roadway elements into a rural resort environment. Nonetheless, the conservative nature of this analysis provides long-term assurance that the transportation system would remain adequate even under a hypothetical future scenario in which Fraser evolves into a fully year-round, suburban community.

Table 2 provides a summary of estimated daily, weekday midday, weekday PM peak hour and Saturday peak hour vehicle-trip estimates.

Table 2. Grand Park West Estimated Trip Generation

Planning Area	Estimated Vehicle-Trips									
	Daily	Midday Peak Hour			PM Peak Hour			Saturday Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
7W	1423	38	36	74	78	48	126	62	56	118
8Wa	1645	46	45	91	91	57	148	75	71	146
8Wb	317	7	7	14	15	10	25	12	13	25
9W.1	2728	129	90	219	114	106	220	136	115	251
9W.2	1089	72	66	138	66	66	132	67	64	131
10W.1	358	12	11	23	22	13	35	19	16	35
10W.2	4055	235	187	422	201	198	399	228	201	429
10W.3	568	13	11	24	27	16	43	20	18	38
11W	349	12	11	23	22	13	35	18	16	34
12W	1793	76	56	132	86	66	152	93	75	168
13Wa.1	151	5	5	10	9	6	15	8	7	15

Planning Area	Estimated Vehicle-Trips									
	Daily	Midday Peak Hour			PM Peak Hour			Saturday Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
13Wa.2	198	7	6	13	13	7	20	10	9	19
13Wb.1	47	2	1	3	3	2	5	3	2	5
13Wb.2	443	15	14	29	28	16	44	23	20	43
14W.1	377	12	12	24	24	14	38	20	17	37
14W.2	896	29	29	58	56	33	89	47	40	87
15W	141	5	4	9	9	5	14	8	6	14
16W.1	745	25	23	48	47	27	74	40	33	73
16W.2	358	13	11	24	22	14	36	19	16	35
17W	1226	41	38	79	76	46	122	64	55	119
18W	528	17	17	34	33	20	53	27	23	50
19W	1217	41	38	79	77	44	121	64	54	118
20W	773	26	24	50	49	28	77	41	35	76
21W	461	10	10	20	21	15	36	17	19	36
TOTALS	21,886	888	752	1,640	1,189	870	2,059	1,121	981	2,102

As shown, the proposed development of Grand Park West is estimated to generate approximately 22,000 vehicle-trips per day and up to 2,100 peak hour vehicle-trips. Upon buildout, it is likely that a portion of the estimated vehicle-trips will remain internal to Grand Park West. However, internal trips are not accounted for in this analysis as these trips would likely make use of the primary road network within Grand Park West. **Appendix B** provides a comparison of these trip generation estimates with the estimates included in the *Master TIA*.

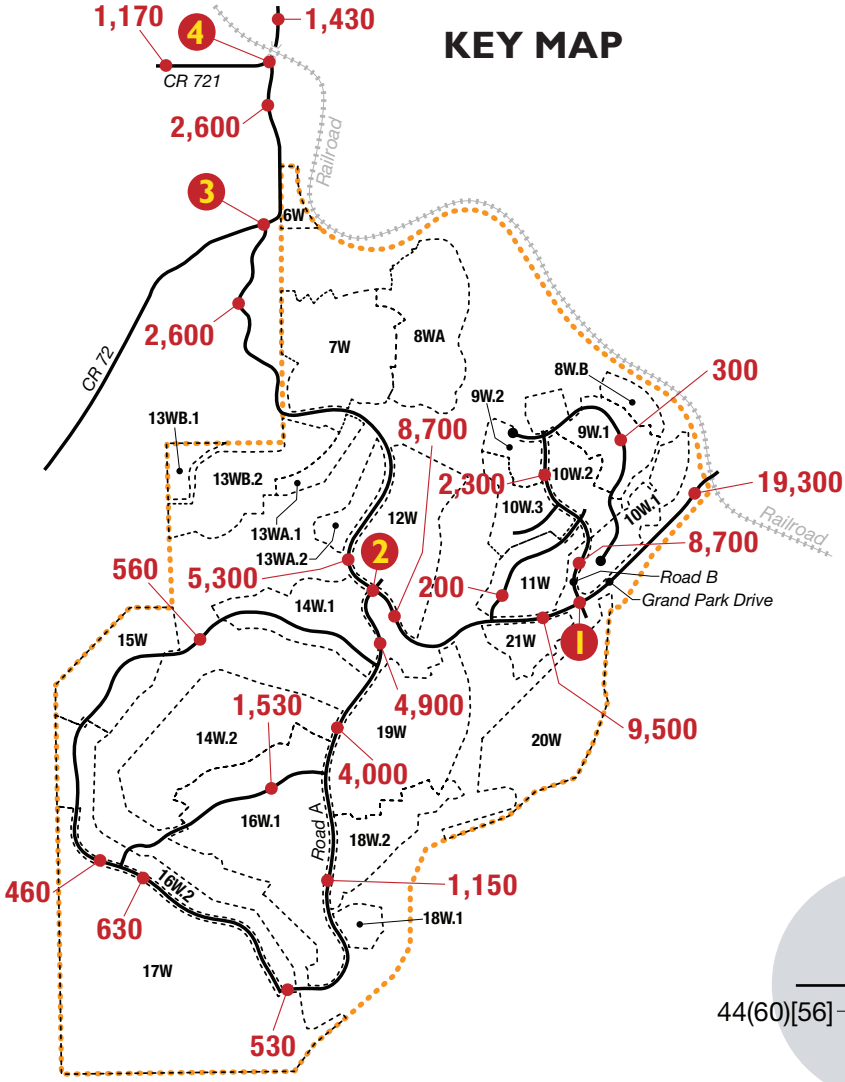
Table 3 provides a summary of trip generation rates utilized in the analysis from the Institute of Transportation Engineers *Trip Generation Manual* (11th Edition). Land Use Codes (LUC) were selected to best represent planned development types within Grand Park West.

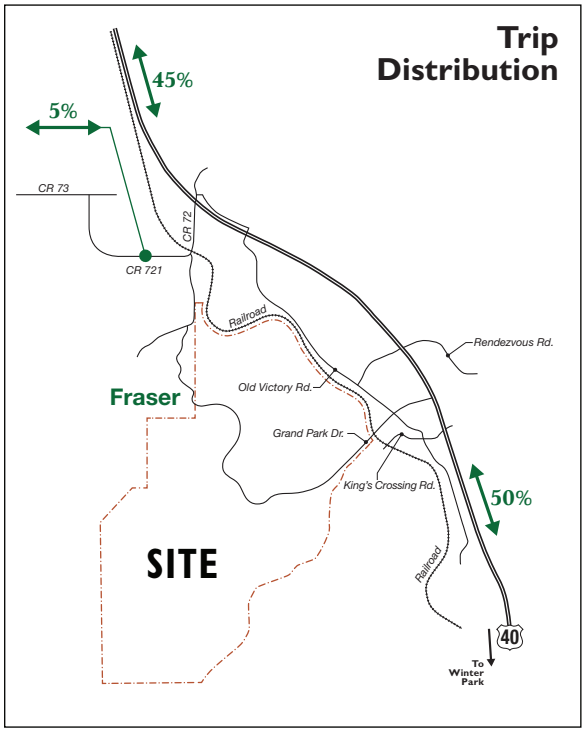
Table 3. Trip Generation Rates *Trip Generation* (11th Edition)

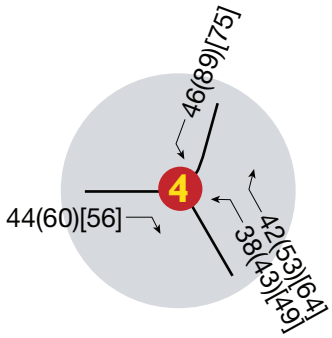
Land Use Type	Trip Generation Rates											
	Variable	ITE LUC	Daily	Midday Peak Hour			PM Peak Hour			Saturday Peak Hour		
				IN	OUT	TOT	IN	OUT	TOT	IN	OUT	TOT
Single-Family Detached	# Units	210	9.43	50%	50%	0.61	63%	37%	0.94	54%	46%	0.92
Single Family Attached	# Units	215	7.20	52%	48%	0.32	59%	41%	0.57	48%	52%	0.57
Multi-Family	# Units	220	6.74	52%	48%	0.23	63%	37%	0.51	50%	50%	0.41
Lodging	# Rooms	310	7.99	62%	38%	0.64	51%	49%	0.59	56%	44%	0.72
Commercial	1,000 SF	822	54.45	52%	48%	6.9	50%	50%	6.59	51%	49%	6.57

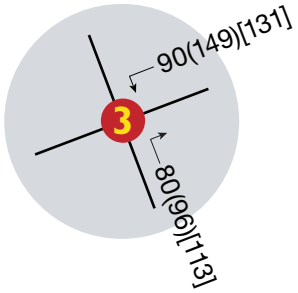
III.C Trip Assignment

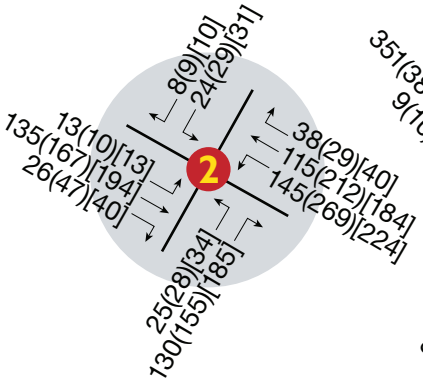
The estimated site vehicle-trips were assigned to the study intersections using the site trip distribution assumptions shown on **Figure 5**. As shown, at site buildout it is assumed that generated trips will be equally split between north and south directions in the Fraser Valley. 50 percent of site trips would utilize US 40 south and 50 percent would travel to and from the north on US 40 (45 percent) or CR 721 (5 percent). **Figure 5** provides the assignment of site generated traffic volumes to the study intersections and roadways.

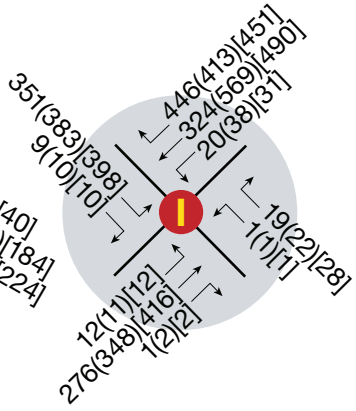












LEGEND

XXX(XXX)[XXX]	=	Midday(PM)[Saturday] Peak Hour Traffic Volumes
XXXX	=	Daily Traffic Volumes (Weekday)
XX%	=	Site Trip Distribution

NORTH

FIGURE 5

Grand Park West Site Generated Traffic and Trip Distribution

Grand Park West - REPORT JAN_26 125152-01 1/9/26

FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

V. BUILDOUT CONDITIONS

V.A Traffic Volumes

The site generated vehicle-trips on **Figure 5** were added to the background traffic volumes shown on **Figure 3** to arrive at the total buildout traffic volumes shown on **Figure 6**. As shown, Grand Park Drive is projected to carry the highest daily and peak hour traffic volumes – varying from 2,600 vpd on its northwest end to 19,300 vpd on its east end.

V.B Traffic Operations

Figure 6 provides the results of LOS analyses of projected buildout conditions at the study intersections. The results are summarized below by intersection along with buildout recommendations:

1. **Grand Park Dr/Road B**: Accessing PA's 8-11, Road B is projected to carry a maximum of 8,700 vehicles per day (vpd). Operational analyses of this intersection began with the assumption of a traditional two-way stop controlled intersection with free eastbound and westbound movements along Grand Park Drive and stop control along the southbound Road B approach. In this configuration, the southbound approach movement would operate at LOS F during peak hours with volume-to-capacity (v/c) ratio exceeding 1.0 and queue lengths up to 600 feet.

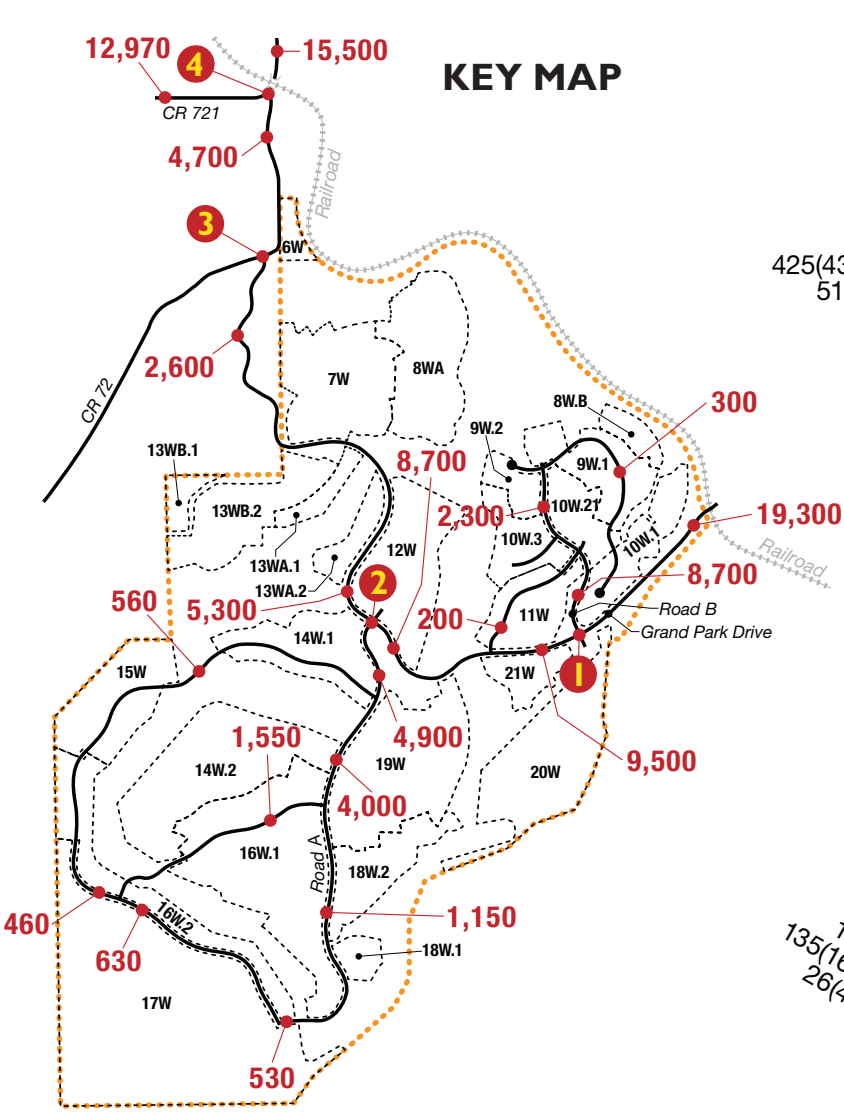
   Considering this substandard result, additional traffic control options were evaluated. While buildout traffic volumes at the intersection may satisfy signal warrant criteria, installation of a traffic signal at this location is not preferred given the mountainous development context. Therefore, a modern roundabout option was tested for operational benefit with the result that intersection movements could be improved to LOS C or better with a single lane roundabout. Roundabout traffic control is recommended at this intersection and is incorporated into current site plans.

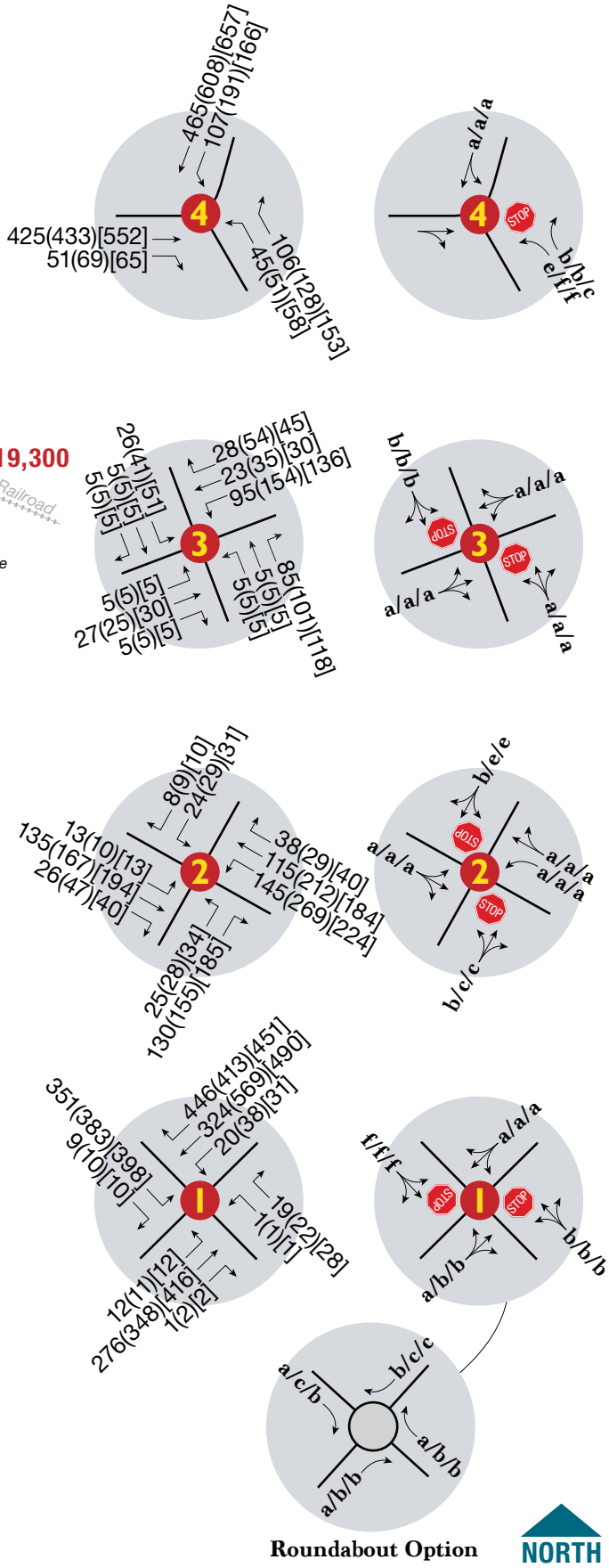
2. **Grand Park Dr/Road A**: Road A would serve PA's 14-19 and is projected to carry up to 4,900 vpd. Under stop sign control, movements through the intersection would operate at LOS C or better with v/c below 0.5 and a 75 ft or less queue length along the Road A approach. A westbound left-turn lane approximately 50 feet long is recommended to minimize interference with through traffic along Grand Park Drive.

3. **Grand Park Dr/CR 72**: Movements through this intersection would operate at LOS B or better under stop sign control, an acceptable LOS. It is recommended that stop sign control be provided along the Grand Park Drive approach to the intersection.

4. **CR 72/CR 721**: The stop-sign controlled northwest-bound left turn through this existing intersection is expected to operate at LOS F during the weekday PM and Saturday peak hours. The v/c ratio is 0.91 and the projected queue length is 125 feet. To address the LOS F condition at the time of buildout, it is recommended that the north-west bound approach be widened to provide a 125 ft. right-turn lane to help optimize operations. Based on a brief threshold analysis, it appears that the need for this widening would be triggered once development in the area reaches approximately 80 percent of full buildout levels.

Figure 6 depicts buildout traffic operations. **Appendix C** provides LOS worksheets.





LEGEND

XXX(XXX)[XXX]	=	Midday(PM)[Saturday] Peak Hour Traffic Volumes
XXXX	=	Daily Traffic Volumes (Weekday)
x/x	=	Midday(PM)[Saturday] Peak Hour Unsignalized Movement Level of Service
STOP	=	Stop Sign

FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

FIGURE 6

Grand Park West
Buildout Total Traffic Conditions

Grand Park West - REPORT JAN_26 125152-01 1/9/26

V.C Road Classification

Applicable standards

A road classification system designates each roadway within a given network as a arterial, collector or local road based on the intended function of each. This hierarchy is routinely implemented for effective movement within and between developed communities. The Town of Fraser provides guidance on its expectations for road classification in its *Design Criteria and Construction Standards* document. Therein it is stated that, "The Town's streets and roads are classified according to function and ADT's (Average Daily Traffic)."

The Standards further state the following regarding road classification and function:

*"The **arterial street** and road system links towns and other large traffic generators with minimal interference to through traffic movements and higher design speeds. and;*

***Collector streets** and roads provide a link between arterial streets and roads and local streets. More moderate speeds are typical on collector streets and roads. and;*

***Local streets** primarily provide access from collector and arterial streets and roads to adjacent neighborhoods and other developments. A local street is a street whose primary function is to provide access to residences, businesses or abutting property rather than to serve through traffic."*

As to ADT, the Town of Fraser standards establish a minimum volume of 601 vpd for arterials, 401-600 for collectors and less than 401 for local roads. The Fraser standards do not specify an assumed occupancy % for the residential density to be constructed and, as noted previously, residential site trip estimates were prepared based on typical suburban US neighborhood occupancy for this study which is greater than the occupancy level reported in the draft Fraser comprehensive plan and occupancy levels reported for vacation rentals which is more typically around 50%. The traffic trips reflected in this study are likely overstated for this reason. Therefore, daily traffic volumes throughout the site are unlikely to attain sustained levels near the values shown in this report.

Classification Recommendations

Based on a review of the projected ADT levels for the primary road network throughout the site, nearly all primary roadways in Grand Park West (Grand Park Drive, Road B, etc.) would be categorized as arterials. Exceptions may be found in the lower southwest corner of the site, where projected ADT is below 600 vpd along a number of streets. However, road classification should not be determined based solely on ADT.

Based on an assessment of the anticipated future function of each road and the overall network at buildout, it is recommended that Grand Park Drive be categorized as a arterial road through the site given its longer continuity.

Portions of connecting roads Road B and Road A should be categorized as collector roadways as these convey traffic from the arterial to local roads; the portion of Road A from Grand Park Drive to the south edge of the site and the portion of Road B from Grand Park Drive north to PA 9W.1.

The remainder of roadways within the site should be classified as local. Of note, the east-west roadway through PA 16W.1 is projected to carry up to 1,550 vehicles per day under a full occupancy scenario. The role of this roadway within the Grand Park network is consistent with that of a local roadway and homes are planned to front onto this roadway. However, given the potential for higher traffic volumes at times, it is recommended that the roadway maintain a curvilinear alignment and neighborhood scale as depicted on the current site plan.

VI. TRANSIT

VI.A Transit Vision and Role in Grand Park West

Transit is envisioned as a core mobility system for Grand Park West rather than a supplemental or mitigation-only element. Given the scale of the development, its resort-oriented land use mix, and its strategic location between the Town of Fraser, the Town of Winter Park, and the Winter Park Ski Area, transit will play a primary role in daily travel, visitor movement, and peak winter transportation demand. Of note, the traffic volume estimates included in this report assumed no reduction to vehicle-trips associated with the provision of a transit system – such a reduction could be expected with the transit system envisioned herein.

Grand Park West is planned as a transit-served resort community, where residents, visitors, and employees can reliably move between residential neighborhoods, lodging, commercial destinations, recreational amenities, medical services, and regional attractions without dependence on private automobiles.

VI.B Regional Transit Integration – The Lift Transportation System

Transit service within Grand Park West should be provided through an expansion of The Lift Transportation System, operated by the Town of Winter Park. The Lift currently serves as the primary regional transit provider for the Upper Fraser Valley and is well-positioned to extend service westward into Grand Park West.

Expanding The Lift system into Grand Park West would:

- Provide direct, fare-free (or low-fare) connections to:
  - Town of Fraser
  - Town of Winter Park
  - Winter Park Ski Area
- support Fraser's commercial growth and sales tax base,
- improve access to employment, medical services and recreation, and
- reduce winter peak traffic volumes along US 40

This approach would leverage an existing, proven transit system rather than introducing a new standalone shuttle network.

VI.C Internal Transit Network Structure

Primary Spine Route – Grand Park Drive

The primary internal transit corridor within Grand Park West would be Grand Park Drive, which functions as the main internal collector roadway and connects all major land use areas.

The spine route would:

- Run the full length of Grand Park Drive
- Serve all major residential neighborhoods, lodging areas, commercial districts, and community amenities
- Provide direct connections to regional Lift routes serving Fraser, Winter Park, and the Ski Area

Neighborhood Loop Routes

To ensure full community coverage, neighborhood loop routes are envisioned to serve residential areas, club amenities, and lower-density neighborhoods located away from Grand Park Drive.

Neighborhood loops would:

- Operate with smaller shuttle vehicles,
- provide frequent, short-distance service,
- be timed to connect with the spine route, and
- minimize walking distances in winter conditions

This two-tier system ensures complete transit coverage throughout the project, including residential neighborhoods, lodging, commercial areas, and club facilities.

VI.D Transit Stop Locations and Spacing

Stop Spacing

Figure 7 provides conceptual locations for future transit stops within Grand Park West. Transit stops should be provided throughout Grand Park West with spacing appropriate for a resort community:

- Residential neighborhoods: approximately every 600–1,000 feet,
- commercial, lodging, and mixed-use areas: approximately every 800–1,200 feet, and
- major destinations: direct stop access regardless of spacing.

This spacing reflects:

- Winter weather conditions,
- visitor travel patterns,
- the need to carry skis, groceries, and equipment, and
- industry standards in mountain resort communities

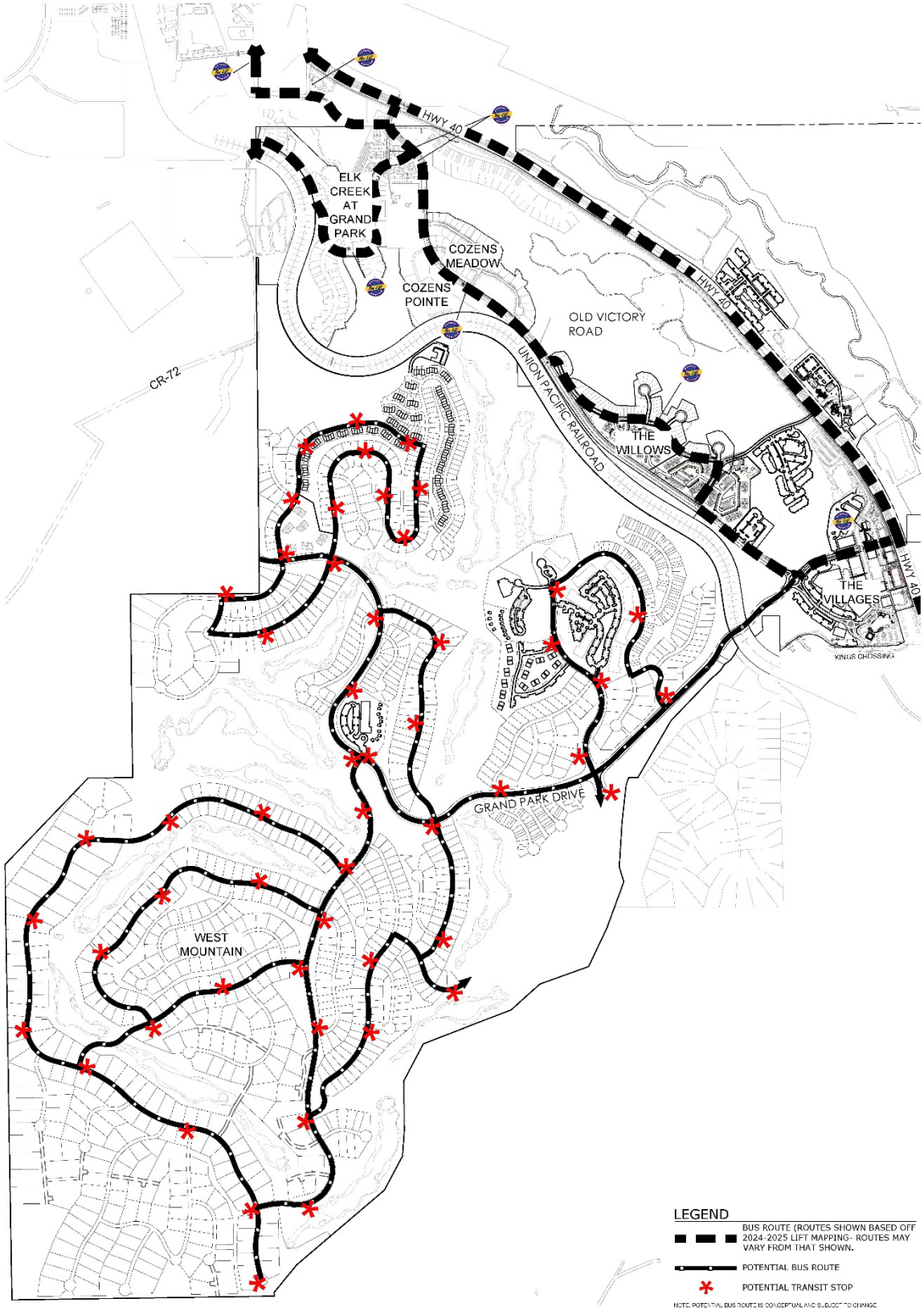
Key Transit Destinations

Transit stops should be located to directly serve the following destinations:

Within Grand Park West

- All residential planning areas,
- lodging and resort accommodations,
- commercial districts,
- private club and community amenities, and
- trailheads and open-space access points

Figure 7. Potential Future Transit Stops



Regional Destinations

- Grand Park Community Recreation Center
- Middle Park Medical / Fraser Hospital
- Foundry Bowl and Cinema
- Fraser commercial corridor and Safeway grocery store
- Town of Winter Park core
- Winter Park Ski Area base areas

Service Frequency and Seasonal Operations

Transit service should scale with seasonal demand and occupancy:

Peak Winter Season (Weekends & Holidays)

- Spine route: every 10–15 minutes
- Neighborhood loops: every 20–30 minutes

Regular Winter Weekdays

- Spine route: every 15–20 minutes
- Neighborhood loops: approximately every 30 minutes

Summer and Shoulder Seasons

- Spine route: every 20–30 minutes
- Neighborhood loops: reduced frequency or on-demand service

Off-Season

- Limited service, event-based service, or microtransit as demand warrants

Transit Implementation Thresholds

Transit implementation should be tied to occupancy, ridership, and seasonal demand, rather than unit count alone. This approach reflects the resort-oriented nature of Grand Park West and avoids premature infrastructure commitments.

Example thresholds include:

- Initiation of service with completion of first residences, or opening of first lodging and commercial areas
- Increased frequency as seasonal occupancy increases
- Expanded service hours and routes based on demonstrated ridership

VI.E Long-Term Ski Area Connectivity Opportunity

Grand Park West is uniquely positioned to potentially provide future lift-based access to the Winter Park Ski Area, specifically via a gondola connection to the Wild Spur Express lift and the Vasquez Ridge area.

A future gondola connection could:

- Substantially reduce winter peak traffic on US Highway 40,
- reduce parking demand at the Winter Park Ski Area,
- improve the visitor experience,
- provide the Town of Fraser with direct access to one of the region's largest recreational draws, and
- strengthen Fraser's identity as a resort destination.

This opportunity represents a long-term, transformative transportation strategy that complements transit investment and supports regional mobility goals. Roadway infrastructure within Grand Park West should be designed to remain compatible with this potential future connection.

VII. SUMMARY

This Buildout Intersection and Roadway Assessment and Transportation analysis provides insight into the expected travel patterns and traffic impacts associated with development of Grand Park West. Proposed development levels would include 1,527 residential units, 620 lodgings and 65 thousand square feet (KSF) of commercial development. Traffic impacts associated with the proposed development were previously addressed in the RENDEzVOUS Master Traffic Impact Analysis and other studies. The proposed land uses are consistent with prior studies. It is estimated that the proposed buildout of Grand Park West would generate more than 20,000 daily vehicle-trips and up to 2,000 vph during peak hours based on the conservative assumption of high residential occupancy rates.

If more locally accurate occupancy rates were applied to trip generation calculations, residential-based traffic trips could be reduced by as much as 40 to 60 percent on an annual average basis, with higher volumes occurring only during limited peak holiday and winter weekend periods. Consequently, the trip generation and intersection volumes presented in this study should be understood as highly conservative, representing a theoretical maximum condition rather than typical or even frequent operating conditions. It is important that roadway infrastructure not be overbuilt to accommodate a 100 percent occupancy scenario that is inconsistent with documented resort-market statistics, as doing so could introduce urban-scale roadway elements into a rural resort environment. Nonetheless, the conservative nature of this analysis provides long-term assurance that the transportation system would remain adequate even under a hypothetical future scenario in which Fraser evolves into a fully year-round, suburban community.

Findings and recommendations are described below by subject area:

Trip Generation Compliance

The current proposed development of Grand Park West is largely consistent with prior land use expectations and analyses such as those contained within the *Master TIA* and 2013 Grand Park TIA. Vehicle-trip generation estimates have increased, but primarily due to the use of the most current trip generation rates rather than appreciable difference in site land use expectations.

Traffic Operations

Four study intersections were addressed per request from the Town of Fraser. Traffic control and lane geometry recommendations follow:

1. **Grand Park Dr/Road B**: A modern roundabout option was tested for operational benefit with the result that intersection movements could be improved to LOS C or better with a single lane roundabout. Roundabout traffic control is recommended at this intersection.

2. **Grand Park Dr/Road A**: A westbound left-turn lane approximately 50 feet long is recommended to minimize interference with through traffic along Grand Park Drive.

3. **Grand Park Dr/CR 72**: Movements through this intersection would operate at LOS B or better under stop sign control, an acceptable LOS. It is recommended that stop sign control be provided along the Grand Park Drive approach to the intersection.

4. **CR 72/CR 721**: To address the LOS F condition at the time of buildout, it is recommended that the north-west bound approach be widened to provide a 125 ft. right-turn lane to help optimize operations. This widening would likely be needed when area buildout reaches approximately 80 percent of anticipated levels.

Road Classification

Grand Park Drive is categorized as a arterial road through the site, consistent with is classification. Portions of connecting roads Road B and Road A should be categorized as collector roadways as these convey traffic from the arterial to local roads; the portion of Road A from Grand Park Drive to the south edge of the site (approximately 1 mile in length through PA's 14W, 19W, 16W and 18W) and the portion of Road B from Grand Park Drive north to PA 9W.1. The remainder of roadways within the site should be classified as local.

Based on information provided by the development team, it is our understanding that the roadways within the site had previously (at the Planned District Development (PDD) stage in 2005) been specified as outlined above. Design efforts since that time have proceeded based on these classifications.

The recommendations included in this assessment are associated with full buildout of Grand Park West and are not required to be fully implemented with development of individual filings and/or planning areas. As each Planning Area is submitted to the Town of Fraser for review, its conformance with this assessment and any needed improvements triggered would be evaluated in individual conformance analyses prepared to address Town requirements.

Appendix A. Level of Service Worksheets – Background Condition

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	27	5	5	23	28	5	5	5	26	5	5
Future Vol, veh/h	5	27	5	5	23	28	5	5	5	26	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	29	5	5	25	30	5	5	5	28	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	55	0	0	34	0	0	97	107	32	97	94	40
Stage 1	-	-	-	-	-	-	42	42	-	50	50	-
Stage 2	-	-	-	-	-	-	55	65	-	47	44	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1550	-	-	1578	-	-	885	783	1042	885	796	1031
Stage 1	-	-	-	-	-	-	972	860	-	963	853	-
Stage 2	-	-	-	-	-	-	957	841	-	967	858	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1550	-	-	1578	-	-	872	778	1042	872	791	1031
Mov Cap-2 Maneuver	-	-	-	-	-	-	872	778	-	872	791	-
Stage 1	-	-	-	-	-	-	969	857	-	960	850	-
Stage 2	-	-	-	-	-	-	943	838	-	953	855	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.7	9.1	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	884	1550	-	-	1578	-	-	878
HCM Lane V/C Ratio	0.018	0.004	-	-	0.003	-	-	0.045
HCM Control Delay (s)	9.1	7.3	0	-	7.3	0	-	9.3
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.4

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	7	64	425	7	61	465
Future Vol, veh/h	7	64	425	7	61	465
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	70	462	8	66	505

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1103	466	0	0	470	0
Stage 1	466	-	-	-	-	-
Stage 2	637	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	234	597	-	-	1092	-
Stage 1	632	-	-	-	-	-
Stage 2	527	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	214	597	-	-	1092	-
Mov Cap-2 Maneuver	214	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	483	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	13.4	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	507	1092	-
HCM Lane V/C Ratio	-	-	0.152	0.061	-
HCM Control Delay (s)	-	-	13.4	8.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.2	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	25	5	150	35	54	5	5	99	41	5	5
Future Vol, veh/h	5	25	5	150	35	54	5	5	99	41	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	27	5	163	38	59	5	5	108	45	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	97	0	0	32	0	0	439	463	30	490	436	68
Stage 1	-	-	-	-	-	-	40	40	-	394	394	-
Stage 2	-	-	-	-	-	-	399	423	-	96	42	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1496	-	-	1580	-	-	528	496	1044	489	514	995
Stage 1	-	-	-	-	-	-	975	862	-	631	605	-
Stage 2	-	-	-	-	-	-	627	588	-	911	860	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1496	-	-	1580	-	-	476	440	1044	397	456	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	476	440	-	397	456	-
Stage 1	-	-	-	-	-	-	972	859	-	629	538	-
Stage 2	-	-	-	-	-	-	549	523	-	809	857	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	4.7	9.4	14.7
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	934	1496	-	-	1580	-	-	428
HCM Lane V/C Ratio	0.127	0.004	-	-	0.103	-	-	0.13
HCM Control Delay (s)	9.4	7.4	0	-	7.5	0	-	14.7
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.3	-	-	0.4

Intersection	
Int Delay, s/veh	1.8

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	8	75	433	9	102	608
Future Vol, veh/h	8	75	433	9	102	608
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	82	471	10	111	661

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1359	476	0	0	481	0
Stage 1	476	-	-	-	-	-
Stage 2	883	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	164	589	-	-	1082	-
Stage 1	625	-	-	-	-	-
Stage 2	404	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	137	589	-	-	1082	-
Mov Cap-2 Maneuver	137	-	-	-	-	-
Stage 1	625	-	-	-	-	-
Stage 2	339	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	15.1	0	1.3
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	447	1082	-
HCM Lane V/C Ratio	-	-	0.202	0.102	-
HCM Control Delay (s)	-	-	15.1	8.7	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.3	-

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	30	5	132	30	45	5	5	116	51	5	5
Future Vol, veh/h	5	30	5	132	30	45	5	5	116	51	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	33	5	143	33	49	5	5	126	55	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	38	0	0	395	414	36	455	392	58
Stage 1	-	-	-	-	-	-	46	46	-	344	344	-
Stage 2	-	-	-	-	-	-	349	368	-	111	48	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1515	-	-	1572	-	-	565	529	1037	515	544	1008
Stage 1	-	-	-	-	-	-	968	857	-	671	637	-
Stage 2	-	-	-	-	-	-	667	621	-	894	855	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1515	-	-	1572	-	-	515	477	1037	415	490	1008
Mov Cap-2 Maneuver	-	-	-	-	-	-	515	477	-	415	490	-
Stage 1	-	-	-	-	-	-	965	854	-	669	576	-
Stage 2	-	-	-	-	-	-	594	561	-	778	852	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	4.8	9.4	14.6
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	954	1515	-	-	1572	-	-	442
HCM Lane V/C Ratio	0.144	0.004	-	-	0.091	-	-	0.15
HCM Control Delay (s)	9.4	7.4	0	-	7.5	0	-	14.6
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0.3	-	-	0.5

Intersection	
Int Delay, s/veh	1.9

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	9	89	552	9	91	657
Future Vol, veh/h	9	89	552	9	91	657
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	97	600	10	99	714

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1517	605	0	0	610	0
Stage 1	605	-	-	-	-	-
Stage 2	912	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	131	498	-	-	969	-
Stage 1	545	-	-	-	-	-
Stage 2	392	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	109	498	-	-	969	-
Mov Cap-2 Maneuver	109	-	-	-	-	-
Stage 1	545	-	-	-	-	-
Stage 2	326	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	18.4	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	375	969	-
HCM Lane V/C Ratio	-	-	0.284	0.102	-
HCM Control Delay (s)	-	-	18.4	9.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.3	-

Appendix B. Trip Generation Conformance Review

FELSBURG HOLT & ULLEVIG
connecting & enhancing communities

ORIGINAL: April 22, 2025
UPDATED: September 22, 2025

Town of Fraser
153 Fraser Avenue
Fraser, CO 80442
Attn: Garrett Scott, Town Planner

RE: Grand Park West Traffic Consistency/Conformance Review
FHU Project No. 125152-01

Dear Mr. Scott:

West Mountain Development LLC requested that I provide an analysis of the West Mountain FPDP with regard to its compliance with the 2004 Traffic Impact Analysis as they prepare to develop the Western portion of the Grand Park development in Fraser, Colorado. The area, Grand Park West, encompasses approximately 1,020 Acres, lies west of the Union Pacific Railroad tracks and incorporates Grand Park Planning Areas 6W through 23W. The proposed development of Grand Park West, termed the "study area" in this letter, includes a mix of residential dwelling units, lodging and commercial development, with locations farther west within the portion more residential in nature. **Figure 1** provides the current development plan.

Per your request, this letter addresses whether the current development plan and associated transportation outcomes is consistent with previous development and traffic studies prepared for the area. The letter identifies prior traffic studies pertaining to the area, describes the current land use and transportation plan in light of prior plans, and provides a vehicle-trip trip generation comparison between the current and prior plans. After review we can confirm that the prior traffic studies provide a reliable assessment of projected transportation conditions associated with development of Grand Park and Grand Park West; and the current proposed land use and roadway network plan for Grand Park West is consistent with prior approved plans.

Prior Traffic Studies

The proposed development of the study area was previously evaluated in the following transportation studies:

- **2004 RENDEzVOUS Traffic Impact Analysis (Master TIA).** For the study area, the Master TIA evaluated potential impacts of development of 686 detached residential dwelling units, 887 attached residential dwelling units, 700 lodging units and 50 thousand square feet of commercial development. This study addressed anticipated site access to US Highway 40 (US 40) and included traffic volume projections for roadways and intersections throughout the study area. **Figure 2** depicts the development plan from this report.

- **2013 Grand Park Traffic Impact Analysis**. This report was developed to address updates to proposed access to US 40 and the associated access permitting process through the Colorado Department of Transportation (CDOT). This study evaluated similar land use types and magnitudes to the Master TIA, anticipating approximately 843 detached dwelling units, 658 attached units, 305 lodging units and 30 thousand square feet of commercial development within the study area.

- **CDOT US Highway 40 Study**. In 2020, CDOT completed a study of US 40 addressing anticipated development-related growth throughout the Fraser River valley. The study incorporated development expectations for Grand Park West and addressed impacts to intersections along US 40.

Figure 1. Current Grand Park West Development Plan

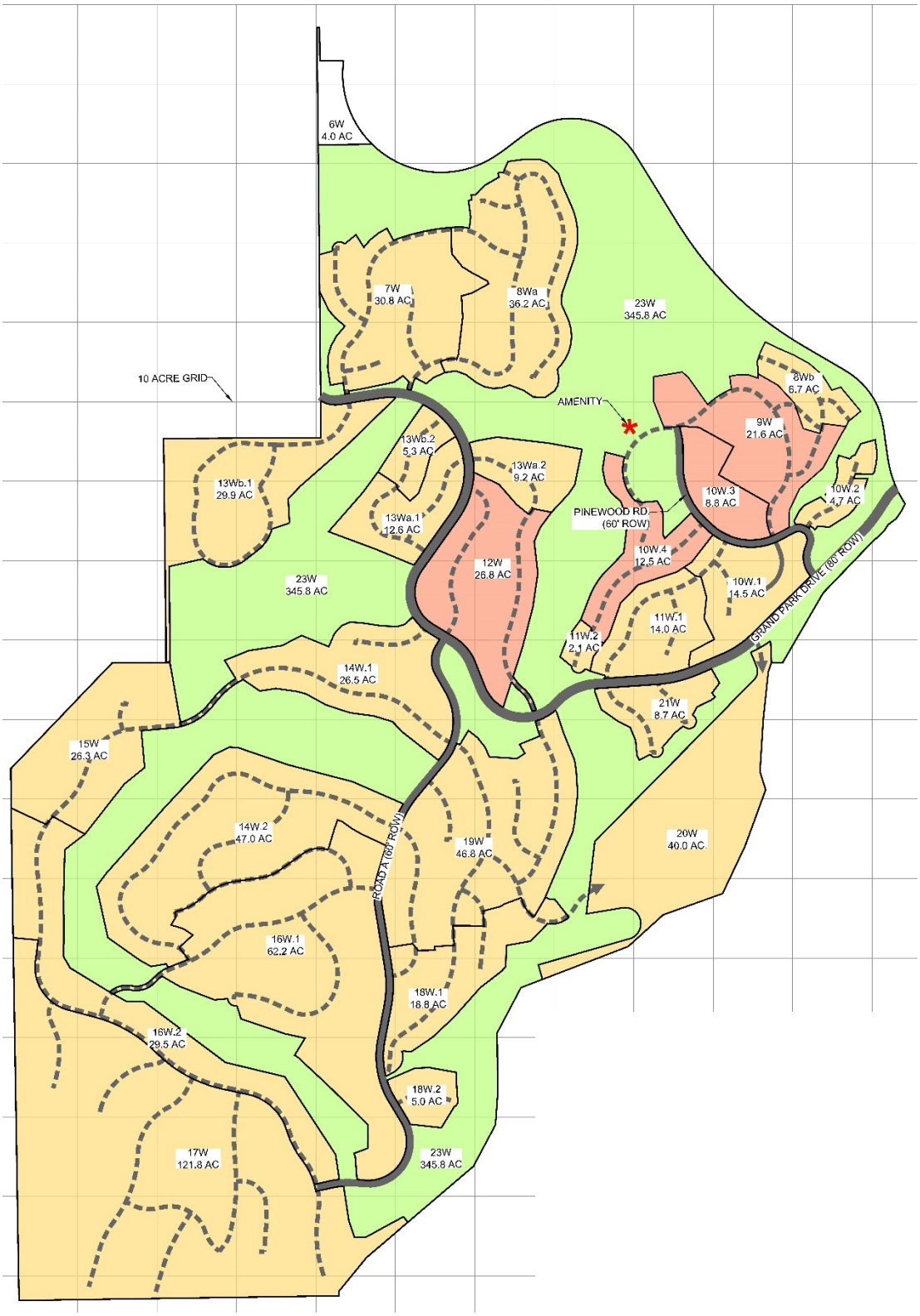
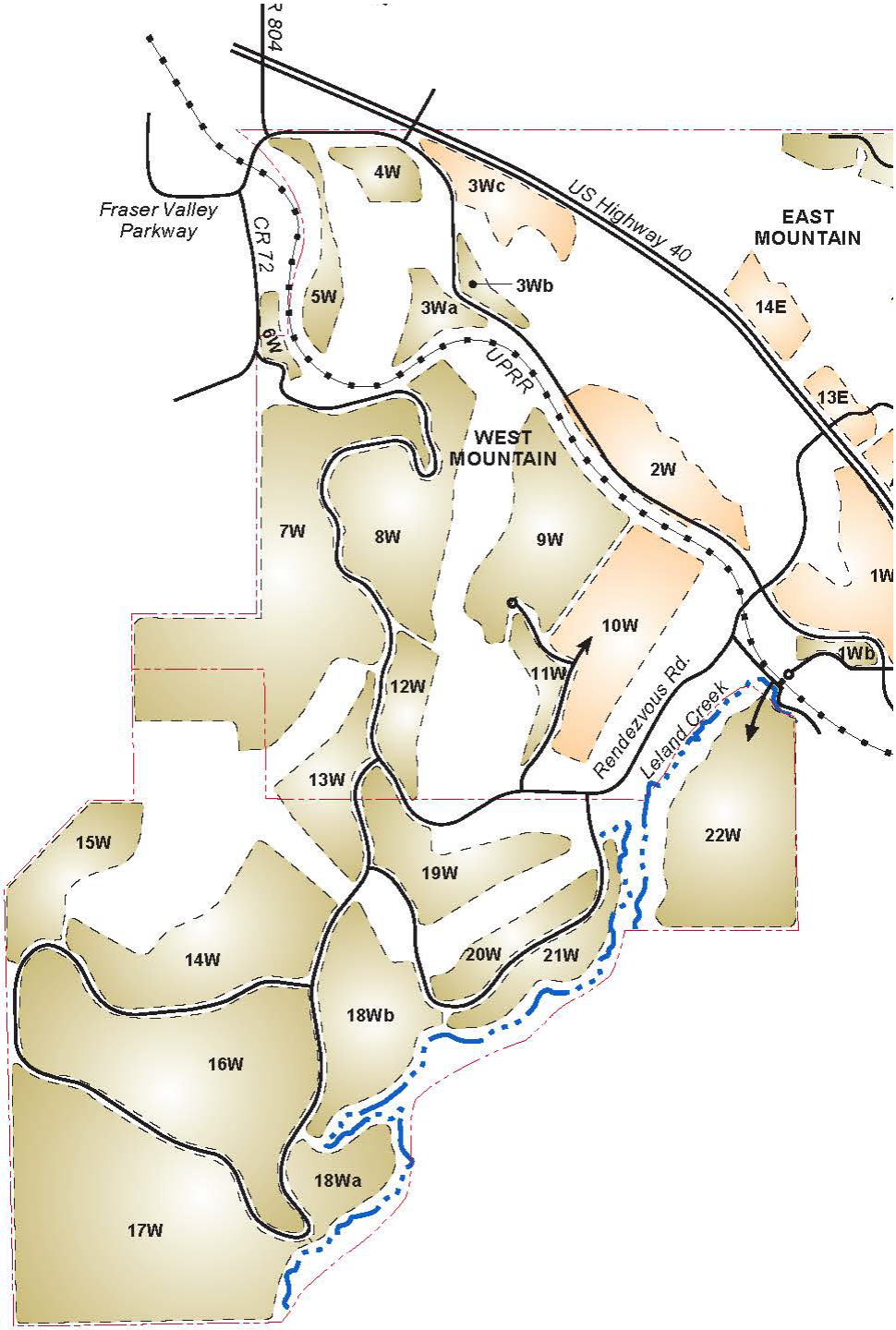


Figure 2. Grand Park West Development Plan (2004 Study)



Taken together, these studies provide a reliable assessment of projected transportation conditions associated with development of Grand Park at large and Grand Park West as a portion. Over time, the infrastructure measures identified in the studies have been implemented alongside development of Grand Park as documentation has demonstrated consistency of each part with the Master TIA.

Development Plan Comparison

Figure 1 and **Figure 2** provide a view of the current and 2004 site plans for Grand Park West, respectively. As shown, the planning areas (6W through 22W) included within Grand Park West are similar between the two plans, though there are adjustments to land coverage of each PA and the planned alignments of streets serving the area. **Table 1** provides a comparison of land use magnitude and type between the Master TIA and current land use for Grand Park West.

Table 1. Grand Park West Land Use Plan Comparison – Master TIA vs. Current

Master TIA Land Use					
Planning Area	Residential			Lodging	Comm KSF
	SFD	SFA	MF		
6W					
7W	45	225			
8W	63	75			
Blank					
9W		153		200	20
10W		118		350	30
11W	10	24		150	
12W		92			
13W	50				
Blank					
14W	117				
15W	12				
16W	90				
17W	72				
18Wa	14				
18Wb	47				
19W	86	93			
20W		57			
21W		50			
22W	80				
TOTALS	686	887	0	700	50

Current Land Use					
Planning Area	Residential			Lodging	Comm KSF
	SFD	SFA	MF		
6W					
7W	76	28	72		
8Wa	9	190			
8Wb		52			
9W		56		250	26
10W	92			250	39
11W	41				
12W	56	24		130	
13Wa	36				
13Wb	52				
14W	151				
15W	15				
16W	117				
17W	129				
18W	56				
19W	129				
20W	82				
21W		64			
22W					
TOTALS	1041	414	72	630	65

SFD = Single Family Detached Units
SFA = Single Family Attached Units
MF = Multi-Family Units (Apartments)
Comm KSF = Commercial 1,000 Square Feet

As shown, the land use scenario analyzed in the Master TIA anticipated similar residential totals to the current plan (1,572 vs. 1,527) but a different mix of single family detached and attached units. The current land use plan

includes more detached homes. The spread of development across the PA's is similar between the two plans – commercial and lodging opportunities lie within PA's 9 and 10 and the other PA's emphasize residential units.

The comparative analysis of land use plans indicates that the current land use plan for Grand Park West is generally consistent with prior approved plans.

Trip Generation Comparison

The proposed development of Grand Park West would generate additional vehicle-trips along the surrounding roadway network. Trip generation estimates were included in the Master TIS for Grand Park West based on trip generation rates documented in the Town of Fraser Standards current at that time and rates provided from similar mountain agencies and sources. More recent traffic analyses of area development have been completed using trip generation information from the Institute of *Transportation Engineers Trip Generation Manual (11th Edition).* **Table 2** provides a comparison of Master TIA and current trip generation using both the Master TIA and ITE rates.

Table 2. Grand Park West Trip Generation Comparison

Scenario	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Master TIA Trip Generation Rates							
Master TIA	14,233	276	735	1,011	835	473	1,308
Current	15,288	301	807	1,108	885	508	1,393
Difference	+1,055	+25	+72	+97	+50	+35	+85
ITE 11th Edition Trip Generation Rates							
Master TIA	21,172	480	866	1,346	1,080	813	1,893
Current	21,856	495	903	1,398	1,181	871	2,052
Difference	+684	+15	+37	+52	+101	+58	+159

As shown, the current land use plan is estimated to generate more vehicle-trips per day and per peak hour than the Master TIA land use. Though the current land use plan includes fewer total residential units than the Master TIA land use, increasing the mix of detached homes with the current plan causes increased traffic levels. Detached homes typically generate higher levels of traffic than attached homes.

The estimated differences are modest, however, amounting to approximately 5-10 percent additional daily and peak hour traffic. This increase would not be expected to result in additional traffic control or infrastructure needs within the Grand Park West site or along US 40.

Summary

In summary, this conformance analysis finds that:

- Prior traffic studies capturing Grand Park West development provide a reliable assessment of projected transportation conditions associated with development of Grand Park at large and Grand Park West as a portion. Over time, the infrastructure measures identified in these studies have been implemented alongside development of Grand Park as documentation has demonstrated consistency of each part with the Master TIA.

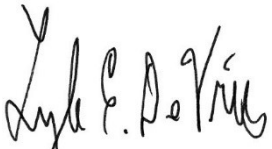
- The current proposed land use and roadway network plan for Grand Park West is consistent with prior approved plans.

- Vehicle-trip generation estimates for Grand Park West increase with the current plan in comparison with prior approved plans due to the introduction of additional detached homes, but the increases are modest and not expected to require additional traffic control or roadway infrastructure needs beyond those identified in prior studies.

Please feel free to contact me at (303)721-1440 or lyle.devries@fhueng.com with any questions.

Sincerely,

FELSBURG HOLT & ULLEVIG



Lyle E. DeVries, PE, PTOE
Principal

Appendix C. Level of Service Worksheets - Buildout Total Condition

Intersection	
Int Delay, s/veh	13.1

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	351	0	9	1	0	19	12	276	1	20	324	446
Future Vol, veh/h	351	0	9	1	0	19	12	276	1	20	324	446
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	-	-	-	-	-	-	-	-	-	-	200
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	382	0	10	1	0	21	13	300	1	22	352	485

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	733	723	352	971	1208	301	837	0	0	301	0	0
Stage 1	396	396	-	327	327	-	-	-	-	-	-	-
Stage 2	337	327	-	644	881	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 336	352	692	232	183	739	797	-	-	1260	-	-
Stage 1	629	604	-	686	648	-	-	-	-	-	-	-
Stage 2	677	648	-	461	365	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 313	333	692	219	173	739	797	-	-	1260	-	-
Mov Cap-2 Maneuver	426	424	-	219	173	-	-	-	-	-	-	-
Stage 1	616	582	-	672	635	-	-	-	-	-	-	-
Stage 2	645	635	-	438	352	-	-	-	-	-	-	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	51.8	10.6	0.4	0.2
HCM LOS	F	B		

Minor Lane/Major Mvmt	NEL	NET	NER	NWLn1	SELn1	SELn2	SWL	SWT	SWR
Capacity (veh/h)	797	-	-	661	426	692	1260	-	-
HCM Lane V/C Ratio	0.016	-	-	0.033	0.896	0.014	0.017	-	-
HCM Control Delay (s)	9.6	0	-	10.6	52.9	10.3	7.9	0	-
HCM Lane LOS	A	A	-	B	F	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	9.5	0	0.1	-	-

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

Intersection	
Int Delay, s/veh	5.2

Movement	NBL	NBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Vol, veh/h	25	0	13	135	26	145	115	38	0	24
Future Vol, veh/h	25	0	13	135	26	145	115	38	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	0	14	147	28	158	125	41	0	26

Major/Minor	Minor1			Major1		Major2			Minor2	
Conflicting Flow All	664	161	166	0	0	175	0	0	722	146
Stage 1	189	-	-	-	-	-	-	-	462	-
Stage 2	475	-	-	-	-	-	-	-	260	-
Critical Hdwy	7.12	6.22	4.12	-	-	4.12	-	-	7.12	6.22
Critical Hdwy Stg 1	6.12	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	374	884	1412	-	-	1401	-	-	342	901
Stage 1	813	-	-	-	-	-	-	-	580	-
Stage 2	570	-	-	-	-	-	-	-	745	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	329	884	1412	-	-	1401	-	-	260	901
Mov Cap-2 Maneuver	329	-	-	-	-	-	-	-	260	-
Stage 1	804	-	-	-	-	-	-	-	574	-
Stage 2	491	-	-	-	-	-	-	-	619	-

Approach	NB	SE	NW	SW
HCM Control Delay, s	11.8	0.6	3.8	11.9
HCM LOS	B			B

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	695	1401	-	-	1412	-	-	557
HCM Lane V/C Ratio	0.242	0.112	-	-	0.01	-	-	0.062
HCM Control Delay (s)	11.8	7.9	-	-	7.6	0	-	11.9
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0.4	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	27	5	95	23	28	5	5	85	26	5	5
Future Vol, veh/h	5	27	5	95	23	28	5	5	85	26	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	29	5	103	25	30	5	5	92	28	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	55	0	0	34	0	0	293	303	32	336	290	40
Stage 1	-	-	-	-	-	-	42	42	-	246	246	-
Stage 2	-	-	-	-	-	-	251	261	-	90	44	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1550	-	-	1578	-	-	659	610	1042	618	620	1031
Stage 1	-	-	-	-	-	-	972	860	-	758	703	-
Stage 2	-	-	-	-	-	-	753	692	-	917	858	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1550	-	-	1578	-	-	616	567	1042	529	576	1031
Mov Cap-2 Maneuver	-	-	-	-	-	-	616	567	-	529	576	-
Stage 1	-	-	-	-	-	-	969	857	-	756	655	-
Stage 2	-	-	-	-	-	-	692	645	-	828	855	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	4.8	9.2	11.7
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	964	1550	-	-	1578	-	-	574
HCM Lane V/C Ratio	0.107	0.004	-	-	0.065	-	-	0.068
HCM Control Delay (s)	9.2	7.3	0	-	7.4	0	-	11.7
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.2	-	-	0.2

Intersection	
Int Delay, s/veh	3.3

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	45	106	425	51	107	465
Future Vol, veh/h	45	106	425	51	107	465
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	115	462	55	116	505

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1227	490	0	0	517	0
Stage 1	490	-	-	-	-	-
Stage 2	737	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	197	578	-	-	1049	-
Stage 1	616	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	167	578	-	-	1049	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	616	-	-	-	-	-
Stage 2	400	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	19.5	0	1.7
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWLn1	NWLn2	SWL	SWT
Capacity (veh/h)	-	-	167	578	1049	-
HCM Lane V/C Ratio	-	-	0.293	0.199	0.111	-
HCM Control Delay (s)	-	-	35.2	12.8	8.9	0
HCM Lane LOS	-	-	E	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.7	0.4	-

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Approach	SE	NW	NE	SW
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	392	22	314	859
Demand Flow Rate, veh/h	400	22	320	876
Vehicles Circulating, veh/h	382	709	412	14
Vehicles Exiting, veh/h	508	23	370	717
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.0	5.7	8.0	10.7
Approach LOS	A	A	A	B

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	400	22	320	876
Cap Entry Lane, veh/h	935	670	906	1360
Entry HV Adj Factor	0.980	1.000	0.981	0.981
Flow Entry, veh/h	392	22	314	859
Cap Entry, veh/h	916	670	889	1334
V/C Ratio	0.428	0.033	0.353	0.644
Control Delay, s/veh	9.0	5.7	8.0	10.7
LOS	A	A	A	B
95th %tile Queue, veh	2	0	2	5

Intersection	
Int Delay, s/veh	54.3

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	383	0	10	1	0	22	11	348	2	38	569	413
Future Vol, veh/h	383	0	10	1	0	22	11	348	2	38	569	413
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	-	-	-	-	-	-	-	-	-	-	200
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	416	0	11	1	0	24	12	378	2	41	618	449

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1115	1104	618	1333	1552	379	1067	0	0	380	0	0
Stage 1	700	700	-	403	403	-	-	-	-	-	-	-
Stage 2	415	404	-	930	1149	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 185	211	489	131	113	668	653	-	-	1178	-	-
Stage 1	430	441	-	624	600	-	-	-	-	-	-	-
Stage 2	615	599	-	321	273	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 162	186	489	117	100	668	653	-	-	1178	-	-
Mov Cap-2 Maneuver	~ 288	291	-	117	100	-	-	-	-	-	-	-
Stage 1	420	398	-	610	586	-	-	-	-	-	-	-
Stage 2	579	585	-	283	247	-	-	-	-	-	-	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	246.5	11.8	0.3	0.3
HCM LOS	F	B		

Minor Lane/Major Mvmt	NEL	NET	NER	NWLn1	SELn1	SELn2	SWL	SWT	SWR
Capacity (veh/h)	653	-	-	554	288	489	1178	-	-
HCM Lane V/C Ratio	0.018	-	-	0.045	1.446	0.022	0.035	-	-
HCM Control Delay (s)	10.6	0	-	11.8	252.6	12.5	8.2	0	-
HCM Lane LOS	B	A	-	B	F	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	22.9	0.1	0.1	-	-

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

Intersection	
Int Delay, s/veh	7.2

Movement	NBL	NBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Vol, veh/h	28	0	10	167	47	269	212	29	0	9
Future Vol, veh/h	28	0	10	167	47	269	212	29	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	0	11	182	51	292	230	32	0	10

Major/Minor	Minor1			Major1			Major2			Minor2	
Conflicting Flow All	1065	208	262	0	0	233	0	0	1144	246	
Stage 1	230	-	-	-	-	-	-	-	830	-	
Stage 2	835	-	-	-	-	-	-	-	314	-	
Critical Hdwy	7.12	6.22	4.12	-	-	4.12	-	-	7.12	6.22	
Critical Hdwy Stg 1	6.12	-	-	-	-	-	-	-	6.12	-	
Critical Hdwy Stg 2	6.12	-	-	-	-	-	-	-	6.12	-	
Follow-up Hdwy	3.518	3.318	2.218	-	-	2.218	-	-	3.518	3.318	
Pot Cap-1 Maneuver	200	832	1302	-	-	1335	-	-	177	793	
Stage 1	773	-	-	-	-	-	-	-	364	-	
Stage 2	362	-	-	-	-	-	-	-	697	-	
Platoon blocked, %				-	-		-	-			
Mov Cap-1 Maneuver	163	832	1302	-	-	1335	-	-	116	793	
Mov Cap-2 Maneuver	163	-	-	-	-	-	-	-	116	-	
Stage 1	765	-	-	-	-	-	-	-	360	-	
Stage 2	279	-	-	-	-	-	-	-	550	-	

Approach	NB	SE	NW	SW
HCM Control Delay, s	16.5	0.3	4.5	39.4
HCM LOS	C			E

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	511	1335	-	-	1302	-	-	145
HCM Lane V/C Ratio	0.389	0.219	-	-	0.008	-	-	0.285
HCM Control Delay (s)	16.5	8.5	-	-	7.8	0	-	39.4
HCM Lane LOS	C	A	-	-	A	A	-	E
HCM 95th %tile Q(veh)	1.8	0.8	-	-	0	-	-	1.1

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	25	5	154	35	54	5	5	101	41	5	5
Future Vol, veh/h	5	25	5	154	35	54	5	5	101	41	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	27	5	167	38	59	5	5	110	45	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	97	0	0	32	0	0	447	471	30	499	444	68
Stage 1	-	-	-	-	-	-	40	40	-	402	402	-
Stage 2	-	-	-	-	-	-	407	431	-	97	42	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1496	-	-	1580	-	-	522	491	1044	482	508	995
Stage 1	-	-	-	-	-	-	975	862	-	625	600	-
Stage 2	-	-	-	-	-	-	621	583	-	910	860	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1496	-	-	1580	-	-	469	435	1044	390	450	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	469	435	-	390	450	-
Stage 1	-	-	-	-	-	-	972	859	-	623	533	-
Stage 2	-	-	-	-	-	-	543	518	-	807	857	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	4.8	9.4	14.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	934	1496	-	-	1580	-	-	421
HCM Lane V/C Ratio	0.129	0.004	-	-	0.106	-	-	0.132
HCM Control Delay (s)	9.4	7.4	0	-	7.5	0	-	14.8
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.4	-	-	0.5

Intersection	
Int Delay, s/veh	6.4

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	51	128	433	69	191	608
Future Vol, veh/h	51	128	433	69	191	608
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	139	471	75	208	661

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1586	509	0	0	546	0
Stage 1	509	-	-	-	-	-
Stage 2	1077	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	119	564	-	-	1023	-
Stage 1	604	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	81	564	-	-	1023	-
Mov Cap-2 Maneuver	81	-	-	-	-	-
Stage 1	604	-	-	-	-	-
Stage 2	222	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	42.5	0	2.3
HCM LOS	E		

Minor Lane/Major Mvmt	NET	NER	NWLn1	NWLn2	SWL	SWT
Capacity (veh/h)	-	-	81	564	1023	-
HCM Lane V/C Ratio	-	-	0.684	0.247	0.203	-
HCM Control Delay (s)	-	-	115.3	13.5	9.4	0
HCM Lane LOS	-	-	F	B	A	A
HCM 95th %tile Q(veh)	-	-	3.2	1	0.8	-

Intersection	
Intersection Delay, s/veh	16.2
Intersection LOS	C

Approach	SE	NW	NE	SW
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	427	25	392	1108
Demand Flow Rate, veh/h	435	25	400	1130
Vehicles Circulating, veh/h	673	822	466	13
Vehicles Exiting, veh/h	470	44	642	834
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	16.8	6.5	10.3	18.3
Approach LOS	C	A	B	C

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	435	25	400	1130
Cap Entry Lane, veh/h	695	597	858	1362
Entry HV Adj Factor	0.982	1.000	0.981	0.980
Flow Entry, veh/h	427	25	392	1108
Cap Entry, veh/h	682	597	842	1335
V/C Ratio	0.626	0.042	0.466	0.830
Control Delay, s/veh	16.8	6.5	10.3	18.3
LOS	C	A	B	C
95th %tile Queue, veh	4	0	3	11

Intersection	
Int Delay, s/veh	57.3

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	398	0	10	1	0	28	12	416	2	31	490	451
Future Vol, veh/h	398	0	10	1	0	28	12	416	2	31	490	451
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	-	-	-	-	-	-	-	-	-	-	200
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	433	0	11	1	0	30	13	452	2	34	533	490

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1095	1081	533	1331	1570	453	1023	0	0	454	0	0
Stage 1	601	601	-	479	479	-	-	-	-	-	-	-
Stage 2	494	480	-	852	1091	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 191	218	547	132	111	607	679	-	-	1107	-	-
Stage 1	487	489	-	568	555	-	-	-	-	-	-	-
Stage 2	557	554	-	354	291	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 167	195	547	119	99	607	679	-	-	1107	-	-
Mov Cap-2 Maneuver	~ 294	306	-	119	99	-	-	-	-	-	-	-
Stage 1	474	449	-	553	541	-	-	-	-	-	-	-
Stage 2	515	540	-	319	267	-	-	-	-	-	-	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	256.4	12.2	0.3	0.3
HCM LOS	F	B		

Minor Lane/Major Mvmt	NEL	NET	NER	NWLn1	SELn1	SELn2	SWL	SWT	SWR
Capacity (veh/h)	679	-	-	532	294	547	1107	-	-
HCM Lane V/C Ratio	0.019	-	-	0.059	1.471	0.02	0.03	-	-
HCM Control Delay (s)	10.4	0	-	12.2	262.5	11.7	8.4	0	-
HCM Lane LOS	B	A	-	B	F	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	24.1	0.1	0.1	-	-

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

Intersection	
Int Delay, s/veh	7.5

Movement	NBL	NBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Vol, veh/h	34	0	13	194	40	224	184	40	0	10
Future Vol, veh/h	34	0	13	194	40	224	184	40	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	0	14	211	43	243	200	43	0	11

Major/Minor	Minor1			Major1			Major2			Minor2	
Conflicting Flow All	974	233	243	0	0	254	0	0	1069	222
Stage 1	261	-	-	-	-	-	-	-	708	-
Stage 2	713	-	-	-	-	-	-	-	361	-
Critical Hdwy	7.12	6.22	4.12	-	-	4.12	-	-	7.12	6.22
Critical Hdwy Stg 1	6.12	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	231	806	1323	-	-	1311	-	-	199	818
Stage 1	744	-	-	-	-	-	-	-	426	-
Stage 2	423	-	-	-	-	-	-	-	657	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	194	806	1323	-	-	1311	-	-	127	818
Mov Cap-2 Maneuver	194	-	-	-	-	-	-	-	127	-
Stage 1	735	-	-	-	-	-	-	-	421	-
Stage 2	340	-	-	-	-	-	-	-	487	-

Approach	NB	SE	NW	SW
HCM Control Delay, s	16.8	0.4	4.2	36
HCM LOS	C			E

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	541	1311	-	-	1323	-	-	160
HCM Lane V/C Ratio	0.44	0.186	-	-	0.011	-	-	0.279
HCM Control Delay (s)	16.8	8.4	-	-	7.8	0	-	36
HCM Lane LOS	C	A	-	-	A	A	-	E
HCM 95th %tile Q(veh)	2.2	0.7	-	-	0	-	-	1.1

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	30	5	136	30	45	5	5	118	51	5	5
Future Vol, veh/h	5	30	5	136	30	45	5	5	118	51	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	33	5	148	33	49	5	5	128	55	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	38	0	0	405	424	36	466	402	58
Stage 1	-	-	-	-	-	-	46	46	-	354	354	-
Stage 2	-	-	-	-	-	-	359	378	-	112	48	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1515	-	-	1572	-	-	556	522	1037	507	537	1008
Stage 1	-	-	-	-	-	-	968	857	-	663	630	-
Stage 2	-	-	-	-	-	-	659	615	-	893	855	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1515	-	-	1572	-	-	505	469	1037	406	482	1008
Mov Cap-2 Maneuver	-	-	-	-	-	-	505	469	-	406	482	-
Stage 1	-	-	-	-	-	-	965	854	-	661	568	-
Stage 2	-	-	-	-	-	-	585	554	-	775	852	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	4.9	9.4	14.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	953	1515	-	-	1572	-	-	433
HCM Lane V/C Ratio	0.146	0.004	-	-	0.094	-	-	0.153
HCM Control Delay (s)	9.4	7.4	0	-	7.5	0	-	14.8
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0.3	-	-	0.5

Intersection	
Int Delay, s/veh	9.2

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	58	153	552	65	166	657
Future Vol, veh/h	58	153	552	65	166	657
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	166	600	71	180	714

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1710	636	0	0	671	0
Stage 1	636	-	-	-	-	-
Stage 2	1074	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	100	478	-	-	919	-
Stage 1	527	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	68	478	-	-	919	-
Mov Cap-2 Maneuver	68	-	-	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	221	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	64.5	0	2
HCM LOS	F		

Minor Lane/Major Mvmt	NET	NER	NWLn1	NWLn2	SWL	SWT
Capacity (veh/h)	-	-	68	478	919	-
HCM Lane V/C Ratio	-	-	0.927	0.348	0.196	-
HCM Control Delay (s)	-	-	191.1	16.5	9.9	0
HCM Lane LOS	-	-	F	C	A	A
HCM 95th %tile Q(veh)	-	-	4.6	1.5	0.7	-

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Approach	SE	NW	NE	SW
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	444	31	467	1059
Demand Flow Rate, veh/h	453	32	476	1081
Vehicles Circulating, veh/h	580	916	477	14
Vehicles Exiting, veh/h	515	37	556	934
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	14.5	7.6	12.5	16.2
Approach LOS	B	A	B	C

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	453	32	476	1081
Cap Entry Lane, veh/h	764	542	848	1360
Entry HV Adj Factor	0.980	0.969	0.981	0.980
Flow Entry, veh/h	444	31	467	1059
Cap Entry, veh/h	749	525	832	1333
V/C Ratio	0.593	0.059	0.561	0.795
Control Delay, s/veh	14.5	7.6	12.5	16.2
LOS	B	A	B	C
95th %tile Queue, veh	4	0	4	9

Town of Fraser
PO Box 370, Fraser, CO 80442 office: 970-726-5491 fax: 970-726-5518
www.frasercolorado.com

Town of Fraser Land Use Application Referral Summary

Date: January 23, 2026
Project Name: Grand Park West Mountain Filing 1 (Planning Area 10W & 11W) – Final Plat & FPDP
Project Number: TF22-10
Referral Begin Date: December 30, 2025
Referral End Date: January 16, 2026
Applicant: West Mountain Development, LLC
From: Alan Sielaff, Assistant Town Planner
CC: Garrett Scott, Town Planner
Michael Brack, Town Manager
Paul Johnson, Public Works Director

Documents sent on referral:

All documents from the 7th Final Plat & FPDP submittal received December 19, 2025, which includes:
- Preliminary Civil Construction Documents, dated as 2nd submittal 12/18/2025
- Final Planned Development Plan (FPDP), dated 12/18/2025
- Final Plat, dated 12/17/2025
- Scale Variance letter, dated 12/17/2025

Responding referral agencies:

- Merrick & Company (Jeanne Boyle, Katherine Knight, Greg Steed, and Donna Barrentine as Town Engineer) – received January 23, 2026
- JVAM (Cooper Gehle as Town Attorney) – received January 15, 2026
- East Grand Fire Protection District (Ryan Mowrey) – received January 14, 2026
- Mountain Parks Electric, Inc. (Jessica Tain) – received January 14, 2026
- Xcel Energy (Julie Gittins) – received January 16, 2026

Planning Department
Town of Fraser
153 Fraser Avenue, P.O. Box 370
Fraser, CO 80442
970-726-5491 x219
asielaff@town.fraser.co.us

January 23, 2026

Layla Rosales, Principal
Terracina Design
10200 E Girard Ave, Ste A-314
Denver, CO 80231

RE: Grand Park West Mountain Filing 1 (Planning Area 10W & 11W) – Final Plat & FPDP (TF22-10)
7th Submittal Referral Summary and Planning Review

Dear Ms. Rosales,

The Town of Fraser Planning Department has reviewed the documents provided in the 7th submittal of the Grand Park West Mountain Filing 1 (Planning Area 10W & 11W) Final Plat and FPDP application and hereby provides the following review comments to be addressed in a resubmittal:

General Comments

1) Please provide written responses to the following Planning review comments as well as referral agencies with outstanding comments provided as an attachment to this letter.

2) As a reminder, a Development Improvements Agreement (DIA) and surety is required prior to infrastructure installation and plat recordation. The previous engineer's cost estimate that was provided dated April 2, 2025 will need to be updated to reflect the quantities per the revised civil plans as well as current unit prices.

3) In the previous approval for West Mountain Filing 1, Board of Trustees approval Resolution 2025-01-09 included condition of approval #2 stating "Prior to recordation of the FPDP and the Final Plat, the Applicant shall receive approval from the Town of Fraser of the West Mountain Water Master Plan and associated design drawings and reports, as stipulated in Articles 5.3, 5.5, and 5.6 of the 2003 Annexation Agreement." An 8th submittal of the construction drawings for the West Mountain Water system were received on January 9, 2026 and are currently under review. Since the water system is not yet fully approved, the previous condition of approval #2 will be recommended to be carried forward with this major amendment request.

4) An updated address map will be needed prior to plat approval. Please provide a blank map to staff and we will provide updated street numbers.

Final Plat

5) Note 3 includes blank references to the title commitment for the property. Please fill in and provide said title commitment with the next submittal.

6) MPEI and Xcel have indicated that adequate easements and/or plat notes meeting their requirements are still not being provided. Per Sec. 19-4-120, easements are to be provided in accordance with the requirements of the utility provider. The plat will not be approved and recorded until they confirm their requirements are met.

7) Depict all required drainage and utility easements on the final plat with blanks for reception numbers to be filled in once recorded. Updated easements deeds and exhibits for each easement will need to be provided with the next submittal as was done with the previous April 2025 submittal. The terms and/or exhibits for these previously provided easements will need to be updated to reflect the updated plat.

8) Depict all sight distance easements on the final plat that are included in the Civils CDs.

9) Provide separate plats for the individual phasing areas as depicted on sheet 8 of the FPDP if the intention is to plat in phases rather than all at once.

10) Label all streets and tracts on each sheet.

11) Sheet 2 - Labels for Lots 62, 68, and 69 are missing.

12) Sheet 3 – Remove the “unplatted” label from area within Tract A.

Final Planned Development Plan (FPDP)

General

13) Previous versions of the West Mountain Filing 1 FPDP included a lighting plan. This is required per the FPDP application checklist. Please add back in with next submittal.

14) Previous versions of the West Mountain FPDP did not include “preliminary” with the grading and utility plans. Final plans are required per the FPDP application checklist. Please update and confirm final civil plans with the next submittal.

Cover Sheet (Sheet 1)

15) Setback notes need to be updated to conform to the new planning area designations. The note lists Lots 1-52 as 11W, but only Lots 1-41 are proposed in 11W. We suggest updating the note as follows for clarity:

2. Setbacks:

2.1. Lots 1-41 (Single Family Detached in 11W): 10' Front, 6' Side, 10' Rear

2.2. Lots 42-52 (Single Family Detached in 10W): 10' Front, 6' Side, 10' Rear

2.3. Lots 53-79 (Single Family Detached and Attached Eligible in 10W): 10' Front, 20' Front to Garage, 0' Attached Side, Detached Side Must Meet Building and Fire Codes, 10' Rear

16) Previous notes 12 and 13 have been removed. Please add back in as they were included in the previous approvals for this FPDP.

17) The vicinity map and legal descriptions conflict in regards to the location of section lines and section numbers, as well as the legal description at the top left of the cover page and the legal description below the owners certificate. Correct the vicinity map, and only one legal description is necessary. The one below the owners block was not included in the previous submittal and appears to be the incorrect one.

18) Update the year to 2026 in the Owner Certificate signature block

Site Plans (Sheets 4 & 5)

19) Staff believes Tract D should include a trail connection along the railroad to the Filing 2 area. While this is a new comment for Filing 1, this area of 23W was not previously included in the FPDP boundaries. We can further discuss the topic as part of the Filing 2 submittal and will flag it for the Planning Commission and the Board as part of the Filing 2 review for their consideration. We acknowledge the PDD is difficult and potentially unclear to read, but there appears to be a hashed line to the left of the railroad. We have also come across a colorized version of the PDD from 2005, see attached. While this is not the recorded PDD and is a slightly earlier version, the trail marking appears to have been carried forward and included on Sheet 6 of the recorded PDD. Included is a highlighted version for reference. Based on the comment response with Filing 2, if topography in this location is challenging, perhaps the trail can be routed along Overlook Drive into Filing 2 and then branch off towards the railroad in order to provide a looped route back to Grand Park Drive on the west side of West Mountain.

20) Ensure labeling for Planning Areas does not interfere with Lot numbers.

21) Snow storage location needs to be coordinated with utility agencies to ensure no conflicts with their easement requirements.

Open Space (Sheet 6)

22) Please confirm the measurement for the open space within 10W.1. Staff's measurement of the open space area is showing only 2.28 acres of open space, roughly 14,000 square feet less than the 2.6 acres listed in the table and is less than the 15% required.

Landscape Plan (Sheet 7)

23) A tree and shrub planting list is provided, but no plantings are depicted. This list may be removed unless a specific approved planting list is proposed.

Grading and Drainage Plans (Sheets 9-10)

24) Sheets 9 and 10 are missing titles. Please label as final grading plan and final utility plan.

25) Lots 27-52 are mislabeled and need to be renumbered, shifting each lot by one (Lot 26 appears to have been labeled twice).

26) Poplar Ct. is labeled as Hunters Ct. on the plat. Please ensure all street names and consistent across all documents.

Referral comments from all responding agencies/entities are provided as an attachment to this letter. It is recognized that some comments provided herein may be duplicative or even contradictory. In the case of contradictions or conflicts in referral comments, the comment from the most applicable agency/entity shall take priority.

Also provided with this letter are PDF copies of the plan set and other submittal or reference documents that contain markups and comments from the planning review (in red) and engineering review (all other colors) that serve to augment and clarify the comments provided in this letter.

Please contact me or Town Planner Garrett Scott (970-505-0467, gscott@town.fraser.co.us) if there are any questions or to discuss any of the referral comments in more detail.

