City of Littleton

Littleton Center
2255 West Berry Avenue
Littleton, CO 80120

Meeting Agenda - Final

City Council

Tuesday, May 20, 2025 | **6:30 PM** | **Council Chamber**

Regular Meeting

1. Roll Call

2. Pledge of Allegiance

3. Approval of Agenda

4. Proclamations

a) ID# 25-131 Mayoral Proclamations

Attachments: 1. 2025 National Public Works Week

5. Public Comment

If you wish to address city council under Public Comment, please sign-in on the public speaker form before the call to order for this meeting. Public Comment is an opportunity to express opinions regarding issues that are not part of public hearings on tonight's agenda; a separate opportunity will be provided for comment for any public hearing. Each speaker is limited to three (3) minutes. We expect comments to be civil. Disrespectful or disruptive behavior will not be tolerated. The city council is not authorized under the Colorado Open Meetings Law to discuss, comment, or take action at this meeting on any issue raised by public comment that is not part of tonight's agenda. The Mayor may refer the matter to the city manager and/or city attorney for immediate comment after Public Comment, or to staff to obtain additional information and report back to council as appropriate.

6. Comments / Reports

a) Council Members

b) Mayor

c) City Manager

d) City Attorney

7. Scheduled Appearances - None

8. Consent Agenda Items

Consent agenda items can be adopted by a simple motion. All ordinances must be read by title prior to a vote on the motion. Any consent agenda item may be removed at the request of a council member.

a) ID# 25-120 Motion to Adopt the Arts & Culture Community Strategic Plan

Attachments: 1. Arts & Culture Community Strategic Plan

b) Resolution 41-2025 Resolution 41-2025: Approving a Construction Contract with Silva Construction, Inc. for the Euclid Avenue Improvements Phase 1: Elati Street to Cherokee Street, City Project No. 23-03

Attachments: 1. Resolution No. 41-2025

2. Construction Contract_Euclid Ave Improvements

c) Resolution 46-2025 Resolution 46-2025: Adopting the Flood Hazard Area Delineation study "Dad Clark Gulch FHAD Floodplain Development Permit", dated December 2024

Attachments: 1. Resolution No. 46-2025

2. Designation of Dad Clark Gulch to CWCB

3. CWCB Agenda Item/FPR

4. Santa Fe Park_Dad Clark Gulch Floodplain Development Permit Memo

d) ID# 25-116 Motion to approve Council recommended appointments to the 2025-2026 Charter Review Committee

Attachments: 1. Charter Review Committee_Recommended Appointees

e) Resolution 54-2025 Resolution 54-2025: Approving an IGA between the Colorado Department of Human Services and the Littleton Police Department for Co-Responder Programs

Attachments: 1. Resolution No. 54-2025

2. IGA - LPD Co-Responder Program Grant

f) Resolution 45-2025 Resolution 45-2025: Approving a Construction Contract with TAK Broadband, LLC for the Littleton Boulevard Fiberoptics Installation for Traffic Operations Project, City Project No. 21-37

Attachments: 1. Resolution No. 45-2025

2. Construction Contract_TAK_Fiberoptics

g) ID# 25-133 Motion to approve minutes of the May 6, 2025, regular city council meeting

Attachments: 1. 05-06-2025 CC Minutes_DRAFT

9. General Business

a) Resolution 55-2025 Resolution 55-2025: Approving a contract with Studio Tectonic LLC for the design phase of the revisioning and expansion of the History Gallery in the Littleton Museum

Attachments:
1. Resolution No. 55-2025
2. PSA_Studio Tectonic LLC
3. Presentation_Res. 55-2025

b) Resolution 34-2025 — Resolution 34-2025: Approving a construction contract with Wild at Heart Investments, LLC dba TALL Contracting & Consulting Co. for the Mineral Mobility East Improvements Phase 1 Project, City Project No. 21-39

Attachments:
1. Resolution No. 34-2025
2. Construction Contract
3. Contract Exhibit E
4. Contract Exhibit F1
5. Contract Exhibit F2
6. Project FAQs
7. Presentation_Res. 34-2025

c) Ordinance 09-2025 — Ordinance 09-2025: An ordinance on first reading approving code text amendments to Title 10, the Unified Land Use Code related to Accessory Dwelling Units (ADUs)

Attachments:
1. Ordinance No. 09-2025
2. PC Resolution No. 02-2025_Signed
3. 2025 ULUC Public Comments
4. Presentation_Ord. 09/10, 2025_ULUC Updates

d) Ordinance 10-2025 — Ordinance 10-2025: An ordinance on first reading approving code text amendments to Title 10, the Unified Land Use Code related to the 2024 Legislative Updates

Attachments:
1. Ordinance No. 10-2025
2. PC Resolution No. 03-2025_Signed
3. 2025 ULUC Public Comments

10. Ordinances on Second Reading and Public Hearings

Speakers wishing to address council as part of a public hearing will be limited to three (3) minutes and will be called upon when the mayor opens the public comment portion of the hearing.

a) Ordinance 04-2025 — Ordinance 04-2025: An ordinance on second reading amending Ordinance No. 23, Series of 2024, appropriating funds for the 2025 Annual Budget for all municipal purposes of the City of Littleton, Counties of Arapahoe, Douglas, and Jefferson, State of Colorado for the fiscal year beginning January 1, 2025, and ending December 31, 2025

Attachments:
1. Ordinance No. 04-2025
2. 2024 CarryOvers and Other Adjustments - General Government
3. Presentation_Ord. 04/05/06-2025_Budget Amendments

b) Ordinance 05-2025

Ordinance 05-2025: An ordinance on second reading of the City of Littleton, Colorado as the governing body of the City of Littleton Sewer Utility Enterprise, amending the 2025 Sewer Budget

Attachments:
1. Ordinance No. 05-2025
2. 2024 CarryOvers and Other Adjustments - Sewer Fund

c) Ordinance 06-2025

Ordinance 06-2025: An ordinance on second reading of the City of Littleton, Colorado, as the governing body of the City of Littleton, Stormwater and Flood Management Utility Enterprise, amending the 2025 budget

Attachments:
1. Ordinance No. 06-2025
2. 2024 CarryOvers and Other Adjustments - Stormwater

11. Adjournment

The public is invited to attend all regular meetings or study sessions of the city council or any city board, commission, or committee. Please call 303-795-3780 at least 48 hours prior to the meeting if you believe you will need special assistance or any reasonable accommodation in order to attend, or participate in, any such meeting. For any additional information concerning city meetings, please call the city clerk's office at the above referenced number.

PUBLIC COMMENT

Public Comment is an opportunity to express opinions on any topic, whether or not it appears on the agenda. Items on the agenda under "Ordinances on Second Reading and Public Hearings" will have a separate speaker sign-up sheet. We expect comments to be civil. Disrespectful or disruptive behavior will not be tolerated

Each speaker is limited to 3 minutes

Tuesday, May 20, 2025

PRINT NAME	DISTRICT	ADDRESS	EMAIL	SUBJECT
1. MARC FLINK	3	[redacted]		
2. Don Sims	4			
3. Cory Palmeiro	4 ~~3~~			
4. Duane + Pam Duffy				
5. Pat McCall	3			
6. Paula Compston				
7. DAVID ORTIZ	2			
8. Gregory Sullivan	4			
9. Dee Boehm	2			
10. Ned Sterne	4			
11. Tammy Whitley	4			
12. Ed Carr	2			
13. Bob Hercher	4			
14. Pam Chadbourne	1			
15. John Marchetti	4			

Miriam

To Address Approved Plan Oversights by Correcting Plan Omissions—

Courageously Proactive Council Intervention with Funding Partners is Needed

Littleton City Council Meeting—May 20, 2025

Don Bruns, Littleton, District IV: retired outdoor recreation planner.

Introduction

Too often, facility planners focus only on activities. The approved *Mineral Spur Trail Plan* does just that—in this case, on walking, riding and running activities.

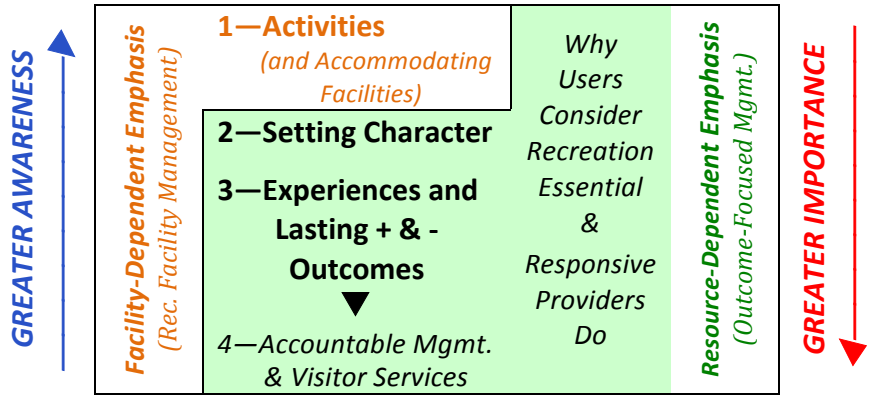
But that ignores citizen and participant desires for landscape settings *and* both immediate recreation experiences and more lasting beneficial and adverse outcomes thereby generated. And this is where trail alignment, trail surfaces and trail width comes into view.

I spoke about this two weeks ago in narrative form. Although you heard what is at stake if the approved plan were to be implemented without modification, it didn't appear that gained Council's attention.

So here is our challenge. Experience demonstrates that recreation activities and facilities are uppermost in the minds of most people. Yet many are less aware of outdoor recreation's the most important elements—and parks and recreation administrators even more so.

What is most important then appears less well-understood by those who should know. Especially recreation planners. And if engineers design trails without understanding recreation, bad things happen. And certainly, overseeing public sector administrators need to be aware of these realities in order to act more responsively to citizens.

In all cases, these interrelationships do not readily fall into your lap—and for too many facility planners, designers and administrators in particular. And although participants experientially know recreation's essential value of recreation they still struggle to articulate to providers and policy makers what specifically matters most to them. The *"The Recreation Demand Hierarchy"* helps illustrate:



Virtually everyone is conversant about recreation activities due to their ***greater awareness***. Nonetheless, all four element of this hierarchy are of ***greater importance***. And the Mineral Spur Trail plan reveals that planners appear to have ignored all these dimensions.

The contrast between nos. 1 and 4 could not be greater. Facility-dependent providers cannot avoid being held accountable to responsively care for settings and condition visitor services simply by hard-surfacing more intensive use areas. ***Because maintenance of all settings to optimize beneficial outcomes and minimize adverse end-results is required of all truly responsive recreation providers.***

Problems and Missed Opportunities Summarized

Page 2 of this paper selects ten of the most pressing items that several people discussed in walking the Mineral Spur Trail within the last month with an experienced trail planner. Therein are briefly summarized the approved plan's missed opportunities and consequent problems in that table's left-hand column. Remediating modifications that could be made for their resolution appear on the right. Details are illustrated pictorially on pages 3 and 4.

Problems, Opportunities and Solutions Summarized



	Essential Considerations: Opportunities & Problems Overlooked	Resolving Plan Modifications
East of Jackass Hill Rd.	**1**—Providing both parallel crusher fines & hard surface trails	**1**—Avoid covering all available space with approved 16’ hard surface
	2—A 16’ concrete trail would not fit the open space setting, meet trail user desires, and is too distant to advance transp. mobility	**2**—Modify design to build a narrower actual hard surface trail in the space between Mineral and the existing crusher fines Spur Trail
	3—The approved all-concrete replacement would break Highline Canal-to-Mary Carter Greenway crusher fines user connectivity	**3**—Redesign to fit both the existing crusher fines trail and a parallel hard surface serving both user clienteles within the same space
	4—Degradation of Mineral Gulch’s open space character	**4**—Retention of Mineral Gulch’s desired open space character
	5—Loss of valued recreation opportunities & adverse health impacts	**5**—Sustainability of open space production of value added benefits
	6—Unnecessary and wasted spending of public funding	**6**—Reprogram saved dollars to meet real public needs
West of Jackass Hill Rd.	**7**—Sidewalk off-of Mineral is unusable when snowplowed under	**7**—Reposition sidewalk further North
	8—Sidewalk exposure to Mineral traffic is a safety hazard	**8**—Plant greenery in vacated space to buffer vehicles and pedestrians
	9—Unsurfaced descent from W. end of Spur Trail to Light Rail	**9**—Add crusher fines surface below W. end of Spur Trail to Light Rail
	10—Portions of this crusher fines trail segment are not maintained	**10**—Restore and maintain crusher fines surface

Mineral Spur Trail Segment East of Jackass Hill Road

Viewing Southeasterly



Item 4 *illustrates why. . .* ➔

- Retention of Mineral Gulch's desired open space character would maintain its productive capacity to generate desirable resource-dependent recreation opportunities,
- Eliminating the need for yet another retaining wall, and
- And it would also avoiding unnecessary expenditure of more public funding.

Item3 *shows that. . .*

- A hard surface trail that fits this open space setting would readily fit within this space and could be aligned to fit within existing tree cover, slowing down cyclists.
- Thereby users of both kinds of trails would be served, all

🡐 **Items 1 & 2** *explain that. . .*

- Instead of covering up the existing crusher fines trail with an inordinate 16 ft. wide concrete surface, an actual hard surface trail could easily be inserted between the exisiting crusher fines trail and Mineral Ave.
- This would simultaneously serve existing crusher fines trail users and accommodate new hard surface recreation.
- And it would also avoid debilitating adverse impacts of a hard surface only trail to runners—as designed in the approved plan.

the way from Highline Canal-to-Mary Carter Greenway.

Mineral Spur Trail Segment West of Jackass Hill Road

Looking Westerly

Item 9 *points to a need for. . .* ➔

- Installing a crusher fines surface to stabilize a safe decent from the crusher fines surface of Mineral Spur Trail's west end to connect with Mary Carter Greenway opposite the Light Rail.

Items 7 & 8 *show how. . .* ➔

- The sidewalk's adjacency to Mineral Ave. is a safety hazard and. . .
- Becomes impassible when winter season snowplows shove snow and ice from onto it.
- By relocating the sidewalk further north *(i.e., to the right in this image)*
- And planting trees and associated greenery within the vacated space, vehicular traffic would be buffered from both pedestrian and cyclist sidewalk travel.



➔ **Item 10** *points to the need to. . .*

- Restore and maintain the crusher fines surface of Mineral Spur Trail's westernmost segment.
- This is presently being neglected.

January 6, 2025

Mayor Schlachter and City Council
City of Littleton
Littleton, Colorado

Re: Proposed Residential Zoning Ordinance Amendment

Dear Mayor and Council:

After 20 years of service in various capacities representing the city of Littleton as Planning Commission Chair, Transportation Mobility Board Chair and RTD elected Board Representative from 2009-2016, I am concerned with the changes proposed in the residential zoning code. I served as the director of Planning and Community Development for the City of Aurora in the early 1980's and during my time there, I managed the revisions of the residential and industrial zoning codes. I mention all of this to provide some understanding of my background and experience to provide a perspective on the proposed amendments.

I come here on January 7, 2025, not to support or condemn the zoning ordinance amendment but rather to ask you some questions for your thought and deliberation as you review the proposal on its final reading and public hearing.

We all remember the universal land use legislation proposed at the state level two years ago. It was resoundingly defeated. The Governor of Colorado and his advisors and supporters decided to break up the original proposal into smaller and more palatable pieces and the Auxiliary Dwelling Unit piece was passed and required local governments to adopt it. This was a divide and conquer strategy and it worked.

What you are looking at tonight is in major part a product of that effort on the part of the State of Colorado to interject itself into local land use controls. My sense is that what you are attempting to adopt tonight is the shiny new object as a solution to a perceived 6000 housing unit deficiency from the study completed by the consulting firm BBC in the previous decade where I served on the committee. The shiny new object must be good to solve our deficiency, so let's get it approved.

In the very limited study session, the City Council and your Planning Commission had in the early fall and final vote by the Planning Commission on the proposal in November, was there ever a review by the Community Development Department staff to consider the following:

1) Review by builders and developers on the cost of construction.
2) Review of the costs for permitting, water and sewer taps, electrical and gas service and overall engineering issues.
3) Review by financial institutions relative to lending requirements.

I know the issue of affordable housing is critical and front and center in your minds. However, from my perspective this effort has nothing to do with affordable housing. Look at affordable for-sale housing being built by Toll Brothers for new attached products at Park Vue in Littleton at the southwest corner of Santa Fe Drive and Mineral Avenue. The new product starts at $600,000 to $700,000 as an example.

I am an incrementalist, could it be less universal in application and are there other options that could be considered as well? Is this a rush to judgement?

You should all remember that during the efforts to update and adopt the new Comprehensive Plan and to complete the Universal Land Use Code update, the key issues discussed were areas of change and areas of stability. Areas of change were the major transportation corridors and areas of stability were the various and different more internal residential neighborhoods. Many of the present staff and City Council members were not participants in these discussions and the staff has been very new in the last two years.

There are intended consequences to decisions but have you and your staff looked at and evaluated the unintended consequences of your decisions.

Should this very important issue have more thorough analysis presented to you and the citizenry of Littleton before making the final decision?

Many of the Littleton staff and City council will not be in leadership positions in 5-10 years when the results of the decisions you are to make tonight are actualized.

Please give this some thought.

Thank you for your attention.

Sincerely Yours,

Kent Bagley
1467 West Briarwood Ave.
Littleton, Colorado, 80120

PUBLIC COMMENT MAY 6, 2025 w/addendum

Note: The following comment has been expanded as the 3-minute time limit does not allow for presentation of sufficient information. Also, an addendum to address the statement by Councilperson Barr has been provided.

My name is Steve Lowry, District 4.

Now that we have been able to review additional documents related to the Mineral Spur project, I would like to clarify a few items.

First, the Mayor's statement on April 15 where he said: "One of the biggest things we have to do as a council is look for the greatest good for the most number of people in our community". In the case of the Spur Trail, this implies that a 16-ft wide concrete trail would somehow serve the most people. However, this is incorrect. Case in point is a representative email to Council members on March 12 from a local runner named Michelle who said: "If you insist on turning the trail into all concrete, this will effectively stop me and most other runners from using it."

So while there may be a very few persons who would begin using the trail if it was 16-ft wide and made entirely of concrete, it is much more likely that many more current users would no longer use this trail.

Second, a review of the City's application to Arapahoe County Open Spaces dated April 2023 contains several incorrect or questionable statements. For instance, the application states there was no opposition to the project when earlier public comments had clearly been opposed to a concrete trail. The letters in favor of the project that were supposed to come from the general public only came from current or past members of the Transportation Mobility Board and as we have recently learned, may not have fairly represented the view of the TMB at that time. The application also made it clear that if funds for the paving were not available, the paving could be "tabled", i.e. the paving is considered as an independent part of the project and not bundled with the other work as has been repeatedly stated by city staff. Additionally, the City has not complied with some terms of the agreement, such as having public engagement once the 90% design was completed. Along with other inconsistencies and incorrect statements in the Application, we feel there are enough reasons for ACOS to consider revoking their grant of $562k.

Third, The City's first application to CDoT in 2020 included several statements that appear to be highly exaggerated or just plain incorrect. For instance, the Application says access from the "east of Jackass Hill is essentially impossible without a car". Not accurate. It also assumes, wrongly, that a crusher fines surface is not ADA compatible. The application also clearly indicates the paving is an independent component and not an integral part of the other work regarding Jackass Hill St and Mineral Ave. In the section on pedestrian and bicyclists use before and after the project, the very minimal increase in usage is due only to population increase and not to the project itself. The application also states there are 27 health facilities within the project area, an obvious misstatement. The application does not indicate the proposed width of the trial or the material, only that the existing trail would be paved. Looking at the application in total, it is questionable if the justification given for the project accurately reflected the situation on the ground, especially with regard to paving of the trail. Again, if this project is constructed as currently planned, these issues could arise when it comes time for CDoT to consider reimbursement of $1.6M of funds to the City.

Addendum to address Councilperson Barr's statement following public comment.

At the Council meeting on April 15, 2025 the Mayor made a statement about the need of Council to listen to other members of his constituency, which is fair enough. This logically raised the question of which of his constituents might be in favor of the full 16-ft of concrete and for what reasons. Barr's response focused on ADA compliance which implied that he, and other Council members, had heard from people supporting the 16-ft width that were concerned about ADA compliance. I, and the rest of the public opposing the full 16-ft width of concrete are also concerned about ADA compliance. The ADA requirements for compliance are met by a properly constructed and well-maintained crusher fines trail. The ADA requirements would also be met by a dual surface trail where users have the choice of either crusher fines or concrete – just as they do on the Mary Carter Greenway and other similar trails.

As a civil engineer who has designed and managed projects since the ADA came into effect in 1990, I am concerned that the proposed design contains a feature that has <u>not</u> been shown to be ADA compliant. That feature is the 1-ft wide concrete buffer with a "heavy rake" surface. The City's specifications for the project do not define what this surface would be, only that it would be detectable by persons who are visually impaired. At the pre-bid conference the bidders asked for more clarification and were told by the City that this would be determined at the pre-paving conference after the project is awarded. In other words, the City is not sure what this surface would be and therefore this is an experimental surface treatment. The standard ADA treatment for a detectable warning, per the U.S. Access Board's Detectable Warnings Update of March 2014 is truncated domes to "indicate the boundary between pedestrian and vehicular routes where there is a flush … connection". I cannot find any reference to a "heavy rake" surface treatment in the ADA regulations. I did meet briefly with Julie Deden, the Director of the CO School for the Blind, on this issue. She was of the opinion that graduates of the school would be able to detect the difference in surface treatment with their canes. This is an insufficient answer in terms of providing the level of safety called for by the ADA. Please note that In this particular case, visually impaired walkers going east bound uphill will be within 1 ft of west bound cyclists moving at high speed as they descend the trail. Any minor deviation by a walker into the path of a cyclist could have serious consequences for all involved. In essence, the proposed 1-ft concrete buffer will be experimenting with the "heavy rake" surface using trail users as the subjects. This is not a good practice and should be revised. The dual surface trail with a grass 1 or 2-ft buffer as used by the majority of trail designers would avoid this issue entirely.

Mr Barr's interpretation of our request to learn more about the reasons for persons preferring the 16-ft wide trail is misguided and borders on being disrespectful. People proposing the full width of concrete are free to make their position known, either as part of public comment or directly to council members or to staff. And it is quite proper for us to ask why these people support a full width concrete trail over either the current trail or a dual surface trail, either of which can be ADA compliant. As reported in the poll done on Next Door, about 15% of the respondents indicated a preference for the full concrete option, so there has never been a denial that a minority feels this is a preferred option. However, as noted above, to meet the Mayor's stated objective of safely serving the largest number of people the use of a dual surface trail makes the most sense.

From: [redacted]
To: Geoffrey Selzer
Cc: Derrik Mills; khonecker@littletonco.com; Matt Duff; David Evans; Michael Gloden; [redacted]; Kyle Schlachter; Stephen Barr; Patrick Driscoll; Pamela Grove; Andrea Peters; Joel Zink; Colleen Norton; Mike Gent; Jim Becklenberg; Dan Radulovich; [redacted]
Subject: Public comment for Transportation Mobility Board May 15 2025 Meeting and City Council May 20 2025 Meeting re Jackass Gulch Trail aka Mineral Avenue Trail aka Railroad Spur Trail
Date: Thursday, May 15, 2025 12:10:37 PM

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Mr. Selzer et al
Since I have not yet heard back on my inquiry as to whether there will be an opportunity to provide public comment at this evening's meeting, I wanted to provide you with an expanded version of the information that I would present. I am copying other members of the Transportation Mobility Board (TMB) and City Council members and certain staff.
I also am copying Tom Grant and Dan Radulovich as my comments relate in part to their conduct as past members of the TMB. Emails have been sent to Mr. Grant and Mr. Radulovich seeking their explanation of the origins of their letters. To date, no response has been received from them. They are again asked for their input by copy of this email.
The facts and information set forth herein were gleaned from the Meeting Minutes, summaries of meetings, and documents presented at TMB meetings that are publicly available at https://www.littletonco.gov/Government/Meetings/TMB-Mtgs?dlv_CoL%20-%20CL%20Public%20Meetings%20-%20All%20RELATIVE=(pageindex=5). Not all meetings from inception to present are available online.
If any of the inferences I have drawn from the TMB related documents available online are incorrect in any way, I request that those with first-hand knowledge of the events provide their recollections.

1. **In October 2019, Littleton's Transportation Master Plan (October 2019) ("TMP") Did Not Propose Any Project For The Jackass Gulch Trail**

The TMP identified 87 proposed projects in Table 16 in the TMP's Active Transportation chapter. Included amongst the Mineral Corridor projects were (1) Bicycle intersection improvements at Jackass Hill Road/ Long Ave. and Mineral Avenue [project 37]; (2) grade separated at Mineral Avenue and Peninsular Dr/High Line Canal Trail [project 45]; (3) protected bicycle intersection at Southpark Lane and Mineral Avenue [project 54]; (4) protected bike lane on Mineral Ave from Jackass Hill Rd to Broadway [project 73]; (5) shared use path between Santa Fe Dr and Jackass Hill Road [project 82].
The TMP did not identify or propose any project for the Jackass Gulch Trail between Jackass Hill Road and the Highline Canal Trail. This was not a mere oversight. The Jackass Gulch Trail is primarily a recreational trail. There is not a single home within the ½ mile Mineral Station walkshed examined in the TMP that can utilize the Jackass Gulch trail to access the Mineral Station.

A. The Transportation Mobility Board's ("TMB") November 2022 Questions

About the TMP.

At its meeting on November 17, 2022, the TMB asked questions concerning the TMP. Two of those questions involved the ½ mile walkshed and public engagement.

"Page 101 – Need to update some of the stats, example: Is it still accurate to say that 88.6% of Littleton households live within a ½ mile walk of bus or light rail considering that many bus routes have closed."

"Page 108 – Policies – Is it appropriate to add here that Littleton will also commit to engaging public opinion, comment, and guidance on transit needs and concerns.?"

B.The March 2023 Littleton Linkages Transportation and Mobility Study Does Not Even Mention or Identify the Jackass Gulch Trail – TMB Member Discussion Generally Supports Preserving Recreational Trails

At the TMB's March 2023 meeting the Littleton Linkages Transportation and Mobility Study was presented. The Study Focus was to "Identify issues/opportunities of the local trail network § Develop prioritized, map-based project list • Existing trail improvements • New trail connections • Trail crossing improvements." In the various maps included in the study, including maps relating to existing trail surfaces and widths, the Jackass Gulch trail between Jackass Hill Road and the Highline Canal Trail is not even mentioned or otherwise identified.

In the TMB's March 23, 2023 discussion concerning the Littleton Linkages Study, the comments of TMB members included the following:

"Results from the first public involvement survey shows that most people use trails for exercise and to connect to regional trails."

"Member Selzer asked if there are ways to make the trail system work better for commuters. Improvements can be made to access regional trails that are more well-suited to commuting."

"Member Bagley mentioned that not all trails should accommodate commuters and that on-street bicycle facilities are better suited for that type of trip. Vice Chair Grant added that commuter infrastructure on trails will degrade the recreation purpose. The Transportation Master Plan (TMP) identifies many buffered or protected bike lanes that will make on-street facilities more comfortable."

C. The TMB's April 2023 New Member Intro Packet References The Projects Identified In The TMP – The Jackass Gulch Paving Is Not One Of Them

At the March 23, 2023 TMB Meeting, the Board received copies of the New Member Intro Packet dated April 2023. The Packet noted that the TMP, as part of the Envision Littleton process, was the result of extensive public engagement, that included, "Over 18 months the Entire Envision Littleton process had: + 92,249 email and social media touch points, + 8,315 conversations with the public and stakeholders + 261 Envision Littleton Events."

The New Member Intro Packet included Figure 19 and Table 16 from the TMP which identified the 87 active transportation projects proposed and identified by the City. The Packet highlighted in green those of the 87 projects that "have been advanced since the adoption of the TMP." The Packet, including the information from the TMP, did not mention or identify the Jackass Gulch Trail as a project either identified, proposed, or advanced.

D. Messrs. Grant and Radulovich Sign Letters Dated April 4 and April 17 2023 That Littleton Attached To Its Application To Arapahoe County Open Space In Support Of Littleton's Request For Taxpayer Open Space Funds To Pave The Jackass Gulch Trail With 16-Foot Wide Concrete.

Although letters relating to paving the Jackass Gulch Trail are not referenced in any of the TMB meeting documents prior to April 2023, Messrs. Grant and Radulovich signed letters dated April 4 and April 17 2023 addressed to Arapahoe County Open Space in support of Littleton's request for a grant to pave a 16-foot wide concrete road through the Jackass Gulch Open Space.

It is reasonable to infer based on the language, structure, and format of the two letters, that the letters were not drafted by either Mr. Grant or Radulovich, but rather were drafted by someone within the City of Littleton transportation staff.

It also is reasonable to infer based on the absence of any discussion of the letters at any prior TMB meeting that neither Mr. Grant nor Mr. Radulovich were authorized by the TMB to speak on behalf of the TMB Board and send the letters as the Vice Chair of TMB's Transportation Mobility Board (and soon to be Chair) and the former Chair of the Transportation Mobility Board, respectively.

Mr. Grant's letter of support for the project is particularly striking in view of his comments at the March 23, 2023 TMB Board meeting that "Vice Chair Grant added that commuter infrastructure on trails will degrade the recreation purpose. The Transportation Master Plan (TMP) identifies many buffered or protected bike lanes that will make on-street facilities more comfortable."

Mr. Grant's and Mr. Radulovich's letters were the sole statements of "community support" for the paving of the Jackass Gulch Trail submitted by Littleton to Arapahoe County. Littleton also told Arapahoe County that there was no opposition to the 16-foot wide concrete road. It is reasonable to infer from comments of Board members at prior meetings that certain TMB Board members may have been opposed to the 16-foot wide paving project if they even knew about it.

E. The Staff Presentation Of The Jackass Gulch Paving Project To The TMB At The May 25, 2023 TMB Meeting Includes Staff's False And Misleading Statements To The TMB, As Littleton Did To CDoT, That The Jackass Gulch Paving Is A Project Identified In The TMP

On May 25, 2023, it appears that staff for the first time provided the TMB Board with an update on the Mineral Mobility Improvements Project. The information provided did not include the ½ and 1-mile mobility shed map that shows that there is not a single home within those mobility sheds whose residents that can access to the Mineral Station by using the Jackass Gulch trail and walking one-mile or less.

Staff's update on the Mineral Mobility Improvements project was presented in the context of the false and misleading statement that the Mineral Mobility Improvements project was comprised of "projects identified in the Transportation Master Plan (TMP), so this project is building out what was set forth in that plan." As stated, the Jackass Gulch project was not one of the 87 active transportation projects identified in the TMP.

Staff's false and misleading statements to the TMP Board repeated the false and misleading statement that Littleton made to CDoT in its application when Littleton stated in Section (G)(1) that: "Implementation of Littleton's Transportation Master Plan (TMP) Recommendations - The elements in this project were identified in Littleton's TMP (October 2019) and this project will help the City implement key safety and connection projects."

F. The Jackass Gulch Paving Project Is Attempted Social Engineering – Littleton Knows That Very Few People Are Willing To Walk The 1 ¼ to 2 ½ miles To Use The Jackass Gulch Road To Get To The Mineral Station.

The TMP addressed the fact that virtually no one walks the Jackass Gulch Trail to access the Mineral Station. In evaluating walkability to the Mineral Station, Littleton's 2019 Transportation Master Plan utilized a ½ mile Mineral Station walkshed because "this distance is used as a standard in determining the walkability of an area (sometimes a 5 minute or ¼ mile walkshed is used – most commonly for measuring connections to bus service.") It is reasonable to infer that the Spur Trail was not identified in the Transportation Master Plan because there is a not a single home that is within a ½ mile or even one-mile walk of the Mineral Station using the Jackass Gulch Spur trail. As the Master Plan notes: "The Mineral station walkshed coverage is poor…"

In Littleton's Safer Main Streets Phase 1.5 submission to CDOT in an effort to get further funding, Littleton made the following misleading statement as it relates to the Jackass Gulch Trail: "the improvements proposed will provide a more cohesive and accommodating walking and biking network for the hundreds of residential dwellings within the one mile travel shed of the light rail station." This is misleading (if not outrightly false) because, as stated, there is a not a single home that is within a ½ mile or even one-mile walk of the Mineral Station using the Jackass Gulch Spur trail. Littleton proposed paving the Jackass Gulch Trail without any knowledge of the number of people who would actually use the paved road to access the Mineral Station. As stated at the May 25, 2023 TMB Meeting during a discussion on the Mineral Mobility Project update:

"Chair Tom Grant asked if the City has counts of how many pedestrians, bicyclists, and vehicles utilize the Mineral LRT Station. Staff explained that the city does not have this information, but that this is an opportunistic time to encourage mode shift as people go back to using light rail."

It is a fiction to think that by paving the Jackass Gulch recreational trail, citizens will decide they now are willing to walk more than twice, three, or four times the standard ½ mile distance to get to the Mineral Station. In the 2020 application from Litteton to CDoT prepared by Shane Roberts, the only projected increase in users who may walk or cycle to the Station was due to a general population increase, and not due to the paving of the Jackass Gulch Trail. (Ref. Safer Main Streets Initiative Project Application Form, Part 3 – Project Data, B. Bicycle Use and C. Pedestrian Use).

Please note that this email comment is not intended to be a comprehensive discussion of the false and misleading statements and information that Littleton included in its applications for funding to CDoT, Arapahoe County, and others. Additional matters are addressed in my prior comments and submissions.

Thank you for your consideration of these matters.

Respectfully,

Marc Flink

[redacted]

* Sender and receiver should be mindful that all incoming and outgoing emails may be subject to the Colorado Open Records Act, S 24-72-200.1, et seq.

From: [redacted]
To: Kyle Schlachter; Stephen Barr; Pamela Grove; Patrick Driscoll; Robert Reichardt; Andrea Peters; Joel Zink
Cc: Colleen Norton
Subject: May 20 2025 City Council Meeting - Public record submittal re Jackass Gulch RR Spur Trail and Proposed Resolution 34-2025
Date: Tuesday, May 20, 2025 8:23:57 AM
Attachments: Littleton Misunderstands and Misapplies First Mile Last Mile Concepts to Jackass Gulch RR Spur Trail.pdf
SMS Phase 1_5 Graphic with access overlay.pdf
THE JACKASS GULCH RAILROAD SPUR TRAIL - THE WALKABILITY ANALYSIS LITTLETON FAILED TO UNDERTAKE OR CHOSE TO IGNORE.pdf
May 20 2025 Flink Public Comments to City Council for May 20 Meeting.pdf

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CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Council
Attached for your consideration prior to tonight's meeting is a paper titled "Littleton Misunderstands and Misapplies 'First Mile/Last Mile' Concepts To Paving Of Jackass Gulch RR Spur Trail." The attached graphic is discussed in that paper. The current paper also relates to issues addressed in the Wakability Analysis previously provided and again attached for your convenience.
The current paper references RTD startegies regarding "First Mile/Last Mile" concepts. Those strategies can be accessed at https://www.rtd denver.com/about-rtd/projects/first-mile-last-mile-strategy and https://res.cloudinary.com/rtd/image/upload/v1696452919/FLM-Strategic Plan_06-10-19_phi2bz.pdf.
Those strategies note: "**People typically access transit locations within the Suburban-Residential typology by driving alone, as the distance between where people live and the transit service is greater than other typologies** (with the exception of the Rural typology)." RTD's First and Last Mile Strategic Plan at 3-23. The Littleton neighborhoods that are relevant to the Jackass Gulch RR Spur Trail discussion are Suburban-Residential neighborhoods which RTD defines as: "Suburban-Residential typology locations consist predominantly of low-density neighborhoods, but also include community and recreation centers, schools, and auto-oriented commercial corridors." RTD's First and Last Mile Strategic Plan at 3-23.
Also attached are the comments I plan to deliver this evening during the public comment period during Council Meeting.
Thank you for your continued consideration of these important matters.
Respectfully,
Marc Flink
[redacted]

* Sender and receiver should be mindful that all incoming and outgoing emails may be subject to the Colorado Open Records Act, S 24-72-200.1, et seq.

Public Comments to City Council Re: Jackass Gulch Railroad Spur Trail and Proposed Resolution No. 34-2025

Submitted May 20, 2025 by Marc Flink, [redacted]

Good evening. I am Marc Flink, a 35-year resident of Southbridge.

In a May 7 email Mayor Pro Tem Barr acknowledged that the “ideal scenario” for the trail in Jackass Gulch is a crusher fines and concrete dual surface trail. A dual surface trail is what the City’s focus group in February 2022 said was preferred to a concrete only path.

Many believe that that the ideal scenario is a rebuilt ADA compliant 10-foot wide crusher fines trail. Such a trail would complement the 8-foot wide concrete interpretative trail through the upper reaches of the gulch.

There can be an honest discussion of whether the recreational Gulch trail should be a crusher fines path, an 8 to 10-foot wide concrete path, or a dual surface path.

However, there can be no honest discussion with the City as to whether the current path should be replaced by a 16-foot wide concrete road.

The proposed concrete road that exists nowhere else in the metro trail network and is apparently someone’s pet project was added to the Mobility Improvement project through false statements and deceptive and dishonest conduct. We will see that conduct continue through tonight’s presentation by City staff.

The pathway through the gulch was not one of the 87 active transportation projects identified in the City’s 2019 Transportation Master Plan, yet the City told CDoT that it was.

The City also obtained funding from Arapahoe County by linking the Gulch project to the TMP and falsely telling the County that the public engagements showed community support and no opposition to a 16-foot wide concrete road.

The City says, contrary to empirical data, that a 16-foot wide concrete road will result in a mode shift of people from the surrounding neighborhoods, encouraging them to walk great distances to the Mineral Station to use light rail. RTD First Mile/Last Mile strategies for Suburban-Residential areas dispel that belief.

Use of the Gulch trail as a commuter road to get to light rail will never happen as the distances are just too great – far beyond the ½ mile walkability standard discussed in the Transportation Master Plan but now apparently discarded by the City for a one-mile travel shed. The Mineral Station is more than a 1.2 mile walk from the nearest home in

Southbridge. Pedestrians from neighborhoods north and south of the Gulch will use the existing Jackass Hill Road and Mineral Avenue sidewalks respectively.

Aside from the problems of distance and access, the Gulch trail cannot be used for light rail access year-round as there is no lighting infrastructure for winter commuters. The safety of those hoped for commuters walking through a darkened Gulch before sunrise and after sunset is not addressed by the City.

If the City proceeds with a contract to construct a 16-foot wide concrete road through the Gulch, the City and any contractor who agrees to work on this project while citizens continue to challenge the City's deceptive conduct in securing taxpayer funds does so at their peril.

LITTLETON MISUNDERSTANDS AND MISAPPLIES "FIRST MILE LAST MILE" CONCEPTS TO PAVING OF JACKASS GULCH RR SPUR TRAIL

In Littleton's Safer Main Streets Phase 1.5 submission to CDoT sometime before January 19, 2021, Littleton stated in part:

> "Providing safe multimodal options for vulnerable cyclist and pedestrians and applying a complete streets approach to developing the transportation network are primary goals identified in the City of Littleton's Transportation Master Plan. We believe that together all of the elements identified as part of this proposed project will result in a safe and complete first and last mile of transit trips experience that will encourage more active users. As shown in the attached graphic, the improvements proposed will provide a more cohesive and accommodating walking and biking network for hundreds of residential dwellings within the one-mile travel shed of the light rail station."

In the Project Overview slide presentation prepared by City Staff, slide 3 states that "[t[he Project will provide:...First/last mile connections to transit." In the Frequently Asked Questions prepared by City Staff dated 5/14/2025, it is similarly stated that "The Mineral Mobility East Improvement Project will provide safety and mobility upgrades to transportation facilities that provide first and last mile access between the Regional Transportation District (RTD) Mineral Light Rail Station and existing and planned residential and commercial development in the area."

Contrary to Littleton's references to the 'First/last mile connections to transit', "first and last mile of transit trips," and "first and last mile access," the First Mile/Last Mile concept is a metaphor and not intended to be taken literally to mean, as relates to the Jackass Gulch RR Spur Trail, that all access roads/trails/paths within a mile of a light rail station are to be paved. As noted in RTDs "First Mile Last Mile Strategy" [ref. https://www.rtd-denver.com/about-rtd/projects/first-mile-last-mile-strategy] those phrases mean: " First Mile: Getting from your start point (e.g. your home to an RTD stop/station" and "Last Mile: Getting from the RTD station/stop to your final destination (e.g. your job)." Thus, a resident whose home in Southbridge is 2.5 miles away from the Mineral Station has a 2.5 mile journey as her "first mile." If that resident's work is 0.1 miles from a light rail station downtown, that person has a 0.1 mile "last mile."

As noted in RTD's "First and Last Mile Strategic Plan": "First and Last Mile (FLM) is the problem of getting to transit (first mile) and getting to your final destination (last mile). Not all trips are the same, and first mile trips often differ from last mile trips in length, mode of

travel, and purpose. Similarly, trips to access transit are not necessarily limited by a one-mile radius but can differ depending on the mode of travel used to access the transit service." [Ref. https://res.cloudinary.com/rtd/image/upload/v1696452919/FLM-Strategic-Plan_06-10-19_phi2bz.pdf].

Littleton's generalized statements regarding access to the Mineral Station by way of the Jackass Gulch Spur Trail overlooks and bypasses the necessary first step in any transit access analysis – that is, determining the typology of the area being examined. As stated in the RTD's First and Last Mile Strategic Plan:

> "Different density and land use contexts demand different types of FLM strategies. What works well for improving FLM access in an urban setting may be much less effective in a Suburban-Residential area, and vice versa. Therefore, identifying the typology for each transit study area is the first step in an FLM analysis."

RTD's First and Last Mile Strategic Plan at 1-5.

The typology of Littleton east of Santa Fe Road and west of South Park Road north and south of West Mineral Avenue and north on Jackass Hill Road likely would be characterized as "Suburban-Residential." "Suburban-Residential typology locations consist predominantly of low-density neighborhoods, but also include community and recreation centers, schools, and auto-oriented commercial corridors." RTD's First and Last Mile Strategic Plan at 3-23

As RTD clearly recognizes, but Littleton apparently does not, Suburban-Residential "locations often have less frequent transit services that connect to higher frequency transit or major employment centers. **People typically access transit locations within the Suburban-Residential typology by driving alone**, **as the distance between where people live and the transit service is greater than other typologies** (with the exception of the Rural typology)." RTD's First and Last Mile Strategic Plan at 3-23.

There is nothing in RTD's publications that would suggest that Littleton's discussion concerning First and Last Mile concepts as relates to the Jackass Gulch Spur Trail is grounded in any way in transit methodology or thinking.

Attached hereto is the graphic created by Littleton and referenced in Littleton's Safer Main Streets Phase 1.5 submission to CDoT. Added to Littleton's graphic are yellow and orange cross-hatched areas that encompass the "hundreds of residential dwellings within the [1/2 mile and] one-mile travel shed[s] of the light rail station" referenced in Littleton's Safer Main Streets Phase 1.5 submission to CDoT.

There is not a single residence in the ½ mile or one-mile travel shed of the Mineral Station that is within a one-mile walk to the Mineral Station using the Jackass Gulch Trail aka Mineral Ave Trail in the graphic.

Homes in the orange cross-hatched area that appear close to the Jackass Gulch Trail are separated from the Jackass Gulch Trail by fencing and/or the renovated gulch drainage. Residents in the homes within the orange cross-hatched area will access the Mineral Station by using the sidewalks on Jackass Hill Road to get to the sidewalk on the north side of Mineral Avenue and west of Jackass Hill Road that leads to the Mineral Station. It is approximately a 0.60 to 0.65 mile walk from the top of Jackass Hill Road where there is a cut-through to the Highline Canal Trail to the Mineral Station. If a resident near the top of Jackass Hill Road wanted to access the Jackass Gulch Trail by way of the Highline Canal Trail, it would be an approximately 0.60 mile walk through the cut through and down the Highline Canal Trail before reaching the Jackass Gulch Trail. It would then be another mile to the Mineral Station.

All homes in the yellow cross-hatched area – the South Park neighborhood – will walk to the Mineral Station by using the sidewalk on the south side of West Mineral Avenue and cross to the north side at Jackass Hill Road. Access to the Jackass Gulch Trail from South Park requires a person to walk east – the wrong direction – to get to the intersection of Mineral and Peninsula Drive where the Highline Canal Trail crosses Mineral. It is an approximately one-mile walk from the junction of the Highline Canal and the Jackass Gulch Trail to the Mineral Station.

Although there are a few homes (approximately 8) on the southwest side of the Southbridge neighborhood that the one-mile travel shed hatched line drawn by Littleton touches, those homes cannot access the Jackass Gulch Trail directly as they are both fenced in and separated from the Highline Canal Trail by the Highline Canal. Those homes require an approximately 0.40 to 0.50 walk out of their neighborhood to Windermere to Mineral to get to the Jackass Gulch Trail. As stated in the Walkability Analysis previously provided, the closest home in Southbridge to the Jackass Gulch Trail is approximately 0.24 miles away from the junction with the Highline Canal Trail and thus 1.24 miles from the Mineral Station.

The Jackass Gulch Trail is a recreational trail, not a "transportation facility." Because the Jackass Gulch Trail does not provide any home within a ½ mile or 1-mile of the Mineral Station with walking access to the station, it was not identified as the subject of any of the 87 active transportation projects proposed in the Littleton's October 2019 Transportation Master Plan. Littleton's application to CDot stating that work on the Jackass Gulch Trail between Jackass Hill Road and the Highline Canal Trail was "identified in Littleton's TMP (October 2019)" is false.

That the Jackass Gulch Spur Trail has never been thought of as a "transportation facility" until this project is emphasized by the failure to even identify the trail in the Littleton Linkages Transportation and Mobility Study from 2023. The Study Focus was to "Identify issues/opportunities of the local trail network § Develop prioritized, map-based project list • Existing trail improvements • New trail connections • Trail crossing improvements." In the various maps included in the study, including maps relating to existing trail surfaces and widths, the Jackass Gulch trail between Jackass Hill Road and the Highline Canal Trail is not even mentioned or otherwise identified.

The methodologies of RTD's First Mile Last Mile strategies applied to the Suburban-Residential area of the Southbridge and surrounding neighborhoods would not suggest a strategy that attempts to encourage residents to walk to the Mineral Station over relatively long distances. "**People typically access transit locations within the Suburban-Residential typology by driving alone, as the distance between where people live and the transit service is greater than other typologies** (with the exception of the Rural typology)." RTD's First and Last Mile Strategic Plan at 3-23.

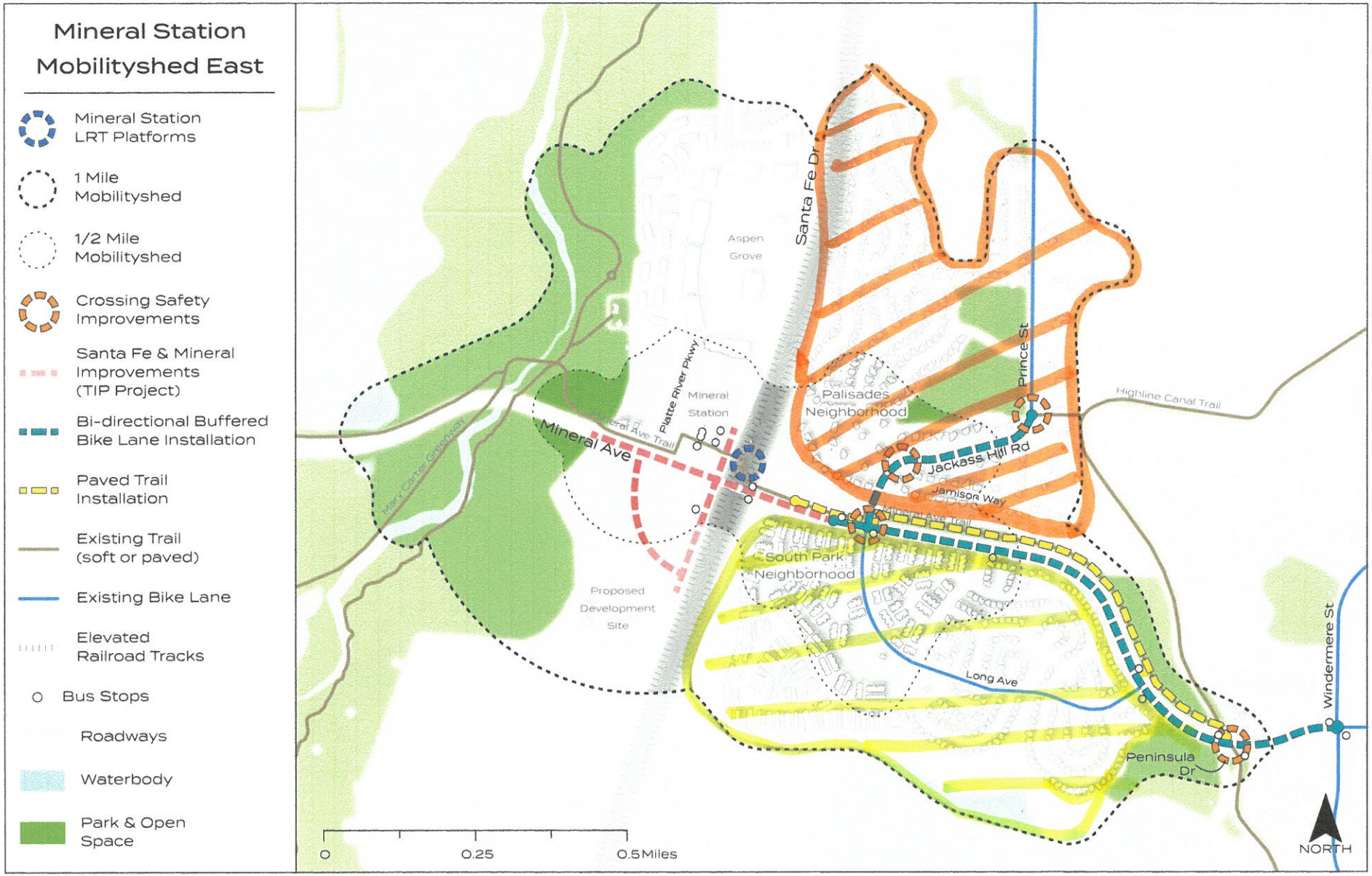
Because the primary reason for the 16-foot wide concrete road is supposedly to increase pedestrian traffic to the Mineral Station from homes more than one-mile away, it will be a failed strategy that not only will waste close to $1 million, but also will scar and desecrate the natural surroundings of the Jackass Gulch Open Space.

Submitted by Marc Flink, [redacted]

May 20, 2025

ACCESS FROM JACKASS HILL ROAD SIDEWALK

ACCESS FROM SIDEWALK ON SOUTHSIDE OF WEST MINERAL AVE



THE JACKASS GULCH RAILROAD SPUR TRAIL

AND

THE MINERAL STATION LRT WALKSHED

THE "WALKABILITY" ANALYSIS LITTLETON FAILED TO UNDERTAKE OR CHOSE TO IGNORE[1]

Submitted: April 23, 2025

By: Marc Flink

7772 South Louthan Street

Littleton, CO 80120

[1] [footnote added 5/5/2025] This paper was prepared prior to receipt of CDOT 's CORA response which produced a document showing that Littleton used a one-mile walkshed in connection with its application for funding for the Mineral Mobility Improvements-East project. The document entitled Safer Main Streets Phase 1.5 prepared by Littleton and produced by CDOT appended a graphic that showed, as emphasized in this white paper, that even when using a 1-mile walkshed, not a single resident in the Southbridge neighborhood could use the Jackass Gulch Spur trail without being more than a mile (and sometimes more than 2 ½ miles) from the Mineral Station. The application that Littleton prepared and submitted to CDOT also contained the false statement that the paving of the Jackass Gulch trail was identified in Littleton's Transportation Master Plan (TMP). Although Littleton's October 2019 TMP identified 87 active transportation projects, there were **no projects** relating to the Spur trail between Jackass Hill Road and the Highline Canal trail.

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This paper is being distributed to all recipients identified in the addresses on the transmitting email. Recipients include funding sources and "partners" with the City of Littleton in Littleton's ill-advised endeavor to pave the recreational Jackass Gulch Railroad Spur Trail ("Spur Trail")[2] with a 16 -foot-wide swath of concrete comprising two bike lanes (together 8-feet wide with a 1-foot buffer) and two pedestrian lanes (together 7 feet wide). While it is the position of the author that any trail to replace to current 10-foot-wide crusher fines trail should be constructed of crusher fines no wider than the current width of 10-feet, in the circumstance that Littleton proceeds with an 8 to10-foot-wide concrete trail, for the reasons addressed below, any adjacent pedestrian trail width should be no more than 6-feet-wide and constructed of crusher fines.

I. CRUSHER FINES ARE A FAR MORE BENEFICIAL SURFACE FOR WALKING AND RUNNING THAN IS CONCRETE.

There cannot be any real dispute that a soft surfaced crusher fine trail is a far more beneficial surface for walking and running than is concrete. https://www.americantrails.org/resources/the-art-of-building-crushed-stone-trails ("Crushed stone trails provide a user-friendly, all-season surface for all types and ages of visitors, including strollers, **wheelchairs**, and road bikes.") (emphasis added); https://www.americantrails.org/resources/building-crusher-fines-trails ("A crusher fine trail combines the rustic feeling of a natural surface trail with a surface type that's durable (but not concrete or asphalt). The natural gravel-like surface feels more like a trail than a hard surfaced path and fits in well with primitive settings."). As addressed in Section III below, Denver's currently ongoing Highline Canal Trail that is mating side-by-side concrete and crusher fines trails is an excellent example of sound recreational planning.

[2] "Recreational trails, as distinguished from transportation trails, typically pass through park lands or natural areas and can be soft or hard surface." https://www.littletonco.gov/files/sharedassets/public/v/1/our-community/documents-community/parks-rec-trails-master-plan-june-2016.pdf

Littleton has recognized that " the sport with the highest participation is walking for exercise (30.5%)." https://www.littletonco.gov/files/sharedassets/public/v/1/our-community/documents-community/parks-rec-trails-master-plan-june-2016.pdf ("Littleton residents participate in a wide variety of outdoor recreation and sports. However, the sport with the highest participation is walking for exercise (30.5%)"). As addressed below, the Spur Trail is first and foremost a recreational trail that walkers (including parents pushing strollers), runners, cyclists, and the occasional equestrian or person using a mobility device seek out for its crusher fines surface.

As noted by Littleton on its "Visit Littleton" website concerning the Mary Carter Trail: "For safety, this busy trail features a **crushed stone path for pedestrians and wheelchair users** along with a paved path for bikers." https://visitlittleton.org/partner/mary-carter-greenway-trail/. (emphasis added).

II. THE SPUR TRAIL IS A RECREATIONAL TRAIL - NOT A SINGLE HOME WITHIN THE MINERAL STATION WALKSHED NEEDS OR HAS ACCESS TO THE SPUR TRAIL FOR SIDEWALK ACCESS TO THE MINERAL STATION.[3]

One of the principal reasons Littleton has put forth for paving a pedestrian walkway through Jackass Gulch is that paving will provide better access to the Mineral Light Rail Station for both walkers and mobility devices. However, access to the Spur Trail from the east at its junction with the crusher fines Highline Canal Tail is well outside the ½ mile walkshed Littleton has defined for the Mineral Station. Moreover, there is not a single home within the Mineral Station walkshed that needs or even has access to the Spur Trail for walking access to the Mineral Station. Although Littleton failed to make any analysis or use of tools available through CDOT to estimate the number of people who actually walk or use a mobility device to access the Mineral Light Rail Station using the Spur Trail[4], a simple analysis of the distances involved supports the view that very few people will ever utilize the Spur Trail to walk to the Mineral Station.

Littleton's Transportation Master Plan: Active Transportation section states in part as follows:

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[3] Although a 2-mile Mineral Station bikeshed includes most of the Southbridge neighborhood, there are already bike lanes down West Mineral Avenue and Jackass Hill Road which feed into the Mineral Station. Moreover, significant public funds are being expended to widen, improve, and buffer the West Mineral Avenue bike lanes, thus rendering the need for a concrete bikeway in Jackass Gulch unnecessary and wasteful. As evidenced by the extensive cycling on the Highline Canal Trail through Littleton, cyclists of all skills and ages easily can navigate a crusher fines trail.

[4] See e.g. https://www.codot.gov/programs/bikeped/documents/2016-10-21-cdot-nonmotorized-monitoring-plan-toolkit_appendix-b_a11y.pdf

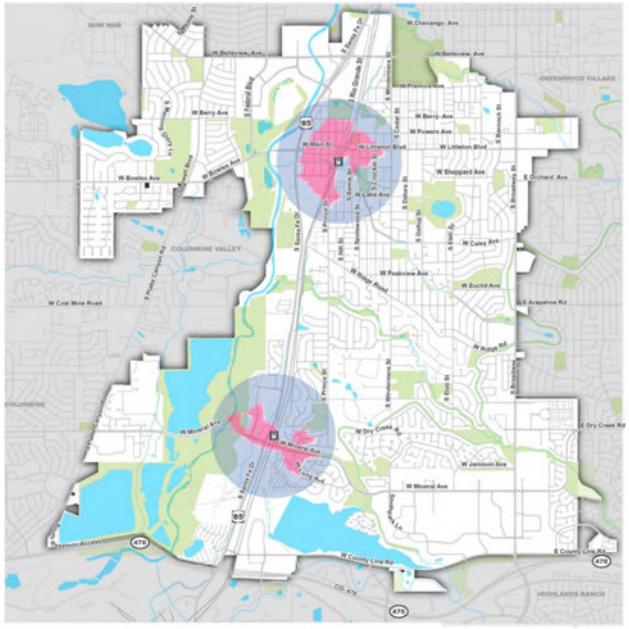
Walksheds

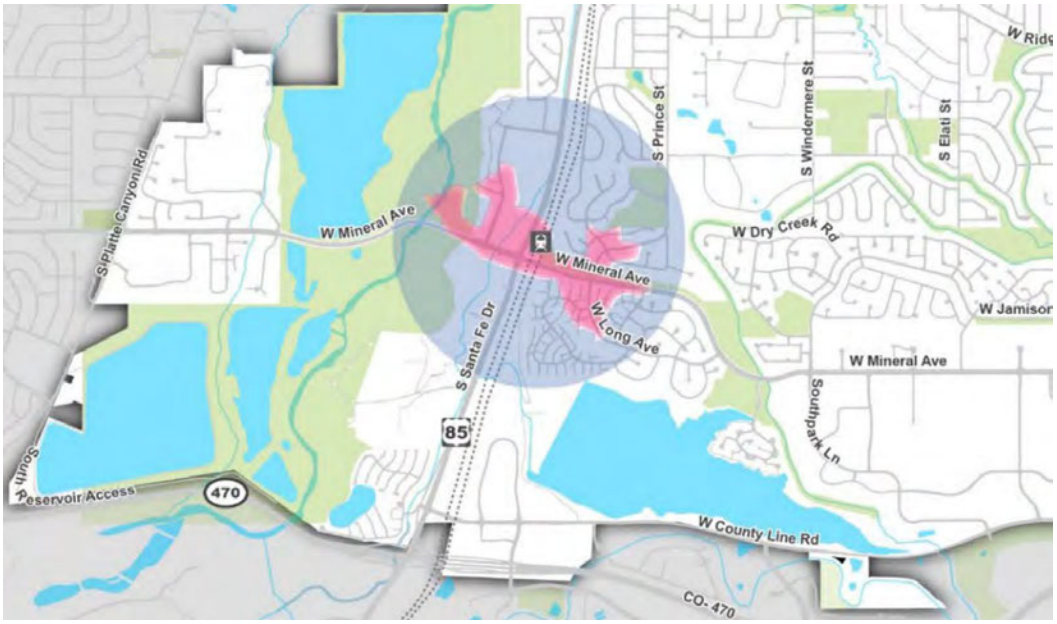
A walkshed analysis was completed to understand the current walking connections to schools and RTD light rail stations. In this case, the sidewalks and trails within the City of Littleton were used as a network along which to route trips of specific distances. Currently, 33% of Littleton households are within a half-mile walk of a primary, secondary, or higher education facility. A **half-mile walkshed** roughly equates to a 10-15 minute walk depending on the walking speed. **This distance is used as a standard in determining the walkability of an area (sometimes a 5-minute or ¼ mile walkshed is used – most commonly for measuring connections to bus service)….**

Currently, 6% of Littleton households are within a half-mile walk of the Mineral or Littleton Downtown RTD Light Rail stations, which are the only high frequency transit stops in the City….The Mineral Station walkshed coverage is poor in comparison due to its placement adjacent to the Santa Fe Drive and Mineral Avenue intersection and the lack of a traditional street grid in the vicinity of the station. Walking to the Mineral Station also requires out of direction travel for many households within a half mile.
(Ref: https://www.littletonco.gov/files/sharedassets/public/v/1/building-amp-development/documents-building/development-review/envision-littletonuluc-docs/transportationmasterplan10.pdf)

Although a total of "6% of Littleton households are within a half-mile walk of the Mineral or Littleton Downtown RTD Light Rail stations" and "33% of Littleton households are within a half-mile walk of a primary, secondary, or higher education facility," there are **zero households** that are within the Mineral Station walkshed that can utilize the Spur Trail within that walkshed to access the Mineral Station. As revealed in the following two diagrams from Littleton's October 2019 Transportation Master Plan, in addition to **zero households** being within a walkshed that would use the Spur Trail for access to the Mineral Station, most of the Jackass Gulch Open Space itself is not within the Mineral Station walkshed.

Figure 13. 1/2 Mile LRT Station Walksheds





The Spur Trail is not utilized by the South Park neighborhood within the Mineral Station walkshed because the sidewalk that leads to the intersection at West Mineral Avenue and Long/Jackass Hill Road is at the western terminus of the Spur Trail. Any South Park resident within or outside the Mineral Station walkshed will utilize the sidewalks already in place on the south side of West Mineral Avenue. In addition, residents of the Peninsula neighborhood and the Pinnacle at Highline, both on the south side of West Mineral Avenue similarly will use sidewalks already in place.

The Spur Trail is not utilized by the homes in the Palisade neighborhood because the sidewalk down Jackass Hill Road leads to the sidewalk west of Jackass Hill Road that takes one directly to the Mineral Station without use of the Spur Trail.

Homes on Prince and east along the Highline Canal Trail can readily access the Mineral Station down the sidewalk along Jackass Hill Road.[5] The walk down Jackass Hill Road to the corner of Jackass Hill Road and West Mineral Avenue is approximately 0.35 miles and the distance from that corner to the middle of the Mineral Station boarding platform is approximately 0.30 miles.

Although Littleton asserts that paving the Spur Trail will provide access to the Mineral Station to the Southbridge neighborhood on the north side of West Mineral Avenue, the walking distances that would need to be travelled place the Southbridge households far outside the Mineral Station's ½ mile walkshed. Walking to the Mineral Station from a Southbridge neighborhood home is of such a distance that walkability is not a real option except for a few who may want to combine exercise and recreation with a walk to the Mineral Station. For those users, a crusher fines trail for walking would be ideal. Further, Littleton has not undertaken any effort to determine the number of people who walk to the Mineral Station from those neighborhoods.

Following is a table which indicates the walking mileage using sidewalks and the Spur Trail from various intersections within the Southbridge neighborhood to the middle of the RTD platform at the Mineral Station. All the referenced distances include the 1-mile distance just walking from the east access to the Spur Trail to Jackass Hill Road and the sidewalk on the north side of West Mineral Avenue west of Jackass Hill Road. As stated, because these distances and the times to walk the distances are far outside the ½ mile walkshed and the 10-15 minutes Littleton assigns to cover ½ mile, walking, and certainly use of a wheelchair or other mobility device, is a highly unlikely option or choice.[6]

[5] Although the walk through from the Highline Canal to the cross-walk at the top of Jackass Hill Road is temporarily closed due a dispute between a homeowner and Littleton, that walk-through will soon reopen. https://www.9news.com/article/sports/outdoors/trail-jackass-hill-high-line-canal-trail-reopening-public/73-d587468f-4fc2-44c1-8ded-d87f748899c1

[6] Even if a disabled person had the desire and inclination to use a wheelchair or device to access the Mineral station from a location in the Southbridge neighborhood, that person could use the paved 10-foot-wide concrete trail Littleton plans to construct for bicycles.

Main Road	Intersecting Street(s)	Distance from intersection to East entry to Spur Trail at Highline Canal Trail[7]	Distance from intersecting Streets to Mineral Station platform	Approximate time to cover the total distance calculated using Littleton's projected 10-15 minutes per ½ mile[8]
W Jamison Ave	Jamison Circle	1.51 miles	2.51 miles	50-75 minutes
W Jamison Ave	West Jamison Ct	1.41 miles	2.41 miles	48-72 minutes
W Jamison Ave	Jamison Court /Elati	1.12 miles	2.12 miles	42-65 minutes
W Jamison Ave	Huron	0.97 miles	1.97 miles	40-60 minutes
W Jamison Ave	Greenwood	0.87 miles	1.87 miles	37-54 minutes
W Jamison/ S Windemere	Cedar/West Kettle	0.64 miles	1.64 miles	32-48 minutes
S Windemere	West Kettle	0.51 miles	1.51 miles	30-45 minutes
S Windemere	West Long	0.38 miles	1.38 miles	28-42 minutes
S Windemere	S Prescott Ct	0.30 miles	1.30 miles	26-39 minutes
S Windemere	Windemere Cir	0.24 miles	1.24 miles	25-37 minutes
W Mineral	S Windemere	0.19 miles	1.19 miles	24-36 minutes
W Mineral	Highline Canal/Jackass Spur	0 miles	1.0 miles	20-30 minutes

The closest house in the Southbridge neighborhood to the Mineral Station by walking down the Spur Trail is located in the area of S Windermere and Windemere Circle – a distance of 1.24 miles, more than twice the distance of the Mineral Station walkshed.

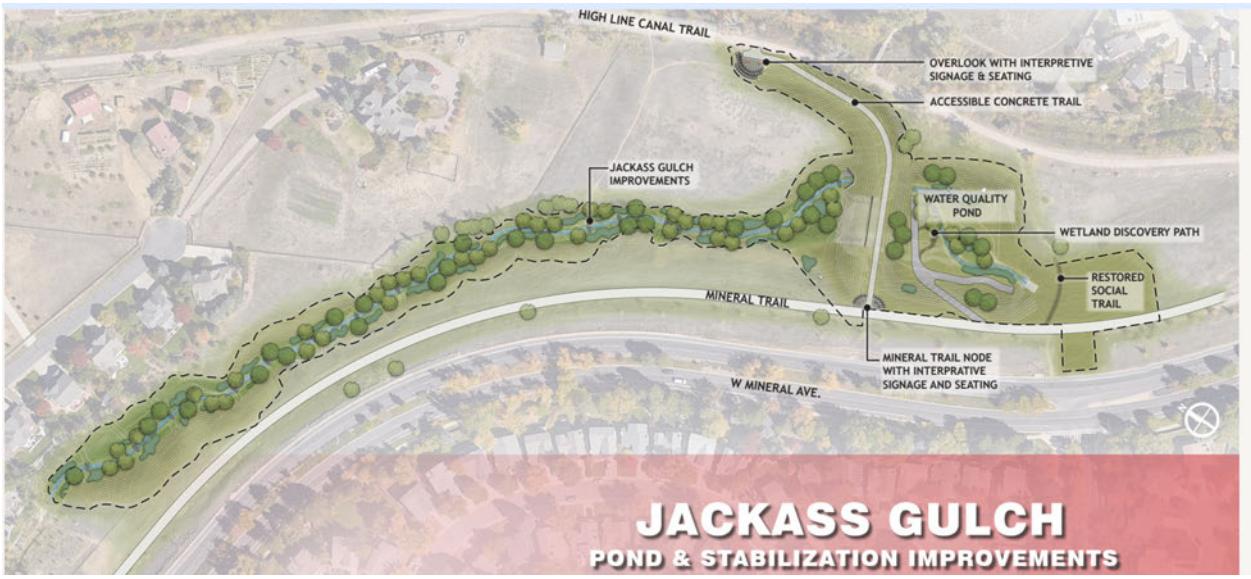
Certain residents of the Southbridge and Heritage neighborhoods may live closer to the Highline Canal Trail than to Jamison Avenue. For example, a resident who lives near the intersection of Windermere Street and the Highline Canal Trail can travel to the Mineral Station by walking the Highline Canal to the cut through at the top of Jackass Hill Road (a distance of approximately 0.47 miles) and then down the sidewalks on Jackass Hill to the sidewalks on West Mineral Avenue to the Mineral Station (a distance of 0.65 miles).

Even the Monte Vista Apartments on West Mineral Avenue are far outside the walkshed. The distance form West Mineral Avenue at South Elati Steet to the Mineral Station is approximately 1.70 miles.

III. THE JACKASS GULCH IS OPEN SPACE THAT SHOULD BE PRESERVED TO THE FULLEST EXTENT POSSIBLE

[7] All distances were determined using a Garmin Fenix 6 watch walking the sidewalks and the Spur Trail on April 21, 2025.

[8] Because the Mineral Station is downhill from the Southbridge neighborhood, times to walk from the Mineral Station to homes in Southbridge likely will be longer than the standard 10-15 minutes per ½ mile used in a walkability analysis.



After the pond and drainage stabilization improvements are completed in the upcoming months as depicted in the above drawing from https://naranjocivil.com/jackass-gulch/, the Open Space should not be scarred by a 16-foot-wide concrete road that will not get much use as a transportation trail to Mineral Station as there are **zero households** in the Mineral Station walkshed that will use the road.

The ability to place a concrete pathway side-by-side with crusher fines without the need for a buffer zone has most recently been recognized by the City of Denver and the Highline Trail Conservancy. In Denver's project on the heavily traveled Highline Canal Trail between Parker Road and Havana, Denver is reconstructing the trail with a 12-foot-wide concrete bike lane next to a 6-foot-wide crusher fines trail. (Ref: https://www.denvergov.org/files/assets/public/v/2/parks-and-recreation/documents/planning/specs/project-sheets/dpr-projectsheet_highlinecanaltrail_parkerhavana.pdf.) Although the heavy traffic on that trail may warrant a 12-foot-wide concrete trail, a concrete trail of no more than a10-foot-width with a 6-foot-wide crusher fines trail should be more than sufficient on the Spur Trail.

Both Littleton and Arapahoe County recognize in their written publications that Open Space should be protected and preserved. As stated in the Arapahoe County Open Space Master Plan:

> The Arapahoe County Open Spaces program enhances quality of life and supports the natural environment, helping to create healthy, sustainable communities for residents and wildlife.
>
> According to our mission, Arapahoe County Open Spaces "works to preserve natural heritage areas, enhance neighborhood and regional parks and build and maintain trails." Our vision is healthy lands, healthy

> communities, healthy people. Our mission is to protect Arapahoe County's treasured parks, trails and open spaces for residents to enjoy today and forever.
>
> (Ref: https://files.arapahoeco.gov/Open%20Space/Open%20Space%20Master%20Plans/Arapahoe%20County%20Open%20Space%20Master%20Plan.pdf)

Similarly, Littleton's vision for Open Spaces includes preservation of natural spaces:

> Littleton's Vision Statement clearly outlines the desired quality of life assets provided by parks and recreation provides.
>
> "To preserve a family-oriented and economically vibrant community that encourages citizen involvement, respects diversity, values community character, and enhances the quality of life of Littleton residents and visitors"
>
> In order to accomplish this vision, it is important that the services and amenities meet the standards for a high level of service. This may involve improvements to existing sites as well as the potential development of new sites. It also entails the equitable provision of services. **Emphasizing the strong natural components and unique attributes of Littleton** will offer a valuable image for current and future residents.

(Ref: https://www.littletonco.gov/files/sharedassets/public/v/1/our-community/documents-community/parks-rec-trails-master-plan-june-2016.pdf)

IV. A 6-FOOT-WIDE CONCRETE PEDESTRIAN WALKWAY IS NOT NECESSARY FOR YEAR-ROUND USE, MAINTENANCE, OR ADA ACCESSIBILITY

If Littleton constructs a 10-foot-wide concrete path, an additional 6-foot-wide concrete pedestrian walkway is not necessary for year round use, maintenance, or ADA accessibility. As stated above, the Mary Carter Trail utilizes both concrete and crusher fines trails: "For safety, this busy trail features a **crushed stone path for pedestrians and wheelchair users** along with a paved path for bikers." (Ref: https://visitlittleton.org/partner/mary-carter-greenway-trail/) (emphasis added).

Although the current crusher fines trail is usable for walking, running, cycling, and mobility device use year round, particularly as the winters have become more mild on the Front Range, a 10-foot-wide concrete path will ensure the easier ability to plow a

path after infrequent heavy snows. The Spur Trail does not get enough bike or pedestrian traffic to necessitate the plowing of any adjacent crusher fines trail any more frequently than the present trail is plowed. Further, not plowing an adjacent crusher fines trail will open the Jackass Gulch Open Space to additional recreational activities in the winter after a snow such as cross country skiing and snowshoeing.

As to ADA accessibility, as addressed above, it is highly unlikely that a person in a wheelchair or on a mobility device will want to travel the distance required to get to the Mineral Station via the Spur Trail. That said, if the 8-foot-wide concrete interpretative trail that is planned to transect the wider portion of the Gulch is not enough for mobility device access, the 10-foot-wide concrete path will provide additional access. Moreover, a crusher fines trail can be constructed to be ADA accessible as noted at https://visitlittleton.org/partner/mary-carter-greenway-trail/. ("For safety, this busy [Mary Carter] trail features a **crushed stone path for pedestrians and wheelchair users** along with a paved path for bikers.").

The crusher fines trail also will be safer. Despite the best intentions when plowing to remove all ice and snow, anyone who has walked or run on concrete paths in SSPRD parks during the winter knows that plowing is not always down to concrete and often snow and ice will melt and freeze and create a treacherous icy condition. With an adjacent crusher fines trail, there will be the ability for more sure-footed or sure-wheeled use. Further, it will be safer for pedestrians when cyclists (both novice and experienced) speeding down the concrete grade don't have an adjacent concrete path (even with rumble strip dividers) on which to swerve.

Further, pet owners will appreciate the crusher fines surface when walking their pets. As the four lane (2 bike and 2 pedestrian) design is presently conceived, walking a pet with an allowed 6-foot leash on the inside "pedestrian lane" is asking for an accident to happen.

V. HAD LITTLETON CONDUCTED A TRANSPARENT CITIZEN ENGAGEMENT PROCESS, THE CITY AND ITS CITIZENS WOULD NOT BE WHERE THEY ARE TODAY

Without belaboring this point, it is arguable that Littleton procured the $562,500 grant from Arapahoe County Open Spaces to pave the Spur Trail by falsely and misleadingly asserting in its Application that it engaged or would engage in "a transparent public process" and stating that "[t]here is no opposition for the Mineral Avenue Trail Paving Project at the time of submission." Moreover, Arapahoe County's review of Littleton's Application fell short by not requesting that Littleton provide the required "[e]vidence of a

transparent public process." Had Arapahoe County inquired as to the results of the February 2022 focus group referenced in Littleton's Application, Littleton would have had to reveal that the focus group yielded the following result:

> "Would you prefer the Mineral Avenue Trail be paved, unpaved, or both?
>
> Both paved and unpaved: 7
>
> Paved: 2
>
> Unpaved: 0
>
> Please don't pave any trails."

Note: The focus group question asks nothing about the width of the trail or provides any indication that Littleton is considering a 16-foot-wide swath of concrete. (Ref: https://www.littletonco.gov/files/sharedassets/public/v/2/public-works/projects-docs-and-images/mineral-mobility/mmi-focus-group-summary-feb-2022.pdf) (see page 6 of web document). Moreover, Littleton states in part in its response to Arapahoe County's Application Question 6 concerning public engagement: "Once design reaches 90%, another round of public engagement will occur before the design is finalized." Littleton has wholly failed to honor its commitment for "another round of public engagement."

Needless to say, had Littleton engaged in public outreach and engagement after the design of the planned trail was 90% complete, as they represented they would do in response to Question 6 in Littleton's Application for the grant, Littleton and Arapahoe County would have been inundated with opposition. Although Littleton did not itself engage in public outreach and engagement "[o]nce design reaches 90%," when this year (2025) the citizens of Littleton caught wind of Littleton's plans to pave the Spur Trail with a 0.70 mile-long and 16-foot-wide swath of concrete, the citizen opposition has been loud and strong.

VI. CONCLUSION – A 16-FOOT-WIDE SWARH OF CONCRETE IS UNNECESSSARY, WILL DEFILE OPEN SPACE AND WILL WASTE PUBLIC FUNDS

The paving of the Spur Trail should not proceed without Littleton's outreach to its citizens for transparent and constructive engagement on how to deal with the Spur Trail. Based on the outcome of the February 2022 focus group where almost all participants opposed a wholly paved trail, it appears likely that the consensus will be to have an 8 to 10-foot-wide concrete trail with an adjacent 6-foot-wide crusher fines trail similar to the trail Denver and the Highline Canal Trail Conservancy are planning for the Highline Canal trail between Parker Road and Havana Street.

Littleton made it clear in its Application to Arapahoe County for a grant to pave the trail that the paving of the trail was not an integral element of their Mineral Mobility Improvements Project: “If the City of Littleton is unable to obtain additional funding through ACOS, implementation of the Mineral Avenue Trail [the Spur Trail] paving will be postponed until more funding is available.” That makes sense as the Spur Trail does not provide walkshed access to Mineral Station and the West Mineral Avenue bikelane elements of the Mineral Mobility Improvements project will provide safe commuting to the Mineral Station by bicycle from the east.

Because there are **zero households** within the Mineral Station walkshed that would or could use the Spur Trail for access to the Mineral Station, there should be no question that the recreational and natural surface qualities of a crusher fines trail should be preserved for the primary recreational walkers and runners who use the Spur Trail.

Constructing a 16-foot-wide concrete road down Jackass Gulch at an expense of over $750,000 will be a waste of public funds and a breach and abuse of the public trust to to "conserve and enhance natural lands" and “to improve, restore and/or protect open space lands” as stated in Arapahoe County Resolution 21-263.

All decision makers for the design and funding of the Spur Trail paving project, if not already done so, should walk the trail in both directions and visualize what a 16-foot-wide concrete swath (the width of a travel lane on Jackass Hill Road) would do to the character and feel of the Jackass Gulch Open Space. Note also the relatively small number of pedestrians, runners, or cyclists on the trail at any time compared with usage of the crusher fines Highline Canal Trail and the ease by which they all navigate the 10-foot-wide crusher fines surface. When walking the trail, keep in mind that a middle portion of the trail has been subject to heavy equipment use over the past few winter/spring months during the Gulch improvement and stabilization project. The reasonably good condition of the trail where the heavy equipment operated speaks volumes to the durability of a crusher fines trail.

May 19, 2025

Dear Council members,

Tuesday you will be given a presentation by staff on the MMIP and the paving of the Mineral Ave Trail (a.k.a. the RR Spur Trail or Jackass Gulch Trail) as well as a FAQ piece. For clarity, we prefer to use the RR Spur Trail instead of the Mineral Ave Trail to differentiate the work on the trail through Jackass Gulch vs the work on the Mineral Ave roadway.

We have reviewed the presentation and find many misleading or incorrect statements, similar to what was used in applications to ACOS and CDoT to obtain funding. As you have limited time to look into all the background documents, we present to you questions you may want to ask staff during, or after the presentation, along with responses that we feel are factual and fair. There are many questions regarding the evolution of this design, so please select the questions you believe are most relevant. And then feel free to compare the responses with what staff tells you.

Keep in mind that a common definition of fraud used in contracting is “An intentional or deliberate act that relies on deception in order to achieve a gain”. The term “waste” is well understood. In the current environment funders are somewhat more sensitive to these terms – fraud and waste. As you may be aware, reasonable people may determine that there are sufficient reasons to believe that the applications for funding to ACOS and CDoT contain sufficient misleading and/or false statements that reimbursement may not occur. If the project is constructed as proposed the city would then be responsible to pay for these non-reimbursed costs, on the order of $2M for Phase 1 and possibly another $2.1M for Phase 2.

Please realize that no one is disputing the proposed Works on Mineral and Jackass Hill Rd and the intersections, as these improvements have been needed for some time. The focus is on the evolution of the design of the RR Spur Trail that took place without sufficient public input or common sense and was disproportionately influenced by SSPRD’s unjustified and self-serving approach in order to reduce their maintenance costs at the expense of serving the citizens of Littleton.

There is a standard approach that should be considered in order to resolve the question of modifying the design to better meet the needs of the citizens and yet still comply with CDoT’s requirements and deadlines. In the Standard Specifications for Road and Bridge Construction, Ed 2023 that is part of the Contract, the Contractor may propose a Value Engineering Proposal, or VEP (Sec. 104.07). The VEP could propose a dual surface trail, thereby reducing the cost, increasing usage, reducing environmental impacts, etc. while maintaining the “essential features” of the project. Such a change could be accepted quickly if the stakeholders are gathered together and understand the full background of the project.

After reviewing all information available to you, if you decide to vote to proceed with this contract we ask that you instruct the City Manager to request the Contractor to submit a

Value Engineering Proposal so that there will be clarity on the question of safety, costs, and schedule and hopefully the project will be constructed to better meet the needs of the residents of the City of Littleton that you represent.

We would be happy to discuss any of these items in more detail at your convenience.

Regards,

Steve Lowry
Marc Flink
Don Bruns
Ned Sterne
John Marchetti

QUESTIONS FOR MESSRS SODERLIN AND HUEMANN RELATING TO MINERAL AVE TRAIL /JACKASS GULCH RR SPUR TRAIL. May 20, 2025.

Questions (Q) are presented as follows, along with responses (R) based on documents reviewed.

RESOLUTION NO. 34 – 2025 TO APPROVE A CONSTRUCTION CONTRACT

Q: Why doesn't the value of the contract with TALL show up in the main body of this Resolution, as it typically does? The Resolution refers to Exhibit A, which is just the Scope of Work and does not mention the contract amount. The Contract Price is shown in the Construction Contract, Part 1.4, as $2,375,653.10. In the request for bid documents, the Construction Contract is referred to as Attachment A. The Construction Contract includes Exhibit A, Scope of Work. Did the Resolution mean to refer to Attachment A rather than Exhibit A?

> R: Most Resolutions that have been reviewed present the costs in the Resolution itself and do not require the reviewer to search other documents. If the Resolution meant to refer to Attachment A instead of Exhibit A this is an example of a lack of quality control.

GENERAL

Q: In evaluating walkability to the Mineral Station, Littleton's 2019 Transportation Master Plan utilized a ½-mile Mineral Station walkshed because "this distance is used as a standard in determining the walkability of an area (sometimes a 5 minute or ¼-mile walkshed is used – most commonly for measuring connections to bus service."). Do you agree that a ½-mile distance is a standard for determining the walkability of an area?

> R: Based on the ½ mile distance, or even a 1-mile distance, there are no homes within this walking distance of the Mineral Station when using the RR Spur Trail.

Q: Can you tell us the neighborhoods where you believe that residents will be willing to walk to and from the Mineral Station to and from their homes by way of the RR Spur Trail to use rapid transit? How far are those homes from the Mineral Station? At a 10-15 minute pace for ½-mile discussed in the 2019 Transportation Master Plan, how long would that walk take? What information do you have that suggests that people would be willing to walk, or bike, that distance and take that much time to walk or bike to Light Rail?

> R: The project is based on a concerning lack of data regarding how many people currently use the trail and how many may use the trail after completion. Based on the walkability analysis, there are exactly 0 homes within a 1-mile walking distance of the Mineral Station. In the City's 2020 application to CDoT the only

increase in people walking or biking to the Mineral Station was due to a general population increase and not to completion of the project.

Q: In Littleton's Safer Main Streets Phase 1.5 submission to CDoT in late 2020/early 2021, Littleton made the following statement: "the improvements proposed will provide a more cohesive and accommodating walking and biking network for the hundreds of residential dwellings within the one-mile travel shed of the Light Rail station." As it relates to the RR Spur Trail, are there any homes whose residents can walk a mile or less to or from their home to or from the Mineral Station using the Jackass Gulch Trail? If the answer is yes, what route do they take to get to the east entrance to the trail?

R: As noted above, the walkability analysis is clear that there are no homes meeting this criteria.

Q: Were either of you present at the May 25, 2023 Transportation Mobility Board Meeting. The meeting summary from that meeting indicates that the Chair asked staff if the City has counts of how many pedestrians, bicyclists, and vehicles utilize the Mineral LRT Station. In response, Staff explained that the city does not have this information. As of this evening, does the City have counts of how many pedestrians and cyclists access the Mineral Station generally and more specifically, how many pedestrians and cyclists access the Mineral Station using the RR Spur Trail?

R: We have not seen any data to show that the paving of the RR Spur Trail would increase the number of people walking or biking to the Mineral Station.

Q: Won't the Jackass Gulch area be accessible to wheelchairs and those with other disabilities using the 8-foot wide concrete trail connecting the HLC trail to the RR Spur Trail over the detention pond embankment that is being installed as part of the drainage improvement project?

R: We understand this alternative route would comply with ADA.

Q: How many days a year do you anticipate snow on the trail? If there was a dual surface, wouldn't plowing only the concrete surface provide sufficient access to users who may use the trail? Snow can be plowed off crusher fines trails using an inexpensive and removable attachment to the plow blade (https://yardsaverplowing.com/). South Suburban has a "district policy" that they won't plow crusher fines trails. One rationale for this policy given by Andy Jennings, former SSPRD Director of Parks and Open Space, was driving vehicles on the crusher fines trails after snows would damage the trails. Yet, SSPRD now drives vehicles on the trails to plow snow from bridges and concrete portions of the trail, so this rationale is false. This practice packs snow onto the crusher fines trails, resulting in snowpack and wet conditions lasting longer. The Lee Gulch Trail between South Prince Street and the Mary Carter Greenway was plowed for many years, making this crusher fines trail immediately accessible to all users after snows. Why shouldn't this practice be revived and expanded?

R: During snow events, trail usage naturally decreases so the 8-ft wide plowed path is expected to be sufficient for users – as it is on other trails.
The city should insist on better maintenance of the trails and not let SSPRD dictate the maintenance procedures.

Q: Littleton has many visually impaired residents – similar to the Mary Carter Greenway trail, wouldn't a dual surface trail be a safer way to demarcate the pedestrian areas from the Bicycle lanes?

R: A dual surface trail with a grass buffer would be much safer for visually impaired persons. The proposed 1-ft wide "heavy raked" buffer is an experimental element that increases risk as it places visually impaired walkers going uphill in immediate proximity to high speed downhill cyclists.

Q: Do the current plans for the buffer between the bike and pedestrian lanes meet ADA standards?

R: ADA does not have a standard that covers a "heavy rake" finish, per the US Access Board (Federal agency). This is an experimental design and puts users at an increased risk compared to a dual surface trail with a 1-ft grass buffer.

Q: Is the RR Spur Trail considered a busy trail compared with the South Platte Park Trail or the Mary Carter Greenway trail? Why is a 16-foott wide concrete trail needed through Jackass Gulch when all other metro concrete trails with higher use are 8 to 10-feet wide?

R: The RR Spur Trail is not a busy trail, and based on the walkability analysis, never will be as busy as other trails in the area.

Q: Putting funding aside, does postponing the work on the RR Spur Trail to change the design require any delay in implementing any of the other elements, such as Mineral Ave and Jackass Hill Rd., in Phase 1 of the Mineral Mobility East Project?

R. The City has said in their applications to ACOS and CDoT that the paving of the trail could be "tabled" if sufficient funds are not available. In other words, the work on the trail is independent of the other work on Mineral and Jackass Hill.

Q: Has anyone in the City recently asked Arapahoe County Open Spaces if they have any objection to redesigning the Jackass Gulch trail to a dual surface trail or delaying the trail work to Phase 2?

R: The ACOS Trail Advisory Board has indicated they are not concerned about the schedule. The current IGA with ACOS will expire in July this year. Renewal

would be dependent on the City complying with conditions in the IGA and questions regarding incorrect statements from the city, such as there being no opposition to the project, being resolved.

Q: When was the last time that anyone from the City has had a meeting with CDoT to discuss the issues relating to the RR Spur Trail and trying to find a solution to the design and timing issues? On Jan 2, 2025 two concerned community members requested Brent and City staff meet with CDOT to explore changes to the all-concrete design. Brent said he would request the meeting, yet after two follow up emails by one of the members (Ned) asking to hear CDOT's response received no reply, the conclusion was that staff he had no intention of contacting CDOT.

R: To our knowledge the City has never presented this option in a meaningful way. Our efforts to meet with CDoT to explore solutions have been thwarted. Similar to our effort to meet with SSPRD that was rejected by Melissa Reese-Thatcher.

Q: Do you agree with Mayor Pro Tem Barr that, funding issues aside, "an ideal scenario would have been a dual surface trail"?

R: Barr made this comment in a May 07 email to Mr. Flink. Apparently SSPRD is driving the 16-ft concrete option to lower their maintenance costs, although no Life Cycle costing analysis has been presented. The city is choosing to go along with this arrangement rather than respect the wishes of the city's citizens to have a dual surface trail.

When asked to produce records of maintenance expenditures on the Lee Gulch Trail, Andy Jennings, SSPRD Director of Parks and Open Space said SSPRD does not maintain records of their trail maintenance.

Q: Isn't it true that if Arapahoe County or CDoT determine that the grants to the City were obtained through false, misleading, or deceptive applications (i.e. fraud), the City could lose those grants even if construction has been started and/or completed but before reimbursement is made?

R: Yes. Then the city would have to pay these amounts, $562k for ACOS and $1.6M for CDoT and possibly $2.089M for DRCOG.

Q: Is the CDoT deadline based on completing the Works, i.e. getting Final Acceptance, or just expending the $1.6M CDoT contribution?

R: refer to letter from CDoT to CoL dated Dec 18, 2020, the deadline is based on "substantial completion" (when the Work is available for use by the Owner). This means that even though the $1.6M may have been spent on design and construction by the deadline, the Works have to be substantially complete.

SLIDE PRESENTATION

SLIDE 3:

Q: First bullet: what is meant by safety and mobility upgrades? Wouldn't a dual surface trail provide similar, or better, safety upgrades?

> R: The proposed 1 ft concrete buffer is not an ADA standard surface. The design puts high speed downhill bicycle traffic immediately adjacent to uphill walkers separated only by this experimental buffer. This increases, not decreases, safety compared to visually impaired persons being able to readily detect the difference between crusher fines, a grass buffer and a concrete surface, such as on the Mary Carter Greenway. The CDoT ADA coordinator is currently looking into this element of design and has not yet responded.
>
> Mobility upgrades for whom? The RR Spur Trail is ADA-compliant and requires no "upgrades to become compliant. Concreting the trail degrades the utility of the trail to walker and runners and markedly decreases the utility of the trail to this large group of users who rely on it to maintain their mobility.
>
> The city has been told numerous times that concrete is not a comfort surface for foot traffic.

Q: Second bullet: Your Project Purpose slide uses the phrase "First/last mile connections to transit." Do you understand that the phrase "first and last mile" when used in the context of evaluating transportation and mobility options and solutions is a metaphor for the first and last legs of a journey and is not to be taken literally as a mandate to pave all access routes within a mile of a home or given destination?

> R: First/last mile is not to be taken literally as a mandate to pave all access routes within a mile of a home or given destination.
>
> The final approach to the RTD Littleton-Mineral RTD Station via the pavement west of Jackass Hill Road along the north side of Mineral Avenue is not ADA-compliant and nothing shown so far in the engineering schematics for Phase 2 of this project will make it ADA-compliant. Therefore, changes to the RR Spur Trail do nothing to make this "last mile" to the RTD Station ADA-compliant.

Q: The Light Rail runs from the Mineral Station from about 5 in the morning until midnight – when you say that the paved RR Spur Trail will provide year-round access to the Mineral Light Rail Station, are you talking only about daylight hours or you suggesting the RR Spur Trail which will be unlit and concealed from Mineral Avenue for much of its length also should and will be used for commuting when its dark out?

> R: Without lighting infrastructure, the trail cannot safely be used as a commuter trail when it is dark.

Q. Third bullet: Your slide says that the project will provide “safer access to recreational amenities.” Isn’t the Jackass Gulch and the current crusher fines trail itself a recreational amenity ?

R: Along with the crusher fines HLC trail, the RR Spur Trail is a recreational amenity used primarily by recreational walkers, runners, pet walkers, and cyclists. The Jackass Gulch drainage project currently under construction will have a concrete trail around the retention pond between the HLC trail and the RR Spur Trail, which could easily be tied into the concrete portion of a dual surface trail. Jackass Gulch will lose its recreational character if a 16-foot wide concrete road is constructed.

Q: Third bullet: The slide references “year-round high-comfort bicycle/ pedestrian facilities.” With respect to pedestrians using the Jackass Gulch Trail, the “high comfort” is referring to the width of the pedestrian walkway, not the surface? Wouldn’t you agree that for many walkers and runners, a crusher fines trail is a more comfortable walking or running surface? In fact, many walkers and runners come to the RR Spur Trail specifically because it is a soft, crusher fines trail. If the trail is concreted, its utility to these users is lost and rather than recreating within their neighborhood they will need to drive to the nearest soft trail.

R: In his May 7 email to Mr. Flink, Mayor Pro Tem Stephen Barr stated in part: “there are many of our residents that have advocated for this trail to remain as is so its nicer to walk on. Heard and would even agree!”

Q: Fifth bullet: Does this imply that crusher fines trails are not ADA compliant?

R: According to US Access Board (the Federal Gov’t’s regulatory body), an ADA trail surface needs to be “firm and stable” and have a grade less than 5%. Crusher fines trails when properly constructed and maintained meet these criteria. It may be considered deceptive to indicate otherwise. The RR Spur Trail is currently ADA-compliant and requires only proper maintenance to remain so.

Q. Last sentence: Is paving the Jackass Gulch Trail between Jackass Hill Road and the Highline Canal Trail one of the 87 active transportation projects identified in Table 16 of the City’s October 2019 Transportation Master Plan? Why did the City tell CDoT in Section (G)(1) in the City’s Main Safer Streets application that: “Implementation of Littleton's Transportation Master Plan (TMP) Recommendations - The elements in this project were identified in Littleton's TMP (October 2019) and this project will help the City implement key safety and connection projects”?

R: Paving the Jackass Gulch Trail between Jackass Hill Road and the Highline Canal Trail was <u>not</u> one of the 87 active transportation projects identified in Table 16 of the City’s October 2019 Transportation Master Plan.

SLIDE 4:

Q: When was the 90% design completed?

R: The 90% design was first mentioned in early September 2023 per email dated Sept 5, 2023 from David Evans Assoc. to CoL and SSPRD. This occurred after the last public engagement on-line meeting in July 2023. Thus, there appears there never was public engagement, as required by the IGA with ACOS, after the 90% design was available. It appears that the City has not complied with the IGA and this should be considered when an extension to the IGA is requested. Generally, if one party has not complied, the agreement would not be renewed or extended. This may seem like a minor discrepancy to some, but public engagement is essential and this should be seen as a major issue and indicative of the staff not paying attention to the need for public engagement.

Q: In the June 2022 public engagement activity the schematic showed a paved trail, without specifying the material, with a 1 ft buffer between a 12-ft wide bikeway and an 8 ft sidewalk. In the July 2023 on-line meeting the schematic indicates a 16-ft wide all concrete design. Who made this change, and why?

R: Given that the majority of the responses in public engagement that occurred prior to July 2023 were opposed to an all-concrete design, who decided to neglect public input and propose the all-concrete option?

SLIDE 5:

Q: In the City's application to Arapahoe County Open Spaces, the City states that feedback from an online survey in December 2021/January 2022, one focus group in February 2022, and one virtual open house in June 2022 "has shown community support for paving the Mineral Trail." Didn't the majority of the focus group tell the City that they thought a dual surface trail would be the best way to proceed? Did the online survey in December 2021/January 2022 even discuss the width of the trail or possible trail designs?

R: The majority were against the concrete surface. The online survey did not mention the width or surface material of the trail.

Q: What were the results of these engagements? How many people? Summary of comments?

R: The February 2022 public forum was the only time the City polled the public as to their preferences for the surface of the RR Spur Trail. The overwhelming majority opted for the dual-surface trail with 7 voting for the dual-surface and 2 voting for the all-concrete options. Surface options for the trail were discussed at the initial public outreach sessions in December 2021/January 2022. At those meeting members of the public, including Charles Blosten and Jim Woods,

former CoL's PWD and CM, were assured by City staff that the trail would be dual-surface. With these assurances many people stopped paying attention to the project planning and were surprised in January of 2025 when word got out the City had adopted the all-concrete design.

SLIDE 6:

Q: We don't see any mention in these examples of a 16-ft wide concrete trail. These seem mostly to be prior to July 2023 and do not provide basic information of the proposed width or surface. The exhibit in the lower left apparently has results of an alternatives analysis. What did that show?

R: Refer to the below table from the June 2022 public forum when the all-concrete plan was announced to under 10 people. This analysis appears to have come from the 3 consulting companies whose reps were at the meeting. This seemingly objective analysis is highly subjective and tailored to arrive at the design favored by staff at the City and South Suburban, not the public. For instance, see "safety potential for peds". The dual-surface design (Alternative 7C) provides the same "designated pedestrian facility" as the all-concrete design, yet gets a FAIR rather than a GOOD rating applied to the all-concrete design. Under "ease of maintenance" both the dual-surface (7C) and the all-concrete design (7D) receive a FAIR rating except the all-concrete design will require added maintenance to the pavement given the additional concrete involved. Again, it is certainly not clear how this exercise leads to recommending the all-concrete over the dual-surface design.

Location: Mineral Avenue - Between Jackass Hill and High Line Canal Trail (HLC) crossing at Peninsula

Alternative ID	Draft Alternatives	Alternative detail	Safety potential - peds	Safety potential - bikes	Safety potential - vehicles	Future traffic conditions	Mode improvement	Right-of-way	Ease of maintenance (segment only)	Local plans
2A	Buffered bike lane with two lanes in each direction	- Bike lanes continue through intersections	POOR No safety improvements anticipated	FAIR Improvement from existing facility	FAIR Indirect safety improvement more space between bike facility	FAIR Operations not anticipated to change	FAIR Improvements for vehicles and bicyclists	GOOD No additional ROW anticipated	FAIR Ability to maintain with small increase in resources with additional striping	FAIR TMP Recommendations for protected bike lanes
2B (Recommended)	**Protected bike lane with two travel lanes in each direction**	**- Bike lanes continue through intersections**	**FAIR Additional physical barrier provides additional protection from vehicles**	**GOOD Physical separation from vehicles**	**FAIR Indirect safety improvement more space between bike facility**	**FAIR Operations not anticipated to change**	**FAIR Improvements for vehicles and bicyclists**	**GOOD No additional ROW anticipated**	**POOR Large increase in resources required to buy equipment to maintain facility**	**GOOD TMP Recommendations for protected bike lanes**

Location: Mineral Avenue Trail

Alternative ID	Draft Alternatives	Alternative detail	Safety potential - peds	Safety potential - bikes	Safety potential - vehicles	Future traffic conditions	Mode improvement	Right-of-way	Ease of maintenance (segment only)	Local plans
7B	East of Jackass Hill: Pave trail	Paved trail	FAIR Improvement from existing facility	FAIR Improvement from existing facility	FAIR Indirect safety improvement of improving trail to prevent people from walking in roadway	FAIR Operations not anticipated to be impacted	FAIR Improvements for pedestrians and bicyclists	GOOD No additional ROW anticipated	FAIR Would require maintenance of paved facility	FAIR General support for bike/ped improvements
7C	East of Jackass Hill: New paved trail adjacent to existing soft surface trail	Paved trail adjacent to soft surface trail	FAIR Improvement from existing facility	FAIR Improvement from existing facility	FAIR Indirect safety improvement of improving trail to prevent people from walking in roadway	FAIR Operations not anticipated to be impacted	FAIR Improvements for pedestrians and bicyclists	FAIR Some additional ROW anticipated from agency partners	FAIR Would require maintenance of paved facility	FAIR General support for bike/ped improvements
7D (Recommended)	**East of Jackass Hill: Pave trail with designated space for bikes/peds**	**Paved trail with path for bicyclists and a sidewalk for pedestrians**	**GOOD Designated pedestrian facility**	**GOOD Designated bicycle facility**	**FAIR Indirect safety improvement of improving trail to prevent people from walking in roadway**	**FAIR Operations not anticipated to be impacted**	**FAIR Improvements for pedestrians and bicyclists**	**FAIR Some additional ROW anticipated from agency partners**	**FAIR Small increase in resources required to maintain paved and larger facility**	**FAIR General support for bike/ped improvements**
7E (Recommended)	**West of Jackass Hill: Expand sidewalk with designated space for bikes/peds**	**Paved trail with path for bicyclists and a sidewalk for pedestrians**	**GOOD Designated pedestrian facility**	**GOOD Designated bicycle facility**	**FAIR Indirect safety improvement of improving trail to prevent people from walking in roadway**	**FAIR Operations not anticipated to be impacted**	**FAIR Improvements for pedestrians and bicyclists**	**FAIR Some additional ROW anticipated from agency partners**	**FAIR Small increase in resources required to maintain larger facility**	**GOOD TMP recommendations (#82 for active transportation projects shared use path)**
7F	West of Jackass Hill: Expand sidewalk into roadway	Expand sidewalk	FAIR Improvement from existing facility	FAIR Improvement from existing facility	FAIR Indirect safety improvement of improving trail to prevent people from biking in roadway	FAIR Operations not anticipated to be impacted	FAIR Improvements for pedestrians and bicyclists	GOOD No additional ROW anticipated	FAIR Small increase in resources required to maintain larger facility	GOOD TMP recommendations (#82 for active transportation projects shared use path)

SLIDE 8:
Q; last bullet: please explain your statement: "Mineral Avenue Trail paving and dedicated space for bicyclists and pedestrians"

R: It's simply untrue—because dedicated space for pedestrians would be preservation of the crusher fines trail. If the city had any awareness of such use on the Mary Carter Greenway, they would know that.

SLIDE 12:

Q: Why doesn't this slide show the CoL's obligation?

R: Council members should be able to see how much is coming from Littleton taxpayers. It may be considered deceptive not to clearly show this amount, which is $1,109,750.

Funding Source	External Funding Amount	Local Match
Colorado Department of Transportation Safer Main Streets Grant[a]	$1,600,000	$400,000
Denver Regional Council of Governments Transportation Improvements Program Grant	$2,089,000	$522,250
Arapahoe County Open Space Grant *(funds Mineral Avenue Trail improvement construction only)*	$562,500	$187,500
South Suburban Parks & Recreation District Contribution *(funds Mineral Avenue Trail improvement construction only)*	$200,000	$0
Total	**$4,451,500**	**$1,109,750**

[a] *Grant expenditure deadline: December 31, 2025*

Q: Why is the DRCOG's contribution shown as being used for Phase 2 Design? The letter dated March 27, 2023 to the Board of DRCOG only states the funding is to be used for construction.

R: The March 27 letter clearly says "to construct safety and accessibility improvement…." and "… to spend the remaining $2.089M of FasTracks funding in FY2024 to construct the Mineral Ave and …Mineral (sic) Trail improvements…" Agencies normally clearly differentiate between design, construction and maintenance when granting funds. Based on language in the letter it appears to be incorrect to use DRCOG funds for design of Phase 2. The design for Phase 2 should properly be allocated towards the CDoT $1.6M grant.

SLIDE 13:

Q: Phase 1 Construction is shown starting June 1, 2025. However, staff anticipates that the Notice to Proceed will not be able to be issued until July 1 with work commencing as late as July 15, 2025. With 144 calendar days allowed for construction from the date of the NTP, how close to the Dec 31, 2025 deadline from CDoT are we? How can we be assured that the work will be completed on time given that most construction contracts

at the City are not completed on time (Gallup St culvert, Jackass Hill culvert repair, etc). What is the risk of not completing the work by the deadline and therefore not being reimbursed by the City?

> R: The Contractor is, of course, optimistic that the Works can be completed in less than 144 days. The City's track record for completing projects on time is not very good. The City will be at substantial risk of not completing the work on time if there are weather delays, other disruptions. CDoT has been clear that no further extensions will be granted, and the City has used this as a reason to reject the idea of redesigning the trail.

FREQUENTLY ASKED QUESTIONS SHEET dtd 5/14/2025

What is the purpose of the project?

Q: Wouldn't a dual surface trail meet the safety and accessibility aspects? As dual surface trails do along the SPR, for instance?

> R: See earlier response re the concept of the first/last mile – it does not require a 16-ft wide concrete trail. A dual surface trail provides a safer project and meets accessibility for more people as it includes runners, walkers and equestrians who may otherwise not use an all-concrete trail.

Why is the project being implemented in phases?

Q: For the existing trail west of Jackass Hill down to the Mineral Station that will be Phase 2, the slopes exceed the ADA criteria of 5% and space is limited to accommodate a switchback to reduce slope. A switchback would increase the length of the trail and include tight turns, making it less attractive to walkers and cyclists. Have you seen any conceptual designs for this design contract that was awarded to DEA on Feb 07, 2025, more than 3 months ago?

> R: as of May 16, no conceptual design had been submitted, according to the PWD. If this reach of the trail cannot be made to meet ADA standards, then that would defeat the who purpose of access for people with disabilities coming from the east. This should have been evaluated much earlier.

How is the project being funded?

Q: Please provide specifics as to what has to be completed by the CDoT deadline of Dec 31, 2025.

> R: CDoT and DRCOG in their letter dtd Dec 18, 2020, require "substantial completion" by the deadline (was June 30, 2024). Substantial completion is defined as "work being available for use by the Owner. The usual interpretation

would be all work funded by CDoT or DRCOG in Phase 1 – which would be the work on Mineral Ave and JAH Road.

How was the community engaged…..

Q: You state that "input gathered during community engagement informed the evaluation of the project's alternatives and Phase 1 design". How does that jibe with the fact that there were very few people involved and of those that gave comments the vast majority were against concrete? Why wasn't the public input given proper consideration?

R: This is a basic problem with city projects – public engagement is minimal and often not considered – a legacy of the prior PWD carried out by the Sr Transportation Planner. Public engagement was sorely lacking. The city's efforts prior to July 2023 lacked sufficient detail on width and surface for meaningful comments. In July 2023 the online meeting was the first time a concrete surface was presented and was attended by less than a dozen people. Comments were generally opposed to concrete.

Q: the summaries provided do not indicate how many people participated or what the feeling of the community was to these early designs.

R: See response above.

What are the project improvements?

Q: You state "…. Design of the improvements were informed by community and stakeholder engagement conducted between late 2021 and mid-2023". As noted earlier, the community engagement appears to have been ignored. Please explain the how the stakeholder engagement was involved in the design. Does this mean SSPRD pushed for the all-concrete option, possibly in order to reduce their maintenance efforts?

R: Since staff has not said they promoted the 16ft wide trail, by process of elimination it appears SSPRD was responsible.

Q: On pg 3, you do not state that Phase 2 will be ADA compatible. Existing grades exceed the standard ADA criteria of 5%.

R: The US Access Board criteria do allow for steeper sections with level platforms at specified intervals. Phase 2 conceptual design should have been provided since the design contract was awarded over 3 months ago. Without this issue being resolved, how can the rest of the trail that is ADA compliant feed into a section that is not ADA compliant?

Q: pg 3, 2nd bullet: Where has the proposed 1-ft wide buffer been successfully demonstrated to separate bicyclists and pedestrians?

R: The proposed 16-ft wide trail with the 1-ft buffer only separates cyclists and pedestrians on paper. Real-world separation would be to redesign to keep the crusher fines trail (actually providing improved conditions for walkers and runners) and build a separate concrete trail (facilitating their mobility goals).

What modifications to the Mineral Ave Trail are provided….?

Q: 1st paragraph: How does Phase 1 provide safety and accessibility improvements when you are making it less safe by putting walkers and cyclists in such close proximity with an unproved buffer design and reducing accessibility for runners, walkers and equestrians who would only use a crusher fines trail?

R: The "heavy rake" finish on the concrete buffer is not an ADA standard, thus it is experimental, using Littleton residents as the subjects of the experiment. During interviews with trail users, and in reviewing emails from trail users, there would be a decrease in users if an all-concrete trial is constructed. The staff's statement is deceptive.

Q: pg 5 3rd bullet: Please explain how putting a 16-ft wide concrete trail through an open space area that had a 10-ft wide crusher fines trail reduces impacts.

R: We have explained very clearly to the city that installation of a 16-ft wide concrete roadway, misnamed a trail, in this open space setting will in fact adversely impact the surrounding open space setting. And the claim that adding trees are unique species is not believable.

Q: pg 5, second bullet: Why don't you say that a dual surface trail will also meet ADA requirements if it has a firm and stable surface and meets grade requirements? During winter months commuters to the Mineral Station will be walking in the dark in the morning and evening. There is no lighting for the trail, so usage is likely to be reduced.

R: Another potentially deceptive statement that implies a crusher fines trail is not ADA compatible.

Q: 3rd bullet: Wouldn't leaving the trail as is have less impact on the environment? Better maintenance would keep it open year-round. How many trees of what size are impacted?

R: Very few trees, all of small diameter are impacted. The design includes unnecessary costly retaining walls that could have been avoided by moving sections of the trail south and relocating these small trees. The design of this trail with a straight alignment is that of a roadway designer, not a trail designer. Bikes, walkers, horses can accommodate a curved trail that would avoid some trees and also slow cyclists down.

Why is the Mineral Avenue Trail being paved? Why are crusher fines not used?

Q: First paragraph, first sentence: Wouldn't a dual surface, for instance along the SPR, also provide ADA compliant and near year-round accessibility?

R: Of course, a dual surface meets these requirements. Potentially deceptive to imply otherwise.

Q; First paragraph, Second sentence: You state that the concrete trail will provide a low-stress, high comfort facility for cyclists. Yet, in winter, ice that forms on a concrete surface is less safe than a crusher fines trail. For instance, Mike Gent broke his ankle due to ice on a concrete trail. You fail to point out that the existing trail connects to the HLC trail, which is crusher fines. Just because the rest of the RR Spur Trail is paved is not a justification for paving the part through Jackass Gulch that is part of a loop used extensively by walkers, runners and gravel bikes.

R: The staffs' statements are misleading.

Q: Second paragraph, first sentence: Wouldn't the concrete portion of a dual surface trail provide access if it was plowed? Are you aware that ven the crusher fines surfaces on the HLC and Lee Gulch can be accessed by SSPRD to plow snow off the bridges along the trail? In winter, cross-country skiers use the RR Spur Trail in conjunction with the HLC trail. Wouldn't plowing the entire trail would deprive these users of a recreational facility?

R: Paving the entire width is not necessary.

Q: 3rd paragraph: Isn't a well-designed and well-maintained crusher fines trail less likely to be subject to erosion? Why doesn't the city insist that SSPRD provide the required staff and equipment to maintain these trails used by the residents of the City? Has the city looked into contracting with another entity to main trails. Or, as the application to AC Open Space stated, the city would maintain the trail?

R: The application to AC OS did state the city would own and maintain the trail. The arrangement between the city and SSPRD is a legacy of the former Exec Director at SSPRD and the former PWD at the city, apparently both of whom favored minimizing the involvement of their organizations at the expense of people using the facility.

Q: 4th paragraph: Are you aware that the SSPRD Trail standards as provided to the city on Feb 3, 2025 were updated from October 9, 2024? These standards were provided well after the design was complete in the fall of 2024 and therefore weren't in effect at the time of design. Why would SSPRD ask for a 5 ft buffer when no other agency along the Front Range has such a requirement? Doesn't this basically exclude many areas from having dual surface trails. As major trails, like Mary Carter Greenway, have successfully performed with a 1ft buffer on shared trails, why didn't the city push back? Given that the ROW in this area is 90ft or 100ft, except for the far west end, why didn't

the city ever ask the designers to try to use the 5 ft buffer and to do so in a way that would minimize impacts?

R: First, this standard was given to the city after the design was essentially completed, so it didn't need to be followed. If the city wanted to see if could be applied, they would have asked the designer to evaluate it. To bring up this standard at this time appears to be just an excuse not to re-evaluate the design.

Filename: QUESTIONS FOR MESSRS SODERLIN AND HUEMANN RELATING TO JACKASS GULCH SPUR TRAIL SL.docx
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Title:
Subject:
Author: Marc Flink
Keywords:
Comments:
Creation Date: 5/19/25 5:57:00 PM
Change Number: 2
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Last Saved By: Microsoft Office User
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As of Last Complete Printing
Number of Pages: 16
Number of Words: 6,032
Number of Characters: 29,809 (approx.)

From: [redacted]
To: Sheri Flies; Jenifer Murillo; Sarah Wortman; gnelson@republiciq.c; Colleen Norton; Kyle Schlachter; Stephen Barr; Patrick Driscoll; Pamela Grove; Andrea Peters; Joel Zink
Subject: Costco Fuel Center and
Date: Saturday, May 17, 2025 1:19:49 PM
Attachments: Vachris May 10th 2025 copy recipients.docx
Petition Costco May 9.pdf

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

May 17, 2025

TO:
Sheri Flies, Senior V.P for Global Sustainability and Compliance,, Costco Wholesale
Jenifer Murillo, Northwest Atlantic Partners, Real Estate Development, Costco Wholesale
Grant Nelson, Republic Investment Group
Mitch Smith, CEO, MG2
Littleton City Council [via Colleen Norton, City Clerk for the City of Littleton]

FROM:
Gregory Sullivan, Ph.D.
Environmental Management and Systems

REF: Letter to Mr. Ron Vachris, CEO and President, Costco Wholesale, "Say No to 32 Gas Pumps!"

There are two attachments to this email: a certified letter and a petition list of names sent to Mr. Vachris, President and C.E.O. of Costco Wholesale. Th letter requests a change in the environmental plan to address the health impacts of 32 gas pumps at the Costco's fuel center at Mineral Place at 700 W. Mineral. The petition has 269 names of citizens who demand that Costco address the environmental harm of 32 pumps.

The Littleton City Council passed a moratorium on gas stations for six months. This is the opportunity for all parties to address serious environmental dangers of 32 gas pumps. The amounts of pollution from over 5,500 car visits per day to Costco's fuel center and store will cause irreparable health outcomes for citizens, especially children attending schools and elderly adults in care facilities within the zone of impact.

This moratorium period on fuel facilities will allow for mitigation of impacts of Costco's fuel center on the community before approving a building permit to construct the 32 gas pumps.

Thank you.

Enclosures:

Letter to Mr. Ron Vachris, CEO and President of Costco Wholesale
Petition with signatures of citizens demanding a change in the environmental plan at 700 Mineral Place

* Sender and receiver should be mindful that all incoming and outgoing emails may be subject to the Colorado Open Records Act, S 24-72-200.1, et seq.

COMMUNITY PETITION

Reduce the Number of Fuel Pumps at the Future Costco Fuel Station

at

700 W. Mineral Dr., Littleton, CO

We, the undersigned residents of Littleton, respectfully urge city officials and Costco representatives to reduce the number of fuel pumps planned for the proposed Costco Fuel Station at 700 W. Mineral Drive—from the proposed 32 pumps to no more than 12. This request is in alignment with the scale of other Costco Fuel Stations and local retail gas stations in similar suburban settings.

The proposed volume of 32 pumps raises significant concern regarding increased traffic congestion, elevated vehicle emissions, and overall environmental impact. These risks are especially troubling given the station's proximity to schools, playgrounds, and parks—areas frequented by children and families.

We believe a more modest-sized fuel station would better reflect the needs and character of our community, while still allowing Costco to serve its members effectively. We respectfully ask for a reconsideration of the current design and call for a solution that prioritizes community health, safety, and environmental stewardship.

Save the Swale
(Future Costco Development)

Date	Printed Name	Signature	Address
9-6-24	Judith Janson	Judith Janson	349 W. Jamison Cir #8 Littleton 80120
11	Frank Atwood	Frank Atwood	7945 S Costilla St Littleton 80120
9-6-2024	PATRICK M-CALL		340 W Jamison Cir #9
9-6-24	Miriam Dunnan	Miriam Dunnan	5599 S. Windermere 80120
9-6-24	Gregory Sullivan	Gregory Sullivan	7775 S. Hill Dr.
9/9/24	Meghan Sullivan		8771 S. Garland Ct 80128
9-8-24	Nick Gallegos		8771 S. Garland Ct 80128
9-13-24	Wilby Smith	Wilby Smith	2891-D W. Long Dr
9/13/24	Rachel Bingham	Rachel Bingham	236 W. Rowland Ave Littleton Co 80120
9-13-24	Pam Chandbourne	Pam Chandbourne	5402 S. Nevada St
9/16/24	Jeff Steffin		7735 S. Hill Dr 80120
9/16/24	Dawn Zilch		1994 S. Bemis St 80120
9/16/24	Marilyn Matheuson	Marilyn Matheuson	2783 W Long Dr #E 80120
9/16	David Kramer	David Kramer	7890 S Hill Dr Littleton 80120
9/16/24	Sheila Thunboe	Sheila Thunboe	7709 S Curtice Way #D Littleton Co 80120
9/16/24	David Muenkel		7776 S. CURTICE CIR 80120
9/16/24	ANNE Krueger	Anne Krueger	2723 W Long Drive 80120
9/17/24	Rachel Kissel	Rachel Kissel	2857 W Rowland Ave 80120
9/22/24	Linda Baker	Linda Baker	8034 So Peninsula Dr. 80120
9/23/24	Carleen Olson	Carleen Olson	7942 S. Elati Cir. 80120
9/23/24	Kathleen Knichel	Kathleen Knichel	7941 S. Elati Cir 80120
9/24/24	Eric McKeeman		7931 S Broadway, Littleton Co 80122
9-24-24	Darlene Clemens		841 W. KETTLE AV LITTLETON 80120
9.24.25	Jennifer M Klekamp	Jennifer M Klekamp	841 W Kettle Ave Littleton Co 80120 80120
9-25-24	Jeremy Goett	Internet Approved	7911 S Elati Circle 80120

SAVE THE SWALE
[FUTURE COSTCO DEVELOPMENT AT 700 W. Mineral]

Date	Print Name	Signature	Address
9/29	Bill Rhoades	~~internet~~ Approved 9-26	7965 S. Elati Circle, Littleton
9/29	Jack Rhoades	" " 9-2	7965 S. Elati Circle, Littleton
9/29	Lynsey Hoover	" " 9-2	801 W. Kettle Ave. Littleton
9/2	Brandon Addison		7979 S Cedar Cir Littleton
9/20	~~Jacob~~ Mont		7959 S CEDAR CIR LITTLETON
10/1	John Hill		7132 S. Coors Rd. Littleton
10/2	Mary Ann Lillis	internet Approved 10/2	971 W. Kettle Ave. 80120
10/2	Paul Lillis	internet Approved 10/2	971 W. Kettle Ave. 80120
10/2	Ann Kempton		7799 S. DATURA ST, LITTLETON 80120
10-4	John Marchetti		2582 W. Rawlins
10-5	Noel Cherubin		7710 S. Greenwood Ct
10-5	Sue Johnson		970 W. Dry Creek Rd.
10-5	Tammy Carpenter	internet approved 10/6	852 W. Kettle Ave 80120
10-6	Jennifer Wiseman	internet approval 10/6	7704 S. Gallup Ct, 80120
10-7	Maureen M. Lomas	Email Approved	930 W. Dry Creek Rd. 80120
10-7	Mary Jean Schloff		2422 W. Dry Creek Ct Littleton, CO 80120
10-7	Dianne Lorang	email approved	2470 W. Jamison Way
10-7	Mike Lorang	email Approved	2470 W. Jamison Way
10-9	Kimberly Smith		7365 S Houston Way Littleton, CO 80120
10-9	Shauna Nevarez		7334 S. Houston Way Cir
10-9	Connor Holdaway		" " "
10-9	Mark Vogel		7491 S Houston Way Cir Littleton Co 80120
10-9	Janine Vogel		" "
10-9	Jon Lisec		2453 W SUNSET DR LITTLETON CO 80120

SAVE THE SWALE
[FUTURE COSTCO DEVELOPMENT AT 700 W. Mineral]

Date	Print Name	Signature	Address
10-10	MELISSA LISEE		2453 W Sunset Dr Littleton
10/10	PAUL BUSCH	Paul Busch	2482 W. SUNSET, LITTLETON
10/11	Brendan Espinosa	email Authorized signature	1372 W Long Dr. Littleton 80120
10/12	Bill Wiseman	email authorization signature	7704 S. Gallup Ct, Littleton, 80120
10/12	Jared Smyth		7792 S. Hill Drive
10-12	Stacey Robinsein		7921 S. Bemis Cir Littleton 80120
10/12	Sheryl Mikuska	Sheryl Mikuska	7931 S. Bemis St. Littleton 80120
10-13	Julie Ross	Julie Ross	7910 S. Bemis St. Littleton 80120
10-15	Carol Borthwick	emailed authorize to sign petition	2490 W. Long Circle, Littleton 80120
10-16	Katherine McMurray	emailed authorized to sign petition	2620 W. Long Circle, Littleton 80120
10-20	Leslie Donahue	emailed authorized to sign petition	7991 S. Bemis Circle. Littleton 80120
10-21	Lisa Knight	emailed authorized to sign petition	850 W. Dry Creek RD Littleton 80120
10-21	Don Knight	emailed authorized to sign petition	850 W. Dry Creek Rd Littleton 80120
10-27	Julie K. Knight	emailed authorized to sign petition	7907 S. Bemis Pl, Littleton 80120
10-31	T MARK DUNNING		2490 W KETTLE AVE LITTLETON 80120
10-31	Katherine Dunning	Katherine Dunning	2490 W Kettle Ave Littleton 80120
10-31	Sarah Radke		7733 S Nevada Dr Lit 80120
10-31	Kenneth Zuck		7771 S Hill Dr Littleton
11/1	Nancy Lashley		7772 S. Hill Dr Littleton 80120
11-1	Kyle Schaffer		7774 S. Hill Dr. Littleton 80120
11-2	Janette Rourke	authorize signature by email	2413 W Long Circle, Littleton 80120
11-2	Brian Rourke	authorized signature by email	2413 W. Long Circle, Littleton, 80120
11-2	Ryan Todd	authorized signature by email	2445 W. Long Cir. 80120
11-2	Carol Swanson	Carol Swanson	7718 S Hill Cr. 80120

SAVE THE SWALE
[FUTURE COSTCO DEVELOPMENT AT 700 W. Mineral]

Date	Print Name	Signature	Address
11/3/24	Garrett Crawford		7720 S Hill Cir Littleton CO 80120
11/3/24	Wendy Davydov	emailed authorization to sign petition	7782 S. Hill Dr. Littleton CO 80120
11/4	Jessica Gzym	emailed authorization to sign petition	7786 S. Curtice Cir. Littleton, CO 80120
11/4	Victoria Hessman	emailed authorization to sign petition	7752 S. Hill DR. Littleton 80120
11/4	Brett Hessman	emailed authorization to sign petition	7752 S. Hill Dr., Littleton 80120
11/4	Steve Widman	emailed authorization to sign petition	2435 W Kettle Cir. Littleton 80120
11/4	Rita Widman	emaild authorization to sign petition	2435 W. Kettle Cir, Littleton 80120
11/8	GAIL SULLIVAN	emailed authorization to sign petition	7721 S. Curtice Way, Littleton 80120
11/8	Leigh Belden	emailed authorization to sign petition	7781 S. Curtice Dr. Unit C, Littleton 80120
11/9	Maggie Toth	emailed authorization to sign petition	2733 W. Long DR #C Littleton 80120
11/13	Marilyn Leedy	emailed authorization to sign petition	8221 S. Seabrook Ln. 80120, Littleton
11/14	Kolette Nelson	emailed authorization to sign petition	2973 W. Long Drive, Unit A. 80120 Littleton
11/14	Elizabeth Fox Kret	emailed authorization to sign petition	2981 W Long Dr., Unit C, Littleton 80120
11/14	Diane S. Young	emailed permission authorized to sign petition	8181 S. Peninsula Dr. Littleton 80120
11/14	Rosey Miller	emailed authorization to add name to petition	2072 W. Nantucket Ct. Littleton 80120
11/14	Laura Mauger		7741 S. Curtice Ct. Littleton 80120
11/14	Christina Jacobs	emailed authorized to place name on petition	7771 S. Curtice Dr. Unit D, Littleton 80120
11/14	DAN FLYNN		6089 S Broadway Littleton
11/15	Anne Strand	email authorizes to place name on petition	2988 W. Long Dr. Unit A Littleton 80120
11/15	Gloria Logan	emailed authorization to place name on petition	2879 W. Long Circle Apt D. Littleton 80120
11-15	Carol Blackstock		7134 S Castilla St. Littleton 80120
11-17	MARY Mackenzie	email permission to have named on petition	211 W. JAMISON Cir, Unit 27 Littleton 80120
11-19	Terry Kret	Terry Kret	2981 W Long Dr #C Littleton 80120
11-19	VALERIE Witte	Valerie Witte	3908 W. Long Circle 80120

SAVE THE SWALE
[FUTURE COSTCO DEVELOPMENT AT 700 W. Mineral]

Date	Print Name	Signature	Address
11/19	Deron Sullivan	Deron Sullivan	7775 s. Hill Dr 80120
11/19	Roberta Sullivan	Roberta Sullivan	7775 So. Hill Dr. Littleton 80120
11/19	Sharon Malon	Sharon Malon	2882-D West Long Cir Littleton 80120
11/20	Jayme Dever	[illegible]	5644 S. Huron St. Littleton 80120
11/20	Kristina Feste-Hanson	Kristina Feste-Hanson	585 W. Jamison Cir. Littleton, Co 80120
11/21	Eric Aoki	emailed authorization to place name on petition	589 W. Jamison Cir. Littleton 80120
11/23	Patrick Santana	Emailed approval to have name on Petition	2307 W. Caley Pl. Littleton, Co 80120
11/23	Gary Hubbard	Gary Hubbard	3004 W long Dr. Littleton 80120
11/23	Deb Corley	emailed approval to have name on petition	2973 W. Long Dr. Unit K, Littleton 80120
11/24	James Lindauer	emailed approval to have name on petition	759 W. Jamison Cir. Littleton 80120
11/24	JoAnn-Mullen Lindauer	emailed authorization to place name on petition	759 W. Jamison Cir. Littleton 80120
11/24	Mike Lessers	[illegible]	7790 S. Huron Ct. Littleton 80120
11/25	Kathleen Holowecky	emailed permission to place name on petition	241 W. Jamison Ct. Littleton 80120
11/25	Frederick Munoz	emailed permission to add names to petition 11/16	7769 S Curtis Dr. Unit B, Littleton 80120
11/25	Janet Munoz		
11/25	Debbie Belden	emailed permission to add name to petition	7781 S. Curtice Dr. Littleton. 80120
11/26	Lyle Hiatt	emailed permission to place name on petition	247 W. Jamison Ct. Littleton 80120
11/26	Susan Hiatt	emailed permission to place name on petition	247 W. Jamieson Ct. Littleton, 80120
11/26	Katie Hiatt	emailed permission to place name on petition	247 W. Jamieson Ct. Littleton 80120
11/26	Sam Hiatt	emailed permission to place name on petition	247 W. Jamieson Ct. Littleton, 80120
11/26	Bill Frey	emailed permission to place name on petition	231 W. Jamison Ct. Littleton 80120
11/29	Kristen Kidd	Kristen Kidd	279 W. Jamison Cir 455 " "
11/29	Lois Warren	Lois Warren	329 W Jamison Cir #4
11/29	Kathy Beach	emailed permission to place name on petition	7760 S. Lakeview Ct. Littleton 80120
11/29	Erik Hansen	[illegible]	7894 S Windermere 80120

SAVE THE SWALE
[FUTURE COSTCO DEVELOPMENT AT 700 W. Mineral]

Date	Print Name	Signature	Address
11/30	David Reynolds	emailed permission to put name on petition	2812 W. Long Dr. #A, Littleton 80120
12/1	Carrie Wheeler	emailed permission to put name on petition	7555 S. Prince St, Littleton 80120
12/2	Anthony Mihelich	[signature]	7905 S. Windermere Cir. Littleton CO 80120
12/2	Denise Mihelich	Denise Mihelich	7905 S. Windermere Cir.
12/3	PAM Winker	emailed permission to place name on petition	710 W. Jamison Cir, Littleton 80120
12/5	Madison Lucas	emailed permission to place name on petition	7886 S. Windermere Circle, Littleton 80120
12/5	Robin Lucas	emailed permission to place name on petition	7886 S. Windermere Cir, Littleton 80120
12/7	James Lawrence	[signature]	7571 So. Bemis Court
12/9	John Kline	emailed permission to place name on petition	1991 W. Dry Creek. 11 W. Dry Creek Cir
12/10	Thomas Smith	emailed permission to place name on petition	931 W. Dry Creek Rd., Littleton 80120
12/10	Bobbi Nelson	emailed permission to place name on petition	7776 S. Prescott St, Littleton, co 80120
12/10	Toni Nelson	emailed permission to place name on petition	7776 S. Prescott St. Littleton, CO 80120
12/12	Lindsey JANSSEN	emailed permission to place name on petition	7602 S. Bemis St, Littleton, CO 80120
12/12	Gregory Janssen	emailed permission to place name on petition	7602 S. Bemis St., Littleton, CO 80120
12/16	Kerri HARRIS	emailed permission to place name on petition	1642 W. Kettle Ave. Littleton 80120
12/16	Scott Harris	emailed permission to place name on petition	1642 W. Kettle Ave, Littleton 80120
12/16	Lauren AYRES	[signature]	7777 S Louthan St Littleton CO 80120
12/18	CAROL NOVAK	emailed permission to place name on petition	1612 W. Kettle Ave. Littleton 80120
12/18	MARY McENARY	emailed permission to place name on petition	7981 S. Cedar Cir, Littleton 80120
12/19	JANET A. Holmes	emailed permission to place name on petition	1563 Dry Creek Rd., Littleton 80120
12/21	Alisha Guerrero	Emailed permission to place name on petition	7763 S. Louthan St. Littleton, CO 80120
12/21	Lori KNUDSON	[signature]	3010 Jamison Pl #9 LITTLETON
12/27	Don Bruns	[signature]	7332 S. Costilla St., Lttn 80120
12/27	Cheryl Bruns	Cheryl A. Bruns	7332 S. Costilla St, Lttn 80120

SAVE THE SWALE
[FUTURE COSTCO DEVELOPMENT AT 700 W. Mineral]

Date	Print Name	Signature	Address
12/28/24	Melissa Miller	email permission to place name on petition	2582 W. Dry Creek, Littleton, 80120
12/28/24	Alex P. Kokoska	email permission to place name on petition	316-352 Jamieson Pl. #115. Littleton
12/[illegible]	Jeffrey Kilden	MJKilden	316 W. Jamieson Pl #4 Littleton, CO 80120
12/30	Mirian Rubey	emailed permission to place name on petition	341 W. Jamison Pl. Littleton, CO 80120
12/31	Ellen Van Dyk	EvD	390 Shadycroft Dr Littleton Co 80120
12/31	John Van Dyk	[signature]	390 Shadycroft Dr. Littleton Co 80120
1/2/25	Matthew Greenfield	[signature]	61 E Euclid ave Littleton CO 80121
1/2/25	Bill Dickey	[signature]	1750 Gentian Ln Littleton Co 80120
1/2	Sharon Majetich	emailed permission to place name on petition	2911 W. Long Circle, Unit G, Littleton 80120
1/3	John Stermole	[signature]	505 Rangeview Dr, Littleton CO 80124
1/3	Patricia Stermole	Patricia Stermole	505 Rangeview Dr, Littleton 80120
1/3	Marcia Lavie	Marcia Lavie	700 Rangeview Dr Littleton 80120
1/4	John Harpole	[signature]	640 Front Range RD Littleton 80120
1/5	Lisa Harpole	Lisa Harpole	640 Front Range Rd. Littleton 80120
1/5	Scott Murphy	Scott Murphy	7070 S. CURTICE St. Littleton 80120
1/5	Elise Murphy	Elise Murphy	7070 S. Curtice St Littleton CO 80120
1/6	Michelle Conti	emailed permission to place name on petition	1545 W. Hinsdale Dr. Littleton 80120
1/7	Josh Witter	[signature]	2100 W Jamison Way, Littleton
1/7	Charles Nau	[signature]	5837. S. Southay St.
1/7	Frank Barth	[signature]	507 E Phillips Dr. N
1/7	Barrett Muhich	Barrett Muhich	2320 W. Jamison Way 80120
1/7	Chris Britt	[signature]	chrisw britt@gmail.com 2400 W Jamison Way 80120
1/7	Karen Buchanan	Karen Buchanan	kabucha27@gmail.com 27 Lindenwood Dr, 80120
1/7	Julia Duggan	Julia Duggan	6391 S. Greenwood St Littleton Co 80120 pereplenn@aol.com

SAVE THE SWALE
[FUTURE COSTCO DEVELOPMENT AT 700 W. Mineral]

Date	Print Name	Signature	Address
1/7/25	Lynn Hornick	Signed at Meeting 1/7/25	1404 W. DAVies Place, Ltn. 80120
1/19/25	Teresa Tucker	Teresa Tucker	18 Bradbury Ln 80120
1/10/25	Suzy Roush	Suzy Roush	2990 W. Long Dr 80120
1/10/25	EDWARD ROUSH	Edward Roush	2990-B W. LONG Dr 80120
1/11/25	MARY NAVIN	emailed permissim to place name on peltim	2984 W. Long Dr. Littleton. 80120
1/12/25	Cody Brush		2970 W. Long Dr. Littleton 80120
1/12/25	Katya Gabriel	Email permissia sign	2970 W. Long Dr. Littleton 80120
1/13/25	Tristan Sedbrook	2978 W. Long DR	2978 W. Long DR. Littleton. 80120
1/13/25	Sarah Sedbrock	Emeile permissim to sign. 2978 W. Long DR	2978 W Long Dr. Littleton 80120
1/16/25	Ned Sterne	Ned Sterne 1981 W. Briarwood	1981 W. Briarwood Littleton 80120
1/17/25	BARRY BRENNAN	590 Front Range	590 Front Range Rd 80120
1/19	JoEllen Farris		340 W. Jemison Cir Unit F Littleton 80120
1/19	Thomas Roemen	Thomas Roemen	6652 S Hill Way Littleton Co 80120
1/19	SALLY MESCHER Allen		6080 S. Elati St Littleton Co 80120
1/19	Christine Hancock		7474 S. Prince St Littleton, CO 80120
1/19	Andrew Hancock		7474 S. Prince St Littleton, Co 80120
1/19	Roseann Roemen	Roseann Roemen	6652 S. Hill WAY, Littleton 80120
1/19	David Allen		6080 S. Elati St Littleton 80120
1/19	Diana Hoyt	Diana Hoyt	5804 S. Datura St. Littleton 80120
1/19	CINDY BRAUN	Cindy Braun	7555 S. Elati St. 80120
1/19	Tammy White	Tammy White	590 Front Range Rd Littleton 80120
1/19	KARL BERRY	Karl Berry	595 LAKE AVE LTN., 80120
1/19	Giken Kitko		2271 W. Briarwood Ave. Ltn 80120
1/19	Carol Brzeczek	Carol Brzeczek	2000 W Arapahoe Rd 80120

SAVE THE SWALE

[FUTURE COSTCO DEVELOPMENT AT 700 W. Mineral]

Date	Print Name	Signature	Address
1/19	Mary P Vallee	Mary P Vallee	6042 S Aberdeen St 80120
1/19	Carol Harris	Carol Harris	6077 S. Lakeview 80120
1/21	Donnell Schmalz	Donnell Schmalz	365 Shadycroft DR. 80120
1/28	Elizabeth Hess	emailed permission to place name on petition	7663 So. Gallup Court, 80120
1/28	Stanley Guess	emailed permission to place name on petition	7663 So. Gallup Court. 80120
1/29	Ken Chance	emailed permission to place name on petition	
2/7	Warren Anderson		6873 S. Prescott St Littleton, Co 80120
2/7	WESTEN PUTNAM		7595 S ELATI ST LITTLETON CO 80120
2/7	MICHAEL POLIZZANO		743 W. ELATI CIR. LITTLETON CO 80120
2/7	Paul Drayton		0360 W ELATI CIRS LITTLETON, CO 80120
2/10	Lance Fisher	emailed permission to place name on petition	W. EasterPlace, Littleton, CO 80120
2/02	Susan Young	emailed permission to place name on petition	6794 S. Gaylord Ltn CO 80122
2/13/25	Tom Davidson	T. Davidson	★Reduce Carbon CO2 emissions)
2/15/25	Kathleen Davidson	Kathy D Davidson	6794 South gilpin Circle E Centennial, Colo 80122
2/15/25	Nathan Shapiro-Shellaby	emailed permission to place name on petition	726 W. Fremont Dr. Littleton, Co 80120
2/26/25	Elizabeth Allen	emailed permission to place name on petition	
10/14/24	Sarah Babcock	emailed permission to place name on petition	1292 W. Kettle Ave. Littleton 80120
		emailed permission to place name on petition	
2/27/25	Carol Johnson	emailed permission to place name on petition	401 Shadycroft Lane, Littleton 80120
2/27/25	Randy Johnson	emailed permission to place name on petition	401 Shadycroft Lane, Littleton. 80120
3/3/25	Hannah Maryatt	daughter goes to school off of mineral	1985 S. Emerson St. Denver
3/3/25	Leisa Blanding		29 Brookhaven Ln Littleton CO 80123
3/3/25	Jerry Stagraul		7884 Lamar A 80125
3/13/25	Daniel N. McIntosh	emailed Permission to place name on petition	

SAVE THE SWALE
[FUTURE COSTCO DEVELOPMENT AT 700 W. Mineral]

Date	Print Name	Signature	Address
3/19/25	Jennifer Revesz	Emailed permission to add name on petition	7242 S. Acoma St. Littleton 80120
3/19/25	Paul Revesz	Emailed permission To add name on petition	7242 S. Acoma St. Littleton. 80120
3/21/25	Brandon Bay	Emailed permission to place name on petition	2941 W. Long Dr. B. Littleton 80120
3/21/25	Enkhee Bay	Emailed Permission to place name on petition	2941 W. Long Dr. B. Littleton, 80120
3/21/25	Khaliuna Bay	Emailed Permission to place name on petition	2941 W. Long Dr. B. Littleton 80120
3-27-25	Tony Arndt		5627 S Fox St Apt A Littleton 80120
3-27-25	Jim Woods	emailed permission to place name on petition	2887-Unit C, West Long Circle. Littleton 80120
3-28-25	Matthew Davis		10499 Bradford Rd. Littleton
3/28/25	John Rodriguez		10449 Bradford Rd, Littleton 80127 80217
3/29/25	Sean Burdick		10449 Bradford Rd, Littleton 80127
3/31/25	Susan Cowdin	emailed permission to place name on petition	2971 W. Long Dr. #E. Littleton, 20120
3/31/25	Pat Cowdin	emailed permission to place name on petition	2971 W. Long Dr. #E. Littleton, 20120
4/1/25	Kathleen Williams	emailed permsn to place name on petition	7776 S. Hill Dr, Littleton. 20120
4/5/25	CHRISTINE WASHINGTON	Christine L Washington	7105 S COSTILLA ST, LITTLETON 80120
4/5/25	Shane Schattinger	Shane Schattinger	7009 S. Curtice St, Littleton, 80120
4/5/25	Katherine R. Monahan	Mrs. Katherine R. Monahan	7012 S. Davies St. Littleton 80120
4/5/25	Alecia Schattinger	Alecia Schattinger	7009 S Curtice St Littleton 80120
4/5/25	Erika Griffiths	Erika Griffiths	7031 S. Curtice St Littleton, Co 80120
4/5/25	Tracy Pavelka	Imagicmommy@gmail.com	Houston Waring Circle 2286
4/8/25	Wayne Smith ✓	Wayne Smith	2481 W. Rowland Ave.
4/8/25	Rexann Smith ✓	Rexann L Smith	2481 W. Rowland Ave. 2288
4/10/25	Lillian Engelland ✓	emailed permission to place name on petition	2443 W. Houston Waring Cir, Littleton 80120
4/10/25	Maddie Engelland	Emailed permission to place name on petition	2443 W. Houston Waring Cir. Littleton 80120
4/10/25	Samantha Engelland ✓	Emailed permission to place name on petition	2443 W. Houston Waring Cir. Littleton 80120

SAVE THE SWALE

[FUTURE COSTCO DEVELOPMENT AT 700 W. Mineral]

Date	Print Name	Signature	Address
4/10	Elizabeth Engelland	Emailed permissin to place name on petition	2443 W. Houston Waring Cir. Littleton 80120
4/10	Nathan Pavelka		2483 W. Houston Waring Cir. Littleton
4/10	Quincy Flowers	Emailed permissin to place name on petition	2468 W. Bradbury Ave. Littleton, 80120
4/10	Rowan Flowers	emailed permissi to place name on petition	2468 W. Bradbury Ave. Littleton. 80120
4/10	Shell Casa	emailed permissi to place name on petition	2533 W. Houston Waring Cir. Littleton. 80120
4/11	Pete Flowers	emailed permissin to place name on petition	2468 W. Bradberry Ave Littleton 80120
4/19	Betty L. Neely	emailed permissi to place name on petition	2444 W. Houston Waring Cir. Littleton 80120
4/29	Morton Stumm	Morton Stumm	6868 S. Prince Circle Littleton 80120
4/23	Lisa Francisco	6917 S. Prince Cir Littleton	emailed permissin to place name on petition
4/23	Carolyn Francisco	emailed permissin To Place name on petition	6917 S. Prince Cir, Littleton. 80120
5/3	Larry Farmer		2462 W Peakview Ct Littleton
5/3	Maureen Farmer	Maureen Farmer	2462 W Peakview Ct Littleton
5/4	Christina Ladd		2218 W Ridge Rd Littleton
5/4	Susan Kramer	Susan Kramer	7840 S. Hill Cir. Littleton CO 80120
5/4	Katherine Kramer	Katherine Kramer	7840 S Hill Cir. Littleton. CO. 80120
5/4	Daniel Kramer		" " " " "
5/4	Robert Gilbert		7842 S. Hill Cir " "
5/4	Scott Kelly		7824 S Hill Cir Littleton
5/4	Elizabeth Gulbreath		7838 S. Hill circle Littleton
5/4	Jeremy Gulbreath		7838 S. Hill circle Littleton
5/4	Jack Rubb		7828 S Hill Cir
5/4	Bear Pawley		7795 S Hill Dr
5/7	Janet Lutz		6503 S. Sycamore Littleton
5/7	KAREN O'CONNOR	emailed name to be placed on petition	6881 S. Prince Cir. Littleton 80120

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SAVE THE SWALE

[FUTURE COSTCO DEVELOPMENT AT 700 W. Mineral]

Date	Print Name	Signature	Address
5/8	Susan Slomski	emailed permission to have name placed on petition	Centennial, Colorado
5/8	Betty A. Harris	emailed permission to have name placed on petition	
5/8	RAY Flesher	Email permission to have name placed on petition	
5/8	Leah Keeter	emailed permission to have name placed on petition	2907 W. Long Cir #D Littleton 80120

May 11, 2025

Mr. Ron Vachris, C.E.O. and President
Costco Wholesale
999 Lake Drive
Issaquah, WA 98027

Dear Mr. Vachris,

Costco Wholesale is moving forward with plans to develop a new store and fuel center at 700 W. Mineral Avenue in Littleton, Colorado. Designed by MG2 in Seattle, the project includes an extremely large fuel station with 32 gas pumps. This scale is deeply concerning, particularly because the site is located within just 500 feet of two primary schools.

Children are uniquely vulnerable to air pollution. Numerous studies show that vehicle emissions—including benzene, formaldehyde, and ultrafine particulates—can impair lung development, trigger asthma, and increase the risk of long-term respiratory and neurological issues in children. The proximity of this massive fueling station to schools, playgrounds, and parks presents an unacceptable health risk [see list of some scientific research studies].

Community members were not made aware of the plan to build such a large fuel facility so close to schools. As residents and concerned parents, we find this lack of transparency deeply troubling. We urge Costco and city officials to reduce the number of fuel pumps to no more than 12, in line with other nearby Costco stations and neighborhood gas facilities.

A 32-pump station would also generate significant traffic congestion, noise, and elevated emissions in an area where children walk, play, and learn. This is not just a land-use issue—it is a public health issue. Children should not be the collateral damage of commercial expansion.

This letter is accompanied by a petition signed by 269 concerned residents who expressed opposition to the fuel center plan and references on effects of pollution and children's health. The proposed 32 gas pumps for the Mineral Place project contradict any reasonable environmental plan for this development, and we strongly urge Costco to reduce the number of pumps in order to mitigate the environmental and public health risks associated with such a large-scale facility.