Sincerely,

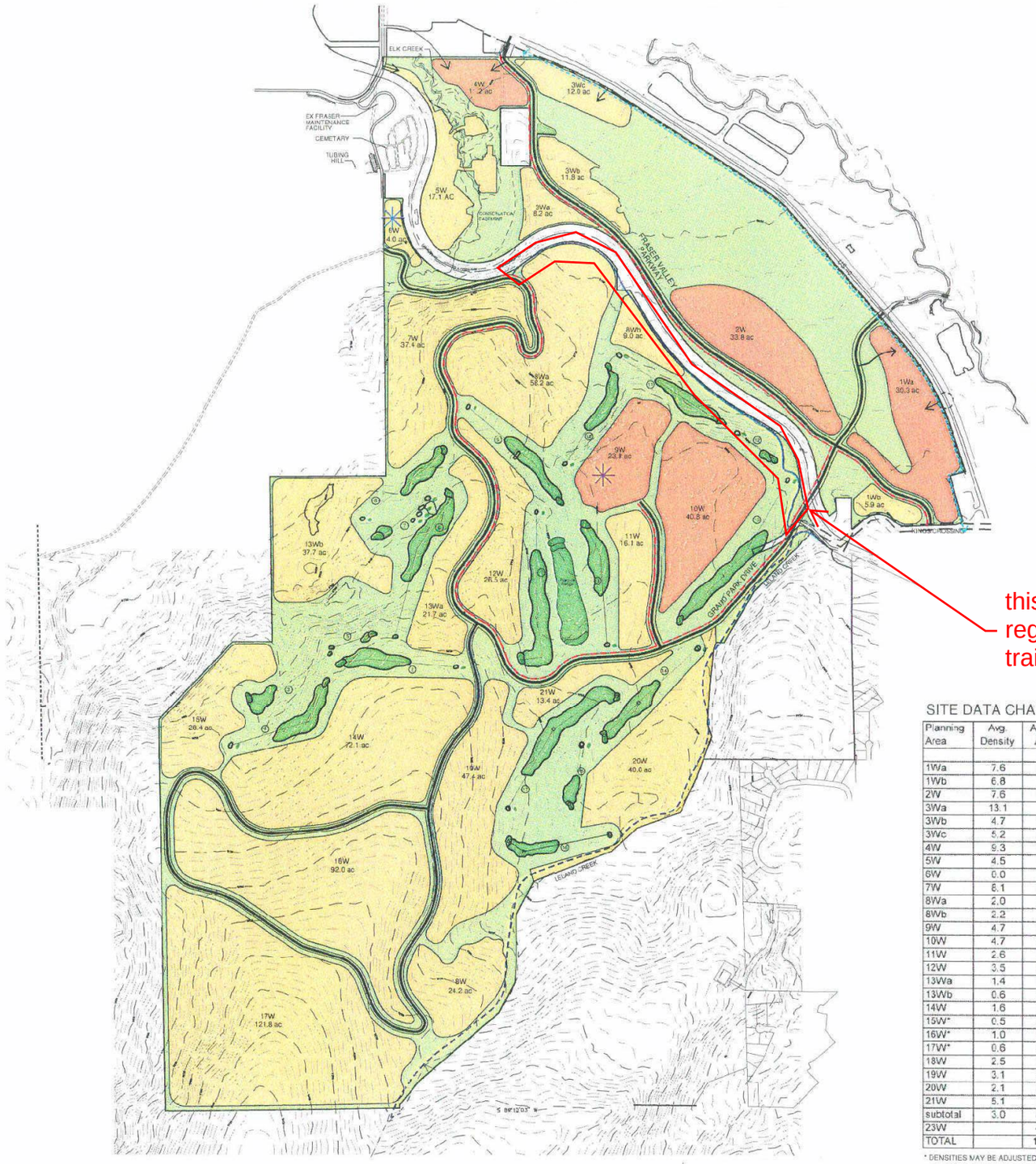


Alan Sielaff
Assistant Town Planner
970-726-5491 x219
asielaff@town.fraser.co.us

GRAND PARK

PLANNED DEVELOPMENT DISTRICT PLAN

LOCATED IN SECTIONS 20, 28, 29, 30, 31, 32
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



this appears to be a regional or community trail

SITE DATA CHART

Planning Area	Avg. Density	Approx. Acres	% Total Area	Residential		Lodging Units	Commercial Sq. Ft.
				detached	attached		
1Wa	7.6	30.3	2.3%		230	300	140,000
1Wb	6.8	5.9	0.5%		40		
2W	7.6	33.8	2.6%	150	100	278	30,000
3Wa	13.1	8.2	0.6%		95		
3Wb	4.7	11.8	0.9%	50	30		
3Wc	5.2	12.0	0.9%		60		70,000
4W	9.3	11.2	0.9%		100		105,800
5W	4.5	17.1	1.3%	70	30		
6W	0.0	4.0	0.3%				public site
7W	6.1	37.4	2.9%	50	90		
8Wa	2.0	58.2	4.4%	83	110		
8Wb	2.2	9.0	0.7%		40		
9W	4.7	23.8	1.8%	33	73	200	20,000
10W	4.7	40.8	3.1%	40	134	350	30,000
11W	2.6	16.1	1.2%	10	31	50	
12W	3.5	26.5	2.0%		92	100	
13Wa	1.4	21.7	1.7%	40			
13Wb	0.6	37.7	2.9%	40			
14W	1.6	72.1	5.5%	117			
15W*	0.5	26.4	2.0%	12			
16W*	1.0	92.0	7.0%	90			
17W*	0.6	121.8	9.3%	120			
18W	2.5	24.2	1.8%	61			
19W	3.1	47.4	3.6%	40	70		
20W	2.1	40.0	3.1%	26	56		
21W	5.1	13.4	1.0%	20	30		
subtotal	3.0	842.8	64.3%	1052	1411		
23W		468.1	35.7%				
TOTAL		1310.9	100.0%	2463		1278	395,800

* DENSITIES MAY BE ADJUSTED DEPENDENT UPON PROVISION OF CENTRAL SERVICES

LEGEND

- RESIDENTIAL
- MIXED USE
- OPEN SPACE/ GOLF COURSE
- CLUBHOUSE SITE
- PROPOSED MAINTENANCE FACILITY
- ROADWAYS
- MAJOR DRAINAGES
- REGIONAL TRAIL
- COMMUNITY TRAIL
- ON-ROAD TRAIL

NORTH

0 300 600 1200

SCALE: 1"=600'-0"

AN AMENDMENT OF THE RENDEzVOUS 2003 PLANNED DEVELOPMENT DISTRICT PLAN

DATE: MARCH 18, 2005
REVISED: MAY 12, 2005

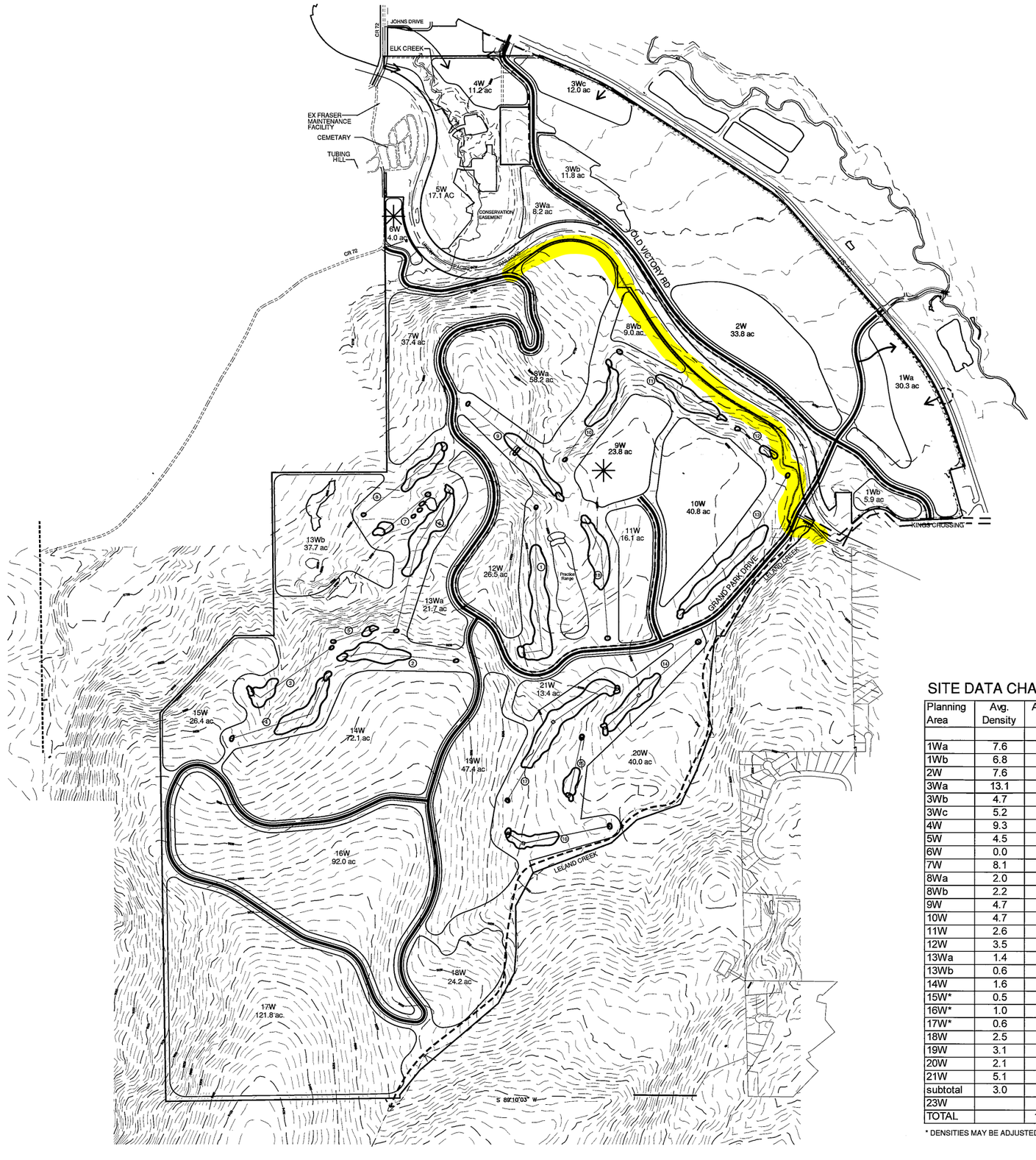
LAND USE PLAN

SHEET 6 OF 11

GRAND PARK

PLANNED DEVELOPMENT DISTRICT PLAN

A PART OF SECTIONS 20, 28, 29, 30, 31, 32
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



SITE DATA CHART

Planning Area	Avg. Density	Approx. Acres	% Total Area	Residential		Lodging Units	Commercial Sq. Ft.
				detached	attached		
1Wa	7.6	30.3	2.3%		230	300	140,000
1Wb	6.8	5.9	0.5%		40		
2W	7.6	33.8	2.6%	150	100	278	30,000
3Wa	13.1	8.2	0.6%		95		
3Wb	4.7	11.8	0.9%	50	30		
3Wc	5.2	12.0	0.9%		60		70,000
4W	9.3	11.2	0.9%		100		105,800
5W	4.5	17.1	1.3%	70	30		
6W	0.0	4.0	0.3%				public site
7W	8.1	37.4	2.9%	50	90		
8Wa	2.0	58.2	4.4%	83	110		
8Wb	2.2	9.0	0.7%		40		
9W	4.7	23.8	1.8%	33	73	200	20,000
10W	4.7	40.8	3.1%	40	134	350	30,000
11W	2.6	16.1	1.2%	10	31	50	
12W	3.5	26.5	2.0%		92	100	
13Wa	1.4	21.7	1.7%	40			
13Wb	0.6	37.7	2.9%	40			
14W	1.6	72.1	5.5%	117			
15W*	0.5	26.4	2.0%	12			
16W*	1.0	92.0	7.0%	90			
17W*	0.6	121.8	9.3%	120			
18W	2.5	24.2	1.8%	61			
19W	3.1	47.4	3.6%	40	70		
20W	2.1	40.0	3.1%	26	56		
21W	5.1	13.4	1.0%	20	30		
subtotal	3.0	842.8	64.3%	1052	1411		
23W		468.1	35.7%				
TOTAL		1310.9	100.0%	2463		1278	395,800

* DENSITIES MAY BE ADJUSTED DEPENDENT UPON PROVISION OF CENTRAL SERVICES

LEGEND

- RESIDENTIAL
- MIXED USE
- OPEN SPACE/ GOLF COURSE
- CLUBHOUSE SITE
- PROPOSED MAINTENANCE FACILITY
- ROADWAYS
- MAJOR DRAINAGES
- REGIONAL TRAIL
- COMMUNITY TRAIL
- ON-ROAD TRAIL

NORTH

SCALE: 1"=600'-0"

0 300 600 1200

STATE OF COLORADO } SS
County of GRAND
Filed for record this 8 day of December, 2005
at 4:04 o'clock P M.
Recorded in Book ____ Page ____
SARA L. ROSENE
Recorder
Deputy
Fees $ 111

AN AMENDMENT OF THE RENDEzVOUS 2003 PLANNED DEVELOPMENT DISTRICT PLAN

2005-012709

DATE: JUNE 16, 2005

LAND USE PLAN

SHEET 6 OF 11

January 23, 2026

Garrett Scott, Town Planner
Town of Fraser
153 Fraser Avenue, P.O. Box 370
Fraser, Colorado 80442

RE: Grand Park West Mountain Filing 1 - 10W & 11W – Final Plat and FPDP Submittal 7 (Major Amendment) –Drainage, General Civil and Utility Review

Dear Mr. Scott:

Merrick has reviewed the Grand Park West Mountain Filing 1 Major Amendment submittal received December 30, 2025. The submittal included the following:

- Final Plat dated December 17, 2025
- Final Planned Development Plan dated December 18, 2025
- Preliminary Construction Plans dated December 18, 2025
- Plan Scale Variance Request Letter dated December 17, 2025

The Preliminary Construction Plans were determined to cover both the Filing 1 and Filing 2 areas and are the same plan set for both submittals, so the comments are the same for both filings. Similarly, no drainage report was submitted with Filing 1, but it was determined that the Filing 2 drainage report dated December 2025 also covers the Filing 1 area, so the Filing 2 drainage report comments are the same for both filings. Additionally, no wetland exhibit was submitted with Filing 1, but it was determined that the Filing 2 wetland exhibit dated December 18, 20205 covers the Filing 1 area, so it was included with our review for Filing 1.

This letter provides Merrick's review comments on the submitted items. The letter is organized in two sections as follows:

Section 1 – Drainage Review

Section 2 – General Civil and Utility Review

Section 3 – Transportation and Roadway Review

SECTION 1 - DRAINAGE REVIEW

We have the following comments to offer related to the proposed drainage improvements:

Final Plat:

1. Drainage and Utility easements by separate document were previously provided for this filing. If previously recorded, show and abandon as necessary.

2. Provide updated drainage easements for the revised layout, including for Ponds B and C and for drainage easements needed outside of the rights-of-way.

Final Planned Development Plan

3. The FPDP Boundary shown on Sheet 2 is different from the boundary shown on Sheets 3 and 4 and yet another different boundary is shown on Sheets 9 and 10. Define and show one consistent FPDP boundary. Also confirm that it matches the FPDP boundary for Filing 2.
4. On Sheet 7: Landscape Plan shows lots 68-79 as landscape area but provides no further direction to planting plans. Instead, it appears that this hatched area should be a seeded area. If so, revise the hatch label and provide the type of seed mix.
5. On Sheet 8: Phasing Plan, with each phase include the detention ponds to which each phase drains to since detention will be required to be constructed along with each phase.
6. On Sheet 9: Label sheet (appears to be grading plan).

Drainage Report:

7. Instead of HEC-HMS, provide hydrologic calculations using the rational method or CUHP. Per section 3.4.3 of the Grand County Storm Drainage Design and Technical Criteria Manual (SDDTCM), runoff shall be determined using the rational method or CUHP. These methods are also preferred since the report states that the HEC-HMS model's accuracy decreases when applied to steep slopes, forested regions, or mountainous areas.
8. It is stated that Pond A is intended to be used as a permanent pool as well as an extended detention basin (EDB). Provide documentation of approval from the State Engineer's Office that allows Pond A to retain and/or detain stormwater for more than the State allowable time period (CRS 37-92-602(8)). The comment response letter indicates that this has been provided. However, we are unable to find it in the Drainage Report.
9. The comment response letter states that the "capacity of the existing 48" culvert will be addressed in the subsequent reports with the final design of Pond A." This analysis is required for approval of the FPDP to show that downstream infrastructure will not be negatively impacted. Confirm that the capacity of the existing 48" culvert is greater than the design discharge for Pond A (stated as 90% or less of the predeveloped peak flow).
10. Provide inlet calculations for all proposed inlets and show the location and number of inlets required to meet street capacity requirements as required in Section 2.3 of the SDDTCM and Section 14-2-20 (Preliminary construction plan submittal) of the Fraser Municipal Code which states that "Construction plans...must contain sufficient information and detail to determine that all Town standards can be satisfied."
11. Provide storm pipe and culvert sizing calculations for all proposed storm sewer systems and show the location and label to match the analysis.
12. Provide swale capacity calculations for all proposed swales.
13. Discuss details for each detention facility, Ponds A, B and C, as required by Section 2.3 of the SDDTCM.
14. Pond B and Basin OS3 are routed to Design Point OS3 which is an existing 24" RCP culvert across the UPRR that routes flow to the Aspenglo development. Stormwater detention is not provided for Basin OS3. To maintain existing condition peak flows at Design Point OS3, reduce the release rates from Pond B to compensate for the increased runoff from Basin OS3.
15. We have the following comments on Appendix A:

a. The Vicinity Map and Preliminary CD do not match the Filing 1 and 2 FPDP's. Revise documents to match.

b. The comment response letter indicates that a "rough project location has been provided on the FEMA FIRM map." However, the project site is not shown. Provide the boundary of the proposed site on the FEMA FIRM.

16. We have the following comments on Appendix B.

a. On page 37 for Pond A, the top of embankment elevation should be 8701, not 8702, as shown on Sheet 21 in the construction plans.

b. On pages 37 and 38, provide the calculations used to determine the pond discharges and corresponding outlet structure dimensions.

c. On page 39, include the calculated percent imperviousness in the tables for each basin.

d. HEC-HMS Flow Results for Ponds A and B are provided on pages 40 and 41 that indicate the Proposed flows are higher than the Existing flows. Clarify if these flows show the inflows to these ponds or the release rates. If they are the release rates, the ponds will need to be resized to reduce the proposed peak flows to the existing peak flows. Also provide this analysis for Pond C.

17. We have the following comments on Appendix C:

a. On page 43, the proposed land use percent imperviousness values for each basin do not match the values used on page 32 to determine the Curve Number Calculations. For example for Basin A, Historic = 64.3% and Paved = 4.8% on page 32, but are 55.2% and 8% on page 43. Revise to match and reflect the proposed improvements.

b. The modified FAA method is not intended for watersheds larger than 160 acres. The total watershed that drains to Pond A is 209 acres. Use only MHFD-Detention to size the ponds which also includes the water quality control volume sizing and follows the recommendation of the SDDTCM per Section 11.2 to use extended detention basins. In addition, analysis methods cannot be mixed so the storage volume results from the FAA method cannot be entered as a User Defined volume in the MHFD-Detention spreadsheet. Revise the MHFD-Detention analyses without this override.

c. On page 46, the highest stage is shown to be 8702 for Pond A, but the grading shown on Sheet 21 in the construction plans shows an embankment height of only 8701. Revise to match.

d. For the MHFD-Detention calculations, the Detention Basin Outlet Structure Design analyses were not reviewed. These will be reviewed when details are provided.

18. Provide an extended detention basin (EDB) in place of the Sediment Pond C. A water quality/detention pond is required to treat and detain the runoff from proposed improvements per SDDTCM Sections 3.3.6 and 3.3.7.

19. We have the following comments on the Proposed Drainage Map in Appendix E:

a. Revise the scale to a maximum of 1" = 200' per SDDTCM Section 2.3.1. Note that this may require two sheets.

b. The comment response letter stated that "labels [for all proposed stormwater infrastructure] will be included in subsequent reports once hydraulic calculations have been performed to size infrastructure." All infrastructure must be sized and labeled prior to approval of this report.

c. Show proposed grading for Pond A.

d. Label required detention volumes, provided volumes, and water surface elevations for all ponds per Section 2.3.1 of the SDDTCM.

e. Significant amounts of water are anticipated to enter Pond A via surface runoff. Provide erosion protection on the side slopes of the pond where surface runoff is expected. We recommend providing a drop structure along No Name Drainageway into Pond A.

f. Label No Name Drainageway. It is part of Basin A.

g. At Design Point E1, extend the storm sewer across the proposed trail to capture runoff from Basin E1 since the trail is shown raised on Sheet 26 in the construction plans and forms a swale on the uphill side.

Preliminary Construction Plans:

20. Provide stabilization improvements along No Name Drainageway. It is understood that the Drainageway is not located within the Filing 2 Planning Areas. However, it will be impacted by increased and more frequent runoff from Filing 2.
21. On Sheets 21, 22, 24, 25, and 27, a 20' drainage easement for a swale is shown along No Name Drainageway. A 20' wide easement may not be sufficient to contain 100-year flows along this drainageway and provide stabilization improvements. Provide a conceptual design and analysis for the drainageway to show the intended concept.
22. All drainageway side slopes steeper than 4:1 (H:V) will require erosion protection, such as approved rolled erosion control product and/or slope protection. All other slopes steeper than 3:1 (H:V) will require erosion protection.
23. On Sheet 24, the slope on the south side of the Road A cul-de-sac of is shown as 39.05%. The maximum slope allowed is 3:1(H:V) or approximately 33.3%. Modify the design to meet allowable slopes.
24. Provide storm line plans and profiles.
25. Provide erosion protection at all storm sewer and culvert outfalls.
26. On Sheet 23 at the low point in Terrain Way, extend the outfall pipe to daylight near the toe of slope.
27. On Sheet 23, downstream of the Terrain Way outfall pipe a swale is proposed within a water/utility & drainage easement. Creating a swale above a water line or other utility is not recommended due to the potential for erosion.
28. On Sheet 24 on the north side of Road A east of Terrain Way, it appears there is a proposed sump. Regrade this area or provide a storm pipe to drain this sump.
29. We have the following comments related to detention ponds:

    a. Provide typical details for pond infrastructure, such as forebays, trickle channels, outlet structures, and emergency spillways. It is understood that this is not the final design of the pond or outlet. Typical details that show the concept are acceptable.

    b. A 12' wide maintenance access trail at a maximum 10% slope must be provided to the bottom/outlet structure of all detention ponds in the final design. For this submittal, show the approximate route for maintenance vehicles to access the pond.

c. On Sheet 24, the maintenance access shown for Pond B must be modified to have a maximum 10% slope.

d. Provide trickle channel(s) with minimum 0.5% slope and slope the pond bottom at 2% minimum to the trickle channel(s). During preliminary design, the pond bottoms must be graded to meet this criteria to ensure the required volumes are available, per Section 14-2-20 (Preliminary construction plan submittal) of the Fraser Municipal Code.

e. On Sheet 21, the Pond A1 embankment appears to be more than 11 feet high, including the permanent pool. Note that coordination with the State Engineer's Office will be required if since the embankment height appears to exceeds 10 feet and could potentially be classified as a jurisdictional dam.

f. On Sheet 21, extend the outlet pipe for Pond A1 to daylight near the toe of slope and provide erosion protection at the outfall.

g. On Sheet 28, extend the outlet pipe for Pond C to daylight near the toe of slope and provide erosion protection at the outfall.

Wetland Exhibit:

30. The comment response letter for Filing 2 states that a jurisdictional determination for all wetlands and pond areas from the U.S. Army Corps of Engineers has been provided to the Town. Include a copy of this determination with this development referral for reference.

31. A USACE 404 Permit(s) or CDPHE Dredge and Fill Temporary Authorization(s) will be required for disturbances to jurisdictional wetlands and waters of the U.S. The Filing 2 comment response letter states that "all impacts were previously made and mitigated by the developer." Wetland impacts appear to be planned along Overlook Drive, Grand Park Drive, Outpost Club Drive (adjacent to Leland Creek), Pond F1 (Pond C in drainage report), and potentially near Lot 60 for installation of water and sanitary sewer improvements. Note that temporary impacts during construction also require permitting and/or authorization. Provide documentation that these impacts have been approved by the USACE.

32. Show and label proposed Pond B. Revise the label for Pond F1 to match the drainage report and construction plans to be Pond C.

33. Include the wetland mapping source and date of survey on the Wetland Exhibit.

Please let us know if you have any questions.

Sincerely,
Merrick & Company

Jeanne M. Boyle, PE, CFM | Theresa M. Ring, PE, CFM | Katherine E. Knight, CFM

SECTION 2 – GENERAL CIVIL AND UTILITY REVIEW

We have the following comments to offer related to the general civil and utility review:

Previous Comments (Not addressed)

1. Previous analysis of sewer loading at ultimate build out including loading from this development area indicate that piping capacity in Old Victory Road will exceed criteria (over 50% full). Any applications for building approvals shall include or be preceded by utility reports with calculated sewer loading of Average Daily Wastewater Flows and Peak Design Flows based on annexation agreement flow rates of gpd per household/unit/SFE.

2. Current water supply facilities are under capacity for existing Grand Park development demands. The Annexation Agreement requires the developer to design, construct, and convey to the Town all "Water Source Facilities" needed to serve the development.

   Provide a timeline or plan for infrastructure development in the wellfield capacity and augmentation storage.

3. Any applications for building approvals shall include or be preceded by utility reports with calculated Average Day Demands, Maximum Day Demands, Peak Hour Demands, and Irrigation Demands based on the annexation agreement gpd per household/unit/SFE.

   In addition, applicant shall provide water model data verifying the proposed water distribution system meets the Town of Fraser pressure requirements per Town Code 14-3-260(a.1(a&b)).

4. Sheet 2, CDs, General Notes: Update sanitary sewer note 8 to current Town Code description. Smith-Blair 229 collar is no longer applicable. (14-3-340 (a)(4)).

5. Sheet 2, CDs: Note 15.2, this part is no longer manufactured. See Town Code 14-4-320(c)(2).

Final Plat:

6. Cover Sheet: a. Provide contact names and phone numbers for owner/developer, surveyor and planner listed.

7. Sheet 2:

   a. Will the 20' utility easement rec. number 2022000996 be vacated by separate document or by this final plat now that there is a proposed 40' water and sanitary easement overlapping this location?

   b. Please clarify why the proposed 40' water and sanitary easement not shown on this final plat. Will it be recorded by separate document? If not, include in the final plat.

   c. The construction plans are showing the 20' utility easement to be a 30' sanitary easement. Please verify which is correct and revise to be consistent.

d. Several water and drainage easements that are shown in the construction plans are not shown on the final plat. Please clarify if those will be by separate document. If not, include in this final plat.

8. Sheet 3: Several water and drainage easements that are shown in the construction plans are not shown in the final plat. Please clarify if those will be by separate document. If not, include in this final plat.

9. Sheet 4: Correct road names where noted.

10. Sheet 5:

a. Will the 20' utility easement rec. number 2022000996 be vacated by separate document or by this final plat, now that there is a proposed 40' water and sanitary easement overlapping this location?

b. Why is the proposed 40' water and sanitary easement not shown on this final plat? Will it be recorded by separate document? If not, include in this final plat.

c. The construction plans are showing the 20' utility easement to be a 30' sanitary easement. Please verify which is correct and revise to be consistent.

11. Sheet 6: See Comment 10 above.

12. Sheet 7:

a. Fix the street name that is cut off.
b. Add missing street name where noted.
c. Add missing water utility easement where noted.

FPDP:

13. Sheet 2: The 30' sanitation easement is shown as a 20' utility easement rec. number 2022000996 on the final plat. Verify which is correct and update all plans to be consistent.

14. Sheet 4:

a. Please correct the 36' Right-of-Way (ROW) Road Sections (With and Without Storm Sewer) to eliminate duplicate text and dimensions.

b. Add a label showing the 10' minimum clearance dimension between outside edge of water to outside edge of sanitary sewer.

Preliminary Construction Plans:

15. On Cover Sheet: Provide an equation for the conversion of NGVD 29 to NAVD 88 vertical datum for the Town's reference and future use as needed for vertical control comparisons. NAVD 88 is required per the Town standards, Section 14-2-110(c), however, due to the status of these construction plans, the conversion equation on the cover sheet is acceptable.

16. Sheet 2: Add Collector and Arterial Road symbols along with their respective ROW and FL-FL data.

17. Sheet 3:

    a. Change Grand Park Drive roadway section from 60’ ROW to 80’ ROW as it is classified as an Arterial Road. Fix dimensions per standard arterial road detail.

    b. Add a roadway section for the emergency access easement/roadway.

    c. The 4” mountable curb detail is shown on sheet 44 rather than sheet 75. Please correct sheet number.

    d. Update the applicable street names listed under in the Local Street A detail. Also remove “A” since this detail applies to all local roads and all streets have updated names per the Final Plat.

    e. Ensure consistency in all street names shown in the Final Plat, FPDP and CDs.

18. Sheet 5: Label 10W.2 and correct label for 10W.3 as indicated.

19. Sheet 6: Update street name where noted.

20. Sheet 7: Label Lot 187 for its intended use.

21. Sheet 8: Several water, sanitary and drainage easements are missing dimension labels.

22. Sheet 9:

    a. Update Steet names where applicable
    b. Label lot 187 for its intended use.
    c. A floating slope label appears to be in the wrong location. Please correct.

23. Sheet 11:

    Since the two 12-inch water lines along Grand Park Drive (to the yellow zone pump station site) will need to be constructed per these construction plans, please remove shading in the area of these pipelines. The piping as shown is incorrect. The north side 12” water main should extend to the storage tank site, which should also be shown on this sheet. The piping from the storage tank site to the pump station site needs be shown as these are necessary infrastructure to serve filings 1 and 2. Please correct the piping configuration.

24. Sheet 29: The existing sanitary sewer under No Name Creek is shown as a 16” sanitary sewer. Please verify and correct to match installed size.

25. Sheet 31:

    a. Label future utility connection points in Terrain Way that will serve the commercial lots. A utility easement will be required for mains outside of the right-of-way.

    b. Show dimension between outside of water mains to sanitary sewers at least once per street on all utility plan sheets.

26. Sheet 34:

    a. Verify that a proposed 8” sanitary sewer will connect to an existing 12” sanitary sewer where shown.

b. Per previous comment, the existing 30’ sanitary easement is shown as a 20’ utility easement per recordation no. 202200996 on the Final Plat. Please correct inconsistency.

c. Label adjacent stormwater pond.

27. Sheet 35:

a. Label plug and blowoff at terminal end of water main Crossing Grand Park Drive at Road A68.

b. Per comment 11 above, since the two 12-inch water lines along Grand Park Drive (to the yellow zone pump station site) will need to be constructed per these construction plans, please remove shading in the area of these pipelines. The piping as shown is incorrect. The north side 12” water main should extend to the storage tank site, which should also be shown on this sheet. The piping from the storage tank site to the pump station site needs be shown as these are necessary infrastructure to serve filings 1 and 2. Please correct the piping configuration.

28. Sheet 36: The water main at the end of Terrain Ct is shown as a 12” water line. Please verify size and correct if needed. This is likely an 8” water main.

29. Sheet 44: Please add a detail for the 5’ curb cut.

Please let us know if you have any questions.

Sincerely,
Merrick & Company





Greg Steed, P.E.
Project Manager

Donna Barrentine, P.E.
Civil & Utility Review

SECTION 3 – TRANSPORTATION AND ROADWAY REVIEW

We have the following comments to offer related to the proposed transportation and roadway improvements:

Preliminary Plat:

1. General. Lot numbers different from the CDs. Please coordinate between the plat and the CDs.
2. General. Multiple road names different from the CDs. Please coordinate between the plat and the CDs.
3. Page 2. How do Lots 106 and 107 access the public ROW? Is an access easement needed across Tract C?
4. Page 3. Sight distance easement needed on Filing 1 Lot 21 per Preliminary CDs
5. Page 3. Sight distance easement needed on Filing 1 Lot 41 per Preliminary CDs
6. Page 10. Sight distance easement needed on Lots 1-4 per Preliminary CDs
7. Page 10. Sight distance easement needed on the Filing 1 Plat per Preliminary CDs

Roadway Exhibit:

8. General comment: Street names do not match the plat. Please coordinate and update accordingly.
9. Should there be a "Shared Drive" to provide legal access for the Clubhouse and the Lodging Units to access the public ROW?

Geotech Report

10. Page 16. Report states that recommendations should be reevaluated once traffic volume studies are available. The TIS traffic volumes are now available. Please update Geotech report and recommended pavement sections.
11. Missing pavement recommendation for collector roadway.

Preliminary CDs

12. General Comment. Lot numbers and street names do not match the plat. Please coordinate and update accordingly.
13. Page 1. Preliminary Plat checklist requires an Erosion and Sediment Control and Revegatation Plan.
14. Page 3 repeat comment. Label max and min catch slopes.
15. Page 3 repeat comment. Label max on the sidewalk cross slope.
16. Page 3 repeat comment. Fraser Design Standard Detail A-11 Mountable Curb Detail calls for 6" height (Typ all curbs).

17. Page 3 collector typical sections. Geotech report missing pavement recommendation for collectors. Work with geotech to include this analysis and update the typical section accordingly.

18. Page 3 local typical section. Label the 5” asphalt paving and 5” base course per the Geotech report. Geotech report notes the pavement recommendations should be reevaluated after traffic volumes are available. Please confirm these thicknesses with the geotech after the report is updated with the TIS traffic volumes.

19. General Comment. Lot numbers and street names do not match the plat. Please coordinate and update accordingly.

20. Page 7. How do Lots 185 & 186 access the public ROW? Is an access easement needed across Tact C?

21. Page 15. Provide curb ramps to connect the pedestrian network to the club house and open space at the intersection of Outpost Club Dr and Terrain Way.

22. Page 15. Confirm anticipated road slope west of the Outpost Club Dr and Terrain Way intersection. If greater than 5%, this sight distance needs to increase to 258.5 (10% increase per table footnote in 14-3-70(5) and AASHTO Table 9-5).

23. Page 16. Terrain Way road slope is 7%. Increase sight distance to 258.5' (10% increase per table footnote in Section 14-3-70(5) and AASHTO Table 9-5). Add sight easement on Lot 156 if needed after sight distance is updated.

24. Page 17. Outpost Club Dr slope is 4.6%. Increase sight distance at Compass Dr to 368.5' (10% increase per table footnote in Section 14-3-70(5) and AASHTO Table 9-5). Update sight easement on Lot 21.

25. Page 18. Might need a sight easement on the lot just north of Road A.

26. Page 18. Grand Park Dr slope is 6.3%. Increase sight distance at Overlook Dr to 368.5' (10% increase per table footnote in Section 14-3-70(5) and AASHTO Table 9-5).

27. See and address the additional redline comments within the submitted documents for further comments.

Should you have any questions about the above comments, please contact me.

Sincerely,

Merrick & Company
Brian Bern, P.E.
Senior Project Engineer

Cc: Paul Johnson, Town of Fraser
Garrett Scott, Town of Fraser

A Mountain Law Firm

Cooper Gehle
(970) 922-2122
cooper@jvamlaw.com

January 15, 2026

Via Email
Town of Fraser
Alan Sielaff, Assistant Town Planner

Re: TF22-10: Grand Park West Mountain Filing 1 FPDP and Final Plat – 7th Submittal

Please review and address our comments below relating to the most recent submission. Some of the comments are made simply for clarity and tracking purposes, as previous conversations have occurred between the Developer and the Town regarding attached versus detached units and acreage flexibility.

1. Final indications of the detached or attached nature in this application are unclear. Site Plan (sheet 5 of the FPDP) notes there are 38 single family detached units in 10W.1 and 41 single family detached units in 11W. However, General Note 2 indicates that Lots 1-52 are single family detached in 11W and Lots 53-79 are single family attached eligible in 10W. 11W only encompasses Lots 1-41, so the application of Note 2.2 to Lots 42-52 is unclear. Further, the "single family attached eligible" language for 10W is unclear as well. It is recommended that Developer clarify the planned units in these planning areas so that accurate counts can be made for the total detached and attached units proposed through West Mountain in accordance to the terms of the PDD.

2. The orientation and cardinal direction present in the FPDP Sheet 3 – Land Use Plan appears incorrect. The North indicator depicts the direction for West.

3. Developer has removed General Notes 12 and 13 from the FPDP. Despite this removal, all light fixtures shall still be in compliance with the Town of Fraser Municipal Code Sections 14-5-30 and 19-4-195. Further, final engineering documents, construction drawings, and site specific geotechnical reports shall be submitted and approved prior to issuance of any building permit unless otherwise determined by Town Staff.

4. Modifications to the acreage of the planning areas are present from the levels approved in the PDD and the previous submission.
    a. 11W previously encompassed 16.1 acres and now covers 19.3 acres. This is an acreage increase of 3.2.
    b. 10W has a total of 40.8 acres on the PDD and is proposed in the FPDP to total 42.7. The previous application for this area had 10W.1 and 10W.2, but the current iteration of 10W.1 encompasses the area that was split between 10W.1 and 10W.2. The area of the current 10W.1 is 17.5 acres, whereas the previous consisted of 19.2 acres between 10W.1 and 10W.2. The application appears to indicate that some of 11W's growth accounts for the loss in acreage to 10W.1, but there is still an unexplained 1.5 acres added to 11W.
    c. Furthermore, this application increases the overall acreage for 11W and 10W by 5.1 acres greater than approved by the PDD.

    These notes are highlighted to address the question from where the excess acreage is transferred. The acreage for 23W in this area was not included in the previous application, so it is unclear if that area has been used to supply the increased acreage. Thus, it is recommended that for future applications which include portions of 23W, that the 23W acreage is included, as it has been here.

EAST GRAND FIRE PROTECTION DISTRICT NO. 4

P.O. Box 2967 • Winter Park, Colorado 80482
(970) 726-5824 • www.eastgrandfire.com

Mr. Alan Sielaff, January 14th, 2026

Thank you for the opportunity to comment on ***Grand Park West Mountain Filing 1 FPDP and Final Plat.*** Special attention to utility locations, wildfire hazard mitigation, access, and municipal water supply is necessary for the protection of lives and property.

Access into Grand Park West Mountain Filing 1 (10W.1,11W & A Portion of 23W) via Grand Park Dr to have access points open, maintained, and unobstructed during all phases of construction. Emergency access roads will be required to be maintained and accessible year-round and be capable of supporting 84,000lbs.

Item of note if *Grand Park West Mountain Filing 2 (Overlook at Grand Park)* is not constructed during the same time period the only access to 10W.1 including Terrain Court and Bulge Cout will be from Overlook Dr. This will need to be evaluated to ensure access in accordance with *2021 IFC D107.1 One- or Two-Family Residential Developments.* If Filing 2 is not to be constructed with secondary access, residential homes will be required to install fire sprinkler systems.

Currently Grand Park Drive is the only access in/out of the area where the local roads and collector roads provide multiple paths of travel, as such Grand Park Drive will be required to be completed, maintained, and accessible to County Rd 72 to provide additional access/egress points prior to the delivery of any combustible material.

The width of the roads in *Grand Park West Mountain Filing* 2 appear to not be less than 26ft wide (excluding emergency access roads) and are acceptable as drawn. Road slopes do not exceed 7% in Filing 2 and are acceptable as drawn.

Parking lot drive isles were not depicted in this submittal but in earlier submittals they were shown at 26ft wide which is acceptable for Aerial Apparatus Access Roads.

"**No Street Parking**" signage will be required throughout, placed, and maintained on both sides of all roads. As well in all Cul-de-sacs. Cul-de-sac design appear on plans in one design and differently on the Town of Fraser Design in Attachment A-12. Both designs differ from the *2021 IFC Appendix D figure D103.1 for Dead-End Fire Apparatus Access Road Turnaround.* For consistency, please make all cul-de-sacs to the largest design which is described in the 2021 IFC Appendix D.

Fire hydrant spacing along all roads appears adequate and meet requirements in IFC Appendix C. Additionally, we would request a hydrant be added to Overlook Dr between Bulge Ct and Terrain Ct as there is a long distance between hydrants in this area. All temporary roadways will be required to be completed at finish grade and accessible by East Grand Fire apparatus as well as fire suppression water supply for Filing 1 will be required to be in place prior to the delivery of combustible building materials. Flows and pressures will need to be verified once that zone is installed to confirm it is functioning as designed.

Consideration for ***Grand Park West Mountain Filing 1*** be given to exterior building materials, landscaping, and defensible space to provide for a more wildfire adapted community and the **required adoption of the Colorado Wildfire Resiliency Code in 2026.**

Thank You,

Ryan A Mowrey
Fire Marshal
East Grand Fire Protection District

Alan Sielaff

From: MPEI Plat Review <mpeiplatreview@mpei.com>
Sent: Wednesday, January 14, 2026 3:40 PM
To: Alan Sielaff
Cc: Gittins, Julie K
Subject: RE: TF22-10: Grand Park WMF1_FPDP and Final Plat - 7th Submittal Referral

Caution! This message was sent from outside your organization.

Hello,

MPEI has a remaining issue that must be addressed on the plat.

1) MPE requires the language "Snow storage is not permitted within 5 feet of above ground electrical equipment" added to plat note 9 since the U.E. is dedicated as utility easement and snow storage in the plat legend.

The item below would not prevent MPEI from approving the filing 1 plat, but is important to document at this time:

A) MPEI must loop primary from Bugle Court to filing 2's Road C as the number of lots on Bugle Court, and Road C, exceeds MPEI's limit for radial (non-looped) primary lines. MPEI would prefer for the primary route and easement to be documented on the Overlook at Grand Park (Grand Park West Mountain Filing 2) plat. MPEI will not install facilities along Bugle Court (filing 1) or Road C (filing 2) until a loop route is provided and easement is secured.

Regards,

Jessica Tain

Jessica Tain mpeiplatreview@mpei.com
970-281-0344

MOUNTAIN PARKS ELECTRIC INCORPORATED

321 West Agate Ave • P.O. Box 170, Granby, CO 80446-0170 •
970.887.3378
We are owned by those we serve.

From: Alan Sielaff <asielaff@town.fraser.co.us>
Sent: Tuesday, December 30, 2025 12:12 PM
To: Kent Whitmer <kent@jvamlaw.com>; Cooper Gehle <cooper@jvamlaw.com>; Greg Steed <greg.steed@merrick.com>; Jeanne Boyle <jeanne.boyle@merrick.com>; Donna Barrentine <donna.barrentine@merrick.com>; Katherine Knight <katherine.knight@merrick.com>; Theresa Ring <theresa.ring@merrick.com>; Ryan Mowrey - East Grand Fire Protecion District #4 <rmowrey@eastgrandfire.com>; MPEI Plat Review <mpeiplatreview@mpei.com>; Gittins, Julie K <julie.k.gittins@xcelenergy.com>

Alan Sielaff

From: Gittins, Julie K <Julie.K.Gittins@xcelenergy.com>
Sent: Friday, January 16, 2026 11:15 AM
To: Alan Sielaff
Cc: MPEI Plat Review
Subject: RE: TF22-10: Grand Park WMF1_FPDP and Final Plat - 7th Submittal Referral

Caution! This message was sent from outside your organization.

Alan,

Good morning!

Xcel stands by their comments provided 4/29/25. We request that the dedicated utility easement language that has been provided in past reviews be added to the notes on the final plat along with the non-exclusive utility easement language for meter banks (see below for your convenience).

Ten-foot (10') wide dry utility easements are hereby dedicated on private property adjacent to the front and side lot lines of each lot in the subdivision or platted area identified as **single-family lots**, and around the perimeter of each **commercial/industrial** and **multi-family** lot in the subdivision or platted area including tracts, parcels and/or open space areas. Fifteen-foot (15') wide dry utility easements are hereby dedicated on private property adjacent to all public streets and side lot lines abutting exterior plat boundary lines. These easements are dedicated to the City/County for the benefit of the applicable utility providers for the installation, maintenance, and replacement of electric, gas, television, cable, and telecommunications facilities (Dry Utilities). Utility easements shall also be granted within any access easements and private streets in the subdivision. Permanent structures, improvements, objects, buildings, wells, water meters and other objects that may interfere with the utility facilities or use thereof (Interfering Objects) shall not be permitted within said utility easements and the utility providers, as grantees, may remove any Interfering Objects at no cost to such grantees, including, without limitation, vegetation. Public Service Company of Colorado (PSCo) and its successors reserve the right to require additional easements and to require the property owner to grant PSCo an easement on its standard form. WITH RESPECT TO THE UTILITY EASEMENT GRANTED HEREBY, NO STRUCTURE OR FOUNDATION SHALL BE ALLOWED CLOSER THAN FIVE FEET (5') AROUND ANY UNDERGROUND LINES. NO OTHER UTILITY LINE (WHETHER WATER, SEWER) SHALL BE ALLOWED CLOSER THAN TEN FEET (10') FROM ANY UNDERGROUND LINE. NOT WITHSTANDING THE FOREGOING, UNDERGROUND COMMUNICATION FACILITIES AND ELECTRIC SHALL NOT BE ALLOWED CLOSER THAN FIVE FEET (5') TO ANY GAS LINES AND ABOVE GROUND COMMUNICATION FACILITIES SHALL NOT BE CLOSER THAN FIVE FEET (5') TO ANY UNDERGROUND FACILITIES. NO GRADE CHANGES (FILL OR CUT) IN-EXCESS OF SIX INCHES (6") ARE PERMITTED WITHIN TEN FEET (10') OF ANY UNDERGROUND LINE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM PSCO. NO TREES OR BOULDERS MAY BE PLANTED OVER DISTRIBUTION OR SERVICE LINES AND MUST BE A MINIMUM OF 5' AWAY. SNOW STORAGE AND DRAINAGE CANNOT BE COMBINED WITH THE UTILITY EASEMENT.

EACH TOWNHOME, DUPLEX, MULTI-FAMILY OR MULTI-USE BUILDING ON THE PROPERTY SHALL HAVE GAS METERS ON THE GABLE END OF ONE (1) END UNIT ("GAS METER BANK"). DEVELOPER, FUTURE HOMEOWNER, OR METRO DISTRICT HEREBY GRANTS TO XCEL (PSCO) A NON-EXCLUSIVE UTILITY EASEMENT FOR (I) ONE GAS METER BANK ON THE END OF ONE (1) END UNIT PER BUILDING AND (II) ALL OTHER THINGS REASONABLY NECESSARY TO CONSTRUCT, INSTALL, MAINTAIN AND OPERATE SUCH GAS METER BANK ON EACH OF THE BUILDINGS (THE "GAS METERING EASEMENT"). ALL LINES AND OTHER FACILITIES RELATED TO SUCH GAS METER

BANK, SUCH AS METER RISERS (BUT NOT INDIVIDUAL GAS METERS), SHALL BE THE PROPERTY OF THE DEVELOPER. ALL GAS METERS USED FOR SUCH GAS METER BANKS SHALL BE THE PROPERTY OF XCEL (PSCO). ALL OF THE FOREGOING RIGHTS AND BENEFITS OF XCEL (PSCO) WITH RESPECT TO THE GAS METERING EASEMENT SHALL BE BINDING UPON AND SHALL INURE TO THE BENEFIT OF SUCCESSORS AND ASSIGNS.

It is Xcel's desire to provide the developer as much information and help ahead of time to address any issues that may arise, but ultimately the proof of burden is on the developer to show that all current required clearances can be met and that there is room to install our distribution in a utility easement outside of ROW. If that can't be done, we may not be able to provide service. Our standards and requirements are based on "Safety First".

Please note – this is not a final assessment of what the new service request will entail. There may be additional things in the field I cannot see. Once an application has been submitted to XCEL, upon final recording of the plat, we can start the full design process and identify the scope of work that will need to be done for this request.

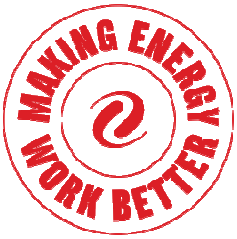
Have a great day!

Julie Gittins

Xcel Energy
Design Planner, Mountain Division
583 E. Jasper Ct., PO Box 528 Granby, CO 80446
C: 970-409-7613
E: Julie.K.Gittins@xcelenergy.com

Direct Supervisor: Kyle.C.Alsup@xcelenergy.com

M*y Office Hours: Tuesday thru Friday, 6:00 – 4:30 pm*



From: Alan Sielaff <asielaff@town.fraser.co.us>
Sent: Tuesday, December 30, 2025 12:12 PM
To: Kent Whitmer <kent@jvamlaw.com>; Cooper Gehle <cooper@jvamlaw.com>; Greg Steed <greg.steed@merrick.com>; Jeanne Boyle <jeanne.boyle@merrick.com>; Donna Barrentine <donna.barrentine@merrick.com>; Katherine Knight <katherine.knight@merrick.com>; Theresa Ring <theresa.ring@merrick.com>; Ryan Mowrey - East Grand Fire Protecion District #4 <rmowrey@eastgrandfire.com>; MPEI Plat Review <mpeiplatreview@mpei.com>; Gittins, Julie K <Julie.K.Gittins@xcelenergy.com>
Cc: Garrett Scott <gscott@town.fraser.co.us>; Paul Johnson <pjohnson@town.fraser.co.us>; Michael Brack <mbrack@town.fraser.co.us>; Lucas Seffens <lseffens@town.fraser.co.us>; Jeff Lunde <jlunde@town.fraser.co.us>; Brad Rome <brome@town.fraser.co.us>; Cathleen Brown <cbrown@town.fraser.co.us>
Subject: TF22-10: Grand Park WMF1_FPDP and Final Plat - 7th Submittal Referral

EXTERNAL - STOP & THINK before opening links and attachments.

Hello all,

February 9th, 2026

Mr. Alan Sielaff
Assistant Town Planner
Town of Fraser
PO Box 370
Fraser, CO 80442

Dear Mr. Sielaff,
On behalf of Grand Park Development, Terracina Design is submitting a revised Final Plat & FPDP for Grand Park West Mountain Filing No. 1 Planning area 10W.1 & 11W to address the comments dated January 26, 2026. See responses below.

General Comments

1. Please provide written responses to the following Planning review comments as well as referral agencies with outstanding comments provided as an attachment to this letter. **RESPONSE: See below**

2. As a reminder, a Development Improvements Agreement (DIA) and surety is required prior to infrastructure installation and plat recordation. The previous engineer's cost estimate that was provided dated April 2, 2025 will need to be updated to reflect the quantities per the revised civil plans as well as current unit prices. **RESPONSE: To be provided with off-site easements**

3. In the previous approval for West Mountain Filing 1, Board of Trustees approval Resolution 2025-01-09 included condition of approval #2 stating "Prior to recordation of the FPDP and the Final Plat, the Applicant shall receive approval from the Town of Fraser of the West Mountain Water Master Plan and associated design drawings and reports, as stipulated in Articles 5.3, 5.5, and 5.6 of the 2003 Annexation Agreement." An 8th submittal of the construction drawings for the West Mountain Water system were received on January 9, 2026 and are currently under review. Since the water system is not yet fully approved, the previous condition of approval #2 will be recommended to be carried forward with this major amendment request. **RESPONSE: The Annexation Agreement explicitly requires a submittal, NOT an approval. Refer to the sections referenced above. Additionally, the plan was approved by email. Asking for two typos to be corrected. The latest 1/9/26 submittal is adjusted to incorporate revisions that we are here tonight to discuss.**

4. An updated address map will be needed prior to plat approval. Please provide a blank map to staff and we will provide updated street numbers. **RESPONSE: Awaiting addresses from the town. Blank address exhibit submitted.**

Final Plat

5. Note 3 includes blank references to the title commitment for the property. Please fill in and provide said title commitment with the next submittal. **RESPONSE: It is standard for us to leave these off until its approved as it is required to be within 30 days of the final plat recording. Will include with the final documents to record.**

6. MPEI and Xcel have indicated that adequate easements and/or plat notes meeting their requirements are still not being provided. Per Sec. 19-4-120, easements are to be provided in accordance with the requirements of the utility provider. The plat will not be approved and recorded until they confirm their requirements are met. **RESPONSE: MPEI and Xcel Energy are not governing bodies that have any authority under the Fraser town Code, nor should the Town of Fraser let these for profit monopolies governed by the PUC of Colorado dictate how and what is platted in the Town of Fraser.**

7. Depict all required drainage and utility easements on the final plat with blanks for reception numbers to be filled in once recorded. Updated easements deeds and exhibits for each easement will need to be provided with the next submittal as was done with the previous April 2025 submittal. The terms and/or exhibits for these previously provided easements will need to be updated to reflect the updated plat. **RESPONSE: If easements are on the final plat they are addressed by the Final Plat. If you are referencing Offsite Easements those are separately recorded. and they are not on the Final Plat as they don't fit in the area being platted and if it were included the legal description of the entire plat would need to be revised and the necessity for an Off Site Easement would thus be removed. See the Meadows Filing 1 Final Plat as an example**

8. Depict all sight distance easements on the final plat that are included in the Civils CDs. **RESPONSE: There are no site distance easements and the Town Code does not require Site Distance Easements. Site distances are typically shown on traffic plans and civil construction plans for intersection design. Show me anywhere in Fraser where a site distance easement has been recorded. The intersection in the town right of way to interfere with the intersection would require approval of the Town of Fraser or could be done by the Town of Fraser since it will own the right of way.**

9. Provide separate plats for the individual phasing areas as depicted on sheet 8 of the FPDP if the intention is to plat in phases rather than all at once. **RESPONSE: Separate Plats will be provided after approval.**

10. Label all streets and tracts on each sheet. **RESPONSE: Revised**

11. Sheet 2 - Labels for Lots 62, 68, and 69 are missing. **RESPONSE: Revised**

12. Sheet 3 – Remove the "unplatted" label from area within Tract A. **RESPONSE: Revised**

Final Planned Development Plan (FPDP)

General

13. Previous versions of the West Mountain Filing 1 FPDP included a lighting plan. This is required per the FPDP application checklist. Please add back in with next submittal. **RESPONSE: There are no intentions to light the subdivision at this time. If lighting is planned to be installed a note has been added to the cover to follow Town Code.**

14. Previous versions of the West Mountain FPDP did not include "preliminary" with the grading and utility plans. Final plans are required per the FPDP application checklist. Please update and confirm final civil plans with the next submittal. **RESPONSE: Final Civil Plans were submitted and the "preliminary" will be removed.**

Cover Sheet (Sheet 1)

15. Setback notes need to be updated to conform to the new planning area designations. The note lists Lots 1-52 as 11W, but only Lots 1-41 are proposed in 11W. We suggest updating the note as follows for clarity:

    2. Setbacks:

    2.1. Lots 1-41 (Single Family Detached in 11W): 10' Front, 6' Side, 10' Rear **RESPONSE: The note is wrong and will be corrected to lot 1-41**

    2.2. Lots 42-52 (Single Family Detached in 10W): 10' Front, 6' Side, 10' Rear **RESPONSE: Revised**

    2.3. Lots 53-79 (Single Family Detached and Attached Eligible in 10W): 10' Front, 20' Front to Garage, 0' Attached Side, Detached Side Must Meet Building and Fire Codes, 10' Rear **RESPONSE: Revised**

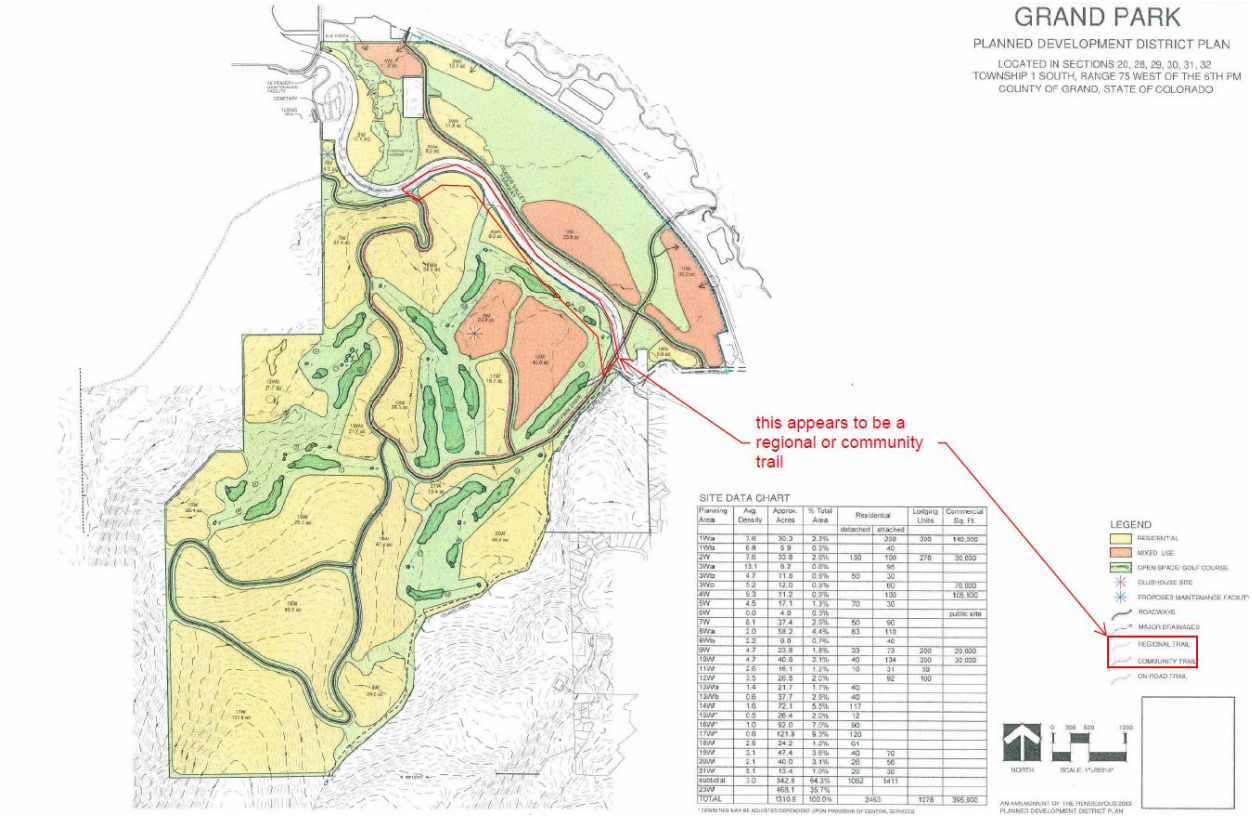
16. Previous notes 12 and 13 have been removed. Please add back in as they were included in the previous approvals for this FPDP. **RESPONSE: Added back in**

17. The vicinity map and legal descriptions conflict in regards to the location of section lines and section numbers, as well as the legal description at the top left of the cover page and the legal description below the owners certificate. Correct the vicinity map, and only one legal description is necessary. The one below the owners block was not included in the previous submittal and appears to be the incorrect one. **RESPONSE: Revised**

18. Update the year to 2026 in the Owner Certificate signature block **RESPONSE: Revised**

Site Plans (Sheets 4 & 5)

19. Staff believes Tract D should include a trail connection along the railroad to the Filing 2 area. While this is a new comment for Filing 1, this area of 23W was not previously included in the FPDP boundaries. We can further discuss the topic as part of the Filing 2 submittal and will flag it for the Planning Commission and the Board as part of the Filing 2 review for their consideration. We acknowledge the PDD is difficult and potentially unclear to read, but there appears to be a hashed line to the left of the railroad. We have also come across a colorized version of the PDD from 2005, see attached. While this is not the recorded PDD and is a slightly earlier version, the trail marking appears to have been carried forward and included on Sheet 6 of the recorded PDD. Included is a highlighted version for reference. Based on the comment response with Filing 2, if topography in this location is challenging, perhaps the trail can be routed along Overlook Drive into Filing 2 and then branch off towards the railroad in order to provide a looped route back to Grand Park Drive on the west side of West Mountain. **RESPONSE1.There is no depiction of a trail in this location. this location is not suitable for a trail as it is adjacent to the railroad with very steep terrain. additionally, required trails are identified in section 10.5 of the annexation agreement. the only public regional or community trails included are leland creek trail (completed), us40 trail (completed), grand park drive trail (partially completed), and old victory road trail (partially completed) Moreover, parts of this area have a golf driving range playing to it as well as golf holes adjacent to the railroad in spots. Golf and trails are not a good mix. Is staff proposing this be a Fraser owned, maintained, and liability protected trail? There is also a parallel trail immediately on the other side of the railroad.**



Planning Area	Avg. Density	Approx. Acres	% Total Area	Residential		Lodging Units	Commercial Sq. Ft.
				detached	attached		
1Wa	7.6	30.3	2.3%		230	300	140,000
1Wb	6.8	5.9	0.5%		40		
2W	7.6	33.8	2.6%	130	100	276	30,000
3Wa	13.1	8.2	0.6%		95		
3Wb	4.7	11.8	0.9%	50	30		
3Wc	5.2	12.0	0.9%		60		70,000
4W	5.3	11.2	0.9%		100		105,600
5W	4.5	17.1	1.3%	70	30		
6W	0.0	4.0	0.3%				public site
7W	6.1	37.4	2.8%	50	90		
8Wa	2.0	58.2	4.4%	83	110		
8Wb	2.2	9.9	0.7%		40		
9W	4.7	23.8	1.8%	33	73	200	29,000
10W	4.7	40.8	3.1%	40	134	200	30,000
11W	2.6	16.1	1.2%	10	31	39	
12WF	3.0	26.5	2.0%		92	100	
13Wa	1.4	21.7	1.7%	40			
13Wb	0.6	37.7	2.9%	40			
14WF	1.6	72.1	5.5%	117			
15WF	0.5	26.4	2.0%	12			
16WF	1.0	92.0	7.0%	90			
17WF	0.6	121.8	9.3%	120			
18WF	2.5	24.2	1.8%	61			
19WF	3.1	47.4	3.6%	40	70		
20WF	2.1	40.0	3.1%	28	56		
21WF	5.1	13.4	1.0%	20	30		
subtotal	3.0	942.8	64.3%	1052	1411		
22WF		568.1	35.7%				
TOTAL		1510.5	100.0%	2463		1278	395,600

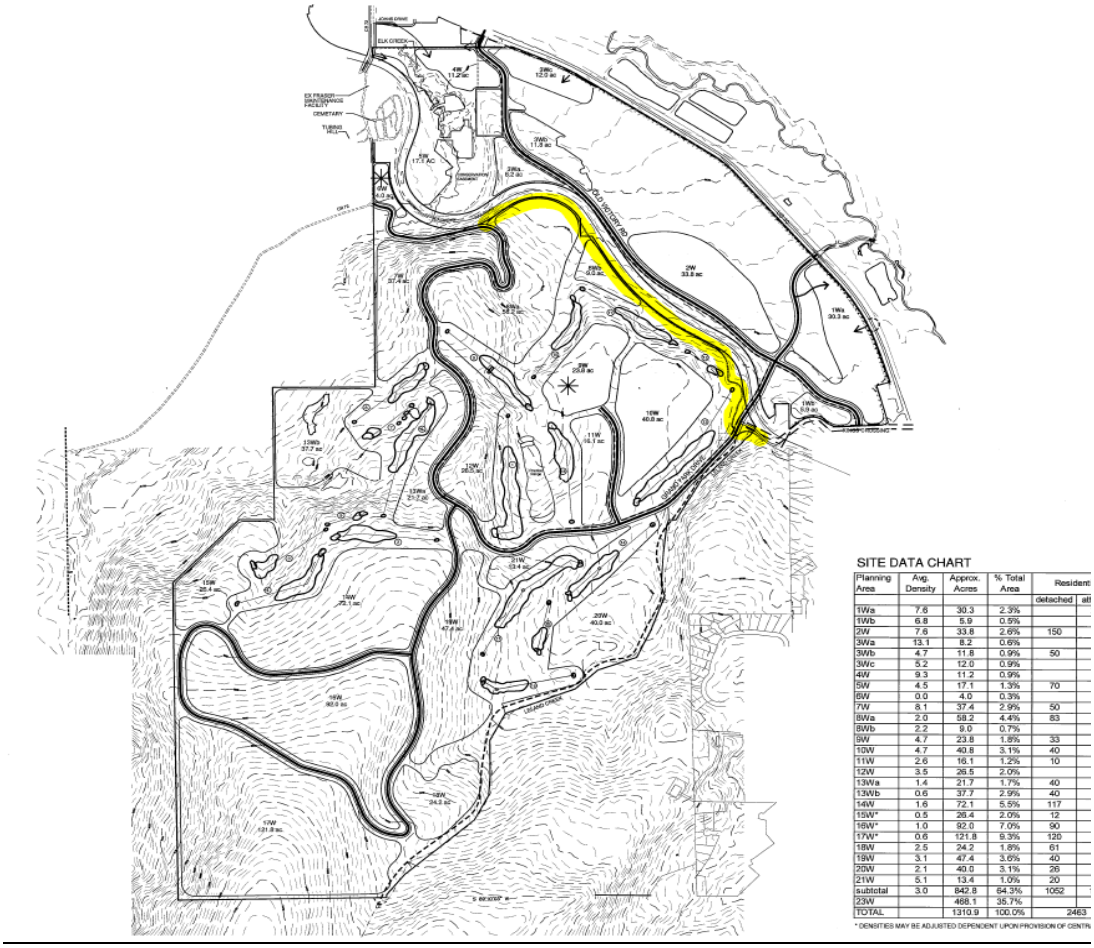
* DENSITIES MAY BE ADJUSTED DEPENDENT UPON PROVISION OF CENTRAL SERVICES

AN AMENDMENT OF THE RENDEZVOUS 2003 PLANNED DEVELOPMENT DISTRICT PLAN

terracina design

Landscape Architecture ▪ Planning ▪ Civil Engineering

10200 E. Girard Avenue, A-314. Denver, CO 80231 ph: 303.632.8867



SITE DATA CHART

Planning Area	Avg. Density	Approx. Acres	% Total Area	Resident	
				detached	att
1Ws	7.6	30.3	2.3%		
1Wb	6.8	5.9	0.5%		
2W	7.6	33.8	2.6%	150	
3Wa	13.1	8.2	0.6%		
3Wb	4.7	11.8	0.9%	50	
3Wc	5.2	12.0	0.9%		
4W	9.3	11.2	0.9%		
5W	4.5	17.1	1.3%	70	
6W	0.0	4.0	0.3%		
7W	8.1	37.4	2.9%	50	
8Wa	2.0	58.2	4.4%	83	
8Wb	2.2	9.0	0.7%		
9W	4.7	23.8	1.8%	33	
10W	4.7	40.8	3.1%	40	
11W	2.6	16.1	1.2%	10	
12W	3.5	26.5	2.0%		
13Wa	1.4	21.7	1.7%	40	
13Wb	0.6	37.7	2.9%	40	
14W	1.6	72.1	5.5%	117	
15W*	0.5	26.4	2.0%	12	
16W*	1.0	92.0	7.0%	90	
17W*	0.6	121.8	9.3%	120	
18W	2.5	24.2	1.8%	61	
19W	3.1	47.4	3.6%	40	
20W	2.1	40.0	3.1%	26	
21W	5.1	13.4	1.0%	20	
subtotal	3.0	842.8	64.3%	1052	
22W		468.1	35.7%		
TOTAL		1310.9	100.0%		2463

* DENSITIES MAY BE ADJUSTED DEPENDENT UPON PROVISION OF CENTR

20. Ensure labeling for Planning Areas does not interfere with Lot numbers. **RESPONSE: Revised**

21. Snow storage location needs to be coordinated with utility agencies to ensure no conflicts with their easement requirements. **RESPONSE: Snow storage is designed the same as it is in all Grand Park projects and will remain the same and coordination for design and construction of utilities with the Town and other utility providers is anticipated to be the same as it always has been.**

Open Space (Sheet 6)

Please confirm the measurement for the open space within 10W.1. Staff's measurement of the open space area is showing only 2.28 acres of open space, roughly 14,000 square feet less than the 2.6 acres listed in the table and is less than the 15% required. **RESPONSE: There is now 2.626 acres between Tract B, C, and G.**

Landscape Plan (Sheet 7)

22. A tree and shrub planting list is provided, but no plantings are depicted. This list may be removed unless a specific approved planting list is proposed. Grading and Drainage Plans (Sheets 9-10) **RESPONSE: Removed**

23. Sheets 9 and 10 are missing titles. Please label as final grading plan and final utility plan. **RESPONSE: Revised**

24. Lots 27-52 are mislabeled and need to be renumbered, shifting each lot by one (Lot 26 appears to have been labeled twice). **RESPONSE: Revised**

25. Poplar Ct. is labeled as Hunters Ct. on the plat. Please ensure all street names and consistent across all documents. **RESPONSE: Revised**

Jeanne M. Boyle, Katherine E Knight and Theresa M. Ring PE, CFM Merrick & Company

SECTION 1 - DRAINAGE REVIEW
We have the following comments to offer related to the proposed drainage improvements:

Final Plat:

1. Drainage and Utility easements by separate document were previously provided for this filing. If previously recorded, show and abandon as necessary. **RESPONSE: No offsite easements were recorded and new final offsite easements that match this plan will be recorded as required.**

2. Provide updated drainage easements for the revised layout, including for Ponds B and C and for drainage easements needed outside of the rights-of-way. **RESPONSE: Off-Site easement to be provided**

Final Planned Development Plan

3. The FPDP Boundary shown on Sheet 2 is different from the boundary shown on Sheets 3 and 4 and yet another different boundary is shown on Sheets 9 and 10. Define and show one consistent FPDP boundary. Also confirm that it matches the FPDP boundary for Filing 2. **RESPONSE: Revised**

4. On Sheet 7: Landscape Plan shows lots 68-79 as landscape area but provides no further direction to planting plans. Instead, it appears that this hatched area should be a seeded area. If so, revise the hatch label and provide the type of seed mix. **RESPONSE: Revised**

5. On Sheet 8: Phasing Plan, with each phase include the detention ponds to which each phase drains to since detention will be required to be constructed along with each phase. **RESPONSE: FPDPs don't have this level of detail, it is in the construction plans.**

6. On Sheet 9: Label sheet (appears to be grading plan). **RESPONSE: Revised**

Drainage Report:

7. Instead of HEC-HMS, provide hydrologic calculations using the rational method or CUHP. Per section 3.4.3 of the Grand County Storm Drainage Design and Technical Criteria Manual (SDDTCM), runoff shall be determined using the rational method or CUHP. These methods are also preferred since the report states that the HEC-HMS model's accuracy decreases when applied to steep slopes, forested regions, or mountainous areas. **RESPONSE: The previous drainage reports for the West Mountain and most recently the Union Pacific Railroad Underpass constructed by Grand Park used the HEC HMS Model produced by Tony Krempin which was approved and accepted by Fraser. We are continuing to use this method for the rest of West Mountain for consistency.**

8. It is stated that Pond A is intended to be used as a permanent pool as well as an extended detention basin (EDB). Provide documentation of approval from the State Engineer's Office that allows Pond A to retain and/or detain stormwater for more than the State allowable time period (CRS 37-92-602(8)). The comment response letter indicates that this has been provided. However, we are unable to find it in the Drainage Report. **RESPONSE: Pond A will not be constructed with this submittal. All basins that will drain to Pond A will utilize a temporary sediment basin in the interim condition. Pond A will be designed in subsequent plans concerning the development of planning areas 8Wb, 9W, 10W.3, and 11W.2.**

9. The comment response letter states that the "capacity of the existing 48" culvert will be addressed in the subsequent reports with the final design of Pond A." This analysis is required for approval of the FPDP to show that downstream infrastructure will not be negatively impacted. Confirm that the capacity of the existing 48" culvert is greater than the design discharge for Pond A (stated as 90% or less of the predeveloped peak flow). **RESPONSE: Pond A will not be constructed with this submittal. All basins that will drain to Pond A will utilize a temporary sediment basin in the interim condition. Pond A will be designed in subsequent plans concerning the development of planning areas 8Wb, 9W, 10W.3, and 11W.2.**

10. Provide inlet calculations for all proposed inlets and show the location and number of inlets required to meet street capacity requirements as required in Section 2.3 of the SDDTCM and Section 14-2-20 (Preliminary construction plan submittal) of the Fraser Municipal Code which states that "Construction plans...must contain sufficient information and detail to determine that all Town standards can be satisfied." **RESPONSE: Included with updated submittal.**

11. Provide storm pipe and culvert sizing calculations for all proposed storm sewer systems and show the location and label to match the analysis. **RESPONSE: Included with updated submittal.**

12. Provide swale capacity calculations for all proposed swales. **RESPONSE: Included with updated submittal.**

13. Discuss details for each detention facility, Ponds A, B and C, as required by Section 2.3 of the SDDTCM. **RESPONSE: Text concerning Pond B has been updated as required per Section 2.3 of the SDDTCM. The required detention volume, designed volume, and water surface elevations have been included in the drainage map as well. Pond A will not be constructed with this submittal. All basins that will drain to Pond A will utilize a temporary sediment basin in the interim condition. Pond A will be designed in subsequent plans concerning the development of planning areas 8Wb, 9W, 10W.3, and 11W.2. A detention basin will be installed in place of temporary sediment basin C when additional filings enter the next phase of construction and there are 15 acres or more draining to this location.**

14. Pond B and Basin OS3 are routed to Design Point OS3 which is an existing 24" RCP culvert across the UPRR that routes flow to the Aspenglo development. Stormwater detention is not provided for Basin OS3. To maintain existing condition peak flows at Design Point OS3, reduce the release rates from Pond B to compensate for the increased runoff from Basin OS3. **RESPONSE: Pond B's outlet structure has been designed to release flows at approximately 70% of the predeveloped peak flow rate. This release rate is low enough that the pond over-detains the flow to account for Basin OS3 being released undetained. In the 100-year storm event, the culvert at design point OS3 went from having 40.8 cfs in the existing condition to 28.8 cfs in the proposed condition (see runoff summary tables in the HEC-HMS map within Appendix F), so drainage infrastructure downstream of Pond B will not be adversely affected by the proposed development.**

15. We have the following comments on Appendix A:
    a. The Vicinity Map and Preliminary CD do not match the Filing 1 and 2 FPDP's. Revise documents to match. **RESPONSE: Updated**

    b. The comment response letter indicates that a "rough project location has been provided on the FEMA FIRM map." However, the project site is not shown. Provide the boundary of the proposed site on the FEMA FIRM. **RESPONSE: Updated**

16. We have the following comments on Appendix B.
    a. On page 37 for Pond A, the top of embankment elevation should be 8701, not 8702, as shown on Sheet 21 in the construction plans. **RESPONSE:**

Pond A will not be constructed with this submittal. All basins that will drain to Pond A will utilize a temporary sediment basin in the interim condition. Pond A will be designed in subsequent plans concerning the development of planning areas 8Wb, 9W, 10W.3, and 11W.2.

b. On pages 37 and 38, provide the calculations used to determine the pond discharges and corresponding outlet structure dimensions. **RESPONSE: Temporary Sediment Basin Stage-Storage Discharge tables have been provided in Appendix D for temporary sediment basin A4 and C. Pond B discharge calculations have been provided in the "Summary Stage-Area-Discharge Relationships" Table in the Outlet Structure Design spreadsheet found in Appendix D.**

c. On page 39, include the calculated percent imperviousness in the tables for each basin. **RESPONSE: We have added a column for percent imperviousness to this table. To see the calculations used to determine these percent imperviousness values, please see the pond imperviousness calculations in Appendix D.**

d. HEC-HMS Flow Results for Ponds A and B are provided on pages 40 and 41 that indicate the Proposed flows are higher than the Existing flows. Clarify if these flows show the inflows to these ponds or the release rates. If they are the release rates, the ponds will need to be resized to reduce the proposed peak flows to the existing peak flows. Also provide this analysis for Pond C. **RESPONSE: This table depicts the inflows into the pond. These tables were utilized by inputting the proposed inflow rates into the "Inflow Hydrographs" table of the MHFD Outlet Structure Design spreadsheet. For clarity, this table has been moved to Appendix D with the rest of the Pond B calculations. We will not create inflow hydrograph tables for temporary sediment basins because their outlet structures are designed according to a standard detail, and the inflow hydrographs are therefore irrelevant to the design of these facilities.**

17. We have the following comments on Appendix C:
    a. On page 43, the proposed land use percent imperviousness values for each basin do not match the values used on page 32 to determine the Curve Number Calculations. For example, for Basin A, Historic = 64.3% and Paved = 4.8% on page 32 but are 55.2% and 8% on page 43. Revise to match and reflect the proposed improvements. **RESPONSE: The values shown on page 32 are the percent of that basin that falls within a certain land use. The values shown on page 43 are the acreage of that basin that falls within a certain land use. A column showing each basins percent imperviousness has been added to the CN calculator spreadsheet.**

b. The modified FAA method is not intended for watersheds larger than 160 acres. The total watershed that drains to Pond A is 209 acres. Use only MHFD-Detention to size the ponds which also includes the water quality control volume sizing and follows the recommendation of the SDDTCM per Section 11.2 to use extended detention basins. In addition, analysis methods cannot be mixed so the storage volume results from the FAA method cannot be entered as a User Defined volume in the MHFD-Detention spreadsheet. Revise the MHFD-Detention analyses without this override. **RESPONSE: The modified FAA method will continue to be used for Pond B since that watershed is less than 160 acres. The modified FAA method is used to determine the required detention volume. The MHFD-Detention spreadsheet will solely be used to design the outlet structure for this pond to ensure its release rate is less than the ponds predeveloped peak flow rate. Pond A will not be constructed with this submittal. Pond A will be designed in subsequent plans concerning the development of planning areas 8Wb, 9W, 10W.3, and 11W.2.**

c. On page 46, the highest stage is shown to be 8702 for Pond A, but the grading shown on Sheet 21 in the construction plans shows an embankment height of only 8701. Revise to match. **RESPONSE: Pond A will not be constructed with this submittal. All basins that will drain to Pond A will utilize a temporary sediment basin in the interim condition. Pond A will be designed in subsequent plans concerning the development of planning areas 8Wb, 9W, 10W.3, and 11W.2.**

d. For the MHFD-Detention calculations, the Detention Basin Outlet Structure Design analyses were not reviewed. These will be reviewed when details are provided. **RESPONSE: Noted**

18. Provide an extended detention basin (EDB) in place of the Sediment Pond C. A water quality/detention pond is required to treat and detain the runoff from proposed improvements per SDDTCM Sections 3.3.6 and 3.3.7. **RESPONSE: A detention basin will be installed in place of temporary sediment basin C when additional filings enter the next phase of construction and there are 15 acres or more draining to this location.**

19. We have the following comments on the Proposed Drainage Map in Appendix E:
    a. Revise the scale to a maximum of 1" = 200' per SDDTCM Section 2.3.1. Note that this may require two sheets. **RESPONSE: Updated.**

    b. The comment response letter stated that "labels [for all proposed stormwater infrastructure] will be included in subsequent reports once hydraulic calculations have been performed to size infrastructure." All infrastructure must be sized and labeled prior to approval of this report. **RESPONSE: Included with updated submittal.**

c. Show proposed grading for Pond A. **RESPONSE: Pond A will not be constructed with this submittal. All basins that will drain to Pond A will utilize a temporary sediment basin in the interim condition. Pond A will be designed in subsequent plans concerning the development of planning areas 8Wb, 9W, 10W.3, and 11W.2.**

d. Label required detention volumes, provided volumes, and water surface elevations for all ponds per Section 2.3.1 of the SDDTCM. **RESPONSE: Included with updated submittal for Pond B and temporary sediment basins.**

e. Significant amounts of water are anticipated to enter Pond A via surface runoff. Provide erosion protection on the side slopes of the pond where surface runoff is expected. We recommend providing a drop structure along No Name Drainageway into Pond A. **RESPONSE: Pond A will not be constructed with this submittal. All basins that will drain to Pond A will utilize a temporary sediment basin in the interim condition. Pond A will be designed in subsequent plans concerning the development of planning areas 8Wb, 9W, 10W.3, and 11W.2.**

f. Label No Name Drainageway. It is part of Basin A. **RESPONSE: This will be called Spring Meadow Basin. This should not be treated as an official drainageway because it is not recognized by FEMA.**

g. At Design Point E1, extend the storm sewer across the proposed trail to capture runoff from Basin E1 since the trail is shown raised on Sheet 26 in the construction plans and forms a swale on the uphill side. **RESPONSE: The swale that is formed for the grading tie backs will disappear approximately 20' upstream of the inlet, so all flows within this swale will sheet flow across the trail and into the road where the runoff can be captured by the proposed Type R Inlet.**

Preliminary Construction Plans:

20. Provide stabilization improvements along No Name Drainageway. It is understood that the Drainageway is not located within the Filing 2 Planning Areas. However, it will be impacted by increased and more frequent runoff from Filing 2. **RESPONSE: Erosion control design will be provided in the Final CDs.**

21. On Sheets 21, 22, 24, 25, and 27, a 20' drainage easement for a swale is shown along No Name Drainageway. A 20' wide easement may not be sufficient to contain 100-year flows along this drainageway and provide stabilization improvements. Provide a conceptual design and analysis for the drainageway to show the intended concept. **RESPONSE: A 20' wide easement will be sufficient to contain 100-year flows within the future swale.**

22. All drainageway side slopes steeper than 4:1 (H:V) will require erosion protection, such as approved rolled erosion control product and/or slope protection. All other slopes steeper than 3:1 (H:V) will require erosion protection. **RESPONSE: Erosion control will be provided in the Final CDs.**

23. On Sheet 24, the slope on the south side of the Road A cul-de-sac of is shown as 39.05%. The maximum slope allowed is 3:1(H:V) or approximately 33.3%. Modify the design to meet allowable slopes. **RESPONSE: Grading has been modified to meet slope requirements.**

24. Provide storm line plans and profiles. **RESPONSE: Storm plan and profiles will be provided in the Final CDs.**

25. Provide erosion protection at all storm sewer and culvert outfalls. **RESPONSE: Erosion control will be provided in the Final CDs.**

26. On Sheet 23 at the low point in Terrain Way, extend the outfall pipe to daylight near the toe of slope. **RESPONSE: For the FES to discharge at the toe of the slope, we would need to increase the depth of the storm significantly. Erosion control measures will be provided during Final CDs to protect the slope.**

27. On Sheet 23, downstream of the Terrain Way outfall pipe a swale is proposed within a water/utility & drainage easement. Creating a swale above a water line or other utility is not recommended due to the potential for erosion. **RESPONSE: Swale is adjacent to the underground utilities with sufficient horizontal and vertical separation. Furthermore, rip rap will be provided at the discharge location to reduce velocities and erosion.**

28. On Sheet 24 on the north side of Road A east of Terrain Way, it appears there is a proposed sump. Regrade this area or provide a storm pipe to drain this sump. **RESPONSE: Proposed Type R Inlet has been provided to drain the sump at the end of Road A's cul-de-sac.**

29. We have the following comments related to detention ponds:
    a. Provide typical details for pond infrastructure, such as forebays, trickle channels, outlet structures, and emergency spillways. It is understood that this is not the final design of the pond or outlet. Typical details that show the concept are acceptable. **RESPONSE: Detailed design will be provided in the Final CDs.**

    b. A 12' wide maintenance access trail at a maximum 10% slope must be provided to the bottom/outlet structure of all detention ponds in the final design. For this submittal, show the approximate route for maintenance

vehicles to access the pond. **RESPONSE: Detailed design will be provided in the Final CDs.**

c. On Sheet 24, the maintenance access shown for Pond B must be modified to have a maximum 10% slope. **RESPONSE: Detailed design will be provided in the Final CDs.**

d. Provide trickle channel(s) with minimum 0.5% slope and slope the pond bottom at 2% minimum to the trickle channel(s). During preliminary design, the pond bottoms must be graded to meet this criteria to ensure the required volumes are available, per Section 14-2-20 (Preliminary construction plan submittal) of the Fraser Municipal Code. **RESPONSE: Detailed design will be provided in the Final CDs.**

e. On Sheet 21, the Pond A1 embankment appears to be more than 11 feet high, including the permanent pool. Note that coordination with the State Engineer's Office will be required if since the embankment height appears to exceeds 10 feet and could potentially be classified as a jurisdictional dam. **RESPONSE: The vertical dimension measured from the lowest point of the natural surface of the ground, where the low point occurs along the longitudinal centerline of the dam crest, to the emergency spillway crest does not exceed 10 feet.**

f. On Sheet 21, extend the outlet pipe for Pond A1 to daylight near the toe of slope and provide erosion protection at the outfall. **RESPONSE: For the FES to discharge at the toe of the slope, we would need to increase the depth of the storm significantly. Erosion control measures will be provided during Final CDs to protect the slope.**

g. On Sheet 28, extend the outlet pipe for Pond C to daylight near the toe of slope and provide erosion protection at the outfall. **RESPONSE: Outfall pipe has been redesigned to daylight near the toe of the slope.**

Wetland Exhibit:

30. The comment response letter for Filing 2 states that a jurisdictional determination for all wetlands and pond areas from the U.S. Army Corps of Engineers has been provided to the Town. Include a copy of this determination with this development referral for reference. **RESPONSE: To be provided**

31. A USACE 404 Permit(s) or CDPHE Dredge and Fill Temporary Authorization(s) will be required for disturbances to jurisdictional wetlands and waters of the U.S. The Filing 2 comment response letter states that "all impacts were previously made and mitigated by the developer." Wetland impacts appear to be planned along Overlook Drive, Grand Park Drive, Outpost Club Drive (adjacent to Leland Creek), Pond F1 (Pond C in drainage report), and potentially near Lot 60 for

installation of water and sanitary sewer improvements. Note that temporary impacts during construction also require permitting and/or authorization. Provide documentation that these impacts have been approved by the USACE. **RESPONSE: To be provided**

32. Show and label proposed Pond B. Revise the label for Pond F1 to match the drainage report and construction plans to be Pond C. **RESPONSE: Revised**

33. Include the wetland mapping source and date of survey on the Wetland Exhibit. **RESPONSE: To be provided**

SECTION 2 – GENERAL CIVIL AND UTILITY REVIEW

Previous Comments (Not addressed)

1. Previous analysis of sewer loading at ultimate build out including loading from this development area indicate that piping capacity in Old Victory Road will exceed criteria (over 50% full). Any applications for building approvals shall include or be preceded by utility reports with calculated sewer loading of Average Daily Wastewater Flows and Peak Design Flows based on annexation agreement flow rates of gpd per household/unit/SFE. **RESPONSE: Sewer report not required per criteria, sewer has been evaluated for capacity. Results were conveyed and discussed with staff in August to show surveyed as-builts and pipe sizes and capacity.**

2. Current water supply facilities are under capacity for existing Grand Park development demands. The Annexation Agreement requires the developer to design, construct, and convey to the Town all "Water Source Facilities" needed to serve the development. Provide a timeline or plan for infrastructure development in the wellfield capacity and augmentation storage. **RESPONSE: Water report and supply document are being prepared and have been discussed with staff during preparation of documents. Documents will be provided when completed.**

3. Any applications for building approvals shall include or be preceded by utility reports with calculated Average Day Demands, Maximum Day Demands, Peak Hour Demands, and Irrigation Demands based on the annexation agreement gpd per household/unit/SFE. **RESPONSE: Water report and supply document are being prepared and have been discussed with staff during preparation of documents. Documents will be provided when completed.**

    a. In addition, applicant shall provide water model data verifying the proposed water distribution system meets the Town of Fraser pressure requirements per Town Code 14-3-260(a.1(a&b)). **RESPONSE: Water report and supply document are being prepared and have been discussed with staff during preparation of documents. Documents will be provided when**

completed. The water report includes water model and scenarios with results showing model function.

4. Sheet 2, CDs, General Notes: Update sanitary sewer note 8 to current Town Code description. Smith-Blair 229 collar is no longer applicable. (14-3-340 (a)(4)). **RESPONSE: Note has been updated to align with Fraser Municipal Code.**

5. Sheet 2, CDs: Note 15.2, this part is no longer manufactured. See Town Code 14-4-320(c)(2). **RESPONSE: Note has been updated to align with Fraser Municipal Code.**

Final Plat:

6. Cover Sheet: a. Provide contact names and phone numbers for owner/developer, surveyor and planner listed. **RESPONSE: Provided**

7. Sheet 2:
    a. Will the 20' utility easement rec. number 2022000996 be vacated by separate document or by this final plat now that there is a proposed 40' water and sanitary easement overlapping this location? **RESPONSE: Vacated by this plat, added note so stating.**

    b. Please clarify why the proposed 40' water and sanitary easement not shown on this final plat. Will it be recorded by separate document? If not, include in the final plat. **RESPONSE: Added to final plat**

    c. The construction plans are showing the 20' utility easement to be a 30' sanitary easement. Please verify which is correct and revise to be consistent. **RESPONSE: Plat revised**

    d. Several water and drainage easements that are shown in the construction plans are not shown on the final plat. Please clarify if those will be by separate document. If not, include in this final plat. **RESPONSE: Added to final plat**

8. Sheet 3: Several water and drainage easements that are shown in the construction plans are not shown in the final plat. Please clarify if those will be by separate document. If not, include in this final plat. **RESPONSE: Added to final plat.**

9. Sheet 4: Correct road names where noted. **RESPONSE: Revised**

10. Sheet 5:

    a. Will the 20' utility easement rec. number 2022000996 be vacated by separate document or by this final plat, now that there is a proposed 40'

water and sanitary easement overlapping this location? **RESPONSE: Vacated with this plat and is so noted.**

b. Why is the proposed 40' water and sanitary easement not shown on this final plat? Will it be recorded by separate document? If not, include in this final plat. **RESPONSE: Added to plat.**

c. The construction plans are showing the 20' utility easement to be a 30' sanitary easement. Please verify which is correct and revise to be consistent. **RESPONSE: Revised**

11. Sheet 6: See Comment 10 above. **RESPONSE: Revised**

12. Sheet 7:
    a. Fix the street name that is cut off. **RESPONSE: Revised**

    b. Add missing street name where noted. **RESPONSE: Revised**

    c. Add missing water utility easement where noted. **RESPONSE: Added**

FPDP:

13. Sheet 2: The 30' sanitation easement is shown as a 20' utility easement rec. number 2022000996 on the final plat. Verify which is correct and update all plans to be consistent. **RESPONSE: Easement revised**

14. Sheet 4:
    a. Please correct the 36' Right-of-Way (ROW) Road Sections (With and Without Storm Sewer) to eliminate duplicate text and dimensions. **RESPONSE: Revised**

    b. Add a label showing the 10' minimum clearance dimension between outside edge of water to outside edge of sanitary sewer. **RESPONSE: Added**

Preliminary Construction Plans:

15. On Cover Sheet: Provide an equation for the conversion of NGVD 29 to NAVD 88 vertical datum for the Town's reference and future use as needed for vertical control comparisons. NAVD 88 is required per the Town standards, Section 14-2-110(c), however, due to the status of these construction plans, the conversion equation on the cover sheet is acceptable. **RESPONSE: Conversion from NGVD 29 to NAVD 88 is being developed and will be provided in a later submittal.**

16. Sheet 2: Add Collector and Arterial Road symbols along with their respective ROW and FL-FL data. **RESPONSE: Symbols have been added to typical sections where applicable.**

17. Sheet 3:
    - **a.** Change Grand Park Drive roadway section from 60' ROW to 80' ROW as it is classified as an Arterial Road. Fix dimensions per standard arterial road detail. **RESPONSE: Grand Park Drive ROW has been updated to an 80' ROW.**

    - **b.** Add a roadway section for the emergency access easement/roadway. **RESPONSE: No emergency access is present on the updated site.**

    - **c.** The 4" mountable curb detail is shown on sheet 44 rather than sheet 75. Please correct sheet number. **RESPONSE: Callout has been updated to show the correct sheet.**

    - **d.** Update the applicable street names listed under in the Local Street A detail. Also remove "A" since this detail applies to all local roads and all streets have updated names per the Final Plat. **RESPONSE: Applicable street names have been updated to match the final plat.**

    - **e.** Ensure consistency in all street names shown in the Final Plat, FPDP and CDs. **RESPONSE: Street names have been updated to match the final plat.**

18. Sheet 5: Label 10W.2 and correct label for 10W.3 as indicated. **RESPONSE: 10W.2 label has been added and 10W.3 label has been corrected.**

19. Sheet 6: Update street name where noted. **RESPONSE: Street names have been updated to match the final plat.**

20. Sheet 7: Label Lot 187 for its intended use. **RESPONSE: Lot label has been updated to include intended use.**

21. Sheet 8: Several water, sanitary and drainage easements are missing dimension labels. **RESPONSE: All easements have been labeled.**

22. Sheet 9:
    a. Update Steet names where applicable. **RESPONSE: Street names have been updated to match the final plat.**

    b. Label lot 187 for its intended use. **RESPONSE: Lot label has been updated to include intended use.**

    c. A floating slope label appears to be in the wrong location. Please correct. **RESPONSE: Floating slope label has been corrected.**

23. Sheet 11:
    Since the two 12-inch water lines along Grand Park Drive (to the yellow zone pump station site) will need to be constructed per these construction plans, please remove shading in the area of these pipelines. The piping as shown is incorrect. The north side 12" water main should extend to the storage tank site, which should also be shown on this sheet. The piping from the storage tank site to the pump station site needs be shown as these are necessary infrastructure to serve filings 1 and 2. Please correct the piping configuration. **RESPONSE: The 12" water lines within Grand Park Drive will be constructed with the Grand Park West Mountain Distribution Water System CDs.**

24. Sheet 29: The existing sanitary sewer under No Name Creek is shown as a 16" sanitary sewer. Please verify and correct to match installed size. **RESPONSE: Existing sewer connection sizing is in accordance with the Spring Meadow Railroad Utility Crossing Construction Documents.**

25. Sheet 31:
    a. a. Label future utility connection points in Terrain Way that will serve the commercial lots. A utility easement will be required for mains outside of the right-of-way. **RESPONSE: Utility stubs have been labeled, and utility easements have been added where necessary.**

    b. Show dimension between outside of water mains to sanitary sewers at least once per street on all utility plan sheets. **RESPONSE: Dimensions between proposed utilities have been added to all utility plan sheets.**

26. Sheet 34:
    a. Verify that a proposed 8" sanitary sewer will connect to an existing 12" sanitary sewer where shown. **RESPONSE: Yes, the proposed 8" Sanitary will connect to the existing 12" Sanitary.**

    b. Per previous comment, the existing 30' sanitary easement is shown as a 20' utility easement per recordation no. 202200996 on the Final Plat. Please correct inconsistency. **RESPONSE: Existing easement has been revised to match the Final Plat.**

    c. Label adjacent stormwater pond. **RESPONSE: Adjacent stormwater pond has been labeled accordingly.**

27. Sheet 35:
    a. Label plug and blowoff at terminal end of water main Crossing Grand Park Drive at Road A68. **RESPONSE: Plug and Blowoff will be constructed as part of the Master Water System CDs and not Filing 1 CDs.**

b. Per comment 11 above, since the two 12-inch water lines along Grand Park Drive (to the yellow zone pump station site) will need to be constructed per these construction plans, please remove shading in the area of these pipelines. The piping as shown is incorrect. The north side 12" water main should extend to the storage tank site, which should also be shown on this sheet. The piping from the storage tank site to the pump station site needs be shown as these are necessary infrastructure to serve filings 1 and 2. Please correct the piping configuration. **RESPONSE: The 12" water lines within Grand Park Drive will be constructed with the Grand Park West Mountain Distribution Water System CDs.**

28. Sheet 36: The water main at the end of Terrain Ct is shown as a 12" water line. Please verify size and correct if needed. This is likely an 8" water main. **RESPONSE: The proposed waterline has been redesigned as an 8" waterline.**

29. Sheet 44: Please add a detail for the 5' curb cut. **RESPONSE: Revised**

SECTION 3 – TRANSPORTATION AND ROADWAY REVIEW

Preliminary Plat:

1. General. Lot numbers different from the CDs. Please coordinate between the plat and the CDs. **RESPONSE: Revised**

2. General. Multiple road names different from the CDs. Please coordinate between the plat and the CDs. **RESPONSE: Revised**

3. Page 2. How do Lots 106 and 107 access the public ROW? Is an access easement needed across Tract C? **RESPONSE: Revised**

4. Page 3. Sight distance easement needed on Filing 1 Lot 21 per Preliminary CDs **RESPONSE: Sight distance easements are not required per Town Code**

5. Page 3. Sight distance easement needed on Filing 1 Lot 41 per Preliminary CDs **RESPONSE: Sight distance easements are not required per Town Code**

6. Page 10. Sight distance easement needed on Lots 1-4 per Preliminary CDs **RESPONSE: Sight distance easements are not required per Town Code**

7. Page 10. Sight distance easement needed on the Filing 1 Plat per Preliminary CDs **RESPONSE: Sight distance easements are not required per Town Code**

Roadway Exhibit:

8. General comment: Street names do not match the plat. Please coordinate and update accordingly. **RESPONSE: Street names have been updated to match the Plat.**

9. Should there be a "Shared Drive" to provide legal access for the Clubhouse and the Lodging Units to access the public ROW? **RESPONSE: A shared drive/access easement is not necessary at this time. Access to the public ROW from lots 185 and 186 will be included in the development of lots 185 and 186. The client owns and has access to all surrounding property, so an access easement/shared drive would just impede future development.**

Geotech Report

10. Page 16. Report states that recommendations should be reevaluated once traffic volume studies are available. The TIS traffic volumes are now available. Please update Geotech report and recommended pavement sections. **RESPONSE: Noted**

11. Missing pavement recommendation for collector roadway. **RESPONSE: Noted.**

Preliminary CDs

12. General Comment. Lot numbers and street names do not match the plat. Please coordinate and update accordingly. **RESPONSE: Lot numbers and street names have been updated.**

13. Page 1. Preliminary Plat checklist requires an Erosion and Sediment Control and Revegatation Plan. **RESPONSE: Erosion and Sediment Control and Revegetation Plan will be provided with Final CDs.**

14. Page 3 repeat comment. Label max and min catch slopes. **RESPONSE: Curb and gutter detail has been provided.**

15. Page 3 repeat comment. Label max on the sidewalk cross slope. **RESPONSE: Labels have been updated.**

16. Page 3 repeat comment. Fraser Design Standard Detail A-11 Mountable Curb Detail calls for 6" height (Typ all curbs). **RESPONSE: A 4" height was used to improve vehicle accessibility around the site. A 4" height was also used in all of the drainage analysis done for this site.**

17. Page 3 collector typical sections. Geotech report missing pavement recommendation for collectors. Work with geotech to include this analysis and update the typical section accordingly. **RESPONSE: Pavement specification will be provided when the updated Geotech report is available.**

18. Page 3 local typical section. Label the 5" asphalt paving and 5" base course per the Geotech report. Geotech report notes the pavement recommendations should be reevaluated after traffic volumes are available. Please confirm these

thicknesses with the geotech after the report is updated with the TIS traffic volumes. **RESPONSE: Pavement and subgrade specification will be provided when the updated Geotech report is available.**

19. General Comment. Lot numbers and street names do not match the plat. Please coordinate and update accordingly. **RESPONSE: Lot numbers and street names have been updated to match the plat.**

20. Page 7. How do Lots 185 & 186 access the public ROW? Is an access easement needed across Tact C? **RESPONSE: A shared drive/access easement is not necessary at this time. Access to the public ROW from lots 185 and 186 will be included in the development of lots 185 and 186. The client owns and has access to all surrounding property, so an access easement/shared drive would just impede future development.**

21. Page 15. Provide curb ramps to connect the pedestrian network to the club house and open space at the intersection of Outpost Club Dr and Terrain Way. **RESPONSE: Curb ramp has been provided.**

22. Page 15. Confirm anticipated road slope west of the Outpost Club Dr and Terrain Way intersection. If greater than 5%, this sight distance needs to increase to 258.5 (10% increase per table footnote in 14-3-70(5) and AASHTO Table 9-5). **RESPONSE: Sight triangle has been updated per table footnote in 14-3-70(5) and AASHTO Table 9-5 of Fraser Municipal Code.**

23. Page 16. Terrain Way road slope is 7%. Increase sight distance to 258.5' (10% increase per table footnote in Section 14-3-70(5) and AASHTO Table 9-5). Add sight easement on Lot 156 if needed after sight distance is updated. **RESPONSE: Sight triangle has been updated per table footnote in 14-3-70(5) and AASHTO Table 9-5 of Fraser Municipal Code.**

24. Page 17. Outpost Club Dr slope is 4.6%. Increase sight distance at Compass Dr to 368.5' (10% increase per table footnote in Section 14-3-70(5) and AASHTO Table 9-5). Update sight easement on Lot 21. **RESPONSE: Sight triangle has been updated per table footnote in 14-3-70(5) and AASHTO Table 9-5 of Fraser Municipal Code.**

25. Page 18. Might need a sight easement on the lot just north of Road A. **RESPONSE: Sight triangle does not intersect ROW, no easement is needed.**

26. Page 18. Grand Park Dr slope is 6.3%. Increase sight distance at Overlook Dr to 368.5'(10% increase per table footnote in Section 14-3-70(5) and AASHTO Table 9-5). **RESPONSE: Sight triangle has been updated per table footnote in 14-3-70(5) and AASHTO Table 9-5 of Fraser Municipal Code.**

27. See and address the additional redline comments within the submitted documents for further comments. **RESPONSE: Noted**

Cooper Gehle JVAM

1. Final indications of the detached or attached nature in this application are unclear. Site Plan (sheet 5 of the FPDP) notes there are 38 single family detached units in 10W.1 and 41 single family detached units in 11W. However, General Note 2 indicates that Lots 1-52 are single family detached in 11W and Lots 53-79 are single family attached eligible in 10W. 11W only encompasses Lots 1-41, so the application of Note 2.2 to Lots 42-52 is unclear. Further, the "single family attached eligible" language for 10W is unclear as well. It is recommended that Developer clarify the planned units in these planning areas so that accurate counts can be made for the total detached and attached units proposed through West Mountain in accordance to the terms of the PDD. **RESPONSE: Notes revised**

2. The orientation and cardinal direction present in the FPDP Sheet 3 – Land Use Plan appears incorrect. The North indicator depicts the direction for West. **RESPONSE: Revised**

3. Developer has removed General Notes 12 and 13 from the FPDP. Despite this removal, all light fixtures shall still be in compliance with the Town of Fraser Municipal Code Sections 14-5-30 and 19-4-195. Further, final engineering documents, construction drawings, and site specific geotechnical reports shall be submitted and approved prior to issuance of any building permit unless otherwise determined by Town Staff. **RESPONSE: Notes added back in**

4. Modifications to the acreage of the planning areas are present from the levels approved in the PDD and the previous submission.

    a. 1W previously encompassed 16.1 acres and now covers 19.3 acres. This is an acreage increase of 3.2. **RESPONSE: See response below**

    b. 10W has a total of 40.8 acres on the PDD and is proposed in the FPDP to total 42.7. The previous application for this area had 10W.1 and 10W.2, but the current iteration of 10W.1 encompasses the area that was split between 10W.1 and 10W.2. The area of the current 10W.1 is 17.5 acres, whereas the previous consisted of 19.2 acres between 10W.1 and 10W.2. The application appears to indicate that some of 11W's growth accounts for the loss in acreage to 10W.1, but there is still an unexplained 1.5 acres added to 11W. **RESPONSE: See section 4.3 of the Annexation Agreement. Moreover, Kent Whitmer has acknowledged this in prior public hearings as our right to adjust planning area acreages. In comments on the Village he said we can't do it when we transfer density in. That is incorrect as well,**

but in this case we are not transferring any density in. See section 4.2 of the Annexation Agreement regarding density transfers.

c. Furthermore, this application increases the overall acreage for 11W and 10W by 5.1 acres greater than approved by the PDD. **RESPONSE: Noted**

5. These notes are highlighted to address the question from where the excess acreage is transferred. The acreage for 23W in this area was not included in the previous application, so it is unclear if that area has been used to supply the increased acreage. Thus, it is recommended that for future applications which include portions of 23W, that the 23W acreage is included, as it has been here. **RESPONSE: Noted**

Ryan A Mowrey Fire Marshal East Grand Fire Protection District

1. Access into Grand Park West Mountain Filing 1 (10W.1,11W & A Portion of 23W) via Grand Park Dr to have access points open, maintained, and unobstructed during all phases of construction. Emergency access roads will be required to be maintained and accessible year-round and be capable of supporting 84,000lbs. **RESPONSE: Noted**

2. Item of note if Grand Park West Mountain Filing 2 (Overlook at Grand Park) is not constructed during the same time period the only access to 10W.1 including Terrain Court and Bulge Cout will be from Overlook Dr. This will need to be evaluated to ensure access in accordance with 2021 IFC D107.1 One- or Two-Family Residential Developments. If Filing 2 is not to be constructed with secondary access, residential homes will be required to install fire sprinkler systems. **RESPONSE: Noted**

3. Currently Grand Park Drive is the only access in/out of the area where the local roads and collector roads provide multiple paths of travel, as such Grand Park Drive will be required to be completed, maintained, and accessible to County Rd 72 to provide additional access/egress points prior to the delivery of any combustible material. **RESPONSE: Noted**

4. The width of the roads in Grand Park West Mountain Filing 2 appear to not be less than 26ft wide (excluding emergency access roads) and are acceptable as drawn. Road slopes do not exceed 7% in Filing 2 and are acceptable as drawn. **RESPONSE: Noted**

5. Parking lot drive isles were not depicted in this submittal but in earlier submittals they were shown at 26ft wide which is acceptable for Aerial Apparatus Access Roads. **RESPONSE: To be 26ft wide**

6. "**No Street Parking**" signage will be required throughout, placed, and maintained on both sides of all roads. As well in all Cul-de-sacs. Cul-de-sac design appear on plans in one design and differently on the Town of Fraser Design in Attachment A-12. Both designs differ from the 2021 IFC Appendix D figure D103.1 for Dead-End Fire Apparatus Access Road Turnaround. For consistency, please make all cul-de-sacs to the largest design which is described in the 2021 IFC Appendix D. **RESPONSE: Noted**

7. Fire hydrant spacing along all roads appears adequate and meet requirements in IFC Appendix C. Additionally, we would request a hydrant be added to Overlook Dr between Bulge Ct and Terrain Ct as there is a long distance between hydrants in this area. All temporary roadways will be required to be completed at finish grade and accessible by East Grand Fire apparatus as well as fire suppression water supply for Filing 1will be required to be in place prior to the delivery of combustible building materials. Flows and pressures will need to be verified once that zone is installed to confirm it is functioning as designed. **RESPONSE: Added**

8. Consideration for Grand Park West Mountain Filing 1 be given to exterior building materials, landscaping, and defensible space to provide for a more wildfire adapted community and the required adoption of the Colorado Wildfire Resiliency Code in 2026. **RESPONSE: Noted**

Jessica Tain **Mountain Parks Electric**

MPEI has a remaining issue that must be addressed on the plat.

1. MPE requires the language "Snow storage is not permitted within 5 feet of above ground electrical equipment" added to plat note 9 since the U.E. is dedicated as utility easement and snow storage in the plat legend. **RESPONSE: Added**

The item below would not prevent MPEI from approving the filing 1 plat, but is important to document at this time:

2. MPEI must loop primary from Bugle Court to filing 2's Road C as the number of lots on Bugle Court, and Road C, exceeds MPEI's limit for radial (non-looped) primary lines. MPEI would prefer for the primary route and easement to be documented on the Overlook at Grand Park (Grand Park West Mountain Filing 2) plat. MPEI will not install facilities along Bugle Court (filing 1) or Road C (filing 2) until a loop route is provided and easement is secured. **RESPONSE: Noted**

Julie Gittins **Xcel Energy**

1. Xcel stands by their comments provided 4/29/25. We request that the dedicated utility easement language that has been provided in past reviews be added to

the notes on the final plat along with the non-exclusive utility easement language for meter banks (see below for your convenience).

2. Ten-foot (10') wide dry utility easements are hereby dedicated on private property adjacent to the front and side lot lines of each lot in the subdivision or platted area identified as single-family lots, and around the perimeter of each commercial/industrial and multi-family lot in the subdivision or platted area including tracts, parcels and/or open space areas. Fifteen-foot (15') wide dry utility easements are hereby dedicated on private property adjacent to all public streets and side lot lines abutting exterior plat boundary lines. These easements are dedicated to the City/County for the benefit of the applicable utility providers for the installation, maintenance, and replacement of electric, gas, television, cable, and telecommunications facilities (Dry Utilities). Utility easements shall also be granted within any access easements and private streets in the subdivision. Permanent structures, improvements, objects, buildings, wells, water meters and other objects that may interfere with the utility facilities or use thereof (Interfering Objects) shall not be permitted within said utility easements and the utility providers, as grantees, may remove any Interfering Objects at no cost to such grantees, including, without limitation, vegetation. Public Service Company of Colorado (PSCo) and its successors reserve the right to require additional easements and to require the property owner to grant PSCo an easement on its standard form. WITH RESPECT TO THE UTILITY EASEMENT GRANTED HEREBY, NO STRUCTURE OR FOUNDATION SHALL BE ALLOWED CLOSER THAN FIVE FEET (5') AROUND ANY UNDERGROUND LINES. NO OTHER UTILITY LINE (WHETHER WATER, SEWER) SHALL BE ALLOWED CLOSER THAN TEN FEET (10') FROM ANY UNDERGROUND LINE. NOT WITHSTANDING THE FOREGOING, UNDERGROUND COMMUNICATION FACILITIES AND ELECTRIC SHALL NOT BE ALLOWED CLOSER THAN FIVE FEET (5') TO ANY GAS LINES AND ABOVE GROUND COMMUNICATION FACILITIES SHALL NOT BE CLOSER THAN FIVE FEET (5') TO ANY UNDERGROUND FACILITIES. NO GRADE CHANGES (FILL OR CUT) IN-EXCESS OF SIX INCHES (6") ARE PERMITTED WITHIN TEN FEET (10') OF ANY UNDERGROUND LINE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM PSCO. NO TREES OR BOULDERS MAY BE PLANTED OVER DISTRIBUTION OR SERVICE LINES AND MUST BE A MINIMUM OF 5' AWAY. SNOW STORAGE AND DRAINAGE CANNOT BE COMBINED WITH THE UTILITY EASEMENT.

   EACH TOWNHOME, DUPLEX, MULTI-FAMILY OR MULTI-USE BUILDING ON THE PROPERTY SHALL HAVE GAS METERS ON THE GABLE END OF ONE (1) END UNIT ("GAS METER BANK"). DEVELOPER, FUTURE HOMEOWNER, OR METRO DISTRICT HEREBY GRANTS TO XCEL (PSCO) A NON-EXCLUSIVE UTILITY EASEMENT FOR (I) ONE GAS METER BANK ON THE END OF ONE (1) END UNIT PER BUILDING AND (II) ALL OTHER THINGS REASONABLY NECESSARY TO CONSTRUCT, INSTALL, MAINTAIN AND OPERATE SUCH GAS METER BANK ON EACH OF THE BUILDINGS (THE "GAS METERING EASEMENT"). ALL LINES AND OTHER FACILITIES RELATED TO SUCH GAS METER BANK, SUCH AS METER RISERS (BUT NOT INDIVIDUAL GAS METERS), SHALL BE

THE PROPERTY OF THE DEVELOPER. ALL GAS METERS USED FOR SUCH GAS METER BANKS SHALL BE THE PROPERTY OF XCEL (PSCO). ALL OF THE FOREGOING RIGHTS AND BENEFITS OF XCEL (PSCO) WITH RESPECT TO THE GAS METERING EASEMENT SHALL BE BINDING UPON AND SHALL INURE TO THE BENEFIT OF SUCCESSORS AND ASSIGNS. **RESPONSE: WE ARE WORKING WITH XCEL TO COME UP WITH MUTUALLY AGREEABLE NOTES. ONCE DETERMINED., IT WILL BE ADDED TO THE FINAL PLAT.**

3. It is Xcel's desire to provide the developer as much information and help ahead of time to address any issues that may arise, but ultimately the proof of burden is on the developer to show that all current required clearances can be met and that there is room to install our distribution in a utility easement outside of ROW. If that can't be done, we may not be able to provide service. Our standards and requirements are based on "Safety First". Please note – this is not a final assessment of what the new service request will entail. There may be additional things in the field I cannot see. Once an application has been submitted to XCEL, upon final recording of the plat, we can start the full design process and identify the scope of work that will need to be done for this request. **RESPONSE: NOTED**

SECTION LINES REMOVED BECAUSE NOT REQUIRED

This doesn't appear to match this, please verify

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO

LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 29 AND THE NORTH HALF OF SECTION 32, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS

BASIS OF BEARINGS: THE NORTH LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 29, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, WAS ASSUMED TO BEAR SOUTH 89°49'44" WEST, A DISTANCE OF 1,321.23 FEET, BEING MONUMENTED AT THE EAST QUARTER CORNER OF SAID SECTION 29 BY A 1-1/2" STEEL POST WITH 2-1/2" GLO BRASS CAP STAMPED "US GENERAL LAND OFFICE SURVEY 1/4 S29 S28 1933" AND AT THE CENTER-EAST SIXTEENTH CORNER OF SAID SECTION 29 BY A NO. 6 REBAR WITH 3-1/4" ALUMINUM CAP STAMPED "DEA INC. T1S R75W E 1/16 C-C S29 2014 PLS 34592".

COMMENCING AT SAID EAST QUARTER CORNER;

THENCE SOUTH 41°09'00" WEST, A DISTANCE OF 910.38 FEET TO THE SOUTHERLY BOUNDARY OF THE 200-FOOT-WIDE UNION PACIFIC RAILROAD RIGHT-OF-WAY AND THE **POINT OF BEGINNING**;

THENCE ALONG SAID SOUTHERLY BOUNDARY THE FOLLOWING TWO (2) COURSES:

1. SOUTH 07°48'24" EAST, A DISTANCE OF 294.34 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE EASTERLY HAVING A RADIUS OF 816.78 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 82°07'05" EAST;
2. SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 12°55'27", AN ARC LENGTH OF 184.24 FEET TO THE MOST NORTHERLY CORNER OF PARCEL 2, GRAND PARK DRIVE EXEMPTION PLAT RECORDED AT RECEPTION NO. 2016002214 IN THE OFFICIAL RECORDS OF THE GRAND COUNTY, COLORADO CLERK AND RECORDER'S OFFICE AND THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 250.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 34°09'07" EAST;

THENCE ALONG THE NORTHWESTERLY AND SOUTHWESTERLY BOUNDARY OF SAID PARCEL 2 THE FOLLOWING FOUR (4) COURSES:

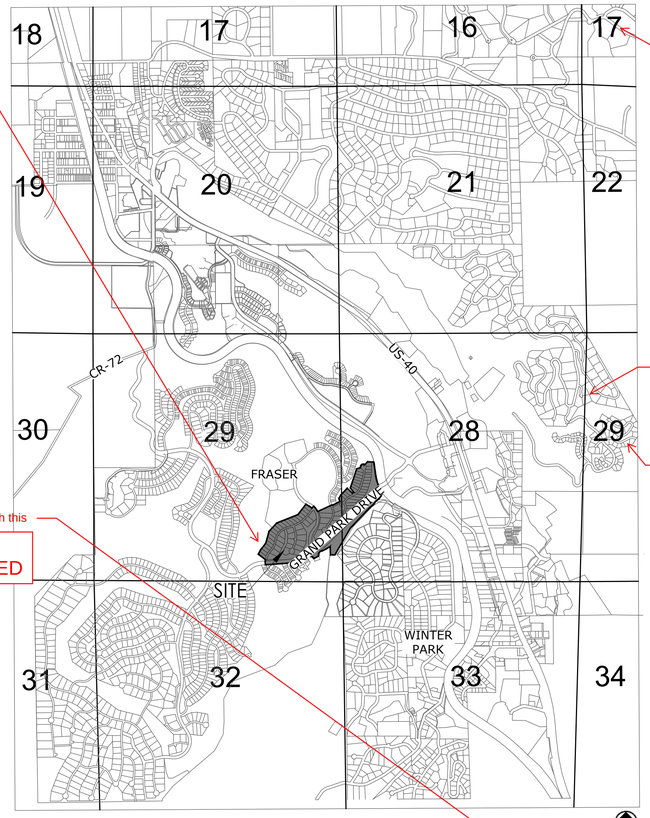
1. SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 44°11'42", AN ARC LENGTH OF 192.84 FEET TO THE BEGINNING OF A REVERSE CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 150.00 FEET;
2. SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 33°48'01", AN ARC LENGTH OF 88.49 FEET;
3. SOUTH 45°27'20" WEST, A DISTANCE OF 135.92 FEET;
4. SOUTH 44°31'03" EAST, A DISTANCE OF 84.39 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 1,040.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 49°03'10" WEST;

THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 04°24'52", AN ARC LENGTH OF 80.13 FEET;
THENCE SOUTH 45°21'41" WEST, A DISTANCE OF 204.83 FEET;
THENCE SOUTH 44°52'10" WEST, A DISTANCE OF 200.03 FEET;
THENCE SOUTH 45°27'20" WEST, A DISTANCE OF 843.10 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHWESTERLY HAVIN
OF 840.00 FEET;
THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 05°56'24", AN ARC LENGTH OF 87.09 FEET TO THE BEGINNING OF A REVERSE CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 50.00 FEET;
THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 09°39'58", AN ARC LENGTH OF 8.44 FEET;
THENCE SOUTH 41°43'46" WEST, A DISTANCE OF 83.60 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE EASTERLY HAVING A RADIUS OF 73.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 51°02'34" EAST;
THENCE SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 60°47'55", AN ARC LENGTH OF 77.46 FEET;
THENCE SOUTH 62°31'49" WEST, A DISTANCE OF 120.63 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHERLY HAVING A RADIUS OF 73.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 68°37'00" WEST;
THENCE WESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 92°24'02", AN ARC LENGTH OF 117.73 FEET;
THENCE SOUTH 68°38'59" WEST, A DISTANCE OF 170.87 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 1,040.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 23°00'41" WEST;
THENCE WESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 19°05'05", AN ARC LENGTH OF 346.41 FEET;
THENCE SOUTH 86°04'23" WEST, A DISTANCE OF 445.44 FEET;
THENCE NORTH 03°55'37" WEST, A DISTANCE OF 80.00 FEET;
THENCE NORTH 86°04'23" EAST, A DISTANCE OF 2.00 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 15.00 FEET;
THENCE NORTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 90°00'00", AN ARC LENGTH OF 23.56 FEET;
THENCE NORTH 03°55'37" WEST, A DISTANCE OF 8.26 FEET;
THENCE NORTH 52°12'55" WEST, A DISTANCE OF 200.13 FEET;
THENCE NORTH 27°58'25" EAST, A DISTANCE OF 102.73 FEET;
THENCE NORTH 37°47'05" EAST, A DISTANCE OF 178.77 FEET;
THENCE NORTH 15°51'37" EAST, A DISTANCE OF 268.33 FEET;
THENCE NORTH 43°06'31" EAST, A DISTANCE OF 242.12 FEET;
THENCE NORTH 68°25'25" EAST, A DISTANCE OF 480.75 FEET;
THENCE NORTH 37°55'55" EAST, A DISTANCE OF 282.21 FEET;
THENCE SOUTH 58°58'37" EAST, A DISTANCE OF 80.26 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 320.00 FEET;
THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 12°31'12", AN ARC LENGTH OF 69.92 FEET;
THENCE NORTH 43°32'35" EAST, A DISTANCE OF 60.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 380.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 43°32'35" WEST;
THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 21°35'44", AN ARC LENGTH OF 143.23 FEET;
THENCE NORTH 65°25'10" EAST, A DISTANCE OF 299.51 FEET;
THENCE NORTH 23°18'18" WEST, A DISTANCE OF 4.49 FEET;
THENCE NORTH 66°41'42" EAST, A DISTANCE OF 36.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 15.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 66°41'42" EAST;
THENCE EASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 94°34'40", AN ARC LENGTH OF 24.76 FEET;
THENCE NORTH 62°07'01" EAST, A DISTANCE OF 137.41 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHERLY HAVING A RADIUS OF 120.00 FEET;
THENCE EASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 15°51'46", AN ARC LENGTH OF 33
THENCE NORTH 17°29'08" WEST, A DISTANCE OF 70.91 FEET;
THENCE NORTH 28°01'24" EAST, A DISTANCE OF 79.96 FEET;
THENCE NORTH 43°23'08" EAST, A DISTANCE OF 204.05 FEET;
THENCE NORTH 84°30'09" EAST, A DISTANCE OF 66.55 FEET;
THENCE NORTH 18°22'32" EAST, A DISTANCE OF 431.96 FEET;
THENCE NORTH 74°33'59" EAST, A DISTANCE OF 87.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE ASTERLY HAVING A RADIUS OF 60.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 75°54'23" EAST;
THENCE NORTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 133°54'35", AN ARC LENGTH OF 140.23 FEET;
THENCE NORTH 46°00'10" EAST, A DISTANCE OF 83.14 FEET;
THENCE SOUTH 89°02'49" EAST, A DISTANCE OF 86.97 FEET;
THENCE SOUTH 72°11'31" EAST, A DISTANCE OF 52.67 FEET TO THE **POINT OF BEGINNING**.

CONTAINING AN AREA OF 47.838 ACRES, (2,083,844 SQUARE FEET), MORE OR LESS.

this conflicts with this

LOWER RIGHT LEGAL REMOVED



VICINITY MAP

SECTION LINES REMOVED BECAUSE NOT REQUIRED

section lines don't match the previous vicinity map and don't match Grand County parcel viewer webmap

GENERAL NOTES

1. LOCATIONS DEPICTED ON THIS PLAN ARE APPROXIMATE ONLY.
2. SETBACKS:
   - 2.2. LOTS 1-52 (SINGLE-FAMILY DETACHED IN 11W): 10' FRONT, 6' SIDE, 10' REAR.
   - 2.3. LOTS 53-79 (SINGLE-FAMILY ATTACHED ELIGIBLE IN 10W): 10' FRONT, 20' FRONT TO GARAGE, 0' ATTACHED SIDE, DETACHED SIDE MUST MEET BUILDING AND FIRE CODES, 10' REAR.

Lots 1-41 are 11W
Lots 42-52 are 10W
Lots 53-79 are 10W

3. LOTS 53-79 MAY BE DETACHED OR
4. BUILDING HEIGHT SHALL NOT EXCEED 35'-0" IN 11W AND 50'-0" IN 10W, EXCLUDING CHIMNEYS, VENTILATORS, AND PIPES. BUILDING HEIGHTS SHALL BE MEASURED FROM THE AVERAGE FINISHED GRADE OF THE PRIMARY FOUR CORNERS OF THE STRUCTURE.
5. LANDSCAPING SHALL BE REQUIRED AND INSTALLED PER THE TOWN OF FRASER MUNICIPAL CODE AND THE GRAND PARK CC&R'S.
6. TO PROTECT AGAINST WILDFIRES AND ENHANCE FOREST HEALTH THE FOLLOWING WILDFIRE MITIGATION MEASURES ARE REQUIRED:
   A.) WATER HYDRANTS WILL BE SITED AT APPROPRIATE DISTANCES; AND
   B.) UTILITIES WILL BE CONSTRUCTED UNDERGROUND.
7. NO ROADS SHALL BE GATED.
8. ALL ROADS SHALL BE PUBLIC.
9. SIGNAGE DETAILS, INCLUDING MATERIALS, DIMENSIONS AND SIGN AREA WILL BE PROVIDED WITH BUILDING PERMIT. SIGNAGE SHALL COMPLY WITH GRAND PARK SIGNAGE PLAN.
10. IF THERE IS ANY CONFLICTING INFORMATION BETWEEN THIS FINAL PLAN AND THE FINAL PLAT, THE FINAL PLAT

REVISED

perhaps slightly reorg to:
2.1. Lots 1-41 (Single Family Detached in 11W)...
2.2. Lots 42-52 (Single Family Detached in 10W)...
2.3. Lots 53-79 (Single Family Detached and Attached Eligible in 10W)...

REVISED

NOTES ADDED BACK IN

Notes 12 and 13 from previous submittal have been removed:
12. Final engineering documents, construction drawings and site specific geotechnical report shall be submitted and approved prior to building permit issuance
13. All light fixtures shall be in compliance with the Town of Fraser Municipal Code Section 14-5-30 and 19-4-195 which regulate exterior lighting and require dark sky compliance

CERTIFICATE FOR APPROVAL BY THE TOWN BOARD:

APPROVED AND ALL PUBLIC DEDICATIONS ACCEPTED THIS ____ DAY OF ____, BY THE FRASER TOWN BOARD. THE TOWN OF FRASER DOES NOT ASSUME ANY RESPONSIBILITY FOR THE CORRECTNESS OR ACCURACY OF ANY INFORMATION DISCLOSED ON THIS PLAN NOR ANY REPRESENTATIONS OR INFORMATION PRESENTED TO THE TOWN OF FRASER WHICH INDUCED THE TOWN TO GIVE THIS CERTIFICATE.

_____
YOR

MORTGAGEE'S CONSENT

THE UNDERSIGNED, BEING AN AUTHORIZED REPRESENTATIVE OF THE U.S. BANK, N.A., THE HOLDER OF A BENEFICIAL INTEREST AND TO THE PROPERTY DESCRIBED ON THIS PLAN, UNDER DEED OF TRUST RECORDED AT RECEPTION NO._____ OF THE GRAND COUNTY, COLORADO REAL PROPERTY RECORDS, HEREBY CONSENTS TO THIS PLAN AND AGREES THAT THE LIEN OF THE DEED OF TRUST IS HEREBY SUBORDINATED TO THIS PLAN.

U.S. BANK, N.A.

BY:_____
NAME:_____
TITLE:_____
NOTARY:
ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____. 20___, BY _____AS _____ OF U.S. BANK, N.A.
WITNESS MY HAND AND OFFICIAL SEAL.
MY COMMISSION EXPIRES:_____

NOTARY PUBLIC
MY COMMISSION EXPIRES:_____

OWNER CERTIFICATE

IN WITNESS WHEREOF, WEST MOUNTAIN DEVELOPMENT, LLC HAS CAUSED HIS/HER NAME TO BE HERE UNDER SUBSCRIBED THIS _____ DAY OF _____, 20__.

WEST MOUNTAIN DEVELOPMENT, LLC.
A COLORADO LIMITED LIABILITY COMPANY,

_____

PRESIDENT, CLARK LIPSCOMB

REVISED

OF COLORADO))
)SS.
COUNTY OF _____)

2026

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____DAY OF ____, 2025, BY _____ AS PRESIDENT ON BEHALF OF WEST MOUNTAIN DEVELOPMENT, LLC. A COLORADO LIMITED LIABILITY COMPANY.
WITNESS MY HAND AND OFFICIAL SEAL

_____
NOTARY PUBLIC
MY COMMISSION EXPIRES:_____

LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN SECTION 28 & 29, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.

SHEET INDEX

COVER SHEET	1
SITE ANALYSIS	2
LAND USE PLAN	3
OVERALL SITE PLAN	4
SITE PLANS	5
OPEN SPACE PLAN	6
LANDSCAPE/REVEGETATION PLANS	7
PHASING PLAN	8
PRELIMINARY GRADING PLAN	9
PRELIMINARY UTILITY PLAN	10

lighting plan removed, required per checklist

PRELIMINARY REMOVED. LIGHTING NOTE ADDED

Previous submittal didn't label as preliminary. Should be Final as a Final Planned Development Plan

OWNER
CLARK LIPSCOMB
WEST MOUNTAIN DEVELOPMENT, LLC.
PO BOX 30
WINTER PARK, CO 80482
(970) 726-8600

ENGINEER
MARTIN METSKER
TERRACINA DESIGN
10200 EAST GIRARD AVENUE
SUITE A-314
DENVER, CO 80231
(303) 632-8867

PLANNER
LAYLA ROSALES
TERRACINA DESIGN
10200 EAST GIRARD AVENUE
SUITE A-314
DENVER, CO 80231
(303) 632-8867

COVER SHEET
DECEMBER 18, 2025
SHEET 1

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W
LOCATED IN SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO

GRAND PARK 9W.2 ZONED: PDDP NOT A PART

GRAND PARK 23W ZONED: PDDP NOT A PART

GRAND PARK 9W.1 ZONED: PDDP NOT A PART

GRAND PARK 10W.2 ZONED: PDDP NOT A PART

GRAND PARK 10W.3 ZONED: PDDP NOT A PART

GRAND PARK 10W.1 ZONED: PDDP

GRAND PARK 11W ZONED: PDDP

GRAND PARK 23W ZONED: PDDP

TOWN OF WINTER PARK LELAND CREEK SUBDIVISION ZONED R-1

8870 8880 8890 8900 8910 8920 8930 8840 8850 8860 8870 8880 8890 8900 8910 8820 8830 8800 8810

30' SANITATION EASEMENT

EXISTING RANCH ROAD, TYP.

EXISTING RANCH ROAD, TYP.

EXISTING FLOODPLAIN

GRAND PARK DRIVE

This shown as a 20' utility easement rec. number 2022000996 on the final plat. Verify and correct as needed for consistency.

REVISED

REVISED

Confirm Filing 1 and 2 FPDP boundaries match

REVISED

Update FPDP boundary to match on Sheets 2, 3, 4, 9, and 10

LEGEND

- FPDP BOUNDARY
- PLANNING AREA BOUNDARY
- 10' CONTOURS
- 30% OR GREATER SLOPES

Scale: 1"= 100'-0"

0 50 100 200

N

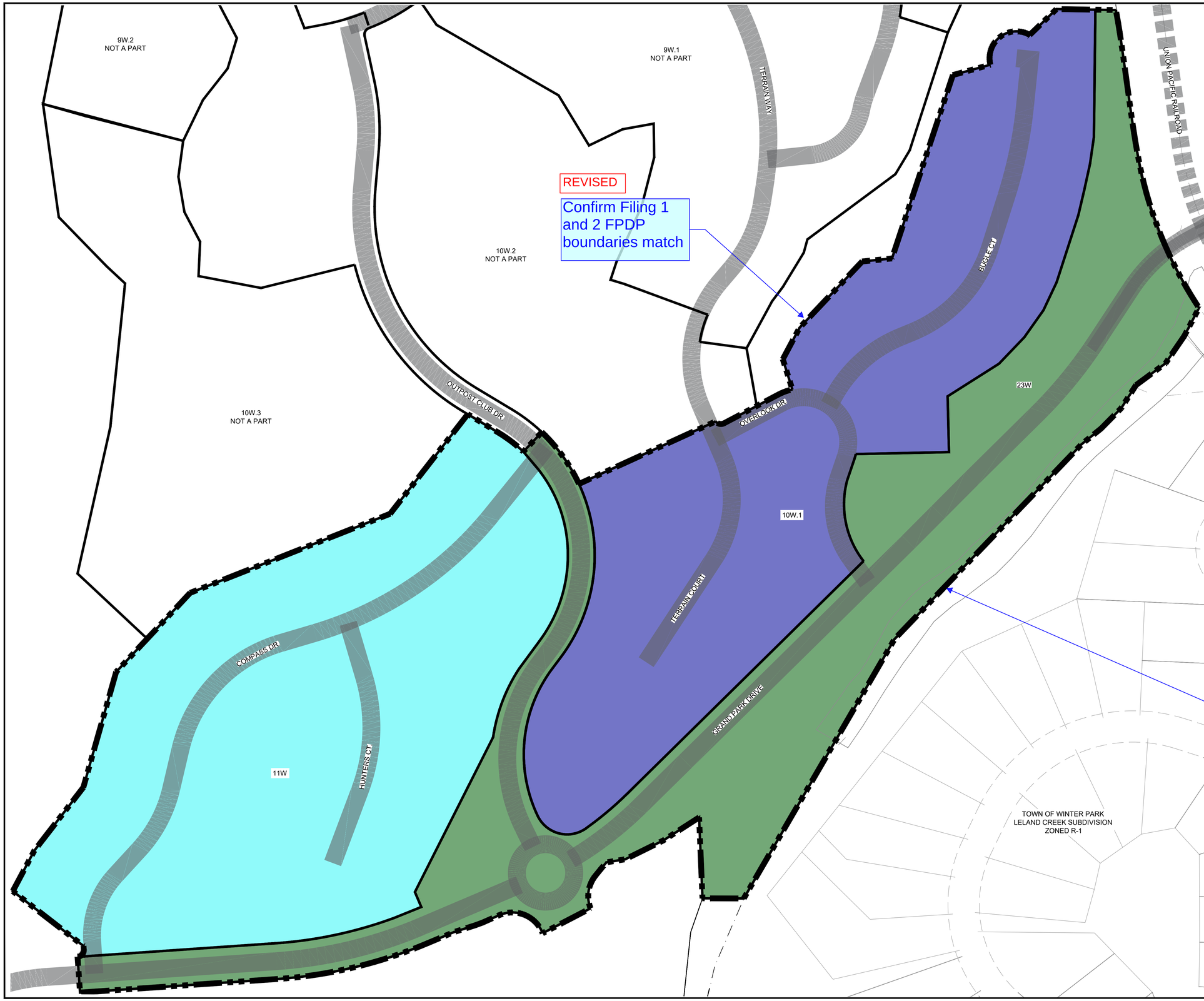
SITE ANALYSIS

DECEMBER 18, 2025

SHEET 2

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



REVISED

Confirm Filing 1 and 2 FPDP boundaries match

REVISED

Update FPDP boundary to match on Sheets 2, 3, 4, 9, and 10

LEGEND

- FPDP BOUNDARY
- PLANNING AREA BOUNDARY
- ROADWAY
- 10W.1
- 11W
- 23W

Land Use		PDDP Units	FPDP Units
Residential			
10W	10W.1	174	38
	10W.2 NOT A PART		(4)
	10W.3 NOT A PART		(70)
Subtotal		174	112
11W	11W	41	41
	*Total	389	265

Planning Area		PDDP Acres	FPDP Acres
10W	10W.1	40.8	17.5
	10W.2 NOT A PART		(11.5)
	10W.3 NOT A PART		(13.7)
Subtotal		40.8	42.7
11W		16.1	19.3
Subtotal		56.9	62.0
23W			16.7
	*Total		53.5

* EXCLUDES 10W.2 & 10W.3

Scale: 1"= 200'-0"

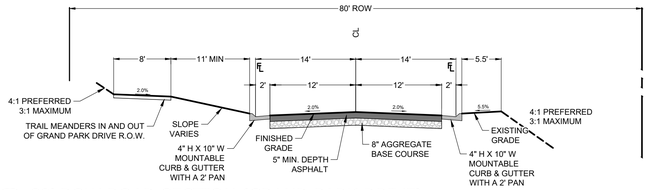
0 100 200 400

LAND USE PLAN

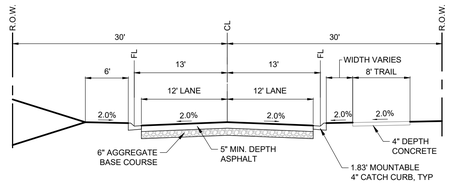
DECEMBER 18, 2025
SHEET 3

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

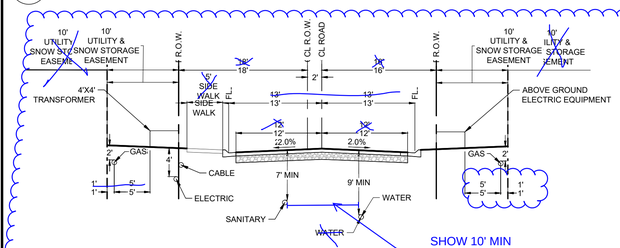
LOCATED IN SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



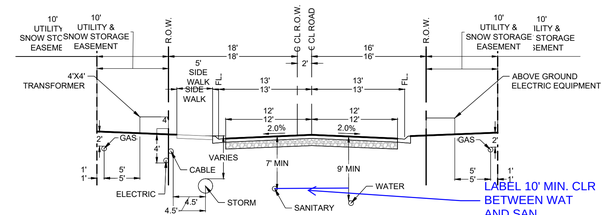
1 80' ROW ROAD SECTION (GRAND PARK DRIVE)
SCALE: 1"=10'



2 60' ROW ROAD SECTION (OUTPOST CLUB DRIVE)
SCALE: 1"=10'



3 36' ROW ROAD SECTION
SCALE: 1"=10'



4 36' ROW ROAD SECTION (WHEN STORM IS PRESENT)
SCALE: 1"=10'

LABEL 10' MIN. CLR BETWEEN WAT AND SAN

SHOW 10' MIN CFLR. BETWEEN WAT AND SAN

FIX OVERSTRIKES AND DUPLICATE TEXT

REVISED

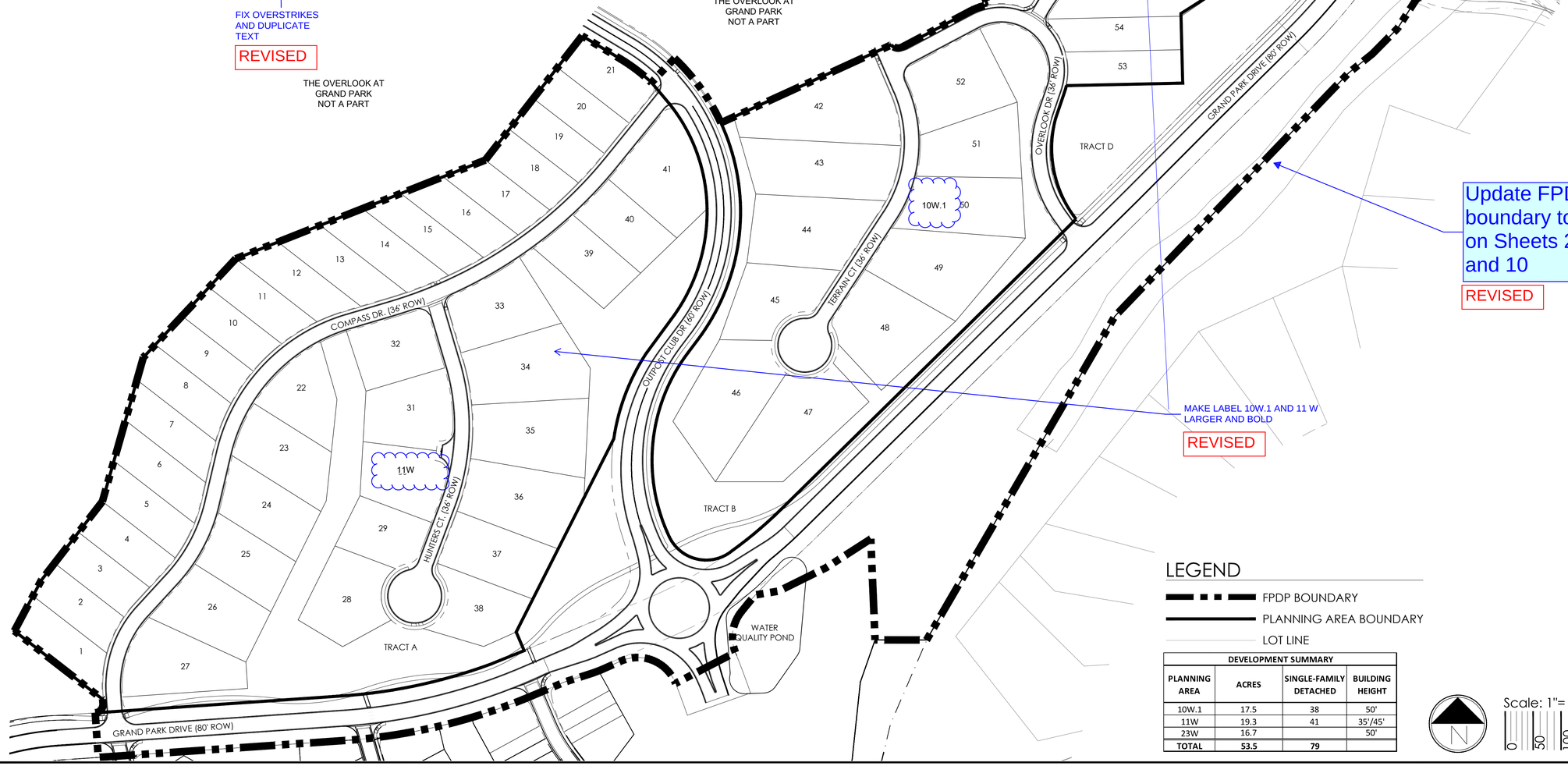
REVISED

Confirm Filing 1 and 2 FPDP boundaries match

THE OVERLOOK AT GRAND PARK NOT A PART

THE OVERLOOK AT GRAND PARK NOT A PART

THE OVERLOOK AT GRAND PARK NOT A PART



Appears a trail is depicted here on page 6 of the PDD and previous comment on Filing 2.

THERE IS NO DEPICTION OF A TRAIL IN THIS LOCATION. THIS LOCATION IS NOT SUITABLE FOR A TRAIL AS IT IS ADJACENT TO THE RAILROAD WITH VERY STEEP TERRAIN. ADDITIONALLY, REQUIRED TRAILS ARE IDENTIFIED IN SECTION 10.5 OF THE ANNEXATION AGREEMENT. THE ONLY PUBLIC REGIONAL OR COMMUNITY TRAILS INCLUDED ARE LELAND CREEK TRAIL (COMPLETED), US40 TRAIL (COMPLETED), GRAND PARK DRIVE TRAIL (PARTIALLY COMPLETED), AND OLD VICTORY ROAD TRAIL (PARTIALLY COMPLETED) MOREOVER, PARTS OF THIS AREA HAVE A GOLF DRIVING RANGE PLAYING TO IT AS WELL AS GOLF HOLES ADJACENT TO THE RAILROAD IN SPOTS. GOLF AND TRAILS ARE NOT A GOOD MIX

Update FPDP boundary to match on Sheets 2, 3, 4, 9, and 10

REVISED

MAKE LABEL 10W.1 AND 11 W LARGER AND BOLD

REVISED

LEGEND

- FPDP BOUNDARY
- PLANNING AREA BOUNDARY
- LOT LINE

DEVELOPMENT SUMMARY			
PLANNING AREA	ACRES	SINGLE-FAMILY DETACHED	BUILDING HEIGHT
10W.1	17.5	38	50'
11W	19.3	41	35'/45'
23W	16.7		50'
TOTAL	53.5	79	

Scale: 1"= 100'-0"
0 50 100 200

OVERALL SITE PLAN

DECEMBER 18, 2025
SHEET 4

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



KEY MAP

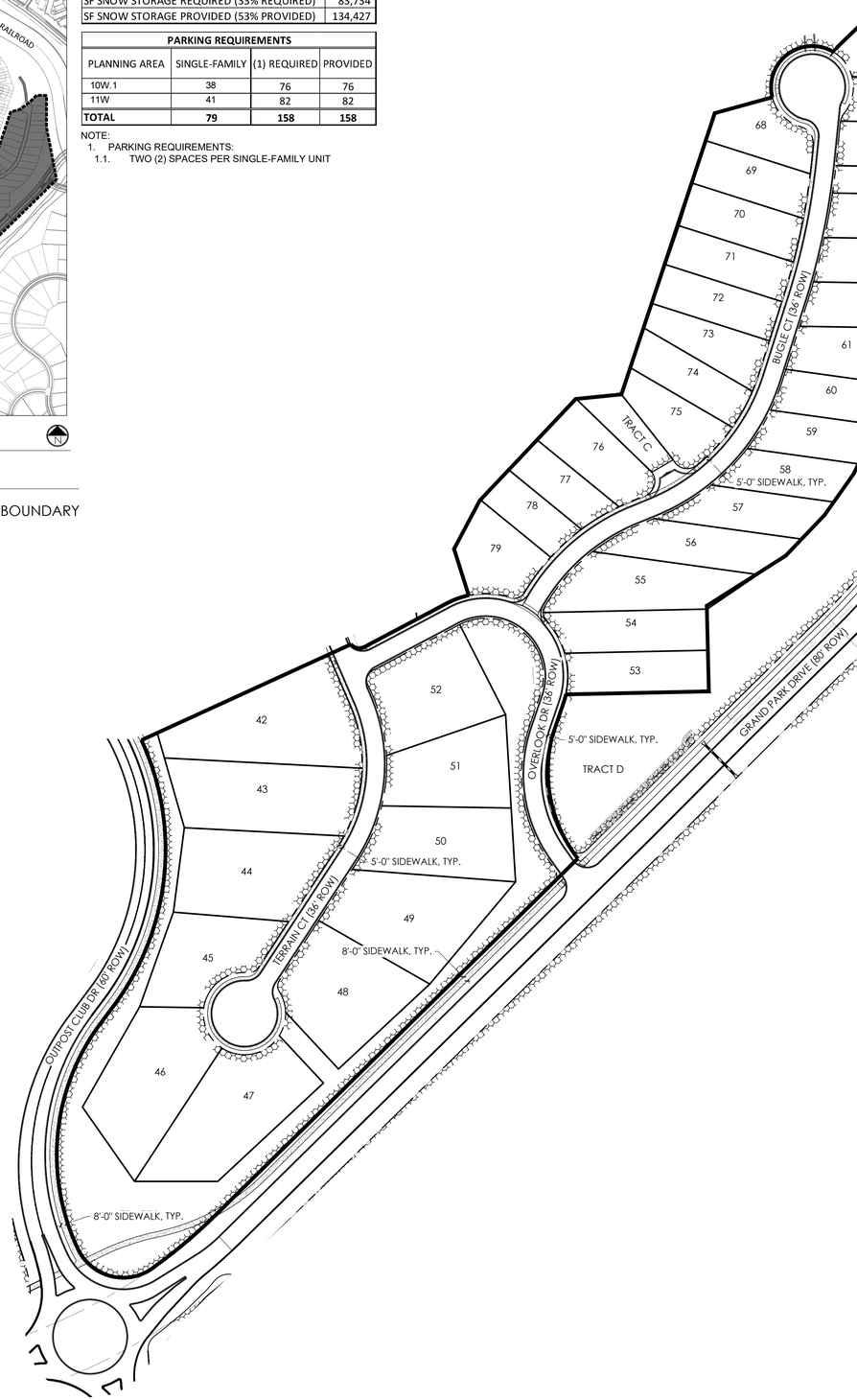
LEGEND

- PLANNING AREA BOUNDARY
- LOT LINE
- SNOW STORAGE

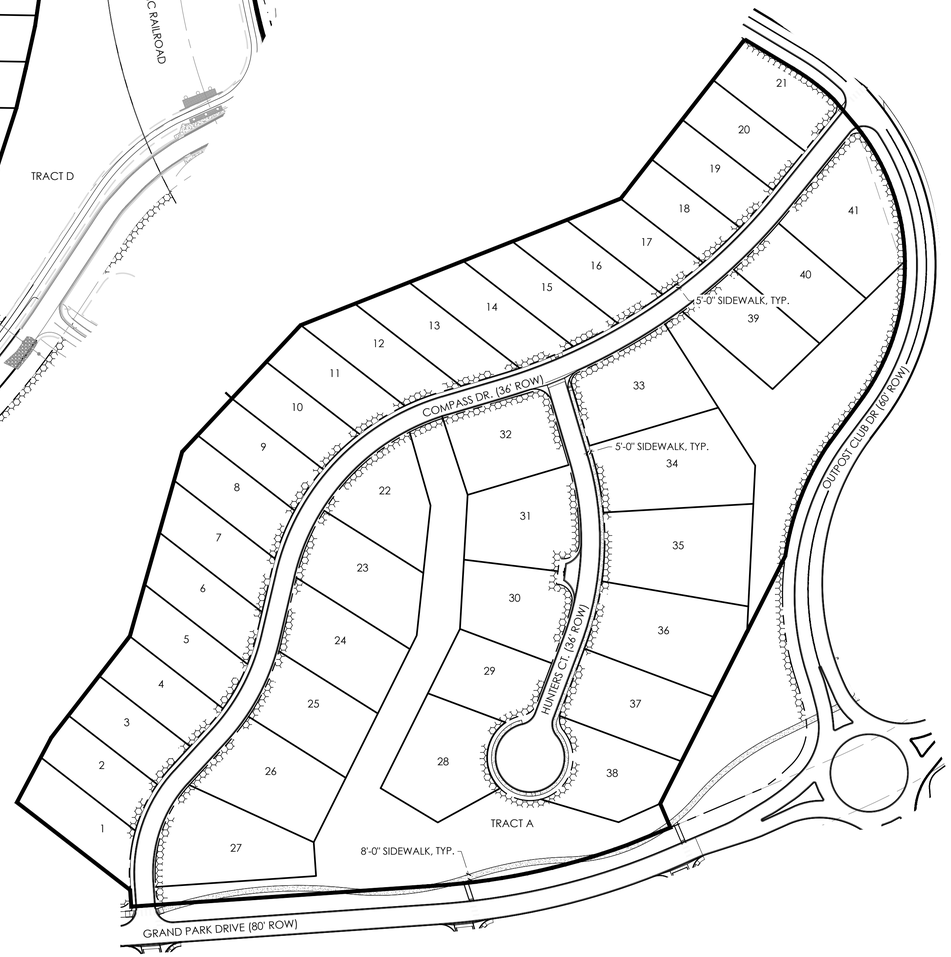
SNOW STORAGE REQUIREMENTS	
SF PAVED SURFACE	253,739
SF SNOW STORAGE REQUIRED (33% REQUIRED)	83,734
SF SNOW STORAGE PROVIDED (53% PROVIDED)	134,427

PARKING REQUIREMENTS			
PLANNING AREA	SINGLE-FAMILY	(1) REQUIRED	PROVIDED
10W.1	38	76	76
11W	41	82	82
TOTAL	**79**	**158**	**158**

NOTE:
1. PARKING REQUIREMENTS:
   1.1. TWO (2) SPACES PER SINGLE-FAMILY UNIT



A 10W.1
- SINGLE FAMILY DETACHED UNITS - 38



B 11W
- SINGLE-FAMILY DETACHED UNITS - 41

Scale: 1"= 100'-0"

0 50 100 200

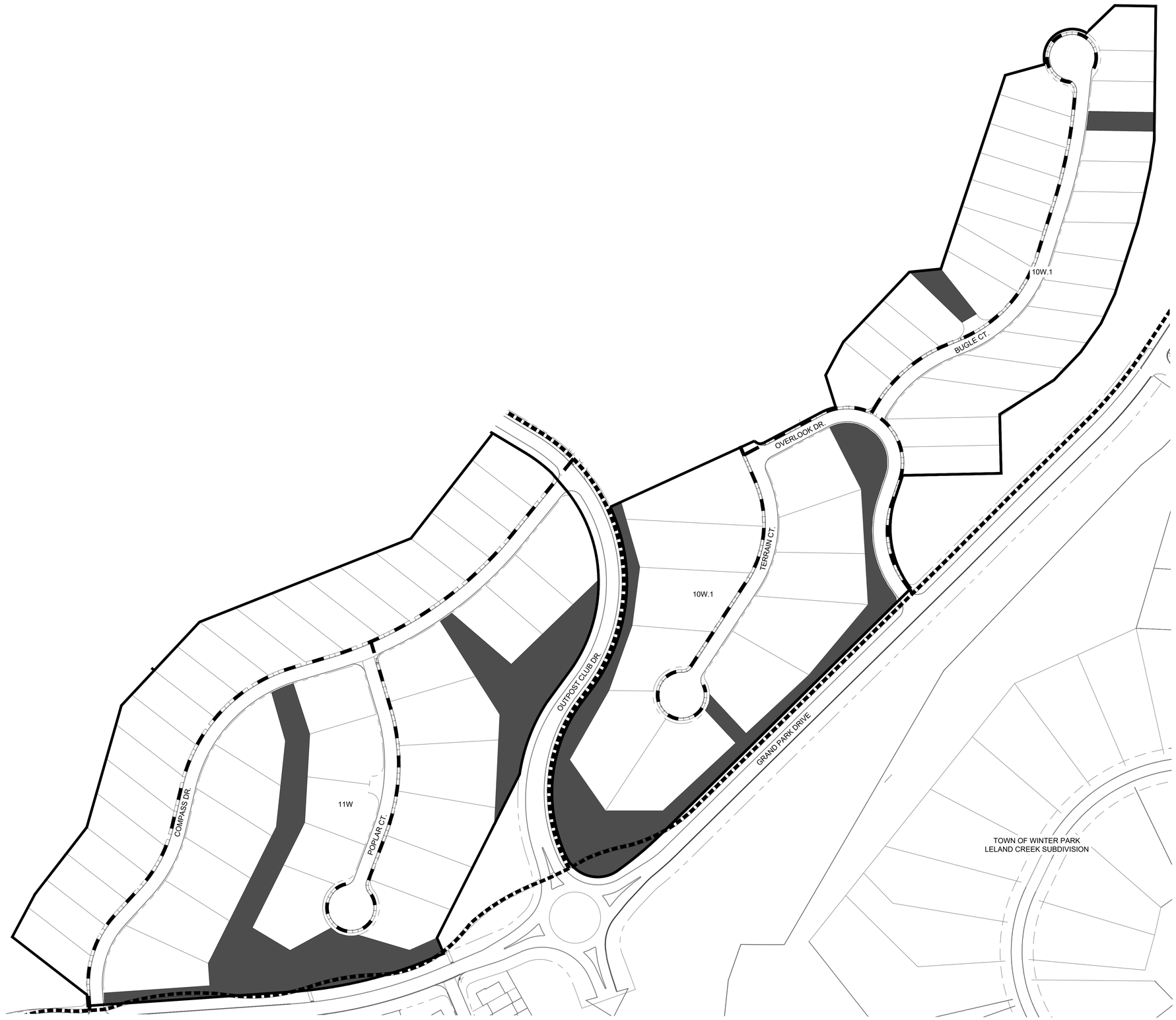
SITE PLAN
DECEMBER 18, 2025
SHEET 5

FINAL PLANNED DEVELOPMENT PLAN

WEST MOUNTAIN FILING 1

PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



LEGEND

- PLANNING AREA BOUNDARY
- 8' SIDEWALK
- 5' SIDEWALK
- OPEN SPACE

OPEN SPACE REQUIREMENTS			
PLANNING AREA	ACRES	*OPEN SPACE REQUIRED	OPEN SPACE PROVIDED
10W.1	17.5	**2.6**	2.6
11W	**19.3**	**2.9**	**2.9**

* OPEN SPACE REQUIREMENTS ARE 15% OF PLANNING AREA

REVISED

2.28 measured, a difference of approximately 14,000 SF

5.2
5.5 acres listed

N

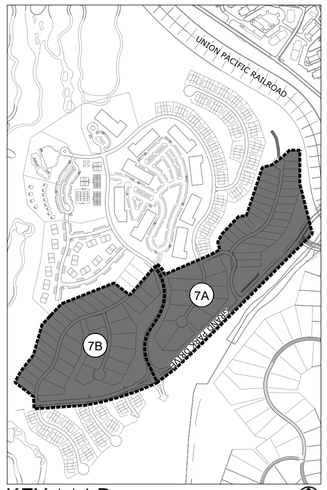
Scale: 1"= 100'-0"

0 50 100 200

OPEN SPACE

DECEMBER 18, 2025
SHEET 6

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W
LOCATED IN SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO



EROSION CONTROL

BEST MANAGEMENT PRACTICES WILL BE INSTALLED AND MAINTANED THROUGHOUT THE DURATION OF CONSTRUCTION

NATIVE GRASS MIX

COMMON NAME	BOTANICAL NAME	% OF MIX	APPLICATION RATE
MANCHAR SMOOTH BROME	BROMUS INERMIS LEYSS	20%	10.0
POTOMAC ORCHARD	DACTYLIS GLOMERATA L.	20%	10.0
PUBESCENT WHEATGRASS	AGROPYRON TRICHOPHORUM	20%	10.0
PERENNIAL RYE	LOLIUM PERENNE L.	11%	5.5
REUBENS CANADA BLUE	POA COMPRESSA	10%	5.0
ANNUAL RYE	LOLIUM MULTIFLORUM LAM.	10%	5.0
TIMOTHY	PHLEUM PRATENSE	5%	2.5
CICER MILKVETCH	ASTRAGALUS CICER L.	2%	1.0
ALSIKE CLOVER	TRIFOLIUM HYBRIDUM	2%	1.0
TOTAL			50.0 LBS/PLS/ACRE

NOTE: ALL DISTURBED AREAS THAT ARE NOT PAVED SURFACE WILL BE SEEDED WITH NATIVE GRASS MIX SHOWN ABOVE.

1. SEED APPLICATION: DRILL SEED 0.25"-0.5" INTO THE SOIL. IN AREAS NOT ACCESSIBLE TO A DRILL HAND BROADCAST AT DOUBLE THE ABOVE RATE AND RAKE 0.25"-0.5" INTO THE SOIL. ON SLOPES STEEPER THAT 2:1 HYDROSEED AT DOUBLE THE RATE.
2. SOIL AMENDMENTS: PREPARE SOIL WITH SAND BASED GRANULAR HUMATE AT THE RATE OF 435 LBS. PER ACRE.
3. FERTILIZATION APPLICATION: APPLY BIOSOL ALL NATURAL ORGANIC FERTILIZER AT THE RATE OF 1800 LBS. PER ACRE IN ALL SEEDING AREAS.
4. HYDROMULCH APPLICATION: HYDROMULCH SHALL CONSIST OF CELLULOSE FIBER MULCH AND MULCH TACKIFIER AND SHALL BE APPLIED AT THE RATES OF 2.000 LBS. PER ACRE AND 100 LBS. PER ACRE CONSECUTIVELY.

YES, LEGEND REVISED

Is hatch intended to represent grass seed mix?

REMOVED

Are any of these proposed, does not appear so. Can remove. Not included in previous submittal.

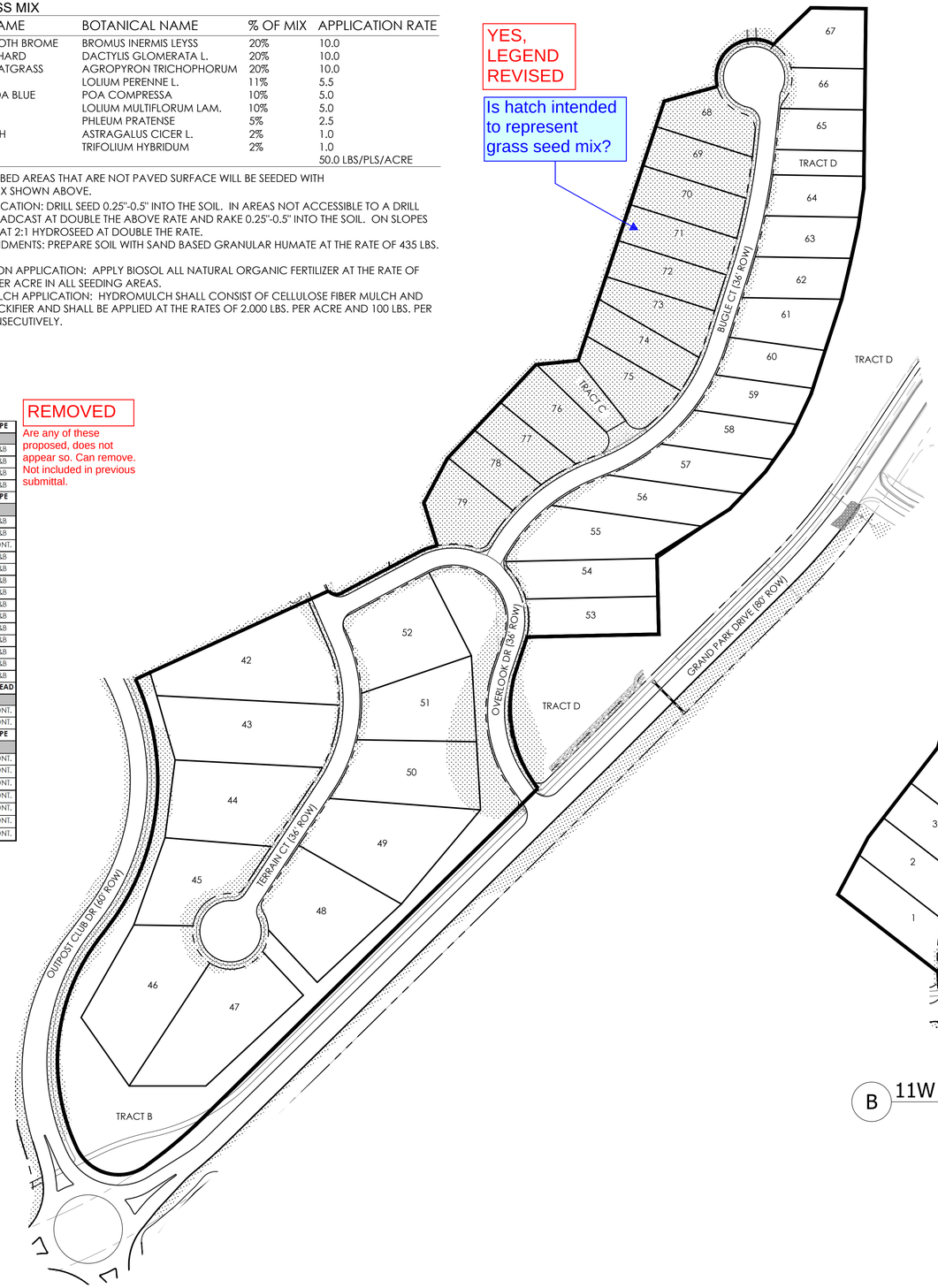
SYM	BOTANICAL NAME	COMMON NAME	SIZE	TYPE
	DECIDUOUS ORNAMENTAL TREES			
	POPULUS TREMULOIDES	ASPEN, QUAKING	6' HT	B&B
	MALUS SP.	CRAB APPLE	6' HT	B&B
	POPULUS ANGUSTIFOLIA	COTTONWOOD, NARROWLEAD	6' HT	B&B
	PRUNUS VIRINIANA 'CANADA RED'	CHOKEBERRY, CANADA RED	6' HT	B&B
	BOTANICAL NAME	**COMMON NAME**	**SIZE**	**TYPE**
	EVERGREEN TREES			
	PICEA PUNGENS	SPRUCE, BLUE	6-8' HT	B&B
	PICEA ENGELMANNII	SPRUCE, ENGELMAN	6-8' HT	B&B
	JUNIPERUS SCOPULORUM	ROCKY MOUNTAIN JUNIPER	#5	CONT.
	PICEA ENGELMANII	ENGLEMAN SPRUCE	6' HT.	B&B
	PICEA PUNGENS	COLORADO BLUE SPRUCE	6' HT.	B&B
	PICEA PUNGENS 'BABY BLUE'	BABY BLUE SPUCE	6' HT.	B&B
	PICEA PUNGENS 'BABY BLUE EYES'	BABY BLUE EYES SPRUCE	6' HT.	B&B
	PICEA PUNGENS 'FAT ALBERT'	FAT ALBER SPRUCE	6' HT.	B&B
	PICEA PUNGENS 'HOOPSII'	HOOPSII SPRUCE	6' HT.	B&B
	PICEA PUNGENS 'PENDULA'	WEEPING BLUE SPRUCE	6' HT.	B&B
	PINUS ARISTATA	BRISTLECONE PINE	6' HT.	B&B
	PINUS CONTORTA LATIFOLIA	LODGEPOLE PINE	6' HT.	B&B
	PINUS FLEXILIS	LIMBER PINE	6' HT.	B&B
	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	6' HT.	B&B
	BOTANICAL NAME	**COMMON NAME**	**SPREAD**	**SPREAD**
	EVERGREEN SHRUBS			
	PICEA PUNGENS 'GLAUCA GLOBOSA'	SPRUCE, DWARF GLOBE GREEN	#5	CONT.
	PICEA PUNGENS 'SESTER DWARF'	SPRUCE, DWARF BLUE	#5	CONT.
	BOTANICAL NAME	**COMMON NAME**	**SIZE**	**TYPE**
	DECIDUOUS SHRUBS			
	RIBES ALPINUM	CURRANT, ALPINE	#5	CONT.
	RIBES AUREUM	CURRANT, YELLOW FLOWERING	#5	CONT.
	POTENTILLA FRUTICOSA 'JACKMANS'S VARIETY'	POTENTILLA, JACKMAN	#5	CONT.
	SYMPPHORICARPOS OREOPHILUS	SNOWBERRY, MOUNTAIN	#5	CONT.
	SPIRAEA SPLENDENS	SPIREA, MOUNTAIN	#5	CONT.
	SAMNUCUS RACEMOSA	ELDER, NATIVE RED-BERRIED	#5	CONT.
	AMELANCHIER ALNIFOLIA	SERVICEBERRY, SASKATOON	#5	CONT.

LEGEND

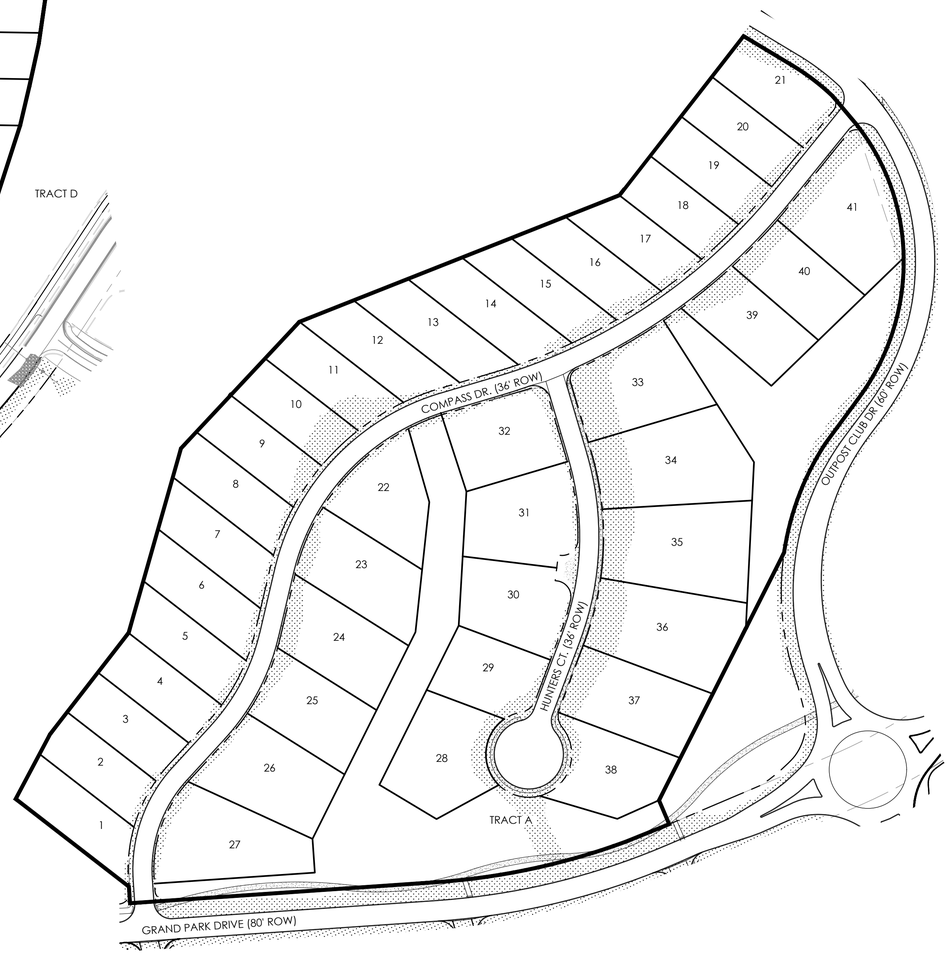
- PLANNING AREA BOUNDARY
- LOT LINE
- LANDSCAPE AREA

Change to seed mix?