Sincerely,

Gregg M. Sullivan

Environmental Management and Systems

cc. Sheri Flies, Senior Vice President of Global Sustainability and Compliance, Costco
Jenifer Murillo, Costco Wholesale Real Estate Division
Mitch Smith, MG2, President and Sarah Wortman, Director of Marketing
Grant Nelson, The Republic Investment Group [RIG]
Littleton City Council

References

McConnell, R., Berhane, K., Yao, L., Jerrett, M., Lurmann, F., Gilliland, F., ... & Peters, J. (2010). Childhood Incident Asthma and Traffic-Related Air Pollution at Home and School. *Environmental Health Perspectives*, 118(7), 1021–1026. .

Ostro, B., Lipsett, M., Reynolds, P., Goldberg, D., Hertz, A., Garcia, C., & Bernstein, L. (2001). *Children's Exposure to Traffic-Related Air Pollution in California: A Study of Respiratory Health Effects*. California Office of Environmental Health Hazard Assessment (OEHHA).

Gartland, N., Aljofi, H. E., Dienes, K., Munford, L. A., Theakston, A. L., & van Tongeren, M. (2022). The Effects of Traffic Air Pollution in and around Schools on Executive Function and Academic Performance in Children: A Rapid Review. *International Journal of Environmental Research and Public Health*, 19(2), 749.

Gaffron, P., & Niemeier, D. A. (2015). School Locations and Traffic Emissions—Environmental (In)Justice Findings Using a New Screening Method. *International Journal of Environmental Research and Public Health*, 12(2), 2009–2025.

Childhood Cancer

Roselle De Guzman, Joan Schillern. [2025.] Air pollution and its impact on cancer incidence, cancer care and cancer outcomes. BMJ Oncology. Mar 25;4(1):e000535. doi: 10.1136/bmjonc-2024-000535

Public Comments
To
Littleton City Council – May 20, 2025
"Say No to 32 Gas Pumps – Protect our Children"

Gregory Sullivan, District IV.

I dedicate this quote by Frederick Douglas to my fellow Eagle Scout, Ned Stern, and all the warriors battling for environmental justice in Littleton.

"It there is no struggle, then there is no progress.
Power gives up nothing without a demand.
It never has. It never will." Frederick Douglas

Flyers Placed on doors: 3,404

Number of signatures on petition: 276 names

Comments:

Citizen said, "I strongly oppose Costco putting 32 gas pumps on the Mineral Ave property. That large number will create much more traffic congestion, and harmful pollutants. I believe that 12 pumps is sufficient and a more responsible choice. Some of the planned gas pumps should be replaced by EV charging stations. Please revise the agreement between the City of Littleton and Costco to reduce the number of gas pumps. I watch City Council actions, and I vote in every election."

House Representative Gretchen Ryder about the 32 gas pumps said, "I think we dropped the ball" when told about the 32 gas pumps at a meeting at the capitol. When I wrote and asked Colorado House Rep Gretchen Ryder that she should say something to Council and Costco, she said that I am no longer on the council, and I am doing important work on the environment for the state. Thius is a dereliction of duty to the citizens of Littleton!

Six Month Moratorium on Gas Stations

Council, you made a smart move for a six month moratorium to understand what impacts gas stations have on the community.
BUT
Council then quickly pivoted, bent a knee to developers and Costco at Mineral Place and Quik Trips on Santa Fe, The City Attorney said that Costco and Quik Trips are exempt from this resolution. This is "One step forward and two steps back." There seems to be the presence of "Dark Money" a foot.

City Manager said that research to be done on the moratorium for Council will only be of a "high level" analysis. This is another way of saying "don't expect much." otherwise another "white wash", just like your "green wash" of your environmental good deeds at Mineral Place.

City Mayor, you said after passage of the agreement between City of Littleton and Republic Investment Group that you are a member of Costco and now you do not have to drive as far for your gas. You wondered if this is conflict of interest. You yourself mentioned - could this be viewed as a conflict of interest. Most certainly! Why not say it before the vote along with others in decision making authority on Council and staff.

Council, you must be honest when talking with your children that there will be a massive environmental problem at Mineral Place affecting them and the Platte River for years to come. Let's not preach to our kids and then do lasting irreparable harm.

Recommendations

We, the citizens of Littleton, demand a moratorium on gas pumps that includes Costco and Quik trips until a reputable study by an outside consultant is done and shared with the public, not by city staff.

This study needs a thorough Cost- Benefit Analysis. This study needs to lay out how Costco plans on addressing the environmental impacts of the super fuel center on children at schools within 700 feet for the next ten years.

Already there has been enormous pollution, most unnecessary, at the site by not following Costco's mandate to be environmentally sensitive to leave the existing swales and the protection of existing trees. An estimate will be presented in the future council meeting.

Developer and Costco need to show what actions they have taken or will take to mitigate the tons of CO2 and the resulting PM2.5 and NO2 produced by removal of two swales and mature trees and processing asphalt from 30 years on-site.

Council needs to show how they will monitor the pollution at Mineral Place for the next 10 years using best industry practices by the Environmental Stewardship Director and Project Works Director. They must inform citizens when unacceptable levels of pollution are present so correct actions can be taken to safeguard the public and children.

The City's Littleton Tree Trust must be created and will be responsible for how the $70,000 will be used at Mineral Place and solicit more funds for nearby neighborhood mitigation impacted by Costco's development and Mineral Place. The Trust must address the need for more and larger trees at Mineral Pace, not spindly 1.5" trees.

Remember the Swale! Protect Our Children!

Littleton Center
2255 West Berry Avenue
Littleton, CO 80120

City of Littleton

Staff Communication

File #: ID# 25-131, **Version:** 1

Agenda Date: 05/20/2025

Subject:
Mayoral Proclamations

Prepared By:	Colleen L. Norton, City Clerk

PURPOSE:
Mayor Schlachter will introduce one (1) Mayoral Proclamation:

a) National Public Works Week

PRESENTATIONS:

Staff Presenter(s): Kyle Schlachter, Mayor
Additional Presenter(s): N/A

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PROCLAMATION
City of Littleton, Colorado
Proclaiming May 18 – May 24, 2025
"NATIONAL PUBLIC WORKS WEEK"
in the City of Littleton

***WHEREAS**, the theme for this year's celebration of public works professionals is "People, Purpose, Presence"; and*

***WHEREAS**, public works professionals are dedicated to serving their communities; and*

***WHEREAS**, often public works professionals will never meet those whose lives have been impacted because when things are going right, no one knows public works is there; and*

***WHEREAS**, public works professionals focus on infrastructure, facilities, and services that are of vital importance to sustainable and resilient communities and to the public health, high quality of life, and well-being of the people of Littleton, CO; and*

***WHEREAS**, these infrastructure, facilities, and services could not be provided without the dedicated efforts of public works professionals, who are engineers, managers, and employees at all levels of government and the private sector, who are responsible for rebuilding, improving, and protecting our nation's transportation, water supply, water treatment and solid waste systems, public buildings, and other structures and facilities essential for our citizens; and*

***WHEREAS**, it is in the public interest for the citizens, civic leaders, and children in Littleton, CO to gain knowledge of and maintain an ongoing interest and understanding of the importance of public works and public works programs in their respective communities; and*

***WHEREAS**, the year 2025 marks the 65th annual National Public Works Week sponsored by the American Public Works Association/Canadian Public Works Association.*

***NOW THEREFORE BE IT RESOLVED**, I, Kyle Schlachter, Mayor of the City of Littleton, do hereby recognize the week of May 18 – May 24, 2025, as "National Public Works Week" in the City of Littleton, I urge all citizens to join with representatives of the American Public Works Association and government agencies in activities, events, and ceremonies designed to pay tribute to our public works professionals, engineers, managers, and employees, and to recognize the substantial contributions they make to protecting our national health, safety, and advancing quality of life for all.*

***IN WITNESS WHEREOF,** I have hereunto set my hand and caused the official seal of the City of Littleton to be affixed this 20th day of May 2025.*

Kyle Schlachter, Mayor

Colleen L. Norton, City Clerk

Draft

Staff Communication

File #: ID# 25-120, **Version:** 1

Agenda Date: 05/20/2025

Subject:
Motion to Adopt the Arts & Culture Community Strategic Plan

From:	James L. Becklenberg, City Manager
Prepared by:	Tim Nimz, Museum Director
	Becky Kosma, Deputy Museum Director
Presentations:	N/A

PURPOSE:
The Arts & Culture Board (ACB) presents the first-ever Arts & Culture Community Strategic Plan for adoption by City Council and implementation.

LONG-TERM OUTCOME(S) SERVED:
Vibrant Community with a Rich Culture

DISCUSSION:
In June 2024, ACB engaged Keen Independent Research to create the first ever Arts & Culture Community Strategic Plan, a key component of the board's Strategic Plan 2.0 which Council adopted in October 2023. Over the next 6 months, Keen conducted a rigorous community engagement process, communicating with over 350 residents. The completed plan was delivered to staff on December 15, 2024, and approved unanimously by ACB on February 13, 2025. At a study session on April 8, 2025, the board reviewed the themes, action items, and goals contained in the plan, and sought direction from Council to begin implementation. Council expressed support for the plan and requested that it be brought to Council for formal adoption.

BACKGROUND:
In November 2019, City Council created the Arts & Culture Commission, now the Arts & Culture Board, with the charge to encourage and support the growth and expansion of culture and arts throughout the community. Through strategic planning, the board develops policies and makes recommendations to fund current and future arts and culture needs.

PRIOR ACTIONS OR DISCUSSIONS:
November 19, 2019 - Council meeting, creation of Arts & Culture Commission
April 13, 2021 - Council meeting, adopt Arts & Culture Commission strategic plan
July 8, 2021 - Arts & Culture Commission meeting, approve lodgers tax revenue distribution formula
April 12, 2022 - Study Session, Review Goal 5: Arts, Culture, and Tourism
August 17, 2022 - Council meeting, submit to the registered voters of the City of Littleton a ballot measure seeking voter approval of a 5% lodgers tax to fund arts, culture, and tourism
October 4, 2022 - Council meeting, a resolution in support of the lodgers tax

November 8, 2022 - Election results, citizens supported 5% lodgers tax for arts, culture, tourism
December 13, 2022 - Study Session, provide feedback/direction to A&CC on formula
January 12, 2023 - Arts & Culture Commission meeting, approve revised formula
March 9, 2023 - Arts & Culture Commission meeting, approve policy to administer formula
April 11, 2023 - Council study session, final review of formula, direct staff to write a resolution to implement lodgers tax revenue distribution policy
May 2, 2023 - Council meeting, a resolution creating the lodgers tax revenue distribution formula
August 10, 2023 - Arts & Culture Commission meeting, approve first draft of Strategic Plan 2.0
September 14, 2023 - Arts & Culture Commission meeting, approve final draft of Strategic Plan 2.0
October 10, 2023 - Joint session with City Council, present 2024 grants recommended from the lodgers tax and Strategic Plan 2.0 for approval by Council.
April 1, 2024 - Arts & Culture Commission renamed Arts & Culture Board by City Council action.
October 8, 2024 - Joint meeting with City Council to reviewing the activity of the past year, provide a status update on the arts and culture master plan, and look forward to issues for study in 2025.
April 8, 2025 - A joint study session with City Council for the purpose of reviewing the Arts & Culture Community Strategic Plan

FISCAL IMPACTS:
The Arts & Culture Board does not have a budget for operational expenses. If Council directs the board to implement the Arts & Culture Community Strategic Plan, the board may request the appropriation of funds during the city's regular budget process.

STAFF RECOMMENDATION:
Staff recommends that adoption of the Arts & Culture Community Strategic Plan.

ALTERNATIVES:
City Council may direct the Arts & Culture Board to focus on other priorities.

PROPOSED MOTION:
I move to adopt the Arts & Culture Community Strategic Plan.







City of Littleton

ARTS & CULTURE STRATEGIC PLAN

2025 – 2029





Littleton



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Mural by Michael Ortiz
Courtesy of City of Littleton

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SECTION 1

Introduction

Littleton Museum's Living History Farm
Courtesy of City of Littleton

Introduction

Littleton, CO boasts a historic Downtown, Mid-Century Modern architecture, proximity to the Rocky Mountains and a vibrant ecosystem of well-established arts and cultural organizations, leaders and practitioners. The City of Littleton ("City") engaged Keen Independent Research in June 2024 to create an inaugural five-year Arts and Culture Strategic Plan to guide City support for arts and culture in Littleton.

What is an Arts and Culture Strategic Plan?

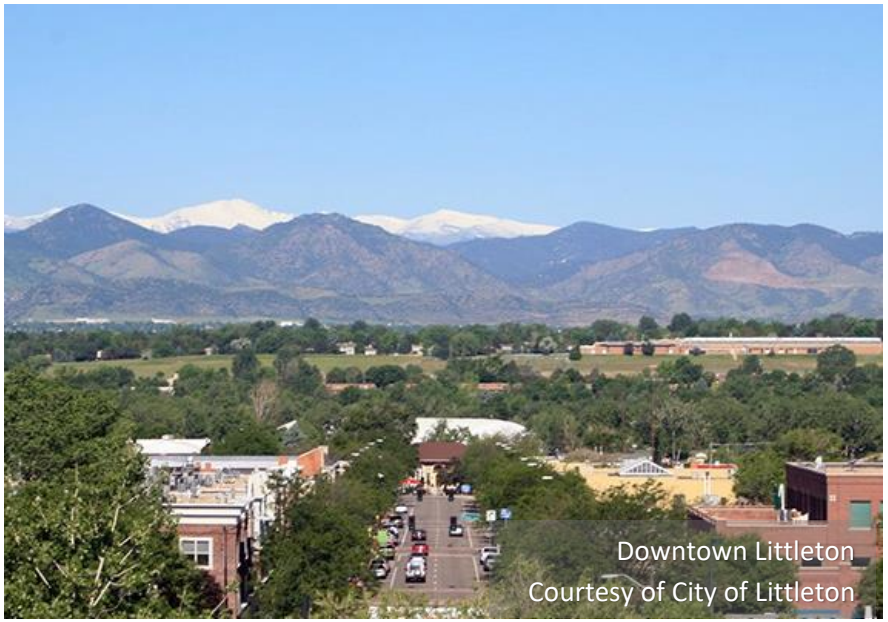
An Arts and Culture Strategic Plan is a unified action plan that helps a city support its arts and culture assets. This plan recognizes that Littleton already has dynamic arts and culture institutions and people passionate about serving Littleton residents, visitors and tourists through cultural programming. Intended as a living document that will adapt to Littleton's changing needs, this plan empowers the City with concrete strategies for strengthening arts and culture in Littleton.

What does "arts and culture" include? The term "arts and culture" encompasses the visual arts, performing arts, museums, libraries, historical preservation efforts, City-run festivals and the ways that the community gathers to celebrate its identity.

How to Use this Plan

The Arts and Culture Strategic Plan will be primarily utilized by the City to guide decision-making over the next five years. Individuals and cultural organizations can use this document to help guide their planning efforts, as well as highlight how their goals align with the City's. The City's Arts and Culture Strategic Plan is the result of thorough stakeholder and community engagement.

This plan is not designed to pick winners or grantees, nor to develop specific programs. Instead, it serves as a guide for the City to support Littleton residents through arts and culture.



Downtown Littleton
Courtesy of City of Littleton



Summer concert at the Littleton Museum
Courtesy of City of Littleton

Introduction

This plan was made possible by City Leaders and Littleton residents.

Message from the Study Team

The study team thanks the following groups and individuals.

City Council, Arts and Culture Board and City leadership staff.

City Council

- Kyle Schlachter, Mayor;
- Stephen Barr, Mayor Pro Tem;
- Pam Grove, Member At Large;
- Gretchen Rydin, Member At Large;
- Patrick Driscoll, District I;
- Robert Reichardt, District II; and
- Andrea Peters, District IV.

Arts and Culture Board

- JD McCrumb, Chair;
- Denise Weed, Vice Chair;
- Emily Abell;
- Roy Bartee;
- Katie Caron;
- Michele Cyran;
- Kate Eckel;
- Tim Fuglei;
- Joseph Haynes;
- Joni Leib; and
- Noah Welshans.

City leadership. City leaders participated in interviews, focus groups and public meetings. The study team appreciates their valuable insight. We especially thank City Manager Jim Becklenberg for his involvement throughout the planning process.

Littleton residents and community members. This project would not have been possible without the active participation of Littleton's residents and community members, who contributed ideas through public meetings, the virtual workshop survey and the email and hotline.

Arts and Culture Strategic Planning Committee. We thank the committee members for providing a substantial commitment of time, effort and expertise essential to the project's success.

- Tim Nimz, Director, Littleton Museum;
- Dennis Quinn, Director, Bemis Public Library;
- Becky Kosma, CSM, Deputy Director, Littleton Museum;
- Jenny Hankinson, Senior Curator of Collections, Littleton Museum;
- Anna Dyste, Public Art Administrator, Littleton Museum;
- JD McCrumb, Chair, Arts and Culture Board; and
- Denise Weed, Vice Chair, Arts and Culture Board.

Study team. Keen Independent Research, www.keenindependent.com, conducted the study. Team members included:

- Alex Keen, Principal;
- Heather Calvin, Senior Consultant; and
- Roksana Filipowska, Ph.D., Consultant.

Background

Littleton's arts and culture connects to the larger ecosystem of the Denver-Aurora-Lakewood, CO Metropolitan Statistical Area. Littleton's city limits span Arapahoe, Douglas and Jefferson counties and its parks and trails are managed by South Suburban Parks and Recreation.

This plan offers strategies for leveraging Littleton's unique arts and cultural offerings within the greater Denver Metropolitan area while also collaborating with county and regional organizations to ensure mutual support and sustainability.

An Arts and Culture Plan for All of Littleton

This Arts and Culture Plan offers strategies for planning and developing arts and culture across all of Littleton. In addition to the Arts and Culture Board, City leadership and staff, the study team also engaged leaders of the following organizations who help support arts and culture in Littleton:

- South Suburban Parks and Recreation District;
- Downtown Development Authority;
- Arapahoe Community College;
- Culture and Arts Partners Group (CAP); and
- Scientific and Cultural Facilities District (SCFD).

This Arts and Culture Strategic Plan includes findings from interviews, focus groups and research involving members of the above groups to ensure that recommended actions are realistic, streamlined and impactful.



Bemis Public Library
Photo by Keen Independent


Hudson Gardens
Courtesy of City of Littleton

Methodology

The following methodology was used to develop the findings and recommendations in this Arts and Culture Strategic Plan.

Keen Independent conducted virtual and in-person stakeholder engagement with City leaders and staff, arts, culture and business leaders and community members. Approximately 350 people shared their perspective on the plan through the following efforts:

- In-person discovery meeting;
- In-depth stakeholder interviews and focus groups;
- Virtual workshop survey;
- Virtual draft plan presentation to the public; and
- Study hotline and email feedback.

Keen Independent also:

- Conducted extensive mapping of existing assets and possible locations for future arts and culture resources;
- Completed a SWOT (strengths, weaknesses, opportunities and threats) analysis of existing infrastructure that supports cultural activities;
- Analyzed demographic and population trends; and
- Reviewed existing City plans to consider how supporting arts and culture can bolster the City's economic development, as well as Diversity, Equity, Accessibility and Inclusion (DEAI) and sustainability efforts.



Discovery meeting
Photo by Keen Independent



Detail of a discovery meeting station
Photo by Keen Independent



SECTION 2

Executive Summary

Día de los Ninos performance
Photo by Bemis Public Library

Key Findings — Introduction

This section describes the Arts and Culture Strategic Plan stakeholder and community engagement process and presents key findings.

Stakeholder and Community Engagement

Keen Independent engaged Littleton residents and community members using a range of methods between June and December 2024.

Stakeholder engagement. The planning process included in-depth interviews and focus groups with 52 stakeholders, including members of the Arts and Culture Board, City staff, local community leaders, business owners and creatives. Stakeholders were asked a series of questions, including how they describe Littleton's culture and markers of success regarding the City's support of arts and culture.

Community engagement. The study team invited Littleton residents and community members to participate in multiple ways throughout the planning process.

Public meetings. Keen Independent facilitated an in-person discovery meeting in July 2024 and presented the draft plan to the public during an Arts and Culture Board meeting in January 2025.

Virtual workshop survey. The study team developed a virtual workshop survey that focused on the City's role in supporting arts and culture, as well as participant preferences regarding future development. The virtual workshop survey was live from mid-August to mid-September 2024.

Study email and hotline. Residents and community members could provide feedback on arts and culture in Littleton, as well as the planning process and the draft plan by using the study email and hotline between July and December 2024. Keen Independent hosted the study website, email and hotline for the duration of the project.

Methodology. Analyzed together, the community engagement tools provided a breadth of community perspectives on art and culture in Littleton, while the stakeholder interviews and focus groups offered depth and information regarding developing, sustaining and supporting arts and cultural initiatives.

See Appendix E for an analysis of stakeholder and community engagement. Stakeholders and community members also provided feedback about the mapping and asset inventories, which are discussed in detail in Appendix A.



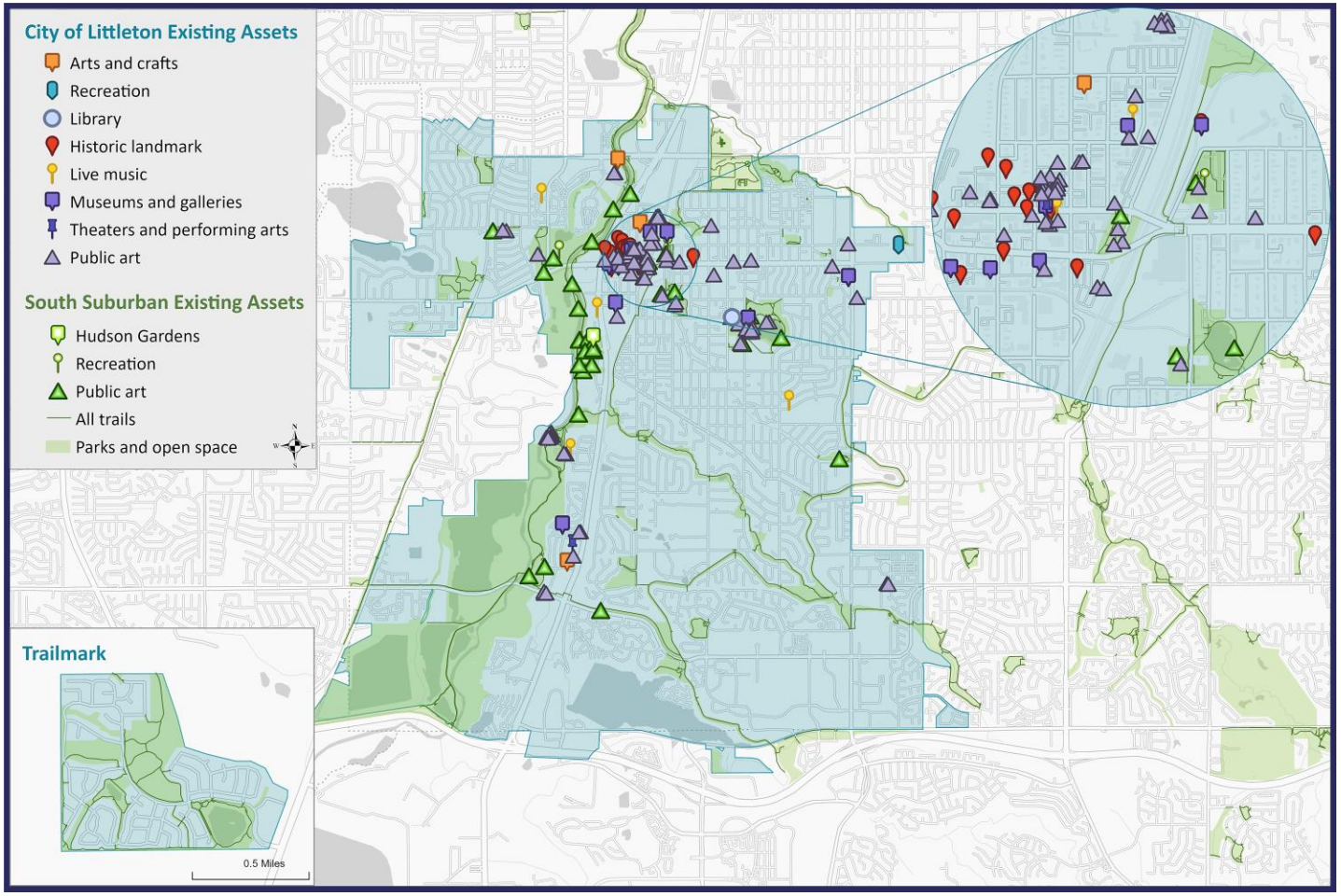
Artist talk at the Littleton Museum
Courtesy of City of Littleton

Key Findings — Arts and cultural assets

Keen Independent developed and mapped inventories of existing arts and cultural assets in Littleton and verified findings with City staff, stakeholders and community members.

Figure 2-1 is an asset area map of Littleton's many arts and cultural offerings. For more information on Littleton's existing arts and cultural assets, see Appendix A "Market Analysis."

2-1. Map of arts and cultural assets in Littleton, 2024



Note: Any green icon regardless of shape or shading indicates that the asset is managed by the South Suburban Parks and Recreation.

Source: Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, ArcGIS, Keen Independent Research.

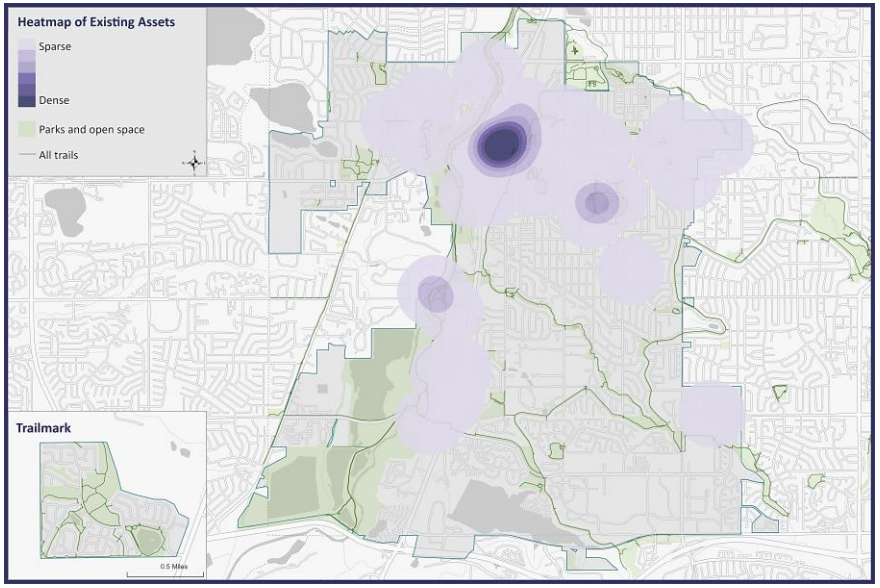
Key Findings — Arts and cultural assets

Keen Independent also examined the locations of existing arts and cultural resources in terms of density. For more information on the mapping featured on this page, see Appendix A, "Market Analysis."

Density of Existing Arts and Cultural Assets

Figure 2-2 is a heat map version of the asset map on the previous page. The asset map shows that Littleton has one hub of arts and culture, which is restricted to Downtown. Visualizing the data in this way suggests that central and southern Littleton lack arts and cultural assets.

2-2. Heat map of existing arts and cultural assets in Littleton, 2024



Note: This heat map is a translation of the map in Figure 2-1 to show the density of arts and culture assets in specific locations in Littleton.

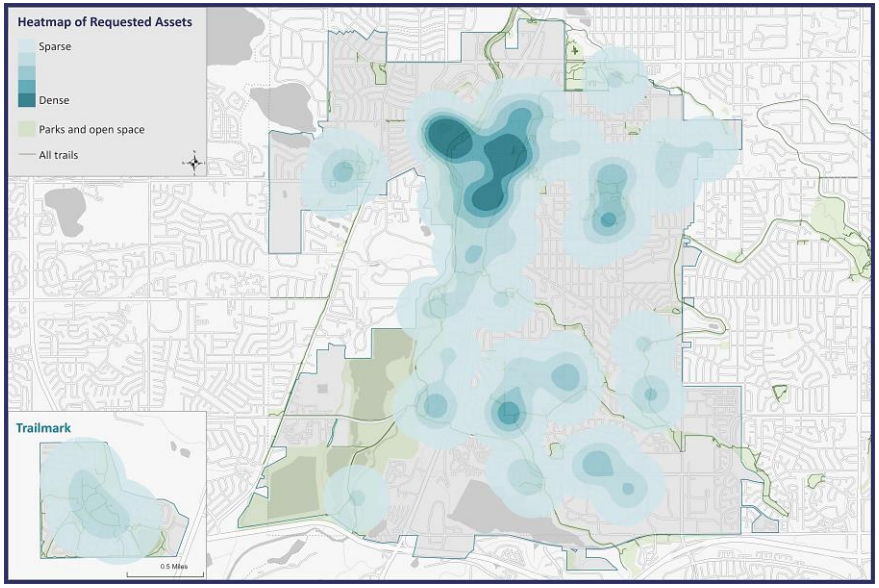
Source: Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, ArcGIS, Keen Independent Research.

Requested Locations for Arts and Culture

Discovery meeting participants engaged in a mapping activity to identify where they would like to see more arts and cultural assets. Keen Independent translated this activity station into the heat map in Figure 2-3.

The heat map below shows a different pattern from the one on the left. Participants want to see more arts and culture assets introduced throughout Littleton, including Downtown and in southern Littleton.

2-3. Heat map of requested locations for arts and cultural assets, 2024



Note: N = 55. This heat map describes findings from the discovery meeting, which is discussed in Appendix E, "Analysis of Stakeholder and Community Input".

Source: Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, ArcGIS, Keen Independent Research.

Key Findings — Shared vision for City's goal

Stakeholders and community members provided their ideas of what success looks like for arts and culture in Littleton. This shared vision is of the City serving as a catalyst for intentional development that supports local creatives while driving tourism, facilitating collaboration and considers development of arts and culture beyond Downtown.

Markers of Success

The following themes sketch out a shared vision of success for City support of arts and culture while the box on the right features quotes from stakeholders and community members. For more information, see Appendix E, "Analysis of Stakeholder and Community Input."

Intentional development. Littleton stakeholders, residents and community members see supporting local arts and cultural organizations and initiatives as the way to drive tourism and economic development. Supporting local arts and culture can look like promoting Littleton-based initiatives and creatives, highlighting local talent during City events and introducing funding sources that aid in operating expenses of cultural organizations.

Collaboration among local and regional organizations. Stakeholders and community members envision a future for arts and culture in Littleton where municipal, nonprofit, academic, county and regional organizations and groups work together to support one another through cross-promotion, sharing of resources and coordinating efforts.

Arts and culture throughout Littleton. Stakeholders and residents see Downtown Littleton as a vibrant hub for arts and culture. Throughout the study, these same stakeholders and residents expressed interest in seeing arts and culture introduced or highlighted throughout Littleton, including in parks and trails, on Littleton Boulevard and in southeastern Littleton. Study participants see this marker of success to unite Littleton and promote civic pride and engagement.

"The City of Littleton and the community have a long and proud history of supporting arts, culture, history and heritage. Additional funding sources would help to build on existing successes."

"Serving locals builds a stronger community, which will in turn drive economic development and tourism."

"Arts and culture [have] a direct impact on regional tourism and beyond. It should be treated as a priority. Art should remain locally sourced to keep the work within the community."

"Cities need to be realistic about building new facilities. It's not just 'If you build it, they will come.' Partner with organizations that are close by for performing arts. See if there are warehouse spaces available for creatives before jumping into building more performing arts space. A warehouse can be a black box theater, artist studios, home to an artist-in-residence program …"

"The multiple players involved in arts and culture [need to] have a robust awareness of each other and what we are all doing and what each of our respective roles and lanes are in the whole picture."

"The more we can continue to collaborate and have these conversations, the more we get our folks out there and involved … I would love to see our City Council members participate."

"[Art and culture] should be shared throughout the community, not just Downtown."

"Developing a sense of pride in our city and encouraging participation in all aspects of life in Littleton results in more committed citizenry."

Key Findings — City's goals and strategies



Tulips in the snow
Courtesy of City of Littleton

This plan assists the City in realizing several of its City-wide goals, including supporting "active arts and cultural programs and organizations that offer opportunities to experience and enjoy the arts in Littleton while contributing to the [City's] economic vitality."[1] For more information, see Appendix D, "Literature Review of City Plans."

The following goals will help focus the City's support of arts and culture in a way that is aligned with City-wide planning:

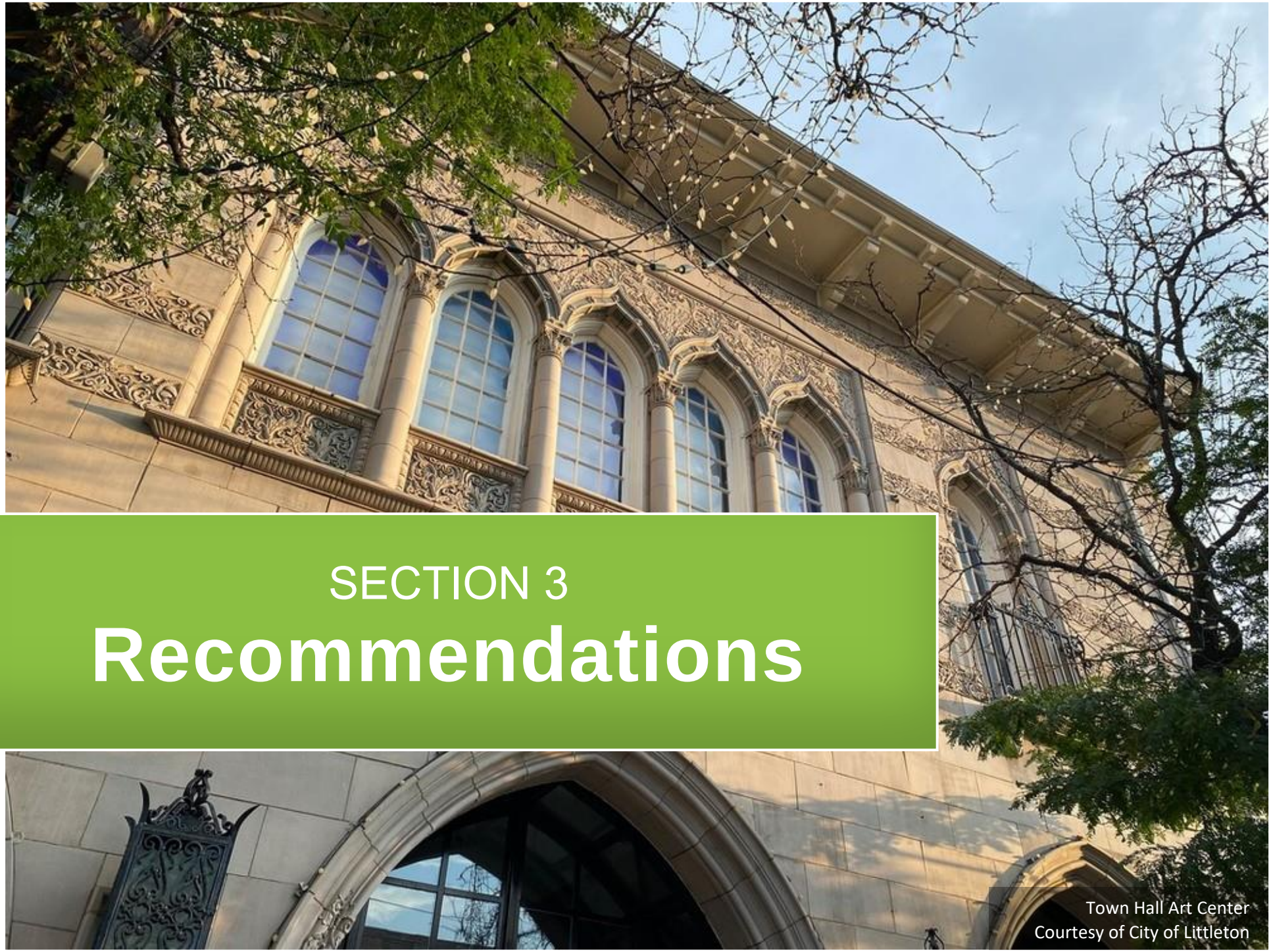
1. **Ensure that Littleton is a desirable place for creatives to live, work and enjoy;**
2. **Unite all of Littleton through placemaking;**
3. **Develop Littleton into a destination for arts and culture.**

The City will achieve these goals, as well as realize the shared vision of the City's role in supporting arts and culture in Littleton, through the following strategies:

1. **Mobilize arts and culture to bolster all of the City's planning efforts;**
2. **Collaborate with regional governments and organizations to develop sustainable relationships of mutual support;**
3. **Empower local cultural leaders; and**
4. **Listen to and engage diverse residents.**

The City can use these goals and strategies to execute the recommendations and the implementation plan in the following two sections of the plan.

[1] Envision Littleton Comprehensive Plan (2019), 63. Retrieved on November 12, 2024 from https://www.littletonco.gov/Building-Development/Land-Planning-Entitlement/Plans-and-Regulations/Comprehensive-Plan-and-Design-Requirements



SECTION 3

Recommendations

Town Hall Art Center
Courtesy of City of Littleton

Recommendations — Introduction

The recommendations in this section support the City's goals of ensuring that Littleton is a desirable place for creatives, uniting all of Littleton through placemaking and developing the city into a destination for arts and culture.

How to Use the Recommendations

This section of the Arts and Culture Strategic Plan is organized by the following recommendations:

1. Activate existing resources;
2. Cultivate arts and culture for all of Littleton;
3. Foster the broader arts and culture ecosystem;
4. Develop and refine governance, policies and procedures; and
5. Plan for Littleton's future.

Recommendations are not listed in terms of priority or start time. Instead, the City can pursue recommendations concurrently. This approach can ensure that the City balances the needs of Littleton residents and organizations while also considering how arts and culture in Littleton relate to county and district-level efforts, such as those of South Suburban Parks and Recreation.

Approaching the recommendations as a road map. The recommendations offer the City guidance on how to reach its goals. Each of the five recommendation themes includes action items that reflect findings for the planning process. This Plan is intended to be a living document, meaning the City can take the suggestions under each action item as starting points for initiatives while making adjustments that respond to stakeholder and resident feedback and needs.

Implementing the recommendations. For a detailed implementation matrix, which includes suggested lead, who will drive the initiative, collaborators and start date, as well as interim and stretch goals to measure progress, see the "Implementation Plan" in the next section



Little Jam concert
Courtesy of City of Littleton

Recommendation 1. Activate existing resources

The first recommendation theme, "Activate existing resources," includes four action items, which are discussed below and on the next two pages.

1-1. Inventory programming and resources offered by arts and cultural organizations throughout Littleton

Littleton is a hub of arts and cultural activity. Throughout the planning process, several stakeholders indicated that a comprehensive inventory of arts and cultural programming and resources would highlight existing activities, identify potential gaps and reveal opportunities for collaboration. For information on stakeholder perceptions, see Appendix E, "Analysis of Stakeholder and Community Input."

Considerations for developing and using a comprehensive programming and resources inventory include:

- Ensuring that all arts and culture organizations throughout Littleton are aware of the initiative through outreach and a call for participation shared regularly through numerous communication channels;
- Reviewing performing arts programming to consider whether performance and rehearsal schedules pose possible conflicts, such as organizations competing for audiences;
- Identifying areas of overlap and difference in instances where multiple organizations offer a similar resource; and
- Organizing and storing the information in a way that ensures ease of updating and sharing.



Bemis Public Library Bookmobile at Meet, Greet and Eat event
Courtesy of City of Littleton



Western Welcome Week Parade
Courtesy of City of Littleton

1-2. Identify and promote existing spaces and places for arts and culture

During the planning process, Littleton residents and community members expressed interest in more spaces and places for arts and culture, including venues for performance, rehearsing and/or community gathering and outdoor areas to enjoy arts and culture with family and friends. Identifying and promoting existing spaces and places can empower creatives to activate underutilized resources. See Appendix A, "Market Analysis" for venue types and capacity identified through the planning process.

Promoting existing spaces for arts and culture may include:

- Identifying gaps in scheduling, such as whether an organization that follows the school year or academic schedule can be used by community groups during the summer;
- Recognizing which outdoor spaces are particularly suited to outdoor arts and cultural activities and developing a booking system to encourage and manage use if not yet available;
- Considering which unused spaces in office buildings could serve creatives for storage or rehearsal purposes;
- Collaborating with local businesses to highlight their capacity to host live music in bars, breweries and restaurants; and
- Encouraging sites to adopt unified messaging, such as a "There's art here!" banner or icon to promote arts and cultural use.



Artistic banner at Aspen Grove
Photo by Keen Independent

Recommendation 1. Activate existing resources



1-3. Develop the Visit Littleton website as a central resource

City of Littleton recently launched Visit Littleton, a website that includes an introduction to Littleton and its history, seasonal itineraries, tips for getting around and a calendar of events. Residents and community members who participated in the planning process see an opportunity to continue to develop Visit Littleton as the go-to website for Littleton by highlighting local arts and culture programming, organizations and creatives.

Developing the Visit Littleton website as a central resource for arts and culture might include:

- Featuring evergreen itineraries focused on arts and culture, such as a public art walk;
- Updating arts- and culture-related content regularly with attractive, up-to-date photography, working links and tracking how the website drives traffic to linked organizations; and
- Sharing regular calls for participation and updates so that all arts and culture organizations are represented on the website.

1-4. Support arts and cultural organizations in community outreach and audience expansion

As the City continues its diversity, equity, inclusion and accessibility efforts, it can partner with arts and cultural organizations that are already offering immigrant services, Spanish-language translation and community outreach to individuals and groups who have not historically participated in municipal decision-making. As seen in Appendix C, "Review of Funding and Resources," supporting arts and culture organizations in this way can further align the City with State priorities.

City support for organizations and groups active in community outreach efforts and audience expansion may look like:

- Identifying existing efforts, using, for example, the previously discussed inventory of programming and resources (action item 1-1.);
- Exploring designating a staff member to coordinate City-wide efforts, such as Spanish-language translation and Alt Text; and
- Considering introducing a grant or funding source to support such efforts.

Recommendation 2. Cultivate arts and culture for all of Littleton

"Cultivate arts and culture for all of Littleton" is the second recommendation theme and includes five action items.

2-1. Develop community-wide arts and culture initiatives

Littleton encompasses 14 square miles, spans three counties and includes the annex neighborhood of TrailMark.[1] Developing community-wide arts and culture initiatives can encourage geographically diverse organizations, residents and community members to see themselves as part of Littleton. Such community-wide initiatives can also drive audiences to explore new locations and make new connections between already beloved sites.

Community-wide arts and culture initiatives may look like:

- Rooted organizations developing mobile resources or off-site programming, such as pop-up performances or exhibits;
- Citywide scavenger hunts with a prize for audiences visiting all participating arts and culture organizations;
- Unified marketing for public art throughout Littleton;
- Film festivals or live music series featuring different locations throughout the programming series; and
- Citywide programming themes, such as Littleton's unique approach to Colorado's 150 anniversary in 2026.



Denver Buddhist Temple Minyou Kai Dance Group
Courtesy of Arapahoe Community College

[1] City of Littleton (2024). Littleton Advantage. Retrieved on November 15, 2024 from https://www.littletonco.gov/Business/Choose-Littleton/Littleton-Advantage

2-2. Design a cohesive placemaking strategy

A cohesive placemaking strategy can further encourage a sense of unified identity for Littleton residents, community members and visitors and tourists.[2] While community-wide arts and culture initiatives often occur inside of buildings during specific operating hours, placemaking is a strategy for defining publicly accessible places as both welcoming and unique regardless of time of day or season. Examples of existing placemaking in Littleton are featured on the right while suggestions for future actions are listed below.

A cohesive placemaking strategy may feature:

- Unified, welcoming and distinctive signage that uses Littleton's city limits to celebrates Littleton's distinct character;
- A crosswalk art initiative introduced in locations of traffic violations and pedestrian accidents to encourage safety;
- Public art that enlivens Littleton's history;
- A shaded structure in a park or on a trail the becomes a site of small gatherings and milestone moments, such as engagements or family photos; and
- Clearly defined neighborhood boundaries that highlight the history, present and future of that community.

Examples of Placemaking



Community garden revitilizing an unused lot or space



Colorful mural encouraging pedestrians to explore an alley way



Crosswalk art encouraging drivers and pedestrians to pay attention



Public art at a transit station highlighting unique identity of that stop



Sculpture that becomes the defining visual feature of a location

[2] Project for public spaces (2024). What is placemaking? Retrieved on November 20, 2024 from https://www.pps.org/article/what-is-placemaking

Recommendation 2. Cultivate arts and culture for all of Littleton

2-3. Introduce resources in areas without arts and culture assets

As suggested in the Executive Summary, stakeholders and community members are interested in seeing arts and culture resources introduced into areas of Littleton without such assets. For more information, see Appendix A, "Market Analysis." Introducing resources in new locations may look like:

- Installing functional art, such as shaded structures and benches, in a park without arts and culture resources;
- Working with communities in TrailMark, south Littleton and other locations to identify what kinds of arts and culture resources are desired; and
- Supporting existing community spaces in introducing arts and culture programming, such as pop-up events.



Tricycle Flag Parade
Courtesy of City of Littleton

2-4. Highlight local creatives

Littleton residents and community members who participated in the planning process are particularly favorable towards the City supporting local creatives. See Appendix E, "Analysis of Stakeholder and Community Input" for more information. Highlighting local creatives might include:

- Featuring local talent on the Visit Littleton website;
- Designing City-run festivals to include a designed stage, booth and/or market to showcase local creatives;
- Developing a City-run directory of local talent; and
- Introducing an annual art prize designated for Littleton residents and community members.



Littleton Ballet performance
Courtesy of City of Littleton

2-5. Promote and measure arts and culture as economic drivers

Current City planning documents show that the City already sees arts and culture as an economic driver, a means of increasing tourism and a leading way to celebrate Littleton's unique character. Measuring the impact of arts and culture on Littleton's economy can identify successes to promote as well as opportunities for improvement. See Appendix D, "Literature Review of City Plans" for more information.

Promoting and measuring arts and culture as economic drivers may look as follows:

- Completing an economic impact study of arts and culture in Littleton at least once every three to five years;
- Sharing results of an economic impact study through the State of the Arts, for instance, and implementing actions based on findings;
- Encouraging businesses to highlight local creatives by hosting live music, exhibiting artwork or selling crafts, and documenting the impact of these initiatives;
- Tracking how much of tourism to Littleton is due to arts and culture;
- Setting goals for increasing economic impact of arts and culture and tracking progress towards those goals; and
- Identifying where Littleton surpasses neighboring communities in terms of arts and culture economic impact and promoting these areas through City marketing.



Historic Crawford Saloon in Downtown Littleton
Courtesy of City of Littleton



Performance at Twilight Criterium
Courtesy of City of Littleton

Recommendation 3. Foster the broader arts and culture ecosystem



The third recommendation theme, "Foster the broader arts and culture ecosystem," features three action items and considers how the City can collaborate with district and countywide arts and culture efforts. We are stronger when we work together.

3-1. Champion arts and culture in parks and trails

Parks and trails in Littleton are managed by South Suburban Parks and Recreation (South Suburban). Stakeholders and community members who participated in the planning process see opportunities for the City to collaborate with South Suburban on arts and culture initiatives in parks and trails. See Appendix D, "Analysis of Stakeholder and Community Input" for more information.

Championing arts and culture in parks and trails might include:

- Exploring a collaborative public art initiative to highlight the unique identity of each park and trail in Littleton;
- Advocate for Littleton residents' interest in more outdoor arts and culture through regular meetings and updates; and
- Promoting South Suburban's role in stewarding green spaces in City marketing materials.

3-2. Integrate arts and culture with Downtown development and businesses

Downtown Littleton is rich in arts, culture and business activity. Throughout the planning process, stakeholders and community members discussed wanting to see Downtown continue to be a site for arts and culture, as well as a hub where arts, culture and business mutually support one another.

Integrating arts and culture with Downtown development and businesses could feature:

- Approaching arts and culture as key ingredients to the success of Project Downtown;
- Meeting regularly with Littleton's Downtown Development Authority (DDA) to align efforts; and
- Using arts and culture to help unify Downtown, as well as celebrating the unique characteristics of subareas.

3-3. Facilitate collaboration with key arts and culture partners

The Arts and Culture Board (ACB) hosts regular meetings with Littleton-based arts and cultural organizations. This forum can be developed to further facilitate collaboration with key arts and culture partners in a way that aligns organizations with City, District and State efforts. For more information on the broader efforts identified through this study, see Appendix C, "Review of Funding and Resources."

Facilitating collaboration with key arts and culture partners could look like:

- Continuing to encourage all Littleton-based organizations to participate in ACB's Culture and Arts Partners group;
- Inviting leadership from the Scientific and Cultural Facilities District (SCFD) to meet with the City and key partners to identify strategies for developing cross-county arts and culture initiatives and to share information;
- Reviewing the completed inventory of programming and resources (action item 1-1.) with key arts and culture partners to identify opportunities to streamline, share resources and/or cross-promote initiatives;
- Collaborating with County Cultural Councils and County Commissioners to align efforts across Littleton arts and culture organizations based in Arapahoe, Douglas and Jefferson counties;
- Highlighting ways for key arts and culture partners to work with the City or to access City funding, such as Tier Two project-based grants available through the lodgers tax.

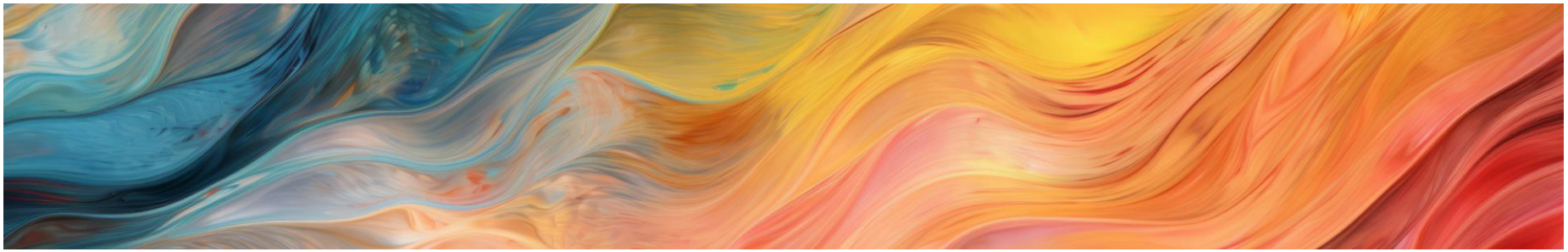


Belly Dancers at Arapahoe Community College's Cultural Caravan
Courtesy of Arapahoe Community College



Pond in Hudson Gardens
Photo by Keen Independent

Recommendation 4. Develop and refine governance, policies and procedures



The fourth recommendation theme, "Develop and refine governance, policies and procedures," includes five action items.

4-1. Engage the community in decision-making

The planning process showed that residents are interested in the City engaging the community in decision-making regarding arts and culture. For more information, see Appendix E, "Analysis of Stakeholder and Community Input."

Engaging the community might look like:

- Ensuring that decision-making processes regarding arts and culture initiatives involve opportunities for residents to provide input;
- Exploring appointing a Task Force of Littleton stakeholders and community members to help with outreach efforts; and
- Introducing selected arts and culture-related questions on ballots as appropriate.

4-2. Clarify roles of, and relationship with, municipally affiliated arts and cultural nonprofits

When a City is clear on the role of its municipally affiliated nonprofits, as well as any quasi-public agencies such as the Littleton DDA and nonprofits that organize largescale events, the City can coordinate efforts so that existing groups are active and promoted in a way that minimizes competition among groups.

This recommendation might include:

- Identifying which nonprofits and quasi-public agencies currently do, or potentially can, support arts and culture in Littleton;
- Designating a City staff member to serve as a liaison with the Friends of the Library and Museum and assist in clarifying the group's scope and purpose; and
- Encouraging appropriate municipally affiliated nonprofits and quasi-public agencies to pursue grants in support of arts and culture.

4-3. Streamline processes and procedures for arts and culture programming

Given that the City has such well-established arts and culture programming and that Littleton spans multiple counties and districts, streamlining processes and procedures for arts and culture programming can introduce greater efficiency, resident involvement and potential for innovation. For more stakeholder and community perceptions on the topic, see Appendix E, "Analysis of Stakeholder and Community Input."

Streamlining processes and procedures for arts and culture programming might include:

- Clarifying permitting process for community events based on resident feedback;
- Working with South Suburban to streamline process for initiating and installing public art in parks and trails located in Littleton;
- Facilitating collaboration between South Suburban and the Littleton DDA regarding arts and culture in green spaces in Downtown Littleton;
- Developing website content addressing clear guidelines for initiating arts and culture programming; and
- Evaluating processes and procedures for efficiency and accessibility on a regular basis, including by considering resident feedback through an open portal, such as a feedback submission form on a website.



The Tree of Knowledge by John King, installed in the Bemis Public Library lobby
Photo by Keen Independent

Recommendation 4. Develop and refine governance, policies and procedures



4-4. Develop the Arts and Culture Board

The City's Arts and Culture Board (ACB) is designed to be the driver of the City's arts and culture vision. Focusing on Board development can empower Board members as arts and cultural leaders and ensure sustainable momentum for years to come.

Developing the Arts and Culture Board could look like:

- Ensuring regular communication between City Council and the ACB;
- Supporting development of outreach and educational resources, such as how residents can submit feedback or volunteer with the ACB;
- Implementing membership planning, especially to ensure that ACB reflects diverse perspectives and experiences;
- Designating a budget for ACB's management, such as through an introduced Percent for Art program; and
- Supporting ACB's collaboration with a nonprofit on conducting a philanthropy study to learn about fundraising potential in Littleton and the region.

4-5. Review tiered system for grant distribution

First collected in 2024, the City has a five percent lodgers tax on hotels, motels and short-term rental hosts within City limits. Starting in 2025, the tax is allocated towards arts and culture in Littleton according to a four-tiered distribution system. The City can review its system annually to ensure distribution is responsive to stakeholder feedback and any new developments regarding arts and culture in Littleton. For more information on the lodgers tax, see Appendix C, "Review of Funding and Resources."

Review of the tiered system for distributing the lodgers tax may feature:

- Considering evaluation criteria for each tier;
- Developing use and reporting guidelines, such as asking recipients to document the impact of the grant;
- Evaluating new funding resources, such as a Percent for Art or more robust fundraising by municipally-affiliated nonprofits and agencies; and
- Assessing regional trends regarding the implementation of a tiered system for grant distribution.

Recommendation 5. Plan for Littleton's future



The fifth and final recommendation theme, "Plan for Littleton's future," features four action items.

5-1. Celebrate a unifying vision for arts and culture in Littleton

As the City begins implementing previously discussed action items of developing the Arts and Culture Board (4-4.), completing a comprehensive inventory of arts and culture programming and resources (1-1.) and developing community-wide initiatives (2-1.), it can clarify its unifying vision through cohesive branding that amplifies arts and culture.

Celebrating a unifying vision for arts and culture could include:

- Developing a dynamic marketing campaign to promote the vision to Littleton organizations and residents;
- Highlighting the vision on the Visit Littleton website, including through a sample itinerary;
- Introducing new, and/or updating existing, City programming, including events, to activate the vision; and
- Sharing the vision with county and district-level stakeholders, including South Suburban, SCFD and others.

5-2. Integrate arts and culture throughout City planning

City planning initiatives that integrate arts and culture could create more opportunities for Littleton residents to enjoy arts and culture. For more information on how existing City plans already address, or impact, arts and culture, see Appendix D, "Literature Review of City Plans."

Integrating arts and culture into City plans may look like:

- Working with City departments to identify initiatives where arts and culture are especially relevant and highlight the role of the cultural arts within those efforts;
- Ensuring the Arts and Culture Board is involved in City planning when the project could impact arts and culture;
- Using this plan to support existing and future City plans; and
- Responding to any research resulting from the implementation of this plan, such as an economic impact or philanthropy study.

5-3. Examine the feasibility of renovating or building new arts and culture spaces

Stakeholders and community members throughout the planning process expressed an interest in more venues dedicated to arts and culture in Littleton. These perceptions are presented in Appendix E, "Analysis of Stakeholder and Community Input." For a strengths, weaknesses, opportunities and threats (SWOT) analysis of the City's infrastructure and facilities, see Appendix B. The City can use the SWOT analysis as a starting point for any feasibility studies.

Examining the feasibility of renovating or building new arts and culture spaces might result in:

- Repurposing warehouse spaces as multi-use creative hubs, such as for artist studios, exhibition galleries, an artist-in-residence program and/or a black box theater;
- Activating unused storefronts through pop-up programming that introduces arts and culture to locations without such resources;
- Expanding the footprint of existing arts and culture organizations to better accommodate community needs, such as through mixed-use classroom and gathering spaces;
- Updating existing performing arts spaces in Littleton to increase capacity, ensure Americans with Disabilities Act (ADA) compliance and update technology; and
- Conducting a focused feasibility study on building a performing arts center in Littleton.



Hudson Gardens
Photo by Keen Independent



Depot Art Gallery Caboose in snow
Courtesy of City of Littleton

5-4. Leverage Littleton's vibrancy within the greater Denver metropolitan area

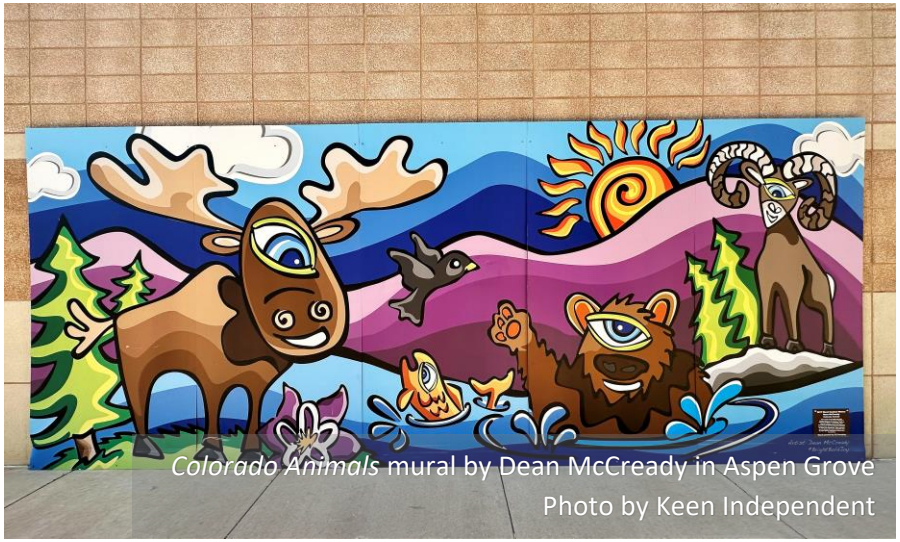
Littleton's unique character, assets and programming within the greater Denver metropolitan area can be leveraged to encourage visitors and to develop Littleton as a destination for arts and culture.

Leveraging Littleton's vibrancy within the Denver metropolitan area could look like:

- Advertising unique arts and culture offerings within the Regional Transportation District;
- Incentivizing future hotel(s) to feature arts and culture, such as exhibit spaces in their lobbies or multi-purpose spaces that could accommodate live music or dance;
- Collaborating with regional organizations to cross-promote offerings;
- Highlighting SCFD-funded organizations and initiatives through marketing, such as documenting visits to Littleton programming by the SCFD mascot;
- Continuing to develop signature City-run events and programming that distinguish Littleton within the greater Denver metropolitan area; and
- Capturing visits to key locations in Littleton and tracking annual growth of visitors coming to Littleton for arts and culture.



Littleton Museum Art Gallery
Photo by Keen Independent



Colorado Animals mural by Dean McCready in Aspen Grove
Photo by Keen Independent



SECTION 4

Implementation Plan

Littleton Ballet performance
Courtesy of City of Littleton

4. Implementation Plan

The following matrix provides guidance for implementing each recommendation along with a timeline and checklist for completion. In the matrix, the "suggested lead" column identifies the City department or position responsible for driving the initiative.

	Recommendation	Suggested Lead	Core Collaborators	Start By	Interim Goal (by 2028)	Stretch Goal (by 2030)
1.	**Activate existing resources**					
1-1.	Inventory programming and resources offered by arts and cultural organizations throughout Littleton	Public Art Administrator	Littleton Museum, Bemis Public Library and Arts and Culture Board	2025	Inventory is completed and readily accessible to all arts and culture organizations by 2026; by 2028, organizations plan programming and resource expansion with awareness of what is available in Littleton	City updates its programming and resources inventory annually; local organizations contact the Public Art Administrator to share updates of new programs and resources
1-2.	Identify and promote existing spaces and places for arts and culture	Public Art Administrator	Littleton Museum, Arts and Culture Board, South Suburban and others	2025	City promotes existing spaces and places for arts and culture by 2026; by 2028, local arts and culture groups use available spaces and places for rehearsal, performance, storage, making and gathering	Performance spaces are identified and available for local performing arts groups
1-3.	Develop the Visit Littleton website as a central resource	Communications, Marketing and Events	Littleton Museum	2025	Visit Littleton represents all arts and culture organizations in Littleton	Visit Littleton drives traffic onwards to websites of local arts and culture organizations; Click through rates for arts and culture are at least between 10 and 15 percent increase from those tracked in 2024
1-4.	Support arts and cultural organizations in community outreach and audience expansion	Public Art Administrator	Littleton Museum, Bemic Public Library, Littleton Public Schools and others	2027	City meets twice per year with Littleton Public Schools to coordinate immigrant services and audience development	Most of the City's marketing materials regarding arts and cultural include information translated in Spanish

4. Implementation Plan

	Recommendation	Suggested Lead	Core Collaborators	Start By	Interim Goal (by 2028)	Stretch Goal (by 2030)
2.	**Cultivate arts and culture for all of Littleton**					
2-1.	Develop community-wide arts and cultural initiatives	Arts and Culture Board	Littleton Museum and Bemis Public Library	2026	City introduces at least one community-wide arts and culture programming series; locations see a 20 percent increase from 2024 in attendance during the programming series	Littleton has at least three hubs beyond Downtown where residents and visitors can experience arts and culture year-round
2-2.	Design a cohesive placemaking strategy	Arts and Culture Board	Littleton Museum and Bemis Public Library	2026	City has a placemaking strategy that considers both neighborhood-specific and Littleton-wide guidelines	Littleton city limits are clearly defined through placemaking; at least two more neighborhoods or sites have a new placemaking program
2-3.	Introduce resources in areas without arts and cultural assets	Public Art Administrator	City Manager's Office, Community Development, Economic Development	2027	City has a plan for introducing arts and cultural programming in new locations that is informed by public input	South Littleton has at least five arts and cultural programs or installations; City features new programming in its community-wide arts and culture initiatives and at least quarterly in marketing materials

The implementation matrix for “Recommendation 2. Cultivate arts and culture for all of Littleton” continues on the next page.

4. Implementation Plan

"Recommendation 2. Cultivate arts and culture for all of Littleton" continues on this page.

	Recommendation	Suggested Lead	Core Collaborators	Start By	Interim Goal (by 2028)	Stretch Goal (by 2030)
2.	**Cultivate arts and culture for all of Littleton**					
2-4.	Highlight local creatives	Communications, Marketing and Events	Littleton Museum	2025	City-organized festivals feature a platform to showcase local talent, such as a designated stage, booth and/or market	City conducts survey to assess rating of its support for local creatives; survey shows at least 80 percent favorability rating regarding City support for local creatives
2-5.	Promote and measure arts and culture as economic drivers	Deputy City Manager	Economic Development	2025	City completes an economic impact study of its arts and culture; City shares results of study with its residents and implements actions based on findings, such as setting a goal of increasing economic impact of arts and culture by 10 percent by 2030	City reassesses economic impact against the goal set during the first assessment and defines new strategies to continue to grow arts and culture as economic drivers

4. Implementation Plan

	Recommendation	Suggested Lead	Core Collaborators	Start By	Interim Goal (by 2028)	Stretch Goal (by 2030)
3.	**Foster the broader arts and culture ecosystem**					
3-1.	Champion arts and culture in parks and trails	Arts and Culture Board	South Suburban Parks and Recreation District	2026	City and South Suburban meet at least twice per year to plan, and collaborate on, arts and culture in parks and trails in Littleton	Littleton has at least three new sites of arts and culture in parks and/or trails
3-2.	Integrate arts and culture with Downtown development and businesses	Public Art Administrator	Deputy City Manager, Downtown Development Authority (DDA)	2025	City and DDA meet quarterly to plan, and collaborate on, arts and culture in Downtown development and businesses	Downtown has at least four new arts and cultural locations and/or programs
3-3.	Facilitate collaboration with key arts and cultural partners	Arts and Culture Board	Culture and Arts Partners	2025	Arts and Culture Board asks Culture and Arts Partners annually how they can improve their quarterly meetings and collaboration	City engages local arts and culture organizations in planning initiatives, which result in at least three new or expanded resources for practitioners and administrators

4. Implementation Plan

	Recommendation	Suggested Lead	Core Collaborators	Start By	Interim Goal (by 2028)	Stretch Goal (by 2030)
4.	**Develop and refine governance, policies and procedures**					
4-1.	Engage the community in decision-making	Public Art Administrator	Arts and Culture Board	2025	City conducts outreach to receive public input on each new arts and culture initiative that impacts a specific neighborhood	Littleton residents have a clear and accessible way to offer input regarding arts and culture; City regularly reviews and acknowledges public feedback
4-2.	Clarify roles of, and relationship with, municipally affiliated nonprofits	Deputy City Manager	Littleton Museum and Bemis Public Library	2025	The Friends of the Littleton Library and Museum have a clarified purpose and scope; Friends group recruits new members based on clarified role and scope	City has clarified role and scope of all municipally affiliated nonprofits; all municipally affiliated nonprofits actively support development of arts and culture in Littleton
4-3.	Streamline processes and procedures for arts and culture programming	Arts and Culture Board	City Council, South Suburban and DDA	2026	City has clear process for arts and culture permitting and programming, including public art, for Downtown and in parks and trails in Littleton	City asks for feedback on streamlined processes and hears that residents are clear on how to obtain event permits and initiate ideas for arts and culture programming

The implementation matrix for “Recommendation 4. Develop and refine governance, policies and procedures” continues on the next page.

4. Implementation Plan

"Recommendation 4. Develop and refine governance, policies and procedures" continues on this page.

	Recommendation	Suggested Lead	Core Collaborators	Start By	Interim Goal (by 2028)	Stretch Goal (by 2030)
4.	**Develop and refine governance, policies and procedures**					
4-4.	Develop the Arts and Culture Board	Arts and Culture Board	City Council	2025	City recruits members to reflect diverse perspectives; Board works with a nonprofit to conduct a philanthropy study; By 2026, Board submits recommendations to City Council, such as for considering a Percent for Art Program on public projects	The Arts and Culture Board manages a budget separate from the lodgers tax and implements actions based on the already conducted philanthropy study and any completed economic impact studies
4-5.	Review tiered system for grant distribution	Arts and Culture Board	Deputy City Manager	2025	City reviews its tiered system for distributing grants based on the lodgers tax, resident feedback and recommended practices	City reviews its tiered system for distributing grants based on any new funding resources and resident feedback

4. Implementation Plan

	Recommendation	Suggested Lead	Core Collaborators	Start By	Interim Goal (by 2028)	Stretch Goal (by 2030)
5.	**Plan for Littleton's future**					
5-1.	Celebrate a unifying vision for arts and culture in Littleton	Arts and Culture Board	Littleton Museum, Bemis Public Library and Communications and Marketing	2026	City has a unifying vision for arts and culture in Littleton and advertises it within the city	City conducts survey asking residents if they perceive Littleton as a destination for arts and culture; survey results show an increase in perception of Littleton as a destination by at least 20 percent from those collected during 2024
5-2.	Integrate arts and culture throughout City planning	Deputy City Manager	City Council	2025	City uses the Arts and Culture Community Strategic Plan as a resource for its other planning efforts, including Project Downtown, and involves the Arts and Culture Board in relevant planning initiatives	All City planning efforts include consideration of how the project will impact arts and culture and whether arts and culture can support the initiative
5-3.	Examine the feasibility of renovating or building new arts and cultural spaces	Public Art Administrator	Deputy City Manager, Community Development and Economic Development	2026	City has conducted at least one feasibility study to repurpose, renovate and/or build new spaces for arts and culture	City has repurposed, renovated and/or built at least two spaces for arts and culture
5-4.	Leverage Littleton's vibrancy within the greater Denver metropolitan area	Arts and Culture Board	Littleton Museum and Bemis Public Library	2027	City begins to advertise its arts and culture within the Regional Transportation District	City conducts annual survey of visitors and tracks growth of visitors coming to Littleton for arts and culture

SECTION 5

Appendices



Littleton Twilight Criterium
Courtesy of City of Littleton

Section 5. Summary of Appendices

Keen Independent provides supporting appendices for more detailed analysis. The appendices inform the summary report.

Market Analysis

Appendix A provides an analysis of the demographics of Littleton as they compare with national averages. This appendix also provides population forecasts, mapping of existing, as well as desired locations for future, arts and cultural assets in Littleton and inventories of public art and arts and cultural facilities.

Analysis of Infrastructure and Facilities

Appendix B is a SWOT (strengths, weaknesses, opportunities and threats) analysis of infrastructure and facilities related to arts and culture in Littleton. The City can use this appendix as a starting point for a future feasibility study with the goal of assessing existing, and potential, spaces and sites for arts and culture.

Review of Funding and Resources

Appendix C provides an overview of existing City funding for arts and culture, as well as identifies potential resources that the City can leverage towards expanding arts and culture.

Literature Review of City Plans

Appendix D is a summary of the City's current plans with key considerations for initiatives that include or impact arts and culture. Analysis includes the 2019 Envision Littleton Comprehensive Plan, the 2021 Littleton Arts and Culture Commission Strategic Plan, City Council Goals and Objectives in Horizon 2027 and the Littleton Comprehensive Economic Development Strategy. The City can use this analysis to align recommendations from the Arts and Culture Strategic Plan with other City plans.

Analysis of Stakeholder and Community Input

Appendix E provides an overview of themes emerging from stakeholder and community engagement conducted throughout the planning process, including in-depth interviews and focus groups, public meetings, a virtual workshop survey and feedback submitted through the study email and hotline.



Performer with the Littleton Symphony Orchestra
Courtesy of City of Littleton

APPENDIX A. Market Analysis

Keen Independent presents a market analysis examining the arts and culture landscape in Littleton, Colorado. This information informs the recommendations we present as part of the Arts and Culture Strategic Plan.

Introduction

For this market analysis, Keen Independent gathered demographic, spending and market potential information about the population of Littleton. Combining this information with population projections from the Colorado State Demography Office and attendance data provided by the National Endowment for the Arts, we projected potential demand for various types of arts and culture activities through 2050.

Business inventory. Additionally, we inventoried relevant arts and cultural businesses in Littleton. Business types include:

- Arts and crafts vendors;
- Historic landmarks;
- Libraries;
- Live music;
- Museums and galleries;
- Recreation;
- Theaters and performing arts venues; and
- Other venues.

Cultural asset inventory. We also inventoried the following cultural assets in Littleton:

- Arts and crafts vendors;
- Historic landmarks;
- Libraries;
- Live music;
- Museums and galleries;
- Recreation;
- Theatres and performing arts venues; and
- Public art.

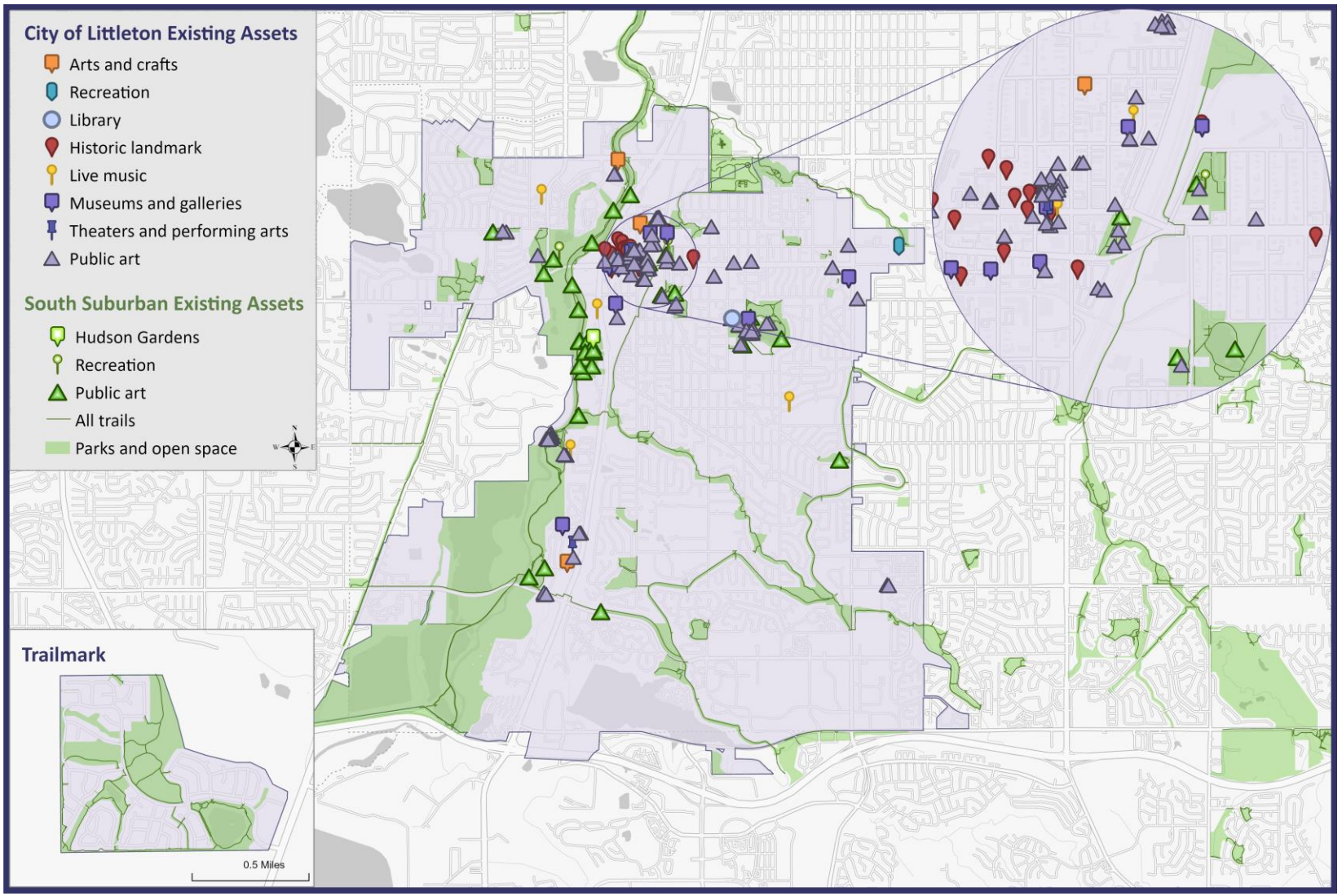
Figure A-2 on the following page shows existing arts and cultural assets in Littleton, including those that are managed by South Suburban Parks and Recreation (South Suburban). Assets are organized by type.

A-1. Downtown Littleton in the snow



Source: City of Littleton.

A-2. City of Littleton arts and culture asset map, 2024



Source: Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, ArcGIS, Keen Independent Research.

APPENDIX A. Market Analysis

Keen Independent analyzed the population and consumer behaviors in Littleton and compared them to national averages.

Population

Figures A-3 and A-4 display income, education, age and race/ethnicity for Littleton compared to the United States overall. Littleton has higher median household income, and a higher percentage of college graduates and white residents compared to the United States overall.

A-3. City of Littleton demographics, 2024

	City of Littleton	United States
Total households	**20,647**	**130,644,648**
Household income		
$24,999 or less	11.0 %	14.9 %
$25,000 to $49,999	12.9	16.8
$50,000 to $74,999	13.3	15.7
$75,000 to $99,999	13.1	12.8
$100,000 to $199,999	30.9	27.2
$200,000 or more	18.8	12.6
Total	**100.0 %**	**100.0 %**
Median household income	**$ 99,261**	**$ 79,061**
Education (population age 25+)		
Less than high school	2.7 %	9.4 %
High school	15.1	26.8
Some college	21.6	27.1
Bachelor's degree	38.7	22.5
Graduate degree	21.9	14.3
Total	**100.0 %**	**100.0 %**

Source: Source: U.S. Census Bureau American Community Survey.

A-4. City of Littleton demographics, 2024

	City of Littleton	United States
Total population	**46,083**	**338,273,465**
Age		
Up to 10 years old	9.4 %	11.3 %
10 to 19 years old	10.5	12.5
20 to 29 years old	12.7	13.3
30 to 39 years old	14.8	13.7
40 to 54 years old	19.3	18.7
55 to 69 years old	18.8	18.0
70 or more years old	14.4	12.4
Total	**100.0 %**	**100.0 %**
Median Age	**41.8**	**39.3**
Race		
African American	1.5 %	12.5 %
Asian American	2.5	6.4
Native American	1.0	1.2
Pacific Islander	0.1	0.2
Other race	4.6	8.8
Two or more races	10.8	10.7
White	79.6	60.3
Total	**100.0 %**	**100.0 %**
Ethnicity (of any race)		
Hispanic American	14.7 %	19.6 %
Non-Hispanic	85.3	80.4
Total	**100.0 %**	**100.0 %**

Source: U.S. Census Bureau American Community Survey.

A. Market Analysis — Spending and behavior

Data on arts and culture-related consumer behavior in the city of Littleton can help inform the type of offerings that organizations offer to patrons.

Entertainment Spending and Market Potential

Figure A-5 presents selected spending potential indices (SPI) for Littleton in categories such as parks and museums, movies and theater performances. An SPI compares the average amount spent locally for a product to the average amount spent nationally. An index of 100 reflects the U.S. average. An SPI of 70, for example, indicates that average spending by local consumers is 30 percent below the national average.

Spending potential. In Littleton, the spending potential indices in all of the entertainment categories examined are higher than the national averages. This indicates that Littleton residents could be more willing to spend money on these forms of entertainment. Tickets to the theatre, as well as operas and concerts, has an SPI of 134, which is the highest index of the categories examined.

A-5. Spending potential indices and averages, 2024

	City of Littleton	United States
Entertainment/recreation		
Index	*123*	*100*
Average	$ 5,042	$ 4,105
Entertainment/recreation fees/admissions		
Index	*130*	*100*
Average	$ 1,071	$ 809
Tickets to theater/operas/concerts		
Index	*134*	*100*
Average	$ 102	$ 74
Tickets to parks or museums		
Index	126	*100*
Average	$ 47	$ 25
Tickets to movies		
Index	*131*	*100*
Average	$ 32	$ 25
Live entertainment-catered affairs		
Index	*131*	*100*
Average	$ 26	$ 20

Source: Esri spending potential database based on U.S. Bureau of Labor Statistics Consumer Expenditure Survey (2024).

Entertainment Spending and Market Potential

Figure A-6 presents relevant market potential indices (MPI) for Littleton. MPI measures the relative likelihood of adults in the specified area exhibiting certain potential behaviors or purchasing patterns. An MPI of 100 represents the U.S. average.

Market potential. The study team reviewed MPIs for going to museums, live theater or dancing, as well as performances including classical/opera, country music, dance, movies and rock music. The MPI for Littleton is higher than the national average in all categories other than attended a country music performance, which was just under the national average. The Littleton index was over 20 points higher than the national average for attending a museum, live theater, dancing or classical/opera performance.

Given that Littleton's spending potential and market potential indicates a higher than national average consumption in most arts and culture categories, the City might consider ways to expand its arts and cultural programming.

A-6. MPI for attending certain types of events in Littleton, 2024

	City of Littleton	United States
Went to museum	16 %	13 %
Index	*122*	*100*
Went to live theater	11 %	9 %
Index	*122*	*100*
Danced or went dancing	16 %	0 %
Index	*122*	*100*
Attended a…		
Classical/opera performance	4 %	3 %
Index	*125*	*100*
Country music performance	4 %	5 %
Index	*96*	*100*
Dance performance	4 %	3 %
Index	*108*	*100*
Movie	46 %	44 %
Index	*104*	*100*
Rock music performance	9 %	8 %
Index	*116*	*100*

Note: 100 is the national average and findings are based on a 12-month period.

Source: Esri market potential database based on MRI Simmons Survey (2024).

Methodology

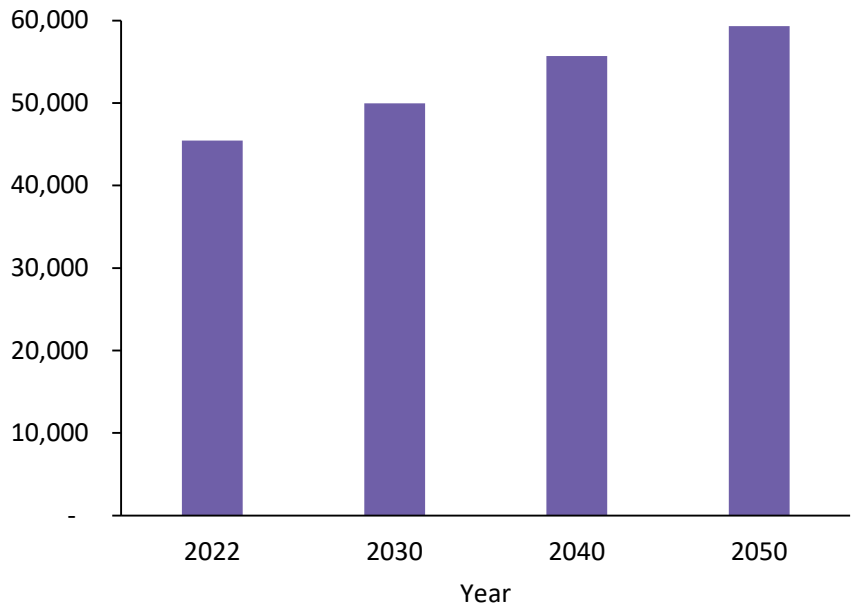
The City of Littleton's current population and their arts and culture consumption and interests can help Littleton understand potential demand in the future. Participation in events of different types varies by age group.

Population forecasts. The Colorado State Demography Office forecasts that Littleton's population will grow from about 45,000 residents in 2022 to just under 60,000 residents in 2050, a 30 percent increase in total residents (see Figure A-7).

Population by age in 2022. Figure A-8 on the following page illustrates the age distribution of Littleton's population. The graph shows the population grouped according to widely recognized generations beginning with the Silent Generation (born between 1926 and 1945) to Gen Z (born between 1996 and 2010) and the Alpha Generation (born in 2011 and later years). Young adults ages 25–29 and 30–24 are the largest groups, around 4,000 each. Older adult cohorts, ages 75 and above, are the smallest groups, ranging from about 900 to 1,300.

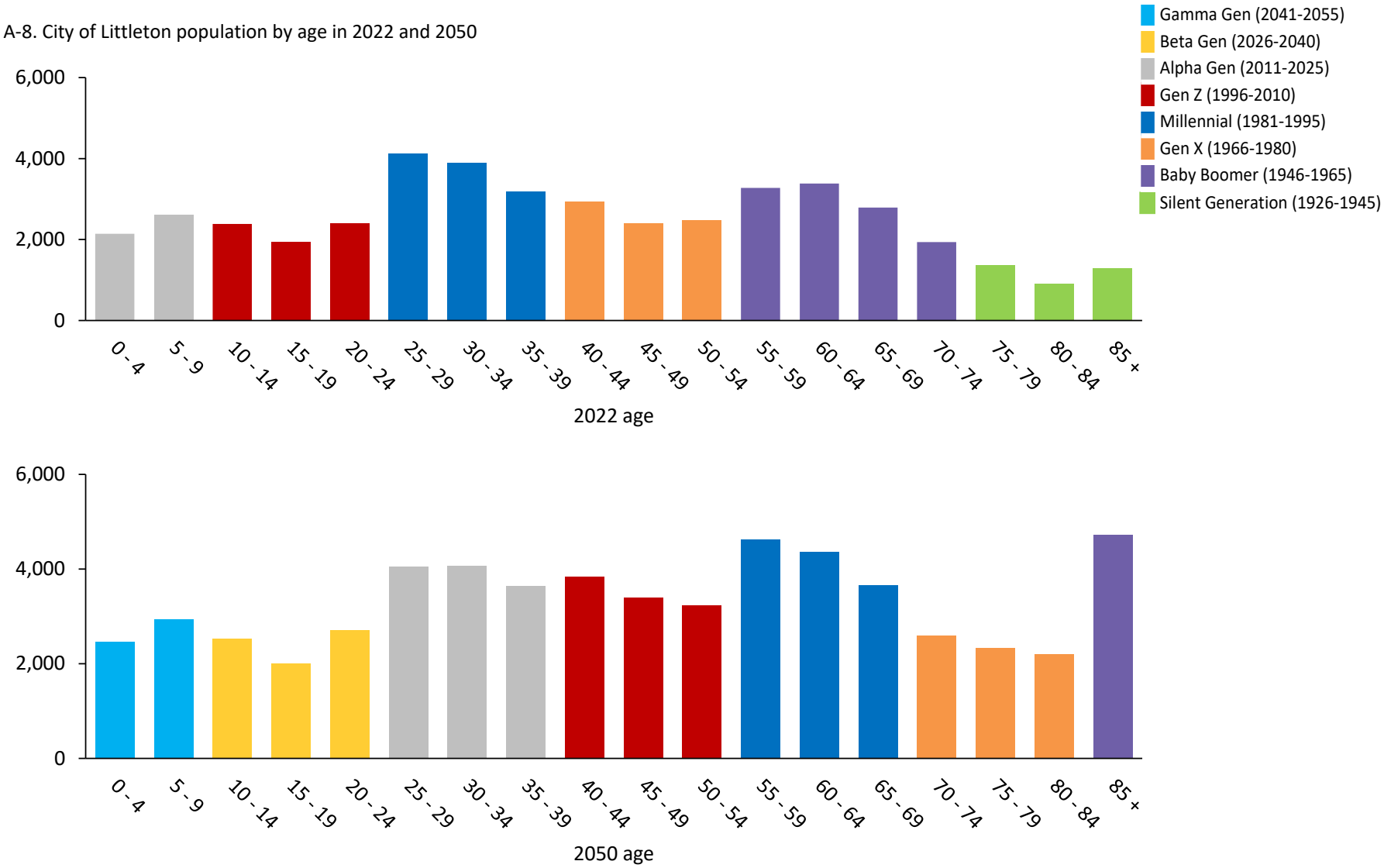
Population by age in 2050. Figure A-8 also presents the projected age distribution for Littleton's population in 2050 based on Colorado State Demography Office and US Census projections for the area. Older adults ages 85 and older are the largest category at about 4,700. Adults in categories ages 25 to 69 range from 3,200 to 4,600. The smallest group is of ages 15 to 19 at about 2,000.

A-7. Population Projections, 2022–2050



Source: Colorado State Demography Office.

A-8. City of Littleton population by age in 2022 and 2050



Source: Colorado State Demography Office.

Demand Scenario

Keen Independent developed a demand scenario for Littleton from the age-specific Colorado State Demography Office population projections and national attendance data generated by the National Endowment for the Arts (NEA) 2022 Survey of Public Participation in the Arts (SPPA).

Key assumptions. These demand projections assume that the 2022 rates for arts and culture participation do not change and that the national trends of age-specific rates of attendance are consistent with Littleton's population.

Demand projections. Displayed in Figure A-9, Keen Independent projects that unconstrained demand (not limited by inventory and capacity) for Littleton's arts and cultural activities will increase by about 20 to 37 percent between 2022 and 2050. For example, demand for art museums and galleries is projected to increase by 25 percent over the next 26 years. Please note the following:

- Demand change is at zero percent for 2022, because that is the starting year from which change is measured;
- Projected demand is based on residents, not tourists; and
- Demand changes are relative to current attendance. Relative changes in categories with small numbers of current participants can appear to be more substantial than they are. For example, a small absolute change in the number of people interested in opera can result in a large percentage change. (See Figure A-10 for absolute demand).

A-9. Arts demand projections for Littleton relative to 2022 demand

	2022	2030	2040	2050
Art museums and galleries	0 %	10 %	20 %	25 %
Ballet	0	10	19	25
Jazz music	0	10	21	26
Latin, Spanish or salsa music	0	8	17	20
Musical plays	0	12	25	32
Non-musical plays	0	12	24	33
Opera	0	13	28	37
Dance (other than ballet)	0	12	26	34
Classical music	0	12	25	32

Source: National Endowment for the Arts 2022 Survey of Public Participation in the Arts, Colorado State Demography Office, Keen Independent Research.

Absolute demand. Keen Independent presents unconstrained absolute demand for arts and cultural activities in the city of Littleton (Figure A-10). Unconstrained demand is the estimated number of annual attendances of each type of event from 2022 to 2030 ordered by popularity. Please note that demand projections are based on national attendance trends and are not necessarily reflective of local consumption behaviors.

Visits to art museums and galleries and musical plays are projected to increase by approximately 2,000 and 1,000 (respectively) between 2022 and 2030. Attendance at all other types of arts events listed in Figure A-10 are also projected to increase, but more modestly.

A-10. Unconstrained number of attendances at arts events of the Littleton population

	2022	2030	Percent change	Net change
Art museums and galleries	19,440	21,382	10 %	1,941
Ballet	1,143	1,255	10	112
Jazz music	7,252	7,964	10	712
Latin, Spanish or salsa music	3,203	3,463	8	260
Musical plays	8,884	9,912	12	1,029
Non-musical plays	3,138	3,505	12	367
Opera	389	441	13	52
Dance (other than ballet)	2,436	2,720	12	284
Classical music	3,752	4,272	12	520

Note: Attendance numbers are pulled from the City of Littleton population projections.

Source: National Endowment for the Arts 2022 Survey of Public Participation in the Arts, Colorado State Demography Office, Keen Independent Research.

A. Market Analysis — Inventory

Keen Independent conducted an environmental scan to identify relevant arts and culture businesses and venues within Littleton.

Arts and Culture Assets in Littleton

Littleton has over 40 arts and culture businesses and historic landmarks within city limits, as displayed in Figure A-11 Businesses include venues for experiencing live music and theater and gathering places to enjoy art and culture activities.

A-11. Arts and culture businesses in the city of Littleton

Cultural assets	Type
Artspark	Arts and crafts
Createry Workshop, Littleton	Arts and crafts
Eastlosarte Galeria and Artisan Shop	Arts and crafts
Littleton Learning Lab	Arts and crafts
Abbott Building	Historic landmark
Arapahoe County Courthouse	Historic landmark
Atchison, Topeka, & Santa Fe Depot	Historic landmark
Batschelet Building	Historic landmark
Carnegie Library	Historic landmark
Columbine Mill	Historic landmark
Coors Building	Historic landmark
Denver & Rio Grande Depot	Historic landmark
First National Bank of Littleton	Historic landmark
Leach House	Historic landmark
Louthan House	Historic landmark
Spotswood Residence	Historic landmark
Two Potters/Lemcke Meat Market	Historic landmark
Weston Masonic Lodge	Historic landmark

Source: Keen Independent Research.

A-11. Arts and culture businesses in the city of Littleton (continued)

Cultural assets	Type
Bemis Public Library	Library
Breckenridge Brewery	Live music
Fraco's Bar and Live Music	Live music
Littleton Bass School	Live music
Platte River Bar & Grill	Live music
Rocker Spirits	Live music
The Alley	Live music
Alley Arts Studio	Museums and galleries
Arapahoe Community College Art and Design Center	Museums and galleries
Carson Nature Center*	Museums and galleries
Colorado Gallery of the Arts	Museums and galleries
Garage Art Gallery & Studio	Museums and galleries
Judy Patti's Art Studio	Museums and galleries
Littleton Depot Art Gallery	Museums and galleries
Littleton Museum	Museums and galleries
ROX Arts Gallery	Museums and galleries
Stanton Art Gallery	Museums and galleries
The Steve Adams Gallery	Museums and galleries
Douglas H. Buck Community Recreation Center*	Recreation
Littleton Public Schools Stadium	Recreation
Sports Complex*	Recreation
Alamo Drafthouse Cinema Littleton	Theatre and performing arts
Hudson Gardens & Event Center*	Theatre and performing arts
Town Hall Arts Center	Theatre and performing arts

Note: * Indicates facilities managed by South Suburban.
Source: Keen Independent Research.

Venues

Keen Independent also identified venues relevant to arts and culture within Littleton's city limits. We note the capacity of each venue where available. These venues are organized into charts based on type:

- Event spaces and multipurpose rooms (Figure A-12);
- Event spaces and multipurpose rooms managed by South Suburban (Figure A-13);
- Live music (Figure A-14); and
- Theater and performing arts (Figure A-15).

Event spaces and multipurpose rooms. Figure A-12 includes event spaces and multipurpose rooms that are open spaces of varying sizes and capacities. These spaces could be used for a range of activities and gatherings, including but not exclusive to meetings, rehearsals and parties. For large meeting spaces, there are four spaces that can accommodate 100 or more people. One space accommodates mid-size groups of up to 75 people while another is designed for small groups of 15 to 20 people.

A-12. Event spaces and multipurpose rooms in Littleton

Event spaces and multipurpose rooms	Capacity
Ashley Ridge by Wedgewood Weddings	300
Riverwalk Clubhouse	125
Bemis Public Library	
Large meeting room	100
Conference room	20
Breckenridge Brewery	
The Great Room	120
The Tour Tasting Room	75

Source: Keen Independent Research.

Event spaces and multipurpose rooms managed by South Suburban. Figure A-13 lists open spaces of varying sizes and capacities that could be used for a range of activities and gatherings, including but not exclusive to meetings, rehearsals and parties. Several of the spaces managed by South Suburban are located within recreation centers that include gyms, courts and turfs designed for sporting events, games and practices. Of the South Suburban managed spaces, there are eight spaces with capacities of 130 or greater, including a gym with a capacity of 525 people. There are six spaces that can accommodate groups of around 50 to 60 people and one small meeting room for under 25 people.

A-13. Event spaces and multipurpose rooms managed by South Suburban

Event spaces and multipurpose rooms	Capacity
Douglas H. Buck Community Recreation Center	
Gym	525
Multi-room block	160
Rio	60
Atchison	58
Pacific	57
Santa Fe	57
Topeka with stage	49
Hudson Gardens	
The Inn & Backyard	175
The Rose Garden & Bloom Room	175
Monet's Place & The Pavilion	150
Sports Complex	
Turf	175
Court	150
Banquet room	130
Meeting room	23

Source: Keen Independent Research.

Live music. Live music venues are businesses, often bars and restaurants, that offer live music as part of their nightly or weekly offerings. Littleton has several places that offer live music, including one venue with a capacity of 150 and another with approximately a 200-person capacity (Figure A-14).

Theater and performing arts. Theater and performing arts spaces are venues primarily used and designed for performances. Most of these spaces include stadium-style seating.

The Littleton Public Schools Stadium, with a capacity of 1,000, and Waring Theatre at Arapahoe Community College, with a capacity of 226, primarily serve student activities and audiences (Figure A-15).
Town Hall Arts Center has a capacity of 226.

A-14. Live music venues in Littleton

Live music	Capacity
Fraco's Bar and Live Music	200
Platte River Bar & Grill	150
BARBOX at Aspen Grove	
Littleton Bass School	
Rocker Spirits	
The Alley	

Note: Capacity not available for all venues.
Source: Keen Independent Research.

A-15. Theater and performing arts venues in Littleton

Theater and performing arts	Capacity
Littleton Public Schools Stadium	1,000
Town Hall Arts Center	260
Waring Theatre	226

Source: Keen Independent Research.

Public Art

Keen Independent inventoried public art assets within Littleton city limits. Littleton has over 100 public assets located across outdoor spaces, which are owned and maintained by private businesses, the City of Littleton and South Suburban. These assets are organized into charts based on type:

- Monuments and memorials;
- Functional design;
- Murals; and
- Sculptures.

Monuments and memorials. Figure A-16 lists monuments and memorials in Littleton. These are assets commemorating nationally recognized historical individuals and events, as well as notable individuals and groups local to Littleton. Some of these assets are managed by the City of Littleton and others are managed by South Suburban.

Functional design. Figure A-17 lists functional design assets in Littleton. In addition to artistic expression, these assets have a functional element to them, such as providing seating or telling time.

A-16. Monuments and memorials in Littleton

Monuments and memorials	Location
A Memorial to the Pioneers of the Upper Platte Valley	Melting Pot Restaurant
Airlife Memorial*	Mary Carter Greenway
Bega-Littleton Sister Cities Monument	Bega Park
Blue Star Memorial*	Hudson Gardens & Event Center
Council Grove	Mary Carter Greenway
Danny Phillip Dietz Jr. Memorial	Berry Park
Littleton War Memorial Sun Dial	Sterne Park
Ray's Bench*	Hudson Gardens & Event Center
Sterne Memorial Fountain	War Memorial Rose Garden
World War II Memorial	Ketring Park

Note: * Indicates assets managed by South Suburban.
Source: Keen Independent Research.

A-17. Functional design assets in Littleton

Functional design	Location
Break Time Fountain	Littleton Museum
Millennium Clock Tower	Downtown Littleton Light Rail Station
Railroad Spur Bench	Railroad Spur (Mineral) Trail
The Silver Band of Present Time Tower	Mineral Light Rail Station

Source: Keen Independent Research.

Murals. Littleton has close to 30 murals, which are installed on local businesses and community buildings, as well as traffic boxes throughout the city (Figure A-18). There is a concentration of murals in downtown Littleton. The murals in Littleton depict different types of imagery, including nature, people, popular culture, history and abstraction.

A-18. Murals in Littleton

Murals	Location
A Celebration of the Performing Arts	2450 W Main St
Color in the Time of COVID	Alley Arts Studio
Colorado Man	Littleton Blvd & Bannock St Intersection
Crashing Bull	Proud Souls Barbecue
Gourmet Pottery	5730 S Curtice St
Imagine	Reinke Brothers
Imagine	Woodlawn Center
Kebler Pass	Alamo Drafthouse Cinema Littleton
Littleton Ballet Academy Mural	Littleton Ballet Academy
Morning Waves	5624 S Prince St
Octo Watertower	Reinke Brothers
Passages	Downtown Littleton Light Rail Station
Poppies	Alley Arts Studio
Title Guaranty Mosaic	Title Guaranty Building

Source: Keen Independent Research.

A-18. Murals in Littleton (continued)

Murals	Location
Untitled - Reinke's history	Reinke Brothers
Untitled - Abstract flowers	Broadway & Powers intersection
Untitled - Annabelle's Box	Broadway & Orchard intersection
Untitled - Aspen trees	Reinke Brothers
Untitled - Black and white butterfly wings	5624 S Prince St
Untitled - Columbines & sunflowers	Aspen Grove Lifestyle Center
Untitled - Crypt	Reinke Brothers
Untitled - Elk & mountains	AMLI Littleton Village
Untitled - Face with geometric shapes and flowers	Littleton's Woodlawn Floral
Untitled - Gemstone	Reinke Brothers
Untitled - Graphic year	Reinke Brothers
Untitled - Halloween scene	Reinke Brothers
Untitled - King & queen	Reinke Brothers
Untitled - Littleton History	Railroad Spur/Mineral Avenue Trail
Untitled - Littleton's 125th Anniversary	SE corner of Nevada St and West Main St
Untitled - Mayan symbol	Reinke Brothers
Untitled - Mountain biking (1)	The Bikery at The Brewery
Untitled - Mountain biking (2)	The Bikery at The Brewery
Untitled - Palenque Cocina dogs	Palenque Cocina
Untitled - Palenque Cocina rabbit	Palenque Cocina
Untitled - Poppies, daisies, & water drop	Reinke Brothers
Untitled - Salon workings	Evolution Hair Studio
Untitled - Skeleton playing guitar near cactus	Reinke Brothers
Untitled - Tattered cover mural	Aspen Grove Lifestyle Center
Untitled - Zooey's Place buffalo	Zooey's Place

Source: Keen Independent Research.

Sculptures. Littleton features over 60 sculptures installed throughout the city (Figure A-19). Many of these sculptures are located downtown. Sculptures are also installed throughout green spaces and around community buildings. Some of these assets are managed by the City while others are managed by the South Suburban. Materials used to create these sculptures include different types of metals, including bronze and stonework.

A-19. Sculptures in Littleton

Sculptures	Location
5 Sunflowers	Littleton Museum
Again	Bowles Grove Park
Aster-Mum	The Buck Recreation Center
Balance in Motion*	Littleton Golf and Tennis Club
Boy Fishing	Ketring Park
Circle of Friends	Bemis Public Library
Climb*	Hudson Gardens & Event Center
Collective Nest*	Hudson Gardens & Event Center
Coming Home	Mary Carter Greenway
Dee Dee & Libby*	Hudson Gardens & Event Center
Dorothy & Friends*	Hudson Gardens & Event Center
Eccentric Cello*	Hudson Gardens & Event Center
Endless Time*	Hudson Gardens & Event Center
Find Beauty*	Hudson Gardens & Event Center
Flight*	Hudson Gardens & Event Center
Flood Story*	South Platte Park
Forever Iris*	Hudson Gardens & Event Center
Fox Den	Littleton Museum
Free Flow	Littleton Museum
Hangin' Around	Mary Carter Greenway
Incoming*	Hudson Gardens & Event Center
Kaleidoscope*	Hudson Gardens & Event Center
Kate's Pony*	Hudson Gardens & Event Center

Note: * Indicates assets managed by South Suburban.

Source: Keen Independent Research.

A-19. Sculptures in the city of Littleton (continued)

Sculptures	Location
Laugh With Us	Littleton Museum
Leaf Canopy	AMLI Littleton Village
Life's Lessons	Littleton Museum
Lotus*	Hudson Gardens & Event Center
Maiden Voyage	Littleton Museum
Mind Field*	Hudson Gardens & Event Center
Moondance	Mary Carter Greenway
Mr. Blues	Littleton Museum
Nature's Legacy*	Carson Nature Center
Operation Red Wings	Berry Park
Peaks	2659 W Main St
Plash*	Little's Creek Park
Quest	Arapahoe Community College
Red Dress*	Hudson Gardens & Event Center
Riverside Downs	Riverside Downs
Roo and Baby Roo	Bega Park
Settler's Remnants to Rust	Littleton Center
Skip To My Lou	Gallup Park
Slinky The Catepillar	Sterne Park
Snips 'n Snails	Bega Park
Solar III	Gallup Gardens
Spirit of Inspiration	Arapahoe Community College Art & Design Center

Note: * Indicates assets managed by South Suburban.

Source: Keen Independent Research.

A-19. Sculptures in the city of Littleton (continued)

Sculptures	Location
Telescape	Littleton Center
The Cobbler's Path	La Rocco Plaza Park
The Gift*	Hudson Gardens & Event Center
The Prize Catch	Mary Carter Greenway
The Touch	Littleton Center
To Share is Precious, Pure and Fair	2440 W Main St
Together We Rise*	Harlow Park
Town Meeting	Littleton Center
Under a Watchful Eye	Mary Carter Greenway
Untitled - Alley/Littleton's History	2420 W Main St
Untitled - Flute player	Miller & Steiert Law Firm
Untitled - Fountain	Littleton Center
Untitled - Spinning horses	Riverside Downs
Untitled - Bird bath	Littleton Museum
Wagon Wheels	2299 W Main St
Waiting for the Kiss	Mary Carter Greenway
Water Drop*	Hudson Gardens & Event Center
Woman Riding Horse	Mary Carter Greenway
Year of Sundays	Littleton Court House

Note: * Indicates assets managed by South Suburban.

Source: Keen Independent Research.

A. Market Analysis — Heat maps

Keen Independent created heat maps of existing and requested locations for arts and cultural assets in Littleton.

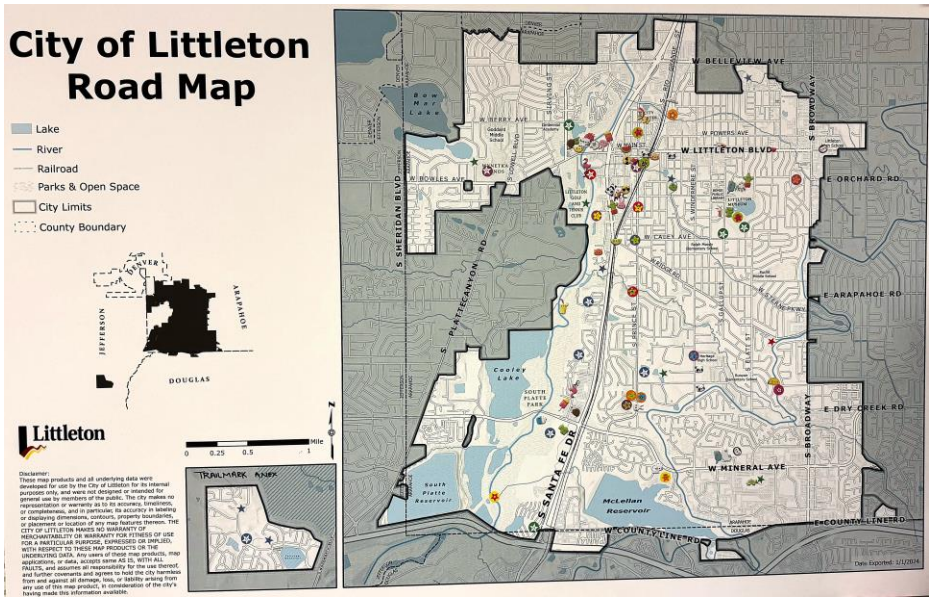
The heat map of existing arts and cultural assets in Figure A-21 shows that current assets are concentrated to downtown Littleton. Southwest Littleton shows no arts and cultural assets.

Methodology for Heat Map of Requested Asset Locations

Keen Independent created Figure A-22, or the heat map of desired locations for arts and cultural assets, based on the findings from a discovery meeting mapping station. Members of the public were invited to place stickers where they would like to see more arts and culture in Littleton. Figure A-20 on this page is a photograph of the findings from the mapping station that serves as the basis for the heatmap in Figure A-22.

Comparing the heat maps of existing and desired locations for arts and culture shows that discovery meeting asked for resources in locations that currently lack arts and culture assets.

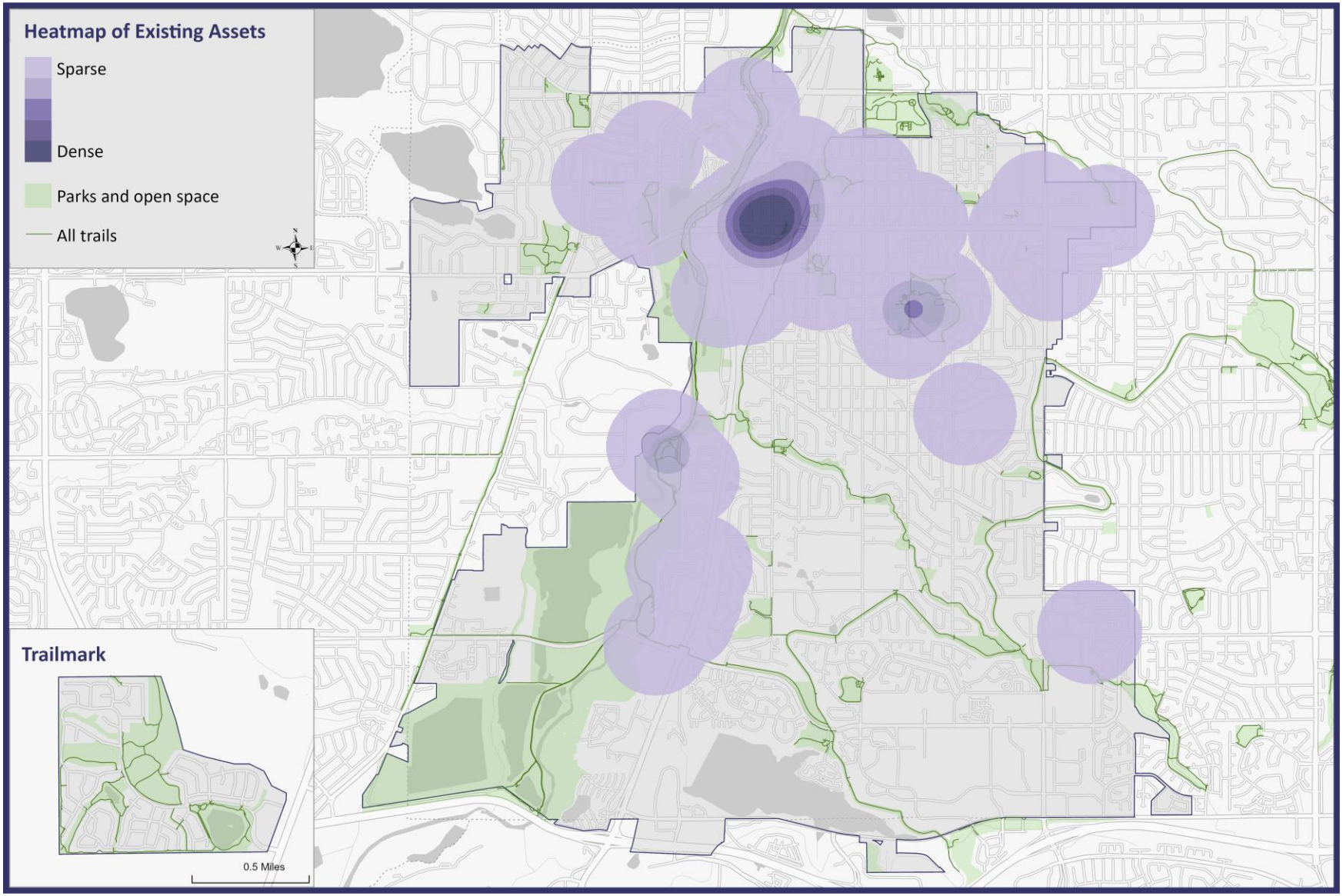
A-20. Photograph documenting the mapping station at the July 15, 2024, discovery meeting for this planning project



Note: N = 55. Participants could apply up to two stickers.

Source: Keen Independent Research.

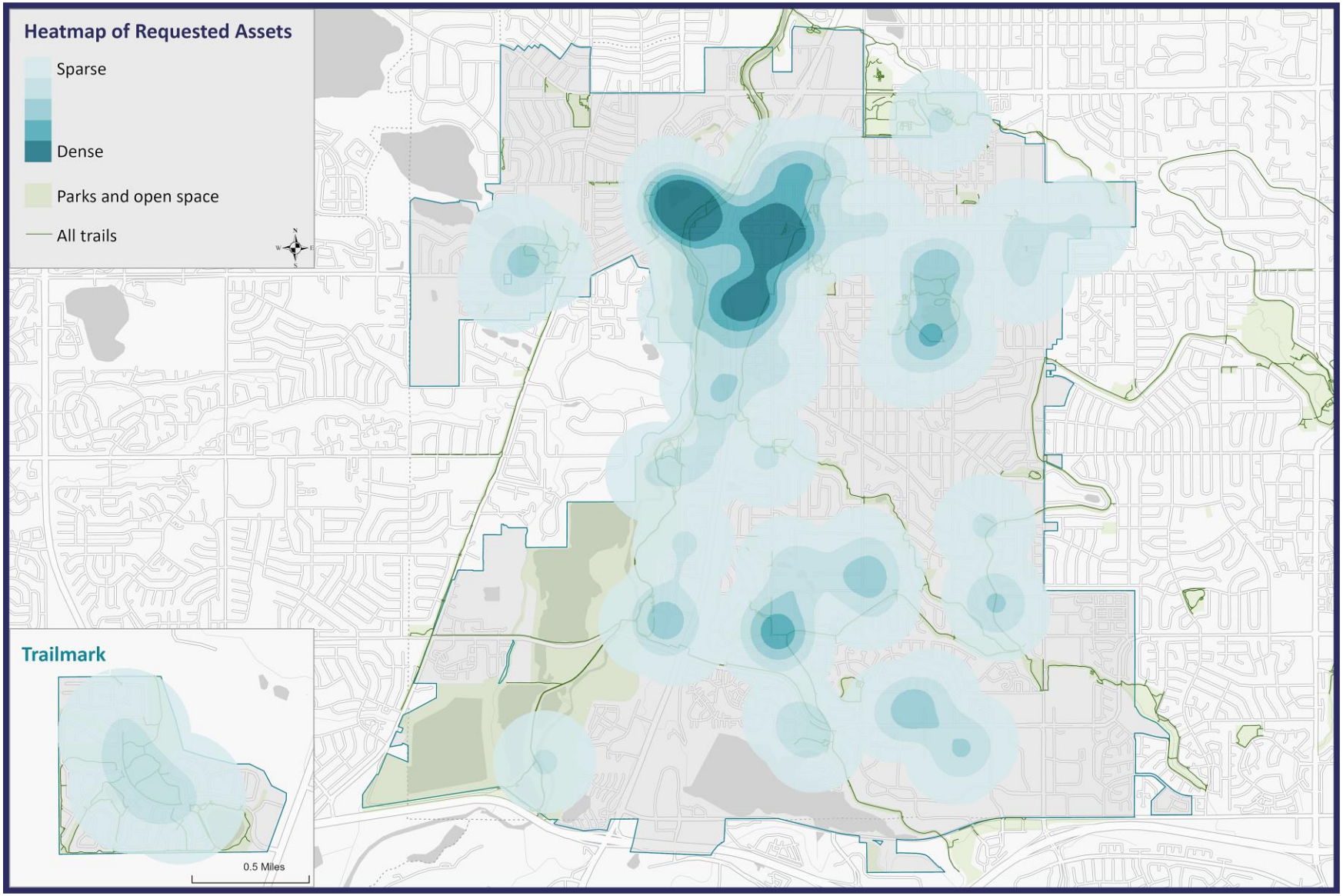
A-21. City of Littleton heat map of current art and culture assets, 2024



Source: Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, ArcGIS, Keen Independent Research.

A. Market Analysis — Heat maps

A-22. City of Littleton heat map of requested art and culture assets during public outreach, 2024



Source: Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, ArcGIS, Keen Independent Research.

Keen Independent also considered Littleton's tourism market.

Tourism in the Denver Metropolitan Area

Located within the greater Denver metropolitan area, Littleton is part of a region robust with tourism. Between 2022 and 2023, the Denver "region," which includes Littleton, increased in spending by tourists by 5 percent.[1] Looking at a broader time period, tourism spending increased by over 17 percent between 2019 and 2023.[2]

Arts and culture spending by tourists. Arts, entertainment and recreation-related spending by tourists in the Denver region increased by 8 percent since 2019 with seven percent of that growth taking place between 2022 and 2023.[3]

Tourism spending at a county level. Relevant to Littleton, which spans three counties, Arapahoe County saw an increase in travel spending of about 6 percent (5.7%), Douglas County rose by 5 percent (4.8%) and Jefferson County experienced a 7 percent increase in visitor spending in 2023 from the previous year.[4]

Hotels and Motels in Littleton

The City has a 5 percent lodgers tax on hotels, motels and short-term rentals that is designated towards arts and culture. Figure A-23 shows estimated annual sales for hotels and motels in Littleton along with the average of available rooms and percentage of occupancy. The data are estimated based on a two-year period of 2022 and 2023.

A-23. Estimated annual sales for hotels and motels in Littleton for 2022 and 2023 with average room availability and occupancy

Hotel or motel	Estimated annual sales	Average rooms available	Average percent occupied
Courtyard by Marriott	$ 5,214,162	125	77 %
Residence Inn by Marriott	4,556,101	116	72
Hampton Inn & Suites	3,515,675	118	70
Staybridge Suites	3,401,794	105	83
WoodSpring Suites	2,192,880	122	73
Essex House Motel	1,165,080	57	70
Evergreen Motel	1,053,938	55	73
Total	**$ 21,099,630**		

Source: City of Littleton, Keen Independent Research.

[1] Dean Runyan Associates (2023). The Economic Impact of Travel in Colorado, 24. Retrieved on November 17, 2024 from https://drive.google.com/file/d/1-JV6YfMyRW4awSd_WaQCHEFo1A-w8Cbs/view The report outlines defines travel spending as a combination of destination spending, such as on activities, and expenditures specific to travel, such as lodging and airfare.

[2] Ibid., 30.

[3] Ibid, 30.

[4] Ibid. 46 to 48.

APPENDIX B. Infrastructure and Facilities SWOT Analysis

The table below provides an analysis of strengths, weaknesses, opportunities and threats, or SWOT analysis, regarding the City's support of arts and culture. This SWOT analysis is a synthesis of qualitative and quantitative research conducted throughout the planning process.

Strengths and weaknesses focus on present-day observations, while opportunities and threats involve factors to consider while looking to the future. Keen Independent recommends that the City use the following SWOT analysis as a starting point for a feasibility study to identify spaces to renovate and/or build for arts and culture in Littleton.

Strengths

- Town Hall Arts Center is a celebrated community asset and has a vision to continue to develop;
- Littleton Museum and Bemis Public Library are supported by the City and recognized by residents for their services;
- Littleton is well-known for its events, including Western Welcome Week and the Audi Denver Littleton Twilight Criterium, which draw residents, area visitors and tourists;
- Downtown Littleton is a vibrant hub of arts, culture and business; and
- Littleton has numerous restaurants and bars that are designed to host live music and which regularly feature local performers.

Weaknesses

- Residents' interest and participation in the performing arts surpasses existing venue availability and capacity;
- Distribution of arts and culture assets is largely limited to Downtown;
- Littleton arts and culture organizations are not aware of existing inventory of multipurpose rooms;
- Some residents view the Littleton Museum and Bemis Public Library as "out of the way," suggesting the City can do more to connect these facilities to the rest of Littleton; and
- Arapahoe Community College's (ACC's) Waring Theatre requires updates and outreach to become accessible to the broader Littleton community.

Opportunities

- Hudson Gardens could emerge as a more prominent arts and culture venue, following its planning process;
- ACC is interested in collaborating with the City on arts and cultural infrastructure and facilities development;
- Downtown Development Authority has capacity to pursue fundraising and grants and has interest in developing more Downtown infrastructure and facilities for arts and culture; and
- Market analysis shows that Littleton residents' behavior and spending are higher than the national average for the arts.

Threats

- Littleton's location in the Denver metropolitan area exposes it to both market saturation and leakage due to Littleton residents going elsewhere to participate in and enjoy arts and culture;
- Approaching the lodgers tax as the main funding source may result in a perception that Littleton's arts and culture are dependent on the tax;
- Lack of coordination between the City and such groups as South Suburban, the DDA, and ACC could lead to competition for audiences or inefficient planning; and
- Cost and availability of real estate may limit development and accessibility of arts and cultural spaces in Littleton.

APPENDIX C. Review of Funding and Resources — Introduction

Keen Independent reviewed current funding practices for arts and culture in Littleton. This appendix offers a summary of City, District and State budgets and taxation tools with a focus on funding streams currently allocated for distribution to arts and cultural organizations.

The review addresses the following topics:

- City budget;
- Lodgers tax;
- Scientific and Cultural Facilities District;
- State; and
- Opportunities.

C-1. Trees on Littleton Crabapple Route



Source: City of Littleton.

C. Review of Funding and Resources — City budget

The City publishes an operating and capital improvement budget each year. Due to the timing of this study, Keen Independent reviewed the Proposed Operating and Capital Improvement Plan Budget for 2025 in addition to previous years. [1]

City Budget for Arts and Culture

As seen in Figure C-2, the City allocates 10 percent, approximately $5.9 million, of its budget ($59.3 million) to the Bemis Public Library and the Littleton Museum. The Arts and Culture Board has access to about $25,000 within the budget allocated for the Littleton Museum.[2] Bemis Public Library and the Littleton Museum each receive an additional $100,000 through the lodgers tax, which is discussed on the following page, and this amount is factored in within their overall budget for 2025 ($6.1 million).[3]

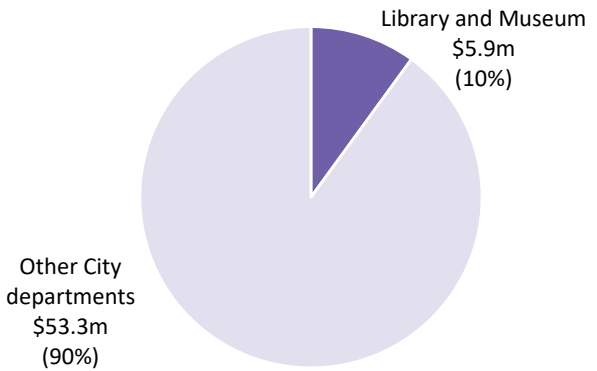
Dependence on sales and use taxes. Given that sales and use taxes comprise the largest revenue source of the 2025 General Fund at 78 percent and that the newly introduced lodgers tax is contingent on hotel and motel taxes, the City's current funding model for arts and culture is largely dependent on sales and use taxes.

City Council Budget Summary

The following initiatives in the City Council Budget Summary are especially pertinent to arts and culture in Littleton:

- Develop arts and culture facilities master plan to identify capital and future improvements;
- Establish a cultural campus at Littleton's Library, Museum, Ketring Park and Gallup Park; and
- Create and implement a plan to market Littleton's unique character and increase tourism.[4]

C-2. Portion of City's 2025 General Fund allocated to arts and culture



Source: City of Littleton, Keen Independent.

[1] City of Littleton, Colorado (2024). 2025 Adopted Budget. 2025 numbers are consistent with prior years where the Library and Museum were allocated 10 percent of the City's budget.

[2] Ibid., 111. Note that the Board is listed as the "Fine Arts Committee."

[3] Ibid, 96 and 105.

[4] Ibid., 36 to 39.

C. Review of Funding and Resources — Lodgers tax

The City has a five percent lodgers tax on hotels, motels and short-term rental hosts within the City limits.[5] Littleton citizens approved the tax in November 2022 and it went into effect in 2024. The hotel, motel and short-term rental infrastructure that supports the lodgers tax is discussed in Appendix A, "Market Analysis."

Distribution of Lodgers Tax

City Council charged the Arts and Culture Board (ACB) with making recommendations for the distribution of the 2024 lodgers tax revenue using a four-tier formula. ACB forwarded funding recommendations to City Council for final approval. Distribution will begin in January 2025.

Four-tiered distribution system. ACB recommended that the lodgers tax is distributed according to the following four tiers:

- **Tier One:** Approximately 50 percent distributed to the "big four cultural assets" of Bemis Public Library, Hudson Gardens, Littleton Museum and the Town Hall Art Center.
- **Tier Two:** Approximately 25 percent distributed in grants to Littleton arts and culture organizations.
- **Tier Three:** Approximately 15 percent of revenue to be used for tourism marketing and visitor promotion.
- **Tier Four:** Approximately 10 percent of revenue to be used for public art, historic preservation and other needs that meet the intent of the lodgers tax ballot language.[6]

Adjustments to distribution. In 2024, the lodgers tax was projected to generate approximately $850,000 in revenue. Collections from the first half of the year resulted in the projection being decreased to $750,000.[7] At the time of this study, ACB recommended to City Council that several of the funding tiers be slightly reduced during the first distribution with other tiers being reduced the following year.

Recommended Considerations for Managing and Distributing the Lodgers Tax

Keen Independent recommends that ACB explore the following with City Council and City staff:

- **Communicate transparent criteria and guidelines for each tier.** This might include a rubric or rationale for what defines a Tier One organization and whether funding is used toward ongoing operational expenses or for capital projects. Transparent criteria and guidelines will support a more equitable distribution of the lodgers tax.
- **Revisit the four-tiered distribution system annually.** The City may find that it will need to adjust the tiered system based on stakeholder and community feedback, as well as revenue generated through the lodgers tax or other funding sources.

[5] Littleton Arts and Culture Board 2025 Lodgers Tax Funding Recommendations Executive Summary (2024). Retrieved on November 4, 2024 from the City of Littleton.

[6] Ibid.

[7] Ibid.

C. Review of Funding and Resources — Scientific and Cultural Facilities District

The Scientific and Cultural Facilities District (SCFD) serves seven counties in the Denver-Aurora-Lakewood, CO Metropolitan Statistical Area. SCFD is a tax district created within Colorado law that has been renewed multiple times by voters since it was first introduced in 1987. The tax is one cent on every $10 in sales and use tax collected goes to SCFD.[8]

Distribution of the SCFD Tax Revenue

SCFD distributes money annually in the following three ways:

- By statute, the "metro area's largest cultural organizations" receive specific amounts determined by a funding formula.[9]
- Regional organizations "qualify by reaching certain budget and attendance thresholds." These organizations receive funding through a second formula.[10]
- Counties participating in the SCFD each receive a share of the tax collected. County Cultural Councils review applications for funding from eligible organizations and "make recommendations on their county's funding priorities. Those recommendations are then reviewed and approved by the Board of County Commissioners or City Council and the SCFD Board of Directors."[11]

For more information on SCFD funding formulas and approval process for county-level funding distribution, see the SCFD State Statute.

C-2. SCFD mascot visits the Central City Opera in Central City, CO



Note: SCFD has a mascot that visits SCFD-funded events to promote SCFD resources.
Source: Scientific and Cultural Facilities District.

[8] SCFD (2024). How does the tax work? Retrieved on November 11, 2024 from https://scfd.org/who-we-are/about-us/

[9] Ibid.

[10] Ibid.

[11] Ibid.

C. Review of Funding and Resources — Scientific and Cultural Facilities District

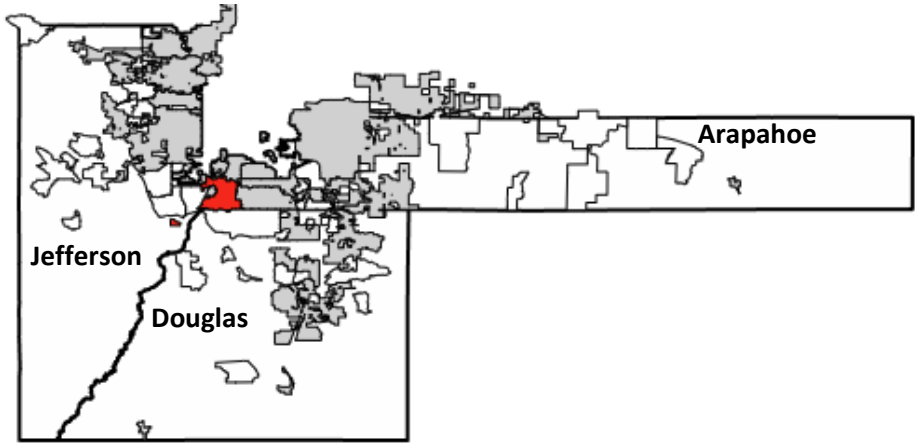
Littleton city limits span the counties of Arapahoe, Douglas and Jefferson. Arts and culture organizations in Littleton are eligible for county-specific funding based on their location. Figure C-3. shows Littleton city limits in red with the three county boundaries outlined in bold. While most of Littleton is in Arapahoe County, all of TrailMark is located in Jefferson County and some parts of south Littleton are in Douglas County.

Increasing Access to SCFD Funding

SCFD has a broad scope and has many competing organizations and agencies to support. The City and local arts and cultural organizations could continue to increase access to SCFD funds by:

- **Focusing on needs related to education and organizational support.** SCFD is designed to "fill the gaps" of other funding sources, which tend to cover programming.[12]
- **Communicating with County Commissioners and SCFD leadership.** ACB and City staff can meet with their local County Commissioners and SCFD leadership to outline a communication plan that both promotes SCFD resources to Littleton residents and notifies SCFD leadership of City's arts and culture initiatives.
- **Collaborating with regional organizations.** SCFD celebrates cross-county and cross-organizational collaborations that encourage the sharing of regional resources in "innovative" ways.[13]

C-3. Map showing Littleton city limits in red over the boundaries of Arapahoe, Jefferson and Douglas counties



Source: Wikipedia Commons.

Know Your County

The City of Littleton has a website page titled "New to Littleton" that features a section encouraging residents to "Know [their] county" for such services as a driver's registration and property tax information.

The City could make SCFD funding more accessible to Littleton-based arts and culture organizations by:

- Developing a detailed map of how city limits interact with boundaries of Arapahoe, Douglas and Jefferson counties; and
- Directing creatives to county-specific resource pages.

[12] SCFD Funding Process (2024). November 17, 2024 from https://scfd.org/grantmaking/getting-started/funding-process/.

[13] Ibid.

C. Review of Funding and Resources — State funding

This section presents considerations for the City to align its efforts with the State's priorities for Fiscal Year 2025 to 2026 (FY 25–26). The State's fiscal year runs from July 1 through June 30 each year.

Colorado Creative Industries

Colorado Creative Industries (CCI) is the state's designated arts agency that distributes state and federal funding. CCI is responsible for:

- State-wide grants and awards;
- Programs to develop sustainable communities, which includes the Colorado Creative Districts;
- State-wide partnerships; and
- The Art in Public Places program across Colorado.[14]

CCI operates under the Office of Economic Development and International Trade.

2025 to 2026 State Budget

Based on Colorado Governor Jared Polis's FY 25–26 Budget Request, which was released in November 2024, arts and culture initiatives that relate to the topics outlined in the box on the right align with State priorities.[15] The FY 25–26 Budget Request continues focus on affordable housing and education as did the FY 24–25 State budget. These State priorities align with areas of focus identified by SCFD leadership, suggesting an opportunity for the City of Littleton to align with both funding sources.

State Priorities for Fiscal Year 2025 to 2026

The following themes and initiatives in the State budget for Colorado relate to arts and culture and are quoted below:

- More housing … including for creative workforce housing;
- K- 12 Education;
- Early Childhood Education;
- Protecting our environment now and for our future;
- Equity, Diversity and Inclusion, including requiring budget requests to specify whether the initiative will have positive equity impact;
- More resources for Spanish speakers; and
- Celebrating our past and our future … including looking forward to Colorado's Sesquicentennial, or 150 birthday, in 2026.[16]

[14] Colorado Office of Economic Development and International Trade (2024). Colorado Creative Industries. Retrieved on November 12, 2024 from https://oedit.colorado.gov/colorado-creative-industries

[15] Note that the budget will be finalized in spring 2025.

[16] Budget Request (2024), 21. Retrieved on November 12, 2024 from https://drive.google.com/file/d/1ca28oajR6oV3wi284ddgMmpU_ilwq6xn/view?pli=1

C. Review of Funding and Resources — Opportunities

Keen Independent identified the following opportunities through the planning process that could help the City share resources and develop new, and more varied, funding streams for arts and culture.

Partnerships

The following organizations or groups are interested in working with the City on arts and culture initiatives.

- **Downtown Development Authority (DDA).** Littleton's DDA is a quasi-public agency that provides organization and financing for redevelopment projects. The DDA also "facilitates partnerships joining businesses, property owners and other civic partners such as chambers of commerce and local government."[17] The DDA's initial board consists of nine appointed members and one City Council representative. The City can work with the DDA on arts and culture programming specific to Downtown Littleton.

- **South Suburban Parks and Recreation District (South Suburban).** South Suburban is a park and recreation district containing 46 square-miles on the southern edge of the Denver Metropolitan Area.[18] South Suburban manages most parks and trails in Littleton and has recently taken on ownership of Hudson Gardens, one of Littleton's Tier One organizations.

Arapahoe Community College (ACC). ACC has three campuses: Littleton is its main location, Castle Rock, CO hosts ACC's Sturm Collaboration Campus and the DCSD Legacy Campus is located in Lone Tree, CO.[19] ACC works closely with Arapahoe County due to its central location in Littleton and Douglas County through a partnership with the Douglas County School District.

Friends of the Littleton Library and Museum

The Friends of the Littleton Library and Museum (Friends) is a 501(c)(3) nonprofit service organization providing financial and volunteer support for the Bemis Public Library and the Littleton Museum. One of the key goals of the Friends is to "fund purchases for the library, museum and living history farms for all to enjoy."[20]

Activating the Friends of the Library and Museum. Being a nonprofit, the Friends can pursue private fundraising from individuals, businesses, foundations and government grants and coordinate research on arts and culture philanthropy in Littleton. Given that the group exists, it is possible to activate the Friends for grant writing opportunities and expanded fundraising.



[17] Littleton Downtown Development Authority (2024). What is a Downtown Development Authority? Retrieved on November 12, 2024 from https://littletondda.org/about-downtown-littleton/

[18] South Suburban Parks and Recreation District (2024). Retrieved on November 12, 2024 from https://www.ssprd.org/about-us

[19] Arapahoe Community College (2024). ACC's History. Retrieved on November 12, 2024 from https://www.arapahoe.edu/about-acc

[20] Friends of the Littleton Library and Museum (2024). Friends Mission. Retrieved on November 12, 2024 from https://friendslittleton.org/about-the-friends

APPENDIX D. Literature Review of City Plans — Introduction

This appendix includes a summary of current plans and ordinances for the City of Littleton ("City") with specific consideration given to initiatives that include or impact arts and culture. Information for each document is represented as it was written at the time it was adopted.

Introduction

Keen Independent assessed the following plans in the development of the Arts and Culture Strategic Plan, presented in chronological order:

- Envision Littleton Comprehensive Plan (2019);[1]
- Littleton Arts and Culture Commission Strategic Plan (2021);[2]
- City Council Goals and Objectives (2022);[3] and
- Littleton Comprehensive Economic Development Strategy (2024).[4]

The study team also reviewed available planning documents by nonprofits and quasi-public entities, such as the Downtown Development Authority. While the recommendations in this Arts and Culture Strategic Plan are informed by research and conversations with stakeholders from most major arts and cultural players in Littleton's greater ecosystem, this appendix focuses on City documents because the City will be the driver of its arts and cultural planning efforts.

D-1. Jogger on the South Platte River



Source: City of Littleton.

[1] Envision Littleton Comprehensive Plan (2019). Retrieved on September 11, 2024 from https://www.littletonco.gov/Building-Development/Land-Planning-Entitlement/Plans-and-Regulations/Comprehensive-Plan-and-Design-Requirements

[2] Littleton Arts and Culture Commission Strategic Plan (2021). Retrieved on September 11, 2024 from https://www.littletonco.gov/files/sharedassets/public/v/2/agendas-and-minutes/acc/accstrategicplanfinal01192021.pdf

[3] City Council Goals and Objectives (2022). Retrieved on September 11, 2024 from https://www.littletonco.gov/Government/Littleton-Leadership/Council-Goals-and-Objectives

[4] Littleton Comprehensive Economic Development Strategy (2024). Retrieved on September 11, 2024 from https://lab2.future-iq.com/littleton-colorado-comprehensive-economic-development-strategic-plan-project/

D. Literature Review of City Plans — Envision Littleton Comprehensive Plan

We begin with a discussion of the Envision Littleton Comprehensive Plan ("Comprehensive Plan"), which was developed in 2019 to guide City development efforts through 2040.[5]

Existing City Data Book

The City began its planning process by creating an Existing City Data Book ("Data Book") to avoid duplicating previous research when building future reports and plans. The Data Book is included in the appendices to the Comprehensive Plan, and it includes information on various subjects including arts and culture, some of which are presented on the right.

Envision Littleton 2040 Report

After developing the Data Book, the City then undertook a civic engagement process that generated over 870 survey responses and helped to create a unified vision of the future of Littleton. These efforts resulted in the Envision Littleton 2040 Report ("Report"), which was used to develop the Comprehensive Plan and is included in the Plan's appendices.[6] The Report introduced shared vision elements and guiding principles, many of which relate to arts and culture and are presented on the right.

Existing City Data Book details relevant to arts and culture planning

- ***Heritage:*** Littleton contains 27 locally designated historic landmarks. Additionally, the City has six National Register Properties and Districts. These include the Littleton Main Street District and Arapaho Hills District; and the properties of Geneva Home, Knight-Wood House, Littleton Town Hall and Littleton Post Office.[7]
- ***Environment:*** 927 acres of parkland in South Platte Park comprise four major ecological communities.[8]

Envision Littleton 2040 Report highlights

- ***Guiding principles:*** anchored, authentic, connected and accessible, active, engaged and civic-minded.
- ***Core values:*** Preservation and celebration of local history; the outdoors, including stewardship of open space and the South Platte River; and being inclusive, including in terms of age, race, income and faith diversity.
- ***Shared priorities:*** Parks, trails and open space; small-town feel and community; Downtown Littleton; accessibility; and amenities and events.[9]

[5] Envision Littleton Comprehensive Plan (2019), 1.

[6] Envision Littleton Comprehensive Plan Appendix 2: Envision Littleton 2040 Report, 4. Retrieved September 13, 2024 from https://www.littletonco.gov/Building-Development/Land-Planning-Entitlement/Plans-and-Regulations/Comprehensive-Plan-and-Design-Requirements

[7] Envision Littleton Comprehensive Plan Appendix 3: Existing City Data Book, 16. Retrieved September 13, 2024 from https://www.littletonco.gov/Building-Development/Land-Planning-Entitlement/Plans-and-Regulations/Comprehensive-Plan-and-Design-Requirements

[8] Ibid., 17.

[9] Envision Littleton Comprehensive Plan Appendix 2: Envision Littleton 2040 Report, 2–4.

D. Literature Review of City Plans — Envision Littleton Comprehensive Plan

Following the City Council's December 2018 adoption of the Envision Littleton Vision Report, the City was able to create the larger Comprehensive Plan. This Comprehensive Plan is the City's first since 1989.[10] Each section of the Comprehensive Plan refers to past planning efforts, which Keen Independent mentions when relevant, as well as key issues and considerations.

The Comprehensive Plan also provides a "framework for action," which includes specific policies and actions to support stated goals. The following sections contain goals pertinent to arts and cultural planning, as well as environmental stewardship and diversity, equity, accessibility and inclusion (DEAI), which the City asked Keen Independent to consider while preparing the Arts and Culture Strategic Plan.

Keen Independent considered:

- Land use and community character;
- Housing and neighborhoods;
- Transportation;
- Infrastructure and services;
- Heritage, arts, recreation and tourism;
- Environment; and
- Special areas and design.[11]

D-2. South Platte Park, Littleton, CO



Source: Uncover Colorado.

[10] "What is Envision Littleton?" Retrieved on September 26, 2024 from https://www.littletonco.gov/Building-Development/Land-Planning-Entitlement/Plans-and-Regulations/Comprehensive-Plan-and-Design-Requirements/What-is-Envision-Littleton#section-2

[11] Envision Littleton Comprehensive Plan (2019), 2.

Land Use and Community Character

This section of the Comprehensive Plan describes Littleton's land use planning for rural, suburban and urban areas and distinguishes zoning from land use planning by indicating differences in relative proportions of paving, buildings and open space between land use types. The document provides 16 categories that address both use and character.[12]

Different land use types may impact planning related to arts and culture. For example:

- Auto-oriented residential multi-family use areas can meet the needs of disabled and elderly residents, particularly when situated "near medical facilities and other such amenities."[13]
- Littleton's Downtown mixed-use area allows for "a place to gather" even as it maintains a historic district designation.[14]

Key issues and considerations. Land use and community character considerations include "ongoing open space stewardship, how growth and change may affect Littleton's character, "small town" feel and beautification, which includes such concerns as loss of mountain views and the need to protect historical and cultural assets."[15]

Goals

- A more attractive community, based on quality design and character of both private development and the public realm.[16]

Policies

- Emphasize compatible intensities and character when evaluating [development] applications;[17]
- Protect green spaces' ecological functions; and
- Promote Littleton's aesthetic appeal through the quality expectations set within the City's Code for landscaping, signage, lighting, and similar design elements.[18]

Actions

- Explore opportunities to link the design and construction of specific capital projects to community beautification objectives.
- Pursue a character-based zoning approach … Incorporate more effective provisions for buffering between differing character types and land use intensities and incorporate provisions to promote quality site and building design that enhances community aesthetics.[19]

[12] Envision Littleton Comprehensive Plan (2019), 16.

[13] Ibid., 25.

[14] Ibid., 37.

[15] Ibid., 41

[16] Ibid., 41

[17] Ibid.

[18] Ibid., 42.

[19] Ibid.

Housing and Neighborhoods

This portion of the Comprehensive Plan indicates that "[a] key component of a city's livability is …. suitable and economical housing options."[20] The Plan states that housing in Littleton needs to be attainable "regardless of economic conditions."

Past planning. Previous Littleton housing planning efforts that inform this section include:

- City of Littleton Neighborhood and Corridor Plans (2016);
- Downtown Neighborhood Plan (2011);
- Littleton Housing Overview (2013);
- City of Littleton Housing Study (2017); and
- South Metro Housing Options (SMHO) Annual Public Housing Agency (PHA) Plan (2017).

Key issues and considerations. The "Housing and Neighborhoods" section of this document emphasizes the key accessibility considerations of affordability, the difficulties of aging in place as well as "concern for a potential loss of demographic diversity (by age, race/ethnicity, income level, etc.) driven by unattainable housing choices and/or neighborhood gentrification in Littleton."[21]

Goals

- Quantity and diversity of housing options that makes living in Littleton attainable for a wide range of age groups and income levels.[22]
- Neighborhoods that maintain their character or are carefully managed when headed toward transition.[23]

Policies

- Adopt and apply development regulations and standards to ensure that new and redeveloped residential properties are compatible with the character of their surrounding area.[24]
- Support the ongoing appeal of Littleton's neighborhoods through effective code compliance and by using public investments in streets, sidewalks, infrastructure, parks and trails, and pedestrian/bicycle safety measures, along with routine maintenance practices for all of the above.[25]

[20] Envision Littleton Comprehensive Plan (2019), 45.

[21] Ibid.

[22] Ibid.

[23] Ibid., 45.

[24] Ibid., 46.

[25] Ibid., 46.

Transportation

The Comprehensive Plan was prepared concurrently with the City's first-ever Transportation Master Plan (TMP). These two plans work together to "[find] the balance where streets are vibrant, safe and promote a sense of place while providing multimodal choices for users of all ages and ability."[26]

Previous transportation planning. Littleton has a considerable history of transportation planning, including corridor projects and Regional Transportation District (RTD) planning. The City participated in Denver Regional Council of Governments Metro Vision 2035 (2017).[27]

Key issues and considerations. The "Transportation" portion of the Comprehensive Plan aims to improve Littleton's walkability by "extending [its] pedestrian network, adding pedestrian bridges, extending sidewalks and improving existing sidewalks.[28]

Framework for action. One key transportation goal is to "contribute to our economic prosperity while maintaining and enhancing our community's character."[29] Policy examples to enhance walkability include improving "the safety of vulnerable user groups on streets and trails," enhancing City snow clearing capabilities and requirements for sidewalks and trails and requiring bike and pedestrian detours during construction. The report encourages planners to "create context-appropriate streets that consider the needs of all potential users."[30]

D-3. Downtown Littleton Light Rail Depot



Source: City of Littleton.

[26] Envision Littleton Comprehensive Plan (2019), 53.

[27] Ibid., 50–51.

[28] Ibid., 51.

[29] Ibid.

[30] Ibid., 53.

Economy and Tax Base

The "Economy and Tax Base" section of the Comprehensive Plan states that "successful economic development … requires a focus on quality of place, capitalizing on Littleton's special character and unique identity to … draw visitors seeking … entertainment, recreation, arts and culture and heritage tourism."[31]

Key issues and considerations. The Comprehensive Plan expresses "concern about loss of small, independent businesses."[32]

Framework for action. The Comprehensive Plan's economic framework outline actions that are relevant to arts and cultural planning. These actions are listed in the right-hand column.

Actions

- Revitalize existing commercial centers to meet present needs of residents and visitors as well as alleviate the impact of vacant lots and similar issues.[33]
- Identify diverse revenue sources in such a way as to enhance Littleton's unique character while minimizing residents' tax burden.[34]
- Assist small businesses to navigate code requirements and other potential challenges to locating in and renovating spaces within older and/or historic structures.[35]
- Prepare a full Economic Development Plan, building upon the 2013 Economic Plan … [including] links to planning for arts and culture, historic preservation, and tourism promotion in the Heritage, Arts, Recreation and Tourism section of this Plan.[36]

[31] Envision Littleton Comprehensive Plan (2019), 59.

[32] Ibid., 59.

[33] Ibid., 59

[34] Ibid., 60.

[35] Ibid., 61.

[36] Ibid., 61.