REVISED



A 10W.1



B 11W

Scale: 1"= 100'-0"

0 50 100 200

LANDSCAPE PLAN

DECEMBER 18, 2025
SHEET 7

FINAL PLAN DEVELOPMENT PLAN
THE OVERLOOK AT GRAND PARK

PLANNING AREAS 8WB, 9W.1, 9W.2 10W.2, 10W.3 AND A PORTION OF 23W

LOCATED IN SECTION 28 & 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO

Include Pond B with Phases I and III

FPDP'S DO NOT HAVE THIS LEVEL OF DETAIL, IT IS IN THE CONSTRUCTION PLANS

TRACT D

BUGLE CT (36' ROW)

III

TRACT C

TRACT D

OVERLOOK DR (36' ROW)

TRACT D

GRAND PARK DRIVE (80' ROW)

10W.1

I

TERRAIN CT (36' ROW)

OUTPOST CLUB DR (60' ROW)

COMPASS DR. (36' ROW)

II

11W

HUNTERS CT. (36' ROW)

TRACT B

TRACT A

WATER QUALITY POND

GRAND PARK DRIVE (80' ROW)

FPDP'S DO NOT HAVE THIS LEVEL OF DETAIL, IT IS IN THE CONSTRUCTION PLANS

Include Pond C with Phase II

LEGEND

- I PHASE ONE
- II PHASE TWO
- III PHASE THREE
- PHASE LINE
- PLANNING AREA

NOTE: PHASES DO NOT NEED TO BE DEVELOPED IN ANY SPECIFIC ORDER AND WILL BE DEVELOPED BASED ON INFRASTRUCTURE AND MARKET DEMAND

N

Scale: 1"= 100'-0"

0 50 100 200

PHASING PLAN

DECEMBER 18, 2025
SHEET 8

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W

LOCATED IN SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO

SEE SHEET 8

7W & 8W NOT A PART

TRACT K

23W

LOCAL ROAD - A50

TRACT I

TRACT J

12W, 13Wa.1, 13Wa2, 13Wb.1 &13Wb.2 NOT A PART

LOT 185 CLUBHOUSE 20,000 SF COMM.

OUTDOOR FACILITIES

SHELTER AND RESTROOMS

VOLLEYBALL COURTS

PADDLEBALL COURTS

PICKLEBALL COURTS

TENNIS COURTS

LOT 186 12 LODGING UNITS

LOT 188 438 LODGING UNITS 42,000 SF COMM

TERRAIN WAY

OUTPOST CLUB DR

BLDG 1

BLDG 2

BLDG 3

BLDG 4

BLDG 5

BLDG 6

16' DRAINAGE EASEMENT

DRAINAGE EASEMENT

REVISED

Confirm Filing 1 and 2 FPDP boundaries match

LABEL FILING 2 WITH PLANNING AREAS AND STATE (NOT A PART)

FILING 2 REMOVED

TERRAIN WAY

ROAD A

POND B

MAINTENANCE ACCESS

30' DRAINAGE EASEMENT

40' WATER & SANITARY EASEMENT

EX 30' SANITARY EASEMENT

Will this easement be vacated?

REVISED

40' DRAINAGE EASEMENT

40' WATER & SANITARY EASEMENT

BUGLE CT

OVERLOOK DR

SIGHT EASEMENT

should end at 52

REVISED

Provide Street Name

REVISED

REVISED

Update FPDP boundary to match on Sheets 2, 3, 4, 9, and 10

EX 30" RCP TO BE REPLACED

30' DRAINAGE EASEMENT

COMPASS DR

SIGHT EASEMENT

TERRAIN CT

OUTPOST CLUB DR

30' WATER EASEMENT

LABEL THESE STREET CLASSIFICATIONS ON THE GRADING PLAN FOR EACH ROAD SHOWN IN THIS FILING

REVISED

GRAND PARK DR

NOT A PART

ROUNDABOUT DESIGNED BY OTHERS

POPLAR CT

REVISED

UPDATE TO MATCH PLAT

TEMPORARY SEDIMENT POND C

30' WATER EASEMENT

LELAND CREEK CT

REVISED

1

Move for clarity

30' SANITARY EASEMENT

16' DRAINAGE EASEMENT

DRAINAGE EASEMENT

30' DRAINAGE EASEMENT

26 27

Lots 27-52 need to be reordered to match the plat and other sheets of this FPDP

REVISED

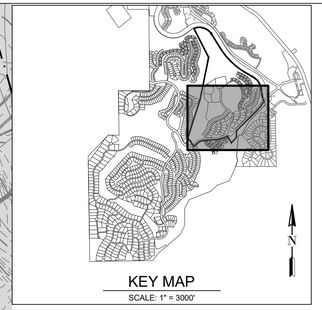
TRACT B

TRACT A

TRACT C

LOCAL ROAD - A69

18W, 19W & 21W NOT A PART



LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- EASEMENT
- CENTERLINE
- LOT / TRACT / PARCEL BOUNDARY
- 4880 PROPOSED MAJOR CONTOUR
- 4879 PROPOSED MINOR CONTOUR
- 4880 PROPOSED MAJOR CONTOUR
- 4879 PROPOSED MINOR CONTOUR
- DRAINAGE SWALE
- SUBMITTAL AREA BOUNDARY
- FP FLOODPLAIN BOUNDARY
- EAST OF SITE - LELAND CREEK WEST OF SITE - ELK CREEK
- CONCRETE
- MAINTENANCE ACCESS
- NOT A PART
- C COLLECTOR CURB & GUTTER (60' ROW, 26' FL-FL) SEE SHEET 3
- EA EMERGENCY ACCESS (30' EASEMENT, 24' EOP-EOP) SEE SHEET 3
- L LOCAL STREET TYPE "A" CURB & GUTTER (36' ROW, 28' FL-FL) SEE SHEET 3
- SD SHARED DRIVE (30' EASEMENT, 20' FL-FL) SEE SHEET 3

NOTES:

1. BUILDING / LODGING LOCATIONS ARE CONCEPTUAL AND WILL BE FINALIZED WITH FINAL CDS
2. SEE SHEET 4 FOR CREEK LOCATIONS & NAMES. PONDS DRAINING WEST OF PROPERTY DRAIN TO ELK CREEK & EAST OF PROPERTY TO LELAND CREEK.
3. CONTOUR INTERVALS ARE 2' & 10'.

Title? Final Grading Plan

DECEMBER 18, 2025
SHEET 9

FINAL PLANNED DEVELOPMENT PLAN
WEST MOUNTAIN FILING 1
PLANNING AREA 10W.1, 11W & A PORTION OF 23W
LOCATED IN SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PM
COUNTY OF GRAND, STATE OF COLORADO

7W & 8W
NOT A PART

12W, 13Wa.1,
13Wa.2, 13Wb.1,
& 13Wb.2
NOT A PART

18W, 19W
& 21W
NOT A PART

NOT A PART

REVISED

Confirm Filing 1 and 2 FPDP boundaries match

REVISED

NOW HUNTERS COURT ON PLAT

THIS SHOULD NOW BE A 40' WATER AND SANITARY ESMT.

THIS EASEMENT IS MISSING FROM THE FINAL PLAT

Lots 27-52 need to be reordered to match the plat and other sheets of this FPDP

LABEL 8" PLUG AND BLOW OFF

REVISED

REVISED

FIX LABEL

REVISED

LABEL TO BE VACATED BY PLAT OR SEPARATE DOCUMENT

Update FPDP boundary to match on Sheets 2, 3, 4, 9, and 10

REVISED

THIS DRAINAGE EASEMENT IS MISSING FROM THE FINAL PLAT.

EASEMENTS ADDED TO FINAL PLAT

TERRAIN WAY
OUTPOST CLUB DR
ROAD A
POND B
14' MAINTENANCE ACCESS
LOCAL ROAD - A50
LOCAL ROAD - A68
LOCAL ROAD - A69
BUGLE CT
OVERLOOK DR
COMPASS DR
TERRAIN CT
POPLAR CT
GRAND PARK DR
LELAND CREEK CT
LOT 185 CLUBHOUSE 20,000 SF COMM.
OUTDOOR FACILITIES
SHELTER AND RESTROOMS
VOLLEYBALL COURTS
PADDLEBALL COURTS
PICKLEBALL COURTS
TENNIS COURTS
LOT 186 12 LODGING UNITS
LOT 188 438 LODGING UNITS 42,000 SF COMM
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
BLDG 7
BLDG 8
LOT 18
16' DRAINAGE EASEMENT
40' DRAINAGE EASEMENT
30' DRAINAGE EASEMENT
20' DRAINAGE EASEMENT
SIGHT EASEMENT
SWALE
DRAINAGE EASEMENT
30' WATER EASEMENT
40' WATER & SANITARY EASEMENT
30' SANITARY EASEMENT
EX 30" RCP TO BE REPLACED
TEMPORARY SEDIMENT POND C
ROUNDABOUT DESIGNED BY OTHERS
YELLOW ZONE PUMP HOUSE
HYDRANT
TIE TO 12" SANITARY FROM GRAND PARK DR PLANS
TIE TO 12" WATER FROM GRAND PARK DR PLANS

KEY MAP
SCALE: 1" = 3000'

N
0 120' 240'
1 inch = 120'

LEGEND

- PROJECT BOUNDARY
- RIGHT OF WAY (ROW)
- STORM (FES, MH, & INLET)
- SANITARY
- WATER (HYDRANT, VALVE, BEND, MH)
- PRESSURE REDUCING VALVE (PRV)
- X — EXISTING FENCE
- FO — EXISTING FIBER OPTIC
- G — EXISTING GAS
- W — EXISTING WATER
- EXISTING SWALE
- DRAINAGE SWALE
- SUBMITTAL AREA BOUNDARY
- FP — FLOODPLAIN BOUNDARY
- EAST OF SITE - LELAND CREEK
  WEST OF SITE - ELK CREEK
- CONCRETE
- MAINTENANCE ACCESS
- RIPRAP
- NOT A PART

Title? Final Utility Plan

DECEMBER 18, 2025
SHEET 10

FINAL PLAT

WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND THE NORTHWEST QUARTER OF SECTION 32, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.

DEDICATION AND NOTARY CLAUSE:

KNOW ALL PEOPLE BY THESE PRESENTS: THAT WEST MOUNTAIN DEVELOPMENT, LLC, A COLORADO LIMITED LIABILITY COMPANY, IS THE OWNER OF THAT REAL PROPERTY SITUATED IN THE TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 29 AND THE NORTH HALF OF SECTION 32, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE NORTH LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 29, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, WAS ASSUMED TO BEAR SOUTH 89°49'44" WEST, A DISTANCE OF 1,321.23 FEET, BEING MONUMENTED AT THE EAST QUARTER CORNER OF SAID SECTION 29 BY A 1-1/2" STEEL POST WITH 2-1/2" GLO BRASS CAP STAMPED "US GENERAL LAND OFFICE SURVEY 1/4 S29 S28 1933" AND AT THE CENTER-EAST SIXTEENTH CORNER OF SAID SECTION 29 BY A NO. 6 REBAR WITH 3-1/4" ALUMINUM CAP STAMPED "DEA INC. T1S R75W E 1/16 C-C S29 2014 PLS 34592".

COMMENCING AT SAID EAST QUARTER CORNER;

THENCE SOUTH 41°09'00" WEST, A DISTANCE OF 910.38 FEET TO THE SOUTHERLY BOUNDARY OF THE 200-FOOT-WIDE UNION PACIFIC RAILROAD RIGHT-OF-WAY AND THE POINT OF BEGINNING;

THENCE ALONG SAID SOUTHERLY BOUNDARY THE FOLLOWING TWO (2) COURSES:

1. SOUTH 07°48'24" EAST, A DISTANCE OF 294.34 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE EASTERLY HAVING A RADIUS OF 816.78 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 82°07'05" EAST;
2. SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 12°55'27", AN ARC LENGTH OF 184.24 FEET TO THE MOST NORTHERLY CORNER OF PARCEL 2, GRAND PARK DRIVE EXEMPTION PLAT RECORDED AT RECEPTION NO. 2016002214 IN THE OFFICIAL RECORDS OF THE GRAND COUNTY, COLORADO CLERK AND RECORDER'S OFFICE AND THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 250.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 34°09'07" EAST;

THENCE ALONG THE NORTHWESTERLY AND SOUTHWESTERLY BOUNDARY OF SAID PARCEL 2 THE FOLLOWING FOUR (4) COURSES:

1. SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 44°11'42", AN ARC LENGTH OF 192.84 FEET TO THE BEGINNING OF A REVERSE CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 150.00 FEET;
2. SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 33°48'01", AN ARC LENGTH OF 88.49 FEET;
3. SOUTH 45°27'20" WEST, A DISTANCE OF 135.92 FEET;
4. SOUTH 44°31'03" EAST, A DISTANCE OF 84.39 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 1,040.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 49°03'10" WEST;

THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 04°24'52", AN ARC LENGTH OF 80.13 FEET;

THENCE SOUTH 45°21'41" WEST, A DISTANCE OF 204.83 FEET;

THENCE SOUTH 44°52'10" WEST, A DISTANCE OF 200.03 FEET;

THENCE SOUTH 45°27'20" WEST, A DISTANCE OF 843.10 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 840.00 FEET;

THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 05°56'24", AN ARC LENGTH OF 87.09 FEET TO THE BEGINNING OF A REVERSE CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 50.00 FEET;

THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 09°39'58", AN ARC LENGTH OF 8.44 FEET;

THENCE SOUTH 41°43'46" WEST, A DISTANCE OF 83.60 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE EASTERLY HAVING A RADIUS OF 73.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 51°02'34" EAST;

THENCE SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 60°47'55", AN ARC LENGTH OF 77.46 FEET;

THENCE SOUTH 62°31'49" WEST, A DISTANCE OF 120.63 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHERLY HAVING A RADIUS OF 73.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 68°37'00" WEST;

THENCE WESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 92°24'02", AN ARC LENGTH OF 117.73 FEET;

THENCE SOUTH 86°04'23" WEST, A DISTANCE OF 445.44 FEET;

THENCE NORTH 03°55'37" WEST, A DISTANCE OF 80.00 FEET;

THENCE NORTH 86°04'23" EAST, A DISTANCE OF 2.00 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 15.00 FEET;

THENCE NORTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 90°00'00", AN ARC LENGTH OF 23.56 FEET;

THENCE NORTH 03°55'37" WEST, A DISTANCE OF 8.26 FEET;

THENCE NORTH 52°12'55" WEST, A DISTANCE OF 200.13 FEET;

THENCE NORTH 27°58'25" EAST, A DISTANCE OF 102.73 FEET;

THENCE NORTH 37°47'05" EAST, A DISTANCE OF 178.77 FEET;

THENCE NORTH 15°51'37" EAST, A DISTANCE OF 268.33 FEET;

THENCE NORTH 43°06'31" EAST, A DISTANCE OF 242.12 FEET;

THENCE NORTH 68°25'25" EAST, A DISTANCE OF 480.75 FEET;

THENCE NORTH 37°55'55" EAST, A DISTANCE OF 282.21 FEET;

THENCE SOUTH 58°58'37" EAST, A DISTANCE OF 80.26 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 320.00 FEET;

THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 12°31'12", AN ARC LENGTH OF 69.92 FEET;

THENCE NORTH 43°32'35" EAST, A DISTANCE OF 60.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 380.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS SOUTH 43°32'35" WEST;

THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 21°35'44", AN ARC LENGTH OF 143.23 FEET;

THENCE NORTH 65°25'10" EAST, A DISTANCE OF 299.51 FEET;

THENCE NORTH 23°18'18" WEST, A DISTANCE OF 4.49 FEET;

THENCE NORTH 66°41'42" EAST, A DISTANCE OF 36.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 15.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 66°41'42" EAST;

THENCE EASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 94°34'40", AN ARC LENGTH OF 24.76 FEET;

THENCE NORTH 62°07'01" EAST, A DISTANCE OF 137.41 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHERLY HAVING A RADIUS OF 120.00 FEET;

THENCE EASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 15°51'46", AN ARC LENGTH OF 33.22 FEET;

THENCE NORTH 17°29'08" WEST, A DISTANCE OF 70.91 FEET;

THENCE NORTH 28°01'24" EAST, A DISTANCE OF 79.96 FEET;

THENCE NORTH 43°23'08" EAST, A DISTANCE OF 204.05 FEET;

THENCE NORTH 84°30'09" EAST, A DISTANCE OF 66.55 FEET;

THENCE NORTH 18°22'32" EAST, A DISTANCE OF 431.96 FEET;

THENCE NORTH 74°33'59" EAST, A DISTANCE OF 87.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 60.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 75°54'23" EAST;

THENCE NORTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 133°54'35", AN ARC LENGTH OF 140.23 FEET;

THENCE NORTH 46°00'10" EAST, A DISTANCE OF 83.14 FEET;

THENCE SOUTH 89°02'49" EAST, A DISTANCE OF 86.97 FEET;

THENCE SOUTH 72°11'31" EAST, A DISTANCE OF 52.67 FEET TO THE POINT OF BEGINNING.

CONTAINING AN AREA OF 47.838 ACRES, (2,083,844 SQUARE FEET), MORE OR LESS.

DEDICATION AND NOTARY CLAUSE CONTINUED:

IN WITNESS WHEREOF, WEST MOUNTAIN DEVELOPMENT, LLC., A COLORADO LIMITED LIABILITY COMPANY, HAS CAUSED ITS NAME TO BE HEREUNTO SUBSCRIBED THIS

_____ DAY OF _____, 20___.

BY: _____
C. CLARK LIPSCOMB, PRESIDENT

STATE OF COLORADO)
)SS
COUNTY OF GRAND)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___
BY: C. CLARK LIPSCOMB AS PRESIDENT OF WEST MOUNTAIN DEVELOPMENT, LLC.

WITNESS MY HAND AND OFFICIAL SEAL.

MY COMMISSION EXPIRES: _____

_____
NOTARY PUBLIC

MORTGAGEE'S CONSENT:

THE UNDERSIGNED, BEING THE AUTHORIZED REPRESENTATIVE OF U.S. BANK, N.A., THE HOLDER OF A BENEFICIAL INTEREST IN AND TO THE PROPERTY DESCRIBED ON THIS PLAT, UNDER DEED OF TRUST RECORDED JUNE 28, 2012 AT RECEPTION NO. 2012-005143 AND RECEPTION NO. 2012-005144 OF THE GRAND COUNTY, COLORADO REAL PROPERTY RECORDS, HEREBY CONSENTS TO THIS PLAT AND AGREES THAT THE LIEN OF THE DEED OF TRUST IS HEREBY SUBORDINATED TO THIS PLAT.

BY: _____

NAME: _____

TITLE: _____

STATE OF _____)
)SS
COUNTY OF _____)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___

BY _____ AS _____ OF U.S. BANK, N.A.

WITNESS MY HAND AND OFFICIAL SEAL.

MY COMMISSION EXPIRES: _____

_____
NOTARY PUBLIC

BOARD OF TRUSTEES APPROVAL:

APPROVED AND ALL PUBLIC DEDICATIONS ACCEPTED THIS _____ DAY OF _____, 20___ BY THE FRASER TOWN BOARD. THE TOWN OF FRASER DOES NOT ASSUME ANY RESPONSIBILITY FOR THE CORRECTNESS OR ACCURACY OF ANY INFORMATION DISCLOSED ON THIS PLAT NOR ANY REPRESENTATIONS OR INFORMATION PRESENTED TO THE TOWN OF FRASER WHICH INDUCED THE TOWN TO GIVE THIS CERTIFICATE.

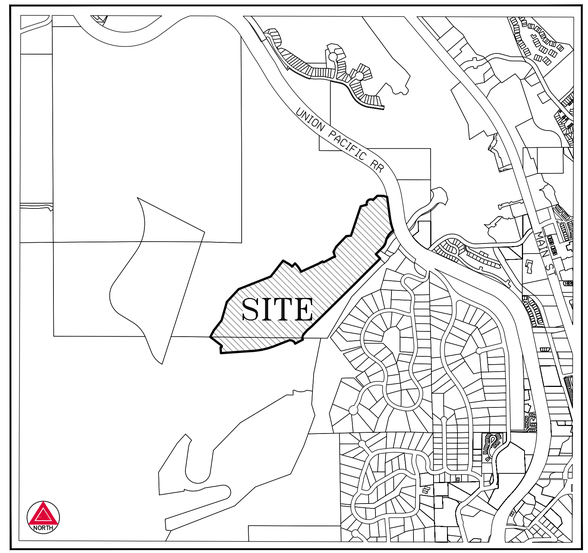
BY: _____

_____
MAYOR, TOWN OF FRASER

GENERAL NOTES:

1. BASIS OF BEARINGS FOR THIS PLAT IS THE NORTH LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN WHICH WAS ASSUMED TO BEAR S89°49'44"W, AS MONUMENTED AS SHOWN HEREON.
2. SET 18" LONG #5 REBAR WITH 1-1/4" PINK PLASTIC CAP MARKED "PLS 38636" AT ALL EXTERIOR BOUNDARY CORNERS UNLESS OTHERWISE NOTED.
3. THIS PLAT DOES NOT CONSTITUTE A TITLE SEARCH BY AZTEC CONSULTANTS INC., TO DETERMINE OWNERSHIP, RIGHTS OF WAY OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS OF WAY AND TITLE OF RECORD, AZTEC CONSULTANTS INC., RELIED UPON _____ COMMITMENT NUMBER _____ WITH AN EFFECTIVE DATE OF _____ ____, _____ __:__ A.M./P.M.
4. LEGAL DESCRIPTION PREPARED BY ANTHONY K. PEALL, AZTEC CONSULTANTS INC., 300 EAST MINERAL AVENUE, SUITE 1, LITTLETON, CO, 80122
5. THE U.S. SURVEY FOOT WAS USED FOR ALL MEASUREMENTS ON THIS SURVEY. PURSUANT TO C.R.S. 38-52.103(2) METRIC CONVERSION IS: ONE METER EQUALS 3937/1200 FEET.
6. TRACT USE SPECIFIED BELOW SHALL BE:

   TRACT C IS FOR OPEN SPACE PURPOSES.
   TRACTS A, B AND D ARE FOR OPEN SPACE & UTILITY PURPOSES.
   TRACTS A-D SHALL BE OWNED AND MAINTAINED BY GRAND PARK HOMEOWNER'S ASSOCIATION INC.
7. ONSITE EASEMENTS ARE HEREBY DEDICATED BY THIS PLAT IN THE LOCATIONS SHOWN HEREON.
8. FIRE PROTECTION SERVICES FOR WEST MOUNTAIN FILING NO. 1 SHALL BE PROVIDED BY THE EAST GRAND FIRE PROTECTION DISTRICT NO. 4.
9. PERPETUAL NON-EXCLUSIVE 10-FOOT UTILITY EASEMENTS ARE HEREBY GRANTED AND SHALL APPLY UPON, ACROSS, ABOVE, OVER, UNDER AND THROUGH THE UTILITY EASEMENTS SHOWN ON THIS PLAT FOR THE PURPOSE OF INGRESS TO AND EGRESS FROM, AND THE INSTALLATION, REPAIR, REPLACEMENT, OPERATION AND MAINTENANCE OF ALL UTILITY LINES AND EQUIPMENT. ANY CONSTRUCTION AND PLACEMENT OF LINES, EQUIPMENT, OR BUILDING STRUCTURES OR CHANGES IN GRADE SHALL COMPLY WITH THE STANDARDS OF ALL UTILITY PROVIDERS UTILIZING THE EASEMENT.
10. THE TOWN OF FRASER HEREBY AGREES ABOVE GROUND UTILITY EQUIPMENT SHALL BE ALLOWED IN THE FRASER TOWN RIGHT-OF-WAY AS DEPICTED HEREIN WHEN PLACED A MINIMUM OF 2' BEHIND THE SIDEWALK OR 3' BEHIND THE 6" CURB WHERE THERE ARE NO SIDEWALKS.
11. UPON COMPLETION OF ALL REQUIRED IMPROVEMENTS, AND IN ACCORDANCE WITH THE ACCEPTANCE PROCESS DETAILED IN THE SUBDIVISION REGULATIONS, ALL ROADS AND DRAINAGE IMPROVEMENTS SHALL BE PUBLIC AND MAINTAINED BY THE TOWN OF FRASER.
12. WHILE BUILDING PERMITS MAY BE ISSUED PRIOR TO FINAL COMPLETION OF SUBDIVISION IMPROVEMENTS, NO CERTIFICATE OF OCCUPANCY MAY BE ISSUED FOR A STRUCTURE ON ANY LOT, PARCEL OR TRACT UNTIL ALL SUCH IMPROVEMENTS, AS REQUIRED BY THE DIA, HAVE BEEN COMPLETED AND PRELIMINARILY ACCEPTED BY THE TOWN PURSUANT TO SECTION 19-3-445.
13. TRAIL/SIDEWALK EASEMENTS ARE HEREBY GRANTED TO THE PUBLIC ACROSS ANY TRACTS THAT CONTAINS TRAILS OR SIDEWALKS, SUCH TRAILS OR SIDEWALKS WILL BE CONSTRUCTED PER THE CONSTRUCTION PLANS FOR THE PURPOSE OF ACCESSING THE TRAIL SYSTEM. THE WIDTH AND LOCATION OF SAID EASEMENT WILL BE DEFINED BY THE WIDTH AND LOCATION OF SAID CONSTRUCTED TRAIL/SIDEWALK.
14. THE PROPERTY IS SUBJECT TO THE AMENDED AND RESTATED ANNEXATION AGREEMENT RECORDED DECEMBER 30, 2003 AT RECEPTION NO. 2003-016733, AS AMENDED; GRAND PARK PLANNED DEVELOPMENT DISTRICT PLAN RECORDED NOVEMBER 8, 2005 AT RECEPTION NO. 2005-012709; THE FINAL PLANNED DEVELOPMENT PLAN FOR WEST MOUNTAIN FILING NO. 1 RECORDED _____, 2025 AT RECEPTION NO._____; THE COMMUNITY CHARTER FOR GRAND PARK RESIDENTIAL PROPERTY RECORDED DECEMBER 7, 2005 AT RECEPTION NO. 2005-13834, AS AMENDED AND SUPPLEMENTED; AND THE COVENANT FOR COMMUNITY ENHANCEMENT FEE RECORDED DECEMBER 7, 2007 AT RECEPTION NO. 2005-013836, AS AMENDED AND SUPPLEMENTED.



VICINITY MAP
SCALE 1" = 1000'

why is this information blank?

REVISED

Provide Contact Names and phone numbers

REVISED

OWNER/DEVELOPER:
WEST MOUNTAIN DEVELOPMENT, LLC.
P.O. BOX 30
WINTER PARK, CO 80482

LAND PLANNER:
TERRACINA DESIGN
10200 E. GIRARD AVE. STE. A-314
DENVER, CO 80231
303-632-8867

SURVEYOR:
AZTEC CONSULTANTS, INC.
300 E. MINERAL AVE., SUITE 1
LITTLETON, CO 80122

DATE PREPARED:
DECEMBER 17, 2025

SURVEYOR'S CERTIFICATE:

I, ANTHONY K. PEALL, A DULY LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT OF WEST MOUNTAIN FILING NO. 2, TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT SAID PLAT COMPLIES WITH THE REQUIREMENTS OF TITLE 38, ARTICLE 51, COLORADO REVISED STATUTES, 1973, AND THE MONUMENTS REQUIRED BY SAID STATUTE AND BY THE TOWN OF FRASER SUBDIVISION REGULATIONS HAVE BEEN PLACED IN THE GROUND.

_____
ANTHONY K. PEALL, CO PLS 38636
AZTEC CONSULTANTS, INC.

FOR REVIEW
DO NOT RECORD

NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

NOTICE: PER THE STATE OF COLORADO BOARD OF LICENSURE FOR ARCHITECTS, PROFESSIONAL ENGINEERS, AND PROFESSIONAL LAND SURVEYORS RULE 1.6.B.2 THE WORD "CERTIFY" AS USED HEREON MEANS AN EXPRESSION OF PROFESSIONAL OPINION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTY, EXPRESSED OR IMPLIED. THE SURVEY REPRESENTED HEREON HAS BEEN PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE AND IS BASED UPON MY KNOWLEDGE, INFORMATION AND BELIEF.

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No: 181122-01 Drawn By: BAM

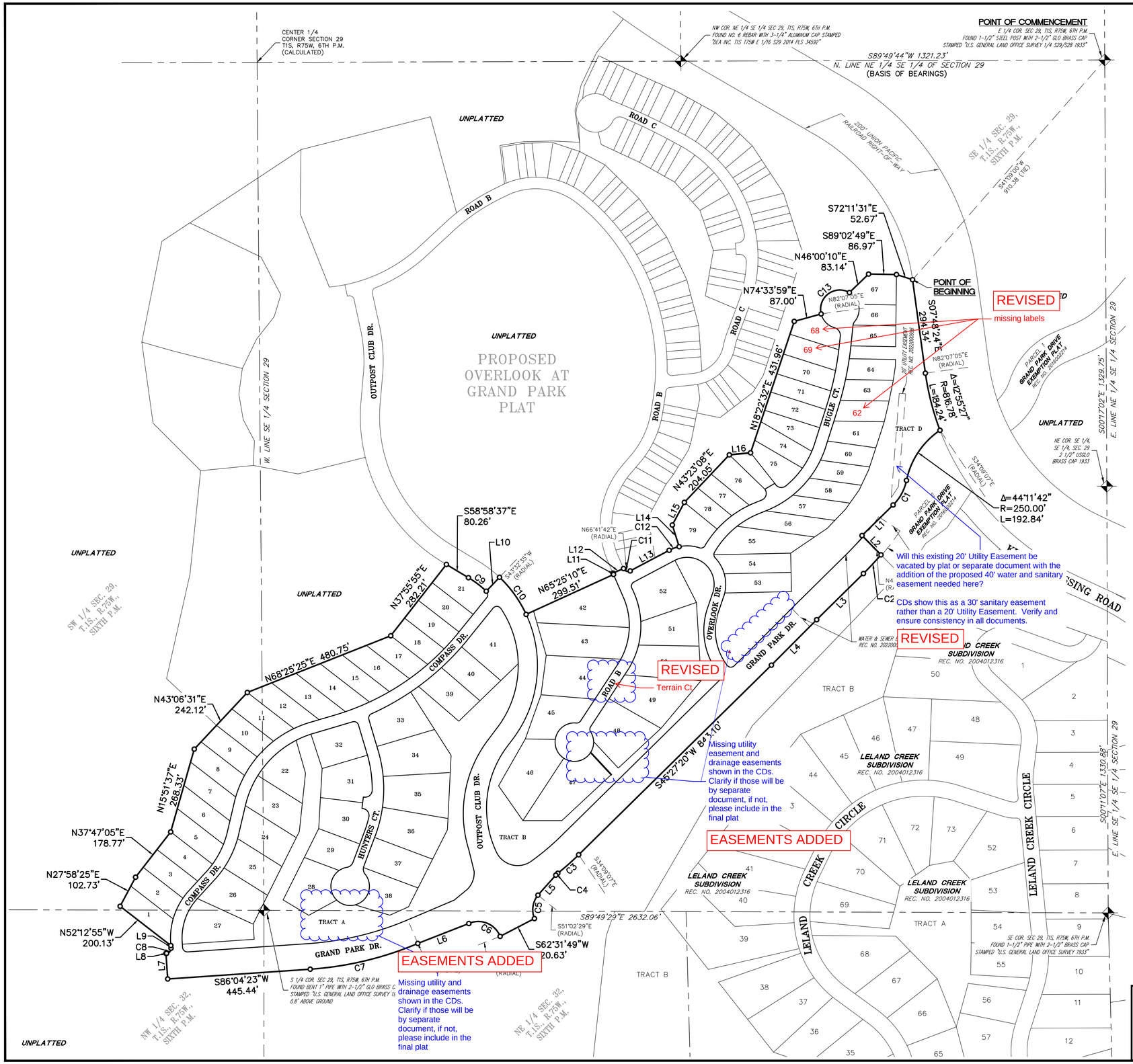
DEVELOPER
GRAND PARK DEVELOPMENT, LLC
P.O. BOX 30
WINTER PARK, COLORADO 80482
(970) 726-8600

DATE OF PREPARATION:	12-17-2025
SCALE:	N/A
SHEET 1 OF 7	

FINAL PLAT

WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND THE NORTHWEST QUARTER OF SECTION 32, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.



LINE TABLE		
LINE	BEARING	LENGTH
L1	S45°27'20"W	135.92'
L2	S44°31'03"E	84.39'
L3	S45°21'41"W	204.83'
L4	S44°52'10"W	200.03'
L5	S41°43'46"W	83.60'
L6	S68°38'59"W	170.87'
L7	N03°55'37"W	80.00'
L8	N86°04'23"E	2.00'
L9	N03°55'37"W	8.26'
L10	N43°32'35"E	60.00'
L11	N23°18'18"W	4.49'
L12	N66°41'42"E	36.00'
L13	N62°07'01"E	137.41'
L14	N17°29'08"W	70.91'
L15	N28°01'24"E	79.96'
L16	N84°30'09"E	66.55'
L17	N03°55'37"W	8.88'
L18	S03°55'37"E	17.14'
L19	S42°30'30"W	79.16'
L20	N42°30'30"E	79.16'
L21	N13°12'29"E	92.61'
L22	S13°12'29"W	92.61'
L23	N73°31'26"E	80.79'
L24	S16°28'34"E	102.14'
L25	N16°28'34"W	94.49'
L26	S83°00'34"E	2.77'
L27	N06°59'26"E	36.00'
L28	N83°00'34"W	2.77'
L29	N20°31'13"E	101.41'
L30	S20°31'13"W	101.41'
L31	N03°55'37"W	47.29'
L32	N65°56'02"E	63.74'
L33	N50°23'41"E	54.06'
L34	N13°46'23"W	67.20'
L35	N36°55'07"E	51.25'
L36	N36°55'07"E	30.40'
L37	S36°55'07"W	30.40'
L38	N45°23'05"E	83.57'
L39	N18°48'14"E	50.00'
L40	S18°48'14"W	50.00'

LINE TABLE		
LINE	BEARING	LENGTH
L41	S01°11'59"E	120.00'
L42	N67°39'10"E	26.25'
L43	S67°39'10"W	29.84'
L44	S67°39'10"W	29.84'
L45	N59°35'16"E	36.00'
L46	N30°24'13"W	2.56'
L47	S30°24'13"E	2.54'
L48	N17°37'41"E	120.32'
L49	S17°37'41"W	120.32'
L50	N05°49'49"E	22.08'
L51	S05°49'49"W	58.96'
L52	S08°15'55"W	45.37'
L53	S11°35'50"W	66.14'
L54	S13°17'01"W	56.30'
L55	S25°15'16"W	68.94'
L56	S35°16'34"W	74.05'
L57	S43°44'52"W	81.87'
L58	S84°10'11"E	27.97'
L59	N18°48'14"E	50.00'
L60	N35°19'15"W	15.62'
L61	N56°45'10"W	2.00'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	33°48'01"	150.00'	88.49'
C2	4°24'52"	1040.00'	80.13'
C3	5°56'24"	840.00'	87.09'
C4	9°39'58"	50.00'	8.44'
C5	60°47'55"	73.00'	77.46'
C6	92°24'02"	73.00'	117.73'
C7	19°05'05"	1040.00'	346.41'
C8	90°00'00"	15.00'	23.56'
C9	12°31'12"	320.00'	69.92'
C10	21°35'44"	380.00'	143.23'
C11	94°34'40"	15.00'	24.76'
C12	15°51'46"	120.00'	33.22'
C13	133°54'35"	60.00'	140.23'
C14	90°00'00"	15.00'	23.56'
C15	46°26'06"	182.00'	147.50'
C16	46°26'06"	218.00'	176.68'
C17	29°18'01"	282.00'	144.21'
C18	29°18'01"	318.00'	162.62'
C19	60°18'57"	343.00'	361.08'
C20	60°18'57"	307.00'	323.18'
C21	90°00'00"	15.00'	23.56'
C22	82°13'10"	15.00'	21.52'
C23	17°05'14"	382.00'	113.92'
C24	36°59'47"	418.00'	269.91'
C25	96°22'46"	22.00'	37.01'
C26	96°22'46"	22.00'	37.01'
C27	7°09'02"	382.00'	47.67'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C28	59°36'36"	25.00'	26.01'
C29	59°36'36"	25.00'	26.01'
C30	107°12'19"	15.00'	28.07'
C31	85°26'45"	15.00'	22.37'
C32	47°44'41"	73.00'	60.83'
C33	103°42'07"	73.00'	132.13'
C34	8°42'13"	760.00'	115.45'
C35	80°46'35"	15.00'	21.15'
C36	97°33'33"	15.00'	25.54'
C37	62°04'59"	120.00'	130.03'
C38	73°18'05"	15.00'	19.19'
C39	77°52'28"	15.00'	20.39'
C40	37°07'38"	318.00'	206.06'
C41	37°37'49"	282.00'	185.21'
C42	98°03'23"	22.00'	37.65'
C43	98°50'59"	22.00'	37.96'
C44	50°01'29"	318.00'	277.64'
C45	33°07'07"	282.00'	163.00'
C46	11°47'52"	980.00'	201.79'
C47	11°47'52"	1016.00'	209.21'
C48	79°48'57"	25.00'	34.83'
C49	33°23'21"	25.00'	14.57'
C50	4°47'36"	960.00'	80.31'
C51	89°04'58"	15.00'	23.32'
C52	4°35'46"	1000.00'	80.22'
C53	65°35'08"	15.00'	17.17'
C54	62°10'55"	15.00'	16.28'

LEGEND

- FOUND ALIQUOT CORNER AS SHOWN HEREON
- SET NO. 5 X 18" REBAR WITH 1-1/4" PINK PLASTIC CAP STAMPED "AZTEC PLS 38636"
- U.E.* UTILITY EASEMENTS & SNOW STORAGE EASEMENT
- (ROW) RIGHT-OF-WAY
- (NR) DENOTES NON-RADIAL

N

0' 75' 150' 300'
SCALE: 1" = 150'

FOR REVIEW
DO NOT RECORD

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No.: 181122-01 Drawn By: BAM

DEVELOPER
GRAND PARK DEVELOPMENT, LLC
P.O. BOX 30
WINTER PARK, COLORADO 80482
(970) 726-8600

DATE OF PREPARATION:	12-17-2025
SCALE:	1" = 150'
SHEET 2 OF 7	

FINAL PLAT

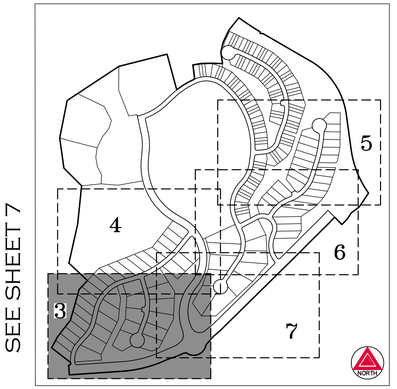
WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND
THE NORTHWEST QUARTER OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.

SEE SHEET 4

SEE SHEET 4

SEE SHEET 7



KEY MAP
SCALE: 1" = 600'

UNPLATTED

N43°06'31"E 242.12'

N15°51'37"E 268.33'

N37°47'05"E 178.77'

N27°58'25"E 102.73'

N52°12'55"W 200.13'

N03°55'37"W 8.26'

Δ=90°00'00"
R=15.00'
L=23.56'

N03°55'37"W 80.00'

N86°04'23"E 2.00'

S86°04'23"W 445.44'

COMPASS DRIVE
(36' WIDE PUBLIC ROW)

HUNTERS COURT
(36' WIDE PUBLIC ROW)

OUTPOST CLUB DRIVE
(PUBLIC ROW WIDTH VARIES)

GRAND PARK DRIVE
(PUBLIC ROW WIDTH VARIES)

1	12,631 SF	0.290 AC
2	11,293 SF	0.259 AC
3	11,056 SF	0.254 AC
4	11,422 SF	0.262 AC
5	12,228 SF	0.281 AC
6	12,782 SF	0.293 AC
7	12,561 SF	0.288 AC
8	12,437 SF	0.286 AC
9	11,541 SF	0.265 AC
10	11,281 SF	0.259 AC
11	12,082 SF	0.277 AC
22	15,901 SF	0.365 AC
23	18,175 SF	0.417 AC
24	17,532 SF	0.402 AC
25	15,931 SF	0.366 AC
26	19,477 SF	0.447 AC
27	21,204 SF	0.487 AC
28	18,821 SF	0.432 AC
29	13,724 SF	0.315 AC
30	16,360 SF	0.376 AC
31	18,342 SF	0.421 AC
32	16,705 SF	0.383 AC
33	19,613 SF	0.450 AC
34	24,593 SF	0.565 AC
35	24,646 SF	0.566 AC
36	23,696 SF	0.544 AC
37	18,757 SF	0.431 AC
38	15,619 SF	0.359 AC
46	27,865 SF	0.640 AC
TRACT A	160,460 SF	3.684 AC
TRACT B	87,572 SF	2.010 AC

Remove the unplatted label, part of Tract A.

REMOVED

ADDED

30' water easement missing here

S 1/4 COR. SEC 29, T1S, R75W, 6TH P.M.
FOUND BENT 1" PIPE WITH 2-1/2" GLO BRASS CAP STAMPED "U.S. GENERAL LAND OFFICE SURVEY 1933" 0.8' ABOVE GROUND

NE 1/4 SEC. 32, T.1S., R.75W., 6TH P.M.

40' WATER AND SANITARY EASEMENT IS MISSING.

16' DRAINAGE EASEMENT IS MISSING

EASEMENTS UPDATED AND ADDED TO PLAT

LEGEND

- FOUND ALIQUOT CORNER AS SHOWN HEREON
- SET NO. 5 X 18" REBAR WITH 1-1/4" PINK PLASTIC CAP STAMPED "AZTEC PLS 38636"
- U.E.* UTILITY EASEMENTS & SNOW STORAGE EASEMENT
- (ROW) RIGHT-OF-WAY
- (NR) DENOTES NON-RADIAL

SEE SHEET 2
FOR LINE &
CURVE TABLES

N
0' 25' 50' 100'
SCALE: 1" = 50'

FOR REVIEW
DO NOT RECORD

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No.: 181122-01 Drawn By: BAM

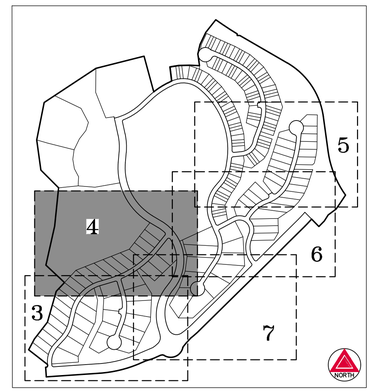
DEVELOPER
GRAND PARK DEVELOPMENT, LLC
P.O. BOX 30
WINTER PARK, COLORADO 80482
(970) 726-8600

DATE OF PREPARATION:	12-17-2025
SCALE:	1" = 50'
SHEET 3 OF 7	

FINAL PLAT

WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND
THE NORTHWEST QUARTER OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.



KEY MAP
SCALE: 1" = 600'

SW 1/4 SEC. 29,
T.1S., R.75W., SIXTH P.M.

SE 1/4 SEC. 29,
T.1S., R.75W., SIXTH P.M.

UNPLATTED

UNPLATTED

UNPLATTED

OUTPOST CLUB DRIVE
(PUBLIC ROW WIDTH VARIES)

COMPASS DRIVE
(36' WIDE PUBLIC ROW)

OUTPOST CLUB DRIVE
(PUBLIC ROW WIDTH VARIES)

OUTPOST CLUB DRIVE
(PUBLIC ROW WIDTH VARIES)

ADDED

Missing drainage easement needed for both Filing 1 and 2

ADDED

Tract B

Tract A

Add road name

ADDED

Delete name here, not needed

REVISED

SEE SHEET 3

SEE SHEET 3

SEE SHEET 2
FOR LINE &
CURVE TABLES

LEGEND

- FOUND ALIQUOT CORNER AS SHOWN HEREON
- SET NO. 5 X 18" REBAR WITH 1-1/4" PINK PLASTIC CAP STAMPED "AZTEC PLS 38636"
- U.E.* UTILITY EASEMENTS & SNOW STORAGE EASEMENT
- (ROW) RIGHT-OF-WAY
- (NR) DENOTES NON-RADIAL

0' 25' 50' 100'
SCALE: 1" = 50'

FOR REVIEW
DO NOT RECORD

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AzTec CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No.: 181122-01 Drawn By: BAM

DEVELOPER
GRAND PARK DEVELOPMENT, LLC

P.O. BOX 30
WINTER PARK, COLORADO 80482
(970) 726-8600

DATE OF PREPARATION:	12-17-2025
SCALE:	1" = 50'

FINAL PLAT

WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND
THE NORTHWEST QUARTER OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.

Needed for both Filing 1 and 2

ADDED
Missing easement for Pond B and its maintenance access

ROAD B (36' WIDE PUBLIC ROW)

ROAD C (36' WIDE PUBLIC ROW)

BUGLE COURT (36' WIDE PUBLIC ROW)

67 11,479 SF 0.264 AC
66 7,849 SF 0.180 AC
65 8,872 SF 0.204 AC
64 9,547 SF 0.219 AC
63 9,747 SF 0.224 AC
62 10,022 SF 0.230 AC
61 11,311 SF 0.260 AC
60 9,453 SF 0.217 AC
59 9,512 SF 0.218 AC
58 10,271 SF 0.236 AC
57 11,763 SF 0.270 AC
56 14,261 SF 0.327 AC
55
68 10,071 SF 0.231 AC
69 10,761 SF 0.247 AC
70 11,319 SF 0.260 AC
71 10,698 SF 0.246 AC
72 10,767 SF 0.247 AC
73 10,361 SF 0.238 AC
74 10,731 SF 0.246 AC
75 10,851 SF 0.249 AC
76 12,465 SF 0.286 AC
77 8,645 SF 0.198 AC
78 8,161 SF 0.187 AC
79 11,819 SF 0.271 AC

TRACT C 6,068 SF 0.139 AC

TRACT D 156,565 SF 3.594 AC

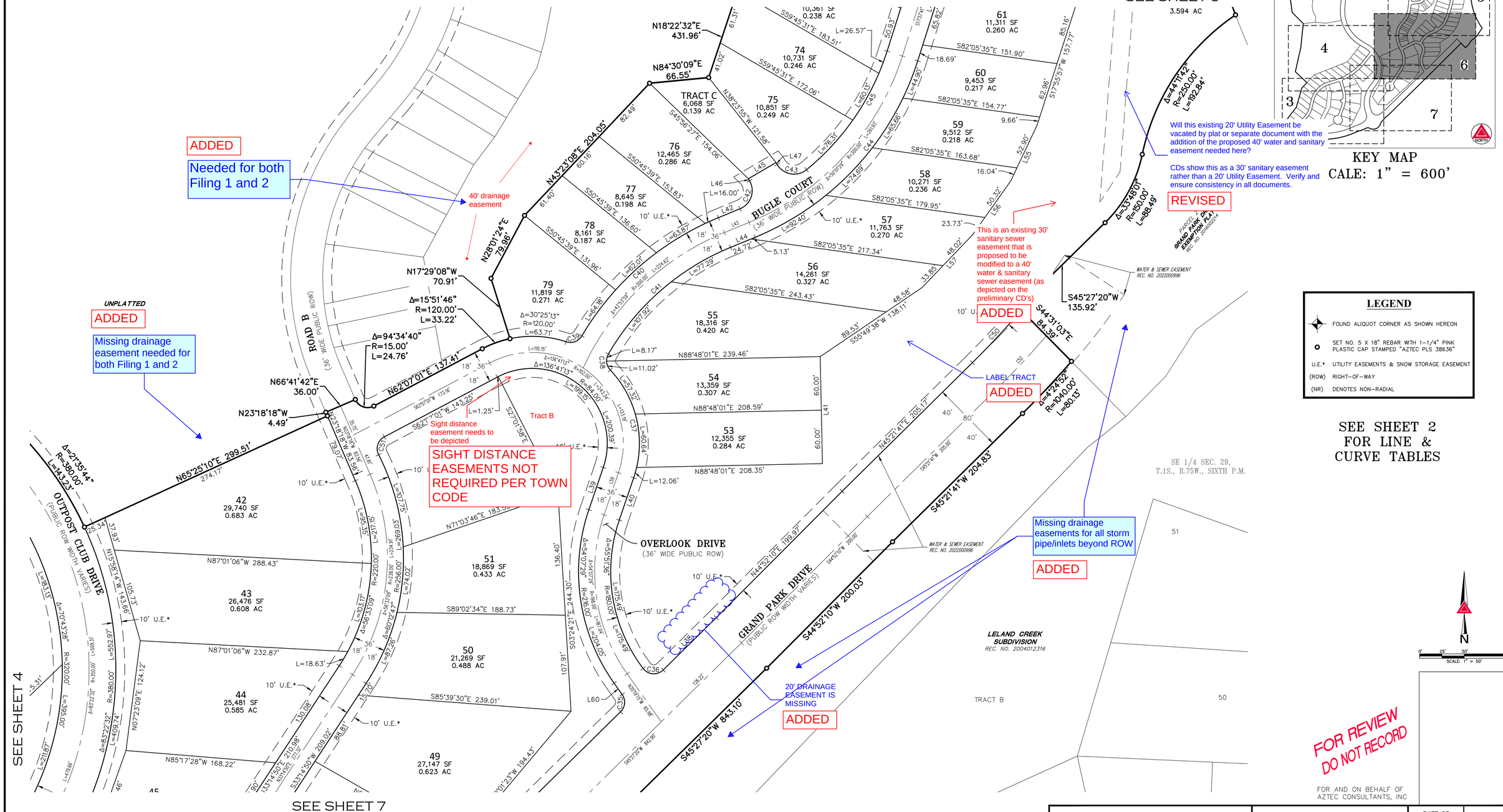
S72°11'31"E 52.67'
S89°02'49"E 86.97'
S07°48'24"E 294.34'
Δ=12°55'27" R=816.78' L=184.24'
Δ=44°11'42" R=250.00' L=192.8
Δ=33°48'01" R=150.00' L=88.49'
S45°27'20"W 135.92'
N46°00'10"E 83.14'
S89°02'49"E 117.48'
S00°40'38"W 225.00'
S89°02'49"E 133.50'
S89°02'49"E 139.43'
S89°02'49"E 144.06'
S89°02'49"E 148.93'
N89°02'49"W 151.71'
S89°02'49"E 156.76'
S82°05'35"E 151.90'
S82°05'35"E 154.77'
S82°05'35"E 163.68'
S82°05'35"E 179.95'
S82°05'35"E 217.34'
S82°05'35"E 243.43'
N74°33'59"E 87.00'
N18°22'32"E 431.96'
N84°30'09"E 66.55'
N43°23'08"E 204.05'
N28°01'24"E 79.98'
N17°29'08"W 70.91'
S72°22'19"E 159.79'
S72°22'19"E 170.58'
S72°22'19"E 176.97'
S72°22'19"E 179.06'
S72°22'19"E 179.84'
S59°45'31"E 183.51'
S59°45'31"E 172.06'
S45°56'27"E 154.06'
S50°45'39"E 153.83'
S50°45'39"E 136.60'
S50°45'39"E 131.96'
S17°55'57"W 157.77'
S17°27'41"W 120.32'
N38°23'55"W 121.58'
L=307.04'
R=60.00'
L=140.23'
L=47.53'
L=56.56'
L=12.76'
L=1.81'
L=4.47'
L=40.24'
L=20.14'
L=82.72'
L=65.77'
L=65.87'
L=66.72'
L=50.63'
L=65.25'
L=80.13'
L=65.66'
L=74.69'
L=92.40'
L=76.31'
L=26.57'
L=16.00'
L=63.87'
L=77.29'
L=64.18'
L=62.07'
L=224.62'
L=205.50'
L=280.00'
L=44.90'
L=43.90'
L=35.81'
L=65.82'
L=18.69'
L=9.66'
L=16.04'
L=23.73'
L=50.32'
L=52.90'
L=62.66'
L=85.16'
L=48.02'
L=33.85'
L=48.58'
L=138.11'
L=24.72'
L=5.13'
L=65.87'
L=66.72'
L=35.81'
L=65.82'
L=44.90'
L=65.66'
L=74.69'
L=80.13'
L=92.40'
L=76.31'
L=65.77'
L=50.63'
L=65.25'
L=82.72'
L=20.14'
L=40.24'
L=4.47'
L=12.76'
L=56.56'
L=47.53'
L=140.23'
L=307.04'
L=1.81'
L=133.50'
L=139.43'
L=144.06'
L=148.93'
L=151.71'
L=156.76'
L=151.90'
L=154.77'
L=163.68'
L=179.95'
L=217.34'
L=243.43'
L=138.11'
L=70.91'
L=79.98'
L=204.05'
L=431.96'
L=66.55'
L=87.00'
L=83.14'
L=86.97'
L=52.67'
L=294.34'
L=184.24'
L=192.8'
L=88.49'
L=135.92'
L=70.91'
L=79.98'
L=204.05'
L=431.96'
L=66.55'
L=87.00'
L=83.14'
L=86.97'
L=52.67'
L=294.34'
L=184.24'
L=192.8'
L=88.49'
L=135.92'

10' U.E.*
8' U.E.*
18' 36' 18'
95.00'
65.00'
65.01'
60.01'
60.00'
61.31'
41.02'
82.49'
60.16'
61.40'
42.22'
37.39'
9.39'
50.93'
66.14'
85.16'
62.66'
52.90'
50.32'
48.02'
33.85'
48.58'
23.73'
16.04'
9.66'
18.69'
65.82'
35.81'
66.14'
45.37'
45.37'
45.37

FINAL PLAT

WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND
THE NORTHWEST QUARTER OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.


SEE SHEET 5
3.594 AC
Δ=44°11'42"
R=250.00'
L=192.84'
Δ=33°48'01"
R=150.00'
L=88.49'
S45°27'20"W
135.92'
WATER & SEWER EASEMENT
REC. NO. 2022000996
PARCEL A
GRAND PARK DR.
EXEMPTION PLAT
REC. NO. 2016002214
Will this existing 20' Utility Easement be vacated by plat or separate document with the addition of the proposed 40' water and sanitary easement needed here?
CDs show this as a 30' sanitary easement rather than a 20' Utility Easement. Verify and ensure consistency in all documents.
REVISED
KEY MAP
CALE: 1" = 600'
LEGEND
FOUND ALIQUOT CORNER AS SHOWN HEREON
SET NO. 5 X 18" REBAR WITH 1-1/4" PINK PLASTIC CAP STAMPED "AZTEC PLS 38636"
U.E.* UTILITY EASEMENTS & SNOW STORAGE EASEMENT
(ROW) RIGHT-OF-WAY
(NR) DENOTES NON-RADIAL
SEE SHEET 2
FOR LINE &
CURVE TABLES
ADDED
Needed for both Filing 1 and 2
40' drainage easement
UNPLATTED
ADDED
Missing drainage easement needed for both Filing 1 and 2
This is an existing 30' sanitary sewer easement that is proposed to be modified to a 40' water & sanitary sewer easement (as depicted on the preliminary CD's)
ADDED
LABEL TRACT
ADDED
Sight distance easement needs to be depicted
SIGHT DISTANCE EASEMENTS NOT REQUIRED PER TOWN CODE
Missing drainage easements for all storm pipe/inlets beyond ROW
ADDED
20' DRAINAGE EASEMENT IS MISSING
ADDED
SEE SHEET 4
SEE SHEET 7
SE 1/4 SEC. 29,
T.1S., R.75W., SIXTH P.M.
LELAND CREEK SUBDIVISION
REC. NO. 2004012316
TRACT B
OVERLOOK DRIVE
(36' WIDE PUBLIC ROW)
GRAND PARK DRIVE
(PUBLIC ROW WIDTH VARIES)
OUTPOST CLUB DRIVE
(PUBLIC ROW WIDTH VARIES)
BUGLE COURT
(36' WIDE PUBLIC ROW)
ROAD B
(36' WIDE PUBLIC ROW)
TRACT C
6,068 SF
0.139 AC
42 29,740 SF 0.683 AC
43 26,476 SF 0.608 AC
44 25,481 SF 0.585 AC
45 AC
49 27,147 SF 0.623 AC
50 21,269 SF 0.488 AC
51 18,869 SF 0.433 AC
53 12,355 SF 0.284 AC
54 13,359 SF 0.307 AC
55 18,316 SF 0.420 AC
56 14,261 SF 0.327 AC
57 11,763 SF 0.270 AC
58 10,271 SF 0.236 AC
59 9,512 SF 0.218 AC
60 9,453 SF 0.217 AC
61 11,311 SF 0.260 AC
74 10,731 SF 0.246 AC
75 10,851 SF 0.249 AC
76 12,465 SF 0.286 AC
77 8,645 SF 0.198 AC
78 8,161 SF 0.187 AC
79 11,819 SF 0.271 AC
10,361 SF 0.238 AC
N18°22'32"E 431.96'
N84°30'09"E 66.55'
N43°23'08"E 204.05'
N28°01'24"E 79.96'
N17°29'08"W 70.91'
N62°07'01"E 137.41'
N66°41'42"E 36.00'
N23°18'18"W 4.49'
N65°25'10"E 299.51'
Δ=15°51'46" R=120.00' L=33.22'
Δ=94°34'40" R=15.00' L=24.76'
Δ=30°25'13" R=120.00' L=63.71'
Δ=21°35'44" R=380.00' L=143.23'
Δ=136°41'13" R=80.00' L=190.85'
Δ=70°43'28" R=320.00' L=395.00'
Δ=83°22'32" R=380.00' L=409.74'
N87°01'06"W 288.43'
N87°01'06"W 232.87'
N85°17'28"W 168.22'
S89°02'34"E 188.73'
S85°39'30"E 239.01'
S03°24'21"E 244.30'
N71°03'46"E 183.53'
N88°48'01"E 239.46'
N88°48'01"E 208.59'
N88°48'01"E 208.35'
S82°05'35"E 151.90'
S82°05'35"E 154.77'
S82°05'35"E 163.68'
S82°05'35"E 179.95'
S82°05'35"E 217.34'
S82°05'35"E 243.43'
S55°49'38"W 138.11'
S45°21'41"W 205.17'
S45°21'41"W 204.83'
S44°52'10"W 200.03'
S45°27'20"W 843.10'
S44°31'03"E 84.39'
S17°55'57"W 157.77'
N44°52'10"E 198.97'
Δ=4°24'52" R=104.00' L=80.13'
L=26.57'
L=12.06'
L=8.17'
L=11.02'
L=1.25'
L=16.00'
L=18.63'
L=74.69'
L=76.31'
L=92.40'
L=77.29'
L=175.49'
L=204.05'
L=217.15'
L=220.00'
L=269.03'
L=74.02'
L=103.77'
L=87.26'
L=200.39'
L=431.19'
L=409.15'
L=211.87'
L=409.74'
L=552.97'
L=395.55'
L=409.31'
L=350.00'
L=380.00'
L=224.62'
L=234.91'
L=238.00'
L=256.00'
L=298.00'
L=380.00'
L=224.62'
L=107.32'
L=571.32'
L=431.19'
L=409.15'
L=200.39'
L=175.49'
L=204.05'
L=217.15'
L=395.55'
L=409.31'
L=350.00'
L=380.00'
L=552.97'
L=409.74'
L=211.87'
L=395.00'
L=409.31'
L=178.66'
L=18.63'
L=18.63'
L=18.63

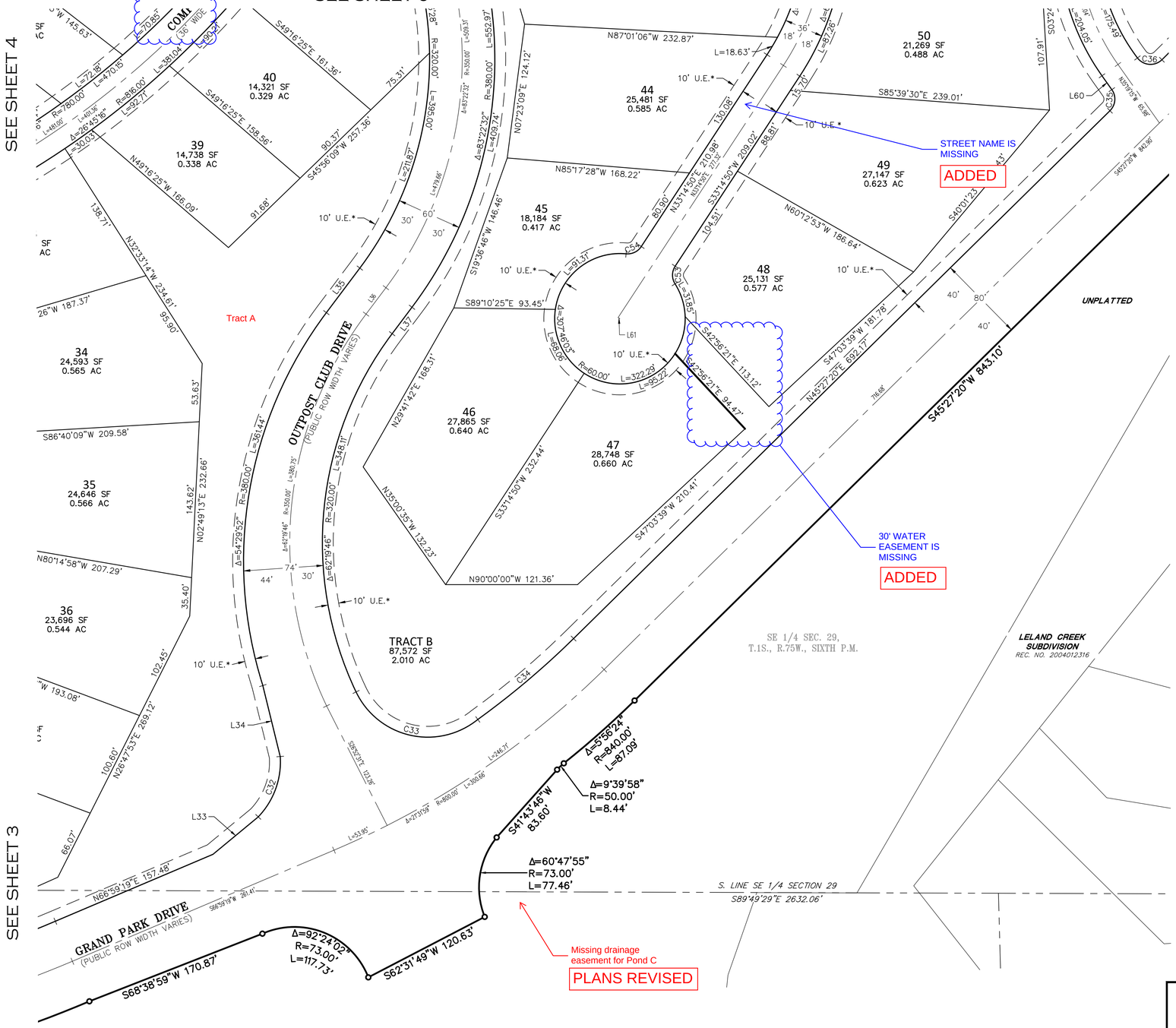
FINAL PLAT

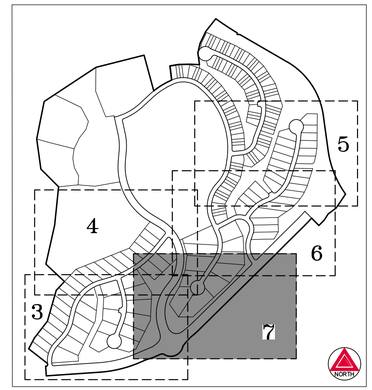
WEST MOUNTAIN FILING NO. 1

A PARCEL OF LAND LOCATED IN SECTION 29 AND
THE NORTHWEST QUARTER OF SECTION 32,
TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO.

REVISED

Fix street name to be legible here





KEY MAP
SCALE: 1" = 600'

LEGEND

✦	FOUND ALIQUOT CORNER AS SHOWN HEREON
○	SET NO. 5 X 18" REBAR WITH 1-1/4" PINK PLASTIC CAP STAMPED "AZTEC PLS 38636"
U.E.*	UTILITY EASEMENTS & SNOW STORAGE EASEMENT
(ROW)	RIGHT-OF-WAY
(NR)	DENOTES NON-RADIAL

SEE SHEET 2
FOR LINE &
CURVE TABLES

N

0' 25' 50' 100'
SCALE: 1" = 50'

FOR REVIEW
DO NOT RECORD

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AzTec Consultants, Inc.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No.: 181122-01 Drawn By: BAM

DEVELOPER
GRAND PARK DEVELOPMENT, LLC
P.O. BOX 30
WINTER PARK, COLORADO 80482
(970) 726-8600

DATE OF PREPARATION:	12-17-2025
SCALE:	1" = 50'
SHEET 7 OF 7	

February 12, 2026

Garrett Scott, Town Planner
Town of Fraser
153 Fraser Avenue, P.O. Box 370
Fraser, Colorado 80442

Re: **GRAND PARK WEST MOUNTAIN WATER SYSTEM CONSTRUCTION PLANS- 8th SUBMITTAL**

Dear Mr. Scott:

Merrick has reviewed the 8th Submittal of the Grand Park West Mountain Distribution Water System Construction Plans received from the Town on January 26, 2026. The Construction Plans are dated January 9, 2026 by Terracina Design. They were provided without responses to the previous comment letters dated 6/10/2025 and 8/15/2026.

General overall priority comments related to water supply planning, water storage tank and pump station sizing that are still outstanding are reiterated below due to their significance. Other minor comments on the construction plans that were not addressed but still may be warranted prior to construction permit approval are list below for the Town's consideration.

Prior General Comments (Not addressed):

1. Additional water supply sources are required to accommodate the increased water demands. Please provide design and construction timelines for the future Water Source Facilities required to supply water to the development with comparison to the timing for the anticipated new development demands coming online. Refer to 2003 Amended Annexation Agreement Article 5 Section 5.5., "Timeline should include project or water demand trigger points for initiation of infrastructure design, construction, and infrastructure commissioning/online. "
    - Note current well production safe yield is approximately 272 gpm and yellow zone treatment plant maximum production is 600 gpm.
    - Also refer to 2020 Town of Fraser Water Supply Report by HRS Water Consultants.

    Applicant response stated that "continued conversations / evaluation is acknowledged." Comment remains unresolved.
2. Current water supply facilities are under capacity for the proposed Grand Park development demands. The Annexation Agreement requires the developer to design, construct, and convey to the Town all "Water Source Facilities" needed to serve the development.
    a. Provide a timeline or plan for infrastructure development in the wellfield capacity and augmentation storage.
    b. Any applications for building approvals shall be preceded by utility reports with calculated Average Day Demands, Maximum Day Demands, Peak Hour Demands, and Irrigation Demands based on annexation agreement gpd per household/unit/SFE.

Prior Comments:

1. Cover Sheet: Benchmark Statement – Town standard survey benchmark is NAD 83 for horizontal and NAVD88 for vertical datum control per the Town standard, Section 14-2-110(c). **Comment not addressed.**

   New Comment: Please provide an equation for conversion from NGVD 29 to NAVD88 per the Town standards.

2. Sheet 10, 13, & 20: Pump station locations are shown at not "an insignificant distance" from tanks. Pump stations should draw water directly from tanks to promote turnover of tank water. **Comment not addressed.**

   New Comment: Please show water lines into and out of storage tanks and pump station sites for reference, but note that their design will be provided under separate construction plans.

3. There is approximately 2,300 linear feet of 12-inch water main outside of the existing 80-foot Grand Park Drive right-of-way from station 18+53 to Station 42+00 (Sheets 4-6). An easement will be required for the water main outside of right-of-way per Section 14-3-240. **Comment not addressed.**

4. Sheet 10 shows two future sanitary stub-outs but there is no sanitary sewer shown within the street. **Comment not addressed.**

   New comment: Remove sanitary stubouts that are not connecting to sanitary sewer and appear incorrect.

New Comments:

5. Coversheet: Please update the professional engineer certification statement to the professional engineer that will be signing and stamping the construction plan set.

6. Merrick acknowledges the formerly proposed Yellow Zone storage tank is no longer shown in the West Mountain Water System Construction Plans. Merrick also understands a letter provided by the East Grand Fire Protection District No. 4 accepted reduced fire storage requirements which led to an assumption for the elimination of the western Yellow Storage Tank and relocating the associated water storage volume in the proposed west Green and Red storage tanks. Merrick will provide future review of the updated Master Water Study and provide appropriate comments to these future facilities, including acceptability of tank elimination, significant increased pumping and water delivery costs in perpetuity, loss of water supply resiliency by using mechanical pressure zone connections rather than gravity fed tank pressure, reduced fire demand storage also effecting the system capacity to maintain supply while experiencing water main break losses, overall system fire resiliency, etc.

7. Pipe joint deflections (horizontal and vertical) noted in plans/profiles exceed allowable deflection per Sheet 2 Note 5. Review and correct the multiple instances of exceeded deflection throughout plan set. Label the design joint deflection in the individual callouts.

8. Sheet 4:

   a. An air release hydrant is shown at station 13+35.77; however, it is also labeled for a future water connection. Please explain the nature of the "future connection" noted at this location. Is this for the future blue tank connection which was mentioned in the 8/22/24 comment response letter from Terracina? Since this fire hydrant appears to be temporary and is not located at a high point, please relabel as a "Temporary blowoff fire hydrant until future connection."

   b. Show the connection to the future blue tank in the vicinity of STA 22+50.

   c. Provide encasement of the 12-inch water main going under the creek from station 20+64 to 21+94 in both plan and profile views. (Chapter 14, Attachment A-24)

9. Sheet 5: STA 24+46 PRV Vault. Applicant should acknowledge the proposed PRV pressure differential will be from the Green Zone to the South Blue Zone which may require special accommodation for the greater pressure reduction.
10. Sheet 6:
    a. Label sanitary crossing the water main at station 44+31 in plan view.
    b. Prior recommendations for an air release valve at station 41+ 30 still valid.
11. Sheet 7: Label sanitary sewer crossings at stations 49+39 and 52+89 in plan view.
12. Sheet 8:
    a. Prior recommendation for an air release valve at station 62+00 still valid.
    b. Label sanitary crossing at station 59+73 in plan view.
13. Sheet 9: Label 8” Water stub, valve, and reducer at Station 74+55.
14. Sheet 10.
    a. The formerly proposed Yellow Zone storage tank is no longer included in the Construction Plans. Acceptability of this elimination is dependent on a yet to be submitted, reviewed, and accepted Master Water Study.
    b. Remove sanitary stub out that is not connecting to any apparent sanitary sewer system.
15. Sheet 11:
    a. Correct the 8” water stub call out to 12”. Label the intent of this future water connection at the Grand Park Drive roundabout.
    b. Update key map to show recently added roundabout.
16. Sheet 16: Label missing sanitary crossings at stations 38+80 and 42+40.
17. Sheet 17: Move 8” water stub to be out from under the ADA sidewalk ramp.
18. Sheet 18: Fix missing finished grade profile at the roundabout.
19. Sheet 19: Fix vertical dimension callout between water main and storm crossing in profile.
20. Sheet 20: Label PRV by others.
21. Sheet 23: Fix missing finished grade line. Label degrees of horizontal deflection.
22. Sheet 24: Delete redundant valve in close proximity to adjacent valve.
23. Sheets 25-29: Label degrees of horizontal deflection.
24. Sheet 30: Fix missing finished grade in profile. Label degrees of horizontal deflection.
25. Sheets 31- 33: Label water lines terminating at the tank and pump station sites and show them extending to the tank and pump station. Label portion by others. Fire hydrants are less than 500’ apart. Designer could space further apart (at exactly 500’ apart) if desired.
26. Sheet 34: Fix missing finished grade in profile.
27. Sheet 36: Add missing Town standard details A-31 (ARV) and A-25 (Bored Casing).

Please let us know if you have any questions on the above comments.

Sincerely,
Merrick & Company

Greg Steed, P.E.
Project Manager

Donna Barrentine, P.E.
General Civil Utility Review

Cc:
Paul Johnson, Town of Fraser
Alan Sielaff, Town of Fraser

Column

See Proof on Next Page

AFFIDAVIT OF PUBLICATION

Ad #: YR1pbhXZQ3osJNpddkLx
Customer: Garrett Scott

State of Florida, County of Orange, ss:

Edmar Corachia, being first duly sworn, deposes and says: That (s)he is a duly authorized signatory of Column Software, PBC, duly authorized agent of Sky-Hi News and Middle Park Times, that the same weekly newspaper printed, in whole or in part and published in the County of Grand, State of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said County of Grand for a period of more than fifty-two consecutive weeks next prior to the first publication of the annexed legal notice or advertisement; that said newspaper has been admitted to the United States mails as a periodical under the provisions of the Act of March 3, 1879, or any amendments thereof, and that said newspaper is a weekly newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado.
That the annexed legal notice or advertisement was published in the regular and entire issue of every number of said weekly newspaper for the period of 1 insertion; and that the first publication of said notice was in the issue of said newspaper dated 14 Jan 2026 in the issue of said newspaper. That said newspaper was regularly issued and circulated on those dates.

Total cost for publication: $30.48

Edmar Corachia

(Signed)_____

VERIFICATION

State of Florida
County of Orange

Subscribed in my presence and sworn to before me on this: 01/14/2026

_____
Notary Public
Notarized remotely online using communication technology via Proof.

NOTARY PUBLIC • STATE OF FLORIDA •

PAMELA BAEZ
Notary Public - State of Florida
Commission # HH 732409
Expires on October 19, 2029

NOTICE OF PUBLIC HEARING
FRASER, COLORADO

NOTICE IS HEREBY GIVEN that a public hearing will be held by the Planning Commission of the Town of Fraser, Colorado, on Wednesday, January 28, 2026, at 6:30 PM in the Board Room of the Fraser Town Hall, located at 153 Fraser Avenue, Fraser, Colorado to consider the following agenda item:

Major Amendment to a Final Planned Development Plan (FPDP) and Major Subdivision (Final Plat) - For part of the Grand Park Development known as West Mountain Filing No. 1 (Planning Areas 10W and 11W).

LEGAL DESCRIPTION: A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 29 AND THE NORTH HALF OF SECTION 32, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO, CONTAINING AN AREA OF 47.838 ACRES, MORE OR LESS.

Property Location: The property is located north of a proposed extension to Grand Park Drive, west of the Union Pacific railroad.

Proposed plans for the subject property are on file with the Town Planning Department.

PUBLISHED IN THE SKY-HI NEWS AND MIDDLE PARK TIMES ON WEDNESDAY, JANUARY 14, 2026.

UNITED STATES POSTAL SERVICE.

SULLIVAN
8700 E JEFFERSON AVE
DENVER, CO 80237-9998
www.usps.com

01/14/2026 09:29 AM

TRACKING NUMBERS

9589 0710 5270 2000 6174 38
9589 0710 5270 2000 6174 45
9589 0710 5270 2000 6174 52
9589 0710 5270 2000 6174 69
9589 0710 5270 2000 6174 76
9589 0710 5270 2000 6174 83
9589 0710 5270 2000 6174 90
9589 0710 5270 2000 6175 06
9589 0710 5270 2000 6150 45
9589 0710 5270 2000 6150 69
9589 0710 5270 2000 6150 76
9589 0710 5270 2000 6150 83
9589 0710 5270 2000 6150 52
9589 0710 5270 2000 6150 90

TRACK STATUS OF ITEMS WITH THIS CODE
(UP TO 25 ITEMS)

TRACK STATUS BY TEXT MESSAGE
Send tracking number to 28777 (2USPS)
Standard message and data rates may apply

TRACK STATUS ONLINE
Visit https://www.usps.com/tracking
Text and e-mail alerts available

PURCHASE DETAILS

Product	Qty	Unit Price	Price
First-Class Mail® Letter Winter Park, CO 80482 Weight: 0 lb 1.10 oz Estimated Delivery Date Sat 01/17/2026	1		$1.07
Certified Mail® Tracking #: 9589 0710 5270 2000 6174 38			$5.30
Return Receipt Tracking #: 9590 9402 7586 2098 8621 59			$4.40
Total			$10.77
First-Class Mail® Letter Denver, CO 80209 Weight: 0 lb 1.10 oz Estimated Delivery Date Sat 01/17/2026	1		$1.07
Certified Mail® Tracking #: 9589 0710 5270 2000 6174 45			$5.30
Return Receipt Tracking #: 9590 9402 7586 2098 8621 66			$4.40
Total			$10.77
First-Class Mail® Letter Lone Tree, CO 80124 Weight: 0 lb 1.10 oz Estimated Delivery Date Sat 01/17/2026	1		$1.07
Certified Mail® Tracking #: 9589 0710 5270 2000 6174 52			$5.30
Return Receipt Tracking #: 9590 9402 7586 2098 8621 73			$4.40
Total			$10.77
First-Class Mail® Letter Denver, CO 80206 Weight: 0 lb 1.10 oz Estimated Delivery Date Sat 01/17/2026	1		$1.07
Certified Mail® Tracking #: 9589 0710 5270 2000 6174 69			$5.30
Return Receipt Tracking #: 9590 9402 7586 2098 8621 80			$4.40
Total			$10.77
First-Class Mail® Letter Winter Park, CO 80482 Weight: 0 lb 1.10 oz Estimated Delivery Date Sat 01/17/2026	1		$1.07
Certified Mail® Tracking #: 9589 0710 5270 2000 6174 76			$5.30
Return Receipt Tracking #: 9590 9402 7586 2098 8621 97			$4.40
Total			$10.77
First-Class Mail® Letter Fraser, CO 80442 Weight: 0 lb 1.10 oz Estimated Delivery Date Sat 01/17/2026	1		$1.07
Certified Mail® Tracking #: 9589 0710 5270 2000 6174 83			$5.30
Return Receipt Tracking #: 9590 9402 7586 2098 8622 03			$4.40
Total			$10.77
First-Class Mail® Letter Winter Park, CO 80482 Weight: 0 lb 1.10 oz Estimated Delivery Date Sat 01/17/2026	1		$1.07
Certified Mail® Tracking #: 9589 0710 5270 2000 6174 90			$5.30
Return Receipt Tracking #: 9590 9402 7586 2098 8622 10			$4.40
Total			$10.77

First-Class Mail® 1 $1.07
Letter
Winter Park, CO 80482
Weight: 0 lb 1.10 oz
Estimated Delivery Date
Sat 01/17/2026
Certified Mail® $5.30
Tracking #:
9589 0710 5270 2000 6175 06
Return Receipt $4.40
Tracking #:
9590 9402 7586 2098 8622 27
Total $10.77

First-Class Mail® 1 $1.07
Letter
Broomfield, CO 80020
Weight: 0 lb 1.10 oz
Estimated Delivery Date
Sat 01/17/2026
Certified Mail® $5.30
Tracking #:
9589 0710 5270 2000 6150 45
Return Receipt $4.40
Tracking #:
9590 9402 7586 2098 8622 34
Total $10.77

First-Class Mail® 1 $1.07
Letter
Winter Park, CO 80482
Weight: 0 lb 1.10 oz
Estimated Delivery Date
Sat 01/17/2026
Certified Mail® $5.30
Tracking #:
9589 0710 5270 2000 6150 69
Return Receipt $4.40
Tracking #:
9590 9402 7586 2098 8622 41
Total $10.77

First-Class Mail® 1 $1.07
Letter
Morrison, CO 80465
Weight: 0 lb 1.10 oz
Estimated Delivery Date
Sat 01/17/2026
Certified Mail® $5.30
Tracking #:
9589 0710 5270 2000 6150 76
Return Receipt $4.40
Tracking #:
9590 9402 7586 2098 8622 58
Total $10.77

First-Class Mail® 1 $1.07
Letter
Austin, TX 78726
Weight: 0 lb 1.10 oz
Estimated Delivery Date
Tue 01/20/2026
Certified Mail® $5.30
Tracking #:
9589 0710 5270 2000 6150 83
Return Receipt $4.40
Tracking #:
9590 9402 7586 2098 8622 65
Total $10.77

First-Class Mail® 1 $1.07
Letter
Excelsior, MN 55331
Weight: 0 lb 1.10 oz
Estimated Delivery Date
Tue 01/20/2026
Certified Mail® $5.30
Tracking #:
9589 0710 5270 2000 6150 52
Return Receipt $4.40
Tracking #:
9590 9402 7586 2098 8621 42
Total $10.77

First-Class Mail® 1 $1.07
Letter
Boulder, CO 80301
Weight: 0 lb 1.10 oz
Estimated Delivery Date
Sat 01/17/2026
Certified Mail® $5.30
Tracking #:
9589 0710 5270 2000 6150 90
Return Receipt $4.40
Tracking #:
9590 9402 7586 2098 8622 72
Total $10.77

Grand Total: $150.78

Credit Card Remit $150.78
Card Name: VISA
Account #: XXXXXXXXXXXX5303
Approval #: 07956G
Transaction #: 442
AID: A0000000031010 Contactless
AL: VISA CREDIT
CHASE VISA

9589 0710 5270 2000 6175 06

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
Winter Park, CO 80482

OFFICIAL USE

Certified Mail Fee	$5.30
$	$4.40
Extra Services & Fees *(check box, add fee as appropriate)*	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$1.07
$	
Total Postage and Fees	$10.77
$	

0069 06

Postmark Here
JAN 14 2026
01/14/2026
SULLIVAN STA DENVER, CO 80237

Sent To
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6174 76

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
Winter Park, CO 80482

OFFICIAL USE

Certified Mail Fee	$5.30
$	$4.40
Extra Services & Fees *(check box, add fee as appropriate)*	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$1.07
$	
Total Postage and Fees	$10.77
$	

0069 06

Postmark Here
JAN 14 2026
01/14/2026
SULLIVAN STA DENVER, CO 80237

Sent To
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6174 90

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
Winter Park, CO 80482

OFFICIAL USE

Certified Mail Fee	$5.30
$	$4.40
Extra Services & Fees *(check box, add fee as appropriate)*	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$1.07
$	
Total Postage and Fees	$10.77
$	

0069 06

Postmark Here
JAN 14 2026
01/14/2026
SULLIVAN STA DENVER, CO 80237

Sent To
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6174 69

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

OFFICIAL USE

Certified Mail Fee	
$	
Extra Services & Fees *(check box, add fee as appropriate)*	
☐ Return Receipt (hardcopy)	$
☐ Return Receipt (electronic)	$
☐ Certified Mail Restricted Delivery	$
☐ Adult Signature Required	$
☐ Adult Signature Restricted Delivery	$
Postage	Robinson Michael
$	
Total Postage and Fees	3033 E 7th Ave
$	

Sent To Denver CO 80206
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

Postmark Here
JAN 14 2026
SULLIVAN STA DENVER, CO 80237

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6174 83

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
Fraser, CO 80442

OFFICIAL USE

Certified Mail Fee	$5.30
$	$4.40
Extra Services & Fees *(check box, add fee as appropriate)*	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$1.07
$	
Total Postage and Fees	$10.77
$	

0069 06

Postmark Here
JAN 14 2026
01/14/2026
SULLIVAN STA DENVER, CO 80237

Sent To
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6174 38

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
Winter Park, CO 80482

OFFICIAL USE

Certified Mail Fee	$5.30
$	$4.40
Extra Services & Fees *(check box, add fee as appropriate)*	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$1.07
$	
Total Postage and Fees	$10.77
$	

0069 06

Postmark Here
JAN 14 2026
01/14/2026
SULLIVAN STA DENVER, CO 80237

Sent To
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6150 90

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

Boulder, CO 80301

OFFICIAL USE

Certified Mail Fee	$5.30
$	$4.40
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$1.07
$	
Total Postage and Fees	$10.77
$	

0069 06

Postmark Here
JAN 14 2026
01/14/2026
DENVER, CO 80237
SULLIVAN STA

Sent To
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6150 69

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

Winter Park, CO 80482

OFFICIAL USE

Certified Mail Fee	$5.30
$	$4.40
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$1.07
$	
Total Postage and Fees	
$	

0069 06

Postmark Here
JAN 14 2026
01/14/2026
DENVER, CO 80237
SULLIVAN STA

Sent To
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6150 76

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

Morrison, CO 80465

OFFICIAL USE

Certified Mail Fee	$5.30
$	$4.40
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$1.07
$	
Total Postage and Fees	
$	

0069 06

Postmark Here
JAN 14 2026
01/14/2026
DENVER, CO 80237
SULLIVAN STA

Sent To
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6150 52

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

OFFICIAL USE

Certified Mail Fee	
$	
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$
☐ Return Receipt (electronic)	$
☐ Certified Mail Restricted Delivery	$
☐ Adult Signature Required	$
☐ Adult Signature Restricted Delivery	$
Postage	Peterson Brenda
$	
Total Postage and Fees	195 W Pine Rd
$	

Postmark Here

Sent To Excelsior MN 55331
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6150 45

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

OFFICIAL USE

Certified Mail Fee	
$	
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$
☐ Return Receipt (electronic)	$
☐ Certified Mail Restricted Delivery	$
☐ Adult Signature Required	$
☐ Adult Signature Restricted Delivery	$
Postage	Post John Osborn
$	
Total Postage and Fees	13933 Gunnison Way
$	

Postmark Here
JAN 14 2026
DENVER, CO 80237
SULLIVAN STA

Sent To Broomfield CO 80020
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6150 83

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

Austin, TX 78726

OFFICIAL USE

Certified Mail Fee	$5.30
$	$4.40
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$1.07
$	
Total Postage and Fees	$10.77
$	

0069 06

Postmark Here
JAN 14 2026
01/14/2026
DENVER, CO 80237
SULLIVAN STA

Sent To
Street and Apt. No., or PO Box No.
City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6174 52

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com*®.

Long Tree, CO 80124

OFFICIAL USE

Certified Mail Fee $5.30

$ $4.40

Extra Services & Fees *(check box, add fee as appropriate)*

- ☐ Return Receipt (hardcopy) $ $0.00
- ☐ Return Receipt (electronic) $ $0.00
- ☐ Certified Mail Restricted Delivery $ $0.00
- ☐ Adult Signature Required $ $0.00
- ☐ Adult Signature Restricted Delivery $

Postage $1.07

$

Total Postage and Fees $10.77

$

0069 06

Postmark Here

SULLIVAN STA DENVER, CO 80237 JAN 14 2026

01/14/2026

Sent To

Street and Apt. No., or PO Box No.

City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 2000 6174 45

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com*®.

Denver, CO 80207

OFFICIAL USE

Certified Mail Fee $5.30

$ $4.40

Extra Services & Fees *(check box, add fee as appropriate)*

- ☐ Return Receipt (hardcopy) $ $0.00
- ☐ Return Receipt (electronic) $ $0.00
- ☐ Certified Mail Restricted Delivery $ $0.00
- ☐ Adult Signature Required $ $0.00
- ☐ Adult Signature Restricted Delivery $

Postage $1.07

$

Total Postage and Fees $10.77

$

0069 06

Postmark Here

SULLIVAN STA DENVER, CO 80237 JAN 14 2026

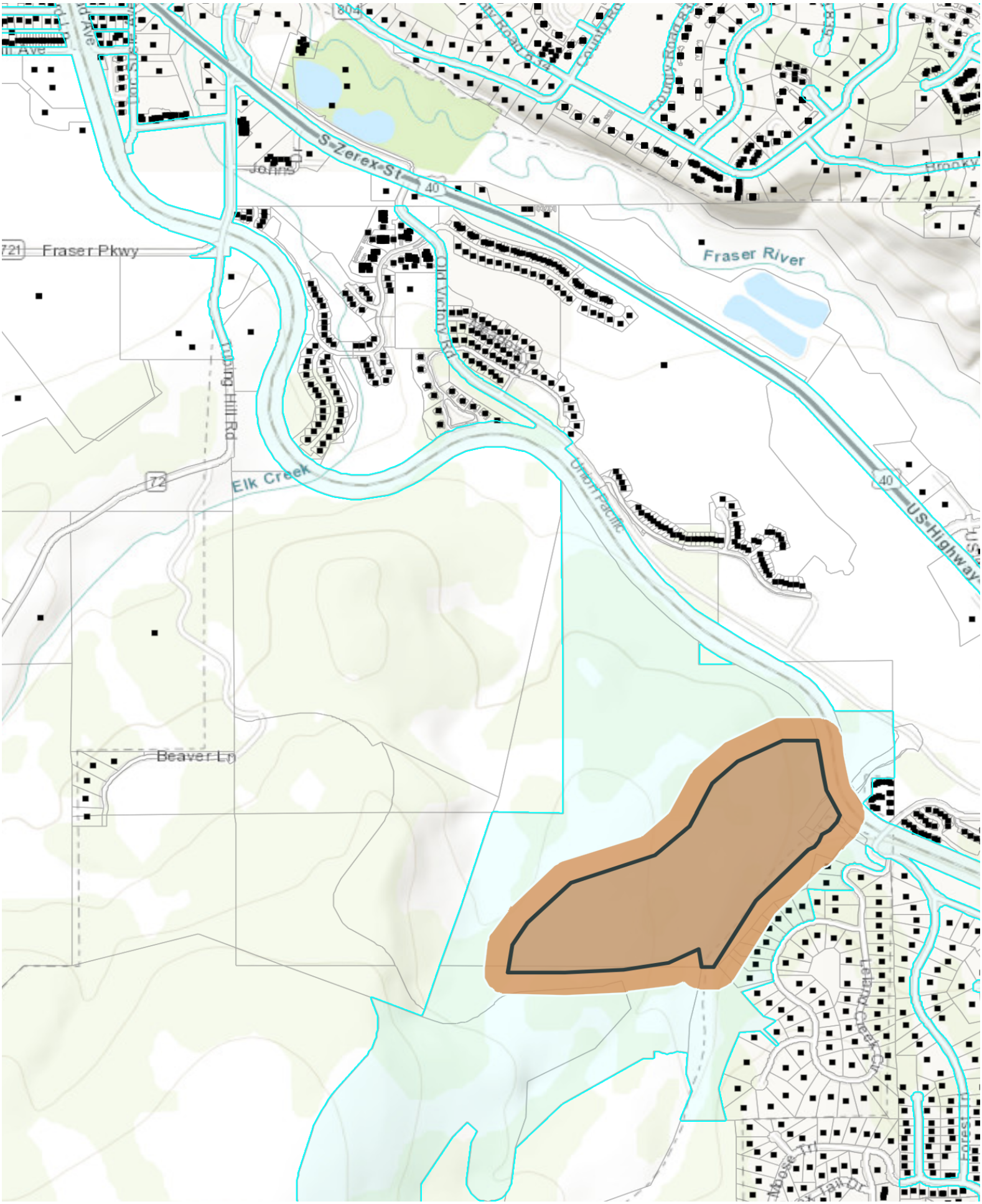
01/14/2026

Sent To

Street and Apt. No., or PO Box No.

City, State, ZIP+4®

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions


S Zerex St
Fraser Pkwy
Fraser River
Old Victory Rd
Tubing Hill Rd
Elk Creek
Union Pacific
US Highway
Beaver Ln
Brooky
Jones
40
72
721
804

DESSEL, JAY H & PATRICIA A
4712 TALLY HO CT
BOULDER, CO 80301-3864

LELAND CREEK OWNERS ASSN
PO BOX 30
WINTER PARK, CO 80482-0030

RYCOKA LLC
10812 BROKEN BROOK
AUSTIN, TX 78726-1904

CORNERSTONE WINTER PARK HOLDINGS LLC
PO BOX 30
WINTER PARK, CO 80482-0030

KINDER KELLY F
10137 S SHADOW HILL DR
LONE TREE, CO 80124-6810

,

PERLMAN JACOB & SPAETH TRISHA
1070 S ADAMS ST
DENVER, CO 80209-4907

FRASER TOWN OF
153 FRASER AVE
FRASER, CO 80442

PRICE, THE DARYL AND DANA REV TRUST
6166 COLOROW DR
MORRISION, CO 80465-2271

GRAND PARK DEVELOPMENT LLC
PO BOX 30
WINTER PARK, CO 80482-0030

ESHER PROPERTIES, INC
PO BOX 3541
WINTER PARK, CO 80482-3541

CHARLAND, SCOTT L & KAREN K
PO BOX 1941
WINTER PARK, CO 80482-1941

PETERSON STEPHEN TRUST AGREEMENT 08-27-2019 PETERSON BRENDA C TRUST AGREEMENT 08-27-2019
195 W POINT RD
EXCELSIOR , MN 55331-9422

POST JOHN OSBORN & POST SARAH EMILY
13933 GUNNISON WAY
BROOMFIELD , CO 80020-6051

ROBINSON, MICHAEL S & SAMANTHA F
3033 E 7TH AVENUE PKWY
DENVER, CO 80206-3907

FRASER PLANNING COMMISSION
RESOLUTION NO. 2026-01-01

A RESOLUTION RECOMMENDING APPROVAL OF A FINAL PLAT AND FINAL PLANNED DEVELOPMENT PLAN (FPDP) FOR A RESIDENTIAL DEVELOPMENT KNOWN AS GRAND PARK WEST MOUNTAIN FILING NO. 1, PLANNING AREAS 10W AND 11W, LOCATED NORTH OF A PROPOSED EXTENSION TO GRAND PARK DRIVE, LEGALLY DESCRIBED AS A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 29 AND THE NORTH HALF OF SECTION 32, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF FRASER, COUNTY OF GRAND, STATE OF COLORADO, CONTAINING AN AREA OF 47.838 ACRES, MORE OR LESS

WHEREAS, on June 5, 2024, Cornerstone Winter Park Holdings, LLC, a Colorado limited liability company, received approval by the Fraser Board of Trustees via Resolution 2024-06-04, for a Final Plat and Final Planned Development Plan (FPDP) for the development of 72 residential units within the boundaries of Planning Areas 10W and 11W of the Grand Park Planned Development District (PDD), known as West Mountain Filing No. 1; and

WHEREAS, on January 22, 2025, Cornerstone Winter Park Holdings, LLC, received approval by the Fraser Board of Trustees via Resolution 2025-01-09 for an Amended Final Plat and Final Planned Development Plan (FPDP) for an increase of 7 units for the development of 79 residential units within the boundaries of Planning Areas 10W and 11W of the Grand Park Planned Development District (PDD), known as West Mountain Filing No. 1; and

WHEREAS, since that time, Cornerstone Winter Park Holdings, LLC, has worked to address the conditions of approval in Resolution 2025-01-09, but has not yet recorded or executed any of the required land use approval documents; and

WHEREAS, on December 19, 2025, West Mountain Development, LLC, a Colorado limited liability company, through Cornerstone Winter Park Holdings, LLC, submitted a revised Final Plat and FPDP application that would rearrange the lots in the previously approved application, which is considered a major amendment to the approved FPDP and therefore should be reviewed and approved by the Fraser Planning Commission and Board of Trustees; and

WHEREAS, West Mountain Development, LLC, a Colorado limited liability company, is the current owner of the property; and

WHEREAS, following a review of the submitted plans and documents by Town Staff and applicable referral entities, the application was considered during a regular meeting of the Fraser Planning Commission held on January 28, 2026 through a properly noticed public hearing; and

WHEREAS, Town Staff has determined that this application is in compliance with the governing documents of the Grand Park PDD and applicable provisions of the Land Development Code of the Town of Faser when the conditions listed below have been addressed.

NOW THEREFORE BE IT RESOLVED that the Fraser Planning Commission has voted to recommend approval of the Final Plat and FPDP application with the following conditions:

1) Prior to recordation of the FPDP and Final Plat, the Applicant must address all outstanding review comments to the satisfaction of the Town and/or applicable entity and revise and resubmit all documents accordingly.

2) Prior to recordation of the FPDP and the Final Plat, the Applicant shall receive approval from the Town of Fraser of the West Mountain Water Master Plan and associated construction design drawings and reports, as stipulated in Articles 5.3, 5.5, and 5.6 of the 2003 Annexation Agreement.

3) Prior to Final Plat recordation, the Applicant shall execute an approved Development Improvements Agreement and provide the appropriate surety.

4) Prior to Final Plat recordation, the Applicant shall provide the Town with the following items as outlined in the Major Subdivision Final Plat Checklist:
    a. Proof of filing the applicable articles of incorporation with the Secretary of State and the executed originals of all legal documents, including a final executed DIA and any required collateral.
    b. Final plat Mylar with appropriate signatures
    c. A digital file of the approved final plat and 911 emergency system drawing / address map in both CAD and PDF format for the Town's Geographic Information System (GIS).

5) Concurrent with the recordation of the Final Plat or any portion/phase thereof, the Town shall record the corresponding Development Improvements Agreement (DIA) as well as the necessary HOA declaration, restrictive covenants, and bylaws.

APPROVED AND ADOPTED THIS 28TH DAY OF JANUARY, 2026.

FRASER PLANNING COMMISSION

Chairperson

ATTEST:

Town Clerk

FRASER FORWARD

COMPREHENSIVE PLAN



Guiding Growth Through Nature's Rhythm

Final Draft for Adoption: February 2026

FRASER

Dear Residents, Stakeholders, and Visitors of Fraser,

It is with great pride and optimism that I present *Fraser Forward: The Town of Fraser Comprehensive Plan*. This document represents more than a statutory requirement or a planning exercise - it is a reflection of who we are as a community and a shared commitment to steward Fraser thoughtfully through the next twenty years.

Fraser has always been shaped by its environment, its people, and its sense of purpose. From our early roots as a railroad and timber town to our evolution into a vibrant and year-round mountain destination community, Fraser has remained resilient, creative, and deeply connected to place. Today, as growth and change accelerate throughout the Fraser Valley, we find ourselves at a pivotal moment - one that calls for intentional choices grounded in our values and guided by a clear, community-driven vision.

Fraser Forward is the result of an eighteen-month collaborative process involving residents, business owners, local organizations, regional partners, Town staff, the Planning Commission, the Downtown Development Authority Board, and the Board of Trustees. Through surveys, workshops, open houses, pop-up events, and countless conversations, the community articulated what matters most: preserving our small-town character, protecting the natural environment, supporting a year-round and diverse population, and ensuring that Fraser remains a place where people of all ages can live, work, and thrive.

This plan builds upon the many strengths and accomplishments that already define Fraser. In recent years, Fraser has experienced strategic growth and reinvestment that are strengthening our community's vitality and long-term sustainability. Major developments such as Rendezvous and Grand Park, as well as in Downtown Fraser, have attracted new residents and businesses, contributing to a higher year-round population, increased visitation, and meaningful sales tax growth that supports essential services and community priorities. These developments complement significant public investments in community assets, including the Fraser River Trail, which enhances connectivity and outdoor recreation for residents and visitors alike; the Grand Park Recreation Center, a hub for health, wellness, and community programming; and the recently opened Middle Park Health Fraser Medical Center, which ensures critical health care access close to home. Together, these projects reflect a shared commitment to balanced growth that honors Fraser's small-town character while expanding opportunities for quality of life, economic resilience, and year-round vibrancy.

Our community is supported by institutions and organizations that consistently demonstrate excellence, dedication, and service. Fraser Valley Elementary School, part of the East Grand School District, fosters learning, inclusion, and opportunity for our youngest residents. In 2024, the elementary school was recognized with two of the most prestigious awards granted by the Colorado Department of Education: the Governor's Distinguished Improvement Award and the John Irwin School of Excellence Award. This coincided with the opening of a new arts and sciences wing at the elementary school ahead of the 2024-2025 school year.

The Fraser Valley Library, operated by the Grand County Library District, serves as a trusted and welcoming hub for education, connection, and lifelong learning, adapting to the evolving needs of residents across generations. In 2023, the library district was recognized with the President's Community Award by the Colorado Association of Libraries for its Senior Lunch & Learn program in partnership with Grand County Public Health and the Mountain Family Center.

Equally important are the civic and volunteer organizations that embody Fraser's spirit of generosity and engagement. These include the Fraser Valley Lions Club and the Grand Foundation which, through decades of service and millions of dollars invested in our community, have strengthened bonds and provided meaningful support to residents in need - quietly but consistently improving quality of life.

Fraser Valley Arts has long played a vital role in shaping Fraser's creative identity, championing visual and performing arts, education, and the prestigious Fraser Mountain Mural Festival and Fire & Ice Festival. Building on this legacy, the organization is advancing plans for The Fraser Center

for Creative Arts, a transformative new facility anticipated to break ground in Downtown Fraser and envisioned as a year-round home for performances, exhibitions, education, and community gatherings. Designed to serve as a cultural anchor and economic catalyst, the Center will activate Downtown Fraser and reinforce revitalization efforts.

Our regional partnerships also play a vital role in Fraser's success. Winter Park Resort, a world-class destination and a major economic driver which was recognized as the most family-friendly ski resort in North America for the 2023-2024 season, contributes to the vitality of the Fraser Valley while reinforcing our shared identity as a year-round recreation community. The close relationship between Fraser, Winter Park, Granby, and Grand County underscores the importance of collaboration in addressing shared challenges such as housing affordability, transportation, infrastructure, and workforce sustainability.

Fraser Forward provides a roadmap for navigating these challenges while building on our assets. Organized around the rhythms of the four seasons - Spring, Summer, Fall, and Winter - the plan reflects how residents experience Fraser throughout the year and how different priorities come into focus over time. From a renewed vision for Downtown Fraser and expanded housing opportunities, to enhanced parks, trails, and public spaces; from sustainability and land stewardship to resilient infrastructure, transportation, and intergovernmental coordination - this plan integrates policy, investment, and implementation into a cohesive framework.

At its core, *Fraser Forward* is grounded in six community values: economic resiliency and workforce development; affordable and diverse housing options; Fraser's unique spirit and character; safe roads and access for all; strong public services and community resources; and the protection of natural spaces and wild places. These values are not abstract ideals - they are directly tied to goals, strategies, and actions that will guide day-to-day decision-making and long-term investments. The accompanying *Fraser in Action* implementation framework ensures accountability by identifying priorities, timelines, partners, and resources needed to move from vision to results.

These values are already being translated into action through projects such as St. Louis Landing. Phase 1 of St. Louis Landing will deliver 129 deed-restricted affordable apartments with completion anticipated in summer 2027, providing much-needed housing for local workers and families. Future phases are envisioned to expand affordable ownership opportunities, reinforcing the Town's commitment to long-term housing stability, economic inclusion, and a diverse, year-round community. St. Louis Landing exemplifies how *Fraser Forward* aligns policy with tangible outcomes - ensuring that those who contribute to the community can also afford to call it home.

This plan is intended to be a living document - one that evolves as Fraser evolves. It will inform future updates to the Land Development Code, guide capital improvement planning, and serve as a touchstone for community conversations in the years ahead. Most importantly, it provides a shared foundation for aligning public and private efforts toward a common future.

I want to extend my sincere gratitude to everyone who contributed to this process. Your voices, insights, and care for this community are evident throughout every page of this plan. *Fraser Forward* belongs to all of us, and its success will be measured not only by policies adopted or projects completed, but by our continued willingness to work together with creativity, respect, and intention.

Together, we will ensure that Fraser remains a distinctive mountain town - rooted in its history, responsive to change, and thriving in every season.

With appreciation and confidence in our shared future,

Brian Cerkvenik
Mayor, Town of Fraser

Acknowledgements

BOARD OF TRUSTEES

Mayor Brian Cerkvenik
Mayor Pro Tem Peggy Smith
Trustee Adam Cwiklin
Trustee Kaydee Fisher
Trustee Lewis Gregory
Trustee Katie Soles
Trustee Julie White

PLANNING COMMISSION

Chairperson, Andy Miller
Vice Chairperson, Bob Gnuse
Margaret Bowles
Joy McCoy
Trustee Peggy Smith
Trustee Katie Soles
Mayor Brian Cerkvenik

TOWN STAFF

Michael Brack, Town Manager
Sarah Catanzarite, Assistant Town Manager
Garrett Scott, Town Planner
Alan Sielaff, Assistant Town Planner
Paul Johnson, Director of Public Works
Sarah Wieck, Marketing & Communications Manager



CONSULTANTS

Cushing Terrell
Leland Consulting
Fehr & Peers

FRASER COMMUNITY

A special thanks to community members who participated in the planning process in 2024 and 2025.



Contents

0 Executive Summary

Executive Summary 10

1 Introduction

Plan Purpose 18
Plan Process 19
Plan Use 20
Plans Referenced 21
Planning Area 22

2 Fraser Today

Fraser Yesterday 26
Fraser Today 28

3 Community Voices

Engagement Process 42
Community Values 46

4 Fraser Forward

Spring: Growth & New Beginnings **52**
- Downtown Vision 54
- Housing 64
- Economic Vitality 69

Summer: Vibrancy & Connection **75**
- Community 77
- Parks, Recreation, Open Space, & Trails 81

Fall: Stewardship & Resilience **87**
- Land Use 89
- Sustainability 94

Winter: Foundations & Support **101**
- Town Services & Infrastructure 103
- Transportation & Mobility 108
- Intergovernmental Coordination 111

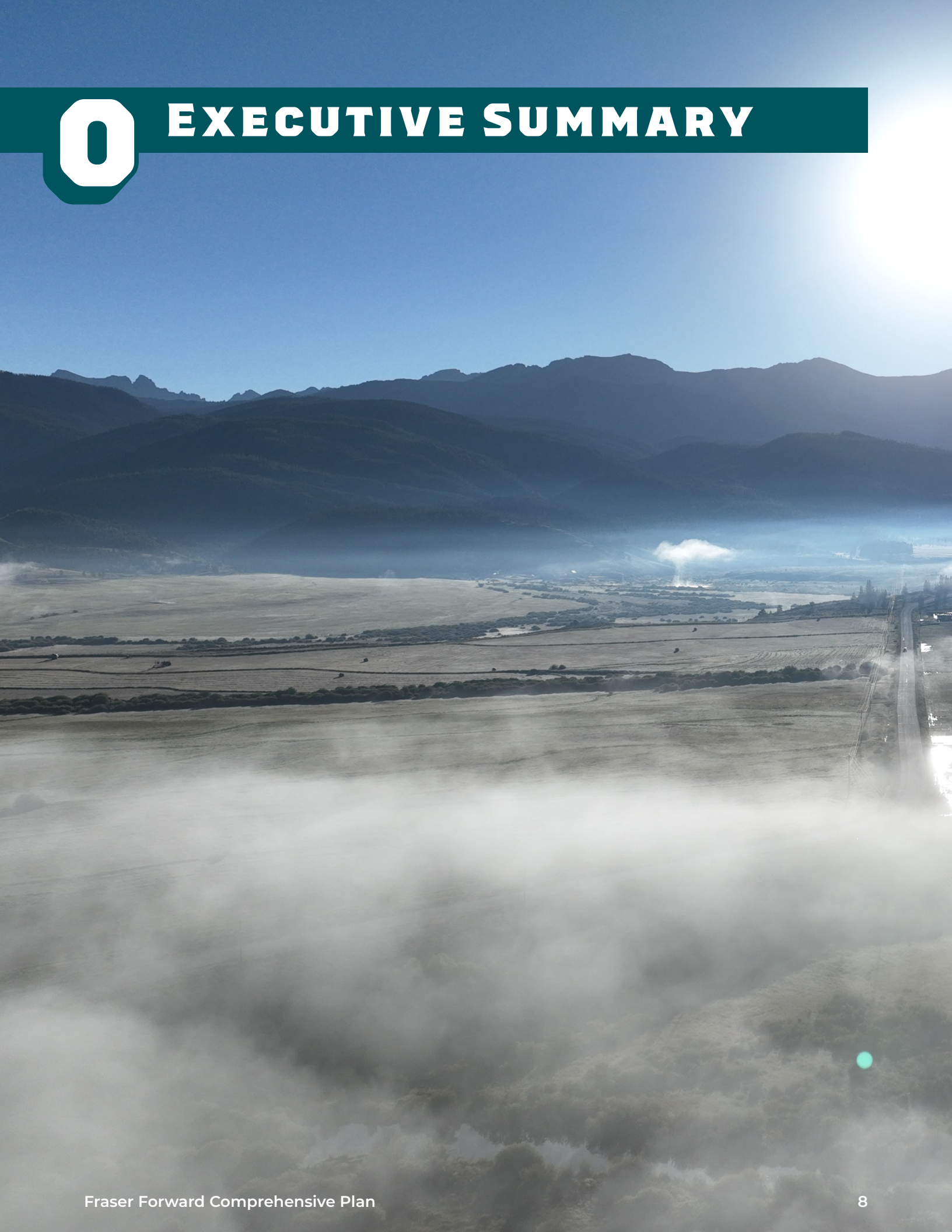
5 Fraser in Action

Implementation **117**
Future Land Use **158**

6 Appendix

Survey Results **171**

0 Executive Summary





Executive Summary

A PLAN FOR FRASER'S FUTURE

Fraser Forward: Comprehensive Plan sets a clear direction for how the Town of Fraser will grow, evolve, and sustain its unique mountain character over the next twenty years. It builds on Fraser's strong sense of community, environmental stewardship, and creative energy to ensure that future development reflects local values, enhances livability, and strengthens the town's identity as the "Center of Adventure" in the Fraser Valley.

The plan provides a roadmap for decisions about land use, housing, transportation, parks and open space, and economic development. It integrates community priorities, aligns with regional initiatives, and establishes an implementation framework to guide investments and policy updates over time.

Community-Driven Vision

The plan is grounded in an extensive public engagement process that reached residents, business owners, and organizations through workshops, surveys, focus groups, and events. Community input consistently emphasized a desire to preserve Fraser's small-town character, maintain access to the outdoors, and support a diverse, year-round community.

From this foundation, the community vision emerged:

Fraser is a vibrant, connected mountain town that celebrates creativity, protects its natural environment, and offers opportunities for people of all ages to live, work, and play.

This vision is expressed through several core community values found on the following page.



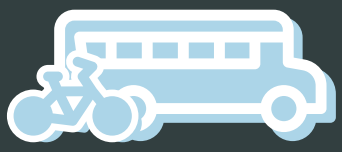
Affordable & Diverse Housing Options:
A community where all can find safe, comfortable housing within their means.



Economic Resiliency and Workforce Development:
Activity year-round with employment opportunities that align with community members.



Fraser's Unique Spirit and Character:
Building on the Town's artistic culture and entrepreneurial spirit.



Safe Roads and Access for All:
Supporting trails, mobility options, and healthy lifestyles.



Public Services and Community Resources:
Providing amenities that are critical to feel supported in our community.



Natural Spaces and Wild Places:
Stewarding the Fraser River, surrounding forests, and open spaces.

FRASER TODAY

Fraser is at a pivotal point in its evolution. Once a quiet mountain community, it has become an increasingly popular place to live and visit. The town's population, economy, and tourism activity are growing, bringing both opportunities and challenges.

Key trends shaping Fraser today include:

- Rapid growth and housing pressure driven by seasonal tourism, regional job centers, and second-home ownership.
- Limited workforce housing, affecting affordability and local employment stability.
- Environmental constraints such as National Forests, St. Louis Creek and Fraser River, and other natural resource conservation.
- A vibrant creative culture that fuels community identity and local events like Fraser Mountain Mural Festival.
- Strong regional connections with Winter Park, Granby, and the greater Grand County economy.

Understanding these dynamics allows Fraser to shape growth intentionally—leveraging opportunity while protecting the community's character and natural assets.

Plan Framework

Fraser Forward organizes goals, policies, and actions under a cohesive framework that reflects how residents experience the town day-to-day. Each chapter builds on the community vision with targeted objectives and implementation strategies. Organizing the planning topics into the four seasons reflects the identity of Fraser as a year-round community shaped by seasonal change. Each season highlights a different rhythm of life – spring brings new opportunities, summer drives energy and activity, autumn gathers the harvest and reflects, and winter strengthens foundations and prepares for the year ahead.



Spring: Growth & New Beginnings

Spring represents opportunity and renewal. This chapter focuses on a Downtown vision, housing, and economic vitality—key drivers of Fraser's long-term prosperity. The plan envisions a thriving Downtown core with a mix of uses, creative placemaking, and attainable housing that supports residents and local businesses alike.



Summer: Vibrancy & Connection

Fraser's summers are full of energy, activity, and connection. This theme centers on enhancing parks, recreation, open space, and trails while strengthening community gathering places. The plan envisions a connected system of green spaces and active transportation routes that encourage outdoor living and celebrate Fraser's mountain lifestyle.



Fall: Stewardship & Resilience

As the seasons change, Fraser's focus turns to sustainability. This chapter addresses land use and sustainability, guiding how and where the town grows. Policies emphasize compact, efficient development, protection of natural resources, climate readiness, and continued commitment to dark skies and water conservation.



Winter: Foundations & Support

Fraser's winter identity represents endurance and strength. This section focuses on intergovernmental coordination especially services, infrastructure, transportation, and mobility— all the systems that keep the town functioning year-round. Goals include improving multimodal transportation, investing in resilient utilities and public facilities, and coordinating regionally to manage growth and shared services.

Together, these four themes form an integrated vision of Fraser as a complete, connected, and sustainable mountain town.

IMPLEMENTATION: FRASER IN ACTION

The final section, Fraser in Action, translates vision into results. It identifies clear strategies, timelines, and partnerships to move the plan forward. Implementation tools include:

- Action matrix outlining short-, mid-, and long-term priorities as well as estimated investment cost and potential partners.
- Integration with capital improvement planning and annual budgeting.
- Coordination among town departments and regional partners.
- Performance monitoring and updates to track progress over time.

Fraser Forward is intended as a living document—one that evolves with the community and remains relevant as new opportunities and challenges emerge.

Moving Forward Together

Fraser Forward reflects the collective aspirations of a community proud of its past and excited for its future. It captures Fraser's enduring spirit of creativity, stewardship, and connection while charting a course for sustainable, inclusive growth.

By implementing this plan, Fraser commits to shaping its future with intention—to remain a distinctive mountain town that values both people and place, and continues to thrive in every season.



1 Introduction





Plan Purpose

WHAT IS A COMPREHENSIVE PLAN?

A comprehensive plan's primary purpose is to provide guidance to Town leadership to make thoughtful, coordinated decisions over time. It guides decisions about laws, budgets, public services, infrastructure, and major projects to ensure that they are in support of the community's vision for the future. The community vision is crafted throughout this process to understand the values, needs, and priorities of residents. In order to acheive the community vision, this plan provides various goals, strategies, and actions for Town staff, elected officials, and the Fraser community to implement. The final component of the plan is the future land use map, which translates the community's vision into on-the-ground solutions.



A Guiding Document



Community Vision for the Future



Goals, Strategies, & Actions



Future Land Use Map

Plan Process

Fraser's Comprehensive Plan was created through a collaborative process led by Town Staff and consultants from Cushing Terrell. Guided by the Planning Commission, Board of Trustees, and informed by the community and local partners, the Comprehensive Plan was crafted over eighteen months in 2024 and 2025. Extensive engagement was conducted with Fraser residents around their vision for Fraser's future. The process followed four phases of plan development, which included:



Plan Use

HOW SHOULD THIS DOCUMENT BE USED?

This Plan is designed to be Fraser's compass for the future. The strategies it contains will guide key decisions on everything from transportation and new development to the protection of stable neighborhoods. It will shape investments in parks and trails, support choices that enhance climate resilience, and inform important community conversations for years to come. It is a tool for alignment, to help ensure that community ideas, partner initiatives, and private development are all working toward the Town's goals. While it provides the foundational direction for future zoning changes and capital projects, this document does not directly change the Land Development Code or assign funding. Rather, it is a living blueprint that serves as a basis to measure decisions against – and ensures that all future changes are moving **Fraser Forward**.



Plans Referenced

WHERE WE LOOKED

A good comprehensive plan aligns with and incorporates other local or regional plans. This ensures that the Town and other organizations are moving in the same direction and highlights opportunities for collaboration and partnership. As a part of the comprehensive plan update, the following plans were reviewed and incorporated into the **Fraser Forward** and **Fraser in Action** chapters where relevant.



- 2004 Fraser Valley Retail Market Analysis
- 2007 Fraser-Winter Park Joint Working Group Final Report
- 2010 Fraser Comprehensive Plan
- 2014 Fraser Winter Park Community Trails Plan
- 2015 Fraser Water Firming Study
- 2016 Fraser Housing Needs and Development Study
- 2016 Fraser Sustainability Plan
- 2017 Downtown Strategic Plan
- 2017 Out of Town Report Service Agreement
- 2018 Fraser River Corridor Master Plan
- 2019 Headwaters Trails Alliance Strategic Trails Plan
- 2019 Regional Workforce Housing Report
- 2020 Town of Fraser Water Supply Report
- 2020 Downtown Fraser
- 2021 Economic Impacts of Outdoor Recreation
- 2021 The Mountain Migration Report
- 2022 Fraser River Valley Housing Needs Assessment Update
- 2022 Wastewater Collection System Master Plan
- 2023 10-Year Water Capital Improvements Plan
- 2023 Workforce Housing Report
- 2023 Water Efficiency Plan

Planning Area

STATE STATUTE

Municipalities in Colorado are required to create and adopt a comprehensive plan for physical development. This plan must also address areas outside the municipality's boundaries.

Although the comprehensive plan itself is an advisory document, it provides the vision that is enforced by other regulatory tools, like the Town's Land Development Code. It is vital to include land within the Three-Mile Area in this plan to ensure that future growth is consistent with the character and vision of Fraser. The Land Use section of this plan, including the Future Land Use Map, provides further detail on this approach.



Source: Town of Fraser

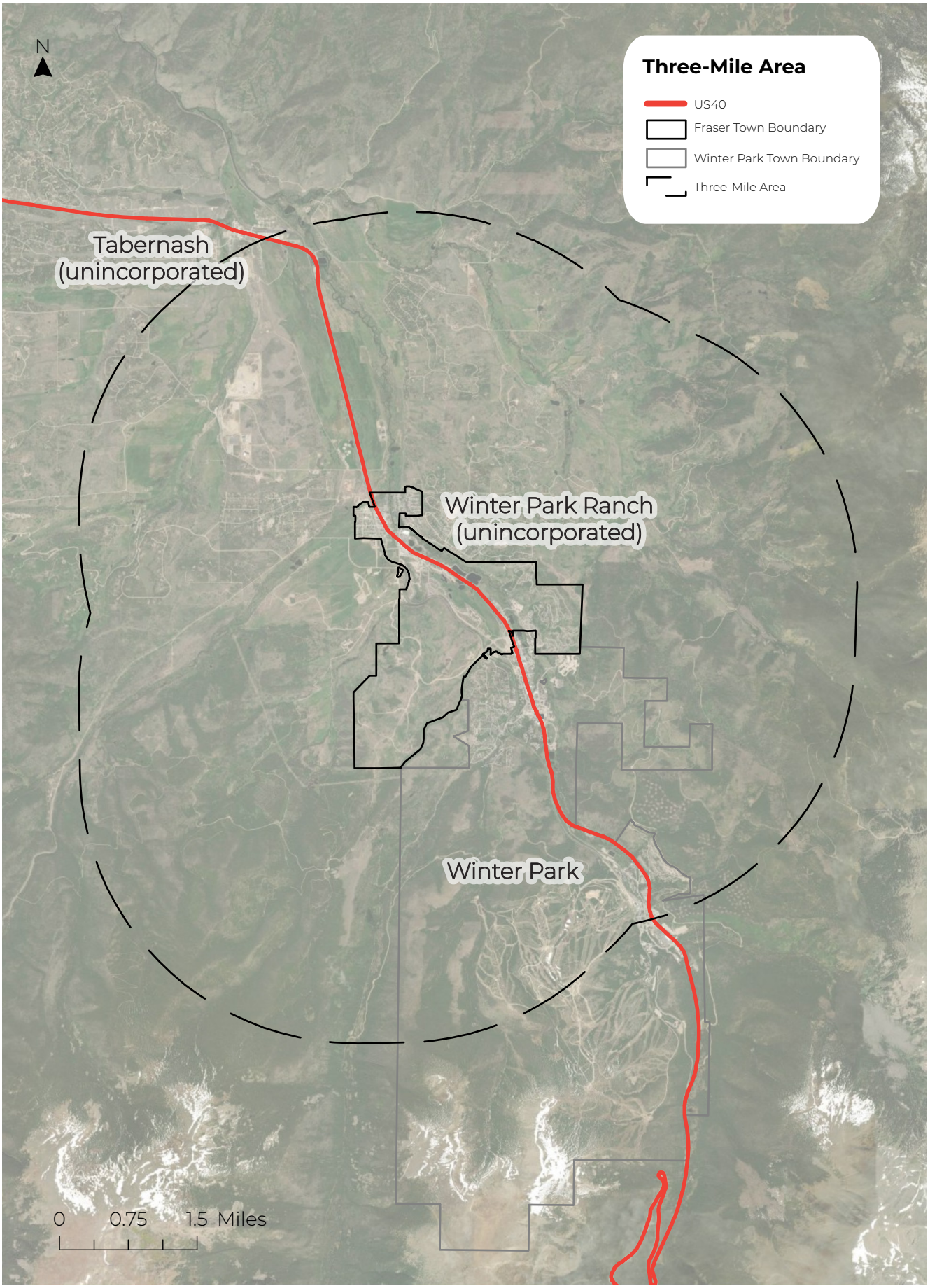
THREE-MILE AREA LEGALITY

The Colorado Municipal Annexation Act of 1965, C.R.S. 31-12-105(e), charges the Planning Commission with creating a plan that addresses areas outside municipal boundaries to improve decision making relative to annexations and guide overall growth and development. In 1987, the state legislature also made changes to annexation law limiting municipal annexations to no more than three miles beyond the current municipal boundary in any given year.

As a result, this document covers land use beyond the current Town of Fraser; it also includes the Three-Mile Area surrounding the town. This entire region is referred to as the planning area and is detailed on the accompanying Three-Mile Area Map. (Figure 1)

Not all properties within the Planning Area have been assigned a future land use designation, as there are lands held by public agencies like Denver Water and the Forest Service, and others lie within the Winter Park Planning Area. Some privately-owned properties are not designated to prevent leapfrog development in unincorporated areas

Figure 1: Town of Fraser Plan Area and Three-Mile Area Map



Source: Town of Fraser GIS

2 Fraser Today





Fraser Yesterday

HISTORY AND DEVELOPMENT

Fraser's history and context is vital to understanding where we are today and what is possible in the future. In 1905, George Eastom acquired the townsite land and recorded a plat of the town, which would not be formally incorporated as Fraser until 1953. Eastom came to the area to set up a lumber operation called the Middle Park Lumber Company, in conjunction with the development of the Moffat Line Railroad. Early residents included ranchers, loggers, railroad workers, and even some who sought the area's cold, dry climate as a respite from tuberculosis, including Dr. Susan Anderson, known as Doc Susie, who practiced medicine in the town for 50 years. In 1944, 200 German prisoners of war arrived in the area to work at the Kopper's logging and lumbering operation manufacturing railroad ties and telephone poles. The prisoners worked diligently in the lumber camp as loggers, skidders, horse-shoers, and carpenters. In the years following their time in the region many former German POWs returned to visit the area and fondly reminisce about their time here. Manufacturers have recognized the opportunity to conduct product research and development, along with field applications in the challenging environment as motor vehicle anti-freeze, batteries, and snow tires were presented to residents for testing for many years following World War II. Later, Fraser became known as the "Western White House" when President Eisenhower spent many summer months fly fishing the local waters while in office.



Source: https://www.angelfire.com/co/chuckgraves/Fraser.html

The development of the ski industry in nearby Winter Park continues to draw many people to the area, both visitors and residents. The resort is owned by the City of Denver but operated by Alterra Mountain Company under a 50-year lease which originated in 2002. The recreation and tourism industry, along with remote workers and the second home market, will continue to play an important role in the local economy. The influx of second home owners and tourists greatly increase the peak demands on services within the Fraser Valley. While Fraser did not experience the boom in second homes like the Town of Winter Park during the 1960s, 1970s, and 1980s, more recent trends and development patterns have come to Fraser and will continue to play a major role in the community. In addition to recreation based employment, people have located within the Fraser Valley for a recreation-oriented lifestyle as people continue to move to the area while maintaining Front Range or even national employment through telecommuting.

The local climate is extreme. Located very near the Continental Divide at an elevation of over 8,550 feet, the Town of Fraser has been called the "Icebox of the Nation." It's not unusual to see drastic temperature variations of 40 degrees within a day. According to climate-data.org, the average high in January is 22.9 and the average low is 2 degrees, but frequently drops to single and double digit below zero temperatures The climate that provides the local ski area with an annual average of over 362 inches of snow also provides for a rich and diverse wildlife habitat. Recognizing this, the 23,000-acre Fraser Experimental Forest (FEF) was established in 1937 as a representative site for conducting studies in the alpine/subalpine environment of the central Rockies. Most early research was oriented towards timber or water production resulting from forest management. In 1976, the FEF was designated a Biosphere Reserve by the United Nations Educational, Scientific and Cultural Organization.

Future generations will benefit from the establishment of the James Peak Protection Area. This wilderness area supplements other areas around the Fraser Valley and within the Arapaho National Forest including the Indian Peaks Wilderness Area, the Vasquez Wilderness Area, the Byers Peak Wilderness Area, and Rocky Mountain National Park. Visitors have come to the area to enjoy the scenic beauty since the late 1800s. Grand County consists of approximately 73% public lands. These public lands are managed by several different entities: U.S. and State Forest Services, National Park Service, the Bureau of Land Management and the State Land Board.

Fraser Today

WHERE WE ARE NOW

The Town of Fraser (Town) is a unique mountain community renowned for its snow-capped peaks, abundant recreational opportunities, access to public lands, and relaxing open space. At the same time, Fraser is not immune to the broader forces of change that affect mountain towns across the region - like shifting economic conditions, population growth, housing costs, evolving visitor patterns, and increasing demands on infrastructure and natural resources. While these dynamics are often viewed as challenges, they also present opportunities to work towards solutions for current and future residents.

LAND USE

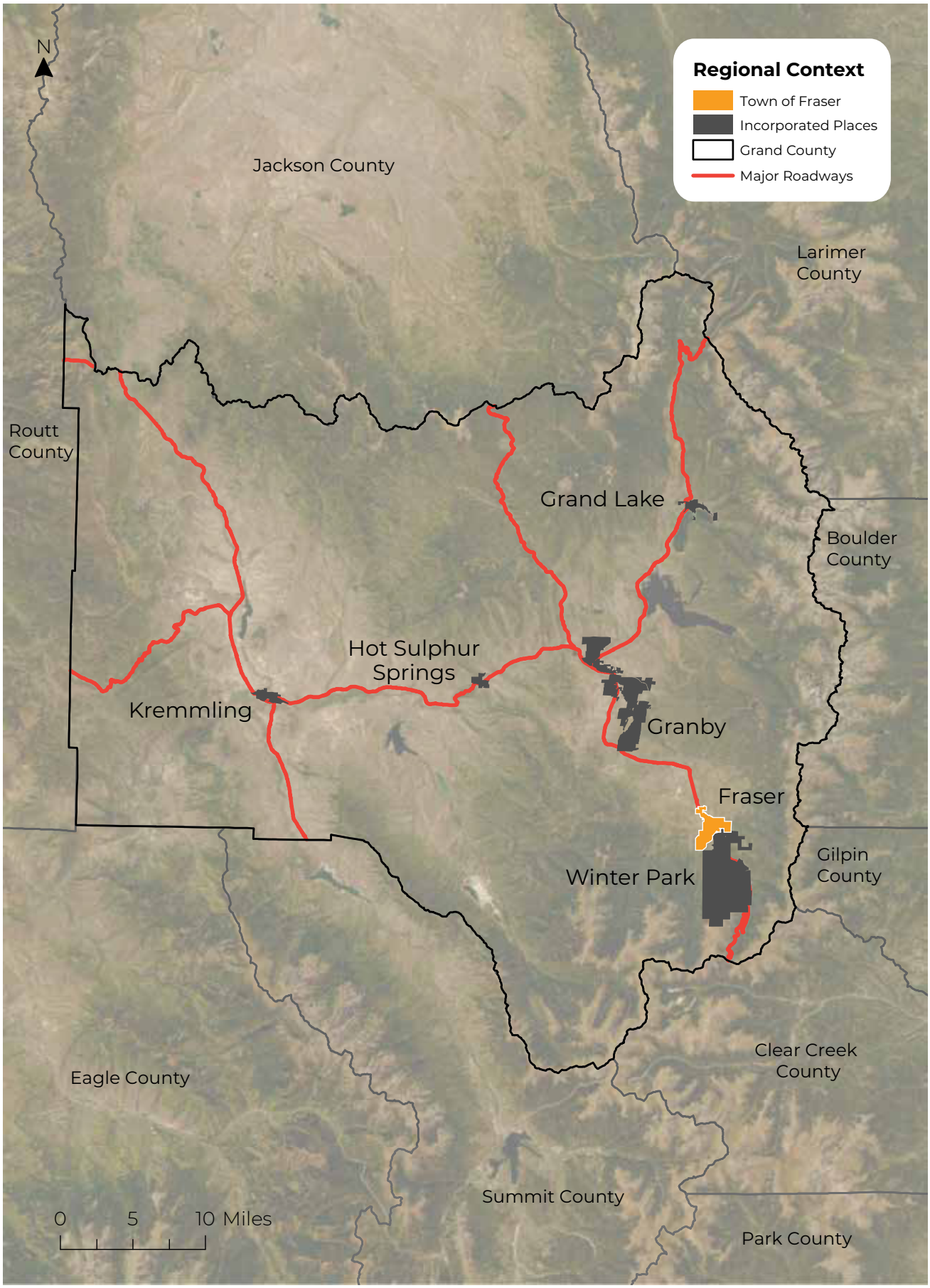
Nearly two thirds (65.5%) of the land area in the Town is undeveloped.

The majority of land within the municipal limits of Fraser is covered by two Planned Development (PD) areas – Rendezvous and Grand Park. While Rendezvous is primarily built out, Grand Park remains mostly undeveloped and is expected to include single-family, multi-family residential, and mixed use commercial development. The completion of these developments has the potential to significantly increase the Town's population. Looking inward, Downtown Fraser also has opportunity for infill development with over a quarter (28.8%) of property currently undeveloped. Many of these unbuilt properties are zoned under the Business or Riverwalk District (regulations that support a walkable, mixed-use Downtown). (Figure 4)



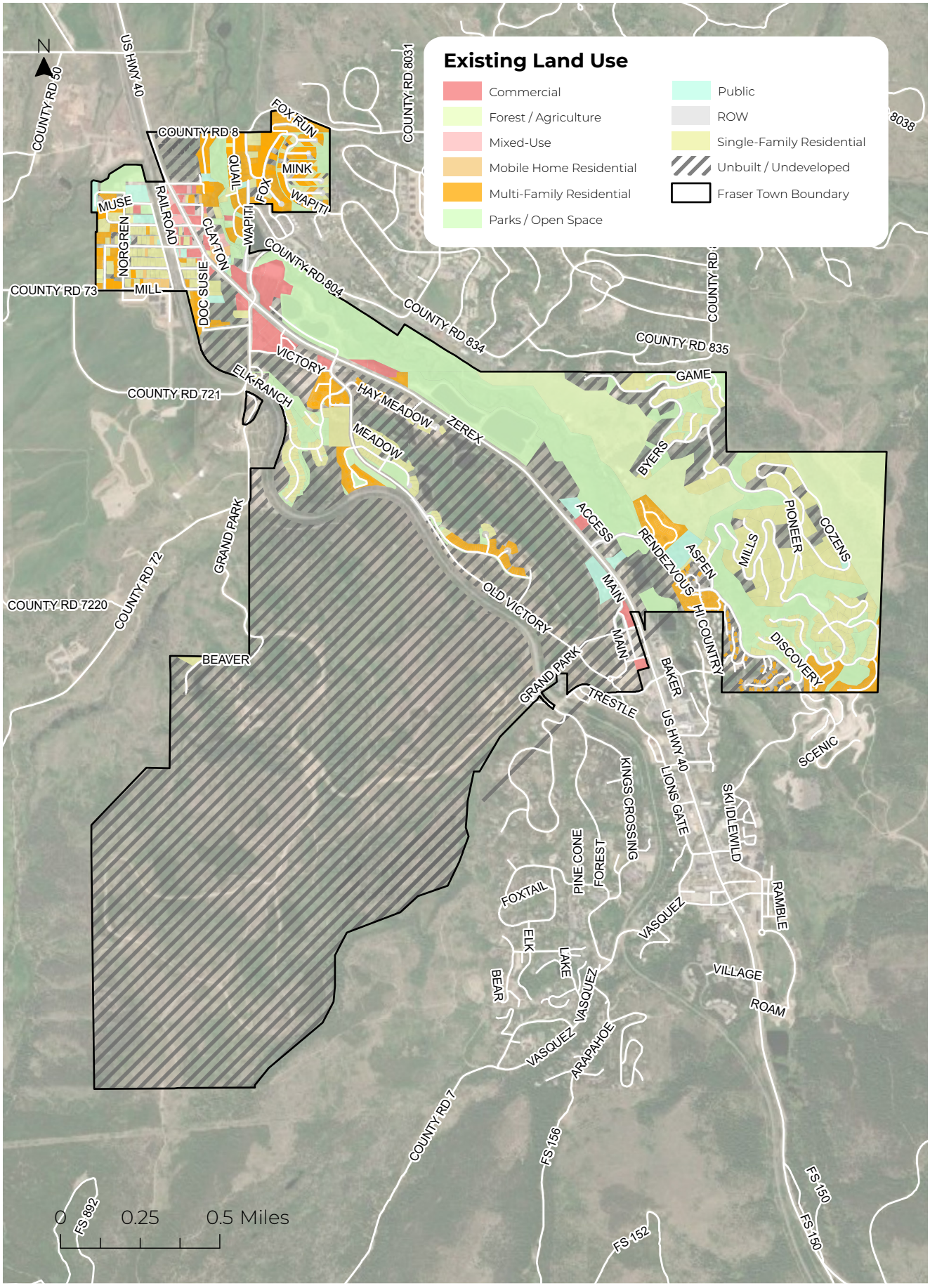
Source: Town of Fraser

Figure 2: Town of Fraser Regional Context Map



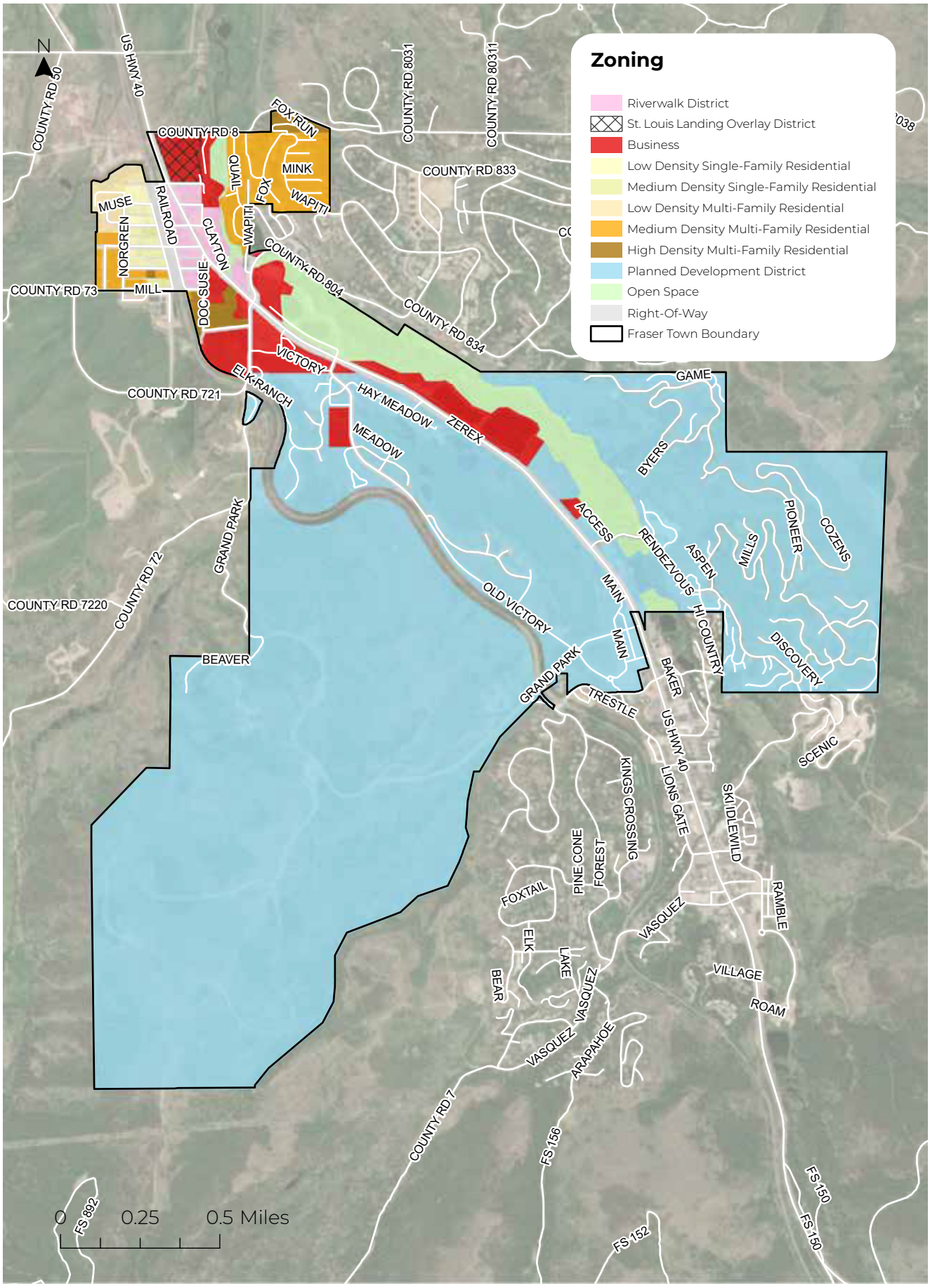
Source: Grand County GIS

Figure 3: Town of Fraser Existing Land Use Map



Source: Town of Fraser GIS

Figure 4: Town of Fraser Zoning Map



Source: Town of Fraser GIS

POPULATION

+14.1 %

Fraser 10-year growth rate (2010-2020)

Winter Park

1,033

Fraser

1,400

Paonia

1,447

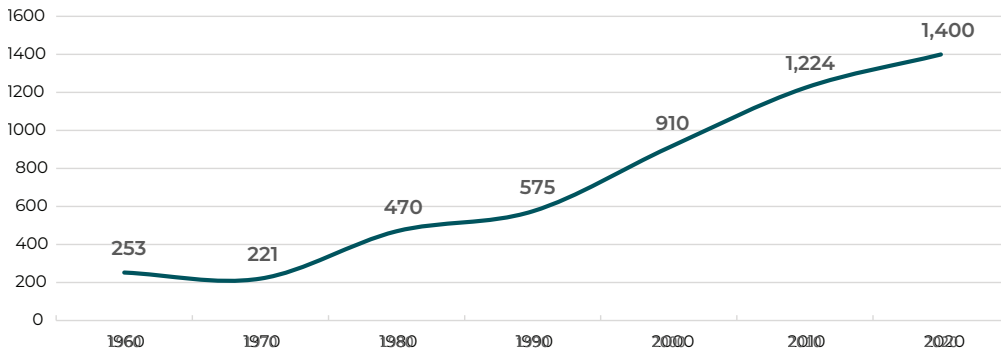
Kremmling

1,509

Source: US Census Decennial Survey

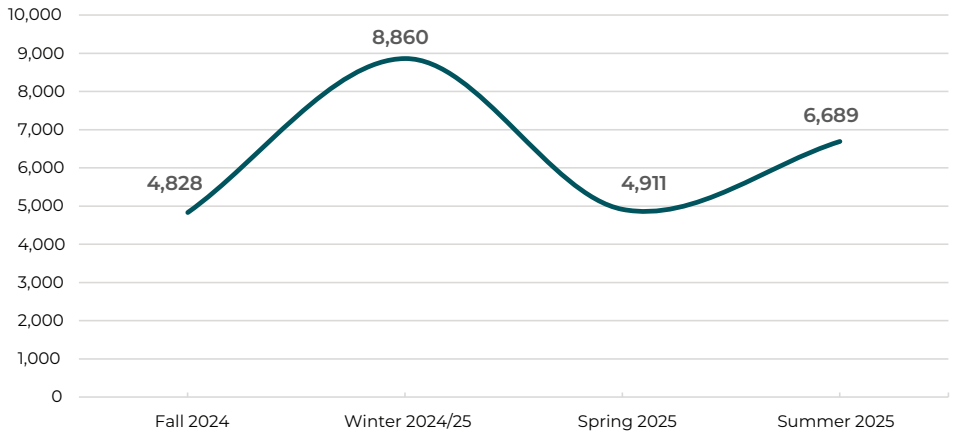
Since 1970, Fraser has seen slow and consistent growth, adding 100-350 people every decade. In 2020, Fraser officially reached 1,400 full-time residents (Figure 5). This compares with other mountain town communities like Paonia (1,447), Kremmling (1,509), and neighboring Winter Park (1,033). The area's population fluctuates throughout the year, peaking during the winter and summer (to a lesser extent) tourist seasons due to seasonal workers, second homeowners, and visitors (Figure 6). This seasonal increase in population results in a greater strain on the Town's resources and infrastructure, in addition to causing greater traffic volumes/vehicular congestion and contributing to higher housing costs.

Figure 5: Town of Fraser Population Change 1960-2020



Source: US Census 2020 Decennial Survey

Figure 6: Town of Fraser Average Daily Population of Seasonal Residents, Second Homeowners, and Tourists



Source: Placer .ai, 2024-2025

Fraser is starting to lose its families, children, and seniors.

In the past, Fraser might have been known as a place for hardened outdoor enthusiasts. Over time it has expanded to include families, children, and seniors. However, challenges in childcare, housing types, and healthcare may be contributing to a loss in these demographic groups. Family households, school aged children, and the 65+ community have all seen declining rates since 2010. Efforts are being made to ensure these populations can remain in Fraser through the creation of deed-restricted housing, such as the St. Louis Landing development that is currently under construction. The first phase will include 129 deed-restricted multifamily residential units ranging from 30% to 120% of Area Median Income (AMI), as well as an early childcare facility and commercial space.

Fraser is seeing an increase in young adults, single households, and demographic diversity.

Young adults (25-34) are now the largest age group in Fraser while the share of residents living alone has also grown. Residents' race, ethnicity, language, and other demographics have also changed – underscoring the importance of community engagement to understand the needs of diverse community members.



**Due to Fraser's small population, higher margins of error in presented data are possible.*

5.1% ↘ 3.6%

Residents 65 years or older

35.8% ↘ 19.5%

Households with one or more people under 18 years old

31.7% ↘ 22.5%

The 19-24 years age group

13.2% ↗ 21.1%

25-34 year old age group

30.6% ↗ 42.1%

Householders living alone

Hispanic or Latino Ethnicity +8.9%

Nonwhite Residents +24.4%

People who speak Spanish at home 11.3%

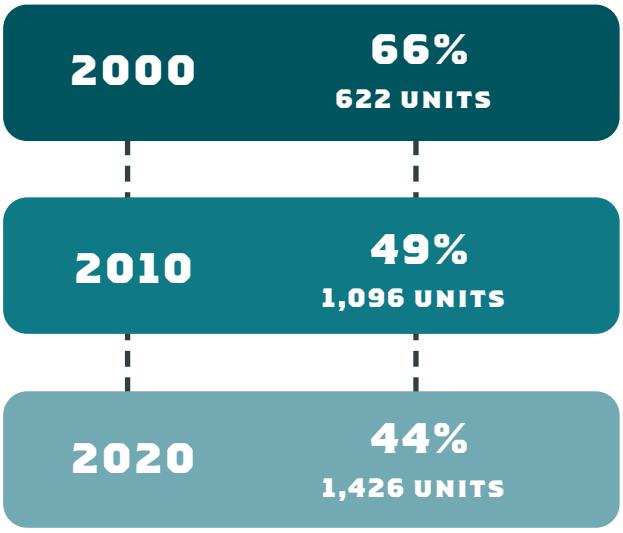
Source: US Census ACS 5-year estimates (2010-2022)

AFFORDABILITY

Increasing interest in vacation homes in Fraser has exacerbated affordability problems for year-round residents.

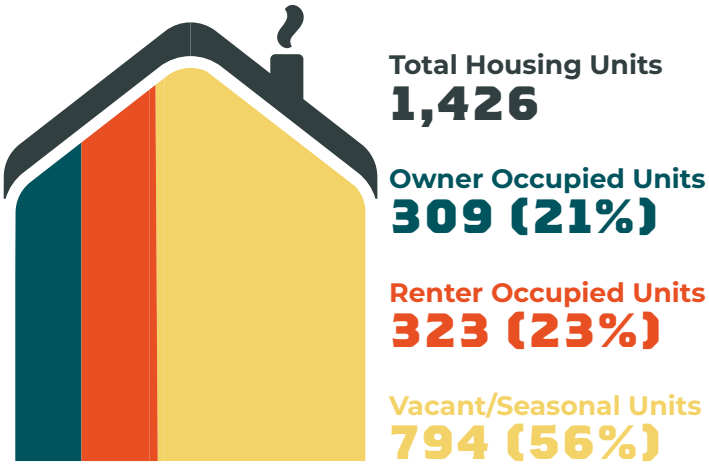
The percentage of homes occupied year-round has been dropping since 2000, despite the total number of homes in Fraser increasing over that time. Additionally, the share of households that are cost-burdened (spending more than 30% of their income on housing costs) remains the highest amongst neighboring areas (43%).

Homes in Fraser Occupied Year-round



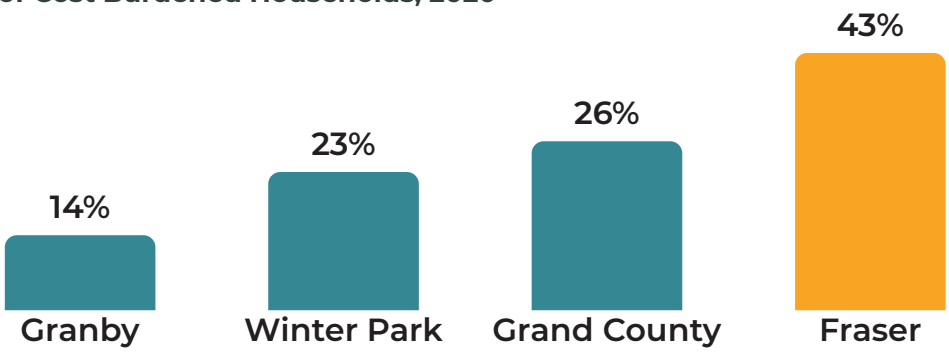
Source: US Census Bureau 2000, 2010, and 2020 Decennial Surveys

Housing Unit Occupancy Status, 2020



Source: US Census Bureau 2020 Decennial Survey

Share of Cost Burdened Households, 2020



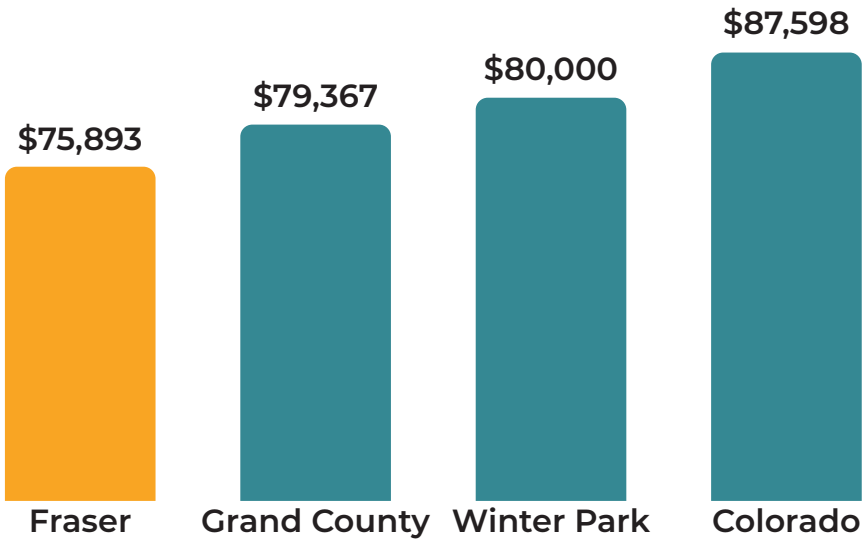
Source: Grand County Housing Needs Assessment; HUD 2016-2020 CHAS Data

LOCAL ECONOMY

The Town's biggest industries depend on lower-wage workers who are vulnerable to displacement as housing costs rise.

This is largely due to the high concentration of jobs in the arts, entertainment, and recreation sector, which support the local tourism and ski economy. Supporting these workers will require ensuring that they are able to afford to live in the area. Fraser has made progress in addressing this critical need by partnering with the Town of Granby, Town of Winter Park, and Grand County to create the Fraser River Valley Housing Partnership, a multi-jurisdictional housing authority. In November 2022, the authority passed a 2-mil property tax levy to generate approximately $1.2 million each year to address workforce housing in the region.

Median Household Income, 2020



Fraser Valley (within three miles of Fraser) top employment sectors:

Arts, Entertainment, and Recreation **50%**

Accomodation and Food Services **18%**

Real Estate and Rental Leasing **7%**

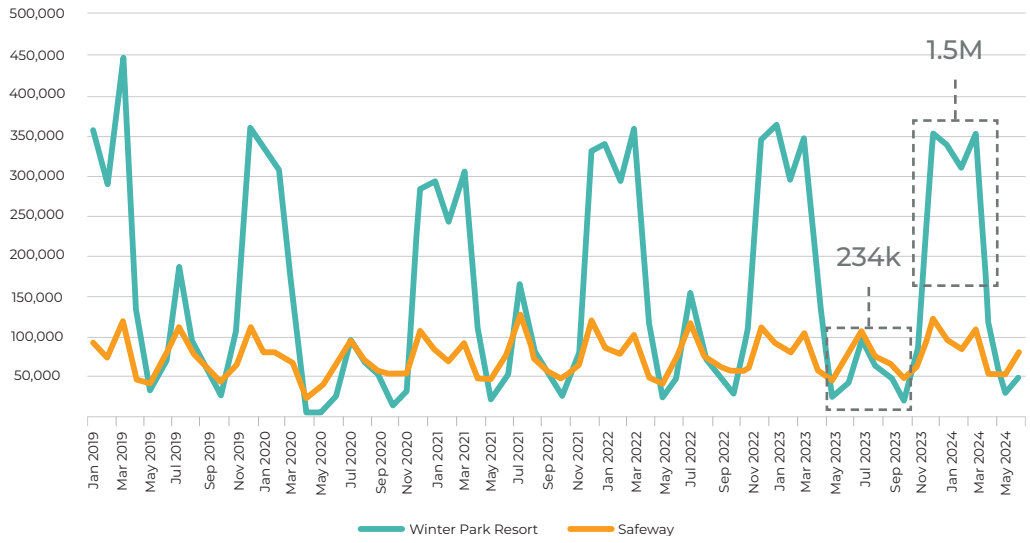
Retail Trade **7%**

Sources: US Census LEHD OntheMap, US Census ACS 5-year estimates

Fraser's commercial activity reflects both its role as a winter sports destination and a local service hub for everyday needs such as groceries, healthcare, and gas.

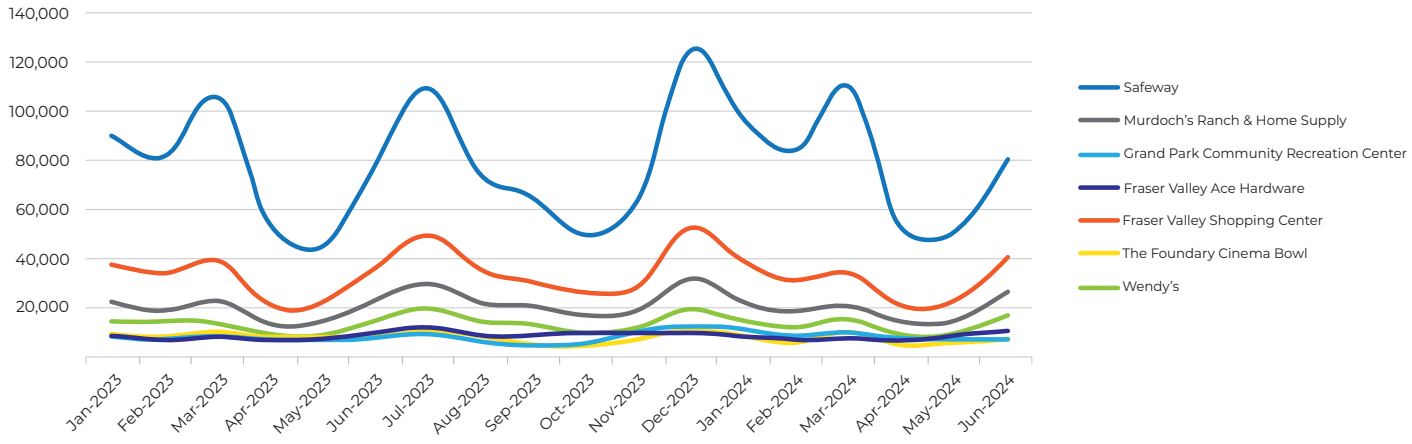
Nearby Winter Park Resort experiences strong seasonal swings, with over 1.5 million visits in peak winter (Dec-Mar) compared to under 234,000 in summer (Jul-Oct) this past year (Figure 7). In contrast, everyday destinations like Safeway and the Fraser Valley Shopping Center maintain steadier activity all year long, especially in the summer (Figure 8). With Safeway drawing from over 40 miles and 5,000 zip codes — Fraser functions as both a community anchor and visitor gateway regardless of time of year. Importantly, few Winter Park Resort guests travel directly to or from home, presenting Fraser with opportunities to capture more dining, entertainment, and retail spending by expanding nighttime attractions and amenities during the winter.

Figure 7: Monthly Visits to the Winter Park Resort and Safeway, 2019-2024



Source: Placer .ai

Figure 8: Town of Fraser Monthly Visits to Key Locations



Source: Placer .ai, 2023-2024

INFRASTRUCTURE

The Town's Public Works department maintains and operates most streets and roads in addition to stormwater systems, parks, trails, open spaces, streetscapes, and public gardens.

The Town has its own Water Division which operates ground water wells and the distribution and collection systems through its own enterprise fund. The Upper Fraser Valley Wastewater Treatment Plant, which is staffed and operated by the Town of Fraser, collects and treats sewage from the Town of Fraser, Grand County Water and Sanitation District #1, and the Winter Park Ranch Water and Sanitation District. In 2022, the Town adopted a 10-year Capital Improvement Plan specifically targeted at improving its water system infrastructure, and a water & wastewater rate study completed in early 2024. Additionally, the Town has identified the need for a new Public Works Facility as the current facility is limited in its ability to expand.

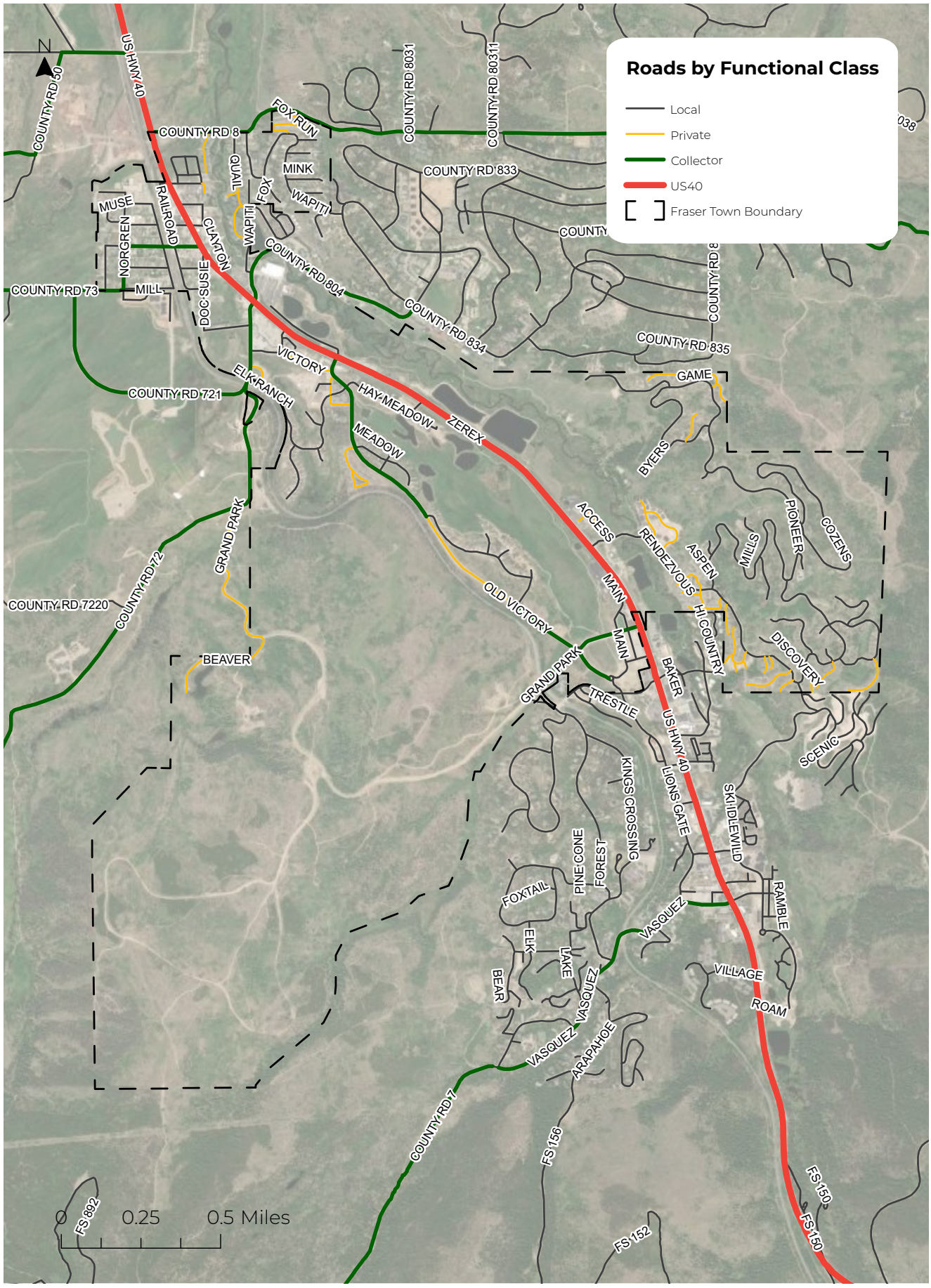
TRANSPORTATION

The reliance on US 40 as the town's primary mobility corridor complicates both local and regional travel, making Fraser vulnerable to traffic congestion, disruptions, and safety concerns.

A feasibility study to widen US 40 through Fraser was completed in 2020, and engineering design of these improvements is underway through a CDOT funded process. Grand County has also identified a bypass route for US 40, known as the Fraser Valley Parkway, for which planning is underway.

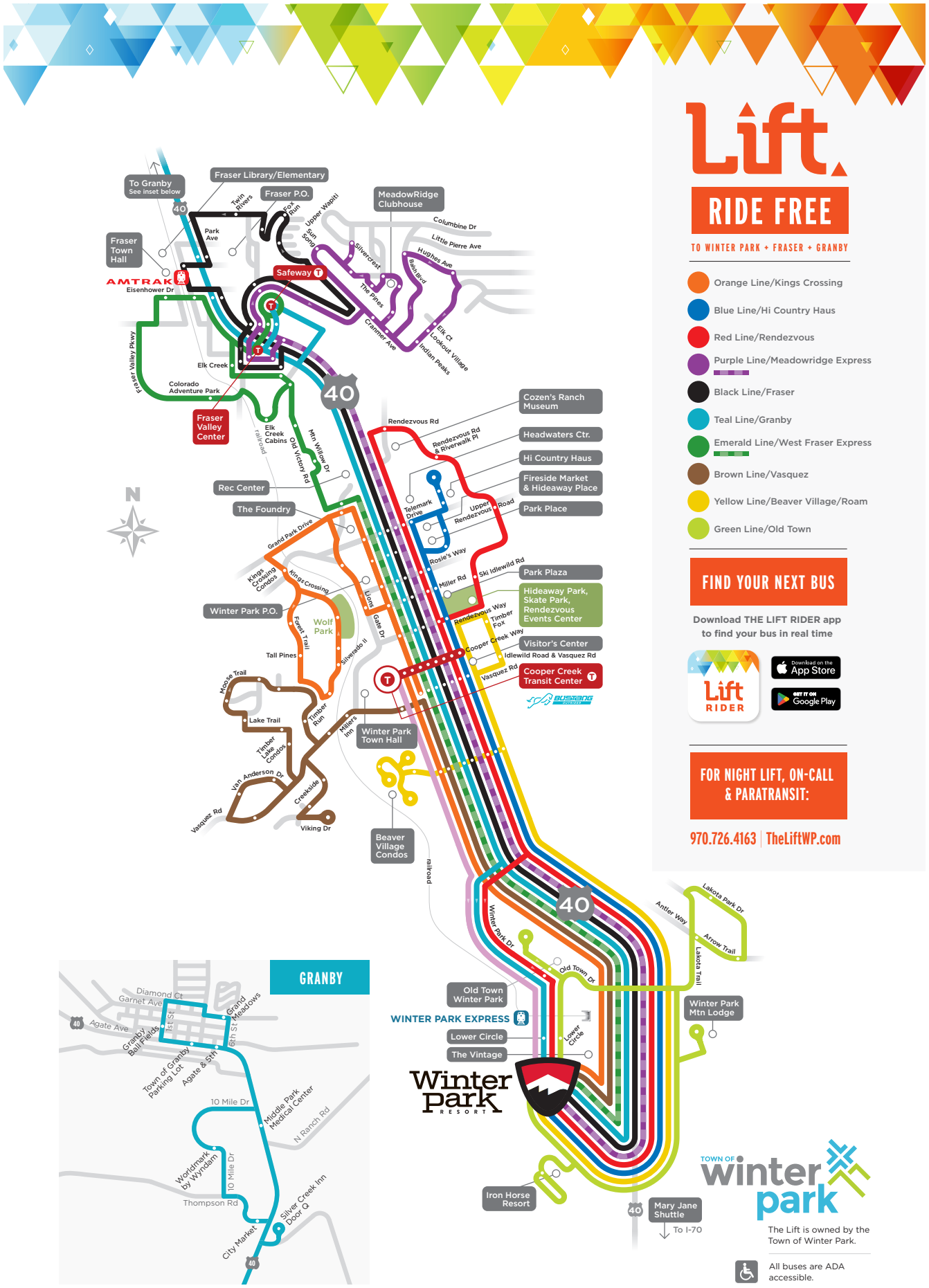
While several other transportation options exist, US 40 continues to be a barrier, and gaps in multi-modal infrastructure make utilizing transit, biking, and walking difficult or unsafe. Fraser has an extensive trail network, a rail station with commuter rail and future mountain rail service, regional Bustang service, and is served by six local bus lines operated by the Town of Winter Park. However, sidewalks and crosswalks are limited throughout town. This lack of first- and last-mile connection can discourage non-vehicular travel once you are in Fraser. (Figure 9)

Figure 9: Town of Fraser Road Network Map



Source: Town of Fraser GIS

Figure 10: Winter Park Transportation Network Map, 2024



Source: Winter Park

3 Community Voices





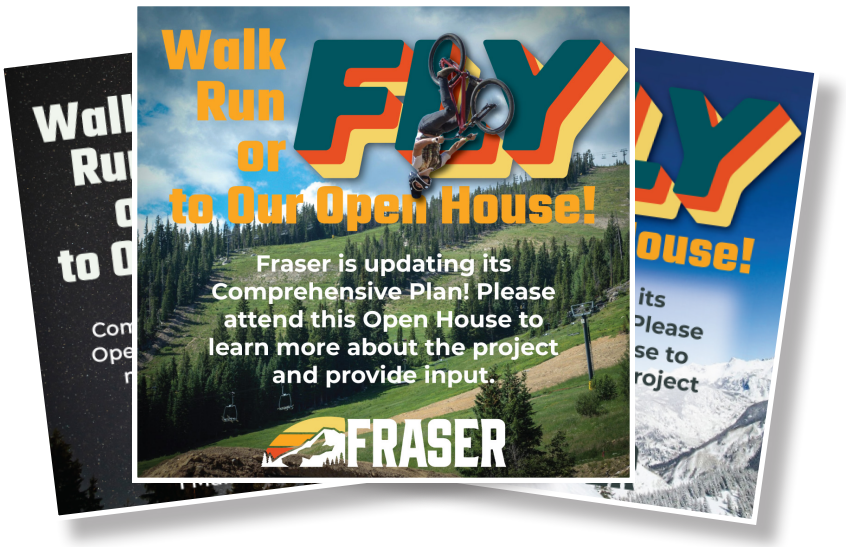
Engagement Process

Figure 11: Engagement Process Timeline

Phase 1: Kick-off & Planning	Website Launch 6/7 2024	Community Survey 8/7-9/20 2024	Picnic at the Park 8/20 2024	Board of Trustees Update 10/16 2024	Planning Commission Update 10/23/2024			
Phase 2: Data Collection	Stakeholder Interviews Oct/Nov 2024	DDA Board Update Dec/Feb 2024	Planning Commission Update 1/15/2025	Board of Trustees Update 1/22/2025	Open House #1 Mar 2025	Planning Commission Update 4/23/2025		
Phase 3: Exploration	Board of Trustees Update 5/7/2025	DDA Board Update 6/10/2025	Board Retreat 6/17/2025	DDA Board Update Jul 2025	Pop-up Events Jun/Jul 2025	Open House #2 Jul 2025	Online Open House #2 Jul 2025	Community Survey #2 Jul/Aug 2025
Phase 4: Draft & Final Plan	DDA Board Update Oct 2025	Planning Commission Review Nov 2025	Ratification Hearing Jan 2026	Adoption Hearing Feb 2026				

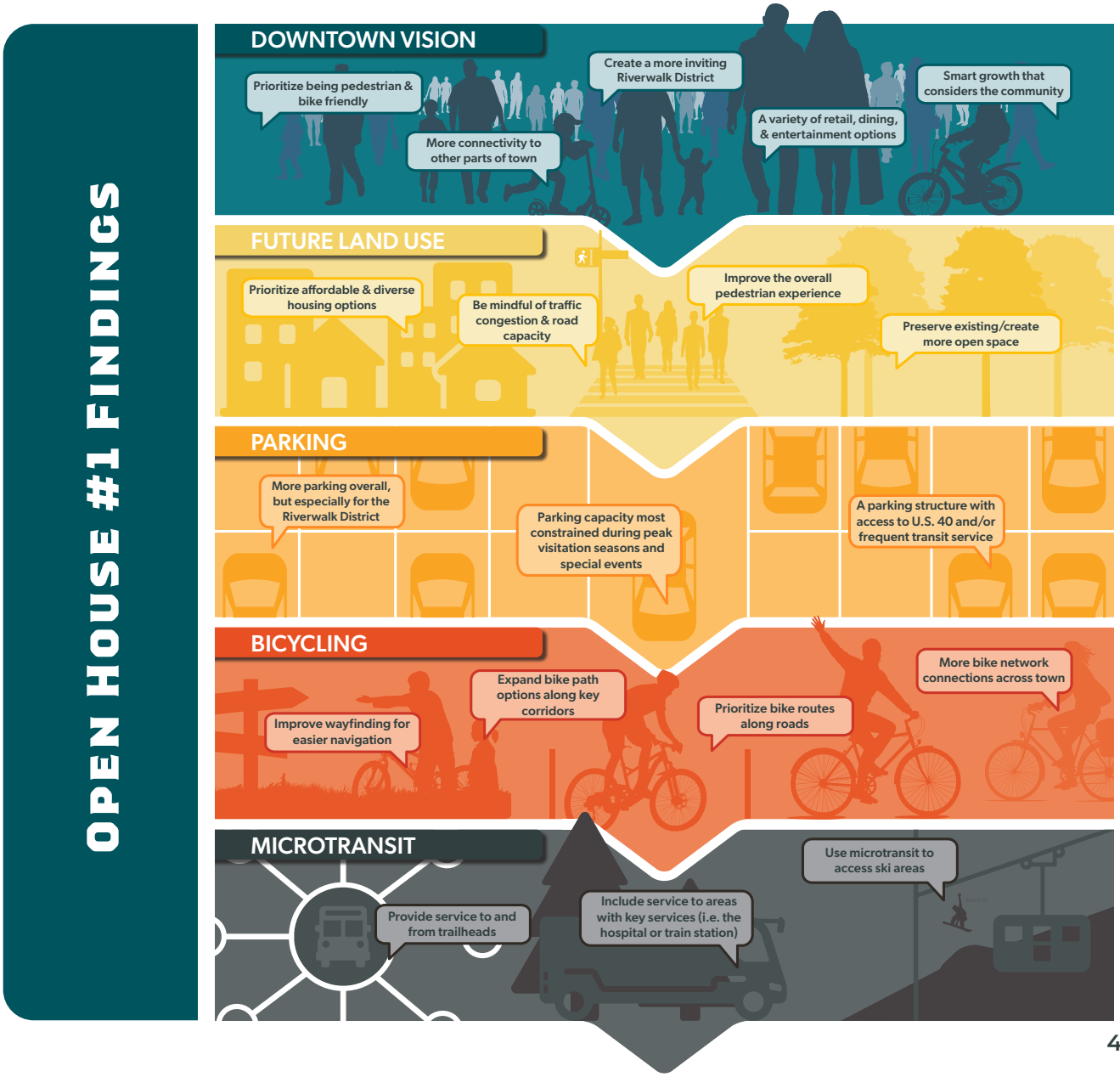
WEBSITE & SURVEY

This comprehensive plan update began with a project website launch to serve as a landing page for residents or anyone interested in the project to be able to find information quickly and subscribe to updates. The site was regularly updated with the most current information and at times, opportunities to engage online. A survey was distributed to gauge residents' sentiments and priorities, which was advertised through a variety of digital and in-person outreach efforts, starting with a pop-up at the well-attended summer concert series in Fraser, Picnic in the Park. The survey received 180 responses and the results provided the foundation for future engagement and the community values. Full survey results can be found in the appendix (**page 170**). This initial phase was rounded out by reporting the survey results and existing conditions highlights to the Planning Commission and the Board of Trustees.