Heritage, Arts, Recreation and Tourism

According to this section, "[Littleton's] unique history and architectural heritage, active arts scene, widespread recreation options, abundant green and open spaces, and many community events year-round, … [offer] an array of amenities." [37] The Comprehensive Plan positions heritage, arts, recreation and tourism (HART) as key to residents' "quality of life."[38]

Key issues and considerations. The Plan includes the following considerations related to arts and culture:

- Preservation "threats to Littleton's historic legacy and architectural heritage;"
- Concern over development encroachment on green spaces;
- Public access to trails and open space within the City;
- Cultural and entertainment inventory of events and festivals;
- Emphasis on Littleton Museum and Bemis Public Library as key cultural assets; and
- "Active arts and cultural programs and organizations that offer opportunities to experience and enjoy the arts in Littleton while contributing to the [City's] economic vitality."[39]

Goals. Key goals include the following:

- Promoting walkability, including connected green spaces throughout the City;
- Protecting Littleton's heritage;
- Highlighting vibrancy of an array of arts, cultural and entertainment options … extensive heritage, tourism opportunities, and … community events and festivals throughout the year; and
- Leveraging the economic and social power of the arts.[40]

Policies. The following policies relate to arts and culture:

- Consensus-building regarding protection and preservation of historic landmarks and districts;
- Safe access to community facilities and events;
- Zoning regulations that promote sensitive design approaches on sites with, or adjacent to, historic structures and areas;
- Resource planning for Bemis Public Library and Littleton Museum so that they can continue as high-quality facilities with targeted programming for all ages;
- Support arts and culture programming in Littleton in a cost-effective manner; and
- Planning that considers the diverse perspectives of Littleton residents and visitors.[41]

[37] Envision Littleton Comprehensive Plan (2019), 63.

[38] Ibid.

[39] Ibid., 63.

[40] Ibid., 63–64.

[41] Envision Littleton Comprehensive Plan (2019), 64.

D. Literature Review of City Plans — Envision Littleton Comprehensive Plan

Programs and initiatives. The Comprehensive Plan's HART section presents numerous proposed programs and initiatives.[42] The following are especially pertinent to the Arts and Culture Strategic Plan:

- Include the [Arts and Culture Board] in a future City organizational structure for parks, "as many public art sculptures are located in parks;"[43]
- Improve access to parks and recreation information and increase promotion an] awareness of programming at recreational sites;
- Track visitor utilization and experience of Littleton amenities and monitor larger tourism trends;
- Promote Littleton's heritage and arts and culture assets through continued events and partnerships;
- Evaluate opportunities and partnerships for incorporating art amenities into building projects; and
- Consider applying for Creative District Certification through the State of Colorado.[44]

Partnerships and coordination. The following local, regional and private partnerships and coordination efforts are listed in the HART section of the Comprehensive Plan:

- Build and enhance partnerships with "the many agencies, organizations and non-profits that provide and/or advocate for heritage, arts, cultural, recreation, and open space amenities in Littleton;"[45]
- Emphasize regional collaboration to enhance the South Platte River corridor from environmental and community-building perspectives; and
- Encourage private developers to incorporate art into their projects."[46]



[42] Envision Littleton Comprehensive Plan (2019), 64–66.

[43] Ibid., 64. The Comprehensive Plan mentions the "Fine Arts Board," which has been since consolidated under the Arts and Culture Board as the Public Art Subcommittee.

[44] Ibid., 64–65.

[45] Ibid., 65.

[46] Ibid.

Potential partnerships and sources of funding. The Comprehensive Plan identifies possible funding sources, as well as potential partners in supporting arts and culture in Littleton. These include:

- Colorado Business Committee for the Arts;
- Scientific and Cultural Facilities District;
- Cultural Councils of Arapahoe, Douglas, and Jefferson Counties;
- The Fine Arts Foundation;
- Western States Art Federation (WESTAF);
- Colorado Creative Industries, a division of the State of Colorado Office of Economic Development and International Trade;
- National Endowment for the Arts; and
- Institute of Museum and Library Services.[47]

D-4. Scientific and Cultural Facilities District logo



Source: Scientific and Cultural Facilities District.

[47] Envision Littleton Comprehensive Plan (2019), 67.

Environment

This portion of the Plan notes that the environment ties into many other elements of the City's priorities, including housing and neighborhood design, walkability, quality of life and other concerns.[48] The Comprehensive Plan states that environmental health can contribute to Littleton's character.[49]

Key issues and considerations. Key environmental themes and considerations especially pertinent to arts and cultural planning include:

- The past and potential loss of natural beauty, including mountain views and open green spaces which have "contributed to a suburban character;" and
- Maintaining and enhancing the High Line Canal corridor as well as the Littleton mature tree canopy.[50]

D-5. Sterne Park in Littleton, CO



Source: Visit Littleton.

[48] Envision Littleton Comprehensive Plan (2019), 69.

[49] Ibid.

[50] Ibid., 69.

Special Areas and Design

The Plan discusses initiatives related to cohesive design for various roadways, districts and open spaces. During the initial Envision Littleton phase of comprehensive planning, residents and visitors identified specific areas of Littleton as "highly valued." These include:

- Downtown Littleton;
- The South Platte River corridor and its associated greenways;
- Littleton Boulevard with its Mid-Century Modern architecture;
- Additional major roadways that help define the layout of Littleton, such as Belleview Avenue, Santa Fe Drive, Broadway, and Mineral Avenue;
- Mineral Station (RTD light rail station);
- Arapaho Hills National Historic District; and
- Louthan Heights Historical Landmark District.[51]

Key issues and considerations. According to the Comprehensive Plan, key themes for the topic of special areas and design include:

- Walkability and vibrancy along the Littleton Boulevard corridor without sacrificing its "hometown" appeal and historic assets;
- "A consensus vision" for planning along the South Platte River;
- Documentation of community preferences and expectations for the future function, design and appearance of Santa Fe Drive as an essential framework for pending Colorado Department of Transportation studies that will delve into these very roadway corridor considerations; and
- "The importance of Mineral Avenue (east of Santa Fe Drive) as a gateway to the distinctive SouthPark area, which is both a leading economic asset and a location for varied, attractive housing options – all within a Suburban character setting, and near rail transit." [52]

Connections between special areas and the Comprehensive Plan's guiding principles

- ***Anchored:*** "The South Platte River, in particular, is a central component of what makes Littleton a special place and is a draw for both residents and visitors."
- ***Connected:*** "Improving and maintaining connections between Downtown and the river is a priority.[53]

[51] Envision Littleton Comprehensive Plan (2019), 73.

[52] Ibid., 76.

[53] Ibid., 76.

D. Literature Review of City Plans — Envision Littleton Comprehensive Plan

Keen Independent identifies the goals, policies and actions in the "Special Areas and Design" section of the Comprehensive Plan that relate to, or can be bolstered by, arts and cultural planning.

Goals. The Comprehensive Plan establishes numerous goals for special areas and design, which can be found on the right. Policies and actions are intended to help accomplish these outlined goals.

Policies. Special areas and design policies that relate to arts and culture planning include:

- Emphasize quality urban design and cultivation of Littleton's image in public and private realms;
- Seek partnering opportunities to enhance special area planning through joint interests and funding sources;
- Stay active in regional planning processes and decision-making forums with implications for special planning areas identified within Littleton, such as Santa Fe Drive.[54]

Actions. The City proposed the following actions to implement the above special areas and design goals:

- Improve wayfinding and community branding throughout Littleton; and
- Explore the potential for a "more formal and systematic program for expanding and prioritizing Littleton's public art installations, utilizing creative funding methods."[55]

Goals related to special areas and design

- A downtown that continues to serve the entire community as a civic, historic, cultural and economic focal point.
- A future Littleton Boulevard that accommodates local businesses and nearby attainable housing options amid a more walkable setting of authentic neighborhoods and historic architecture.
- An ecologically sound and exceptionally attractive South Platte River corridor, framed by sensitively planned land uses, that continues to anchor the trail and open space networks.
- Roadway corridors that fulfill their primary transportation functions for drivers, pedestrians, cyclists and public transit while advancing the community's economic development, housing and aesthetic interests.[56]

[54] Envision Littleton Comprehensive Plan (2019), 76–77.

[55] Ibid., 77.

[56] Ibid., 76.

D. Literature Review of City Plans — Littleton Arts and Culture Commission Strategic Plan

Littleton Arts and Culture Commission

Following the adoption of the Envision Littleton Comprehensive Plan, the City created the Littleton Arts and Culture Commission (A&CC),[57] which prepared a strategic and action plan building on the action items for Heritage, Art, Recreation and Tourism (HART). Note that the Littleton Arts and Culture Commission became the Arts and Culture Board (ACB) in April 2024. Some A&CC values are presented on the right.

Arts and Culture Commission Values

- Raise the profile of arts and cultural programs and activities and promote the positive role they play in civic life.
- Be guided by needs and wants of all the residents reaching out to those without a voice, including the poor, the disadvantaged, children, elderly and all ethnicities.
- Seek input from all arts and cultural groups.
- Be collaborative to pursue efficiency, avoid duplication, and minimize the waste of precious resources.
- Encourage creativity and innovation as good practices.
- Respect the investment of time and effort of volunteers.
- Serve as a public forum for community engagement on all arts and culture issues.
- Regularly coordinate with and update the City Council.[58]

[57] The Littleton Arts and Culture Commission and the Fine Arts Board were combined into an Arts and Culture Board (ACB) as of April 2024. This appendix refers to the Arts and Culture Commission, as this was the nomenclature in use at the time the Strategic Plan was created.

[58] Ibid., 5.

Arts and Culture Commission Strategic Plan

For the Littleton Arts and Culture Commission's (A&CC) Strategic Plan ("Strategic Plan"), the A&CC developed the following goals and proposed work plan elements, in keeping with HART objectives.

Goal 1. "Integrate arts and culture into the … fabric of Littleton … producing a positive economic impact, defining a sense of place, and improving the quality of life."[59] Proposed 2021–2025 workplan elements for this goal include:

- Propose community programs with children in mind, e.g., "photo exhibit, essay contest, drawing exhibit;"
- Annual review of City arts and culture funding;
- Arts and culture funding advocacy at the City Council level;
- Identify temporary gallery spaces and locations for a variety of outdoor arts including murals;
- Work with the Cultural and Media Services Department to ensure arts and culture programs are promoted on the City website;
- Connect with Littleton hotels to learn more about their customer base for tourism purposes; and
- Work with Visit Denver and Colorado Tourism Office to schedule presentations on regional tourism trends.[60]

Goal 2. Support local arts organizations through the following efforts:

- Research potential arts grant programs for the A&CC;
- Schedule City staff presentation regarding current and potential regulatory support measures for arts and culture; and
- Create a group of cultural and arts partners to meet quarterly.[61]

Goal 3. "Support creative individuals and advance arts leadership" through an annual awards event related to arts leadership and creativity.[62]



[59] The Littleton Arts and Culture Commission Strategic Plan, 9.

[60] Ibid., 9–12.

[61] Ibid., 13–14.

[62] Ibid., 16.

Goal 4. "Identify and recommend policies and funding sources to support arts and culture community efforts, organizations, and programs," including

- Developing and proposing to the City Council a percentage of capital projects to direct toward public art;
- Proposing a modest ticket admission fee for all arts and culture venues that charge admission; and
- Supporting a lodging tax ballot initiative, proceeds of which would be divided between local arts and culture initiatives and grant programs, which went into effect in 2024.[63]

Goal 5. "Enhance collaboration, communication, and partnerships with the many agencies, organizations, and non-profits that advocate for heritage, arts and culture."[64]

Goal 6. Create a clear organizational structure for the A&CC to enhance efficiency and lower barriers to entry for community members interested in participating. The Strategic Plan listed the following subcommittees:

- Policy development;
- Program planning;
- Recruitment and retention of commission members;
- Littleton Museum;
- Bemis Public Library; and
- Strategic Plan Review.[65]

D-6. Bemis Public Library, Littleton, CO



Source: City of Littleton.

[63] The Littleton Arts and Culture Commission Strategic Plan, 17. Please note that the lodgers tax has been implemented.

[64] Ibid., 18.

[65] Ibid., 20.

D. Literature Review of City Plans — City Council goals and objectives

On May 17, 2022, City Council proposed its 2022–2023 list of goals and objectives. Further subdivisions of the goals are provided on the Council's work plan dashboard and were most recently updated in December 2022.[66] The following City Council goals relate to arts and culture.

Goal 4: Downtown

This goal relates to the Comprehensive Plan, which states that "a downtown that continues to serve the entire community as a civic, historic, cultural and economic focal point" is the City's priority. Objectives for this City Council goal include developing the streetscape and partnerships.[67]

Goal 5: Arts, Culture and Tourism

In Goal 5, Littleton is described as a "vibrant city for both residents and visitors," who have access to varied arts and culture options as well as entertainment, heritage, tourism and other community events. Objectives for this goal include:

- Enhancing regional tourism; and
- Improving access to programs at the Bemis Public Library and the Littleton Museum.[68]

Goal 7: Environmental Stewardship

This City Council goal is to define Littleton's environmental stewardship within context of environmental efforts in the region. Objectives under this goal include developing a definition for environmental stewardship, as well as creating a citizen committee and aligning resources.

D-7. Downtown Littleton



Source: Downtown Littleton.

[66] Council Goals and Objectives. Retrieved September 13, 2024 from https://www.littletonco.gov/Government/Littleton-Leadership/Council-Goals-and-Objectives. Note that these are the most recent City Council Goals and Objectives at the time of this project.

[67] Ibid.

[68] Ibid.

D. Literature Review of City Plans — Comprehensive Economic Development Strategy

Between March 2023 to January 2024, the City was engaged in creating a Comprehensive Economic Development Strategy ("CEDS"), which included input from about 540 City leaders and staff, stakeholders and community members. The document presents a consensus strategy intended to guide the City in building economic capacity, prosperity and resilience.[69]

Think-Tank Session Results

The report begins by presenting results of an initial "Think-Tank" workshop, in which a group of stakeholders expressed a united desire for Littleton to be a "creative, cutting-edge small town."[70] Think-Tank participants defined this as having a "[s]trong focus on leveraging and repurposing unique features in creative ways that preserve and enhance while creating business innovation and renewal … The City has a regional leadership role as a forward-looking creative community."[71]

Strategic Pillars

Following the Think-Tank, a series of seven focus groups were held to build out the Strategic Pillars of the CEDS Plan. The stakeholder input from the seven focus groups informed the development of the action areas of the CEDS Strategic Pillars.[72] Six Strategic Pillars were developed, including Strategic Pillar 4: Enhancing Historic Character and Cultural Fabric. Strategic actions related to Strategic Pillar 4 are presented on the right.

Strategic Action Areas

- Activate the streetscape of Littleton Boulevard. Littleton Boulevard offers the opportunity for imaginative and innovative urban renewal and streetscape activation [including] … widening sidewalks and incorporating activity centers and quiet zones from Broadway to Downtown Littleton. Improve the pedestrian and biking environment.
- Explore ways to activate cultural heritage along Littleton Boulevard. Adopt an Overlay District for Littleton Boulevard to preserve and promote arts and culture in the area. Note that an "overlay" is a special zoning area with additional regulations and design standards to a base zoning district.
- Evaluate the economic impact of arts and culture. Quantify the economic value of arts and culture in Littleton to recognize and strategize for continued growth of cultural assets and arts as economic drivers to the City.

Steps identified in the CEDS

- Conduct an Economic Impact Assessment of arts and culture in Littleton; and
- Explore adopting an Overlay District for Littleton Boulevard to better preserve, protect, and enhance the character of the corridor.[73]

[69] Littleton Comprehensive Economic Development Strategy (2024), 5. Retrieved on September 11, 2024 from https://lab2.future-iq.com/littleton-colorado-comprehensive-economic-development-strategic-plan-project/

[70] Ibid., 3.

[71] Ibid., 12

[72] Ibid., 14.

[73] Ibid., 30.

Key Opportunities for Arts and Culture

Through this review of City Plans and related documents, Keen Independent identified key opportunities for existing and potential initiatives that relate to this Arts and Culture Strategic Plan. Thoughtful integration of arts and culture initiatives can help support existing and future City planning efforts.

The following summary of opportunities for supporting arts and culture builds upon existing efforts in City plans and related documents. These opportunities can be grouped by the following themes:

- Branding;
- Zoning;
- Integrating arts and culture into daily life;
- Connecting arts and culture with economic impact;
- Identifying spaces and places for more arts and cultural resources.

Branding. The City is invested in presenting a clear identity to residents, visitors and within the greater region. Based on review of the planning documents, City interest in branding expands beyond its logo to include placemaking, or planned design and interventions that highlight, or cultivate, a sense of place.

Zoning. The following can assist in both delineating and creating visual ease of movement between different land use characters:

- Distinctive landscaping choices that protect ecological functions of existing green space;
- Thoughtful wayfinding and placemaking, including signage, lighting and design elements; and
- Walkability, including for vulnerable groups.

Integrating arts and culture into daily life and movement. Littleton has a considerable inventory of arts and culture offerings but can continue to integrate the arts more thoroughly through the following strategies:

- Continued promotion of existing events and cultural sites as well as linking these to Littleton's identity through branding;
- Collaboration between different artistic groups to reduce silos and create regular collaboration possibilities;
- Programming that bridges gaps between the different cultural and heritage areas of the City, such as event series that encourage attendance to multiple sites, such as Downtown, at or near to the Littleton Museum and Bemis Public Library, the South Platte River Corridor and Littleton Boulevard, or the "Mid-Mod Mile."

Connecting arts and culture with economic impact. Based on this literature review, the City is interested in measuring the economic impact of its existing arts and culture, as well as leveraging arts and culture to foster economic development in Littleton. Keen Independent discusses the value of measuring the economic impact of arts and culture in Appendix C "Funding Analysis."



Locations for arts and culture. While there are many areas of Littleton that may benefit from more arts and cultural resources, two locations stand out in the review of existing City documents.

Littleton Boulevard. Many of the documents reviewed present goals and strategies for improving placemaking on Littleton Boulevard. Potential strategies could include:

- Developing an overlay district to enhance cohesiveness of the Boulevard;
- Improving safety and walkability, including pedestrian crossings, wayfinding and medians;
- Improving non-motorized access and funneling of pedestrian traffic to Littleton Boulevard from the Bemis Public Library and the Littleton Museum;
- Emphasizing and enhancing extant vernacular branding of this area as the "Mid Mod Mile;" and
- Defining and creating visual anchor points, including beautification, on Littleton Boulevard.

Santa Fe Drive and the South Platte River Corridor. This area has the potential for programmatic and environmental improvement. Strategies could include:

- Collaborating on Colorado Department of Transportation's (CODOT's) Planning and Environmental Linkages study as it relates to South Santa Fe Drive;
- Seeking opportunities to collaborate with CODOT on this area and, where possible, incorporating wayfinding and City branding into such plans; and
- Developing public art, programming and wayfinding that encourage the use and enhances the safety of these areas.

D-8. Mid-Century International Style building at 2000 West Littleton Boulevard



Source: Historic Littleton, Inc.

APPENDIX E. Analysis of Stakeholder and Community Input — Introduction

Keen Independent gathered input from stakeholders, including City leaders and staff, local arts and cultural leaders, educators and creatives, and Littleton residents.

Qualitative analysis integrates results from:

- A virtual workshop survey;
- In-depth interviews and focus groups;
- An in-person discovery meeting; and
- Study hotline and email feedback.

The analysis in this appendix reflects the perspectives of approximately 350 respondents. Analysis is organized by the following topics:

- Methodology and participation;
- Demographics;
- City's role regarding arts and culture;
- Strengths;
- Areas for improvement; and
- Preferences.

Throughout this appendix, sample quotes illustrate themes the study team identified when analyzing stakeholder and community input.

E-1. Littleton residents and community members at the discovery meeting for the Arts and Culture Strategic Plan



Source: Keen Independent Research.

E. Analysis of Stakeholder and Community Input — Methodology and participation

Virtual Workshop

Keen Independent invited Littleton residents and community members to participate in a virtual workshop related to arts and culture. A virtual workshop is an online, asynchronous instrument, similar to a survey in format, but containing more open-ended questions which encourage deep, thoughtful responses. The virtual workshop was live for one month, from mid-August 2024 to mid-September 2024.

Questions. Survey participants responded to two primary question types: Likert scales (where respondents ranked their agreement with different statements on a scale from 1 to 7) and open-ended responses. The questions covered a range of topics related to Littleton arts engagement, including:

- Demographics;
- The City's role regarding the cultural arts;
- What makes Littleton unique;
- Perceptions on existing cultural arts; and
- Fostering the cultural arts in Littleton.

Distribution. Keen Independent posted the virtual workshop to the study website and the City of Littleton shared it digitally through their networks, social media, press releases and other means. Figure E-2 shows the survey 's landing page.

Participation. The survey gathered 243 total responses used in this analysis.

Of total responses, 210 are classified as "complete" meaning that participants progressed all the way through the survey instrument and clicked "submit" at the end. Another 33 responses are classified as "partial" in that respondents did not click "submit" at the end of the survey instrument. Nearly all questions in the survey were optional. As a result, "partial" responses may in some cases have included answers to more questions than "complete" responses. Individual "N" are a better measure of participation and are provided with data tables for each question throughout this appendix.

E-2. Littleton virtual workshop landing page



Source: Keen Independent Research.

E. Analysis of Stakeholder and Community Input — Methodology and participation

In-depth Interviews and Focus Groups

This appendix presents qualitative information that Keen Independent collected and analyzed as part of its facilitation of in-depth interviews and focus groups with community stakeholders including City leadership and staff, municipally affiliated nonprofits, as well as local arts and cultural leaders, business owners, artists and educators.

Interviews and focus groups covered many topics including Littleton's existing cultural arts, the City's role in supporting arts and culture and opportunities for increased collaboration.

Some comments are directly quoted, while others are summarized and condensed. Comments have been intentionally anonymized to maintain confidentiality and are organized by subject matter as detailed below.

Study team members used interview guides to facilitate semi-structured conversations, meaning that predetermined questions guided the discussion, but facilitators asked follow-up questions and probed when necessary to deepen understanding or clarify comments.

Facilitators informed participants that their comments would be used in aggregate and would not be attributed to individuals by name.

Questions. Questions explored the following topics in relation to arts and culture:

- Strengths and areas for improvement;
- Vision for long-term success; and
- Most-important future priorities.

Participation. In total, 52 stakeholders provided input to the planning process through in-depth interviews or focus groups.

E-3. Several stakeholders gather at the discovery meeting



Source: Keen Independent Research.

E. Analysis of Stakeholder and Community Input — Methodology and participation

In-person Discovery Meeting

Study team members facilitated an in-person discovery meeting on July 15, 2024. The discovery meeting took place at the Littleton Museum and was open to all Littleton residents and community members.

This public meeting was an opportunity for Littleton residents and community members to learn about the study and to provide feedback regarding arts and culture in Littleton. The discovery meeting was advertised widely by the City and attended by 55 participants.

Each of the five stations were designed to capture different arts and culture information about Littleton (Figure E-4).

- **Mapping arts and culture.** Community members reviewed a map of Littleton's city limits and placed stickers where they would like to see more public art assets.
- **Cultivating change.** Community members identified aspects of Littleton that they wanted to keep intact and what aspects of Littleton they would like to see change.
- **Drawing corner.** Community members drew in response to the prompt, "My favorite thing to do in Littleton is…"
- **Big ideas.** Community members used Post-it notes to suggest and endorse arts and culture-related infrastructure or programming they would like to see in Littleton. The "big ideas" station generated 50 ideas and 115 endorsements.
- **Benchmark cities.** Community members identified cities that could serve as references for the big ideas or changes that they would like to see represented in Littleton.

E-4. Discovery meeting activity stations



Source: Keen Independent Research.

Public Communication Portals

The study team hosted a dedicated hotline and study email address to invite comments and questions about the project. All stakeholders and community members could use the hotline and study email to provide anonymous feedback. Feedback received through those channels is analyzed as part of this appendix. Littleton residents and community members actively used the study hotline and email as a resource, especially when the study was first advertised in early July 2024.

E. Analysis of Stakeholder and Community Input — Demographics

Keen Independent examined the demographics of virtual workshop participants, including their race, ethnicity, gender, age and residency in Littleton, in addition to analyzing respondents' attitudes towards arts and culture.

Race and Ethnicity

Most virtual workshop respondents (88%) identify as white, as well as not Hispanic or Latino (85.3%). The race and ethnicity of survey participants is proportionate to the demographics of Littleton residents, which Keen Independent discusses in Appendix A "Market Analysis" in this document. Figure E-5 shows the race and ethnicity of virtual workshop participants.

E-5. Race and ethnicity of virtual workshop participants

	Percentage
Race	
White	88.0 %
Two or More Races	5.8
Asian	2.4
American Indian and/or Alaskan Native	1.4
Native Hawaiian and/or Other Pacific Islander	1.0
Black or African American	0.5
Other	0.5
Prefer not to answer	5.8
Total	**100.0 %**
Ethnicity	
Not Hispanic or Latino	85.3 %
Hispanic or Latino	4.4
Prefer not to answer	10.3
Total	**100.0 %**

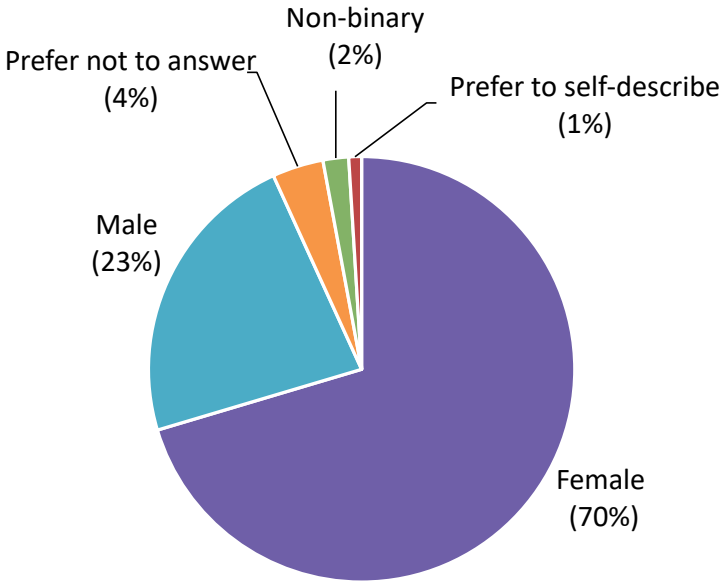
Note: Race, N=208. Ethnicity, N=204. For Race, participants could select more than one answer.

Source: Keen Independent Research.

Gender

Figure E-6 shows how virtual workshop participants identified their gender. The majority if workshop participants identified as female (70%), followed by male (23%). Gender demographics of virtual workshop participation is consistent with what the study team sees in responses across arts and culture strategic planning research.

E-6. Gender of virtual workshop participants



Note: N = 206.

Source: Keen Independent Research.

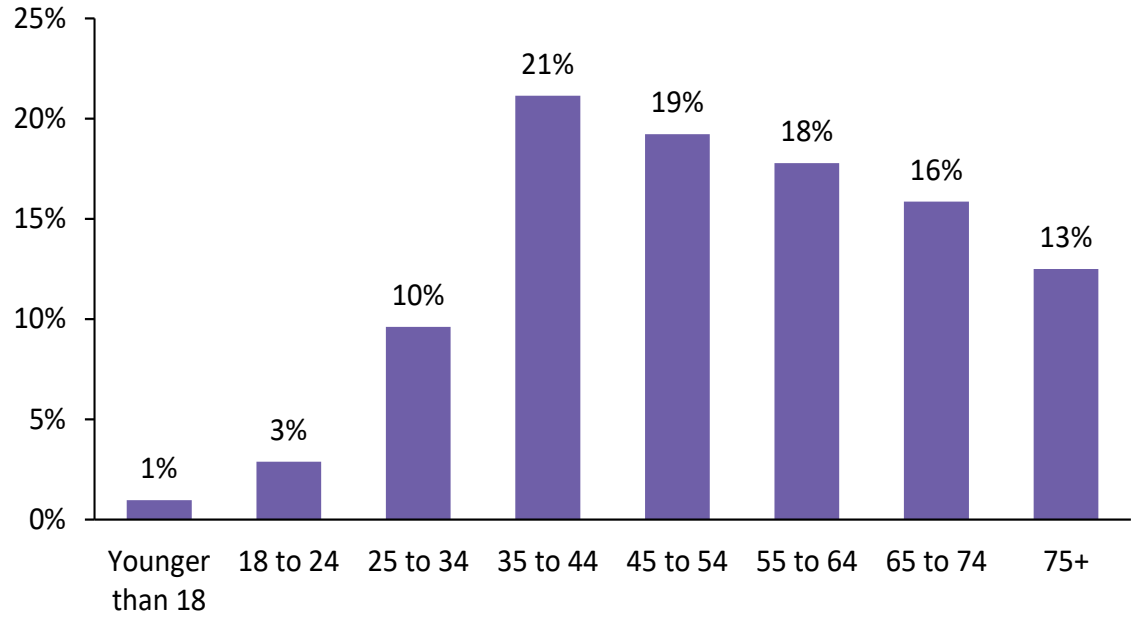
E. Analysis of Stakeholder and Community Input — Demographics

Age

The virtual workshop attracted participation from a wide range of ages. Figure E-7 shows the age distribution of virtual workshop participants.

Over 50 percent of respondents were 35 to 64 years old. Almost 30 percent of respondents were ages 65 and older. Less than 15 percent were ages 34 and younger.

E-7. Age of virtual workshop participants



Note: N = 208.

Source: Keen Independent Research.

Other Demographic Identifiers

Keen Independent invited virtual workshop participants to comment on any additional demographic identifiers they would like to share to help the study team understand their experiences or the experiences of other members of their household. A total of 65 participants elected to provide additional identifiers reflecting persons with disabilities, veteran/military, LGBTQ+ or bilingual/multilingual or other. Respondents could select multiple options. Figure E-8 shows the demographic self-identification of respondents.

E-8. Demographic self-identification of virtual workshop participants or their household members

Other demographic identifiers	Count
LGBTQ+	25
Person(s) with disability	21
Bilingual/multilingual	12
Veteran/military	10
Other	13

Note: N = 65.

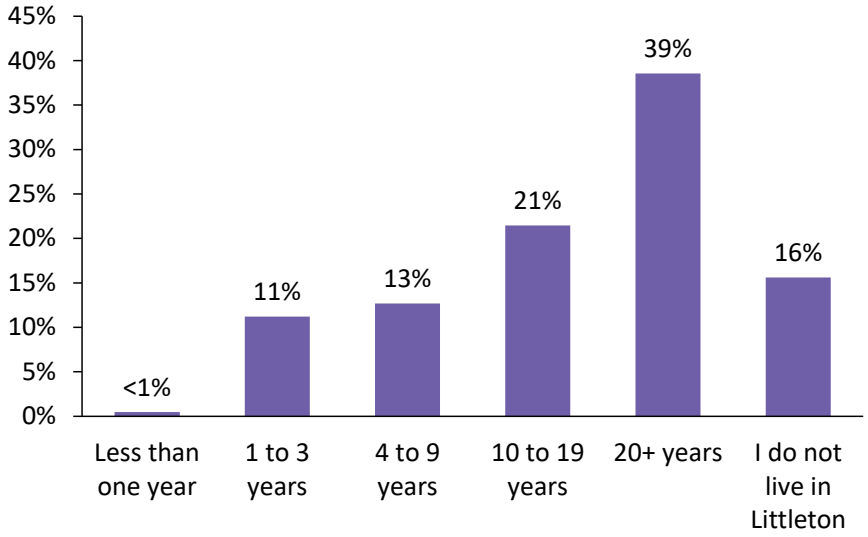
Source: Keen Independent Research.

E. Analysis of Stakeholder and Community Input — Demographics

Residency in Littleton

Most virtual workshop respondents (60%) indicated that they have lived in Littleton for 10 or more years with over 39 percent of participants living in the City for 20 or more years. Figure E-9 shows the length of time that virtual workshop participants have lived in Littleton.

E-9. Length of residency of virtual workshop participants



Note: N = 205.

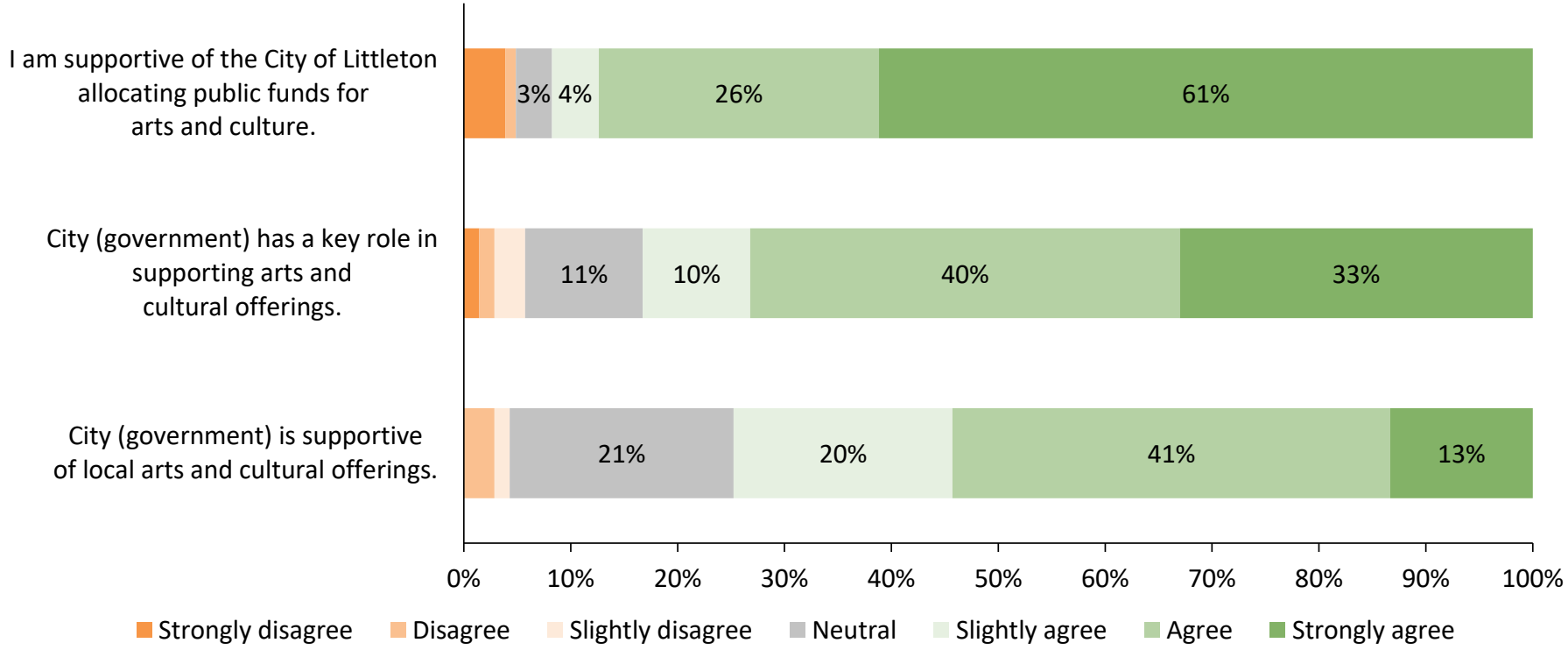
Source: Keen Independent Research.

Residents' Perceptions of the City's Role

Virtual workshop participants provided their perceptions of the City's role in arts and culture. Figure E-10 shows all responses along a seven-point agreement scale ranging from "strongly disagree" to "strongly agree."

Over 90 percent of participants were "supportive of the City of Littleton allocating public funds for arts and culture." Many participants also agreed (slightly to strongly) that the "City has a key role in supporting arts and cultural offerings" (83%). Most participants agreed (slightly to strongly) that "City (government) is supportive of local arts and cultural offerings." However, responses to this statement were somewhat more mixed than other City role statements, with fewer participants selecting "strongly agree" (13%) and more choosing "neutral" (21%).

E-10. Perceptions of the City's role in arts and culture



Note: N = 206-210. Non-residents of Littleton were excluded from analysis.

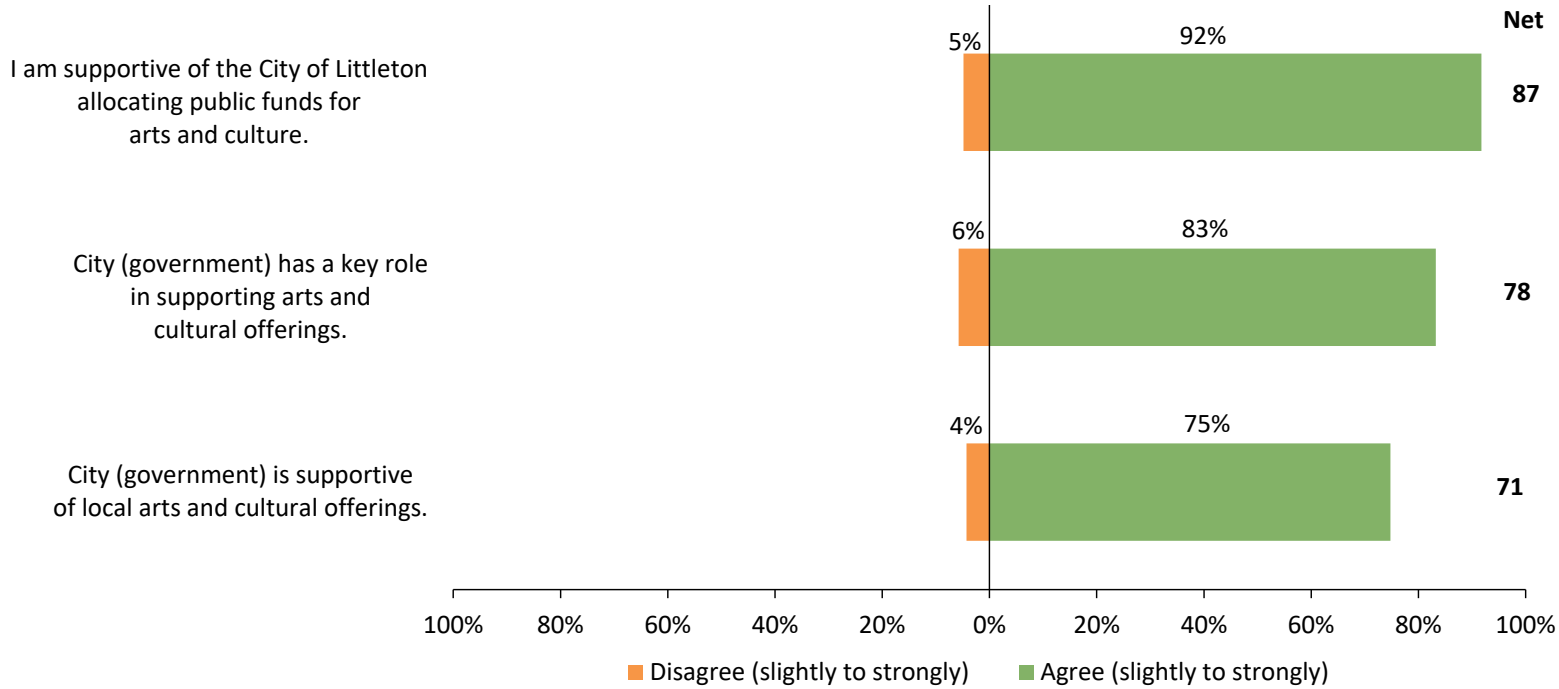
Source: Keen Independent Research.

E. Analysis of Stakeholder and Community Input — City's role regarding arts and culture

Net rating. Net rating provides a simple representation of the overall slant of participants toward agreement or disagreement. The net rating is calculated by subtracting the sum of the "strongly disagree," "disagree," and "slightly disagree" responses from the sum of the participants who "strongly agree," "agree," and "slightly agree."

Three-quarters or more of virtual workshop participants expressed support towards the City's role in arts and culture in Littleton (Figure E-11). With a net rating of 87, almost all respondents were "supportive of the City of Littleton allocating public funds for arts and culture." With a net rating of 71, respondents shared that the City is supportive of local arts and culture offerings. This gap suggests that perhaps there is room for growth in arts support.

E-11. Perceptions of the City's role in arts and culture net rating



Note: N = 206-210. Non-residents of Littleton were excluded from analysis. The net rating is calculated by subtracting the sum of the "strongly disagree," "disagree," and "slightly disagree" responses from the sum of the participants who "strongly agree," "agree," and "slightly agree."

Source: Keen Independent Research.

E. Analysis of Stakeholder and Community Input — City's role regarding arts and culture

Other City government priorities. Although many residents and stakeholders are supportive of the City allocating public funds for arts and culture, some noted that arts and culture are not always the focus because there are other priorities that the City is responsible for addressing, such as transportation, housing, public safety and homelessness. These priorities, which require attention, time and funding, have an impact on residents' quality of life and their ability to enjoy arts and culture opportunities.

Some residents felt this was a barrier to providing arts and culture support, while others felt like this prioritization over arts and culture projects was justified.

Competing priorities.

Virtual workshop participant

Maintaining cleanliness and safety.

Virtual workshop participant

Homelessness in park.

Virtual workshop participant

Don't spend a penny until you fix the roads.

Virtual workshop participant

Government support isn't needed for arts and culture to thrive. Please focus on the issues you are responsible for like housing and transportation.

Virtual workshop participant

Prioritization of economic development over community wellbeing.

Virtual workshop participant

E. Analysis of Stakeholder and Community Input — Strengths

This section discusses perceptions of Littleton's cultural strengths.

What Makes Littleton Unique

Figure E-12 is a word cloud that illustrates the range and frequency of characteristics that survey respondents identified as unique to Littleton.

The descriptors "small town," "history," "nature" and "community" appear largest in the image, indicating that these words and phrases were mentioned most frequently. These words and phrases were also echoed by stakeholders and discovery meeting participants.

E-12. What makes Littleton unique



Note: N = 184. Respondents were asked to share up to five words or short phrases.

Source: Keen Independent Research.

E. Analysis of Stakeholder and Community Input — Strengths

Littleton residents and stakeholders elaborated on the primary word cloud themes about what makes Littleton unique. This section references perspectives from the virtual workshop and discovery meeting, as well as interviews and focus groups.

Vibrant small town. Many stakeholders stated that they appreciate Littleton due to its small town, or hometown, feel. They often described the community as having a vibrant Downtown area that is home to many "mom and pop" businesses. The City was also described as walkable.

Historical. Many stakeholders take pride in Littleton's history. They appreciate the historic, mid-century modern infrastructure on Main Street. Stakeholders highlighted the importance of celebrating and preserving the City's history and character and valued the cultural institutions that keep this history alive.

Nature. Stakeholders and residents alike shared that the abundance of natural spaces, such as parks, trails and open space, in Littleton are cherished and unique, especially given the City's proximity to Denver. They treasured the tree-lined neighborhoods and the vegetation native to the Littleton area. Littleton community members also liked that these natural spaces seemed accessible to everyone.

Community. Many stakeholders remarked that Littleton has a strong sense of community. These interviewees generally described community in terms of friendliness and sense of belonging. They also discussed a love for the people who make up the community. Residents who discussed Littleton's community as a strength often identified as growing up in the area or as long-time residents.

Has opportunities to grow but still keeps that small town home feel.

Virtual workshop participant

Vibrancy of the City. Beautiful place to live!

Discovery meeting participant

It's truly a historic Main Street which adds a lot of character and uniqueness to the metro area.

Focus group participant

Reminders of the history of the town are kept alive.

Virtual workshop participant

The access to nature within the City of Littleton is pretty remarkable given that we are part of the [Denver] metro area.

Focus group participant

Plentiful open spaces.

Virtual workshop participant

Comfortable and welcoming.

Virtual workshop participant

[There are] people that like to have a say in the enhancements of their community and [they have] a lot of passion for where they live.

Focus group participant

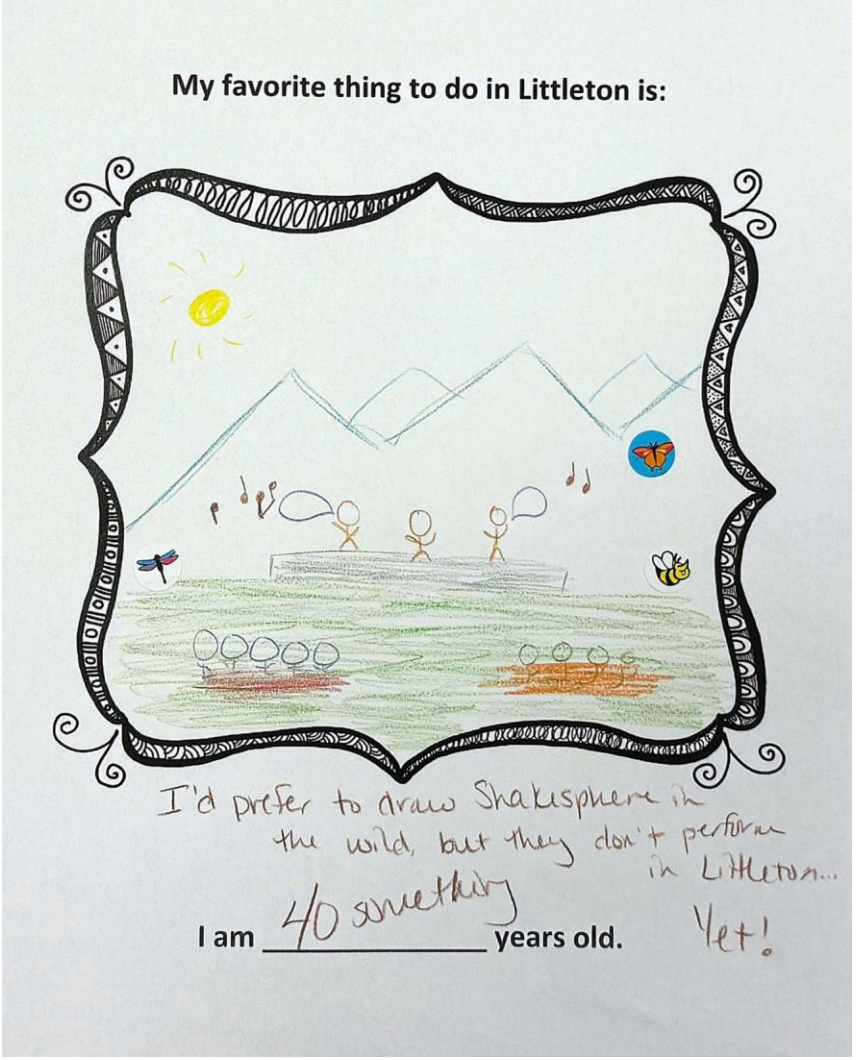
Favorite thing to do in Littleton

As part of the discovery meeting, residents used colored pencils and stickers to create drawings in response to the prompt, "My favorite thing to do in Littleton is…" Figure E-13 highlights one example drawing from this station.

Participants drew:

- Outdoor arts and cultural activities, such as performances and film screenings;
- Visiting the Littleton Museum and the Bemis Public Library; and
- Spending time with friends and family while participating in arts and cultural events.

E-13. One example of feedback gathered through the drawing corner activity station at the discovery meeting



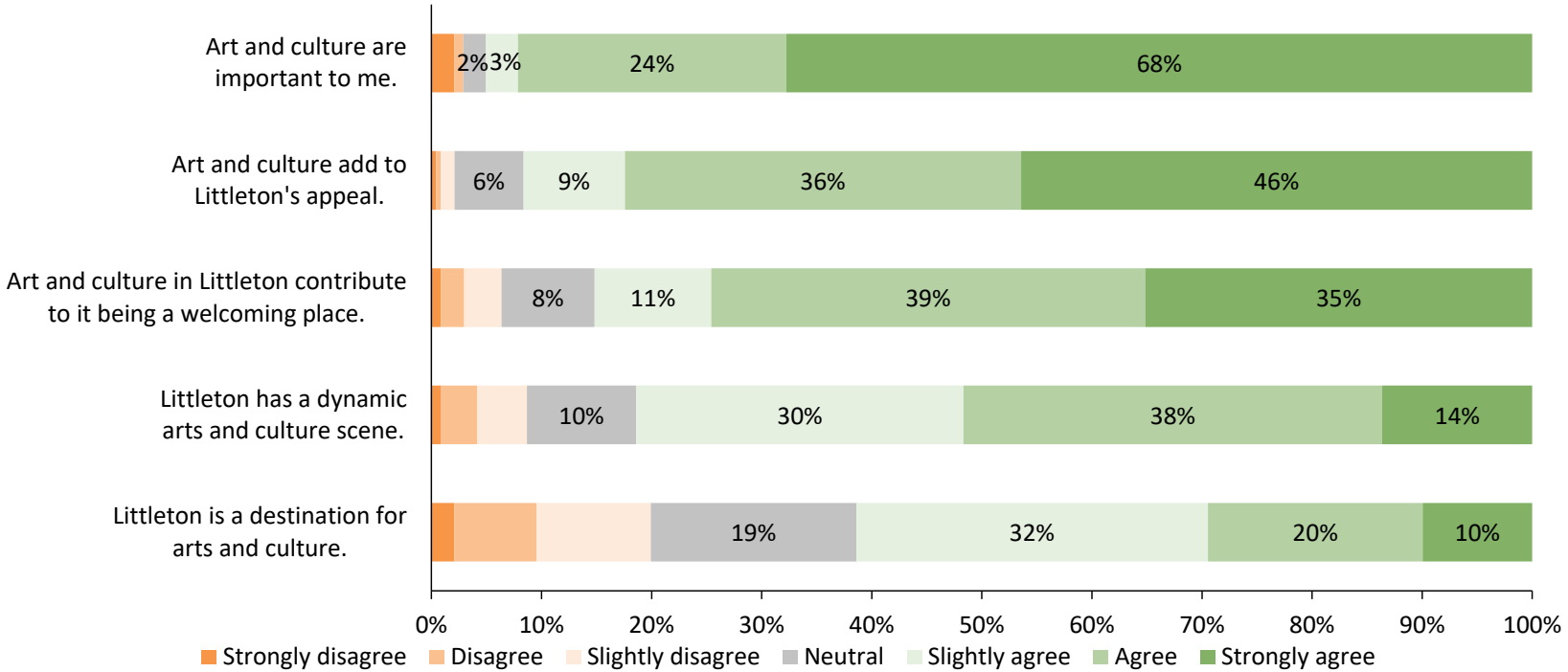
Source: Keen Independent Research.

Perceptions of Arts and Culture

Virtual workshop participants provided their perceptions of Littleton's arts and culture scene. Figure E-14 shows all responses along a seven-point agreement scale ranging from "strongly disagree" to "strongly agree." For all statements, other than "Littleton is a destination for arts and culture," participants were overall positive in their perceptions of arts and culture in the City. Almost all participants (95%) indicated that arts and culture are important to them and that arts and culture adds to Littleton's appeal (91%).

The majority of participants felt that arts and culture in Littleton contribute to it being a welcoming place (85%) and that there is a dynamic arts and culture scene in the City (82%). Participants indicated mixed agreement to the statement that "Littleton is a destination for arts and culture," with the fewest responses in the "strongly agree" and "agree" categories. These data suggest that that arts and culture is important to participants but that more could be done to make Littleton a draw for arts and cultural experiences.

E-14. Virtual workshop respondents' perceptions of arts and culture



Note: N = 236-242.

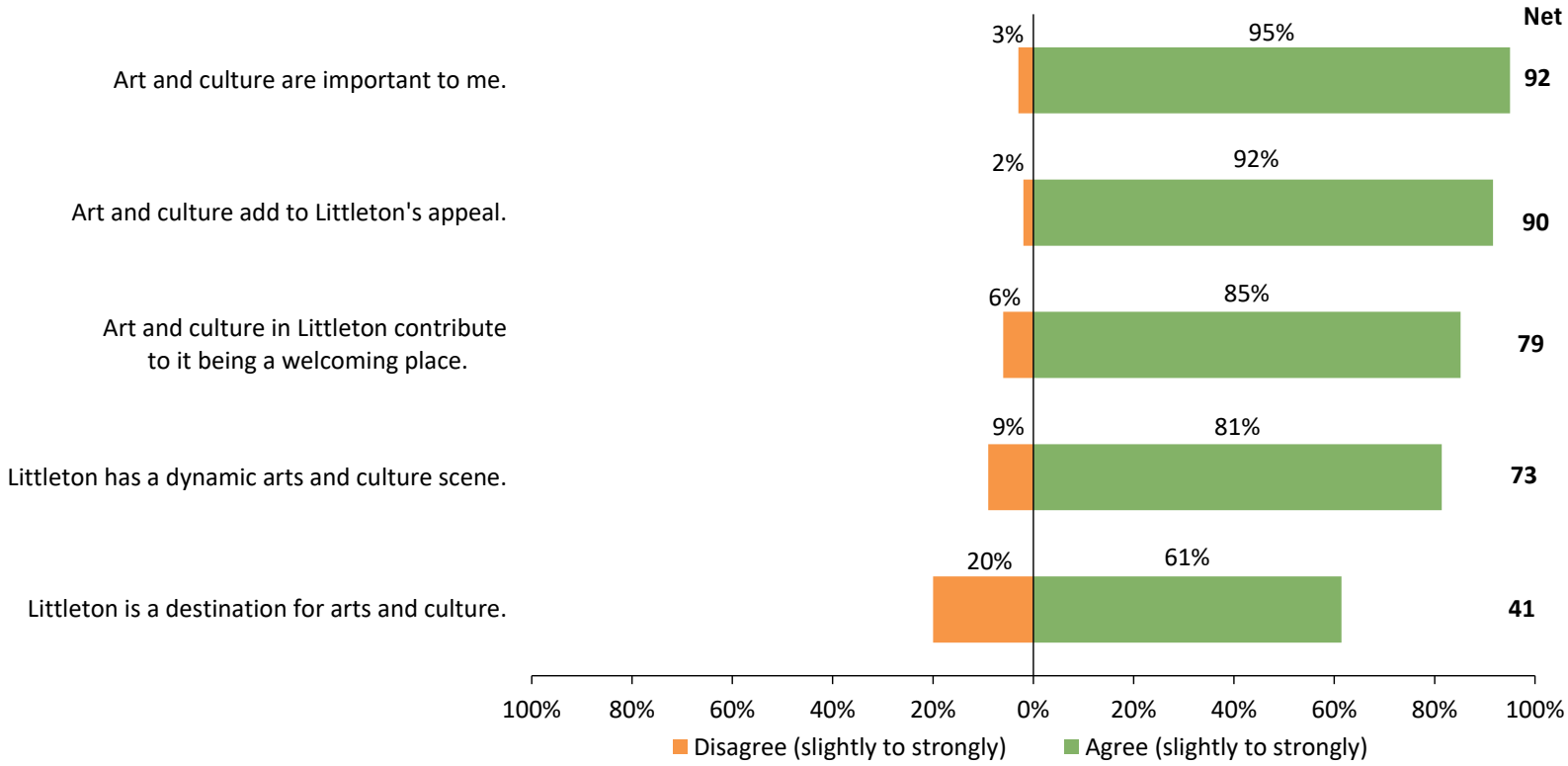
Source: Keen Independent Research.

Perceptions of Arts and Culture Net Rating

Figure E-15 highlights the net rating for the same perception of arts and culture statements discussed in Figure E-14.

Arts and culture are "important to me" and "add to Littleton's appeal" have the highest ratings of 90 and above. "Littleton is a destination for arts and culture" has a net rating of 41 and this figure shows that 20 percent of respondents disagreed (slightly to strongly) with this statement, which is over double the percentage of disagreement for other statements.

E-15. Virtual workshop respondents' perceptions of arts and culture net rating



Note: N = 236-242. The net rating is calculated by subtracting the sum of the "strongly disagree," "disagree," and "slightly disagree" responses from the sum of the participants who "strongly agree," "agree," and "slightly agree."

Source: Keen Independent Research.

E. Analysis of Stakeholder and Community Input — Strengths

Arts and Culture Strengths in Littleton

Arts and culture are important to community stakeholders and residents of Littleton. This is apparent through the vibrant and varied number of cultural offerings within the City, as well as the numerous cultural organizations who create and support these offerings. These themes are outlined below with relevant quotes from the virtual workshop, discovery meeting and in-depth interviews and focus groups listed on the right.

Vibrant and varied arts and cultural offerings. Stakeholders frequently discussed the vibrancy and variety of arts and cultural offerings in Littleton, ranging from public art and performances to the natural landscape and annual festivals. Many stakeholders identified specific organizations, such as the Littleton Museum, Bemis Public Library and the Town Hall Arts Center. Several study participants mentioned appreciation for Littleton's natural areas, such as parks and trails. Stakeholders also highlighted annual traditions and festivals in Littleton, such as Western Welcome Week.

Arts and cultural leadership. Several study participants discussed arts and cultural leadership in Littleton as a strength. Stakeholders observe that local arts and cultural leaders are passionate about serving the community. Multiple stakeholders mentioned that they are starting to see more collaboration between arts and cultural leaders and that they hope this trend continues. Study participants familiar with the Arts and Culture Board commented that the current members have "vision."

I appreciate the art & culture fostered by the Bemis Library, Littleton Museum, Town Hall Arts Center, Hudson Gardens, ACC, South Platte Greenway and all of the open space, parks, and trails.

Virtual workshop participant

Town Hall performances rock! I personally love all the murals around town. We are very lucky to have the Littleton symphony as well.

Virtual workshop participant

I feel like there's a lot of tradition in Littleton.

Focus group participant

I feel like [Littleton takes] pride in the diversity of what you see, whether that be sculptures or different type of events.

Focus group participant

There are a lot of passionate people in Littleton when it comes to arts and culture!

Interview participant

I'm starting to see more collaboration … Keep it going!

Discovery meeting participant

The Arts and Culture Board has vision.

Interview participant

E. Analysis of Stakeholder and Community Input — Areas for improvement

This section addresses perceived areas for improvement for Littleton.

Challenges to Supporting Arts and Culture

In the virtual workshop, participants could list up to five words or phrases to identify the biggest challenges to developing arts and culture in Littleton.

Figure E-16 is a word cloud that illustrates the range and frequency of challenges identified by survey respondents. Participants most frequently identified "funding," "other priorities," "communication" and "lack of diversity" and "parking" as key challenges.

E-16. Challenges to arts and culture in the City of Littleton



Note: N = 187. Respondents were asked to share up to five words or short phrases.

Source: Keen Independent Research.

E. Analysis of Stakeholder and Community Input — Areas for improvement

This section elaborates on word cloud themes referencing perspectives from the virtual workshop and discovery meeting, as well as interviews and focus groups.

Arts and Culture Challenges and Requests

Littleton residents and stakeholders expounded on the following challenges to arts and culture in Littleton:

- Vision;
- Cross-communication;
- Marketing;
- Funding;
- Venues;
- Gathering spaces;
- Diversity, equity, accessibility and inclusion;
- Placement and sourcing of public art; and
- Parking.

Vision. Some residents shared that they did not feel that the City had clear goals for selecting and implementing public art and that planned events seemed disorganized. They felt that the City could be more creative in how it approaches art selection, installation and use of public spaces so that Littleton could be viewed as an arts and culture destination.

Regarding vision planning, a few focus group participants revealed that their arts and culture organizations have been undergoing arts and culture master planning, but that work is often happening in silos. Several stakeholders shared that they want the community to make clear connections between their organizations and Littleton's arts and culture scene but that is not always happening.

To showcase a thriving economy, [arts and culture] should be part and parcel of everything that we do.

Focus group participant

Lack of branding as an art city.

Virtual workshop participant

Lack of imagination.

Virtual workshop participant

We have so many players in the arts community that there isn't really a synergizing kind of focus.

Focus group participant

E. Analysis of Stakeholder and Community Input — Areas for improvement

Cross-communication. Most focus group stakeholders said that communication and collaboration between the various arts and culture organizations could be stronger. Several stakeholders shared that there are avenues in place to communicate with one another, such as representation across arts-related boards and commissions, but these avenues could be better utilized.

For example, because public art is owned and managed by different arts and cultural organizations, there are different processes in place for selecting and maintaining art. Stakeholders and community leaders who were part of focus groups indicated that these processes were not always clear. This includes processes such as selecting public art, deaccessioning, or removing, public art from the City's collection and obtaining permits for cultural events.

Marketing. Many residents felt that they did not always know what was happening around Littleton related to arts and culture and that there could be better transparency about the events and works in progress around arts and culture. There is not one central way to communicate local activities and festivities, but rather many individual newsletters and websites to consult.

Funding. A number of Littleton residents and community stakeholders discussed how funding is necessary for realizing arts and cultural goals. Cultural assets, events and activities require money to succeed. Residents felt that smaller organizations may be at a greater disadvantage than larger organizations. Stakeholders shared that there are limited City funds available for their organizations and when funding is available, not all arts and culture organizations are eligible for the same funding opportunities.

How do we collaborate together with the community? How do we create space that we can share with the community that more people can use?

Focus group participant

We have lots of ways to communicate. They're just not always known to [other organizations] so they're not as effective as we'd like them to be.

Focus group participant

There's so many opportunities to participate in activities that are culturally based, or arts based. I just don't know that people know about them.

Focus group participant

Collaboration with Littleton merchants, schools, and non-profits to promote events.

Virtual workshop participant

Arts [advertisement] by more than online sources.

Virtual workshop participant

City funding [is] often limited.

Virtual workshop participant

Small organizations without resources for their own venue are at a huge disadvantage compared to larger organizations that have their own venues and receive significantly more funding from the City.

Virtual workshop participant

E. Analysis of Stakeholder and Community Input — Areas for improvement

Venues. A clear request from many Littleton residents and community stakeholders alike was to have more performing art venues in Littleton. Respondents shared that the Town Hall Arts Center is a great community asset, but as the main indoor performing arts venue in the City, the 260-seat capacity is not enough to meet the community's demand. Residents felt that to be considered a destination for arts and culture, Littleton needs a larger performing arts venue.

Some residents added that Littleton is unable to attract bigger named artists and performers because it lacks the infrastructure to support larger, more popular acts. They also shared that local arts groups leave Littleton to be able to access venues that can accommodate their art. One resident perceived that the City only promotes events inside Littleton, and this puts local community groups at a disadvantage when they have to go outside the City for venue access.

Gathering spaces. Many Littleton community members expressed a need for more gathering spaces that are welcoming and of varying types and sizes. These spaces should be versatile so they can be used for rehearsals, practices, meetings or any type of community gathering. Filling this need may require repurposing existing spaces or creating new spaces designed with community needs in mind. However, some community stakeholders shared the challenge of being a one-size-fits-all venue for all arts-related needs.

A number of public ensembles use the Waring Theater…it's fabulous, but it's too small. The stage is not ideal for that kind of performance.

Focus group participant

We NEED A PERFORMING ARTS SPACE – 700 seats, lifts and sets.

Discovery meeting participant

Please repurpose or find a space that can be dedicated to performing arts. We have to drive out of the City for these types of events.

Virtual meeting participant

Few indoor community meeting spaces and they're not affordable.

Virtual workshop participant

As an artist in the area, it would be great to have a place to gather and create with other artists.

Virtual workshop participant

E. Analysis of Stakeholder and Community Input — Areas for improvement

Diversity, equity, accessibility and inclusion. In the virtual workshop, participants could engage with an open-ended prompt regarding how the City can improve its diversity, equity, accessibility and inclusion efforts through arts and culture. Several participants said that the City could do a better job representing art and artists from marginalized communities in Littleton. They also hoped the City would prioritize events highlighting and of interest to diverse communities. Some residents made specific suggestions, such as festivals or themed weekends that celebrate specific ethnicities and their traditions. Participants also discussed wanting to see greater accessibility at events and local venues, including ADA compliance, affordability and bilingual communication.

Placement and sourcing of public art. In Littleton, a majority of arts and culture assets are located Downtown, but city limits expand far beyond the Downtown area. As a sprawling city with different neighborhoods, people and spaces, many residents and some stakeholders communicated that art could be placed throughout the City rather than in a concentrated location. Many residents also voiced a desire for sourcing public art through local artists and organizations, also suggesting an artist-in-residence program. This would provide an opportunity to showcase local art and financially support local artists.

Parking. A number of residents highlighted that parking and traffic, especially Downtown, result in big challenges to attending and enjoying arts and culture events and activities. These were sometimes deterrents for participation in community events.

Actively seek out diverse artists, programming, exhibits that appeal to diverse segments of the community and region.

Virtual workshop participant

Our schools are becoming more diverse. Work with the schools to reach the families.

Focus group participant

Reaching out to all neighborhoods in Littleton. Having information in different languages Providing transportation to venues. Offering low or no cost tickets to events.

Virtual workshop participant

Art offerings not distributed throughout City.

Virtual workshop participant

In years past there has not been a push for public spaces to include art. It seems like that is slowly changing.

Virtual workshop participant

Parking for big events.

Virtual workshop participant

Traffic.

Virtual workshop participant

E. Analysis of Stakeholder and Community Input — Looking to the future

Keen Independent asked community members to consider future markers of success for arts and culture planning.

Markers of Success

Stakeholders and residents identified the following markers of success for the City:

- Increased awareness;
- Increased engagement;
- Art throughout Littleton;
- Equitable support;
- More venues;
- Preservation;
- Collaboration;
- Greater outreach; and
- Economic development.

Increased awareness. Stemming from a need for more streamlined and transparent communication, some stakeholders hoped that these efforts would result in more of the community knowing what arts and culture offerings and resources are available in Littleton.

Increased engagement. Stakeholders from all focus groups hoped to see more community members attending and feeling positive about the arts and culture offerings in Littleton. Some described a key purpose of art being that it draws people in and creates community. They felt this could be achieved by presenting art that sparks conversation or is integrated into nature and human-made spaces around Littleton.

Art throughout Littleton. Most residents and several stakeholders would like to see the footprint of art expand beyond the Downtown area, which is already vibrant in arts and culture assets.

I'd like to see an easier community events and calendar page. Both to see what's happening and to post what is happening.

Discovery meeting participant

A success marker for me is having better visibility through the City's communication avenues.

Focus group participant

Are we fully reaching as much of the community as we can? There are pockets throughout our community proper, our City proper and in our broader community, where we don't have quite as much engagement. Are we welcoming and accommodating and accessible to as many as we can be?

Focus group participant

Developing a sense of pride in our City and encouraging participation in all aspects of life in Littleton results in more committed citizenry.

Virtual workshop participant

Side street art projects to draw more businesses to those areas.

Discovery meeting participant

Should be shared throughout the community, not just Downtown.

Virtual workshop participant

Make art structures a destination and have a theme. That way it could be a game to visit each structure.

Discovery meeting participant

E. Analysis of Stakeholder and Community Input — Looking to the future

Equitable support. Many Littleton residents hoped that the City would prioritize support for diverse and locally sourced art so that new opportunities reflect diverse cultures and perspectives. A few Stakeholders hoped that the City would also consider how existing funding is being allocated to the City's key cultural assets.

More venues. Most residents and stakeholders agree that supporting arts and culture in the City could be better achieved by creating additional gathering spaces and performance venues.

Preservation. Many residents and stakeholders alike discussed the importance of remembering and preserving Littleton's history. They reiterated that arts and culture efforts, and City leadership, should continue to celebrate Littleton's rich history and the infrastructure that showcase those stories and characteristics.

Be intentional about recruiting diverse artists.

Virtual workshop participant

The City of Littleton and the community have a long and proud history of supporting arts, culture, history, and heritage. Additional funding sources would help to build on existing successes.

Virtual workshop participant

Represent diverse artists including people of color, LGBTQ+ and other historically marginalized people. Ensuring that art is in all neighborhoods and accessible to all.

Virtual workshop participant

Venue, venue, venue. Performing arts facility that is affordable, accessible and centrally located.

Virtual workshop participant

Littleton should provide venues where ALL can come and enjoy art and culture — especially live performance! A large theater that can accommodate a larger audience would provide more opportunities for a diverse audience to enjoy.

Virtual workshop participant

Preserving and maintaining its historic places and parks and trails is a top priority.

Virtual workshop participant

A big win for arts and culture would be designating a historic district. A specific destination for shopping and cultural appreciation.

Hotline participant

E. Analysis of Stakeholder and Community Input — Looking to the future

Collaboration. Most stakeholders acknowledged that there could be better coordination between arts and culture organizations in sharing plans and finding ways to work together so that there is greater transparency about community efforts.

Greater outreach. Many Littleton residents called for more outreach across City leadership, so that the community could better participate and inform decision making. They suggested outreach to different neighborhoods and partnerships, such as collaborations with students of all ages, as strategies for achieving collaboration.

Economic development. Many residents and stakeholders agreed that arts and culture could promote economic development across Littleton, resulting in opportunities for new infrastructure projects and support for local artists. Several community residents discussed how serving local residents would help businesses thrive and, in turn, drive tourism as well. A couple of stakeholders suggested that the City track the impact of arts and culture in relation to economic development in Littleton.

I think a big piece is that the multiple players involved in arts and culture and the community and quality of life have a robust awareness of each other and what we are all doing and what each of our respective roles and lanes are in the whole picture.

Focus group participant

The more that we can continue to collaborate and have these conversations, the more we get our folks out there and involved, but also having the City come to us more. I would love to see our City Council members participate.

Focus group participant

Tap into diverse neighborhoods to include them in artistic planning and programming.

Virtual workshop participant

Develop programs that involve community members actively. Utilize the schools as partners.

Virtual workshop participant

Tourism and economic development are not mutually exclusive goals to the community focus. I think prioritizing health and beautification of this space would drive organic tourism and development.

Virtual workshop participant

Track economic development and how much of that could be attributed to us; our completion of projects and bringing people in.

Focus group participant

E. Analysis of Stakeholder and Community Input — Preferences

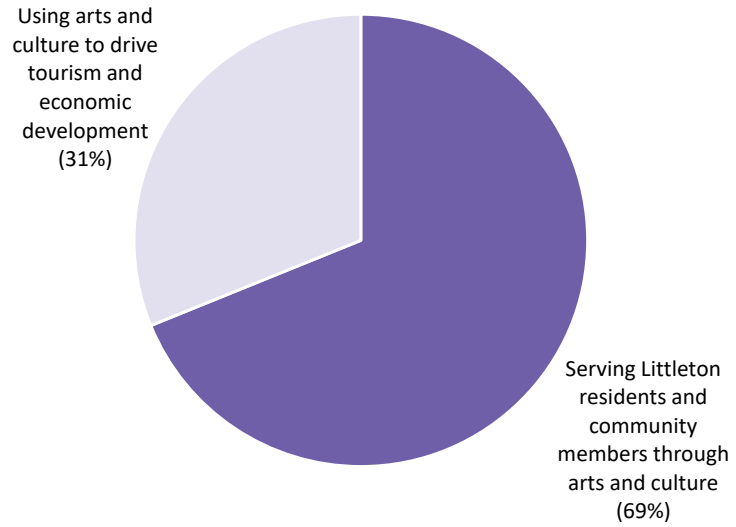
Keen Independent asked virtual workshop, discovery meeting, and interview and focus group participants to identify their preferences regarding potential future arts and cultural priorities for the City.

Residents' Preferences for Arts and Culture Focus

When asked, "Which of the following statements better reflects your opinion about the focus for arts and culture in the City of Littleton?" about 69 percent of virtual workshop participants selected "serving Littleton residents and community members through arts and culture," while 31 percent selected "Using arts and culture to drive tourism and economic development." (Figure E-17).

When provided an opportunity to explain their response, some participants added that both priorities are important. Others shared that community building and showing appreciation for Littleton is important. A few participants worried that focusing on tourism would be at the expense of local interests. Three participants did not want Littleton to focus on either priority.

E-17. Arts and Culture focus for City government



Note: N = 183. Non-residents of Littleton were excluded from analysis.
Source: Keen Independent Research.

I think prioritizing either one will enhance the other.

Virtual workshop participant

Serving locals builds a stronger community, which will in turn drive economic development and tourism.

Virtual workshop participant

Prioritizing tourism and development, however, is likely to come at the cost of the wellbeing of people who already live here.

Virtual workshop participant

We do not need huge tourism to crowd and ruin the home flavor.

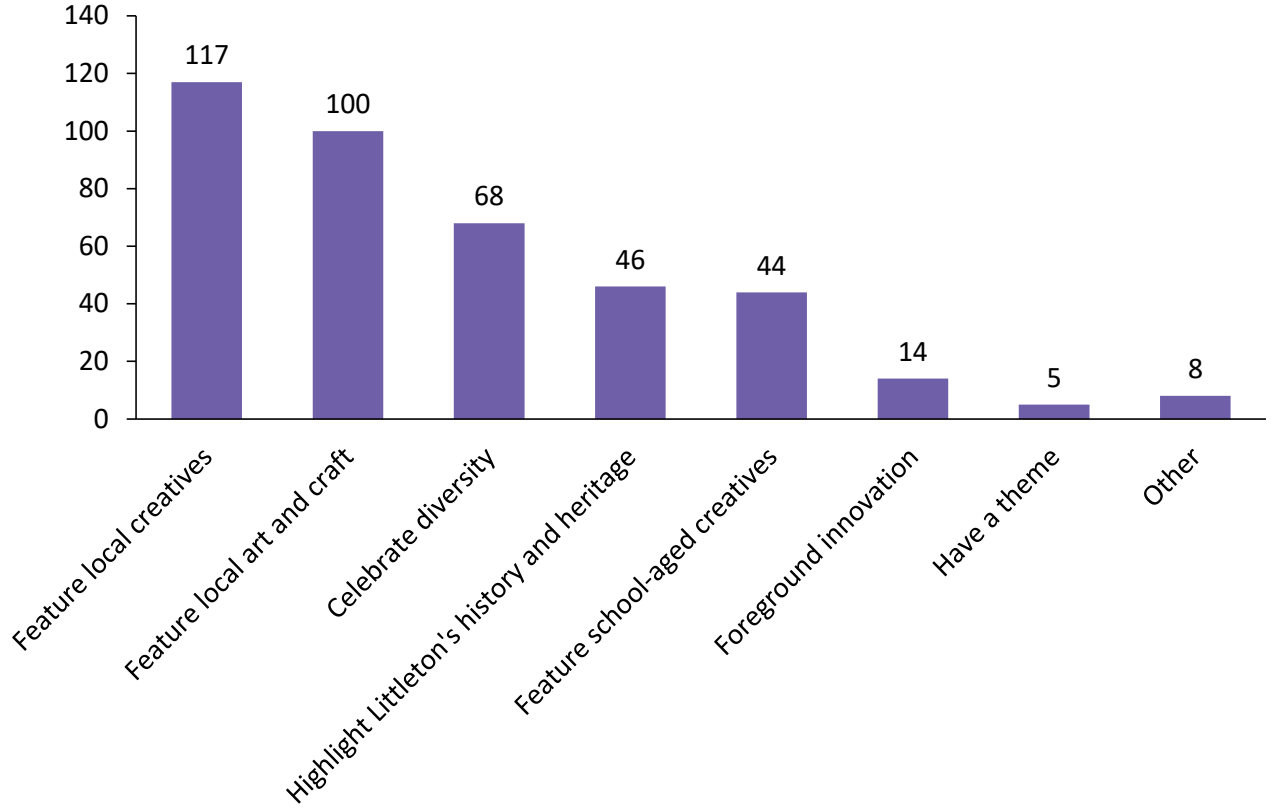
Virtual workshop participant

City-organized Event Preferences

Figure E-18 shows virtual workshop participants' responses about potential City-organized events.

Virtual Workshop participants shared a preference for City-organized events that "feature local creatives" or "feature local art and craft." Around one-third of participants want events that "celebrate diversity."

E-18. Virtual workshop participants responses to, "I would like the City to organize more events that…"



Note: N = 216. Respondents could select up to two responses.

Source: Keen Independent Research.

Public Art and Placemaking

When asked about public art and placemaking preferences, many participants selected "made by local artists" (Figure E-19). About half of respondents also selected art that "highlighting Littleton's history," "made with the community" and "Interactive." Some participants who selected "other" added that public art and placemaking should highlight diversity and marginalized voices and others suggested specific types of art or locations.

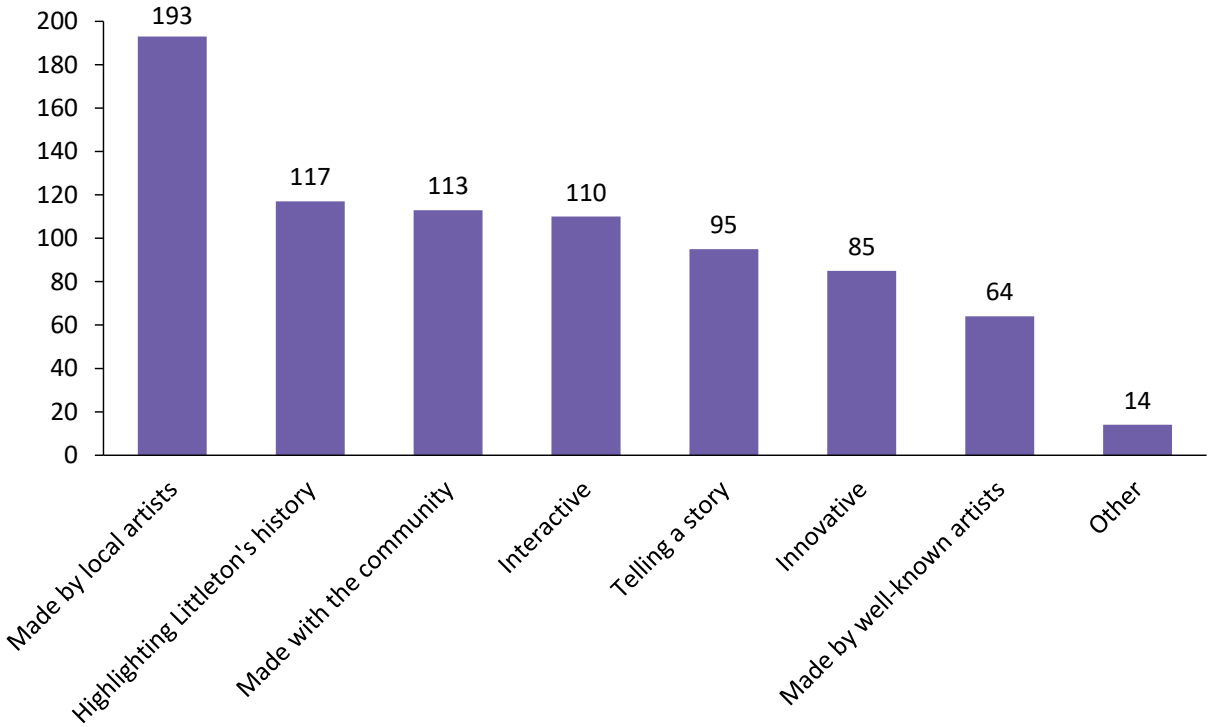
I love Littleton but it could embrace more diversity and involvement with communities in Colorado, such as our cultural connections to Black, Native American, Latino and Asian populations.

Virtual workshop participant

More places for live music and entertainment. Music can draw people from all over if it's done well. We have lots of bands and musicians but no place to perform consistently.

Virtual workshop participant

E-19. Virtual Workshop participant responses to, "I would like to see more public art and placemaking that is…"



Note: N = 218. Respondents could select more than one answer.

Source: Keen Independent Research.

Desired Locations for Public Art and Placemaking

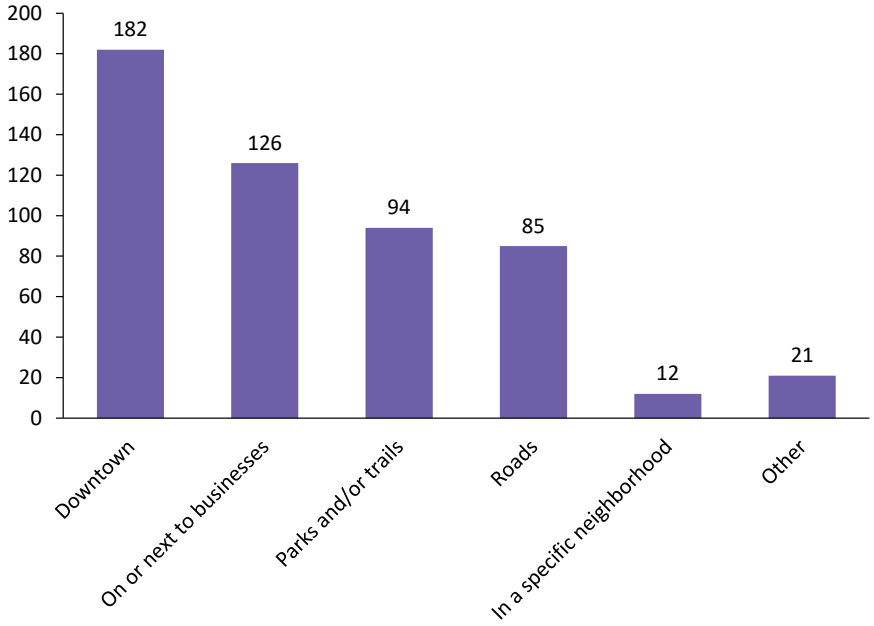
When asked where Littleton residents would like to see more arts and culture, most virtual workshop participants suggested "Downtown" (Figure E-20). Many participants also indicated "on or next to businesses," "parks and trails" and "roads."

When asked more specifically about parks and/or trails, virtual workshop participants most often listed Ketring Park, High Line, Sterne Park, Mary Carter Greenway and Lee Gulch.

When asked about specific neighborhoods, several participants noted Littleton Boulevard and Northeast Littleton.

As part of the discovery meeting "mapping arts and culture station," participants placed stickers where they would like to see more public art assets. This information informed the requested arts and culture development heat map located in Appendix A, "Market Analysis," in this Plan.

E-20. Desired locations for public art and placemaking



Note: N = 221. Respondents could select more than one answer.

Source: Keen Independent Research.

All major buildings and areas should have outdoor arts at their locations.

Discovery meeting participant

Likelihood of Using an Online Directory

When asked, "How likely are you to use a City-managed online directory of local artists?" virtual workshop participants shared mixed opinions on their use of a local artist directory (Figure E-21). Half of participants (53%) were "somewhat" or "very" likely to use this resource, while 30 percent were "Neutral/not sure."

Some participants explained their responses. Those who were likely to use the directory thought it would be useful for showcasing and supporting local artists. Community members with hesitations about the directory brought up concerns around directory management, the online format, expected quality, and its overall intended use. Several participants felt that an event calendar would be more useful than a directory.

Working for a non-profit organization that puts on events for the community, it would be nice to access this database.

Virtual workshop participant

Needs to be kept up to date. So many City directories end up with dead links.

Virtual workshop participant

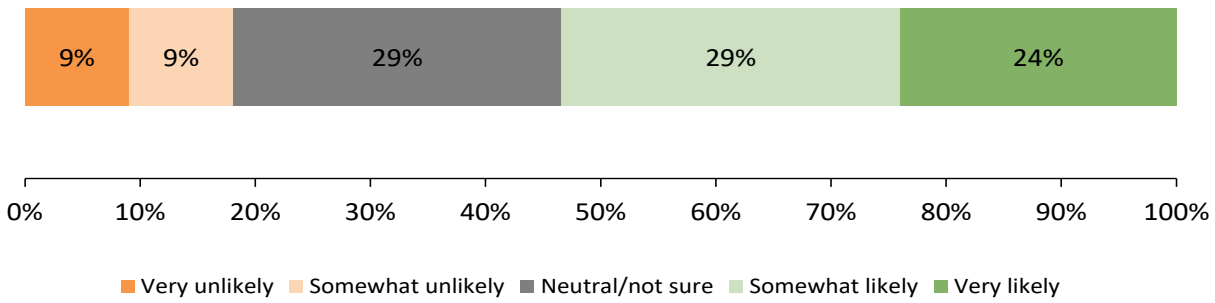
Unclear what this would include and what the benefit could be.

Virtual workshop participant

I would be more likely to use an event driven calendar from the City than just a list of who the artists are.

Virtual workshop participant

E-21. Likelihood of using an online directory of local artists



Note: N = 221.

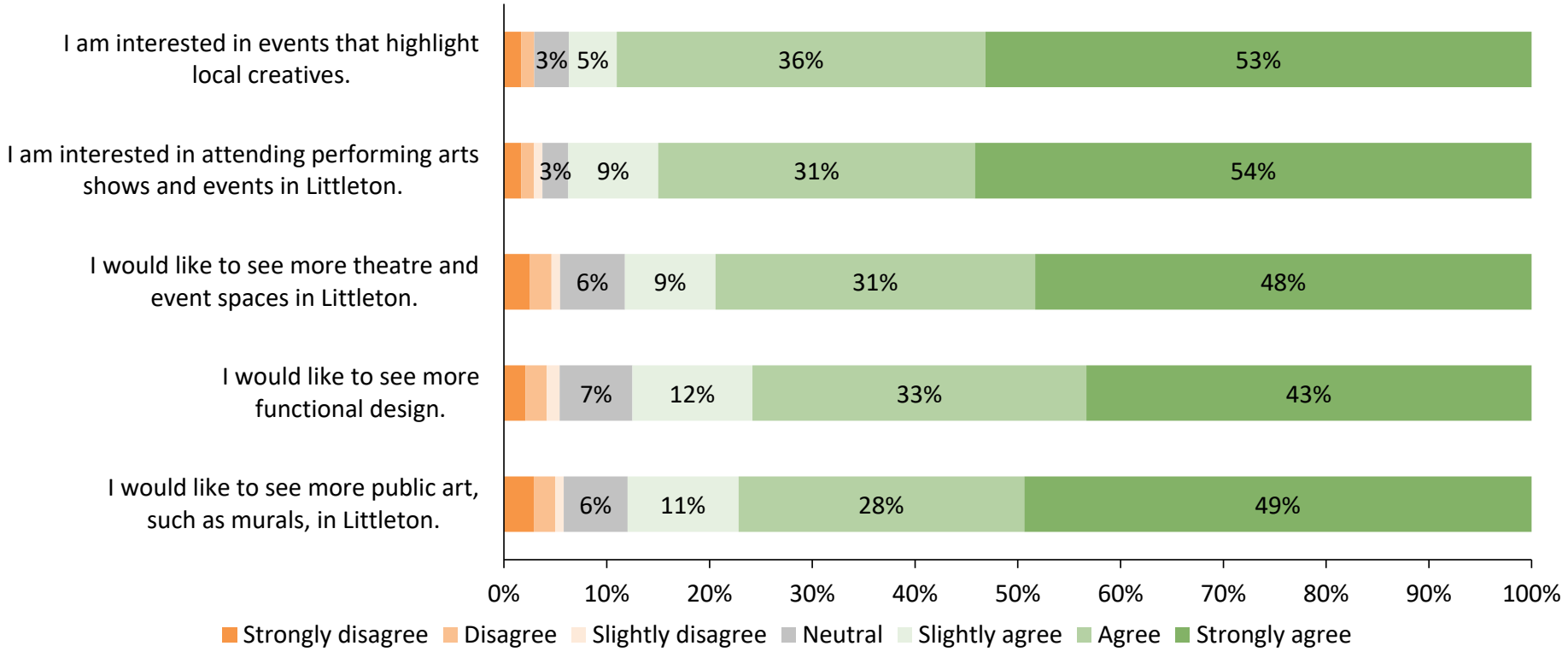
Source: Keen Independent Research.

Art-related Interests

Virtual workshop participants indicated their level of interest for different types of art. Figure E-22 shows all responses along a seven-point agreement scale ranging from "strongly disagree" to "strongly agree."

For all interest statements, virtual workshop participants generally agreed (slightly to strongly) that they would like to see more art of varying types in Littleton. "Events that highlight local creatives" and "performing arts shows and events" were of particular interest, with 94 percent of participants agreeing.

E-22. Virtual workshop participant art-related interests



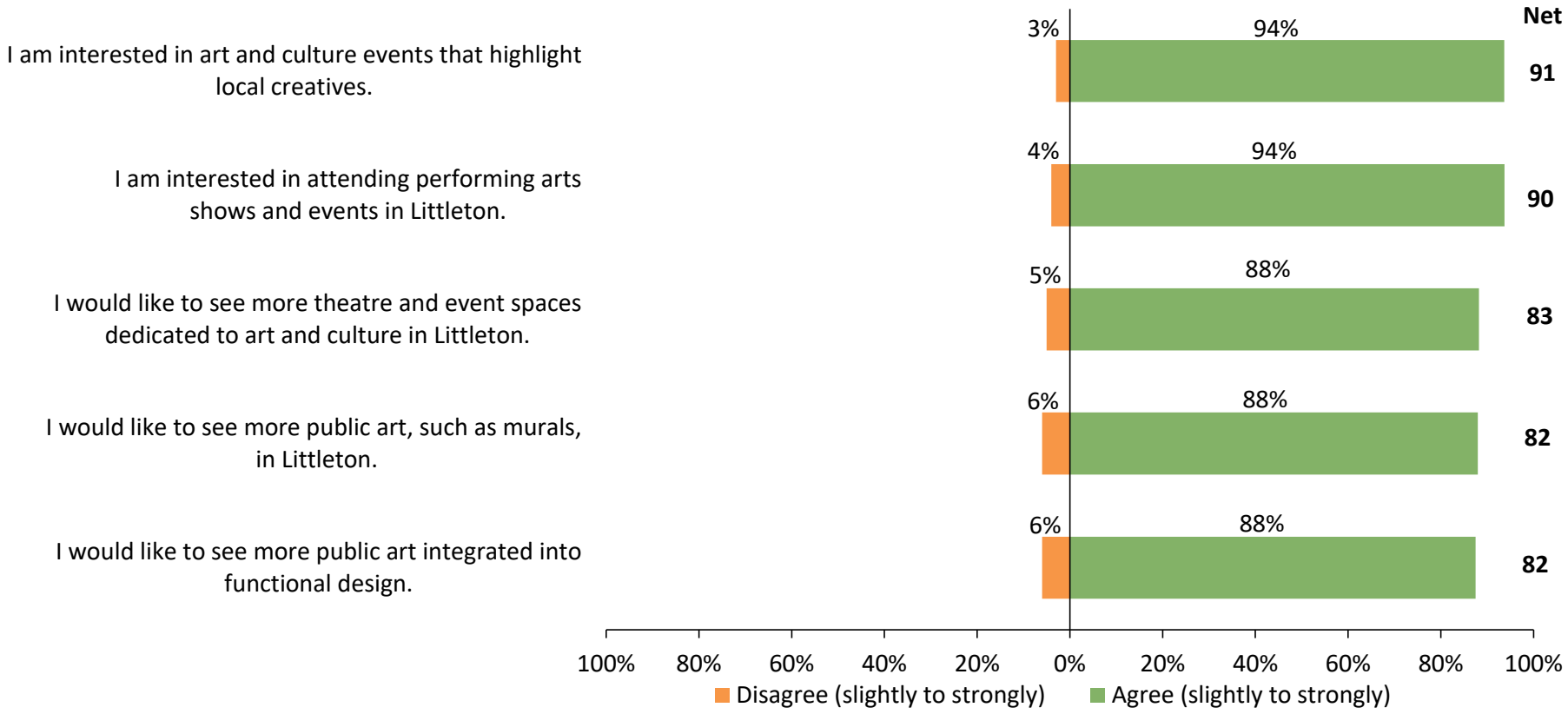
Note: N = 236-242.

Source: Keen Independent Research.

Net rating. Figure E-23 highlights the net rating for statements discussed in Figure E-22. All statements have a net score of 82 or higher.

"Events that highlight local creatives" and "performing arts shows and events" have the highest net ratings, at 91 and 90 respectively. These data further support that participants are highly interested in art and would love to see more offerings.

E-23. Virtual workshop participant art-related interests net rating



Note: N = 236-242. The net rating is calculated by subtracting the sum of the "strongly disagree," "disagree," and "slightly disagree" responses from the sum of the participants who "strongly agree," "agree," and "slightly agree."

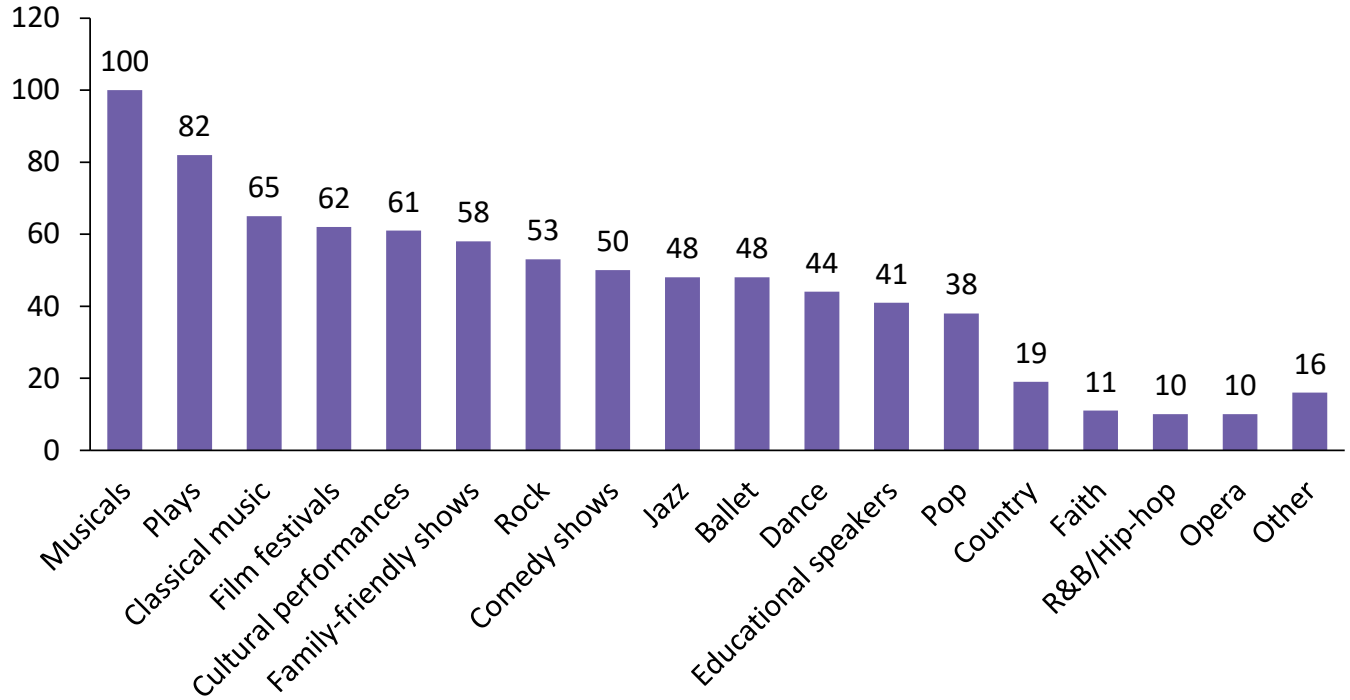
Source: Keen Independent Research.

Favorite Types of Live Entertainment

Virtual workshop participants were asked to select up to four types of performances or live entertainment that they enjoy. Figure E-24 shows that respondents indicated an affinity for a broad range of show types.

"Musicals" and "plays" received the greatest number of participant responses with 100 and 82 responses respectively. Categories with next greatest number of selections were "classical music," "film festivals" and "cultural performances."

E-24. Favorite types of performances and live entertainment



Note: N = 220. Respondents could select up to four responses.

Source: Keen Independent Research.

E. Analysis of Stakeholder and Community Input — Preferences

Infrastructure Preferences

Community residents and stakeholders shared ideas for future infrastructure through the virtual workshop, discovery meeting, hotline and in-depth interviews and focus groups.

Most frequently, community members across all feedback methods supported building additional performing arts venues and gathering spaces. This included a performing arts center with greater capacity than the existing Town Hall Arts Center, as well as multi-purpose spaces that could be used for art events, artists' work and groups to meet for art-related purposes.

Other infrastructure ideas included ways to physically connect the City and its attractions, such as a trolley and an alleyway program. A couple of participants also suggested building a boutique hotel and a play area in the Downtown district.

Many virtual workshop participants were particularly vocal about the need for additional parking Downtown, especially for when arts and culture events take place.

Performing arts center.

Discovery meeting participant

Outdoor amphitheater.

Discovery meeting participant

Art complex with flex space.

Discovery meeting participant

An art co-op.

Virtual workshop participant

A trolley is a great investment for Littleton. I would like to see more of Littleton connected through a trolley and a bike lane.

Hotline participant

Enhance the alley through [a] walkway [with] two entrances, one in an alley and one in a storefront along the main street. [Add] seating elements [and] art elements. Changes the character of a downtown.

Focus group participant

Boutique hotel.

Discovery meeting participant

An area that encourages play, whether that's a nature type of experience or an actual physical structure.

Focus group participant

Parking, especially downtown.

Virtual workshop participant

E. Analysis of Stakeholder and Community Input — Preferences

Benchmark Cities

During the discovery meeting, residents were invited to identify other cities that might serve as a reference for the kind of change they'd like to see in Littleton regarding arts and culture. Participants used index cards and markers to respond to the following prompt:

- "Which city has art and cultural resources that you would like to see in Littleton? Please explain."

Colorado-based infrastructure. Some participants discussed locations in Colorado, such as Arvada for its "Art Complex" or Fort Collins for its "walkable waterpark/river project with extensive arts opportunities and incorporated public art."

Diverse stories and voices. Some participants talked about incorporating diverse perspectives, such as Santa Fe, NM for culture that "integrates Native American and many local ethnic groups." Others called out San Jose, CA for its "diversity of arts and opinions."

Other themes. As an example of "support for local arts and artisans," participants identified Ashville, NC. Grand Rapids, MI, meanwhile, was highlighted for its "Art Prize." Finally, one participant suggested that Littleton already has arts and cultural resources and can continue to develop without emulating other cities.

Community Recommended Benchmark Cities

- Arvada, CO
- Fort Collins, CO
- Santa Fe, NM
- San José, CA
- Ashville, NC
- Grand Rapids, MI
- *"I don't think Littleton has to look any further than its own backyard."*



KEEN INDEPENDENT RESEARCH

Created for the City of Littleton in 2024
by Keen Independent Research, LLC

Staff Communication

File #: Resolution 41-2025, **Version:** 1

Agenda Date: 05/20/2025

Subject:
Resolution 41-2025: Approving a Construction Contract with Silva Construction, Inc. for the Euclid Avenue Improvements Phase 1: Elati Street to Cherokee Street, City Project No. 23-03

From:	James L. Becklenberg, City Manager
Prepared by:	Brent Soderlin, Director of Public Works & Utilities
	Brent Thompson, City Engineer
	Kyle Morris, Transportation Engineer II
Presentations:	N/A

PURPOSE:
Approving a Construction Contract with Silva Construction, Inc. for the Euclid Avenue Improvements Phase 1: Elati Street to Cherokee Street, City Project No. 23-03.

LONG-TERM OUTCOME(S) SERVED:
Safe Community; High Quality Governance

DISCUSSION:
The City of Littleton strives to be a community which is safe for all modes of transportation, including bicycle and pedestrian mobility. As part of the Littleton Linkages Trail Study and the Safer Streets Initiative, Euclid Avenue from Elati Street to Broadway has been identified for upgrades which will support safer pedestrian and bicycle travel and promote traffic calming measures for vehicular traffic. In addition, this street segment has been identified as having poor quality pavement and in need of rehabilitation.

The city held a public open house event for this project on Monday, March 3rd at 6:00 PM to discuss design elements, timelines, and circulation for pick-up and drop-off patterns at Euclid Middle School. The feedback received at the open house was considered in the advancement of the design of the project.

The project on Euclid Avenue will be constructed in two separate phases. The first phase extends from Elati Street to Cherokee Street. The second phase extends from Cherokee Street to Broadway, including improvements to the connection with the Highline Canal Trail. The design of the first phase is complete. A prioritized construction goal is to complete the first phase during the Euclid Middle School summer break from late May to early August 2025. The second phase is near completion of design and may be constructed later this fall if feasible, but likely in the summer of 2026.

The City of Littleton advertised an Invitation for Bids for construction of the Euclid Avenue Improvements Phase 1: Elati Street to Cherokee Street, City Project No. 23-03. The formal solicitation for the project closed on April 15th and all bids were reviewed for completeness and accuracy. Silva Construction, Inc. was identified

as the lowest and most qualified bidder. Approval of this resolution would authorize a contract with Silva Construction, Inc. for construction of the Euclid Avenue Improvements Phase 1: Elati Street to Cherokee Street, City Project 23-03.

BACKGROUND:
The Euclid Avenue Improvements Project will provide mobility and safety upgrades to Euclid Avenue. The upgrades will create a safer and more accessible route through the Euclid Avenue corridor and will improve connectivity to both Euclid Middle School and Options Secondary Program, and ultimately the Highline Canal Trail and Broadway. The project will also provide street resurfacing.

This project is divided into two construction phases. The scope of work of the first phase extends from Elati Street to Cherokee Street, directly adjacent to Euclid Middle School, and is scheduled to be built within the 2025 summer break for Littleton Public Schools. The street and intersections in this first phase will receive critical sidewalk, bike infrastructure, and crossing upgrades to protect students and all modes of transportation. These Phase 1 upgrades compliment the proposed site improvements planned for summer 2025 at Euclid Middle School.

Phase 2 of the Euclid Avenue project will provide a continuation of the improvements constructed in Phase 1 to provide connectivity to the Highline Canal Trail and Broadway. Design is underway and construction may take place in fall 2025, but likely will occur in the summer of 2026.

Completion of both phases of the Euclid Avenue project will mark the first “complete street” in the city, a milestone event for the Safer Streets Program. Complete streets provide high-comfort bicycle and pedestrian facilities and create safer access to trails, schools and amenities throughout the city. The safety of pedestrians, cyclists, transit users, children, elderly, those with disabilities, and other vulnerable roadway users throughout the city is critical to a healthy city and transportation network.

Prior Actions or Discussions
There have been no prior formal actions involving this project with Council, however this Safer Streets project has been identified as a high priority project by Council, and additional funds were allocated towards the project in the 2025 capital improvement budget.

FISCAL IMPACTS:
The proposed construction contract with Silva Construction, Inc. for the Euclid Avenue Improvements Phase 1: Elati Street to Cherokee Street, City Project 23-03 is $2,217,187. This project will be funded through the 3A Sales Tax Capital Improvement Fund and Storm Drainage Enterprise Fund.

Pursuant to the City’s Procurement Policy, all contracts exceeding $500,000 must be approved by City Council.

STAFF RECOMMENDATION:
Staff recommends approval of the Construction Contract.

ALTERNATIVES:
If the contract is not approved, the construction of the project will not be completed, and no safety nor multimodal school zone improvements will be made to this corridor at this time.

PROPOSED MOTION:
I move to approve Resolution 41-2025 approving a Construction Contract with Silva Construction, Inc. for the

Euclid Avenue Improvements Phase 1: Elati Street to Cherokee Street, City Project No. 23-03.

CITY OF LITTLETON, COLORADO

Resolution No. 41

Series, 2025

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LITTLETON, COLORADO, APPROVING A CONSTRUCTION CONTRACT BETWEEN THE CITY OF LITTLETON AND SILVA CONSTRUCTION, INC. FOR THE EUCLID AVENUE IMPROVEMENTS PHASE 1: ELATI STREET TO CHEROKEE STREET - CITY PROJECT NO. 23-03

WHEREAS pursuant to Section 1-15-62 of the Littleton Municipal Code, City Council approval is a condition precedent to the approval of an agreement in which the total value of the agreement is over five hundred thousand dollars and 00/100 cents $500,00.00); and

WHEREAS the city issued an Invitation for Bid soliciting bids for the Euclid Avenue Improvements Phase 1: Elati Street to Cherokee Street, City Project No. 23-03; and

WHEREAS the contractor, Silva Construction, Inc. submitted a response to perform the project and the city, after examination of the contractor's submittal, has determined that the contractor has the requisite background, pricing, bond, and expertise to provide the requested work; and

WHEREAS city staff recommends acceptance of the contractor's proposal for work in accordance with the issued Invitation for Bid; and

WHEREAS, the city and Silva Construction, Inc. desire to enter into an agreement in which Silva Construction, Inc. will perform work in accordance with the terms and conditions outlined in the agreement, in substantially the same form attached hereto as Exhibit "A".

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF LITTLETON, COLORADO, THAT:

Section 1. The Littleton City Council hereby approves the *Construction Contract by and between the City of Littleton and Silva Construction, Inc., for the Euclid Avenue Improvements Phase 1: Elati Street to Cherokee Street, City Project No. 23-03*, in substantially the same form attached hereto as Exhibit "A," and authorizes the Mayor, or authorized designee, to execute the same on behalf of the City of Littleton.

Section 2. The Resolution shall take effect upon its approval by the Littleton City Council.

INTRODUCED, READ, AND ADOPTED at a regularly scheduled meeting of the City Council of the City of Littleton, Colorado, on the 20th day of May 2025, at 6:30 p.m. at the Littleton Center, 2255 West Berry Avenue, Littleton, Colorado.

ATTEST:

_____
Colleen L. Norton
CITY CLERK

_____
Kyle Schlachter
MAYOR

APPROVED AS TO FORM:

_____
Reid Betzing
CITY ATTORNEY

CONSTRUCTION CONTRACT

THIS CONSTRUCTION CONTRACT ("Contract") is made and entered into on the date of the last signature set forth below, by and between the City of Littleton, a municipal corporation within the State of Colorado ("City"), and **SILVA CONSTRUCTION, INC.** a Colorado corporation ("Contractor"). The Contractor and the City are referred to as a "Party" or collectively the "Parties."

RECITALS AND REPRESENTATIONS

WHEREAS the City issued a solicitation for bids no. 10-2025, and the Contractor submitted a bid to perform the work; and

WHEREAS the City has elected to accept the Contractor's bid.

NOW, THEREFORE, in consideration of the mutual covenants herein set forth, the Parties agree as follows:

1.1 **Contract Documents and Exhibits**. The term "Contract Documents" consist of this Contract together with the following:

Exhibit A	Scope of Work
Exhibit B	Bid Schedule
Exhibit C	General Conditions
Exhibit D	Construction Contract Forms
Exhibit E	Drawings and Specifications
Exhibit F	Special Conditions

All exhibits referred to in this Contract are attached hereto and are, by reference, incorporated herein for all purposes. In the event any matter, term, provision, or condition that is the subject of this Contract requires clarification or is in dispute, or is the subject of a difference of opinion, the purpose and intent of the Contract shall be first ascertained by reference to the Contract Documents in their entirety. In the event of any dispute or differences between the respective documents that constitute the Contract Documents, then the Contractor shall secure the written instructions from the City before proceeding with the performance of the services affected by such conflicts, omissions or discrepancies.

1.2 **Project.** The Contractor shall commence and complete the Scope of Work ("Work"), **Exhibit A**, in accordance with the Contract Documents, as defined herein. The Contractor agrees to perform and complete the Work in a proper and workmanlike manner, consistent with the highest standards of professional and construction practices and in full compliance with, and as required by or pursuant to, this Contract, and with the greatest economy, efficiency, and expedition consistent therewith, with only new, undamaged and first quality equipment, materials and supplies. The Contractor shall, at its own expense, furnish all labor,

materials, tools, supplies, machinery, utilities, permits, licenses, and other equipment that may be necessary for the completion of the Work, as outlined in the Contract Documents. No work shall commence until a Notice to Proceed has been issued, and if required by the City, until after approval by the City Council in accordance with the City Charter and City Code.

1.3 **Commencement and Completion of the Project**. The Contractor understands and agrees that all Work required under this Contract shall be fully completed, as set forth in the Contract Documents, **within 75 calendar days of the date of the Notice to Proceed**. The Contractor acknowledges and understands that it is an essential term of this Contract that Contractor maintain a rate of progress in the Work that will result in completion of the Work in accordance with the Contract Documents, and to that end, Contractor agrees to proceed with all due diligence to complete the Work in a timely manner in accordance with the Contract Documents.

1.4 **Contract Price**. The City accepts the Contractor's bid for the estimated quantities and costs as set forth in the Bid Schedule, **Exhibit B**, in the total amount of **$2,217,187.00.** The City shall make payment(s) to Contractor in the manner and at such times as set forth in the General Conditions of such amounts as are required by the Contract Documents. The City shall deduct and retain five (5) percent from the total amount of each approved invoice, including Change Orders. The City may also deduct in addition to retainage as stated above, the additional amount(s) of any and all outstanding claims pursuant to Colorado Revised Statute ("C.R.S.") §38-26-107 from each approved invoice. The City has appropriated sufficient funds for the completion of this work.

1.5 **Payments to Constitute Current Expenditures.**

1.5.1 Notwithstanding any other term, provision, or condition herein, all financial obligations of the City are contingent on funds for that purpose being appropriated, budgeted and otherwise made available by the City Council. The City's obligations under the Contract shall not constitute a multiple-fiscal year direct or indirect debt or other financial obligation of the City within the meaning of Article X, Section 20 of the Colorado Constitution.

1.5.2 Further, pursuant to 103.6(2) of Article 91, Title 24, C.R.S., no Change Order, Amendment, or other form of order or directive by the City which requires additional compensable work to be performed, and which work causes the aggregate amount payable under this Contract to exceed the amount appropriated for the original Contract, shall be executed, or shall work be performed by the Contractor, unless the City provides written assurances to the Contractor that lawful appropriations to cover the costs of such additional work have been made or unless such work is covered under a remedy-granting provision of this Contract. For purposes of this paragraph, "remedy-granting provision" shall be defined as set forth in C.R.S. §24-91-103.6(4).

1.6 **Confidentiality.** Notwithstanding any provision in the Contract Documents to the contrary, the City is obligated to comply with the Colorado Open Records Act (C.R.S. §§24-72-101 *et seq.*), which may require the City to disclose all or a portion of communications relating to the Contract, or terms of same, or of any transaction under the Contract, and other related matters. The Contractor shall familiarize itself with the Colorado Open Records Act. In no event shall the City be liable to the Contractor for the disclosure of all or a portion of communications, or relating documents, or electronic imaging, including all documents and exhibits that may be included as part of this Contract.

1.7 **Insurance.**

1.7.1 The Contractor shall not commence work, and shall not allow any subcontractor to commence work, until it has obtained all insurance required herein and such insurance has been approved by City. For the duration of the Contract, the Contractor must maintain the insurance coverage required in this section. The City's acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Contract shall not act as a waiver of the Contractor's breach of Contract or of any of the City's rights or remedies under this Contract.

1.7.2 The Contractor shall not be relieved of any liability, claims, demands, or other obligations assumed pursuant to the Contract Documents by reason of its failure to procure or maintain insurance, or by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.

1.7.3 The Contractor shall procure and maintain at its own cost and shall cause each subcontractor of the Contractor to procure and maintain at its own cost (or shall insure the activity of Contractor's subcontractors in Contractor's own policy with respect to), the minimum insurance coverages listed below. Such coverages shall be procured and maintained with forms and insurers acceptable to the City. All coverages shall be continuously maintained from the date of commencement of the Work. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage.

1. Workers' Compensation and Employers' Liability insurance with minimum limits of FIVE HUNDRED THOUSAND DOLLARS ($500,000) each accident, FIVE HUNDRED THOUSAND DOLLARS ($500,000) disease - policy limit, and FIVE HUNDRED THOUSAND DOLLARS ($500,000) disease - each employee. The policy shall cover obligations imposed by the Workers' Compensation Act of Colorado and any other

applicable laws for any employee engaged in the performance of Work.

2. Commercial General Liability insurance with minimum combined single limits of ONE MILLION DOLLARS ($1,000,000) each occurrence and TWO MILLION DOLLARS ($2,000,000) aggregate. The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, independent contractors, products, and both ongoing and completed operations. The policy shall include coverage for explosion, collapse, and underground hazards (XCU). The policy shall contain a severability of interests provision.

3. Comprehensive Automobile Liability insurance with a minimum combined single limit for bodily injury and property damage of ONE MILLION DOLLARS ($1,000,000) with respect to each of Contractor's owned, hired and/or non-owned vehicles assigned to or used in performance of the Work. The policy shall contain a severability of interests provision.

4. Installation Floater/Inland Marine insurance with minimum limits of not less than the insurable value of the work to be performed at completion. The value shall include the aggregate value of any City-furnished equipment and materials to be erected or installed by the Contractor not otherwise insured. The policy shall protect the Contractor and the City from all insurable risks of physical loss or damage to materials and equipment not otherwise covered, while in warehouses or storage areas, during installation, during testing, and after the Work under this Contract is completed. The policy shall be of the "all risks" type, with coverages designed for the circumstances which may occur in the particular Work to be performed under this Contract. The policy shall provide for losses to be payable to the Contractor and the City as their interests may appear. The policy shall contain a provision that in the event of payment for any loss under the coverage provided, the insurance company shall have no rights of recovery against the Contractor or the City.

1.7.4 The City of Littleton shall be included as additional insured for Commercial General Liability and Comprehensive Automobile Liability insurance. The City of Littleton shall be included as additional insured or loss payee for

Installation Floater/Inland Marine insurance. All policies of insurance providing additional insured status shall be primary insurance, and any insurance carried by the City, its officers, or its employees, shall be excess and not contributory insurance to that provided by Contractor. The additional insured endorsement for the Commercial General Liability insurance required above shall not contain any exclusion for bodily injury or property damage arising from completed operations. The Contractor shall be solely responsible for any deductible losses under each of the policies required above.

1.7.5 Certificates of insurance shall be completed by the Contractor's insurance company as evidence that policies providing the required coverages, conditions, and minimum limits are in full force and effect, and shall be subject to review and approval by the City. The certificate cannot contain "endeavor to" language in the portion of the certificate addressing cancellation. The City of Littleton shall be included as Certificate Holder. The City reserves the right to request and receive a certified copy of any policy and any endorsement thereto.

1.7.6 The coverages afforded under the policies shall not be cancelled, terminated or materially changed until at least thirty (30) days' prior written notice has been given to the City. Failure on the part of the Contractor to procure or maintain policies providing the required coverages, conditions, and minimum limits shall constitute a material breach of Contract upon which the City may immediately terminate the Contract, or at its discretion may procure or renew any such policy or any extended reporting period thereto and may pay any and all premiums in connection therewith, and all monies so paid by the City shall be repaid by Contractor to the City upon demand, or the City may offset the cost of the premiums against any monies due to Contractor from the City.

1.7.7 The Parties hereto understand and agree that the City is relying on, and does not waive or intend to waive by any provision of this Contract, the monetary limitations (presently $387,000 per person and $1,093,000 per occurrence) or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, C.R.S. § 24-10-101 et seq., as from time to time amended, or otherwise available to the City, its officers, or its employees.

1.8 **Taxes.** The City of Littleton is not subject to taxation. The Contractor shall not invoice the City for any state, federal or local taxes whatsoever. Upon written notification by the City, the Contractor shall reimburse the City in a timely manner for any taxes erroneously paid by the City.

1.9 **Waiver of Breach.** A waiver by any Party to the Contract or the breach of any term or provision of the Contract shall not operate or be construed as a waiver of any subsequent breach by either Party.

1.10 **No Third-Party Beneficiaries.** It is expressly understood and agreed that enforcement of the terms and conditions of this Contract, and all rights of action relating to such enforcement, shall be strictly reserved to the City and the Contractor and nothing contained in this Contract shall give or allow any such claim or right of action to any other third-party on this Contract. It is the express intention of the City and the Contractor that any person other than the City or the Contractor receiving services or benefits under this Contract shall be deemed to be an incidental beneficiary only.

1.11 **Independent Contractor.** The Contractor shall perform the Work as an independent contractor and shall not be deemed by virtue of this Contract to have entered into any partnership, joint venture, employer/employee or other relationship with the City other than as a contracting party and independent contractor.

1.12 **Non-Discrimination.** In connection with the performance of the Work, the Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ethnicity, citizenship, immigration status, sex, gender, age, sexual orientation, gender identity or gender expression, marital status, source of income, military status, protective hairstyle, genetic information, pregnancy, or disability, or any other status protected by applicable law. The Contractor will take affirmative action to ensure applicants are employed, and employees are treated during employment, without regard to their race, color, religion, national origin, ethnicity, citizenship, immigration status, sex, gender, age, sexual orientation, gender identity or gender expression, marital status, source of income, military status, protective hairstyle, genetic information, pregnancy, disability, or any other status protected by applicable law. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

1.13 **Indemnification.** The Contractor agrees to investigate, defend, indemnify and hold harmless the City, its officers, employees, insurers, and self-insurance pool, from and against all liability, claims and demands on account of any losses, injuries, and damages, including but not limited to, alleged personal injury claims, and/or death claims, or property damage claims, or errors and omissions, which arise solely out of the Contractor’s and/or any of its agents' officers or employees performance of the Contractor’s obligations under this Contract. The City is prohibited by Article XI, Section 1, Colorado Constitution, from indemnifying any individual or entity. Therefore, the City does not indemnify the Contractor, successors, or assigns under this Contract. Notwithstanding the foregoing, nothing

herein is intended to constitute a covenant, promise, or agreement to indemnify and hold harmless the City from any liability or damages directly caused by or attributable to the City's own negligence, nor is anything herein intended to be nor may be construed as a waiver of the immunities, protections, or limitations on damages provided to the City by the Colorado Governmental Immunity Act, C.R.S. §§24-10-101 et seq., as it may from time to time be amended.

1.14 **Governing Law and Venue.** The Contract shall be governed by the laws of the State of Colorado. Venue for any action arising under the Contract or for the enforcement of the Contract shall be in the appropriate court for Arapahoe County, Colorado.

1.15 **Additional Documents or Action**. The Parties agree to execute any additional documents and to take any additional action that is necessary to carry out this Contract.

1.16 **Binding Effect.** This Contract shall inure to the benefit of, and be binding upon, the Parties, their respective legal representatives, successors, heirs, and assigns; provided, however, that nothing in this paragraph shall be construed to permit the assignment of this Contract except as otherwise expressly authorized herein.

1.17 **Integration, Amendment, and Severability.** This Contract represents the entire agreement between the Parties and there are no oral or collateral agreements or understandings. This Contract may be amended only by an instrument in writing signed by the Parties or as otherwise provided herein. If any other provision of this Contract is held invalid or unenforceable, no other provision shall be affected by such holding, and all of the remaining provisions of this Contract shall continue in full force and effect.

1.18 **Binding Authority.** The Contractor represents and affirms that the signature page hereof accurately states the full legal name of Contractor (whether as a corporation, partnership, limited liability company, sole proprietorship, or other), contains all requisite signature(s) on behalf of Contractor, has been properly acknowledged by attestation, notary acknowledgment, or both, and in all other respects is effective to bind Contractor, in accordance with all applicable statutes, regulations, resolutions, rules, bylaws, agreements, or similar sources of authority or limitation. This Contract may be executed in counterpart(s), each of which shall be deemed to be an original, and all of which, taken together, shall constitute one instrument.

1.19 **Subject to Legislative Approval and Compliance with Law.** The Contractor acknowledges and agrees that if a Change Order is required under the terms of the Contract, the City shall not incur any liability whatsoever for claims of payment, compensation, damages, or adjustment of any kind by the Contractor due to any delays for the required approvals and execution under Section 1.3 of the General Conditions, **Exhibit C**. The Contractor further acknowledges and agrees that this

Contract's execution may be contingent upon approval by the City Council, in compliance with all applicable provisions of the City Charter and City Code. The City shall not incur any liability whatsoever if this Contract is not approved by City Council.

1.20 **Notices.** All notices required under this Contract shall be in writing and shall be sent by registered or certified mail, return receipt requested, to the addresses of the Parties herein set forth. A Party may change its mailing address by giving written notice of such change of address to other Party.

Notice to City:	City of Littleton City Manager 2255 West Berry Avenue Littleton, CO 80120
Notice to Contractor:	Silva Construction, Inc. 421 W 70th Pl Denver, Colorado 80221

1.21 **Force Majeure.** Neither Party shall be responsible for a delay in its respective performance under this Contract, other than a delay in payment for Work already performed, if such delay is caused by extraordinary weather conditions or other natural catastrophes, war, terrorist attacks, sabotage, computer viruses, riots, strikes, lockouts or other industrial disturbances, epidemics, pandemics, acts of governmental agencies or authorities, discovery of hazardous materials or differing and unforeseeable site conditions, or other events beyond the reasonable control of the claiming Party. Contractor shall be entitled to an equitable adjustment to the project schedule and compensation in the foregoing circumstances.

1.22 **Electronic Signatures and Electronic Records.** The Contractor consents to the use of electronic signatures by the City. The Contract, and any other documents requiring a signature hereunder, may be signed electronically by the City in the manner specified by the City. The Parties agree not to deny the legal effect or enforceability of the Contract solely because it is in electronic form or because an electronic record was used in its formation. The Parties agree not to object to the admissibility of the Contract in the form of an electronic record, or a paper copy of an electronic document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original.

DATED this ____ day of _____, 2025.

CITY OF LITTLETON, COLORADO

_____
Kyle Schlachter
MAYOR

ATTEST

_____
Colleen Norton
CITY CLERK

APPROVED AS TO FORM:

_____
Reid Betzing
CITY ATTORNEY

CONTRACTOR

_____ _____
Jose Silva Date
PRESIDENT

Exhibit A

Contractor shall perform grading, asphalt pavement, concrete sidewalk, concrete curb ramps, curb & gutter, storm sewer, construction traffic control, erosion control, signing, and striping from Elati Street to Broadway in Littleton.

Exhibit B

Item No.	Quantity Items	Units	Quantity	Unit Cost	Cost
202-00018	Removal of Catch Drain	EACH	2	$ 3,500.00	$7,000.00
202-00019	Removal of Inlet	EACH	1	$ 2,700.00	$2,700.00
202-00021	Removal of Manhole	EACH	1	$ 2,700.00	$2,700.00
202-00035	Removal of Pipe	LF	175	$ 50.00	$8,750.00
202-00200	Removal of Sidewalk	SY	403	$ 18.00	$7,254.00
202-00203	Removal of Curb and Gutter	LF	478	$ 9.00	$4,302.00
202-00204	Removal of Curb, Gutter and Sidewalk	LF	2,572	$ 13.00	$33,436.00
202-00206	Removal of Concrete Curb Ramp	SY	88	$ 20.00	$1,760.00
202-00210	Removal of Concrete Pavement	SY	200	$ 20.00	$4,000.00
202-00220	Removal of Asphalt Mat	SY	6,571	$ 17.00	$111,707.00
202-00226	Removal of Asphalt Mat (Special)	SY	128	$ 20.00	$2,560.00
202-00810	Removal of Ground Sign	EACH	8	$ 100.00	$800.00
203-00000	Unclassified Excavation	CY	3,220	$ 60.00	$193,200.00
208-00008	Erosion Log Type 2 (12 Inch)	LF	1,912	$ 5.00	$9,560.00
208-00029	Reinforced Rock Berm	LF	28	$ 200.00	$5,600.00
208-00035	Aggregate Bag	LF	96	$ 30.00	$2,880.00
208-00045	Concrete Washout Structure	EACH	1	$ 1,000.00	$1,000.00
208-00054	Storm Drain Inlet Protection (Type II)	EACH	10	$ 60.00	$600.00
208-00070	Vehicle Tracking Pad	EACH	2	$ 10,000.00	$20,000.00
208-00200	Erosion Control Management	L S	1	$ 18,000.00	$18,000.00
210-00065	Reset Monument (Type 3A)	EACH	1	$ 500.00	$500.00
210-00810	Reset Ground Sign	EACH	4	$ 100.00	$400.00
210-00827	Reset Pull Box	EACH	1	$ 2,000.00	$2,000.00
210-04010	Adjust Manhole	EACH	8	$ 400.00	$3,200.00
210-04050	Adjust Valve Box	EACH	9	$ 400.00	$3,600.00
214-00200	Landscape Restoration	LS	1	$ 13,000.00	$13,000.00
216-00201	Soil Retention Blanket (Straw-Coconut) (Biodegradable	SY	73	$ 21.00	$1,533.00
304-06007	Aggregate Base Course (Class 6)	CY	2,033	$ 60.00	$121,980.00
403-00720	Hot Mix Asphalt (Patching)	TON	35	$ 180.00	$6,300.00
403-33741	Hot Mix Asphalt (Grading S) (75) (PG 64-22)	TON	701	$ 146.00	$102,346.00
403-34741	Hot Mix Asphalt (Grading SX) (75) (PG 64-22)	TON	703	$ 146.00	$102,638.00
412-00600	Concrete Pavement (6 Inch)	SY	488	$ 107.00	$52,216.00
412-01000	Concrete Pavement (10 Inch)	SY	108	$ 170.00	$18,360.00
412-01001	Concrete Pavement (10 Inch) (Special)	SY	54	$ 170.00	$9,180.00
503-00018	Drilled Shaft (18 Inch)	LF	24	$ 400.00	$9,600.00
603-01185	18 Inch Reinforced Concrete Pipe (CIP) or ADS HP Storm Pipe	LF	170	$ 200.00	$34,000.00
603-01245	24 Inch Reinforced Concrete Pipe (CIP) or ADS HP Storm Pipe	LF	1,100	$ 189.00	$207,900.00
604-16050	Inlet Type 16 (Single) (Special)	EACH	5	$ 11,000.00	$55,000.00
604-16550	Inlet Type 16 (Double) (Special)	EACH	2	$ 13,500.00	$27,000.00
604-19205	Inlet Type R L10 (5 Foot)	EACH	1	$ 13,500.00	$13,500.00
604-19305	Inlet Type R L15 (5 Foot)	EACH	1	$ 18,000.00	$18,000.00
604-39010	Manhole Special (10 Foot)	EACH	7	$ 11,000.00	$77,000.00
608-00000	Concrete Sidewalk	SY	2,695	$ 106.00	$285,670.00
608-00010	Concrete Curb Ramp	SY	207	$ 130.00	$26,910.00

609-21020	Curb and Gutter Type 2 (Section II-B)	LF	2,976	$ 40.00	$119,040.00
609-22021	Curb, Gutter and Sidewalk Type 2 (Section MS)	LF	105	$ 113.00	$11,865.00
614-00011	Sign Panel (Class I)	SF	59	$ 50.00	$2,950.00
614-00012	Sign Panel (Class II)	SF	63	$ 30.00	$1,890.00
614-00217	Steel Sign Post (2x2 Inch Telespar Tubing)	LF	120	$ 30.00	$3,600.00
614-72860	Pedestrian Push Button	EACH	4	$ 700.00	$2,800.00
614-80003	Rectangular Rapid Flashing Beacon	EACH	4	$ 7,500.00	$30,000.00
614-84000	Traffic Signal Pedestal Pole Steel	EACH	4	$ 4,500.00	$18,000.00
626-00000	Mobilization	LS	1	$ 64,000.00	$64,000.00
627-00008	Modified Epoxy Pavement Marking	GAL	16	$ 370.00	$5,920.00
627-30210	Thermoplastic Pavement Marking (Xwalk-Stopline)	SF	506	$ 20.00	$10,120.00
627-30405	Preformed Thermoplastic Pavement Marking) (Word-Symbol)	SF	112	$ 30.00	$3,360.00
630-00000	Traffic Control	LS	1	$ 64,000.00	$64,000.00
700-70010	Force Account				$250,000.00

TOTAL BID **$2,217,187.00**

Exhibit C
General Conditions

SECTION 1
SCOPE OF WORK

1.1. **PLANS AND SPECIFICATIONS**:

1.1.1. The Contractor shall perform all items of Work covered and stipulated in the Specifications, Bid Schedule, Contract, General Conditions and Special Provisions, together with any authorized alterations, Extra Work and Change Orders, all in accordance with the Plans. The Contractor shall furnish, unless otherwise provided in the Specifications and/or Special Provisions, all materials, implements, machinery, equipment, tools, supplies, transportation and labor necessary to perform and complete the Work.

1.1.2. The Contractor shall be responsible for taking all steps reasonably necessary to ascertain the nature and location of the Work, and the general and local conditions which can affect the Work or the cost of the Work. Failure by the Contractor to do so will not relieve it from responsibility for successfully performing Work without additional expense to the City. The City will not be responsible for any understanding or representations concerning conditions unless such understanding or representations are expressly stated in the Contract.

1.2. **SPECIAL WORK**: Should any construction or conditions which are not thoroughly stipulated or set forth by the Specifications be anticipated on any proposed Project, Special Conditions for such Work may be prepared and attached hereto as **Exhibit F,** and shall be considered as part of the Specifications, the same as though contained fully therein. Should any Special Conditions conflict with the Specifications, the Special Conditions will govern.

1.3. **CHANGES AND INCREASED OR DECREASED QUANTITIES OF WORK**:

1.3.1. Without invalidating the Contract, the Project Manager and/or City reserves and shall have the right, without notice to any Sureties, by written Change Order, to make any changes, from time to time, to the character and quantity of the Work, including but not limited to, the Drawings, Specifications, Plans or Addenda, as

may be considered necessary or desirable to complete fully and acceptably the Work in a satisfactory manner. Such Change Order shall set forth with specificity the changed Work to be done and shall set forth any changes or extensions to the time of completion.

1.3.2. *Increase in Cost and Required Approvals.*

i. Such Change Orders shall not increase the total cost of the Work, based on the original estimate of quantities and unit prices contained in the Bid Schedule, by more than 10% (ten percent) without the approval of the City of Littleton City Manager or authorized designee. Contractor shall be entitled to the cost of said increased units at the original price within the original bid, but not to an adjustment of unit price.

ii. In the event said Change Order increases the total cost of the Contract based upon the unit price bid by more than 10% (ten percent), an equitable adjustment will be made and the Contract modified accordingly by a written Change Order, to be approved by the City of Littleton City Manager or authorized designee, and subject to City Council approval; provided, however, that except for claims based on errors in the Contract, no claim for change hereunder will be allowed for cost incurred more than twenty (20) days before the Contractor gives written notice as herein required; and in the case of errors in the Contract for which the City is responsible, the adjustment will be increased costs, reasonably incurred by the Contractor in attempting to comply with such errors in the Contract.

iii. Any Change Order or other amendment that increases the total cost of the Contract to be equal to or greater than five hundred thousand and 00/100 dollars ($500,000.00) shall require the approval of City Council.

iv. In case a satisfactory adjustment in price cannot be reached for any item requiring a written Change Order, the City reserves the right to terminate the Contract as to said item as it applies to the terms in question and make such arrangements as may be deemed necessary to complete the Work.

v. The Contractor shall require subcontractors to certify to the best of their knowledge and belief that the cost and pricing data submitted are accurate, complete, and current as of the date of execution, which date shall be as close as possible to the date of agreement on the negotiated price of the Change Order.

vi. The Contractor shall not start Work on any alteration until the agreement, whether by Change Order or more formal amendment, setting forth the adjusted prices has been executed by the City and the Contractor, subject to all requirements of Title 1, Chapter 15 of the City of Littleton Code and the City’s procurement policy. All changes or approvals for increasing the

Work as required and authorized herein, shall be in written form and approved and signed by the City prior to the Work being done. All such writings and approvals shall be specific as to the nature of the Work and the quantities involved. Any Work performed without prior written approval of the City shall not be binding on the City.

1.3.3. *Field Order for Minor Changes.* The Project Manager ("Project Manager") may at any time, by issuing a Field Order, order minor changes in the Work not involving an increase or decrease in the Contract amount and not involving a change in the time for completion. If the Contractor believes that any order for minor changes in the Work involves changes in the Contract amount or time for completion, the Contractor shall not proceed with the minor changes so ordered and shall within seven (7) days of the receipt of such order notify the Project Manager in writing of the estimate of the changes in the amount and time for completion. Such estimate shall thereafter be treated as a Change Order Request.

1.3.4. *Equitable Adjustment.*

i. If the Contractor intends to assert a claim for an equitable adjustment under this Section, the Contractor shall, within 30 (thirty) days after receipt of a written Change Order or the furnishing of a written notice of requested changes by the Project Manager, submit to the Project Manager a written statement setting forth the general nature and monetary extent of such claim. No claim by the Contractor for an equitable adjustment hereunder will be allowed unless asserted as described above.

ii. In the event the Contractor and the City are unable to agree upon the Contractor's entitlement to an equitable adjustment or upon the amount thereof, or in the event that it is in the best interest of the City to have the Work proceed pending negotiation of amount of an equitable adjustment, the City may direct the Contractor to perform the Work in accordance with the Change Order, direction, instruction, interpretation, or determination, with any Work price adjustments and progress payments for the Work to be determined on a Force Account basis in accordance with Section 7.6 of the General Conditions. The Contractor shall continue diligently to perform the Work in accordance with the City's order, direction, instruction, interpretation, or determination during negotiations with respect to the Contractor's entitlement to an equitable adjustment hereunder or to the amount of any Work price adjustment hereunder or to the amount or any Work price adjustment or time extension. The Contractor and the City may agree on certain aspects of an equitable adjustment and take those aspects out of operation of Force Account provisions.

1.3.5. *Payments for Change Orders.*

i. Payment will not be made for Work or materials which are required under the Contract Documents and which are not specifically mentioned, indicated

or otherwise provided for in the Bid Schedule, if, in the opinion of the Project Manager, the Work or materials are susceptible of classification under or reasonably inferred to be included. in the Bid Schedule.

ii. In the event the Contractor is ordered to perform Work under this Section for which payments are not determined hereunder, which in the opinion of the City it is impracticable to have performed by the Contractor's own employees, the Contractor will, subject to the written approval of the Project Manager, be paid the actual cost of such Work and, in addition thereto, an amount of 10% (ten percent) of the actual costs to cover the Contractor's superintendence, administration and other overhead expenses. The terms and conditions of any subcontract which the Contractor may propose to enter into in connection with Work under the provisions of this Section, shall be subject to the written approval of the City before such subcontract is executed.

iii. In cases other than those described above, the City and the Contractor (on its own behalf and on behalf of its subcontractors) shall endeavor to negotiate a reasonable price and line adjustment in a Change Order on terms appropriate to the changed Work. The Contractor will be required to submit a sufficiently detailed price bid supported with sufficient documentation so that the City can determine that (1) the bid reflects all impacts on the Work from Work additions, deletions and modifications shown in the Change Order; (2) the proposed prices are set out in such a way that their reasonableness can be evaluated against prices based on adequate price competition, unit prices, established catalog or market prices of commercial items sold in substantial quantities to the general public, prices set by law or regulation, recognized published price lists and indices, independently developed cost estimate and other appropriate price comparisons; and (3) cost-increase provisions relating to Work changes are complied with, including but not limited to City of Littleton City Manager or City Council approvals. If any prices or other aspects are conditional, such as on firm orders being made by a certain date or the occurrence or non-occurrence of an event, the Contractor shall identify these aspects in the Change Order Request. A negotiated Change Order shall set forth prices, scheduling requirements, time extensions and all costs of any nature arising out of the issuance of a Change Order except for those cost and time aspects explicitly reserved on the face of the Change Order.

1.3.6. *Claims for Concealed or Unknown Conditions*. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents; or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing Party shall be given to the other Party promptly before conditions

are disturbed and in no event later than seven (7) days after first observance of the conditions. Site conditions which an experienced and prudent contractor could have anticipated by visiting the site, familiarizing themselves with the local conditions under which the work is to be performed and correlating observations with the requirements of the Contract Documents, shall not be considered as claims for concealed or unknown conditions, nor shall the locations of utilities which differ from locations provided by the utility companies. The Project Manager will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or the required time for, performance of any part of the Work, will recommend an equitable adjustment in the cost and/or time. If the Project Manager determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Project Manager shall so notify the Contractor in writing, stating the reasons. Claims by either Party in opposition to such determination must be made within twenty-one (21) days after the Project Manager has given notice of the decision. If the City and Contractor cannot agree on an adjustment in the cost and/or time, the adjustment shall be subject to further proceedings pursuant to Section 1.3.4 and Section 1.3.9 of the General Conditions, which shall apply to claims by either Party, notwithstanding language in said Sections that they apply only to claims brought by the Contractor.

1.3.7. *Inspection, Recordkeeping.* For any Change Orders, the Contractor shall maintain, and the City or the City's representatives shall have the right to examine books, records, documents and other evidence and accounting principles and practices sufficient to reflect properly all direct and indirect costs of whatever nature claimed to have been incurred and anticipated to be incurred for the performance of the Contract changes. At the request of the City, the Contractor shall submit any documents reasonably necessary to permit adequate evaluation of the cost or pricing data submitted including, but not limited to, computations, projections, price competition, catalog and market prices, etc. If inadequate or incomplete documentation is submitted, the City may refuse to complete negotiation until such a time that satisfactory documentation is submitted. The requirements of Section are in addition to other audit, inspection and record keeping provisions elsewhere in the Contract Documents.

1.3.8. Changes involving aggregate increases and decreases in excess of one hundred thousand dollars and 00/100 ($100,000.00) shall be subject to the following:

a. A change, defined for the purposes of this Section, involves aggregate increases and decreases in excess of one hundred thousand dollars and 00/100 ($100,000.00) if the total value of Work affected, without regard to any increases or decreases, exceeds this amount. For example, a Change Order adding Work in the amount of seventy-five thousand dollars and 00/100 ($75,000.00) and reducing Work in the amount of fifty-thousand dollars and 00/100 ($50,000.00) will be considered to involve aggregate increases and decreases of $125,000.00.

b. The Contractor shall submit, in support of all items not based upon unit prices or lump sum prices contained in the Contract or upon the established prices at which commercial items are sold in substantial quantities to the public, statements by vendors that the prices charged the Contractor are not greater than the prices charged by the respective vendors to their most favored customers for the same items in similar quantities.

c. Pricing shall be reduced accordingly, and the Contract shall be modified in writing accordingly to reflect such reduction, if any price (including profit and fee) negotiated in connection with any price adjustment was increased by any significant sums because:

(1) The Contractor furnished cost or pricing data which were not complete, accurate, or current as certified in the Contractor's pricing data; or

(2) Adjustments or any subcontract provisions therein required, furnished costs or pricing data which were not complete, accurate, and current as certified in the subcontractor's pricing data.

Any reduction in the Contract price due to defective subcontractor data of a prospective subcontractor, when the subcontract was not subsequently awarded to such subcontractor, will be limited to the amount (plus applicable overhead and profit markup) by which the actual subcontract, was less than the prospective subcontract cost estimate submitted by the Contractor, provided the actual subcontract price was not affected by defective cost or pricing data; or the Contractor shall require subcontractors to certify to the best of their knowledge and belief that the cost and pricing data submitted are accurate, complete, and current as of the date of execution, which date shall be as close as possible to the date of agreement on the negotiated price of the Change Order.

1.3.9. In case a satisfactory adjustment in price cannot be reached for any item requiring a Change Order, the City reserves the right to terminate the Contract as to said item as it applies to the terms in question and make such arrangements as may be deemed necessary to complete the Work.

1.4. **OMITTED ITEMS**: The Project Manager may, in writing, order omitted from the Work any item other than Major Items, which are found by the Project Manager or City to be unnecessary to the Project and such omission shall not be a waiver of any condition of the Contract nor invalidate any of the provisions thereof. Major Items may be omitted by amendments to the Contract. The Contractor will be paid for all Work performed toward the completion of the item prior to such omission as provided in Section 7.5 of the General Conditions.

1.5. **EXTRA WORK**:

1.5.1. When additional Work is necessary for the proper completion of the Project for which no quantities or prices were given in the Contract, the same shall be called “Extra Work” and shall be performed by the Contractor when so directed in writing by the Project Manager. Extra Work shall be performed by the Contractor in accordance with these Specifications in a skillful and workmanlike manner and as may be directed by the Project Manager.

1.5.2. Prices for Extra Work shall be itemized and covered by a Change Order. Pricing shall be submitted by the Contractor and approved by the City prior to the actual starting of such Work, in accordance with Section 1.3 of the General Conditions. Should the Parties be unable to agree on unit prices for the Extra Work or if this method of pricing is impractical, the Project Manager may instruct the Contractor to proceed with the Work by day labor or Force Account as hereinafter provided in Section 7.6. of the General Conditions. Claims for Extra Work not authorized in writing by the Project Manager prior to the Work being performed will be rejected and the Contractor shall not be compensated for.

1.5.3. Extra Work shall not include materials, labor or equipment which is incidental or appurtenant to the Work indicated on the drawings and in the Specifications. Such Work shall be completed and paid for as part of the Work to which it is appurtenant.

1.6. **UNAUTHORIZED WORK**: Work performed beyond the lines and grades shown on the Contract drawings, approved Work and Shop Drawings and Extra Work done without written authorization will be considered unauthorized work and the Contractor will receive no compensation therefore. If required by the City, unauthorized work shall be remedied, removed or replaced by the Contractor at the Contractor's expense. Upon failure of the Contractor to remedy, remove or replace unauthorized Work, the City may take action as provided in Section 2.11 of the General Conditions.

1.7. **MAINTENANCE AND CONTROL OF TRAFFIC**:

1.7.1. Unless the Contract specifically provides for the closing to traffic of any local road or highway while construction is in progress, such road or highway shall be kept open to all traffic by the Contractor. The Contractor shall also provide and maintain in a safe condition temporary approaches, crossings or intersections with roads and highways.

1.7.2. The Contractor will provide their own traffic control, including flagging, traffic control supervisor, and traffic control devices for the duration of the Project per the most current edition of the Manual on Uniform Traffic Control Devices (“MUTCD”). Traffic control plans will be required for City review and approval prior to commencement on Work.

1.7.3. The Contractor shall bear all expense of maintaining traffic over the section of road

affected by the Work to be done under this Contract, and of constructing and maintaining such approaches, crossings, intersections and any accessory features without direct compensation, except as otherwise provided.

1.8. **REMOVAL AND DISPOSAL OF STRUCTURES AND OBSTRUCTIONS:** All structures or obstructions found on the site and shown on the Plans which are not to remain in place or which are not to be used in the new construction shall be removed as directed by the Project Manager. Unless specified in the Contract, this Work will not be paid for separately but will be included in the price bid for that portion of the Work requiring the removal of the obstruction. All material found on the site or removed therefrom shall become the property of the Contractor unless otherwise indicated. Materials determined by the Project Manager to be unsuitable for backfill shall be disposed of off the site at the Contractor's expense.

1.9. **USE OF MATERIALS FOUND ON THE WORK**:

1.9.1. The Contractor, with the approval of the Project Manager, may use in the proposed construction, any stone, sand, or gravel found on the site. The Contractor will not be paid for such excavation unless specifically stated in the Contract, and the Contractor shall replace with other suitable material, without compensation, all of that portion of the material so removed and used as was contemplated for use in the embankments or otherwise. If it was intended that any or all of the material so excavated and used was to have been wasted, then the Contractor will not be required to replace it. The Contractor shall not excavate any material from the site which is not within the excavation as indicated by the slope and grade lines, without being authorized in writing by the Project Manager.

1.9.2. Specific job mix designs conforming to specifications for any Work shall be submitted for Project Manager approval within 10 (ten) days of the Notice to Proceed, or a minimum of seven (7) days prior to use of the material. This material approval applies to asphaltic concrete paving materials, concrete, aggregate base course, and fine grading material.

1.10. **FINAL CLEAN UP**:

1.10.1. During the Project's final cleanup, the Contractor shall remove from the site(s) all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The streets and adjacent properties in the Project shall be repaired to as good or better condition than existed prior to construction. This shall include removal of all dirt or mud from streets and lawns. No extra payment shall be made for these items. The Contractor shall leave the site(s) in a neat and presentable condition.

1.10.2. The Contractor shall provide written notification to the Project Manager that the Work is complete and the site is ready for final inspection. If the Project Manager determines that the Work is not complete, they will immediately notify the

Contractor in writing stating the reasons. If the Project Manager determines the Work is complete, the City will inspect the Work within seven (7) r days and prepare a final cleanup list. When the final cleanup list is completed by the Contractor and inspected by the Project Manager, the Project Manager will initiate the acceptance and final payment procedures as set forth in Section 7.9 of the General Conditions. The final cleanup shall be completed before the expiration of the Contract's term as set forth in the Contract Documents.

1.11. **DELAYS**: No payment, compensation, damages, or adjustment of any kind, other than extension of time if received in writing from the City shall be made to, or claimed by, the Contractor because of hindrances or delays from any cause in the commencement, prosecution, or completion of the Work, whether caused by the City or any other party and whether avoidable or unavoidable other than as set forth in a Change Order described fully above.

SECTION 2
CONTROL OF THE WORK

2.1. **AUTHORITY OF PROJECT MANAGER**: The Project Manager shall decide any and all questions which may arise as to the quality and acceptability of the materials furnished, the Work performed, the manner of performance and the rate of progress of the Work. The Project Manager shall decide all questions which may arise as to the interpretation of the Plans and Specifications, all questions as to acceptable fulfillment of the Contract, all disputes and mutual rights by the contractors if there be more than one contractor on the Work, and all questions as to compensation. The decision of the Project Manager shall be final and shall have executive authority to make effective such decisions and to enforce the Contractor to carry out all orders promptly.

2.2. **PLANS AND SHOP DRAWINGS**:
This Section 2.2 shall be included in all subcontracts hereunder at all times.

2.2.1. The Contractor shall bring discrepancies between different Plans, or between Plans and Specifications, or regulations and codes covering the Work to the attention of the Project Manager in writing. In the event such discrepancies exist and the Project Manager is not so notified, the Project Manager shall reserve the right to exercise sole arbitration authority. It is mutually agreed that all authorized alterations affecting the requirements and information given on the approved Plans shall be in writing and approved by the Project Manager.