DATA COLLECTION

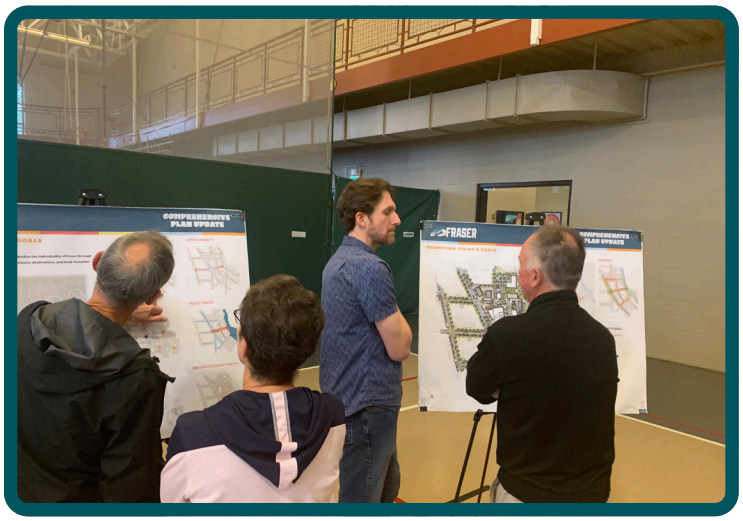
Nine stakeholder interviews were conducted virtually as a part of phase 2 to gain local knowledge from professionals and local organization leaders. Seven of them were grouped by planning topic areas such as mobility, sustainability/ resiliency, arts/history/culture, Downtown development/housing, community services, community needs/quality, and parks/recreation/open space. The remaining two were with stakeholders/developers of the Rendezvous and Grand Park neighborhoods. This was followed by another update with the Planning Commission and Board of Trustees to gain preliminary feedback on the Future Land Use Map and the Downtown Vision. With direction from local leadership, open house #1 was conducted at the Grand Park Recreation Center in March 2025. An estimated 60 people were in attendance while 5 people left feedback online through a digital open house survey. Planning Commission, Board of Trustees, and the Downtown Development Authority meetings after open house #1 closed out the data collection phase.



EXPLORATION

Based on the feedback and refinement of ideas from previous engagement opportunities, a draft of policy recommendations and implementation strategies were developed and shared at a second open house event. Digital and in-person outreach was done to promote the event, including passing out postcards at the Picnic in the Park event in July 2025. Open house #2 was conducted at Grand Park Recreation Center, and this time an estimated 50 people were in attendance while 13 people left feedback online.





"I love this vision for Downtown that makes Fraser a destination rather than a drive through. Great idea to focus on the river"

"I support the over-arching theme of maintaining the mountain community "vibe" with emphasis on small business, the Riverwalk District, recreation, and open space"



DRAFT & FINAL PLAN

In November 2025, an initial draft of the Fraser Forward Comprehensive Plan was published on the project website along with a survey for the public to provide feedback on the plan document. The draft plan was then reviewed by the Planning Commission on November 12, 2025, and the community was able to provide comments via the online survey through December 19, 2025.

On January 28, 2026, the Fraser Planning Commission held a noticed public hearing to consider adoption of the Comprehensive Plan. The Planning Commission approved PC Resolution 2026-01-02, which approved and certified the adoption of the Fraser Forward Comprehensive Plan, subject to final approval by the Board of Trustees. A workshop to review and discuss the plan was held with the Board of Trustees on February 4, 2026. During the Board of Trustees meeting on February 18, 2026, the Board passed Ordinance 532, approving and adopting the Fraser Forward Comprehensive Plan.

Community Values

HOW DO WE CONTINUE TO MOVE FRASER FORWARD?

This Comprehensive Plan isn't just a document; it's a guidebook to decisive, sustained action that ensures the community's evolution and prosperity. Moving Fraser forward means actively transitioning from conceptual discussions to tangible outcomes that enhance residents' quality of life, strengthen the local economy, and preserve the town's unique character. This sustained progress requires ongoing collaboration between local government, residents, businesses, and community organizations to leverage resources, overcome challenges, and consistently push for innovation and improvement across all sectors. This plan provides the definitive roadmap for maintaining this forward momentum for years to come.

HOW WILL THESE VALUES BE USED THROUGHOUT THE PLAN?

The six foundational community values are the operational backbone of this comprehensive plan, ensuring that the community's core beliefs drive its future. To ensure these values are not merely aspirational statements, they have been integrated into the plan's functional structure. Throughout the document, each value is directly tied to a corresponding set of specific, measurable goals, practical strategies, and concrete actions that will be undertaken by the Town and its partners. This alignment shows that every step Fraser takes, from allocating resources to making policy decisions, is directly rooted in and supportive of the community's priorities.

This framework creates a transparent and accountable system for implementation. By assigning specific values to these functional elements, a direct, traceable link between daily work and the long-term vision is established. This means that the successful completion of any strategy or action is intrinsically designed to advance a desired community value, effectively linking the day-to-day decisions and operations of the town to the broad, shared vision for Fraser. This structure ensures that the plan remains relevant, focused, and truly community-driven throughout its life cycle.



Affordable & Diverse Housing Options

This was one of the most prevalent and pressing issues found in the survey as well as in several focus group meetings. Sentiments included concerns about being priced out of Fraser, housing dependent on work status, and the effects of short-term rentals on the supply of housing. Key words or phrases throughout the process included affordability, attainability, costs, property tax, and second homes.



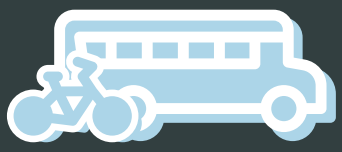
Economic Resiliency and Workforce Development

This was identified as an opportunity in the survey and the topic of discussion at the open houses and local leadership updates. Sentiments included a desire for more food/drink options in town, supporting small businesses, and attracting and retaining workers. Key words or phrases throughout the process include retail, jobs, tourism, and economic development.



Fraser's Unique Spirit and Character

In the survey, community character was identified as a major opportunity, the reason most cited for the desire to live/work/play in Fraser, and should be a key consideration in the development of Downtown. Sentiments included appreciation for the small size and feel of town, the active yet laid-back lifestyle, and the down-to-earth people in an out of this world place. Key words include creative, friendly, fun, and quality of life.



Safe Roads and Access for All

According to survey respondents, the most important transportation issues were safe road crossings and a better environment for walking and biking. Specifically, US 40 was identified as the largest barrier to moving in and around Fraser. Sentiments included an openness to using micro transit options to access the Fraser Rail Station and trailheads. There was also a desire for enhanced transit services and improved pedestrian infrastructure. Key words include safety, sidewalks, connectivity, and trails.



Public Services and Community Resources

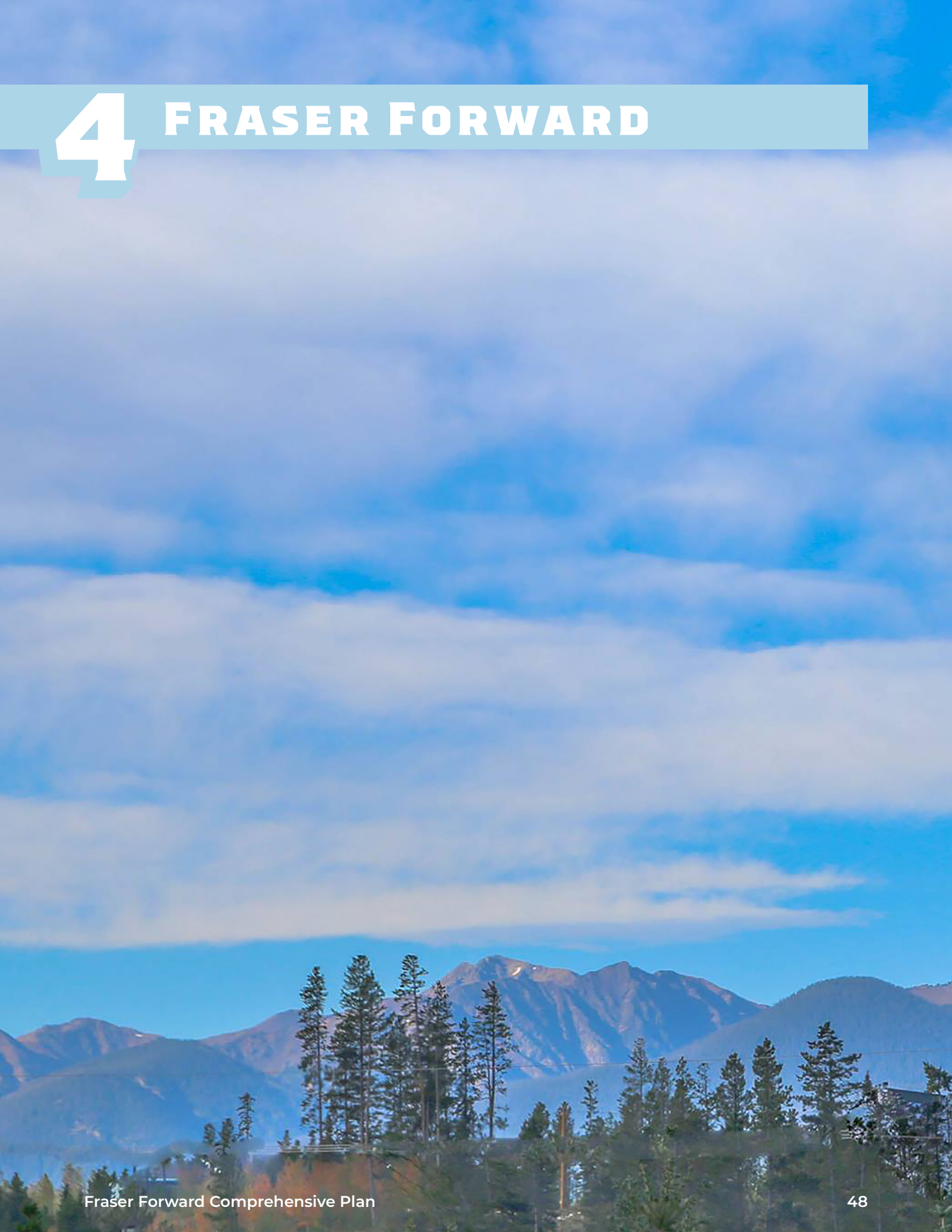
Town services and resources were highlighted as an opportunity in the survey and in focus group meetings. Sentiments include a need for affordable childcare and senior services, more local health care options, and a wider range of mental and behavioral health services. Key words include families, funding, and collaboration.



Natural Spaces and Wild Places

In the survey, preservation of natural resources was identified as the most important topic to focus on, while enhancing the Fraser River Trail and green spaces was identified as the most important focus of Downtown. Sentiments include protecting open space and wildlife habitats, specifically Cozen's Meadow and the Fraser River, while maintaining and expanding outdoor recreational opportunities. Key words include conservation, mountains, beauty, and trails.

4 Fraser Forward





Plan Organization

Organizing the planning topics into the four seasons reflects the identity of Fraser as a year-round community shaped by seasonal change. Each season highlights a different rhythm of life – spring brings new opportunities, summer drives energy and activity, autumn gathers the harvest and reflects, and winter strengthens foundations and prepares for the year ahead. This framework makes the plan more relatable, aligning technical planning topics with the natural cycles residents and visitors experience throughout the year. Using the seasons also underscores Fraser's unique character and helps communicate planning priorities in a way that feels both memorable and true to place.

Each planning topic then has a vision, goals, strategies, and actions.

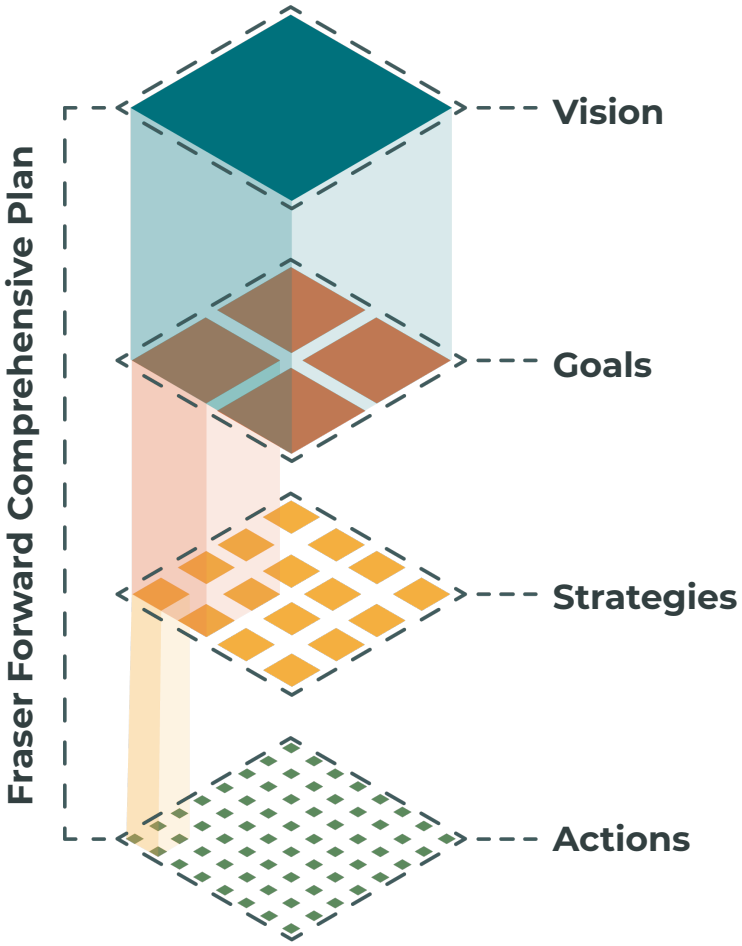
Vision: A high level, prophetic statement that envisions what a future might look like where all or most of our goals are accomplished. It serves as both inspiration and direction, providing a unifying guide for decision-making at the local level.

Goals: Statements that are broad but achievable. They speak to different aspects of a planning topic but if achieved, come together to accomplish the vision.

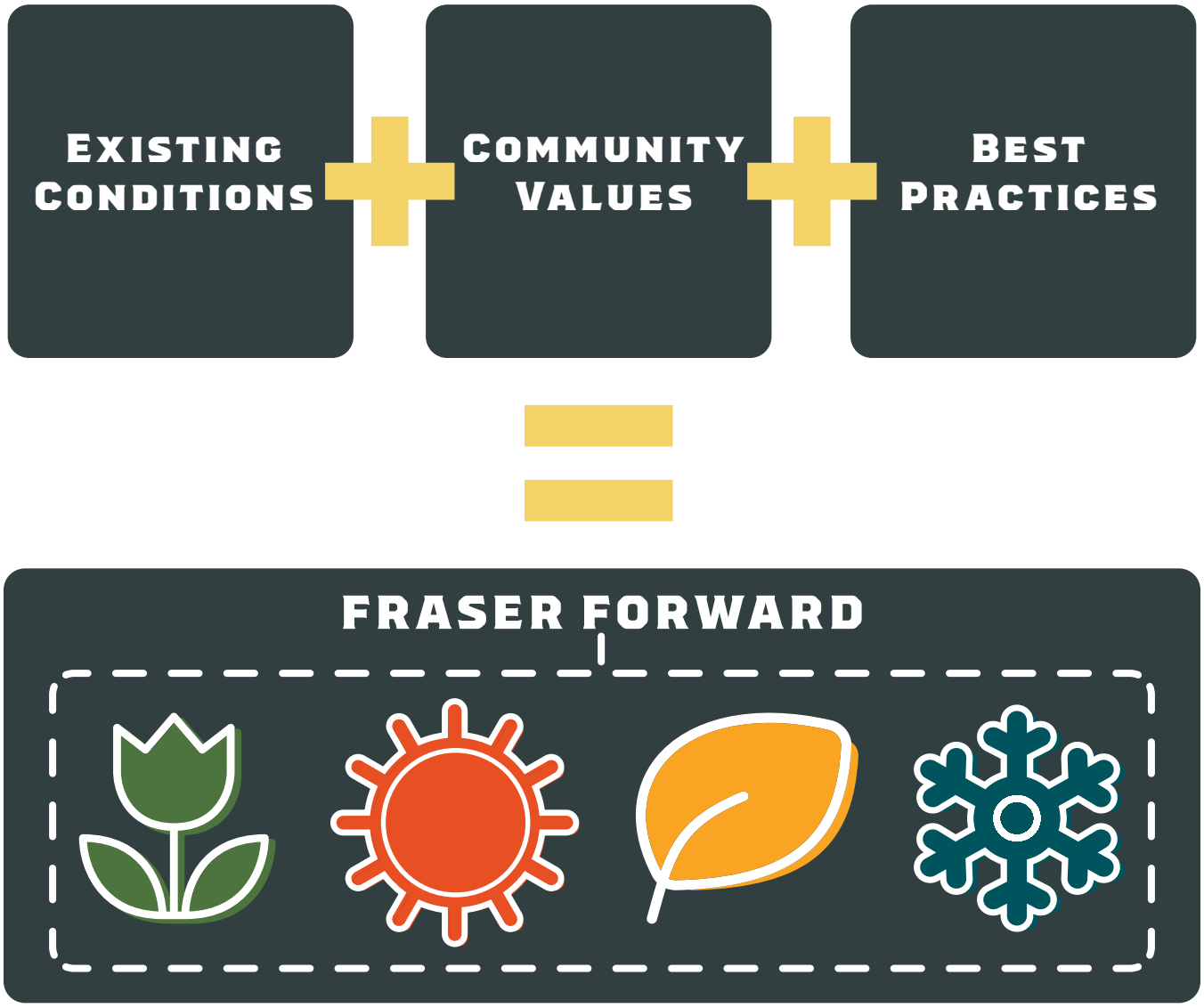
Strategies: Provide a policy, program, or approach that an entity can work towards in the greater pursuit of achieving the corresponding goal. They bridge the gap between broad aspiration and specific steps.

Actions: Specific tasks, projects, or initiatives that can be undertaken to implement the higher-level strategies, goals, and vision. They also have a priority level, timeframe, estimated cost range, and partners associated with them found in the Fraser in Action Chapter to provide a clear roadmap for how each planning topic will be advanced.

Figure 12: Plan Organization & Hierarchy



Fraser Forward is shaped by three primary inputs: existing conditions, community values, and best practices. Existing conditions (Fraser Today) provide a clear understanding of the opportunities and challenges facing the community. They offer an inventory of current assets and a realistic framework for identifying the greatest needs and determining what can be reasonably accomplished. Community values (Community Voices) reflect the priorities and aspirations voiced by residents, businesses, and stakeholders during the engagement process, ensuring the plan stays rooted in what matters most to the people it serves. Goals are directly tied to Community Values and are visually denoted by icons throughout this chapter. Lastly, best practices use proven ideas and successful strategies from other communities and the planning field, providing tested approaches that can be adapted to fit Fraser's unique needs.



Spring

Growth & New Beginnings

Downtown Vision
Housing
Economic Vitality



Just as the spring season in Fraser is defined by peak energy, vibrant activity, and flourishing landscapes, the spring chapter of this Plan embodies a vision for a period of dynamic growth and new beginnings. This section addresses the core elements that will drive the Town's evolution and transformation.

The topics of Downtown Fraser, Economic Vitality, and Housing each in their own way represent the most significant areas of change and expansion. Creating a thriving, vibrant Downtown is a chance to build a central hub of culture and community life that reflects Fraser's future. Expanding housing options is the foundation for future growth, welcoming new residents and families who will bring fresh energy to the community, as well as giving long-term residents a place to set down roots and grow. Finally, fostering economic vitality is the engine that will power this growth, bringing new opportunities and prosperity. Together, these elements capture a shared vision for a Fraser in full bloom.



Downtown Vision

Vision

Create a vibrant and inviting Downtown that embodies the individuality of Fraser through thriving businesses, lively community spaces, walkable destinations, and local character.

DOWNTOWN FRASER

Evolving over time and forever the centerpiece of Fraser, Downtown embodies the Town's individuality and identity. Fraser's unique character, natural features, and seasonal opportunities converge in Downtown, where many of these possibilities come to life. The benefits of a thriving Downtown radiate throughout the Town. At the heart of this vision is Clayton Court, located between Highway 40 and the Fraser River.

"Downtown Fraser is a vibrant and creative community that embraces its unique character and funky spirit and is committed to fostering a Downtown that celebrates individuality. It is a place where community and commerce thrive. It is a hub where culture and community are preserved and celebrated and local businesses are supported. Downtown Fraser seeks to enhance the overall quality of life for its residents and contribute to the Town's long-term social, environmental and fiscal sustainability."

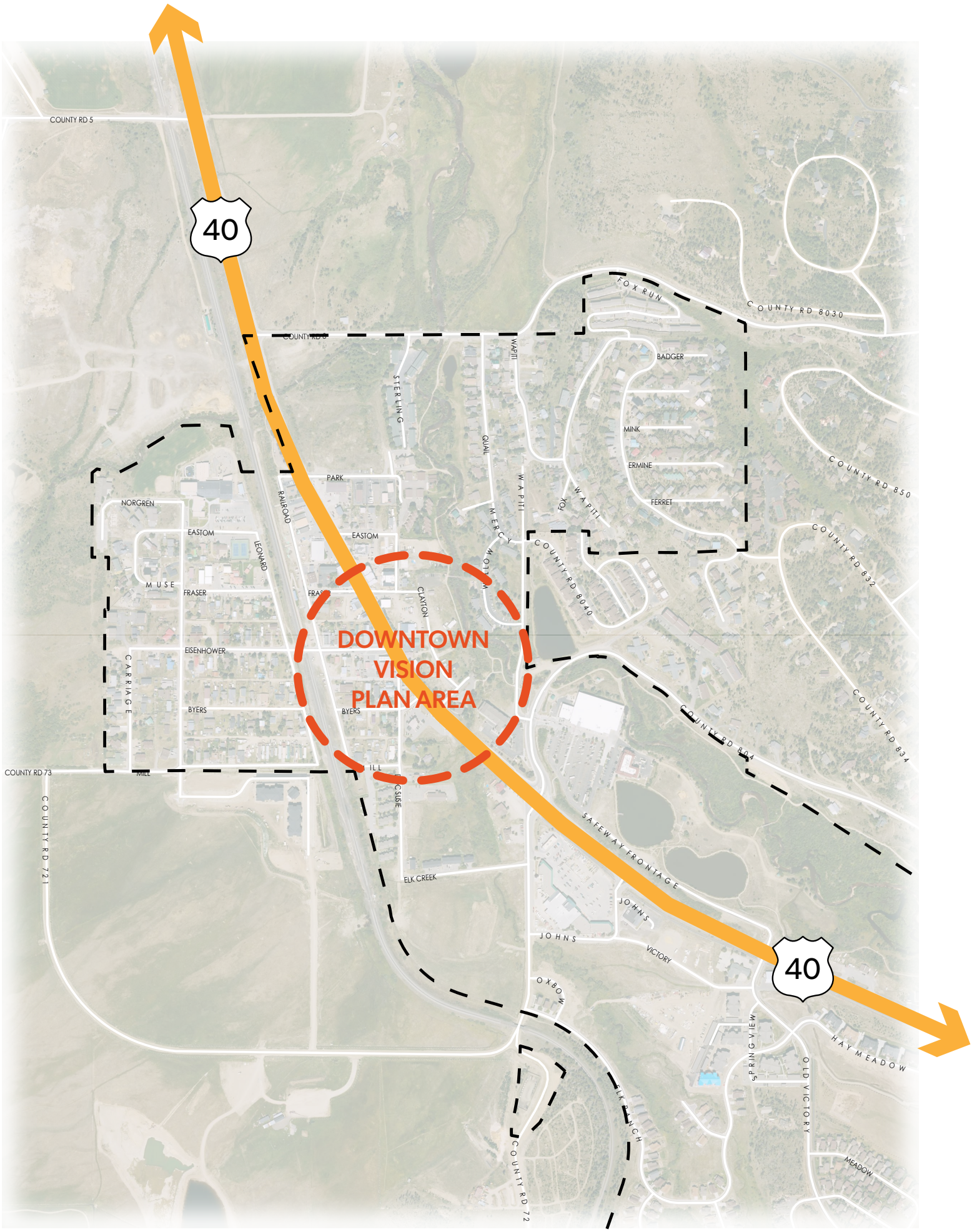
-Fraser Downtown Development Authority

To better engage the community and stakeholders, a conceptual Vision Plan was developed to explore what is possible and imagine what Downtown could become. The Vision Plan is long-term—likely spanning 20+ years—and, as the name suggests, is aspirational. It aims to break down barriers, whether perceived or actual, to achieve the essence of what the community desires.

These goals are interdependent, and when achieved together, their benefits are amplified.

As illustrated in the legend of the following graphic (**page 59**), the Vision Plan incorporates design elements that support the realization of these goals. Key components include:

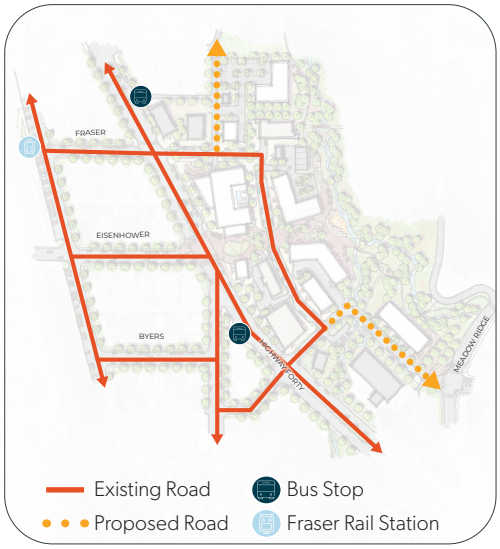
1. Strengthening the physical and visual connection between Highway 40 and the Fraser River through integrated public gathering spaces.
2. Minimizing off-street surface parking in the Downtown core by incorporating tuck-under, on-street, structured, and district parking strategies to reduce visual impact.
3. Activating street-level building fronts with local retail and upper-level residential or commercial uses.
4. Improving connectivity through new pedestrian and vehicular pathways and linkages.
5. Leveraging the Fraser River and Fraser River Trail to enrich the Downtown experience.
6. Expanding and enhancing signage, public art, and wayfinding elements.


DOWNTOWN
VISION
PLAN AREA
40
40
COUNTY RD 5
COUNTY RD 8
FOX RUN
COUNTY RD 8030
BADGER
MINK
ERMINE
FERRET
COUNTY RD 850
COUNTY RD 832
COUNTY RD 834
COUNTY RD 8040
COUNTY RD 804
STERLING
QUAIL
WAPITI
MERCY
WOLOW
FOX
PARK
RAILROAD
NORGREN
EASTOM
LEONARD
MUSE
FRASER
CLAYTON
EISENHOWER
CARRIAGE
BYERS
MILL
COUNTY RD 73
COUNTY RD 721
ELK CREEK
SAFEWAY FRONTAGE
JOHNS
VICTORY
OXBOW
SPRINGVIEW
HAY MEADOW
OLD VICTORY
MEADOW
ELK RANCH
COUNTY RD 72

ACTIVE MOBILITY



VEHICULAR CIRCULATION



PUBLIC SPACES



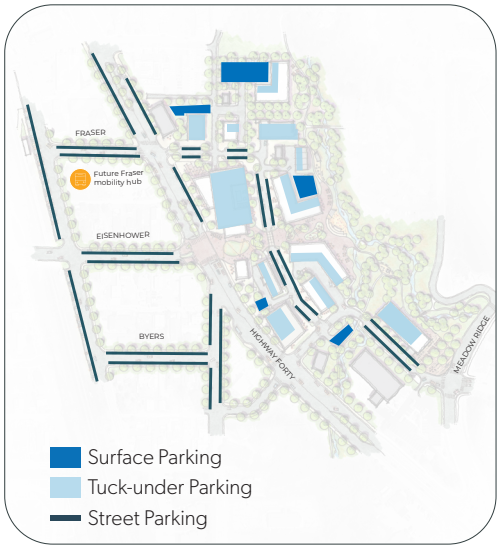
ENTRY MONUMENTS



GROUND FLOOR ACTIVATION



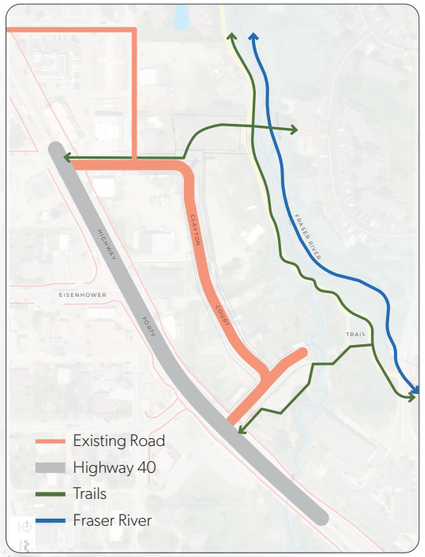
PARKING



Downtown Vision Plan



EXISTING FRAMEWORK



PROPOSED FRAMEWORK



Connecting vision to goals...

DTV 1 DTV 2 DTV 3 DTV 4

- A Trail Overlook
- B Existing Bridge
- C Terraced Gathering Area & Overlook
- D Planned Art Center
- E Planned Signal & Streetscape Improvements
- F Grade Transition
- G Programmed Plaza
- H Play/Gathering Zone
- I Potential Roadway Connection to Meadow Ridge
- J Potential Wapiti Realignment
- K Potential Roadway Connection at Sun River Drive
- L Existing Roadway Bridge
- M Potential Byers Relocation
- N Streetscape Improvements
- O Shared Train/Downtown Parking
- P Transit Stop
- Q Headwaters Trail Alliance Building
- R Distillery Barrel Storage Building
- S Potential Shared Parking Opportunity
- T Festival Street
- U Future Fraser Mobility Hub



DOWNTOWN VISION GOAL 1

Create an environment where walking, biking, and rolling feels fun, easy, and accessible.

DTV 1.1

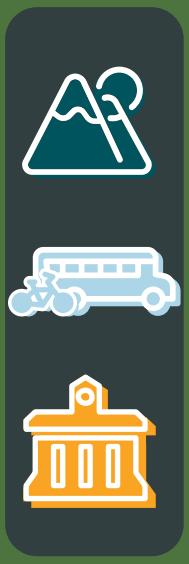
Improve signage and wayfinding for easier navigation.

- Create artistic monuments in and around Downtown through the commissioning of local or regional artists that create natural wayfinding elements.
- Use the Winter Park & Fraser Wayfinding Plan to identify signage and wayfinding deficiencies and fill these gaps.
- Adopt and implement the Winter Park & Fraser Signage and Wayfinding Master Plan.

DTV 1.2

Improve pedestrian and vehicular safety.

- Emphasize the importance of pedestrian and vehicular safety in discussions with CDOT on potential Highway 40 modifications.
- Integrate safety best practices in the design of future roads and pathways.
- Incorporate principals of Crime Prevention through Environmental Design (CPTED) in the design of public spaces.
- Add sidewalks to existing and proposed roadways and ensure all spaces meet The Americans with Disabilities Act (ADA).
- Inventory current deficiencies and projected replacement timeframes for pedestrian and vehicular infrastructure and add to Town Budget/ Capital Improvement Plan.
- Widen the Fraser River Trail within Downtown to separate cyclists from pedestrians where possible.
- In high speed or high traffic areas, consider grade separated crossings between active and passive modes of transportation.



DTV 1.3

Expand and improve mobility options.

- Establish a public-private partnership to establish a shared-use parking lot or garage in Downtown Fraser.
- Work with the railroad to create additional parking on the east side of the tracks that could be used by Downtown visitors.
- Improve roadways and/or stripe additional parallel parking on the roads west of Highway 40.
- Install public EV charging stations.
- Conduct a parking analysis and/or Parking Master Plan.
- Continue to explore the feasibility of connecting a road to Safeway and Sun River Drive, as shown on the Vision Plan.
- Work with The Lift to maintain and improve bus service to Downtown.
- Consider micro-transit options to compliment bus routes and services from the LIFT.
- Create an affordable and seasonal on-demand (e)bike share system.
- Establish the Town-owned property at 360 Railroad Avenue as the Fraser Mobility Hub.

DTV 1.4

Allocate and design space that is friendly to walk, bike, and roll.

- Consider updating the Riverwalk District standards, street standards, and other applicable portions of the Town code to secure a minimum of 12' for sidewalks when buildings face roadways to allow the inclusion of street trees and more comfortably create space for site furnishings such as benches, bike racks, pedestrian lighting, and litter receptacles.
- Design streets using best practices that are naturally safe for cyclists. Provide striping and signage to improve visibility to clearly delineate cyclist space.
- Pursue development of a trail along Elk Creek, from the Fraser River to CR 72 and potentially beyond, with a grade separated underpass under US 40 to connect Clayton Court and the Fraser River Trail to the Fraser Valley Center.



DOWNTOWN VISION GOAL 2

Build a lively and sustainable business environment that supports small, local shops and businesses, reflecting the town's unique and fun spirit.

DTV 2.1

Promote business diversity, local businesses, and entrepreneurs that provide goods and services appealing to both locals and visitors.

- Provide economic incentives to desired businesses via financial incentives.
- Provide incubator space for desired businesses to become established and grow.
- Create marketing collateral to attract businesses.
- Invest in public infrastructure that creates value for prospective investors.

DTV 2.2

Increase foot-traffic and visitation.

- Enhance marketing and advertising campaigns through various media outlets.

DTV 2.3

Provide inclusive housing that prioritizes the workforce.

- Continue to assess and evaluate the effectiveness of zoning incentives for developments that voluntarily provide affordable housing and adjust the requirements/criteria on affordable unit ratios and AMI's, as needed.
- Continue to explore new ways to integrate affordable and market-rate housing for local employees.
- Work with the Fraser River Valley Housing Partnership on additional affordable residential projects.

DTV 2.4

Create a full-day Fraser experience.

- Encourage traditional lodging types beyond short-term rentals (STR) to diversify housing options.
- Encourage non-competing local businesses to partner with each other to promote the local economy.
- Encourage future development to facilitate a full-day visitor experience to make it an easier choice for weekend and time-constrained visitors.



DOWNTOWN VISION GOAL 3

Make the Fraser River and Fraser River Trail the heart of Downtown, shaping the area's identity and offering a vibrant, scenic space for residents and visitors to enjoy.

DTV 3.1

Enhance Fraser River Trail amenities and gathering spaces near Downtown.

- Acquire areas within the Downtown intended for parks and open space to ensure the Downtown Vision is realized as desired.
- Incorporate the Downtown Vision Plan as part of the design review process in which developers must abide by.
- Upon securing public areas, develop detailed public space designs that work with adjacent development parcels and enhance future development.

DTV 3.2

Encourage active uses and programming along the Fraser River while respecting ecologically sensitive areas.

- Evaluate ecological conditions and functions and provide best-practice solutions. Explore options that improve the current user experience.
- Evaluate construction constraints such as wetlands and challenging geotechnical conditions.
- Continue to evaluate Riverwalk District zoning as projects are built and, as needed, make any changes that might affect active ground floor uses along the River.
- Create events and programs along the Fraser River that bring people into the Downtown.

DTV 3.3

Improve non-motorized access and visibility from Highway 40 and Clayton Court to the River.

- Integrate new wayfinding signage and monuments that lead individuals to the Fraser River.
- Create stronger physical connections between these points through wider sidewalks, plazas, lawns, and other communal spaces.
- Create a memorable landmark/trailhead at the junction of the Fraser River Trail and Downtown.

DOWNTOWN VISION GOAL 4

Enhance Downtown to be the go-to destination, buzzing with excitement and events every month of the year, where there's always something fun for everyone.

DTV 4.1

Enhance event and programming efforts.

- Coordinate with local municipalities and Winter Park Resort to ensure that valley-wide events and programming are complementary and don't result in efforts taking attendance away from each other.
- Enhance four-season programming and event planning to promote visitation during typical shoulder seasons.
- Continue to support and enhance the Town's signature multi-day events such as Fraser Mountain Mural Festival and Fraser Fire & Ice.

DTV 4.2

Ensure high-quality architectural and public realm design that is memorable and unique.

- Work with the local community during the planning of public realm spaces to create community ownership.
- Hire local artists to create memorable elements that are unique to Fraser.
- Allocate budget to maintain a clean and enjoyable public realm. Work with the Downtown Development Authority (DDA) and business owners to discuss current challenges and opportunities.
- Work with the property owners of the Safeway shopping center and Fraser Valley Center (Murdoch's) to encourage redevelopment / retrofitting of these suburban style commercial developments to a more urban form that integrates with the rest of Downtown Fraser.

Housing

Vision

Encourage the building and maintenance of great places to call home, whether year-round or seasonally.

A great community starts with great places to call home. The availability, affordability, and quality of homes shape not only where people live, but also how they connect to jobs, schools, parks, and services. A strong housing framework supports a diverse population, provides stability for families, and helps attract and retain a skilled workforce. Whether year-round or seasonal, housing in our community should reflect the character, needs, and aspirations of the people who live here.

This plan encourages both the creation of new housing and the maintenance of existing neighborhoods, with a focus on quality, affordability, and long-term livability. By supporting diverse housing options, we strengthen community identity, provide stability for residents, and build resilience for the future.

HOUSING GOAL 1

Promote a variety of housing options to meet the needs of both renters and homebuyers, offering something for everyone in the community.

H 1.1

Create incentives and streamlined processes for developing a range of housing types, including missing middle housing options like small-lot single-family (cottage courts), townhomes, duplexes, and small-scale multifamily.

- Evaluate the Town's current residential unit thresholds for minor and major site plan applications.
- Consider allowing small-scale multifamily (4 units or less) to only require administrative approval.

H 1.2

Support housing solutions that serve diverse household compositions, income levels, and life stages.

- Identify potential developers to complete public-private partnerships.

H 1.3

Modify zoning and land use codes to allow greater housing variety and density in appropriate areas.

- Consider changes to reduce minimum open space, reduce required setbacks, and increase maximum building height in residential zone districts.
- Consider inclusionary zoning models and practices that would incentivize and/ or require construction of low/ middle income units as part of housing developments.

H 1.4

Establish programs to help maintain and preserve existing affordable housing stock.

- Collaborate with the Fraser River Valley Housing Partnership to offer a deed restriction program for existing residential units and tailor the incentives it provides to be attractive to local homeowners and homebuyers.



HOUSING GOAL 2

Encourage mixed-use housing development in areas where it can make the neighborhood more walkable, contribute to its character, and boost local business.

H 2.1

Identify priority areas where mixed-use development should be concentrated, particularly near Downtown and transit corridors.

- Consider changes to the allowed uses within commercial and mixed-use zone districts so that permitted development is not comprised of only residential uses.

H 2.2

Create design guidelines that ensure mixed-use developments contribute positively to neighborhood character and walkability.

H 2.3

Review and update regulatory/zoning incentives such as density bonuses and parking reductions for mixed-use projects that incorporate housing into targeted areas.

H 2.4

Support the adaptive reuse of existing buildings for mixed-use development.

- Implement expedited permitting and review processes for adaptive reuse projects that are mixed-use.
- Consider fee reductions/waivers for adaptive reuse projects that are mixed-use.

HOUSING GOAL 3

Build and strengthen partnerships with state, regional/county, and philanthropic organizations that can help Fraser increase affordable and attainable housing to better meet the needs of local workers.

H 3.1

Actively participate in regional housing coalitions and initiatives, such as the Fraser River Valley Housing Partnership, to leverage shared resources and expertise.

H 3.2

Pursue grants, tax credits, and other external funding sources for housing development and assistance programs.

- Work with DOLA and other agencies to identify proper funding sources.

H 3.3

Collaborate with major employers and business organizations to develop employer-assisted housing programs.

H 3.4

Partner with nonprofit housing developers to increase capacity for affordable housing development that is subsidized and/or protected.



HOUSING GOAL 4

Seek a balance of housing options for year-round residents, seasonal workforce, non-resident owners, and short-term visitors – recognizing the importance of each for the local economy and quality of life.

H 4.1

Create dedicated seasonal workforce housing solutions through partnerships and targeted development.

H 4.2

Establish monitoring systems to track housing inventory across different occupancy types to help inform policies to expand workforce-appropriate housing.

H 4.3

Implement policies that encourage non-resident homeowners to make properties available for long-term rental when not in use.

- Explore case studies for temporary subsidies or incentives to unlock existing housing stock for long-term rentals.

Economic Vitality

Vision

A vibrant mountain town filled with shopping, dining, and entertainment options fueled by happy visitors and residents.

A vibrant economy is essential to the life of a mountain town. Shopping, dining, and entertainment create destinations that serve both residents and visitors, while generating the energy and activity that define a thriving community. By supporting local businesses, attracting new investment, and celebrating the area's unique character, the economy fuels prosperity and Fraser's high quality of life.

This plan seeks to strengthen the community as a place where businesses can grow, workers can thrive, and visitors feel welcomed. A diverse mix of experiences ensures that the local economy remains resilient, sustainable, and enjoyable for all.

ECONOMIC VITALITY GOAL 1

Build and nurture a thriving, memorable mountain Downtown.

EV 1.1

Enhance the physical environment of Downtown.

- Complete streetscape improvements including sidewalk widening, street furniture, and wayfinding signage along main Downtown corridors.
- Continue to support and consider expanding the existing business enhancement grant program to assist property owners with building upgrades that enhance Downtown character.

EV 1.2

Support existing Downtown businesses while attracting complementary new businesses.

- Work with the DDA and Chamber to identify market gaps and actively recruit businesses that fill those gaps.
- Streamline permitting and approval processes for Downtown business expansions and tenant improvements.

EV 1.3

Enhance Downtown's market position and visibility.

- Create a Downtown marketing and branding strategy that highlights Fraser's unique character and offerings.
- Support DDA social media and promotional efforts that showcase Downtown events and businesses.

EV 1.4

Activate Downtown through events and programming.

- Develop and maintain a coordinated annual calendar of Downtown events and activities that drive foot traffic year-round.
- Support pop-up activations and temporary uses that bring energy to Downtown during shoulder seasons.

ECONOMIC VITALITY GOAL 2

Bolster counter-seasonal business to help balance workforce needs and revenue generation across the year.

EV 2.1

Identify and promote off-season tourism opportunities.

- Develop and promote signature off-season events that draw visitors and support local businesses.

EV 2.2

Support businesses in developing shoulder season products and services.

- Connect businesses with technical assistance resources for developing new off-season products or services.

EV 2.3

Incentivize year-round business activity and employment.

- Identify brownfield funding opportunities and other supports to incentivize a manufacturing use at the former pole yard property.
- Explore creation of a year-round employment incentive program (e.g., tax rebates, fee waivers) for businesses maintaining staff during shoulder seasons.
- Consider property tax incentives or other financial tools for businesses that provide year-round goods/services critical to community needs.



ECONOMIC VITALITY GOAL 3

Encourage growth in small businesses that help diversify the local economy and fit with Fraser's mountain setting.

EV 3.1

Provide business support services and resources.

- Maintain and promote online resources that connect entrepreneurs to capital access programs, grants, and lending opportunities.
- Sponsor or co-sponsor quarterly networking events for local entrepreneurs and small business owners.

EV 3.2

Expand availability of flexible, affordable business space.

- Support adaptive reuse of existing buildings for pop-up retail, artist studios, or flexible commercial space.
- Consider zoning amendments to allow live-work units and home-based business options in appropriate locations.

EV 3.3

Attract businesses that complement Fraser's character and fill service gaps.

- Target recruitment efforts toward businesses that complement the mountain lifestyle and fill gaps in local services.
- Maintain inventory of available commercial spaces and actively market them to desired business types.

EV 3.4

Support remote workers and home-based businesses.

- Continue infrastructure improvements including broadband expansion.
- Create or support co-working space development that provides professional workspace and networking opportunities.

ECONOMIC VITALITY GOAL 4

Make Fraser a place where people can both live and work affordably.

EV 4.1

Support regional workforce development initiatives.

- Share information about local employment opportunities and employer needs with regional workforce development partners.

EV 4.2

Support the creation of year-round, higher wage jobs.

- Track and report on job quality metrics including wage levels, benefits, and year-round vs. seasonal employment.

EV 4.3

Help to integrate work and living options.

- Support mixed-use development that allows residents to live near employment centers and reduce commuting costs.

EV 4.4

Integrate economic development with housing and childcare.

- Survey local employers about employee housing and childcare needs to inform policy decisions.

ECONOMIC VITALITY GOAL 5

Encourage businesses to collaborate in emerging shopping areas to create a dynamic environment where everyone benefits.

EV 5.1

Support business association and merchant groups.

- Encourage formation of merchant associations in emerging commercial areas.

EV 5.2

Foster a collaborative approach to marketing and programming.

- Facilitate regular meetings between Downtown and highway-oriented business groups to coordinate marketing and events.


OPEN
STOP
BIRDIE LOUNGE

Summer

Vibrancy & Connection

Community
Parks, Recreation, Open Space, & Trails



Summer in Fraser is all about connecting with community and the great outdoors. This chapter of the plan focuses on the elements that will enhance that connection, fostering a lively, active, and deeply integrated community.

The topics of Community and Parks, Recreation, Open Space, and Trails are representative of the very heart of Fraser's outdoor culture. Parks and trails are not just amenities; they are the places where people gather, where friendships are forged, and where the community's energy truly shines. By focusing on these elements the plan aims to create a more accessible and vibrant environment, ensuring that residents and visitors alike have endless opportunities to connect with one another and with the stunning natural landscapes that define Fraser. This chapter is a blueprint for celebrating and strengthening the connections that make Fraser such a special place to live, work, and play.



Community

Vision

A funky and authentic town that celebrates its local history, outdoor recreation, welcoming community, and mountain town character.

Community is more than a collection of buildings or streets. It is the spirit that brings people together and makes a place feel like home. Here, that spirit is defined by a funky and authentic character that reflects both the town's history and its mountain setting. Local traditions, adventurous attitudes, and a welcoming culture give the community its unique sense of place and draw people who value both connection and individuality.

Looking ahead, the community will continue to grow and change, but Fraser's character should remain the foundation. This plan encourages the creation of inclusive gathering spaces, the preservation of cultural and historic assets, and the support of events and activities that strengthen the local identity that is so beloved. By nurturing these qualities, the town can remain a welcoming, vibrant place where residents and visitors alike feel a strong sense of belonging.

COMMUNITY GOAL 1

Preserve Fraser's one-of-a-kind charm, mountain town vibe, and strong sense of community.

C 1.1

Encourage community leadership and participation in Town government.

- Establish a Citizen's Academy to educate and inform Fraser Valley residents on the role of their local government and its operations.

C 1.2

Establish community gateways, wayfinding, and signage that showcase Fraser's unique identity and educate residents and visitors about the Town and its history.

- Use the Winter Park & Fraser Wayfinding Plan to identify priority areas for gateways, signage, and informational kiosks.

C 1.3

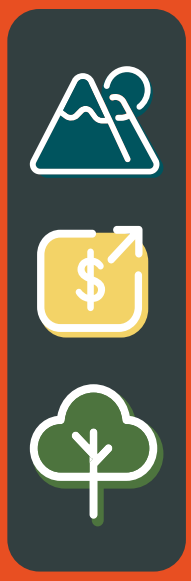
Support development, spaces, and programming that enhance quality of life for everyone.

- Support the Fraser Bike Park with programming and events.
- Pursue/support the addition of new parks and park facilities.

C 1.4

Encourage second homeowners to become active members of the community.

- Develop programs and spaces that bring together longtime locals and new residents.



COMMUNITY GOAL 2

Ensure development enhances the visual character of the area, blending modern design with the unique charm and natural beauty of the community to create a cohesive and vibrant built environment.

C 2.1

Incorporate elements of Fraser's history and traditions into architectural design, streetscapes, and public spaces.

C 2.2

Promote and protect architectural integrity.

- Partner with the Grand County Historical Association, the Grand County Historic Preservation Board, and other entities to develop a local register of historic structures.
- In partnership with the Fraser Downtown Development Authority (FDDA), provide incentives for preservation or adaptive reuse of historic structures.
- Provide signage at historic landmarks to educate on building history and significance.
- Establish a walking tour of Fraser guidebook.

C 2.3

Support oversight to ensure new development is compatible with existing character.

- Establish design guidelines for new development.
- Incorporate public spaces that reflect the character of Fraser and create community in new development.
- Preserve walkable, small-town streetscapes that activate frontages and provide gathering spaces.
- Integrate the built environment with Fraser's natural surroundings to enhance the mountain character and outdoor lifestyle.
- Establish and maintain view corridors of Byers Peak, the Continental Divide, and Winter Park Resort.

COMMUNITY GOAL 3

Celebrate arts and culture as a vital force in shaping the town's identity, fostering inclusivity, and creating spaces that connect and inspire people.

C 3.1

Support local arts and culture to leverage Fraser as an artist community.

- Partner with local artists and other creatives to develop public art, murals, and other installations that reflect Fraser's history and culture.
- Maintain and increase funding for Art in Public Places in the Town's annual budget.
- Encourage the collaboration and support of the Public Arts Committee, the Fraser Downtown Development Authority, and other entities to fund the arts.

C 3.2

Leverage the future Fraser Valley Arts Center as a place for communication and collaboration amongst different art groups in the community.

C 3.3

Host or support events, festivals, pop-ups, and other activities that bring the community together and showcase music, crafts, and traditions.

- Explore supporting events such as the Winter Park Film Festival and/or providing supplemental activities.

Parks, Recreation, Open Space, & Trails

Vision

Fraser's parks, recreation, open spaces and trails enrich the community by providing fun places to explore, stay active, and enjoy a healthy environment.

Fraser's parks, recreation opportunities, open spaces, and trails are central to the community's quality of life. They provide places to play, gather, and explore - while also protecting the natural beauty that defines the town's mountain character. These resources encourage active lifestyles, support public health, and offer fun, accessible ways for people of all ages and abilities to connect with the outdoors.

Looking forward, this plan seeks to build on this strong foundation by expanding trail connections, improving park facilities, and ensuring that recreation opportunities remain accessible. By investing in both natural areas and recreational amenities, Fraser can continue to offer a healthy environment and a variety of experiences that strengthen its reputation as an outdoor recreation hub.

PARKS, RECREATION, OPEN SPACE, & TRAILS GOAL 1

Protect and enhance Fraser's open spaces ensuring they remain beautiful, accessible, and enjoyable for all.

PROST 1.1

Protect and enhance the Cozens Ranch Open Space.

- Implement the recommendations from the 2018 Fraser River Corridor Master Plan to enhance both conservation and recreation in the Cozens Ranch Open Space.
- Work with Colorado Open Lands to place a conservation easement over a majority of the land within the Cozens Ranch Open Space.

PROST 1.2

Develop properties in a manner that preserves the natural features of a site and provides new or connects to existing public open space.

PROST 1.3

Promote responsible open space use through signage, education, and stewardship.

- Update current and install new interpretive signage that showcases ecological features and Leave No Trace principles.
- Create volunteer opportunities for clean-up days, native plant restoration, or wildlife monitoring in Fraser's open space.



PARKS, RECREATION, OPEN SPACE, & TRAILS GOAL 2

Maintain and enhance a rich and varied public trail network, creating more opportunities for outdoor adventure and connecting the community to nature and nearby public lands.

PROST 2.1

Improve trailheads with amenities that support access and comfort.

- Upgrade trailheads with essentials like restrooms, bike racks, trash and recycling bins, shade, seating, and expanded parking.
- Prioritize improvements at high-use trailheads and those serving multiple user groups.

PROST 2.2

Enhance trail wayfinding and navigation across the network.

- Work with regional partners and organizations to install consistent, clear signage with trail names, distances, and safety information across regional trails based on the Winter Park & Fraser Wayfinding Plan.

PROST 2.3

Improve pedestrian and bicycle connections.

- Prioritize trail linkages that create a cohesive network, allowing one to travel conveniently without a car.
- Identify gaps, new connections, and trail extensions to improve recreation and non-motorized transportation options.

PROST 2.4

Plan and construct new trails with consideration for environmental sensitivity and land use compatibility.

PROST 2.5

Continue to provide high-quality parks and outdoor facilities and support their expansion and improvement.

- Support the completion and ongoing maintenance of the Fraser Bike Park.

PARKS, RECREATION, OPEN SPACE, & TRAILS GOAL 3

Provide more opportunities for indoor recreation, offering the community a variety of activities to stay active, social, and engaged, no matter the weather.

PROST 3.1

In partnership with the Fraser Valley Metropolitan Recreation District, explore opportunities for a fieldhouse/multi-purpose use facility for additional indoor recreation opportunities.

PROST 3.2

Support the Grand Park Community Recreation Center.

PROST 3.3

Expand indoor programming within existing buildings.

- Use schools or other public spaces for programs like fitness classes, youth activities, or community gatherings.



PARKS, RECREATION, OPEN SPACE, & TRAILS GOAL 4

Promote inclusive and barrier-free access to all public spaces, making sure everyone in Fraser feels welcome and engaged, and benefits from community resources.

PROST 4.1

Find opportunities to expand and protect public lands.

- Secure easements or access agreements where necessary and work to prevent the loss or privatization of established access routes.

PROST 4.2

Identify and remove barriers to using public spaces.

- Offer scholarships, reduced fees, or free programs to ensure cost isn't a barrier to accessing recreation opportunities.
- Provide transportation options to parks, recreation facilities, libraries, and other public spaces.
- Incorporate universal design elements and ADA compliance.

PROST 4.3

Promote public events and resources to all community members.

- Use multiple communication channels to advertise Town sponsored events and recreational opportunities.
- Partner with community organizations to reach underrepresented groups.
- Provide signage and communications in multiple languages as appropriate.

PROST 4.4

Maintain funding sources to support growth and improvements.

- Where feasible, look to expand parks and recreation facilities by utilizing land dedicated through land dedication requirements.
- Utilize fees-in-lieu of park land dedication to fund capital improvements and expansions to existing parks.



Fall

Stewardship & Resilience

Land Use Sustainability



Fall in Fraser is a time of both bounty and preparation, a natural cue for focusing on long-term stewardship and community resilience. Unlike the forward-looking growth of spring, this chapter centers on the foundational elements that will preserve and protect Fraser for the future.

The topics of Land Use and Sustainability and Natural Resources are brought together here to address the careful management of the town's assets. Thoughtful land use is the framework that guides how Fraser grows, ensuring it preserves its unique character and open spaces. Sustainability and the protection of Fraser's natural resources are not just policy choices; they are commitments to the health of the environment, the economy, and the community. This chapter provides a clear strategy for responsible governance, ensuring Fraser remains vibrant and capable of adapting to future challenges. It is the town's blueprint for maintaining the delicate balance between progress and preservation.



Land Use

Vision

Fraser grows thoughtfully and sustainably, ensuring a vibrant community that meets the needs of both current and future residents while preserving unique character.

Land use shapes the way a community grows, functions, and feels. In Fraser, thoughtful and sustainable land use decisions are essential to creating a vibrant town that meets the needs of current residents while planning for future growth. By guiding how land is developed, preserved, and connected, the community can ensure that neighborhoods, businesses, parks, and public spaces all work together to support a high quality of life.

This plan focuses on guiding growth in ways that respect Fraser's unique character, protect natural resources, and support the community's long-term needs. Thoughtful land use decisions will encourage development that fits the town's scale, strengthen neighborhoods, and create activated public spaces. By balancing preservation with new opportunities, Fraser can remain an attractive, resilient, and well-organized community without compromising the small-town feel that is so beloved.



LAND USE GOAL 1

Promote a balanced mix of land uses that supports current and future residents and the Town's ability to provide services, while also ensuring we preserve green spaces, enhance outdoor recreation amenities, and protect natural resources.

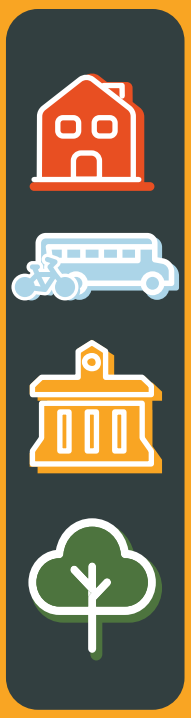
LU 1.1

Encourage mixed-use development that integrates housing, stores, businesses, and services in key areas, like Downtown and near transit.

LU 1.2

Support small-scale neighborhood serving retail and services within or near residential areas.

- Encourage future development and annexations to integrate small-scale retail.



LAND USE GOAL 2

Plan development where infrastructure and services already exist to reduce the impact and cost of new development.

LU 2.1

Encourage the development of empty lots and renovation of existing buildings in areas supported by existing infrastructure.

- Prioritize the use of underused or empty parcels within existing town boundaries.
- Direct growth to locations with available sewer, water, transportation, and emergency services.

LU 2.2

Promote compact, walkable, transit-supported development patterns that preserve open space.

LU 2.3

Discourage sprawl and leapfrog development patterns that strain town services and inefficiently consume land.



LAND USE GOAL 3

Ensure new development is beneficial to the fiscal sustainability of the Town of Fraser.

LU 3.1

Implement and regularly update development impact fees at least every 3 years to ensure new development contributes its fair share toward infrastructure, green space, and public services.

- Conduct a study to determine the feasibility of implementing impact fees for transportation, affordable/workforce housing, and other essential servives.
- Ensure that plant investment fees for water and sewer are regularly updated to align with the cost of capital expansions.
- Reevaluate the Town's current land dedication and fee-in-lieu requirements for parks and schools.
- Coordinate and collaborate with the East Grand Fire Protection District on periodic reassessments of their impact fees for new development.
- Review and adjust fee structures periodically to reflect actual service costs.

LU 3.2

Require off-site improvements, when necessary, as a condition of approval for development projects to mitigate community impacts.

- Strengthen and clarify existing regulations for off-site improvements (such as transportation/roadway improvements, drainage and snow storage/melting facilities, parks/trails/open space, etc.) and right-of-way dedication for new development projects.

LU 3.3

Develop and adopt a standard annexation agreement that guides future annexations and their development.

- Explore provisions that require new annexations to contribute to the cost of infrastructure, public services, and amenities, and/or provide affordable housing, open space, and commercial land uses.
- Codify the proposed annexation policy and template agreement outlining expectations for infrastructure contributions, conveyance of water rights, service provisions, and community benefits.

LU 3.4

Promote commercial and mixed-use development in appropriate areas for sales tax generation.

- Encourage development that expands retail, lodging, and service sectors to increase sales and lodging tax revenues.
- Target high-visibility or high-traffic locations for commercial and mixed-use areas.
- Inclusion of light industrial/manufacturing land uses to diversify the region's job and tax base.



LAND USE GOAL 4

Align development codes, policies, and processes with the vision and goals of the Comprehensive Plan.

LU 4.1

Follow the Future Land Use Map for strategic future annexations and rezoning requests.

- Review and periodically update the Future Land Use Map and 3-mile

LU 4.2

Update the land development code to support the vision and goals in this document.

Sustainability & Natural Resources

Vision

Fraser treasures its natural resources and is dedicated to preserving and improving them, ensuring they are accessible for future generations to enjoy.

Fraser is committed to sustainability as a core part of its identity. The town prioritizes protecting natural resources, reducing environmental impacts, and promoting practices that support long-term community resilience. From energy and water use to land management and waste reduction, sustainable strategies help ensure that Fraser's forests, waterways, wildlife, and open spaces remain healthy, vibrant, and accessible for years to come.

This plan emphasizes integrating sustainability into every aspect of community planning. By fostering environmentally responsible growth, protecting natural assets, and encouraging eco-friendly lifestyles, Fraser can continue to thrive as a resilient mountain town that balances human needs with the needs of the earth.

SUSTAINABILITY & NATURAL RESOURCES GOAL 1

Foster and support initiatives that preserve and enhance Fraser's natural beauty, ensuring its unique landscapes remain vibrant for years to come.

SNR 1.1

Protect wildlife habitat through restoring and preserving wildlife corridors.

- Designate and preserve corridors that facilitate wildlife movement, reducing habitat fragmentation through the adoption of conservation zoning regulations that limit development in critical habitats or provide restorative measures.
- Collaborate with CDOT and CPW to implement wildlife crossings of US 40 where feasible.

SNR 1.2

Enhance riparian corridors through buffer zones, native vegetation restoration, and erosion control measures.

- Implement the Fraser River Corridor Maintenance Plan and explore expansion in the future.
- Maintain and expand the Town's current regulations regarding buffer zones / setbacks along waterways to limit erosion, restore riparian integrity, filter pollutants, and provide wildlife habitat.
- Prioritize the replanting of native flora along waterways to improve ecological health and resilience.

SNR 1.3

Protect, restore, and enhance wetlands by implementing control measures.

- Conduct comprehensive mapping of existing wetlands to identify priority wetlands and inform planning decisions.
- Enforce development restrictions to protect existing wetlands and employ mitigation banking to compensate for previous or future impacts.

SNR 1.4

Protect watersheds through a comprehensive watershed management plan.

- Develop and implement plans that address land use, water quality, and conservation within the watershed and implement best practices to reduce runoff and prevent pollution in waterways.



SNR 1.5

Conserve water through community outreach that removes barriers to implement best practices.

- In partnership with local municipalities and water & sanitation districts, promote water savings programs including audits, retrofits, and the use of water efficient landscaping practices through public education and demonstration gardens.
- Implement the recommendations from the 2023 Water Efficiency Plan and monitor/evaluate their effectiveness.
- Update the Town's landscaping regulations for new development to require vegetation that does not require irrigation once it is established.

SNR 1.6

Restore and protect the tree canopy through programs, ordinances, and community events.

- Expand the role of the Town's streetscape and public gardens management staff to plant new and maintain existing trees in public spaces to enhance canopy cover.
- Enact ordinances that protect mature trees when development occurs, including a tree replacement equivalency schedule for any impacted mature trees
- Organize events that encourage community participation in tree planting and care (Plant a Tree Day).

SNR 1.7

Manage noxious weeds through integrated weed management, monitoring, and awareness.

- Adopt a combination of mechanical, chemical, and biological control methods to manage invasive species, educate the community on identifying and reporting, and conduct routine surveys to detect and address noxious weed infestations promptly.



SNR 1.8

Manage stormwater through maintenance, ordinances, and sustainable infrastructure.

- Utilize the existing conditions survey of stormwater infrastructure and form a holistic, regional/neighborhood based approach to update inefficient stormwater infrastructure.
- Adopt supplemental regulations to the Grand County Storm Drainage Design and Criteria Manual to encourage and incentivize new developments to incorporate rain gardens, bioswales, permeable pavements and other green infrastructure to manage stormwater naturally.
- Explore partnerships with the school district, library district, and other entities to educate the community on stormwater management with hands-on demonstrations along St. Louis Creek.

SNR 1.9

Strive to achieve Dark Sky Community Designation by 2035 - reducing light pollution through ordinances and education.

- Strengthen existing exterior lighting ordinances to minimize skyglow and light trespass and/or require the use of shielded fixtures that direct light downward.
- Inform residents and businesses about the benefits of reducing light pollution.
- Partner with HOA's to update and enforce neighborhood lighting regulations.
- Explore implementing a grant program to support local compliance.



SUSTAINABILITY & NATURAL RESOURCES GOAL 2

Embrace sustainable development practices that create harmony between growth with the natural environment, ensuring a thriving community while protecting the beauty and resources of Fraser.

SNR 2.1

Encourage energy efficiency for all homes and businesses in Fraser.

- Support and partner with Sustainable Grand and other nonprofit community groups that provide education and outreach with regards to energy efficiency.
- Update local building codes to align with the latest International Energy Conservation Code (IECC) standards.
- Provide subsidized energy audits for homes and small businesses, and additional support/subsidies for weatherization, insulation, and HVAC upgrades.

SNR 2.2

Support green building design by offering density bonuses, expedited permits, or reduced fees for projects that meet LEED or other high-performance building standards.

SNR 2.3

Lead by example by retrofitting town-owned facilities with high-efficiency appliances and fixtures and utilizing native plantings and drought-tolerant species across town facilities.

- Conduct a greenhouse gas emissions inventory to determine progress/impact of the recommendations from the 2016 Sustainability Plan.
- Create a new Sustainability Plan and implement its recommendations.

SNR 2.4

Ensure development oriented in a way that mitigates the risk of natural and human-made disaster.

- Create defensible space programs and vegetation management, especially near the Wildland-Urban Interface (WUI).
- Adopt codes and regulations that align with the Colorado Wildfire Resiliency Code.
- Ensure new development is outside of the 100-year floodplain and wetland designations.



SUSTAINABILITY & NATURAL RESOURCES GOAL 3

Promote efforts to improve air quality helping to create a cleaner, healthier environment for residents.

SNR 3.1

Measure, track, and set targets for greenhouse gas reduction.

SNR 3.2

Advance renewable energy.

- Advocate for Mountain Parks Electric to increase the share of its electric power that comes from renewable energy sources such as solar and wind.
- Promote community solar programs.

SNR 3.3

Reduce solid waste.

- Promote the pay-as-you-throw trash and recycling services available at the Town's facility, The Drop.
- Create programs and incentives to increase usage of The Drop by both residents and visitors.
- Explore, and implement where feasible, expansion of recycling services and what is collected, as well as composting services for organics.
- Adopt policies in line with the implementation of the Colorado Producer Responsibility Program and Minimum Recyclables List and require licensed haulers or contracted services to provide recycling.

SNR 3.4

Further vehicle electrification and support development of EV charging infrastructure.

- Convert transit and Town fleet vehicles to electric or hybrid models.
- Adopt the permitting processes and standards from the EV Charging Model Land Use Code promulgated by the Colorado Energy Office to reduce barriers to EV charging development.



SUSTAINABILITY & NATURAL RESOURCES GOAL 4

Inspire and support healthy, sustainable lifestyles that nourish both people and the planet.

SNR 4.1

Reduce vehicle miles traveled.

- Implement a car share program.
- Explore a parking demand strategy to reduce idling and increased driving.

SNR 4.2

Encourage multi-modal transportation by designing roads for all users—pedestrians, cyclists, transit riders, and drivers—with safe sidewalks, crosswalks, and bike lanes.

- Collaborate with neighboring communities and regional agencies to expand public transit routes and schedules for the Lift and other public transit options.
- Audit the bicycle connectivity network and incorporate into strategic development.
- Explore, and implement if feasible, micro-transit or bike-share programs to complement Lift services.

WINTER

Foundations & Support

Town Services & Infrastructure
Transportation & Mobility
Intergovernmental Coordination



Winter in Fraser calls for a strong foundation and a network of support, which mirrors this chapter's focus on the essential systems and partnerships that sustain the town. Unlike the visible growth of spring and summer, or the long-term stewardship of fall, this section is dedicated to the robust infrastructure and foundational relationships that ensure daily life runs smoothly.

Town Services/Infrastructure, Transportation/Mobility, and Intergovernmental Cooperation highlight the critical backbone of the community. Reliable town services and infrastructure provide the support systems residents depend on, from utilities to public safety. Efficient transportation and mobility infrastructure ensures the town remains accessible and functional, connecting people and places, no matter the weather. Finally, strong intergovernmental cooperation strengthens Fraser's capacity by building a network of support with neighboring entities, ensuring the region can collaboratively meet its needs. This chapter outlines the strategic investments and partnerships required to maintain the fundamental support systems that allow Fraser to thrive year-round.



Town Services & Infrastructure

Vision

Fraser's services and infrastructure provide residents with safe, reliable, and effective amenities.

Fraser will maintain and enhance its town services and infrastructure to support a safe, efficient, and thriving community. Roads, utilities, public facilities, and emergency services will be reliable, resilient, and designed to meet both current and future needs. Strategic investments will ensure services are accessible, efficient, and adaptable, preparing the town for any changing conditions.

This chapter examines existing systems, identifies gaps, and outlines strategies to guide improvements over time. By focusing on sustainability, innovation, and long-term planning, Fraser can strengthen its foundation, support economic vitality, and sustain the quality-of-life residents value.

TOWN SERVICES & INFRASTRUCTURE GOAL 1

Provide essential services for residents of all ages, backgrounds, and abilities.

TSI 1.1

Improve access to affordable childcare and early childhood education.

- Enhance partnerships with local providers, schools, and nonprofits to expand childcare options and increase childcare capacity.
- Secure funding/revenue opportunities to provide licensing and support operations for childcare providers.
- Explore incentives for businesses or housing developments that include on-site childcare.
- Work at the county level with Grand Beginnings, the county, neighboring municipalities, local businesses and foundations to address the need for sustainable early childhood education funding.

TSI 1.2

Expand educational and community services.

- Support increased senior services such as transportation, meal delivery, social programming, and in-home care support for older residents.
- Support local libraries to expand programming and resources.
- Support the formation of a 6-12 grade school facility in Fraser.

TSI 1.3

Expand access to multilingual, culturally inclusive, and digitally accessible communications.

- Provide translation and interpretation services for public information, especially around emergency services.
- Offer Town materials and service information in multiple languages and a digitally accessible format.

TSI 1.4

Ensure facilities meet American Disabilities Act (ADA) standards and are universally accessible.

- Ensure that public buildings, sidewalks, trails, and other amenities meet accessibility standards and guidelines and retrofit/upgrade these facilities if needed.
- Ensure existing businesses and commercial properties make upgrades that meet accessibility standards and guidelines and require new developments to comply during the development review process.

TSI 1.5

Strengthen community outreach and services to further support residents.

- Partner with non-profits and agencies to connect residents with available resources and services.
- Endeavor to meet the needs of all residents through culturally inclusive and multilingual programming.

TSI 1.6

Support emergency preparedness and resilience efforts in the case of natural or human-made disasters.

- Equip the community with the tools, knowledge, and resources needed to prepare for, respond to, and recover from disasters.
- Identify and make places of refuge available during severe snow or weather events, particularly during closures of Berthoud Pass.



TOWN SERVICES & INFRASTRUCTURE GOAL 2

Expand health services to support the growing needs and quality care of Fraser's residents.

TSI 2.1

Increase healthcare options and services.

- Support the new Middle Park Health Hospital campus and facilitate the development of additional healthcare related services.
- Recruit health providers in Fraser to serve local needs.

TSI 2.2

Expand mental and behavioral health services.

- Create partnerships with current mental healthcare providers and facilities.
- Collaborate with county and nonprofit mental health providers to increase access.

TSI 2.3

Integrate health promotion into Town programs.

- Use parks and recreation programming and community events to encourage physical activity, healthy lifestyles, and preventative care.
- Expand community event offerings to include a wider range of activities that appeal to all residents, including those seeking non-alcohol centered experiences, and enhance access to additional support resources.



TOWN SERVICES & INFRASTRUCTURE GOAL 3

Maintain and enhance Fraser's physical infrastructure to ensure it's ready to support the community's growth and needs.

TSI 3.1

Ensure long-term water supply and high-quality drinking water.

- Plan for future water use through conservation programs, infrastructure upgrades, and watershed protection.
- Continue to monitor and maintain water treatment facilities to meet quality standards.
- Incorporate rain gardens, bioswales, permeable pavements and other green infrastructure into public streets to manage stormwater naturally and protect the Fraser River and its tributaries.
- Locate snow storage and melting facilities away from the Fraser River.

TSI 3.2

Invest in sewer and wastewater systems upgrades.

- Upgrade aging sewer infrastructure and expand capacity in areas targeted for growth.

TSI 3.3

Support the expansion or consolidation of Town services.

- Support the expansion or relocation of the post office within Town boundaries.
- Expand recycling and compost services and facilities.
- Explore the creation of a separate parks division or department.

TSI 3.4

Review and update the Capital Improvement Plan (CIP) based on infrastructure condition, development trends, available funding, and reaching 50% completion on previous CIP.

Transportation & Mobility

Vision

A joyful and connected mountain town where walking, biking, and transit make it easy to get around and explore.

Fraser envisions a transportation system that is safe, connected, and accessible for all. Roads, trails, transit, and pedestrian networks connect neighborhoods, support local businesses, and promote sustainable, multimodal travel. Strategic planning and targeted investments will ensure the transportation system meets current needs while anticipating changing travel patterns.

This chapter establishes a framework for the future of Fraser's transportation system. By planning strategically and prioritizing multimodal options, Fraser can accommodate future growth, reduce congestion, enhance safety, and encourage sustainable travel choices. The framework also emphasizes resilience and adaptability, ensuring the transportation system can respond to changing needs, emerging technologies, and evolving community priorities.

TRANSPORTATION & MOBILITY GOAL 1

Build safe, inspiring walking and biking connections—whether strolling Downtown or heading out on a scenic trail—that invite people to explore year-round.

TM 1.1

Improve pedestrian, ADA accessibility, and bicycle connectivity, comfort, and safety.

- Identify gaps in the pedestrian and bicycle networks.
- Improve key bicycle and pedestrian crossings.
- Improve regional trail connections through Fraser.
- Evaluate and improve ADA accessibility on all existing pedestrian facilities within the Town, and ensure ADA compliance for all new facilities.
- Conduct a study for pedestrian connections from the Fraser Valley Elementary School, across the railroad and US 40, to St. Louis Landing and other neighborhoods and amenities east of US 40.
- Address drainage and snow removal issues to improve pedestrian friendly sidewalks throughout the winter and spring months.

TM 1.2

Develop new standard/typical roadway sections that allocate space for non-motorized users.

TRANSPORTATION & MOBILITY GOAL 2

Plan for a flexible and seamless transit experience that includes local solutions like micro-transit and a rail station area that welcomes travelers into Fraser's vibrant Downtown.

TM 2.1

Support increased passenger rail traffic to Fraser.

- Develop a Rail Station Area Plan for the Fraser Rail Station.
- Work with rail service providers to ensure consistent service.
- Plan for the future Fraser Mobility Hub to connect rail passengers to bus, bicycle, and other transportation services.

TM 2.2

Improve transit connectivity for areas not served by fixed-route transit.

- Evaluate feasibility of implementing micro-transit service.

TRANSPORTATION & MOBILITY GOAL 3

Support a well-connected road network that improves traffic flow, reduces congestion, and ensures the safe, efficient movement of people and vehicles throughout Fraser.

TM 3.1

Maintain and adapt Fraser's road network to support year-round access, safety, and the town's unique mountain context.

- Maintain and enhance roadway conditions through targeted reinvestment.
- Coordinate with CDOT on the US 40 capacity project to reflect local needs.
- Coordinate with Grand County on the completion of the Fraser Valley Parkway (FVP) from CR 73 (St. Louis Creek Road) to CR 50 (Church Park Road).
- Identify a north-south connection east of US 40 from CR 8 to Safeway (Edna Tucker Way-Sun River Dr-Clayton Ct).

TRANSPORTATION & MOBILITY GOAL 4

Provide thoughtful and easy-to-find parking that is balanced with the Town's commitment to walkability and placemaking.

TM 4.1

Balance parking supply and management with walkability and placemaking.

- Explore time restrictions for on-street parking near highly visited destinations and implement if needed.
- Add signage in key locations as consistent with the Winter Park & Fraser Wayfinding Plan throughout Town to clarify parking, destinations, and transportation options.
- Coordinate with CDOT Mountain Passenger Rail improvements and Clayton Court development to identify a location for a shared parking facility.
- Evaluate the feasibility of a parking monitoring program.
- Evaluate a fee-in-lieu and shared parking models.

Intergovernmental Coordination

Vision

The town of Fraser communicates and coordinates with other jurisdictions, agencies, and nonprofits to collaboratively address regional planning issues.

Effective collaboration with neighboring jurisdictions, regional agencies, and state and federal partners is essential for Fraser's long-term growth. Intergovernmental coordination ensures that services are implemented efficiently, reducing duplication, leveraging resources, and addressing shared challenges.

This chapter establishes a framework for proactive communication, partnership, and alignment with other governmental entities. By fostering strong relationships and coordinated planning, Fraser can advance regional priorities, respond to emerging challenges, and achieve outcomes that benefit residents, businesses, and the broader community. Through strategic coordination, the town strengthens its ability to deliver services, manage growth, and enhance its role as a collaborative and forward-looking member of the region.

INTERGOVERNMENTAL COORDINATION GOAL 1

Develop a framework for ongoing regional collaboration to foster strong partnerships and drive impactful solutions across communities and regions.

IGC 1.1

Create and formalize intergovernmental agreements for shared services and infrastructure .

- Inventory and monitor active IGAs between Fraser and other entities.

INTERGOVERNMENTAL COORDINATION GOAL 2

Encourage coordination and collaboration around land use in the Fraser Valley.

IGC 2.1

Work with Winter Park, Grand County, and other partners to identify shared growth areas, environmental resources, and land use goals that cross jurisdictions.

- Establish a procedure for notifying and consulting nearby towns and the County on significant development proposals, annexations, or rezonings near shared boundaries.

INTERGOVERNMENTAL COORDINATION GOAL 3

Coordinate regional transit plans and projects to efficiently move people throughout the Valley.

IGC 3.1

Foster relationships with CDOT, Grand County, and Union Pacific to be involved with regional transportation master planning efforts.

IGC 3.2

Work with Winter Park, Winter Park Resort, Granby, and Grand County to support operation and expansion of The Lift transit service.

- Secure additional, sustainable joint funding for transit infrastructure and operations.
- Explore the formation of a Regional Transportation Authority (RTA).

INTERGOVERNMENTAL COORDINATION GOAL 4

Create forward-thinking, regional housing plans that address the needs of the entire Valley.

IGC 4.1

Work with Fraser Valley Housing Partnership, Winter Park, and Grand County to create a Valley-wide strategy for workforce, seasonal, and affordable housing.

IGC 4.2

Explore shared tools and incentives for housing development.

INTERGOVERNMENTAL COORDINATION GOAL 5

Work with Grand County and Winter Park to understand capacity and plan for services and infrastructure upgrades.

IGC 5.1

Work with government entities and special districts in the Fraser River Valley to further long-range planning goals and align Capital Improvement Plans across jurisdictions.

- Continue to explore a location for a shared composting site with Grand County and Winter Park.
- In partnership with Grand County, continue to advocate for a quiet zone and pedestrian amenities at the CR 5 railroad crossing.

IGC 5.2

Provide leadership and participation in efforts to address local challenges through regional cooperation.