2.2.2. The Plans will be supplemented by Shop Drawings as necessary to adequately control the Work or as specified. Shop Drawings are not part of the Contract Documents. Shop Drawings may consist of drawings, diagrams, illustrations, schedules, calculations, and other data prepared by the Contractor, subcontractor, manufacturer, supplier, or distributor, which illustrate how specific portions of the Work shall be fabricated and/or installed in accordance with the Plans and

Specifications. Any Work performed prior to the City's approval of Shop Drawings will be at the Contractor's risk and expense.

2.2.3. The Project Manager may request additional details and require the Contractor to make changes in the design which are necessary to conform to the provisions and intent of these Specifications without additional cost to the City.

2.2.4. Approval of the Shop Drawings by the Project Manager shall not be construed as a complete check and verification but will indicate that general conformance with the design concept and general compliance with the information given in the Contract has been achieved. Any information or action to be taken as set forth in the Shop Drawings is subject to the requirements of the Plans and Specifications. The Contractor shall be responsible for all dimensions and quantities shown on the Shop Drawings. The Project Manager shall be notified in writing and shall take appropriate action for any information in the Shop Drawings that deviates from the requirements of the Contract Documents.

2.2.5. Approval by the Project Manager of the Contractor's Shop Drawings shall not relieve the Contractor of its obligation to meet all requirements of the Plans and Specifications and shall not relieve the Contractor of its responsibility for the correctness of the Shop Drawings.

2.2.6. Five (5) sets of Shop Drawings shall be submitted to the Project Manager either in hard copy format or electronic format. No faxed copies will be accepted. After inspection, two sets will be returned to the Contractor; one for the Contractor's use and the other for the fabricator or supplier's use. Shop Drawings being returned will be stamped to indicate the following:

i) Shop Drawings approved for use in construction will have one of the following statements checked: Approved; No Exception Taken; or Approved as Noted; or

ii) Shop Drawings to be corrected or redrawn and resubmitted for approval will have one of the following statements checked: Revise as Noted; Resubmit; or Rejected.

If Shop Drawings are returned for correction, corrections shall be made and the corrected drawings shall be resubmitted by the Contractor in the same manner as the first submittal. The time required for approval of each submittal will not exceed four (4) weeks after Shop Drawings are received by the Project Manager.

It is the intent that no more than two submittals will be required. If, however, additional submittals are required by actions of the Contractor, the additional time for Shop Drawing approval will be borne by the Contractor. If additional submittals are required, or if Shop Drawing approval is delayed by actions of the Project Manager, and if the Contractor's controlling operations are delayed or interfered with by reason of the delay in Shop Drawing reviews, an extension of time

commensurate with the delay in completion of the Work thus caused will be granted as provided herein.

Specifications for the Shop Drawings:

i) Electronic Shop Drawings and work drawings are preferred.

ii) All manually-drafted Shop Drawings shall be 34 inches long and 22 inches wide overall. There shall be a two-inch margin on the left side of the sheet and one-half inch margin on the other three sides. A blank space, six inches by three inches, shall be left near the lower right-hand corner for an approval stamp. Computer drafted 11-inch by 17-inch drawings may be submitted.

   a. Where design notes or catalogue cuts are required, they may be submitted on 8 1/2 inch by 11-inch sheets in lieu of the size mentioned above.

ii) There shall be a title block in the lower right-hand corner of each sheet. The title block shall show the City's name, structure number, the location of the structure, and the contents of the sheet.

iii) The Contract price will include the cost of furnishing all Shop Drawings. Shop Drawings and working drawings submitted to the Project Manager by the Contractor, subcontractor or any lower tier subcontractor pursuant to the Work, may be duplicated by the City and the City may use and disclose in any manner and for any purpose such Shop Drawings and working drawings delivered under this Contract.

2.3. **OPERATING MANUALS AND PARTS LISTS**: The Contractor shall submit four (4) complete operating manuals and parts lists to the Project Manager for all items of mechanical and electrical equipment incorporated into the Work.

2.4. **AS-BUILT DRAWINGS**: The Contractor shall maintain a set of drawings at the site, with all changes or deviations from the original drawings neatly marked thereon in brightly contrasting color. This shall be a separate set of drawings, not used for construction purposes, which shall be kept up-to-date as the job progresses and shall be made available for inspection by the Project Manager at all times. Upon completion of the Contract, this set of drawings shall be delivered to the Project Manager.

2.5. **CONFORMITY WITH PLANS AND ALLOWABLE DEVIATIONS**: Finished surfaces shall conform with lines, grades, cross sections and dimensions shown on the approved Plans. Any deviation from the approved Plans and working drawings, as may be required by the demands of construction, will in all cases be determined by the Project Manager and authorized in writing.

2.6. **COORDINATION OF SPECIFICATIONS, PLANS AND SPECIAL PROVISIONS**: The Specifications, Plans, Special Provisions, and all supplementary Plans and documents are essential parts of the Contract, and a requirement occurring in one is as

binding as though occurring in all. They are intended to be cooperative to describe and provide for a complete Work. In case of discrepancy, figured dimensions, unless obviously incorrect, shall govern over scaled dimensions. Plans shall govern over Specifications and Special Provisions shall govern over both Plans and Specifications. The Contractor shall not use to its advantage any apparent error or omission in the Plans or Specifications. In the event the Contractor discovers any apparent error or discrepancy, the Contractor shall immediately request the Project Manager's interpretation and decision, and such decision shall be final. In the event contradiction and/or conflicts occur in the Specifications not otherwise covered by Special Provisions, the Specifications deemed by the Project Manager to be most restrictive shall govern.

2.7. **CONSTRUCTION SURVEYING**: The Contractor will furnish and set all construction stakes. The Project Manager will review the stakes. The Contractor shall be held responsible for the proper preservation of all marks and stakes. If, in the opinion of the Project Manager, any marks or stakes have been willfully or carelessly disturbed or destroyed by the Contractor, its employees, or subcontractors, the cost of replacing them will be charged against the Contractor and be deducted from the final payment.

2.8. **RIGHT OF ENTRY**: At all times, the City shall have the right to enter and inspect the Project premises.

2.9. **AUTHORITY AND DUTIES OF INSPECTORS**:

2.9.1. All Work shall be subject to inspection and testing by the City at all reasonable times and at all places prior to acceptance. Inspectors, employed by the City, are authorized to inspect all Work done and all material furnished. Such inspection may extend to all of any part of the Work and to the preparation, fabrication, or manufacture of the materials to be used. The Inspector is not authorized to revoke, alter, or waive any requirements of the Plans and Specifications. The Inspector is authorized to call to the attention of the Contractor any failure of the Work or materials to conform to the Specifications and Contract Documents.

2.9.2. The Inspector shall have the authority to reject materials or suspend the Work until any question at issue can be referred to and decided by the Project Manager. If the Contractor refuses to suspend operations on verbal order, the Inspector shall issue a written order giving the reason for shutting down the Work. Work performed during the absence of the Inspector will not be accepted nor paid for by the City.

2.9.3. Inspections by the City or others shall not relieve the Contractor from its obligations to perform the Work in accordance with the requirements of the Contract Documents and to also inspect its own Work.

2.9.4. Any plan of action, method of work or construction procedure suggested to the Contractor by the City or City contractors, whether orally or in writing, if adopted or followed by the Contractor in whole or in part, shall be at the sole risk and responsibility of the Contractor.

2.9.5. The Inspector shall neither act as foreman or perform other duties for the Contractor nor interfere with the management of the Work by the Contractor. Any advice which the Inspector may give the Contractor shall, in no way, be construed as binding to the Project Manager in any way or releasing the Contractor from fulfilling any of the terms of the Contract.

2.10. **INSPECTION**:

2.10.1. Until final payment, all parts of the work may be subject to inspection and testing by the City. The Contractor shall furnish, at its own expense, all reasonable access, assistance, and facilities required by the City for such inspection and testing. The Contractor shall furnish the Project Manager with every reasonable facility for ascertaining whether the Work performed and materials used are in accordance with the requirements and intent of the Specifications and Contract. In the event of night Work, the Contractor shall furnish proper lighting to adequately perform and inspect the Work being performed.

2.10.2. Upon request from the Project Manager, the Contractor shall, at any time before acceptance of the Work, remove or uncover such portion of the finished Work as may be directed. After examination, the Contractor may restore said portions of the Work to the standard required by the Specifications. Should the Work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the coverage or making good of the parts removed, may be paid for as Extra Work; but should the Work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed, shall be at the Contractor's expense. Any Work performed or materials used by the Contractor without suitable supervision or inspection by the City shall be ordered removed and replaced at the Contractor's expense.

2.10.3. If the Contractor does not promptly replace rejected material or correct rejected workmanship, the City may (a) by separate Contract or otherwise, replace such material or correct such workmanship and charge the cost thereof to the Contractor; or (b) terminate the Contractor's right to proceed in accordance with this Agreement pursuant to Section 4.10 of the General Conditions. Such inspection and test is for the sole benefit of the City and shall not relieve Contractor of the responsibility of providing quality control measures to assure that the Work strictly complies with the Contract. No inspection or test by the City shall be construed as constituting or implying acceptance. Inspection or test shall neither relieve Contractor of responsibility for damage to or loss of the material prior to acceptance, nor in any way affect the continuing rights of the City after acceptance of the completed Work.

2.10.4. Any Work outside the normal five (5) day, forty (40) hour week will require the Project Manager or Inspector on the job. All inspection so required shall be

done at the Contractor's expense and the cost thereof may be deducted from the final payment. Overtime inspection may be conducted by the City at the Contractor's expense at one hundred dollars and 00/100 ($100.00) per hour. The payment by the Contractor of overtime inspection fees shall not relieve the Contractor from the liquidated damages provisions as specified in Section 4.8 of the General Conditions.

2.11. **REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK**:

2.11.1. All Work which has been rejected or condemned by the City shall be repaired, or if it cannot be satisfactorily repaired, be removed and replaced at the Contractor's expense. At the Project Manager's discretion, the following unauthorized work shall neither be measured nor paid for by the City, and may need to be removed at the Contractor's sole expense:

i. Work performed beyond the lines and grades shown on the Plans, or as given, except as herein provided; or
ii. Work performed without giving timely notice to the Project Manager so the Project Manager may elect to be present to observe the Work in progress; or
iii. Any Extra Work or unclassified Work performed without prior City written authority and price agreement.

2.11.2. If directed by the City, should the Contractor fail to satisfactorily repair or remove and replace rejected, unauthorized, or condemned Work immediately after receiving formal notice from the Project Manager, the City may, at its sole discretion, recover for such defective Work on the Contractor's Bond or by action in a court having proper jurisdiction over such matters, or the City may employ labor and equipment and satisfactorily repair or remove and replace such Work and charge the cost of the same to the Contractor, which cost will be deducted from any payments due to the Contractor.

2.12. **SUPERVISION AND SUPERINTENDENCE**:

2.12.1. The Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor shall be responsible to see that the completed work complies with the Contract Documents.

2.12.2. The Contractor shall designate and keep on any work site at all times during its progress, a competent superintendent who shall not be replaced without prior written notice to the Project Manager. The Contractor shall provide contact information for the superintendent who may be reached twenty-four (24) hours per day. The superintendent will be the Contractor's representative at the site and shall have authority to act on behalf of the Contractor. All communications given to the

superintendent shall be as binding as if given to the Contractor. During periods when the Work is suspended, the Contractor shall make appropriate arrangements for any emergency work which may be required.

2.12.3. Whenever the superintendent is not present on any particular part of the Work where the Project Manager may desire to inform the Contractor relative to interpretation of the Plans and Specifications or to disapprove or reject materials or Work performed, the Project Manager may so inform the foreman or other worker in charge of the particular part of the Work in reference to which the information is given. Information so given shall be as binding as if given to the superintendent.

2.12.4. The Contractor will be supplied with four (4) copies of the Plans, and three (3) copies of the Specifications and Special Provisions. The Contractor shall have available on the work site at all times one copy each of said Plans, Specifications and Special Provisions, exclusive of the set designated for as-built drawings in Section 2.4 of the General Conditions. Additional copies of Plans, Specifications and Special Provisions can be obtained by the Contractor at the cost of reproduction.

SECTION 3
CONTROL OF MATERIAL

3.1. **MATERIAL**:

3.1.1. Unless otherwise indicated in this Contract, equipment, material and products incorporated in the Work covered by this Contract, shall be new and of the grade specified for the purpose intended. Unless otherwise specifically indicated, reference to equipment, material, product, or patented process by trade names, make or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition, and the Contractor may, with permission from the Project Manager, use any equipment, material, article, or process which is equivalent to that named, subject to the requirements of this Section.

3.1.2. Within the scope of their authority, the Project Manager shall be the sole judge of the quality and suitability of proposed alternative equipment, material, article or process. The burden of proving the quality and suitability of the alternative shall be upon the Contractor. Information required by the Project Manager in judging an alternative shall be supplied by the Contractor at the Contractor's expense.

3.2. **APPROVAL AND ACCEPTANCE OF MATERIALS**:

3.2.1. Samples of all materials to be tested may be taken by the Project Manager or their authorized representative at the discretion of the Project Manager. Materials may be sampled either prior to shipment or after being received at the work site. All

sampling, inspection, and testing shall be done in accordance with the Specifications contained in the Contract Documents.

3.2.2. The Contractor shall provide such facilities as the City may require for conducting field tests and for collecting and forwarding samples. The Contractor shall not use or incorporate into the Work any materials represented by the samples until tests have been approved by the City. Any material, which after approval, has for any reason become unfit for use, shall not be incorporated into the Work.

3.2.3. Tests or approvals by the Project Manager or others shall not relieve the Contractor from its obligations to perform the Work in accordance with the requirements of the Contract Documents.

3.3. **CITED SPECIFICATIONS; SAMPLES AND TESTS**:

3.3.1. Except as otherwise provided, sampling and testing of all materials, and the laboratory sampling and testing of equipment required under these Specifications, shall be in accordance with the current edition of the American Society for Testing Materials ("ASTM") publication of standards, adopted and in effect on the date of the City's solicitation for bids.

3.3.2. When designated, sampling and testing of materials shall be in accordance with the current edition of the American Standards Association ("ASA") Specifications; the current edition of The American Association of State Highway and Transportation Officials ("AASHTO") publication Standard Specification for Highway Materials and Methods of Sampling and Testing; the current edition of the American Water Works Association Specifications; the current edition of the Federal Specifications or the current edition of MIL Specifications adopted and in effect on the date of City's solicitation for bids.

3.3.3. The testing of all samples and materials shall be made at the expense of the City, when specified herein as by the City, unless the tests reveal nonconformance in which case said costs shall be reimbursed by the Contractor to the City. The Contractor shall furnish the required samples without charge to the City. The Contractor shall give sufficient notification of the placing of orders for materials in order to permit the Project Manager to arrange for appropriate testing.

3.4. **STORAGE**: Materials shall be stored to insure the preservation of their quality and fitness for the Work. When necessary, they shall be placed on wooden platforms, or other hard, clean surfaces and not on the ground and shall be placed under cover when directed. Stored materials shall be located to facilitate prompt inspection.

3.5. **SUBSTITUTION OF MATERIALS AFTER AWARD OF CONTRACT**: Substitution of equipment and materials of makes and types other than those specified and/or those approved in advance by the Project Manager will be considered for approval only as hereafter provided:

i. Proposed substitutes shall be equal or superior to items specified or previously approved.

ii. The Contractor shall submit any requests on its letterhead in duplicate within two (2) weeks after the date of Contract execution. The request for substitutions shall include a complete written list submitted at one time and must be accompanied by a statement outlining reasons for each requested substitution. The request shall include catalog number, technical data, cuts diagrams and such other descriptive data or samples as may be required, and a detailed statement listing all significant details in which each item requested for approval differs from the item specified. Such listing or the failure to list such information shall not relieve the Contractor from providing properly functioning and/or fitting materials, regardless of the approval action taken by the Project Manager. If so requested by the Project Manager, the Contractor shall submit samples of both the specified material or equipment and the proposed substitute. In case of a difference in price, the City shall receive all benefits of the difference for any substitutions, and the Contract amount shall be altered by Change Order to credit the City with any savings so obtained.

3.6. **DEFECTIVE MATERIALS**: All materials not conforming to the requirements of the Specifications shall be considered defective. Whether in place or not, such material shall be removed immediately from the work site, unless otherwise permitted by the Project Manager. No rejected material, the defects of which have been subsequently corrected, shall be used without prior approval from the Project Manager. Upon failure of the Contractor to comply promptly with any order the Project Manager made under the provisions of this Section, the City shall have authority to remove defective materials and to deduct the cost of removal and replacement with specified materials from any moneys due or to become due to the Contractor, or said costs of removal and replacement may be recovered in any action by the City against the Contractor's Bond.

3.7. **PROPERTY RIGHTS IN MATERIALS**: The Contractor shall have no property right in materials after they have been attached, affixed or incorporated in the Work or the soil, or after payment has been made by the City to the Contractor for materials delivered to the work site or stored subject to or under the control of the City.

3.8. **DAMAGE TO THE WORK AND RESPONSIBILITY FOR MATERIALS**:

3.8.1. The Contractor shall be responsible for materials delivered and Work performed until completion and Final Acceptance of the entire construction thereof.

3.8.2. The Contractor shall bear the risk of injury, loss or damage to any and all parts of the Work for whatever cause, whether arising from the execution or from the non-execution of Work. The Contractor shall rebuild, repair or restore Work and materials which have been damaged or destroyed from any causes before completion and acceptance of the Work and shall bear the expense thereof. The

Contractor shall provide security and drainage and erect temporary structures as necessary to protect the Work and materials from damage.

3.8.3. The Contractor shall be responsible for materials not delivered to the work site for which any progress payment has been made to the same extent as if the materials were so delivered.

SECTION 4
PERFORMANCE AND PROGRESS

4.1. **SUBCONTRACTING OR ASSIGNMENT OF WORK**:

4.1.1. No contractual relationship will be recognized under the Contract other than the contractual relationship between the City and Contractor.

4.1.2. No portion of the Contract shall be subcontracted, assigned or otherwise disposed of except with the written consent of the City and Surety, which consent shall not be unreasonably withheld.

4.1.3. Requests for permission to subcontract, assign or otherwise dispose of any portion of the Contract shall be in writing to the Project Manager and shall be accompanied by documents demonstrating the organization which will perform the Work is particularly experienced and equipped for such Work. Consent to subcontract, assign or otherwise dispose of any portion of the Contract shall not be construed to relieve the Contractor of any responsibility for the fulfillment of the Contract.

4.2. **COMMENCEMENT OF WORK**: The Contractor shall begin the Work within the prescribed amount of days set by the City in the written Notice to Proceed. The Contractor shall notify the Project Manager at least forty-eight (48) hours in advance of the time it intends to begin Work. Work shall be completed in the prescribed amount of days set by the City in the Contract Documents, including any Change Orders or amendment. The Contractor shall conduct Work in such a manner and with sufficient materials, equipment, and labor as is considered necessary to ensure its completion within the time limit set forth in the Contract. Should the prosecution of Work for any reason be discontinued by the Contractor, with the consent of the Project Manager, the Contractor shall notify the Project Manager at least forty-eight (48) hours in advance of resuming operations.

4.3. **LIMITATION OF OPERATIONS**: Each item of Work shall be performed to completion without delay and in no instance will the Contractor be permitted to transfer its force from uncompleted Work to new Work without the permission of the Project Manager. The Contractor shall not open up Work to the prejudice of Work already started.

4.4. **PROGRESS SCHEDULE**:

4.4.1. The Contractor shall prepare and submit to the Project Manager for approval five (5) days prior to the Preconstruction Conference, a practicable schedule, showing the order in which the Contractor proposes to carry on the Work, the date on which it will start the several salient features (including procurement of materials and

equipment) and the contemplated dates for completing the same. The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of Work scheduled for completion at any time. The Contractor shall enter on the chart the actual progress at such intervals as directed by the Project Manager and shall immediately deliver three (3) copies thereof. If the Contractor fails to submit a progress schedule within the time herein prescribed, the Project Manager may withhold approval of progress payment estimates until such time as the Contractor submits the required progress schedule.

4.4.2. The Contractor shall perform the Work in accordance with the latest approved progress schedule. If the progress of items along the critical path is delayed, the Contractor shall revise its planning to include additional forces, equipment, shifts or hours as necessary to meet the time or times of completion specified in this Contract. Additional costs resulting therefrom will be borne by the Contractor. The Contractor shall make such changes when progress at any check period does not meet at least one of the following two tests:

i. The percentage of dollar value of completed Work with respect to the total amount of the Contract is within 10% (ten percent) of the percentage of the Contract time elapsed; or

ii. The percentage of dollar value of completed Work is within 10% (ten percent) of the dollar value which should have been performed according to the Contractor’s network analysis previously approved by the Project Manager.

4.4.3. Failure of the Contractor to comply with the requirements under this Section will be grounds for determination that the Contractor is not performing the Work with such diligence as will ensure completion within the time of completion specified in this Contract. Upon such determination, the City may terminate the Contractor's right to proceed with the Work, or any separate part thereof, in accordance with the provisions contained herein. The City may extend the time periods reflected by Section 4.4.2 (i) or (ii) above, if it does not reasonably reflect upon the Contractor’s prosecution of the Work.

4.5. **CHARACTER OF WORKMEN AND EQUIPMENT**:

4.5.1. The Contractor shall employ such superintendents, foremen, and workmen as are careful and competent, and the Project Manager may demand the dismissal of any person employed or subcontracted by the Contractor in, about, or upon the Work who misconduct themselves or act incompetently or negligently in the proper performance of their duties, or neglects or refuses to comply with the directions given. Such person or subcontractor shall not be employed again thereon without the written consent of the Project Manager. Should the Contractor continue to employ, or again employ such person or subcontractor, the Project Manager may withhold all payments which are or may become due, or the Project Manager may suspend the Work until such orders are complied with.

4.5.2. In the employment of labor, preference shall be given, other conditions being equal, to residents of the area wherein the Work is being performed, but no other preference (except as may be required by special labor provisions) or discrimination among citizens of the United States shall be made. No convict labor shall be employed.

4.5.3. The Contractor shall furnish such equipment as is considered necessary for the prosecution of the Work in an acceptable manner and at a satisfactory rate of progress. All equipment, tools, and machinery used for handling materials and executing any part of the Work shall be subject to the approval of the Project Manager and shall be maintained in a satisfactory working condition. Equipment used on any portion of the Work shall be such that no injury to the Work, roadways, adjacent property, or other objects will result from its use. The Contract may be terminated if the Contractor fails to provide adequate equipment for the Work.

4.6. **TEMPORARY SUSPENSION OF WORK**: The City shall have the right to suspend, delay or interrupt the Work wholly or in part for such period as he may determine to be appropriate because of the failure on the part of the Contractor to properly perform the Work in accordance with the Contract, to carry out orders, or to remove defective material or Work. The Contractor shall not suspend the Work without written order given by the Project Manager, and prior to resuming Work shall give the Project Manager forty-eight (48) hours' prior notice to afford opportunity to reestablish supervision.

4.7. **DETERMINATION AND EXTENSION OF CONTRACT TIME FOR COMPLETION**:

4.7.1. The Contractor shall perform fully, entirely, and in a satisfactory and acceptable manner the Work, within the number of days stipulated in the Contract. Time will be assessed against the Contractor beginning with the actual date the Work is started in accordance with the Notice to Proceed. If the Contractor does not begin the Work within the limit as designated in the Notice to Proceed, the days shall start on the first day after the expiration of the limit as stated in the Notice to Proceed.

4.7.2. In adjusting the Contract time for the completion of the Project, all strikes, lockouts, unanticipated delays in transportation or any condition over which the Contractor has no control, and any suspensions ordered by the City for causes not the fault of the Contractor, shall be excluded from the computation of the Contract time for completion of the Work and the City may extend the time for completion in such amount as the conditions justify. In order to secure an extension of time for delays beyond its control, the Contractor, shall within 10 (ten) days from the beginning of any such delay, notify the Project Manager in writing of the causes of delay, where upon the Project Manager shall ascertain the facts and the extent of the delay and extend the time for completing the Work when, in their judgment, the findings of fact justify such an extension, and their finding of fact thereon shall be final and

conclusive. No allowances will be made for delays or suspensions of the performance of the Work which are in the control of the Contractor.

4.7.3. If the satisfactory execution and completion of the Contract shall require Work or materials in greater amounts or quantities than those set forth in the Contract, then the Contract time shall automatically be increased in the same proportion as the cost of the additional Work bears to the original Work contracted for.

4.8. **FAILURE TO COMPLETE WORK ON TIME**:

4.8.1. The City and Contractor agree and recognize that time is of the essence for every time period set forth in the Contract Documents and that the City will suffer financial loss if the Work is not substantially complete within the time set forth in the Contract Documents. If the Contractor fails to fully perform and complete the Work in conformity with the provisions and conditions of the Contract within the specified time limit for such performance and completion, or within such further time as, in accordance with the provision of this Contract, shall be fixed or allowed for such performance and completion, the City and Contractor agree that as liquidated damages, and not as a penalty, for the delay in performance, the Contractor shall pay to the City the amount stipulated below for each and every calendar day that expires after the time set forth in the Contract Documents until the same is finally complete and ready for final payment as provided herein.

Original Contract Amount	Amount of Liquidated Damages Per Day
Less than $100,000	$300.00
$100,000 and less than $500,000	$600.00
$500,000 and less than $1,000,000	$1,000.00
$1,000,000 and over	$1,500.00

4.8.2. The City shall recover inspection charges and damages by deducting the amount thereof out of any moneys which may be due or may become due to the Contractor, and/or by an action at law against the Contractor or its Surety. It is understood and agreed that aside from any other penalty or damage, all costs of the Project Manager and inspection on behalf of the City may be charged to the Contractor and be deducted from any estimate or payment otherwise due and payable.

4.8.3. If the Contractor fails to pay such liquidated damages promptly upon demand therefor, the Surety shall pay such damages. In addition, and at the City's option, the City may withhold all or any part of such liquidated damages from any payment due the Contractor.

4.9. **ADJUSTMENT FOR SUSPENDED WORK**:

4.9.1. In the event the Contractor is ordered by the City, in writing, to suspend Work for some unforeseen cause not provided for in the Contract, and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the job during the period of shutdown. No allowance will be made for lost profits. The period of shutdown shall be computed from the date set out in the written order for Work to cease until the date of the written order for Work to resume. Claims for such compensation shall be filed with the City within 10 (ten) days of the date of written order to resume Work, or such claims will not be considered. The Contractor shall submit with its claim substantiating papers covering the entire amount shown on the claim. The City shall take the claim under consideration, and may make such investigations as are deemed necessary, and shall be the sole judge as to the equitability of such claim and such decision shall be final.

4.9.2. Notwithstanding any provisions of this Contract to the contrary, no provision of this Section shall be construed as entitling the Contractor to compensation for delays due to inclement weather, delays due to failure of the Surety, for suspensions made at the request of the Contractor, or for any other delay provided for in the Contract Documents, Specifications, Special Provisions, Bid Schedule, Contract, Change Order or Field Order.

4.10. **TERMINATION OF CONTRACT FOR DEFAULT**:

4.10.1. The occurrence of any one or more of the following shall constitute an "Event of Default" of the Contract, for which the City may, at the City's option, terminate the Contract upon written notice to the Contractor:

i. The Contractor fails to start the Work on the date given in the Notice to Proceed, or the Contractor in any way abandons the Work;
ii. The Contractor's progress is insufficient to complete the Work within the specified time;
iii. The Contractor's willful or deliberate failure or violation to comply with any requirement of the Contract, including the Plans and Specifications and Special Provisions, or execution of Work by the Contractor in bad faith or otherwise not in accordance with its obligations;
iv. The Contractor fails to maintain any required Bonds, licenses, permits, and/or insurance as required in the Contract;
v. The Contractor fails to promptly repair, replace or remove any defects in materials or Work or any defects in materials or Work of any other nature, the correction of which has been directed in writing by the Project Manager;
vi. Substantial evidence of the Contractor's collusion for the purpose of illegally procuring a Contract or perpetrating fraud in the construction of Work;
vii. The Contractor files a voluntary petition in bankruptcy if a receiver is appointed for the Contractor or any of its property, or the insolvency of the Contractor;

viii. The Contractor allows any final judgment against it unsatisfied for a period of 10 (ten) days or longer, and makes an assignment for the benefit of creditors;

ix. The Contractor or any of its officers or employees are convicted, plead nolo contendre, enter into a formal agreement in which they admit guilt, enter a plea of guilty, or otherwise admit culpability to criminal offenses of bribery, kickbacks, collusive bidding, bid-rigging, anti-trust, fraud, undue influence, theft, extortion, or any offense of similar nature, in connection with the Contractor's business;

x. Other just causes for termination as determined by the City.

4.10.2. The City shall provide the Contractor and Surety with written notice of the City's intent to terminate. The Contractor and/or Surety shall have 10 (ten) days from receipt of notice to cure any default or to provide to the City a detailed plan, in writing, of how the Contractor will cure the causes for termination listed within the written notice. If a satisfactory effort has not been made by the Contractor or its Surety to correct the default within the prescribed period in the notice, or, if in the judgment of the City, any submitted written plan does not ensure satisfactory performance of the Work, the City may declare the Contract terminated and notify the Contractor and its Surety accordingly. Upon receipt of notice from the City that the Contract has been terminated, the Contractor shall immediately discontinue all operations. The City may then proceed with the Work in any lawful manner that it elects until completion.

4.10.3. The City reserves the right to take possession of any machinery, implements, tools, or materials of any description that shall be found upon the Work, to account for said equipment and materials, and to use the same to complete the Project. When the Work is thus finally completed, the total cost of the same will be computed. If the total cost is more than the Contract price, the difference shall be paid to the City either by the Contractor or its Surety. In case of termination, all expenses incident to ascertaining and collecting losses under the Bond, including City project management and legal services, shall be assessed against the Bond.

4.11. **TERMINATION FOR CONVENIENCE OF THE CITY**: This Contract and the performance of the Work hereunder may be terminated at any time, in whole or in part, for convenience. Any such termination shall be effected by delivery to the Contractor of a written notice ("Notice of Termination") specifying the extent to which performance of Work is terminated, the date upon which termination becomes effective, and any necessary actions to be taken by the Contractor to effectuate termination and close-out the Contract. If the Contract is terminated, the Contractor shall be paid on a prorated basis of Work satisfactorily completed, under the Work. The portion of Work satisfactorily completed but not yet accepted by the City shall be determined by the City.

4.12. **COOPERATION WITH OTHER CONTRACTORS**: In connection with the improvements under this Contract, the right is reserved by the City to award any Work not included in the Contract to another contractor for performance during the progress of this Contract, or to perform such Work with the City's forces, and the Contractor shall cooperate and so conduct its operation as to minimize the interference therewith, as directed by the Project Manager.

4.13. **TERMINATING OF CONTRACTOR'S RESPONSIBILITY**: This Contract will be considered complete when all Work and final cleanup has been finished, the Work has been accepted by the City, and all claims for payment of labor, materials, or services of any kind used in connection with the Work have been settled for by the Contractor or its Surety. The Contractor will then be released from further obligation except as set forth in the Bond and for its responsibility for injury to persons or property arising from its duties and obligations under Section 7 of the General Conditions. The Bond executed for performance of this Contract shall be in full effect for a period of one (1) year following acceptance of the Work; except with regard to the representation regarding copyright infringement found in Section 6.4 the Bond shall remain in effect for three (3) years, and except with regard to the representation regarding patent infringement found in Section 6.4 the Bond shall remain in effect for six (6) years. Neither the final payment nor any provision in the Contract Documents shall relieve the Contractor of the responsibility for negligence or faulty materials or workmanship. The Contractor shall warrant its work to be free from faulty materials or workmanship for the period of two (2) years after Final Acceptance, and upon written notice, the Contractor shall remove any defect due thereto and pay for any damage due to other Work resulting there from which shall appear within the two-year period. Remedied Work shall carry the same warranty as the original Work starting with the date of acceptance of the replacement or repair. Payment to the Contractor will not relieve the Contractor of any obligation under this Contract.

SECTION 5
WARRANTY

5.1. **SCOPE OF WARRANTY:**

5.1.1. The Contractor warrants that the Work and all of its components shall be free from defects and flaws in design, workmanship, and materials; shall strictly conform to the requirements of this Contract; and shall be fit, sufficient and suitable for the purposes expressed in, or reasonably inferred from, this Contract. The warranty herein expressed shall be in addition to any other warranties expressed or implied by law, which are hereby reserved unto the City. In all emergencies the Contractor shall immediately remedy, repair, or replace, without cost to the City and to the entire satisfaction of the City, defects, damages or imperfections due to faulty materials or workmanship appearing in said Work within said period of not less than two (2) years from the date of Final Acceptance. Remedied Work shall carry the same warranty as the original Work starting with the date of acceptance of the replacement or repair. Payment to the Contractor will not relieve the Contractor of any obligation under this Contract.

5.1.2. The Contractor, at no additional expense to the City, shall also remedy damage to equipment, the site, or the buildings or the contents thereof which is the result of any failure or defect in the Work, and restore any Work damaged in fulfilling the requirements of the Contract. Should the Contractor fail to remedy any such failure or defect within a reasonable time after receipt of notice thereof, the City will have the right to replace, repair, or otherwise remedy such failure or defect at the Contractor's expense.

5.1.3. Subcontractors', manufacturers', and suppliers' warranties and guarantees, expressed or implied, respecting any part of the Work and any material used therein shall be deemed obtained and shall be enforced by the Contractor for the benefit of the City without the necessity of separate transfer or assignment thereof.

5.1.4. The rights and remedies of the City provided in this Section are in addition to and do not limit any rights and remedies afforded by the Contract or by law. The Contractor specifically waives all the provisions of Chapter 8 of Article 20 of Title 13, C.R.S. regarding defects in the Work under the Contract.

5.2. **CITY'S RIGHT TO CORRECT**: If, within five (5) business days after the City gives the Contractor notice of any defect, damage, flaw, unsuitability, nonconformity, or failure to meet warranty subject to correction by the Contractor, or if the Contractor neglects to make, or undertake with due diligence to make the necessary corrections, then the City shall be entitled to make, either with its own forces or with contract forces, the corrections and to recover from the Contractor all resulting costs, expenses, losses, or damages, including attorneys' fees and administrative expenses.

5.3. **WARRANTY PERIOD**: Except where longer periods of warranty are indicated for certain items, the Contractor warrants Work under the Contract to be free from faulty materials and workmanship for a period of not less than two (2) years from date of Final Acceptance, with one (1) of those years being covered by the Bond, as specified in this Contract. In cases of warranty work, which is not an emergency, all necessary repairs shall be made within a reasonable time not to exceed twenty (20) days after notice of the required repair is received by the Contractor. For those items of warranty work which cannot be completed within said twenty (20)-day period, the Parties shall negotiate a reasonable period of time.

SECTION 6
LEGAL RELATIONSHIP AND RESPONSIBILITY TO THE PUBLIC

6.1. **LAWS TO BE OBSERVED**: The Contractor shall at all times observe and comply with all Federal, State and local laws, codes, ordinances, and regulations, which pertain to and affect the conduct of the Work, and the Contractor and its Surety shall indemnify and save harmless the City and all its officers, agents, employees, or any of their heirs, successors or assigns against any claim, judgment, demand, costs, liability or expenses, including but not limited to attorney's fees and costs of suit arising from or based on the

violation of any such law, ordinance, regulations, order, or decree, whether such claim, judgment, demand, costs, liability or expenses arises from actions by the Contractor, its employees, agents or subcontractors. Nothing contained herein shall be deemed to create liability for the Contractor for any design defects not managed by the Contractor.

6.2. **PERMITS AND LICENSES**: The Contractor shall, at its own expense, procure all permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the Work. Any costs incurred for these permits must be included in the unit costs.

6.3. **PAYMENT OF TAXES**:

6.3.1. With the exception of being exempt from City of Littleton Sales and Use taxes, the Contractor shall pay all sales and use taxes required to be paid, shall maintain such records in respect to its Work, which shall be separate and distinct from all other records maintained by the Contractor and shall be available for inspection by the City at any and all reasonable times, and shall furnish the City with such data, as may be necessary to enable the City to obtain any refunds of such taxes which may be available to the City under the laws, ordinances, rules or regulations applicable to such taxes. The Contractor shall require each of its subcontractors to pay all sales and use taxes required and to maintain such records and furnish the Contractor with such data as may be necessary to enable the City to obtain a refund of the taxes paid by such subcontractors.

6.3.2. In accordance with C.R.S. §§ 39-26-114 and 39-26-203, and the related regulation of the State of Colorado Department of Revenue, the Contractor shall apply to the State of Colorado Department of Revenue and secure prior to commencing Work, an exemption certificate which when issued by the State of Colorado Department of Revenue will enable the Contractor to purchase all materials free of State Sales and Use Taxes and Regional Transportation District ("RTD") Tax, provided that any building permit fee shall be included in any Bid Schedule with respect to the Work. Further, no Littleton sales and/or use tax shall be included in any billing with respect to the Work. This provision shall apply to all contractors, subcontractors and material suppliers. When Littleton sales tax is paid to licensed Littleton vendors for materials, which become part of the Work by a Contractor, the City of Littleton will refund that tax to the Contractor upon receipt of an application from the Contractor at the conclusion of the Contract. Accompanying the application must be the material receipt(s) displaying a description of the item(s) purchased, date of purchase, amount of purchase, tax paid and any other documentation and information which may be required by the City to substantiate the payment and validate a refund.

6.3.3. Contractors who purchase materials that become part of the Work that do not honor the exemption, and thereby who pay sales tax, will not be reimbursed for that tax payment by the City. The Contractor shall bear the risk of any added or increased taxes occurring during the performance of the Work. A change in taxes

shall under no circumstances entitle the Contractor to an adjustment under the Contract.

6.4. **PATENTED DEVISES, MATERIALS AND PROCESSES**: If the Contractor is required or desires to use any design, device, material or processes covered by patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the patentee or patent owner. The Contractor shall warrant that the materials, equipment or devices used on or incorporated in the Work shall be delivered free of any rightful claim of any third-party for infringement of any United States patent or copyright. If notified promptly in writing and given authority, information and assistance, the Contractor shall defend, or may settle, at its expense, any suit or proceeding against the City so far as based on a claimed patent or copyright infringement which would result in a breach of this warranty, and the Contractor shall pay all damages and costs awarded therein against the City due to such breach. In case any use of any materials, equipment or devices is in such suit held to constitute an infringement and such use is enjoined, the Contractor shall, at its expense and option, either procure for the City the right to continue using said materials, equipment or devices, or replace same with non-infringing materials, equipment or devices, or modify the same so it becomes non-infringing. The Contractor shall report to the City promptly and in reasonable written detail each notice or claim of patent or copyright infringement based on the performance of this Contract of which the Contractor has knowledge. In the event of any claim or suit against the City as a result of any alleged patent or copyright infringement arising out of the performance of this Contract or out of the use of any supplies furnished or Work or services performed hereunder, the Contractor shall furnish to the City when requested by the City, all evidence and information in possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the City except where the Contractor has agreed to indemnify the City. This clause shall be included in all subcontracts.

6.5. **SANITARY PROVISIONS**: The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of its employees as may be necessary to comply with the requirements and regulations of the State Department of Health and the Occupational Safety and Health Administration (“OSHA”). As stated in OSHA Construction Standard 1926.51 C, the Contractor shall supply temporary sanitary facilities as per the following table:

Number of Employees	Minimum Toilet Facilities
20 or less	1 Toilet
21 to 50	1 Toilet and 1 Urinal per 40 workers
51 or more	1 Toilet and 1 Urinal per 50 workers

This requirement to provide sanitary facilities will neither be measured nor paid for separately by the City, but shall be considered incidental to and included in the cost of the Work.

6.6. **PUBLIC CONVENIENCE AND SAFETY**:

6.6.1. The Contractor shall be solely and completely responsible for conditions of the Work site, including safety of all persons and property during performance of the Work. The Contractor shall fully comply with all applicable Federal, State and local laws, and rules and regulations governing safety of the public and workers. The Contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions on its own responsibility reasonably necessary to protect the life and health of employees on the job and the safety of the public, and to protect property in connection with the performance of the Work. Materials stored on the site shall be so placed and the Work shall, at all times, be so conducted as to cause no greater obstruction to traffic than is considered necessary by the Project Manager.

6.6.2. The Contractor shall not close any road to the public except by the express permission of the City. When the improvement under construction is being used by the traveling public, special attention shall be paid to keeping both the sub-grade and surfacing in such condition that the public can travel in comfort and safety. The Contractor shall cooperate with the Project Manager in the regulation of traffic. If the Contractor constructs temporary bridges or temporary stream crossings, the Contractor’s responsibility for accidents shall include the roadway approaches as well as the structures of such crossing.

6.6.3. The right of the Project Manager to conduct construction review or observation of the Contractor's performance will not include review or observation of the adequacy of the Contractor's safety measures in, on, or near the Work site.

6.7. **BARRICADES, SIGNS AND HAZARD MARKINGS**:

6.7.1. The Contractor shall provide, erect and maintain all necessary barricades, signs, danger signals and lights for the protection of the Work and the safety of the public. All barricades, signs and obstructions erected by the Contractor shall be illuminated at night and all devices for this purpose shall be kept illuminated from sunset to sunrise.

6.7.2. The Contractor shall be held responsible for all damage to the Work due to failure of barricades, signs, lights and watchman to protect it, and whenever evidence of such damage is found prior to acceptance, the Project Manager may order the damaged portion immediately removed and replaced by the Contractor without cost to the City if, in the opinion of the Project Manager, such action is justified. The Contractor's responsibility for the maintenance of barricades, signs and lights shall not cease until Work has been accepted.

6.8. **USE OF EXPLOSIVES**: When the use of explosives is necessary for the Work, the Contractor shall use the utmost care so as not to endanger life or property, and whenever directed by the Project Manager the number and size of the charges shall be

reduced. The Contractor shall notify the proper representatives of any public services corporation, the City, any company, or any individual at least eight (8) hours in advance of any blasting which may damage property on, along, or adjacent to the site. The Contractor shall comply with the requirements of Title 9, Article 7 of the C.R.S., as amended, titled "Explosive Permits". The Contractor shall also be required, at a minimum, to notify the Littleton Fire Department and the Littleton Police Department. All explosives shall be stored in a secure manner and all storage places shall be marked clearly "DANGEROUS EXPLOSIVES," and shall be in care of competent watchmen at all times.

6.9. **PROTECTION AND RESTORATION OF PROPERTY**:

6.9.1. The Contractor shall not enter upon private property for any purpose without first obtaining permission, and shall be responsible for the preservation of all public and private property, sod, trees, fences, monuments, underground structures, etc., on and adjacent to the site(s) and shall use every precaution necessary to prevent damage or injury thereto. The Contractor shall protect carefully, from disturbance or damage, all land monuments and property markers until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.

6.9.2. The Contractor shall be responsible for all damage or injury to property of any character resulting from any act, omission, neglect or misconduct in his manner, or method of executing said Work, or due to its non-execution of said Work, or at any time due to defective Work or materials, and said responsibility shall not be released until the Work has been completed and accepted by the City.

6.9.3. The Contractor's attention is directed to the importance of protecting all public utilities encountered on all projects. Such utilities may include, but are not limited to, telephone, telegraph and power lines, water lines, sewer lines, gas lines, railroad tracks, and other overhead and underground utilities, cable television lines and facilities. Before any excavation is to begin in the vicinity of water lines, railroad tracks or structures, sewer lines, cable television lines, gas lines or telephone conduits, each utility company concerned must be notified in advance of such excavation, and such excavation shall not be made until an authorized representative of the utility company concerned is on the ground and has designated the location of their facilities.

6.9.4. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect or misconduct in the execution of the Work, or in consequence of the non-execution thereof on the part of the Contractor, the Contractor shall restore, at its own expense, such property to a condition similar or equal to that existing before such damage or injury was done by repairing, rebuilding, or otherwise restoring, as may be directed; or the Contractor shall make good such damage or injury in an acceptable manner. In case of the failure on the part of the Contractor to restore such property, or to have started action to make good such damage or injury, the City may upon forty-eight

(48) hours' notice, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any moneys due or which may become due the Contractor under the Contract or prosecuted as a claim against the Contractor's Bond.

6.9.5. The cost of insurance for damages due to Contractor's operation or cost of protecting utilities where required to permit construction under this Contract shall be included in the original Contract prices for the Work.

6.10. **INDEMNIFICATION AND HOLD HARMLESS**: The Contractor and its Surety shall indemnify and save harmless the City, its officers, agents, employees, successors and assigns from all suits, demands, actions, or claims of any nature whatsoever brought or made against the City, its officers, agents, employees, successors or assigns from any injuries or damages sustained by any person, firm or corporation or property or resulting from or arising out of any neglect in safeguarding the Work; or through the use of unacceptable materials in the construction of the improvement; or as a result of any act or omission by the Contractor; or from the use, misuse, storage or handling of explosives; or on account of any claims or amounts recovered for any infringement of patent, trademark or copyright; or from any claims or amounts arising or recovered under Worker's Compensation laws, or any other law, by-law, ordinance, order or decree. Moneys due to the Contractor under and by virtue of the Work, as shall be considered necessary by the City, may be retained, or in case no money is due, the Contractor's Bond shall be held until such suit(s), action(s), or claim(s) for injuries or damages have been settled and satisfactory evidence has been furnished to the City.

6.11. **NO PERSONAL LIABILITY OF THE PROJECT MANAGER**: The Project Manager is an agent of City, and the Project Manager, its agents, heirs, successors and assignees shall have no liability to any third-party as a result of performance of this Contract.

6.12. **NO WAIVER OF LEGAL RIGHTS**: Inspection by the Project Manager or authorized City representatives, payment of money, payment for or acceptance of any Work or any extension of time, or possession taken by the City shall not operate as a waiver of any provision of the Contract, or any power therein provided. A waiver of any breach or term of the Contract shall not be deemed to be a waiver of any other or subsequent breach. The City reserves the right to correct any error that may be discovered in any estimate that may have been paid, and to adjust the same to meet the requirements of the Contract and Specifications. The City reserves the right to claim and recover, by process of law, sums as may be sufficient to correct any error or make good any deficit in the Work resulting from such error, dishonesty, or collusion discovered in the Work after the final payment has been made.

6.13. **RIGHTS-OF-WAY**: The City shall furnish all lands and rights-of-way required for completion of the Work. In acquiring rights-of-way, the City will proceed as expeditiously as possible, but in the event all rights-of-way or easements are not acquired prior to the beginning of construction, the Contractor shall begin Work on such lands and rights-of-

way as have been acquired. No claim for damage will be allowed or shall be made by reason of the City's delay in obtaining lands, easements or rights-of-way. In the event of litigation or other delays in acquiring rights-of-way, the time allowed herein for completion will be extended to compensate for the time actually lost by such delay.

SECTION 7
MEASUREMENT AND PAYMENT

7.1. **BONDS**.

7.1.1. Contemporaneous with the Contractor's execution of this contract, the Contractor shall provide a Performance Bond and a Labor and Material Payment Bond as security for the faithful performance and payment of all the Contractor's obligations under the Contract Documents. All bonds shall be in the form prescribed by the City, executed by a surety company i) licensed to do business in the State of Colorado; ii) with a general rating of A and a financial size category of Class X or better in Best's Insurance Guide, each in the penal sum of the contract price; and iii) in conformance with C.R.S. §§ 38-26-105 and 106 ("Bonds"). All Bonds signed by an agent or attorney-in-fact shall be accompanied by a certified copy of the signatory's authority to act. The Contractor shall, at all times while providing, performing, or completing the Work including without limitation at all times while correcting any failure to meet warranty pursuant to Section 5 of the General Conditions, maintain and keep in force the Bonds at the Contractor's expense.

7.1.2. If the Surety for any Bond furnished by the Contractor is placed in a receivership or declared bankrupt, or its rights to do business in Colorado are terminated, or it ceases to meet the requirements specified herein, the Contractor shall within five (5) days thereafter substitute another Bond and Surety, both of which shall be acceptable to the City.

7.2. **MEASUREMENT OF WORK PERFORMED**: The determination of the amount of Work acceptably completed under the terms of the Contract, or as directed by the Project Manager in writing, will be made by the Project Manager based on measurements taken by them or their authorized representatives. These measurements will be taken according to the United States standard measure. All surface and linear measurements will be taken horizontally unless otherwise shown on Plans or otherwise specified. Structures shall be measured to the neat lines as shown on the Plans, or as directed in writing by the Project Manager.

7.3. **SCOPE OF PAYMENT**:

7.3.1. The Contractor shall accept the compensation, as herein provided, in full payment for furnishing all materials, equipment, labor, tools, and incidentals necessary to complete the Work and for performing all Work contemplated and embraced under the Contract; for loss or damage arising from the nature of the Work, or from the

action of the elements, or from any unforeseen difficulties which may be encountered during the completion of the Work until the final acceptance by the City; for all risks of every description connected with the completion of the Work; for all expenses incurred in consequence of the suspension or discontinuance of the Work as herein specified; for any infringement of patent, trademark, or copyright; and for completing the Work according to the Plans and Specifications. Neither the payment of any partial payment nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective Work or material. No moneys payable under the Contract or any part thereof, except the partial payment for the first month period, shall become due and payable until the Contractor satisfies to the City that it has fully settled or paid for all materials and equipment used in or upon the Work and labor done in connection therewith. The City, if it so elects, may pay any or all such bills, wholly or in part, and deduct the amount or amounts so paid from any monthly or final partial payment excepting the first estimate.

7.4. **PAYMENT FOR INCREASED OR DECREASED QUANTITIES**: When alterations in the Plans or quantities of Work are ordered and performed without a written Change Order or amendment, the Contractor shall accept payment in full at the Contract unit price for the actual quantities of Work done, and only upon the City's review and approval of said Work. No allowance will be made for lost profits. Increased or decreased Work without a written Change Order will be paid for as stipulated herein.

7.5. **PAYMENT FOR OMITTED ITEMS**:

7.5.1. For any item omitted from the Work, the City will pay the Contractor a fair and equitable amount for costs incurred directly related to such item prior to the date of the City's order to omit the item, subject to Section 1.4 of the General Conditions. No allowance will be made for lost profits in reimbursements to the Contractor for omitted items of Work. Acceptable materials ordered by the Contractor or delivered to the Work site prior to the date of cancellation, alteration, or suspension of the Work by order of the Project Manager will be paid for at the actual cost to the Contractor and shall thereupon become the property of the City.

7.5.2. The Contractor shall immediately submit certified statements covering all money expended in preparation for any omitted item, and shall be reimbursed for any money expended in preparation for Work on any omitted item when such preparation has no value to the remaining items of the Contract, or for a proportionate amount based on the total Contract price over which such preparation would ordinarily be distributed when other items are included in such preparation.

7.6. **EXTRA AND FORCE ACCOUNT WORK**:

7.6.1. Extra Work, for which no price is provided in the Bid Schedule, shall be covered by Change Order to be signed by both Parties before such Work is commenced.

Extra Work will be paid for either at a lump sum, or unit prices agreed upon, or on a Force Account basis, subject to Section 1.5 of the General Conditions. For all labor, teams, and foremen in direct charge of the specific operations accomplished on a Force Account basis, the Contractor shall receive the current local rate of wage, to be agreed upon before starting the Work, to which shall be added 15% (fifteen percent) of the sum thereof to cover cost of supervision, the rental of small tools and ordinary equipment, additional Bond, Unemployment Insurance, all overhead and any other costs not specifically stated. In addition, the Contractor shall be paid a sum equal to the Worker's Compensation insurance premium, the actual costs of Social Security taxes computed on the base rate for the class of Work involved for the actual amount of the payroll, and the public liability and property damage insurance premium; provided, however, that nothing in this Section will change the legal status of the relationship between the Parties to this Agreement. For all materials furnished and used by the Contractor on a Force Account basis, the Contractor shall receive the actual cost of such materials, including transportation charges as shown by original receipted bills, to which shall be added 15% (fifteen percent) of said actual cost.

7.6.2. For machine power tools or equipment, including fuel and lubricant, used on Force Account Work, payment for the same will be made on a rental basis at the rate agreed upon between the Contractor and the Project Manager, to which rate no percentage shall be added.

7.6.3. The compensation as herein provided shall be received by the Contractor as payment for Extra Work done on a Force Account basis and subject to any conditions or limitations as specified in Section 1.5 of the General Conditions. The Contractor shall make no claim for Force Account Work, unless performed on written order and in accordance therewith. The Contractor's representative and the Inspector shall compare records of Extra Work done on a Force Account basis at the end of each day. Copies of these records shall be made upon suitable forms provided for this purpose and signed by both the Inspector and the Contractor's representative, one copy being forwarded to the Project Manager and one copy to the Contractor.

7.6.4. All claims for Extra Work done on a Force Account basis shall be submitted each month to the Project Manager by the Contractor upon certified statements, or upon forms furnished by the City. Work performed prior to a written order by the Project Manager will not be paid for.

7.7. **PARTIAL PAYMENTS**:

7.7.1. Partial progress payments shall be made by the City to the Contractor for the percentage of the Work completed, subject to inspection and approval by the Project Manager. The City shall determine when work has been completed, and progress payments shall not constitute a waiver of the City’s right to require fulfillment of all terms of the Contract Documents and the delivery of all Work

contemplated herein, complete and satisfactory to the City.

7.7.2. Once per month as the Work progresses, the Project Manager will make an estimate of the value of the Work performed and materials completed and in-place or delivered to the Work site in accordance with the Contract. Upon the Project Manager's request, the Contractor shall furnish a detailed estimate of the total Contract price showing the amount included therein for each category of Work, to provide a basis for determining the amount of progress payments. The market value of materials and equipment delivered to the Work site but not yet incorporated in the Work may, at the discretion of the City, be included with a progress payment. However, payment by the City for such materials and equipment shall not relieve the Contractor of the responsibility for the care of such materials and equipment; the City shall not be deemed to have assumed ownership of the materials or equipment until incorporated into the completed and accepted Work. Such increases to progress payments, if authorized, are intended only to reduce the cost of doing business with the City.

7.7.3. In accordance with C.R.S. § 24-91-103, where the Contract price exceeds one hundred fifty thousand dollars ($150,000.00), partial payments shall be authorized at the end of each calendar month, or as soon thereafter as practicable, to the Contractor upon satisfactory performance of the Contract. The City shall, from the total of the Contract estimate so ascertained, deduct an amount equivalent to five (5) percent of the whole, to be retained by the City until acceptance of the entire Contract and the balance of the sum equivalent to 95% (ninety-five percent) of the whole, shall be certified to by the Project Manager for payment.

7.7.4. The City shall retain from all progress payments an amount equal to all statutory claims filed against the Contractor pursuant to C.R.S. § 38-26-107. No partial payments except final payment will be made for a sum less than one thousand dollars ($l,000.00). The estimates will be approximate only, and all partial or monthly estimates and payments shall be subject to correction in the estimate and payment rendered following discovery of an error in any previous estimates or payments. Should any defective Work or material be discovered, or should a reasonable doubt arise as to the integrity of any part of the Work completed previous to the final acceptance and payment, the costs shall be deducted from the first payment rendered after the discovery of such Work an amount equal in value to the defective or questioned Work, and this Work will not be included in a subsequent estimate or payment until the defects have been remedied or the causes for doubt removed.

7.8. **PUNCH LIST AND FINAL ACCEPTANCE**. The Work shall be finally accepted when, and only when, the whole and all parts thereof shall have been completed to the satisfaction of City in full compliance with, and as required by or pursuant to, this Contract. Upon receipt of the Contractor's Written Notice of Completion, the City shall make a review of the Work and notify the Contractor in writing of all Punch List Work, if any, to be completed or corrected. Following the Contractor's completion or correction of all Punch

List Work, the City shall review the Work and prepare and deliver to the Contractor either a written notice of additional Punch List Work to be completed or corrected or a written notice of Final Acceptance of the Work.

7.9. **ACCEPTANCE AND FINAL PAYMENT**:

7.9.1. Two (2) weeks after acceptance of the Work including final cleanup, the City shall initiate the acceptance and final payment procedures. All prior partial estimates and payments shall be subject to correction in the final estimate and payment. Upon completion of the acceptance and final payment procedures, the Work will be considered accepted, the Contract considered complete, and, upon compliance with the provisions of State law, the final payment shall be executed and submitted to the Contractor.

7.9.2. The acceptance by the Contractor of the last payment as aforesaid shall operate as and shall be a release of the City from all claims for liability arising from the performance of the Work under the Contract, excepting any claims that may arise during the warranty period.

7.10. **LIENS.**

7.10.1. *Title*. Nothing in this Contract shall be construed as vesting in the Contractor any right of property in any equipment, materials, supplies, and other items provided under this Contract after they have been installed in, incorporated into, attached to, or affixed to, the Work or Work site. All such equipment, materials, supplies, and other items shall, upon being so installed, incorporated, attached or affixed, become the property of the City, but such title shall not release the Contractor from its duty to insure and protect the Work in accordance with the requirements of this Contract.

7.10.2. *Waivers of Lien*. The Contractor shall, from time to time at the City's request and in any event prior to final payment, furnish to the City such receipts, releases, affidavits, certificates, and other evidence as may be necessary to establish, to the reasonable satisfaction of the City, that no lien against the work or the public funds held by the City exists in favor of any person whatsoever for or by reason of any equipment, material, supplies, or other item furnished, labor performed, or other thing done in connection with the Work or this Contract ("Lien"), and that no right to file any Lien exists in favor of any person whatsoever.

7.10.3. *Removal of Liens*. If at any time any notice of any Lien is filed, the Contractor shall, promptly and without charge, discharge, remove, or otherwise dispose of such Lien. Until such discharge, removal, or disposition, the City shall have the right to retain from any money payable hereunder an amount that the City, in its sole judgment, deems necessary to satisfy such Lien and to pay the costs and expenses, including attorneys' fees and administrative expenses, of any actions brought in connection therewith or by reason thereof.

7.10.4. *Protection of City Only*. This Section shall not operate to relieve the Contractor's Surety or Sureties from any of their obligations under the Bonds, nor shall it be deemed to vest any right, interest, or entitlement in any subcontractor or supplier. The City's retention of funds pursuant to this Section shall be deemed solely for the protection of its own interests pending removal of such Liens by the Contractor, and the City shall have no obligation to apply such funds to such removal but may, nevertheless, do so where the City's interests would thereby be served.

7.11. **DEDUCTIONS.**

7.11.1. *City's Right To Withhold*. Notwithstanding any other provision of this Contract and without prejudice to any of the City's other rights or remedies, the City shall have the right at any time, to deduct and withhold from any progress or final payment that may be or become due under this Contract, such amount as may reasonably appear necessary to compensate the City for any actual or prospective loss due to:

i. Work that is defective, damaged, flawed, unsuitable, nonconforming, or incomplete;
ii. Claims or liens filed or reasonable evidence indicating probable filing of claims or liens from third-parties, regardless of merit;
iii. Failure of the Contractor to make payments properly and promptly to subcontractors for material or labor;
iv. Failure of the Contractor to complete any portion of the Work in compliance with an approved schedule;
v. Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract value;
vi. Failure of the Contractor to submit on a timely basis, any documentation required by the Contract Documents, including without limitation, monthly reports, schedules, or request for approval of subcontractors;
vii. Unauthorized Work or deviations by the Contractor from the Contract Documents;
viii. Damage to the City or to another contractor;
ix. State or local sales, use, or excise taxes from which the City is exempt;
x. Any other failure of the Contractor to perform any of its obligations under this contract; or
xi. The cost to the City, including attorneys' fees and administrative costs, of correcting any of the aforesaid matters or exercising any one or more of the City's remedies set forth within the Contract Documents.

7.11.2. *Release and Use of Withheld Funds*. The City shall be entitled to retain any and all amounts withheld pursuant to Section 7.11.1 above until the Contractor has either performed the obligations in question or furnished security for such performance satisfactory to the City. The City shall be entitled to apply any money withheld or any other money due to the Contractor under this Contract to reimburse itself for any and all costs, expenses, losses, damages, liabilities, suits, judgments, awards, attorneys' fees and administrative expenses incurred, suffered, or sustained by the City and chargeable to Contractor under this Contract.

7.11.3. *Waiver under C.R.S. § 38-26-107*. Execution of the Contract Documents by the Contractor shall constitute waiver by the Contractor to claim any right of payment of interest upon any such retained funds, or to claim any right of payment of interest upon funds withheld under the provisions of C.R.S. § 38-26-107.

SECTION 8
DISPUTES AND REMEDIES

8.1. DISPUTE RESOLUTION PROCEDURE.

8.1.1. *Notice of Disputes and Objections.* If the Contractor disputes or objects to any requirement, direction, instruction, interpretation, determination, or decision of the City, the Contractor may notify the City in writing of the issue and of the amount of any equitable adjustment to the Contract price or Contract time to which the Contractor claims it will be entitled as a result thereof; provided, however, that the Contractor shall, nevertheless, proceed without delay to perform the Work as required, directed, instructed, interpreted, determined, or decided by the City, without regard to such dispute or objection. Unless the Contractor so notifies the City within two (2) business days after receipt of such requirement, direction, instruction, interpretation, determination, or decision, the Contractor shall be conclusively deemed to have waived all such disputes or objections and all claims based thereon.

8.1.2. *Negotiation of Disputes and Objections.* To avoid and settle without litigation any such dispute or objection, the City and the Contractor agree to engage in good faith negotiations. Within 10 (ten) business days after the City’s receipt of the Contractor's written notice of dispute or objection, a conference between the City and the Contractor shall be held to resolve the dispute. Within 10 (ten) business days after the end of the conference, the City shall render its final decision in writing to the Contractor. If the Contractor objects to the City’s final decision, then it shall, within 10 (ten) business days give the City notice thereof and, in such notice, shall state its final demand for settlement of the dispute. Unless the Contractor so notifies the City, the Contractor shall be conclusively deemed to have agreed to and accepted the City’s final decision and to have waived all claims based on such final decision.

8.2. **DISPUTED CLAIMS FOR EXTRA WORK**: In case the Contractor deems extra compensation is due for Work or material not covered in the Contract Documents, or not ordered by the Project Manager as Extra Work, the Contractor shall notify the Project Manager in writing of its intention to make claim for such extra compensation before beginning Work on which the Contractor bases the claim, and shall afford the Project Manager every facility for keeping actual cost of the Work. Failure on the part of the Contractor to give such notification or to afford the Project Manager proper facilities for keeping strict account of actual cost shall constitute a waiver of the claim for such extra compensation. The filing of such notice by the Contractor and the keeping of costs by the Project Manager shall not in any way be construed to prove the validity of the claim. When the Work has been completed, the Contractor shall, within 10 (ten) days, file its claim for extra compensation with the Project Manager, who will review for consideration.

8.3. **CONTRACTOR'S REMEDIES**. If the City fails or refuses to satisfy a final demand made by the Contractor pursuant to Section 8.2 above, or to otherwise resolve the dispute which is the subject of such demand to the satisfaction of the Contractor, within 10 (ten) days following receipt of such demand, the Contractor shall be entitled to pursue such remedies, not inconsistent with the provisions of this Contract, as it may have in law or equity.

8.4. **CITY'S REMEDIES**. If it should appear at any time prior to final payment that an Event of Default, and has failed to cure any such Event of Default, as defined within Section 4.10 of the General Conditions, the City shall have the right, at its election and without prejudice to any other remedies provided by law or equity, to pursue any one or more of the following remedies:

i. The City may require the Contractor, within such reasonable time as may be fixed by the City, to complete or correct all or any part of the Work that is defective, damaged, flawed, unsuitable, nonconforming, or incomplete; to remove from the Work site any such work; to accelerate all or any part of the Work; and to take any or all other action necessary to bring the Contractor and the Work into strict compliance with this Contract.
ii. The City may perform or have performed all work necessary for the accomplishment of the results stated in (i) above and withhold or recover from the Contractor all the cost and expense, including attorneys' fees and administrative costs, incurred by the City in connection therewith.
iii. The City may accept the defective, damaged, flawed, unsuitable, nonconforming, incomplete, or dilatory Work or part thereof and make an equitable reduction in the Contract price.
iv. The City may terminate this Contract without liability for further payment of amounts due or to become due under this Contract, pursuant to Section 4.10 of the General Conditions.
    i. Upon any termination of this Contract or of the Contractor's rights under this Contract in accordance with Sections 4.10 or

4.11 of the General Conditions, and at the City's option exercised in writing, any or all subcontracts and supplier contracts of the Contractor shall be deemed to be assigned to the City without any further action being required, but the City shall not thereby assume any obligation for payments due under such subcontracts and supplier contracts for any Work provided or performed prior to such assignment.

v. The City may withhold from any progress or final payment, whether or not previously approved, or may recover from the Contractor any and all costs including attorneys' fees and administrative expenses, incurred by the City as the result of any Event of Default or as a result of actions taken by the City in response to any Event of Default.

vi. The City may recover any damages suffered by the City.

8.5. **CITY'S SPECIAL REMEDY FOR DELAY**. If the Work is not completed by the Contractor in full compliance with and as required by or pursuant to this Contract, within the time as such time may be extended by Change Order, then the City may invoke its remedies under Section 8.4 of the General Conditions or may, in the exercise of its sole and absolute discretion, permit the Contractor to complete the Work but charge to the Contractor and deduct from any progress or final payments, whether or not previously approved, administrative expenses and costs for each day completion of the Work is delayed beyond the completion date, computed as set forth in Section 4.8 of the General Conditions, as well as any additional damages caused by such delay.

8.6. **ATTORNEY FEES:** In the event there is any dispute between the the Contractor or the Surety and the City, its officers, agents or employees, and the City, its officers, agents or employees prevail, the City, its officers, agents or employees shall be granted all of its costs, including but not limited to attorney's fees, court costs and expert witness fees.

SECTION 9
OTHER PROVISIONS

9.1. Wherever a number of days is specified in this Contract it shall mean calendar days unless otherwise specified.

9.2. When a delay on any aspect of the Work occurs, the Contractor, to the maximum extent possible, shall utilize its resources elsewhere in the Work. If the Contractor, after complying the maximum extent possible by the reassignment of its labor force, equipment and materials, alleges to have suffered damages due to delay, and the delay is caused in whole or in part by acts or omissions within the control of the City or persons acting on its behalf, then such a claim shall be treated as a Change Order request and shall be processed in accordance with the Change Order, audit and inspection requirements specified in the General Provisions or it shall be deemed forever waived. Nothing herein contained shall be interpreted so

as to allow the Contractor to recover delay damages from the City for delays caused by acts of God, the acts or omissions of the Contractor, its subcontractors, employees or agents, or persons over which the City has no control.

9.3. Work performed by the Contractor under this Contract shall conform to reasonable and normal professional standards and the Contractor shall conduct itself at all times in a manner consistent with industry standards.

9.4. No reports, graphics or other material produced specifically for the City under this Contract shall be the subject of an application for copyright or trademark by or on behalf of the Contractor.

9.5. No assignment of any claim or proceeds under this Contract shall be binding upon the City unless it shall be first notified thereof in writing.

DEFINITIONS

Whenever the following terms or pronouns are used in the Specifications and Contract Documents, the intent and meaning shall be as follows:

AWWA: American Water Works Association.

CHANGE ORDER: A written modification of the Contract, issued after award to the Contractor, authorizing an addition, deletion, or revision to the Work within the general scope of the Contract or authorizing an adjustment in the Contract price or time mutually agreed upon between the City and the Contractor.

CDOT: Colorado Department of Transportation.

CONTRACT OR CONTRACT DOCUMENTS: The written agreement executed between the City and the Contractor covering the performance of the Work and the furnishing of labor and materials, by which the Contractor is bound to perform the Work and furnish the labor and materials and by which the City is obligated to compensate at a mutually established and accepted rate or price.

CONTRACTOR: The individual, partnership, firm, or corporation executing the Contract, acting directly or through lawful agents or employees, primarily liable for the acceptable performance of the Work for which contracted, and for the payment of all legal debts pertaining to the Work.

DRAWINGS: The Plans, profiles, typical cross-sections, general cross-sections, elevations, schedules, and details which show locations, character, dimensions, and details of the Work.

DISTRICT: A legally constituted group of individuals who have joined together in order to facilitate construction of utility systems within the limits of their property. The district shall be represented by its authorized Board of Directors.

PROJECT MANAGER: The duly authorized representative of the City, acting directly or through an assistant or representative.

EQUIPMENT: All machinery, together with the necessary supplies for upkeep and maintenance, and all tools and apparatus necessary for the proper construction and acceptable completion of the Work.

EXTRA WORK: Work not provided for in the Contract as awarded but found to be essential to the satisfactory completion of the Contract, within its intended scope.

FIELD ORDER: A written order effecting minor change in the Work not involving an adjustment in the Contract price or an extension of the Contract time, issued by the Project Manager to the Contractor during construction.

FINAL ACCEPTANCE: An acknowledgment made by the City that all Work has been completed.

FORCE ACCOUNT: A method of payment, other than lump sum or unit price, for Work ordered by a Change Order.

INSPECTOR: An authorized representative of the City assigned to make all necessary inspection of the Work performed or being performed, or of the materials furnished or being furnished by the Contractor.

LABORATORY: The official testing laboratories of the City or such other laboratories as may be designated by the Project Manager.

NOTICE TO PROCEED: A written notice to the Contractor of the date on which it is to begin Work.

PAYMENT BOND: The approved form of security furnished by the Contractor and its Surety as a guarantee that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the Work, as provided by law.

PERFORMANCE BOND: The approved form of security furnished by the Contractor and its Surety as a guarantee of good faith and ability of the Contractor to execute the Work in accordance with the terms of the Plans, Specifications, and Contract. In lieu of a separate Performance Bond, a combination Performance, Labor and Material Payment Bond may be supplied by the Contractor.

PERFORMANCE, LABOR AND MATERIAL PAYMENT BOND: Security furnished by the Contractor and its Surety as a guarantee that the Contractor will pay in full all bills and accounts for materials and labor used in the Work and that it will execute the Work in accordance with the Contract.

PLANS: The official Plans, working drawings, or supplemental drawings or exact reproductions thereof, approved by the Project Manager which show the locations, character, dimensions, and details of the Work to be done and which are to be considered as part of the Contract, supplementary to the Specifications.

PROGRESS SCHEDULE: A construction schedule prepared by the Contractor in a bar-chart, critical path or other format acceptable to the Project Manager which includes the start and completion dates of all salient features of the Work.

SHOP DRAWINGS: All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a subcontractor, manufacturer, supplier, or distributor, which illustrate how specific portions of the Work shall be fabricated or installed.

SPECIAL PROVISIONS: The specific clauses setting forth conditions or requirements particular to the Work, covering work or materials involved in the bid and estimate, which are not thoroughly or satisfactorily stipulated in the General Provisions or Specifications.

SPECIFICATIONS: The directions, provisions, and requirements contained herein, supplemented by Special Provisions, pertaining to the method and manner of performing the Work, or to the quantities or the qualities of materials to be furnished under the Contract. Also includes Technical Specifications, part of the Contract Documents consisting of technical written descriptions for materials, equipment, construction systems, standards and workmanship.

STRUCTURES: Bridges, culverts, sewers, catch basins, retaining walls, manholes, headwalls, buildings, valve vaults and other features which may be encountered in the Work and not otherwise classified herein.

SUBCONTRACTOR: An individual, firm or corporation having a direct contract with the Contractor or the Contractor's subcontractor(s) for the performance of a part of the Work.

SUBSTANTIAL COMPLETION: The Work (or a specified part thereof) has progressed to the point where, in the opinion of the Project Manager, it is sufficiently complete in accordance with the Contract, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. For the purposes of final acceptance of the Work, Substantial Completion shall include cleanup of the Work site and all work areas.

SUPPLIER: Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design.

SURETY: The corporate body or individuals who are bound by the Performance Bond; Payment Bond; or Performance, Labor and Material Payment Bond, with and for the Contractor who is responsible for the entire and satisfactory fulfillment of the Contract and for the payment of all debts incurred in fulfilling the Contract.

UNIT PRICE WORK: Work to be paid for on the basis of unit prices.

Exhibit D

Bond Number: 7901115635

PERFORMANCE, LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that Silva Construction, Inc. (Contractor), as Principal (the "Principal") and **Nationwide Mutual Insurance Company**, a corporation organized under the laws of the State of **Ohio**, and authorized to transact business in the State of Colorado, as "Surety," jointly and severally, including their heirs, personal representatives, successors and assigns, are held and firmly bound unto the City of Littleton as Obligee, hereinafter called Owner, for the use and benefit of claimants as herein below defined, in the amount of two million two hundred seventeen thousand one hundred eighty-seven Dollars ($ 2,217,187.00) , for the payment and interest as provided by law for the performance of the Contract between the Principal and the Owner, dated _____, 2025, for the Euclid Avenue Improvements Phase 1 #23-03 project in accordance with drawings and specifications; which the Contract is made a part hereof, and is hereinafter referred to as the Contract, and incorporated by this reference.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal, at all times, shall promptly and faithfully perform said Contract, and shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contact, any authorized modifications thereof during the original term of the Contract, any extensions thereof that may be granted by the Owner, and during the term of any guarantee or warranty required under the Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense when the Owner may incur in making good any default, then the Principal and Surety shall have no obligation under this Bond, otherwise it shall remain in full force and effect for a period of one (1) year following execution of the Contract. Upon expiration, this Bond shall be extended by a continuation certificate for an additional one (1) year, and extended thereafter until the warranty period has expired in accordance with the terms of the Contract.

The Surety, for value received, agrees that no extension of time, change in, addition to, or other alteration or modification of the terms of the Contract or work to be performed there under or any other forbearance on the part of either the Owner or the Principal to the other shall in any way release or impact the Surety's liability or obligation on this Bond, and the Surety hereby waives notice of any extension of time, change in, addition to, or other alteration or forbearance.

Whenever the Owner terminates the Contract in accordance with the terms thereof, the Surety shall, within fifteen (15) calendar days after written notice of such termination, notify the Owner in writing of its election to complete the Contract in accordance with its terms and conditions, or notify the Owner that the Surety elects not to complete the Contract. If the Surety fails to provide the written notice within the fifteen

(15) calendar day period, then it will have deemed to have not elected to complete the Contract. Should the Surety elect to complete the Contract, then it shall, within fifteen (15) additional calendar days, following written notice of such election, obtain a bid or bids for submission to Owner for completing the Contract in accordance with its terms and conditions. The Surety shall arrange for a contract between bidder and Owner, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs, attorneys fees of the Owner and damages for which the Surety shall be liable hereunder, the amount set forth in the first paragraph hereof. In the event of termination, the Surety may not engage the Principal to complete the Contract, without prior written consent of the Owner, which consent may be withheld in the Owner's sole discretion. If the Surety elects to complete the Contract, then it shall be entitled to receive the balance of the Contract price, less i) any amounts paid by the Owner to the Principal; ii) costs incurred by the Owner in correcting the defective work; iii) any additional legal, design professional or other costs incurred by the Owner resulting from Principal's default; and iv) any liquidated damages caused by the delayed performance or nonperformance of the Principal. Any progress payments, less retainage, due but not paid at the date of termination shall be paid to the Surety so long as the Surety has agreed to indemnify the Owner for the amount thereof and no other claims have been made to such funds by subcontractors or suppliers in accordance with the Contract or any applicable law. In the event that the Surety elects not to complete the Contract, the Owner may then have work completed by such means and in such manner, as it may deem advisable. The Surety, in such event, shall at all times make available, as work progresses under the Contract between the Owner and new contractor, sufficient funds to pay the cost of completion of the Contract pursuant to the its terms together with the other amounts set forth above, but in no event shall the Surety be responsible for the payment of any sums to the Owner until the Owner has paid in full its total obligation under the terms of the original Contract, plus Change Orders or amendments less deductions and claims chargeable by law or by the Contract, if any, and less the retainage which will be disbursed as provided by the Contract and any applicable law.

Any proceeding, whether legal or equitable, under this Bond, except for claims for payment of labor and material, or copyright or patent infringement, must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

Further, the above named Principal and Surety hereby jointly and severally agree with the Owner that the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such Contract ("claimant"), and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs or machinery, equipment and tools, consumed or used in connection with the construction of such work, whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

Docusign Envelope ID: 68EAAB3D-1F43-4D3B-B7DF-A2654023617C

The above-named Principal and Surety hereby jointly and severally agree with the Owner that every claimant, who has not been paid in full at any time up to and including the time of final settlement for the work contracted to be done, file with the Owner, a verified statement of the amount due and unpaid in accordance with Section 38-26-107, C.R.S. Provided, further, that no final settlement between the Owner and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied. The Owner shall not be liable for the payment of any costs, attorney fees, or other expenses of any such legal remedies a claimant may have against the Principal or Surety.

SIGNED this 28th day of April 20 25.

In the presence of:

Silva Construction, Inc.

By: _____

(Contractor / Principal)

Nationwide Mutual Insurance Company

By: _____

(Surety) **Ashlea McCaughey, Attorney-in-Fact**

(Accompany this Bond with Attorney in-fact's authority from the Surety to execute the Bond, certified to include the date of the Bond.)

APPROVED FOR THE OWNER:

DocuSigned by:

Brent Soderlin

A00195A9B58C4D2...

BRENT SODERLIN

DIRECTOR OF PUBLIC WORKS AND UTILITIES

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS THAT:

Nationwide Mutual Insurance Company, an Ohio corporation

hereinafter referred to severally as the "Company" and collectively as "the Companies" does hereby make, constitute and appoint:

ALISSA CAHALAN; ASHLEA MCCAUGHEY; BEN WILLIAMS; DONALD E APPLEBY; MARK SWEIGART; MARY ASHLEY ALLEN; SARAH C BROWN; TODD BENGFORD;

each in their individual capacity, its true and lawful attorney-in-fact, with full power and authority to sign, seal, and execute on its behalf any and all bonds and undertakings, and other obligatory instruments of similar nature, in penalties not exceeding the sum of

UNLIMITED

and to bind the Company thereby, as fully and to the same extent as if such instruments were signed by the duly authorized officers of the Company; and all acts of said Attorney pursuant to the authority given are hereby ratified and confirmed.

This power of attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the board of directors of the Company:

"RESOLVED, that the president, or any vice president be, and each hereby is, authorized and empowered to appoint attorneys-in-fact of the Company, and to authorize them to execute and deliver on behalf of the Company any and all bonds, forms, applications, memorandums, undertakings, recognizances, transfers, contracts of indemnity, policies, contracts guaranteeing the fidelity of persons holding positions of public or private trust, and other writings obligatory in nature that the business of the Company may require; and to modify or revoke, with or without cause, any such appointment or authority; provided, however, that the authority granted hereby shall in no way limit the authority of other duly authorized agents to sign and countersign any of said documents on behalf of the Company."

"RESOLVED FURTHER, that such attorneys-in-fact shall have full power and authority to execute and deliver any and all such documents and to bind the Company subject to the terms and limitations of the power of attorney issued to them, and to affix the seal of the Company thereto; provided, however, that said seal shall not be necessary for the validity of any such documents."

This power of attorney is signed and sealed under and by the following bylaws duly adopted by the board of directors of the Company.

Execution of Instruments. Any vice president, any assistant secretary or any assistant treasurer shall have the power and authority to sign or attest all approved documents, instruments, contracts, or other papers in connection with the operation of the business of the company in addition to the chairman of the board, the chief executive officer, president, treasurer or secretary; provided, however, the signature of any of them may be printed, engraved, or stamped on any approved document, contract, instrument, or other papers of the Company.

IN WITNESS WHEREOF, the Company has caused this instrument to be sealed and duly attested by the signature of its officer the 1st day of April, 2024.

Antonio C. Albanese, **Vice President** of Nationwide Mutual Insurance Company

ACKNOWLEDGMENT

STATE OF NEW YORK COUNTY OF KINGS: ss

On this 1st day of April, 2024, before me came the above-named officer for the Company aforesaid, to me personally known to be the officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, deposes and says, that he is the officer of the Company aforesaid, that the seal affixed hereto is the corporate seal of said Company, and the said corporate seal and his signature were duly affixed and subscribed to said instrument by the authority and direction of said Company.

Sharon Laburda
Notary Public, State of New York
No. 01LA6427697
Qualified in Kings County
Commission Expires January 3, 2026

Notary Public
My Commission Expires
January 3, 2026

CERTIFICATE

I, Lezlie F. Chimienti, Assistant Secretary of the Company, do hereby certify that the foregoing is a full, true and correct copy of the original power of attorney issued by the Company; that the resolution included therein is a true and correct transcript from the minutes of the meetings of the boards of directors and the same has not been revoked or amended in any manner; that said Antonio C. Albanese was on the date of the execution of the foregoing power of attorney the duly elected officer of the Company, and the corporate seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority of said board of directors; and the foregoing power of attorney is still in full force and effect.

IN WITNESS WHEREOF, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of said Company this _____ day of _____, **2025**.

Assistant Secretary

BDJ 1(04-24)00

HOLMES MURPHY

THINKING AHEAD

April 28, 2025

City of Littleton
2255 West Berry Avenue
Littleton, CO 80120

Re: Principal: Silva Construction, Inc.
Obligee: City of Littleton
Project Description: Euclid Avenue Improvements Phase 1 #23-03, Littleton, CO
Bond Number: 7901115635
Bond Amount: $2,217,187.00

To Whom It May Concern:

The referenced bonds and accompanying Power of Attorney forms are "undated" because the contract has not yet been dated.
This letter serves as your authority to insert the appropriate dates once the contracts have been executed. Please note the date of the bond and power of attorney must be on or after the date of the contract in order for the bond to become effective. The bond is not valid if it, or the accompanying power of attorney, is dated prior to the contract date.
Once the bonds have been dated, please notify our office within 24 hours of the applicable date so that our records and those of the Surety can be completed.

Sincerely,

Ashlea McCaughey, AFSB
720-458-5775
amccaughey@holmesmurphy.com

NOTICE TO PROCEED
[Project Name and Number]

Date: _____

TO: **[Type Contractor Name]**
[Type Contractor Address]

You are hereby authorized to proceed on this date, [**Date**] with the work covered in the contract documents titled **[Project Name and Number]**. Work must commence within [**Number of Days in which construction must commence**] days of acceptance of this Notice to Proceed.

OWNER, CITY OF LITTLETON

By:_____Title:_____

CONTRACTOR ACCEPTANCE OF NOTICE TO PROCEED
By: _____
this _____ day of _____, 20___.
Title:_____

CONTRACTOR'S RECEIPT FOR FINAL PAYMENT

[Project Name and Number]

Date: _____

TO: **[Type Contractor Name]**
[Type Contractor Address]

The undersigned has accepted the City of Littleton's Check No. _____ dated _____, 20 ____ in the amount of _____ Dollars ($_____), as final payment of all sums due for work done under the Contract Documents titled **[Project Name and Number]**, as amended, and as complete performance by the Contractor of all obligations to be performed by it pursuant thereto. The Contractor acknowledges and agree that no future claims for additional payments shall be made.

CONTRACTOR

By:_____Title:_____

FINAL ACCEPTANCE AND WARRANTY INITIATION

[Project Name and Number]

Date: _____

TO: **[Type Contractor Name]**
[Type Contractor Address]

You are hereby notified that on the ___ day _____, 20___, the City of Littleton has accepted the construction work completed by _____, for the construction work covered under the contracts documents titled **[Project Name and Number].**

You are also notified that the warranty terms and conditions as set forth in the contract documents are initiated as of the date of this acceptance.

Final payment receipt form is attached within the contract documents for your convenience. Should this form not be returned within ten (10) calendar days, properly signed and approved, it will be assumed that lack of such performance constitutes informal giving of a receipt and satisfaction by the contractor for final settlement of all amounts due.

CITY OF LITTLETON

By:_____Title:_____

NOTICE OF END OF BASIC WARRANTY PERIOD

[Project Name and Number]

Date: _____

TO: _____

_____

_____

You are hereby notified that on the ____ day of _____ , 20____, the City of Littleton has ended the basic warranty period for the construction work completed by _____ for the construction work covered under the contract documents titled **[Project Name and Number].** The basic warranty two (2) years from the date of Final Acceptance and warranty initiation.

You are also notified that the contract provisions concerning additional warranties on remedied work; patented devices, materials, and processes which may have been used in this construction; or other expressed warranties are not relinquished by the owner as a result of the issuance of this notice.

CITY OF LITTLETON

By: _____
Title: _____

PROJECT SPECIAL PROVISIONS
MODIFICATIONS TO COLORADO DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS

The technical specifications for this project shall be the Colorado Department of Transportation 2023 Standard Specifications for Road and Bridge Construction and the most current version of the Metropolitan Government Pavement Engineers Council (MGPEC) standards. The following special provisions supplement or modify the Standard Specifications and Supplemental Specifications and take precedence over the Standard Specifications, Supplemental Specifications, and plans.

PROJECT SPECIAL PROVISIONS

NOTICE TO BIDDERS **2**
COMMENCEMENT AND COMPLETION OF WORK **3**
REVISION OF SECTION 101 GENERAL PROVISIONS **4**
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REVISION OF SECTION 412 CONCRETE PAVEMENT (SPECIAL) **24**
REVISION OF SECTION 608 SIDEWALKS AND BIKEWAYS **25**
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REVISION OF SECTIONS 627 AND 713 PREFORMED THERMOPLASTIC PAVEMENT MARKING **27**
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FORCE ACCOUNT ITEMS **33**
PROJECT DESCRIPTION **34**

NOTICE TO BIDDERS

Pursuant to subsections 102.04 and 102.05, it is recommended that bidders on this project review the work site and plan details prior to submitting a proposal. Prospective bidders may contact the following listed authorized City representative prior to the Bid Question Submittal Deadline listed in the Bid Documents and questions and responses will be posted online from the Rocky Mountain E-Purchasing System at www.govbids.com, if such is prepared.

City Procurement Manager: Megan Sullivan - MSullivan@littletongov.org

The above-referenced individual or their designee are the only representatives of the City with authority to provide any information, clarification, or interpretation regarding the plans, specifications, and any other contract documents or requirements.

COMMENCEMENT AND COMPLETION OF WORK

The Contractor shall commence work under the Contract within seven (7) calendar days after date of the "Notice to Proceed" work shall be completed within **75 Calendar Days**. Minimum Salient features to be shown (for each bid schedule) on the Contractor's Progress Schedule are:

1) ROW Use Permit (CDOT & Littleton)
2) Traffic control setup per the approved MHT's for each phase of work.
3) Public Notification
4) Erosion Control
5) Removals
6) Earthwork/Subgrade
7) Curb & Gutter, Sidewalks, and Curb Ramps
8) Asphalt Paving, Concrete Paving
9) Storm Sewer Pipe and Inlets
10) Striping
11) Clean Up
12) Landscape/Irrigation Repair (as necessary).
13) Final Acceptance

All work shall be completed prior to **August 11, 2025 unless previously approved by the City of Littleton**. Completion shall include all pavement marking installation.

REVISION OF SECTION 101
GENERAL PROVISIONS

SECTION 101 of the Standard Specifications is hereby revised for this project as follows:

101 DEFINITIONS & TERMS

Technical Specifications related to construction materials and methods for the work embraced under this Contract shall consist of the Colorado Department of Transportation *Standard Specifications for Road and Bridge Construction* dated 2023.

Certain terms utilized in the Specifications referred to in the paragraph above shall be interpreted to have different meaning within the scope of this Contract. A summary of redefinitions follows:

Subsection 101.28	"Department" shall mean the City of Littleton, Colorado.
Subsection 101.29	"Chief Engineer" shall mean the City Engineer, Littleton, Colorado, or designated representative.
Subsection 101.39	"Laboratory" shall mean Littleton, Colorado or their designated representative.
Subsection 101.51	"Project Engineer" or "Project Manager" shall mean the City Engineer, Littleton, Colorado, or their designated representative.
Subsection 101.76	"State" shall mean Littleton, Colorado (where applicable).

REVISION OF SECTION 105
CONTROL OF WORK

SECTION 105 of the Standard Specifications is hereby revised for this project as follows:

105.17 REMOVAL OF UNACCEPTABLE WORK AND UNAUTHORIZED WORK

Shall include the following:

Contractor will verify all items to be removed and replaced with the Engineer. The Contractor shall verify, with the Engineer, any marked locations not included within the contract documents prior to any removal activities. Any removal NOT listed in the contract or otherwise verified and approved by the Engineer will be at the Contractor's expense.

Existing condition or damage to any adjacent infrastructure and/or structures shall be the responsibility of the Contractor to fully document prior to any work. The Contractor shall notify the Engineer of any existing damage and to confirm the various locations, and their limits, of existing damage prior to any work.

105.19 MAINTENANCE DURING CONSTRUCTION

Shall include the following:

The Contractor shall pave the roadway surface within seven (7) calendar days of milling operations. If traffic is to be placed on a milled surface the Contractor shall adequately protect all utility appurtenances or vertical milled faces by placing a wedge of asphalt or other means deemed acceptable to the Engineer. All costs associated with temporary asphalt, pavement markings or additional signage shall not be measured and paid for separately but shall be included in the work.

REVISION OF SECTION 106
CONFORMITY TO THE CONTRACT OF HOT MIX ASPHALT

Section 106 of the Standard Special Provisions is hereby revised for this project as follows:

Subsection 106.05 shall include the following:

For this project, Contractor process control testing of hot mix asphalt is mandatory.

REVISION OF SECTION 107
LEGAL RELATIONS & RESPONSIBILITY TO THE PUBLIC

SECTION 107 of the Standard Specifications is hereby revised for this project as follows:

107.02 PERMITS, LICENSES, AND TAXES

Shall include the following:

Unless otherwise specified, the Contractor shall procure all required permits and licenses; pay all charges, fees, and taxes, including permits procured for this project by others; and give all notices necessary and incidental to the due and lawful prosecution of the work. The costs of these permits will not be paid for separately but shall be included in the work.

Prior to beginning work, the Contractor shall furnish the Engineer with a written list of all permits required for the proper completion of the contract. The list shall clearly identify the types of permits that must be obtained before work on any particular phase or phases of work can be started. Copies of the fully executed permits shall be furnished to the Engineer upon request.

107.07 PUBLIC CONVENIENCE AND SAFETY

Shall include the following:

The Contractor shall provide the following services on an ongoing basis throughout the duration of the project:

(a) A contact person for the project shall be designated by the Contractor at the preconstruction conference. This individual shall be primarily responsible for maintaining communications with the Engineer and impacted residents/businesses; provide information on a regular basis to private individuals, local organizations interested in the project and the affected agencies.

(b) The following agencies shall be coordinated with on an ongoing basis:

City of Littleton

South Metro Fire and Rescue

City of Littleton Police Department

Adjacent Businesses/Residents

RTD

Littleton Public Schools

(c) A letter of introduction and notice of work shall be delivered to all affected landowners and

tenants at least five (5) business days and no more than ten (10) business days prior to mobilization and the commencement of work for each project site.

(d) Updates shall be on a weekly basis after mobilization and one (1) week prior to any major traffic switches.

(e) The letter shall include the following as a minimum:

Contractor – Name, Address, Direct Phone Number
Field Superintendent – Name, Mobile Phone Number
Schedule (commencement date and duration) and description of work. Description of work shall include approximate length of time for spraying tack and paving operations restricting use of roadway.
Information regarding private property and repair procedures

(f) The contractor shall notify each adjacent property owner in writing a minimum of forty-eight (48) hours prior to the commencement of construction activities at the corresponding address or location.

(g) Payment for the above requirements will not be made separately but shall be included in the work.

107.10 BARRICADES AND SIGNS

Shall include the following:

Construction traffic control signs or devices not in use shall be removed from the roadway and pedestrian walkway (sidewalk & trails). Laying the sign down in a horizontal position or turning the sign parallel is not permitted on the sidewalk and/or within private property such as residential yards.

Variable Message Boards (VMB) shall contain the following information at a minimum: type of work, the scheduled week of work, and the phrase “ALTERNATE ROUTES ARE ADVISED”.

Any missing or defaced signs shall be replaced within twenty-four (24) hours.

"NO PARKING" signs shall be placed a minimum of forty-eight (48) hours in advance of any construction activities on all streets to be resurfaced where on-street parking is permitted. No Parking signs shall specify the date range and time where no parking will be allowed due to construction activities.

“Bump” and “Milled Surface” signs, or approved equivalents, shall be posted in sufficient number and proper locations to adequately notify the public of such roadway conditions.

Any other signs as required by the Traffic Engineer shall be placed.

When surface treatment work is performed by contract, Contractor shall supply and maintain all signs at Contractor's expense.

For locations that do not have sufficient right-of-way available to store the sign(s) or device(s), they must be picked up or moved to an approved storage area. Signs that are placed in the medians must be dismantled, laid down, or relocated to the approved storage area.

107.12 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE s*hall be revised to include the following:*

(a) The contractor shall replace and/or repair all damaged landscaping within seven (7) days of completion of the adjacent removal and replacement.

(b) Sod damage resulting from concrete removal and replacement shall be cleanly cut to the limits of the damaged area(s) and parallel to the sidewalk or curb and gutter and replaced at a minimum removal and replacement width of 18" wide for the full length of the damaged area(s).

(c) Landscape rock, mulch and other miscellaneous landscaping and all other related materials shall be cleared and replaced in a condition equal to or better than before construction.

(d) The contractor shall repair and/or replace any damaged irrigation pipes. The repairs or replacement must be completed within twenty-four (24) hours of the damage.

(e) Continuous failure to complete repair in the time specified above may result in the suspension of additional work until the specified repairs have been made and are determined to be satisfactory by the Engineer. Additional contract time will not be given for such suspensions.

Unless otherwise specified in the Contract, all work listed above will not be measured and paid for separately but shall be included in the work.

REVISION OF SECTION 108
PROSECUTION AND PROGRESS

SECTION 108 of the Standard Specifications is here by revised for this project as follows:

108.03 SCHEDULE

Shall include the following:

The contractor shall provide a construction schedule at the pre-construction meeting for review by the Engineer.

108.05 LIMITATION OF OPERATIONS

Shall include the following:

In residential areas, the Contractor shall limit hours of operation to **7:00 a.m. to 7:00 p.m. Monday thru Friday, 9:00 AM to 5:00 PM Saturday, and no work on Sunday** or as otherwise approved in writing by the Engineer.

In non-residential areas, the Contractor shall limit hours of operation to **7:00 a.m. to 7:00 p.m. Monday thru Sunday** or as approved in writing by the Engineer.

108.09 FAILURE TO COMPLETE WORK ON TIME

Shall include the following:

A daily charge will be made against the Contractor for each calendar day that work is performed outside the working times listed in 108.09, Limitation of Operations. A penalty of $500 per occurrence will be applied as Liquidated Damages.

REVISION OF SECTION 202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS

SECTION 202 of the Standard Specifications is hereby revised for this project as follows:

202.02 CONSTRUCTION REQUIREMENTS ***shall be revised to include the following:***

Removal of Fire Hydrant shall include removing the lateral pipe and valve. The pipe stub at the main line tee shall be capped.

202.12 BASIS OF PAYMENT ***shall be revised to include the following:***

Payment will be made under:

Pay Item	**Pay Unit**
Removal of Catch Drain	Each
Removal of Inlet	Each
Removal of Manhole	Each
Removal of Pipe	LF
Removal of Sidewalk	SY
Removal of Curb and Gutter	LF
Removal of Curb, Gutter, and Sidewalk	LF
Removal of Concrete Curb Ramp	SY
Removal of Concrete Pavement	SY
Removal of Asphalt Mat	SY
Removal of Asphalt Mat (Special)	SY
Removal of Ground Sign	Each

When the Contract does not include pay items for removal of a particular type of structure or obstruction, the removal will not be paid for separately but shall be included in the work.

Payment for Removal of Pipe, Removal of Catch Drain, and Removal of Manhole shall include necessary excavation, removal of the structures, lateral pipes (if any) and valve removal (if any), and capping (as necessary).

REVISION OF SECTION 203
EXCAVATION AND EMBANKMENT

SECTION 203 of the Standard Specifications is hereby revised for this project as follows:

203.02 EXCAVATION

Subsection 203.02 (c) is hereby deleted and replaced with the following:

(c) Material that is free of organics but has excessive moisture shall not be classified as unsuitable for subgrade due to the presence of excessive water. It shall be the Contractor's responsibility to satisfy the moisture conditions specified in the Contract Documents for subgrade. The classification of material as unsuitable for subgrade shall be made by the Engineer.

203.13 METHOD OF MEASUREMENT ***shall be revised to include the following:***

Proof rolling will not be measured and paid for separately, but shall be included in the work as required.

203.12 BASIS OF PAYMENT ***shall be revised to include the following:***

Any additional excavation and backfill made by the Contractor below the approved subgrade elevation, without the prior acceptance of the Engineer will be at the responsibility and expense of the Contractor.

REVISION OF SECTION 208
EROSION CONTROL

Section 208 of the Standard Specifications is hereby revised for this project as follows:

208.12 BASIS OF PAYMENT ***shall be revised to include the following:***

Payment will be made under:

Pay Item	**Pay Unit**
Erosion Log Type 2 (12 Inch)	LF
Reinforced Rock Berm	LF
Aggregate Bag	LF
Concrete Washout Area	Each
Storm Drain Inlet Protection (Type II)	Each
Vehicle Tracking Control	Each
Erosion Control Management	LS

Topsoil, native seeding, sod and mulching will be paid for under their respective sections.

REVISION OF SECTION 210
RESET STRUCTURES

Section 210 of the Standard Specifications is hereby revised for this project as follows:

Subsection 210.02 shall include the following:

Any work performed by the Contractor on a utility facility is subject to inspection and approval by the owning utility company. The Contractor is responsible for coordinating inspection with the owning utility.

The Contractor must submit notice to the Project Manager of water service outages in accordance with Denver Water standards. The Contractor shall give a minimum of 30-day notice to the owning utility company before any work that will affect their facilities. The Contractor shall not operate any water valves without permission of the owning utility company.

All structures within pavement areas shall be recessed a minimum of a quarter inch to maximum of half inch below finish grade. Structures within sidewalk area shall have a pedestrian lid and flush with finish grade.

Structures within the roadway surface shall be adjusted prior to placement of the final lift of asphalt. Manhole ring and cover assemblies shall be adjusted to finish grade on reconstructs (includes up to 18" from top of cone section to finish grade). Manholes located within overlays will require grade adjustment rings that can be mechanically secured to the existing manhole ring. All materials shall be approved by the owning utility.

Temporary construction plates must be inspected prior to use on the project by the project inspector. All plates shall be sized for the manhole intended to be covered, shall have centering devices, and shall be traffic load rated.

Subsection 210.10 shall include the following:

Valve Box Assembly. "Replacement and/or adjustment of valve boxes" shall involve removal of the existing valve box riser assembly, or a portion thereof, and installation of a new valve box assembly, and raising or lowering the new assembly to match construction activity grade (elevation). Unless otherwise specified, all required materials shall be supplied by the Contractor. All materials used for this item shall be approved by the owning utility for use.

Valve Boxes located within overlays will require grade adjustment risers that can be mechanically secured to the existing valve top. "Drop in" adjusting rings will not be allowed. All materials shall be approved by the owning utility.

All utility valve boxes shall be identified, functional and accessible at all times.

When adjusting valve boxes, the box shall be cleaned of all foreign debris such that the operating nut of the valve is fully accessible to operate. The Work shall be subject to inspection by and approval of the owning utility and is incidental to the pay item for adjusting water valves.

Monument (Type 3A). Contractor shall comply with the requirements in Section 625.08.

210.13 BASIS OF PAYMENT ***shall be revised to include the following:***

Payment will be made under:

Pay Item	**Pay Unit**
Reset Ground Sign	Each
Reset Pull Box	Each
Adjust Manhole	Each
Adjust Valve Box	Each
Adjust Monument (Type 3A)	Each

REVISION OF SECTION 212
LANDSCAPE RESTORATION

SECTION 212 of the Standard Specifications is here by revised for this project as follows:

DESCRIPTION

212.01 This work consists of restoring existing sod, landscaping, and sprinkler systems due to construction activities for curbs and sidewalks. The Contractor is also directed to the requirements of Revision of Section 107.12. Topsoil requirements shall comply with Section 207. Restoration of seeded and sodded areas shall comply with Section 212. Restoration of other landscaping materials, such as mulch and plantings, shall comply with Section 214.

CONSTRUCTION REQUIREMENTS

212.03 It is anticipated construction of curbs and sidewalks will affect existing miscellaneous landscape materials such as topsoil, sod, plantings, river rock, wood mulch, and other miscellaneous landscaping features. When the Contractor's construction operations for curbs and sidewalks affects existing landscaping, the Contractor shall document the landscaping prior to construction with photographs submitted to the Engineer.

The Contractor shall remove the landscape material to the limits required for construction and stockpile the material. Care shall be taken to not damage landscape materials during removal. Following completion of curbs and sidewalks the landscape material shall be restored to the areas.

Property owners shall be notified prior to removal of landscape materials, including information on schedule and restoration of the landscaping.

Any landscaping materials damaged by the Contractor's operations shall be replaced as directed by the Engineer at the Contractor's expense.

Grading and sidewalk construction may affect existing sprinkler heads and sprinkler lateral lines. If construction operations affect sprinkler systems, the sprinkler line shall be modified by capping or resetting as directed by the Engineer and coordinated with the adjacent property owner. Any sprinkler lines damaged shall be repaired as directed by the Engineer.

METHOD OF MEASUREMENT

212.07 Landscape Restoration will not be measured but shall be paid for as lump sum.

BASIS OF PAYMENT

212.08 Payment will be made under:

Pay Item	**Pay Unit**
Landscape Restoration	Lump Sum

Payment shall include removal, hauling, stockpiling, resetting, restoration and replacement of any damaged landscape materials. Payment shall include sprinkler system capping, resetting and repairs. Topsoil and Sod will not be paid for separately but shall be included in this work item.

REVISION OF SECTION 250
ENVIRONMENTAL, HEALTH AND SAFETY MANAGEMENT

SECTION 250 of the Standard Specifications is hereby revised for this project as follows:

250.03 GENERAL

Shall include the following:

Job materials and equipment may be stockpiled and stored at locations near the job site. A list of sites to be used for this purpose and written permission from the property owner shall be submitted to the Engineer for approval at least ten (10) days prior to any use. The proposed truck route for ingress and egress to such sites shall also be submitted to the Engineer for approval. Using such job-site storage requires the following:

1. Obtaining written permission from the property owner, which shall include a brief description of the area of the property to be used, the length of time the property will be used for this purpose, any access restrictions (i.e. times of day), and the name and phone number of the property owner. A copy of the written permission shall be submitted to the Project Manager at least one week prior to delivery of material to the site.

2. Keeping stockpiles and equipment confined to the approved area.

3. Providing security for job materials and equipment and for public safety at the site.

4. Keeping all access roads clean and in good condition.

5. Returning site to original condition.

Precautions shall be taken to ensure that stockpiles are carefully mixed just prior to use to ensure uniform distribution of the moisture, and that they do not become contaminated with over-sized seed rock, clay, silt or excessive amounts of moisture. The stockpile shall be kept in areas that drain readily. Segregation of the aggregate will not be permitted.

When surface treatment work is performed by contract, the Contractor shall be responsible for compliance with all requirements of this section. The Contractor shall hold the City and all its employees and representatives harmless from any injury or damage to property occurring as a result of Contractor's operations on property used for this purpose.

REVISION OF SECTION 304
AGGREGATE BASE COURSE

SECTION 304 of the Standard Specifications is hereby revised for this project as follows:

304.02 AGGREGATE ***shall be revised to include the following:***

The minimum allowable R-value for Aggregate Base Course shall be 78. The specific gravity for the aggregates shall be greater than 2.0 at the source. The use of crushed reclaimed concrete material under some circumstances may be substituted for natural aggregate for use in roadbed stabilization upon review and written approval of the Engineer. Aggregate base course for use in shouldering and all-weather surfaces shall be natural and approved by the City of Littleton. All-weather surfaces will be required in-place at the end of each shift when traffic is not running on pavement. Base course from within the existing roadway section, if encountered, can be used as an all-weather surface.

Base course shall have a minimum unit weight of 125 pounds per cubic foot.

The Contractor shall have adequate Aggregate Base Course available for use on project as required by the Engineer.

304.08 BASIS OF PAYMENT ***is deleted in its entirety and replaced with the following:***

Payment for aggregate base course shall be made at the applicable contract unit price for Aggregate Base Course and shall include full compensation for all transportation, materials, labor, equipment, supervision, tools, placement, compaction and all other appurtenant items to complete the work.

Excavation and removal of subgrade deemed unsuitable by the Engineer shall not be measured and paid of separately, but shall be included in the work.

Water will not be measured and paid for separately, but shall be included in the work.

If the Contractor utilizes imported crushed reclaimed concrete in lieu of aggregate base course, payment will be made on the accepted quantity of Aggregate Base Course, Class 6.

If the Contractor elects to utilize Aggregate Base Course to correct subgrade imperfections or control depths at their convenience this will not be paid for separately but shall be included in the work.

Pay Item	**Pay Unit**
Aggregate Base Course (Class 6)	CY

REVISION OF SECTION 304 AND 403
AGGREGATE BASE COURSE AND HOT MIX ASPHALT TICKET COLLECTION

Sections 304 and 403 of the Standard Specifications is hereby revised for this project as follows:

Subsection 304.08 and 403.05 shall include the following:

The Contractor shall collect the scale ticket on each load when it is delivered to the project site, and ensure that the information required in subsection 109.01 is shown on each ticket. The Contractor's ticket collector shall add the placement location to each scale ticket using stationing or mileposts and sign it.

The scale tickets shall be available on site for CDOT personnel to inspect.

Each day the Contractor shall provide to the Engineer envelopes which contain the previous day's signed tickets and the following:

1. On each envelope: Project number, date of paving, type of material, daily total and cumulative total.
2. One of the following:

    A. Two adding machine tape tabulations of the weight tickets with corresponding totals run and signed by different persons,
    B. One signed adding machine tape tabulation of the weight tickets that has been checked and signed by a second person,
    C. Signed check tape of computer scale tickets that have a cumulative total. These scale tickets must be consecutive and without voids adjustments.

3. A listing of any overweight loads on the envelope, including ticket numbers and amount over legal limit.
4. A comparison of the actual yield for each day's placement to the theoretical yield. Theoretical yield shall be based on the actual area paved, the planned thickness, and the actual density of the mixture being placed. Any variance greater than +2.5% shall be indicated on the envelope and a written explanation included.

All of the above items such as collected scale tickets, total tabulation sheets, over weight tickets, overweight permits, haul vehicle ID sheets, and etc. shall also be submitted electronically (scanned pdf format).

The Contractor shall provide a vehicle identification sheet that contains the following information for each vehicle:
(1) Vehicle number
(2) Length
(3) Tare weight
(4) Number of axles

(5) Distance between extreme axles
(6) All other information required to determine legal weight.
(7) Legal weight limit.

REVISION OF SECTION 403
HOT MIX ASPHALT

Section 403 of the Standard Specifications is hereby revised for this project as follows:

Subsection 403.02 shall include the following:

The design mix for hot mix asphalt shall conform to the following:

Table 403-1

Property	Test Method	Value For Grading		
		S(75)	SX(75)	Patching
Air Voids, percent at: N (design)	CPL 5115	3.5 – 4.5	3.5 – 4.5	3.5 – 4.5
Lab Compaction (Revolutions): N (design)	CPL 5115	75	75	75
Stability, minimum	CPL 5106	28	30	28
Aggregate Retained on the 4.75 mm (No. 4) Sieve for S, SX and SG, and on the 2.36mm (No. 8) Sieve for ST and SF with at least 2 Mechanically Induced fractured faces, % minimum*	CP 45	60%	60%	60%
Accelerated Moisture Susceptibility Tensile Strength Ratio (Lottman), minimum	CPL 5109 Method B	80	80	80
Minimum Dry Split Tensile Strength, kPa (psi)	CPL 5109 Method B	205 (30)	205 (30)	205 (30)
Grade of Asphalt Cement, Top Layer		PG64-22	PG64-22	PG64-22
Grade of Asphalt Cement, Layers below Top		PG64-22	PG64-22	PG64-22
Voids in the Mineral Aggregate (VMA) % minimum	CP 48	See Table 403-2	See Table 403-2	See Table 403-2
Voids Filled with Asphalt (VFA), %	AI MS-2	65-80	65-75	65-75
Dust to Asphalt Ratio Fine Gradation Coarse Gradation	CP 50	0.6 – 1.2 0.8 – 1.6	0.6 – 1.2 0.8 – 1.6	0.6 - 1.2 0.8 – 1.6

Table 403-1				
Property	**Test Method**	**Value For Grading**		
		S(75)	SX(75)	Patching
Note: AI MS-2 = Asphalt Institute Manual Series 2 Note: Mixes with gradations having less than 40% passing the 4.75 mm (No. 4) sieve shall be approached with caution because of constructability problems. Note: Gradations for mixes with a nominal maximum aggregate size of one-inch or larger are considered a coarse gradation if they pass below the maximum density line at the #4 screen. Gradations for mixes with a nominal maximum aggregate size of 3/4" to 3/8" are considered a coarse gradation if they pass below the maximum density line at the #8 screen. Gradations for mixes with a nominal maximum aggregate size of #4 or smaller are considered a coarse gradation if they pass below the maximum density line at the #16 screen. *Fractured face requirements for SF may be waived by RME depending on project conditions.				

All mix designs shall be run with a gyratory compaction angle of 1.25 degrees and properties must satisfy Table 403-1. Form 43 will establish construction targets for Asphalt Cement and all mix properties at Air Voids up to 1.0 percent below the mix design optimum. CDOT will establish the production asphalt cement and volumetric targets based on the Contractor's mix design and the relationships shown between the hot mix asphalt mixture volumetric properties and asphalt cement contents on the Form 429. CDOT may select a different AC content other than the one shown at optimum on the Contractor's mix design in order to establish the production targets as contained on the Form 43. Historically, Air Voids adjustments typically result in asphalt cement increases from 0.1 to 0.5 percent. Asphalt binder content shall conform to the following: minimum of 5.4% and a maximum of 6.1%. Contractors bidding the project should anticipate this change and factor it into their unit price bid.

Table 403-2

Nominal Maximum Size*, mm (inches)	**Minimum Voids in the Mineral Aggregate (VMA)**			
	***Design Air Voids **			
	3.5%	**4.0%**	**4.5%**	**5.0%**
37.5 (1½)	11.6	11.7	11.8	N/A
25.0 (1)	12.6	12.7	12.8	
19.0 (¾)	13.6	13.7	13.8	
12.5 (½)	14.6	14.7	14.8	
9.5 (⅜)	15.6	15.7	15.8	
4.75 (No. 4)	16.6	16.7	16.8	16.9
	* The Nominal Maximum Size is defined as one sieve larger than the first sieve to retain more than 10%. ** Interpolate specified VMA values for design air voids between those listed. *** Extrapolate specified VMA values for production air			

	voids beyond those listed.

The Contractor shall prepare a quality control plan outlining the steps taken to minimize segregation of HMA. This plan shall be submitted to the Engineer and approved prior to beginning the paving operations. When the Engineer determines that segregation is unacceptable, the paving shall stop and the cause of segregation shall be corrected before paving operations will be allowed to resume.

Hot mix asphalt for patching shall conform to the gradation requirements for Hot Mix Asphalt (Grading SX).

Subsection 403.03 shall include the following:

Delete subsection 403.05 and replace with the following:

403.05 The accepted quantities of hot mix asphalt will be paid for in accordance with subsection 401.22, at the contract unit price per ton for the bituminous mixture.

Payment will be made under:

Pay Item	**Pay Unit**
Hot Mix Asphalt (Patching)	Ton
Hot Mix Asphalt (Grading S)(75)(PG 64-22)	Ton
Hot Mix Asphalt (Grading SX)(75)(PG 64-22)	Ton

Aggregate, asphalt recycling agent, asphalt cement, additives, hydrated lime, and all other work and materials necessary to complete each hot mix asphalt item will not be paid for separately but shall be included in the unit price bid. When the pay item includes the PG binder grade, any change to the submitted mix design optimum asphalt cement content to establish production targets on the Form 43 will not be measured and paid for separately but shall be included in the work. No additional compensation will be considered or paid for any additional asphalt cement, plant modifications and additional personnel required to produce the HMA as a result in a change to the mix design asphalt cement content.

Historically, typical asphalt cement increases reflected on the Form 43 are from 0.1 to 0.5 percent. However, the Contractor should anticipate the AC increases typical of his mixes. Contractors bidding the project should anticipate this change and factor it into their unit price bid.

When the pay item does not include the PG binder grade, asphalt cement will be measured and paid for in accordance with Section 411. Asphalt cement used in Hot Mix Asphalt (Patching) will not be measured and paid for separately, but shall be included in the work.

Excavation, preparation, and tack coat of areas to be patched will not be measured and paid for separately, but shall be included in the work.

REVISION OF SECTION 412
CONCRETE PAVEMENT (SPECIAL)

Section 412 of the Standard Specifications is hereby revised for this project as follows:

Subsection 412.02 ***shall include the following:***

Concrete Pavement (Special) shall consist of concrete pavement with an integral color admixture. The color shall be Federal Color 20109 "Red Brown". The Contractor shall submit a concrete color sample and product information to the Engineer for approval prior to construction.

The color admixture shall be incorporated into the concrete according to the manufacturer's recommendations.

Subsection 412.24 ***shall include the following:***

Payment will be made under:

Pay Item	**Pay Unit**
Concrete Pavement (10 Inch) (Special)	Square Yard

Color admixture and color sample shall be included in the cost of Concrete Pavement (Special).

REVISION OF SECTION 608
SIDEWALKS AND BIKEWAYS

Section 608 of the Standard Specifications is hereby revised as follows:

608.03 Concrete Sidewalks and Bikeways *is hereby revised to include the following:*

(e) *Joints*. Newly constructed curb and gutter shall not be poured monolithically with adjacent curb ramps or sidewalks unless otherwise approved or directed by the Engineer.

REVISION OF SECTION 614
SIGNS AND SIGN POSTS

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.02 shall include the following:

Sign posts and bases shall be steel galvanized perforated square tubing as supplied by Unistrut, or approved equal.

Signs shall use sign posts with 2-inch x 2-inch tube, with bases of 2.25-inch x 2.25-inch tube.

Bases shall be 3 feet long, embedded with 2 inches to 4 inches exposed above the ground, and the post inserted 18 inches to 24 inches into the base.

Subsection 614.09 shall include the following:

Sign panels shall be mounted to sign posts with oversized washers.

Subsection 614.14 shall include the following:

Pay Item	**Pay Unit**
Steel Sign Post (2 x 2 Inch Telespar Tubing)	Linear Foot

Sign post anchors, hardware and other incidental materials necessary for the proper installation of the item, will not be measured and paid for separately, but shall be included in the cost of the steel sign post.

REVISION OF SECTIONS 627 AND 713
PREFORMED THERMOPLASTIC PAVEMENT MARKING

Section 627 of the Standard Special Provisions is hereby revised for this project as follows:

Subsection 627.09 (a) *shall include the following:*

(a) *Application.* An epoxy resin primer shall be applied to any existing surface (concrete, asphalt, existing markings, etc.) prior to the application of any new preformed thermoplastic, plastic pavement marking. The epoxy resin primer shall conform to CDOT Standard Specifications subsection 708.07. Primer shall be required for all markings used including markings that manufacture does not require a primer. Primer and application will not be measured and paid for separately, but shall be included in the work.

Surface shall be dry and free of dirt, dust, chemicals, and/or significant oily substances. Application procedures for Portland concrete pavement shall be as described above except a compatible primer sealer shall be applied before application of marking to assure proper adhesion.

Subsection 627.09 *shall include the following:*

(c) *Inlaid Preformed Thermoplastic Pavement Marking.* Shall be done for crosswalks, stop lines and symbols. The grooved width shall be the pavement marking width plus 1 inch, with a tolerance of ± ¼ inch. The depth of the grooves shall be 130 mils ± 5 mils. Groove position shall be a minimum of 2 inches from the edge of the pavement marking to the longitudinal pavement joint. Grinding of existing preformed thermoplastic pavement marking and the inlaying of proposed preformed thermoplastic pavement marking shall not be measured and paid for separately, but shall be included in the work.

Grooving shall not be performed on bridge decks.

The preformed thermoplastic pavement marking shall be inlaid on new and existing pavements as shown in the Contract. The material shall be capable of use for patching worn areas of the same type according to the manufacturer's recommendations.

The following shall be included in subsection 627.13:

Payment will be made under:

Pay Item	**Pay Unit**
Preformed Thermoplastic Pavement Marking (Xwalk-Stop Line)	Square Foot
Preformed Thermoplastic Pavement Marking (Word-Symbol)	Square Foot

Removal and application of temporary preformed thermoplastic pavement marking associated with wet-cutting of pavement shall be at the Contractor's expense.

Subsection 713.14 (a) *shall include the following:*

(a) General. Material such as lines, legends, or symbols shall be capable of being affixed to HMA or PCC pavements. Marking shall be capable of conforming to pavement contours, breaks, and

faults etc. by the use of the normal heat of a propane torch. Marking shall be capable of withstanding the actions of traffic at normal pavement temperatures. Marking shall have resealing characteristics such that it is capable of fusing with itself and previously applied thermoplastic pavement markings when heated with the torch.

Subsection 713.14 *shall include the following:*

(c) Performance. Marking, when applied in accordance with manufactures recommendations shall demonstrate a uniform level of sufficient night time retro-reflection when tested in accordance to ASTM E1710-97. The applied material must have an initial minimum intensity reading of 500 $mcd \cdot m^{-2} \cdot 1x^{-1}$ for white and 300 $mcd \cdot m^{-2} \cdot 1x^{-1}$ for yellow as measured with a retro-reflectometer.

The top surface of the stencils (the same side as the factory applied surface beads) shall have an indicator system for the contractor to properly gauge the correct amount of heat to apply during installation. The indicator system shall have a positive visual indication, such as beads changing color or indents closing together, when the material has reached the correct installation temperature. The indicator system must also provide a positive, visual indication if the material has not reached the correct installation temperature.

REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL

Section 630 of the Standard Specifications is hereby revised as follows:

Subsection 630.01 ***is revised to include the following:***

1. Working hours shall be 7:00 a.m. to 7:00 p.m. Monday through Friday, 9:00 AM to 5:00 PM Saturday, and no work on Sunday in all residential areas, or as otherwise approved in writing by the Engineer.
2. Working hours shall be 7:00 a.m. to 7:00 p.m. Monday through Sunday in nonresidential areas.
3. A full closure of Euclid Avenue is acceptable.
4. All work done outside the times above must be approved by the Engineer in writing.

As required by, in descending order of precedence, these plans and special specifications, the current Standard Specifications, as augmented by the Colorado Department of Transportation M and/or S standards, and the current version of the Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways.

Subsection 630.10 through 630.11 ***shall be modified to read:***
Traffic control throughout the construction area is the responsibility of the Contractor. Before starting construction, the Contractor shall submit, in writing, the proposed Method of Handling Traffic (MHT) for the initial phase of construction. When a different MHT is required for a subsequent construction phase, it must be submitted two weeks prior to starting that phase. All proposed methods of handling traffic shall be approved, in writing, by the Engineer. No phase of construction shall start until an acceptable MHT has been received and approved by the Engineer. The proposed methods shall include, as a minimum, the following:

A detailed diagram which shows the location of all sign placements, including advance construction signs (if not previously approved) and speed limit signs; method length and time duration for lane closures; and location of flag persons.

A tabulation of all traffic control devices shown in the detailed diagram including, but not limited to: construction signs, vertical panels; vertical panels with lights; Type 1 and Type 2 barricades; cones and drum channelizing devices; concrete barrier (temporary); advance warning flashing or sequencing arrow panels.

Approval of the proposed MHT is intended to indicate all devices to complete the project safely. Such approval does not relieve the contractor of liability specifically assigned to him under the contract. The Contractor shall erect and maintain warning lights, signs, barricades, and sufficient safeguards around all excavations, embankments, stockpiles, equipment, and obstructions.

Non-metallic drums may be substituted for vertical panel channelizing devices if site dimensions allow.

The Contractor shall, at the preconstruction conference, designate one of their employees, other than the Superintendent, to be responsible for traffic control management. This responsibility shall include management for the contractor's signing and all other details covered by the specifications which contribute to the convenience, safety, and orderly movement of traffic and to the comfort of the traveling public. The designated employee will have the Certification of the Traffic Control Supervisor as a Worksite Traffic Supervisor by the American Traffic Safety Services Association (ATSSA) in lieu of completion of the CDOT minimum training requirements.

Traffic control managements shall be maintained on a 24-hour per day basis. The contractor shall make arrangements so that the Traffic Control supervisor or their approved representative will be available on every working day, "on call" at all times and available upon the Engineer's request at other than normal working hours. The Traffic Control Supervisor shall have an up-to-date copy of Part VI of the MUTCD, pertaining to traffic controls for street and highway constructions, and the approved MHT available at all times.

The contractor shall apply for and receive a City of Littleton right-of-way use permit (at no cost to the contractor) prior to commencing operations.

Due to the mobility of the operation, the contractor will need to provide traffic control consistent with the MUTCD. For sweeping operations, the contractor will need to provide an MHT.

The flagger's STOP/SLOW sign paddle shall be 18 inches with letters six inches high.

The Contractor shall provide three (3) variable message boards for the duration of the project to be deployed at the City's direction. Variable message boards shall be placed on westbound Euclid Avenue, northbound Elati Street, and southbound Elati Street. Variable message boards shall be in place two (2) weeks prior to the start of construction.

Specific traffic control requirements for this project are as follows:

- Proposed phasing:
    - Phase 1 – South side of the roadway, including all curb, gutter, sidewalk, signing, striping, and driveway construction.
    - Phase 2 – North side of the roadway, including all curb, gutter, sidewalk, signing, striping, and driveway construction.
- One-way traffic is permitted.
    - During Phase 1 construction, one westbound lane shall be maintained. Unless the contractor is actively constructing or curing curb, gutter, sidewalk, or driveways, residential access shall be maintained between 5:00pm and 8:00am. During periods when driveways will not be accessible, Contractor shall provide residents three (3) days advanced notice.
    - During Phase 2 construction, one eastbound lane shall be maintained.
- Traffic lanes shall be a minimum of 10 feet wide for each phase of construction.
- Sidewalks shall be closed on only one side of the street at a time. When a sidewalk is closed, "Sidewalk Closed" signs shall be placed at the closure point and "Sidewalk Closed Ahead Cross Here" or "Pedestrian Detour" signs shall be placed at the next crosswalk prior. Where

the next crosswalk prior is an unreasonable distance away, the Contractor shall provide a temporary interim crossing.

Subsection 630.13 ***is revised to include the following:***

Towing

Vehicles shall be identified by the Engineer and shall be limited to any class of vehicle that is upright and on wheels. 'No Parking' signs shall have been in-place and maintained for a minimum of forty-eight (48) hours along the proposed street segment prior to towing a vehicle.

The Contractor shall make every reasonable attempt as determined by the Engineer, including but not limited to door-to-door investigation, to locate the owner/operator of the vehicle prior to initiating the towing process.

Towing shall be limited to towing a vehicle conflicting with the current or proposed work activities. Vehicles shall be towed using techniques that do not damage the towed vehicle or the roadway, adjacent structures, or other public property or assets. Vehicles shall be towed to a location designated by the Engineer at the time of towing, typically to an adjacent street beyond the proposed work area. **Towed vehicles shall be positioned in a legal parking space within a public roadway in a manner that permits through traffic**.

Immediately after towing a vehicle, the Contractor shall affix a notice to the windshield or other appropriate place on the motor vehicle, stating "This vehicle was parked within a Temporary Construction Work Zone. It was moved to this location by order of the City of Littleton Public Works.", or similar language approved by the Engineer.

The City shall not grant additional time or compensation for any resulting delays or loss of production because of failure to comply with the requirements of the Contract Documents including posting of notices and identifying and towing vehicles. Initial cost of towing will be the responsibility of the Contractor but can be reimbursed at a later date using the force account for the project if deemed reasonable by the Engineer and documentation of towing tickets can be provided by the Contractor.

Towing Tickets

The Contractor shall deliver a towing ticket identifying the following information:

- Date and time towing request received,
- Make, model, and license number of vehicle towed,
- Locations vehicle towed from and to, and
- Signature of an authorized City Representative with time and date work performed.

Towing Equipment Requirements

Towing equipment shall, at a minimum, be equipped with a power winch, two-way radio, ten-pound dry fire extinguisher, motorcycle sling, dollies or flatbed equipment, and other modern towing and safety devices. All equipment shall be in good working condition when reporting for use.

630.17 METHOD OF MEASUREMENT and 630.16 BASIS OF PAYMENT ***are hereby deleted in their entirety and replaced with the following:***

Traffic control shall be paid on a lump sum basis to be paid for as follows: 50 percent of the Schedule amount upon first utilization and the remaining 50 percent of the Schedule amount when 75 percent of the original schedule amount has been earned.

In the event towing services are required, the Contractor shall be reimbursed $150 per vehicle through the Force Account Item for Minor Contract Revisions. Reimbursement shall be considered full compensation for coordination, mobilization, towing vehicles, mechanical work, fees, fuel, maintenance, and for furnishing all materials, labor, equipment, tools, and incidentals or related services necessary to complete the work. Any towing performed without required signage or pre-authorization will not be paid.

PAY ITEM	**UNIT**
Traffic Control	Lump Sum

FORCE ACCOUNT ITEMS

DESCRIPTION

This special provision contains the City's estimate for force account items included in the Contract. Such estimated amounts will be added to the total bid to determine the Project Commitment Amount and the amount of the performance and payment bonds. Force Account work shall be performed as directed by the Engineer.

BASIS OF PAYMENT

Payment will be made in accordance with subsection 109.04. Payment will constitute full compensation for all work necessary to complete the item.

Force account work valued at $5,000 or less, that must be performed by a licensed journeyman in order to comply with federal, state, or local codes, may be paid for after receipt of an itemized statement endorsed by the Contractor.

Force Account Item	Quantity	Estimated Amount
F/A Minor Contract Revisions	F.A.	$250,000.00

PROJECT DESCRIPTION

The City of Littleton Public Works is concentrating on maintaining and preserving the condition of existing roadway infrastructure throughout the City. This project consists of furnishing all labor, equipment, and some materials necessary to reconstruct, rehabilitate, and maintain West Euclid Avenue between Elati Street and Cherokee Street. The anticipated work includes asphalt paving, sidewalk, concrete curb, gutter, and curb ramps, patching, signage, striping, and adjusting manholes and valves.

LOCATION SCHEDULE

See attached construction documents.

CONSTRUCTION NOTES

Alternative construction sequences may be submitted but are subject to approval by the Engineer. Acceptance of alternatives will be based upon impacts to the public and cost.

Stockpiling location of material must be approved by the Engineer, or a written approval from property owner submitted.

All excess material will be disposed of off-site, or at an approved site by the Engineer.

Due to budget limitations, the City reserves the right to increase or decrease the total quantity to meet their needs. Repricing of the items will not be permitted due to a change in the planned quantity.

Work shall proceed at the direction of the City's Engineer or his designee.

PoDI / NHS	
FHWA PROJECT OF DIVISION INTEREST (PoDI)?	■ NO ☐ YES
NATIONAL HIGHWAY SYSTEM?	■ NO ☐ YES

FOR BURIED UTILITY INFORMATION
THREE (3) BUSINESS DAYS BEFORE YOU DIG
CALL 811
(or 1-800-922-1987)
UTILITY NOTIFICATION CENTER OF COLORADO (UNCC)
www.uncc.org

EUCLID AVE IMPROVEMENTS – PHASE 1 FROM ELATI ST TO CHEROKEE ST LITTLETON, COLORADO

PUBLIC WORKS & ENGINEERING
LITTLETON PROJECT NO. 23-03

TABULATION OF LENGTH		
STATION	LENGTH	
	LINEAR FEET	MILES
ROADWAY IMPROVEMENTS		
BEGIN – STA 0+14.32	1,487.89	0.28
END – STA 15+02.21		
TOTAL PROJECT LENGTH	**1,487.89**	**0.28**

LITTLETON DESIGN DATA	
DESIGN SPEED	20 MPH

DESIGNER CERTIFICATION:

I HEREBY CERTIFY THAT THIS GRADING, SEDIMENT AND EROSION CONTROL PLAN WAS PREPARED BY ME (OR UNDER MY DIRECT SUPERVISION) IN ACCORDANCE WITH THE PROVISIONS OF THE CITY OF LITTLETON'S STORM DRAINAGE DESIGN AND CRITERIA MANUAL FOR THE OWNERS THEREOF.

ENGINEER OF RECORD SIGNATURE _____ DATE _____

STATE OF COLORADO PE NO. _____

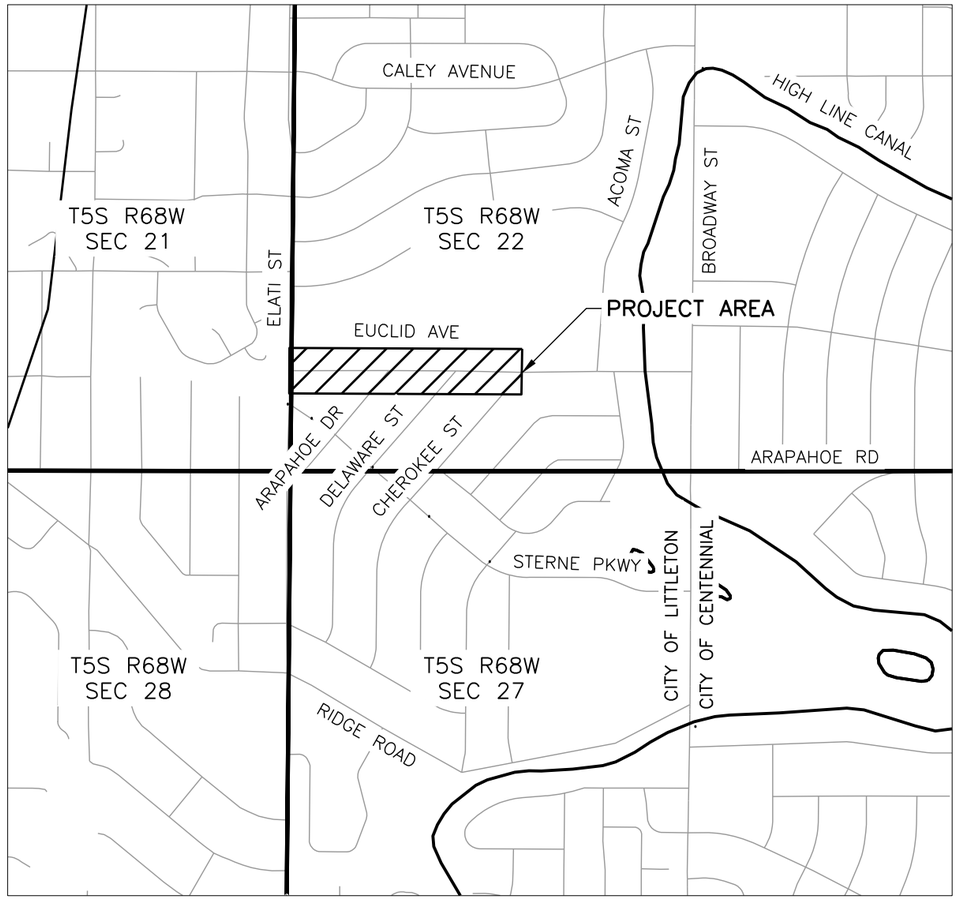
PROPERTY OWNER CERTIFICATION:

I HEREBY CERTIFY THAT THIS GRADING, SEDIMENT AND EROSION CONTROL PLAN FOR THE EUCLID AVE IMPROVEMENTS PROJECT – PHASE 1 IS MY RESPONSIBILITY TO IMPLEMENT AND MAINTAIN, AND I ACCEPT ALL OF THE TERMS OF THE GRADING, EROSION, AND SEDIMENT CONTROL GENERAL NOTES. I UNDER

PROPERTY OWNER PRINTED NAME _____ DATE _____

PROPERTY OWNER SIGNATURE _____

ADDRESS _____



VICINITY MAP

INDEX OF SHEETS

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2	M&S STANDARDS LIST
3–4	GENERAL NOTES
5–7	SUMMARY OF APPROXIMATE QUANTITIES
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12–14	TYPICAL SECTIONS
15–16	HORIZONTAL CONTROL PLANS
17–18	REMOVAL PLANS
19–24	ROADWAY PLAN AND PROFILES
25–41	ROADWAY DETAILS
42–48	STORM SEWER PLANS
49–51	TABULATION OF SIGNING AND STRIPING
52–53	SIGNING AND STRIPING PLANS
54–59	GESC PLANS
60	PHASING PLAN

COLORADO LICENSED
TRAVIS LEE GREEMAN
47650
3/17/25
PROFESSIONAL ENGINEER

Print Date: 3/13/2025
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Horizontal Scale: 1"=1,000' Vertical Scale:

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Sheet Revisions		
Date:	Comments	Initials

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Public Works & Engineering
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Littleton, Colorado 80120

As Constructed	EUCLID AVE IMPROVEMENTS – PHASE 1	Project No.
No. Revisions:	COVER SHEET	23-03
Revised:	Designer: LML / Detailer: LML	Structure Numbers:
Void:	Sheet Subset: COVER	Subset Sheets: 1 OF 1
		Sheet Number: 1 OF 60

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COLORADO
DEPARTMENT OF TRANSPORTATION

M&S STANDARDS PLANS LIST

July 31, 2019

Revised on December 20, 2024

ALL OF THE M&S STANDARD PLANS, AS SUPPLEMENTED AND REVISED, APPLY TO THIS PROJECT WHEN USED BY DESIGNATED PAY ITEM OR SUBSIDIARY ITEM.

THE M&S STANDARD PLANS USED TO DESIGN THIS PROJECT ARE INDICATED BY A MARKED BOX ■, AND WILL BE ATTACHED TO THE PLANS. ALL OTHER M&S STANDARD PLANS ARE STILL ELIGIBLE FOR USE IN CONSTRUCTION IF APPROVED BY AN APPROPRIATE CDOT ENGINEER.

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Horizontal Scale: Vertical Scale:

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Sheet Revisions		
Date:	Comments	Initials

Littleton Colorado
Public Works & Engineering
2255 W Berry Avenue
Littleton, Colorado 80120

As Constructed
No. Revisions:
Revised:
Void:

EUCLID AVE IMPROVEMENTS - PHASE 1
M&S STANDARDS LIST

Designer: LML
Detailer: LML
Sheet Subset: M&S
Structure Numbers:
Subset Sheets: 1 OF 1

Project No. 23-03
Sheet Number: 2 OF 60

GENERAL NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2023 EDITION, THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), CURRENT EDITION, THE PROJECT SPECIAL PROVISIONS, AND THE CDOT M&S STANDARDS PLANS.

2. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND ACCEPTANCE BY THE ENGINEER.

3. THE CONTRACTOR SHALL KEEP A COPY OF THE COLORADO DEPARTMENT OF TRANSPORTATION PLANS AND SPECIFICATIONS ON SITE AT ALL TIMES.

4. ALL WORK SHALL BE DONE TO THE LINES, GRADES, SECTIONS, AND ELEVATIONS SHOWN ON THE PLANS. THE ENGINEER MUST APPROVE, PRIOR TO CONSTRUCTION, ANY ALTERATION OR VARIANCE FROM THESE PLANS. ANY VARIATIONS FROM THESE PLANS SHALL BE PROPOSED IN CONSTRUCTION FIELD PRINTS AND TRANSMITTED TO THE ENGINEER.

5. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING THE WORK. NO FIELD CHANGES OR DEVIATIONS FROM THE DESIGNS ARE TO BE MADE WITHOUT PRIOR APPROVAL AND NOTIFICATION OF THE ENGINEER. NO CONSIDERATION WILL BE GIVEN TO CHANGE ORDERS FOR WHICH THE ENGINEER WAS NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM.

6. ALL WORK SHALL BE CONDUCTED WITHIN THE PUBLIC RIGHT-OF-WAY WITH THE APPROPRIATE PUBLIC PERMITS ON THE JOB SITE AT ALL TIMES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH STANDARD SPECIFICATION 107.01 AND 107.02.

7. ANY FACILITIES DAMAGED DURING THE COURSE OF CONSTRUCTION AS A RESULT OF THE CONTRACTOR'S OPERATION ARE TO REMAIN, INCLUDING CURB AND GUTTER, SIDEWALK, CURB RAMP, ASPHALT CONCRETE PAVEMENT, LANDSCAPING, AND LAWN IRRIGATION, SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION IMMEDIATELY AND PRIOR TO CONTINUING OTHER WORK.

8. THE CONTRACTOR SHALL OBTAIN ALL APPLICABLE PERMITS NEEDED TO COMPLETE THE PROJECT. COSTS FOR OBTAINING PERMITS SHALL BE INCLUDED IN THE COST OF THE PROJECT.

9. THERE WILL BE NO STOCKPILING OR SIDE CASTING OF WASTE MATERIALS WITHIN PUBLIC RIGHT-OF-WAY, INCLUDING, BUT NOT LIMITED TO, PAINT CHIPS, CONCRETE, SOILS, TRAFFIC SIGNAL EQUIPMENT, SIGNAGE, ETC., THAT COULD POTENTIALLY RESULT FROM PROJECT ACTIVITIES. REMOVAL IS INCIDENTAL AND NOT AN ADDITIONAL COST TO THE PROJECT.

10. THE CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES TO THOSE AREAS WITHIN THE LIMITS OF DISTURBANCE AND/OR TOES OF SLOPES AS SHOWN ON THE PLANS. ANY DISTURBANCE BEYOND THESE LIMITS SHALL BE RESTORED TO ORIGINAL CONDITIONS AT THE CONTRACTOR'S EXPENSE. CONSTRUCTION ACTIVITIES, IN ADDITION TO NORMAL CONSTRUCTION PROCEDURES, SHALL INCLUDE THE PARKING OF VEHICLES OR EQUIPMENT, DISPOSAL OF LITTER AND ANY OTHER ACTION WHICH WOULD ALTER EXISTING CONDITIONS, WHERE APPROVED.

11. ANY MUD OR OTHER MATERIAL TRACKED OR OTHERWISE DEPOSITED ON THE ROADWAY SHALL BE REMOVED AS DIRECTED BY THE INSPECTOR. REMOVAL IS INCIDENTAL AND NOT AN ADDITIONAL COST TO THE PROJECT.

12. WATER SHALL BE USED AS A DUST PALLIATIVE WHERE REQUIRED TO REDUCE MIGRATION OF AIR BORNE SOIL PARTICLES. THE CONTRACTOR SHALL PROVIDE WATER AS A DUST PALLIATIVE AS DIRECTED BY THE ENGINEER. WATER AS A DUST PALLIATIVE WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.

13. ALL LANDSCAPING WITHIN THE PROJECT AREA THAT IS DAMAGED, NOT SPECIFIED FOR REMOVAL, OR REQUIRES RESTORATION FOLLOWING CONSTRUCTION OPERATIONS, SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR AS LANDSCAPE RESTORATION – 1 LUMP SUM. SEEDING, MULCHING, AND SOD WILL BE PAID FOR SEPARATELY.

14. WHERE IT IS REQUIRED TO CUT ROADWAY PAVEMENT, OR SIDEWALK/CURB/GUTTER, THE CUTTING SHALL BE PERFORMED TO A NEAT WORK LINE TO THE FULL DEPTH OF THE PAVEMENT WITH A PAVEMENT CUTTING SAW OR OTHER METHOD AS APPROVED BY THE PROJECT ENGINEERING. THIS WORK WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE WORK. ALL SAWCUT RESIDUE SHALL BE PROPERLY CONTAINED AND NOT ALLOWED TO DRAIN TO ANY LIVE TRAFFIC LANES, STORM DRAINS, OR WATER WAYS PER 101, 107, AND 208 SPECIFICATIONS.

15. THE CONTRACTOR SHALL USE AN APPROPRIATE AND APPROVED MEANS FOR THE CAPTURING AND REMOVAL OF ANY AND ALL CONCRETE WASHOUT. THE DUMPING OF THE CONCRETE WASHOUT OR WATER ONTO THE SITE OR INTO THE MATERIAL STOCKPILE WILL NOT BE ACCEPTABLE.

16. ANY REMAINING/EXCESS SOIL, CONCRETE, OR OTHER DEBRIS LEFT BY THE CONCRETE TRUCK AS IT IS BEING WASHED OUT SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED OFF-SITE INCIDENTAL TO THE PROJECT.

17. EROSION/SEDIMENT CONTROL MEASURES MUST BE IMPLEMENTED BEFORE CONSTRUCTION OPERATIONS BEGIN. ALL EROSION/SEDIMENT CONTROL BMPS SHALL BE PLACED AS NEEDED AND AS APPROVED BY THE PROJECT ENGINEER. ALL EROSION/SEDIMENT CONTROL AND STORM WATER RESPONSIBILITIES ARE AT STATED IN THE STORMWATER MANAGEMENT PLAN AND SPECIFICATIONS 101, 107, AND 208.

18. FINAL GRADING OF PAVING SHALL PROVIDE POSITIVE DRAINAGE. WATER POCKETS AND POOLING OF WATER ON THE ROADWAY, RAMPS, OR SIDEWALK WILL NOT BE ACCEPTED AND SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE. A SOLUTION SHALL BE PROPOSED AND MUST BE APPROVED BY THE ENGINEER PRIOR TO CORRECTION.

GENERAL NOTES (CONT'D):

19. FOR PLAN QUANTITIES OF PAVEMENT MATERIALS, THE FOLLOWING RATES OF APPLICATION WERE USED:
    - AGGREGATE BASE COURSE @ 133 LBS/CU. FT.
    - HOT MIX ASPHALT @ 110 LBS/SY/INCH
    - TACK COAT DILUTED EMULSIFIED ASPHALT (SLOW-SETTING) @ 0.1 GAL/SY

20. A TACK COAT OF EMULSIFIED ASPHALT (SLOW-SETTING) SHALL BE APPLIED TO IMPROVE THE BOND AT THE FOLLOWING LOCATIONS:
    - BEFORE PLACING NEW PAVEMENT OVER EXISTING PAVEMENT
    - ALONG THE FACE OF ALL CURBS, GUTTERS, MANHOLES, ADJACENT EXISTING PAVEMENT, AND OTHER SURFACES WITH WHICH ASPHALT WILL BE PLACED
    - BETWEEN PAVEMENT COURSES WHEN DIRECTED BY THE ENGINEER

21. ALL RANGE POINTS, TIES, BENCHMARKS, OR OTHER SURVEY CONTROL POINTS WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION SHALL BE PRESERVED.

22. THE CONTRACTOR SHALL PROTECT ALL EXISTING SURVEY, RIGHT-OF-WAY, AND SECTION CORNER MONUMENTATION DURING CONSTRUCTION OPERATION UNLESS INSTRUCTED OTHERWISE. ANY MONUMENTS DISTURBED BY CONSTRUCTION OPERATIONS SHALL BE RESET BY A COLORADO LICENSED SURVEYOR AT THE CONTRACTORS EXPENSE. THE CONTRACTOR SHALL NOTE ALL MONUMENTS IN THE FIELD PRIOR TO CONSTRUCTION.

23. NO CONSTRUCTION VEHICLES SHALL BE IN THE TRAVELED WAY AT ANY TIME WITHOUT CONSTRUCTION TRAFFIC CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING APPROVED TRAFFIC CONTROL PLANS FROM THE CITY. TRAFFIC CONTROL SHALL FOLLOW MUTCD STANDARDS. ALL TRAFFIC CONTROL PLANS SHALL BE SUBMITTED TO THE CITY AND APPROVED BY THE CITY PRIOR TO THE COMMENCEMENT OF WORK.

24. THE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN TEMPORARY TRAFFIC CONTROL DEVICES NECESSARY THROUGHOUT THE DURATION OF CONSTRUCTION IN CONFORMANCE WITH TRAFFIC CONTROL PLANS.

25. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL AGENCY NOISE ORDINANCES AND/OR OTHER RESTRICTIONS APPLICABLE TO NIGHTTIME CONSTRUCTION ACTIVITIES FOR PROJECTS WITHIN THE LOCAL MUNICIPAL COVERAGE AREAS. THE CONTRACTOR SHALL COORDINATE WITH THE LOCAL AGENCY AND/OR CDOT FOR ALL NECESSARY NOISE EXEMPTIONS OR NOTICES, NOISE PERMIT VARIANCES, AND APPROVALS TO DO NIGHT WORK AS REQUIRED.

26. FOR THIS PROJECT, THE CONTRACTOR IS REQUIRED TO REVIEW AND UNDERSTAND ALL LOCAL AGENCY ORDINANCES WITH PROJECT APPLICABLE NIGHT RESTRICTIONS. WHEN CONDITIONS APPLY, THE CONTRACTOR SHALL SUBMIT A NIGHTTIME NOISE ORDINANCE MEMORANDUM(S) TO ALL JURISDICTIONAL LOCAL AUTHORITIES. THIS MEMORANDUM SHALL REQUEST CONSTRUCTION NOISE EXEMPTIONS FOR NIGHT WORK OPERATIONS (AT LEAST TWO WEEKS PRIOR TO THE PROPOSED NIGHT WORK START DATE) WHERE CONSTRUCTION WORK IS SCHEDULED BETWEEN THE HOURS OF 7:00 PM AND 7:00 AM. THE FOLLOWING INFORMATION SHALL BE INCLUDED IN THE EXEMPTION REQUEST SUBMITTALS AND SENT TO THE CITY ENGINEER: (1) REQUESTING ENTITY, (2) CONTACT PERSON AND PHONE NUMBER, (3) LOCATION OF THE WORK, (4) REASONS NIGHT WORK IS BEING REQUESTED, (5) TYPE OF ACTIVITIES PROPOSED TO OCCUR AT NIGHT, (6) EQUIPMENT PROPOSED TO BE USED AT NIGHT, (7) START AND END DATE PROPOSED, AND (8) TOTAL NUMBER OF NIGHTS WORK IS PROPOSED TO OCCUR.

27. THE CONTRACTOR SHALL CONTROL FUGITIVE DUST THROUGH IMPLEMENTATION PER 107, 209, AND 250 SPECIFICATIONS AND THE AIR POLLUTION CONTROL DIVISION'S AIR POLLUTANT EMISSION NOTIFICATION (APEN) REQUIREMENTS.

28. THE FOLLOWING BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED DURING CONSTRUCTION:
    - MAINTAIN ENGINES AND EXHAUST SYSTEMS ON CONSTRUCTION EQUIPMENT AND VEHICLES IN GOOD WORKING ORDER. PROHIBIT TAMPERING WITH EQUIPMENT TO INCREASE HORSEPOWER OR DISABLING EMISSION CONTROL DEVICES. EQUIPMENT IS SUBJECT TO INSPECTION BY THE PROJECT MANAGER TO ENSURE MAINTENANCE IS CONDUCTED REGULARLY.
    - PROHIBIT UNNECESSARY IDLING OF CONSTRUCTION EQUIPMENT AND VEHICLES.
    - LOCATE STAGING AREAS AND STATIONARY CONSTRUCTION EQUIPMENT/DIESEL ENGINES AS FAR AS POSSIBLE FROM RESIDENCES AND OTHER SENSITIVE RECEPTORS. COVER, WET, COMPACT, OR USE CHEMICAL STABILIZATION TO CONTROL DUST FROM DISTURBED AREAS AND EXCAVATED MATERIALS.

29. THE CONTRACTOR SHALL ABIDE BY ALL LITTLETON CONSTRUCTION HOUR REQUIREMENTS. SHOULD WEEKEND WORK BE REQUIRED, THE CONTRACTOR SHALL NOTIFY THE CITY IN WRITING 48 HOURS IN ADVANCE. WEEKEND WORK MAY BE GRANTED BY THE CITY ON A CASE-BY-CASE BASIS.

30. THE CONTRACTOR SHALL CALL 811 FOR UTILITY LOCATIONS AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY DIGGING, NOT INCLUDING THE DAY OF ACTUAL CONTACT.

31. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES IN THE WORK AREA BEFORE COMMENCING WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGES THERE TO. IF UNDERGROUND UTILITIES ARE EXPOSED DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE OWNER OF THE FACILITY TO ALLOW INSPECTION OF THE FACILITY FOR DAMAGE.

32. ACCESS TO EUCLID MIDDLE SCHOOL SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. ALL DISTURBED AREAS SHALL BE RESTORED FOLLOWING CONSTRUCTION.

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EUCLID AVE IMPROVEMENTS – PHASE 1
GENERAL NOTES

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GRADING, EROSION, AND SEDIMENT CONTROL GENERAL NOTES:

1. THE OPERATOR, PROPERTY OWNER, OR THEIR DESIGNEE IS RESPONSIBLE FOR OBTAINING APPLICABLE PERMITS AND THE INSTALLATION AND MAINTENANCE OF ALL BEST MANAGEMENT PRACTICES (BMPS) FOR EROSION AND SEDIMENT CONTROL, EVEN IF SPECIFIC TASKS MAY BE DESIGNATED TO OTHERS.

2. FOR ALL SITES DISTURBING ONE (1) OR MORE ACRES, THE STATE OF COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) REQUIRES A "STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY" PERMIT. A COPY OF THAT ISSUES PERMIT SHALL BE SUBMITTED TO THE ENGINEERING DIVISION PRIOR TO THE ISSUANCE OF A LOCAL CITY PERMIT.

3. ALL BMPS SHOWN ON THE GRADING, EROSION, AND SEDIMENT (GESC) PLANS SHALL BE INSTALLED PROPERLY AND INSPECTED BY A CITY REPRESENTATIVE PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY ON THE SITE THAT DISTURBS THE GROUND. BMPS SHALL BE INSPECTED, CLEANED, AND MAINTAINED BY THE PROPERTY OWNER OR DESIGNEE AS NEEDED DURING CONSTRUCTION.

4. ISSUANCE OF A GRADING OR BUILDING PERMIT WITH AN APPROVED GESC PLAN PROVIDES AUTHORIZATION FOR THE CITY TO ENTER THE PREMISES FOR PURPOSES OF INSPECTION AND COMPLIANCE WITH THE APPROVED PLANS, PROVISIONS OF MUNICIPAL CODE TITLE 7, CHAPTER 7, AND THE CITY'S STORM DRAINAGE DESIGN AND TECHNICAL CRITERIA.

5. THE CITY MAY REQUIRE THAT THE OPERATOR, PROPERTY OWNER, OR THEIR DESIGNEE PROVIDE ADDITIONAL EROSION OR SEDIMENT CONTROL MEASURES, SHOULD WATER OR WIND EROSION PROBLEMS OCCUR OR SHOULD THE IMPLEMENTED GESC PLAN AND BMPS NOT FUNCTION ADEQUATELY OR AS INTENDED.

6. INSPECTIONS AND NEEDED MAINTENANCE OF BMPS ARE REQUIRED A MINIMUM OF EVERY 14 DAYS AND AFTER STORM EVENTS, OR ALTERNATIVELY EVERY SEVEN (7) DAYS. THE CITY RESERVES THE RIGHT TO REQUIRE THE OPERATOR TO SUBMIT COPIES OF INSPECTION REPORTS OR OTHER STORMWATER MANAGEMENT DOCUMENTS AT ANY TIME.

7. GESC PLANS SHALL ACCOMMODATE CONSTRUCTION PHASING, INCLUDING CLEARING AND GRUBBING, UTILITIES, ROADS, VERTICAL CONSTRUCTION, FINAL GRADING, AND STABILIZATION, AND SHALL HAVE REDUNDANT DOWNSLOPE BMPS IN PLACE TO ENSURE ADEQUATE EROSION AND SEDIMENT CONTROL DURING ALL PHASES.

8. THE OPERATOR, PROPERTY OWNER, OR THEIR DESIGNEE SHALL BE RESPONSIBLE FOR IMPLEMENTATION AND FIELD UPDATES/CHANGES TO THE GESC PLAN THAT INCLUDES THE PLAN VIEW LAYOUT AND INSTALLATION DETAILS OF APPROPRIATE CONTROL MEASURES AND MAINTENANCE PROCEDURE.

9. IF THE OPERATOR, PROPERTY OWNER, OR THEIR DESIGNEE FAILS TO IMPLEMENT ANY OF THE PROVISIONS OF THE SWMP AND IGNORES THE CITY'S VERBAL OR WRITTEN REQUEST FOR IMMEDIATE REMEDY, THE CITY MAY MAKE ARRANGEMENTS TO HIRE A PRIVATE PROPERTY OWNER OR DESIGNEE TO PERFORM MAINTENANCE, INSTALLATION OR REPLACEMENT OF BMPS, OR CLEAN THE PUBLIC WAYS. CHARGES FOR SERVICES SHALL BE SENT TO THE OPERATOR, PROPERTY OWNER, OR THEIR DESIGNEE FOR PAYMENT. ENFORCEMENT PROCEDURES ARE OUTLINED IN LITTLETON MUNICIPAL CODE 7-7-12.

10. THE CITY MAY ISSUES A "STOP WORK" ORDER TO STOP ANY PERMITTED SITE CONSTRUCTION WORK FROM PROCEEDING UNTIL THE BMPS PROVIDED ON THE GESC PLANS ARE INSTALLED, IMPLEMENTED AS INTENDED, MAINTAINED, OR UNTIL CORRECTIVE MEASURES ARE TAKEN AND ANY NECESSARY CLEANUP IS PERFORMED. THE OWNER BEARS ALL COSTS ASSOCIATED WITH ANY DELAYS IN THE PROJECT.

11. THE OPERATOR, PROPERTY OWNER, OR THEIR DESIGNEE SHALL NOT UTILIZE THE PUBLIC STREET AS A STAGING AREA FOR THE TEMPORARY STORAGE OF BUILDING MATERIALS, EXCAVATED MATERIALS, OR CONSTRUCTION EQUIPMENT, EXCEPT AS APPROVED BY THE CITY. USE OF OFFSITE PRIVATE PROPERTY FOR STAGING MAY BE SUBJECT TO REVIEW BY THE COMMUNITY DEVELOPMENT DEPARTMENT.

12. A CONSTRUCTION DEWATERING DISCHARGE PERMIT SHALL BE OBTAINED FROM CDPHE PRIOR TO PUMPING ANY SURFACE OR SUB-SURFACE WATER INTO ANY CITY PUBLIC WAY OR STORM DRAINAGE SYSTEM. ADEQUATE SEDIMENT CONTROL BMPS SHALL BE REQUIRED AT THE PUMP'S INLET AND OUTLET.

13. ALL SOIL AREAS DISTURBED SHALL BE GRADED, SEEDED, AND MULCHED OR OTHERWISE VEGETATED OR COVERED TO STABILIZE THE GROUND SURFACE WITHIN 14 DAS OF COMPLETION OF GRADING OPERATIONS. THE CITY SHALL APPROVE THE SEED MIX AND RATE OF APPLICATION PRIOR TO SEEDING THE AREA. IF DISTURBED SOIL AREAS ARE TO BE LEFT DORMANT FOR OVER 14 DAYS, A TEMPORARY STABILIZING COVER IS REQUIRED (THE METHOD TO BE APPROVED BY THE CITY). THE WEEDS ARE NOT AN ACCEPTABLE TEMPORARY OR PERMANENT STABILIZATION COVER.

14. BMPS SHALL REMAIN IN-PLACE AND OPERATIONAL UNTIL ALL SITE PAVING, PERMANENT LANDSCAPING, OR ADEQUATE VEGETATIVE COVER ESTABLISHMENT IS COMPLETED. ADEQUATE VEGETATION COVER IS DEFINED AS A UNIFORM VEGETATIVE COVER WITH A PLANT DENSITY (STEM OR STALKS) OF AT LEAST 70% OF THE PRE-DISTURBANCE CONDITION. TEMPORARY IRRIGATION MAY BE NECESSARY TO ESTABLISH PLANT GROWTH. ADEQUATE VEGETATIVE COVER WILL BE DETERMINED BY CITY STAFF WITH AN ON-SITE INSPECTION PRIOR TO ANY PERMIT RELEASE INCLUDING TERMINATION OF A CDPHE STORMWATER PERMIT.

15. AFTER THE SITE HAS BEEN STABILIZED AS DETERMINED BY CITY STAFF, THE OPERATOR, PROPERTY OWNER, OR THEIR DESIGNEE SHALL REMOVE ALL BMPS AND CLEAN UP ANY STORM SEWERS WHERE CONSTRUCTION SEDIMENT MAY HAVE DEPOSITED.

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EUCLID AVE IMPROVEMENTS - PHASE 1				Project No.
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CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY/TRAFFIC		DRAINAGE		UTILITIES		PROJECT TOTALS	
			PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.
202-00018	REMOVAL OF CHASE DRAIN	EA			2				2	
202-00019	REMOVAL OF INLET	EA			1				1	
202-00021	REMOVAL OF MANHOLE	EA					1		1	
202-00035	REMOVAL OF PIPE	LF			175				175	
202-00200	REMOVAL OF SIDEWALK	SY	403						403	
202-00203	REMOVAL OF CURB AND GUTTTER	LF	478						478	
202-00204	REMOVAL OF CURB, GUTTER AND SIDEWALK	LF	2572						2572	
202-00206	REMOVAL OF CONCRETE CURB RAMP	SY	88						88	
202-00210	REMOVAL OF CONCRETE PAVEMENT	SY	200						200	
202-00220	REMOVAL OF ASPHALT MAT	SY	6571						6571	
202-00226	REMOVAL OF ASPHALT MAT (SPECIAL)	SY	128						128	
202-00810	REMOVAL OF GROUND SIGN	EA	8						8	
203-00000	UNCLASSIFIED EXCAVATION	CY	3220						3220	
208-00008	EROSION LOG TYPE 2 (12 INCH)	LF	1912						1912	
208-00029	REINFORCED ROCK BERM	LF	28						28	
208-00035	AGGREGATE BAG	LF	96						96	
208-00045	CONCRETE WASHOUT AREA	EA	1						1	
208-00054	STORM DRAIN INLET PROTECTION (TYPE II)	EA	10						10	
208-00070	VEHICLE TRACKING CONTROL	EA	2						2	
208-00200	EROSION CONTROL MANAGEMENT	LS	1						1	

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SUMMARY OF APPROXIMATE QUANTITIES

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			PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.
210-00067	RESET MONUMENT (TYPE 5)	EA	1						1	
210-00810	RESET GROUND SIGN	EA	4						4	
210-00827	RESET PULL BOX	EA					1		1	
210-04010	ADJUST MANHOLE	EA					8		8	
210-04050	ADJUST VALVE BOX	EA					9		9	
212-01200	LANDSCAPE RESTORATION	LS	1						1	
216-00201	EROSION RETENTION BLANKET (STRAW-COCONUT) (BIODEGRADABLE CLASS 1)	SY	73						73	
304-05007	AGGREGATE BASE COURSE (CLASS 6)	CY	2033						2033	
403-00720	HOT MIX ASPHALT (PATCHING)	TON	35						35	
403-33741	HOT MIX ASPHALT (GRADING S) (75) (PG 64-22)	TON	701						701	
403-34741	HOT MIX ASPHALT (GRADING SX) (75) (PG 64-22)	TON	703						703	
412-00600	CONCRETE PAVEMENT (6 INCH)	SY	488						488	
412-01000	CONCRETE PAVEMENT (10 INCH)	SY	108						108	
412-01001	CONCRETE PAVEMENT (10 INCH) (SPECIAL)	SY	54						54	
503-00018	DRILLED SHAFT 18 INCH	LF	24						24	
603-01185	18 INCH REINFORCED CONCRETE PIPE (CIP)	LF			170				170	
603-01245	24 INCH REINFORCED CONCRETE PIPE (CIP)	LF			1100				1100	
604-16050	INLET TYPE 16 (SINGLE) (SPECIAL)	EA			5				5	
604-16550	INLET TYPE 16 (DOUBLE) (SPECIAL)	EA			2				2	
604-19205	INLET TYPE R L10 (5 FOOT)	EA			1				1	

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			PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.
604-19305	INLET TYPE R L15 (5 FOOT)	EA			1				1	
604-39010	MANHOLE SPECIAL (10 FOOT)	EA			7				7	
608-00000	CONCRETE SIDEWALK	SY	2695						2695	
608-00010	CONCRETE CURB RAMP	SY	207						207	
609-21020	CURB AND GUTTER TYPE 2 (SECTION II-B)	LF	2976						2976	
609-22021	CURB, GUTTER AND SIDEWALK TYPE 2 (SECTION MS)	LF	105						105	
614-00011	SIGN PANEL (CLASS I)	SF	59						59	
614-00012	SIGN PANEL (CLASS II)	SF	63						63	
614-00217	STEEL SIGN POST (2x2 INCH TELESPAR TUBING)	LF	120						120	
614-72860	PEDESTRIAN PUSH BUTTON	EA	4						4	
614-80003	RECTANGULAR RAPID FLASHING BEACON	EA	4						4	
614-84000	TRAFFIC SIGNAL PEDESTRIAN POLE STEEL	EA	4						4	
625-00000	CONSTRUCTION SURVEYING	LS	1						1	
626-00000	MOBILIZATION	LS	1						1	
627-00008	MODIFIED EPOXY PAVEMENT MARKING	GAL	16						16	
627-30210	THERMOPLASTIC PAVEMENT MARKING (XWALK-STOPLINE)	SF	506						506	
627-30405	THERMOPLASTIC PAVEMENT MARKING (WORD-SYMBOL)	SF	112						112	
630-00000	TRAFFIC CONTROL	LS	1						1	
700-70010	F/A MINOR CONTRACT REVISIONS	FA	1						1	

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REMOVAL QUANTITIES

LOCATION	SIDE	202-00018	202-00019	202-00021	202-00035	202-00200	202-00203	202-00204	202-00206	202-00210	202-00220	202-00226
		REMOVAL OF CHASE DRAIN	REMOVAL OF INLET	REMOVAL OF MANHOLE	REMOVAL OF PIPE	REMOVAL OF SIDEWALK	REMOVAL OF CURB AND GUTTER	REMOVAL OF CURB, GUTTER AND SIDEWALK	REMOVAL OF CONCRETE CURB RAMP	REMOVAL OF CONCRETE PAVEMENT	REMOVAL OF ASPHALT MAT	REMOVAL OF ASPHALT MAT (SPECIAL)
		EA	EA	EA	LF	SY	LF	LF	SY	SY	SY	SY
0+14 TO 14+84	RT/LT										6471	
0+18 TO 0+34	RT/LT		1		175			105	24	3	8	
0+20 TO 0+36	RT							18	11			
0+34 TO 2+36	LT							203	12		38	
0+36 TO 0+71	RT							37		13		
0+71 TO 1+40	RT							69		19		
1+40 TO 2+85	RT							136	5	20		
2+36 TO 2+86	LT					29	41			10		
2+85 TO 4+75	RT							190		10		
2+87 TO 5+68	LT					243	281					
4+75 TO 6+12	RT							138		36		
4+19 TO 4+31	RT/LT											42
5+68 TO 6+48	LT	1		1		68	79					
6+12 TO 6+31	RT							31	10			
6+31 TO 6+94	RT							74	10			
6+48 TO 7+25	LT	1				63	77			9		
6+94 TO 10+51	RT							360		22		
7+25 TO 8+74	LT							149				
8+74 TO 12+48	LT							374			54	
9+19 TO 9+30	RT/LT											43
10+51 TO 10+70	RT							28	8			
10+70 TO 11+26	RT							70	8			
11+26 TO 14+84	RT							358		58		
12+64 TO 12+76	RT/LT											43
12+48 TO 14+80	LT							232				
TOTAL		**2**	**1**	**1**	**175**	**403**	**478**	**2572**	**88**	**200**	**6571**	**128**

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TABULATION OF ROADWAY QUANTITIES

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Sheet Subset: RDWY TABS
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Subset Sheets: 1 OF 4

Project No. 23-03

Sheet Number: 8 OF 60

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ROADWAY QUANTITIES

LOCATION	SIDE	210-00067	210-00827	210-04010	210-04050	412-00600	608-00000	608-00010	609-21020	609-21020
		RESET MONUMENT (TYPE 5)	RESET PULL BOX	ADJUST MANHOLE	ADJUST VALVE BOX	CONCRETE PAVEMENT (6 INCH)	CONCRETE SIDEWALK	CONCRETE CURB RAMP	CURB AND GUTTER TYPE 2 (SECTION II-B)	CURB AND GUTTER TYPE 2 (SECTION II-B)
		EA	EA	EA	EA	SY	SY	SY	LF	LF
0+15 TO 0+49	LT						27	32	19	105
0+16 TO 0+57	RT						37	33	27	
0+25	LT				1					
0+49 TO 2+05	LT						213		156	
0+57 TO 1+16	RT					25	22		59	
0+87	RT			1						
0+98	RT			1						
1+16 TO 2+02	RT					36	39		87	
1+60	LT			1						
2+02 TO 2+83	RT					57	52	13	71	
2+05 TO 2+73	LT					49	41		68	
2+73 TO 3+79	LT						75	14	96	
2+74	LT				1					
2+83 TO 2+92	RT						12		10	
2+92 TO 4+70	RT					64	89		178	
3+39	RT			1						
3+79 TO 6+14	LT					64	314		235	
4+61	LT			1						
4+63	LT			1						
4+70 TO 6+30	RT					42	113	16	190	
6+14 TO 8+40	LT					64	233	14	226	
6+30 TO 6+87	RT						122	16	82	
6+66	RT				1					
6+71	RT				1					
SUBTOTALS		**0**	**0**	**6**	**4**	**401**	**1389**	**138**	**1504**	**105**

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EUCLID AVE IMPROVEMENTS - PHASE 1
TABULATION OF ROADWAY QUANTITIES

Designer: LML
Detailer: CWD
Sheet Subset: RDWY TABS
Structure Numbers:
Subset Sheets: 2 OF 4

Project No. 23-03

Sheet Number: 9 OF 60

ROADWAY QUANTITIES

LOCATION	SIDE	210-00067	210-00827	210-04010	210-04050	412-00600	608-00000	608-00010	609-21020	609-21020
		RESET MONUMENT (TYPE 5)	RESET PULL BOX	ADJUST MANHOLE	ADJUST VALVE BOX	CONCRETE PAVEMENT (6 INCH)	CONCRETE SIDEWALK	CONCRETE CURB RAMP	CURB AND GUTTER TYPE 2 (SECTION II-B)	CURB AND GUTTER TYPE 2 (SECTION II-B)
		EA	EA	EA	EA	SY	SY	SY	LF	LF
6+87 TO 7+77	RT						38	13	81	
7+77 TO 10+68	RT						182	17	311	
8+37	LT				1					
8+40 TO 14+80	LT						787	22	643	
8+54	LT				1					
10+20	LT		1							
10+68 TO 11+93	RT					87	105	17	144	
10+77	RT				1					
11+10	LT	1								
11+11	RT				1					
11+88	RT			1						
11+93 TO 14+84	RT						194		293	
13+35	RT			1						
13+55	LT				1					
SUBTOTALS		**1**	**1**	**2**	**5**	**87**	**1306**	**69**	**1472**	**0**
TOTALS		**1**	**1**	**8**	**9**	**488**	**2695**	**207**	**2976**	**105**

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TABULATION OF ROADWAY QUANTITIES

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PAVEMENT QUANTITIES

LOCATION	SIDE	304-06007	403-33741	403-34741	412-01000	412-01001
		AGGREGATE BASE COURSE (CLASS 6)	HMA (GRADING S) (75) (PG 64-22)	HMA (GRADING SX) (75) (PG 64-22)	CONCRETE PAVEMENT (10 INCH)	CONCRETE PAVEMENT (10 INCH) (SPECIAL)
		CY	TON	TON	SY	SY
0+14 TO 14+84	RT/LT	1239	701	701		
0+14 TO 14+84	LT	441				
0+17 TO 6+06	RT	136				
6+29 TO 10+44	RT	102				
10+68 TO 14+84	RT	91				
2+62 TO 2+92	RT/LT	12			54	27
6+77 TO 7+07	RT/LT	12			54	27
9+94 TO 10+06	RT/LT			2		
TOTAL		**2033**	**701**	**703**	**108**	**54**

EARTHWORK QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY
203-00010	UNCLASSIFIED EXCAVATION (COMPLETE IN PLACE)	CY	3,220
FOR INFORMATION ONLY			
	EMBANKMENT MATERIAL	CY	-84
	EMBANKMENT X FACTOR (1.15)	CY	-97
	EXCAVATION (ROADWAY)	CY	3,220
	EXCESS FOR DISPOSAL	CY	3,123

EARTHWORK NOTES:

1. HAULING WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE WORK.
2. THERE IS NO DESIGNATED BORROW SITE. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE EMBANKMENT BORROW SITE.
3. TOPSOIL WILL BE REQUIRED TO A DEPTH OF 6 INCHES ON AREAS TO BE SEEDED AND SODDED. EXISTING TOPSOIL WITHIN THE LIMITS OF DISTURBANCE MAY BE STRIPPED AND REUSED. STRIPPING AND STOCKPILING EXISTING TOPSOIL WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE WORK.
4. ON-SITE EXCAVATED MATERIAL MAY NOT BE SUITABLE FOR REUSE ON THE PROJECT. NATIVE MATERIAL SHALL BE TESTED BY THE CONTRACTOR TO CHECK IF IT MEETS THE EMBANKMENT MATERIAL SPECIFICATIONS.
5. THE EMBANKMENT COMPACTION FACTOR IS AN ESTIMATE AND HAS NOT BEEN VERIFIED.
6. THE EXCAVATION QUANTITY IS APPROXIMATE. THE CONTRACTOR SHALL WORK WITH THE ENGINEER TO VERIFY THE INFORMATION SHOWN OR SHALL MODIFY AND FIELD-FIT THE DESIGN AS NECESSARY.
7. EXCESS MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OFFSITE IN ACCORDANCE WITH APPLICABLE REGULATIONS.

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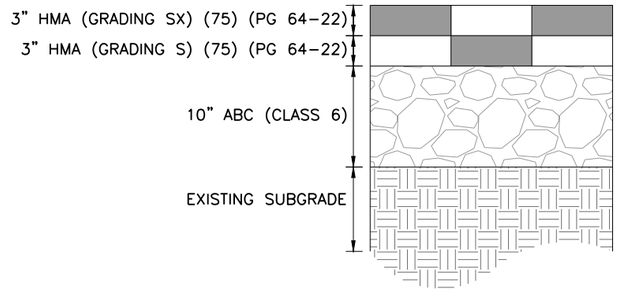
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EUCLID AVE IMPROVEMENTS - PHASE 1
TABULATION OF ROADWAY QUANTITES

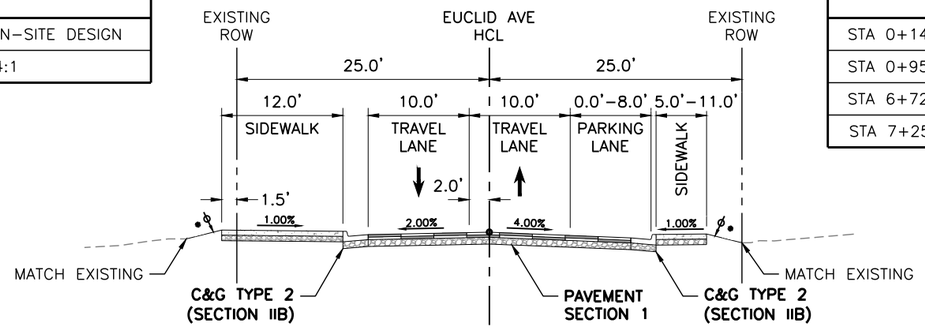
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Detailer: LML
Sheet Subset: RDWY TABS
Structure Numbers:
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Project No. 23-03
Sheet Number: 11 OF 60



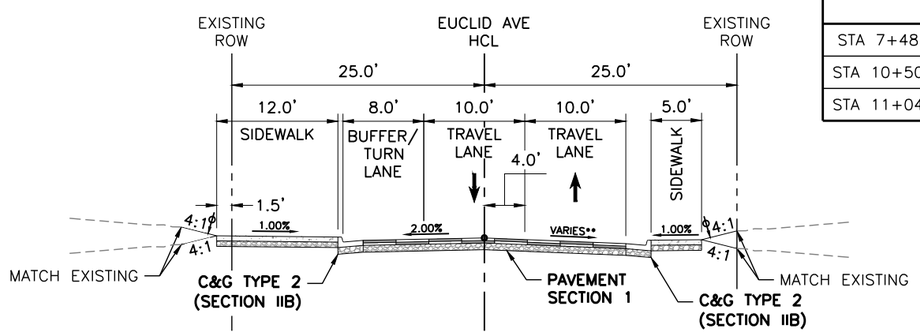
PAVEMENT SECTION 1
HOT MIX ASPHALT

*LT GRADING TABLE	
STA 0+14.32 TO STA 6+68.05	MATCH LPS ON-SITE DESIGN
STA 6+68.05 TO STA 7+48.81	4:1



EUCLID AVE TYPICAL SECTION 1
STA 0+14.32 TO STA 7+48.81
LOOKING EAST
SEE NOTE 2, THIS SHEET

*RT GRADING TABLE	
STA 0+14.32 TO STA 0+95.00	3:1
STA 0+95.00 TO STA 6+72.00	4:1
STA 6+72.00 TO STA 7+25.00	3:1
STA 7+25.00 TO STA 7+48.81	4:1



EUCLID AVE TYPICAL SECTION 2
STA 7+48.81 TO STA 13+68.00
LOOKING EAST

**RT TRAVEL LANE CROSS SLOPE	
STA 7+48.81 TO STA 10+50.83	4%
STA 10+50.83 TO STA 11+04.83	TRANSITION 4% TO 2%
STA 11+04.83 TO STA 13+68.00	2%

LEGEND:

- ϕ — STABILIZE AND REVEGETATE TO THIS LINE WITH 6" OF TOPSOIL UNLESS OTHERWISE DIRECTED
- ∘ — PROFILE GRADE LINE

NOTES:

1. TYPICAL SECTIONS PROVIDE CROSS SECTIONAL ELEMENTS, DEPTHS, WIDTHS, MATERIAL AND APPROXIMATE SLOPES OVER VARYING STATION RANGES. DIMENSION SHOWN ARE TYPICAL. SAWCUT LOCATIONS, CROSS SLOPES, ROADWAY LANE WIDTHS, AND SIDEWALK WIDTH VARY AT SOME LOCATIONS. FOR ADDITIONAL INFORMATION, REFER TO THE ROADWAY PLAN AND PROFILES, ROADWAY DETAILS, AND SIGNING AND STRIPING PLANS.
2. LITTLETON PUBLIC SCHOOLS (LPS) IS DESIGNING ON-SITE IMPROVEMENTS (OUTSIDE OF THE RIGHT-OF-WAY) AT EUCLID MIDDLE SCHOOL. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO MATCH ON-SITE, FINISHED GRADE IMPROVEMENTS.

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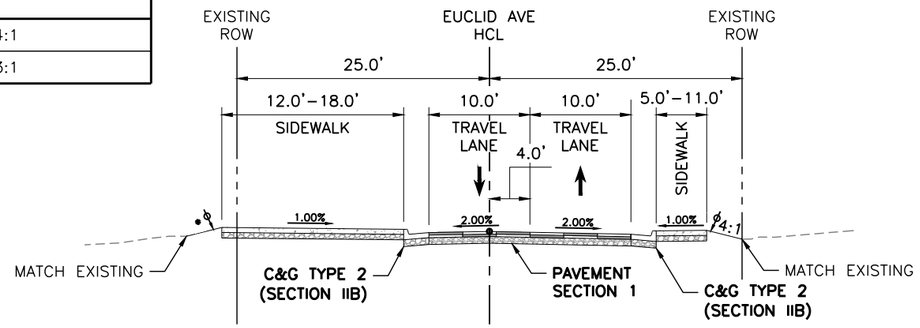
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TYPICAL SECTIONS

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Structure Numbers:
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Project No. 23-03
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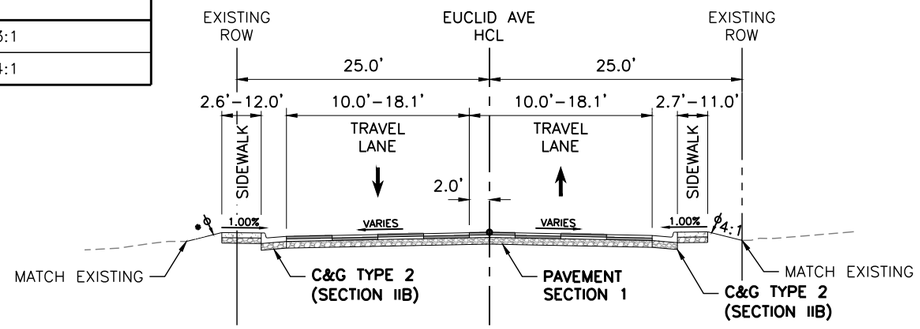
•LT GRADING TABLE	
STA 13+68.00 TO STA 14+10.00	4:1
STA 14+10.00 TO STA 14+33.00	3:1



EUCLID AVE TYPICAL SECTION 3

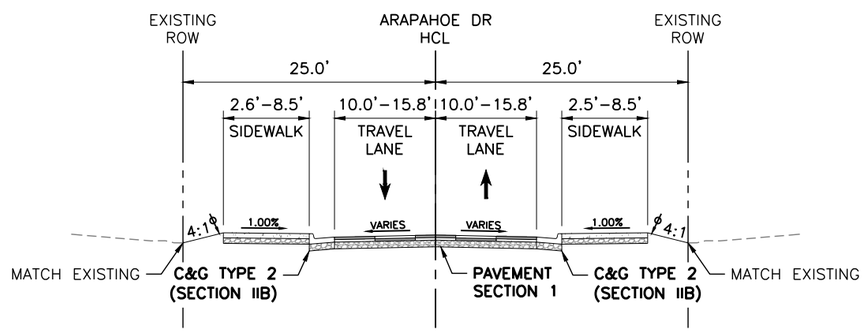
STA 13+68.00 TO STA 14+33.00
LOOKING EAST

•LT GRADING TABLE	
STA 14+33.00 TO STA 14+60.00	3:1
STA 14+60.00 TO STA 14+84.21	4:1



EUCLID AVE TYPICAL SECTION 4

STA 14+33.00 TO STA 14+84.21
LOOKING EAST



ARAPAHOE DR TYPICAL SECTION

STA 100+10.00 TO STA 100+75.40
LOOKING SOUTH
SEE NOTE 2, THIS SHEET

LEGEND:

- ϕ STABILIZE AND REVEGETATE TO THIS LINE WITH 6" OF TOPSOIL UNLESS OTHERWISE DIRECTED
- PROFILE GRADE LINE

NOTES:

1. TYPICAL SECTIONS PROVIDE CROSS SECTIONAL ELEMENTS, DEPTHS, WIDTHS, MATERIAL AND APPROXIMATE SLOPES OVER VARYING STATION RANGES. DIMENSION SHOWN ARE TYPICAL. SAWCUT LOCATIONS, CROSS SLOPES, ROADWAY LANE WIDTHS, AND SIDEWALK WIDTH VARY AT SOME LOCATIONS. FOR ADDITIONAL INFORMATION, REFER TO THE ROADWAY PLAN AND PROFILES, ROADWAY DETAILS, AND SIGNING AND STRIPING PLANS.
2. THE STATION RANGE PROVIDED FOR ARAPAHOE DR IS APPROXIMATE. EXISTING TOPOGRAPHIC SURVEY ENDS PRIOR TO THE NOTED STATION TIE–IN LOCATION. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO DETERMINE IF THE TIE–IN LOCATION SHOULD BE MODIFIED.

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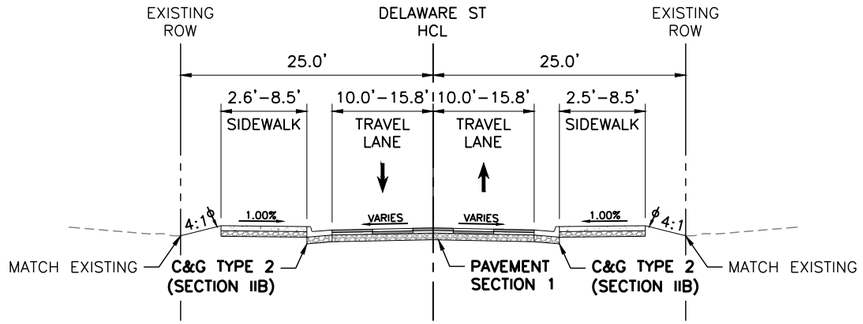
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EUCLID AVE IMPROVEMENTS – PHASE 1
TYPICAL SECTIONS

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Sheet Number: 13 OF 60



DELAWARE ST TYPICAL SECTION

STA 200+16.00 TO STA 200+73.03
LOOKING SOUTH
SEE NOTE 2, THIS SHEET

LEGEND:

- STABILIZE AND REVEGETATE TO THIS LINE WITH 6" OF TOPSOIL UNLESS OTHERWISE DIRECTED
- PROFILE GRADE LINE

NOTES:

1. TYPICAL SECTIONS PROVIDE CROSS SECTIONAL ELEMENTS, DEPTHS, WIDTHS, MATERIAL AND APPROXIMATE SLOPES OVER VARYING STATION RANGES. DIMENSION SHOWN ARE TYPICAL. SAWCUT LOCATIONS, CROSS SLOPES, ROADWAY LANE WIDTHS, AND SIDEWALK WIDTH VARY AT SOME LOCATIONS. FOR ADDITIONAL INFORMATION, REFER TO THE ROADWAY PLAN AND PROFILES, ROADWAY DETAILS, AND SIGNING AND STRIPING PLANS.
2. THE STATION RANGE PROVIDED FOR DELAWARE ST IS APPROXIMATE. EXISTING TOPOGRAPHIC SURVEY ENDS PRIOR TO THE NOTED STATION TIE–IN LOCATION. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO DETERMINE IF THE TIE–IN LOCATION SHOULD BE MODIFIED.

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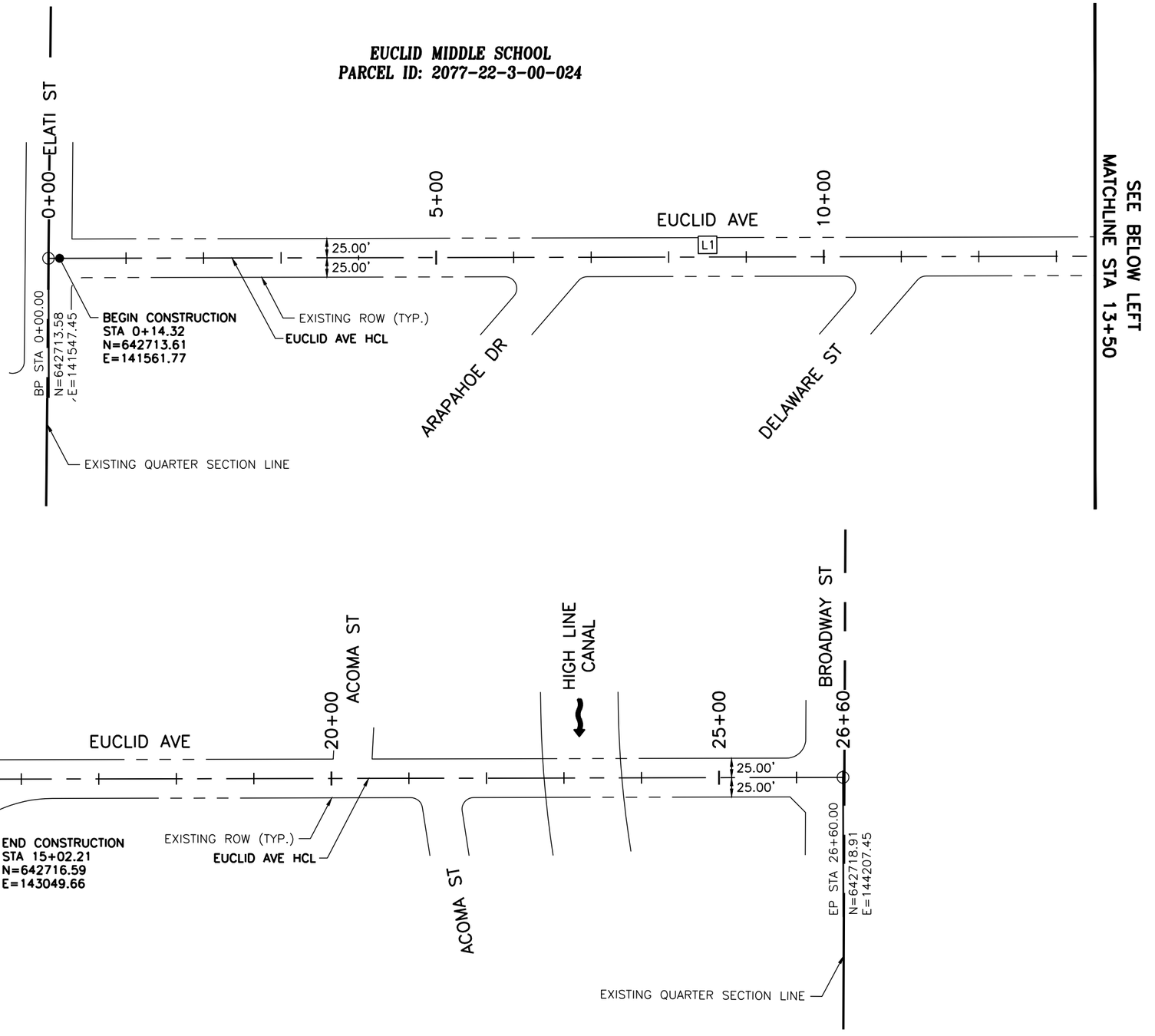
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TYPICAL SECTIONS

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LINE DATA TABLE		
LINE #	LENGTH	DIRECTION
L1	2660.00	N89° 53' 07"E

NOTES:

1. HORIZONTAL CONTROL LINE INFORMATION FOR ARAPAHOE DR AND DELAWARE ST CAN BE FOUND ON SHEET 16.

0' 75' 150' 300'

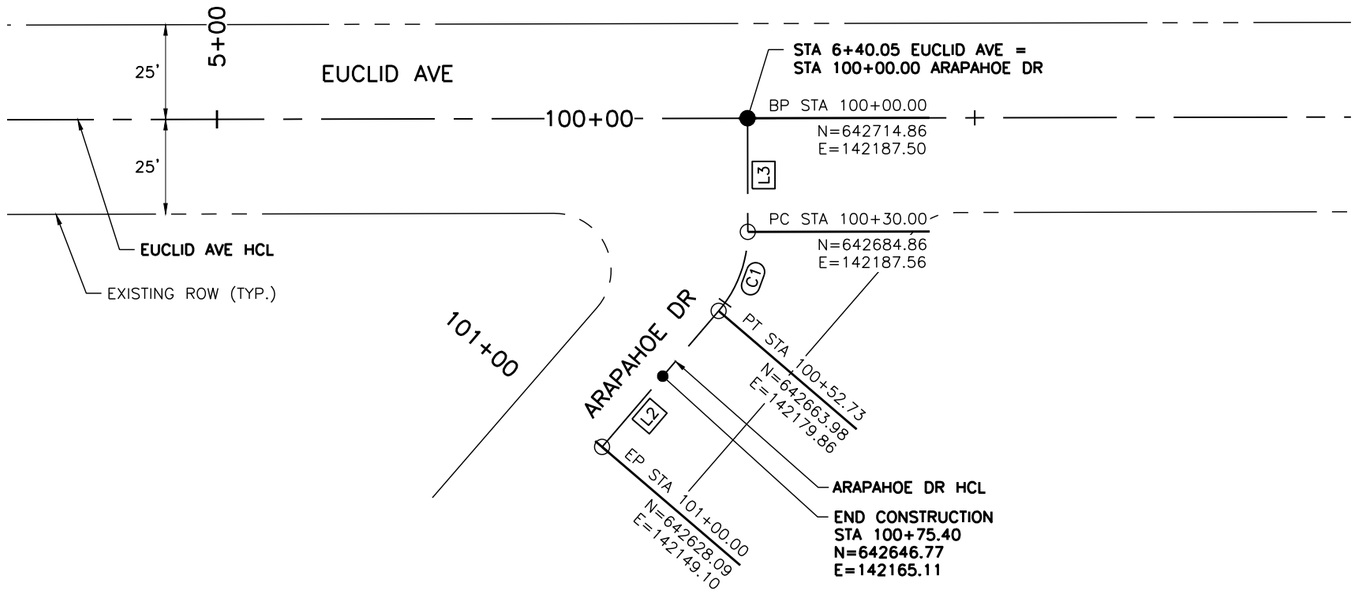
SCALE: 1" = 150'

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LINE DATA TABLE		
LINE #	LENGTH	DIRECTION
L2	47.27	S40° 35' 25"W
L3	30.00	S00° 06' 53"E
L4	49.63	S40° 59' 02"W
L5	31.00	S00° 06' 53"E

CURVE DATA TABLE				
CURVE #	RADIUS	LENGTH	DELTA	TANGENT
C1	32.00	22.73	40° 42' 20"	11.87
C2	27.00	19.37	41° 05' 50"	10.12

0' 20' 40' 80'

SCALE: 1" = 40'

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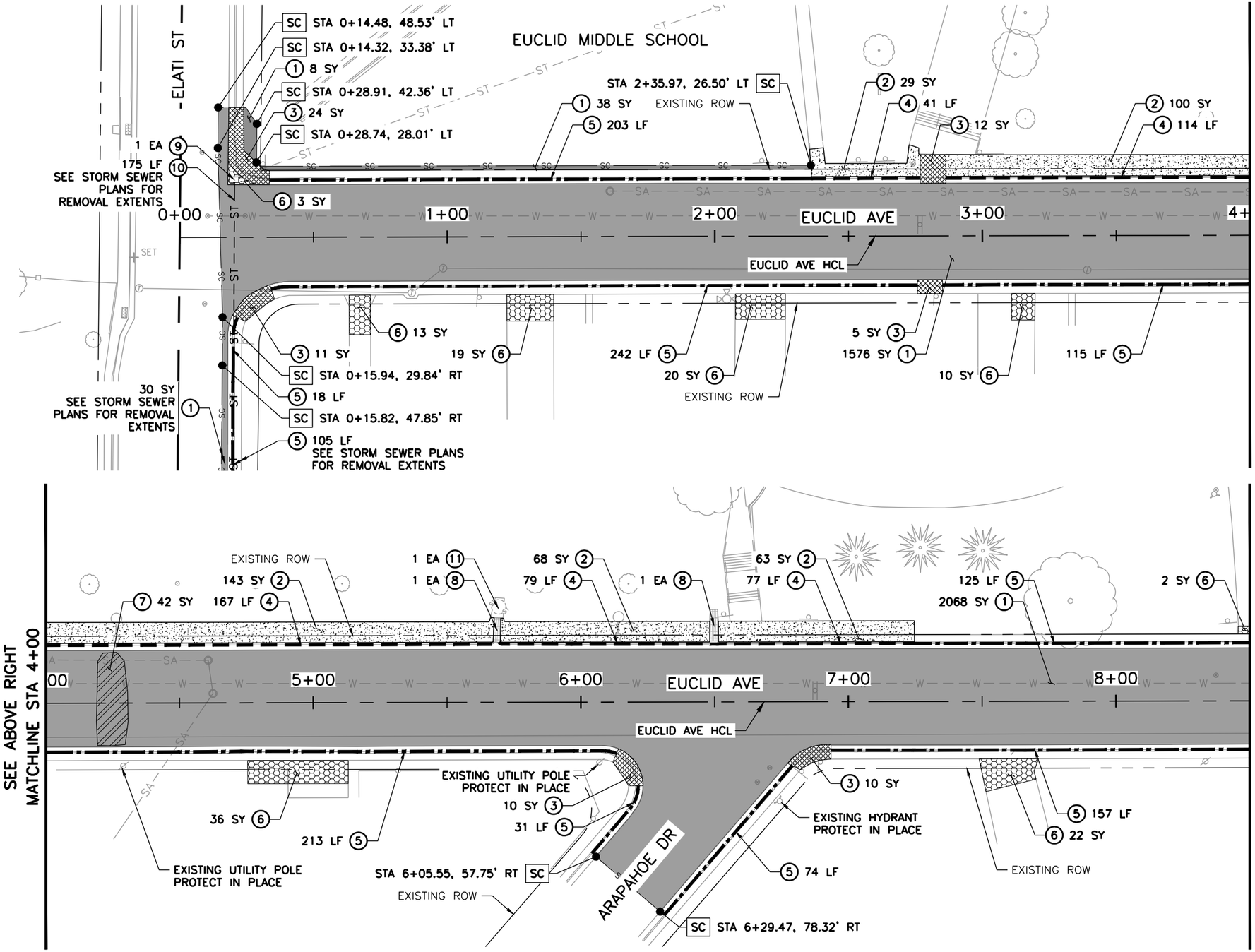
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HORIZONTAL CONTROL PLANS

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Sheet Number: 16 OF 60

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LEGEND:

- — SC — SAWCUT (SC) LIMITS
- (1) REMOVAL OF ASPHALT MAT
- (2) REMOVAL OF SIDEWALK
- (3) REMOVAL OF CONCRETE CURB RAMP
- (4) REMOVAL OF CURB AND GUTTER
- (5) REMOVAL OF CURB, GUTTER AND SIDEWALK
- (6) REMOVAL OF CONCRETE PAVEMENT
- (7) REMOVAL OF ASPHALT MAT (SPECIAL)
- (8) REMOVAL OF CHASE DRAIN
- (9) REMOVAL OF INLET
- (10) REMOVAL OF PIPE
- (11) REMOVAL OF MANHOLE

NOTES:

1. SAWCUTTING SHALL BE INCLUDED IN THE COST OF REMOVAL OF ASPHALT MAT.

0' 20' 40' 80'

SCALE: 1" = 40'

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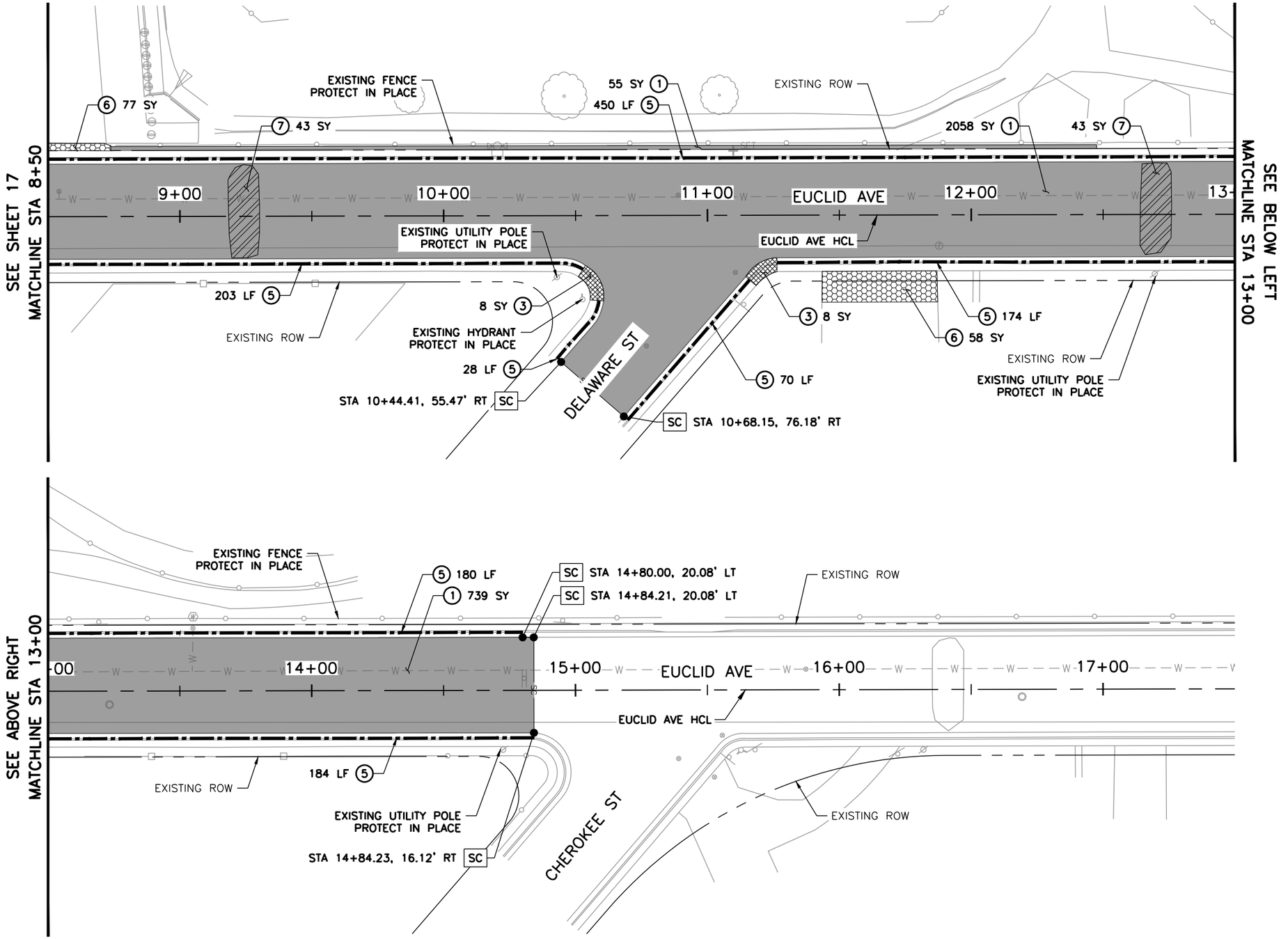
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EUCLID AVE IMPROVEMENTS – PHASE 1
REMOVAL PLANS

Designer:	CWD	Structure Numbers	
Detailer:	CWD		
Sheet Subset:	DEMO	Subset Sheets:	1 OF 2

Project No. 23-03

Sheet Number: 17 OF 60



LEGEND:

- — SC — SAWCUT (SC) LIMITS
- (1) REMOVAL OF ASPHALT MAT
- (2) REMOVAL OF SIDEWALK
- (3) REMOVAL OF CONCRETE CURB RAMP
- (4) REMOVAL OF CURB AND GUTTER
- (5) REMOVAL OF CURB, GUTTER AND SIDEWALK
- (6) REMOVAL OF CONCRETE PAVEMENT
- (7) REMOVAL OF ASPHALT MAT (SPECIAL)
- (8) REMOVAL OF CHASE DRAIN
- (9) REMOVAL OF INLET
- (10) REMOVAL OF PIPE
- (11) REMOVAL OF MANHOLE

NOTES:

1. SAWCUTTING SHALL BE INCLUDED IN THE COST OF REMOVAL OF ASPHALT MAT.

0' 20' 40' 80'

SCALE: 1" = 40'

N

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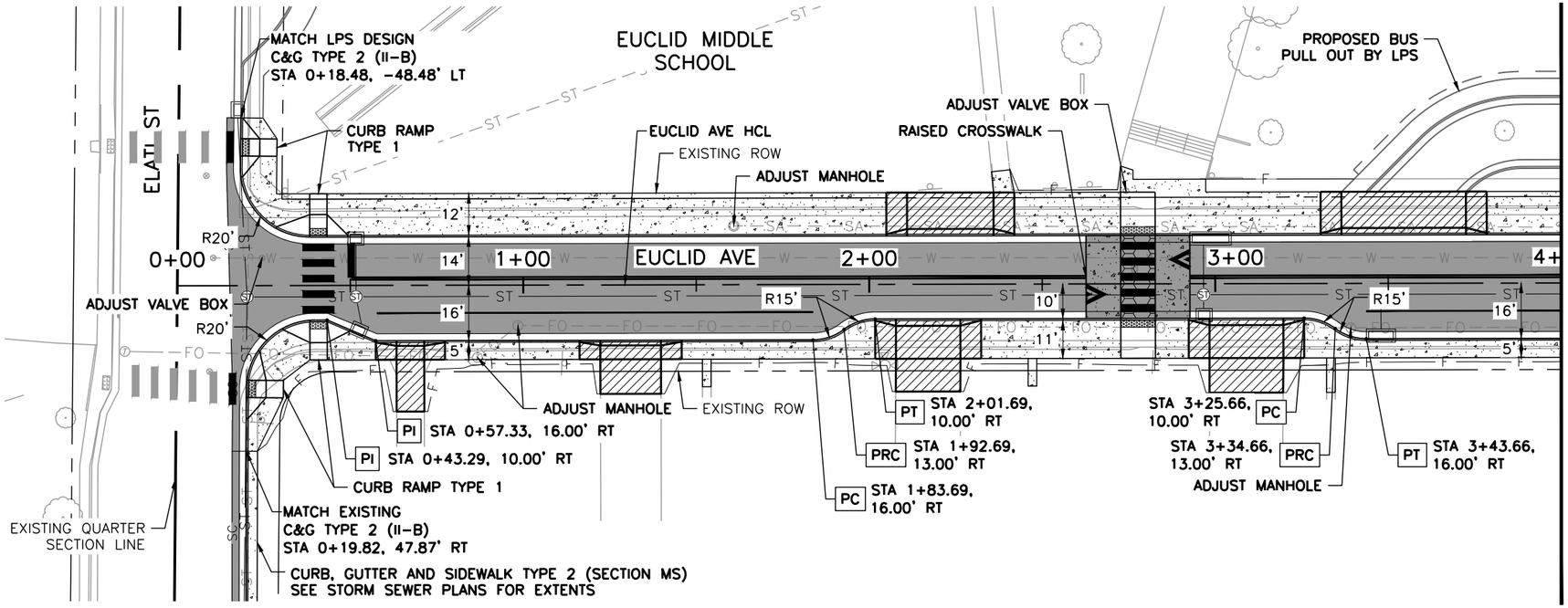
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EUCLID AVE IMPROVEMENTS – PHASE 1
REMOVAL PLANS

Designer:	CWD	Structure Numbers	
Detailer:	CWD		
Sheet Subset:	DEMO	Subset Sheets:	2 OF 2

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Sheet Number: 18 OF 60



LEGEND:

- HOT MIX ASPHALT
- CONCRETE PAVEMENT (6 INCH)
- CONCRETE PAVEMENT (10 INCH)
- CONCRETE PAVEMENT (SPECIAL)
- CONCRETE SIDEWALK (6 INCH)
- —SC— SAWCUT LIMITS
- —F— TOE OF FILL
- —C— TOP OF CUT

NOTES:

1. ALL STATION, OFFSET CALLOUTS REFERENCE THE EUCLID AVE HCL AND ARE TO THE FLOWLINE.
2. ALL RADIAL DIMENSIONS ARE TO THE FLOWLINE.
3. LITTLETON PUBLIC SCHOOLS (LPS) IS DESIGNING ON-SITE IMPROVEMENTS (OUTSIDE OF THE RIGHT-OF-WAY) AT EUCLID MIDDLE SCHOOL. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO MATCH ON-SITE, FINISHED GRADE IMPROVEMENTS.
4. REFER TO THE ROADWAY DETAIL SHEETS FOR ADDITIONAL INFORMATION NOT PROVIDED ON THE ROADWAY PLAN AND PROFILE SHEETS.

0' 20' 40' 80'

SCALE: 1" = 40'

N

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EUCLID AVE IMPROVEMENTS – PHASE 1
ROADWAY PLAN AND PROFILES
EUCLID AVE

Designer:	LML	Structure Numbers	
Detailer:	LML		
Sheet Subset:	RDWY PNP	Subset Sheets:	1 OF 6

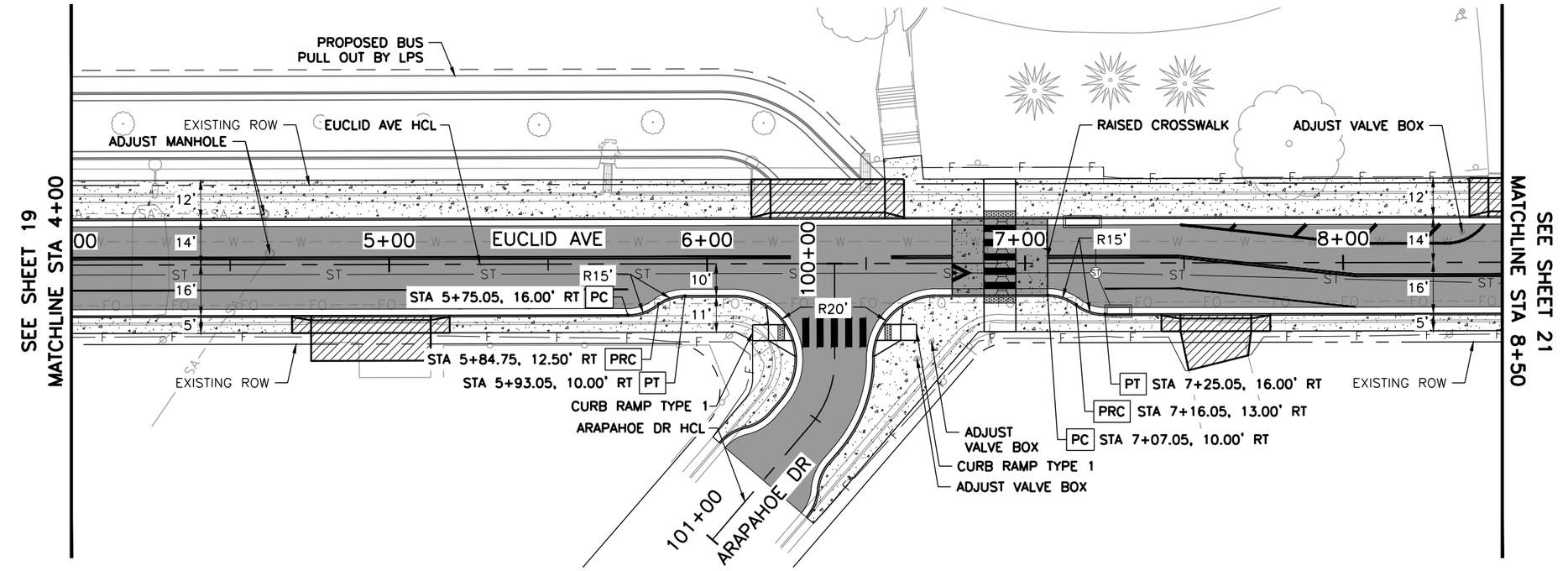
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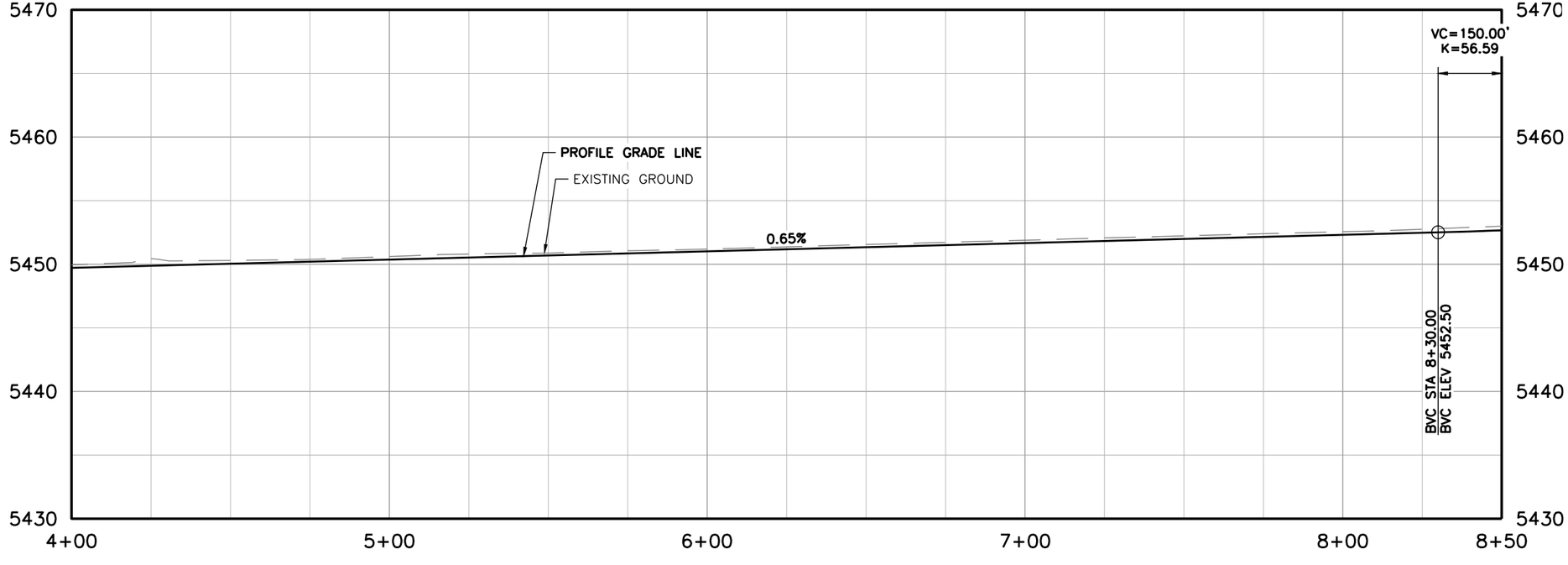
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LEGEND:

- HOT MIX ASPHALT
- CONCRETE PAVEMENT (6 INCH)
- CONCRETE PAVEMENT (10 INCH)
- CONCRETE PAVEMENT (SPECIAL)
- CONCRETE SIDEWALK (6 INCH)
- —SC— SAWCUT LIMITS
- —F— TOE OF FILL
- —C— TOP OF CUT

NOTES:

1. ALL STATION, OFFSET CALLOUTS REFERENCE THE EUCLID AVE HCL AND ARE TO THE FLOWLINE.
2. ALL RADIAL DIMENSIONS ARE TO THE FLOWLINE.
3. LITTLETON PUBLIC SCHOOLS (LPS) IS DESIGNING ON-SITE IMPROVEMENTS (OUTSIDE OF THE RIGHT-OF-WAY) AT EUCLID MIDDLE SCHOOL. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO MATCH ON-SITE, FINISHED GRADE IMPROVEMENTS.
4. REFER TO THE ROADWAY DETAIL SHEETS FOR ADDITIONAL INFORMATION NOT PROVIDED ON THE ROADWAY PLAN AND PROFILE SHEETS.

0' 20' 40' 80'
SCALE: 1" = 40'

N

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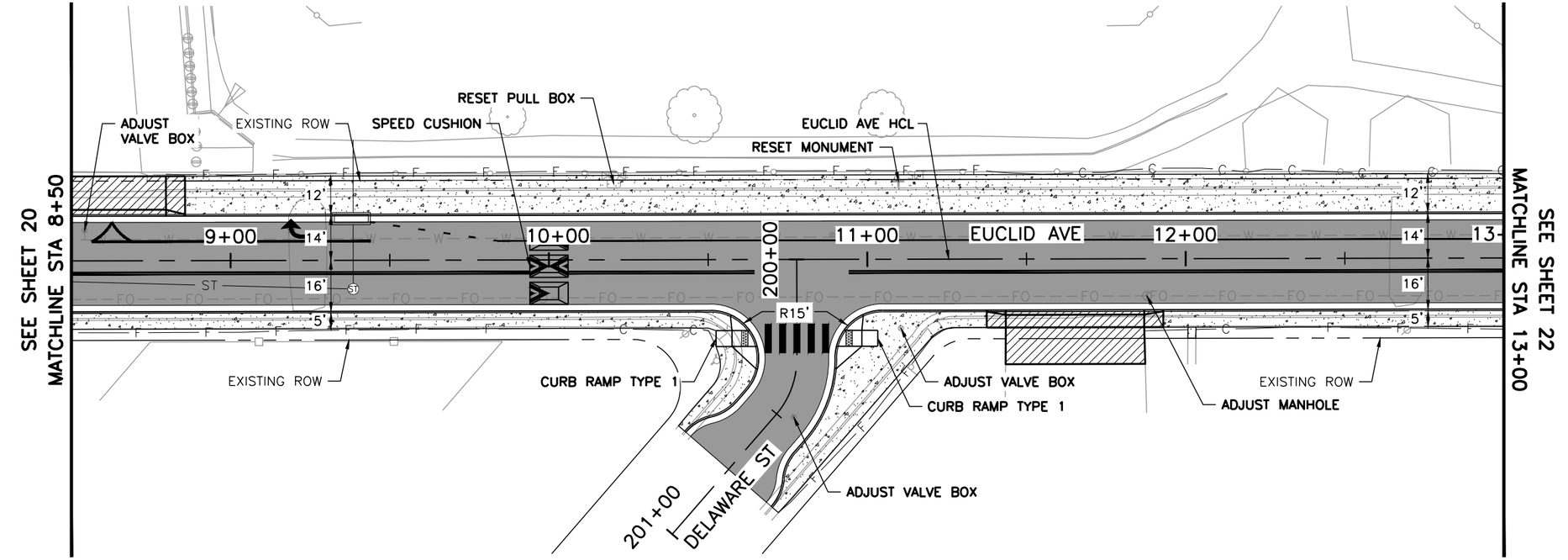
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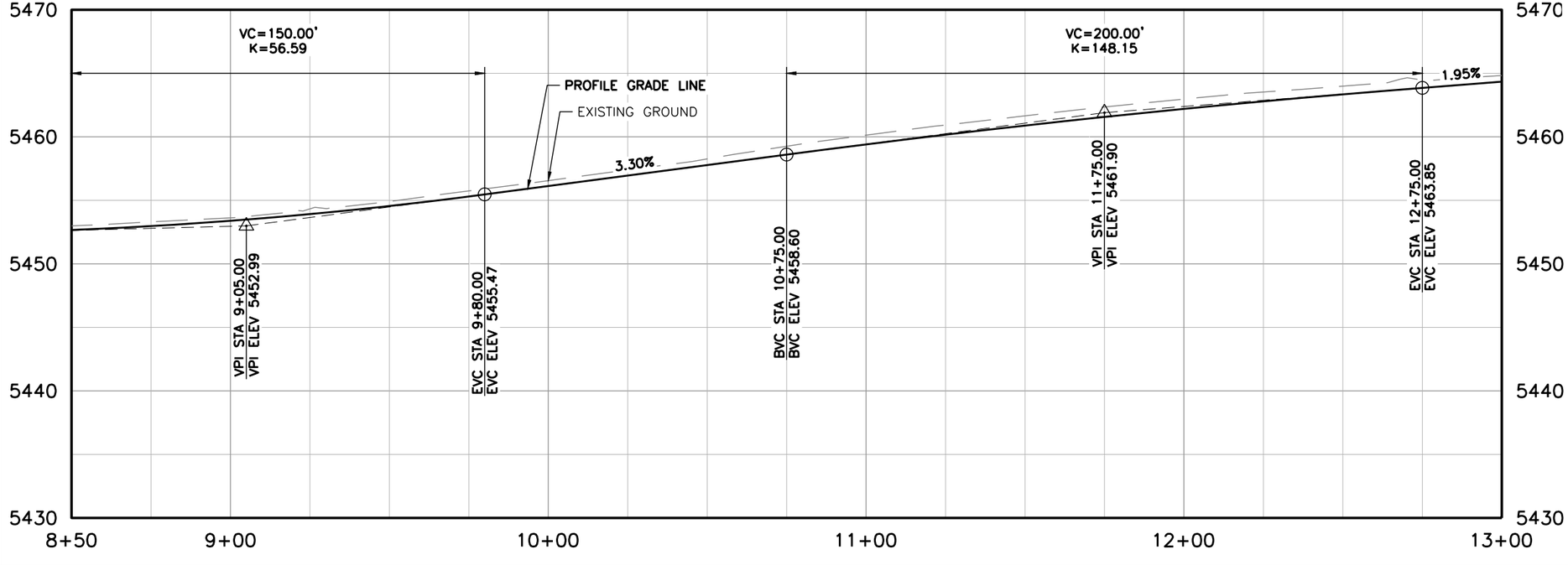
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ROADWAY PLAN AND PROFILES
EUCLID AVE

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Sheet Subset: RDWY PNP
Structure Numbers
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LEGEND:

- HOT MIX ASPHALT
- CONCRETE PAVEMENT (6 INCH)
- CONCRETE PAVEMENT (10 INCH)
- CONCRETE PAVEMENT (SPECIAL)
- CONCRETE SIDEWALK (6 INCH)
- —SC— SAWCUT LIMITS
- —F— TOE OF FILL
- —C— TOP OF CUT

NOTES:

1. ALL STATION, OFFSET CALLOUTS REFERENCE THE EUCLID AVE HCL AND ARE TO THE FLOWLINE.
2. ALL RADIAL DIMENSIONS ARE TO THE FLOWLINE.
3. LITTLETON PUBLIC SCHOOLS (LPS) IS DESIGNING ON-SITE IMPROVEMENTS (OUTSIDE OF THE RIGHT-OF-WAY) AT EUCLID MIDDLE SCHOOL. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO MATCH ON-SITE, FINISHED GRADE IMPROVEMENTS.
4. REFER TO THE ROADWAY DETAIL SHEETS FOR ADDITIONAL INFORMATION NOT PROVIDED ON THE ROADWAY PLAN AND PROFILE SHEETS.

0' 20' 40' 80'

SCALE: 1" = 40'

N

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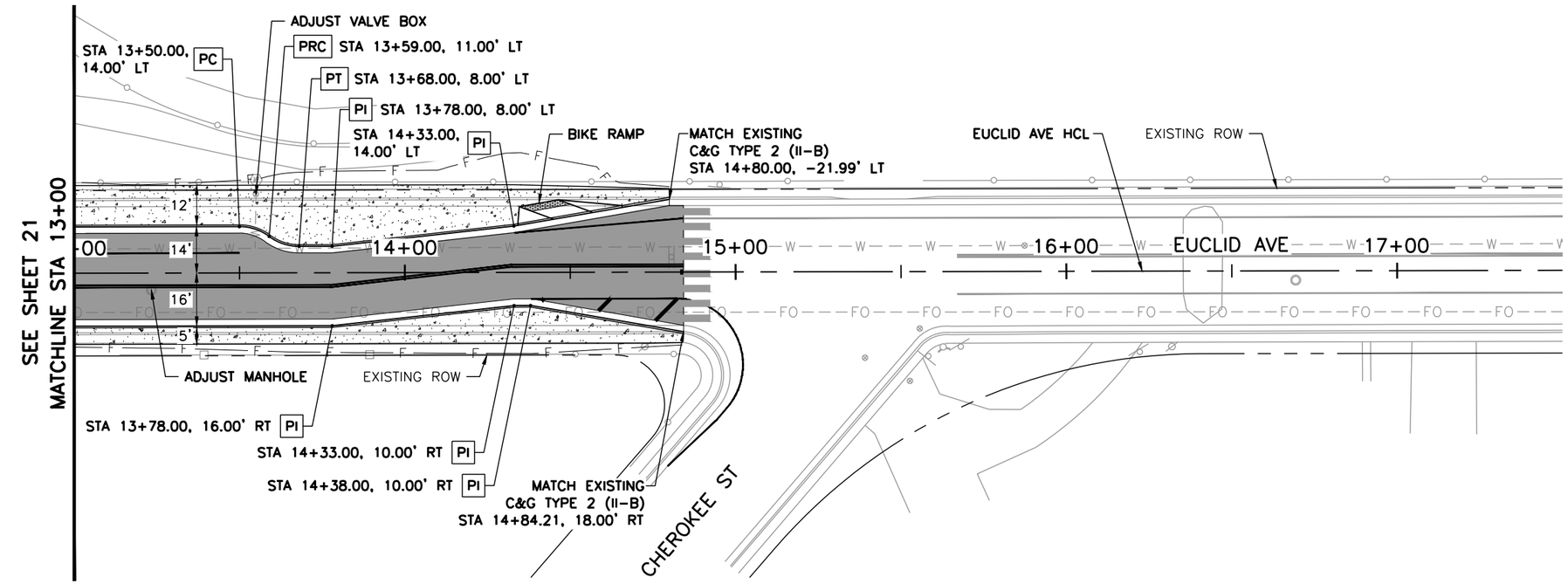
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EUCLID AVE

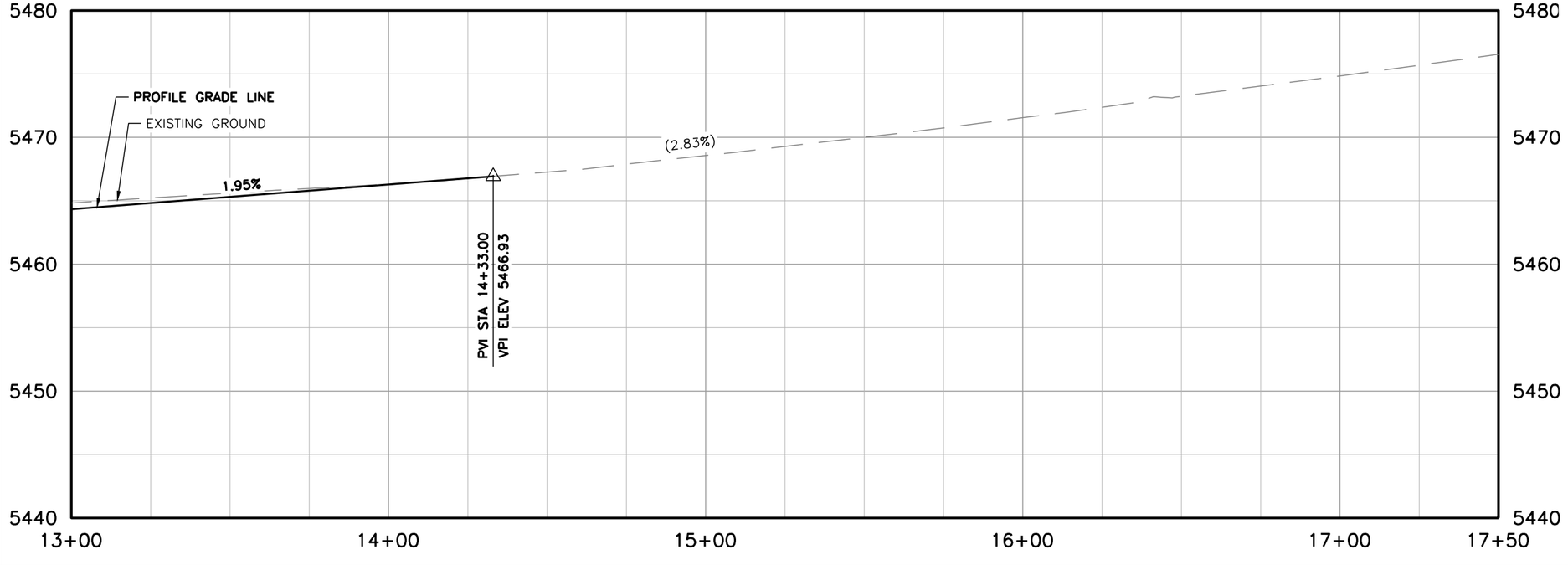
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LEGEND:

- HOT MIX ASPHALT
- CONCRETE PAVEMENT (6 INCH)
- CONCRETE PAVEMENT (10 INCH)
- CONCRETE PAVEMENT (SPECIAL)
- CONCRETE SIDEWALK (6 INCH)
- —SC— SAWCUT LIMITS
- —F— TOE OF FILL
- —C— TOP OF CUT

NOTES:

1. ALL STATION, OFFSET CALLOUTS REFERENCE THE EUCLID AVE HCL AND ARE TO THE FLOWLINE.
2. ALL RADIAL DIMENSIONS ARE TO THE FLOWLINE.
3. LITTLETON PUBLIC SCHOOLS (LPS) IS DESIGNING ON-SITE IMPROVEMENTS (OUTSIDE OF THE RIGHT-OF-WAY) AT EUCLID MIDDLE SCHOOL. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO MATCH ON-SITE, FINISHED GRADE IMPROVEMENTS.
4. REFER TO THE ROADWAY DETAIL SHEETS FOR ADDITIONAL INFORMATION NOT PROVIDED ON THE ROADWAY PLAN AND PROFILE SHEETS.

0' 20' 40' 80'

SCALE: 1" = 40'

N

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EUCLID AVE

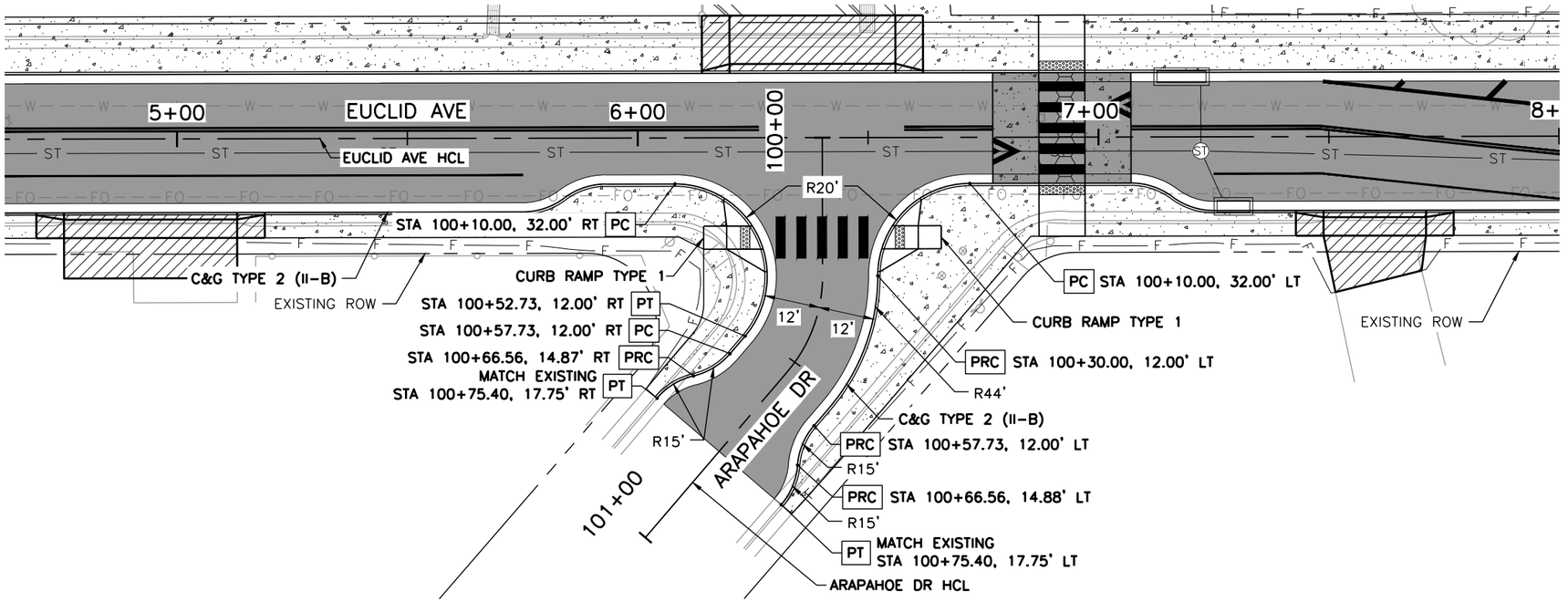
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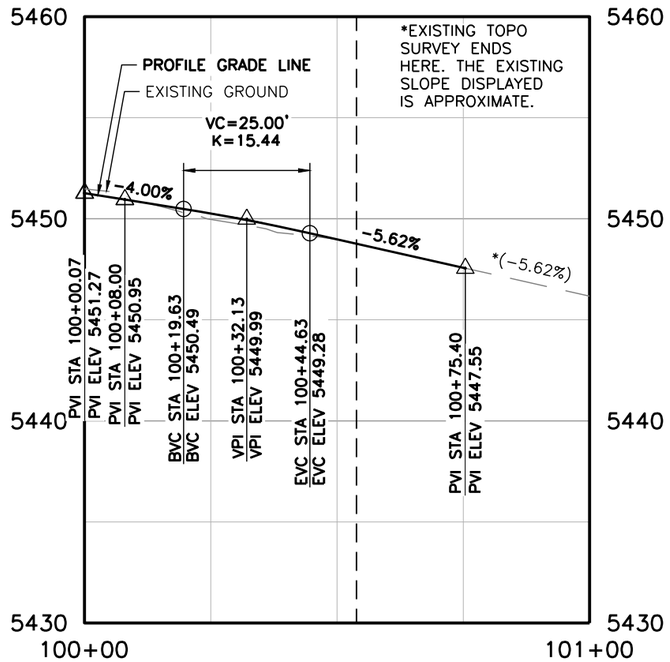
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LEGEND:

- HOT MIX ASPHALT
- CONCRETE PAVEMENT (6 INCH)
- CONCRETE PAVEMENT (10 INCH)
- CONCRETE PAVEMENT (SPECIAL)
- CONCRETE SIDEWALK (6 INCH)
- —SC— SAWCUT LIMITS
- —F— TOE OF FILL
- —C— TOP OF CUT

NOTES:

1. ALL STATION, OFFSET CALLOUTS REFERENCE THE ARAPAHOE DR HCL AND ARE TO THE FLOWLINE.
2. ALL RADIAL DIMENSIONS ARE TO THE FLOWLINE.
3. THE PROPOSED TIE-IN LOCATION ON ARAPAHOE DR IS APPROXIMATE. EXISTING TOPOGRAPHIC SURVEY ENDS PRIOR TO THE PROPOSED SAWCUT LINE. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO DETERMINE IF THE TIE-IN LOCATION SHOULD BE MODIFIED.
4. THE ARAPAHOE DR PROFILE GRADE LINE SHOWN ON THIS SHEET IS APPROXIMATE. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO DETERMINE IF THE VERTICAL ALIGNMENT SHOULD BE MODIFIED TO HAVE MINIMAL IMPACTS TO ADJACENT PRIVATE PROPERTIES.
5. REFER TO THE ROADWAY DETAIL SHEETS FOR ADDITIONAL INFORMATION NOT PROVIDED ON THE ROADWAY PLAN AND PROFILE SHEETS.

0' 15' 30' 60'

SCALE: 1" = 30'

N

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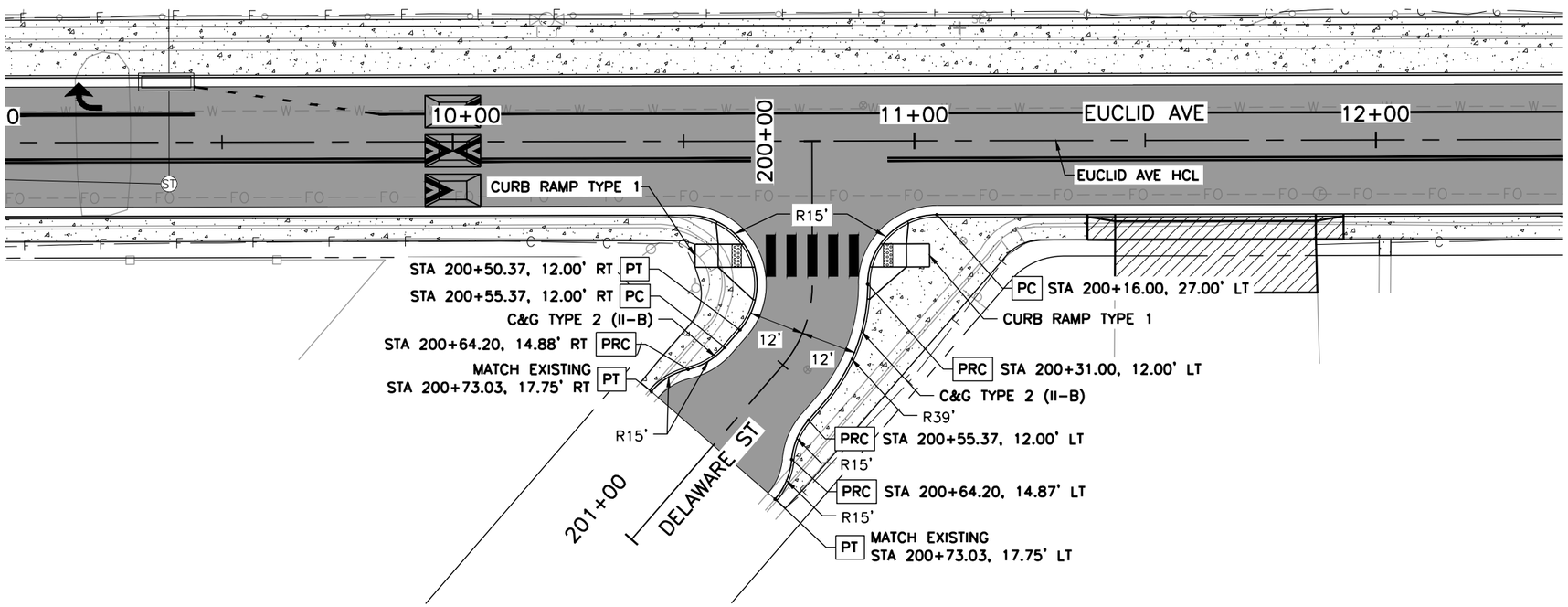
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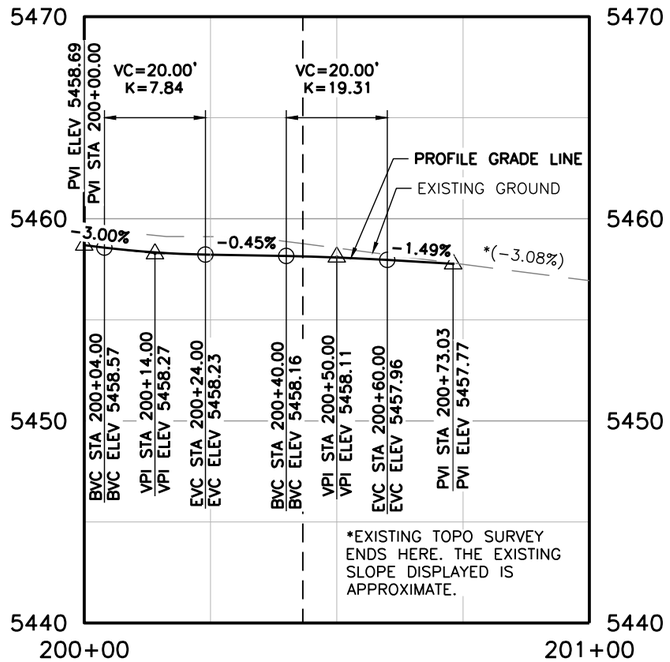
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No. Revisions:			
Revised:	Designer: LML	Structure Numbers	
	Detailer: LML		
Void:	Sheet Subset: RDWY PNP	Subset Sheets: 5 OF 6	Sheet Number: 23 OF 60

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LEGEND:

- HOT MIX ASPHALT
- CONCRETE PAVEMENT (6 INCH)
- CONCRETE PAVEMENT (10 INCH)
- CONCRETE PAVEMENT (SPECIAL)
- CONCRETE SIDEWALK (6 INCH)
- —SC— SAWCUT LIMITS
- —F— TOE OF FILL
- —C— TOP OF CUT

NOTES:

1. ALL STATION, OFFSET CALLOUTS REFERENCE THE DELAWARE ST HCL AND ARE TO THE FLOWLINE.
2. ALL RADIAL DIMENSIONS ARE TO THE FLOWLINE.
3. THE PROPOSED TIE-IN LOCATION ON DELAWARE ST IS APPROXIMATE. EXISTING TOPOGRAPHIC SURVEY ENDS PRIOR TO THE PROPOSED SAWCUT LINE. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO DETERMINE IF THE TIE-IN LOCATION SHOULD BE MODIFIED.
4. THE DELAWARE ST PROFILE GRADE LINE SHOWN ON THIS SHEET IS APPROXIMATE. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO DETERMINE IF THE VERTICAL ALIGNMENT SHOULD BE MODIFIED TO HAVE MINIMAL IMPACTS TO ADJACENT PRIVATE PROPERTIES.
5. SLOPE LABELS IN PARENTHESIS REFER TO EXISTING CONDITIONS.
6. REFER TO THE ROADWAY DETAIL SHEETS FOR ADDITIONAL INFORMATION NOT PROVIDED ON THE ROADWAY PLAN AND PROFILE SHEETS.

0' 15' 30' 60'

SCALE: 1" = 30'

N

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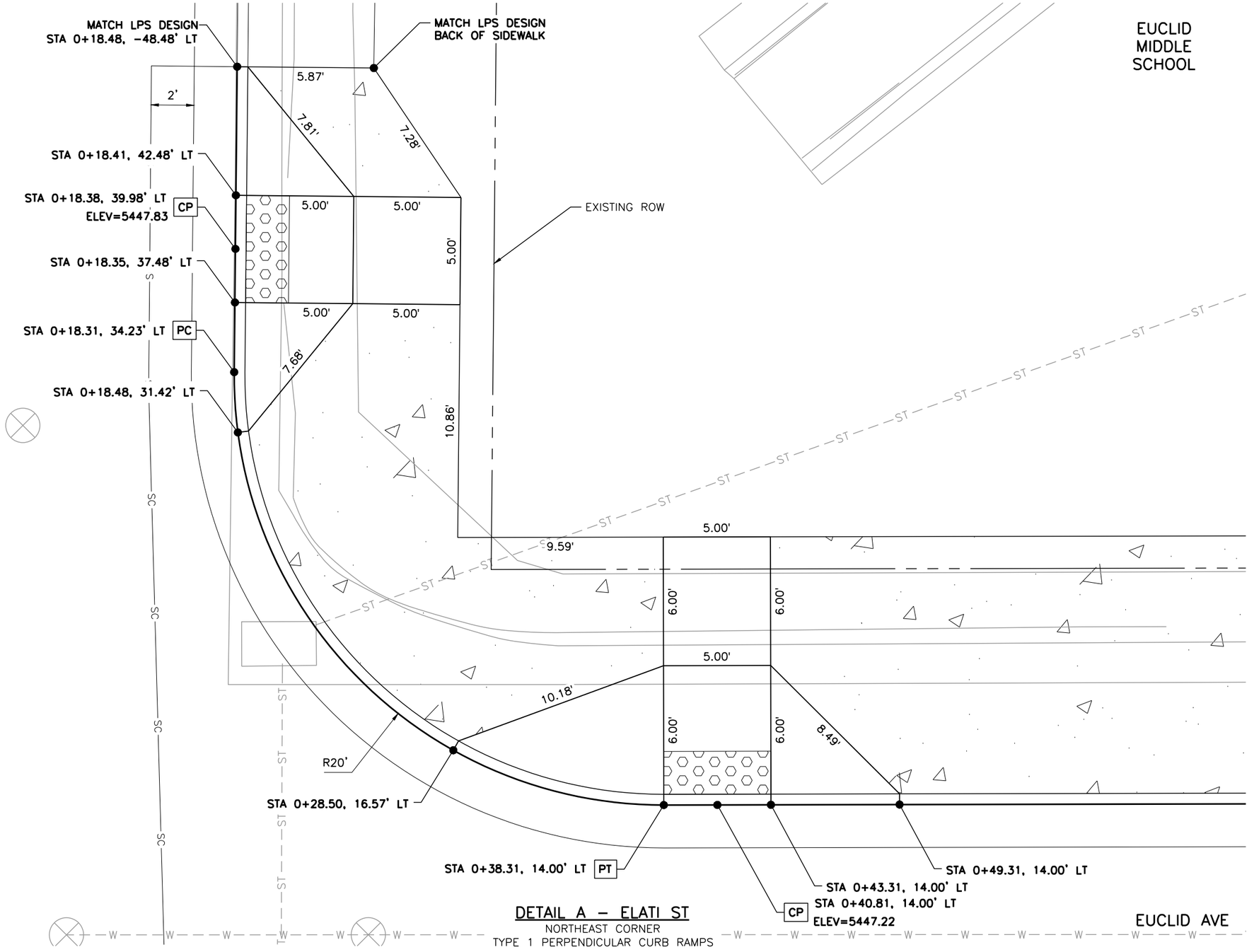
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EUCLID AVE IMPROVEMENTS – PHASE 1
ROADWAY PLAN AND PROFILES
DELAWARE ST

Designer: LML
Detailer: LML
Sheet Subset: RDWY PNP
Structure Numbers:
Subset Sheets: 6 OF 6

Project No. 23-03

Sheet Number: 24 OF 60



DETAIL A – ELATI ST
NORTHEAST CORNER
TYPE 1 PERPENDICULAR CURB RAMPS

NOTES:

1. ALL STATION, OFFSET CALLOUTS REFERENCE THE EUCLID AVE HCL AND ARE TO THE FLOWLINE.
2. THE CONTROL POINT (CP) PROVIDES A PROPOSED ELEVATION POINT AT THE CENTER OF A CURB RAMP OR DRIVEWAY ALONG THE FLOWLINE.
3. TIE–IN LOCATIONS SHOWN ARE APPROXIMATE. TIE–IN LOCATIONS SHALL BE TO THE NEAREST EXISTING JOINT.
4. EXPANSION MATERIAL SHALL BE PLACED BETWEEN THE SIDEWALK AND BACK OF CURB AND AROUND FIXED OBJECTS. EXPANSION MATERIAL SHALL BE INCLUDED IN THE COST OF THE SIDEWALK.
5. LINE AND CURVE DIMENSIONS FOR CURB RAMP DETAILS AND DRIVEWAY DETAILS ARE PROVIDED FOR REFERENCE.
6. CURB RAMP CONSTRUCTION SHALL CONFORM TO THE GRADE, WIDTH, AND LENGTH REQUIREMENTS SHOWN IN CDOT STD PLAN NO. M–608–1. WHERE FIELD CONDITIONS PREVENT A FULLY COMPLIANT FACILITY, THE CONTRACTOR SHALL WORK WITH THE ENGINEER TO VERIFY THE FIELD CONSTRAINTS, DOCUMENT THAT THE FACILITY WILL BE BUILT TO BE COMPLIANT TO THE MAXIMUM EXTENT FEASIBLE, AND DOCUMENT AN EXCEPTION TO BE FILED WITH THE CITY.
7. LITTLETON PUBLIC SCHOOLS (LPS) IS DESIGNING ON–SITE IMPROVEMENTS (OUTSIDE OF THE RIGHT–OF–WAY) AT EUCLID MIDDLE SCHOOL. ADJUSTMENTS IN THE FIELD MAY BE NEEDED TO MATCH ON–SITE, FINISHED GRADE IMPROVEMENTS.

0' 2.5' 5' 10'
SCALE: 1" = 5'

N

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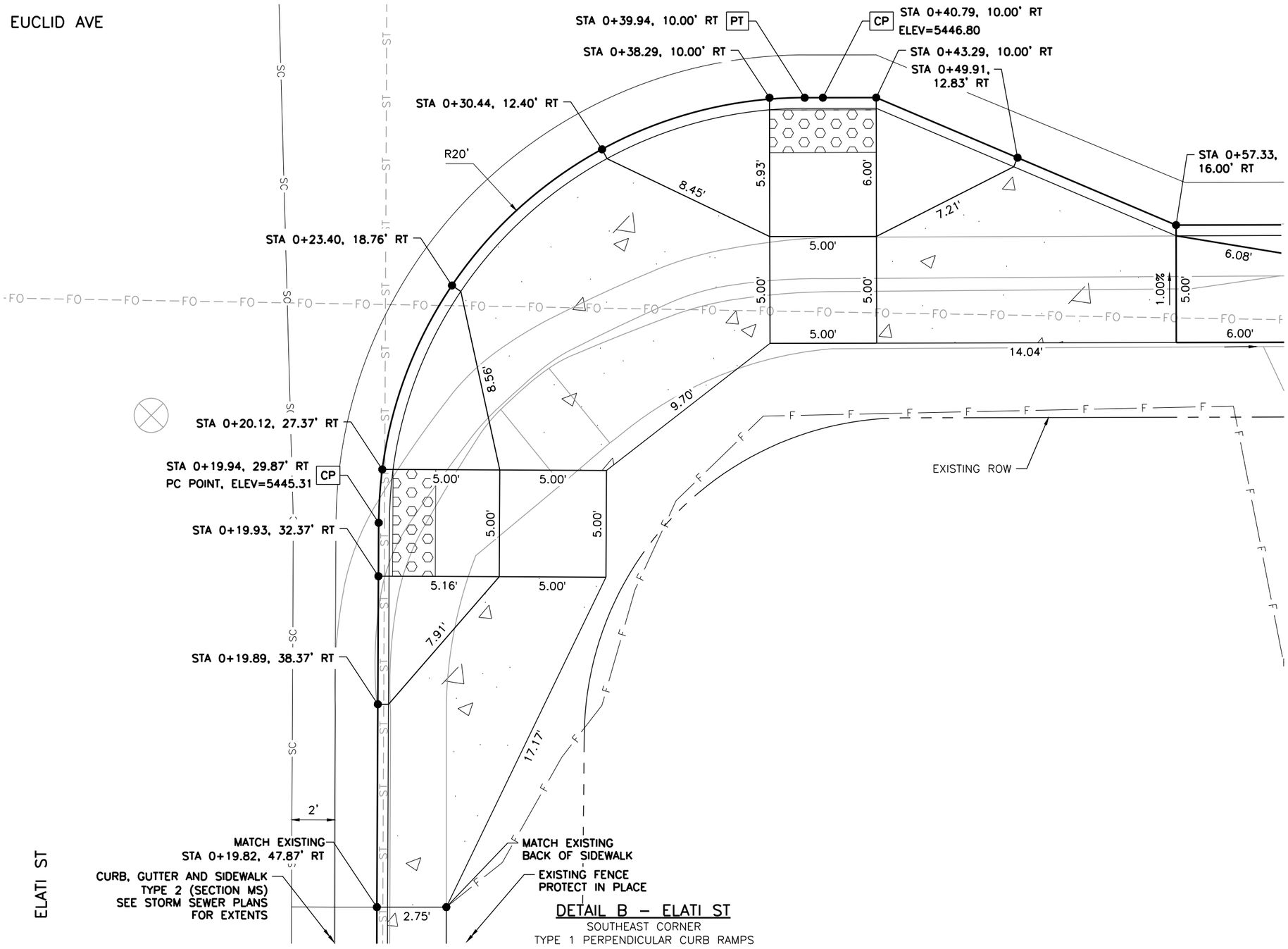
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EUCLID AVE IMPROVEMENTS – PHASE 1
ROADWAY DETAILS

Designer:	LML	Structure Numbers	
Detailer:	LML		
Sheet Subset:	RDWY DTLS	Subset Sheets:	1 OF 17

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DETAIL B – ELATI ST
SOUTHEAST CORNER
TYPE 1 PERPENDICULAR CURB RAMPS

NOTES:

1. ALL STATION, OFFSET CALLOUTS REFERENCE THE EUCLID AVE HCL AND ARE TO THE FLOWLINE.
2. THE CONTROL POINT (CP) PROVIDES A PROPOSED ELEVATION POINT AT THE CENTER OF A CURB RAMP OR DRIVEWAY ALONG THE FLOWLINE.
3. TIE–IN LOCATIONS SHOWN ARE APPROXIMATE. TIE–IN LOCATIONS SHALL BE TO THE NEAREST EXISTING JOINT.
4. EXPANSION MATERIAL SHALL BE PLACED BETWEEN THE SIDEWALK AND BACK OF CURB AND AROUND FIXED OBJECTS. EXPANSION MATERIAL SHALL BE INCLUDED IN THE COST OF THE SIDEWALK.
5. LINE AND CURVE DIMENSIONS FOR CURB RAMP DETAILS AND DRIVEWAY DETAILS ARE PROVIDED FOR REFERENCE.
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0' 2.5' 5' 10'
SCALE: 1" = 5'

N

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47650
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PROFESSIONAL ENGINEER

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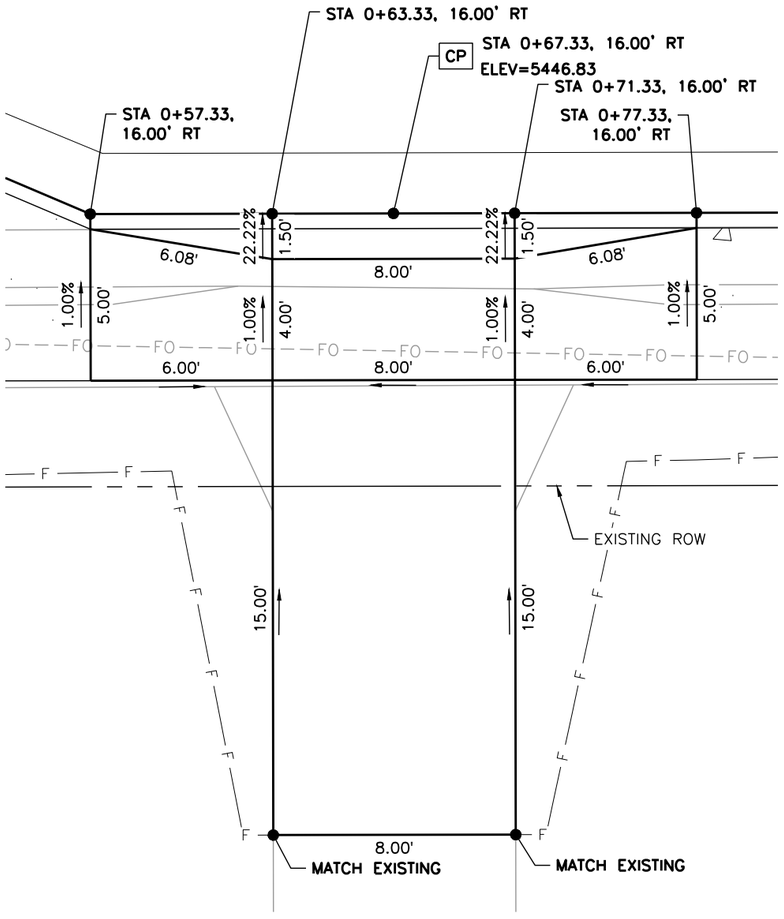
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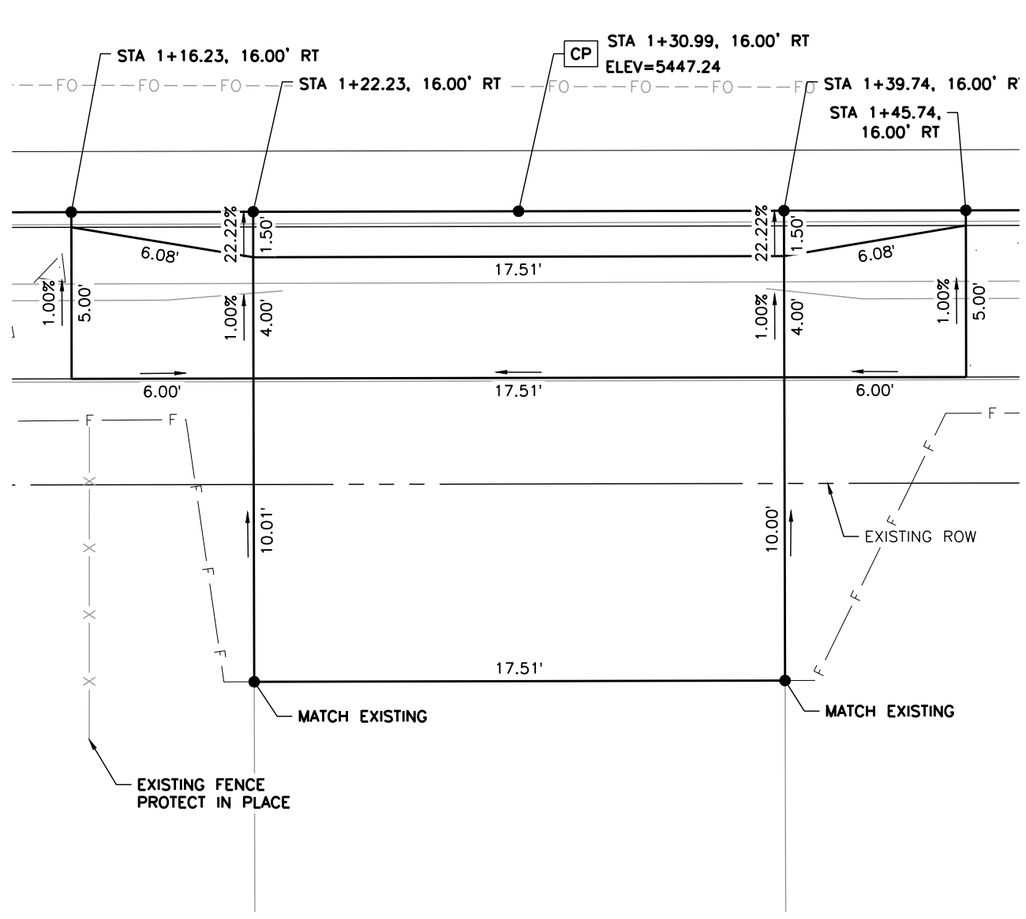
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ROADWAY DETAILS

Designer: LML
Detailer: LML
Sheet Subset: RDWY DTLS
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DETAIL C – DRIVEWAY
792 W EUCLID AVE



DETAIL D – DRIVEWAY
782 W EUCLID AVE

NOTES:

1. ALL STATION, OFFSET CALLOUTS REFERENCE THE EUCLID AVE HCL AND ARE TO THE FLOWLINE.
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0' 2.5' 5' 10'
SCALE: 1" = 5'

N

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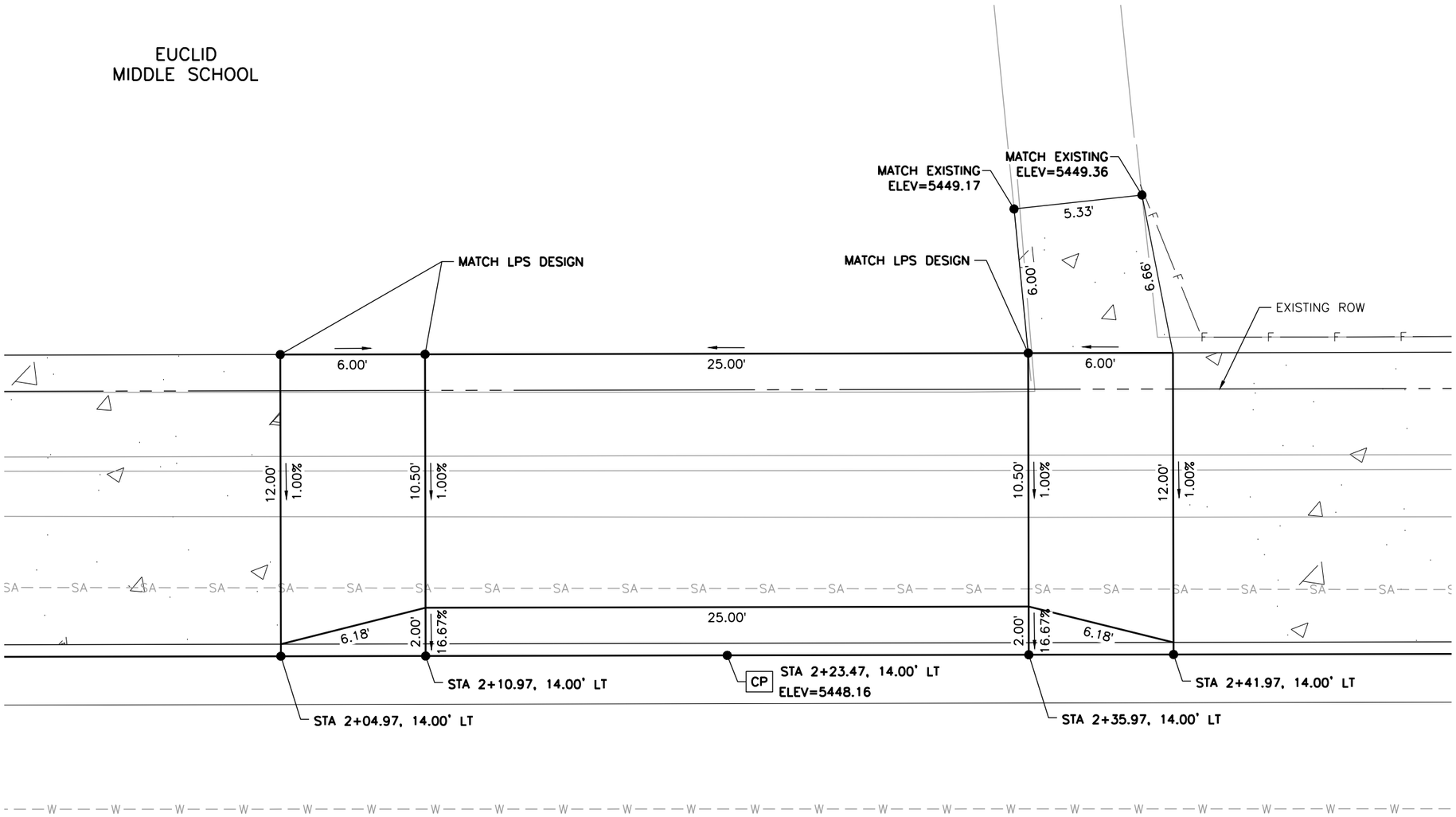
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EUCLID
MIDDLE SCHOOL



EUCLID AVE

DETAIL E – DRIVEWAY
EUCLID MIDDLE SCHOOL PARKING LOT ENTRANCE

NOTES:

1. ALL STATION, OFFSET CALLOUTS REFERENCE THE EUCLID AVE HCL AND ARE TO THE FLOWLINE.
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0' 2.5' 5' 10'
SCALE: 1" = 5'

N

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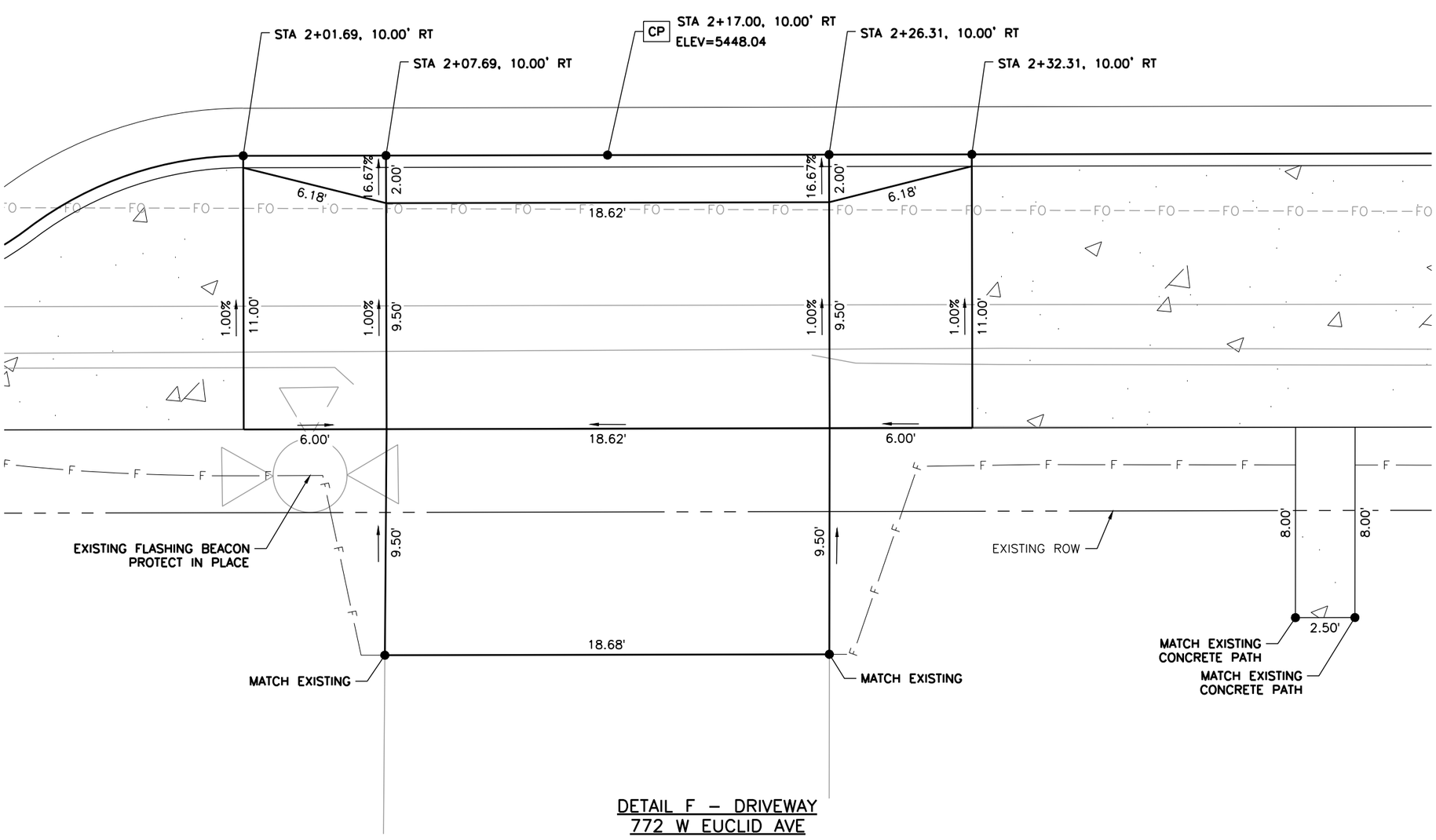
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EUCLID AVE



DETAIL F – DRIVEWAY
772 W EUCLID AVE

NOTES:

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0' 2.5' 5' 10'
SCALE: 1" = 5'

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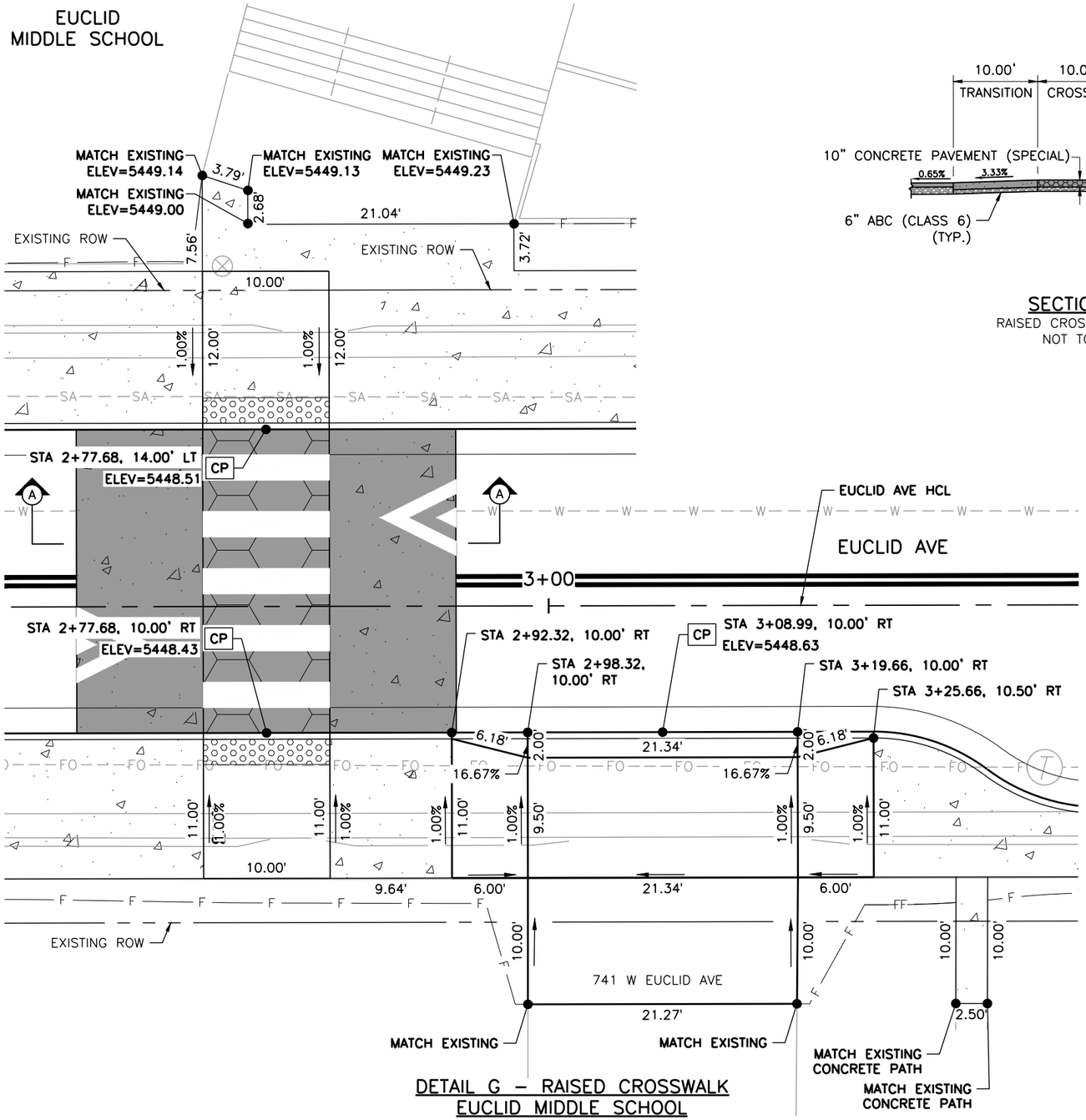
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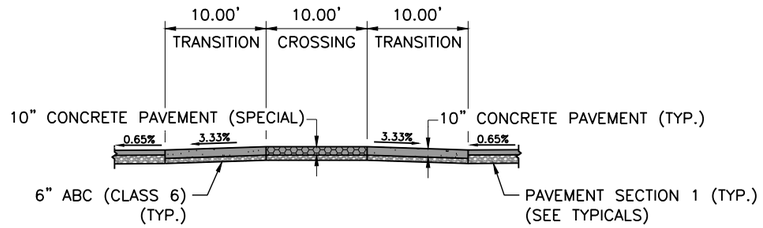
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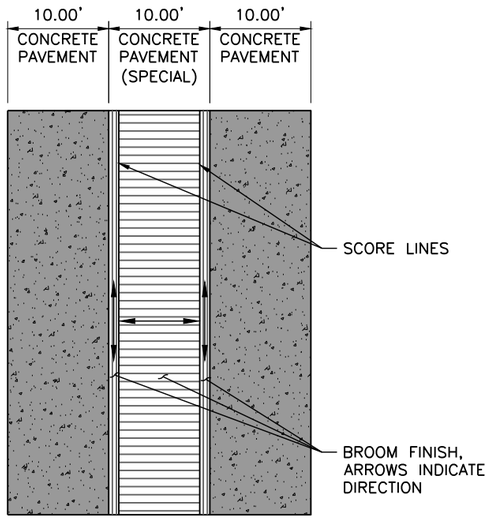
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DETAIL G – RAISED CROSSWALK
EUCLID MIDDLE SCHOOL



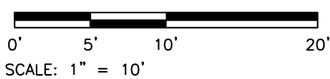
SECTION A–A
RAISED CROSSWALK TYPICAL
NOT TO SCALE



RAISED CROSSWALK
FINISHING DETAIL
NOT TO SCALE

NOTES:

1. ALL STATION, OFFSET, ELEVATION CALLOUTS REFERENCE THE EUCLID AVE HCL AND ARE TO THE FLOWLINE.
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8. CONCRETE PAVEMENT (SPECIAL) SHALL INCLUDE AN INTEGRAL COLOR ADMIXTURE, FEDERAL COLOR 20109 "RED BROWN".







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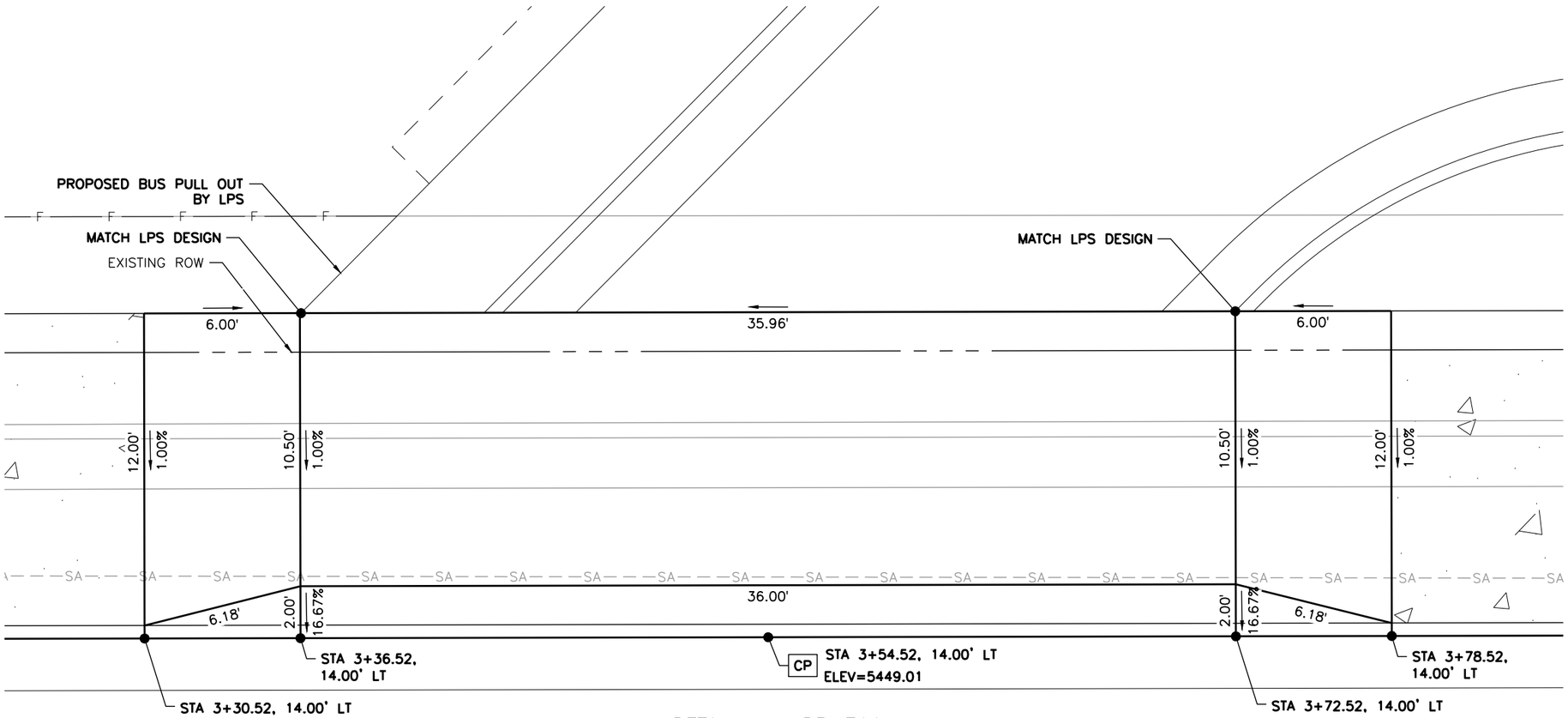
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DETAIL H – DRIVEWAY
BUS PULL OUT (EGRESS)

EUCLID AVE

NOTES:

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0' 2.5' 5' 10'
SCALE: 1" = 5'

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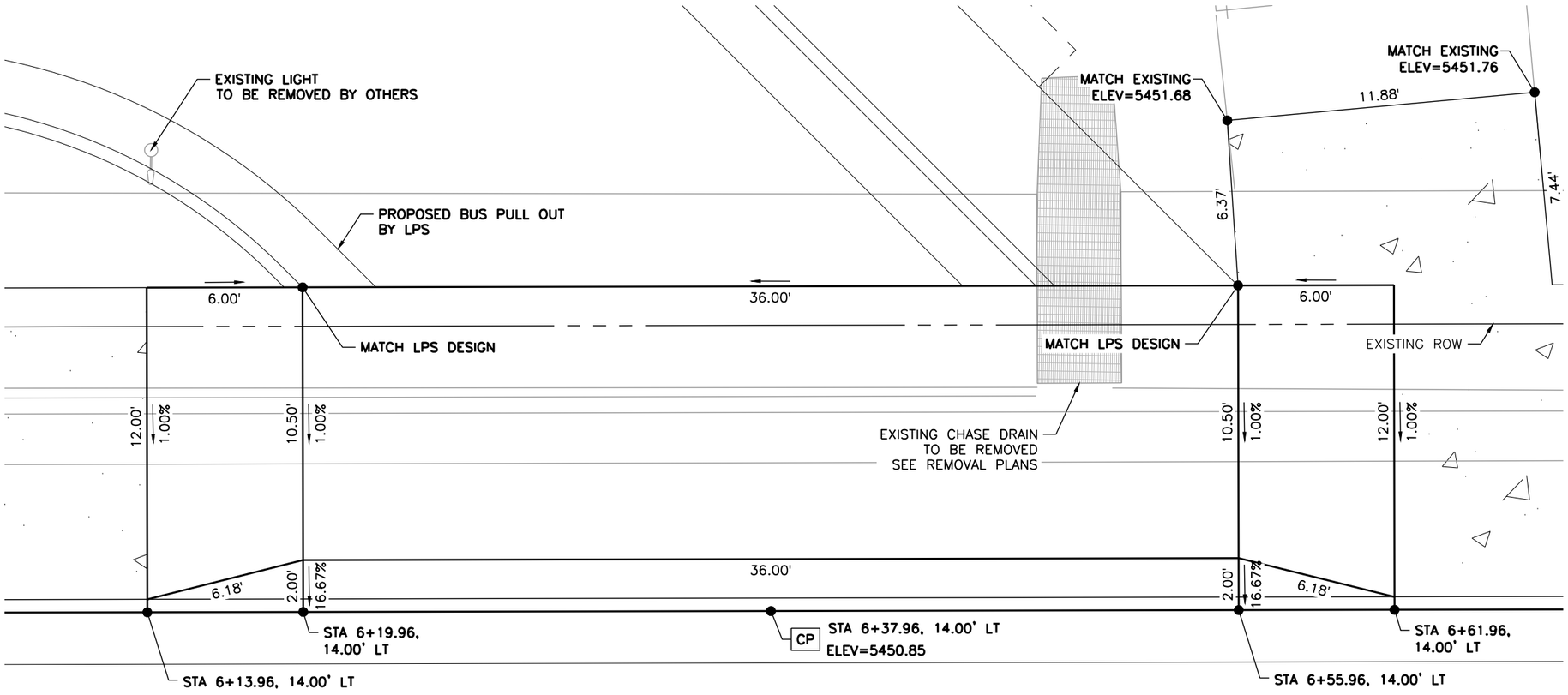
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DETAIL 1 – DRIVEWAY
BUS PULL OUT (INGRESS)

EUCLID AVE

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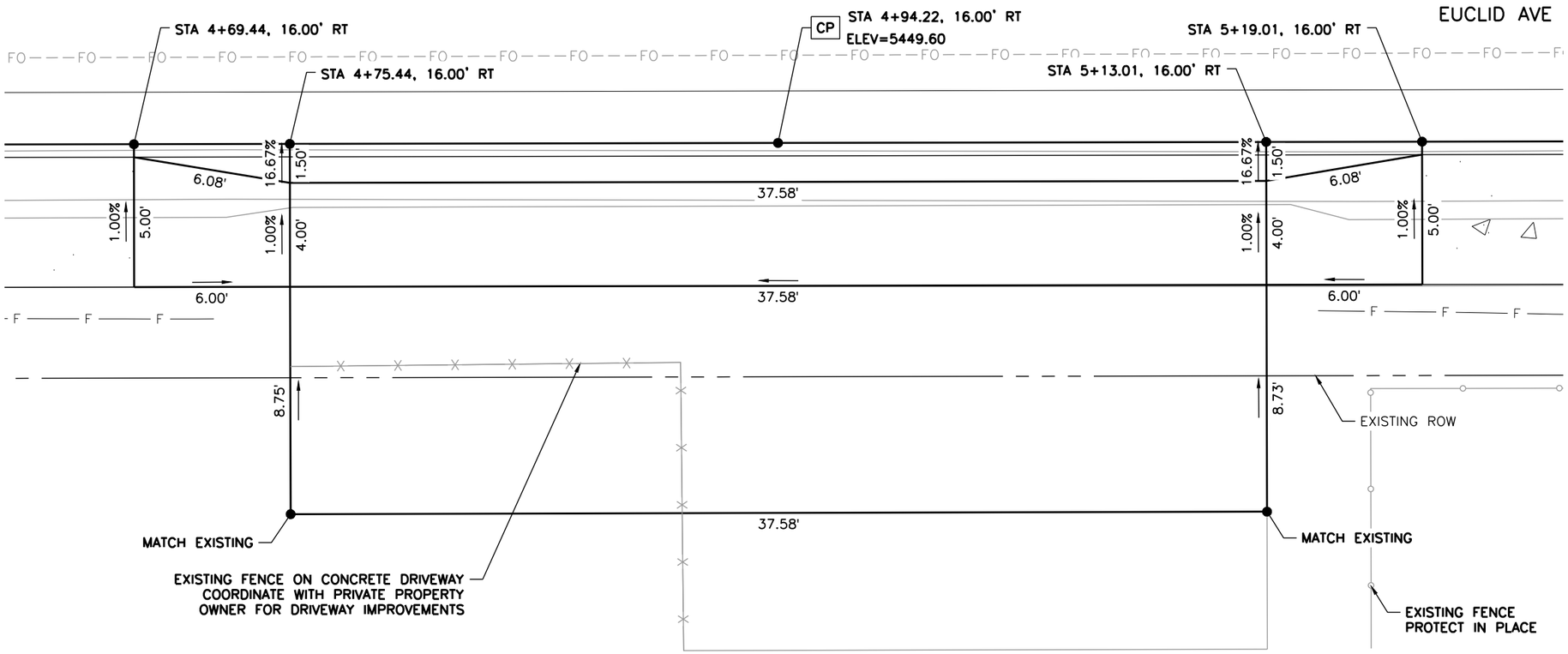
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Subset Sheets: 8 OF 17

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DETAIL J – DRIVEWAY
6617 S ARAPAHOE DR

NOTES:

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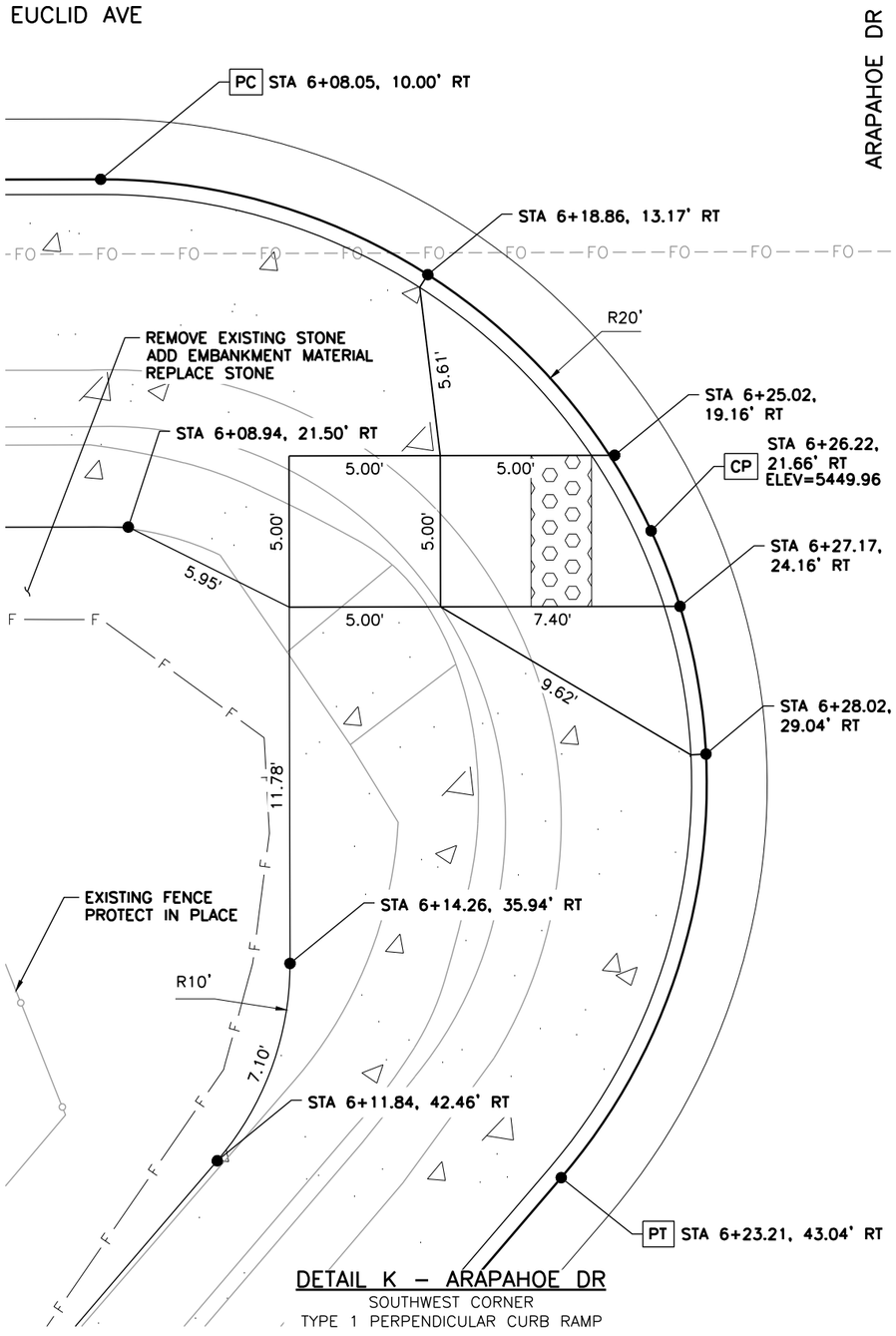
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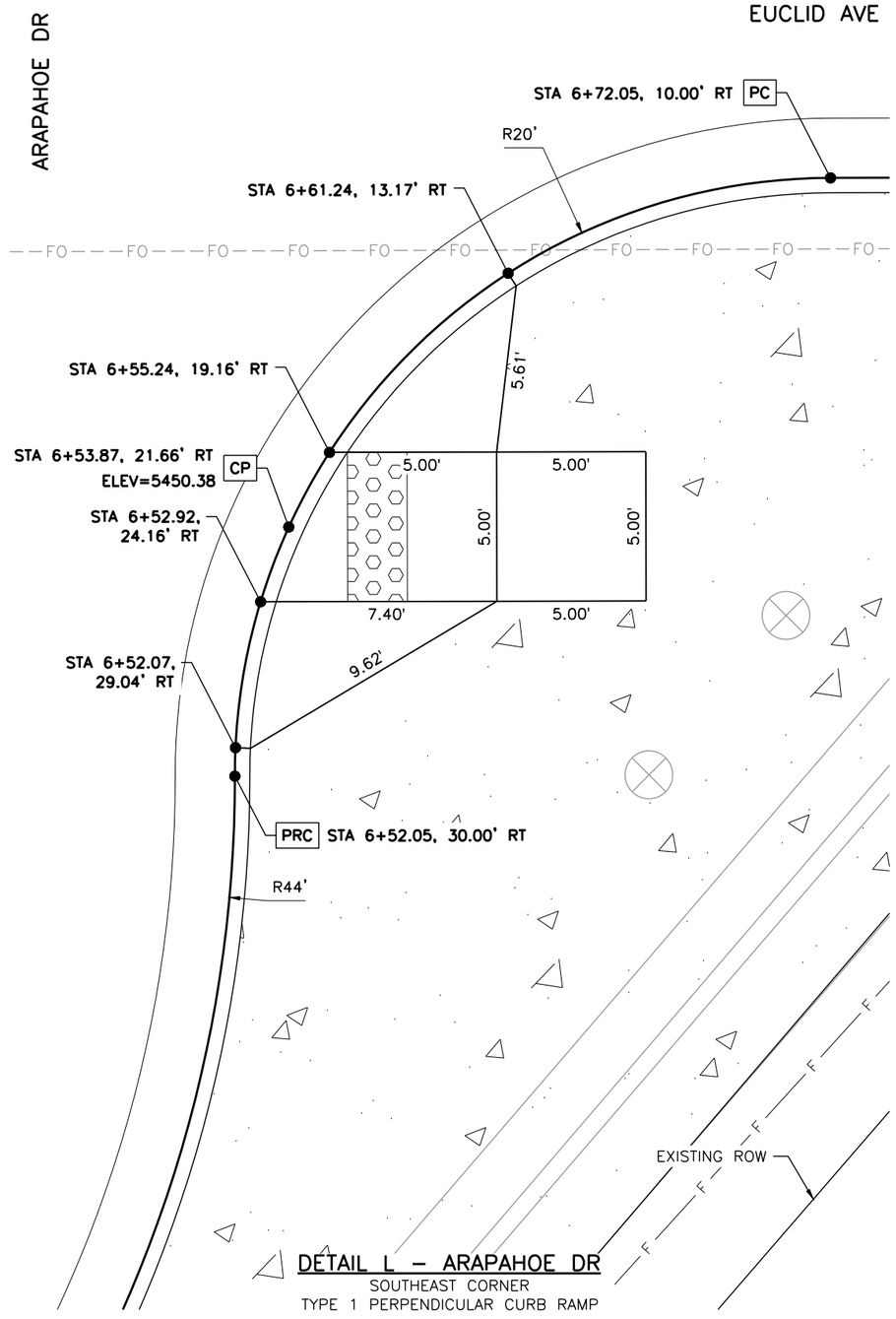
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DETAIL K – ARAPAHOE DR
SOUTHWEST CORNER
TYPE 1 PERPENDICULAR CURB RAMP



DETAIL L – ARAPAHOE DR
SOUTHEAST CORNER
TYPE 1 PERPENDICULAR CURB RAMP

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0' 2.5' 5' 10'
SCALE: 1" = 5'

N

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TRAVIS LEE GREIMAN
47650
3/17/25
PROFESSIONAL ENGINEER

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Denver, Colorado 80237
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Contract ID 3194

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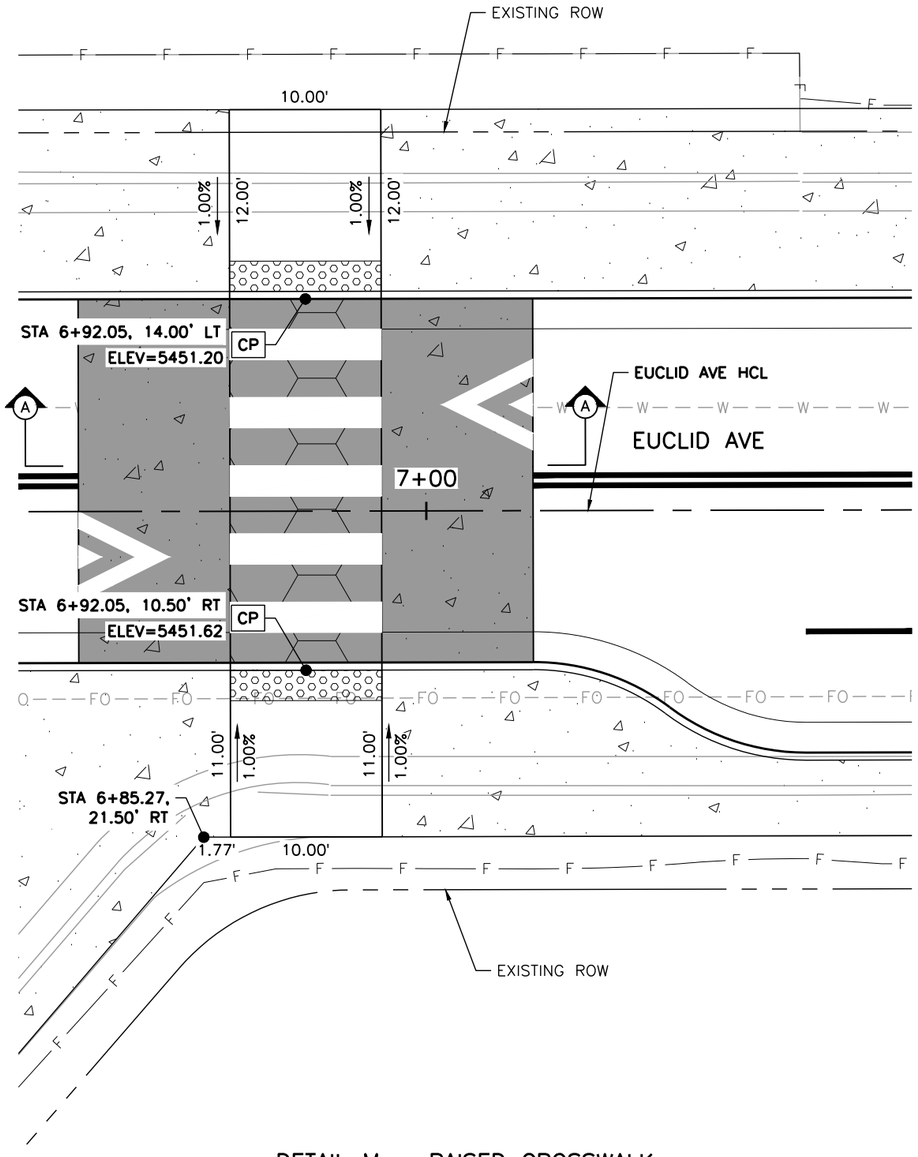
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EUCLID AVE IMPROVEMENTS – PHASE 1
ROADWAY DETAILS