IGC 5.3

Collaborate with the Grand County Library District to enhance library programming to engage a greater number of residents.

IGC 5.4

Further explore opportunities to share municipal services with Winter Park for advanced efficiency and coordination.

- Identify shared projects with adjacent water & sanitation districts.

INTERGOVERNMENTAL COORDINATION GOAL 6

Coordinate efforts around parks, recreation, open space, and trails to create a cohesive regional network.

IGC 6.1

Coordinate regional recreation and collaborate with the Fraser Valley Metropolitan Recreation District (FVMRD), Headwaters Trail Alliance (HTA), Colorado Open Lands (COL), and the Town of Winter Park.

IGC 6.2

Collaborate on joint use facilities and programming.

- Inventory and assess recreation district-wide.
- Identify land for acquisition across jurisdictions.
- Share facilities, funding, and programming to expand access.

IGC 6.3

Encourage regional strategic planning and initiatives regarding Fraser River Regional trail linkages.

INTERGOVERNMENTAL COORDINATION GOAL 7

Protect residents, visitors, and property from human or natural made disasters.

IGC 7.1

Coordinate with regional agencies and adjacent communities on hazard mitigation and prepardeness.

- Continue to participate in regular updates to the Grand County Multi-Hazard Mitigation Plan, Emergency Operations Plans, and Community Wildfire Protection Plan.

5 Fraser in action





Implementation

The implementation matrix on the following pages serves as a tool to track and manage progress. Each action has a priority level, timeframe, estimated cost range, and Town partners for notification, collaboration, and potential funding opportunities. Each action's realization is in the greater mission of accomplishing the strategy and ultimately the goal identified above each action in the matrix.

IMPLEMENTATION MATRIX KEY

PRIORITY LEVEL

1: Critical
2: Vital
3: Desirable

TIMEFRAME

Ongoing (ON): as needed
Short term (ST): 0-3 years
Medium term (MT): 3-5 years
Long term (LT): 5+ years

COST

NM: non-monetary
$: $0-$25k
$$: $25k-$75k
$$$: $75k+



PARTNERS

AM	Amtrak
CDOT	Colorado Department of Transportation
CHFA	Colorado Housing and Finance Authority
COEDIT	Colorado Office of Economic Development and International Trade
COL	Colorado Open Lands
CPW	Colorado Parks and Wildlife
CWCB	Colorado Water Conservation Board
D	The Drop
DCI	Downtown Colorado Inc.
DOLA	Colorado Department of Local Affairs
EGFPD	East Grand Fire Protection District
EGSD	East Grand School District
FDDA	Fraser Downtown Development Authority
FEMA	Federal Emergency Management Agency
FRVHP	Fraser River Valley Housing Partnership
FVA	Fraser Valley Arts
FVMRD	Fraser Valley Metropolitan Recreation District
FWPC	Fraser-Winter Park Chamber
FWPPD	Fraser-Winter Park Police Department
GB	Grand Beginings
GC	Grand County
GC1	Grand County Water and Sanitation #1
GCED	Grand County Economic Development
GCHPB	Grand County Historic Preservation Board
GCHS	Grand County Historical Society
GCLD	Grand County Library District
GCRHN	Grand County Rural Health Network
GF	The Grand Foundation
GKLC	Grand Kids Learning Center
GY	Town of Granby
HTA	Headwater Trails Alliance
LT	The Lift Transit
MFC	Mountain Family Center
MPE	Mountain Parks Electric
MPH	Middle Park Health
PAC	Public Arts Committee
SG	Sustainable Grand
UCWET	Upper Colorado Watershed Environment Team
UPRR	Union Pacific Railroad
USACE	US Army Corps of Engineers
USFS	US Forest Service
WP	Town of Winter Park
WPRWS	Winter Park Ranch Water and Sanitation

Figure 13: Downtown Vision Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
DTV 1: Create an environment where walking, biking, and rolling feels fun, easy, and accessible.					
DTV 1.1 Improve signage and wayfinding for easier navigation.					DTV 2.2, DTV3.3, EV1.1, C1.2, PROST2.2, TM4.1, IGC6.1
Create artistic monuments in and around Downtown through the commissioning of local or regional artists that create natural wayfinding elements.	3	ON	$$	FDDA, FWPC, FVA, PAC	
Use the Winter Park & Fraser Wayfinding Plan to identify signage and wayfinding deficiencies and fill these gaps.	2	ON	$$	WP, HTA, FVMRD	
Adopt and implement the Winter Park and Fraser Signage & Wayfinding Master Plan.	2	LT	$$$	WP, HTA, FVMRD, FDDA, DOLA	
DTV 1.2 Improve pedestrian and vehicular safety.					DTV1.4, DTV 2.2, DTV 3.1, DTV 4.2, PROST2.2, TSI3.4, TM1.1, TM1.2, TM3.1
Emphasize the importance of pedestrian and vehicular safety in discussions with CDOT on potential Highway 40 modifications.	1	ON	$	CDOT, GC	
Integrate safety best practices in the design of future roads and pathways.	1	ON	$	CDOT, GC, HTA	
Incorporate principals of Crime Prevention through Environmental Design (CPTED) in the design of public spaces.	1	ON	$		
Add sidewalks to existing and proposed roadways and ensure all spaces meet The Americans with Disabilities Act (ADA).	2	ON	$$$	DOLA, FDDA	
Inventory current deficiencies and projected replacement timeframes for pedestrian and vehicular infrastructure and add to Town Budget/Capital Improvement Plan.	2	ON	$$	FDDA	
Widen the Fraser River Trail within Downtown to separate cyclists from pedestrians where possible.	2	LT	$$$	CDOT, HTA, DOLA, FDDA, FEMA, FVMRD	

Figure 14: Downtown Vision Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
In high speed or high traffic areas, consider grade separated crossings between active and passive modes of transportation.	2	LT	$$$	CDOT, GC	
DTV 1.3 Expand and improve mobility options.					DTV2.2, Transportation & Mobility Section (TM), SNR3.4, SNR4.1, SNR4.2, IGC3.1
Establish a public-private partnership to establish a shared-use parking lot or garage in Downtown Fraser.	3	LT	$$$	FDDA	
Work with the railroad to create additional parking on the east side of the tracks that could be used by Downtown visitors.	2	MT	$$	AM, UPRR	
Improve roadways and/or stripe additional parallel parking on the roads west of Highway 40.	2	LT	$$$		
Install public EV charging stations.	3	LT	$$$	SG, FDDA	
Conduct a parking analysis and/or Parking Master Plan.	2	ST	$$$	DOLA, FDDA	
Continue to explore the feasibility of connecting a road to Safeway and Sun River Drive, as shown on the Vision Plan.	2	ST	$		
Work with The Lift to improve bus service to Downtown.	2	ON	$	LF, WP	
Consider micro-transit options to compliment bus routes and services from the LIFT.	2	MT	$$$	LF, WP, FWPC	
Create an affordable and seasonal on-demand (e)bike share system.	3	LT	$$$	SG, FDDA, HTA, FVMRD	
Establish the Town-owned property at 360 Railroad Avenue as the Fraser Mobility Hub.	1	ST	$$$	CDOT, WP, AM	
DTV 1.4 Allocate and design space that is friendly to walk, bike, and roll.					DTV1.2, DTV 2.2, DTV3.3, DTV4.2, EV1.1, PROST2.3, PROST2.4, PROST4.2, LU4.2, SNR1.6, SNR4.2, TSI1.4, TM1.1, TM1.2

Figure 15: Downtown Vision Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Consider updating the Riverwalk District standards, street standards, and other applicable portions of the Town code to secure 12' sidewalks where possible to create space for street trees or site furnishings such as benches, bike racks, pedestrian lighting, and litter receptacles.	1	MT	$		
Design streets using best practices that are naturally safe for cyclists. Provide striping and signage to improve visibility to clearly delineate cyclist space.	1	ON	$	HTA	
Pursue development of a trail along Elk Creek, from the Fraser River to CR 72 and potentially beyond, with a grade separated underpass under US 40 to connect Clayton Court and the Fraser River Trail to the Fraser Valley Center.	3	LT	$$$	CDOT, DOLA, HTA, FVMRD	
DTV 2: Build a lively and sustainable business environment that supports small, local shops and businesses, reflecting the town's unique and fun spirit.					
DTV 2.1 Promote business diversity, local businesses, and entrepreneurs that provide goods and services appealing to both locals and visitors.					DTV2.2, DTV2.4, DTV4.2, H3.3, Economic Vitality Section (EV), LU1.1, TSI1.1, TM2.1, IGC1.1
Provide economic incentives to desired businesses via financial incentives.	2	MT	$$$	FDDA, COEDIT, DOLA, FWPC	
Provide incubator space for desired businesses to become established and grow.	2	MT	$$$	FDDA, COEDIT, DOLA, FWPC	
Create marketing collateral to attract businesses.	3	MT	$$$	FDDA, COEDIT, DOLA, FWPC	
Invest in public infrastructure that creates value for prospective investors.	2	LT	$$$	FDDA, DOLA	
DTV 2.2 Increase foot-traffic and visitation.					Downtown Vision Section (DTV), EV1.3, EV2.1, C1.2, TM4.1

Figure 16: Downtown Vision Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Enhance marketing and advertising campaigns through various media outlets.	2	ON	$$	FDDA, FWPC	
DTV 2.3 Provide inclusive housing that prioritizes the workforce.					DTV2.2, EV4.1, Housing Section (H), IGC4.1, IGC4.2
Continue to assess and evaluate the effectiveness of zoning incentives for developments that voluntarily provide affordable housing and adjust the requirements/criteria on affordable unit ratios and AMI's, as needed.	2	ON	$	FRVHP	
Continue to explore new ways to integrate affordable and market-rate housing for local employees.	2	ON	$	CHFA, FWPC, FRVHP	
Work with the Fraser River Valley Housing Partnership on additional affordable residential projects.	2	ON	$	FRVHP	
DTV 2.4 Create a full-day Fraser visitor experience.					DTV2.1, DTV2.2, DTV4.1, DTV4.2, H4.3
Encourage traditional lodging types beyond short-term rentals (STR) to diversify lodging options.	2	ON	$	FDDA, FWPC	
Encourage non-competing local businesses to partner with each other to promote the local economy.	2	ON	$	FDDA, FWPC	
Encourage future development to facilitate a full-day visitor experience to make it an easier choice for weekend and time-constrained visitors.	3	ON	$	FDDA, FWPC	
DTV 3: Make the Fraser River and Fraser River Trail the heart of Downtown, shaping the area's identity and offering a vibrant, scenic space for residents and visitors to enjoy.					
DTV 3.1 Enhance Fraser River Trail amenities and gathering spaces near Downtown.					DTV1.2, DTV2.2, DTV3.3, DTV4.2, PROST2.1, PROST4.4, TSI1.4, IGC6.1
Acquire areas within the Downtown intended for parks and open space to ensure the Downtown Vision is realized as desired.	1	ST	$$$	FDDA, FWPC	

Figure 17: Downtown Vision Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Incorporate the Downtown Vision Plan as part of the design review process in which developers must abide by.	1	ST	$	FDDA	
Upon securing public areas, develop detailed public space designs that work with adjacent development parcels and enhance future development.	3	LT	$$$	FDDA, FVMRD	
DTV 3.2 Encourage active uses and programming along the Fraser River while respecting ecologically sensitive areas.					DTV2.2, DTV4.1, EV1.4, EV5.2, C1.3, C3.3, SNR1.3, TSI2.3
Evaluate ecological conditions and functions and provide best-practice solutions. Explore options that improve the current user experience.	2	LT	$$$	USACE, CPW, FEMA	
Evaluate construction constraints such as wetlands and challenging geotechnical conditions.	2	ON	$$	USACE, CPW, FEMA	
Continue to evaluate Riverwalk District zoning as projects are built, and as needed, make any changes that might affect active ground floor uses along the River.	2	ON	$		
Create events and programs along the Fraser River that bring people into the Downtown.	1	LT	$$$	FDDA, DCI, FWPC	
DTV 3.3 Improve non-motorized access and visibility from Highway 40 and Clayton Court to the River.					DTV 1.4, DTV2.2, DTV 3.1, C1.2, PROST2.1, PROST 2.2, PROST2.3
Integrate new wayfinding signage and monuments that lead individuals to the Fraser River	2	MT	$$	FDDA	
Create stronger physical connections between these points through wider sidewalks, plazas, lawns, and other communal spaces.	2	LT	$$$	FDDA	
Create a memorable landmark/ trailhead at the junction of the Fraser River Trail and Downtown.	3	LT	$$$	HTA, FDDA, FVMRD	
DTV 4: Enhance Downtown to be the go-to destination, buzzing with excitement and events every month of the year, where there's always something fun for everyone.					

Figure 18: Downtown Vision Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
DTV 4.1 Enhance event and programming efforts.					DTV2.2, DTV2.4, DTV 3.2, EV1.3, EV1.4, EV2.1, EV5.2, C3.3, PROST4.3, TSI2.3
Coordinate with local municipalities and Winter Park Resort to ensure that valley-wide events and programming are complementary and don't result in efforts taking attendance away from each other.	3	ON	$	WP, GC	
Enhance four-season programming and event planning to promote visitation during typical shoulder seasons.	3	ON	$$$	FDDA, FWPC	
Continue to support and enhance the Town's signature multi-day events such as Fraser Mountain Mural Festival and Fraser Fire & Ice.	3	ON	$	FDDA, FWPC, FVA	
DTV 4.2 Ensure high-quality architectural and public realm design that is memorable and unique.					DTV1.2, DTV1.4, DTV 2.1, DTV2.2, DTV2.4, DTV3.1, EV5.1, H2.2, C2.1, C2.3, C3.1, PROST4.2, TM3.1
Work with the local community during the planning of public realm spaces to create community ownership.	2	LT	$		
Hire local artists to create memorable elements that are unique to Fraser.	3	LT	$$	FDDA, FWPC, FVA	
Allocate budget to maintain a clean and enjoyable public realm. Work with the Downtown Development Authority (DDA) and business owners to discuss current challenges and opportunities.	2	ON	$$$	FDDA, FWPC, FVA	

Figure 19: Downtown Vision Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Work with the property owners of the Safeway shopping center and Fraser Valley Center (Murdoch's) to encourage redevelopment / retrofitting of these suburban style commercial developments to a more urban form that integrates with the rest of Downtown Fraser.	2	ON	$$$	FWPC, FDDA	

Figure 20: Housing Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
H 1: Promote a variety of housing options to meet the needs of both renters and homebuyers, offering something for everyone in the community.					
H 1.1 Create incentives and streamlined processes for developing a range of housing types, including missing middle housing options like small-lot single-family (cottage courts), townhomes, duplexes, and small-scale multifamily.					DTV 2.3, H1.2, H1.4, H2.3, H4.3, C2.2, SNR2.2, IGC4.2
Evaluate the Town's current residential unit thresholds for minor and major site plan applications.	2	ON	NM	FRVHP	
Consider allowing small-scale multifamily (4 units or less) to only require administrative approval.	2	ON	NM	FRVHP	
H 1.2 Support housing solutions that serve diverse household compositions, income levels, and life stages.					DTV 2.3, H1.1 , H4.2
Identify potential developers to complete public-private partnerships.	3	ON	NM	FRVHP	
H 1.3 Modify zoning and land use codes to allow greater housing variety and density in appropriate areas.					DTV 2.3, H2.3, EV3.2, LU4.2
Consider changes to reduce minimum open space, reduce required setbacks, and increase maximum building height in residential zone districts.	2	ON	NM	FRVHP	
Consider inclusionary zoning models and practices that would incentivize and/ or require construction of low/ middle income units as part of housing developments.	3	ON	NM	FRVHP	
H 1.4 Establish programs to help maintain and preserve existing affordable housing stock.					DTV 2.3, H1.1, H4.3, LU2.1
Collaborate with the Fraser River Valley Housing Partnership to offer a deed restriction program for existing residential units and tailor the incentives it provides to be attractive to local homeowners and homebuyers.	3	ON	NM	FRVHP, CHFA, DOLA	

Figure 21: Housing Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
H 2: Encourage mixed-use housing development in areas where it can make the neighborhood more walkable, contribute to its character, and boost local business.					
H 2.1 Identify priority areas where mixed-use development should be concentrated, particularly near Downtown and transit corridors.					DTV 2.3, EV4.3, H2.3, LU1.1, LU3.4
Consider changes to the allowed uses within commercial and mixed-use zone districts so that permitted development is not comprised of only residential uses.	1	ST	NM	FRVHP	
H 2.2 Create design guidelines that ensure mixed-use developments contribute positively to neighborhood character and walkability.					DTV 2.3, DTV4.2, EV1.1, C2.1, C2.3, LU2.2
H 2.3 Review and update regulatory/zoning incentives such as density bonuses and parking reductions for mixed-use projects that incorporate housing into targeted areas.					DTV 2.3, H 1.1 , H1.3, H2.1, LU1.1, TM4.1, IGC4.2
H 2.4 Support the adaptive reuse of existing buildings for mixed-use development.					DTV 2.3, EV3.2, EV4.3, C2.2, LU2.1
Implement expedited permitting and review processes for adaptive reuse projects that are mixed-use.	2	ST	NM	GCHS, FRVHP, CHFA	
Consider fee reductions/waivers for adaptive reuse projects that are mixed-use.	2	ST	NM	GCHS, FRVHP, CHFA	
H 3: Build and strengthen partnerships with state, regional/county, and philanthropic organizations that can help Fraser increase affordable and attainable housing to better meet the needs of local workers.					
H 3.1 Actively participate in regional housing coalitions and initiatives, such as the Fraser River Valley Housing Partnership, to leverage shared resources and expertise.					DTV 2.3, IGC2.1, IGC4.1, IGC5.2
H 3.2 Pursue grants, tax credits, and other external funding sources for housing development and assistance programs.					DTV 2.3, EV1.1
Work with DOLA and other agencies to identify proper funding sources.	2	ON	NM	DOLA, FRVHP, CHFA	
H 3.3 Collaborate with major employers and business organizations to develop employer-assisted housing programs.					DTV2.1, DTV 2.3, EV4.1, EV4.4
H 3.4 Partner with nonprofit housing developers to increase capacity for affordable housing development that is subsidized and/or protected.					DTV 2.3

Figure 22: Housing Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
H 4: Seek a balance of housing options for year-round residents, seasonal workforce, non-resident owners, and short-term visitors – recognizing the importance of each for the local economy and quality of life.					
H 4.1 Create dedicated seasonal workforce housing solutions through partnerships and targeted development.					DTV 2.3, EV4.1, IGC4.1
H 4.2 Establish monitoring systems to track housing inventory across different occupancy types to help inform policies to expand workforce-appropriate housing.					DTV 2.3, H1.2
H 4.3 Implement policies that encourage non-resident homeowners to make properties available for long-term rental when not in use.					DTV 2.3, DTV2.4, H1.1, H1.4
Explore case studies for temporary subsidies or incentives to unlock existing housing stock for long-term rentals.	3	ON	NM	FRVHP, CHFA	

Figure 23: Economic Vitality Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
EV 1: Build and nurture a thriving, memorable mountain Downtown.					
EV 1.1 Enhance the physical environment of Downtown.					DTV1.1, DTV 1.4, DTV2.1, H2.2, H3.2, C1.2, C2.3, LU3.2
Complete streetscape improvements including sidewalk widening, street furniture, and wayfinding signage along main Downtown corridors.	2	LT	$$$	FDDA, FWPC	
Continue to support and consider expanding the existing business enhancement grant program to assist property owners with building upgrades that enhance Downtown character.	3	MT	$$$	FDDA, FWPC	
EV 1.2 Support existing Downtown businesses while attracting complementary new businesses.					DTV2.1, EV3.2, EV3.3, LU2.1, TSI1.4
Work with the DDA and Chamber to identify market gaps and actively recruit businesses that fill those gaps.	2	ON	NM	FDDA, FWPC	
Streamline permitting and approval processes for Downtown business expansions and tenant improvements.	1	ST	NM	WP	
EV 1.3 Enhance Downtown's market position and visibility.					DTV2.1, DTV2.2, DTV4.1, EV1.2, EV5.2, C3.3,
Create a Downtown marketing and branding strategy that highlights Fraser's unique character and offerings.	3	MT	$$$	FDDA, FWPC	
Support DDA social media and promotional efforts that showcase Downtown events and businesses.	3	ON	NM	FDDA, FWPC	
EV 1.4 Activate Downtown through events and programming.					DTV2.1, DTV 3.2, DTV4.1, EV2.1, EV2.2, EV2.3, EV5.2, C1.3, C1.4, C3.3, PROST3.3, TSI1.5, TSI2.3

Figure 24: Economic Vitality Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Develop and maintain a coordinated annual calendar of Downtown events and activities that drive foot traffic year-round.	3	ST	$	FDDA, FWPC	
Support pop-up activations and temporary uses that bring energy to Downtown during shoulder seasons.	2	ON	NM	FDDA, FWPC	
EV 2: Bolster counter-seasonal business to help balance workforce needs and revenue generation across the year.					
EV 2.1 Identify and promote off-season tourism opportunities.					DTV2.1, DTV2.2, DTV4.1, EV1.4, EV2.2
Develop and promote signature off-season events that draw visitors and support local businesses.	2	MT	$$	FDDA, FWPC	
EV 2.2 Support businesses in developing shoulder season products and services.					DTV2.1, EV1.4, EV2.1, EV3.1
Connect businesses with technical assistance resources for developing new off-season products or services.	2	LT	$	FDDA, FWPC	
EV 2.3 Incentivize year-round business activity and employment.					DTV2.1, EV1.4, EV2.1, EV4.2, LU1.2, TSI2.1
Identify brownfield funding opportunities and other supports to incentivize a manufacturing use at the former pole yard property.	2	MT	NM	DOLA, GCED, FWPC, COEDIT	
Explore creation of a year-round employment incentive program (e.g., tax rebates, fee waivers) for businesses maintaining staff during shoulder seasons.	1	ST	$$$	GCED, FDDA, FWPC, COEDIT	
Consider property tax incentives or other financial tools for businesses that provide year-round goods/services critical to community needs.	2	LT	$$		
EV 3: Encourage growth in small businesses that help diversify the local economy and fit with Fraser's mountain setting.					

Figure 25: Economic Vitality Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
EV 3.1 Provide business support services and resources.					DTV2.1, EV2.2, EV5.1, LU2.1, LU1.2, SNR2.1, TSI1.1
Maintain and promote online resources that connect entrepreneurs to capital access programs, grants, and lending opportunities.	3	ST	$	GCED, FDDA, FWPC	
Sponsor or co-sponsor quarterly networking events for local entrepreneurs and small business owners.	3	ST	$	GCED, FDDA, FWPC	
EV 3.2 Expand availability of flexible, affordable business space.					DTV2.1, EV1.2, EV3.4, H1.3, H2.4, C3.1, LU2.1
Support adaptive reuse of existing buildings for pop-up retail, artist studios, or flexible commercial space.	3	LT	NM	FDDA	
Consider zoning amendments to allow live-work units and home-based business options in appropriate locations.	2	ST	NM		
EV 3.3 Attract businesses that complement Fraser's character and fill service gaps.					DTV2.1, EV1.2, LU1.2, TSI1.2, TSI2.1
Target recruitment efforts toward businesses that complement the mountain lifestyle and fill gaps in local services.	1	ON	$$	FDDA, FWPC, GCED	
Maintain inventory of available commercial spaces and actively market them to desired business types.	1	ON	NM	FDDA, FWPC	
EV 3.4 Support remote workers and home-based businesses.					DTV2.1, EV3.2, LU2.1, TSI1.4
Continue infrastructure improvements including broadband expansion.	2	ON	$$$		
Create or support co-working space development that provides professional workspace and networking opportunities.	3	ON	$	FDDA, FWPC	
EV 4: Make Fraser a place where people can both live and work affordably.					

Figure 26: Economic Vitality Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
EV 4.1 Support regional workforce development initiatives.					DTV2.1, DTV2.3, H3.3, H4.1, IGC4.1, IGC5.2
Share information about local employment opportunities and employer needs with regional workforce development partners.	3	ON	NM	FDDA, FWPC, GCED, COEDIT	
EV 4.2 Support the creation of year-round, higher wage jobs.					DTV2.1, EV2.3
Track and report on job quality metrics including wage levels, benefits, and year-round vs. seasonal employment.	2	LT	$	FDDA, FWPC	
EV 4.3 Help to integrate work and living options.					DTV2.1, H2.1, H2.4, LU1.1, LU2.4, LU3.4
Support mixed-use development that allows residents to live near employment centers and reduce commuting costs.	2	ON	NM		
EV 4.4 Integrate economic development with housing and childcare.					DTV2.1, H3.3, TSI1.1
Survey local employers about employee housing and childcare needs to inform policy decisions.	2	MT	$$	FDDA, FWPC	
EV 5: Encourage businesses to collaborate in emerging shopping areas to create a dynamic environment where everyone benefits.					
EV 5.1 Support business association and merchant groups.					DTV2.1, DTV4.2, EV3.1, EV5.2
Encourage formation of merchant associations in emerging commercial areas.	2	ON	NM	FWPC	
EV 5.2 Foster collaborative approach to marketing and programming.					DTV2.1, DTV 3.2, DTV 4.1, EV1.3, EV1.4, EV5.1, C3.3
Facilitate regular meetings between Downtown and highway-oriented business groups to coordinate marketing and events.	2	ON	NM	FDDA, FWPC	

Figure 27: Community Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
C 1: Preserve Fraser's one-of-a-kind charm, mountain town vibe, and strong sense of community.					
C 1.1 Encourage community leadership and participation in Town government.					C1.4, PROST4.3, TSI1.5, TSI1.6
Establish a Citizen's Academy to educate and inform Fraser Valley residents on the role of their local government and its operations.	3	ON	NM		
C 1.2 Establish community gateways, wayfinding, and signage that showcase Fraser's unique identity and educate residents and visitors about the Town and its history.					DTV1.1, DTV2.2, DTV3.3, EV1.1, C2.1, C2.2, C3.1, PROST2.2, TM4.1
Use the Winter Park & Fraser Wayfinding Plan to identify priority areas for gateways, signage, and informational kiosks.	2	MT	$$$	FDDA, FWPC, WP	
C 1.3 Support development, spaces, and programming that enhance quality of life for everyone.					DTV 3.2, EV1.4, LU3.3, TSI1.4, IGC5.3
Support the Fraser Bike Park with programming and events.	2	ON	$$	FVMRD	
Pursue/support the addition of new parks and park facilities.	3	ON	$$$	FVMRD	
C 1.4 Encourage second homeowners to become active members of the community.					EV1.4, C1.1
Develop programs and spaces that bring together longtime locals and new residents.	3	ON	NM	FVMRD, GCLD, FVA, PAC	
C 2: Ensure development enhances the visual character of the area, blending modern design with the unique charm and natural beauty of the community to create a cohesive and vibrant built environment.					
C 2.1 Incorporate elements of Fraser's history and traditions into architectural design, streetscapes, and public spaces.					DTV4.2, H2.2, C1.2
C 2.2 Promote and protect architectural integrity.					H1.1, H2.4, C1.2, SNR2.2
Partner with the Grand County Historical Association, the Grand County Historic Preservation Board, and other entities to develop a local register of historic structures.	2	MT	$$	GCHS, GCHPB	

Figure 28: Community Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
In partnership with the Fraser Downtown Development Authority (FDDA), provide incentives for preservation or adaptive reuse of historic structures.	2	ST	$$	FDDA	
Provide signage at historic landmarks to educate on building history and significance.	3	ON	$$	GCHS, GCHPB	
Establish a walking tour of Fraser guidebook.	2	MT	$$	GCHS, GCHPB, FDDA	
C 2.3 Support oversight to ensure new development is compatible with existing character.					DTV4.2, EV1.1, H2.2, LU2.2, PROST1.2, PROST2.4, PROST2.4, TM3.1
Establish design guidelines for new development.	1	LT	$$$		
Incorporate public spaces that reflect the character of Fraser and create community in new development.	1	ON	NM	FDDA, PAC	
Preserve walkable, small-town streetscapes that activate frontages and provide gathering spaces.	1	ON	NM	FDDA	
Integrate the built environment with Fraser's natural surroundings to enhance the mountain character and outdoor lifestyle.	1	ON	NM	HTA	
Establish and maintain view corridors of Byers Peak, the Continental Divide, and Winter Park Resort.	3	LT	NM		
C 3: Celebrate arts and culture as a vital force in shaping the town's identity, fostering inclusivity, and creating spaces that connect and inspire people.					
C 3.1 Support local arts and culture to leverage Fraser as an artist community.					DTV4.2, EV3.2, C1.2, C3.2
Partner with local artists and other creatives to develop public art, murals, and other installations that reflect Fraser's history and culture.	2	ON	$$	FDDA, FVA, FWPC, PAC	

Figure 29: Community Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Maintain and increase funding for Art in Public Places in the Town's annual budget.	3	ON	$$$	PAC	
Encourage the collaboration and support of the Public Arts Committee, the Fraser Downtown Development Authority, and other entities to fund the arts.	3	ST	$$	FDDA, PAC	
C 3.2 Leverage the future Fraser Valley Arts Center as a place for communication and collaboration amongst different art groups in the community.					C3.1
C 3.3 Host or support events, festivals, pop-ups, and other activities that bring the community together and showcase music, crafts, and traditions.					DTV3.2, DTV4.1, EV1.3, EV1.4, EV2.1, EV5.2, PROST4.3, TSI2.3
Explore supporting events such as the Winter Park Film Festival and/or providing supplemental activities.	2	ST	$$$	WP, FDDA, FWPC	

Figure 30: Parks, Recreation, Open Space, & Trails Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
PROST 1: Protect and enhance Fraser's open spaces ensuring they remain beautiful, accessible, and enjoyable for all.					
PROST 1.1 Protect and enhance the Cozens Ranch Open Space.					PROST1.3, PROST4.1, SNR1.1, SNR1.4, TSI3.1
Implement the recommendations from the 2018 Fraser River Corridor Master Plan to enhance both conservation and recreation in the Cozens Ranch Open Space.	2	ON	$$$	COL, CPW, HTA	
Work with Colorado Open Lands to place a conservation easement over a majority of the land within the Cozens Ranch Open Space.	2	ON	$	COL, CPW	
PROST 1.2 Develop properties in a manner that preserves the natural features of a site and provides new or connects to existing public open space.					C2.3, PROST2.3, LU2.2, SNR1.2, SNR1.8, TSI3.1
PROST 1.3 Promote responsible open space use through signage, education, and stewardship.					PROST1.1, LU2.2, LU3.3, SNR1.1, SNR1.2, IGC6.3
Update current and install new interpretive signage that showcases ecological features and Leave No Trace principles.	2	LT	$$	HTA, USFS	
Create volunteer opportunities for clean-up days, native plant restoration, or wildlife monitoring in Fraser's open space.	2	MT	NM	HTA	
PROST 2: Maintain and enhance a rich and varied public trail network, creating more opportunities for outdoor adventure and connecting the community to nature and nearby public lands.					
PROST 2.1 Improve trailheads with amenities that support access and comfort.					DTV3.1, DTV3.3, SNR3.3, SNR4.2, TSI1.4, TM1.1, TM4.1, IGC6.1
Upgrade trailheads with essentials like restrooms, bike racks, trash and recycling bins, shade, seating, and expanded parking.	2	LT	$$$	HTA, CPW, USFS, GC	
Prioritize improvements at high-use trailheads and those serving multiple user groups.	1	ST	$$$	HTA, CPW, USFS, GC	
PROST 2.2 Enhance trail wayfinding and navigation across the network.					DTV1.1, DTV1.2, DTV3.3, C1.2, TM1.1, IGC5.2, IGC6.1

Figure 31: Parks, Recreation, Open Space, & Trails Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Work with regional partners and organizations to install consistent, clear signage with trail names, distances, and safety information across regional trails based on the Winter Park & Fraser Wayfinding Plan	2	LT	$$$	HTA, CPW, USFS, GC	
PROST 2.3 Improve pedestrian and bicycle connections.					DTV1.4, DTV3.3, PROST1.2, PROST2.4, SNR4.2, TM1.1, IGC6.1
Prioritize trail linkages that create a cohesive network, allowing one to travel conveniently without a car.	1	ST	$$$	HTA, CPW, USFS, GC	
Identify gaps, new connections, and trail extensions to improve recreation and non-motorized transportation options.	2	MT	$$	HTA, CPW, USFS, GC	
PROST 2.4 Plan and construct new trails with consideration for environmental sensitivity and land use compatibility.					DTV1.4, C2.3, PROST2.3, TM1.1, IGC6.1, IGC6.3
PROST 2.5 Continue to provide high-quality parks and outdoor facilities and support their expansion and improvement.					
Support the completion and ongoing maintenance of the Fraser Bike Park	1	ST	$		
PROST 3: Provide more opportunities for indoor recreation, offering the community a variety of activities to stay active, social, and engaged, no matter the weather.					
PROST 3.1 In partnership with the Fraser Valley Metropolitan Recreation District, explore opportunities for a fieldhouse/multi-purpose use facility for additional indoor recreation opportunities.					PROST3.1, PROST3.2, PROST3.3, PROST4.4, IGC6.1, IGC6.2
PROST 3.2 Support the Grand Park Community Recreation Center.					PROST3.1, PROST4.2, PROST4.3, TSI2.3, IGC6.1, IGC6.2
PROST 3.3 Expand indoor programming within existing buildings.					EV1.4, PROST3.1, IGC5.3
Use schools or other public spaces for programs like fitness classes, youth activities, or community gatherings.	2	ST	NM	EGSD	
PROST 4: Promote inclusive and barrier-free access to all public spaces, making sure everyone in Fraser feels welcome and engaged, and benefits from community resources.					

Figure 32: Parks, Recreation, Open Space, & Trails Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
PROST 4.1 Find opportunities to expand and protect public lands.					PROST1.1, SNR1.1, SNR1.4, IGC1.1
Secure easements or access agreements where necessary and work to prevent the loss or privatization of established access routes.	1	MT	NM	USFS, CDOT, GC	
PROST 4.2 Identify and remove barriers to using public spaces.					DTV1.4, DTV4.2, PROST3.2, TSI1.3, TSI1.4, TM1.2
Offer scholarships, reduced fees, or free programs to ensure cost isn't a barrier to accessing recreation opportunities.	2	ST	$$	CPW, HTA, FVMRD	
Provide transportation options to parks, recreation facilities, libraries, and other public spaces.	2	MT	$$$	CPW, HTA	
Incorporate universal design elements and ADA compliance.	2	ON	$$$	CDOT, CPW, USFS, HTA	
PROST 4.3 Promote public events and resources to all community members.					DTV4.1, EV5.2, C1.1, C3.3, PROST3.2, SNR1.6, TSI1.3, TSI2.3
Use multiple communication channels to advertise Town sponsored events and recreational opportunities.	3	ON	NM	HTA, FVMRD	
Partner with community organizations to reach underrepresented groups.	3	ON	NM	HTA, FVMRD, MFC	
Provide signage and communications in multiple languages as appropriate.	2	ON	$	HTA, FVMRD	
PROST 4.4 Maintain funding sources to support growth and improvements.					DTV3.1, PROST3.1, LU3.1, LU3.2, TSI3.3, TSI3.4, IGC5.1, IGC6.2
Where feasible, look to expand parks and recreation facilities by utilizing land dedicated through land dedication requirements.	3	ON	$	FVMRD	
Utilize fees-in-lieu of park land dedication to fund capital improvements and expansions to existing parks.	3	ON	$	FVMRD	

Figure 33: Land Use Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
LU 1: Promote a balanced mix of land uses that supports current and future residents and the Town's ability to provide services, while also ensuring we preserve green spaces, enhance outdoor recreation amenities, and protect natural resources.					
LU 1.1 Encourage mixed-use development that integrates housing, stores, businesses, and services in key areas, like Downtown and near transit.					DTV2.1, EV4.3, H2.1, H2.3, LU3.4, TSI2.1
LU 1.2 Support small-scale neighborhood serving retail and services within or near residential areas.					EV2.3, EV3.1, EV3.3, LU2.3, LU2.4, LU3.3, LU3.4, LU4.1, TSI1.5
Encourage future development and annexations to integrate small-scale retail.	1	ST	NM		
LU 2: Plan development where infrastructure and services already exist to reduce the impact and cost of new development.					
LU 2.1 Encourage the development of empty lots and renovation of existing buildings in areas supported by existing infrastructure.					EV1.2, EV3.1, EV3.2, H1.4, H2.4, LU2, TSI1.4, TSI3.1, TSI3.2, TM1.1
Prioritize the use of underused or empty parcels within existing town boundaries.	1	ST	NM		
Direct growth to locations with available sewer, water, transportation, and emergency services.	1	ST	NM		
LU 2.2 Promote compact, walkable, transit-supported development patterns that preserve open space.					H2.2, C2.3, PROST1.2, PROST1.3, LU2, SNR1.1
LU 2.3 Discourage sprawl and leapfrog development patterns that strain town services and inefficiently consume land.					LU1.2, LU2
LU 3: Ensure new development is beneficial to the fiscal sustainability of the Town of Fraser.					
LU 3.1 Implement and regularly update development impact fees at least every 3 years to ensure new development contributes its fair share toward infrastructure, green space, and public services.					PROST4.4, LU3.2, H1.3, TSI1.6, TSI3.1, TSI3.2, TSI3.3, TM4.1, IGC5.1, IGC6.2, IGC7.1
Conduct a study to determine the feasibility of implementing impact fees for transportation, affordable/workforce housing, and other essential services.	1	ST	NM	FRVHP, GC, WP, FWPPD	

Figure 34: Land Use Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Ensure that plant investment fees for water and sewer are regularly updated to align with the cost of capital expansions.	1	ST	NM	WPRWS	
Reevaluate the Town's current land dedication and fee-in-lieu requirements for parks and schools.	1	ST	NM	EGSD	
Coordinate and collaborate with the East Grand Fire Protection District on periodic reassessments of their impact fees for new development.	1	ON	NM	EGFPD	
Review and adjust fee structures periodically to reflect actual service costs.	1	ON	NM		
LU 3.2 Require off-site improvements, when necessary, as a condition of approval for development projects to mitigate community impacts.					EV1.1, PROST4.4, LU3.1, SNR2.4, TM4.1, IGC5.1
Strengthen and clarify existing regulations for off-site improvements (such as transportation/roadway improvements, drainage and snow storage/melting facilities, parks/trails/open space, etc.) and right-of-way dedication for new development projects.	1	ST	NM		
LU 3.3 Develop and adopt a standard annexation agreement that guides future annexations and their development.					C1.3, PROST1.3, LU1.2, LU3, LU4.1, TSI3.3, IGC1.1, IGC2.1
Include provisions that require new annexations to contribute to the cost of or dedicate land for infrastructure, public services, and amenities; and/or provide affordable housing, open space, and commercial land uses.	1	ST	NM		
Codify the proposed annexation policy and template agreement outlining expectations for infrastructure contributions, conveyance of water rights, service provisions, and community benefits.	1	ST	NM		
LU 3.4 Promote commercial and mixed-use developments in appropriate areas for sales tax generation.					EV4.3, H2.1, LU1.2

Figure 35: Land Use Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Encourage development that expands retail, lodging, and service sectors to increase sales and lodging tax revenues.	1	ST	NM		
Target high-visibility or high-traffic locations for commercial and mixed-use areas.	1	ON	NM		
Inclusion of light industrial/ manufacturing land uses to diversify the region's job and tax base.	3	ON	NM	GCED, FWPC	
LU 4: Align development codes, policies, and processes with the vision and goals of the Comprehensive Plan.					
LU 4.1 Follow the Future Land Use Map for strategic future annexations and rezoning requests.					LU1.2, LU3.3, SNR1.2, IGC2.1, IGC5.1, IGC6.3
Review and periodically update the Future Land Use Map and 3-mile plan.	2	ON	NM	GC, WP	
LU 4.2 Update the land development code to support the vision and goals in this document.					DTV1.4, H1.3, SNR1.1, SNR1.6, SNR1.8, SNR1.9, SNR2.4

Figure 36: Sustainability & Natural Resources Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
SNR 1: Foster and support initiatives that preserve and enhance Fraser's natural beauty, ensuring its unique landscapes remain vibrant for years to come.					
SNR 1.1 Protect wildlife habitat through restoring and preserving wildlife corridors.					PROST1.1, PROST1.3, PROST4.1, LU2.2, LU4.3, SNR1, IGC3.1
Designate and preserve corridors that facilitate wildlife movement, reducing habitat fragmentation through the adoption of conservation zoning regulations that limit development in critical habitats or provide restorative measures.	2	ON	NM	CPW, COL	
Collaborate with CDOT and CPW to implement wildlife crossings of US 40 where feasible.	3	LT	$$$	CDOT, CPW	
SNR 1.2 Enhance riparian corridors through buffer zones, native vegetation restoration, and erosion control measures.					PROST1.2, PROST1.3, LU4.1, SNR1
Implement the Fraser River Corridor Maintenance Plan and explore expansion in the future.	2	ON	$$	CPW	
Maintain and expand the Town's current regulations regarding buffer zones / setbacks along waterways to limit erosion, restore riparian integrity, filter pollutants, and provide wildlife habitat.	1	ON	NM	USACE, CWCB, UCWET	
Prioritize the replanting of native flora along waterways to improve ecological health and resilience.	2	ON	$$	CWCB, UCWET	
SNR 1.3 Protect, restore, and enhance wetlands by implementing control measures.					DTV3.2, SNR1, SNR2.4
Conduct comprehensive mapping of existing wetlands to identify priority wetlands and inform planning decisions.	2	MT	$$	USACE, CWCB	
Enforce development restrictions to protect existing wetlands and employ mitigation banking to compensate for previous or future impacts.	1	ON	NM	USACE, CWCB, CPW	

Figure 37: Sustainability & Natural Resources Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
SNR 1.4 Protect watersheds through a comprehensive watershed management plan.					PROST1.1, PROST 4.1, SNR1, TSI3.1
Develop and implement plans that address land use, water quality, and conservation within the watershed and implement best practices to reduce runoff and prevent pollution in waterways.	2	ON	NM	CWCB	
SNR 1.5 Conserve water through community outreach that removes barriers to implement best practices.					SNR1, SNR2.3, TSI1.5, TSI3.1, IGC5.4
In partnership with local municipalities and water & sanitation districts, promote water savings programs including audits, retrofits, and the use of water efficient landscaping practices through public education and demonstration gardens.	3	MT	$$	GC1, WPRWS	
Implement the recommendations from the 2023 Water Efficiency Plan and monitor/evaluate their effectiveness.	2	ON	$		
Update the Town's landscaping regulations for new development to require vegetation that does not require irrigation once it is established.	2	ST	NM		
SNR 1.6 Restore and protect the tree canopy through programs, ordinances, and community events.					DTV1.4, PROST 4.3, LU4.2, SNR1
Expand the role of the Town's streetscape and public gardens management staff to plant new and maintain existing trees in public spaces to enhance canopy cover.	2	MT	$$$		
Enact ordinances that protect mature trees when development occurs,	1	ST	NM		
Organize events that encourage community participation in tree planting and care (Plant a Tree Day).	3	ST	$		

Figure 38: Sustainability & Natural Resources Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
SNR 1.7 Manage noxious weeds through integrated weed management, monitoring, and awareness.					SNR1, SNR2.4
Adopt a combination of mechanical, chemical, and biological control methods to manage invasive species, educate the community on identifying and reporting, and conduct routine surveys to detect and address noxious weed infestations promptly.	3	LT	$$$		
SNR 1.8 Manage stormwater through maintenance, ordinances, and sustainable infrastructure.					PROST1.2, LU4.2, SNR1, SNR2.2, TSI3.1, TM1.1, IGC5.2
Survey existing conditions and form a holistic, regional/ neighborhood based approach to update inefficient stormwater infrastructure.	3	MT	$$		
Adopt supplemental regulations to the Grand County Storm Drainage Design and Criteria Manual to encourage and incentivize new developments to incorporate rain gardens, bioswales, permeable pavements and other green infrastructure to manage stormwater naturally.	2	ST	$$		
Explore partnerships with the school district, library district, and other entities to educate the community on stormwater management with hands-on demonstrations along St. Louis Creek.	1	ST	$	EGSD, GCLC, UCWET, GCWIN, LBD	
SNR 1.9 Strive to achieve Dark Sky Community Designation by 2035 - reducing light pollution through ordinances and education.					LU4.2, SNR1, SNR2.3
Strengthen existing exterior lighting ordinances to minimize skyglow and light trespass and/ or require the use of shielded fixtures that direct light downward.	2	ST	NM		
Inform residents and businesses about the benefits of reducing light pollution.	3	ON	$	FDDA, FWPC, SG	

Figure 39: Sustainability & Natural Resources Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Partner with HOA's to update and enforce neighborhood lighting regulations.	2	ON	NM		
Explore implementing a grant program to support local compliance.	3	MT	$$$		
SNR 2: Embrace sustainable development practices that create harmony between growth with the natural environment, ensuring a thriving community while protecting the beauty and resources of Fraser.					
SNR 2.1 Encourage energy efficiency for all homes and businesses in Fraser.					EV3.1, SNR3.2, TSI1.5
Support and partner with Sustainable Grand and other nonprofit community groups that provide education and outreach with regards to energy efficiency.	3	ON	$	SG	
Update local building codes to align with the latest International Energy Conservation Code (IECC) standards.	2	ON	NM	SG	
Provide subsidized energy audits for homes and small businesses, and additional support/subsidies for weatherization, insulation, and HVAC upgrades.	2	LT	$$$	SG	
SNR 2.2 Support green building design by offering density bonuses, expedited permits, or reduced fees for projects that meet LEED or other high-performance building standards.					H1.1, C2.2, SNR1.8, SNR3.1
SNR 2.3 Lead by example by retrofitting town-owned facilities with high-efficiency appliances and fixtures and utilizing native plantings and drought-tolerant species across town facilities.					SNR1.5, SNR1.9, SNR3.1, TSI1.4
Conduct a greenhouse gas emissions inventory to determine progress/impact of the recommendations from the 2016 Sustainability Plan.	2	MT	$$$	SG	
Create a new Sustainability Plan and implement its recommendations.	2	LT	$$$	SG, CWCB, D, MPE	
SNR 2.4 Ensure development is oriented in a way that mitigates the risk of natural and human-made disaster.					LU3.2, LU4.2, SNR1.3, SNR1.7, TSI1.6, IGC7.1

Figure 40: Sustainability & Natural Resources Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Create defensible space programs and vegetation management, especially near the Wildland-Urban Interface (WUI).	2	ST	$$	CPW, USFS, EGFPD, WP, GC	
Adopt codes and regulations that align with the Colorado Wildfire Resiliency Code.	1	ST	NM	EGFPD, WP, GC	
Ensure new development is outside of the 100-year floodplain and wetland designations.	1	ON	NM	USACE	
SNR 3: Promote efforts to improve air quality helping to create a cleaner, healthier environment for residents.					
SNR 3.1 Measure, track, and set targets for greenhouse gas reduction.					SNR2.2, SNR2.3, IGC2.1
SNR 3.2 Advance renewable energy.					SNR2.1, SNR3.4
Advocate for Mountain Parks Electric to increase the share of its electric power that comes from renewable energy sources such as solar and wind.	3	ON	NM	MPE, SG	
Promote community solar programs.	3	ON	$$	MPE, SG	
SNR 3.3 Reduce solid waste.					PROST2.1, TSI3.2, TSI3.3
Promote the pay-as-you-throw trash and recycling services available at the Town's facility, The Drop.	2	ON	NM	D	
Create programs and incentives to increase usage of The Drop by both residents and visitors.	2	ST	$$	D	
Explore, and implement where feasible, expansion of recycling services and what is collected, as well as composting services for organics.	3	MT	$$	D	
Adopt policies in line with the implementation of the Colorado Producer Responsibility Program and Minimum Recyclables List and require licensed haulers or contracted services to provide recycling.	2	MT	NM	D	

Figure 41: Sustainability & Natural Resources Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
SNR 3.4 Further vehicle electrification and support development of EV charging infrastructure.					DTV1.3, SNR3.2, SNR4.1
Convert transit and Town fleet vehicles to electric or hybrid models.	3	LT	$$$	SG, LF, WP, MPE	
Adopt the permitting processes and standards from the EV Charging Model Land Use Code promulgated by the Colorado Energy Office to reduce barriers to EV charging development.	2	ST	NM	SG, MPE	
SNR 4: Inspire and support healthy, sustainable lifestyles that nourish both people and the planet.					
SNR 4.1 Reduce vehicle miles traveled.					DTV1.3, SNR3.4, SNR4.2, TM4.1
Implement a car share program.	2	LT	$$$	CDOT, LF, WP	
Explore a parking demand strategy to reduce idling and increased driving.	3	MT	$$	CDOT, WP	
SNR 4.2 Encourage multi-modal transportation by designing roads for all users—pedestrians, cyclists, transit riders, and drivers—with safe sidewalks, crosswalks, and bike lanes.					DTV1.3, DTV1.4, SNR4.1, TM2.2, PROST2.1, PROST2.3, LU2.4, TM1.2, TM2.2, IGC5.2
Collaborate with neighboring communities and regional agencies to expand public transit routes and schedules for the Lift and other public transit options.	1	ST	$$$	LF, WP	
Audit the bicycle connectivity network and incorporate into strategic development.	2	MT	$$	HTA	
Explore, and implement if feasible, micro-transit or bike-share programs to complement Lift services.	2	MT	$$$	LF, WP, GC	

Figure 42: Town Services & Infrastructure Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
TSI 1: Provide essential services for residents of all ages, backgrounds, and abilities.					
TSI 1.1 Improve access to affordable childcare and early childhood education.					DTV2.1, EV3.1, EV4.4
Enhance partnerships with local providers, schools, and nonprofits to expand childcare options and increase childcare capacity.	1	ON	NM	EGSD, GKLC, GF, GB	
Secure funding/revenue opportunities to provide licensing and support operations for childcare providers.	1	ST	NM	GF	
Explore incentives for businesses or housing developments that include on-site childcare.	1	ST	NM		
Work at the county level with Grand Beginnings, the county, neighboring municipalities, local businesses and foundations to address the need for sustainable early childhood education funding.	1	LT	NM	GF, GB, GKLC, WP, GY, FWPC	
TSI 1.2 Expand educational and community services.					EV3.3, TSI1.5, TSI2.1, TM2.2, IGC3.2, IGC5.3
Support increased senior services such as transportation, meal delivery, social programming, and in-home care support for older residents.	2	ST	$$$	GCCA	
Support local libraries to expand programming and resources.	2	MT	$$	GCLD	
Support the formation of a 6-12 grade school facility in Fraser.	1	LT	$$$	EGSD	
TSI 1.3 Expand access to multilingual, culturally inclusive, and digitally accessible communications.					PROST4.2, PROST4.3, TSI1.5, TSI1.6, TSI3.3, IGC6.2, IGC7.1
Provide translation and interpretation services for public information, especially around emergency services.	1	MT	$$$		

Figure 43: Town Services & Infrastructure Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Offer Town materials and service information in multiple languages and a digitally accessible format.	2	MT	$$		
TSI 1.4 Ensure facilities meet American Disabilities Act (ADA) standards and are universally accessible.					DTV 1.4, DTV 3.1, EV1.2, C1.3, PROST2.1, PROST4.2, LU2.1, SNR2.3, TM1.1
Ensure that public buildings, sidewalks, trails, and other amenities meet accessibility standards and guidelines and retrofit/upgrade these facilities if needed.	2	LT	$$$		
Ensure existing businesses and commercial properties make upgrades that meet accessibility standards and guidelines and require new developments to comply during the development review process.	2	MT	NM	FDDA, FWPC	
TSI 1.5 Strengthen community outreach and services to further support residents.					EV1.4, C1.1, LU1.2, SNR1.5, SNR2.1, TSI1.2, TSI1.3, IGC5.3
Partner with non-profits and agencies to connect residents with available resources and services.	3	ON	NM	GCRHN, MPH, GKLC, GB, GCLD, MFC	
Endeavor to meet the needs of all residents through culturally inclusive and multilingual programming.	3	ON	$		
TSI 1.6 Support emergency preparedness and resilience efforts in the case of natural or human-made disasters.					C1.1, LU3.1, SNR2.4, TSI1.3, IGC7.1
Equip the community with the tools, knowledge, and resources needed to prepare for, respond to, and recover from disasters.	2	ON	$$	GC, EGFPD, FWPPD	
Identify and make places of refuge available during severe snow or weather events, particularly during closures of Berthoud Pass.	3	LT	$$$	FVMRD, FWPPD, EGFPD, EGSD	

Figure 44: Town Services & Infrastructure Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
TSI 2: Expand health services to support the growing needs and quality care of Fraser's residents.					
TSI 2.1 Increase healthcare options and services.					EV2.3, EV3.3, LU1.1, TSI1.2, TSI2.2, TSI2.3, IGC5.2
Support the new Middle Park Health Hospital campus and facilitate the development of additional healthcare related services.	3	ON	$$$	MPH, GCRHN	
Recruit health providers in Fraser to serve local needs.	2	ON	NM	GCRHN	
TSI 2.2 Expand mental and behavioral health services.					TSI2.1, IGC5.2
Create partnerships with current mental healthcare providers and facilities.	3	ON	NM	MPH, GCRHN, MFC	
Collaborate with county and nonprofit mental health providers to increase access.	3	ON	NM	GC, MPH, GCRHN	
TSI 2.3 Integrate health promotion into Town programs.					DTV 3.2, DTV4.1, EV1.4, C3.3, PROST3.2, PROST4.3, TSI2.1
Use parks & recreation programming and community events to encourage physical activity, healthy lifestyles, and preventative care.	3	ON	NM		
Expand community event offerings to include a wider range of activities that appeal to all residents, including those seeking non-alcohol centered experiences, and enhance access to additional support resources.	2	ST	$$		
TSI 3: Maintain and enhance Fraser's physical infrastructure to ensure it's ready to support the community's growth and needs.					
TSI 3.1 Ensure long-term water supply and high-quality drinking water.					PROST1.1, PROST1.2, LU2.1, LU3.1, SNR 1.4, SNR1.5, SNR1.8, IGC5.4

Figure 45: Town Services & Infrastructure Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Plan for future water use through conservation programs, infrastructure upgrades, and watershed protection.	2	LT	$$$	CWCB	
Continue to monitor and maintain water treatment facilities to meet quality standards.	2	ON	$$$	CWCB	
Incorporate rain gardens, bioswales, permeable pavements and other green infrastructure into public streets to manage stormwater naturally and protect the Fraser River and its tributaries.	2	ON	$$$		
Locate snow storage and melting facilities away from the Fraser River.					
TSI 3.2 Invest in sewer and wastewater systems upgrades.					SNR3.3, LU2.1, LU3.1, IGC5.4
Upgrade aging sewer infrastructure and expand capacity in areas targeted for growth.	2	LT	$$$	GC1, WPRWSD	
TSI 3.3 Support the expansion or consolidation of Town services.					PROST4.4, LU3.1, LU3.3, SNR3.3, TSI1.3, IGC1.1, IGC3.2, IGC5.4
Support the expansion or relocation of the post office within Town boundaries.	2	LT	$$$		
Expand recycling and compost services and facilities.	3	ON	$$$		
Explore the creation of a separate parks division or department.	2	LT	$$		
TSI 3.4 Review and update the Capital Improvement Plan (CIP) based on infrastructure condition, development trends, available funding, and reaching 50% completion on previous CIP.					DTV1.2, PROST4.4, IGC5.1

Figure 46: Transportation & Mobility Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
TM 1: Build safe, inspiring walking and biking connections—whether strolling Downtown or heading out on a scenic trail—that invite people to explore year-round.					
TM 1.1 Improve pedestrian, ADA accessibility, and bicycle connectivity, comfort, and safety.					DTV1.2, DTV1.3, DTV1.4, PROST2.1, PROST2.2, PROST2.3, PROST2.4, LU2.1, SNR1.8, SNR4.2, TSI1.4, TM3.1, IGC6.1, IGC6.3
Identify gaps in the pedestrian and bicycle networks.	2	ST	$	HTA	
Improve key bicycle and pedestrian crossings.	2	LT	$$$	CDOT	
Improve regional trail connections through Fraser.	2	ON	$$$	HTA	
Evaluate and improve ADA accessibility on all existing pedestrian facilities within the Town, and ensure ADA compliance for all new facilities.	1	ON	$$$		
Conduct a study for pedestrian connections from the Fraser Valley Elementary School, across the railroad and US 40, to St. Louis Landing and other neighborhoods and amenities east of US 40.	2	LT	$$$	AM, CDOT	
Address drainage and snow removal issues to improve pedestrian friendly sidewalks throughout the winter and spring months.	1	LT	$$	CDOT, FDDA	
TM 1.2 Develop new standard/typical roadway sections that allocate space for non-motorized users.					DTV1.2, DTV1.3, DTV1.4, DTV3.3, PROST4.2, SNR4.2
TM 2: Plan for a flexible and seamless transit experience that includes local solutions like micro-transit and a rail station area that welcomes travelers into Fraser's vibrant Downtown.					
TM 2.1 Support increased passenger rail traffic to Fraser.					DTV1.3, DTV2.1, TM4.1, IGC3.1, IGC3.2
Develop a Rail Station Area Plan for the Fraser Rail Station.	1	ST	$$$	AM, CDOT	
Work with rail service providers to ensure consistent service.	2	ON	NM	AM, CDOT	

Figure 47: Transportation & Mobility Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Plan for the future Fraser Mobility Hub to connect rail passengers to bus, bicycle, and other transportation services.	2	MT	NM	AM, CDOT	
TM 2.2 Improve transit connectivity for areas not served by fixed-route transit.					DTV1.3, SNR4.2, TSI1.2, IGC3.2
Evaluate the feasibility of implementing a micro-transit service.	2	MT	$$$	LF, WP, GC	
TM 3: Support a well-connected road network that improves traffic flow, reduces congestion, and ensures the safe, efficient movement of people and vehicles throughout Fraser.					
TM 3.1 Maintain and adapt Fraser's road network to support year-round access, safety, and the town's unique mountain context.					DTV1.2, DTV1.3, DTV4.2, C2.3, TM1.1, TM4.1, IGC3.1
Maintain and enhance roadway conditions through targeted reinvestment.	1	ON	$$$		
Coordinate with CDOT on the US 40 capacity project to reflect local needs.	2	ON	NM	CDOT	
Coordinate with Grand County on the completion of the Fraser Valley Parkway (FVP) from CR 73 (St. Louis Creek Road) to CR 522.	2	ON	NM	GC	
Identify a north-south connection east of US 40 from CR 8 to Safeway (Edna Tucker Way-Sun River Dr-Clayton Ct).	2	ON	NM	FDDA	
TM 4: Provide thoughtful and easy-to-find parking that is balanced with the Town's commitment to walkability and placemaking.					
TM 4.1: Balance parking supply and management with walkability and placemaking.					DTV1.1, DTV1.3, DTV2.2, H2.3, C1.2, PROST2.1, LU3.1, LU3.2, SNR4.1, TM2.1, TM3.1, IGC2.1, IGC3.1
Explore time restrictions for on-street parking near highly visited destinations and implement if needed.	3	ON	NM		

Figure 48: Transportation & Mobility Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Add signage in key locations as consistent with the Winter Park & Fraser Wayfinding Plan throughout Town to clarify parking, destinations, and transportation options.	3	MT	$$$		
Coordinate with CDOT Mountain Passenger Rail improvements and Clayton Court development to identify a location for a shared parking facility.	1	LT	NM	CDOT, AM	
Evaluate the feasibility of a parking monitoring program.	2	MT	$$	FDDA	
Evaluate a fee-in-lieu and shared parking models.	1	ST	$$	FDDA	

Figure 49: Intergovernmental Coordination Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
IGC 1: Develop a framework for ongoing regional collaboration to foster strong partnerships and drive impactful solutions across communities and regions.					
IGC 1.1 Create and formalize intergovernmental agreements for shared services and infrastructure.					DTV2.1, PROST4.1, LU3.3, TSI3.3, IGC2.1, IGC3.2, IGC5.1, IGC5.4
Inventory and monitor active IGAs between Fraser and other entities.	3	ON	$		
IGC 2: Encourage coordination and collaboration around land use in the Fraser Valley.					
IGC 2.1 Work with Winter Park, Grand County, and other partners to identify shared growth areas, environmental resources, and land use goals that cross jurisdictions.					H3.1, LU3.3, LU4.1, SNR3.1, TM4.1, IGC1.1, IGC4.2, IGC5.1, IGC5.4
Establish a procedure for notifying and consulting nearby towns and the County on significant development proposals, annexations, or rezonings near shared boundaries.	2	MT	$	GC, WP	
IGC 3: Coordinate regional transit plans and projects to efficiently move people throughout the Valley.					
IGC 3.1 Foster relationships with CDOT, Grand County, and Union Pacific to be involved with regional transportation master planning efforts.					DTV1.3, SNR1.1, TM2.1, TM3.1, TM4.1, IGC3.2, IGC5.1
IGC 3.2 Work with Winter Park, Winter Park Resort, Granby, and Grand County to support operation and expansion of The Lift transit service.					TSI1.2, TSI3.3, TM2.1, TM2.2, IGC1.1, IGC3.1, IGC5.2
Secure additional, sustainable joint funding for transit infrastructure and operations.	2	ON	NM	WP, GY, GC	
Explore the formation of a Regional Transportation Authority (RTA).	3	LT	$$$	WP, GY, GC	
IGC 4: Create forward-thinking, regional housing plans that address the needs of the entire Valley.					
IGC 4.1 Work with Fraser Valley Housing Partnership, Winter Park, and Grand County to create a Valley-wide strategy for workforce, seasonal, and affordable housing.					DTV2.3, EV4.1, H3.1, H4.1
IGC 4.2 Explore shared tools and incentives for housing development.					DTV2.3, H1.1, H2.3, IGC2.1
IGC 5: Work with Grand County and Winter Park to understand capacity and plan for services and infrastructure upgrades.					

Figure 50: Intergovernmental Coordination Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
IGC 5.1 Work with government entities and special districts in the Fraser River Valley to further long-range planning goals and align Capital Improvement Plans across jurisdictions.					PROST4.4, LU3.1, LU3.2, LU4.1, TSI2.2, TSI3.4, IGC1.1, IGC2.1, IGC5.4, IGC6.2
Continue to explore a location for a shared composting site with Grand County and Winter Park.	3	ON	$	GC, WP, D	
In partnership with Grand County, continue to advocate for a quiet zone and pedestrian amenities at the CR 5 railroad crossing.	2	MT	$	GC	
IGC 5.2 Provide leadership and participation in efforts to address local challenges through regional cooperation.					H3.1, EV4.1, PROST2.2, SNR1.8, SNR4.2, TSI2.1, IGC3.2, IGC6.1, IGC6.3, IGC7.1
IGC 5.3 Collaborate with the Grand County Library District to enhance library programming to engage a greater number of residents.					C1.3, PROST3.3, TSI1.2, TSI1.5, IGC6.2
IGC 5.4 Further explore opportunities to share municipal services with Winter Park for advanced efficiency and coordination.					SNR1.5, TSI3.1, TSI3.3, IGC1.1, IGC2.1, IGC5.1, IGC6.2
Identify shared projects with adjacent water & sanitation districts.	2	ON	$$$	WPRWSD, GC1	
IGC 6: Coordinate efforts around parks, recreation, open space, and trails to create a cohesive regional network.					
IGC 6.1 Coordinate regional recreation and collaborate with the Fraser Valley Metropolitan Recreation District (FVMRD), Headwaters Trail Alliance (HTA), Colorado Open Lands (COL), and the Town of Winter Park.					DTV1.1, DTV3.1, PROST2, PROST3.1, PROST3.2, TM1.1, IGC5.2, IGC6.2
IGC 6.2 Collaborate on joint use facilities and programming.					PROST3.1, PROST3.2, PROST4.4, LU3.1, TSI1.3, IGC5.1, IGC5.3, IGC5.4, IGC6.1
Inventory and assess recreation district-wide.	3	LT	$$$	FVMRD, WP	
Identify land for acquisition across jurisdictions.	3	LT	$	FVMRD, WP	

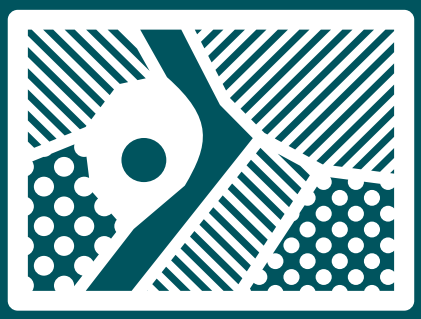
Figure 51: Intergovernmental Coordination Implementation Matrix

Goal/Strategy/Action	Priority	Timeframe	Cost	Partners	Other Applicable Policy
Share facilities, funding, and programming to expand access.	2	ON	$	FVMRD, WP	
IGC 6.3 Encourage regional strategic planning and initiatives regarding Fraser River Regional trail linkages.					PROST1.3, PROST2.4, LU4.1, TM1.1, IGC5.2
IGC 7: Protect residents, visitors, and property from human or natural made disasters.					
IGC 7.1 Coordinate with regional agencies and adjacent communities on hazard mitigation and prepardeness.					LU3.1, SNR2.4, TSI1.3, TSI1.6, IGC5.2
Continue to participate in regular updates to the Grand County Multi-Hazard Mitigation Plan, Emergency Operations Plans, and Community Wildfire Protection Plan.	1	ON	NM	GC, FEMA, USFS, CWPP, GFWP, GY, FWPPD, EGFPD, USACE	

Future Land Use

WHAT IS FUTURE LAND USE?

Future land use is a common tool used in comprehensive planning to guide land use decisions and inform changes to development regulations. A description of each future land use designation can be found on pages **163-166**, along with the intent, an example in Fraser (or elsewhere) where this designation already exists, and how much land area the designation represents within the Town and the larger 3-mile area. The colors of each designation correspond to the Future Land Use Map (FLUM) in **Figure 52**. While the purpose of future land use can vary from municipality to municipality, in Fraser it is used in the following ways.



Ties the type of activity and intensity of different land uses to geographic areas in Fraser & the 3-mile area.



Forms the basis for decision making when it comes to zoning changes and development.



Guides development towards areas with infrastructure and planned improvements.



Protects open and natural spaces.

Future land use ties the type of activity and intensity of different land uses to geographic areas in Fraser & the 3-mile area.
Future land use's primary role is to categorize land uses based on activity level, impacts, and character. By integrating all the planning elements outlined in the Fraser Forward chapter, the framework translates community priorities and policy recommendations into the physical environment. Within Fraser, designations highlight current conditions and guide how areas should evolve, while in the 3-mile area they identify the types of activities best suited for future and planned expansion.

It forms the basis for decision making when it comes to zoning changes and development.
Although it is not zoning, it is a key component that guides future code updates and rezonings. Future land use is intentionally broad so that multiple zoning districts can fit into one future land use designation. This provides some general direction for the type of developments and where they can occur, but provides flexibility for context-sensitive design.

Future land use guides development towards areas with infrastructure and planned improvements.
By categorizing and regulating the density and activities of areas, the town can ensure that it is growing in a financially sustainable manner. Encouraging development in places already served by infrastructure such as roads, water, and sewer reduces the cost of extending and maintaining infrastructure.

It's used to protect open and natural spaces.
By encouraging infill development and designating environmentally sensitive areas, future land use guides development to appropriate areas and can even prohibit development of open and natural spaces. By guiding development in areas already served by infrastructure it makes the town more vibrant and keeps the natural areas – natural.

PLANNED NATURAL AREA (PNA) BOUNDARY

The PNA Boundary is the 2.6 acres of wetland habitat that is protected in the St. Louis Landing (formerly Victoria Village) development. The PNA was originally established in 2012 with deed restrictions as part of wetland mitigation for wetland fill on site under the United States Army Corps of Engineers (USACE). The Town worked with Grand Environmental Services (GES) to receive USACE approval to modify the PNA boundary to facilitate a bridge crossing of the St Louis Creek for the proposed road that will run through the development. Displaying the PNA Boundary on the future land use map helps ensure it is conserved as intended and properly managed for years to come.

FRASER VALLEY PARKWAY

The existing and planned Fraser Valley Parkway is displayed to give greater context to future land use decisions that are made on adjacent properties. The Fraser Valley Parkway expansion is currently in the planning stages with Grand County and CDOT, with the Town of Fraser being a major stakeholder in the process.

PLANNED DEVELOPMENT (PD) ZONING

Almost all of Fraser's more recent development has occurred within the Grand Park and Rendezvous neighborhoods and has been guided by the framework of their Planned Development (PD) zoning. PDs generally are established to allow for more flexibility than standard zoning districts in exchange for more detailed and thoughtful design, and they are often established in conjunction with securing additional public benefits negotiated through the annexation process. Due to both of these development areas having established standards and amendment processes, this Comprehensive Plan focuses on areas of investment and possible future strategic growth while strengthening and celebrating the transformational nature of these PD neighborhoods in terms of the new housing choices, recreation opportunities, and services and attractions for residents and visitors alike that they have created. The Future Land Use Map reflects the latest approvals and entitlements for the Grand Park and Rendezvous Planned Developments.

Areas depicted with the Planned Development designation on the Future Land Use Map are those which have not received final land use approval at the time of adoption of this Comprehensive Plan. Approvals of proposed land uses in areas zoned PD will be governed by all applicable regulations, including but not limited to the approved Planned Development District Plans (PDDP), for the duration of the vested rights term. Any future amendments to these areas are subject to review and approval by the Town in conjunction with the planned development amendment procedures and their respective annexation agreements.

FUTURE ANNEXATION

Land may be considered for annexation into the Town of Fraser, if the annexation would comply with state annexation statutes and the policies of this Comprehensive Plan. It is the responsibility of the applicant or annexation petitioner to demonstrate how the proposed annexation would comply with all of the pertinent policies and show why annexation would be a benefit to the Town of Fraser.

If a property is annexed, zoning will be established according to the Future Land Use Map contained in this Comprehensive Plan and through an evaluation of the rezoning criteria contained the Fraser Land Development Code. The annexed land will need to meet the development standards of the Fraser Land Development Code.

All proposed annexations shall be accompanied by an annexation agreement which contains the specific obligations of development. The agreement shall be executed upon approval of the annexation application by the Fraser Board of Trustees. The obligations contained in the annexation agreement should provide a clear community benefit to the Town of Fraser and serve the best long-term needs and interests of the Town. These obligations should relate to the goals, strategies, and actions contained in this Comprehensive Plan.

The following items listed are identified community needs (higher priority) and interests (lower priority) that could be achieved through an annexation proposal. This is not an exhaustive list but rather intended to facilitate discussion with parties interested in annexation into the Town of Fraser.

Community Needs

- Conveyance of water rights to the Town
- Dedication of land for future 6th - 12th grade public school(s) to serve the Fraser Valley
- Dedication of approximately 15 acres of land, west of the existing Upper Fraser Valley Wastewater Treatment Plant, to facilitate future capacity improvements
- Assurance that the annexed area is served by proper postal services, either through expansion/ renovation of the existing post office building or construction of a new post office
- Dedication of land for a public works satellite facility
- Inclusionary zoning / affordable housing incorporated into the development of the annexed area
- Extension of the Fraser River Trail and permanent preservation of open space / riparian areas

Community Interests

- Dedication of land for post-secondary education, such as a community college or trade school campus
- Dedication of land to the Fraser Valley Metropolitan Recreation District for additional facilities
- Dedication of land for a future public purpose
- Inclusion of light industrial / manufacturing uses within the annexation area to diversify the region's job and tax base
- Creation of a geothermal utility district within the annexation area

FUTURE LAND USE DESIGNATIONS

RESIDENTIAL

Town: 25.2% 3-mile area: 34.2%

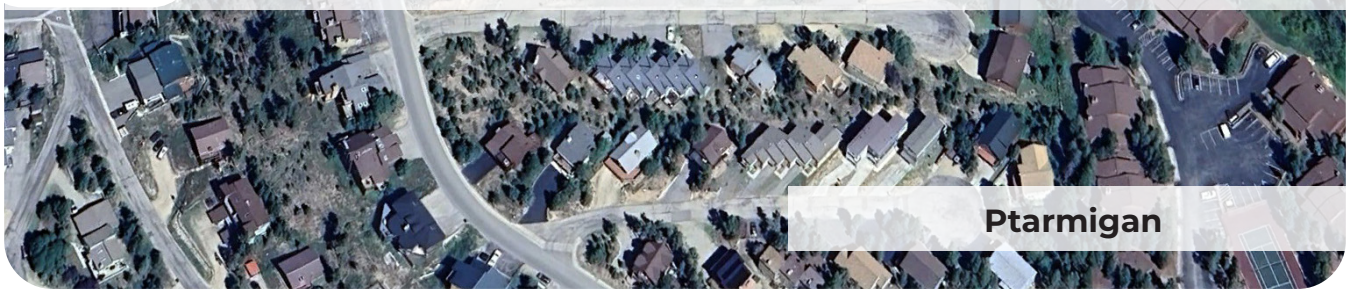
Low Density Residential



Preserve and enhance Fraser's mountain-town character and natural surroundings by providing areas primarily for single-family homes on larger lots.

Town: 18.3% 3-mile area: 4.4%

Medium Density Residential



Provide for a diverse range of housing options, including single-family homes on smaller lots, duplexes, townhomes, and appropriately scaled multi-family dwellings, that contribute to a vibrant and accessible community.

Town: 4.7% 3-mile area: 4.4%

High Density Residential



Strategically accommodate a variety of higher-density housing types, including apartments and condominiums, in areas that are well-served by existing infrastructure, public transportation, and within convenient walking or cycling distance of commercial centers, employment opportunities, and community amenities.

FUTURE LAND USE DESIGNATIONS

COMMERCIAL/MIXED USE

Town: 1.2% 3-mile area: 0.3%

Commercial

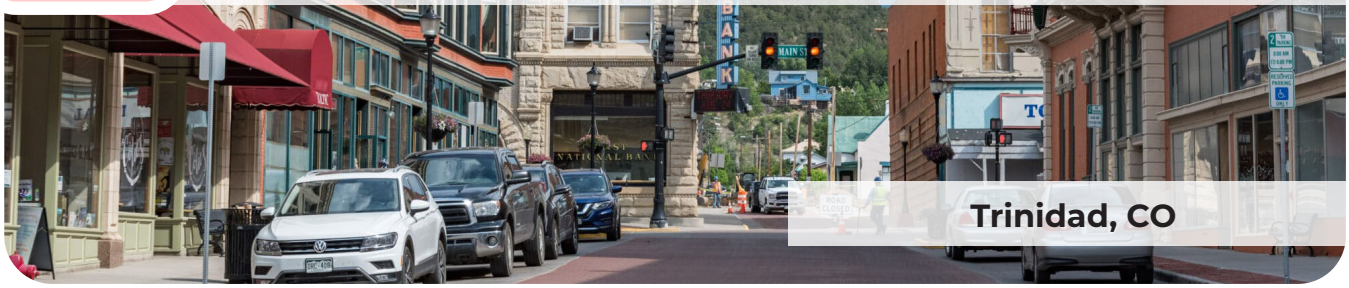


Murdoch's Ranch & Home Supply

Provide dedicated areas for a range of retail, service, office, and light commercial establishments necessary to serve the daily needs of Fraser residents and visitors.

Town: 7.0% 3-mile area: 2.6%

Mixed Use/Riverwalk

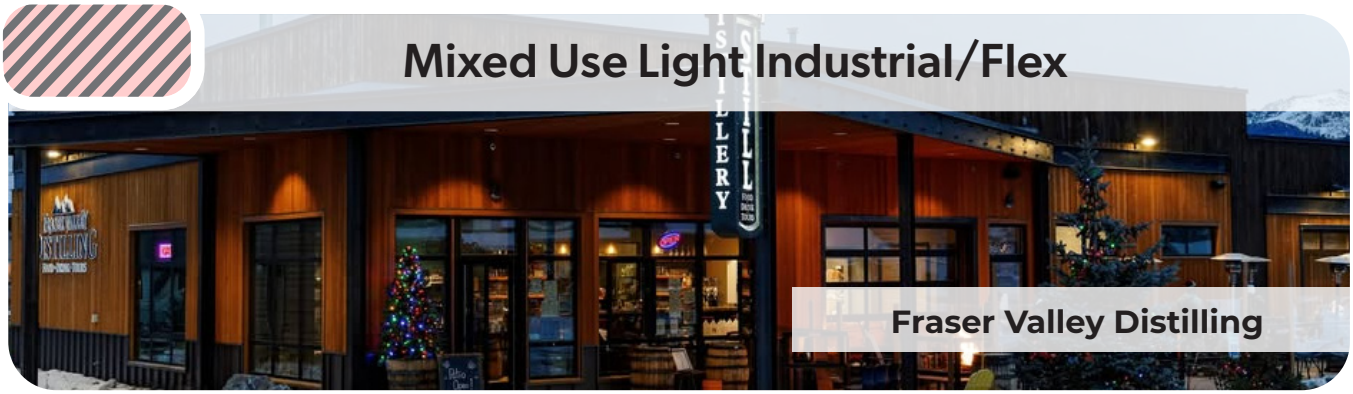


Trinidad, CO

Foster vibrant, walkable, and economically diverse activity centers within Fraser. Encourages the integration of complementary commercial, retail, office, service, and residential uses.

Town: 0% 3-mile area: 2.3%

Mixed Use Light Industrial/Flex



Fraser Valley Distilling

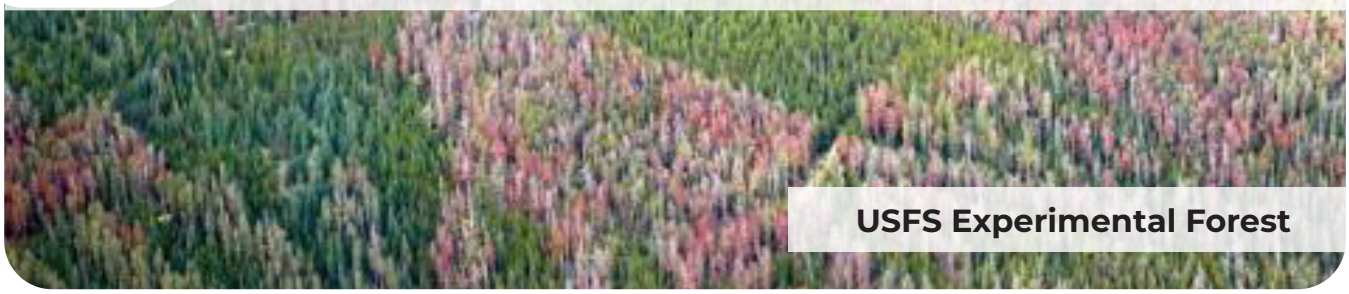
Create flexible areas that support a range of light industrial, manufacturing, warehousing, research and development, and compatible commercial uses that require larger spaces or specific operational characteristics.

FUTURE LAND USE DESIGNATIONS

NATURAL/RECREATION/PUBLIC

Town: 0% 3-mile area: 18.2%

Forest/Agriculture

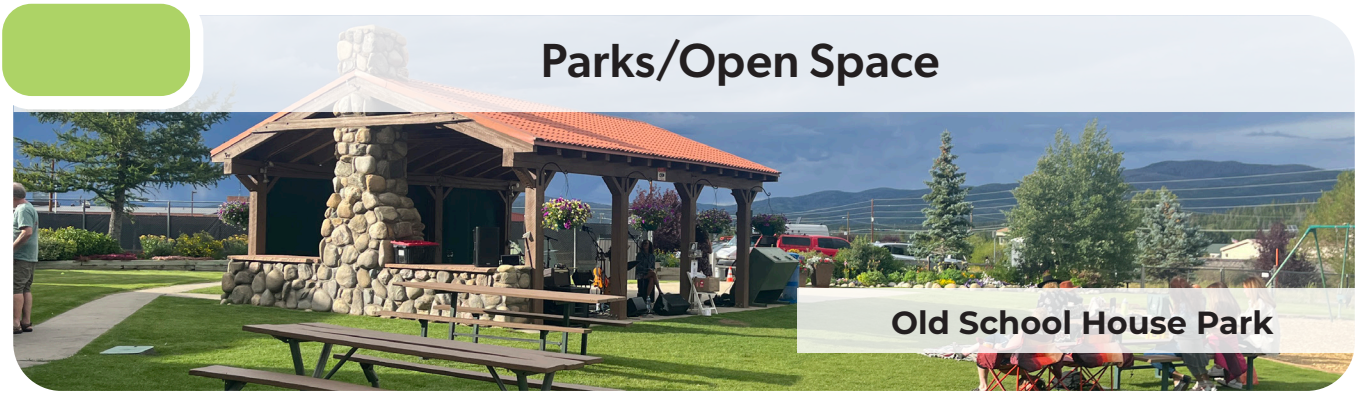


USFS Experimental Forest

Preserve and protect large tracts of Fraser's natural and rural landscapes, including forests, agricultural lands, open meadows, and sensitive ecological areas.

Town: 38.1% 3-mile area: 16.2%

Parks/Open Space



Old School House Park

Provide accessible recreational opportunities for all residents and visitors, preserve scenic vistas, and enhance the overall health and well-being of the community.

Town: 3.4% 3-mile area: 3.6%

Conservation Easement



Cozens Ranch

Ensure the long-term stewardship of critical environmental resources, wildlife habitat, riparian corridors, agricultural viability, and public access.

FUTURE LAND USE DESIGNATIONS

Town: 1.7% 3-mile area: 1.1%

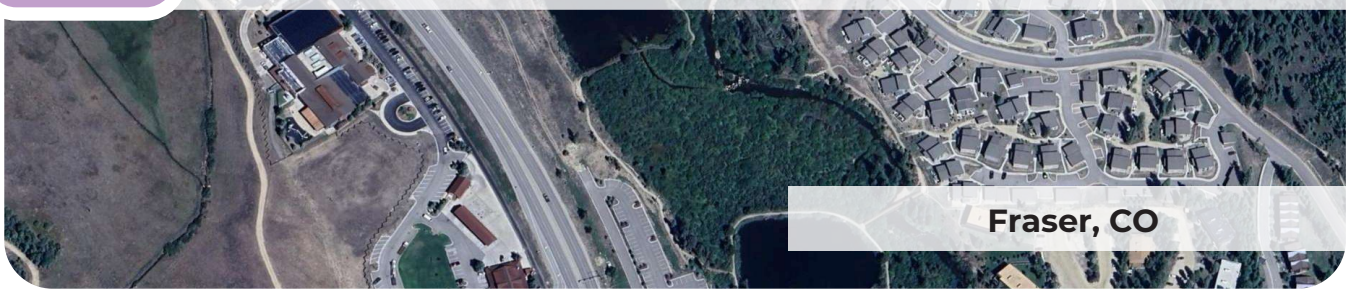
Public/Institutional



Ensure the efficient and effective provision of necessary public services, support civic functions, and promote community well-being.

Town: 0.5% 3-mile area: 13.7%

Future Collaboration Area



Foster strategic and coordinated development within designated areas of Fraser through active partnerships.

60 Foot Fraser River Overlay



Safeguard water quality, protect critical riparian and aquatic ecosystems, manage stormwater, mitigate flood risks, and provide for passive recreational opportunities where appropriate.

Planned Development



Applies area specific standards or conditions to allow for flexibility in land use and design.

Figure 52: Town of Fraser Future Land Use Map

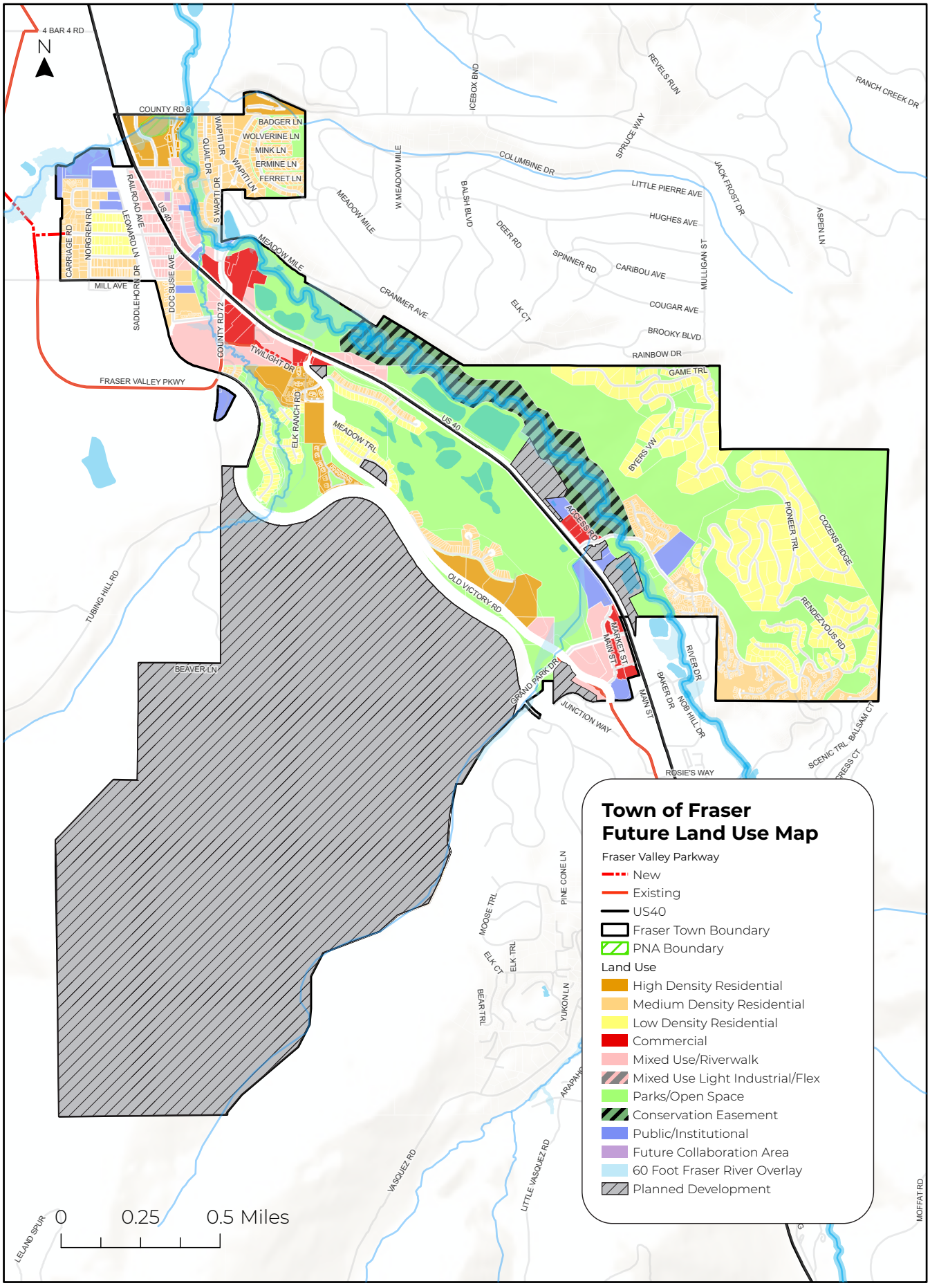
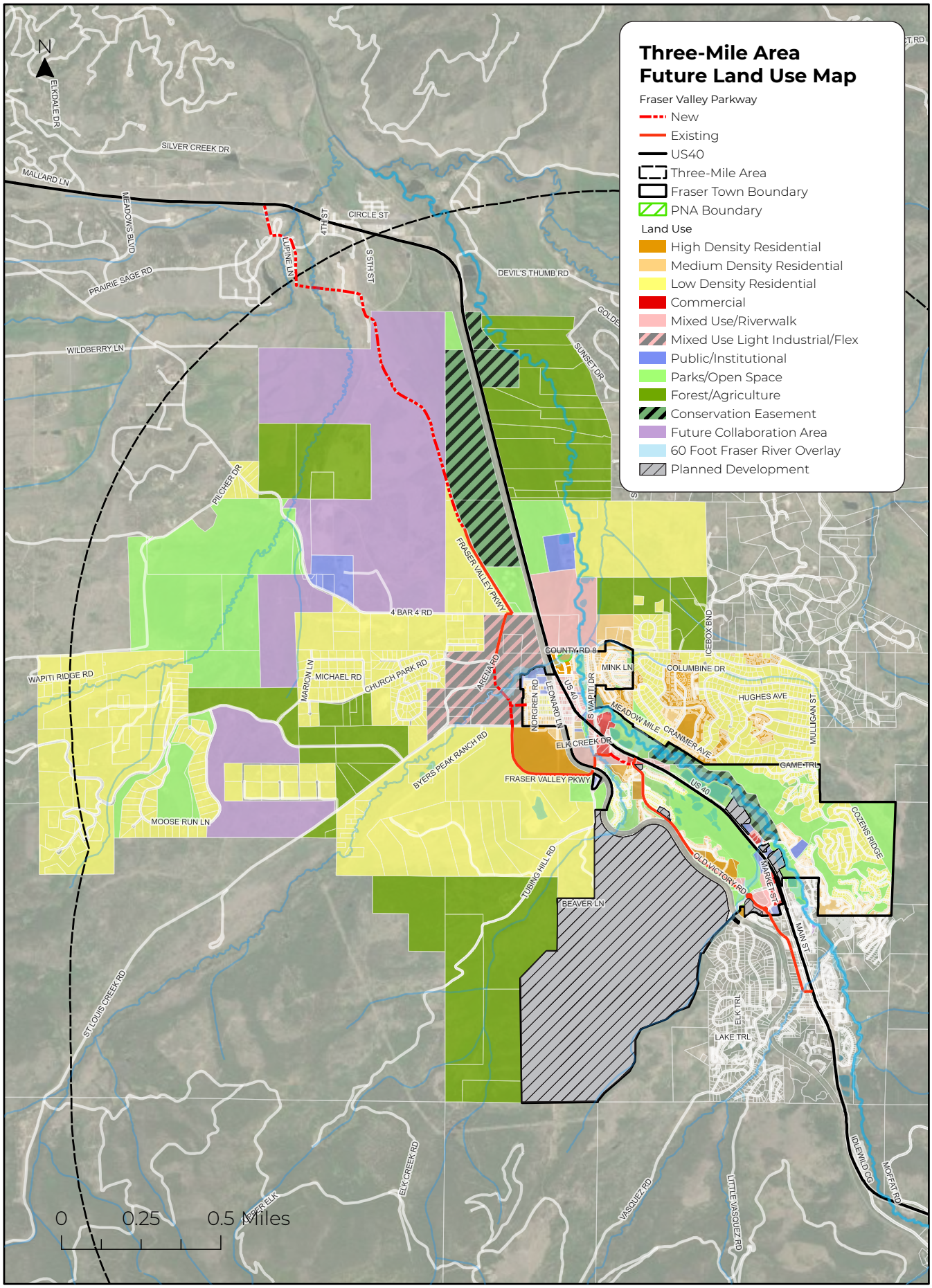


Figure 53: Three-Mile Area Future Land Use Map



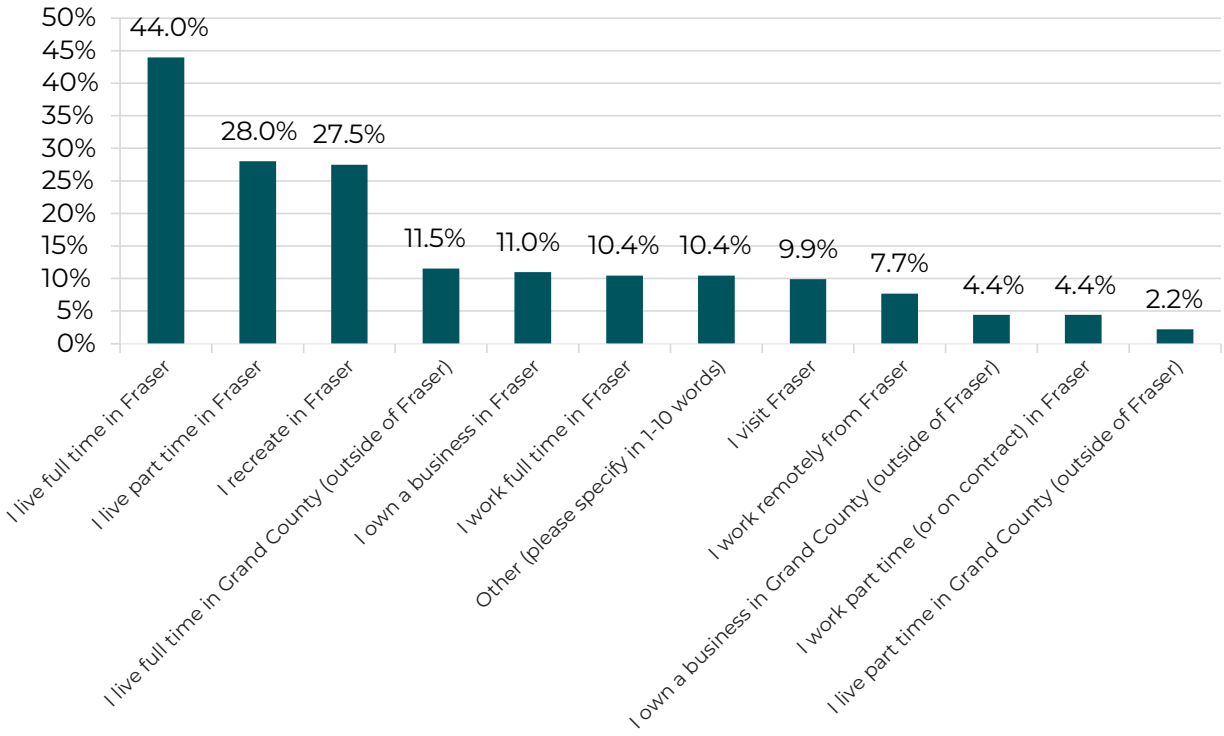
6 Appendix



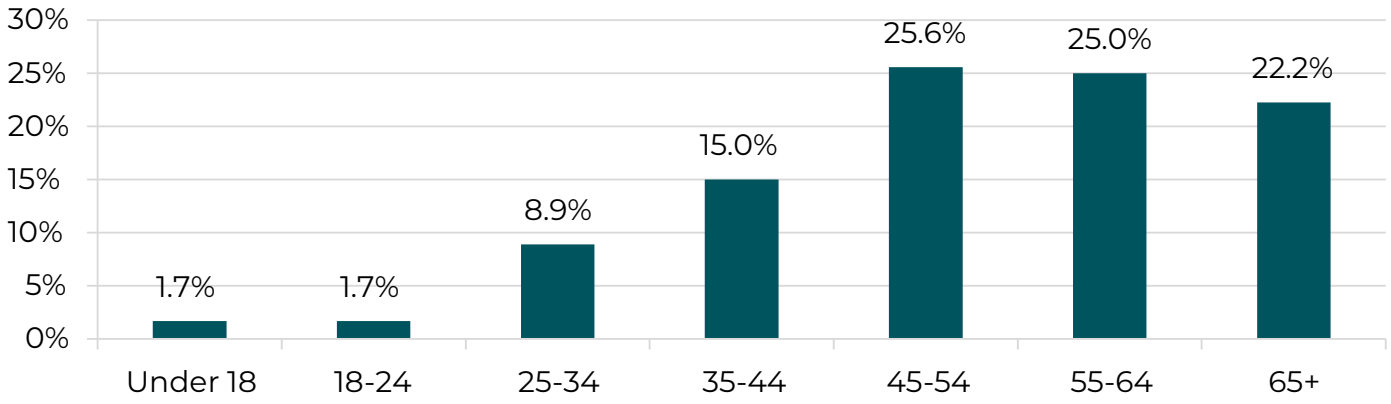


COMMUNITY SURVEY RESULTS

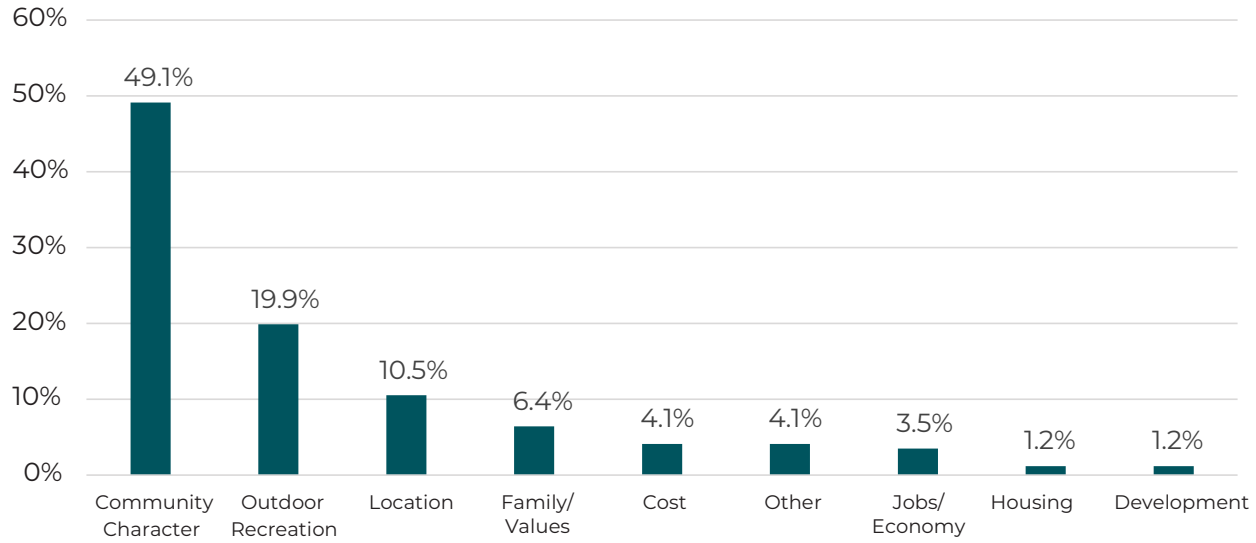
Q1: What is your relationship to the Town of Fraser? Please select all that apply.



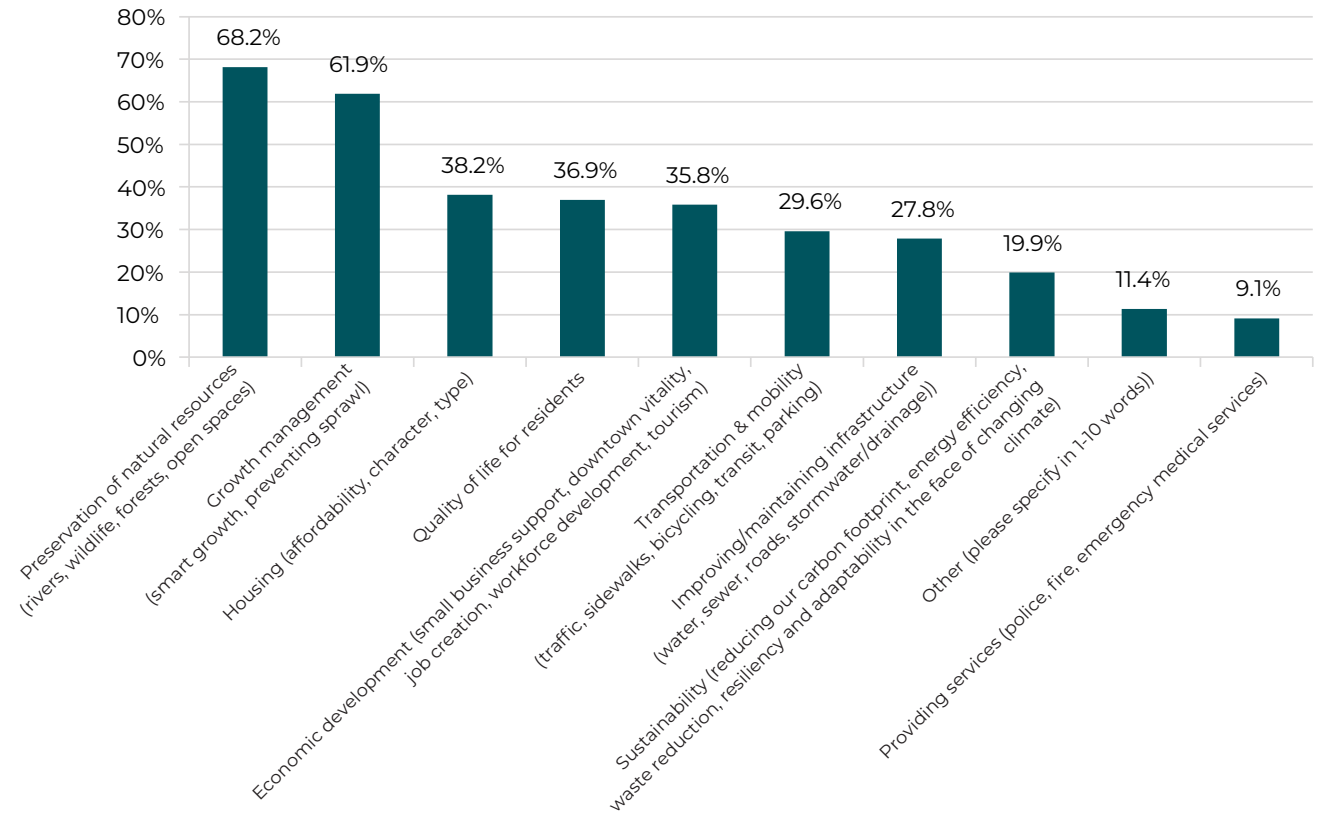
Q2: What is your age?



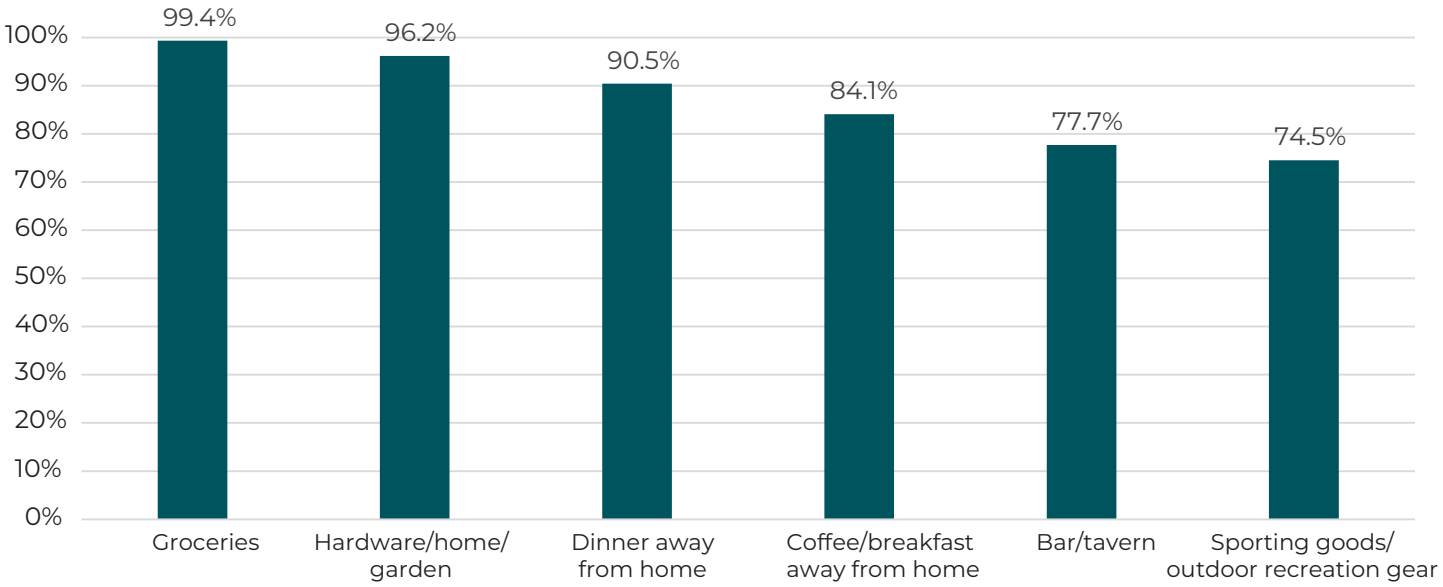
Q3: Why do you choose to live/work/play in Fraser?

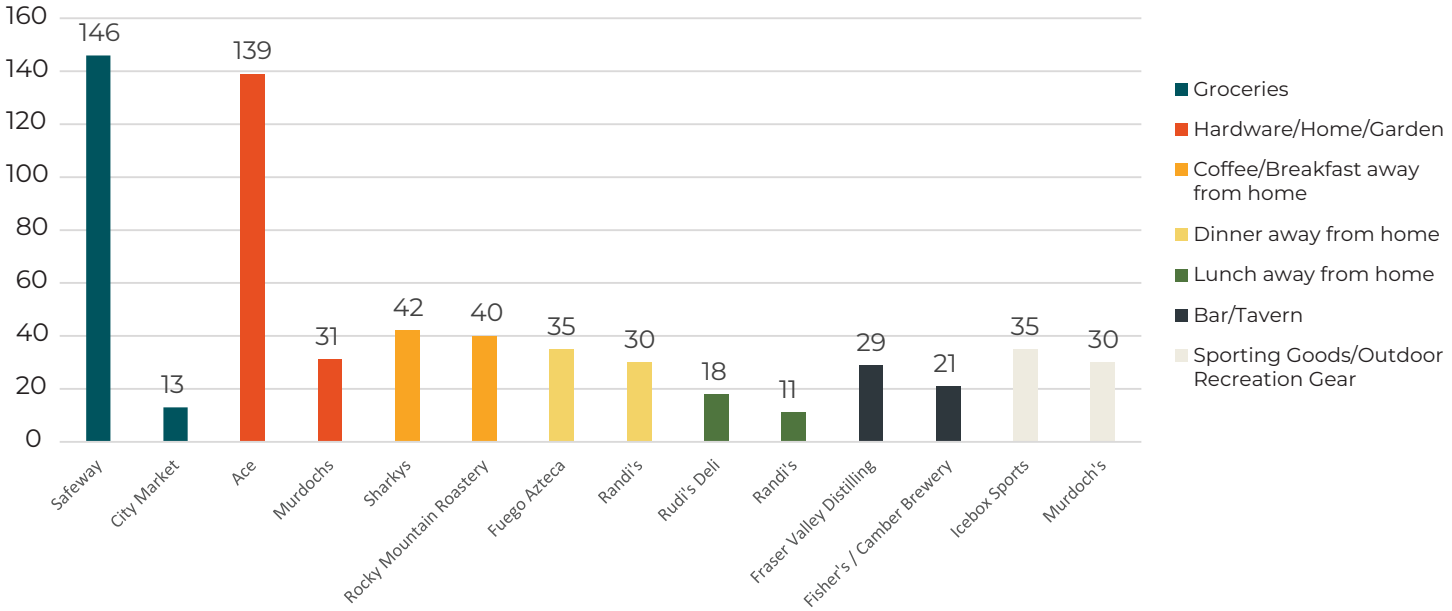


Q4: What are the most important topics that this Comprehensive Plan should focus on? Please select your top three (3).

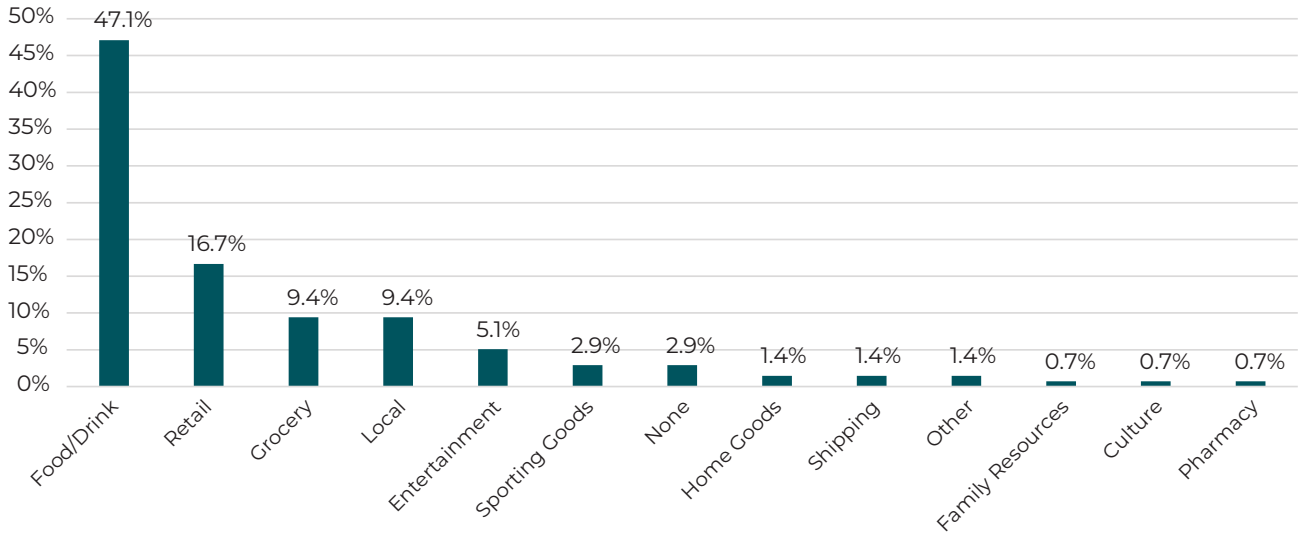


Q5: When in Fraser, what specific establishments do you visit most often for the following spending categories, whether the establishment is located in Fraser or not? You can list more than one establishment in each category (or none), but please list the most frequently visited first.).

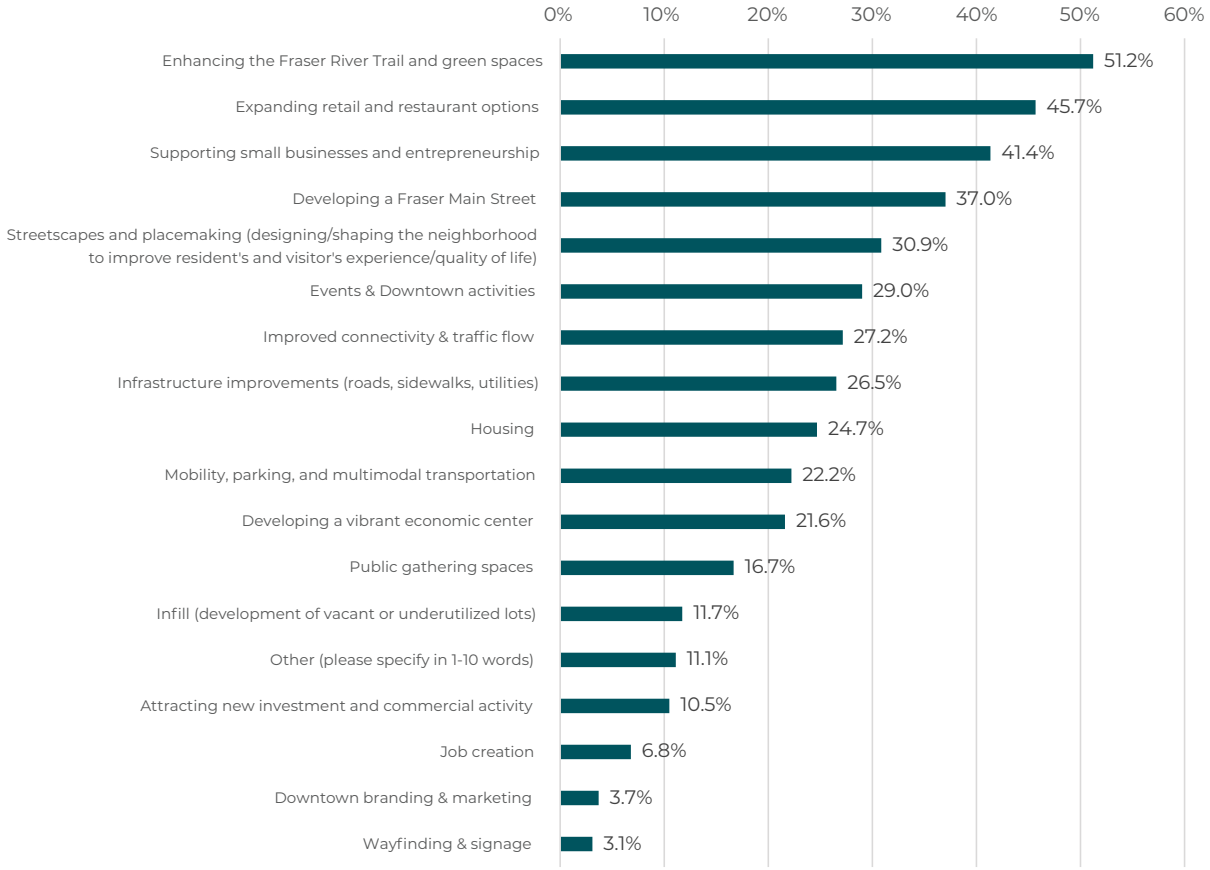




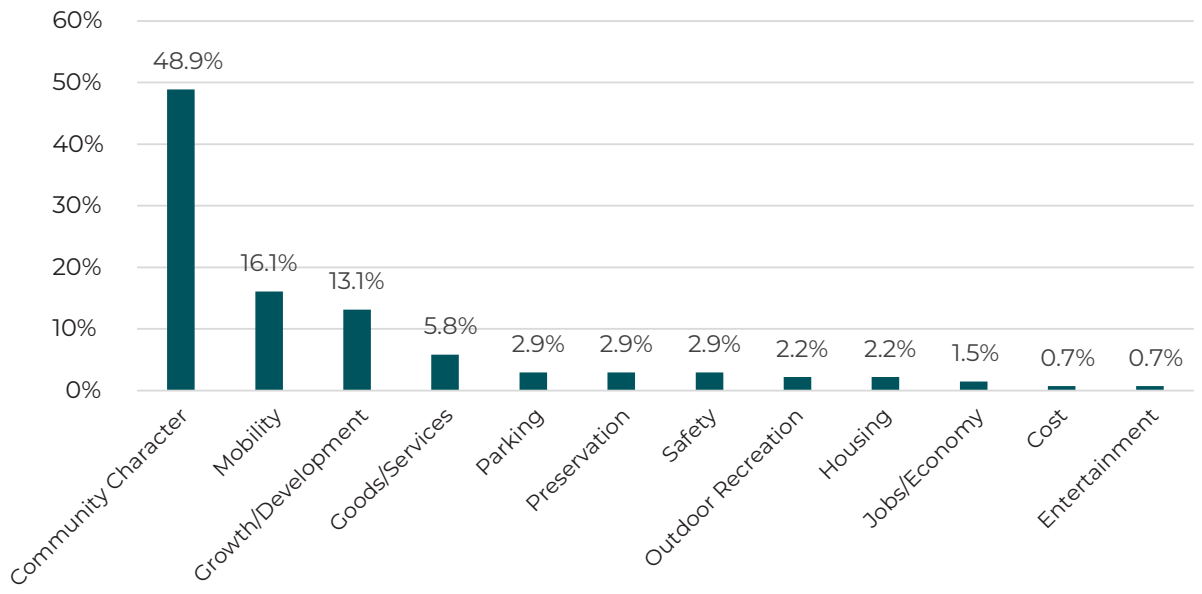
Q6: What type of new store/establishment/restaurant, or experiential retail would you most like to see added in Fraser? Please include the specific brand/chain if you'd like, or you may just focus on the type of establishment.



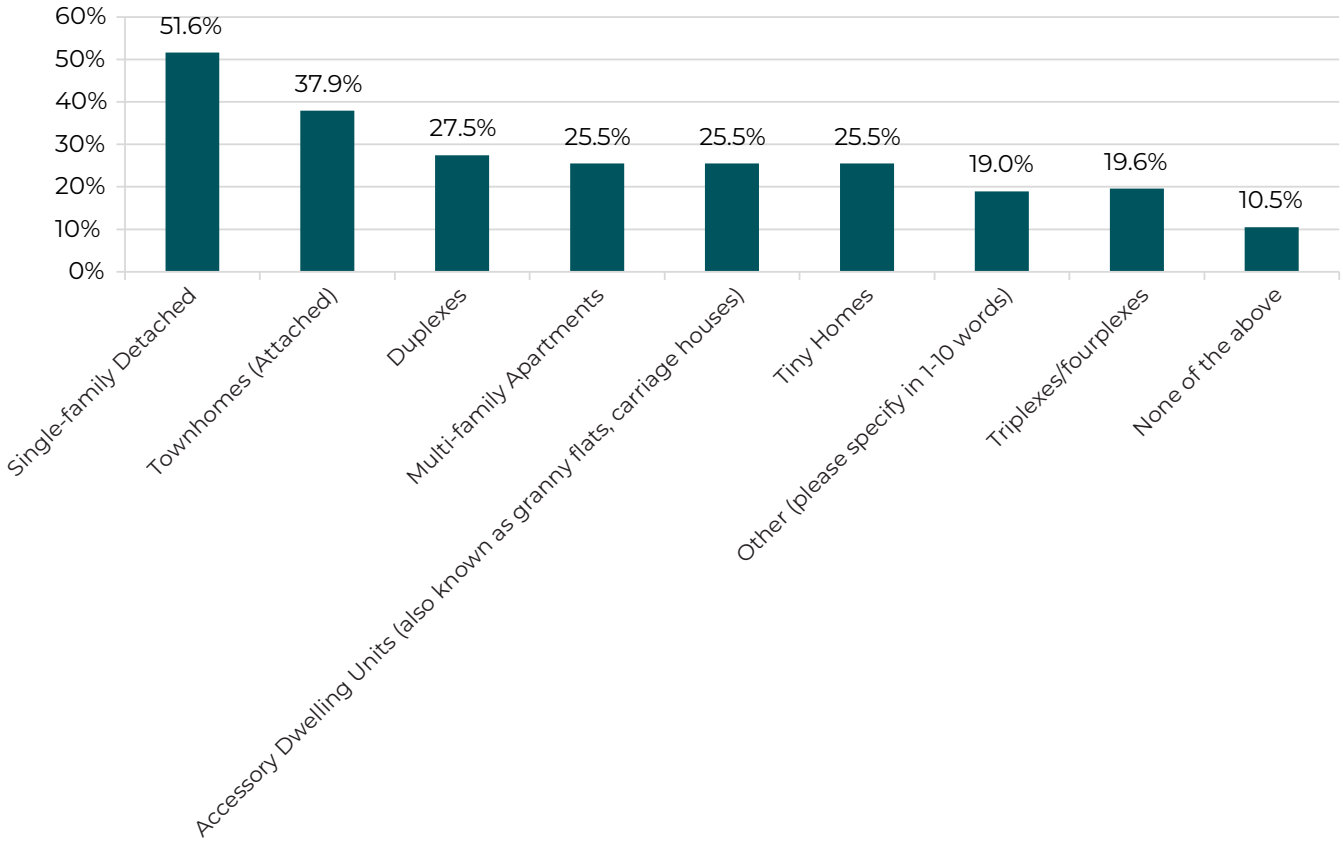
Q7: What areas would you like to see focused on for Downtown development in Fraser? Please select your top four (4).



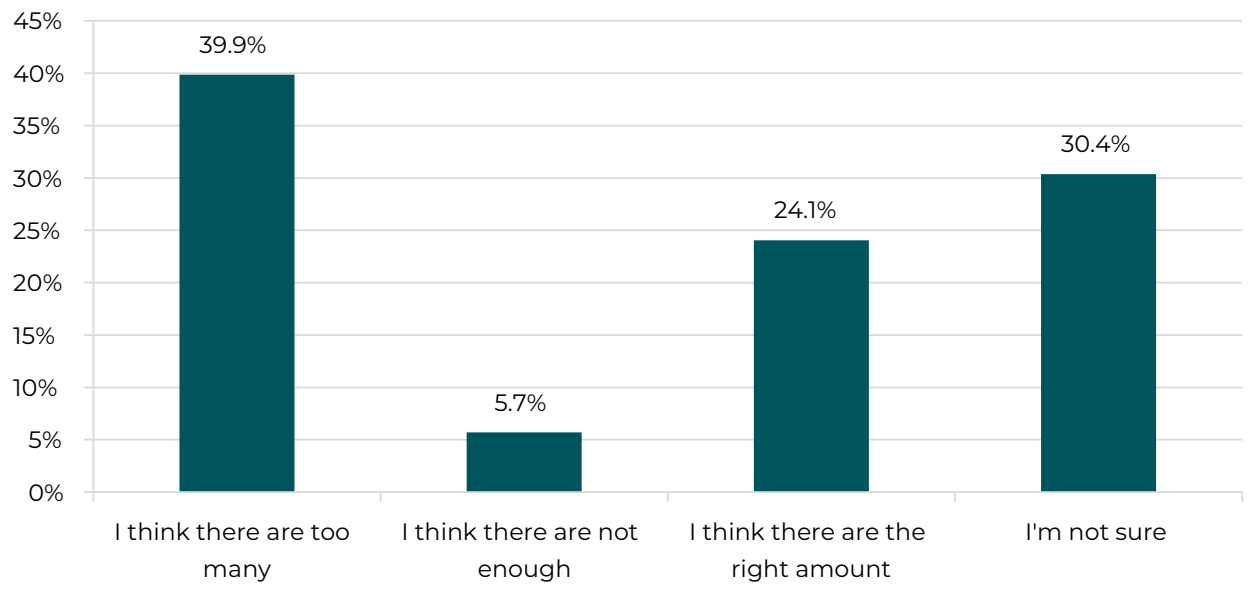
Q8: With a few key words or phrases, what is most important to your vision for Downtown Fraser?



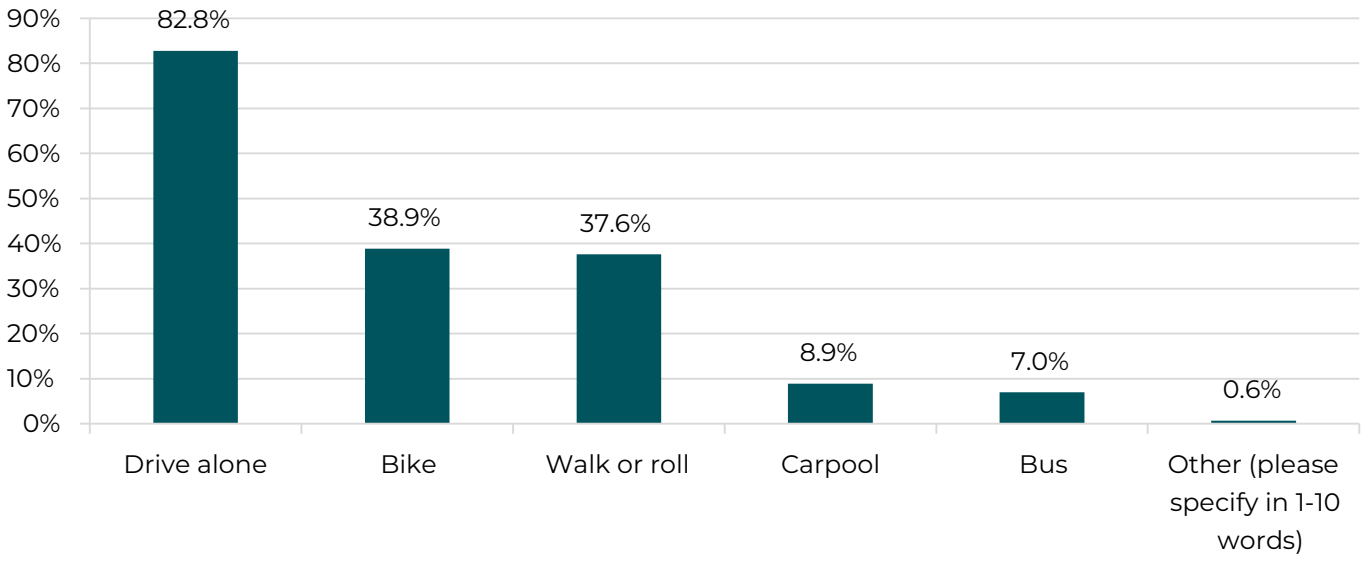
Q9: What type of housing would you like to see more of in Fraser? Please select all that apply.



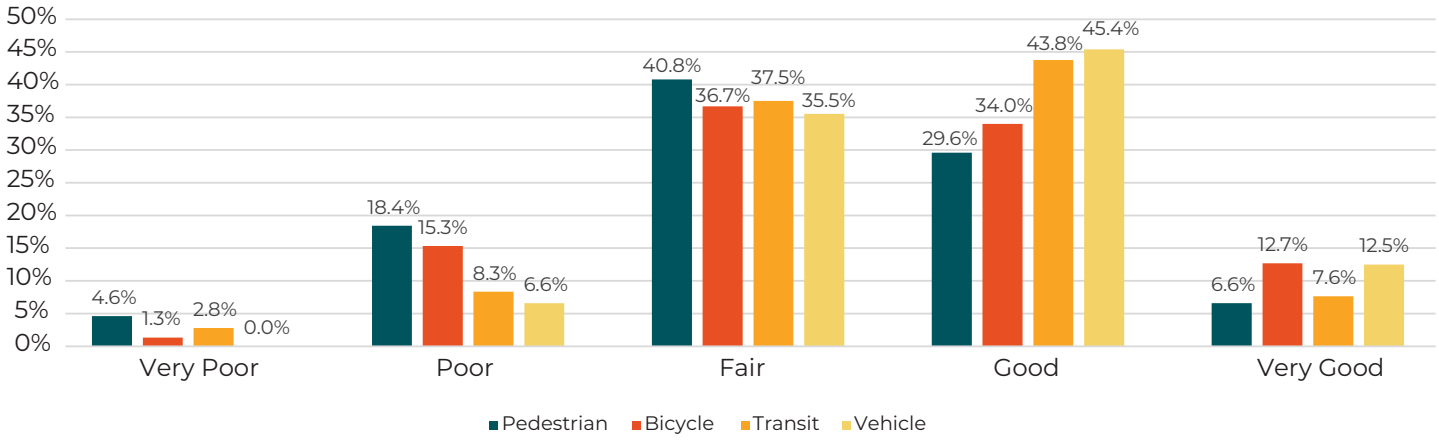
Q10: How do you feel about short-term rentals (Airbnb, VRBO) in Fraser?



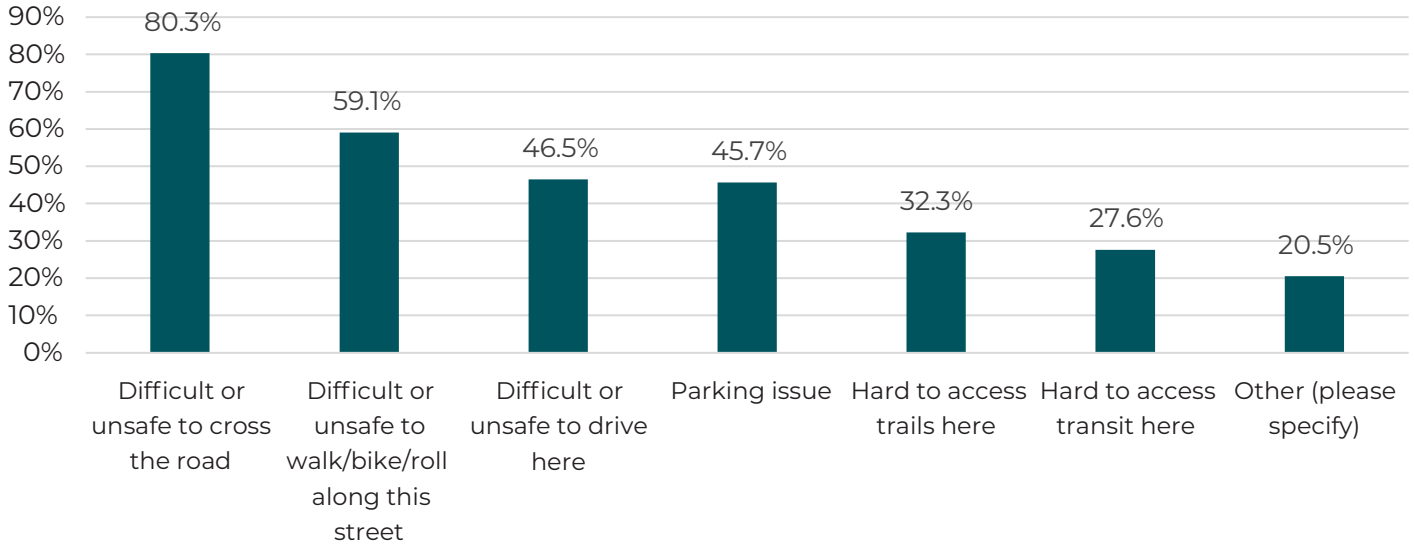
Q11: When in Fraser and making trips of less than 5 miles, how do you usually get around? Please select your top two.



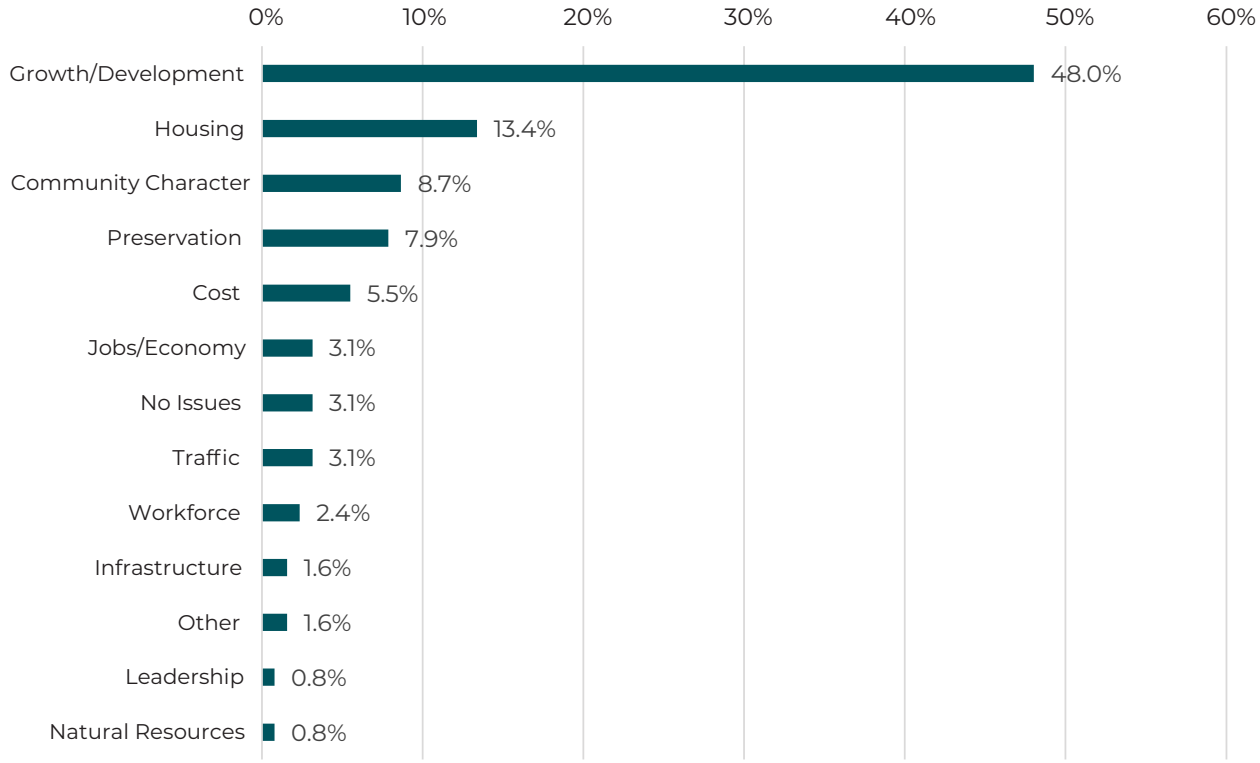
Q12: How would you describe the quality of transportation infrastructure in Fraser?



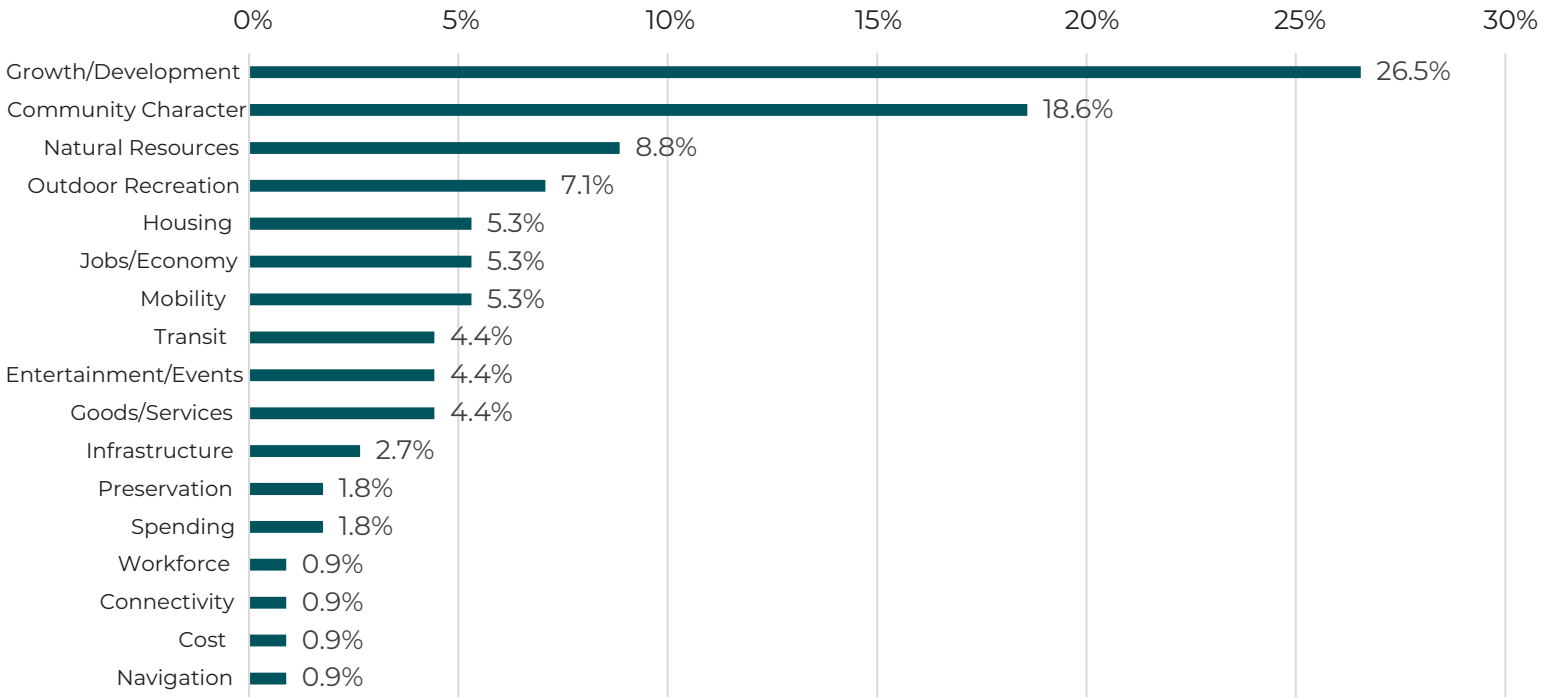
Q13: Where are current transportation issues or challenges in Fraser?



Q14: Do you have any concerns about the future of Fraser? Please describe in 1-20 words.



Q15: What do you see as opportunities for Fraser? Please describe in 1-20 words.



POP-UP SURVEY RESULTS

Growth Management	Economic Development	Preservation of Natural Resources	Providing Services	Housing	Sustainability	Transportation and Mobility	Improving/ Maintaining Infrastructure	Other
Oversight of building/ structures to preserve quaint, small town look, considering history!	Natural Grocer in the county!		Post office doesn't have any space left.	Live @ Nordron, Speed limit 20, safety for pets + kids, construction folks are considerate, afford-able challenges with housing.		Additional lift frequency, stops (Northend) express, copper creek	What is the big vision?	School House Park!
	Koselig development really great - want more like it.		Daycare + Childcare options	Great to get more afford-able housing for staff at restaurants + such. Hous-ing is so expensive.		E-bike docking share	Walkable food/restau-rants, retail can cross easily	Hot Air Balloons! (be known for this)
						Quiet zones (train)	Similar condition river, train, main st. Look to Truckee for how they did it.	Competition: Mr.Whis-kers of Fraser
						Less folks from Denver on weekend	Integration with the river.	"Highwood" aka Guinness record for "pot shops" but better
						Crosswalk Hwy 40 + Victory - very unsafe for bikers	Shade at Mural Park	The Icebox - be known for this!
						Amtrak service always delayed, Better bike racks at town hall and through-out town, Quiet crossing at Eisenhower, train whis-tles at 4am are bad.		
						Median was not a good use of money on 40		
						CR 8 + 40 Traffic circle		
						County road 8 + 40 in-tersection. Safety. Traffic light.		
						Don't build roads on west side of town		
						More Downtown parking		
						Denver to Steamboat bypass		
						Where I live - add I live in grand county! Resident by proximity!		
						Mural Park has no shade. Poles not orange		

FOCUS GROUP FINDINGS

SUSTAINABILITY & RESILIENCY

- Key focus areas:
  - Preservation & restoration of natural resources
  - Alternative energy & energy efficiency
  - Multimodal transportation

ARTS, HISTORY & CULTURE

- Key focus areas:
  - Continue fundraising and momentum behind the Arts Center
  - Look to DDA revenues for arts fund
  - Leveraging passenger rail

DOWNTOWN DEVELOPMENT / HOUSING

- Key focus areas:
  - Increase workforce housing by 500-700 units by 2027 (in Grand County partnership area)
  - Support the business community
  - Attract new industry
  - Build out vision for Downtown Fraser as a mixed use hub, walkable, with greater interaction with the River
  - Support the short-term rental market that's critical to the tourism economy

COMMUNITY SERVICES

- Key focus areas:
  - Provide health care locally so residents and visitors don't have to travel outside the County
  - Lack of childcare & services for older adults
  - Providing more mental and behavioral health services

PARKS / RECREATION / OPEN SPACE

- Key focus areas:
  - Maintaining grant funding for HTA
  - Hwy 40 crossings and trailhead parking
  - More opportunities for indoor recreation
  - Micro-transit to connect train station to destinations

MOBILITY

- Key focus areas:
  - Last mile connections to train station
  - Lack of sidewalks in Old Town
  - Safe crossings of Hwy 40
  - Need to expand Lift service in Fraser
  - Managing traffic and decreasing single occupancy vehicle trips on Hwy 40

COMMUNITY NEEDS / QUALITY OF LIFE

- Key focus areas:
  - Seeking more funding opportunities to provide licensing for childcare providers
  - Possible solutions: sales tax, Summit County as case study ($400k)
  - Large opportunity for after school outdoor based programs, youth experiences, and nature-based learning opportunities for kids
  - Library wants to serve more teens and seniors by making improvements to digital resources, groups/clubs, and increased outdoor space
  - Bus stop/station at library would help improve awareness and accessibility
  - Continued collaboration and partnership between non-profit entities and the Town in regards to housing, childcare, and services

OPEN HOUSE 1 SURVEY RESULTS (IN-PERSON)

Feedback on Downtown Vision
Headed in right direction. Smart growth not too fully driven by economics
Pedestrian friendly/bike friendly
Architectural review of Riverwalk District
Consider land owners - who pay vs others
Make decks on all buildings in Riverwalk District overlooking river
Connect train visitors
Like connection to Safeway
Should continue vision plan to the Railroad tracks - specifically the colored pavement shown at the intersection of Eisenhower
Left turn from Distillery is challenging - particually if CDOT adds more lanes in this area
Comment (multiple): Don't see much parking. Response: Pointed out how parking is concealed away from view via tuckunder, on street, potential district/centralized location to give more community space. Feedback: Most appeared to appreciate that.
Getting across 40 is hard right now. (multiple) Concern about pedestrian safety crossing 40 which would likely worse with potential widening of road with CDOT plans.
Koselig is too close to road and more room should be given for walking space
Show north up on the plans (multiple)
Want it to be local rather than tourist central (multiple).
Would good place for folks that don't want to go to Winter Park for retail.
More options for commercial services. Have Ace, Murdochs, but not much else. Don't want a Target (or other big box stores). Fine with going down 70 to go to Costco occassionally.
Attainability is a challenge not just affordability
Think we have enough breweries
Consistency is needed - year round avaiability
Design should start with pedestrian network and safety
Pedestrian underpass under railroad would be good to improve safety and connectivity
Okay with taller development in the valley but not along the ridge and hillside due to visibility and light reflection. Why just 45' max height?
CDOT Byers alignment makes sense

Feedback on Future Land Use
Family oriented housing
Make St.Louis Landing affordable
Open space and wildlife considerations
Obviously not aware of all the good Clark has done (below)
Keep tabs on Clark
Why? He's done great things for Fraser (above)
Focus on pedestrian walkways, bridge over 40, 2 lane 40 through town
Natural resource preservation
All growth has to consider capacity of US40. It is at its max at times now
Consider pedestrian traffic vs car traffic
Affordable housing
Yes this! -open space/cozens meadow
Tiny home area without huge monthly rental fee (additional comment says "great idea")
Mix of affordable housing products (apartments, condos, townhomes, tiny homes, etc.)
Affordable housing + open space
Byers Peak Ranch should be mixed use
Affordable single family homes. Preservation of land, resources
Space for "homeless" ex: car, van, campers
Allow for wildlife corridors. Increase affordable housing. Require - for all developers
Make railroad crossing. No train whistles
Jones Ranch should be open space
How will it be executed?

Parking	
Where do you have the most trouble parking Downtown today?	
Location	Comment
N Zerex St	Pedestrian Crossing
Meadow Ridge Rd	Ped/Bicycle Markings
US 40	Roundabout

Bicycling		
What kind of bike improvements would make you feel most comfortable?		
Topic	Sticker Count	Comments
Better Wayfinding and Signage	4	Fraser Valley River Trail
Prioritized on-street bike routes	7	
Improved trail network	6	
Improved roadway crossings	8	Safeway Crossing, Trailhead/ Parking Hub

Microtransit
What destinations should be included in a potential microtransit service area?
Microtransit to lift stations
All Fraser-Granby trailheads
Remote parking lot with frequent transit/micro
Train station
Resort
No lift here - need micro (on dot sticker)
Hospital (on dot sticker)

OPEN HOUSE 1 SURVEY RESULTS (ONLINE)

Question 1: Do you have any feedback on the themes we heard from community engagement?
This seems like an accurate portrayal of the people and needs. If new development feels out of place, how does old town residences and business fit into the plan? Will those residents and business owners eventually be displaced or replaced? What steps are being taken to include them in the planning for the future?
"I think the voices of those who live her full time should be elevated. I agree that managed growth is a risk and opportunity. Most of this board seems too high level to provide significant guidance.
Question 2: Do you have any feedback on the draft Downtown Vision Plan?
Parking structure with access off of 40
The Clayton Ave connection from US 40(N Zerex St) to CR 804(Meadow Ridge Rd) is amazing and it would be both a great car and pedestrian connection that is much needed. Also the realignment of S Wapiti Dr looks amazing, SOUTH wapiti Dr should also connect to Wapiti drive for another N/S connection, there's a small ROW/property impact but the connection is needed. It would make the most sense given that the road is named "South" wapiti drive, so connecting it to Wapiti Drive would be the most convenient. The Downtown plan looks great and will provide a great community space, pedestrian space, and a needed place to gather.
I'm concerned that the plan doesn't seem to include the old town area. It creates an us vs them, old vs new feeling, with 40 down the middle furthering that feeling. I'd like to see how the vision meshes with the old. I think it's harmful not to include the future rail plans and incorporate train as a transit option. It would be beneficial to the overall plan to see how things like the train depot, school, and library fit into the plan for flow.
I like the Downtown vision, the connectivity is great and I like the scale of the proposed development. I would prefer a more grid like layout to mirror the old Downtown area and improve the ease of wayfinding/navigation. Any reason for these building footprints at these angles? It appears most of this is in the floodplain, is it feasible?
Question 3: Do you have any thoughts about the Draft Future Land Use Maps?
All the open space planned looks amazing, and is needed. Density is also good to for areas close to town, single family houses wouldn't make sense within the Downtown area, so the higher density planned area look great.
These maps seem correct and logical

I would like to see the road grid improved to support additional growth- 40 is being widened but that will only sustain growth for so long. Improving connectivity with grid style networks off of 40 will support local commerce and residents.
Question 4: Do you have any comments on microtransit and/or parking?
More parking for River Walk District- parking structure
Old victory rd, Fraser valley pkwy, tubing hill rd(CR 72), east and west Eisenhower Dr, North and south Zerex St, and Norgren Rd will be important corridors, ensuring they have proper facilities for pedestrians and bikers will be vital. Encourage only Detached sidewalks, never ever allow an attached sidewalk to be installed within the town of Fraser, they are unsafe and outdated. — also make any new developers like those at grand park install sidewalks and paths on Both sides of the road, not just one, pedestrian facilities in Fraser are getting better but need improvement, even in the new grand park they are extremely lacking and reflective of how neighborhoods were built in the 60s - very car centric. proper pavement markings which is currently a issue(stop bars/crosswalks often not painted, painted turn arrows, etc) having larger paved multi use paths will be important, also always encouraging roundabouts in any new development or for intersection improvements far before signals or stop signs are looked at will benefit all who use the road and create a better environment with safer roads and more efficient traffic patterns. way finding is important too — signage on sidewalks will be great to direct pedestrians to where they want to go, the signs that are currently in Fraser are great! I know these aren't micro transit related issues but they are somewhat related as the road network they use needs to be robust and encourage all modes to use it. People will bike more and walk more if there's proper and safe facilities that are planned out very well. People will use the bus more if there's proper bus stops with lighting shelter, seating, and the most important part which is currently an issue in both Fraser and winter park- a sidewalk to reach the bus stops, many bus stops are literally just in the dirt. Even though it's a smaller town and not a city, it's helpful to be fair to all users and make the stops look cared for, maintained and not an afterthought, and be easy to access without having to walk across muddy grass. The current network is great and it hits important destinations, it may need to expand later in the future but overall the network is great considering it's a smaller town.
The microtransit option might be great, especially if the old town areas aren't part of the future plans to be more walkable.
"Micro transit seems like overkill given our bus system, it is pricey for the cost per trip (via is a great resource for costing this), I don't think it is worth the cost given our transit that exists. I would love to see improved bike connections that parallel an overall improvement in the roadway grid."

OPEN HOUSE 2 SURVEY RESULTS (IN-PERSON)

Vision & Goals	
Topic	Comments
Community	Who determines the aesthetics of Fraser's charm and mountain town vibe? How is the aesthetic enforced?
Land Use	Don't cause confusion on maps by inaccurate color coding of land uses No high density housing along River/Meadow north of town. Preserve River Front
Housing	Compost. Encourage recycling and reuse
Economic Development	
Sustainability & Natural Resources	Compost. Encourage recycling and reuse
Town Services & Infrastructure	Child care
Transportation & Mobility	How to take the train to ski and stay in town - how do I get around?
Parks, Recreation, Open Space & Trails	Dog park please
Intergovernmental Coordination	
Downtown Vision	Need shops and restuarants on Riverfront Town events - Monthly - Curb side, "Free day" for stuff, Builds community & brings in shoppers
Have We Missed Anything?	Child care is fundamental to growth Encourage, educate, support stated dark sky implementation. How about a compost area at the daop 2?

Downtown Vision and Goals			
DTV1	DTV2	DTV3	DTV4
Hourly rental bikes (Lime) no scooters! Pedestrian sidewalks	Coffee shops, restaurants with outdoor patios	Outdoor ice skating at Lions Club ponds. Ice castle at pond. Coffee shop, skate rentals, etc.	I do not want loud music and bright lights here ever!
Consider stop lights @ post office & Meadow Ridge with 25 mph through heart of Downtown	UPS store, pharmacy (like CVS), additional hair/nail salons, speciality grocery, "Farm Stop" with local grower/farmer offerings	Fountains, chimes, greenery, fire pits, patio festive lighting, seating - i.e. like Estes Park river walk.	Farmer's market, garden workshops, meet the local firefighters
Stop light on Eisenhower should be moved to end of town. Maybe by post office. We should not curb businesses in especially gas stations	Antique + Art stores	Picnic tables. Playground - fountains, swings, basketball, pickleball, bocce. Mini Golf	Craft Fairs
	important to have local shops	Art Center	Farmers markets
	No loud music from the tubing hill. No bright lights from the tubing hill		Monthly outdoor movies, rollerskating nights & ice skating, ice cream socials, s'mores nights, pickleball tournaments, fun runs, outdoor yoga, kite flying
	*Want class action lawsuit against Clark Development and tubing hill		
	Bakery, pharmacy, UPS		

OPEN HOUSE 2 SURVEY RESULTS (ONLINE)

Question 1: Do you have any feedback on the Community Engagement Themes or Open House #1 Findings?
No more commercial development - except for whatever is already zoned for that. Lower the commercial development height to maintain the mtn views and open vibe of Fraser. Less condo development - prefer townhomes and single family homes. Even in the affordable housing sector - people want homes they can own and they like single family homes. Need to make those affordable homes deed restricted forever so the town isn't having to redo housing again in 50 years.
I support the over arching theme of maintaining the mountain community “vibe” with emphasis on small business, The River walk district, recreation and open space
Like the overall direction
I attended both Open Houses and was disappointed to see so few attended. There were also fewer boards where people could make comments. Regarding the timeline--how many surveys do you want to receive prior to making decisions? Will you publish the results? And comments, too? The maps are dated and not accurate--really important to update before the survey. For example, the maps are misrepresenting land uses for Grand Park, Rendezvous and Foundry in their mapping which can cause a lot of confusion, misperceptions, misinterpretations and unrealistic expectations in the future. The new maps are a departure from previously approved Fraser maps that characterized Grand Park, Rendezvous and Foundry in one solid color, not defining specific land uses.
The town of Fraser seems to have conflicting goals when protecting our pristine valley’s natural resources. We as a town have fought the grand park development tooth and nail spending a million plus dollars of tax money in suits (one being lost, another still being adjudicated) despite being pre-approved to protect cozens meadow. This proposed plan seems to reflect a double standard with the town trying to place high density residential, a business district and a Downtown development authority all overlaid and next to the Fraser River with greatly reduced or no setbacks required. While we are excited to see the mobile homes go, the land should be protected in and around the river and let development occur in the grand park area that has been planned and approved for 20 years.
While the Community Engagement Themes appropriately emphasize public input and environmental stewardship, there appears to be a disconnect between community values and the proposed planning direction. Specifically, the strong public preference for preserving sensitive natural areas—such as the river corridor north of town—does not appear to be adequately reflected in the current draft. Community engagement is only meaningful if it informs the final plan in a transparent and consistent manner.

Your survey received a very low response rate. It strikes me as too low to merit consideration (even though I count myself among the 181 responses).
Question 2: Do you have any thoughts about the Draft Future Land Use Designations and Maps?
more conservation easements to protect the land and habitat for the animals and plants. I've seen the encroachment on the moose breeding and rearing habitat in Grand Park and it makes me sick to see those animals being pushed out. I want to see the town of fraser buy land to protect it from over development. I like the idea of more connected bike paths for all types of skill level. I've had friends ask for more pickball courts and that the pickballers don't like the Fraser Ice Box pickleball courts.
I did not see building height limits addressed. Maintaining visual open space and view sheds maximizes what is so very special about Fraser, the 360 degree beauty. Also new development can (and has) taken away views from existing developments and that should be considered and avoided.
Like the overall direction. Want to make sure that if the Fraser Valley Parkway comes to fruition, which I support, that there also is a safe bike route.
Making a high density residential zone next to the river goes against all logic and vision.
These maps are very misleading as there are very defined areas of the map (i.e. the northern part of town with high density and b district) that wouldn't change while large swaths of planned development (rendezvous and grand park) show designated open space/park areas (even including it in the riverwalk district? maybe its for mixed use?) that will very likely change. At the open house, the town planner very clearly stated (was in group discussion, another attendee asked specifically about these maps) that these maps reflect the 2005 maps. This was either intentionally said to mislead (lied about it) or was said without knowing the 2005 map (either are quite egregious). This doesn't seem to be the transparent nature the town manager has expressed in multiple interviews that the town is playing by and very misleading to the citizens, me included. The town is very specific in the proposed changes on the northern part of the map while designating open space and parks that are subject to change. Why can't I find anything on the towns site about this survey? Easily found on the consultant's site that was present yesterday. Why were we only informed 5 days before the open house? It didn't seem well attended and doesn't seem very transparent, particularly the 'affordable' SLL project.
The maps misrepresent land uses and will cause confusion with the public because they will think that all areas marked with a specific color key are set in stone. They will also think the areas in green are Parks/Open Space even if they are on private land.
The current draft map inaccurately represents land use designations for Grand Park, Rendezvous, and the Foundry by delineating specific land uses within areas that have historically been illustrated using a unified, consolidated designation. This deviation from previously adopted Fraser land use maps introduces a risk of confusion, misinterpretation, and the formation of unrealistic expectations among both the public and the development community.

There is a major discrepancy between the stated goals of increasing ease of walking and biking, on the one hand, while limiting high-density housing on the other hand. Most of the high-density residential areas are already built. First, as a resident of one of these areas, I would dispute that these are all appropriately categorized. You include multi-story apartment buildings and duplexes within the same land-use category. Those do not seem to me equivalent. Moreover, you can't increase ease of walking and biking relying on residential options that favor single-family residences in medium- or low-density areas. Nothing reduces use of private vehicles like high-density housing, especially if in mixed use buildings. Importantly, the existing high-density housing shown on your maps consists of Grand Park, none of which is mixed-use.
Question 3: Do you have any feedback on the Draft Vision & Goals? Please specify what vision and goal you have comments on.
All the open space planned looks amazing, and is needed. Density is also good to for areas close to town, single family houses wouldn't make sense within the Downtown area, so the higher density planned area look great.
I don't understand how you will protect the character of Fraser when there is so much development planned, seems like a huge hypocrisy. I'd like to see the Downtown riverwalk development to be small and impactful and focused in that area. Keep everything close together so that it is easy for people to walk around and explore.
There is a need for more restaurants and retail. Perhaps consideration of a store like Walmart should not be dismissed. We need retails for basic household goods and perhaps used furniture or other stores that is not expensive up scale hoity toity. We need a livable community.
Like the overall direction
I agree with the vision, but is it realistic? Based on my experience, the town will have to expand their staff considerably to execute to these goals. Where will the money come from???
The town seems to really push back on other development while they (the developers) have brought a hospital to the valley (one of the goals outlined in TSI), provided massive infrastructure investment to the town in the way of water treatment facility, built the last deed restricted property in the county right outside of Fraser amongst other much needed amenities and not at the taxpayers expensive (such as the proposed SLL). Very confused about what the town of Fraser's stance is on development. We fight it on the one hand while propping it up as the most needed thing on the other.
Regarding land use, it is a travesty to have the north end of town be developed as high density real estate. Public sentiment was clear to preserve the river area. It is also a double standard because Fraser is fighting development in the Grand Park meadow that already has conservation protections but is actively planning dense development on even more sensitive river front property with no protections or open space allocated.

The Draft Vision outlines commendable goals such as responsible land use and environmental sustainability; however, these objectives are undermined by proposed land use designations that contradict them. For instance, planning high-density development along an ecologically sensitive river corridor directly conflicts with the vision of environmental stewardship. Consistency between stated goals and actual implementation is essential to the plan's credibility.
Courts designated for Pickleball. Official courts
Question 4: Do you have any comments on the Draft Downtown Vision & Goals? Please specify what goal you have comments on.
I'm worried about the impact on the Fraser river habitat. And the height of those buildings destroying the mountain views. We might as well be on the front range. Need lots of green spaces here so it doesn't look like a concrete hell. I would suggest a few pocket parks with grass and trees and flowers. And can you make the railroad crossing safer for bicycles and pedestrians? There is a narrowing of the road there and it is an accident waiting to happen.
I think it looks good!
Like the overall direction. Wondering if another traffic light will be needed on Park Ave or the North end of town. And what the long term plan is for the post office.
Unsure why the town doesn't want to leave the development where it has been approved for 2 decades and now double the development by placing a heavy emphasis on the northern part of town and on the pristine shores of the Fraser River. Isn't the corridor to town from the south where we get 20k cars per day coming from that direction during peak season? The only time people come from the north to enter Fraser is on their way out, back to their originating destinations. At least from what can be garnered from Sundays as traffic backs up on the flats. It is important to revitalize the Downtown Fraser area as it's been an eyesore for a long time. It is nice to see the distillery and simple buildings go up although the approved designs don't really match the character well. Wonder what the simple coffee building aesthetic will look like in 40 years?
It seems like the maps are deliberately omitting the high-density plan on the north end of town.
The Draft Downtown Vision outlines commendable goals such as walkability and community vitality; however, these must be pursued alongside a consistent, town-wide application of land use principles. Planning decisions affecting sensitive areas outside the Downtown core—particularly when they appear to favor certain developers—undermine public trust and the integrity of the vision. Consistency in standards is essential to achieving a cohesive and sustainable future for Fraser.
Will there still be a trail linkage from the bridge from Wapiti Meadows to Downtown Fraser? Doesn't appear to be one on the map.
Add designated pickleball courts to the recreation plan.

DTV 1 - I'd love to see dedicated bike paths and interconnected walking paths. I love this vision for Downtown that makes Fraser a destination rather than a drive through. Great idea to focus on the river!
Regarding DTV1, the most valuable addition to Downtown would be to slow through traffic significantly or reposition vehicular traffic away from pedestrians, bicyclists, and commercial establishments. Regarding DTV2, businesses that support the outdoor activities that are available in the Fraser Valley plus high-quality food and drinking establishments. Regarding DTV3, the key is to seamlessly connect the river to Downtown such they are not distinct. To do this, commercial establishments should face the river with exterior that make the river visible as well as plentiful outdoor seating. In addition, the town should raise the attractiveness of the river by developing seating and walking/biking trails along the riverfront.
For the Riverwalk District, I would like to see a stronger articulation of a common parking solution that encompasses things like the train station, the Arts Center, and the hospitality and retail areas that are contemplated. As some of these things are nearing reality, the uncertainty (and burden) on these entites makes it harder to plan and make them reality. If there were a clear solution proposed, that would be helpful.

Community Engagement Themes or Open House #1 Findings
it seems these challenges have been created by the town by being so staunchly against adding units that serve local populations for decades while blaming developers who solve this problem by adding to the supply. Increased housing supply will reduce the cost of housing. if the full projects that are already preapproed are realized , housing costs will go down as free markets come into play. no chance country haus can charge 2k for a 1 bedroom if having to compete with newly built units
it seems these challenges have been created by the town by being so staunchly against adding units that serve local populations for decades while blaming developers who solve this problem by adding to the supply. Increased housing supply will reduce the cost of housing. if the full projects that are already preapproed are realized , housing costs will go down as free markets come into play. no chance country haus can charge 2k for a 1 bedroom if having to compete with newly built units
Why would we say we want to preserve open space while proposing high density residential and b districts on the shores of the fraser river where open space exists? the hypocrisy is dizzying and already have a plan for massive development up-valley. is fraser becoming like the developers we fought so long to keep at bay? very confusing with this new plan bolstering heavy development on pristine natural resources

Totally agree with the above comments
Future Land Use Map and Designations
Why high density so close to the Fraser River? This goes against the vision and community input.
this looks nothing like the 2005 maps, where did the town planner get this information
It looks like the existing Fraser-Granby trail will be part of the Fraser valley parkway from the ball fields to Tabernash. That isn't conducive to walking or biking away from traffic. not a fan of losing the trail.
Draft and Vision
Where will additional bike/pedestrian lanes or trails be located? The proposed Fraser Valley Parkway route seems workable except for the loss of that portion of the Fraser-Granby trail. Will it be relocated? Maintained as a safe bikeway through that area?
Land Use: Don't put high density housing on the most valuable, pristine riverfront property and not put any open space around it. This section of the river on the north end of town should be preserved or developed in a way that honors and respects the land. LU4: Aligning development codes, policies, and process should mean being consistent with the demands placed on other developments. It's contradictory to plan high density development on the north end of town on the river while fighting development in other areas of Fraser.
interesting perspective...i will be sure to attend the board meeting regarding that project
Yes, the St. Louis Landing project is a joke! There were supposed to be buildings there this summer. The financing is not final, it's no longer affordable, the units will be cheap and developers are dishonest. Fraser deserves better.
How are you planning for wildlife corridors/crossings to improve connectivity in habitat while promoting safety for both drivers and animals?
This all looks fine, but ambitious. Does the town have resources to do all this? I don't think so. Look at the St. Louis Landing debacle. It's an example of what happens when well meaning people don't have the experience to manage a massive project.

Housing: Keep government out of development because you don't know what you're doing. The St. Louis Landing project is the most mismanaged project in the Valley. It should be called Unattainable Affordable Housing because nobody who needs it will be able to afford living there. If more housing development is slated, leave it to the people that have experience.
the TSI slide should be omitted seems to have been solved in every way by current development; massive private investment in municipal water system, private investment in bringing the new middle park health campus to fraser ...surprising the town doesnt want private equity to maintain the towns muni systems as well
Draft Downtown Vision and Goals
The Downtown vision and goals map is pretty, but it completely omits the most offensive part of the plan which is to put high density housing on the river north of town by St. Louis Landing. Why would this critical element of the plan not be represented?

FRASER FORWARD

COMPREHENSIVE PLAN

FRASER

TOWN OF FRASER
ORDINANCE NO. 532
Series 2026

AN ORDINANCE APPROVING AND ADOPTING THE FRASER FORWARD COMPREHENSIVE PLAN (MASTER PLAN) FOR THE TOWN OF FRASER AND SUCH ADDITIONAL TERRITORY AS INCLUDED THEREIN, AS AUTHORIZED BY COLORADO REVISED STATUTES, AS AMENDED, SPECIFICALLY TITLE 31, ARTICLE 23, PART 2

WHEREAS, the Planning Commission and Board of Trustees of the Town of Fraser are authorized to adopt a Comprehensive Plan (Master Plan), pursuant to C.R.S. 31-23-206, as amended, for the physical development of the municipality, including certain areas outside its boundaries; and

WHEREAS, the Planning Commission has prepared an amended Comprehensive Plan after making careful and comprehensive review and evaluation of present conditions and future growth of the Town of Fraser, with due regard to neighboring territory; and

WHEREAS, said amended Comprehensive Plan is intended to replace the Town's current Comprehensive Plan, as previously adopted and amended; and

WHEREAS, the Planning Commission has conducted one or more public hearings, duly advertised as provided by law, at which were considered public comments; and

WHEREAS, the Planning Commission has properly adopted such Comprehensive Plan and recommend to this body that it adopt it as the Town of Fraser Comprehensive Plan; and

WHEREAS, the Board of Trustees has reviewed said plan and has concluded that the same should be adopted as the Comprehensive Plan for the Town of Fraser.

NOW THEREFORE, BE IT ORDAINED BY THE BOARD OF TRUSTEES OF THE TOWN OF FRASER, COLORADO, THAT:

PART 1: ADOPTION OF PLAN

Section 1. The foregoing recitals are incorporated herein as conclusions, facts, determinations, and findings by the Board;

Section 2. The Board of Trustees hereby finds that the Town of Fraser Comprehensive Plan (including all maps and descriptive and other matter contained therein), as adopted and certified by the Planning Commission of the Town of Fraser pursuant to Planning Commission Resolution No. 2026-01-02, was made and adopted as the amended Comprehensive Plan (Master Plan) for the Town of Fraser in accordance with the laws of the State of Colorado (specifically Colorado Revised Statutes, Title 31, Article 23, Part 2, as amended).

Section 3. The Board of Trustees further finds that said Comprehensive Plan was

made with the general purpose of guiding and accomplishing a coordinated, adjusted and harmonious development of the municipality and its environs which will, in accordance with present and future needs, best promote health, safety, morals, order, convenience, prosperity, and general ware, as well as efficiency and economy in the process of development, including, among other things, adequate provision for traffic, the promotion of healthful and convenient distribution of population, the promotion of good civic design and arrangement, wise and efficient expenditure of public funds, the adequate provision for public utilities and other public requirements, and the promotion of energy conservation.

Section 3. The said Comprehensive Plan is hereby adopted as the amended Comprehensive Plan (Master Plan) for the Town of Fraser, and said Comprehensive Plan, as amended, is hereby certified to apply to all territory within the boundaries of the Town of Fraser and to those areas outside the Town as provided by C.R.S. 31-12-105(1)(e).

PART 2: REPEAL. Any and all existing ordinances or parts of ordinances of the Town of Fraser covering the same matters as embraced in this Ordinance are hereby repealed and all ordinances or parts of ordinances inconsistent with the provisions of this ordinance are hereby repealed; provided, however, that such repeal shall not affect or prevent the prosecution or punishment of any person for any act done or committed in violation of any ordinance hereby repealed prior to the taking effect of this Ordinance

PART 3: SEVERABILITY. If any section, subsection, sentence, clause or phrase of this Ordinance is, for any reason, held to be invalid or unconstitutional, such decision shall not affect the validity or constitutionality of the remaining portions of this Ordinance. The Town of Fraser hereby declares that it would have adopted this Ordinance, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases thereof be declared invalid or unconstitutional.

PART 4: EFFECTIVE DATE. This Ordinance shall take effect thirty (30) days after passage, adoption and publication thereof as provided by law.

PART 5: PUBLICATION. This Ordinance shall be published by title only.

READ, PASSED, ADOPTED AND ORDERED PUBLISHED BY THE BOARD OF TRUSTEES AND SIGNED THIS 18TH DAY OF FEBRUARY, 2026.

Votes in favor: ____
Votes opposed: ____
Votes abstained: ____

BOARD OF TRUSTEES OF THE
TOWN OF FRASER, COLORADO

BY: _____
Mayor

(S E A L) ATTEST: _____
Town Clerk

Published in the *Middle Park Times* on_____.