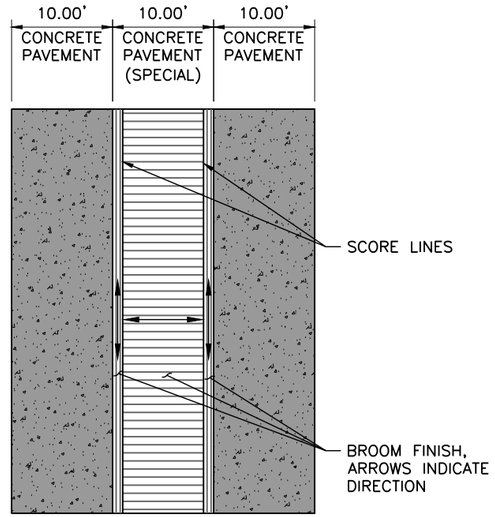
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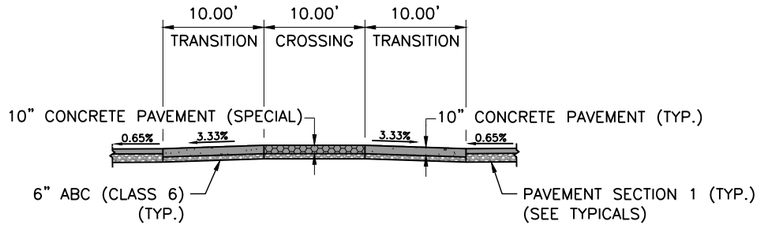
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DETAIL M – RAISED CROSSWALK
EAST OF ARAPAHOE DR



RAISED CROSSWALK
FINISHING DETAIL
NOT TO SCALE



SECTION A–A
RAISED CROSSWALK TYPICAL
NOT TO SCALE

NOTES:

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0' 5' 10' 20'
SCALE: 1" = 10'

N

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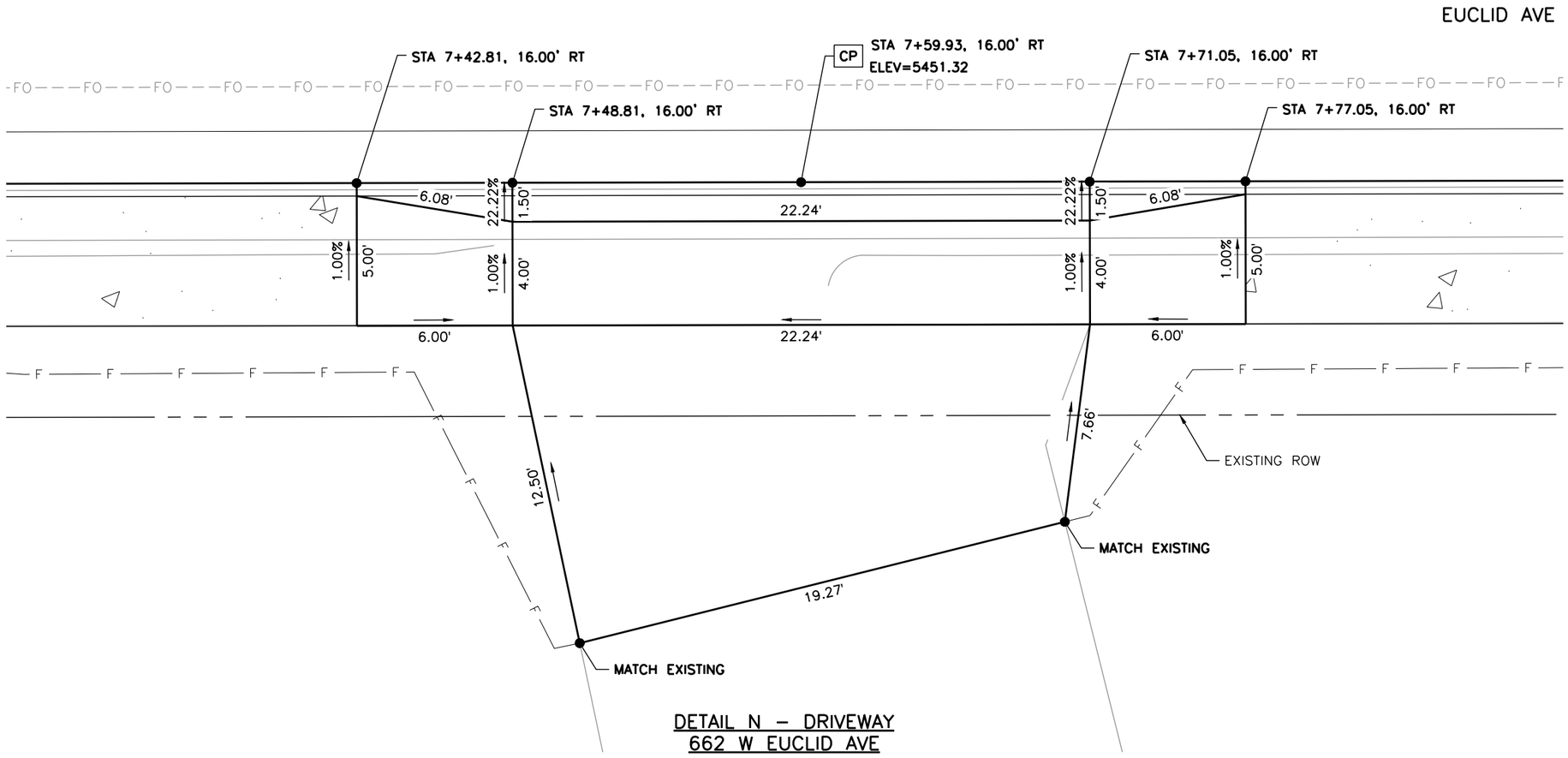
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DETAIL N – DRIVEWAY
662 W EUCLID AVE

NOTES:

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0' 2.5' 5' 10'
SCALE: 1" = 5'

N

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TRAVIS LEE GREHMAN
47650
3/17/25
PROFESSIONAL ENGINEER

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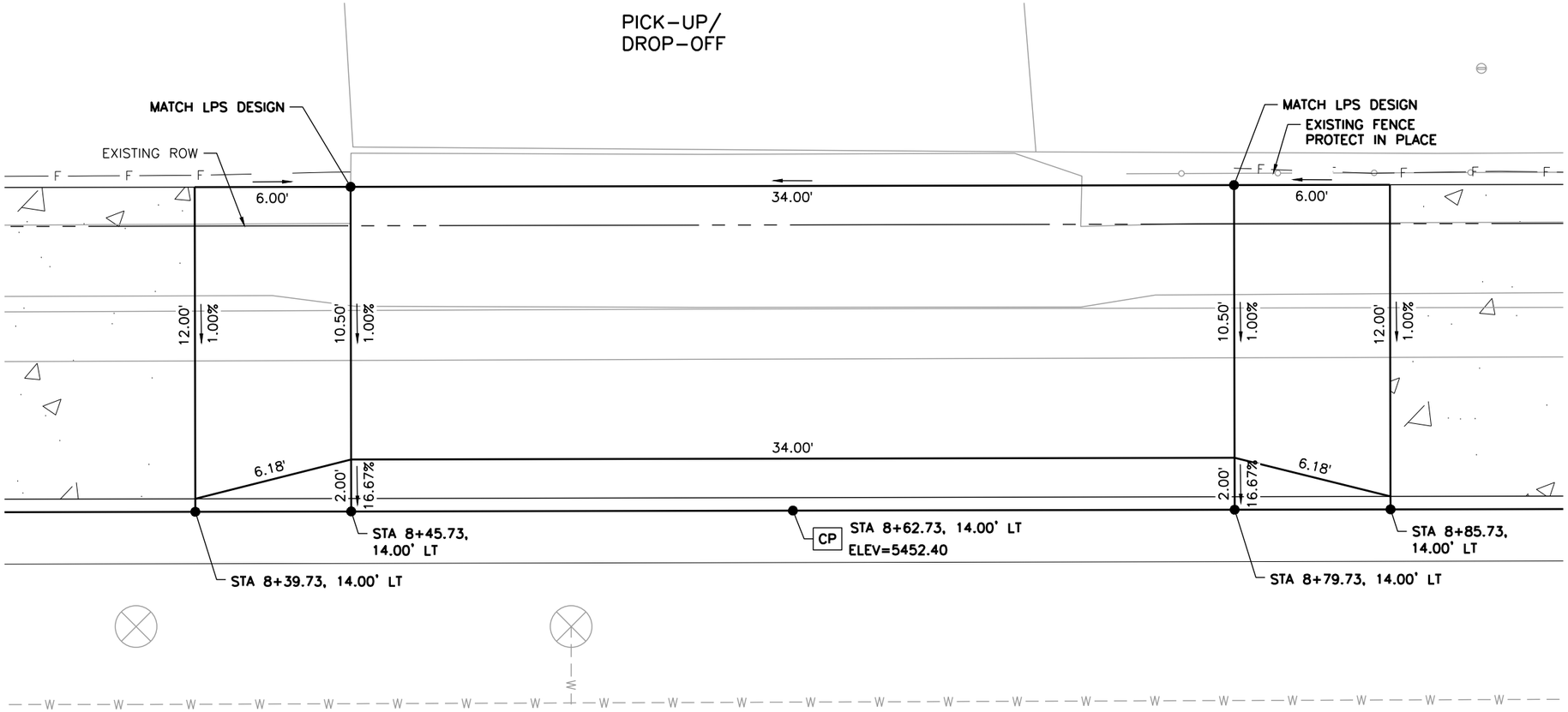
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DETAIL O – DRIVEWAY
EUCLID MIDDLE SCHOOL
PICK-UP/DROP-OFF

EUCLID AVE

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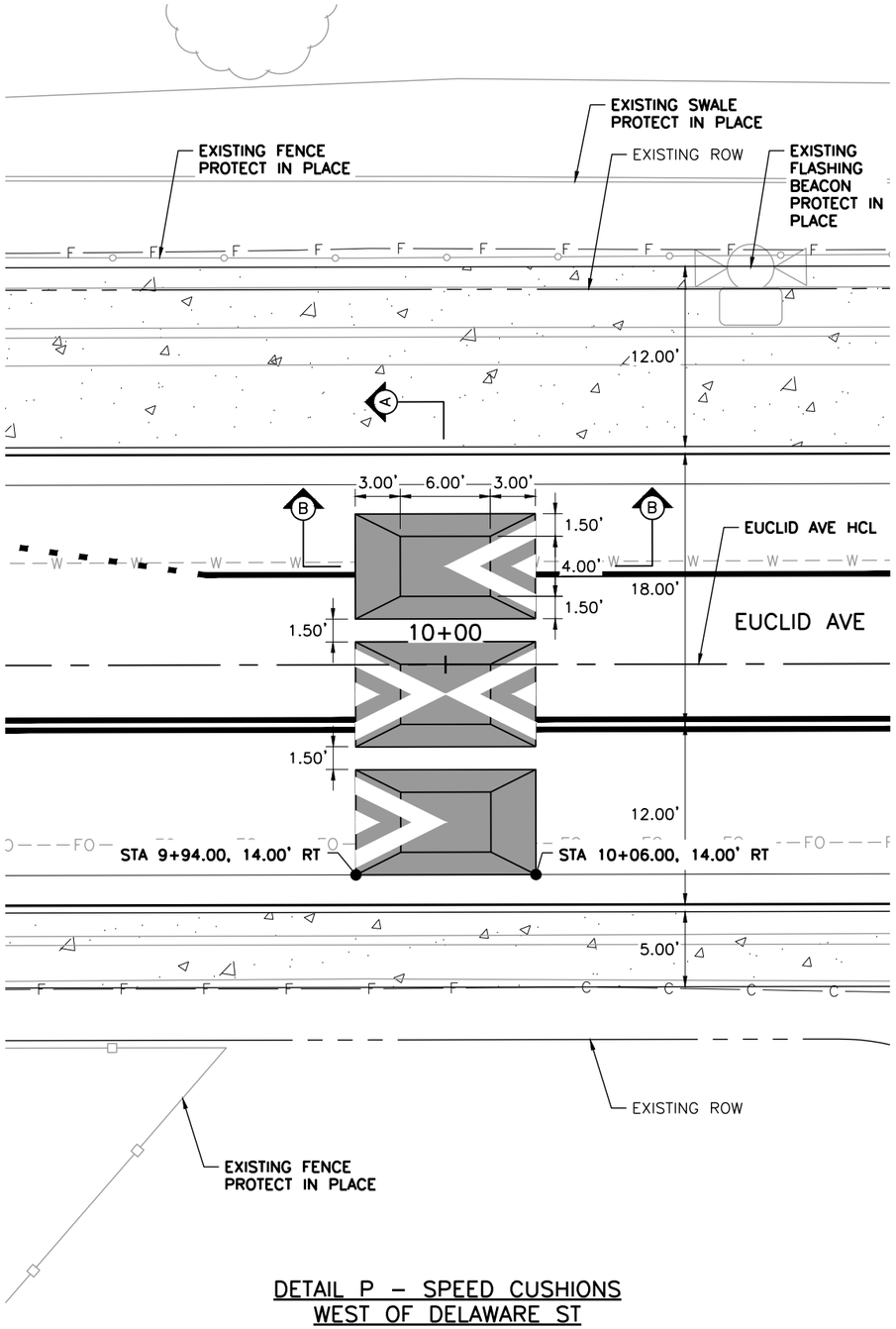
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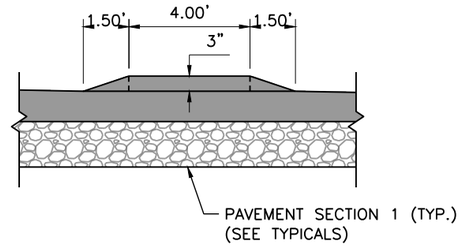
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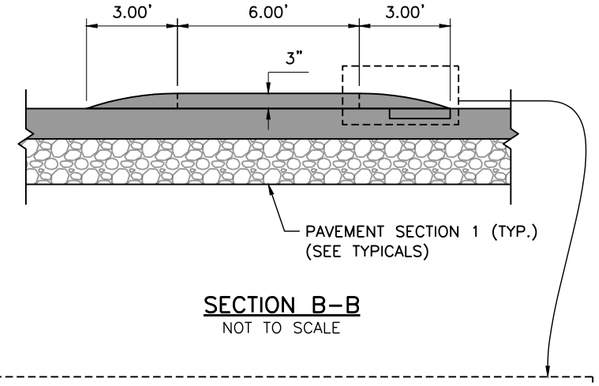
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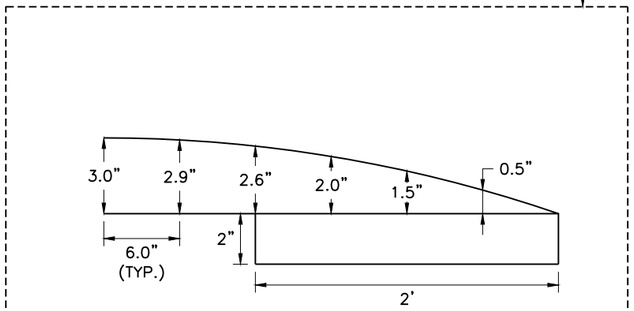
DETAIL P – SPEED CUSHIONS
WEST OF DELAWARE ST



SECTION A–A
NOT TO SCALE



SECTION B–B
NOT TO SCALE



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TRAVIS LEE GREHMAN
47650
3/17/25
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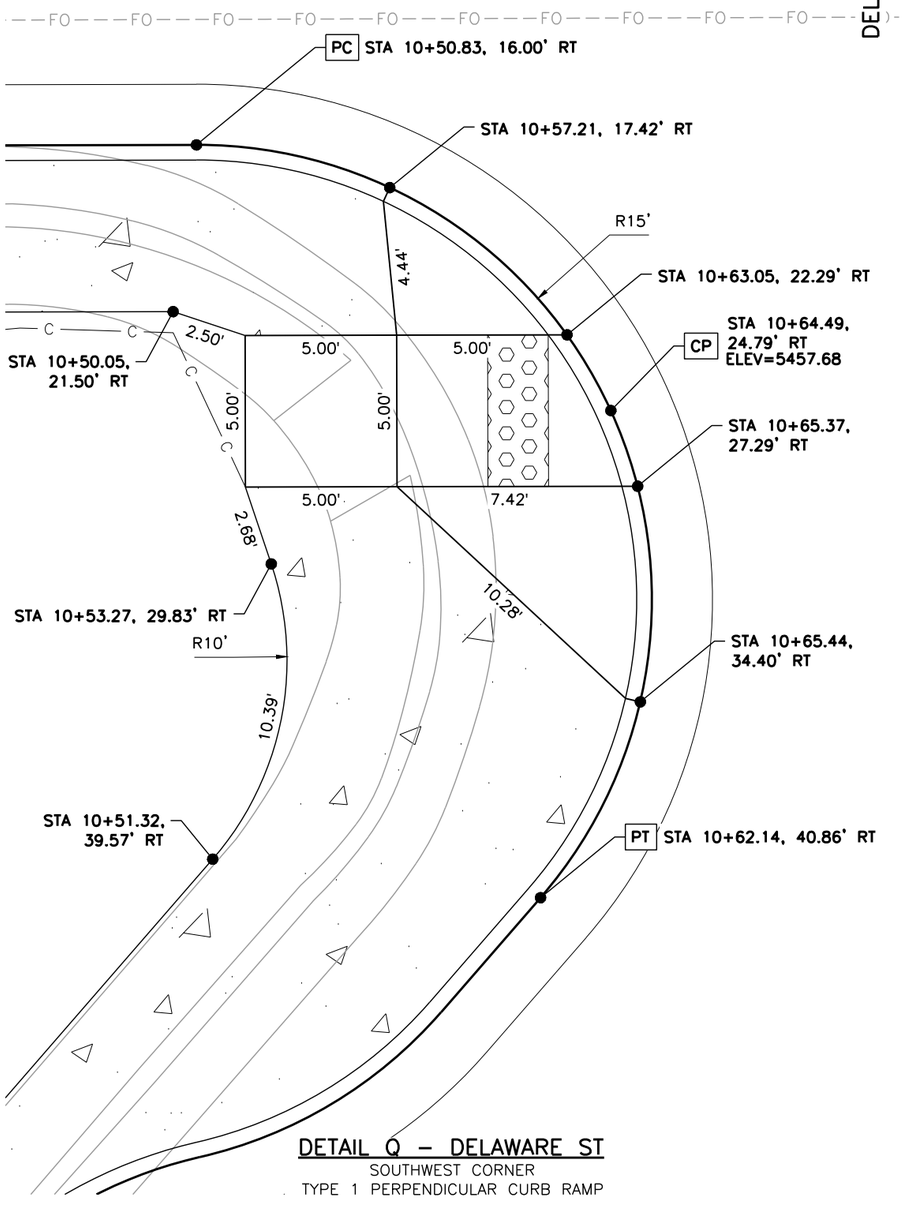
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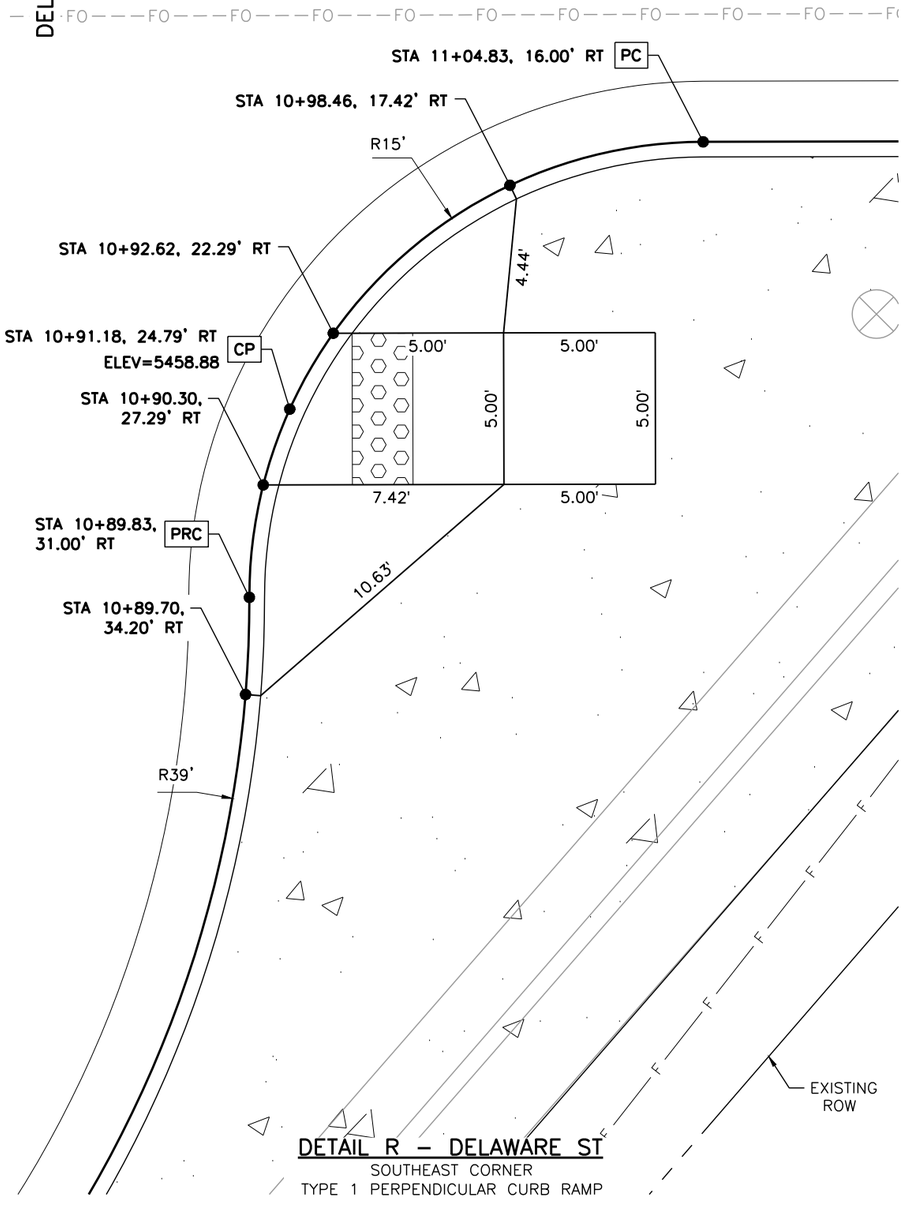
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DETAIL Q – DELAWARE ST
SOUTHWEST CORNER
TYPE 1 PERPENDICULAR CURB RAMP



DETAIL R – DELAWARE ST
SOUTHEAST CORNER
TYPE 1 PERPENDICULAR CURB RAMP

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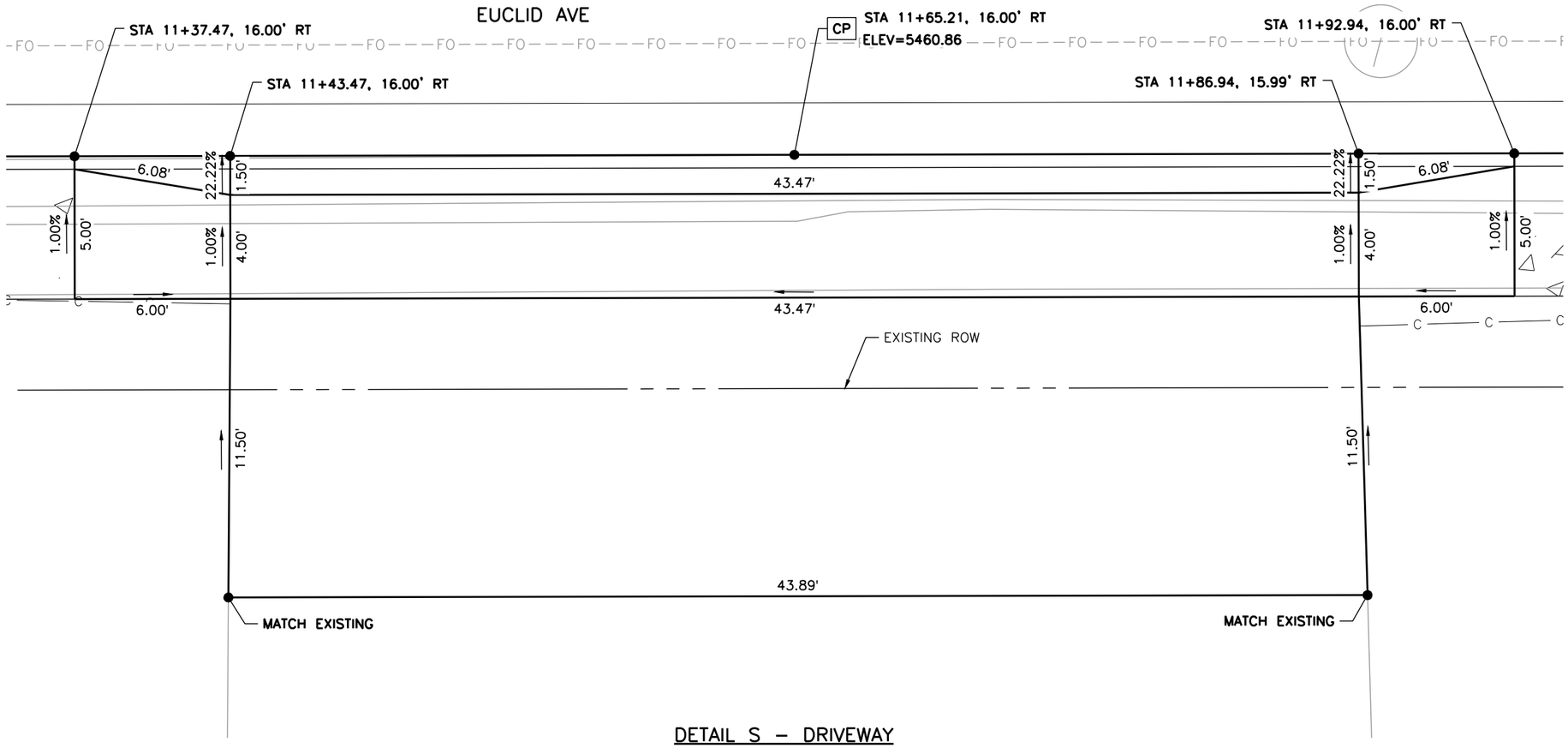
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DETAIL S – DRIVEWAY
432 W EUCLID AVE

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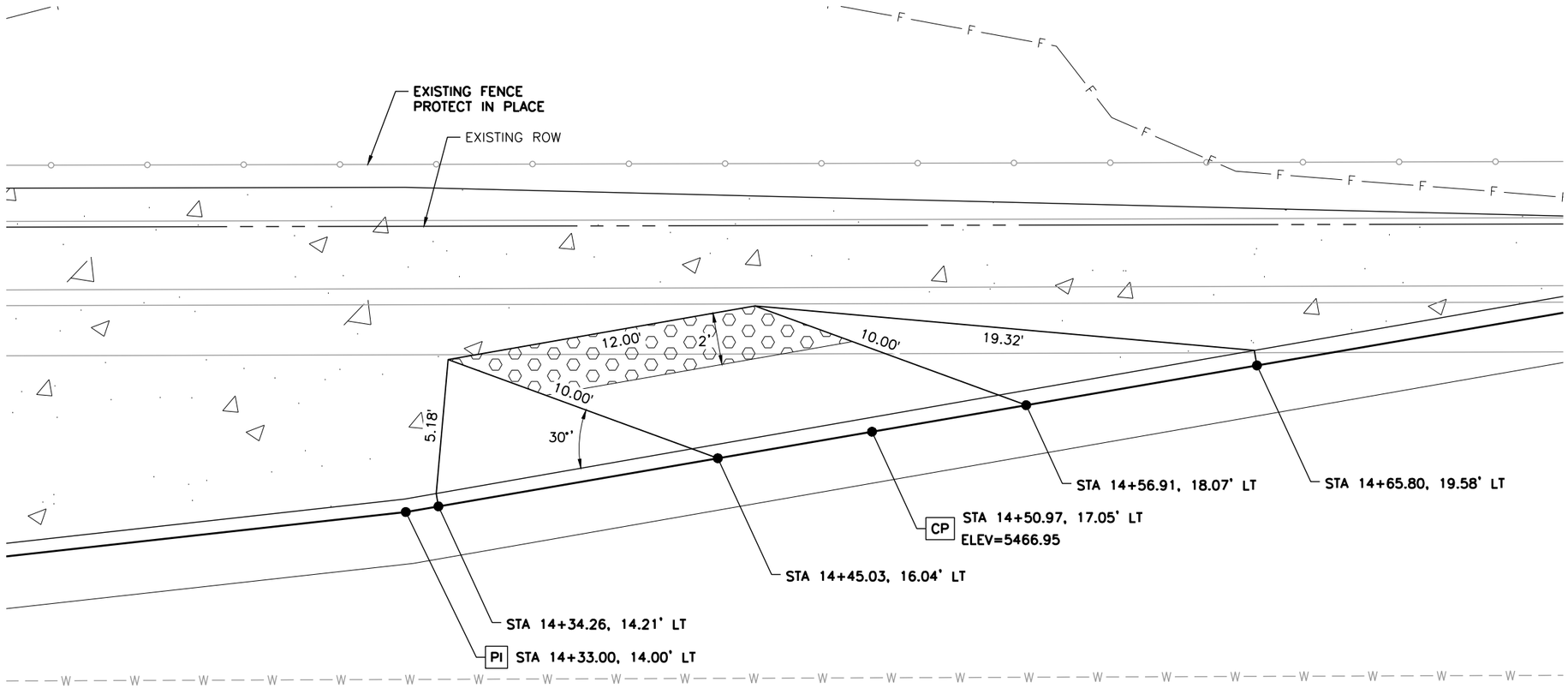
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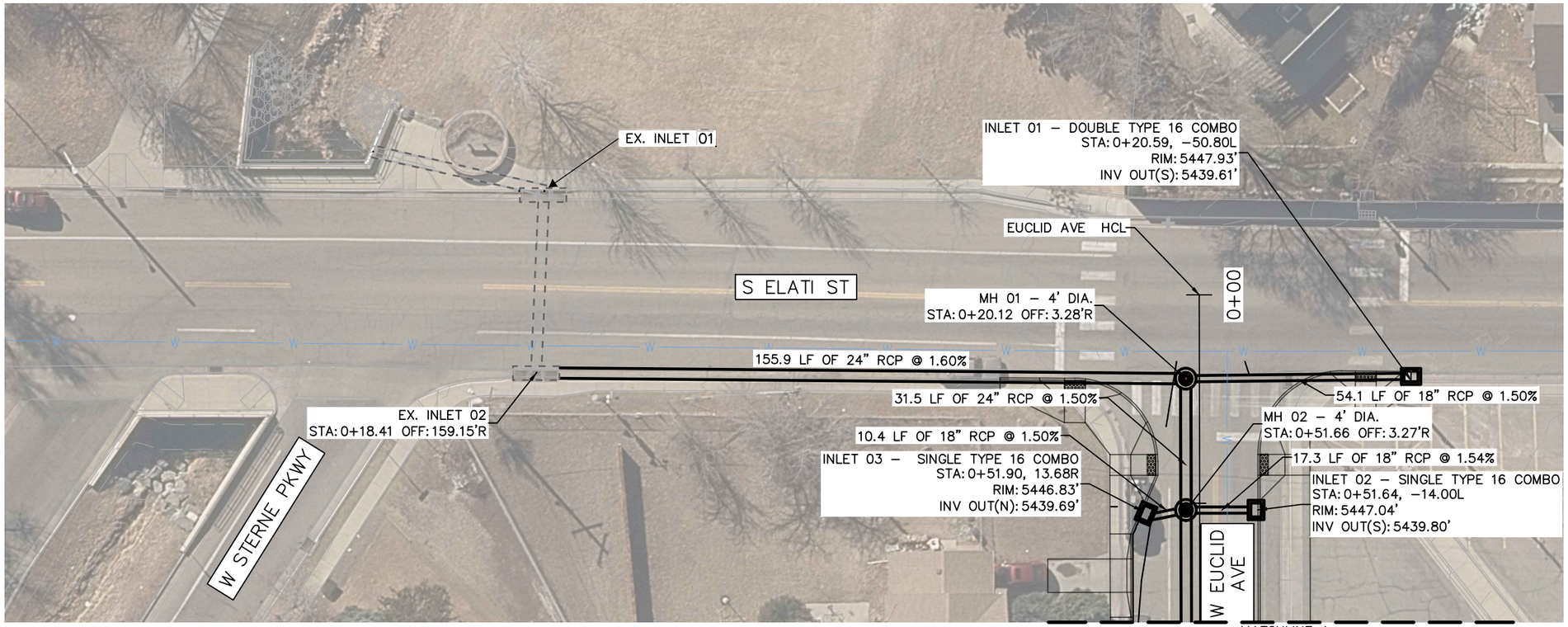
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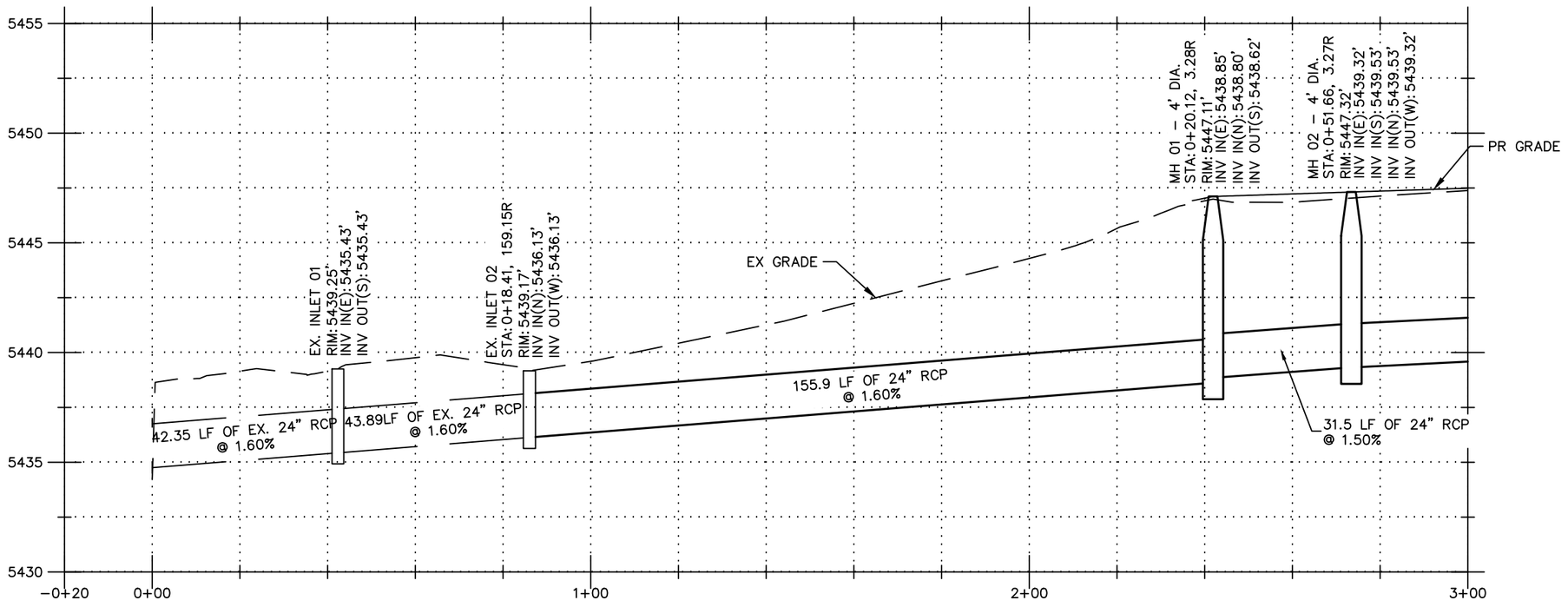

EXISTING FENCE
PROTECT IN PLACE
EXISTING ROW
F F F F F F F F F F
12.00'
2"
10.00'
10.00'
19.32'
5.18'
30°
STA 14+56.91, 18.07' LT
STA 14+65.80, 19.58' LT
CP
STA 14+50.97, 17.05' LT
ELEV=5466.95
STA 14+45.03, 16.04' LT
STA 14+34.26, 14.21' LT
PI
STA 14+33.00, 14.00' LT
W W W

North

0 15 30

SCALE: 1" = 30'





PROJECT NUMBER
23-03

23-03
EUCLID AVENUE IMPROVEMENTS
STORM SEWER PLANS

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Detailer
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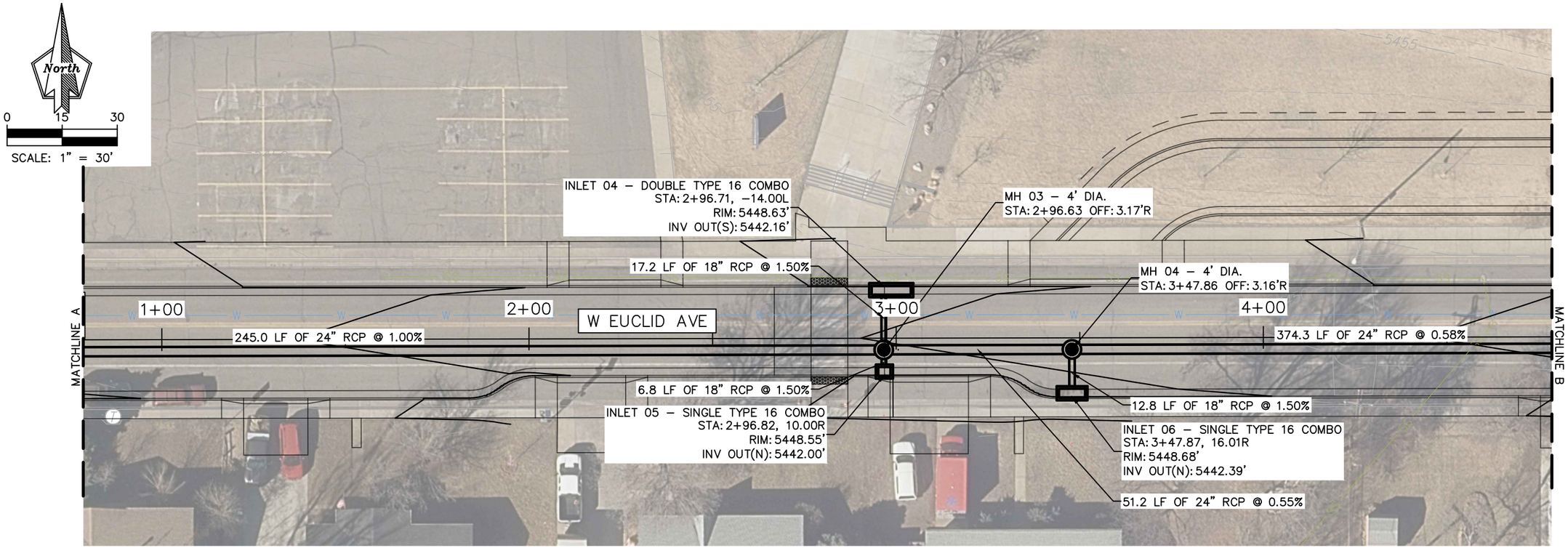
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(303) 795-3865
www.littletongov.org

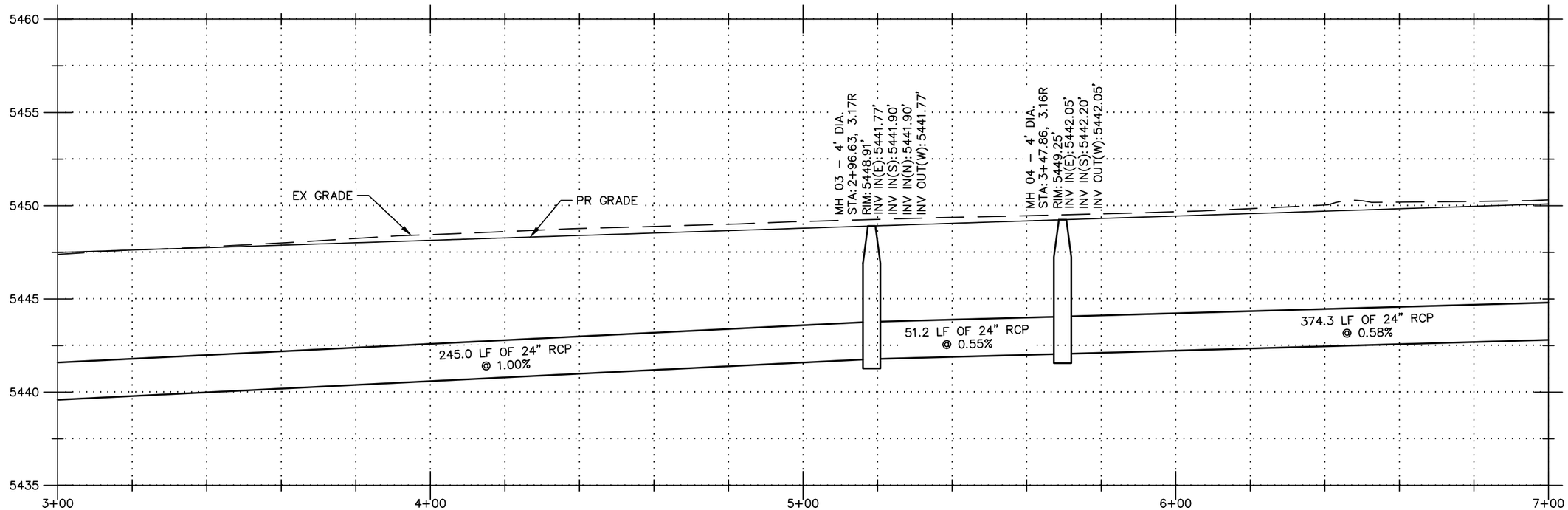
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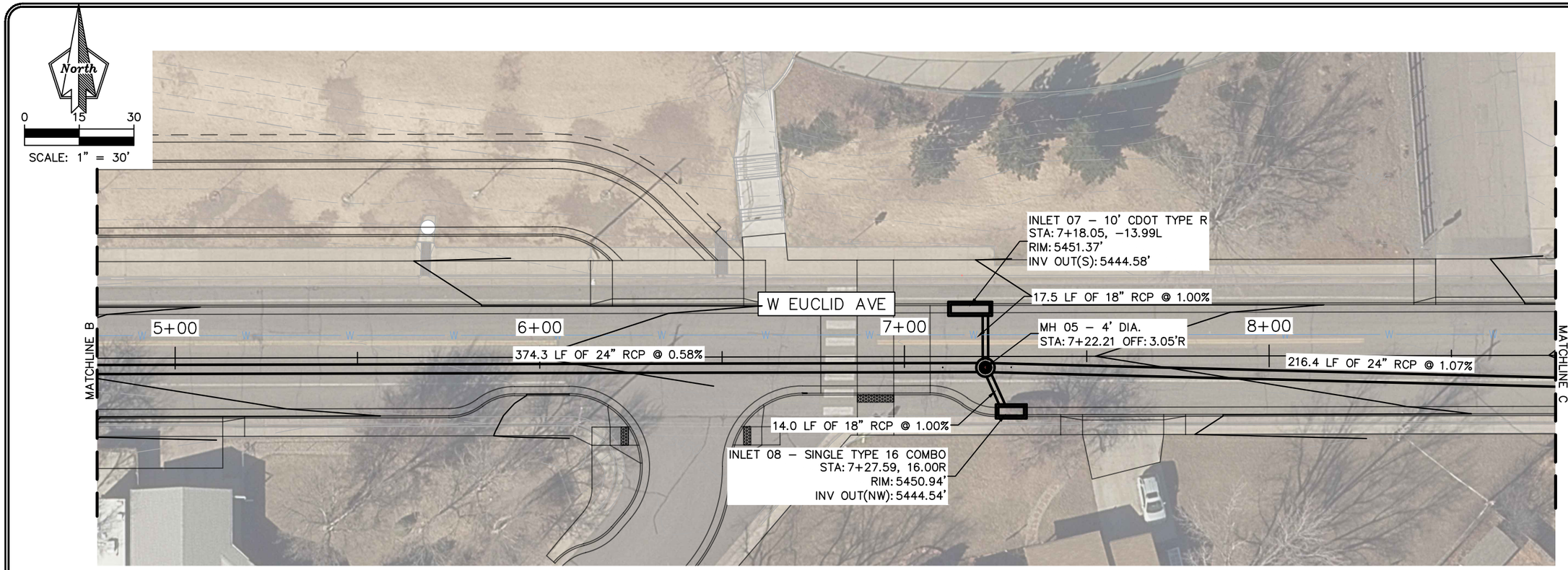
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Littleton, CO 80120 (303) 795-3865
www.littletongov.org

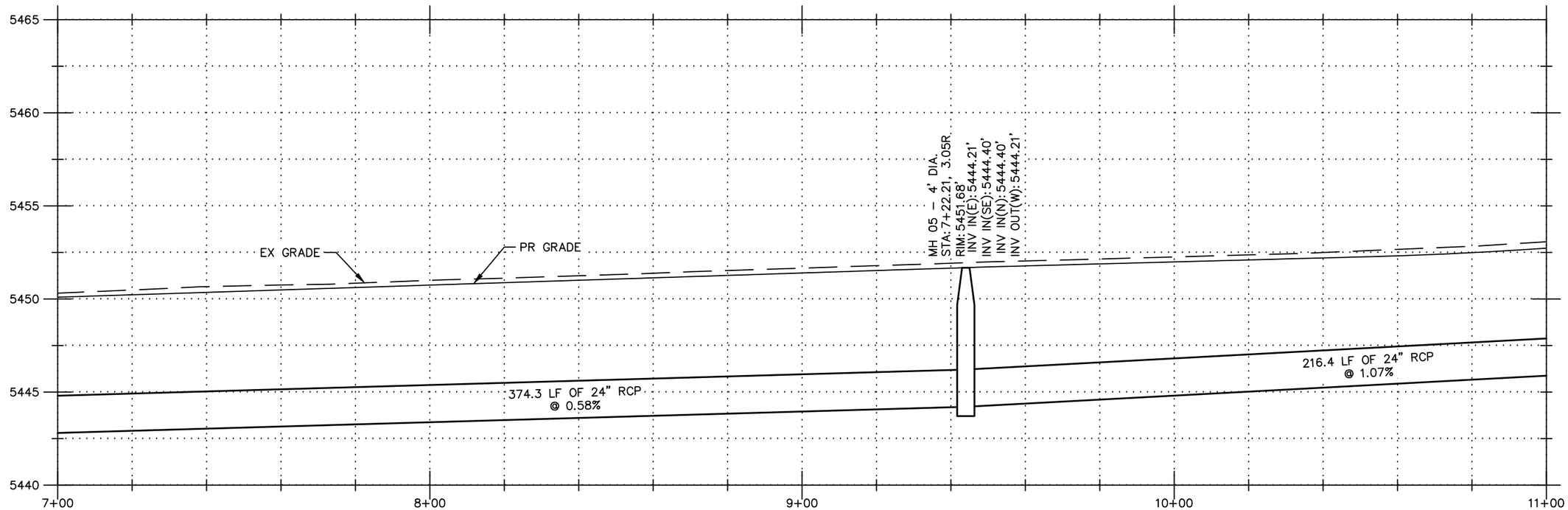
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DATE DESCRIPTION

SHEET 43 of 60

Date

PATH:
PLOTTED BY:
XREFS:
PLOT DATE:





PROJECT NUMBER
23-03

23-03
EUCLID AVENUE IMPROVEMENTS
STORM SEWER PLANS

Designer
Detailer
Checked

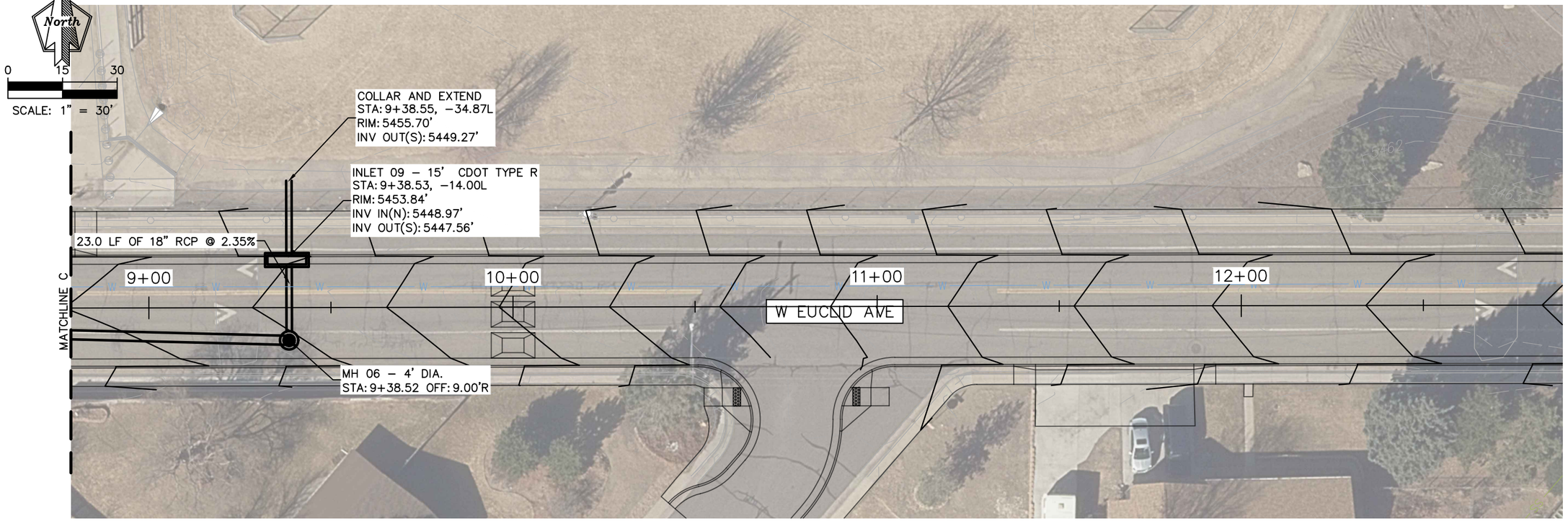
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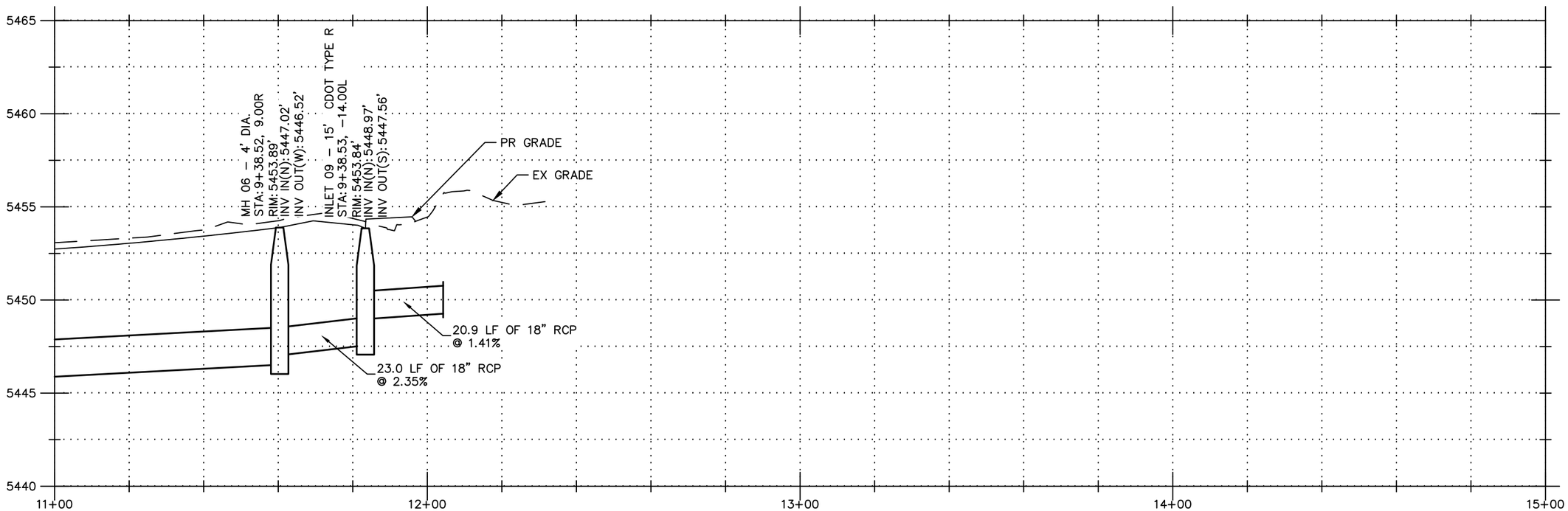
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DATE DESCRIPTION

SHEET
44 of 60

Date

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PROJECT NUMBER
23-03

23-03
EUCLID AVENUE IMPROVEMENTS
STORM SEWER PLANS

Designer
Detailer
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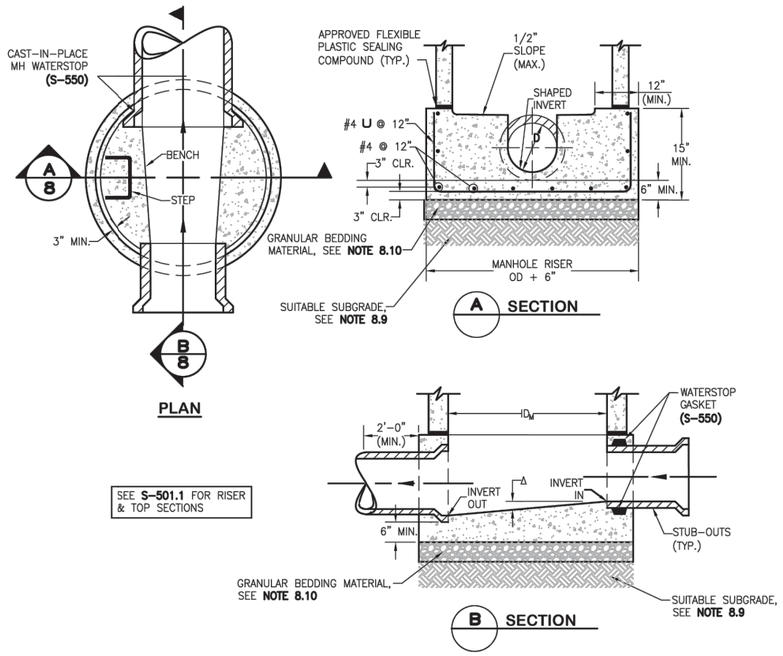
INDEX OF REVISIONS
DATE DESCRIPTION

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45 of 60

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CAST -IN-PLACE MANHOLE BASE
(FOR SAN. (TYPE A) MH & STM. (TYPE C) MH)
NO SCALE

CAST-IN-PLACE MANHOLE BASE NOTES:

8.1 MANHOLE RISER MINIMUM DIAMETER SHALL CONFORM TO **TABLE 6, S-501.1**.

8.2 GROUTED FLOW CHANNELS AND INVERTS MAY BE FORMED BY SHAPING WITH LEAN CONCRETE (f'_c=2000 PSI MIN.), ALL OTHER CONCRETE SHALL BE MIN. f'_c=4500 PSI.

8.3 ALL DEAD END MANHOLES SHALL BE STUBBED THRU AT 0.40% MINIMUM SLOPE.

8.4 STUB-OUTS SHALL EXTEND 2'-0" MIN. PAST MANHOLE O.D. AND BE FACTORY PLUGGED.

8.5 REINFORCING IS REQUIRED FOR ALL MANHOLE BASES.

8.6 SLOPE MANHOLE BENCH 1/2" MAXIMUM TOWARD FLOW CHANNEL.

8.7 FOR SANITARY SEWERS, IF $\Delta \geq 18$", AN OUTSIDE DROP MANHOLE IS REQUIRED **(S-530)**.

8.8 SHIPLAP JOINTS ON MANHOLE BARREL RISER SHALL CONFORM TO DIVISION STANDARDS AND SPECIFICATIONS **(S-401)**.

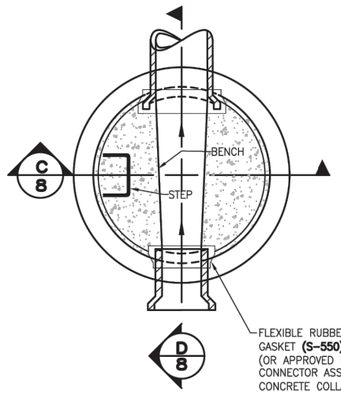
8.9 ALL MANHOLES & SPECIAL STRUCTURES TO BE PLACED ON SUITABLE SUBGRADE MATERIAL. IF SUBGRADE CONDITIONS WARRANT, UNSUITABLE FOUNDATION MATERIAL WILL BE OVEREXCAVATED, & SELECT SUBGRADE MATERIAL WILL BE PLACED AS PER SECTION 5.00 OF THE WCPM STANDARD CONSTRUCTION SPECIFICATIONS.

8.10 GRANULAR BEDDING MATERIAL SHALL BE COMPACTED TO 90% MAXIMUM DRY DENSITY IN ACCORDANCE WITH AASHTO T-180.

8.11 ALL PIPE OPENINGS SHALL BE CONSTRUCTED WITH AN APPROVED FLEXIBLE WEDGE-TYPE GASKET CONFORMING TO ASTM C-443 WHICH SHALL BE CAPABLE OF PROVIDING A WATER TIGHT JOINT WITH ZERO LEAKAGE AROUND THE INSTALLED PIPE. CONCRETE TO CONCRETE DONE WITHOUT WATER STOP GASKET FOR STORM SEWER WILL BE AT THE DISCRETION OF THE CITY **(S-550)**.

8.12 ALL PRECAST RISER SECTIONS, CONES, GRADE RINGS, ETC. SHALL CONFORM TO THE LATEST REVISION OF ASTM C-478, STANDARD SPECIFICATION FOR CIRCULAR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS.

8.13 NO MODIFICATIONS TO A CAST-IN-PLACE MANHOLE WILL BE ACCEPTED ONCE CASTED.



PRECAST MANHOLE BASE NOTES:

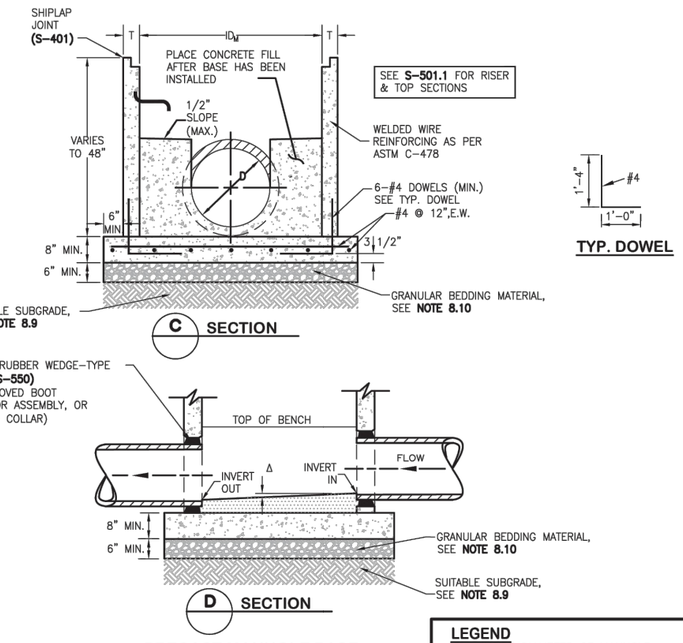
8.14 THE BASE SLAB SHALL BE POURED MONOLITHICALLY WITH BOTTOM RISER SECTION.

8.15 PRECAST MANHOLE BASES SHALL FIT THE CONDITIONS AND LOCATIONS FOR WHICH THEY ARE INTENDED WITHOUT ANY FIELD MODIFICATIONS. ANY MANHOLE BASE WHICH REQUIRES FIELD CUTTING OR MODIFICATION IN ORDER TO FIT THE LOCATIONS INTENDED SHALL BE REJECTED BY THE CITY AND REMOVED AND REPLACED BY THE CONTRACTOR AT NO COST TO THE CITY.

8.16 AN APPROVED FLEXIBLE BOOT TYPE SLEEVE MAY ALSO BE USED FOR PRECAST INSTALLATIONS.

8.17 PRECAST MANHOLES CANNOT BE SHIPPED PRIOR TO 5 DAYS POST CASTING, AND CANNOT BE INSTALLED PRIOR TO 7 DAYS POST CASTING.

8.18 FOR CONNECTIONS INTO BLIND CORE WITHOUT BOOT, SEE DETAIL FOR CONNECTOR PIPE INTO WALL, **S-450**.



PRECAST MANHOLE BASE
(FOR SAN. (TYPE A) MH & STM. (TYPE C) MH)
NO SCALE

f'_c = 4500 PSI
f_y = 60,000 PSI

LEGEND
ID_M= INSIDE DIAMETER OF MANHOLE
T= MANHOLE WALL THICKNESS
Δ= DROP THROUGH MANHOLE
D= INSIDE DIAMETER OF PIPE

NO.	DESCRIPTION OF REVISIONS	DATE	BY

DENVER THE MILE HIGH CITY

CITY AND COUNTY OF DENVER
2000 W. 3RD AVE. DENVER, CO 80223
www.denvergov.org

STANDARD DETAILS
MANHOLE BASE CONSTRUCTION - TYPE A AND C

S-502

DRAWN BY: KRC
DESIGNED BY: ----
APPROVED BY: ----
DRAWING NAME: S502.dwg
DATE: JUNE 2020
SHEET NO.: 8

COLORADO LICENSED
TRAVIS LEE GREIMAN
47650
3/17/25
PROFESSIONAL ENGINEER

PLOT DATE: May 1, 2020

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Print Date: 3/13/2025	
File Name: 1525-201872.18-CD-11-DRAINAGE PNP.dwg	
Horizontal Scale: 1"=40'	Vertical Scale:

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Sheet Revisions

Date:	Comments	Initials

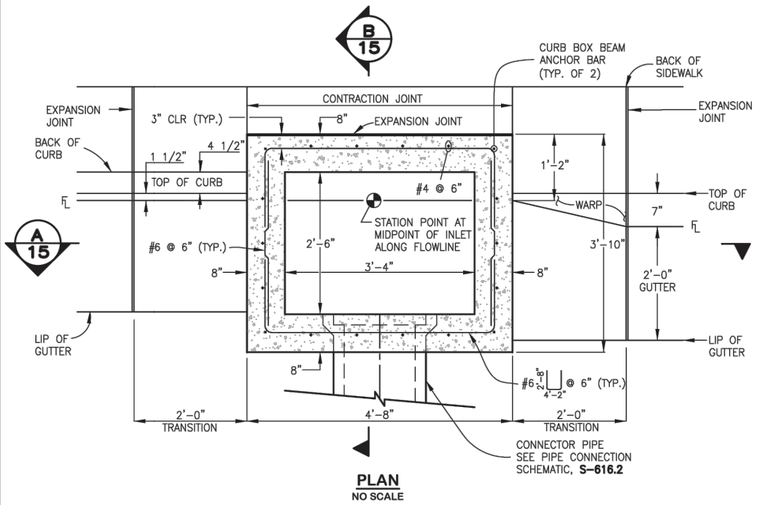
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Public Works & Engineering
2255 W Berry Avenue
Littleton, Colorado 80120

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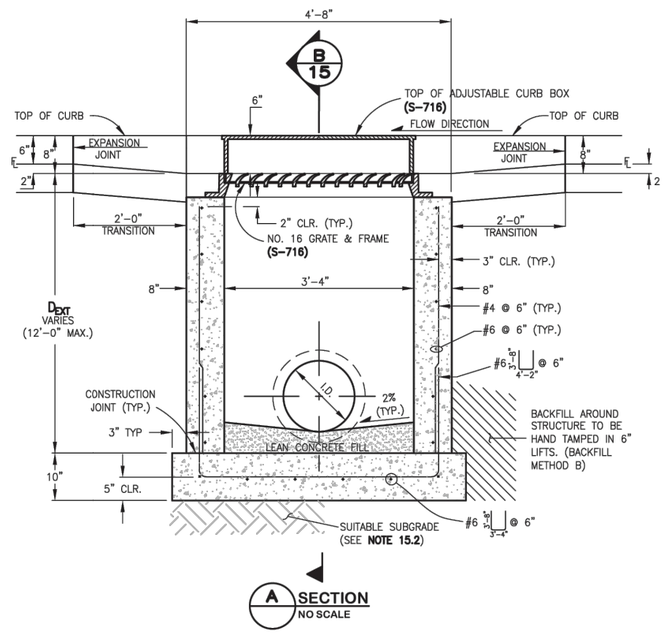
EUCLID AVE IMPROVEMENTS – PHASE 1
STORM SEWER DETAILS

Designer:	LML	Structure Numbers	
Detailer:	LML		
Sheet Subset:	STORM	Subset Sheets:	5 OF 7

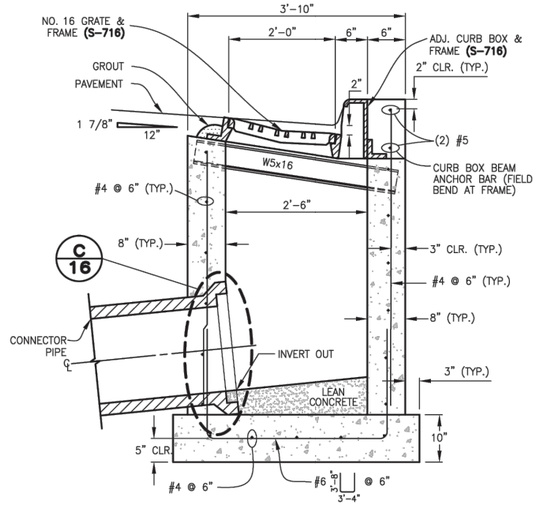
Project No.
23-03
Sheet Number: 46 OF 60



PLAN
NO SCALE



A SECTION
NO SCALE



B SECTION (TYPICAL, ALL SIZES)
NO SCALE

SINGLE NUMBER 16 INLET NOTES:

15.1 FOR PAYMENT PURPOSES, INLET STRUCTURES SHALL ALSO INCLUDE 2'-0" CURB & GUTTER TRANSITION SECTION AT EACH END OF INLET PLUS SIDEWALK SECTIONS WHERE REQUIRED BEHIND INLET STRUCTURE AND TRANSITION SECTIONS.

15.2 SUB-GRADE SHALL BE 6-12" OF CLASS B BEDDING COMPACTED PER WCPM STANDARD CONSTRUCTION SPECIFICATIONS, ON SUITABLE, UNDISTURBED MATERIAL. IF SUBGRADE IS UNSUITABLE, THE SUBGRADE SHALL BE OVEREXCAVATED AND STABILIZED WITH CLASS B BEDDING PER WCPM STANDARD CONSTRUCTION SPECIFICATIONS.

15.3 FLOOR SLOPE MAY BE POURED MONOLITHIC WITH BASE.

15.4 Sc = SLOPE OF CONNECTOR = 2% MIN.

15.5 UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS OR OTHERWISE APPROVED, ALL NO. 16 INLETS SHALL BE CONSTRUCTED WITH AN ADJUSTABLE CAST IRON CURB BOX **(S-716)**.

15.6 DESIGN CONDITIONS FOR INLET ALLOWS DEPTHS OF 12'-0" (MAX.). FOR INLETS MORE THAN 12'-0" FEET IN DEPTH, SHOP DRAWINGS AND DESIGN ANALYSIS SHALL BE SUBMITTED FOR APPROVAL.

15.7 ALL REINFORCING STEEL SHALL BE ASTM, A-615, GRADE 60 DEFORMED BARS. DIAMETER OF BEND MEASURED ON THE INSIDE OF THE BAR SHALL BE A MINIMUM OF 6 BAR DIAMETER.

15.8 ALL SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, 2017.

15.9 NO FORMWORK SHALL WORK REMAIN INSIDE STRUCTURE WHEN COMPLETE.

15.10 CONCRETE MIX FOR GUTTER AND ANY ADDED STREET PANELS SHALL MEET CLASS 2 REQUIREMENTS FOR SULFATE RESISTANCE IN ACCORDANCE WITH CDOT STANDARD 601.04 ON STREETS WHERE MAGNESIUM CHLORIDE CHEMICAL DEICERS ARE APPLIED. REFER TO WCPM STANDARD CONSTRUCTION SPECIFICATIONS SECTION 11 FOR REQUIREMENTS FOR SULFATE RESISTANCE IN CONCRETE EXPOSED TO EARTH.

15.11 SPLICING OF REINFORCING STEEL SHALL BE PERMITTED ONLY WHERE DETAILED IN DRAWINGS.

15.12 INLET WALLS SHALL BE FORMED BOTH INSIDE AND OUTSIDE. CASTING OF SIDEWALLS AGAINST EARTH IS NOT PERMITTED.

15.13 LEAN CONCRETE FILL TO BE F'C = 2000 PSI. INLET STRUCTURE, LID, STREET CURB AND GUTTER, AND PAVEMENT TO BE F'C = 4,500 PSI, MAX W/CM = 0.45 AND AIR ENTRAINED 5% TO 8%. F'C = 28 DAY COMPRESSIVE STRENGTH REQUIREMENT FOR MIX DESIGN, FIELD ACCEPTANCE.

15.14 FOR THROUGH STRUCTURES, BENCHES MUST COME TO TOP OF PIPE.

15.15 NO CORNER PENETRATIONS ON STRUCTURE.

15.16 SEE WCPM STANDARD CONSTRUCTION SPECIFICATIONS SECTION 11.04 STORM INLETS FOR MORE INFORMATION. USE OF THIS DETAIL WITHOUT SPECIFICATIONS SHALL BE CONSIDERED NON-COMPLIANT.

15.17 SEE **S-616.2** FOR REBAR PLACEMENT AT WALL PENETRATION DETAIL.

15.18 REFER TO "TRANSPORTATION STANDARDS AND DETAILS FOR THE ENGINEERING DIVISION" FOR ADJACENT ROADWAY AND SIDEWALK DESIGN CRITERIA.

NO.	DESCRIPTION OF REVISIONS	DATE	BY

DENVER THE MILE HIGH CITY

CITY AND COUNTY OF DENVER
2000 W. 3RD AVE. DENVER, CO 80223
www.denvergov.org

STANDARD DETAILS
SINGLE NUMBER 16 INLET
S-616.1

DRAWN BY: ---
DESIGNED BY: ASP/JDMT
APPROVED BY: ---
DRAWING NAME: S616-1.dwg
DATE: JUNE 2020
SHEET NO.: 15

COLORADO LICENSED
TRAVIS LEE GHEIMAN
47650
3/17/25
PROFESSIONAL ENGINEER

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PLOT DATE: May 1, 2020
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Print Date: 3/13/2025
File Name: 1525-201872.18-CD-11-DRAINAGE PNP.dwg
Horizontal Scale: 1"=40' Vertical Scale:

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Denver, Colorado 80237
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Contract ID 3194

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Sheet Revisions		
Date:	Comments	Initials

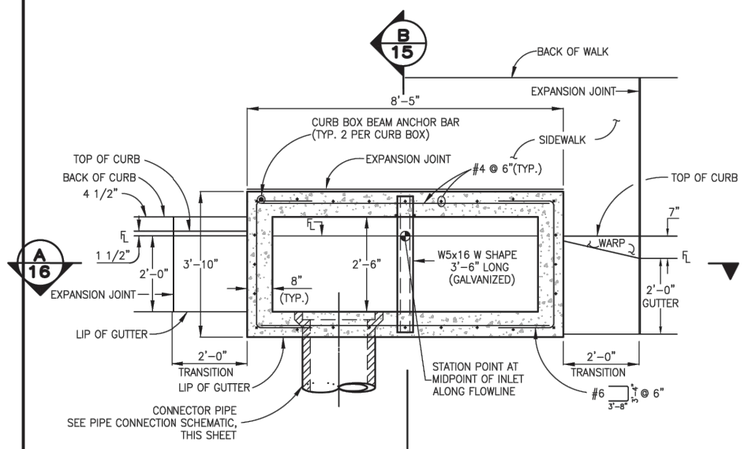
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Public Works & Engineering
2255 W Berry Avenue
Littleton, Colorado 80120

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No. Revisions:
Revised:
Void:

EUCLID AVE IMPROVEMENTS – PHASE 1
STORM SEWER DETAILS

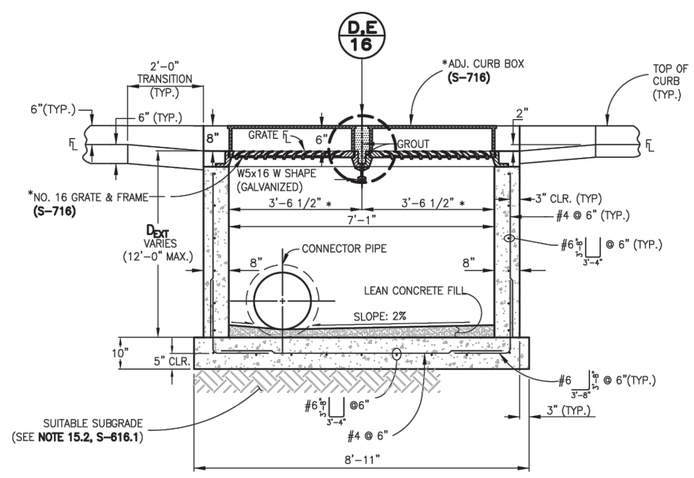
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Detailer: LML
Sheet Subset: STORM
Structure Numbers:
Subset Sheets: 6 OF 7

Project No. 23-03
Sheet Number: 47 OF 60

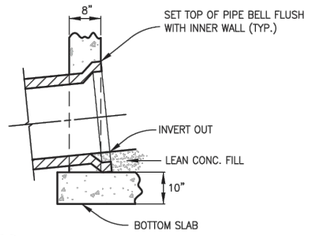


6" VERTICAL CURB AND GUTTER | **COMBINATION CURB GUTTER AND SIDEWALK**

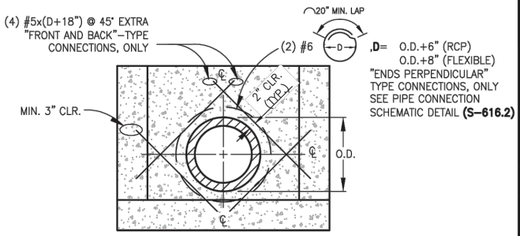
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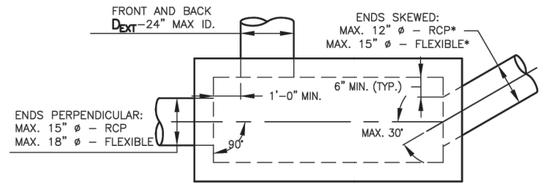
A SECTION
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C DETAIL - CONNECTOR OUTLET
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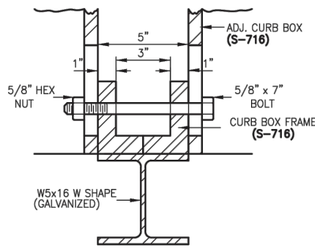


DETAIL - REBAR PLACEMENT AROUND CONNECTOR PIPE
NO SCALE

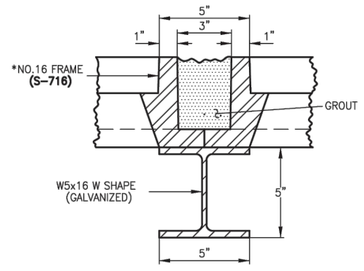


*ANGLED CONNECTIONS REQUIRE CITY APPROVAL.

PIPE CONNECTION SCHEMATIC (NO. 16 INLET)
THIS DIAGRAM IS PROVIDED FOR GENERAL GUIDANCE ONLY. THE DESIGNER IS RESPONSIBLE FOR VERIFYING PROJECT SPECIFIC GEOMETRY.



D DETAIL - PLACEMENT OF ADJ. CURB BOX ON SUPPORT RAIL (TYP.)
NO SCALE



E DETAIL - FRAME PLACEMENT ON SUPPORT RAIL (TYP.)
NO SCALE

DOUBLE NUMBER 16 INLET NOTES:

16.1 SEE DETAIL SPECIFICATIONS SECTION 11.05 STORM INLETS FOR MORE INFORMATION. USE OF THIS DETAIL WITHOUT SPECIFICATIONS SHALL BE CONSIDERED NON-COMPLIANT.

16.2 SEE GENERAL NOTES ON **S-616.1.**

16.3 EXPANSION JOINT MATERIAL SHALL BE PLACED FULL DEPTH OF THE CURB AND GUTTER, SIDEWALK, CONCRETE PAVEMENT, AS APPLICABLE. THE TOP PORTION OF THE JOINT SHALL BE SEALED WITH SILICONE SEALANT.

16.4 SEE **S-616.1** FOR REBAR PLACEMENT AT WALL PENETRATION DETAIL.

* STANDARD DETAIL **S-716** APPLIES TO ALL OF THE GRATE & FRAME GEOMETRIC DIMENSIONS FOR THE DOUBLE NUMBER 16 INLET EXCEPT FOR THE FRAME LENGTH. FRAME LENGTH SHOULD BE MANUFACTURED FOR THE DIMENSIONS CALLED OUT ON THIS SHEET.

NO.	DESCRIPTION OF REVISIONS	DATE	BY

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CITY AND COUNTY OF DENVER
2000 W. 3RD AVE. DENVER, CO 80223
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STANDARD DETAILS
DOUBLE NUMBER 16 INLET
S-616.2

DRAWN BY: ---
DESIGNED BY: ASP/JDMT
APPROVED BY: ---
DRAWING NAME: S616-2.dwg
DATE: JUNE 2020
SHEET NO.: 16

COLORADO LICENSED
TRAVIS LEE GREIMAN
47650
3/17/25
PROFESSIONAL ENGINEER

PLOT DATE: May 1, 2020
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File Name: 1525-201872.18-CD-11-DRAINAGE PNP.dwg			
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EUCLID AVE IMPROVEMENTS - PHASE 1
STORM SEWER DETAILS

Designer:	LML	Structure Numbers	
Detailer:	LML		
Sheet Subset:	STORM	Subset Sheets:	7 OF 7

Project No. 23-03

Sheet Number: 48 OF 60

Contract ID 3194

SIGN QUANTITIES

SIGN NO.	LOCATION	SIDE	SIGN CODE	SIGN DESCRIPTION	SIGN SIZE W X H (INCHES)	APPROX. AREA OF SIGN (SF)	SIGN BACKGROUND COLOR	202-00810 REMOVAL OF GROUND SIGN (EA)	210-00810 RESET GROUND SIGN (EA)	614-00011 SIGN PANEL CLASS I (SF)	614-00012 SIGN PANEL CLASS II (SF)	614-00217 STEEL SIGN POSTS (2"X2" TELESPAR TUBING) (LF)	614-72860 PEDESTRIAN PUSH BUTTON (EA)	614-80003 RECTANGULAR RAPID FLASHING BEACON (EA)	614-84000 TRAFFIC SIGNAL PEDESTRIAN POLE STL. (EA)	503-00018 DRILLED SHAFT 18 INCH (LF)
1.01	0+29	RT	R1-1	STOP					1							
			R1-3P	ALL WAY												
			R7-1	NO PARKING ANY TIME												
1.02	0+50	LT	R1-1	STOP					1							
			STREET NAME SIGN	ELATI ST												
			STREET NAME SIGN	EUCLID AVE												
			R1-3P	ALL WAY												
1.03	1+60	RT	W17-1	SPEED HUMP	36 x 36	9	YELLOW				9	12.5				
			W13-1(15)	15 M.P.H.	18 x 18	2.25	YELLOW			2.25						
1.04	2+71	LT	S1-1	SCHOOL CROSSING SYMBOL	30 x 30	6.25	YELLOW-GREEN			6.25			1	1	1	6
			W16-7PL	DOWNWARD DIAGONAL ARROW (LEFT)	24 x 12	2	YELLOW-GREEN			2						
			W16-7PR	DOWNWARD DIAGONAL ARROW (RIGHT)	24 x 12	2	YELLOW-GREEN			2						
			R10-25	PUSH BUTTON TO TURN ON WARNING LIGHTS	9 x 12	0.75	WHITE			0.75						
1.05	2+77	LT	R1-6B	IN-STREET SCHOOL CROSSING (YIELD)				1								
1.06	2+83	RT	S1-1	SCHOOL CROSSING SYMBOL				1								
			W16-7PL	DOWNWARD DIAGONAL ARROW (LEFT)												
1.07	2+85	RT	S1-1	SCHOOL CROSSING SYMBOL	30 x 30	6.25	YELLOW-GREEN			6.25			1	1	1	6
			W16-7PL	DOWNWARD DIAGONAL ARROW (LEFT)	24 x 12	2	YELLOW-GREEN			2						
			W16-7PR	DOWNWARD DIAGONAL ARROW (RIGHT)	24 x 12	2	YELLOW-GREEN			2						
			R10-25	PUSH BUTTON TO TURN ON WARNING LIGHTS	9 x 12	0.75	WHITE			0.75						
1.08	2+99	LT	S1-1	SCHOOL CROSSING SYMBOL				1								
			W16-7PL	DOWNWARD DIAGONAL ARROW (LEFT)												
1.09	4+13	LT	W17-1	SPEED HUMP	36 x 36	9	YELLOW				9	11				
1.10	5+71	RT	W17-1	SPEED HUMP	36 x 36	9	YELLOW				9	11				
SIGN SUBTOTALS								**3**	**2**	**24.25**	**27**	**34.5**	**2**	**2**	**2**	**12**

NOTES:

1. SIGN POSTS SHALL BE STEEL 2"X2" TELESPAR TUBING. ALL SIGN POST SHALL INCLUDE ANCHOR SLEEVES.
2. SIGN POSTS INSTALLED WITHIN A HARDSCAPE AREA SHALL INCLUDE A 6" PVC SLEEVE. PVC SLEEVES ARE NOT REQUIRED WITHIN GRASS OR DIRT AREAS.
3. ANCHOR SLEEVES AND PVC SLEEVES SHALL BE INCLUDED IN THE COST OF THE TELESPAR TUBING.

COLORADO LICENSED
TRAVIS LEE GREIMAN
47650
3/17/25
PROFESSIONAL ENGINEER

Print Date: 3/13/2025
File Name: 1525-201872.18-CD-12-SING&STRIPE TABS.dwg
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Date:	Comments	Initials

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2255 W Berry Avenue
Littleton, Colorado 80120

As Constructed
No. Revisions:
Revised:
Void:

EUCLID AVE IMPROVEMENTS – PHASE 1
SIGNING TABULATIONS

Designer: CWD
Detailer: CWD
Sheet Subset: S&S TABS
Structure Numbers:
Subset Sheets: 1 OF 3

Project No. 23-03

Sheet Number: 49 OF 60

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SIGN QUANTITIES

SIGN NO.	LOCATION	SIDE	SIGN CODE	SIGN DESCRIPTION	SIGN SIZE W X H (INCHES)	APPROX. AREA OF SIGN (SF)	SIGN BACKGROUND COLOR	202-00810 REMOVAL OF GROUND SIGN	210-00810 RESET GROUND SIGN	614-00011 SIGN PANEL CLASS I	614-00012 SIGN PANEL CLASS II	614-00217 STEEL SIGN POSTS (2"X2" TELESPAR TUBING)	614-72860 PEDESTRIAN PUSH BUTTON	614-80003 RECTANGULAR RAPID FLASHING BEACON	614-84000 TRAFFIC SIGNAL PEDESTRIAN POLE STL.	503-00018 DRILLED SHAFT 18 INCH
								EA	EA	SF	SF	LF	EA	EA	EA	LF
1.11	6+14	RT	R7-6	NO PARKING LOADING ZONE				1								
			R7-9A	NO PARKING (SYMBOL) BIKE LANE												
1.12	6+62	LT	R1-1	EUCLID AVE					1							
			STREET NAME SIGN	ARAPAHOE DR												
			STREET NAME SIGN	EUCLID AVE												
1.13	6+85	LT	S1-1	SCHOOL CROSSING SYMBOL				1								
			W16-7PL	DOWNWARD DIAGONAL ARROW (LEFT)												
1.14	6+86	RT	S1-1	SCHOOL CROSSING SYMBOL	30 x 30	6.25	YELLOW-GREEN			6.25			1	1	1	6
			W16-7PL	DOWNWARD DIAGONAL ARROW (LEFT)	24 x 12	2	YELLOW-GREEN			2						
			W16-7PR	DOWNWARD DIAGONAL ARROW (RIGHT)	24 x 12	2	YELLOW-GREEN			2						
			R10-25	PUSH BUTTON TO TURN ON WARNING LIGHTS	9 x 12	0.75	WHITE			0.75						
1.15	6+88	RT	R1-6B	IN-STREET SCHOOL CROSSING (YIELD)				1								
1.16	6+90	LT	S1-1	SCHOOL CROSSING SYMBOL				1								
			W16-7PL	DOWNWARD DIAGONAL ARROW (LEFT)												
1.17	6+99	LT	S1-1	SCHOOL CROSSING SYMBOL	35 x 36	6.25	YELLOW-GREEN			6.25			1	1	1	6
			W16-7PL	DOWNWARD DIAGONAL ARROW (LEFT)	36 x 36	2	YELLOW-GREEN			2						
			W16-7PR	DOWNWARD DIAGONAL ARROW (RIGHT)	24 x 12	2	YELLOW-GREEN			2						
			R10-25	PUSH BUTTON TO TURN ON WARNING LIGHTS	9 x 12	0.75	WHITE			0.75						
1.18	8+07	LT	W17-1	SPEED HUMP	36 x 36	9	YELLOW				9	11				
1.19	8+42	LT	R3-4	NO U-TURN								16				
			R1-1	STOP												
			R3-2	NO LEFT TURN SYMBOL	36 x 36	9	WHITE				9					
2.01	9+44	LT	R3-7R	RIGHT LANE MUST TURN RIGHT	36 x 36	9	WHITE				9	12.5				
			R7-1	NO PARKING ANY TIME	12 x 18	1.5	WHITE			1.5						
SIGN SUBTOTALS								**4**	**1**	**23.5**	**27**	**39.5**	**2**	**2**	**2**	**12**

NOTES:

1. SIGN POSTS SHALL BE STEEL 2"X2" TELESPAR TUBING. ALL SIGN POST SHALL INCLUDE ANCHOR SLEEVES.
2. SIGN POSTS INSTALLED WITHIN A HARDSCAPE AREA SHALL INCLUDE A 6" PVC SLEEVE. PVC SLEEVES ARE NOT REQUIRED WITHIN GRASS OR DIRT AREAS.
3. ANCHOR SLEEVES AND PVC SLEEVES SHALL BE INCLUDED IN THE COST OF THE TELESPAR TUBING.

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PROFESSIONAL ENGINEER

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EUCLID AVE IMPROVEMENTS - PHASE 1
SIGNING TABULATIONS

Designer: CWD
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Sheet Subset: S&S TABS
Structure Numbers:
Subset Sheets: 2 OF 3

Project No. 23-03
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SIGN QUANTITIES

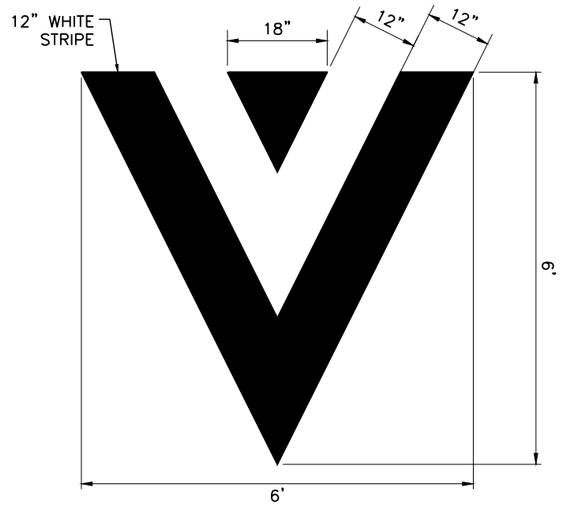
SIGN NO.	LOCATION	SIDE	SIGN CODE	SIGN DESCRIPTION	SIGN SIZE W X H (INCHES)	APPROX. AREA OF SIGN (SF)	SIGN BACKGROUND COLOR	202-00810 REMOVAL OF GROUND SIGN (EA)	210-00810 RESET GROUND SIGN (EA)	614-00011 SIGN PANEL CLASS I (SF)	614-00012 SIGN PANEL CLASS II (SF)	614-00217 STEEL SIGN POSTS (2"X2" TELESPAR TUBING) (LF)	614-72860 PEDESTRIAN PUSH BUTTON (EA)	614-80003 RECTANGULAR RAPID FLASHING BEACON (EA)	614-84000 TRAFFIC SIGNAL PEDESTRIAN POLE STL. (EA)	503-00018 DRILLED SHAFT 18 INCH (LF)
2.02	10+55	LT	W17-1	SPEED HUMP	36 x 36	9	YELLOW				9	12.5				
			W13-1(15)	15 M.P.H.	18 x 18	2.25	YELLOW			2.25						
2.03	10+99	RT	R1-1	STOP					1							
			STREET NAME SIGN	DELAWARE ST												
			STREET NAME SIGN	EUCLID AVE												
2.04	11+33	LT	R7-3	NO PARKING 8:00 AM TO 9:00 AM	12 x 18	1.5	WHITE			1.5		11				
			R7-3	NO PARKING 3:00 PM TO 4:00 PM	12 x 18	1.5	WHITE			1.5						
2.05	13+19	LT	R7-9A	NO PARKING (SYMBOL) BIKE LANE				1								
2.06	13+50	LT	R7-3	NO PARKING 8:00 AM TO 9:00 AM	12 x 18	1.5	WHITE			1.5		11				
			R7-3	NO PARKING 3:00 PM TO 4:00 PM	12 x 18	1.5	WHITE			1.5						
2.07	14+47	LT	R3-7	BIKE LANE	24 x 18	3	WHITE			3		11				
			R3-17B	ENDS	24 x 9	1.5	WHITE			1.5						
2.08	14+81	LT	R1-6B	IN-STREET SCHOOL CROSSING (YIELD)				1								
SIGN SUBTOTALS								**1**	**1**	**11.25**	**9**	**45.5**	**0**	**0**	**0**	**0**
SIGN TOTALS								**8**	**4**	**59**	**63**	**120**	**4**	**4**	**4**	**24**

NOTES:

1. SEE NOTES FROM SHEET 50.

PAVEMENT MARKING QUANTITIES

LOCATION	627-00008 MODIFIED EPOXY PAVEMENT MARKING					627-30405 PREFORMED THERMOPLASTIC PAVEMENT MARKING		627-30410
	4" DOUBLE YELLOW LINE (LF)	4" WHITE EDGE LINE (LF)	4" WHITE GUIDE LINE (2' X 6' GAP) (LF)	8" WHITE EDGE LINE (LF)	12" WHITE HATCH LINE (LF)	TURN ARROW (SF)	SPEED TABLE (SF)	XWALK-STOPLINE (SF)
0+14 TO 2+63	425	126						126
2+63 TO 6+26	667	232					24	100
6+26 TO 6+77	38							90
6+77 TO 8+56	300	79		98	25		24	100
8+56 TO 9+94	275	10	40	105		16		
9+94 TO 10+65	117	59					48	
10+65 TO 15+03	780	447			16			90
SUBTOTALS	**2602**	**953**	**40**	**203**	**41**	**16**	**96**	506
TOTAL (SF)	**867**	**318**	**3**	**135**	**27**	**16**	**96**	506
TOTAL (GALLONS)			**16**			**-**	**-**	-



DETAIL A - SPEED TABLE PAVEMENT MARKING
SCALE: NTS

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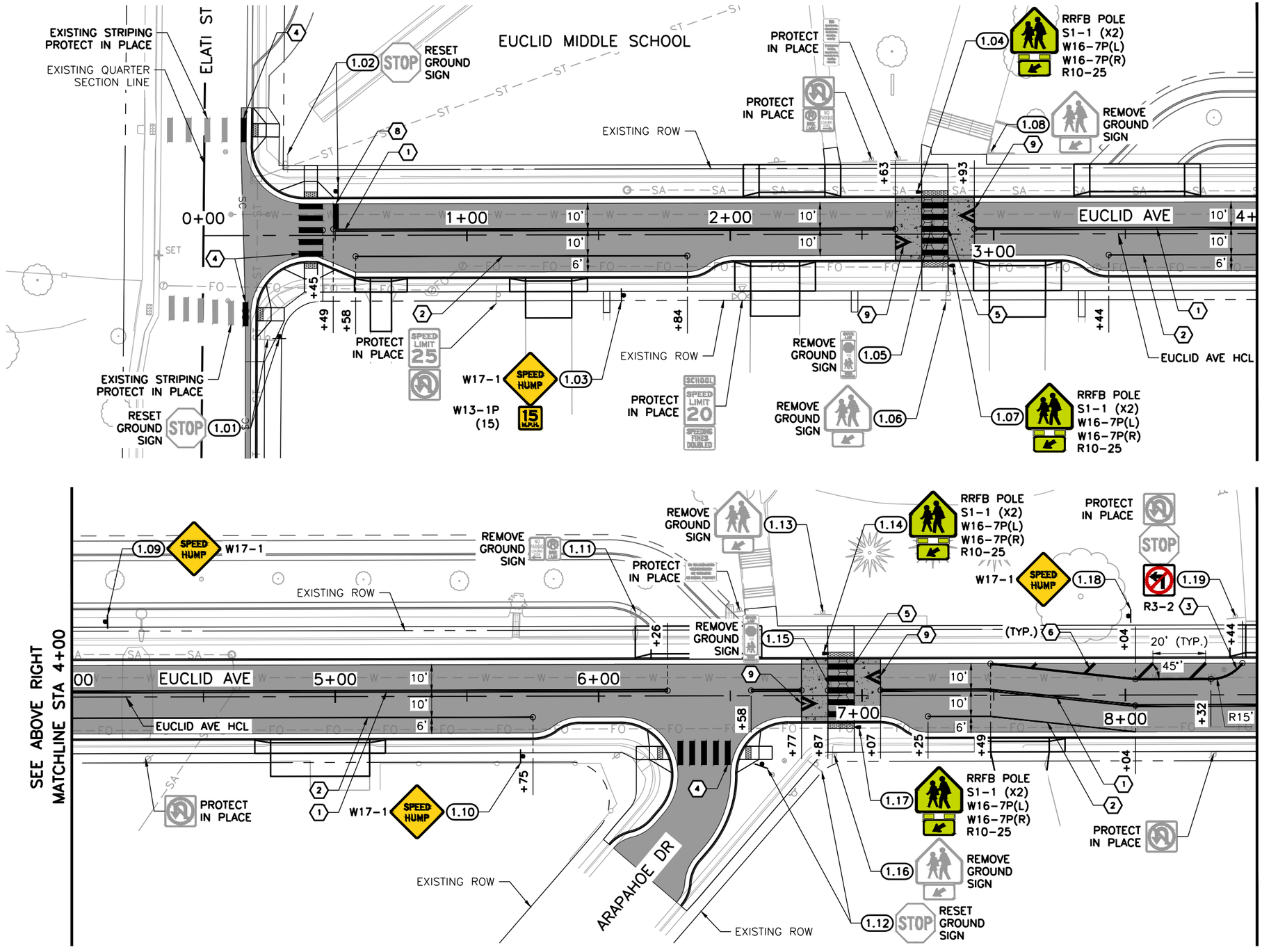
EUCLID AVE IMPROVEMENTS - PHASE 1
SIGNING AND STRIPING TABULATIONS

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Sheet Subset: S&S TABS
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Project No. 23-03

Sheet Number: 51 OF 60

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LEGEND:

- (X.XX) SIGN NO.
- (1) 4" DOUBLE YELLOW LINE
- (2) 4" WHITE EDGE LINE
- (3) 8" WHITE EDGE LINE
- (4) 2' X 9' CROSSWALK BARS
- (5) 2' X 10' CROSSWALK BARS
- (6) 12" WHITE HATCH LINE
- (7) 4" WHITE GUIDE LINE (2' STRIPE X 6' GAP)
- (8) 24" WHITE STOP BAR
- (9) SPEED TABLE PAVEMENT MARKING (SEE DETAIL A, SHEET 51)
- (10) TURN LANE ARROW

NOTES:

1. LANE DIMENSIONS ARE FROM CENTER OF STRIPE TO CENTER OF STRIPE OR EDGE OF PAVEMENT.
2. TRUNCATED STATION CALLOUTS ARE PLACED AT EDGES OF PROPOSED PAVEMENT MARKINGS OR PI POINTS.
3. ALL SYMBOLS, CROSSWALKS AND STOP BARS ARE TO BE PREFORMED THERMOPLASTIC PAVEMENT MARKINGS. ALL OTHERS SHALL BE MODIFIED EPOXY PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED ON THE PLANS

0' 20' 40' 80'
SCALE: 1" = 40'

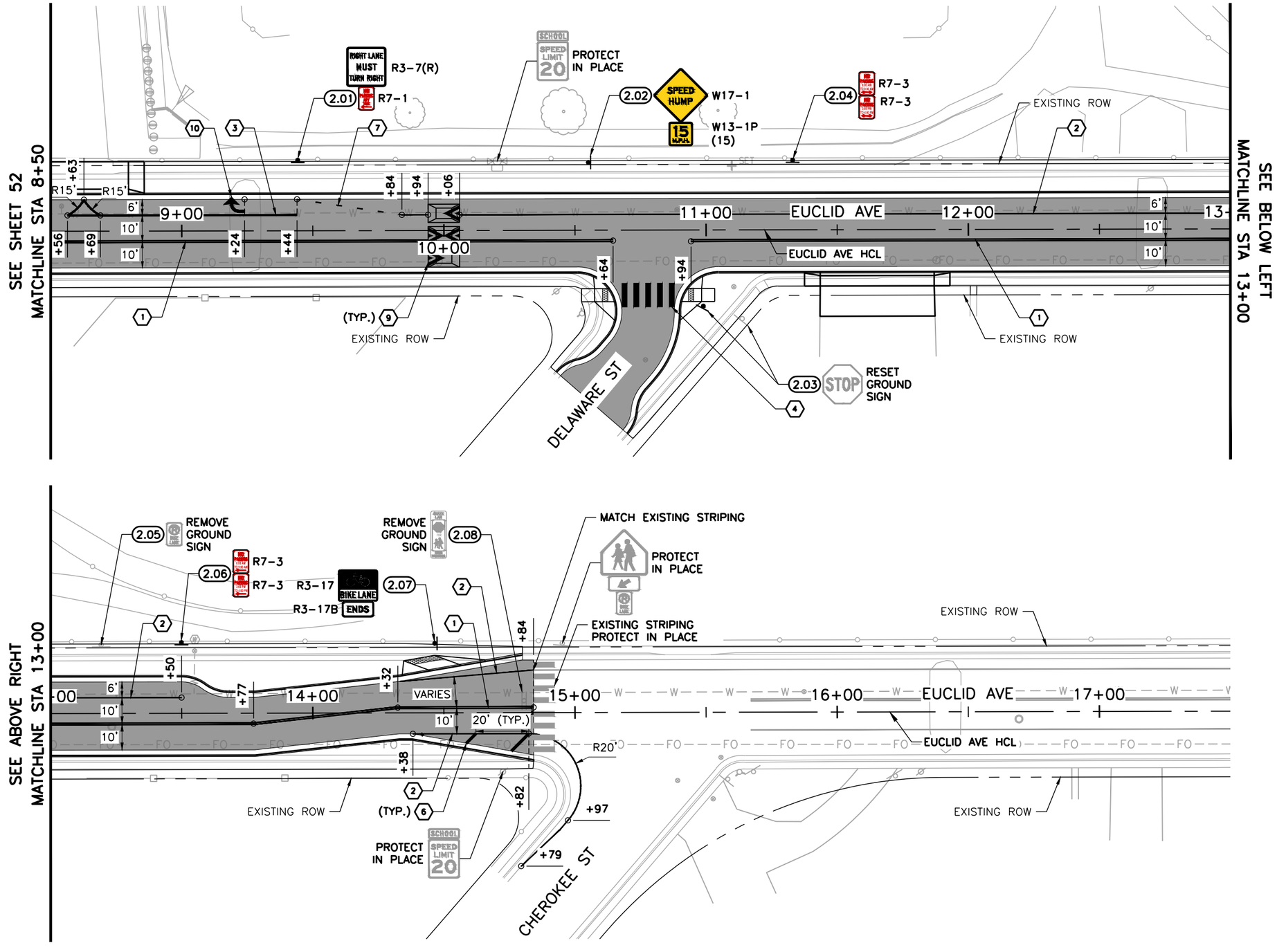
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LEGEND:

- (X.XX) SIGN NO.
- (1) 4" DOUBLE YELLOW LINE
- (2) 4" WHITE EDGE LINE
- (3) 8" WHITE EDGE LINE
- (4) 2' X 9' CROSSWALK BARS
- (5) 2' X 10' CROSSWALK BARS
- (6) 12" WHITE HATCH LINE
- (7) 4" WHITE GUIDE LINE (2' STRIPE X 6' GAP)
- (8) 24" WHITE STOP BAR
- (9) SPEED TABLE PAVEMENT MARKING (SEE DETAIL A, SHEET 51)
- (10) TURN LANE ARROW

NOTES:

1. LANE DIMENSIONS ARE FROM CENTER OF STRIPE TO CENTER OF STRIPE OR EDGE OF PAVEMENT.
2. TRUNCATED STATION CALLOUTS ARE PLACED AT EDGES OF PROPOSED PAVEMENT MARKINGS OR PI POINTS.
3. ALL SYMBOLS, CROSSWALKS AND STOP BARS ARE TO BE PREFORMED THERMOPLASTIC PAVEMENT MARKINGS. ALL OTHERS SHALL BE MODIFIED EPOXY PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED ON THE PLANS

0' 20' 40' 80'

SCALE: 1" = 40'

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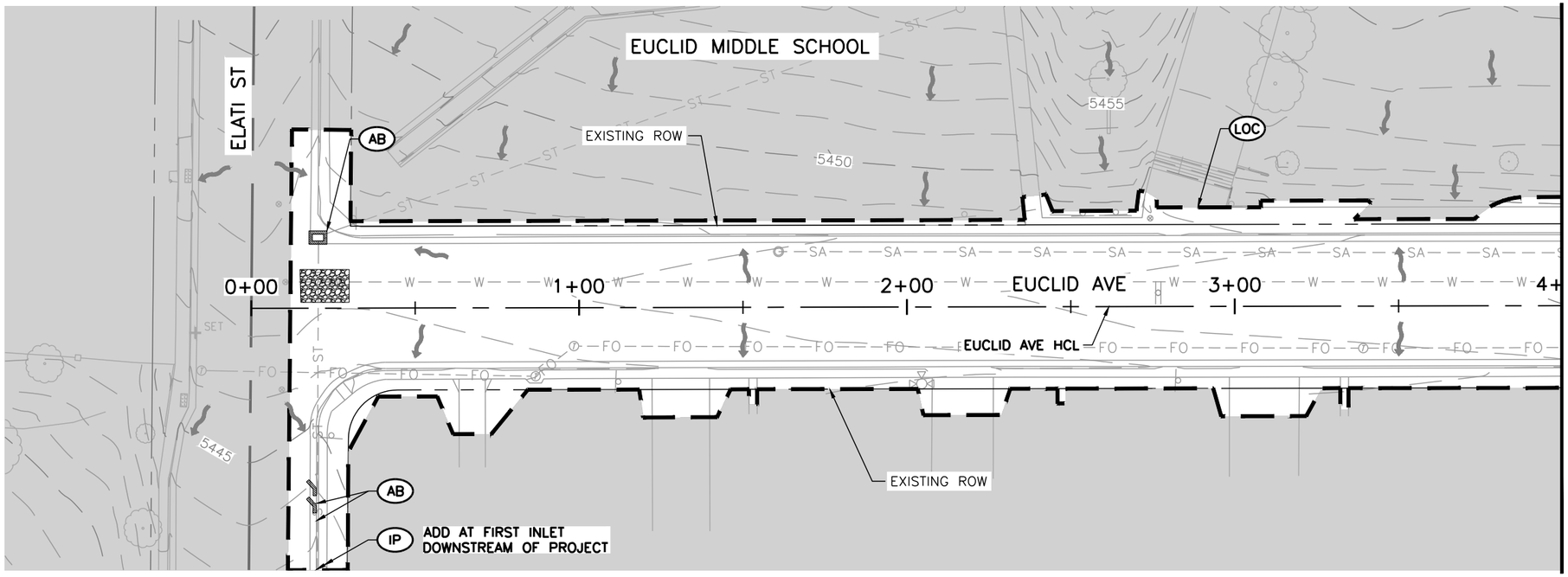
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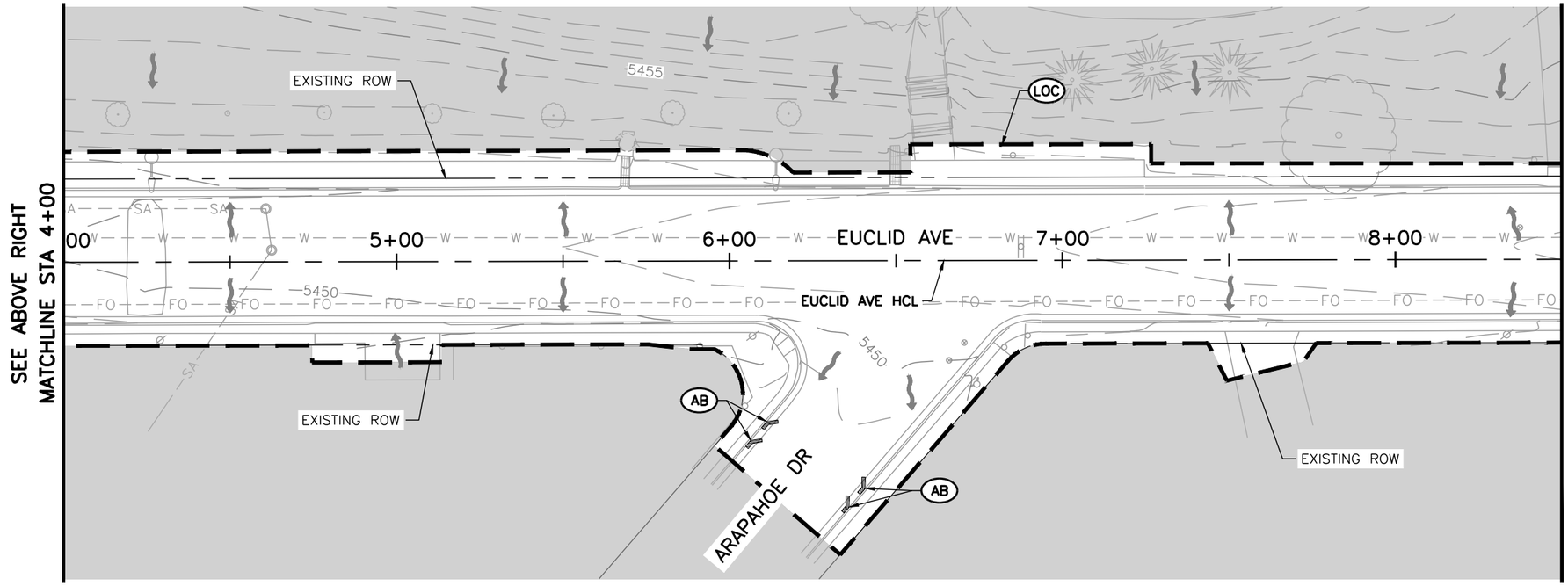
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SIGNING AND STRIPING PLANS

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Detailer:	CWD		
Sheet Subset:	S&S	Subset Sheets:	2 OF 2

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LEGEND:

- LOC — LIMITS OF CONSTRUCTION
- IP — INLET PROTECTION
- AB — AGGREGATE BAG
- SCL — SEDIMENT CONTROL LOG
- RRB — REINFORCED ROCK BERM
- VTC — VEHICLE TRACKING CONTROL
- CWA — CONCRETE WASHOUT AREA
- SOD — SOD
- SM — SEEDING AND MULCHING
- ECB — EROSION CONTROL BLANKET
- FLOW DIRECTION (EXISTING)
- FLOW DIRECTION (PROPOSED)
- AREA OUTSIDE OF LIMITS OF CONSTRUCTION

NOTES:

1. BMPS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL WORK WITH THE ENGINEER TO VERIFY THE INFORMATION SHOWN OR MODIFY AND FIELD-FIT AS NECESSARY.

0' 20' 40' 80'

SCALE: 1" = 40'

N

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GRADING EROSION AND SEDIMENT CONTROL
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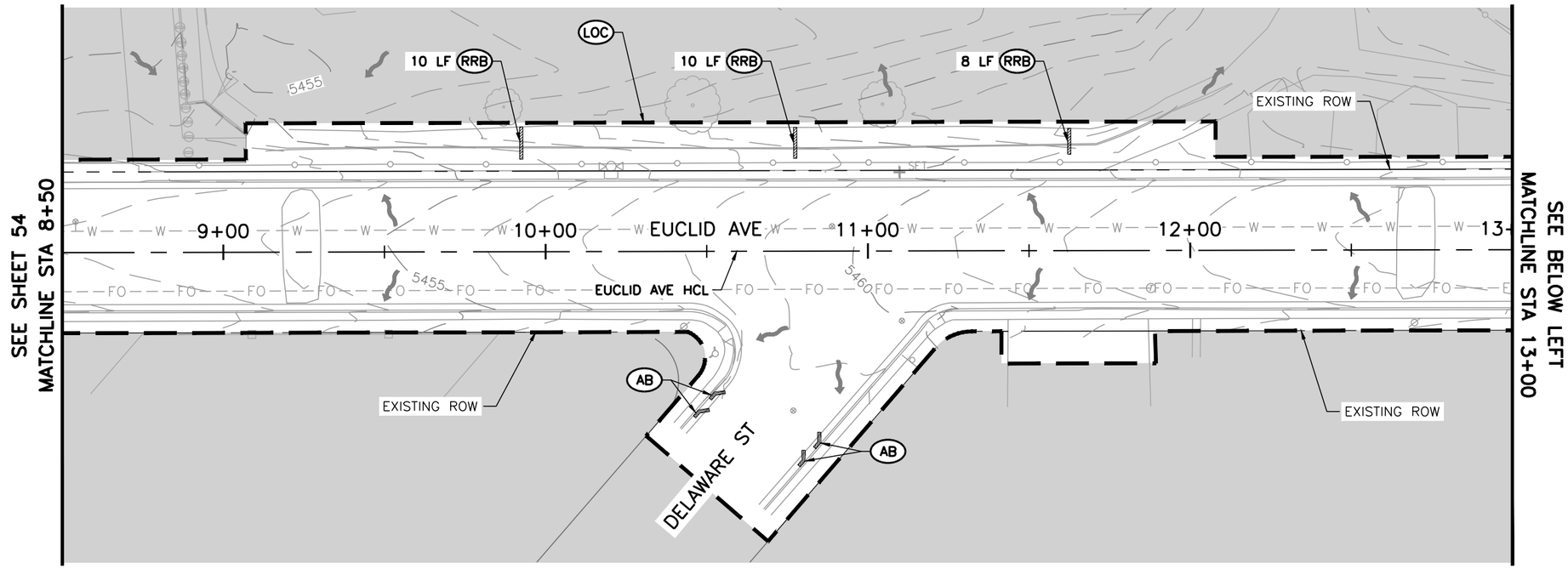
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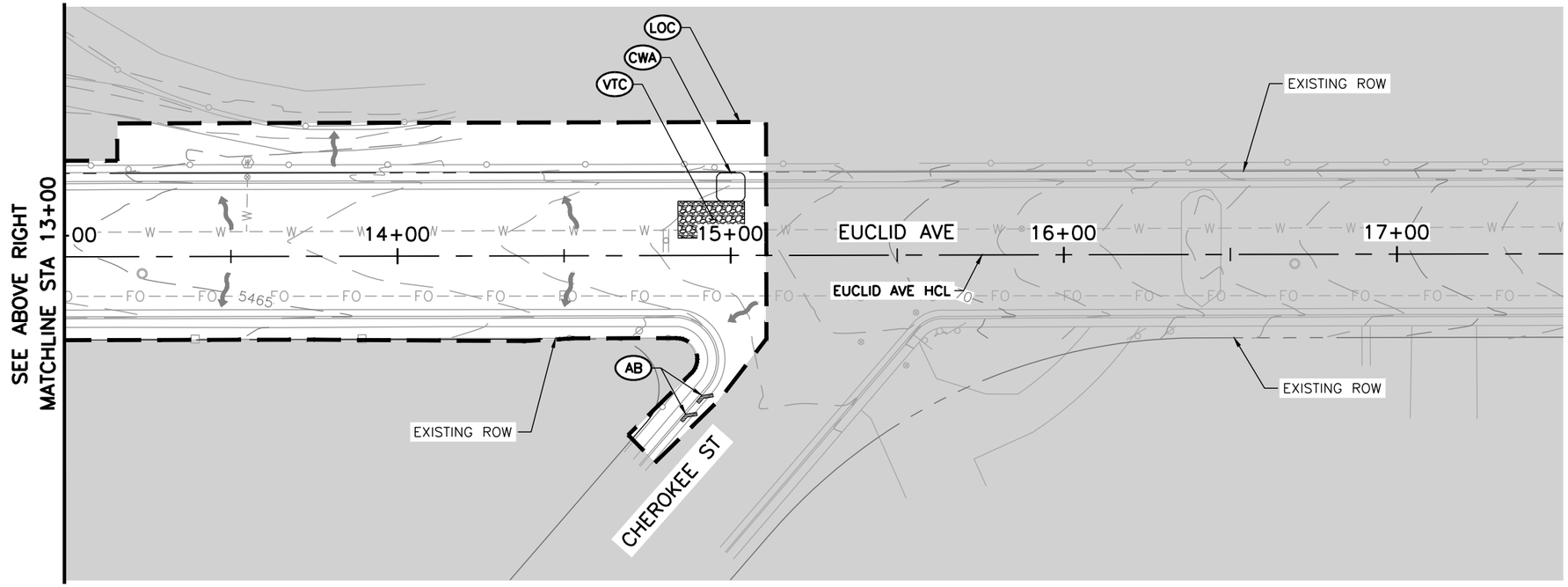
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LEGEND:

LOC	LIMITS OF CONSTRUCTION
IP	INLET PROTECTION
AB	AGGREGATE BAG
SCL	SEDIMENT CONTROL LOG
RRB	REINFORCED ROCK BERM
VTC	VEHICLE TRACKING CONTROL
CWA	CONCRETE WASHOUT AREA
SOD	SOD
SM	SEEDING AND MULCHING
ECB	EROSION CONTROL BLANKET
	FLOW DIRECTION (EXISTING)
	FLOW DIRECTION (PROPOSED)
	AREA OUTSIDE OF LIMITS OF CONSTRUCTION

NOTES:

1. BMPS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL WORK WITH THE ENGINEER TO VERIFY THE INFORMATION SHOWN OR MODIFY AND FIELD-FIT AS NECESSARY.

0' 20' 40' 80'

SCALE: 1" = 40'

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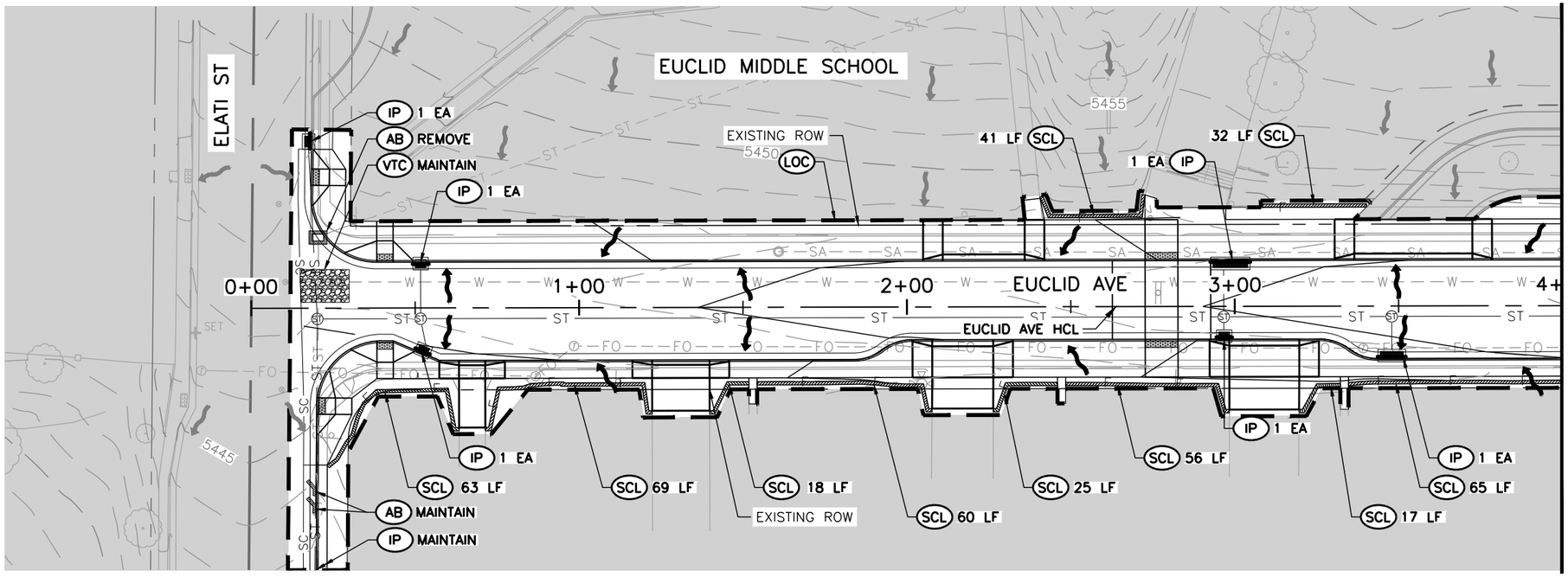
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INITIAL PLANS

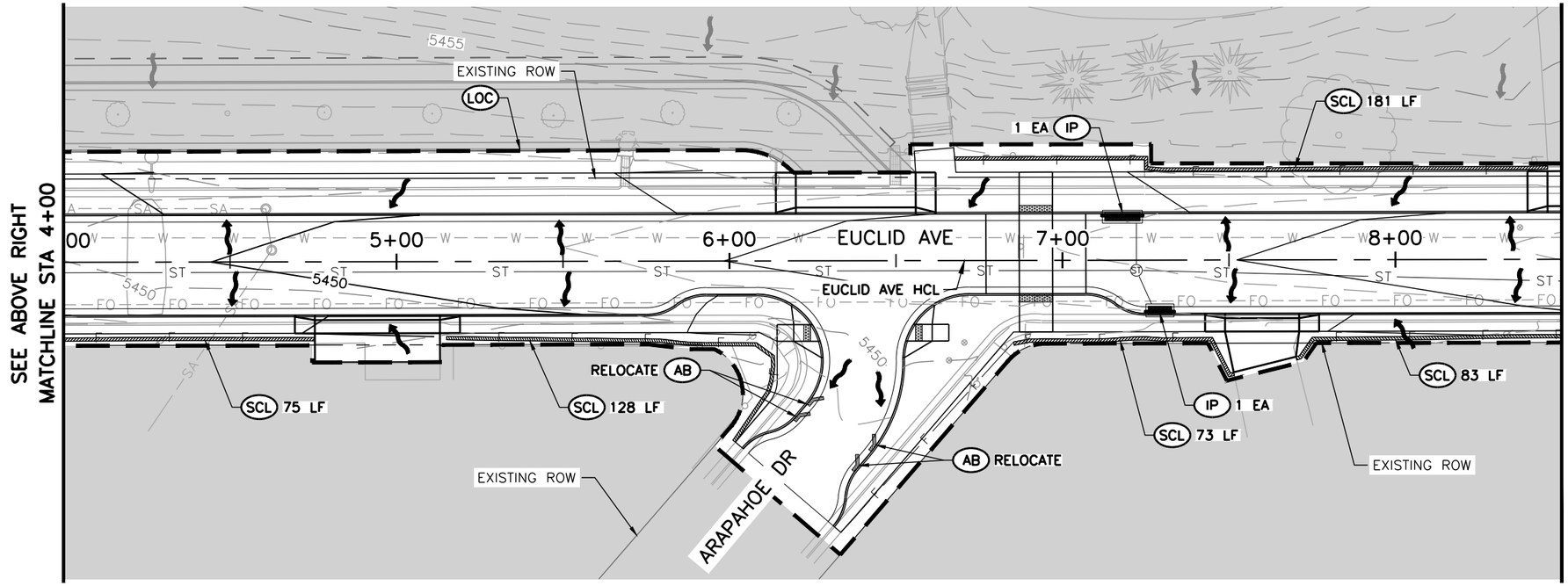
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Sheet Subset: GESC
Structure Numbers:
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LEGEND:

- LOC — LIMITS OF CONSTRUCTION
- IP — INLET PROTECTION
- AB — AGGREGATE BAG
- SCL — SEDIMENT CONTROL LOG
- RRB — REINFORCED ROCK BERM
- VTC — VEHICLE TRACKING CONTROL
- CWA — CONCRETE WASHOUT AREA
- SOD — SOD
- SM — SEEDING AND MULCHING
- ECB — EROSION CONTROL BLANKET
- FLOW DIRECTION (EXISTING)
- FLOW DIRECTION (PROPOSED)
- AREA OUTSIDE OF LIMITS OF CONSTRUCTION

NOTES:

1. BMPS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL WORK WITH THE ENGINEER TO VERIFY THE INFORMATION SHOWN OR MODIFY AND FIELD-FIT AS NECESSARY.

0' 20' 40' 80'

SCALE: 1" = 40'

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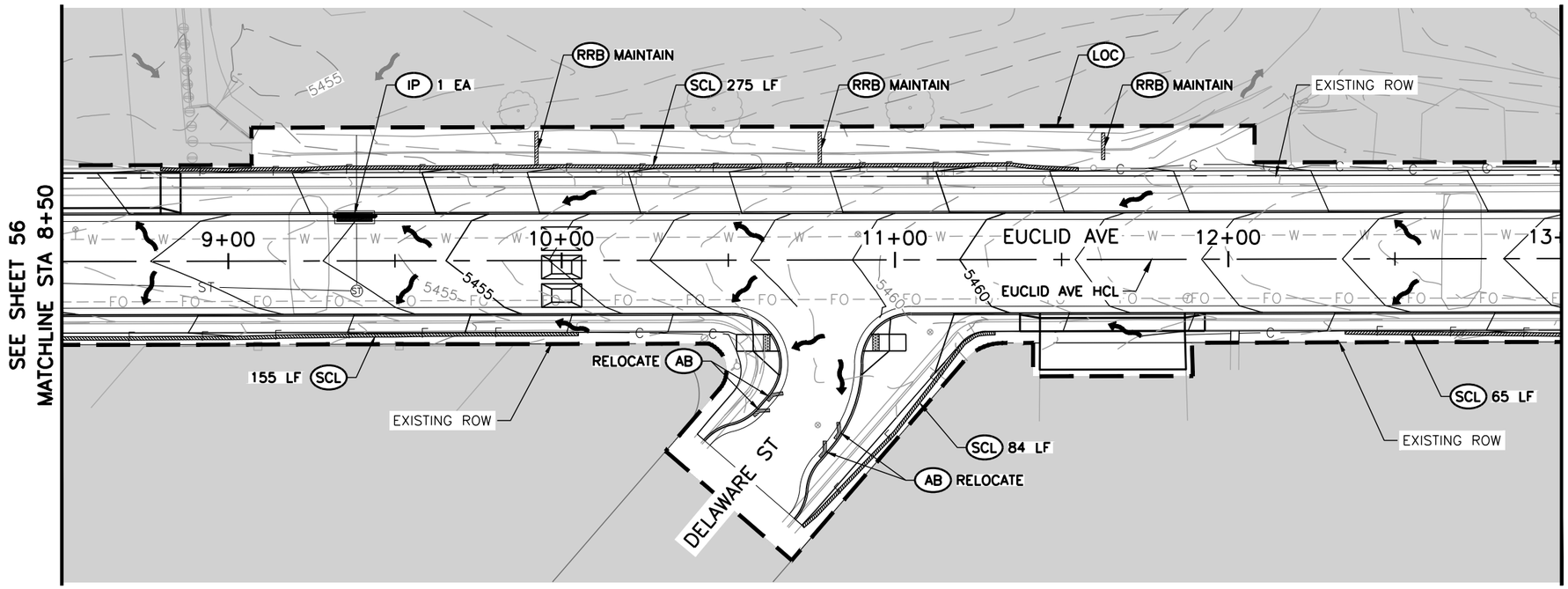
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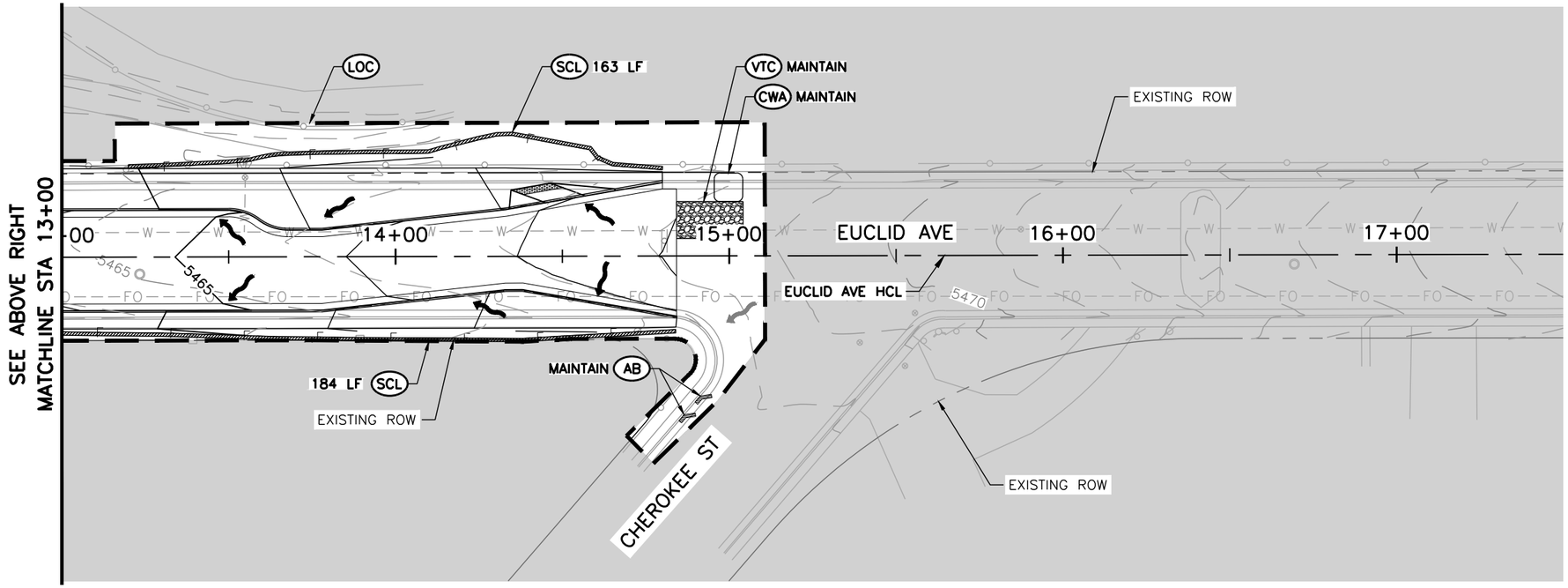
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No. Revisions:				23-03
Revised:	Designer: CWD	Structure Numbers		
Void:	Detailer: CWD			Sheet Number: 56 OF 60
	Sheet Subset: GESC	Subset Sheets: 3 OF 6		

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- LOC — LIMITS OF CONSTRUCTION
- IP — INLET PROTECTION
- AB — AGGREGATE BAG
- SCL — SEDIMENT CONTROL LOG
- RRB — REINFORCED ROCK BERM
- VTC — VEHICLE TRACKING CONTROL
- CWA — CONCRETE WASHOUT AREA
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- SM — SEEDING AND MULCHING
- ECB — EROSION CONTROL BLANKET
- FLOW DIRECTION (EXISTING)
- FLOW DIRECTION (PROPOSED)
- AREA OUTSIDE OF LIMITS OF CONSTRUCTION

NOTES:

1. BMPS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL WORK WITH THE ENGINEER TO VERIFY THE INFORMATION SHOWN OR MODIFY AND FIELD-FIT AS NECESSARY.

0' 20' 40' 80'
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Print Date: 3/13/2025	R-X	Sheet Revisions			As Constructed
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benesch Alfred Benesch & Company 7979 E. Tufts Avenue, Suite 800 Denver, Colorado 80237 303-771-6868					Void:

Littleton Colorado
Public Works & Engineering
2255 W Berry Avenue
Littleton, Colorado 80120

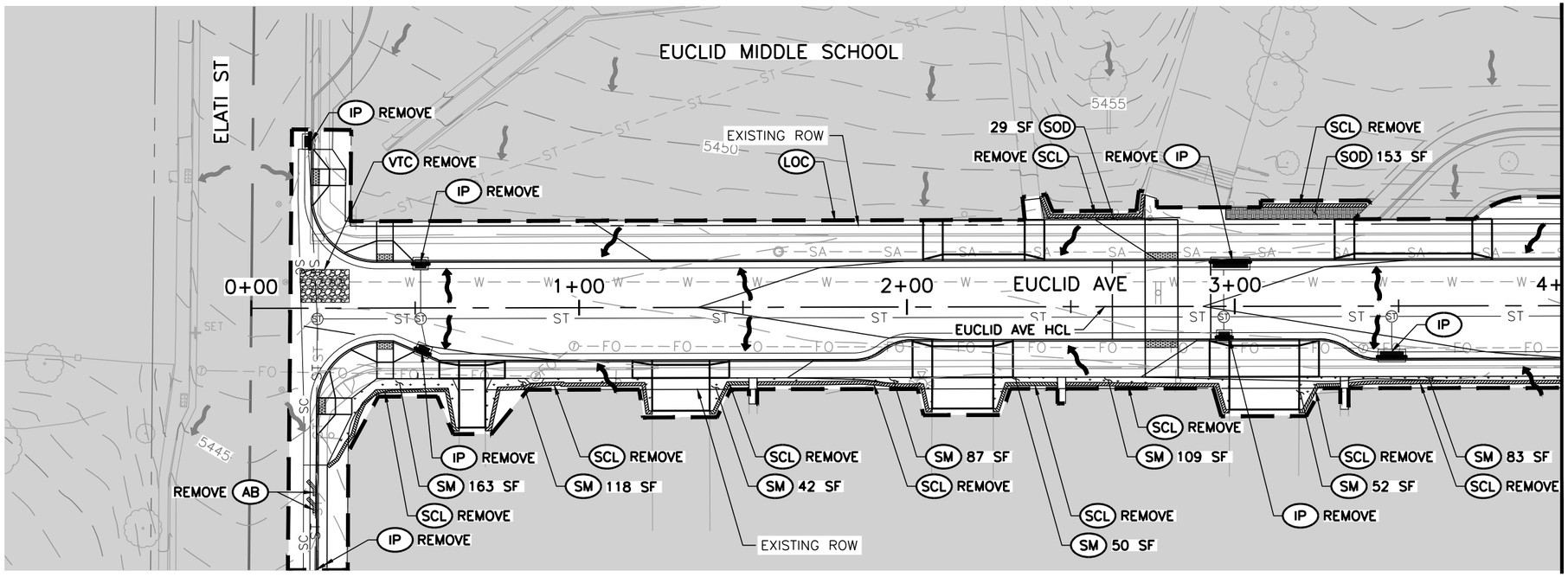
EUCLID AVE IMPROVEMENTS – PHASE 1
GRADING EROSION AND SEDIMENT CONTROL INTERIM PLANS

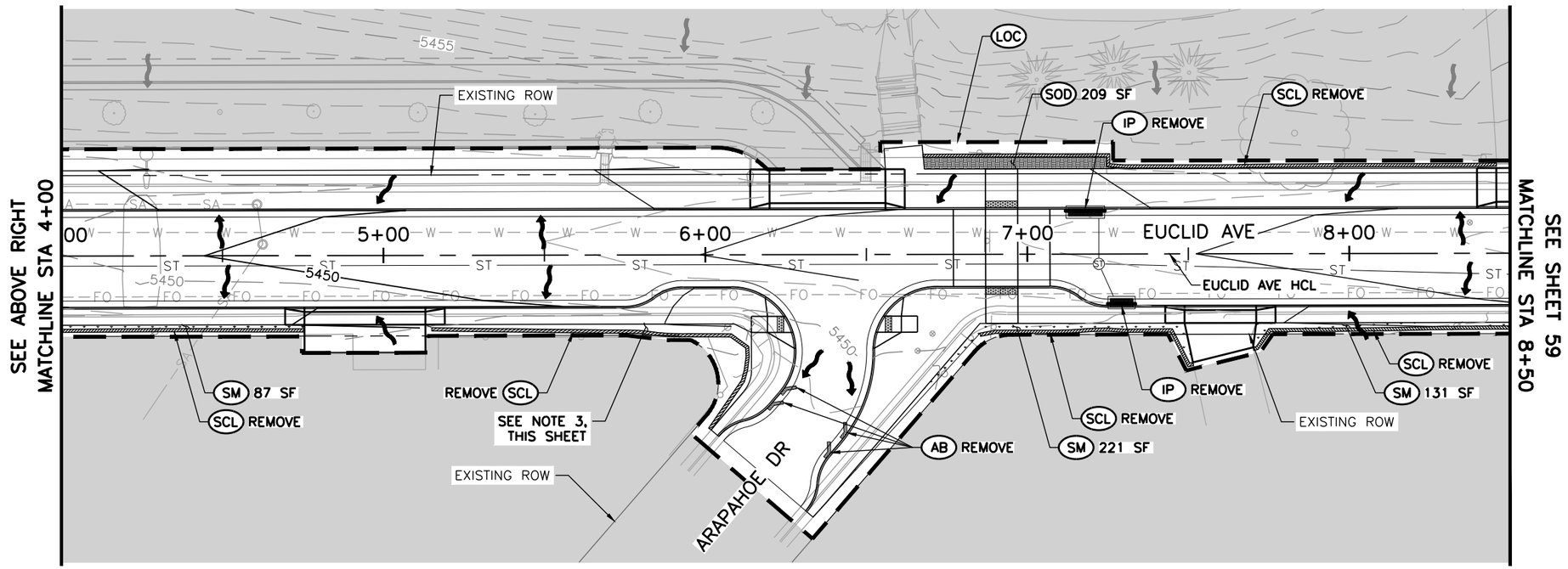
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Detailer:	CWD		
Sheet Subset:	GESC	Subset Sheets:	4 OF 6

Project No. 23-03

Sheet Number: 57 OF 60

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LEGEND:

- LOC — LIMITS OF CONSTRUCTION
- IP — INLET PROTECTION
- AB — AGGREGATE BAG
- SCL — SEDIMENT CONTROL LOG
- RRB — REINFORCED ROCK BERM
- VTC — VEHICLE TRACKING CONTROL
- CWA — CONCRETE WASHOUT AREA
- SOD — SOD
- SM — SEEDING AND MULCHING
- ECB — EROSION CONTROL BLANKET
- FLOW DIRECTION (EXISTING)
- FLOW DIRECTION (PROPOSED)
- AREA OUTSIDE OF LIMITS OF CONSTRUCTION

NOTES:

1. EROSION CONTROL MANAGEMENT SHALL BE LUMP SUM. SEEDING, MULCHING, AND TOPSOIL SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF WORK FOR LANDSCAPE RESTORATION AND SHALL BE LUMP SUM. BMPS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL WORK WITH THE ENGINEER TO VERIFY THE INFORMATION SHOWN OR MODIFY AND FIELD-FIT AS NECESSARY.
2. SEEDING, MULCHING, AND LANDSCAPE RESTORATION SHOULD MATCH EXISTING LANDSCAPING OR AS DIRECTED BY THE ENGINEER.
3. REMOVE EXISTING STONE. ADD EMBANKMENT MATERIAL. REPLACE STONE.

0' 20' 40' 80'

SCALE: 1" = 40'

N

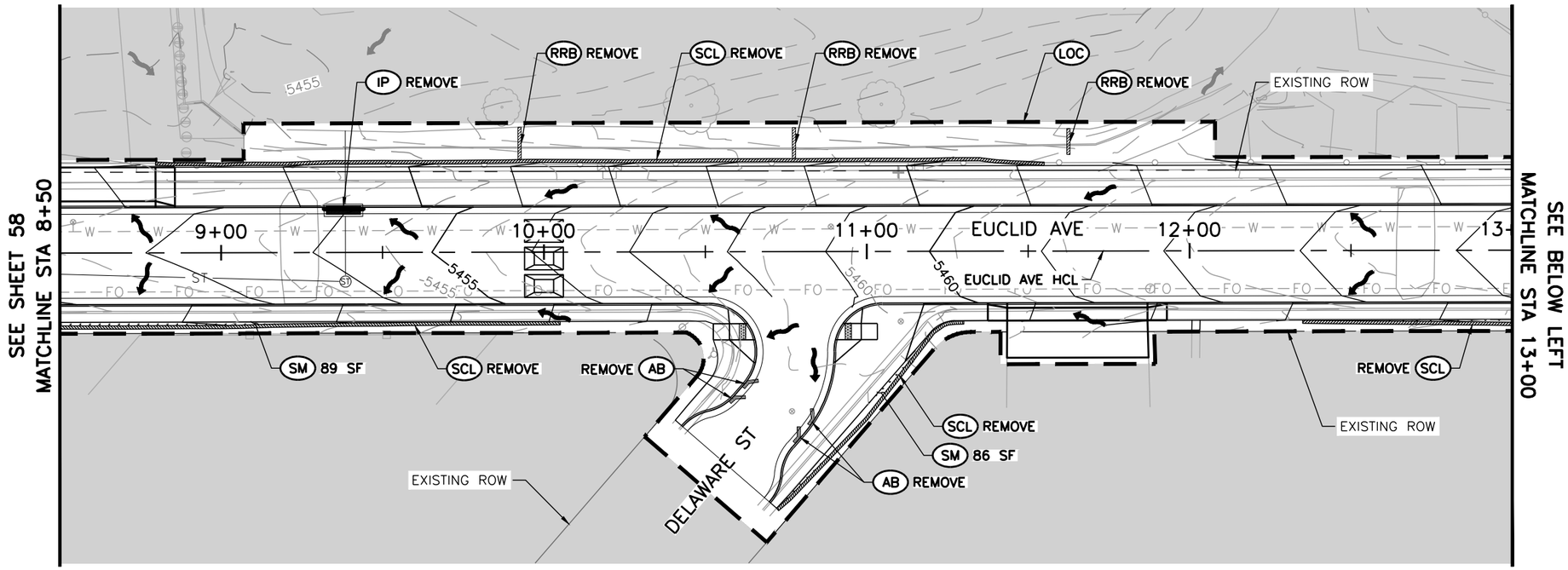
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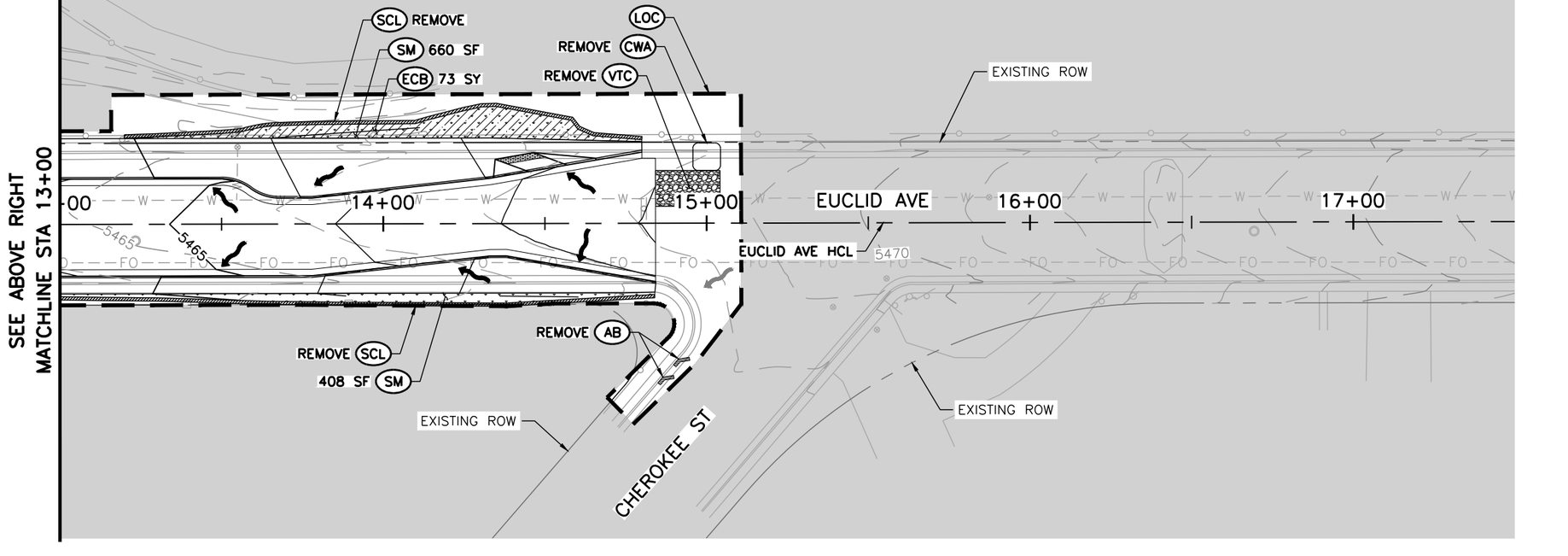
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2255 W Berry Avenue
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As Constructed	EUCLID AVE IMPROVEMENTS – PHASE 1		Project No.
No. Revisions:	GRADING EROSION AND SEDIMENT CONTROL FINAL PLANS		23-03
Revised:	Designer: CWD	Structure Numbers	
Void:	Detailer: CWD		
	Sheet Subset: GESC	Subset Sheets: 5 OF 6	Sheet Number: 58 OF 60





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0' 20' 40' 80'

SCALE: 1" = 40'

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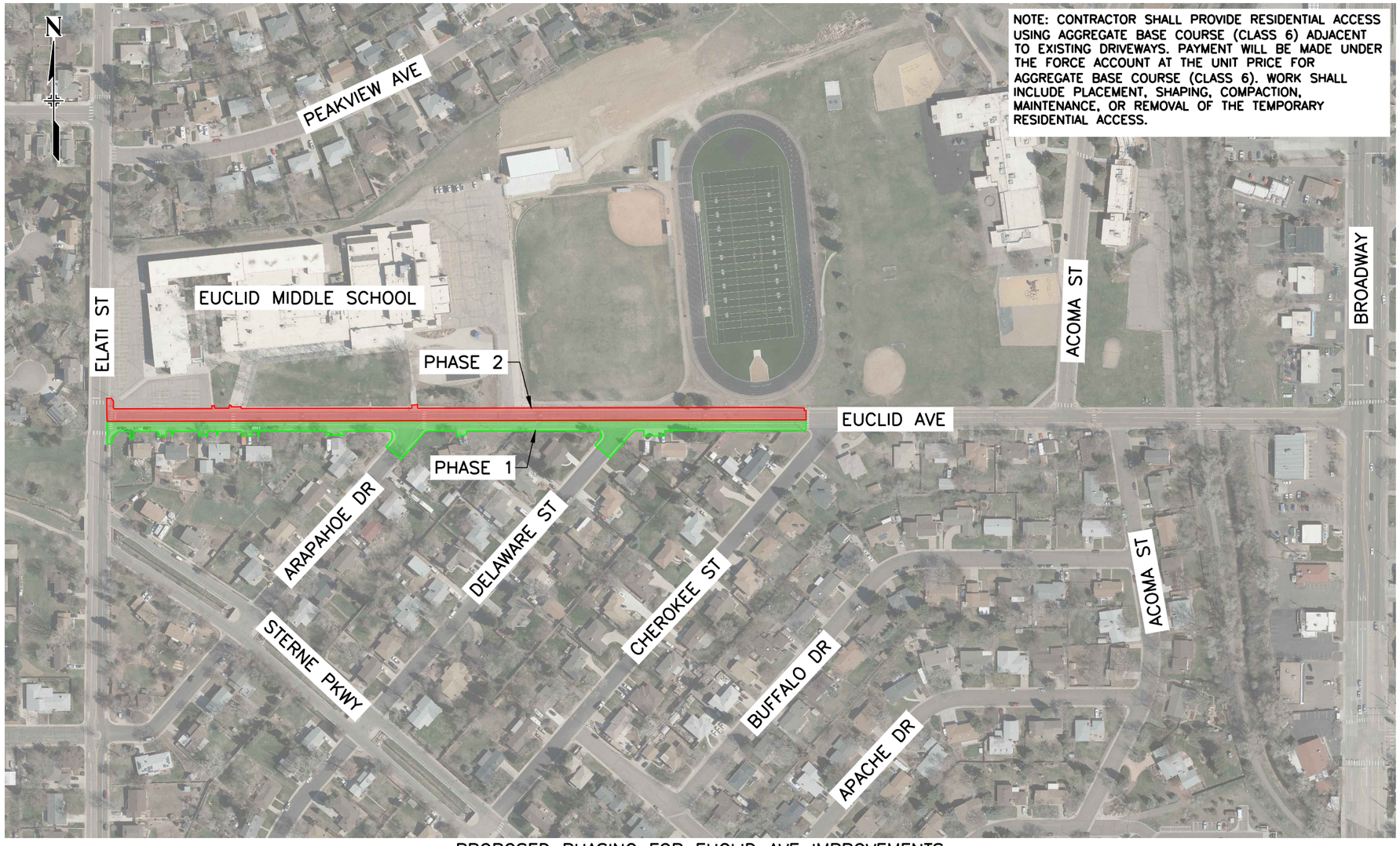
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EUCLID AVE IMPROVEMENTS – PHASE 1
GRADING EROSION AND SEDIMENT CONTROL
FINAL PLANS

Designer: CWD
Detailer: CWD
Sheet Subset: GESC
Structure Numbers:
Subset Sheets: 6 OF 6

Project No. 23-03

Sheet Number: 59 OF 60



PROPOSED PHASING FOR EUCLID AVE IMPROVEMENTS

1" = 250'

GENERAL NOTES:

1. ONE WAY TRAFFIC IS PERMITTED.
2. DURING PHASE 1 CONSTRUCTION, WESTBOUND LANE SHALL BE MAINTAINED. UNLESS THE CONTRACTOR IS ACTIVELY CONSTRUCTING OR CURING CURB, GUTTER, SIDEWALK, OR DRIVEWAYS, RESIDENTIAL ACCESS SHALL BE MAINTAINED BETWEEN 5:00 PM AND 8:00 AM. DURING PERIODS WHERE DRIVEWAYS WILL NOT BE ACCESSIBLE, CONTRACTOR SHALL PROVIDE RESIDENTS THREE (3) DAYS ADVANCED NOTICE.
3. DURING PHASE 2 CONSTRUCTION, EASTBOUND LANE SHALL BE MAINTAINED.
4. TRAFFIC LANES SHALL BE A MINIMUM OF 10 FEET WIDE FOR EACH PHASE OF CONSTRUCTION.
5. SIDEWALKS SHALL BE CLOSED ON ONLY ONE SIDE OF THE STREET AT A TIME. WHEN A SIDEWALK IS CLOSED, "SIDEWALK CLOSED" SIGNS SHALL BE PLACED AT THE CLOSURE POINT AND "SIDEWALK CLOSED AHEAD CROSS HERE" OR "PEDESTRIAN DETOUR" SIGNS SHALL BE PLACED AT THE NEXT CROSSWALK PRIOR. WHERE THE NEXT CROSSWALK PRIOR IS AN UNREASONABLE DISTANCE AWAY, THE CONTRACTOR SHALL PROVIDE A TEMPORARY INTERIM CROSSING.

LEGEND:

WORK AREA – PHASE 1

WORK AREA – PHASE 2

PHASE 1 CONSTRUCTION

1. SAWCUT AND REMOVE EXISTING CURB RAMPS, CURB AND GUTTER, SIDEWALKS SECTIONS, AND DRIVEWAY SECTIONS ON THE SOUTH SIDE OF EUCLID AVE (BETWEEN ELATI ST AND CHEROKEE ST).
2. SAWCUT AND REMOVE EXISTING PAVEMENT ON THE SOUTH SIDE OF EUCLID AVE BETWEEN EXISTING CURB AND CUTTER AND THE PROPOSED EUCLID AVE HCL (BETWEEN ELATI ST AND CHEROKEE ST).
3. INSTALL STORM SEWER TRUNK LINE, AS WELL AS INLETS, MANHOLES, AND LATERAL STORM SEWER LINES LOCATION ON THE SOUTH SIDE OF EUCLID AVE,
4. CONSTRUCT NEW CURB RAMPS, CURB AND GUTTER, SIDEWALK SECTIONS AND DRIVEWAY SECTIONS ON THE SOUTH SIDE OF EUCLID AVE (BETWEEN ELATI ST AND CHEROKEE ST). DURING CONSTRUCTION ALLOW ENTRY TO ALL PROPERTIES UNLESS THERE IS CURRENT CONCRETE WORK BEING PREFORMED.
5. CONSTRUCT ROADWAY PAVEMENT AND RAISED PEDESTRIAN CROSSINGS BETWEEN PROPOSED CURB AND GUTTER AND PROPOSED EUCLID AVE HCL (BETWEEN ELATI ST AND CHEROKEE ST).
6. RESTORE LANDSCAPING TO ALL IMPACTED PROPERTIES ON THE SOUTH SIDE OF EUCLID AVE. LANDSCAPING SHALL BE RESTORED WITHIN SEVEN (7) DAYS AND DAMAGED IRRIGATION PIPES MUST BE REPAIRED WITHIN TWENTY–FOUR (24) HOURS.

PHASE 2 CONSTRUCTION

1. SAWCUT AND REMOVE EXISTING CURB RAMPS, CURB AND GUTTER, AND SIDEWALKS SECTIONS THE NORTH SIDE OF EUCLID AVE (BETWEEN ELATI ST AND CHEROKEE ST).
2. SAWCUT AND REMOVE EXISTING PAVEMENT ON THE NORTH SIDE OF EUCLID AVE BETWEEN EXISTING CURB AND CUTTER AND THE PROPOSED EUCLID AVE HCL (BETWEEN ELATI ST AND CHEROKEE ST).
3. INSTALL STORM SEWER INLETS, MANHOLES, AND LATERAL STORM SEWER LINES LOCATED ON THE NORTH SIDE OF EUCLID AVE.
4. CONSTRUCT NEW CURB RAMPS, CURB AND GUTTER, AND SIDEWALK SECTIONS ON SOUTH SIDE OF EUCLID AVE (BETWEEN ELATI ST AND CHEROKEE ST).
5. CONSTRUCT ROADWAY PAVEMENT AND RAISED PEDESTRIAN CROSSINGS BETWEEN PROPOSED CURB AND GUTTER AND PROPOSED EUCLID AVE HCL (BETWEEN ELATI ST AND CHEROKEE ST).
6. CENTER LANE LINES AND EDGE LINES SHALL BE PLACED AS PREFORMED THERMOPLASTIC PAVEMENT MARKINGS. STOP BARS AND CROSSWALK BARS SHALL BE PLACED AS PREFORMED THERMOPLASTIC PAVEMENT MARKINGS.

PHASE 3 CONSTRUCTION

1. INSTALL TOP LIFT OF ASPHALT BETWEEN ELATI STREET AND CHEROKEE STREET.

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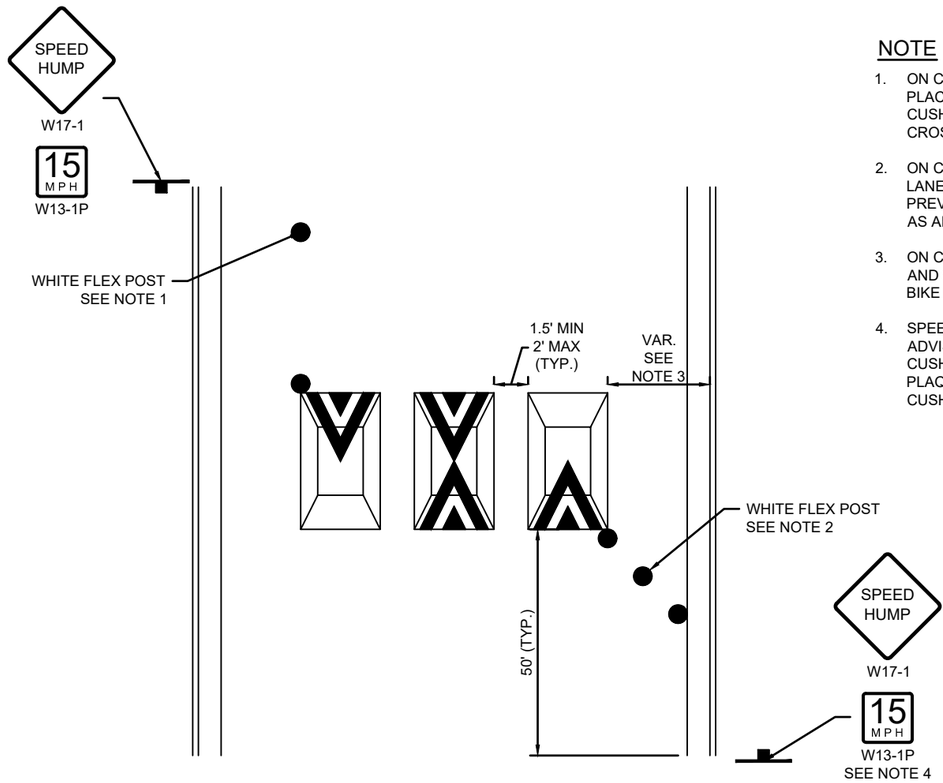
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PHASING PLAN

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Detailer:	CWD		
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Project No. 23-03

Sheet Number: 60 OF 60

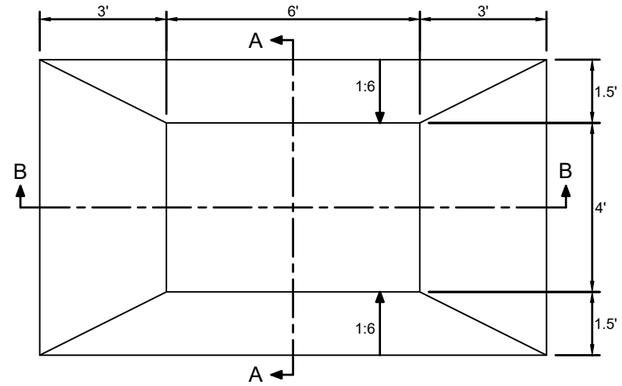
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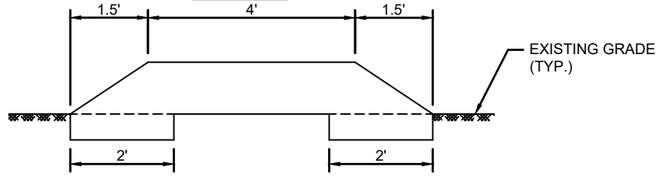
NOTE

1. ON CORRIDORS WITH BIKE LANES, FLEX POSTS SHOULD BE PLACED ON THE APPROACH STARTING 50' PRIOR TO SPEED CUSHIONS AT 10' SPACING, AVOIDING DRIVEWAYS, CROSSINGS, AND OTHER ACCESSES.
2. ON CORRIDORS WITH ON-STREET PARKING BUT NO BIKE LANES, FLEX POSTS SHOULD BE PLACED IN A WAY TO PREVENT VEHICLES FROM BYPASSING SPEED CUSHIONS, AS APPROVED BY THE CITY ENGINEER.
3. ON CORRIDORS WITH BIKE LANES, SPEED CUSHION WIDTH AND SPACING SHALL BE DESIGNED TO NOT EXTEND INTO BIKE LANE.
4. SPEED HUMP SIGN SHOULD BE SUPPLEMENTED WITH ADVISORY SPEED PLAQUE. IF A SERIES OF SPEED CUSHIONS EXISTS IN CLOSE PROXIMITY, ADVISORY SPEED PLAQUE MAY BE ELIMINATED ON ALL BUT THE FIRST SPEED CUSHION IN THE SERIES.

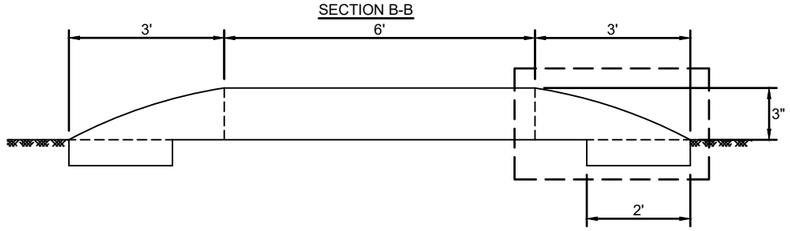
CUSHION PLAN VIEW



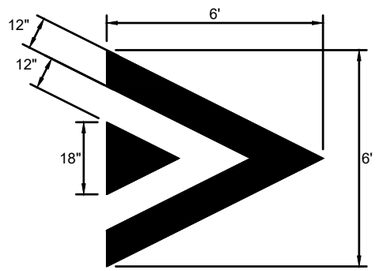
SECTION A-A

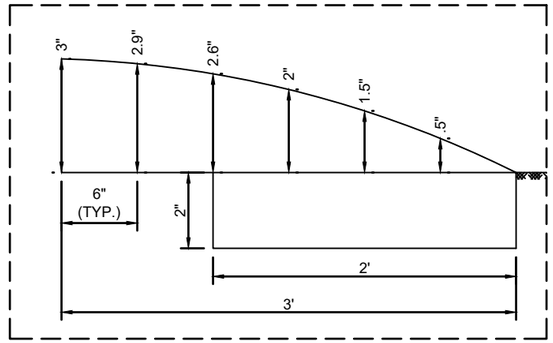


SECTION B-B



PAVEMENT MARKING DETAIL





DIMENSIONS IN DETAIL ABOVE ONLY APPLICABLE TO CONCRETE AND ASPHALT SPEED CUSHIONS

SPEED CUSHION

Littleton Colorado

DAVID EVANS AND ASSOCIATES INC.
1600 Broadway Street Suite 800
Denver Colorado 80202
Phone: 720.946.0969

LITTLETON TRAFFIC CALMING DESIGN GUIDANCE

SHEET 1

Staff Communication

File #: Resolution 46-2025, **Version:** 1

Agenda Date: 05/20/2025

Subject:
Resolution 46-2025: Adopting the Flood Hazard Area Delineation study "Dad Clark Gulch FHAD Floodplain Development Permit", dated December 2024

From:	James L. Becklenberg, City Manager
Prepared by:	Brent Soderlin, Director of Public Works & Utilities
	Sarah White, Water Resources Manager
Presentations:	N/A

PURPOSE:
Adopting the Flood Hazard Area Delineation (FHAD) study for "Dad Clark Gulch FHAD, Floodplain Development Permit" prepared by Westwood Professional Services, dated December 2024.

LONG-TERM OUTCOME(S) SERVED:
Safe Community; High Quality Governance

DISCUSSION:
The City of Littleton, in partnership with Mile High Flood District (MHFD), conducted a study to update the Dad Clark Gulch floodplain within the City of Littleton limits west of Santa Fe to the outfall at South Platte River, titled "Santa Fe Park South, Dad Clark Gulch FHAD Floodplain Development Permit", dated December 2024. With approval recommendation of MHFD, the Colorado Water Conservation Board adopted the revision to the Dad Clark Gulch floodplain by their Resolution 25-752 on March 19, 2025.

Staff recommends adoption of this floodplain delineation for Dad Clark Gulch to meet the intent of Municipal Code 10-7-1.3(B) which states, "Basis for Establishing Floodplains. Floodplains and special flood areas shall be the boundary of the 100-year floodplain (1% chance floodplain). The extent of this area shall be based upon the best available information including:

> (2) FHADs. Flood Hazard Area Delineation (FHAD) studies produced by the Mile High Flood District, as may be amended and updated, hereby adopted by reference as part of these regulations when adopted by Mile High Flood District and Colorado Water Conservation Board, and subsequently by the Council.

Adoption of the Santa Fe Park South, Dad Clark Gulch FHAD Floodplain Development Permit report and associated new floodplain boundaries will allow the issuance of Certificates of Occupancy within the Santa Fe Park South development for parcels that were previously in the floodplain prior to its modification, and per the Subdivision Improvement Agreement executed for said development.

BACKGROUND:

The Dad Clark Gulch floodplain was originally delineated in November 1990 through "FHA for Lower Dad Clark Gulch and DFA 0068" completed by Mile High Flood District (formerly known as Urban Drainage and Flood Control District) and the City of Littleton. The existing Dad Clark Gulch floodplain conveys a watershed from Highlands Ranch until its embankment at McLellan Reservoir, a water supply reservoir for the City of Englewood, Colorado. Dad Clark Gulch is channelized west of the Reservoir under Santa Fe Drive, then spreads out until its ultimate outfall into the South Platte River.

Toll Southwest LLC has been approved to develop the property located west of Santa Fe Drive, south of Mineral Avenue and north of C-470. This development, known as Santa Fe Park South, consists of 77.6 acres and will be a combination of single-family residential homes and commercial and mixed-use zoning. The existing Dad Clark Gulch regulatory floodplain encompassed a majority of the proposed Santa Fe Park South development.

The Outfall Systems Plan (OSP) for Lower Dad Clark Gulch was adopted in April 1990. The OSP provided alternatives to modify Dad Clark Gulch for future development in the Santa Fe Park area. The Santa Fe Park South development generally follows that alternative provided in the 1990 OSP, with the exception for routing of Dad Clark Gulch to the north instead of following the existing channel. The Santa Fe Park South development was approved by the City of Littleton with the condition of the Dad Clark Gulch Channel Realignment being mapped and adopted by the CWCB and the City of Littleton. Per the executed Subdivision Improvement Agreement, adopted revisions of the Dad Clark Gulch floodplain are required prior to the issuance of Certificate of Occupancy for any lot within that existing floodplain, and the lowest finished floor elevations of any structures must be verified prior to Certificate of Occupancy for all lots and structures adjacent to the adopted revised Dad Clark Gulch floodplain.

The City of Littleton, in partnership with Mile High Flood District, conducted a study to update the Dad Clark Gulch floodplain with portions within the city limits, titled "Santa Fe Park South, Dad Clark Gulch FHAD Floodplain Development Permit", dated December 2024, prepared by Westwood Professional Services. MHFD reviewed and recommended the FHAD to CWCB for adoption. The CWCB adopted the revision to the Dad Clark Gulch floodplain by their Resolution 25-752 on March 19, 2025.

In compliance with the City of Littleton Municipal Code 10-7-13 (B)(2) stating "Flood Hazard Area Delineation (FHAD) studies produced by the Mile High Flood District, as may be amended and updated, hereby adopted by reference as part of these regulations when adopted by Mile High Flood District and Colorado Water Conservation Board, and subsequently by the Council", staff is recommending the revised Dad Clark Gulch floodplain be adopted by City Council.

The portion of Dad Clark Gulch west of McLellan Reservoir is not currently a Federal Emergency Management Agency (FEMA) floodplain due to the smaller drainage basin size (less than 1 square mile) but is regulated by the city as a "local floodplain" as identified in the city's Storm Drainage Design and Technical Criteria Manual. The FHAD update is not currently proposed to be submitted to FEMA for federal regulation of Dad Clark Gulch and will continue to be locally regulated.

Prior Actions or Discussions
N/A

FISCAL IMPACTS:
N/A

STAFF RECOMMENDATION:
Staff recommends approval of the resolution.

ALTERNATIVES:
With approval of this resolution, the city remains in compliance and good standing with the State of Colorado floodplain regulations. If not approved, the city will not be enforcing the floodplain regulations on the best available information for Dad Clark Gulch. Nor will the city be acknowledging the State regulatory floodplain for Dad Clark Gulch, a violation of the state floodplain regulations.

PROPOSED MOTION:
I move to approve Resolution 46-2025 adopting the Flood Hazard Area Delineation study for "Dad Clark Gulch FHAD, Floodplain Development Permit", dated December 2024.

CITY OF LITTLETON, COLORADO

Resolution No. 46

Series, 2025

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LITTLETON, COLORADO, ADOPTING THE FLOOD HAZARD AREA DELINEATION STUDY "SANTA FE PARK SOUTH, DAD CLARK GULCH FHAD FLOODPLAIN DEVELOPMENT PERMIT", DATED DECEMBER 2024

WHEREAS, the City of Littleton has been a participating community in the National Flood Insurance Program since 1978, when floodplain maps were established in the City; and

WHEREAS, rules for regulatory floodplains are of statewide concern to the State of Colorado and the Colorado Water Conservation Board (CWCB) to prevent flooding and the negative impacts of floods, as well as to promote public health, safety, welfare and property by limiting development in regulatory floodplains; and

WHEREAS, both the Federal Emergency Management Agency (FEMA) and the CWCB have delineated floodplains within the City of Littleton and those delineations are subject to revision and update; and

WHEREAS, in compliance with Rule 5 of "Rules and Regulations for Regulatory Floodplains in Colorado," 2 CCR 408-1, the Colorado State General Assembly has deemed the designation of Floodplains a matter of statewide importance and interest and gave the CWCB the responsibility for the designation of Regulatory Floodplains; and

WHEREAS, legislative bodies of local jurisdictions may provide zoning regulations for land uses on or along any storm or floodwater runoff channel or basin only after designation and approval by the CWCB; and

WHEREAS, the Dad Clark Gulch floodplain was originally delineated in the "Flood Hazard Area Delineation for Lower Dad Clark Gulch and DFA 0068" completed by Mile High Flood District (f/k/a Urban Drainage and Flood Control District) and the City of Littleton in November 1990; and

WHEREAS, the City of Littleton has approved the Santa Fe Park South development plans with condition to reroute and channelize the existing Dad Clark Gulch floodplain; and

WHEREAS, the City of Littleton, in partnership with Mile High Flood District, conducted a study to update the Dad Clark Gulch floodplain within the City of Littleton limits west of Santa Fe Drive to the outfall at South Platte River, titled "Santa Fe Park South, Dad Clark Gulch FHAD Floodplain Development Permit", dated December 2024; and

WHEREAS, the Mile High Flood District provides recommended to the Colorado Water Conservation Board for adoption; and

WHEREAS, the Colorado Water Conservation Board adopted the revision to the Dad Clark Gulch floodplain by their Resolution 25-752 on March 19, 2025; and

WHEREAS, the City of Littleton Municipal Code 10-7-1.3 (B)(2) states "Flood Hazard Area Delineation (FHAD) studies produced by the Mile High Flood District, as may be amended and updated, hereby adopted by reference as part of the regulations when adopted by Mile High Flood District and Colorado Water Conservation Board, and subsequently by the Council"; and

WHEREAS, the City of Littleton must now adopt and begin to regulate to the updated Dad Clark Gulch floodplain.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF LITTLETON, COLORADO, THAT:

The Flood Hazard Area Delineation study for "Dad Clark Gulch FHAD, Floodplain Development Permit" prepared by Westwood Professional Services, dated December 2024 is hereby approved.

INTRODUCED, READ, AND ADOPTED at a regularly scheduled meeting of the City Council of the City of Littleton, Colorado, on the 20th day of May 2025, at 6:30 p.m. at the Littleton Center, 2255 West Berry Avenue, Littleton, Colorado.

ATTEST:

_____
Colleen L. Norton
CITY CLERK

_____
Kyle Schlachter
MAYOR

APPROVED AS TO FORM:

_____
Reid Betzing
CITY ATTORNEY

MHFD
MILE HIGH FLOOD DISTRICT
12575 W. Bayaud Ave. | Lakewood, CO 80228
TEL 303 455 6277 | FAX 303 455 7880
www.mhfd.org

January 15, 2025

Lauren Ris, Director
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, CO 80203

Dear Ms. Ris:

We are transmitting via OneDrive the Dad Clark Gulch floodplain to CWCB for designation by the state.

Development has occurred along this drainageway that will update the FHAD and the City of Littleton needs the CWCB to formally adopt the changes so they can issue building permits.

We request that the Colorado Water Conservation Board consider the 100-year floodplain as described in the electronic data submission for designation as flood hazard areas. The communities listed above will be responsible for regulating the floodplains.

We will be happy to make a presentation to your Board, if you desire. Please feel free to contact us if you have any questions.

Sincerely,

Brooke Seymour

Brooke Seymour, P.E., CFM
Planning and Floodplain Management Director
Enclosures - Cc: Kevin Houck, CWCB

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

1313 Sherman Street, Room 718
Denver, CO 80203

P (303) 866-3441
F (303) 866-4474

Jared Polis, Governor

Dan Gibbs, DNR Executive Director

Lauren Ris, CWCB Director

TO: Colorado Water Conservation Board Members

FROM: Kevin Houck, P.E. CFM, Section Chief
Watershed & Flood Protection Section
Steven Reeves, Watershed and Flood Protection Specialist

DATE: March 19, 2025

AGENDA ITEM: Consent Agenda Item 5. March 19-20, 2025 Board Meeting - Floodplain Designations

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Background: Consent Agenda Item 5 includes 1 new floodplain study that is proposed for CWCB action. Staff is requesting Board designation and approval for this item. A brief summary of the study is presented in the attached document.

CWCB staff performs technical reviews of floodplain information to assure the Board that the information complies with the requirements of the CWCB's "Rules and Regulations for Regulatory Floodplains in Colorado," 2 CCR 408-1. The attached document provides a further discussion of legislative authority and responsibilities delegated to the CWCB. The CWCB's designation and approvals greatly assist local communities in meeting the statutory requirements of the State and the regulatory requirements of the National Flood Insurance Program.

Additional supporting information for these items are attached.

Requested action for Floodplain Resolution 25-752: Staff recommends that the Board: 1) designate and approve the 100-year detailed floodplain and floodway information contained in said report within the City of Littleton, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to the City of Littleton, and the Mile High Flood District. This action is recommended in order to meet statutory requirements.

Attachment – Supporting Information

Consent Agenda Item 5 – Floodplain Designations

March 2025

Summary

Consent Agenda Item 5 includes 1 floodplain study that is proposed for CWCB action. Staff is requesting Board designation and approval for this item. A brief summary of the study is presented below.

CWCB staff performs technical reviews of floodplain information to assure the Board that the information complies with the requirements of the CWCB's "Rules and Regulations for Regulatory Floodplains in Colorado," 2 CCR 408-1. Furthermore, Sections 31-23-301 and 30-28-111, Colorado Revised Statutes, state that legislative bodies of local jurisdictions may provide zoning regulations for land uses on or along any storm or floodwater runoff channel or basin only after designation and approval by the CWCB. In addition, Section 37-60-106(1)(c), Colorado Revised Statutes, directs the CWCB to designate and approve storm or floodwater runoff channels or basins and to make such designations available to legislative bodies of local jurisdictions.

The CWCB's designation and approvals greatly assist local communities in meeting the statutory requirements of the State and the regulatory requirements of the National Flood Insurance Program. Floodplain information is broadly categorized as detailed or approximate using the following definitions. Detailed floodplain information means floodplain information prepared using topographic base maps, hydrologic analyses, and hydraulic calculations to arrive at precise water surface profiles and floodplain delineations suitable for making land use decisions under statutorily authorized zoning powers. Approximate floodplain information means floodplain information prepared using a significantly reduced level of detail to arrive at floodplain (hazard delineation) without water surface profiles.

CWCB staff performs technical reviews on the following types of reports and maps for approval and designation by the Board:

"Flood Insurance Study" (FIS), which is produced by the Federal Emergency Management Agency (FEMA) and used for floodplain management, regulation, and insurance purposes.

"Flood Insurance Rate Map" (FIRM), which is produced by FEMA and used for floodplain management, regulation, and insurance purposes. A FIRM may be published with or without an associated hydrologic and hydraulic report.

"Flood Hazard Boundary Map" (FHBM), which was produced by the Federal Insurance Administration and are used for floodplain management, regulation, and insurance purposes. An FHBM usually depicts approximate floodplain boundaries only and does not have an accompanying report. Note: For all FHBM designations, the CWCB staff will perform (in-house or by contract with a consultant) hydrologic analyses.

"Floodplain Information Report", which is produced by local governments, state and federal agencies, special districts, or the private sector, and are used for floodplain management purposes and sometimes adopted by FEMA for use in Flood Insurance Rate Map revisions.

Various hydrology studies and related floodplain studies (community-wide or site specific) that depict 100-year floodplain information that is useful for floodplain management purposes.

"Floodplain Information" is a generic term used to describe any of the above types of reports and/or maps in the CWCB's "rules and regulations…"

"Floodplain Resolution" is a formal document prepared by CWCB staff describing the Floodplain Information that is to be designated and approved by the Board.

Summary of Designation Actions

Floodplain resolution number: FPR Designation #25-752

Affected communities: City of Littleton

Name of study to be formally acted on: "Santa Fe Park South, Dad Clark Gulch FHAD Floodplain Development Permit", by Westwood, dated December 2024.

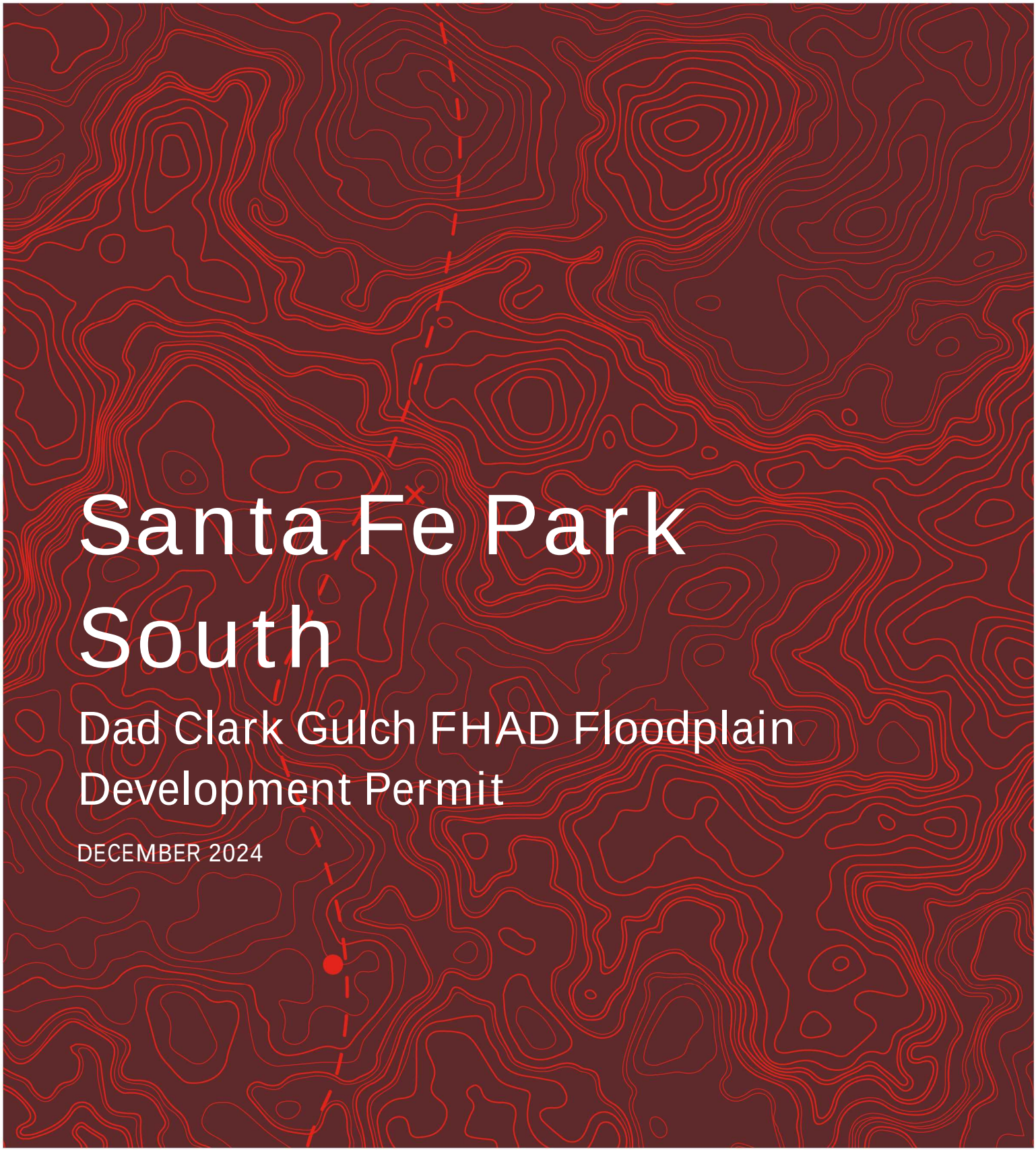
Studied streams: The subject reach is in the South Platte Basin. The report includes detailed hydrologic and hydraulic information for the 100-year floodplain and floodway for Dad Clark Gulch.

Technical Issues: This report utilized the previous 1990 FHAD model run in HEC 2, which was then imported into HEC-RAS 5.0.7. Further proposed modeling utilized HEC-RAS 6.4.1.

Community response: The action to designate this Study was initiated by the Mile High Flood District. This study was initiated by the approval of new development on property that includes the Dad Clark Gulch channel.

Staff findings: CWCB staff has determined that the subject 100-year floodplain and floodway information for Dad Clark Gulch is in conformance with the CWCB's rules and regulations for floodplain designation and approval. The CWCB staff has relied on the technical competence of Westwood, who produced the study, but also performed a limited independent technical review of the report. CWCB staff therefore endorses this study as containing the most current floodplain mapping available and urges the affected communities to adopt said study for land use regulation purposes pursuant to statutory authority.

Requested action for Floodplain Resolution 25-752: Staff recommends that the Board: 1) designate and approve the 100-year detailed floodplain and floodway information contained in said report within the City of Littleton, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to the City of Littleton, and the Mile High Flood District. This action is recommended in order to meet statutory requirements.



Santa Fe Park South

Dad Clark Gulch FHAD Floodplain Development Permit

DECEMBER 2024

PREPARED FOR:

Toll Southwest, LLC

Englewood CO

PREPARED BY: Westwood

Westwood

SANTA FE PARK SOUTH

Dad Clark Gulch FHAD Floodplain Development Permit

Littleton, Colorado



Prepared For:

Toll Southwest, LLC
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Englewood, Colorado 80112
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Date: December 2024

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1. Introduction

On behalf of the applicant, Toll Southwest, LLC, Westwood Professional Services, Inc. (WW) have prepared the Floodplain Development Permit Application to the City of Littleton. This report contains all the information provided to date and any additional information requested by the City of Littleton, Colorado for the application. This report is a companion report to the *Santa Fe Park South Final Drainage Report (FDR) [Ref 3]* approved January 2023. This report uses the base information from the FDR to prepare an analysis meeting the MHFD requirements.

A. Background

Toll Southwest LLC. (applicant) has been approved to develop the property located west of Santa Fe Drive located south of Mineral Drive and north of Wolhurst Landing, in the City of Littleton. The property is currently zoned PD-C and PD-R. The property is divided by the existing (historic) Dad Clark Gulch channel that drains a watershed located east of Santa Fe Drive which has been impounded by McLellan Reservoir which is a water supply reservoir for the City of Englewood, Colorado. The property also contains a portion of City Ditch that provides conveyance for the flows from McLellan Reservoir to the City of Englewood water treatment plant.

This development contains a constructed channel for Dad Clark Gulch that is designed based on Mile High Flood District (MHFD) criteria to be a high functioning, low maintenance MEP eligible channel. It consists of a low flow (effective) channel inside a larger floodplain channel that is designed to safely convey the 100-yr flow from the upstream watershed. The channel has been diverted from its original location to reduce the impact to the proposed development.

B. Project Location

Santa Fe Park South is generally located west of Santa Fe Drive and south of West Mineral Avenue in Section 32, Township 5 South, Range 68 West of the 6th Principal Meridian, in the City of Littleton, Arapahoe County, Colorado. The site is highlighted on the vicinity map with all principle geographic features and roadways identified.



Vicinity Map

C. Property Description

1. Area, Soils, and Existing Cover

The Santa Fe Park South site consists of 77.6 acres of mostly undeveloped row crop and pastureland with some existing structures. The soils are made up of 40% group B, 21% group C, and the remainder group D type soils.

2. Existing Drainage

The site drains to the west to the South Platte River (SPR) located approximately 500 feet at its closest point. The site is split from east to west by the existing Dad Clark Gulch channel that drains McLellan Reservoir which is located approximately 1800 feet east of the site. The drainage path contains both a subsurface 31" pipe and a small surface channel (Dad Clark Gulch) that conveys flow from the reservoir to the South Platte River. The surface channels convey overflow from the reservoir and the pipe conveys flow when necessary to satisfy downstream water demands.

3. Existing Irrigation Facilities

City Ditch flows from south to north through the eastern portion of the site. City Ditch crosses Dad Clark Gulch via an elevated flume. Along this flume, a two inch pipe discharges "augment" water into Dad Clark Gulch, where water is conveyed across the property and ultimately to the South Platte River. This "augment" water is continuously released at a rate of approximately 0.12 cfs which creates a continuous flow that nourishes several small wetland areas along the channel and at the discharge point to the South Platte River floodplain.

4. Proposed Land Use and Encumbrances

The proposed land use will be single family attached residential with some lots reserved for future commercial and mixed use. The residential areas will also include open parks and trails. Proposed land uses are shown on the attached exhibits.

D. Previous Investigations

The Flood Hazard Area Delineation (FHAD) for Lower Dad Clark Gulch and DFA 0068 was completed by the Urban Drainage and Flood Control District (UDFCD) and the City of Littleton in November 1990.

A FHAD flood map was developed as part of the study. The flood map is provided in Appendix D. It shows that the main flow follows the historic channel with some shallow (less than 1 foot) overbank flow spills to the north along the low lying area that is contained in South Platte Park. The overbank flow is not significant in depth or rate and is not considered a cause for flow reduction in the main channel in the FHAD model.

Additionally, an Outfall Systems Plan (OSP) for Lower Dad Clark Gulch was adopted in April 1990 (Ref 4). The OSP provided alternatives to modify Dad Clark Gulch for future development in the Santa Fe Park area. The development proposed generally follows that in the OSP with a mixture of high density residential and commercial areas. The Dad Clark Gulch modification in Option 1.A is followed except for the routing of Dad Clark Gulch to the north instead of following the existing channel.

2. Proposed Channel Description

A. Previous Investigations

Two flows are simulated for the Lower Dad Clark Gulch channel. The 1990 Flood Hazard Area Delineation (FHAD) 100-yr flow with no flood attenuation from McLellan Reservoir of 1780 cfs is used to size the flood channel. The 10-yr flow and 50-yr flow from the 1990 FHAD and OSP reports were also modeled. The 10-yr flow downstream of Santa Fe Drive is 810 cfs, and the 50-yr flow was 1380 cfs.

The effective (bank full) channel is sized based on calculated minor storm flows from the tributary area between McLellan Reservoir and Santa Fe Drive of approximately 23 cfs. The effective channel is a non-regulatory flow path that provides ecological services to the channel and allows for the establishment of wetlands and floodplain vegetation. For this analysis, no discharge is anticipated from McLellan reservoir in a minor storm.

B. Channel Design

The channel is designed based on criteria from the USDCM Volume 1, Chapter 8. The channel is designed to be Mile High Flood District (MHFD) maintenance eligible.

The channel design consists of several steps that also provide information for the floodplain modification requested. The design steps that apply include:

1). Estimate the channel dimensions based on the slope of the flow route, and the flows that are generated from the upstream watershed. For this preliminary step, the MHFD generated UD-Channel spreadsheet was used. The overbank slopes in the flow path are significant, so a series of drop structures are proposed to ensure that the channel can achieve a stable slope for the effective channel and the flood benches. A typical cross-section is provided in the plan exhibit showing the dimensions provided.

2). Develop a HEC-RAS model of the proposed channel to verify the depths, velocities, and other flow characteristics of the channel for its entire length including upstream and downstream offsite areas.

C. 1D HEC-RAS Model

The HEC-RAS model are described in the following paragraphs below:

DCG Effective Model

We obtained the existing conditions Dad Clark Gulch (DCG) FHAD model from Brooke Seymour at MHFD. The existing (effective) model is a 1990 version HEC 2 model. We began by importing the DCG HEC 2 model into the most recent version of HEC-RAS 5.0.7. The imported model operated in the HEC-RAS 5.0.7 and was saved as the effective model which is provided with this electronic submittal.

DCG Effective Model and Corrected Effective Model

The effective model was modified to correct the elevations from the NGVD 1929 datum to the NAD 88 datum and was examined to verify the bridge simulation methods. The model elevations were corrected using the NOAA Vertcon method that indicated the change in elevations from the NGVD 1929 to the NAD 88 datums at the site location is 3.05 ft. A printout of the datum conversion is provided in Appendix E.

The HEC 2 model did not include any Special Bridge (SB) or Normal Bridge (X2) sections. The railroad bridges on the east of Santa Fe Drive and the Santa Fe Drive highway bridge were simulated by including the piers in the cross section editor. Because no bridge methods were used, no changes were made in calculation methods or expansion/contraction coefficients for the bridge cross sections in the HEC 2 model. These sections were not changed in the proposed model to allow continuity between the models. The corrected effective model is also provided as an electronic attachment. The manning n values for upstream cross sections from the HEC 2 model were maintained for these cross sections throughout the modeling effort.

DCG Proposed Model

The U.S. Army Corps of Engineers Hydrologic Engineering Center's HEC-RAS version 6.4.1 software was used to model subcritical flow regime hydraulics for the purposes of this study. The proposed model replaces all cross sections from the effective 1990 FHAD but maintains the location of the FHAD cross section 50.0 as the U/S tie in. The stream centerline was also remodeled from the effective to better reflect the existing ground and proposed channel alignment. Mannings n values were chosen using MHFD recommended values for the proposed channel and Chow 1959 for the offsite area. Drop structures are modeled per USACE Drop Structures guidance located in the Hydraulic Reference Manual. Further information regarding the analysis are located in the summary and CX descriptions in the model.

DCG Floodway Model

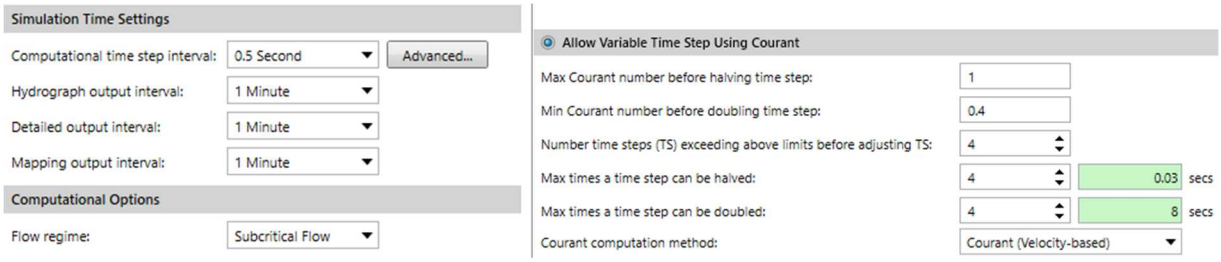
A floodway model was generated matching the original meeting the following parameters:

- Method 1 was used for the offsite portions of the model.
- The engineered channel portion the floodplain is the floodway

The HEC-RAS 1D analysis results are shown in Appendix B. The Floodplain Exhibits are shown in Appendix E.

D. 2D HEC-RAS Model

A 2D HEC-RAS analysis was completed to inform and validate the 1D HEC-RAS analysis. The basic 2D analysis is an 8' grid model with 4' cells used to analyze specific features. A variable time step analysis was used with the following parameters:



HEC-RAS 2D Parameters

The McKellan Reservoir 100-year inflow hydrograph was used as the U/S boundary condition. The D/S boundary condition was the normal slope of the Platte River. The model is stable and ran with no errors.

The HEC-RAS 2D results were used to determine the flow path of the offsite area. The flowpath set the alignment in the HEC-RAS 1D model through this area.

The HEC-RAS 2D maximum flood extents are very similar to the results of the HEC-RAS 1D model.

The summary results from the 2D analysis are shown in appendix C.

E. Proposed Drainage Description

This development proposes to divert the Dad Clark Gulch channel from the existing flow path to an alternate engineered high functioning low maintenance channel that will direct the offsite upstream flow to the South Platte River floodplain at a point north of the existing discharge point. This diversion will confine the floodplain to the improved channel, while providing a functioning flow path for the offsite flow. Only offsite flow and rainfall falling on the immediate channel area will be conveyed in Dad Clark Gulch through the proposed development.

All run-off from the proposed development will be directed to one of four full spectrum detention ponds that will release at an allowed rate directly to the South Platte River riparian floodplain. The ponds will be sized as full spectrum ponds following MHFD and City of Littleton criteria.

F. Proposed Drainage Facility Maintenance

The proposed Dad Clark Gulch channel will be designed and constructed to meet MHFD criteria for regional channels to be eligible for public maintenance. All drainage structures and ponds interior to the development will be privately maintained by the metropolitan district.

3. Drainage Analysis and Design Criteria

A. Regulations

All analysis and design have been completed based on the City of Littleton Storm Drainage Design and Technical Criteria Manual, and the Mile High Flood District's Urban Storm Drainage Criteria Manual.

B. Development Criteria

The major channel through the site for Dad Clark Gulch is sized for the ultimate flow specified in the Flood Hazard Area Delineation for Lower Dad Clark Gulch and DFA 0068 completed by the UDFCD and the City of Littleton in November 1990. The channel will be sized to convey the 100-year flow of 1780 cfs while allowing a 1.5 foot freeboard as specified in the MHFD Urban Storm Drainage Criteria Manual. The effective channel is designed to convey the effective flow (70% of 2-year storm) generated by the approximately 60 acre tributary area between the McLellan reservoir and the site, along with the augment water continuously added to the site by the City Ditch flume.

The FHAD study does not recognize that McLellan Reservoir essentially detains all upstream stormwater flows, as the only flows discharged from the reservoir are relative to downstream irrigation needs conveyed via the 31" pipe and augment water, or municipal water supply to the City of Englewood discharged via the pumphouse, flume, and City Ditch. Releases from the McLellan Reservoir spillway are infrequent and sporadic.

Sizing the effective channel for the actual effective flow that will be conveyed is a reasonable approach that will result in a low maintenance, well vegetated channel. The augment flow will allow establishment of instream wetland areas to enhance water quality and ecological services along the revised Dad Clark Gulch channel. Established vegetation will also provide stability to the channel for long term function.

C. Impacts to South Platte Park

The proposed design will reroute the flow through Dad Clark Gulch from the existing discharge point to a point north near Mineral Avenue. The rerouted Dad Clark Gulch flow will enter SPR at the same point that Jackass Gulch enters the river. The flow will largely follow an abandoned SPR oxbow that currently receives flow during large storm events. The channel is well vegetated and contains wetland features that will now receive continuous flow from the diverted augment flow within Dad Clark Gulch. The existing 31" discharge pipe will be replaced with a 30" RCP that will still discharge to the existing outfall.

The point where the diverted channel empties into South Platte Park will contain a drop structure and velocity dissipation structure to protect the downstream channel from high velocity erosive flows. Low flows will follow the abandoned river bend on the east side of South Platte Park adjacent to the natural levee. In the event of a major storm discharge event, the flow will spread out across the flat area of South Platte Park. This area was considered an area of shallow flooding (average depth less than 0.8 ft) in the OSP (Ref 4). This will remain true for most of the South Platte Park with the revised flow path.

The introduction of the augment water from the City Ditch flume over the revised Dad Clark Gulch channel will provide nourishment to future wetland areas and native vegetation in the South Platte Park north of the proposed development. This will add stability and diversity to the existing low lying features in this area and help it withstand the additional flows that it may experience in major flood events.

The instream wetland impacts will be mitigated by establishment of new wetlands in the new channel. Additionally, the new channel outfall also contains wetlands in the depressional area of the former oxbow which will now also receive the augment water and the effective flow from the realigned channel.

The proposed FHAD floodplain will no longer contain the areas along and adjacent to the existing channel. This area will be raised by fill for the proposed development. The northern portion of the FHAD floodplain will now receive the flows from Dad Clark Gulch in the constructed channel to the abandoned South Platte River oxbow. The proposed flows will be much higher than the existing in this oxbow, but the energy dissipation structure that will be constructed at the outfall of the proposed channel will protect the existing wetlands from high velocities and shear stresses. The wetlands will be improved by nourishment from the augment water and more able to withstand the periodic high flows.

The abandoned SPR oxbow will direct the low flows and a portion of the periodic major flood flows to the South Platte River via the existing Jackass Gulch outfall immediately south of Mineral Drive.

4. Conclusions

The proposed floodplain as described in this report and illustrated on the attached floodplain exhibits will allow development of the historic Dad Clark Gulch FHAD while providing an alternate flow path that will safely convey the 100-yr flow to the South Platte River. Per agreement with MHFD the impact of Jackass Gulch can be ignored when modeling the Dad Clark Gulch Floodplain. The South Platte River in this area is regulated by Chatfield Reservoir and the re-directed flow is not expected to impact the South Platte River channel.

5. References

1. City of Littleton Storm Drainage and Technical Criteria Manual, City of Littleton. Effective date July 1, 2019.
2. Urban Drainage and Flood Control District (UDFCD) Drainage Criteria Manual, Volumes 1, 2, and 3, November 2016.
3. Santa Fe Park South Final Drainage Report, Westwood. January 2023
4. Lower Dad Clark Gulch and DFA 0068 Flood Hazard Area Delineation, Centennial Engineering Inc. 1990
5. Outfall Systems Planning for Lower Dad Clark Gulch and DFA 0068, Alternative Evaluation Report, Centennial Engineering Inc. 1990
6. CLOMR Request for South Platte River, Chatfield to Ft. Lupton, Wright Water Engineers, June 2016.
7. FEMA FIRM 08005C0433K Revised December 17, 2010
8. Chow, V.T. 1959. Open-Channel Hydraulics. New York: McGraw-Hill Book Company

APPENDICES

Appendix A – Digital files including HEC-RAS modeling, shapefiles, and terrain file

Appendix B – Proposed and Floodway HEC-RAS 1D Results

Appendix C – Proposed HEC-RAS 2D Results

Appendix D – Excerpts from the 1990 FHAD study report, SPR FIRM, Corrective Effective Summary

Appendix E – Floodplain Exhibit

Appendix F – Channel As-built P&P's, Platte River Parkway Bridge Plans

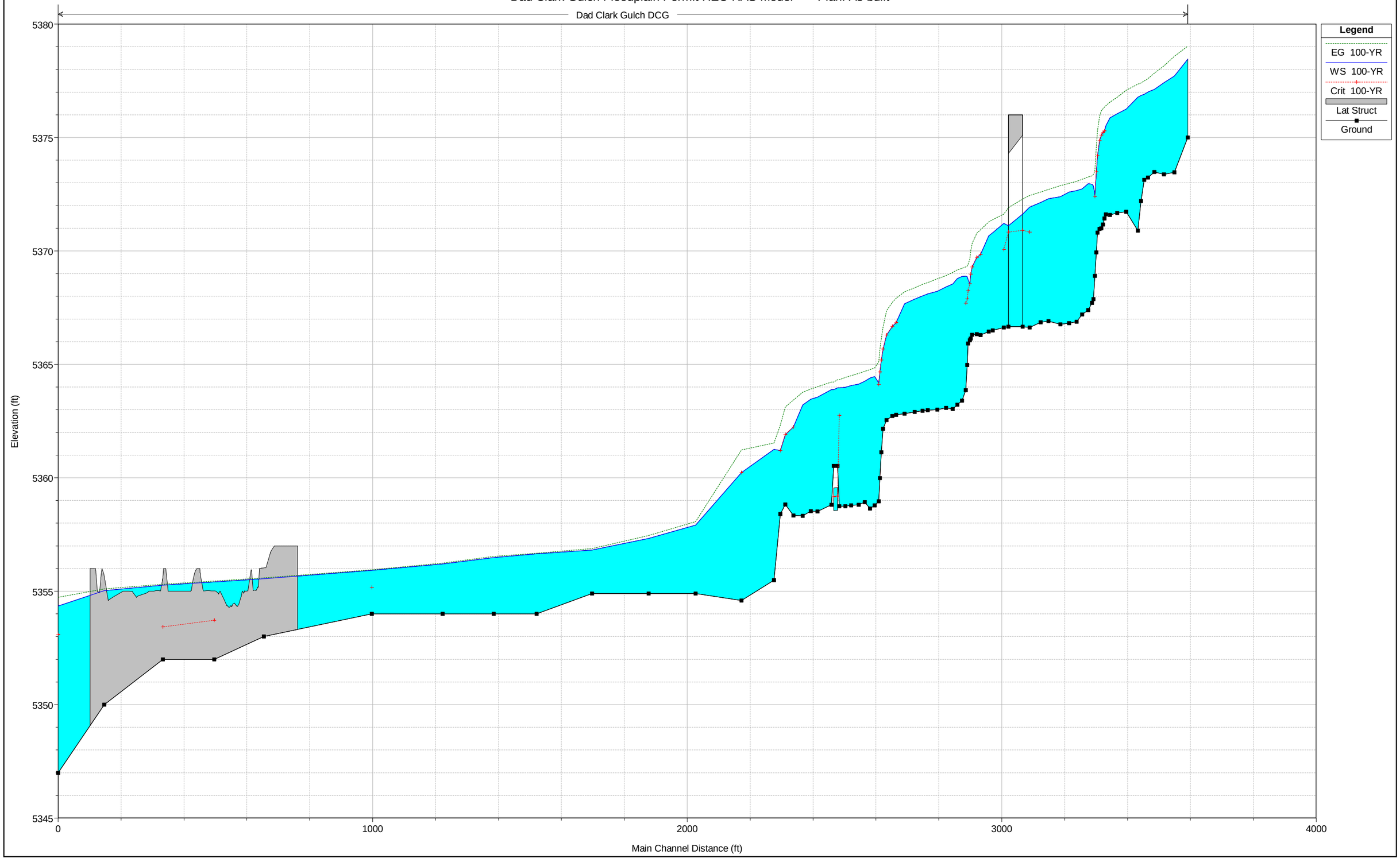
Appendix G – Fence Plans

APPENDIX A (SEPARATE FILE)

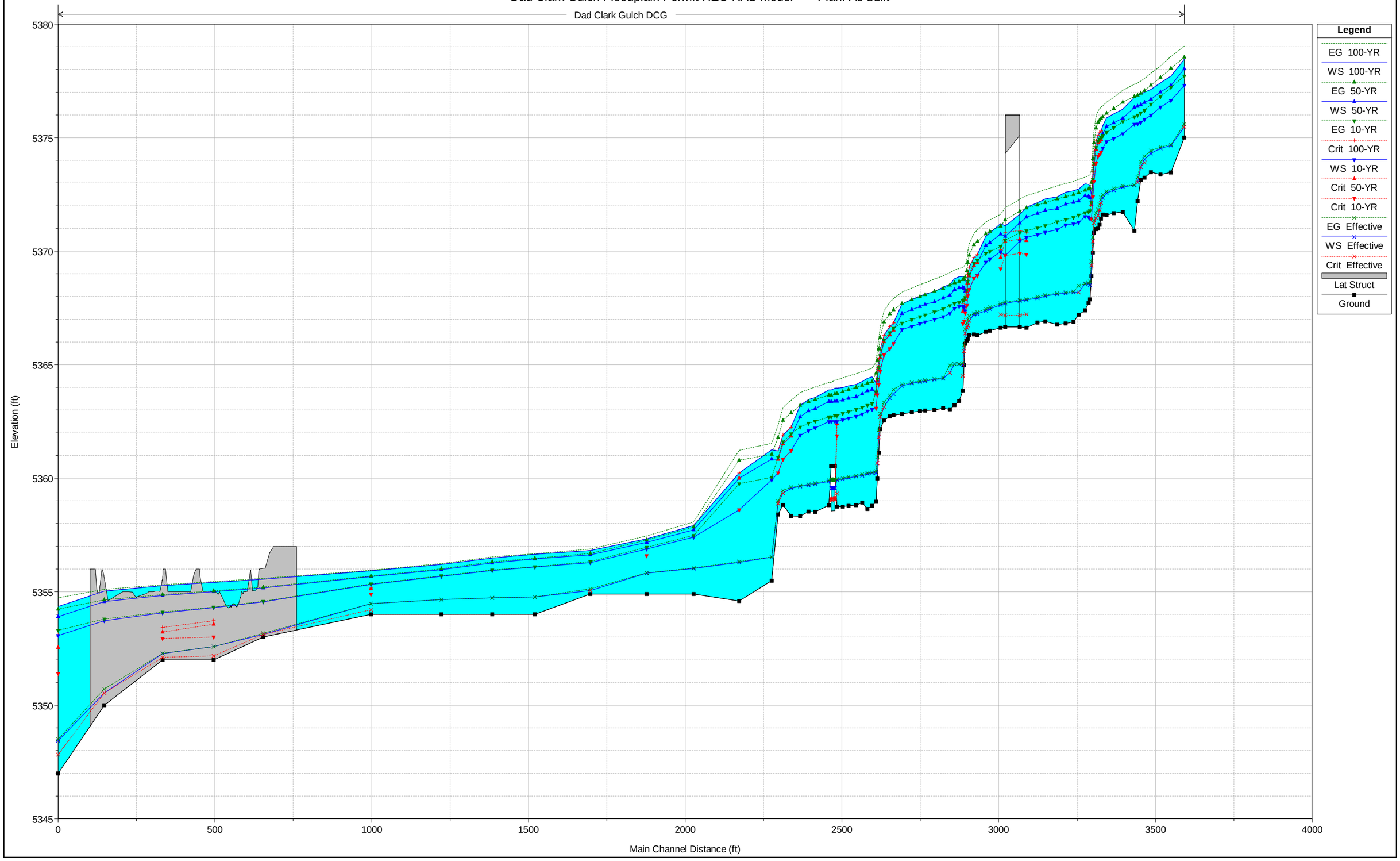
APPENDIX B

Proposed and Floodway HEC-RAS 1D Results

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

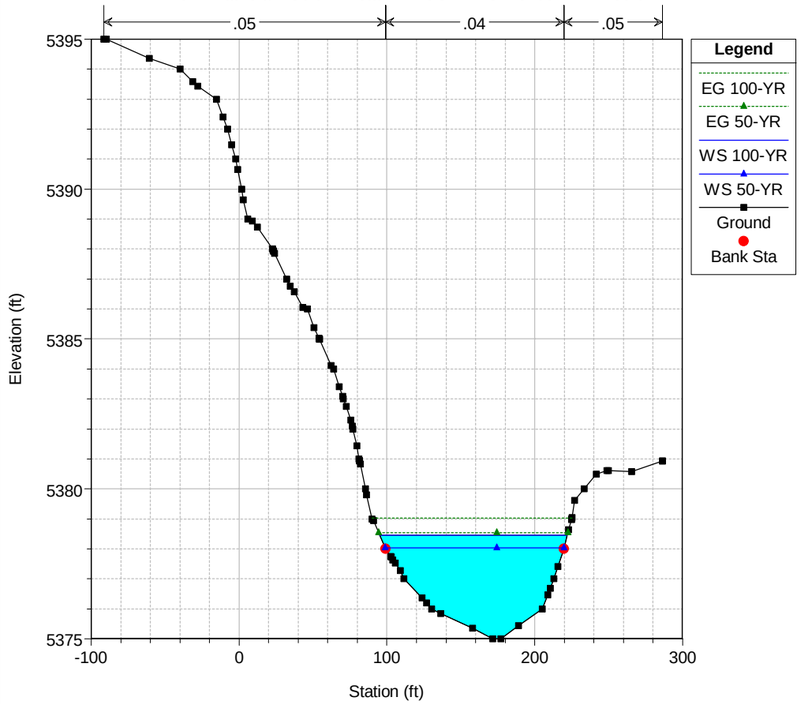


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built



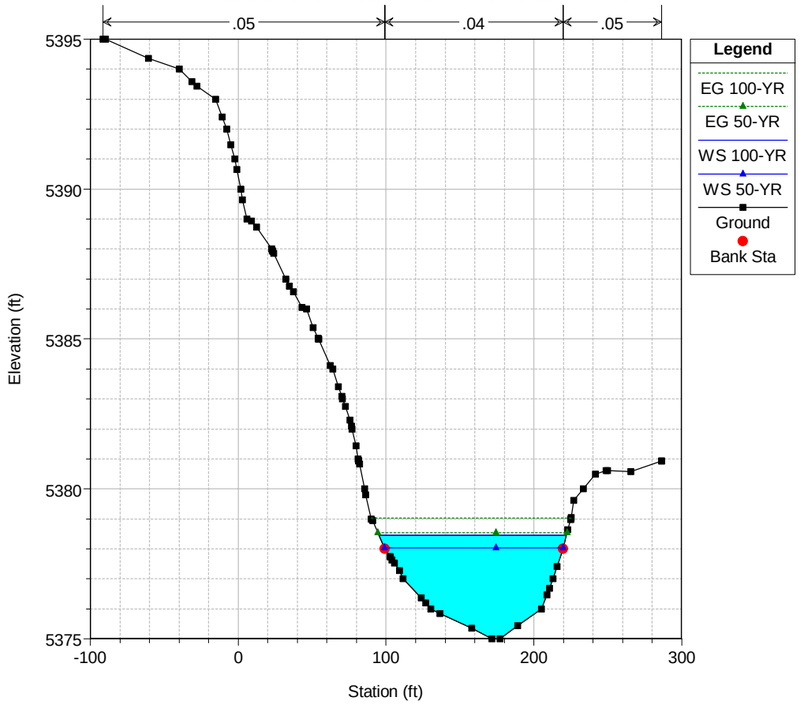
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3705 FHAD 50.0



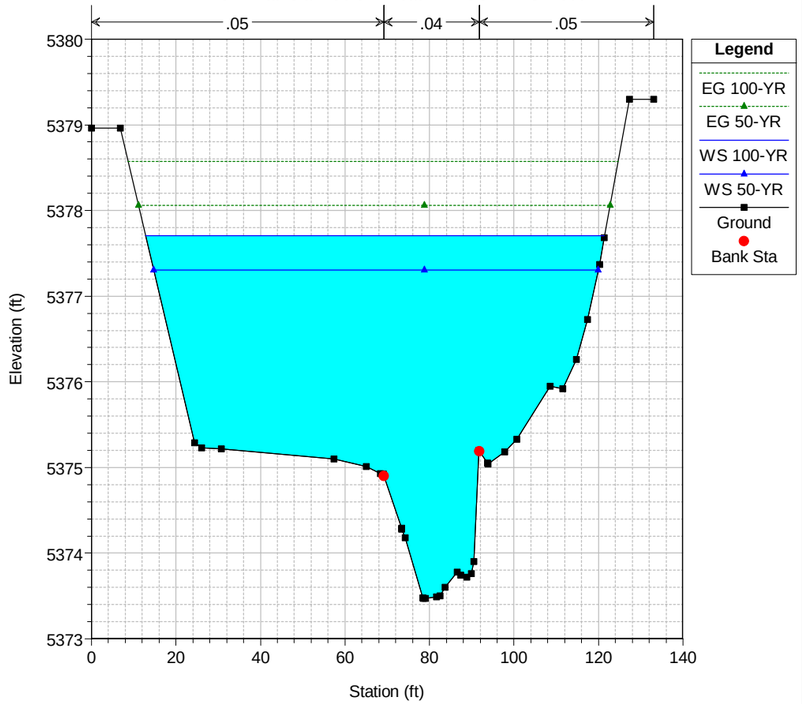
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3705 FHAD 50.0



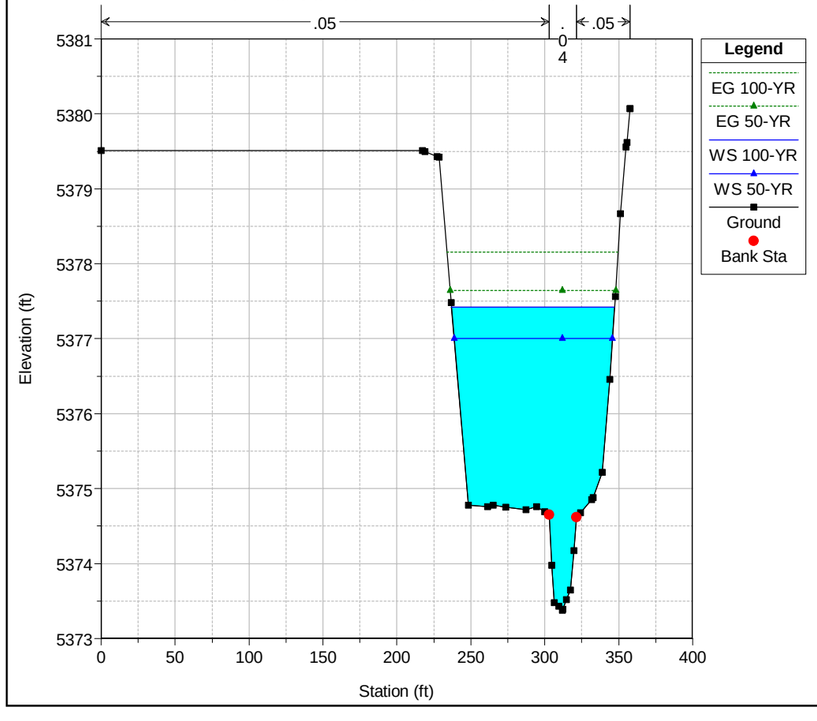
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3662



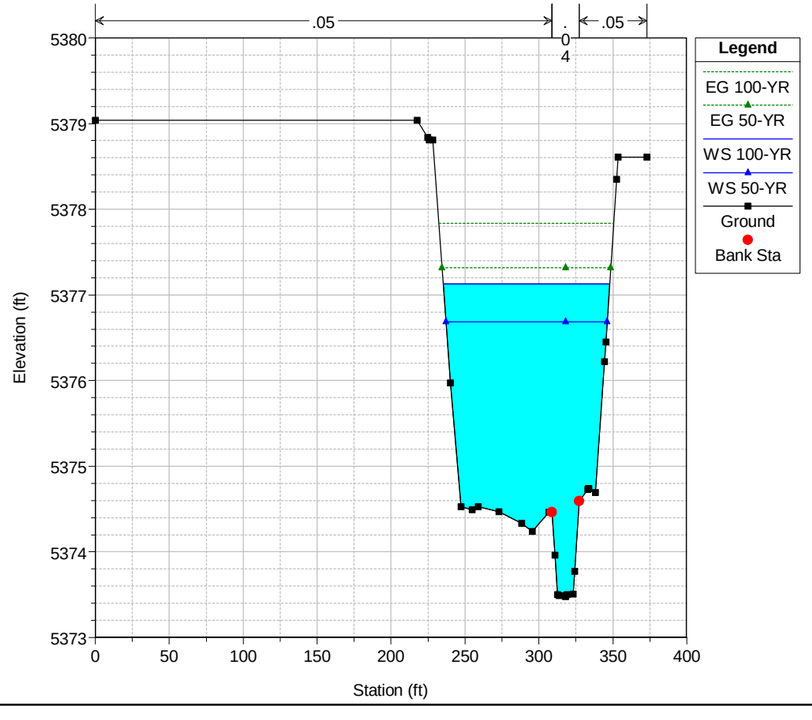
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3629



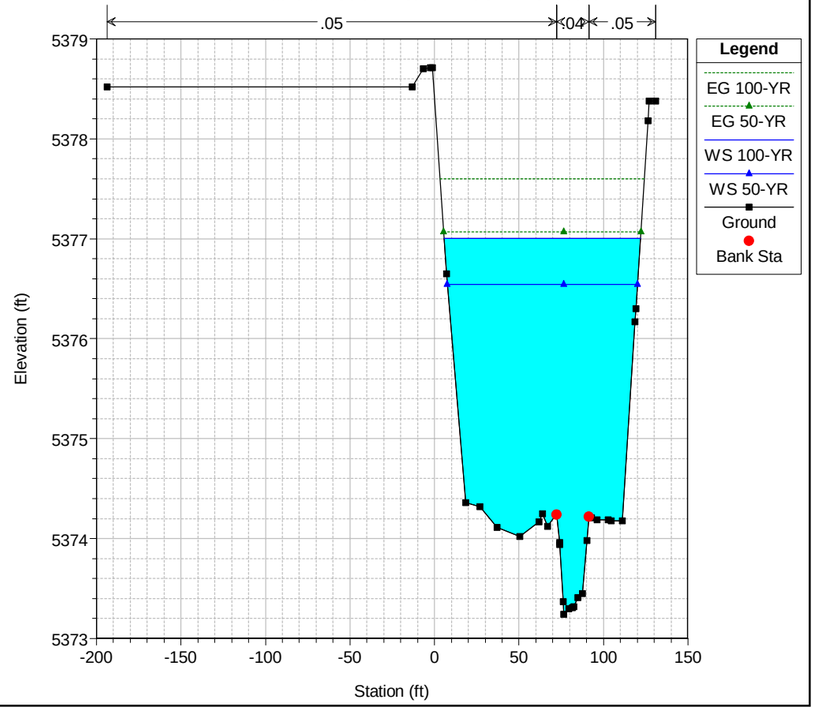
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3598



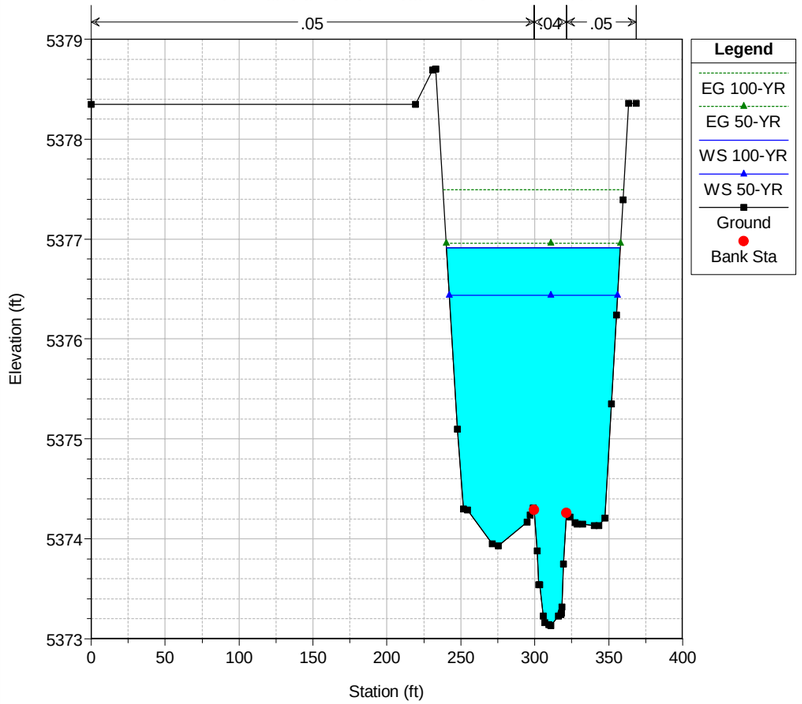
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3578



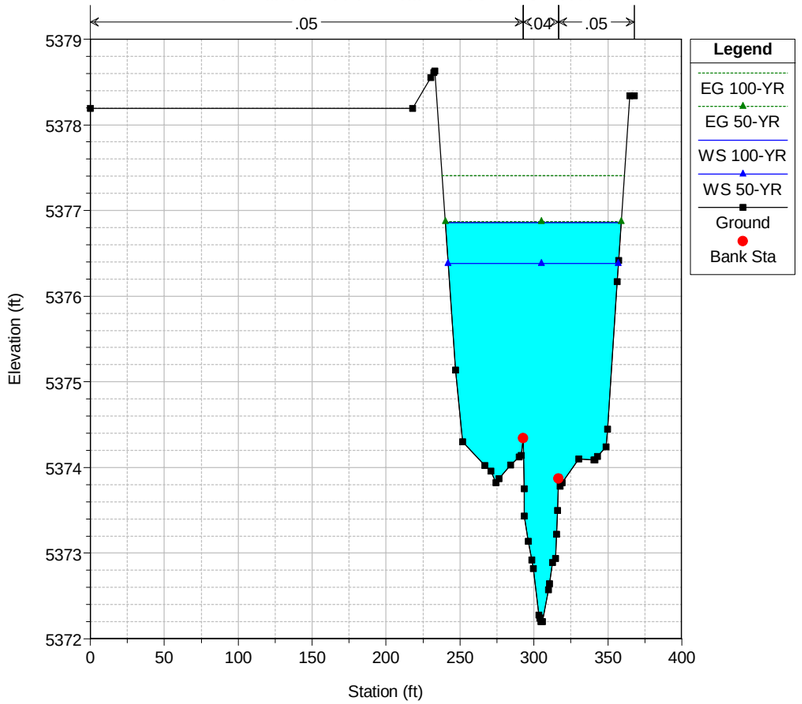
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3566



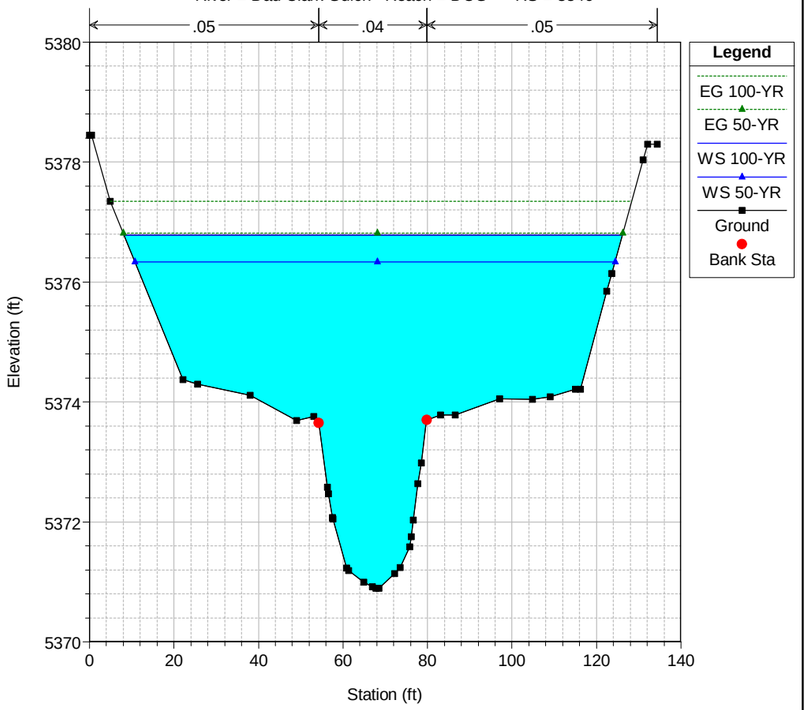
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3556



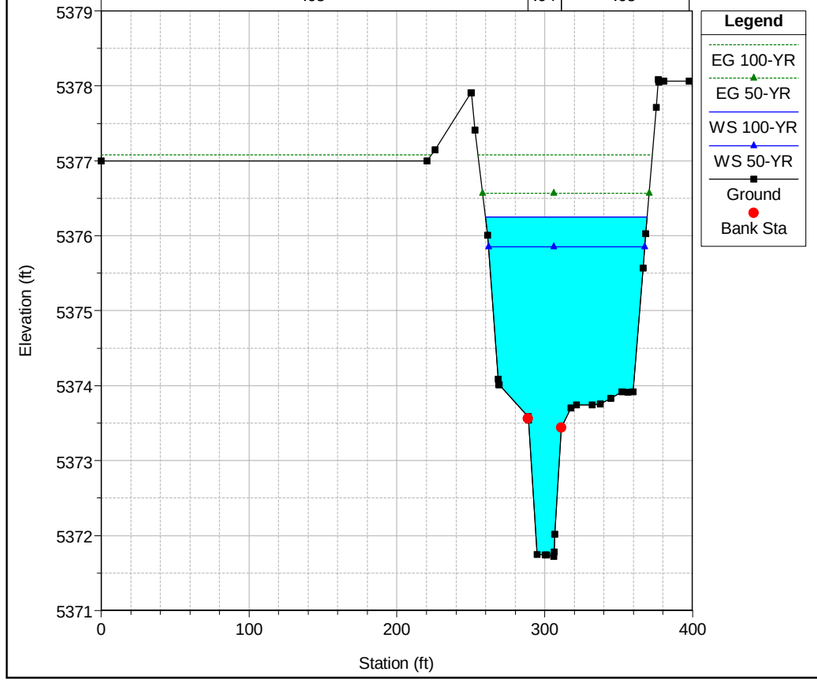
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3546



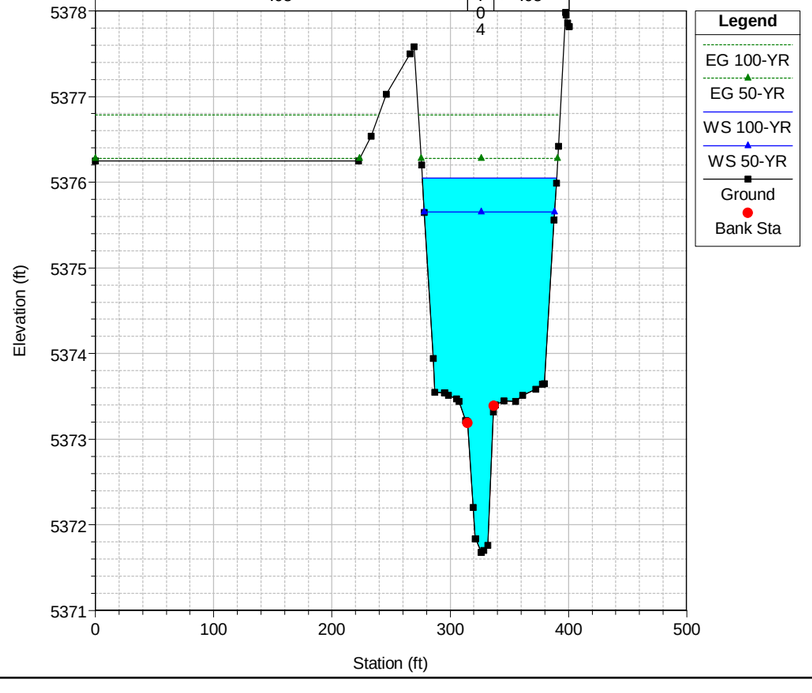
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3509



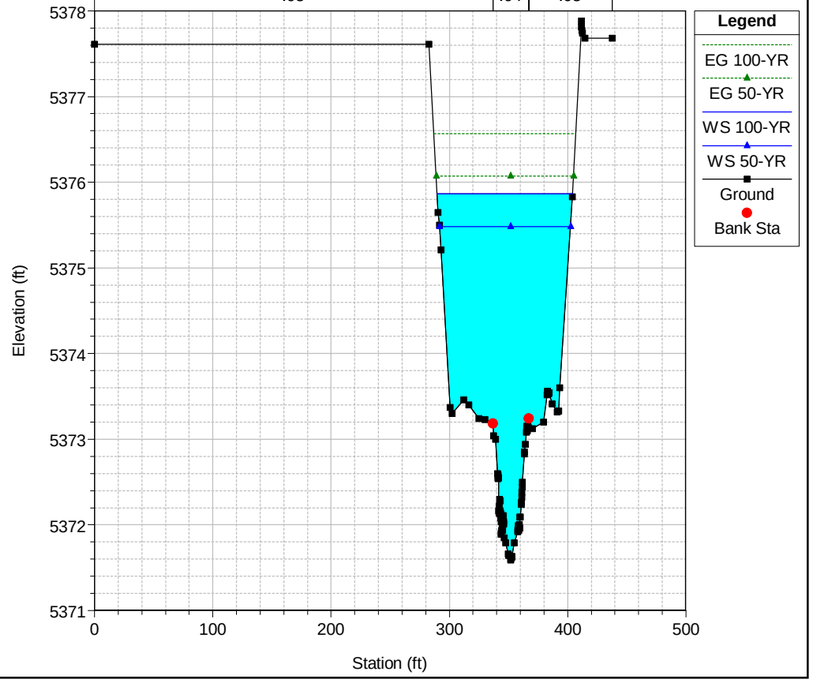
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3480



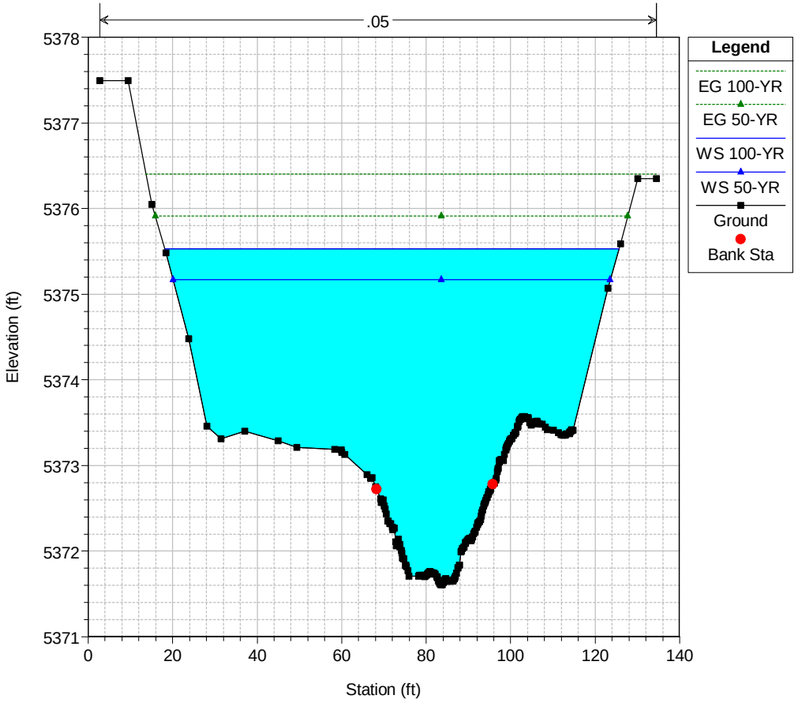
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3457



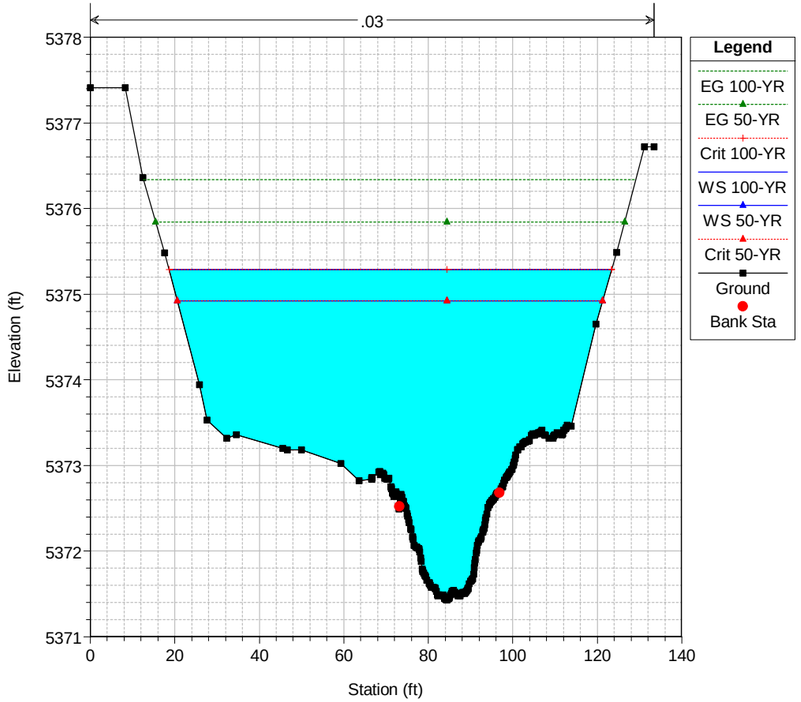
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3444



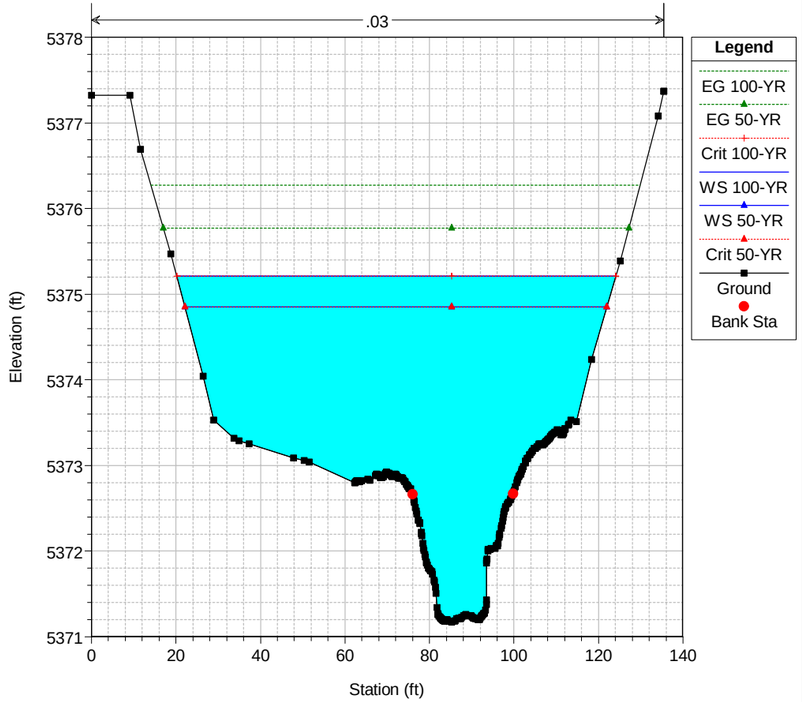
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3439



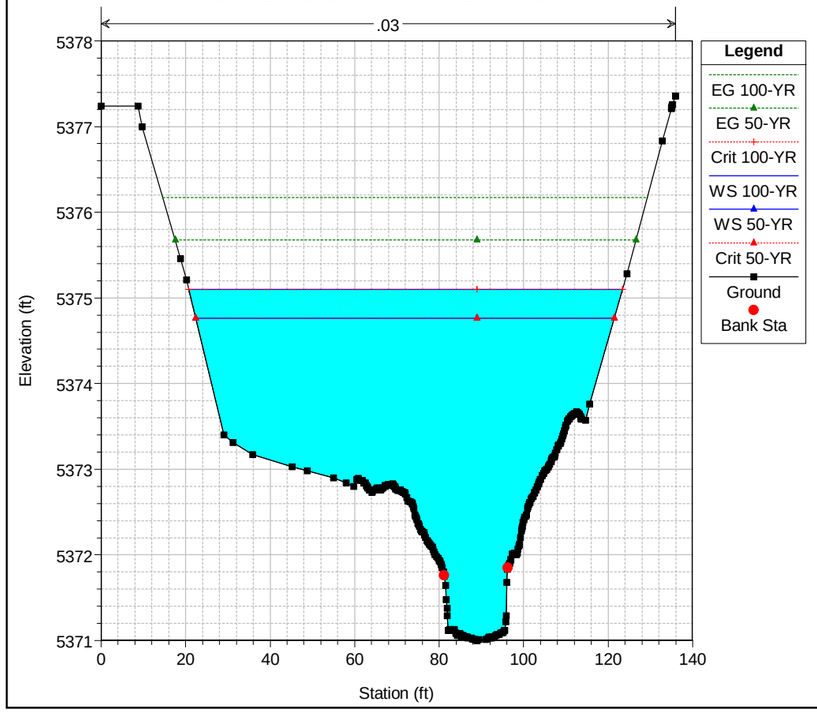
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3435



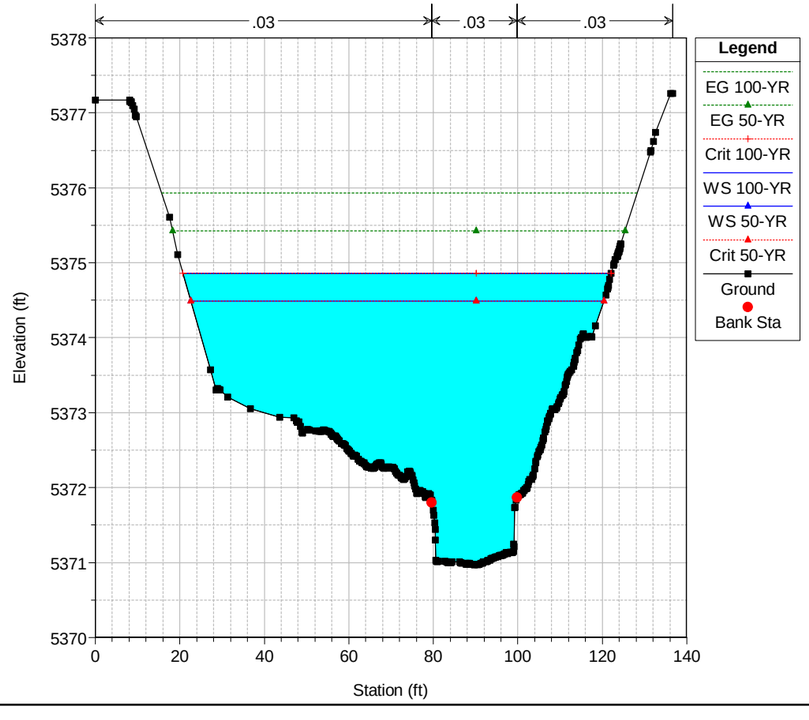
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3430



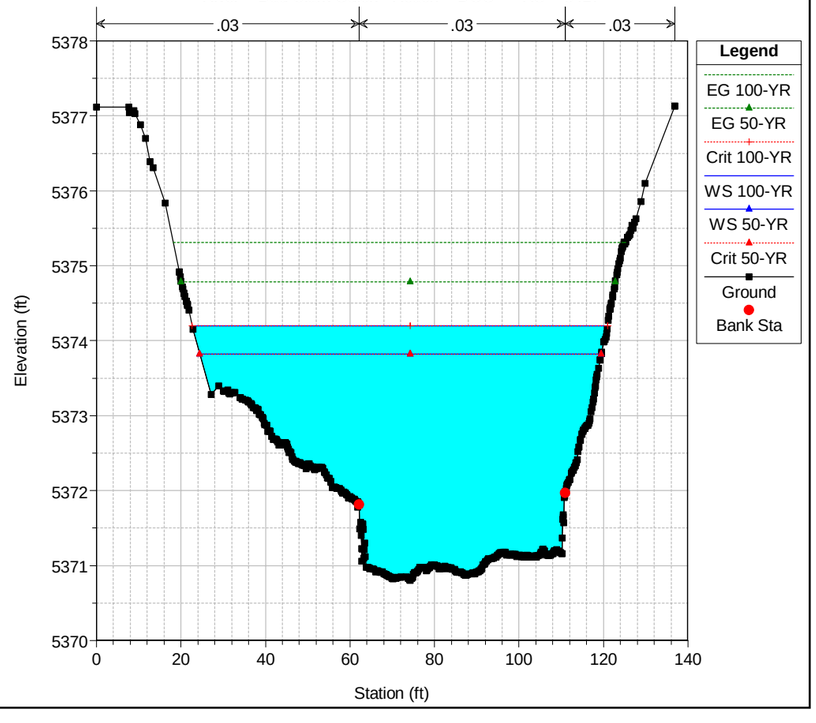
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3424



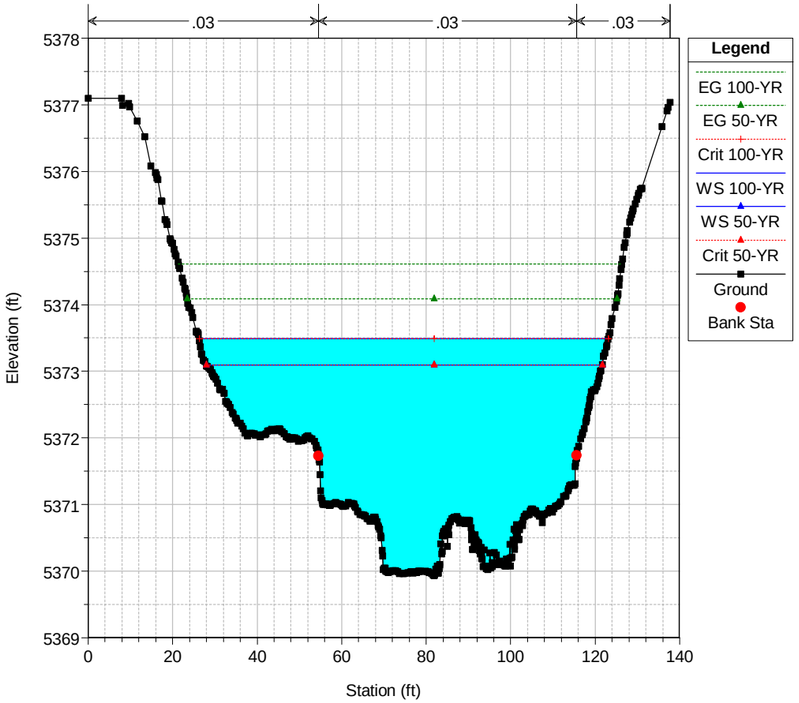
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3417



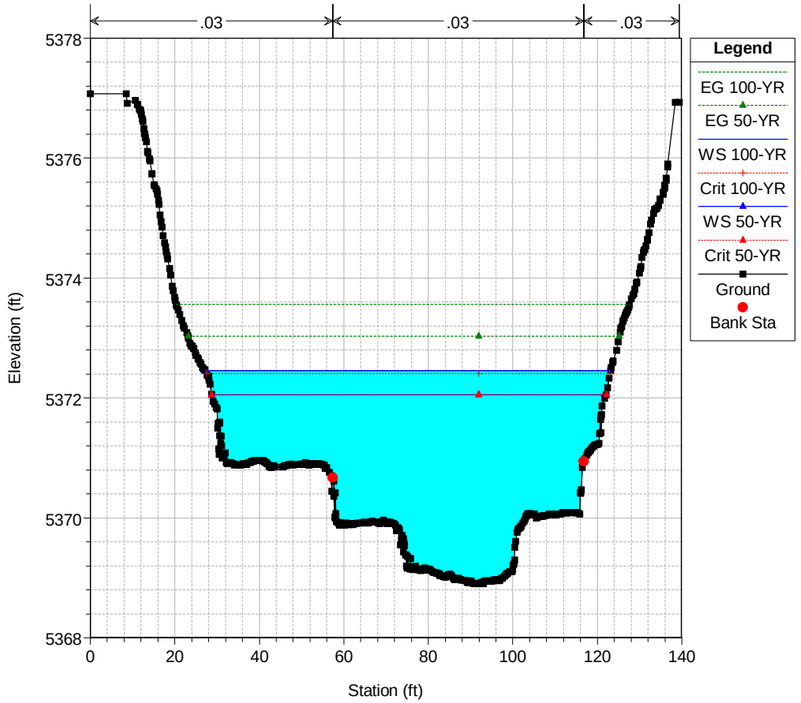
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3413



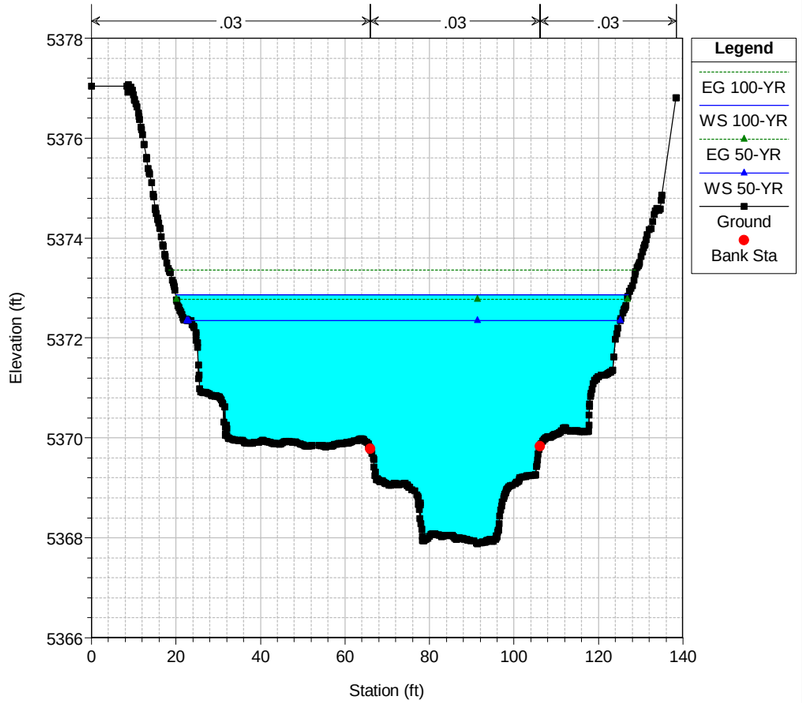
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3409



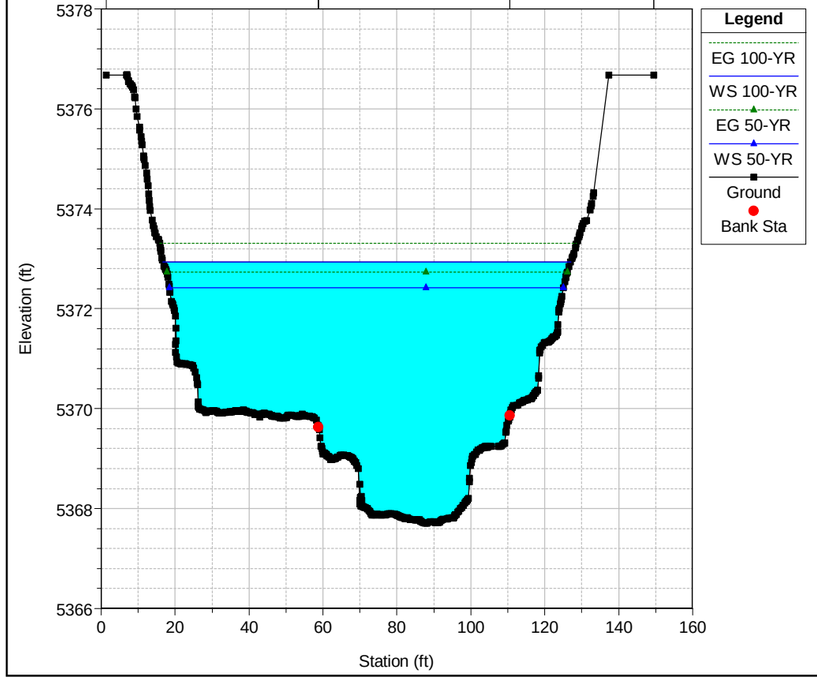
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3404



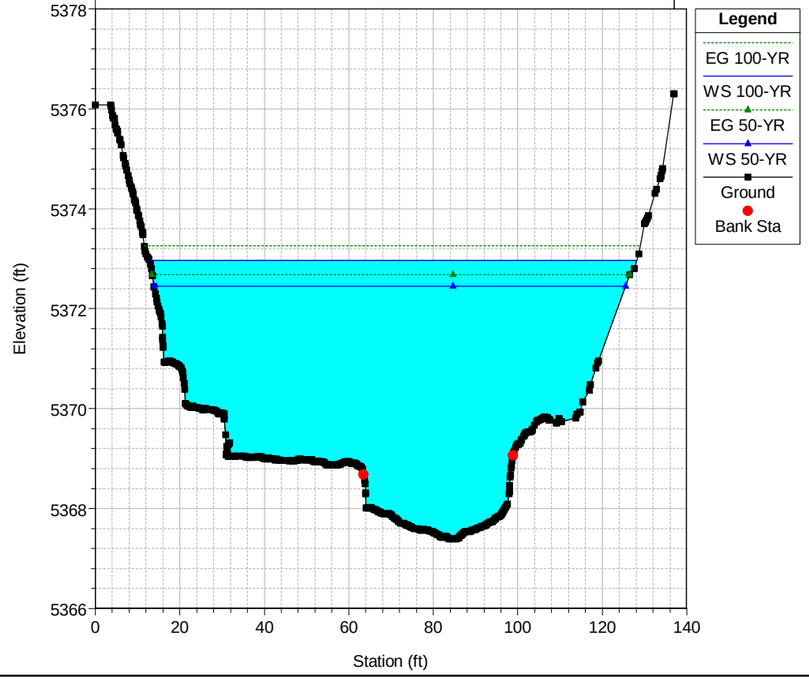
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3400



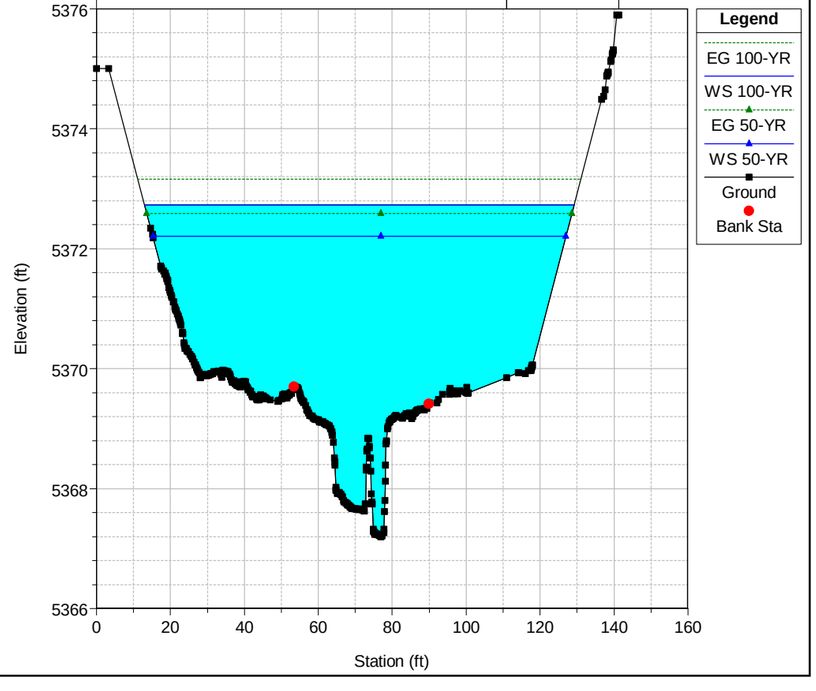
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3388



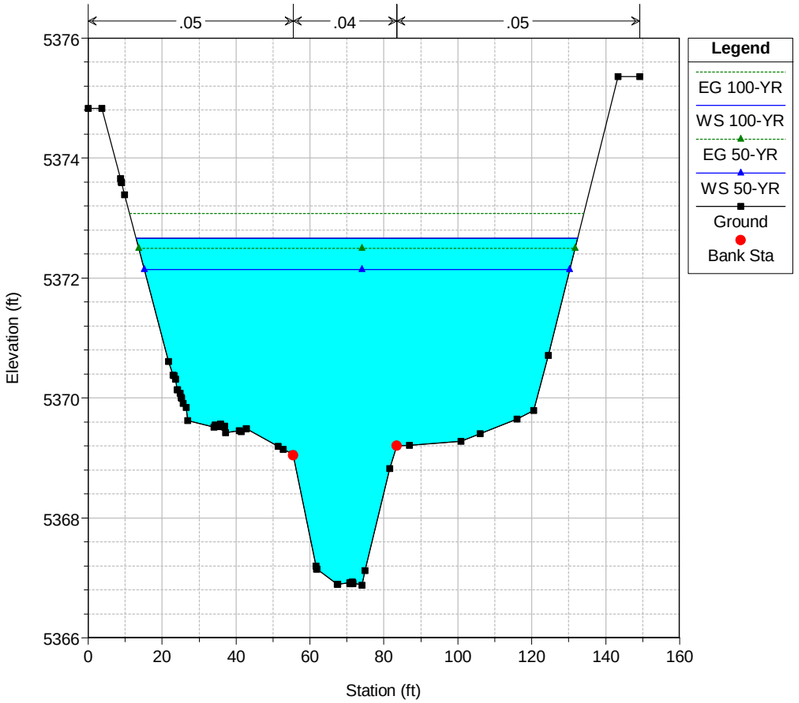
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3368



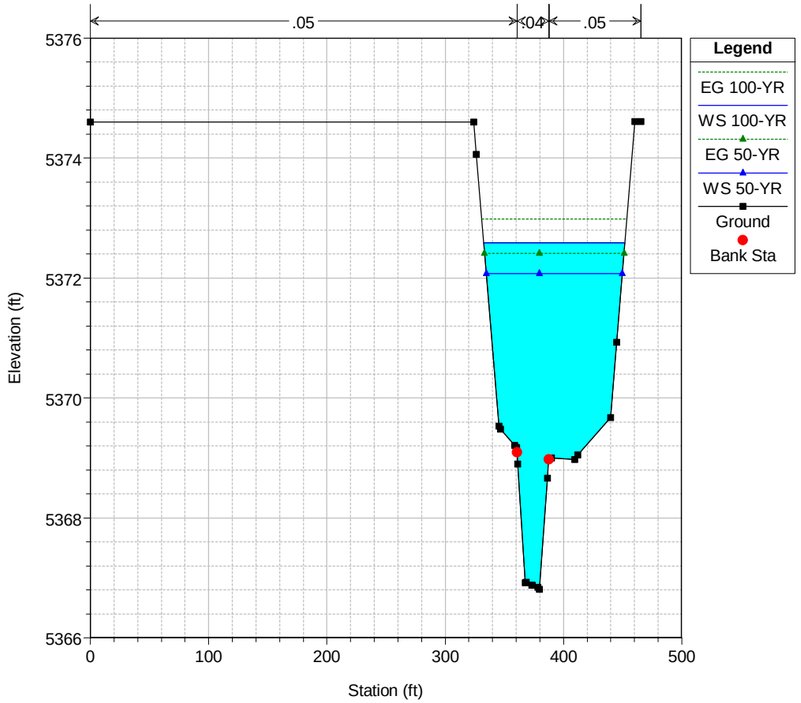
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3351



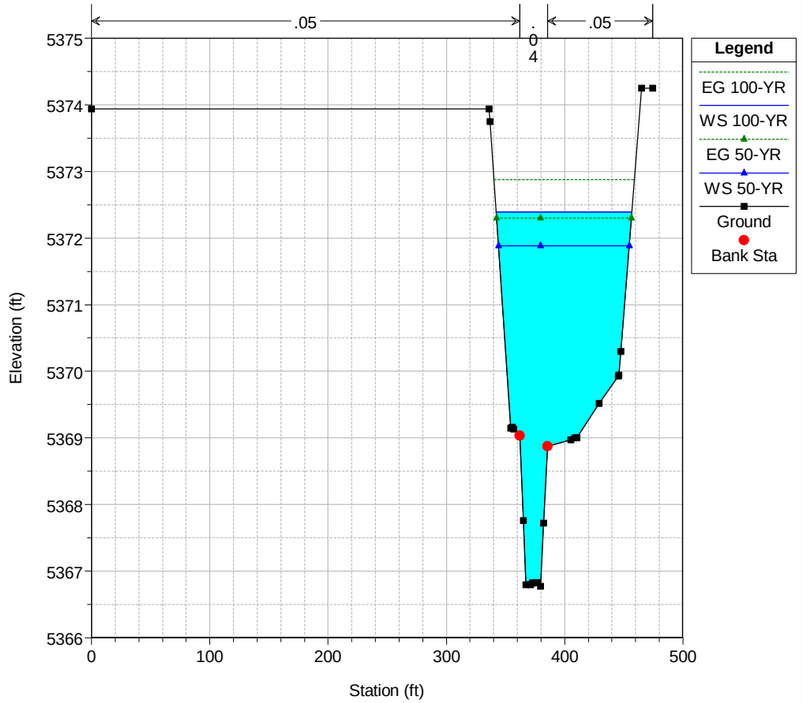
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3327



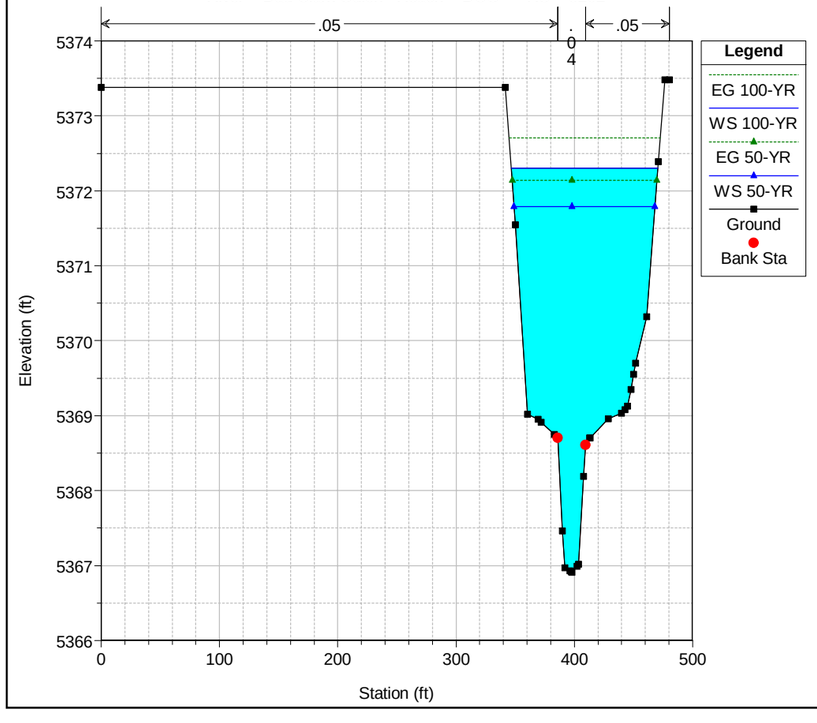
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3299



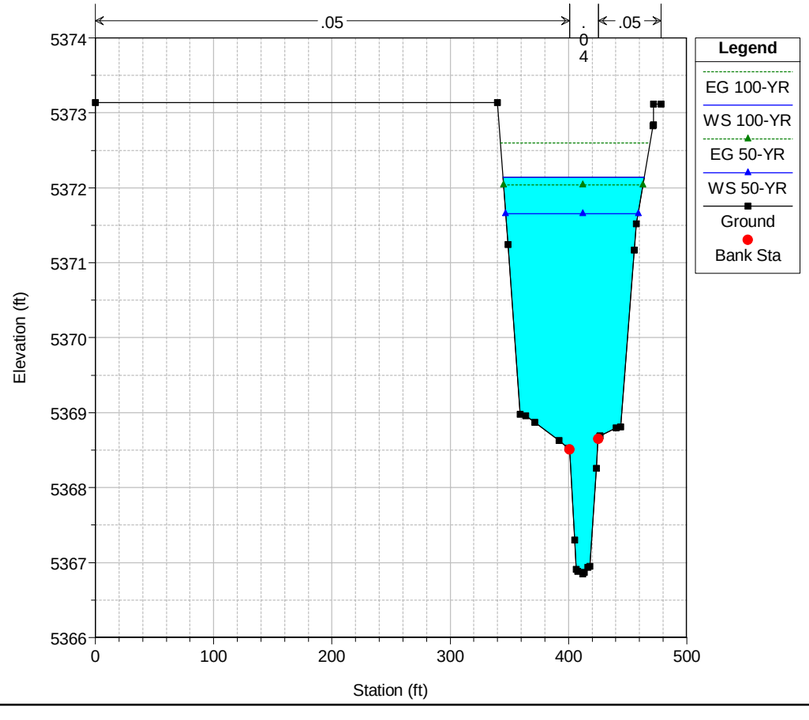
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3262



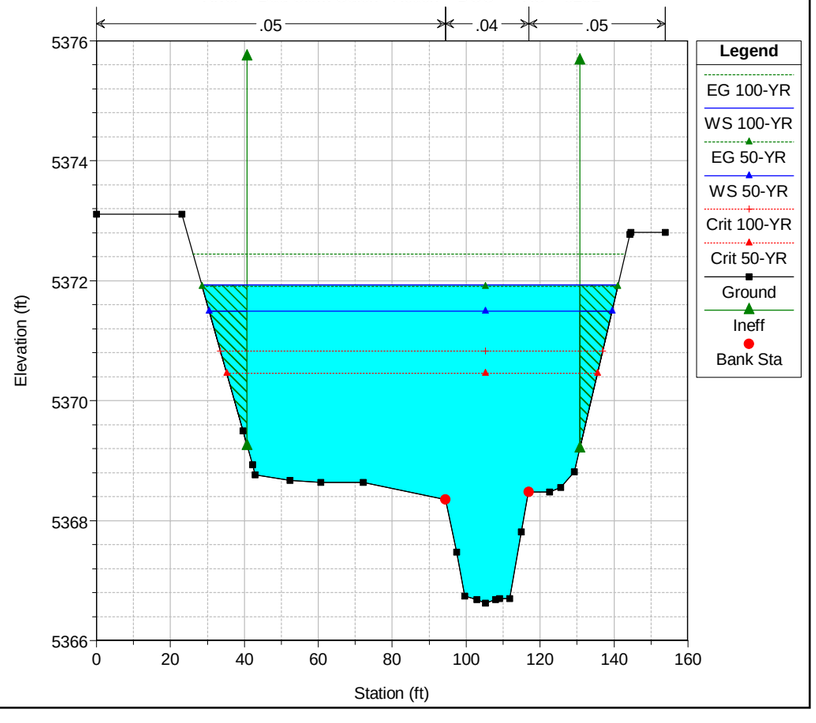
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3237



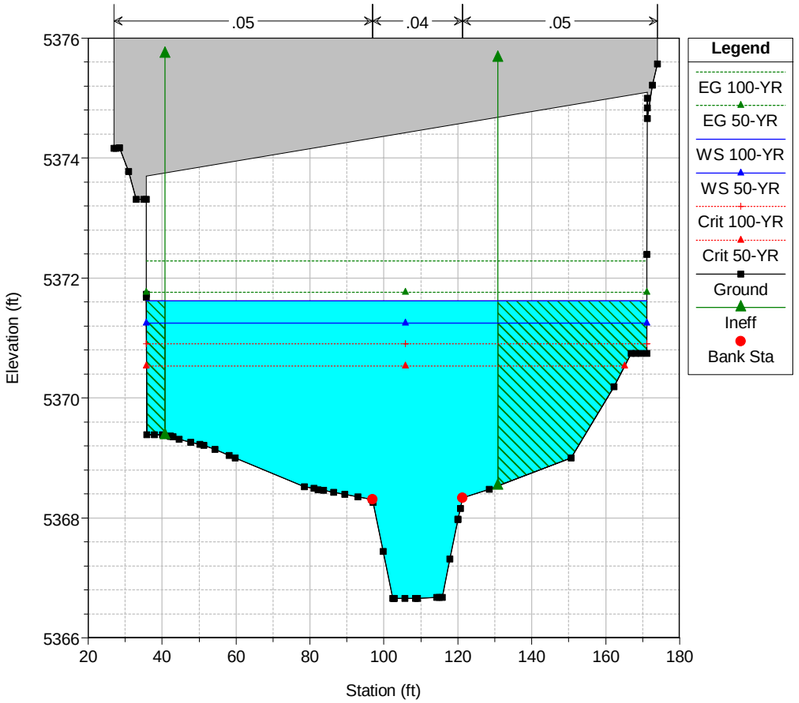
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3202



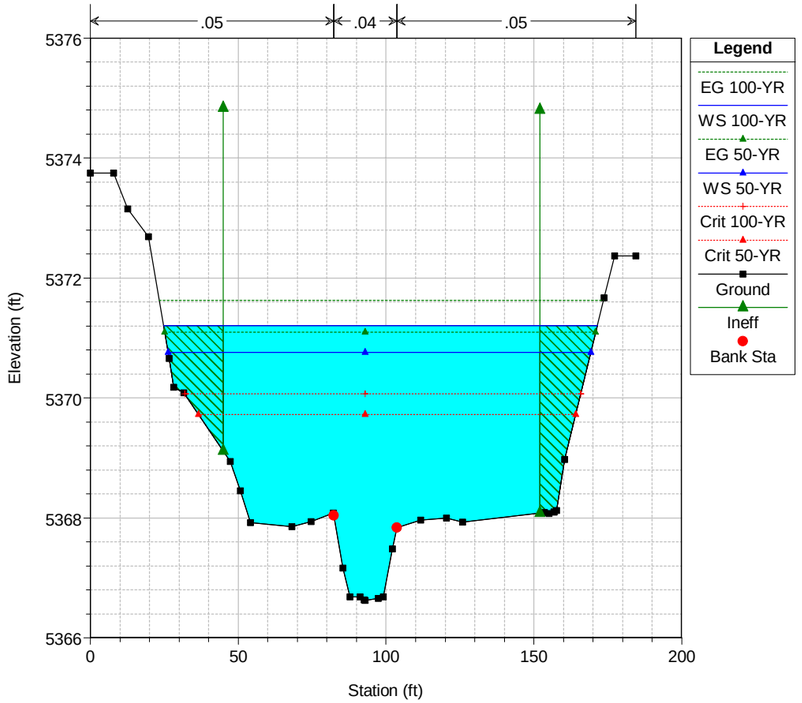
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3154 BR



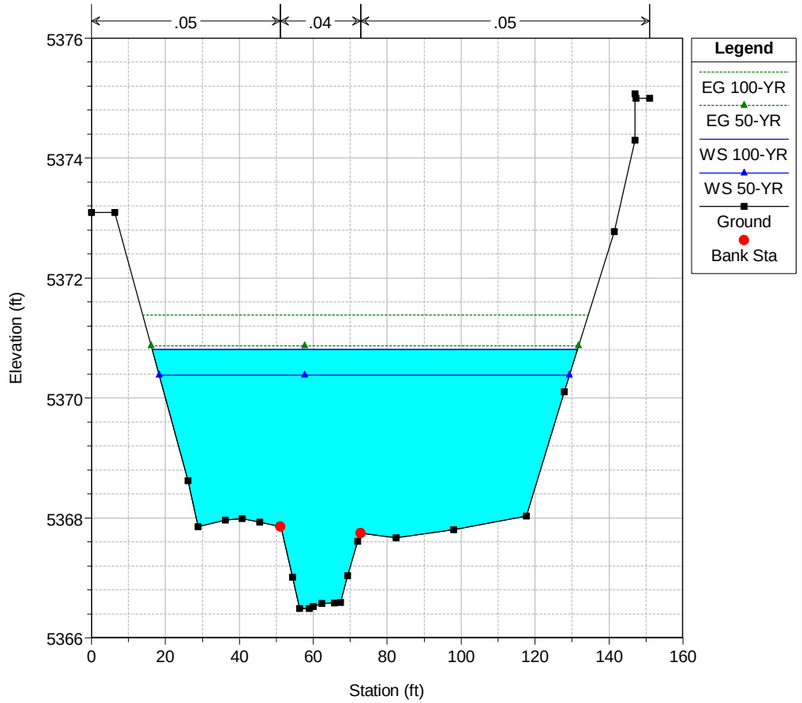
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3119



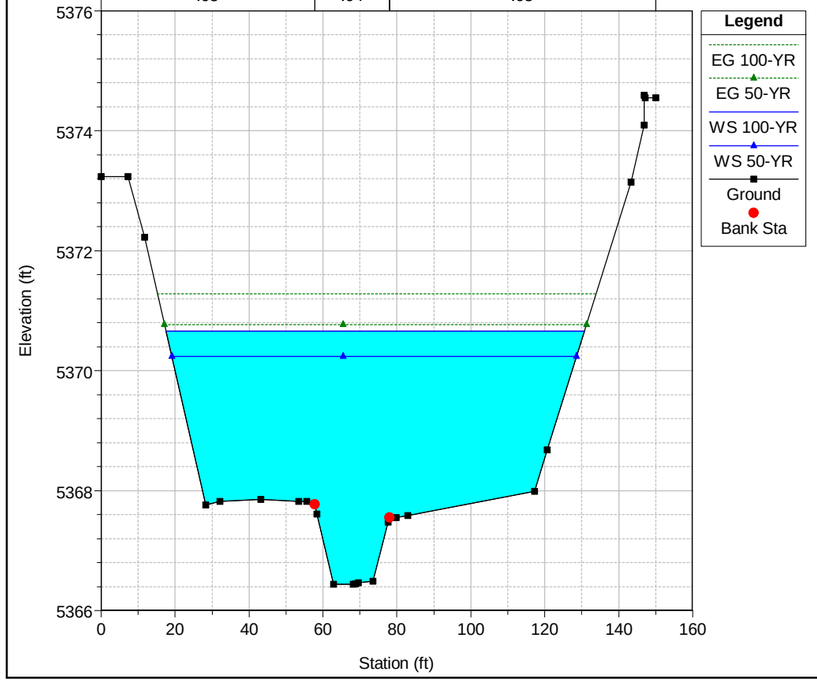
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3085



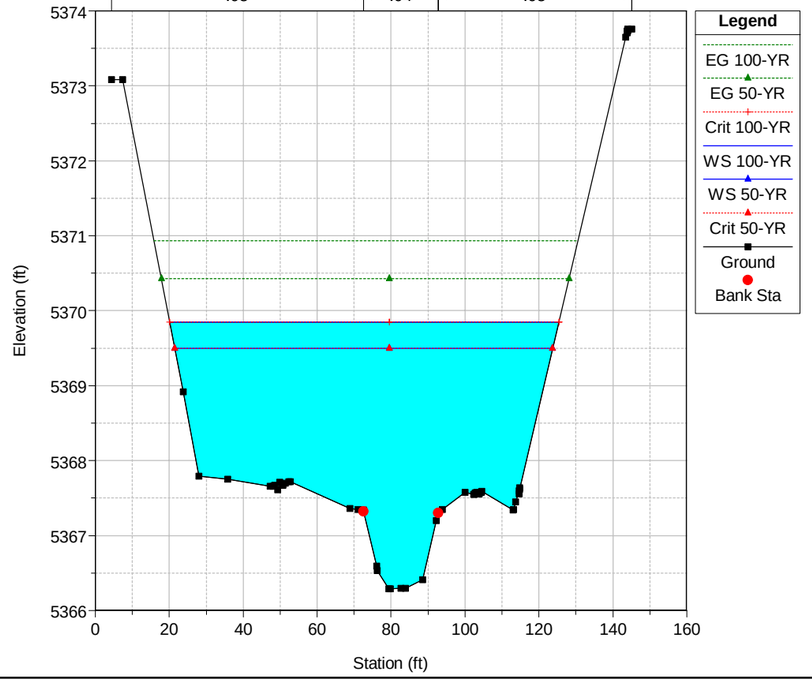
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3072



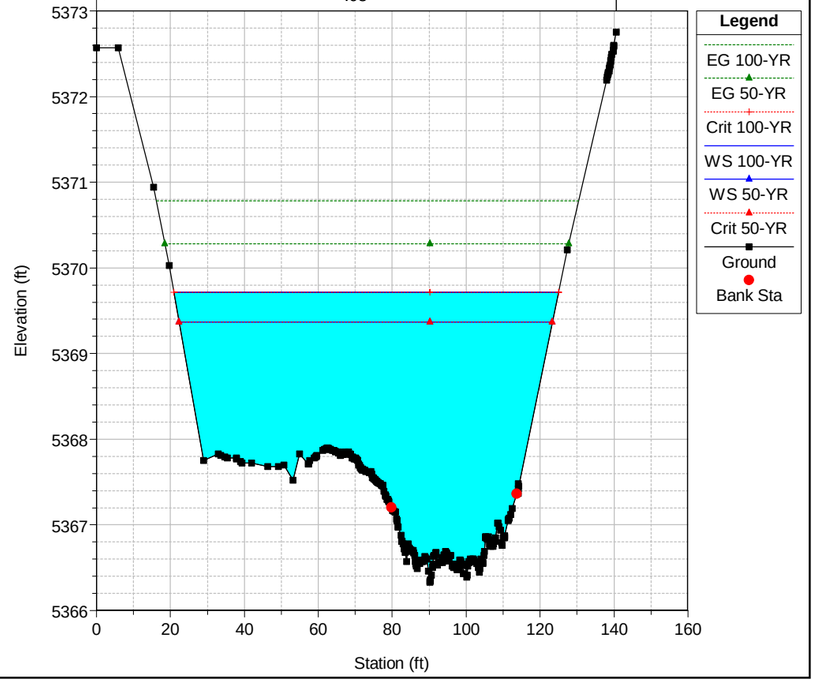
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3045



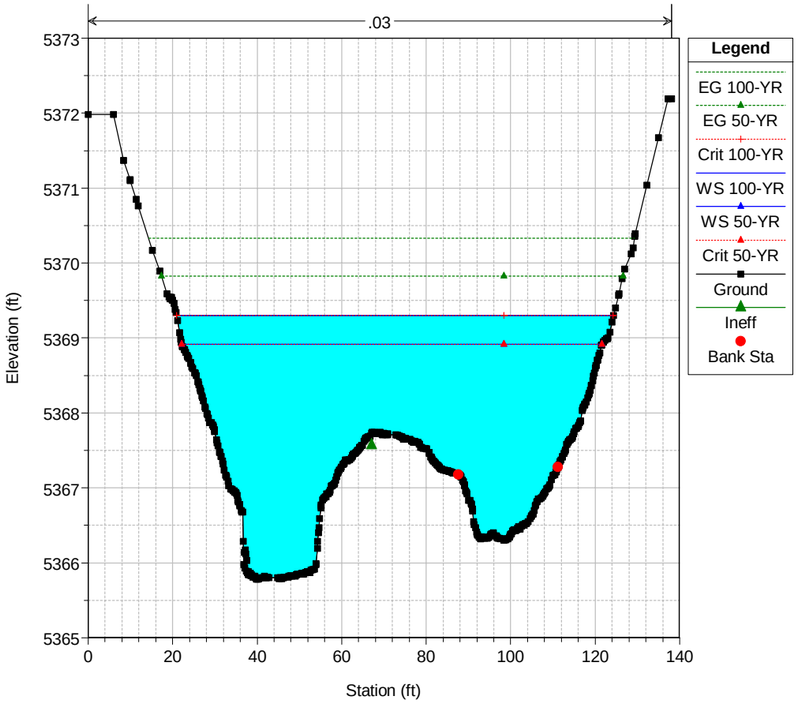
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3034



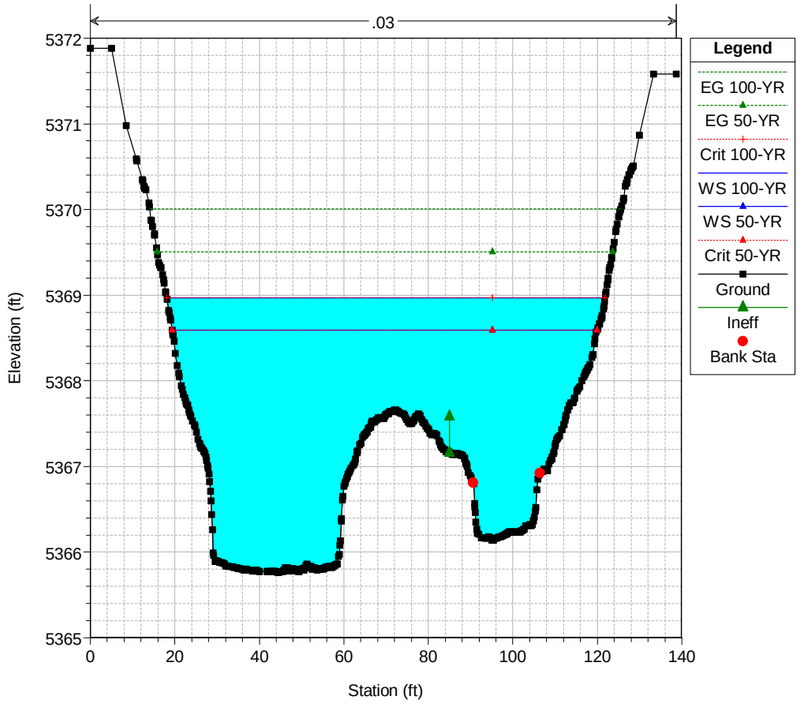
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3019



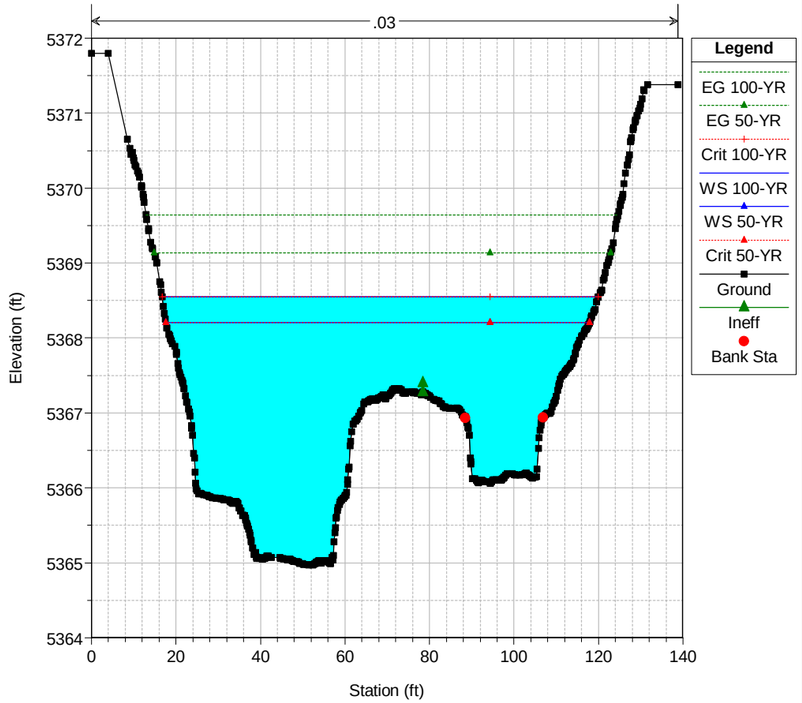
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3014



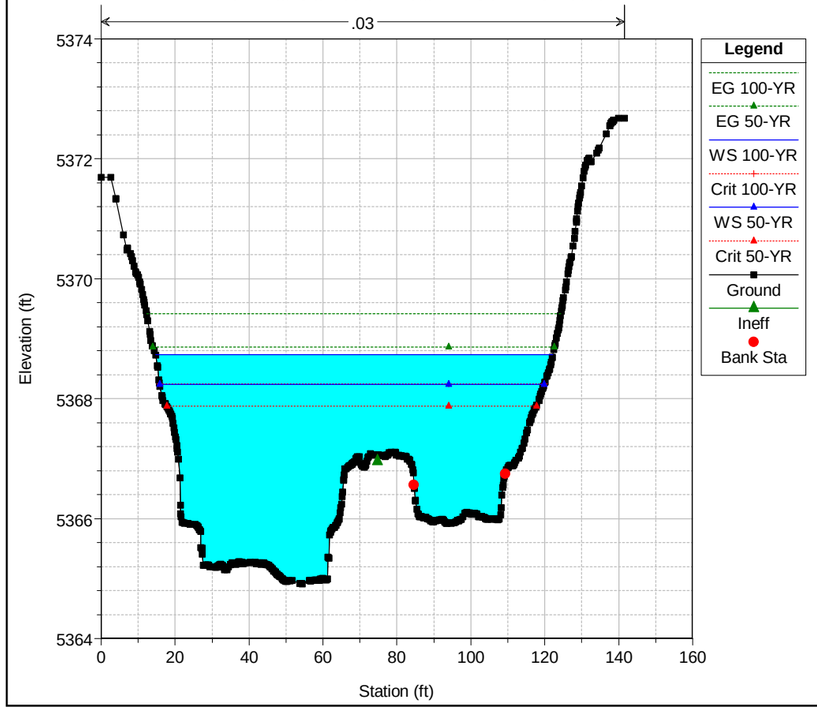
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3011



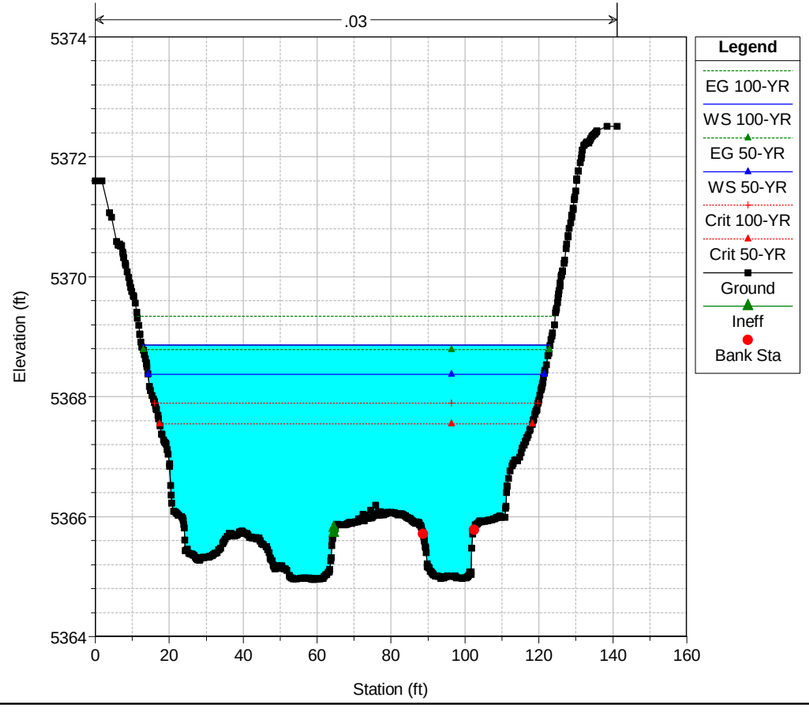
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3006



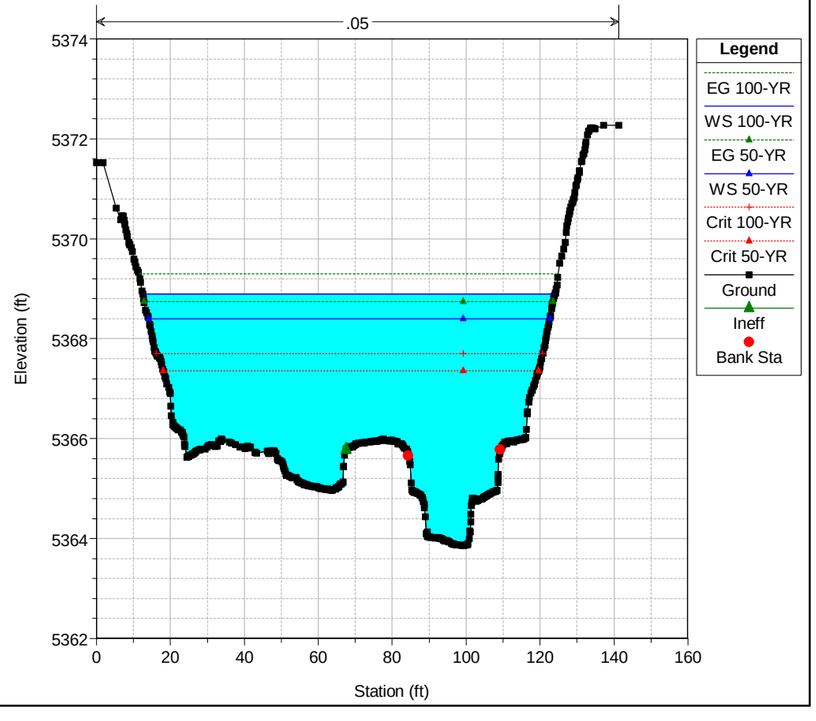
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 3003



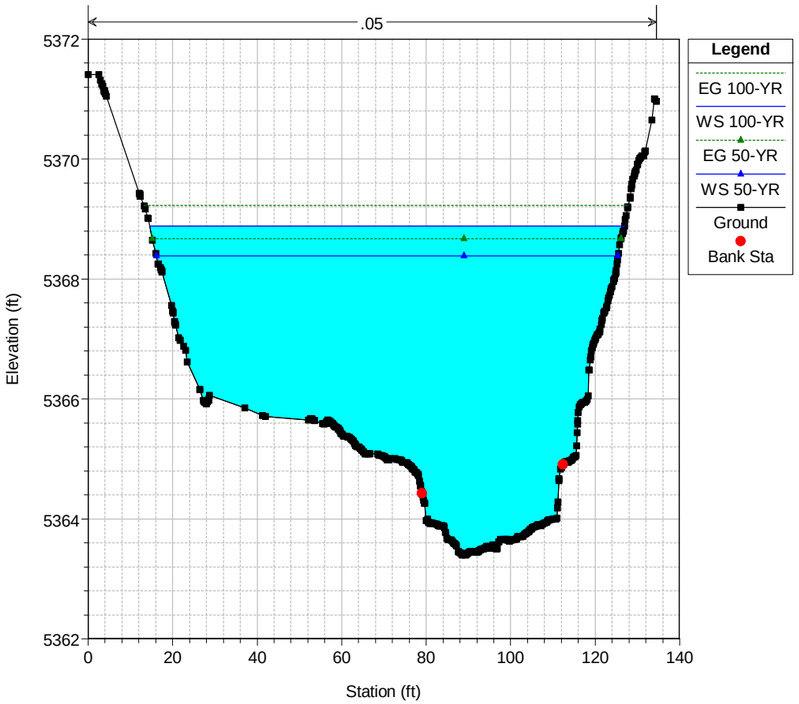
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2999



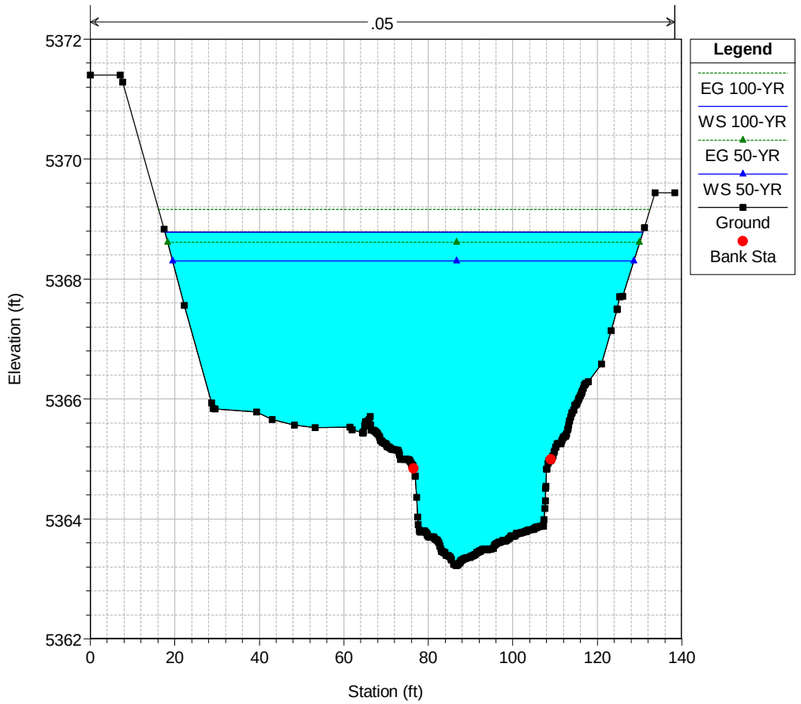
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2987



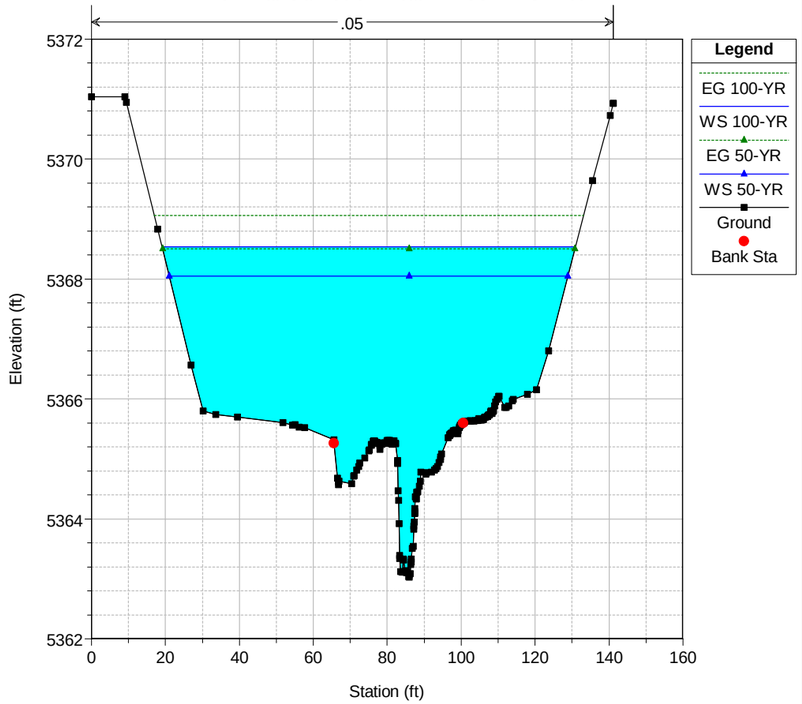
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2972



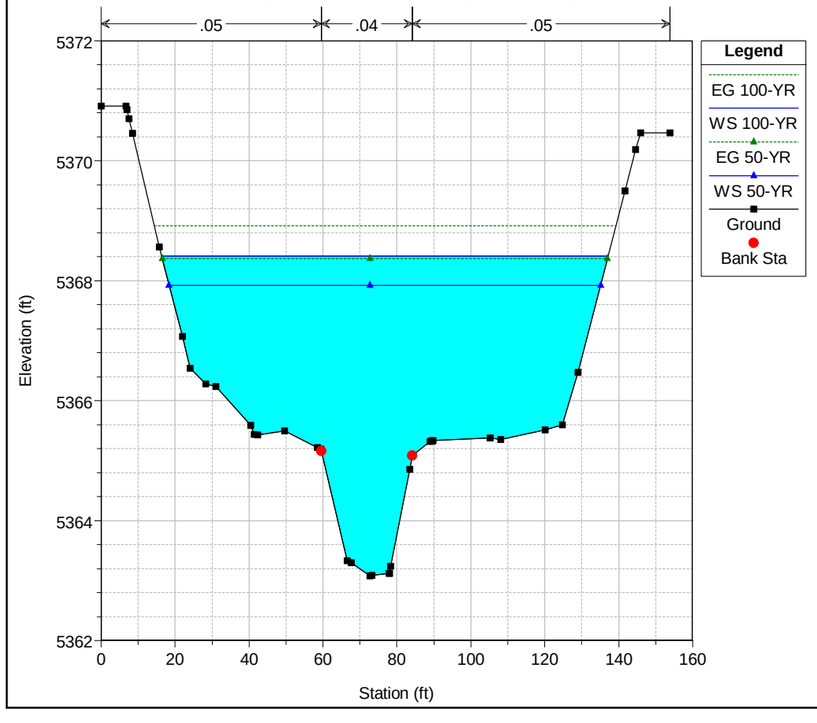
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2957



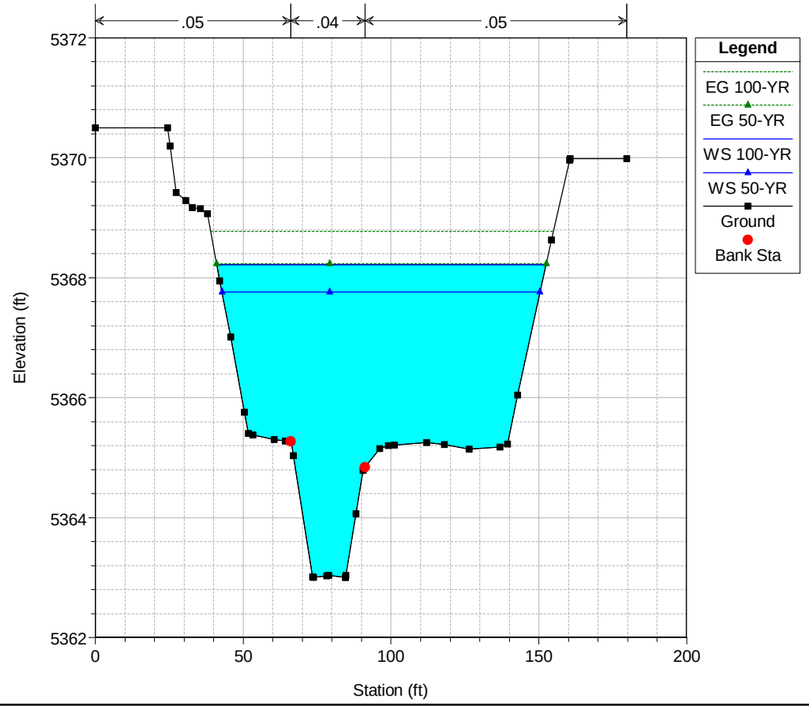
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2936



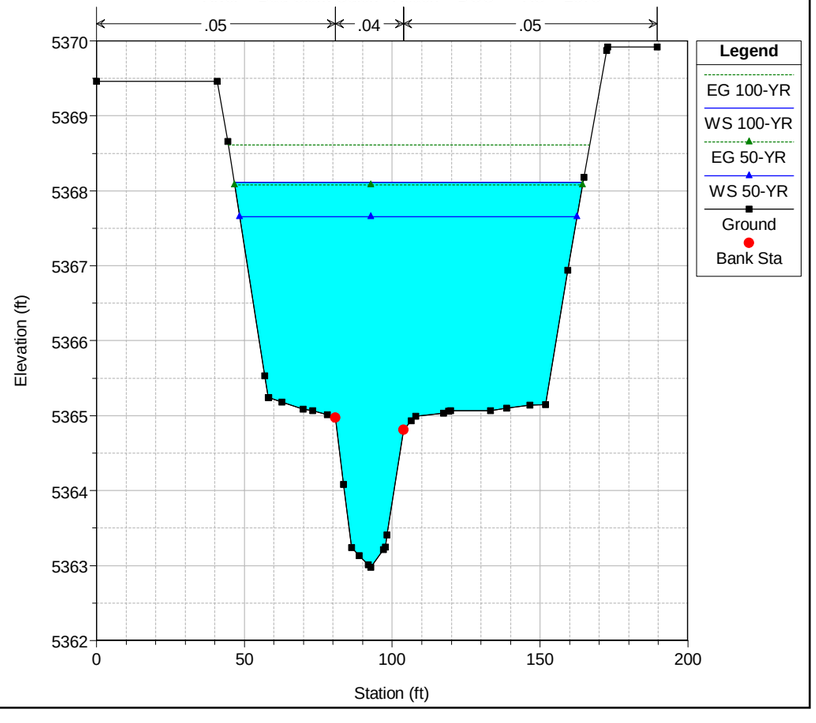
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2908



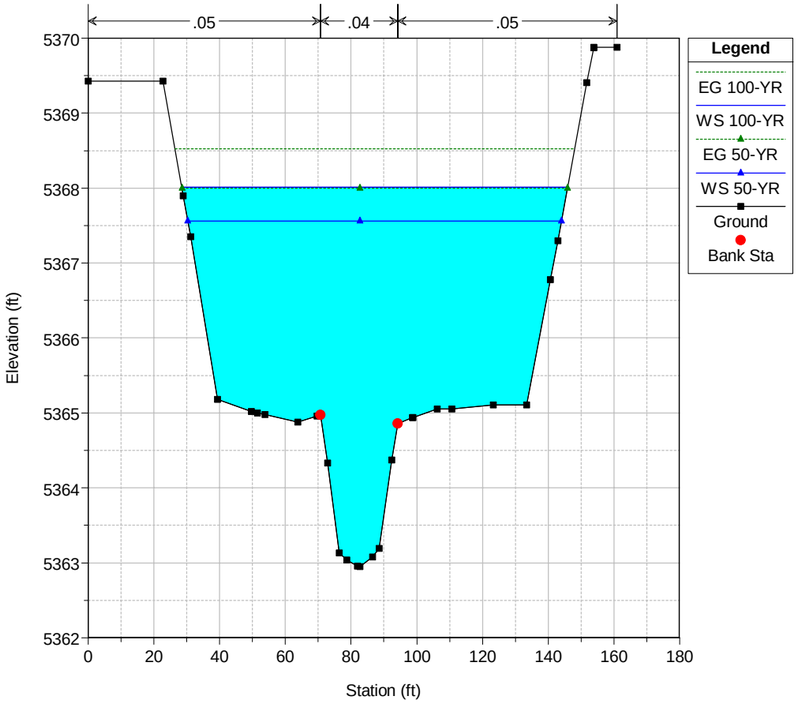
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2878



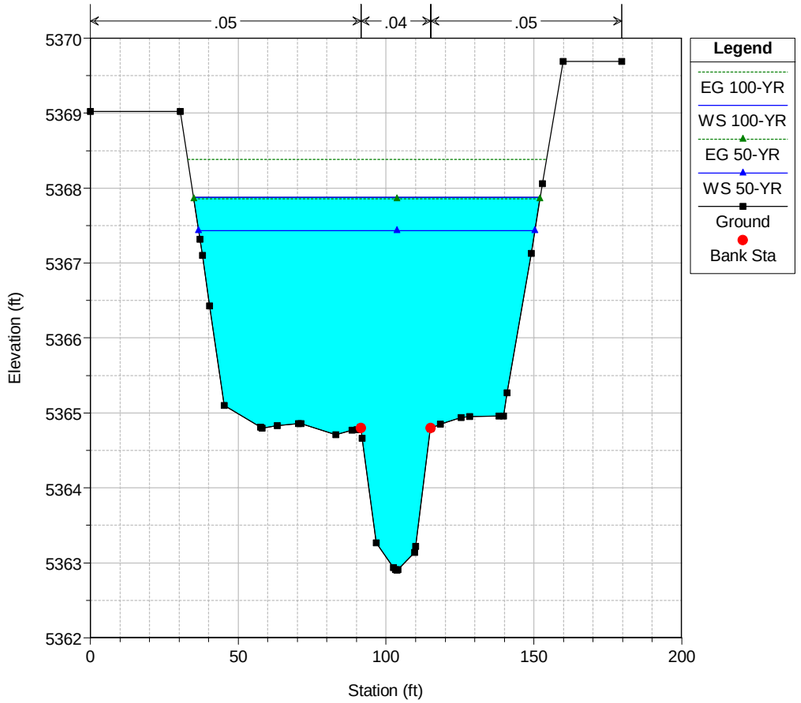
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2861



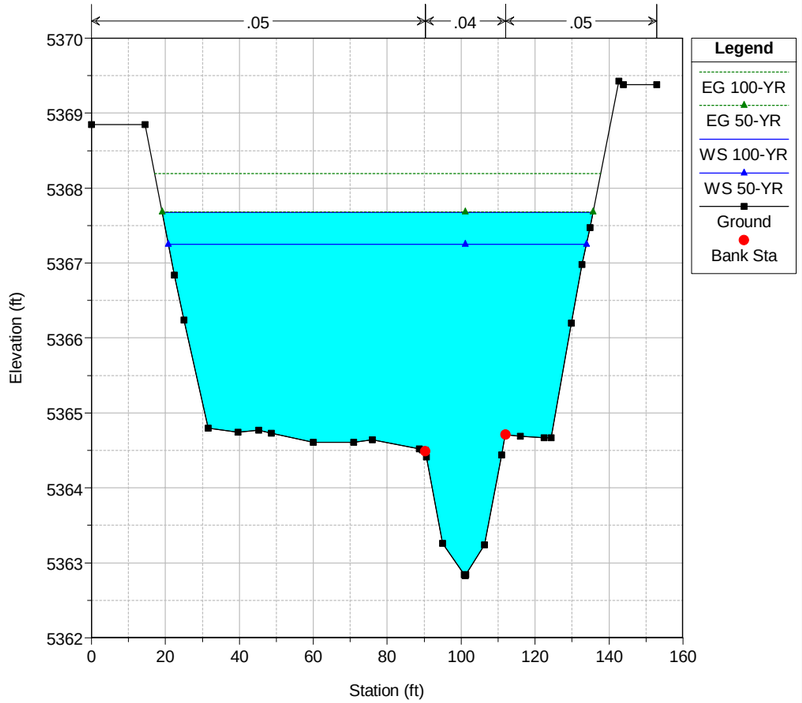
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2836



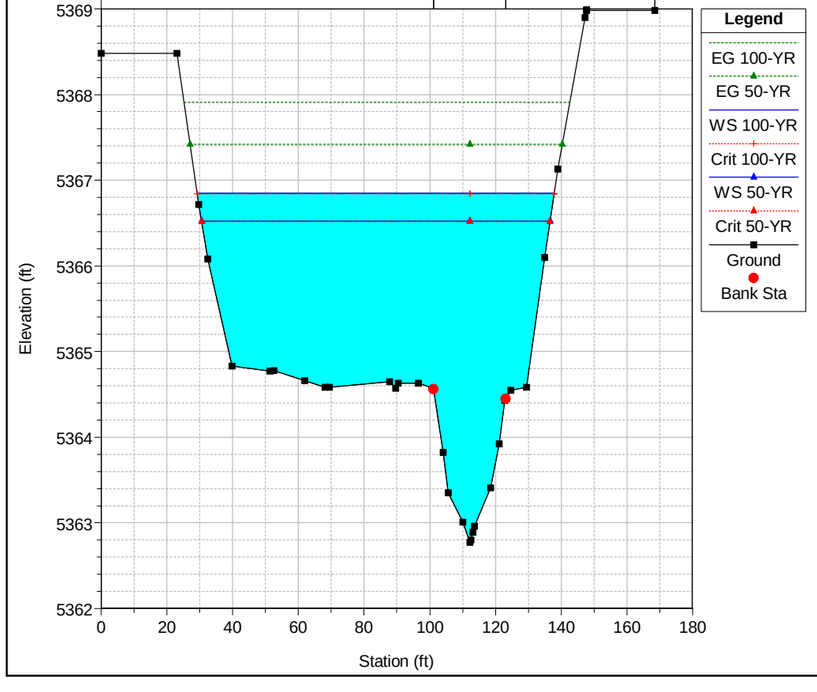
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2804



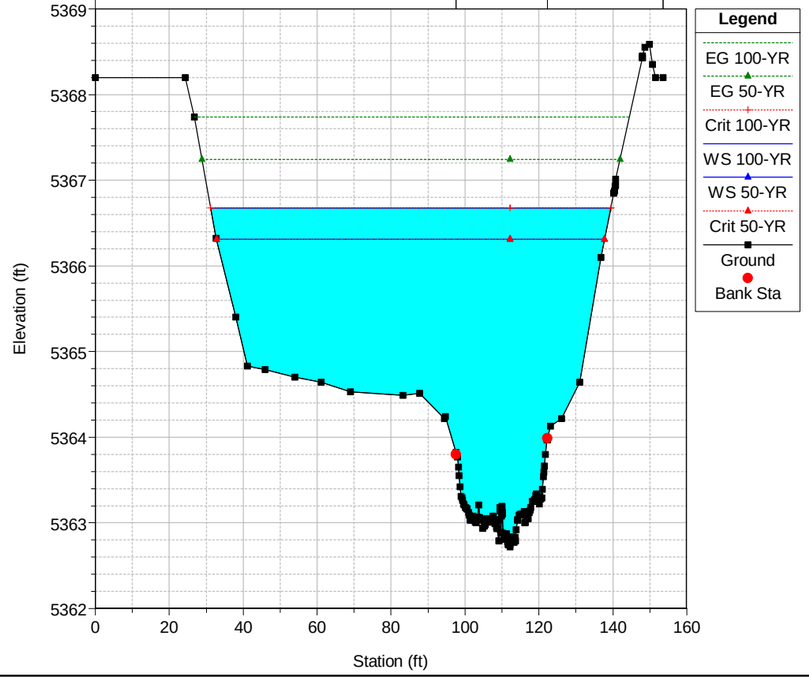
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2777



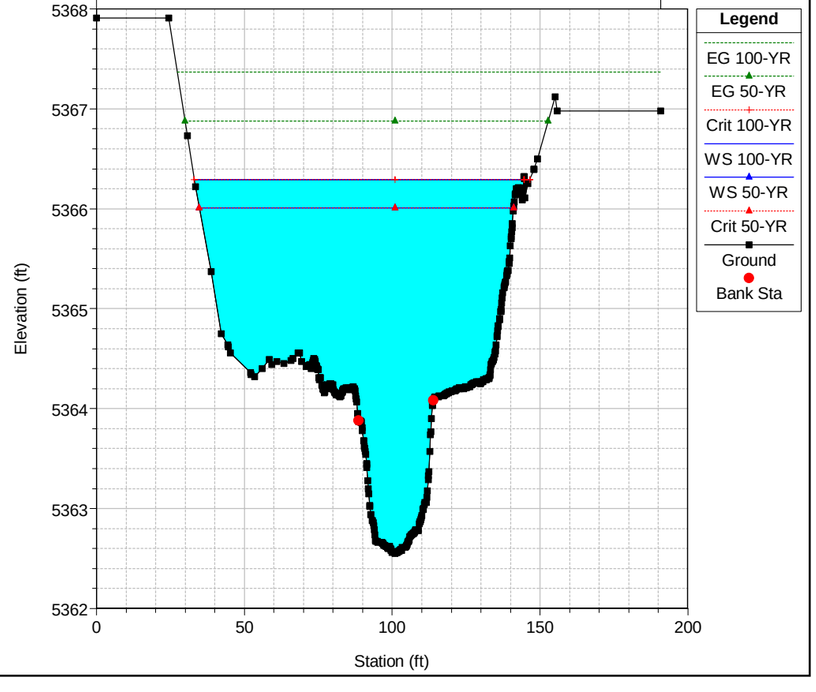
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2765



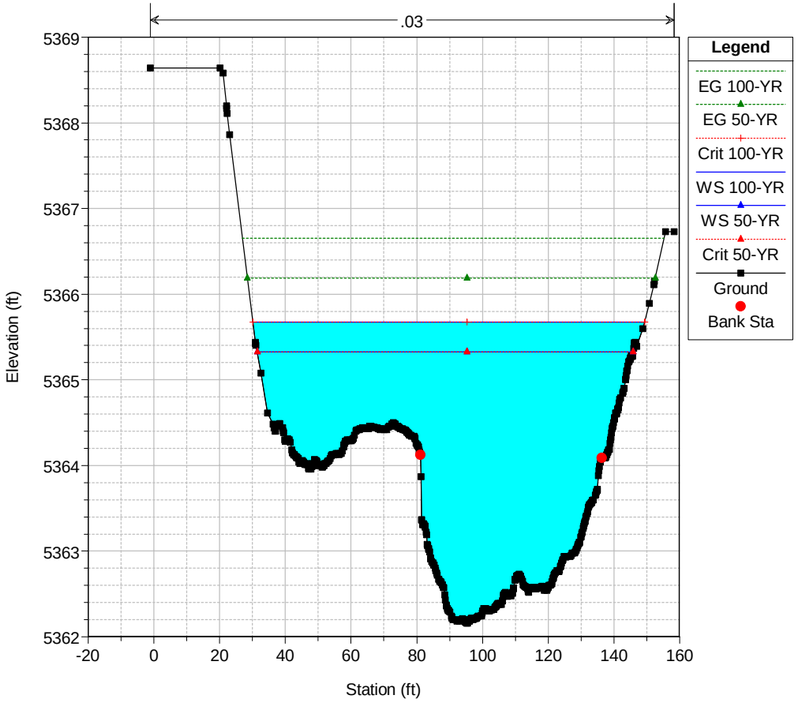
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2747



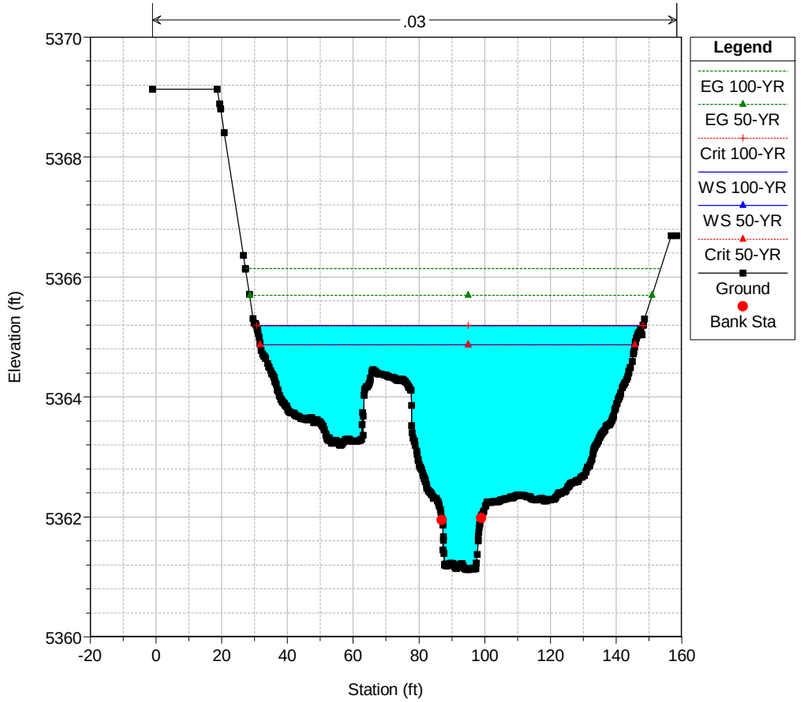
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2735



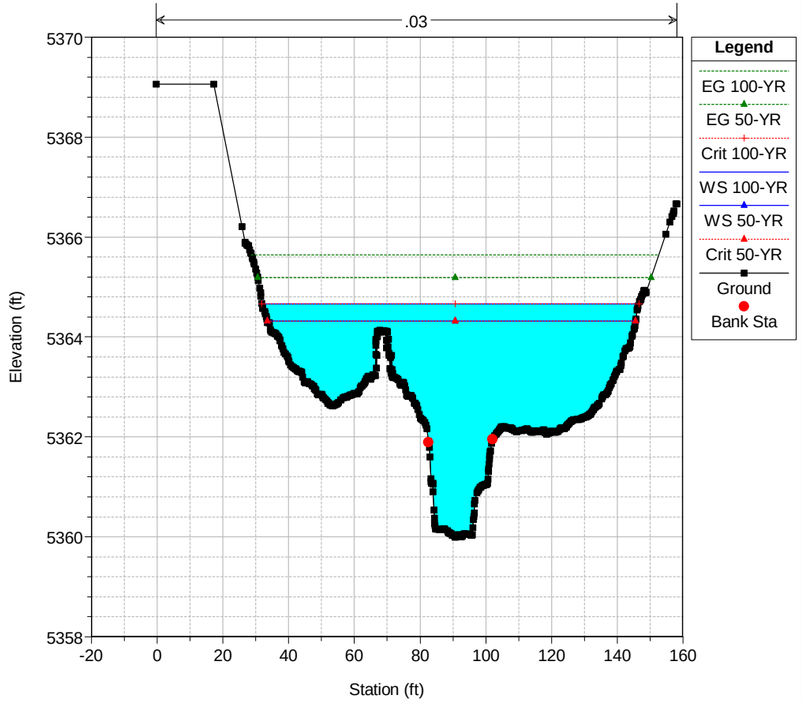
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2731



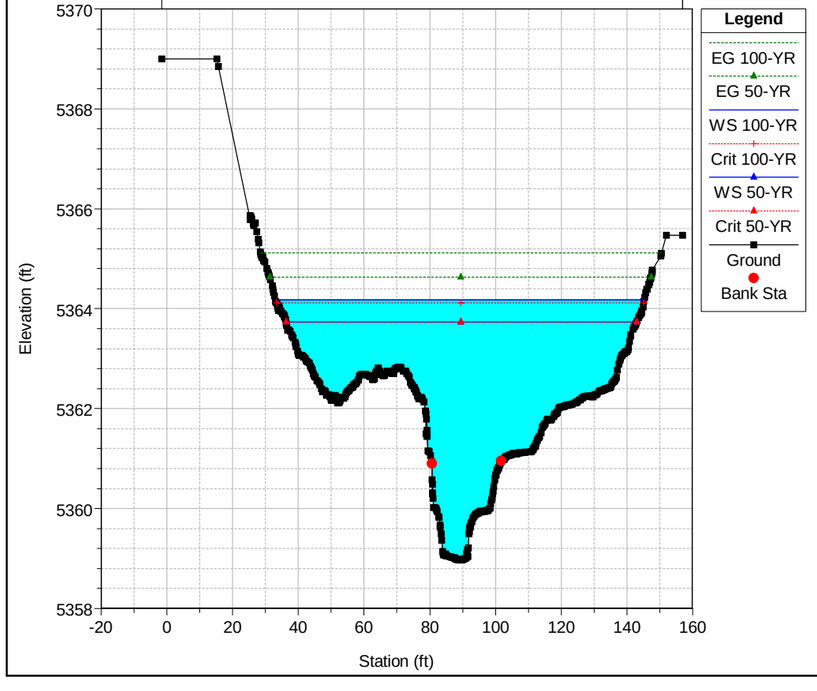
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2726



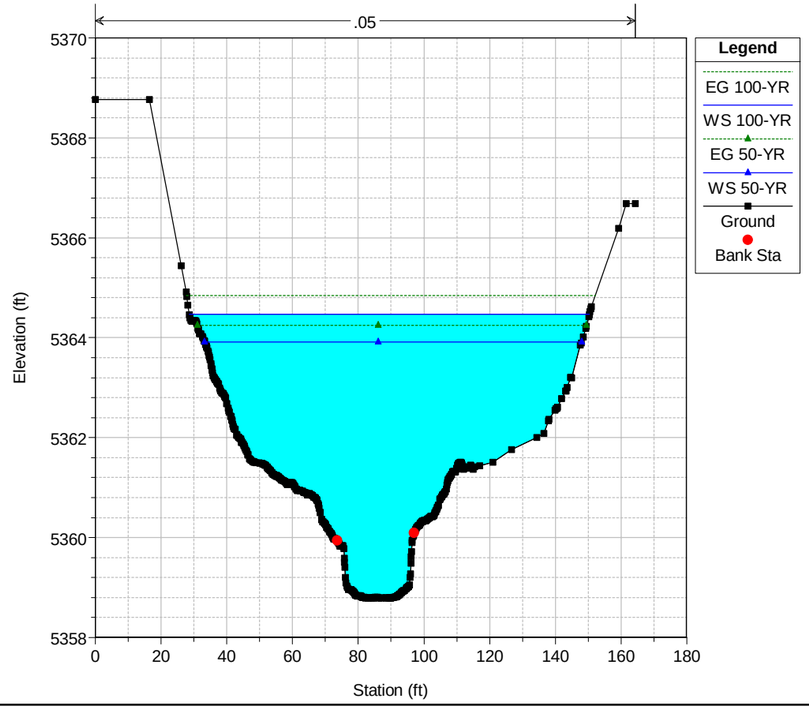
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 2722



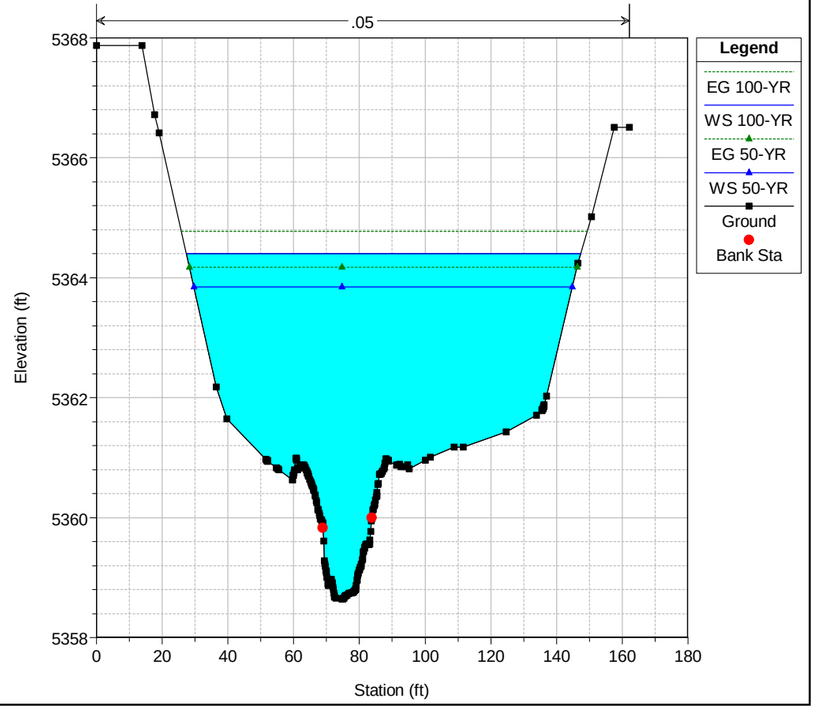
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

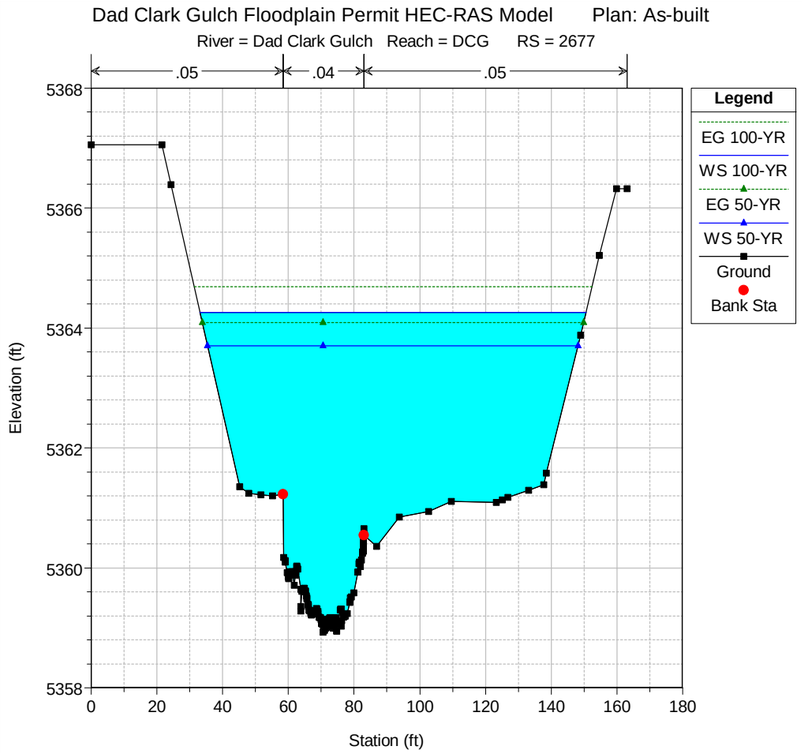
River = Dad Clark Gulch Reach = DCG RS = 2709

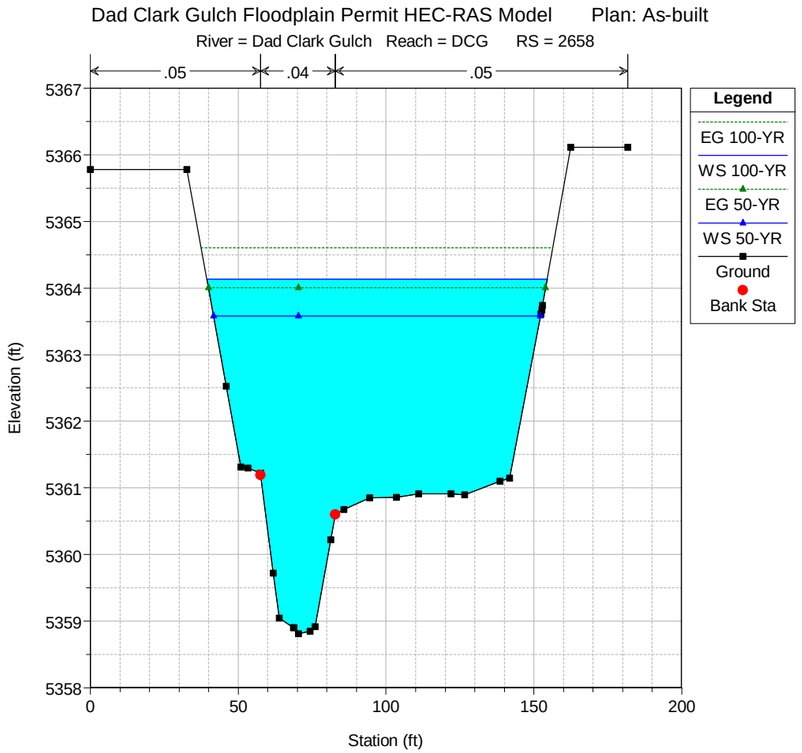


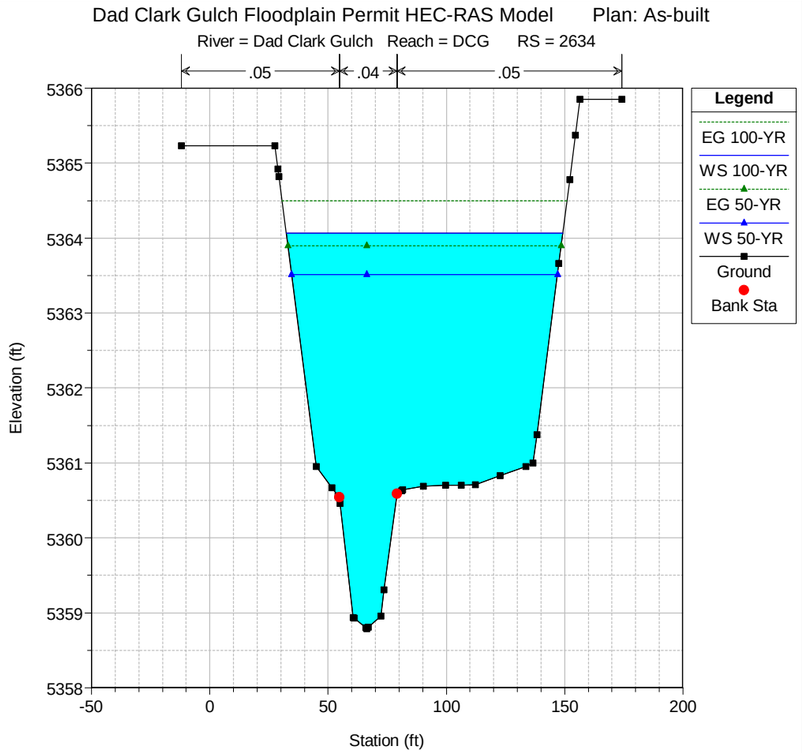
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

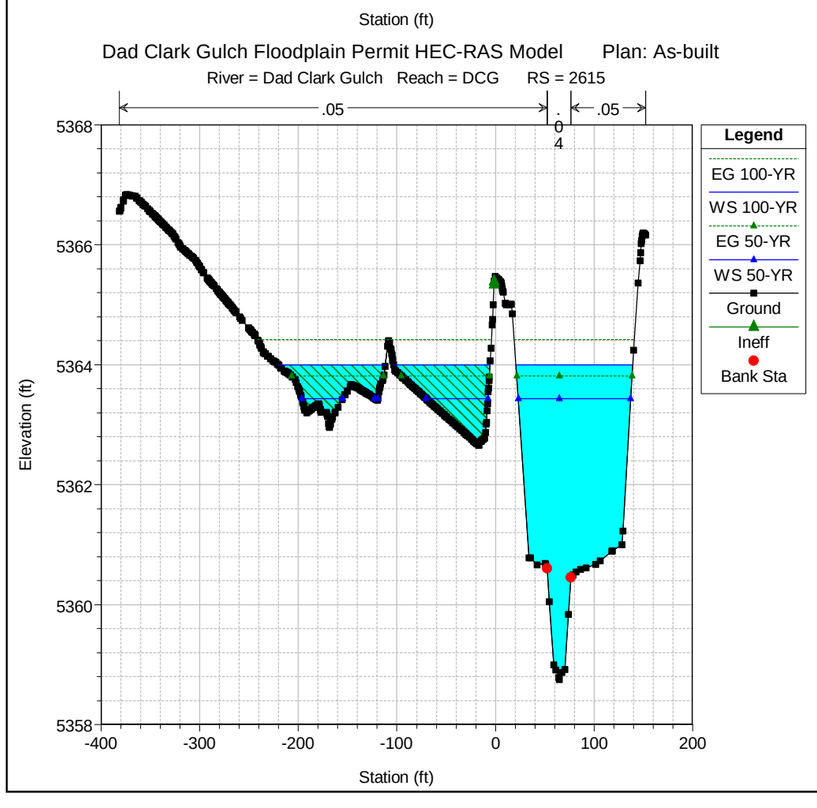
River = Dad Clark Gulch Reach = DCG RS = 2694

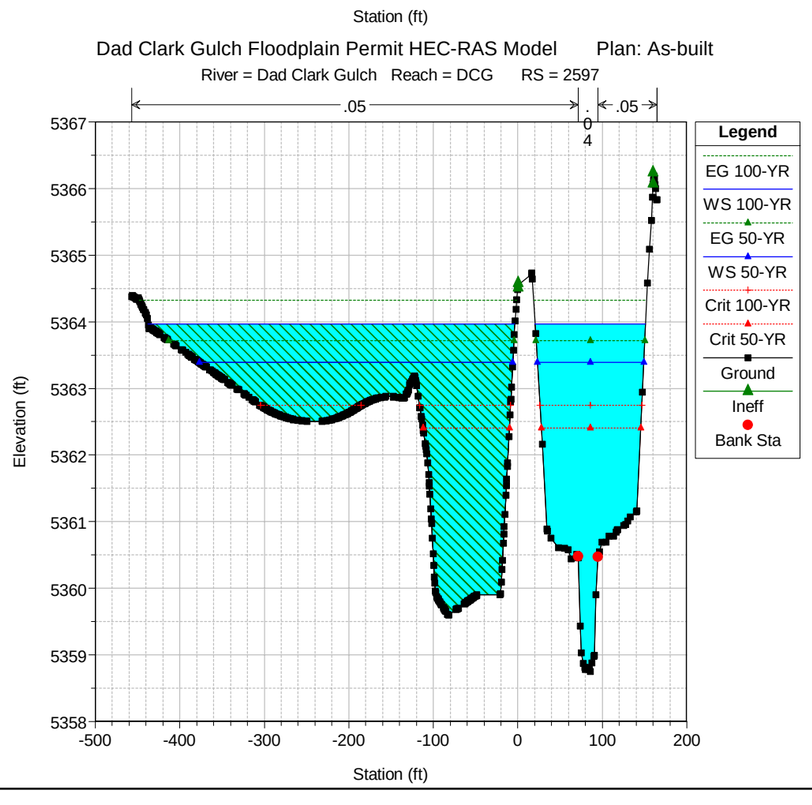


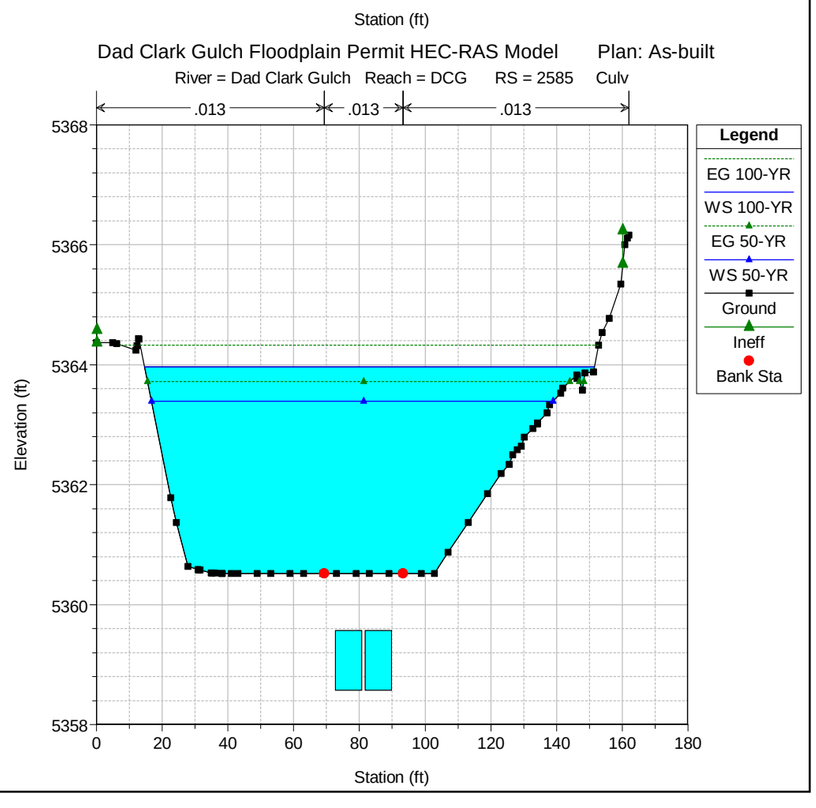

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2677
.05
.04
.05
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

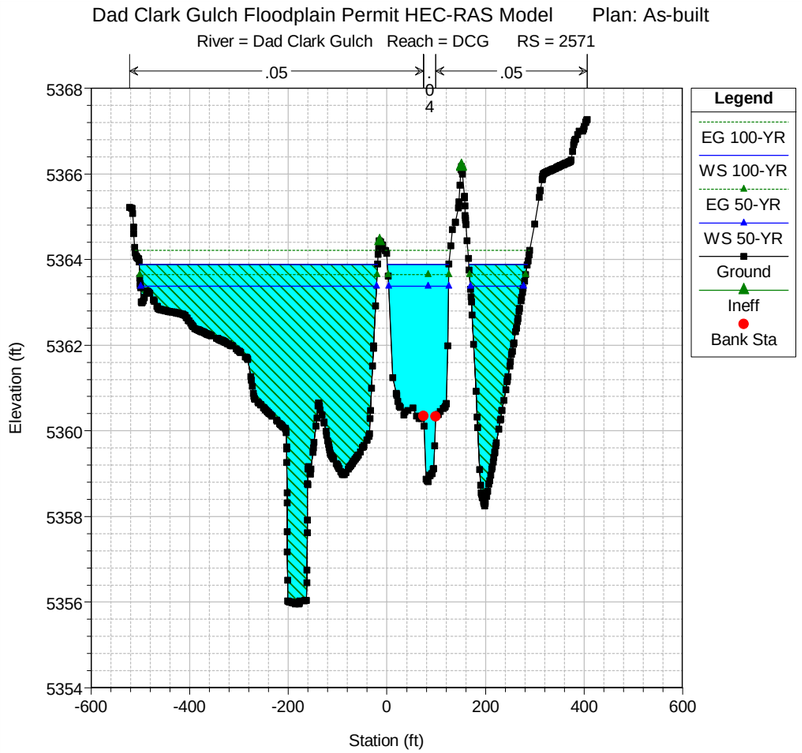

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2658
.05
.04
.05
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

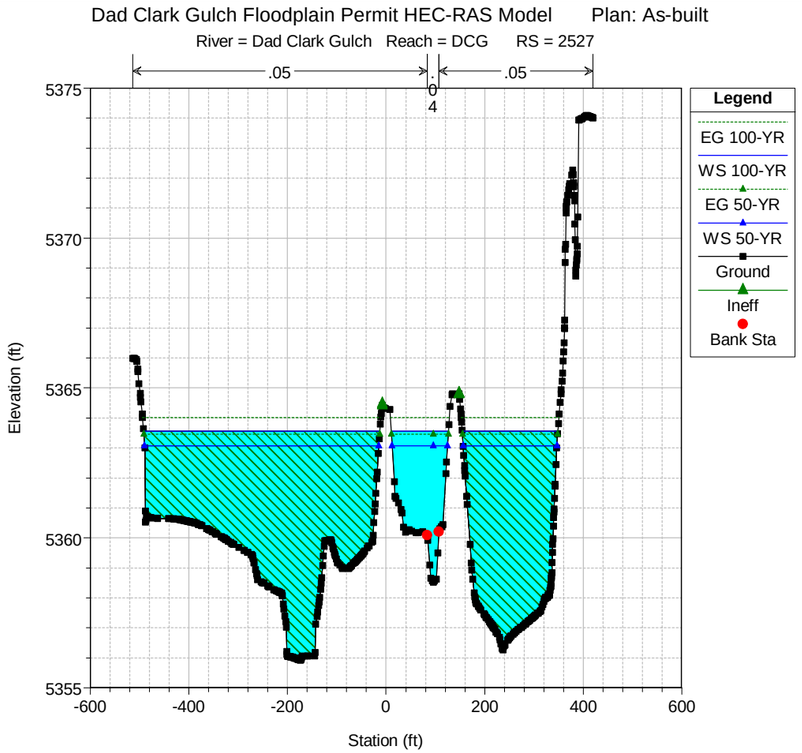

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2634
.05
.04
.05
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

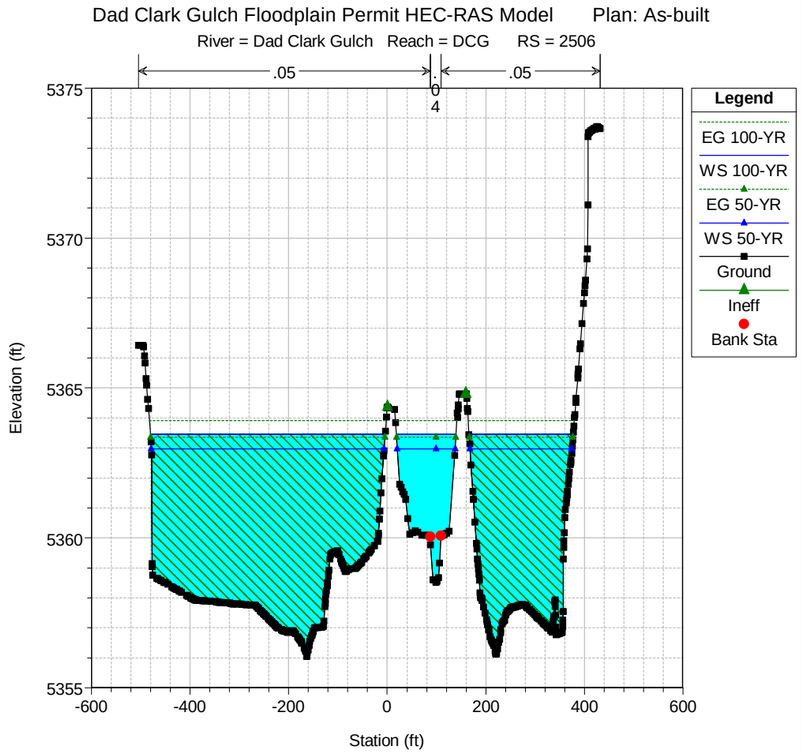

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2615
.05
.04
.05
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

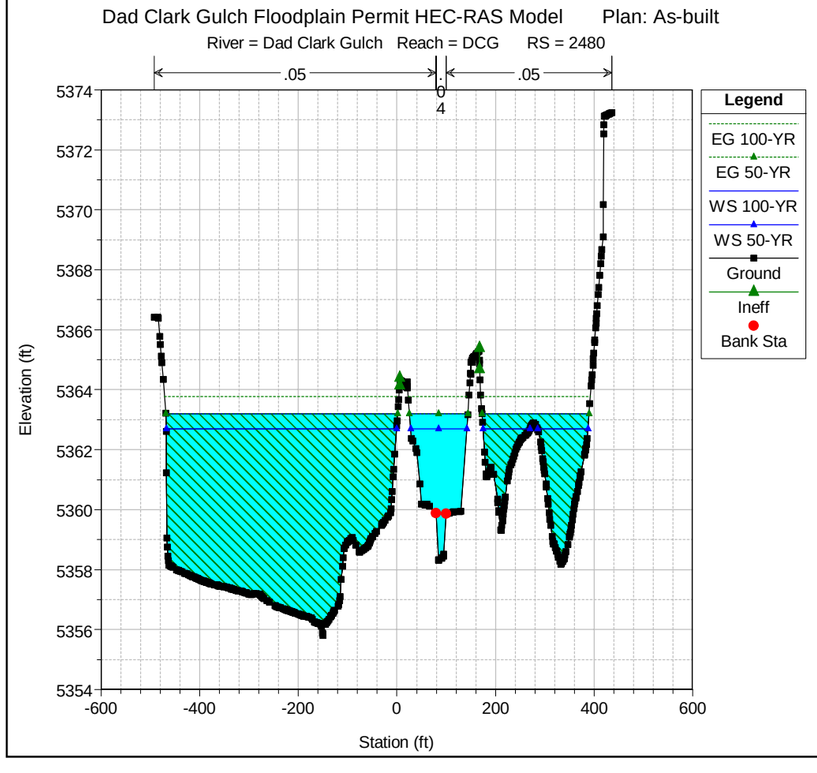

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2597
.05
.04
.05
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Crit 100-YR
Crit 50-YR
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

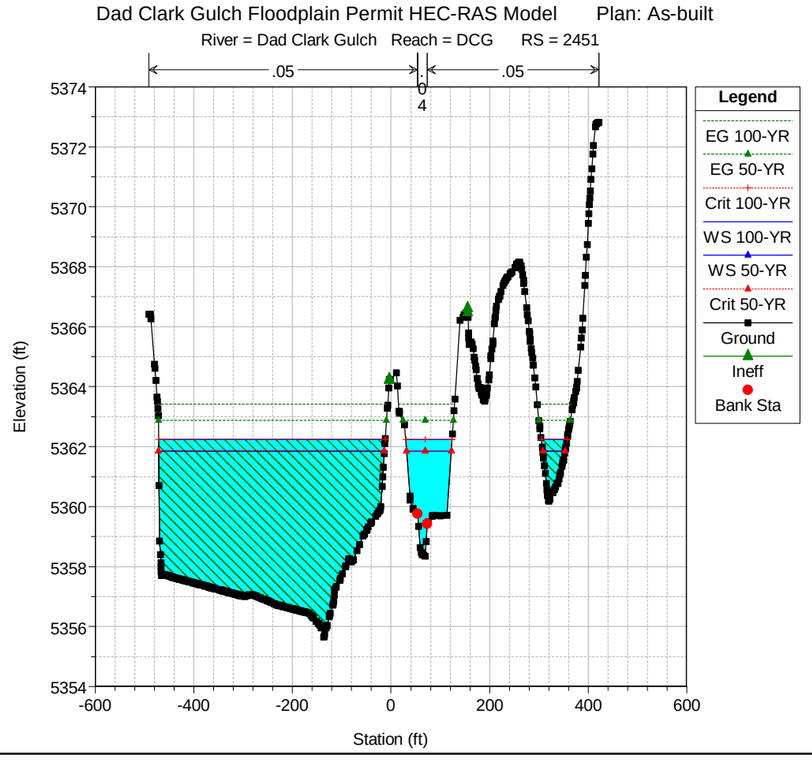

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2585 Culv
.013
.013
.013
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

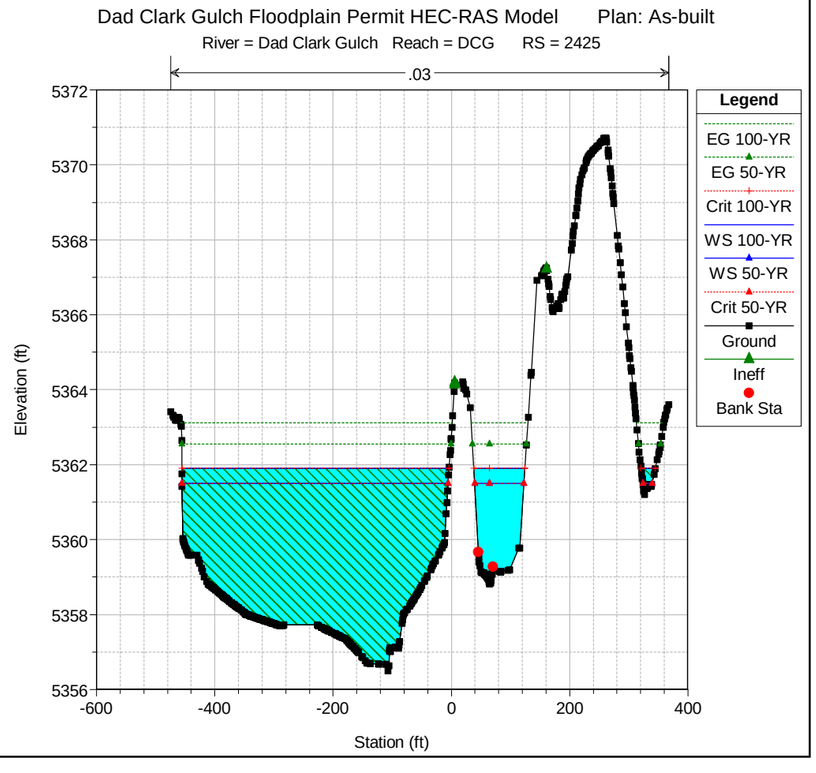

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2571
.05
.05
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

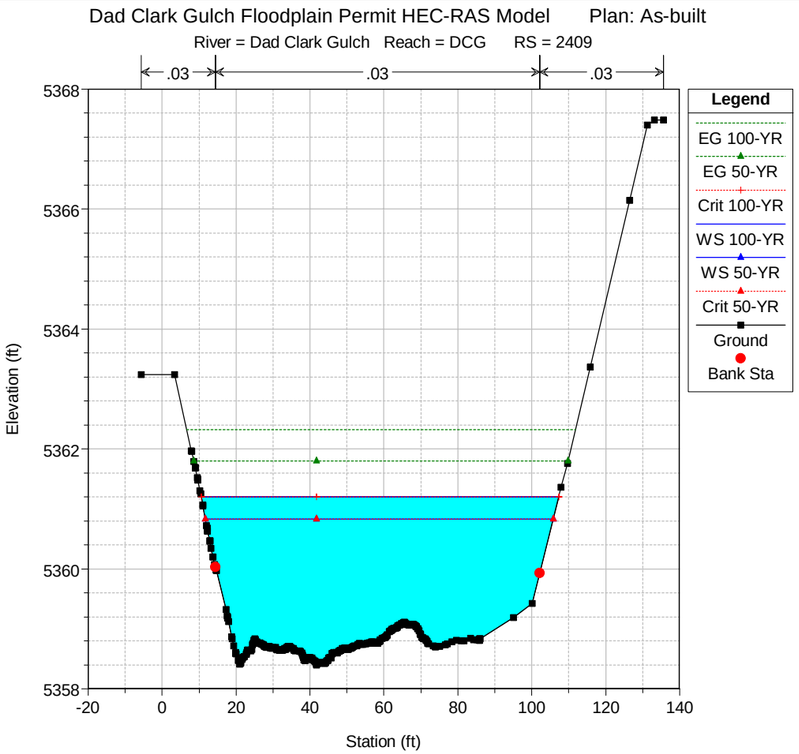

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2527
.05
.05
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

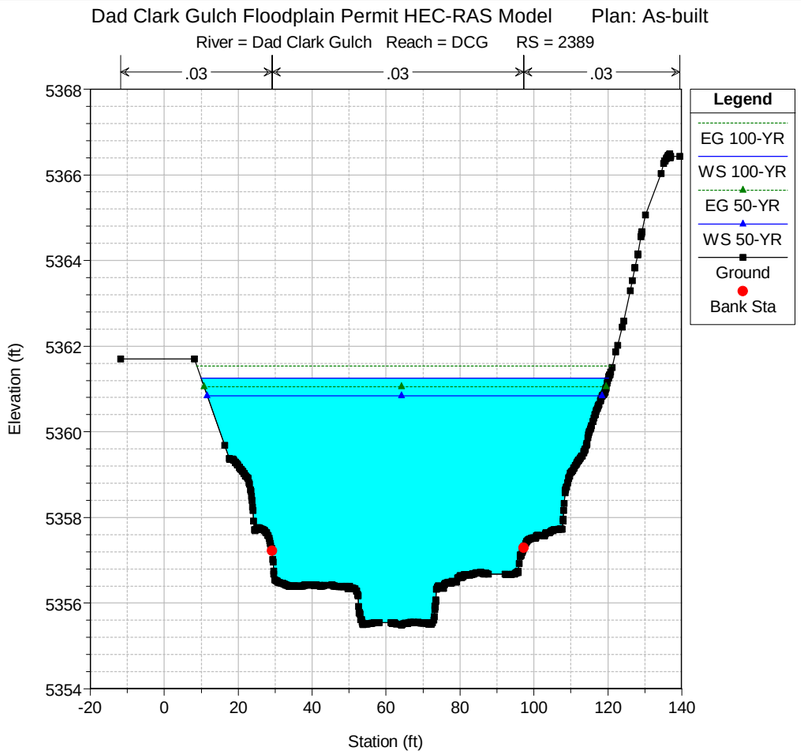

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2506
.05
.05
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

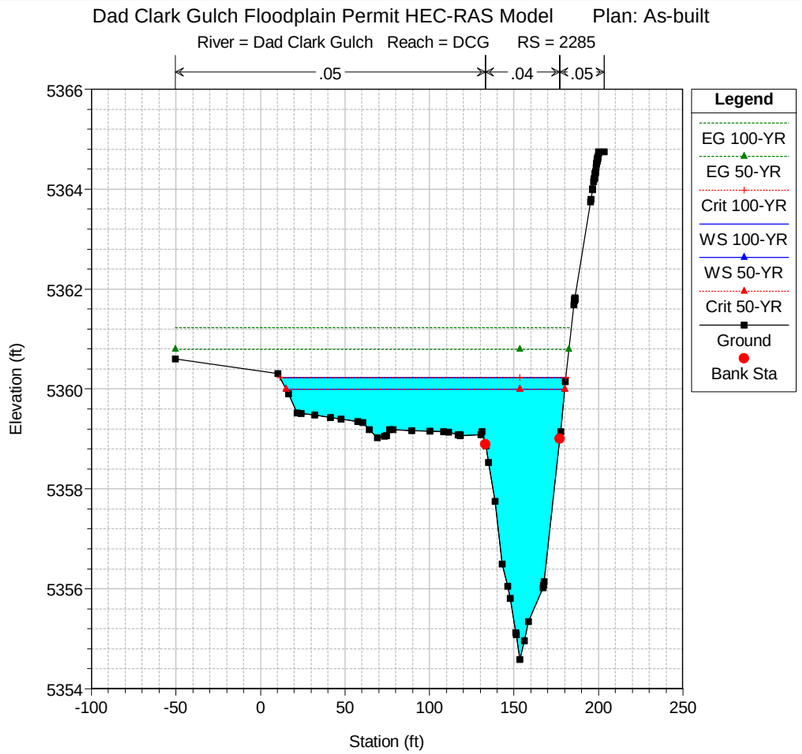

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2480
.05
.05
Legend
EG 100-YR
EG 50-YR
WS 100-YR
WS 50-YR
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

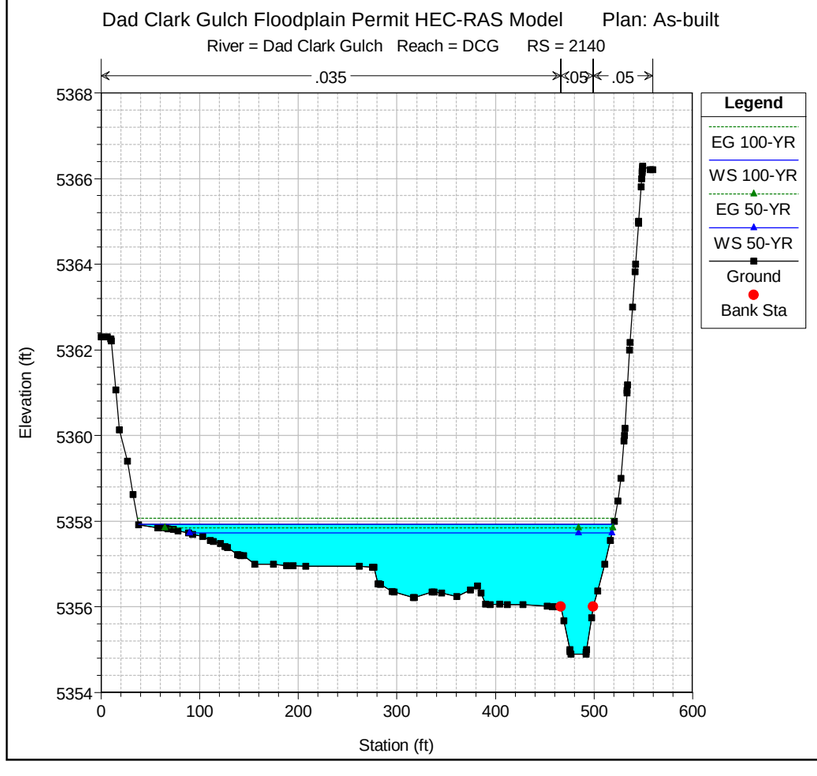

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2451
.05
.05
Legend
EG 100-YR
EG 50-YR
Crit 100-YR
WS 100-YR
WS 50-YR
Crit 50-YR
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

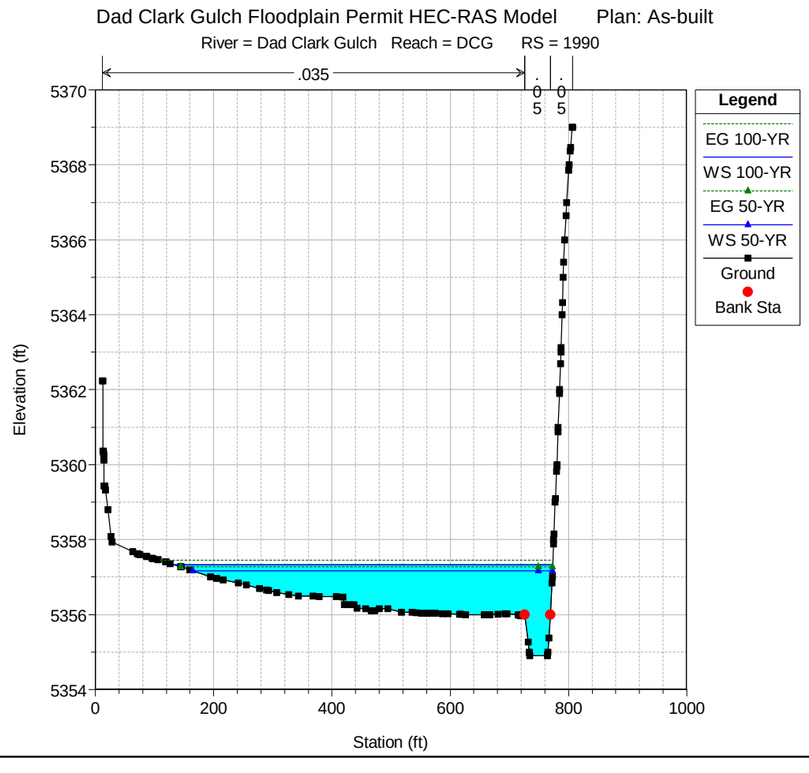

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2425
.03
Legend
EG 100-YR
EG 50-YR
Crit 100-YR
WS 100-YR
WS 50-YR
Crit 50-YR
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

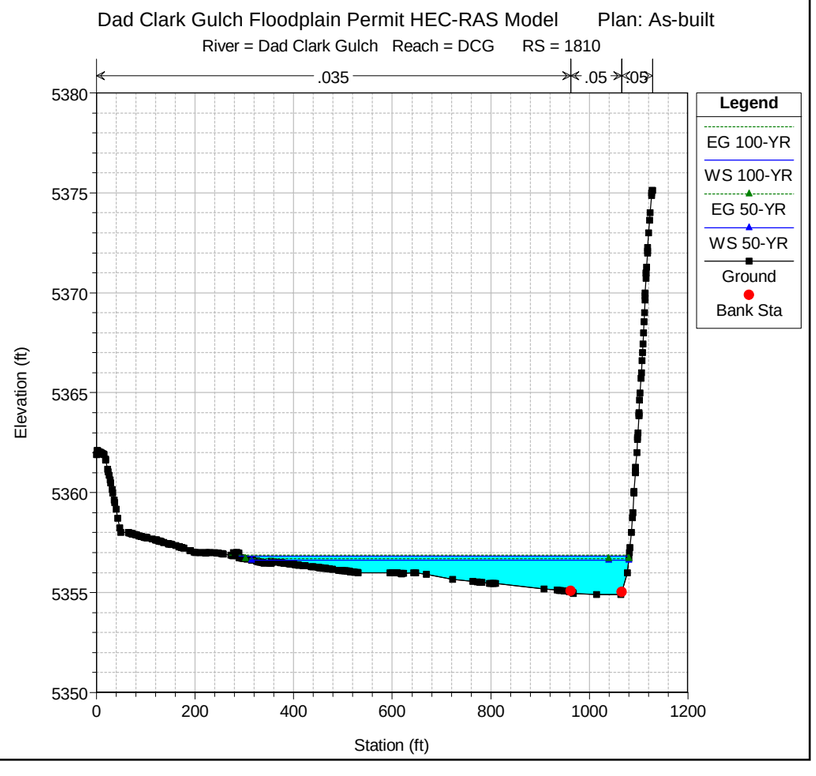

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2409
.03
.03
.03
Legend
EG 100-YR
EG 50-YR
Crit 100-YR
WS 100-YR
WS 50-YR
Crit 50-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2389
.03
.03
.03
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2285
.05
.04
.05
Legend
EG 100-YR
EG 50-YR
Crit 100-YR
WS 100-YR
WS 50-YR
Crit 50-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

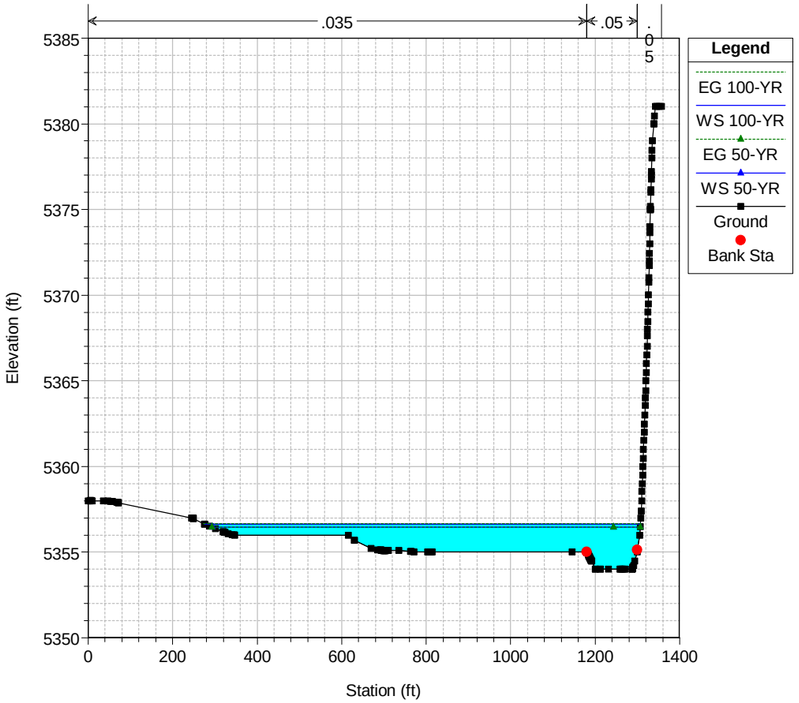

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 2140
.035
.05
.05
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 1990
.035
.05
.05
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built
River = Dad Clark Gulch Reach = DCG RS = 1810
.035
.05
.05
Legend
EG 100-YR
WS 100-YR
EG 50-YR
WS 50-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

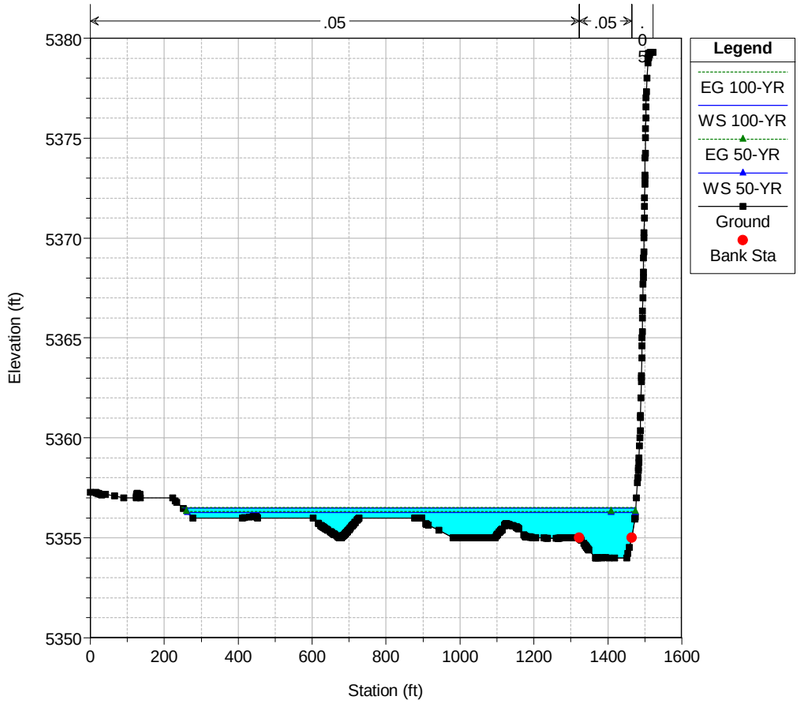
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 1634



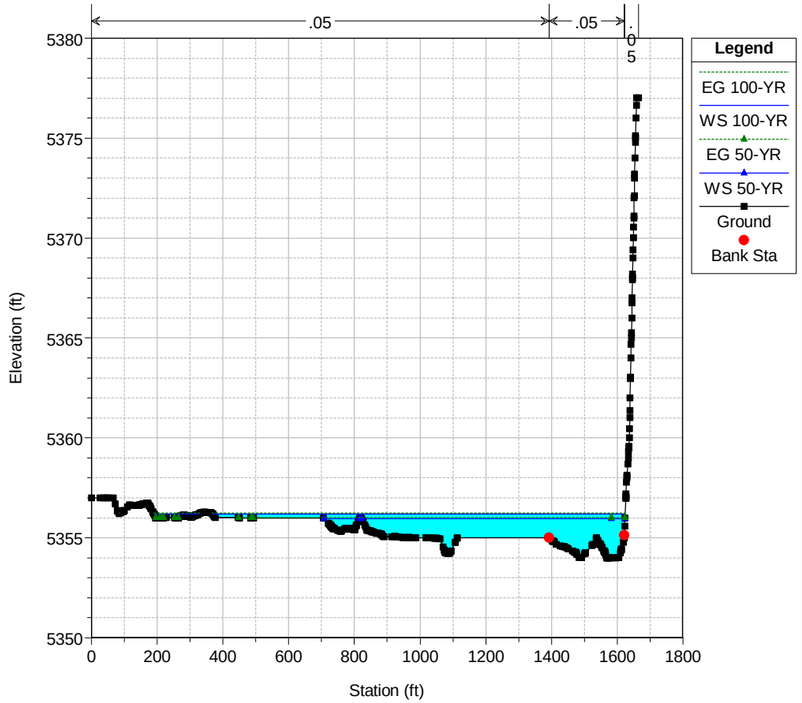
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 1498



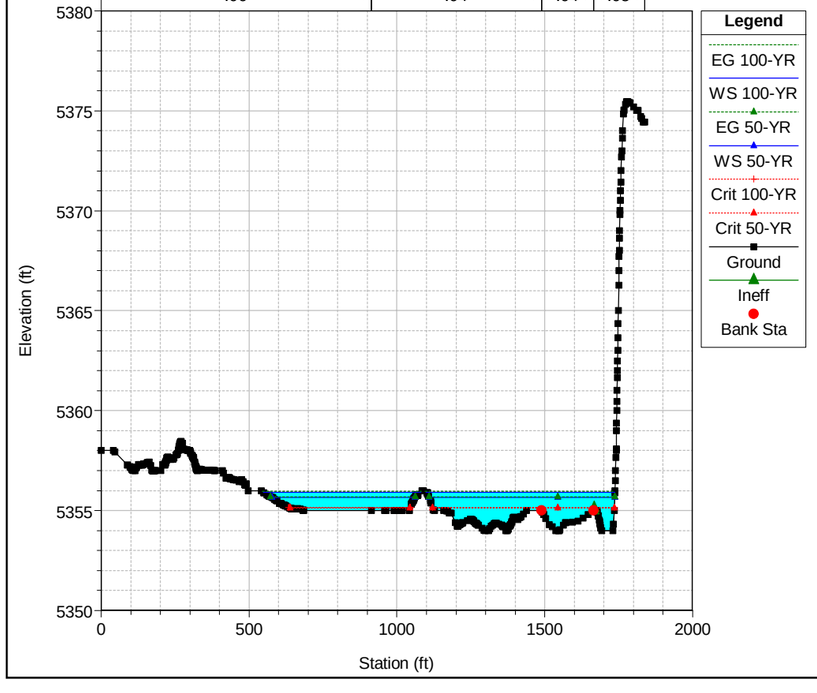
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 1336



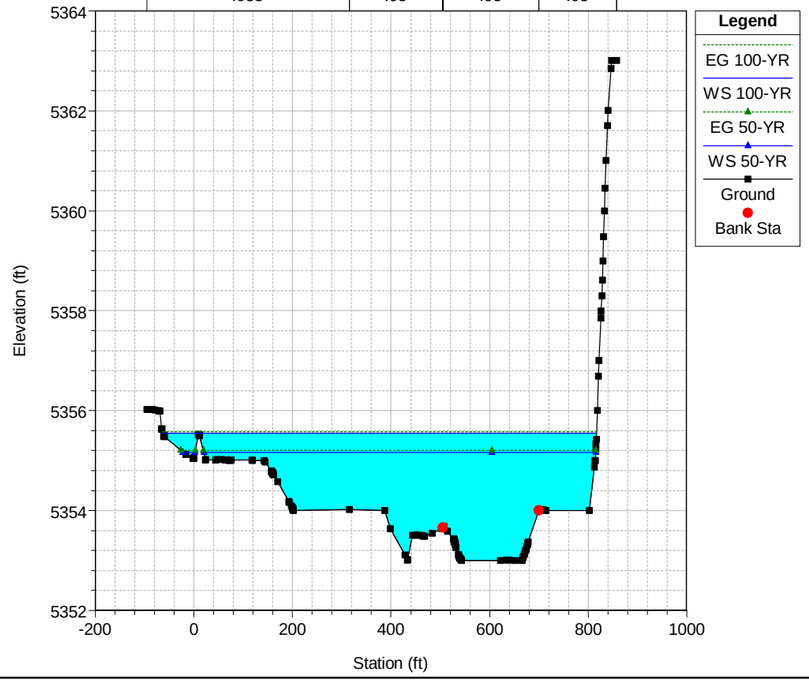
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 1110



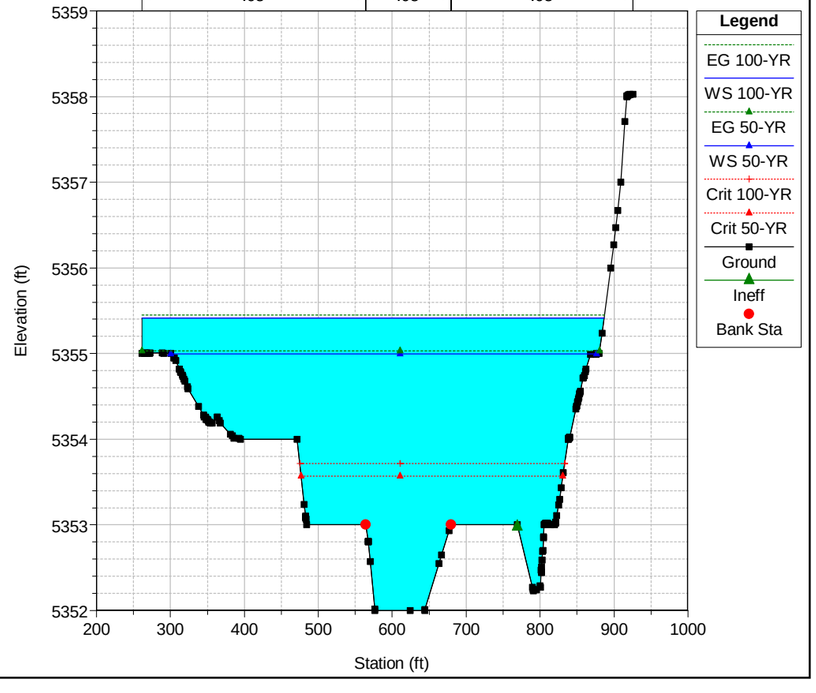
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 767



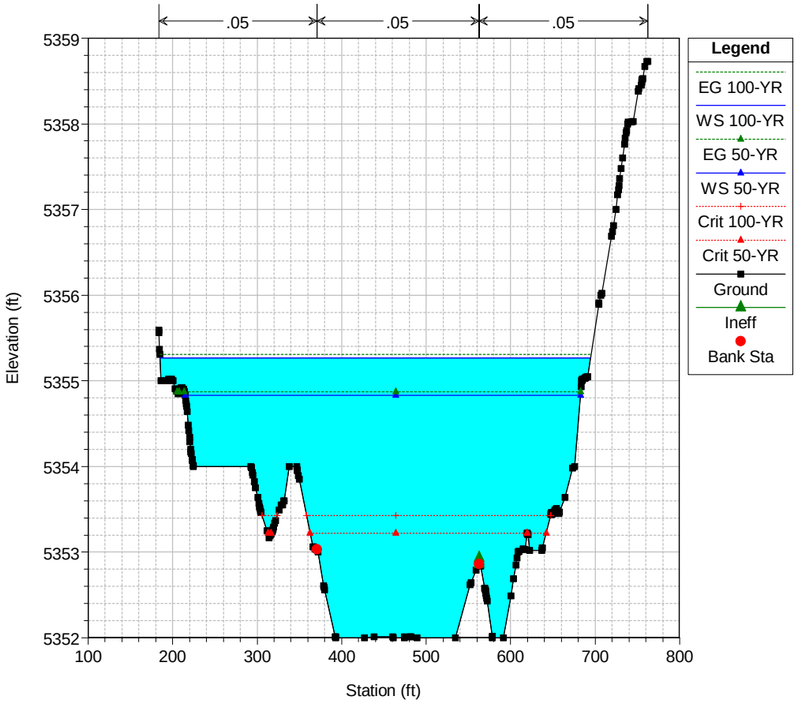
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 609



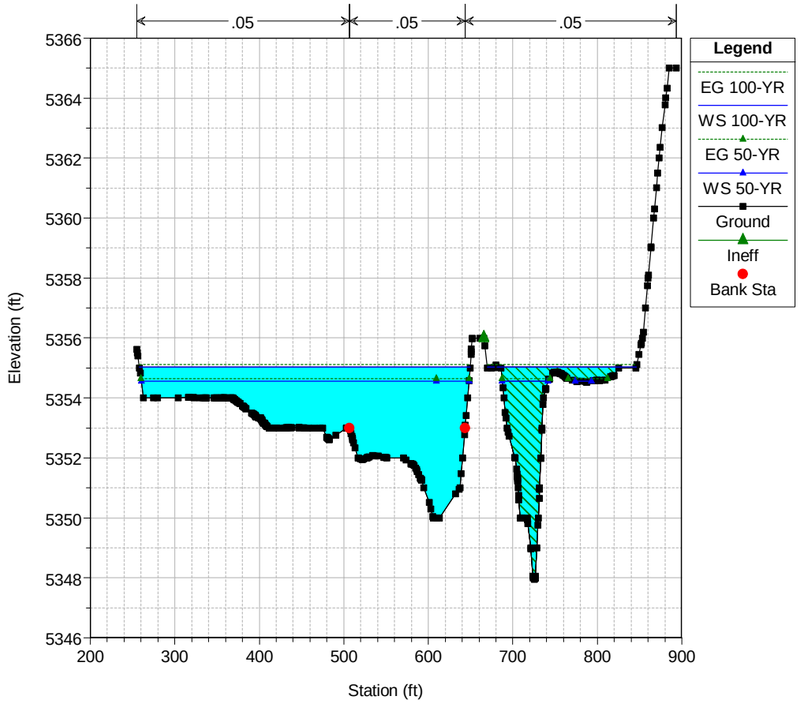
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 446



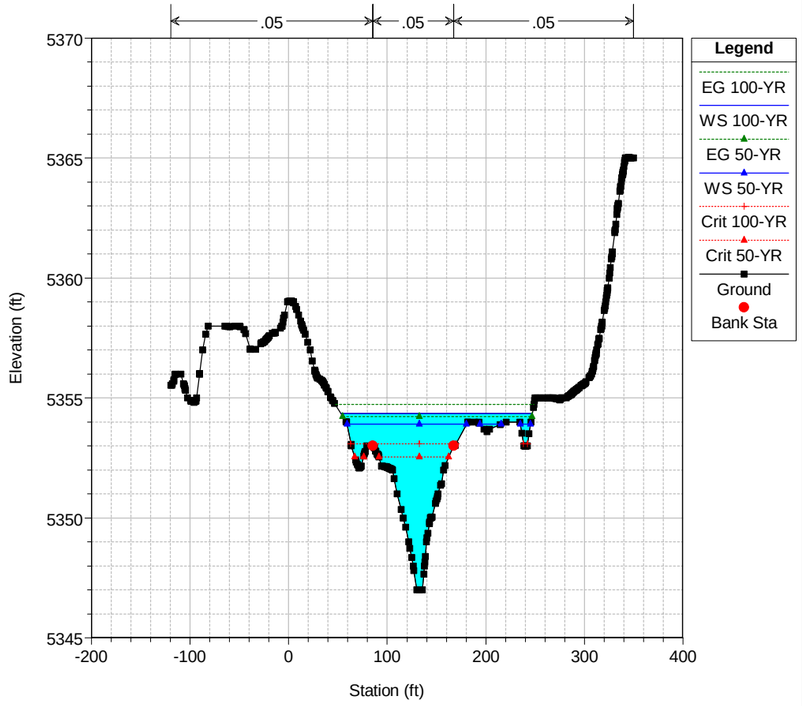
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 260



Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: As-built

River = Dad Clark Gulch Reach = DCG RS = 113



HEC-RAS Plan: As-Built River: Dad Clark Gulch Reach: DCG Profile: 100-YR

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	3705 FHAD 50.0	100-YR	1780.00	5375.00	5378.46		5379.03	0.008212	6.08	294.11	126.74	0.69
DCG	3662	100-YR	1780.00	5373.47	5377.71		5378.58	0.011399	9.44	269.74	108.61	0.85
DCG	3629	100-YR	1780.00	5373.38	5377.42		5378.16	0.010570	9.02	283.93	110.34	0.83
DCG	3598	100-YR	1780.00	5373.48	5377.13		5377.83	0.011112	8.78	284.11	112.60	0.84
DCG	3578	100-YR	1780.00	5373.24	5377.00		5377.60	0.009147	8.06	306.54	116.21	0.76
DCG	3566	100-YR	1780.00	5373.13	5376.91		5377.49	0.008597	7.86	311.89	117.42	0.74
DCG	3556	100-YR	1780.00	5372.20	5376.86		5377.41	0.006701	7.58	332.32	118.89	0.66
DCG	3546	100-YR	1780.00	5370.89	5376.78		5377.35	0.004758	7.44	351.41	117.96	0.58
DCG	3509	100-YR	1780.00	5371.72	5376.25		5377.08	0.009875	9.26	280.42	109.41	0.81
DCG	3480	100-YR	1780.00	5371.68	5376.05		5376.78	0.009494	8.85	291.92	113.62	0.79
DCG	3457	100-YR	1780.00	5371.59	5375.86		5376.57	0.008978	8.20	295.26	114.58	0.76
DCG	3444	100-YR	1780.00	5371.61	5375.53		5376.41	0.016963	8.86	250.87	107.46	0.83
DCG	3439	100-YR	1780.00	5371.43	5375.29	5375.29	5376.34	0.007951	9.84	229.50	104.76	0.95
DCG	3435	100-YR	1780.00	5371.17	5375.21	5375.21	5376.27	0.007718	9.85	230.15	103.89	0.93
DCG	3430	100-YR	1780.00	5371.00	5375.10	5375.10	5376.17	0.007564	10.58	230.64	102.71	0.93
DCG	3424	100-YR	1780.00	5370.97	5374.86	5374.86	5375.93	0.007475	10.10	229.99	101.32	0.92
DCG	3417	100-YR	1780.00	5370.80	5374.20	5374.20	5375.31	0.007664	9.10	223.93	98.33	0.90
DCG	3413	100-YR	1780.00	5369.93	5373.49	5373.49	5374.61	0.008509	8.85	218.84	96.85	0.91
DCG	3409	100-YR	1780.00	5368.90	5372.46	5372.41	5373.56	0.008243	8.84	221.10	95.98	0.92
DCG	3404	100-YR	1780.00	5367.88	5372.87		5373.36	0.002503	6.32	332.90	107.18	0.54
DCG	3400	100-YR	1780.00	5367.71	5372.94		5373.31	0.001643	5.36	379.76	110.38	0.44
DCG	3388	100-YR	1780.00	5367.39	5372.97		5373.26	0.003177	4.98	430.54	115.39	0.38
DCG	3368	100-YR	1780.00	5367.20	5372.73		5373.16	0.006718	5.88	348.66	116.31	0.51
DCG	3351	100-YR	1780.00	5366.88	5372.66		5373.08	0.003490	6.38	395.34	119.40	0.50
DCG	3327	100-YR	1780.00	5366.81	5372.59		5372.98	0.003330	6.27	402.82	119.46	0.49
DCG	3299	100-YR	1780.00	5366.77	5372.39		5372.88	0.004312	7.04	366.47	114.61	0.55
DCG	3262	100-YR	1780.00	5366.91	5372.30		5372.71	0.003833	6.56	396.43	123.84	0.52
DCG	3237	100-YR	1780.00	5366.85	5372.14		5372.60	0.004354	6.89	373.36	119.50	0.55
DCG	3202	100-YR	1780.00	5366.62	5371.93	5370.83	5372.45	0.004624	7.10	332.93	112.66	0.57
DCG	3154		Bridge									
DCG	3119	100-YR	1780.00	5366.62	5371.21	5370.07	5371.63	0.004566	6.52	364.16	146.67	0.56
DCG	3085	100-YR	1780.00	5366.49	5370.81		5371.39	0.007336	7.87	320.97	115.09	0.70
DCG	3072	100-YR	1780.00	5366.44	5370.66		5371.28	0.008092	8.22	310.30	113.21	0.73
DCG	3045	100-YR	1780.00	5366.29	5369.85	5369.85	5370.93	0.017479	10.79	237.30	105.24	1.05
DCG	3034	100-YR	1780.00	5366.33	5369.72	5369.72	5370.78	0.008548	9.37	224.97	104.08	0.95
DCG	3019	100-YR	1780.00	5366.30	5369.30	5369.30	5370.33	0.009162	9.07	222.63	103.36	0.98
DCG	3014	100-YR	1780.00	5366.14	5368.97	5368.97	5370.00	0.009266	9.10	222.17	103.77	0.98
DCG	3011	100-YR	1780.00	5366.06	5368.55	5368.55	5369.64	0.010075	8.58	215.61	103.19	0.99
DCG	3006	100-YR	1780.00	5365.92	5368.73	5368.24	5369.41	0.004993	6.70	272.17	107.48	0.72
DCG	3003	100-YR	1780.00	5364.97	5368.86	5367.89	5369.34	0.002891	6.30	325.26	110.52	0.57
DCG	2999	100-YR	1780.00	5363.86	5368.89	5367.70	5369.30	0.005895	5.93	357.05	111.55	0.50
DCG	2987	100-YR	1780.00	5363.40	5368.88		5369.23	0.003900	5.45	398.02	112.33	0.42
DCG	2972	100-YR	1780.00	5363.22	5368.78		5369.16	0.004411	5.73	382.69	113.10	0.45
DCG	2957	100-YR	1780.00	5363.03	5368.54		5369.06	0.008987	6.47	315.88	111.83	0.59
DCG	2936	100-YR	1780.00	5363.08	5368.41		5368.92	0.004939	7.22	359.50	120.84	0.59
DCG	2908	100-YR	1780.00	5363.00	5368.22		5368.78	0.005444	7.48	337.95	111.29	0.61
DCG	2878	100-YR	1780.00	5362.98	5368.11		5368.61	0.005266	7.27	353.89	117.90	0.60
DCG	2861	100-YR	1780.00	5362.95	5368.01		5368.53	0.005461	7.34	349.27	117.44	0.61
DCG	2836	100-YR	1780.00	5362.90	5367.88		5368.38	0.005489	7.29	349.09	117.19	0.61
DCG	2804	100-YR	1780.00	5362.83	5367.68		5368.20	0.006067	7.46	340.63	116.52	0.64
DCG	2777	100-YR	1780.00	5362.77	5366.85	5366.84	5367.91	0.016044	10.54	243.71	108.60	1.01
DCG	2765	100-YR	1780.00	5362.72	5366.68	5366.68	5367.74	0.014915	10.23	246.50	108.25	0.95
DCG	2747	100-YR	1780.00	5362.55	5366.29	5366.29	5367.37	0.008282	10.02	230.91	113.30	0.96
DCG	2735	100-YR	1780.00	5362.16	5365.68	5365.68	5366.65	0.007110	8.56	241.96	119.20	0.87
DCG	2731	100-YR	1780.00	5361.12	5365.19	5365.19	5366.14	0.007548	10.14	244.14	117.71	0.90
DCG	2726	100-YR	1780.00	5359.99	5364.67	5364.67	5365.65	0.006463	9.83	250.11	114.73	0.85
DCG	2722	100-YR	1780.00	5358.97	5364.18	5364.11	5365.12	0.015458	9.48	256.68	112.26	0.79
DCG	2709	100-YR	1780.00	5358.79	5364.47		5364.85	0.004536	6.07	390.23	121.78	0.46
DCG	2694	100-YR	1780.00	5358.64	5364.40		5364.77	0.004973	6.26	383.39	120.10	0.47
DCG	2677	100-YR	1780.00	5358.93	5364.26		5364.69	0.004585	6.58	372.26	117.47	0.53
DCG	2658	100-YR	1780.00	5358.81	5364.13		5364.60	0.004499	6.88	363.94	115.11	0.56
DCG	2634	100-YR	1780.00	5358.79	5364.07		5364.50	0.004184	6.70	377.23	116.86	0.54
DCG	2615	100-YR	1780.00	5358.75	5364.00		5364.42	0.004201	6.65	380.50	324.45	0.54
DCG	2597	100-YR	1780.00	5358.75	5363.97	5362.75	5364.33	0.003640	6.28	415.10	564.84	0.50
DCG	2585		Culvert									
DCG	2571	100-YR	1780.00	5358.81	5363.89		5364.22	0.003308	5.90	423.06	726.86	0.48
DCG	2527	100-YR	1780.00	5358.52	5363.55		5364.02	0.004781	6.97	362.94	789.76	0.58
DCG	2506	100-YR	1780.00	5358.53	5363.47		5363.92	0.004874	7.02	368.28	808.61	0.58
DCG	2480	100-YR	1780.00	5358.32	5363.21		5363.77	0.006142	7.77	337.65	805.81	0.65
DCG	2451	100-YR	1780.00	5358.34	5362.24	5362.24	5363.43	0.017041	11.11	227.43	606.04	1.04
DCG	2425	100-YR	1780.00	5358.82	5361.91	5361.91	5363.11	0.009406	9.57	204.95	562.52	1.00
DCG	2409	100-YR	1780.00	5358.40	5361.20	5361.20	5362.32	0.009558	8.53	211.97	96.75	0.98
DCG	2389	100-YR	1780.00	5355.49	5361.26		5361.54	0.000965	4.46	438.91	110.28	0.35
DCG	2285	100-YR	1780.00	5354.59	5360.23	5360.23	5361.23	0.009935	8.80	281.05	169.10	0.80
DCG	2140	100-YR	1780.00	5354.90	5357.92		5358.07	0.004163	3.74	587.82	482.16	0.40
DCG	1990	100-YR	1780.00	5354.90	5357.33		5357.45	0.004244	3.33	651.63	640.59	0.39
DCG	1810	100-YR	1780.00	5354.90	5356.81		5356.88	0.002623	2.33	838.19	791.19	0.30
DCG	1634	100-YR	1780.00	5354.00	5356.65		5356.67	0.000673	1.42	1392.33	1032.76	0.16
DCG	1498	100-YR	1780.00	5354.00	5356.49		5356.53	0.001761	2.17	1270.17	1225.19	0.25
DCG	1336	100-YR	1780.00	5354.00	5356.20		5356.24	0.002085	2.00	1248.27	1391.84	0.26

HEC-RAS Plan: As-Built River: Dad Clark Gulch Reach: DCG Profile: 100-YR (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	1110	100-YR	1780.00	5354.00	5355.92	5355.17	5355.95	0.001297	1.72	1296.32	1172.20	0.25
DCG	901		Lat Struct									
DCG	767	100-YR	1780.00	5353.00	5355.55		5355.58	0.000887	1.58	1317.04	879.55	0.18
DCG	609	100-YR	1780.00	5352.00	5355.41	5353.72	5355.45	0.000854	1.88	1233.49	625.29	0.19
DCG	446	100-YR	1780.00	5352.00	5355.26	5353.43	5355.31	0.000888	1.90	1111.51	509.21	0.19
DCG	260	100-YR	1780.00	5350.00	5355.03		5355.11	0.001371	2.55	863.97	564.70	0.24
DCG	113	100-YR	1780.00	5347.00	5354.35	5353.10	5354.73	0.005265	5.17	399.78	194.00	0.47

HEC-RAS Plan: As-Built River: Dad Clark Gulch Reach: DCG

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	3705 FHAD 50.0	100-YR	1780.00	5375.00	5378.46		5379.03	0.008212	6.08	294.11	126.74	0.69
DCG	3705 FHAD 50.0	50-YR	1380.00	5375.00	5378.04		5378.54	0.009296	5.70	242.17	120.92	0.71
DCG	3705 FHAD 50.0	10-YR	810.00	5375.00	5377.30		5377.71	0.011063	5.10	158.97	106.59	0.74
DCG	3705 FHAD 50.0	Effective	29.40	5375.00	5375.47	5375.47	5375.61	0.037782	2.99	9.84	36.95	1.02
DCG	3662	100-YR	1780.00	5373.47	5377.71		5378.58	0.011399	9.44	269.74	108.61	0.85
DCG	3662	50-YR	1380.00	5373.47	5377.30		5378.06	0.011415	8.76	226.31	105.19	0.84
DCG	3662	10-YR	810.00	5373.47	5376.63		5377.21	0.010984	7.42	157.95	98.96	0.79
DCG	3662	Effective	29.40	5373.47	5374.65		5374.70	0.002903	1.74	16.85	20.26	0.34
DCG	3629	100-YR	1780.00	5373.38	5377.42		5378.16	0.010570	9.02	283.93	110.34	0.83
DCG	3629	50-YR	1380.00	5373.38	5377.01		5377.65	0.010675	8.37	238.85	107.15	0.82
DCG	3629	10-YR	810.00	5373.38	5376.34		5376.81	0.010240	7.05	169.59	101.97	0.77
DCG	3629	Effective	29.40	5373.38	5374.53		5374.59	0.003608	1.96	14.99	17.90	0.38
DCG	3598	100-YR	1780.00	5373.48	5377.13		5377.83	0.011112	8.78	284.11	112.60	0.84
DCG	3598	50-YR	1380.00	5373.48	5376.69		5377.32	0.011845	8.27	235.34	109.10	0.85
DCG	3598	10-YR	810.00	5373.48	5375.98		5376.47	0.013114	7.26	160.45	103.42	0.85
DCG	3598	Effective	29.40	5373.48	5374.31		5374.42	0.008943	2.65	11.37	25.80	0.57
DCG	3578	100-YR	1780.00	5373.24	5377.00		5377.60	0.009147	8.06	306.54	116.21	0.76
DCG	3578	50-YR	1380.00	5373.24	5376.54		5377.07	0.009763	7.57	253.93	112.48	0.77
DCG	3578	10-YR	810.00	5373.24	5375.80		5376.21	0.010832	6.60	173.14	105.95	0.77
DCG	3578	Effective	29.40	5373.24	5374.04	5373.91	5374.19	0.014323	3.04	9.73	22.13	0.71
DCG	3566	100-YR	1780.00	5373.13	5376.91		5377.49	0.008597	7.86	311.89	117.42	0.74
DCG	3566	50-YR	1380.00	5373.13	5376.44		5376.96	0.009270	7.41	257.43	113.72	0.75
DCG	3566	10-YR	810.00	5373.13	5375.66		5376.08	0.011047	6.64	171.57	107.61	0.78
DCG	3566	Effective	29.40	5373.13	5373.71	5373.71	5373.93	0.030713	3.80	7.74	17.25	1.00
DCG	3556	100-YR	1780.00	5372.20	5376.86		5377.41	0.006701	7.58	332.32	118.89	0.66
DCG	3556	50-YR	1380.00	5372.20	5376.38		5376.87	0.006946	7.10	276.61	115.15	0.66
DCG	3556	10-YR	810.00	5372.20	5375.60		5375.98	0.007431	6.22	188.33	109.02	0.66
DCG	3556	Effective	29.40	5372.20	5373.03	5373.03	5373.26	0.032886	3.87	7.59	17.33	1.03
DCG	3546	100-YR	1780.00	5370.89	5376.78		5377.35	0.004758	7.44	351.41	117.96	0.58
DCG	3546	50-YR	1380.00	5370.89	5376.34		5376.82	0.004420	6.75	299.67	113.63	0.55
DCG	3546	10-YR	810.00	5370.89	5375.59		5375.92	0.003583	5.41	217.21	106.29	0.48
DCG	3546	Effective	29.40	5370.89	5372.90		5372.91	0.000340	0.87	33.61	22.65	0.13
DCG	3509	100-YR	1780.00	5371.72	5376.25		5377.08	0.009875	9.26	280.42	109.41	0.81
DCG	3509	50-YR	1380.00	5371.72	5375.85		5376.57	0.009500	8.49	237.92	105.72	0.78
DCG	3509	10-YR	810.00	5371.72	5375.16		5375.70	0.008938	7.17	166.78	100.21	0.73
DCG	3509	Effective	29.40	5371.72	5372.83		5372.88	0.002922	1.83	16.07	18.14	0.34
DCG	3480	100-YR	1780.00	5371.68	5376.05		5376.78	0.009494	8.85	291.92	113.62	0.79
DCG	3480	50-YR	1380.00	5371.68	5375.65		5376.28	0.009215	8.12	247.74	110.03	0.77
DCG	3480	10-YR	810.00	5371.68	5374.96		5375.43	0.008870	6.88	173.84	104.10	0.72
DCG	3480	Effective	29.40	5371.68	5372.69		5372.77	0.005319	2.22	13.22	17.54	0.45
DCG	3457	100-YR	1780.00	5371.59	5375.86		5376.57	0.008978	8.20	295.26	114.58	0.76
DCG	3457	50-YR	1380.00	5371.59	5375.48		5376.07	0.008537	7.43	252.49	110.96	0.73
DCG	3457	10-YR	810.00	5371.59	5374.82		5375.23	0.007838	6.11	180.53	104.65	0.67
DCG	3457	Effective	29.40	5371.59	5372.56		5372.63	0.006293	2.16	13.59	21.08	0.47
DCG	3444	100-YR	1780.00	5371.61	5375.53		5376.41	0.016963	8.86	250.87	107.46	0.83
DCG	3444	50-YR	1380.00	5371.61	5375.17		5375.91	0.016463	8.12	213.08	103.44	0.81
DCG	3444	10-YR	810.00	5371.61	5374.54		5375.08	0.015899	6.87	149.92	96.88	0.76
DCG	3444	Effective	29.40	5371.61	5372.35		5372.48	0.027142	2.93	10.05	21.56	0.76
DCG	3439	100-YR	1780.00	5371.43	5375.29	5375.29	5376.34	0.007951	9.84	229.50	104.76	0.95
DCG	3439	50-YR	1380.00	5371.43	5374.92	5374.92	5375.84	0.008117	9.20	191.69	100.65	0.94
DCG	3439	10-YR	810.00	5371.43	5374.36	5374.36	5375.02	0.007543	7.72	136.61	94.62	0.87
DCG	3439	Effective	29.40	5371.43	5372.12	5372.12	5372.37	0.017359	3.96	7.43	15.55	1.01
DCG	3435	100-YR	1780.00	5371.17	5375.21	5375.21	5376.27	0.007718	9.85	230.15	103.89	0.93
DCG	3435	50-YR	1380.00	5371.17	5374.85	5374.85	5375.77	0.007710	9.16	193.34	99.85	0.91
DCG	3435	10-YR	810.00	5371.17	5374.26	5374.26	5374.94	0.007290	7.76	136.25	93.23	0.85
DCG	3435	Effective	29.40	5371.17	5371.81	5371.81	5372.07	0.017148	4.09	7.18	13.83	1.00
DCG	3430	100-YR	1780.00	5371.00	5375.10	5375.10	5376.17	0.007564	10.58	230.64	102.71	0.93
DCG	3430	50-YR	1380.00	5371.00	5374.77	5374.77	5375.67	0.007173	9.72	197.13	99.15	0.89
DCG	3430	10-YR	810.00	5371.00	5374.18	5374.18	5374.84	0.006481	8.23	140.88	92.85	0.83
DCG	3430	Effective	29.40	5371.00	5371.58	5371.58	5371.83	0.017106	4.03	7.29	14.43	1.00
DCG	3424	100-YR	1780.00	5370.97	5374.86	5374.86	5375.93	0.007475	10.10	229.99	101.32	0.92
DCG	3424	50-YR	1380.00	5370.97	5374.49	5374.49	5375.42	0.007448	9.41	193.40	97.79	0.90
DCG	3424	10-YR	810.00	5370.97	5373.88	5373.88	5374.57	0.006875	7.93	136.30	88.66	0.84
DCG	3424	Effective	29.40	5370.97	5371.46	5371.46	5371.67	0.018117	3.69	7.97	18.80	1.00

HEC-RAS Plan: As-Built River: Dad Clark Gulch Reach: DCG (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	3417	100-YR	1780.00	5370.80	5374.20	5374.20	5375.31	0.007664	9.10	223.93	98.33	0.90
DCG	3417	50-YR	1380.00	5370.80	5373.82	5373.82	5374.79	0.007724	8.39	187.40	95.04	0.88
DCG	3417	10-YR	810.00	5370.80	5373.07	5373.07	5373.86	0.009091	7.38	120.07	78.84	0.91
DCG	3417	Effective	29.40	5370.80	5371.24	5371.24	5371.35	0.022527	2.75	10.70	47.05	1.02
DCG	3413	100-YR	1780.00	5369.93	5373.49	5373.49	5374.61	0.008509	8.85	218.84	96.85	0.91
DCG	3413	50-YR	1380.00	5369.93	5373.10	5373.10	5374.08	0.008924	8.23	181.16	93.72	0.91
DCG	3413	10-YR	810.00	5369.93	5372.40	5372.40	5373.17	0.010245	7.10	119.19	84.29	0.93
DCG	3413	Effective	29.40	5369.93	5370.44	5370.44	5370.62	0.021133	3.43	8.58	23.44	1.00
DCG	3409	100-YR	1780.00	5368.90	5372.46	5372.41	5373.56	0.008243	8.84	221.10	95.98	0.92
DCG	3409	50-YR	1380.00	5368.90	5372.05	5372.05	5373.03	0.008769	8.25	182.95	93.47	0.92
DCG	3409	10-YR	810.00	5368.90	5371.43	5371.43	5372.14	0.009127	6.93	125.59	90.05	0.90
DCG	3409	Effective	29.40	5368.90	5369.38	5369.38	5369.55	0.020068	3.36	8.74	25.73	1.02
DCG	3404	100-YR	1780.00	5367.88	5372.87		5373.36	0.002503	6.32	332.90	107.18	0.54
DCG	3404	50-YR	1380.00	5367.88	5372.35		5372.78	0.002533	5.83	278.63	102.23	0.53
DCG	3404	10-YR	810.00	5367.88	5371.44		5371.77	0.002836	5.13	187.80	98.24	0.54
DCG	3404	Effective	29.40	5367.88	5368.50		5368.65	0.010359	3.09	9.51	18.93	0.77
DCG	3400	100-YR	1780.00	5367.71	5372.94		5373.31	0.001643	5.36	379.76	110.38	0.44
DCG	3400	50-YR	1380.00	5367.71	5372.42		5372.73	0.001588	4.86	323.91	106.57	0.43
DCG	3400	10-YR	810.00	5367.71	5371.51		5371.73	0.001555	4.05	228.27	103.26	0.41
DCG	3400	Effective	29.40	5367.71	5368.57		5368.60	0.001340	1.39	21.10	29.99	0.29
DCG	3388	100-YR	1780.00	5367.39	5372.97		5373.26	0.003177	4.98	430.54	115.39	0.38
DCG	3388	50-YR	1380.00	5367.39	5372.45		5372.69	0.002965	4.49	371.38	111.64	0.36
DCG	3388	10-YR	810.00	5367.39	5371.53		5371.69	0.002599	3.64	271.52	105.66	0.33
DCG	3388	Effective	29.40	5367.39	5368.57		5368.58	0.001331	0.98	30.03	34.38	0.18
DCG	3368	100-YR	1780.00	5367.20	5372.73		5373.16	0.006718	5.88	348.66	116.31	0.51
DCG	3368	50-YR	1380.00	5367.20	5372.21		5372.58	0.007148	5.53	288.67	111.74	0.52
DCG	3368	10-YR	810.00	5367.20	5371.26		5371.58	0.009108	5.08	187.28	102.97	0.56
DCG	3368	Effective	29.40	5367.20	5368.19	5368.19	5368.48	0.052839	4.29	6.85	12.22	1.01
DCG	3351	100-YR	1780.00	5366.88	5372.66		5373.08	0.003490	6.38	395.34	119.40	0.50
DCG	3351	50-YR	1380.00	5366.88	5372.14		5372.50	0.003383	5.84	334.43	115.06	0.48
DCG	3351	10-YR	810.00	5366.88	5371.21		5371.48	0.003325	4.97	230.59	107.27	0.46
DCG	3351	Effective	29.40	5366.88	5368.19		5368.22	0.001646	1.46	20.17	20.85	0.26
DCG	3327	100-YR	1780.00	5366.81	5372.59		5372.98	0.003330	6.27	402.82	119.46	0.49
DCG	3327	50-YR	1380.00	5366.81	5372.08		5372.41	0.003197	5.72	342.28	115.16	0.47
DCG	3327	10-YR	810.00	5366.81	5371.15		5371.39	0.003071	4.82	238.75	107.42	0.44
DCG	3327	Effective	29.40	5366.81	5368.15		5368.18	0.001449	1.40	20.95	20.83	0.25
DCG	3299	100-YR	1780.00	5366.77	5372.39		5372.88	0.004312	7.04	366.47	114.61	0.55
DCG	3299	50-YR	1380.00	5366.77	5371.89		5372.30	0.004205	6.48	309.39	110.43	0.54
DCG	3299	10-YR	810.00	5366.77	5370.95		5371.29	0.004309	5.63	209.97	102.76	0.52
DCG	3299	Effective	29.40	5366.77	5368.11		5368.14	0.001435	1.44	20.40	19.21	0.25
DCG	3262	100-YR	1780.00	5366.91	5372.30		5372.71	0.003833	6.56	396.43	123.84	0.52
DCG	3262	50-YR	1380.00	5366.91	5371.79		5372.14	0.003769	6.04	334.21	119.12	0.51
DCG	3262	10-YR	810.00	5366.91	5370.84		5371.12	0.004055	5.33	224.64	110.65	0.51
DCG	3262	Effective	29.40	5366.91	5368.01		5368.07	0.003028	1.82	16.13	18.86	0.35
DCG	3237	100-YR	1780.00	5366.85	5372.14		5372.60	0.004354	6.89	373.36	119.50	0.55
DCG	3237	50-YR	1380.00	5366.85	5371.66		5372.04	0.004095	6.23	317.34	112.06	0.53
DCG	3237	10-YR	810.00	5366.85	5370.73		5371.02	0.004096	5.30	218.42	102.57	0.51
DCG	3237	Effective	29.40	5366.85	5367.93		5367.99	0.003282	1.85	15.93	19.46	0.36
DCG	3202	100-YR	1780.00	5366.62	5371.93	5370.83	5372.45	0.004624	7.10	332.93	112.66	0.57
DCG	3202	50-YR	1380.00	5366.62	5371.49	5370.46	5371.90	0.004144	6.32	293.81	109.02	0.53
DCG	3202	10-YR	810.00	5366.62	5370.61	5369.86	5370.89	0.003868	5.25	213.91	101.58	0.49
DCG	3202	Effective	29.40	5366.62	5367.85	5367.23	5367.89	0.002104	1.63	18.06	18.96	0.29
DCG	3154		Bridge									
DCG	3119	100-YR	1780.00	5366.62	5371.21	5370.07	5371.63	0.004566	6.52	364.16	146.67	0.56
DCG	3119	50-YR	1380.00	5366.62	5370.76	5369.72	5371.10	0.004369	5.91	315.62	142.90	0.54
DCG	3119	10-YR	810.00	5366.62	5369.97	5369.23	5370.20	0.004083	4.90	231.42	132.11	0.50
DCG	3119	Effective	29.40	5366.62	5367.63	5367.22	5367.69	0.004077	1.99	14.79	19.03	0.40
DCG	3085	100-YR	1780.00	5366.49	5370.81		5371.39	0.007336	7.87	320.97	115.09	0.70
DCG	3085	50-YR	1380.00	5366.49	5370.38		5370.87	0.007143	7.20	272.55	111.01	0.68
DCG	3085	10-YR	810.00	5366.49	5369.65		5369.99	0.006752	5.99	193.79	104.10	0.63
DCG	3085	Effective	29.40	5366.49	5367.45		5367.53	0.005427	2.19	13.44	18.59	0.45
DCG	3072	100-YR	1780.00	5366.44	5370.66		5371.28	0.008092	8.22	310.30	113.21	0.73
DCG	3072	50-YR	1380.00	5366.44	5370.24		5370.77	0.007917	7.53	263.27	109.48	0.71
DCG	3072	10-YR	810.00	5366.44	5369.52		5369.90	0.007590	6.32	186.46	103.10	0.67

HEC-RAS Plan: As-Built River: Dad Clark Gulch Reach: DCG (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	3072	Effective	29.40	5366.44	5367.38		5367.46	0.005560	2.23	13.16	17.95	0.46
DCG	3045	100-YR	1780.00	5366.29	5369.85	5369.85	5370.93	0.017479	10.79	237.30	105.24	1.05
DCG	3045	50-YR	1380.00	5366.29	5369.50	5369.50	5370.43	0.017242	9.93	200.84	102.19	1.02
DCG	3045	10-YR	810.00	5366.29	5368.93	5368.92	5369.59	0.015627	8.21	144.73	97.30	0.94
DCG	3045	Effective	29.40	5366.29	5367.24		5367.31	0.005342	2.14	13.72	19.41	0.45
DCG	3034	100-YR	1780.00	5366.33	5369.72	5369.72	5370.78	0.008548	9.37	224.97	104.08	0.95
DCG	3034	50-YR	1380.00	5366.33	5369.37	5369.37	5370.28	0.008720	8.71	188.93	100.98	0.94
DCG	3034	10-YR	810.00	5366.33	5368.80	5368.80	5369.46	0.008607	7.38	133.15	95.97	0.90
DCG	3034	Effective	29.40	5366.33	5367.21		5367.26	0.003094	1.74	16.91	32.99	0.43
DCG	3019	100-YR	1780.00	5366.30	5369.30	5369.30	5370.33	0.009162	9.07	222.63	103.36	0.98
DCG	3019	50-YR	1380.00	5366.30	5368.92	5368.92	5369.83	0.009954	8.53	183.82	99.49	0.99
DCG	3019	10-YR	810.00	5366.30	5368.31	5368.31	5368.98	0.010833	7.26	126.18	92.36	0.99
DCG	3019	Effective	29.40	5366.30	5366.93	5366.93	5367.15	0.018324	3.78	7.78	40.07	1.02
DCG	3014	100-YR	1780.00	5366.14	5368.97	5368.97	5370.00	0.009266	9.10	222.17	103.77	0.98
DCG	3014	50-YR	1380.00	5366.14	5368.59	5368.59	5369.50	0.010105	8.59	183.29	100.53	1.00
DCG	3014	10-YR	810.00	5366.14	5368.03	5368.03	5368.68	0.010713	7.34	127.83	95.43	0.98
DCG	3014	Effective	29.40	5366.14	5366.73	5366.73	5366.99	0.017614	4.03	7.29	46.41	1.02
DCG	3011	100-YR	1780.00	5366.06	5368.55	5368.55	5369.64	0.010075	8.58	215.61	103.19	0.99
DCG	3011	50-YR	1380.00	5366.06	5368.21	5368.21	5369.14	0.010509	7.88	180.58	100.33	0.99
DCG	3011	10-YR	810.00	5366.06	5367.61	5367.61	5368.29	0.011666	6.55	123.50	92.50	0.98
DCG	3011	Effective	29.40	5366.06	5366.62	5366.62	5366.85	0.016461	3.80	7.75	53.79	0.97
DCG	3006	100-YR	1780.00	5365.92	5368.73	5368.24	5369.41	0.004993	6.70	272.17	107.48	0.72
DCG	3006	50-YR	1380.00	5365.92	5368.23	5367.87	5368.86	0.005879	6.35	219.47	104.03	0.76
DCG	3006	10-YR	810.00	5365.92	5367.37	5367.26	5367.95	0.009324	5.73	133.89	94.71	0.88
DCG	3006	Effective	29.40	5365.92	5366.38	5366.38	5366.56	0.018189	3.41	8.63	67.28	0.99
DCG	3003	100-YR	1780.00	5364.97	5368.86	5367.89	5369.34	0.002891	6.30	325.26	110.52	0.57
DCG	3003	50-YR	1380.00	5364.97	5368.37	5367.55	5368.78	0.003020	5.87	271.85	107.14	0.57
DCG	3003	10-YR	810.00	5364.97	5367.54	5366.92	5367.85	0.003411	5.13	185.21	100.77	0.58
DCG	3003	Effective	29.40	5364.97	5365.60	5365.60	5365.86	0.016057	4.11	7.15	43.17	0.98
DCG	2999	100-YR	1780.00	5363.86	5368.89	5367.70	5369.30	0.005895	5.93	357.05	111.55	0.50
DCG	2999	50-YR	1380.00	5363.86	5368.40	5367.36	5368.75	0.005878	5.47	302.75	108.57	0.49
DCG	2999	10-YR	810.00	5363.86	5367.57	5366.81	5367.81	0.005837	4.66	214.02	102.86	0.46
DCG	2999	Effective	29.40	5363.86	5365.00	5364.51	5365.06	0.009298	2.04	14.44	27.26	0.46
DCG	2987	100-YR	1780.00	5363.40	5368.88		5369.23	0.003900	5.45	398.02	112.33	0.42
DCG	2987	50-YR	1380.00	5363.40	5368.39		5368.67	0.003639	4.92	343.57	109.30	0.40
DCG	2987	10-YR	810.00	5363.40	5367.56		5367.74	0.002999	3.92	255.44	103.00	0.35
DCG	2987	Effective	29.40	5363.40	5365.03		5365.03	0.000401	0.69	43.66	44.60	0.11
DCG	2972	100-YR	1780.00	5363.22	5368.78		5369.16	0.004411	5.73	382.69	113.10	0.45
DCG	2972	50-YR	1380.00	5363.22	5368.30		5368.61	0.004127	5.18	328.86	109.14	0.43
DCG	2972	10-YR	810.00	5363.22	5367.49		5367.69	0.003412	4.15	243.13	102.23	0.37
DCG	2972	Effective	29.40	5363.22	5365.02		5365.03	0.000360	0.67	43.88	36.00	0.10
DCG	2957	100-YR	1780.00	5363.03	5368.54		5369.06	0.008987	6.47	315.88	111.83	0.59
DCG	2957	50-YR	1380.00	5363.03	5368.05		5368.51	0.009468	6.05	262.62	107.86	0.59
DCG	2957	10-YR	810.00	5363.03	5367.25		5367.59	0.010658	5.31	178.18	101.25	0.60
DCG	2957	Effective	29.40	5363.03	5364.64	5364.64	5364.98	0.056378	4.64	6.34	9.94	1.02
DCG	2936	100-YR	1780.00	5363.08	5368.41		5368.92	0.004939	7.22	359.50	120.84	0.59
DCG	2936	50-YR	1380.00	5363.08	5367.92		5368.37	0.004928	6.71	301.27	116.73	0.58
DCG	2936	10-YR	810.00	5363.08	5367.11		5367.45	0.004772	5.72	208.65	109.87	0.55
DCG	2936	Effective	29.40	5363.08	5364.39		5364.43	0.001959	1.58	18.62	19.44	0.28
DCG	2908	100-YR	1780.00	5363.00	5368.22		5368.78	0.005444	7.48	337.95	111.29	0.61
DCG	2908	50-YR	1380.00	5363.00	5367.77		5368.24	0.005167	6.80	288.35	107.58	0.59
DCG	2908	10-YR	810.00	5363.00	5366.99		5367.32	0.004521	5.55	207.90	101.14	0.53
DCG	2908	Effective	29.40	5363.00	5364.35		5364.38	0.001421	1.42	20.75	19.99	0.25
DCG	2878	100-YR	1780.00	5362.98	5368.11		5368.61	0.005266	7.27	353.89	117.90	0.60
DCG	2878	50-YR	1380.00	5362.98	5367.66		5368.08	0.005073	6.65	301.05	114.08	0.58
DCG	2878	10-YR	810.00	5362.98	5366.88		5367.19	0.004604	5.51	215.53	107.63	0.53
DCG	2878	Effective	29.40	5362.98	5364.27		5364.32	0.002496	1.73	17.04	18.72	0.32
DCG	2861	100-YR	1780.00	5362.95	5368.01		5368.53	0.005461	7.34	349.27	117.44	0.61
DCG	2861	50-YR	1380.00	5362.95	5367.56		5368.00	0.005258	6.71	297.18	113.71	0.59
DCG	2861	10-YR	810.00	5362.95	5366.80		5367.11	0.004741	5.54	213.21	107.46	0.54
DCG	2861	Effective	29.40	5362.95	5364.24		5364.28	0.002068	1.63	18.08	18.80	0.29
DCG	2836	100-YR	1780.00	5362.90	5367.88		5368.38	0.005489	7.29	349.09	117.19	0.61
DCG	2836	50-YR	1380.00	5362.90	5367.43		5367.86	0.005247	6.64	298.09	113.64	0.59
DCG	2836	10-YR	810.00	5362.90	5366.69		5366.99	0.004620	5.42	216.19	107.68	0.53

HEC-RAS Plan: As-Built River: Dad Clark Gulch Reach: DCG (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	2836	Effective	29.40	5362.90	5364.18		5364.23	0.002197	1.63	18.01	19.53	0.30
DCG	2804	100-YR	1780.00	5362.83	5367.68		5368.20	0.006067	7.46	340.63	116.52	0.64
DCG	2804	50-YR	1380.00	5362.83	5367.25		5367.68	0.005791	6.79	291.53	113.05	0.62
DCG	2804	10-YR	810.00	5362.83	5366.54		5366.83	0.005025	5.51	213.52	107.34	0.55
DCG	2804	Effective	29.40	5362.83	5364.06		5364.13	0.004188	2.07	14.22	17.60	0.41
DCG	2777	100-YR	1780.00	5362.77	5366.85	5366.84	5367.91	0.016044	10.54	243.71	108.60	1.01
DCG	2777	50-YR	1380.00	5362.77	5366.53	5366.52	5367.42	0.015137	9.58	209.22	106.05	0.96
DCG	2777	10-YR	810.00	5362.77	5365.93	5365.93	5366.60	0.014289	8.07	147.85	101.02	0.90
DCG	2777	Effective	29.40	5362.77	5363.70		5363.90	0.021634	3.56	8.26	15.57	0.86
DCG	2765	100-YR	1780.00	5362.72	5366.68	5366.68	5367.74	0.014915	10.23	246.50	108.25	0.95
DCG	2765	50-YR	1380.00	5362.72	5366.31	5366.31	5367.24	0.014787	9.47	207.29	105.03	0.93
DCG	2765	10-YR	810.00	5362.72	5365.71	5365.71	5366.40	0.013750	7.94	145.59	99.02	0.87
DCG	2765	Effective	29.40	5362.72	5363.54		5363.65	0.015614	2.73	10.78	22.75	0.70
DCG	2747	100-YR	1780.00	5362.55	5366.29	5366.29	5367.37	0.008282	10.02	230.91	113.30	0.96
DCG	2747	50-YR	1380.00	5362.55	5366.01	5366.01	5366.88	0.007424	8.95	200.07	106.24	0.90
DCG	2747	10-YR	810.00	5362.55	5365.44	5365.44	5366.09	0.007056	7.62	141.04	101.11	0.85
DCG	2747	Effective	29.40	5362.55	5363.13	5363.13	5363.34	0.017755	3.64	8.08	19.65	1.00
DCG	2735	100-YR	1780.00	5362.16	5365.68	5365.68	5366.65	0.007110	8.56	241.96	119.20	0.87
DCG	2735	50-YR	1380.00	5362.16	5365.32	5365.32	5366.19	0.007235	7.94	200.96	114.42	0.86
DCG	2735	10-YR	810.00	5362.16	5364.73	5364.73	5365.39	0.007370	6.75	134.53	107.44	0.83
DCG	2735	Effective	29.40	5362.16	5362.70	5362.70	5362.84	0.021085	3.09	9.52	33.72	1.02
DCG	2731	100-YR	1780.00	5361.12	5365.19	5365.19	5366.14	0.007548	10.14	244.14	117.71	0.90
DCG	2731	50-YR	1380.00	5361.12	5364.87	5364.87	5365.69	0.007151	9.34	207.71	114.05	0.87
DCG	2731	10-YR	810.00	5361.12	5364.13	5364.13	5364.87	0.008430	8.70	128.77	90.96	0.90
DCG	2731	Effective	29.40	5361.12	5361.81	5361.81	5362.11	0.017707	4.43	6.64	11.12	1.01
DCG	2726	100-YR	1780.00	5359.99	5364.67	5364.67	5365.65	0.006463	9.83	250.11	114.73	0.85
DCG	2726	50-YR	1380.00	5359.99	5364.32	5364.32	5365.19	0.006301	9.16	210.81	112.15	0.82
DCG	2726	10-YR	810.00	5359.99	5363.67	5363.67	5364.37	0.006020	7.91	142.08	99.31	0.78
DCG	2726	Effective	29.40	5359.99	5360.66	5360.66	5360.94	0.016850	4.23	6.95	12.44	1.00
DCG	2722	100-YR	1780.00	5358.97	5364.18	5364.11	5365.12	0.015458	9.48	256.68	112.26	0.79
DCG	2722	50-YR	1380.00	5358.97	5363.73	5363.73	5364.63	0.016377	9.11	208.18	106.76	0.80
DCG	2722	10-YR	810.00	5358.97	5363.08	5363.08	5363.80	0.015052	7.78	141.29	98.58	0.74
DCG	2722	Effective	29.40	5358.97	5360.23		5360.30	0.009515	2.25	13.04	18.01	0.47
DCG	2709	100-YR	1780.00	5358.79	5364.47		5364.85	0.004536	6.07	390.23	121.78	0.46
DCG	2709	50-YR	1380.00	5358.79	5363.92		5364.25	0.004542	5.66	325.09	114.76	0.45
DCG	2709	10-YR	810.00	5358.79	5363.03		5363.29	0.004292	4.82	227.42	106.08	0.42
DCG	2709	Effective	29.40	5358.79	5360.24		5360.26	0.000910	1.01	29.64	28.45	0.16
DCG	2694	100-YR	1780.00	5358.64	5364.40		5364.77	0.004973	6.26	383.39	120.10	0.47
DCG	2694	50-YR	1380.00	5358.64	5363.85		5364.18	0.005200	5.96	317.81	115.22	0.48
DCG	2694	10-YR	810.00	5358.64	5362.95		5363.21	0.005429	5.31	218.09	107.62	0.47
DCG	2694	Effective	29.40	5358.64	5360.19		5360.23	0.002600	1.65	18.05	17.27	0.27
DCG	2677	100-YR	1780.00	5358.93	5364.26		5364.69	0.004585	6.58	372.26	117.47	0.53
DCG	2677	50-YR	1380.00	5358.93	5363.71		5364.09	0.004758	6.17	308.73	112.78	0.53
DCG	2677	10-YR	810.00	5358.93	5362.83		5363.13	0.004763	5.29	213.62	105.22	0.51
DCG	2677	Effective	29.40	5358.93	5360.12		5360.17	0.004701	1.87	15.74	23.22	0.40
DCG	2658	100-YR	1780.00	5358.81	5364.13		5364.60	0.004499	6.88	363.94	115.11	0.56
DCG	2658	50-YR	1380.00	5358.81	5363.58		5364.00	0.004660	6.45	301.83	110.60	0.56
DCG	2658	10-YR	810.00	5358.81	5362.72		5363.04	0.004597	5.48	209.55	103.33	0.53
DCG	2658	Effective	29.40	5358.81	5360.07		5360.11	0.002068	1.59	18.47	19.89	0.29
DCG	2634	100-YR	1780.00	5358.79	5364.07		5364.50	0.004184	6.70	377.23	116.86	0.54
DCG	2634	50-YR	1380.00	5358.79	5363.51		5363.90	0.004317	6.26	313.66	112.36	0.54
DCG	2634	10-YR	810.00	5358.79	5362.65		5362.93	0.004204	5.30	219.53	105.33	0.51
DCG	2634	Effective	29.40	5358.79	5360.02		5360.06	0.002337	1.65	17.82	19.96	0.31
DCG	2615	100-YR	1780.00	5358.75	5364.00		5364.42	0.004201	6.65	380.50	324.45	0.54
DCG	2615	50-YR	1380.00	5358.75	5363.44		5363.81	0.004392	6.24	315.28	222.08	0.54
DCG	2615	10-YR	810.00	5358.75	5362.57		5362.85	0.004393	5.33	219.11	107.39	0.52
DCG	2615	Effective	29.40	5358.75	5359.96		5360.01	0.002949	1.78	16.49	19.59	0.34
DCG	2597	100-YR	1780.00	5358.75	5363.97	5362.75	5364.33	0.003640	6.28	415.10	564.84	0.50
DCG	2597	50-YR	1380.00	5358.75	5363.39	5362.41	5363.72	0.003889	5.97	341.23	497.23	0.51
DCG	2597	10-YR	810.00	5358.75	5362.50	5361.87	5362.77	0.004098	5.24	232.17	222.33	0.50
DCG	2597	Effective	29.40	5358.75	5359.92	5359.33	5359.96	0.002004	1.58	18.63	96.60	0.29
DCG	2585		Culvert									
DCG	2571	100-YR	1780.00	5358.81	5363.89		5364.22	0.003308	5.90	423.06	726.86	0.48

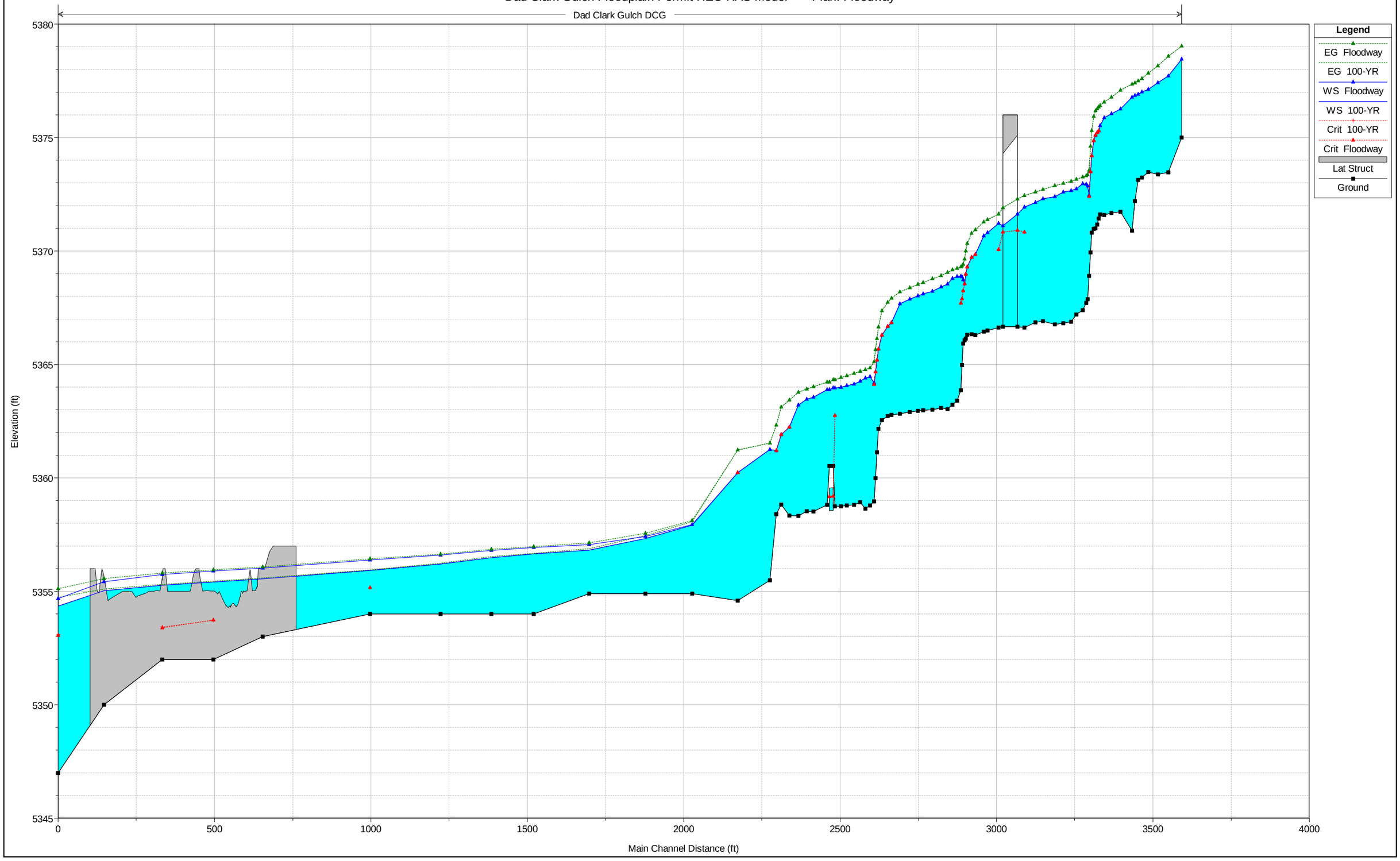
HEC-RAS Plan: As-Built River: Dad Clark Gulch Reach: DCG (Continued)

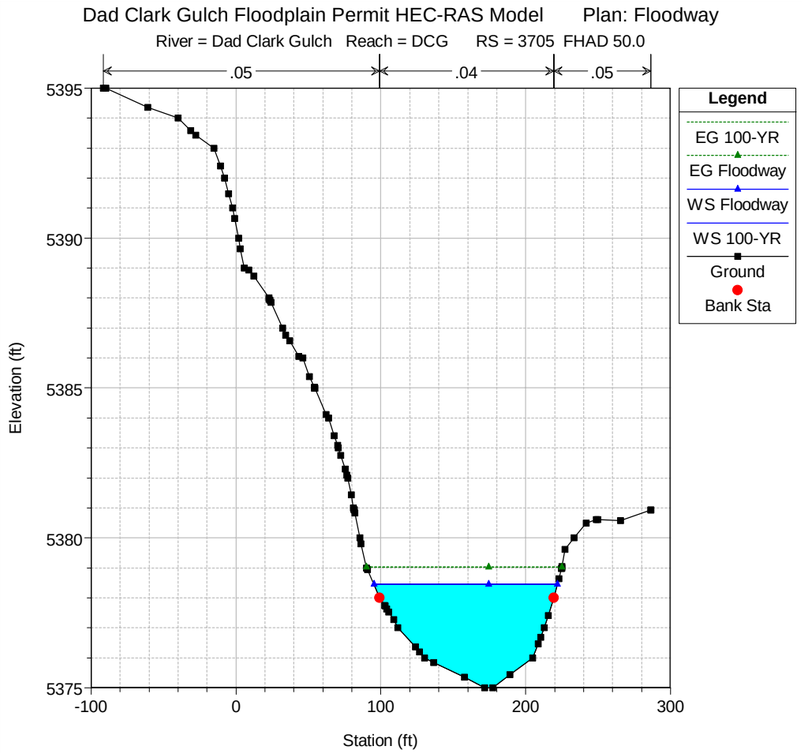
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	2571	50-YR	1380.00	5358.81	5363.38		5363.65	0.003240	5.41	360.03	708.63	0.47
DCG	2571	10-YR	810.00	5358.81	5362.49		5362.70	0.003194	4.58	254.44	579.58	0.45
DCG	2571	Effective	29.40	5358.81	5359.86		5359.91	0.003186	1.77	16.58	201.98	0.35
DCG	2527	100-YR	1780.00	5358.52	5363.55		5364.02	0.004781	6.97	362.94	789.76	0.58
DCG	2527	50-YR	1380.00	5358.52	5363.06		5363.46	0.004709	6.42	307.14	778.04	0.56
DCG	2527	10-YR	810.00	5358.52	5362.21		5362.51	0.004716	5.49	213.72	761.90	0.54
DCG	2527	Effective	29.40	5358.52	5359.75		5359.79	0.002269	1.63	17.99	441.93	0.30
DCG	2506	100-YR	1780.00	5358.53	5363.47		5363.92	0.004874	7.02	368.28	808.61	0.58
DCG	2506	50-YR	1380.00	5358.53	5362.97		5363.37	0.004919	6.52	309.01	796.59	0.57
DCG	2506	10-YR	810.00	5358.53	5362.09		5362.41	0.005312	5.75	209.04	775.58	0.57
DCG	2506	Effective	29.40	5358.53	5359.69		5359.74	0.002632	1.72	17.07	644.99	0.33
DCG	2480	100-YR	1780.00	5358.32	5363.21		5363.77	0.006142	7.77	337.65	805.81	0.65
DCG	2480	50-YR	1380.00	5358.32	5362.70		5363.21	0.006402	7.32	278.95	778.94	0.65
DCG	2480	10-YR	810.00	5358.32	5361.89		5362.26	0.006028	6.09	191.88	708.17	0.61
DCG	2480	Effective	29.40	5358.32	5359.64		5359.67	0.001915	1.56	18.82	512.80	0.28
DCG	2451	100-YR	1780.00	5358.34	5362.24	5362.24	5363.43	0.017041	11.11	227.43	606.04	1.04
DCG	2451	50-YR	1380.00	5358.34	5361.85	5361.85	5362.87	0.016921	10.25	191.58	593.95	1.02
DCG	2451	10-YR	810.00	5358.34	5361.21	5361.21	5361.95	0.015983	8.56	135.60	572.72	0.95
DCG	2451	Effective	29.40	5358.34	5359.55		5359.60	0.002890	1.82	16.38	455.96	0.34
DCG	2425	100-YR	1780.00	5358.82	5361.91	5361.91	5363.11	0.009406	9.57	204.95	562.52	1.00
DCG	2425	50-YR	1380.00	5358.82	5361.50	5361.50	5362.55	0.009883	8.86	170.90	548.40	1.00
DCG	2425	10-YR	810.00	5358.82	5360.84	5360.84	5361.60	0.011096	7.58	116.97	524.84	1.01
DCG	2425	Effective	29.40	5358.82	5359.35	5359.35	5359.46	0.016696	2.86	12.06	450.86	0.92
DCG	2409	100-YR	1780.00	5358.40	5361.20	5361.20	5362.32	0.009558	8.53	211.97	96.75	0.98
DCG	2409	50-YR	1380.00	5358.40	5360.83	5360.83	5361.80	0.010339	7.91	176.32	94.12	0.99
DCG	2409	10-YR	810.00	5358.40	5360.23	5360.23	5360.93	0.011907	6.68	121.50	89.77	1.00
DCG	2409	Effective	29.40	5358.40	5358.89	5358.89	5358.98	0.019740	2.41	12.22	59.86	0.94
DCG	2389	100-YR	1780.00	5355.49	5361.26		5361.54	0.000965	4.46	438.91	110.28	0.35
DCG	2389	50-YR	1380.00	5355.49	5360.84		5361.05	0.000801	3.83	393.40	106.85	0.31
DCG	2389	10-YR	810.00	5355.49	5359.92		5360.04	0.000626	2.92	298.50	99.38	0.27
DCG	2389	Effective	29.40	5355.49	5356.52		5356.54	0.001803	1.27	23.15	48.57	0.32
DCG	2285	100-YR	1780.00	5354.59	5360.23	5360.23	5361.23	0.009935	8.80	281.05	169.10	0.80
DCG	2285	50-YR	1380.00	5354.59	5360.00	5360.00	5360.80	0.008226	7.68	242.55	165.03	0.72
DCG	2285	10-YR	810.00	5354.59	5358.61	5358.61	5359.76	0.018230	8.58	94.36	41.22	1.00
DCG	2285	Effective	29.40	5354.59	5356.29		5356.33	0.002282	1.53	19.23	23.76	0.30
DCG	2140	100-YR	1780.00	5354.90	5357.92		5358.07	0.004163	3.74	587.82	482.16	0.40
DCG	2140	50-YR	1380.00	5354.90	5357.72		5357.85	0.003751	3.37	497.55	428.54	0.37
DCG	2140	10-YR	810.00	5354.90	5357.40		5357.48	0.003125	2.81	365.66	387.77	0.33
DCG	2140	Effective	29.40	5354.90	5356.03		5356.05	0.001625	1.06	27.89	54.49	0.20
DCG	1990	100-YR	1780.00	5354.90	5357.33		5357.45	0.004244	3.33	651.63	640.59	0.39
DCG	1990	50-YR	1380.00	5354.90	5357.17		5357.27	0.004118	3.12	552.01	607.90	0.38
DCG	1990	10-YR	810.00	5354.90	5356.88	5356.59	5356.95	0.004111	2.82	380.32	540.29	0.37
DCG	1990	Effective	29.40	5354.90	5355.82		5355.83	0.001252	0.90	32.66	41.06	0.18
DCG	1810	100-YR	1780.00	5354.90	5356.81		5356.88	0.002623	2.33	838.19	791.19	0.30
DCG	1810	50-YR	1380.00	5354.90	5356.62		5356.69	0.002900	2.28	688.15	765.42	0.31
DCG	1810	10-YR	810.00	5354.90	5356.28		5356.33	0.003247	2.08	450.49	636.27	0.31
DCG	1810	Effective	29.40	5354.90	5355.06	5355.06	5355.12	0.068462	2.08	14.13	102.21	0.99
DCG	1634	100-YR	1780.00	5354.00	5356.65		5356.67	0.000673	1.42	1392.33	1032.76	0.16
DCG	1634	50-YR	1380.00	5354.00	5356.45		5356.47	0.000664	1.33	1188.16	1012.67	0.16
DCG	1634	10-YR	810.00	5354.00	5356.09		5356.11	0.000683	1.21	835.25	975.46	0.15
DCG	1634	Effective	29.40	5354.00	5354.77		5354.77	0.000284	0.39	75.81	111.10	0.08
DCG	1498	100-YR	1780.00	5354.00	5356.49		5356.53	0.001761	2.17	1270.17	1225.19	0.25
DCG	1498	50-YR	1380.00	5354.00	5356.27		5356.32	0.002062	2.20	1007.69	1212.63	0.27
DCG	1498	10-YR	810.00	5354.00	5355.93		5355.97	0.001662	1.75	635.29	691.43	0.23
DCG	1498	Effective	29.40	5354.00	5354.73		5354.73	0.000315	0.38	77.38	126.66	0.09
DCG	1336	100-YR	1780.00	5354.00	5356.20		5356.24	0.002085	2.00	1248.27	1391.84	0.26
DCG	1336	50-YR	1380.00	5354.00	5355.97		5356.01	0.001964	1.77	957.26	909.71	0.25
DCG	1336	10-YR	810.00	5354.00	5355.68		5355.70	0.001804	1.47	691.76	876.15	0.23
DCG	1336	Effective	29.40	5354.00	5354.66		5354.66	0.000708	0.40	74.17	210.14	0.12
DCG	1110	100-YR	1780.00	5354.00	5355.92	5355.17	5355.95	0.001297	1.72	1296.32	1172.20	0.25
DCG	1110	50-YR	1380.00	5354.00	5355.66	5355.13	5355.69	0.001653	1.71	1000.49	1110.60	0.27
DCG	1110	10-YR	810.00	5354.00	5355.32	5354.89	5355.35	0.002153	1.56	631.68	1055.52	0.30
DCG	1110	Effective	29.40	5354.00	5354.48	5354.21	5354.48	0.001183	0.44	60.72	321.80	0.17
DCG	901		Lat Struct									

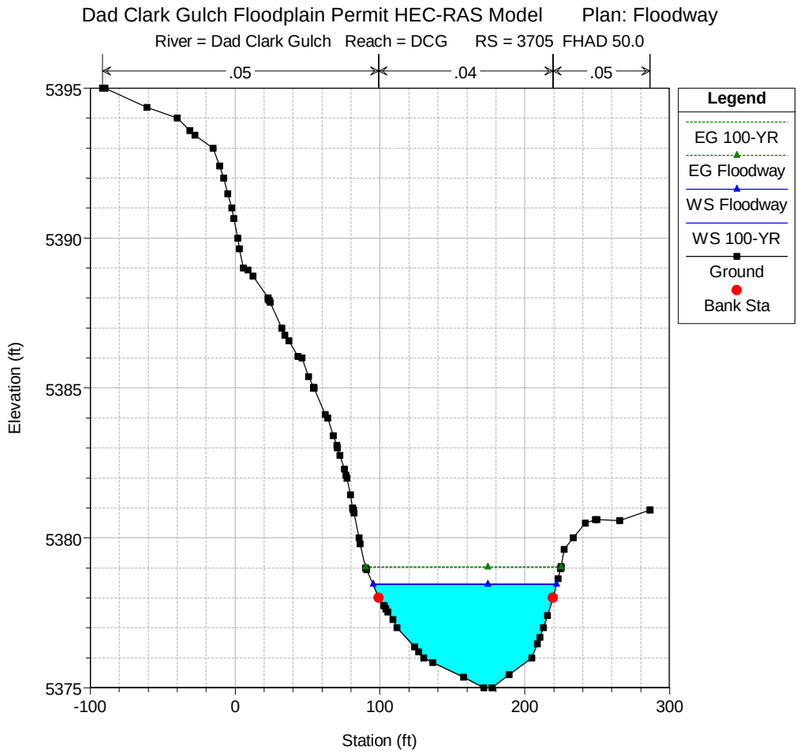
HEC-RAS Plan: As-Built River: Dad Clark Gulch Reach: DCG (Continued)

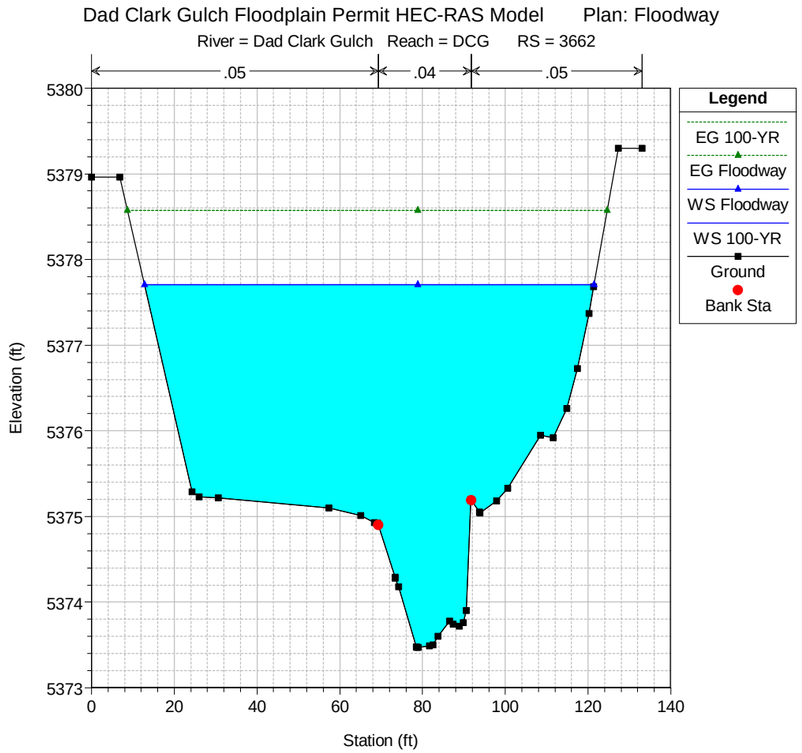
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	767	100-YR	1780.00	5353.00	5355.55		5355.58	0.000887	1.58	1317.04	879.55	0.18
DCG	767	50-YR	1380.00	5353.00	5355.17		5355.20	0.001235	1.66	989.27	820.17	0.21
DCG	767	10-YR	810.00	5353.00	5354.55		5354.58	0.002212	1.73	559.15	637.13	0.26
DCG	767	Effective	29.40	5353.00	5353.12	5353.11	5353.18	0.077559	1.92	15.44	141.81	1.01
DCG	609	100-YR	1780.00	5352.00	5355.41	5353.72	5355.45	0.000854	1.88	1233.49	625.29	0.19
DCG	609	50-YR	1380.00	5352.00	5355.00	5353.57	5355.03	0.000989	1.85	974.77	575.47	0.20
DCG	609	10-YR	810.00	5352.00	5354.29	5353.00	5354.33	0.001313	1.75	598.36	502.98	0.21
DCG	609	Effective	29.40	5352.00	5352.58	5352.18	5352.59	0.001150	0.63	46.57	115.57	0.16
DCG	446	100-YR	1780.00	5352.00	5355.26	5353.43	5355.31	0.000888	1.90	1111.51	509.21	0.19
DCG	446	50-YR	1380.00	5352.00	5354.83	5353.22	5354.87	0.000964	1.79	898.02	467.85	0.19
DCG	446	10-YR	810.00	5352.00	5354.07	5352.94	5354.11	0.001356	1.70	546.61	453.03	0.22
DCG	446	Effective	29.40	5352.00	5352.28	5352.11	5352.29	0.003289	0.71	41.64	178.27	0.24
DCG	260	100-YR	1780.00	5350.00	5355.03		5355.11	0.001371	2.55	863.97	564.70	0.24
DCG	260	50-YR	1380.00	5350.00	5354.57		5354.65	0.001602	2.51	684.40	460.89	0.25
DCG	260	10-YR	810.00	5350.00	5353.72		5353.79	0.002196	2.37	388.80	309.50	0.28
DCG	260	Effective	29.40	5350.00	5350.54	5350.54	5350.71	0.051644	3.34	8.79	48.98	1.00
DCG	113	100-YR	1780.00	5347.00	5354.35	5353.10	5354.73	0.005265	5.17	399.78	194.00	0.47
DCG	113	50-YR	1380.00	5347.00	5353.90	5352.55	5354.23	0.005269	4.75	317.22	152.85	0.46
DCG	113	10-YR	810.00	5347.00	5353.07	5351.39	5353.31	0.005266	3.92	213.52	110.37	0.44
DCG	113	Effective	29.40	5347.00	5348.44	5347.83	5348.51	0.005272	2.09	14.06	14.25	0.37

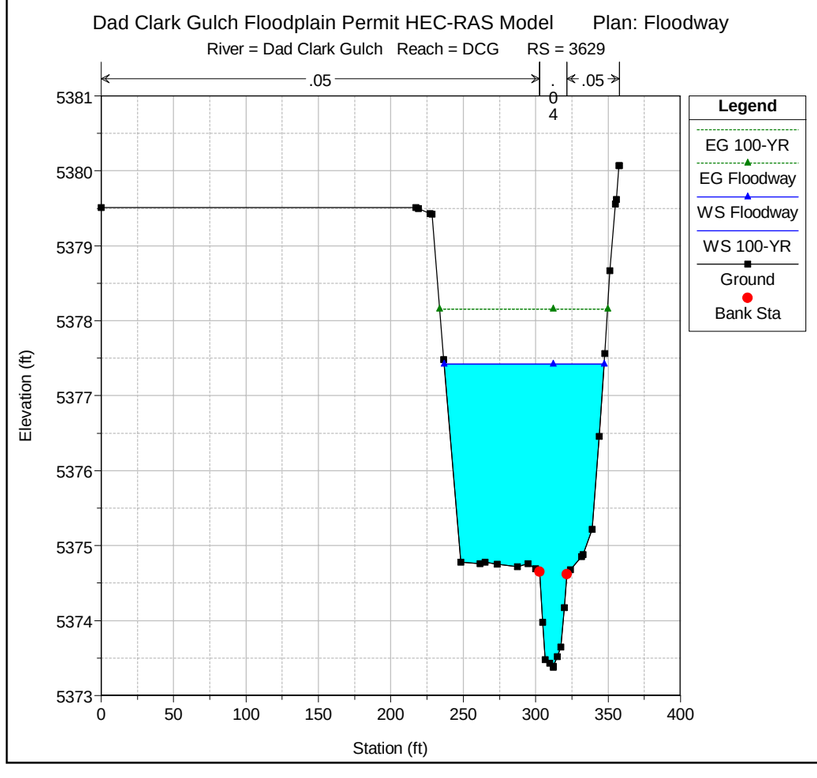
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

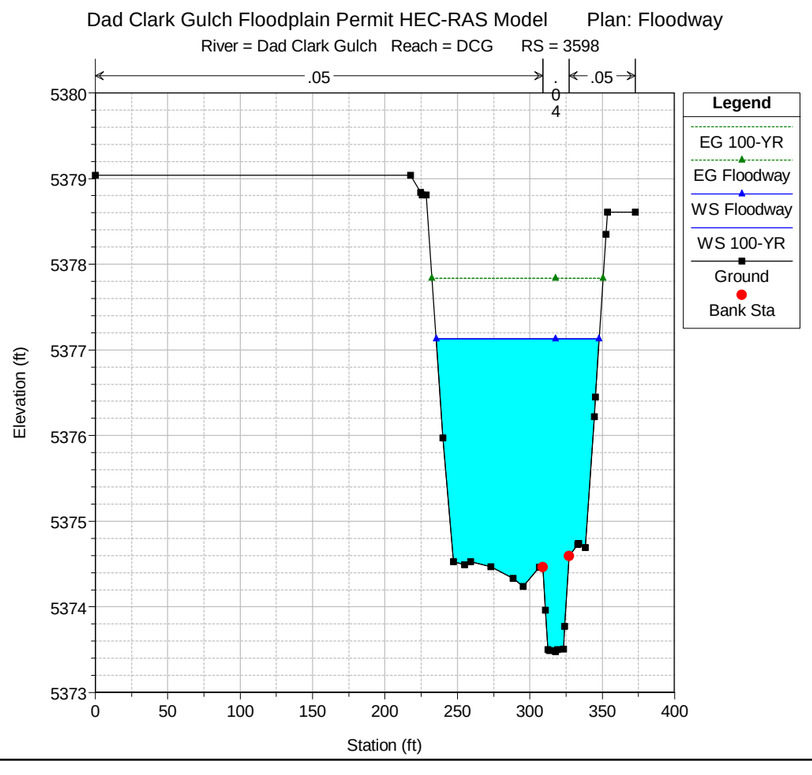


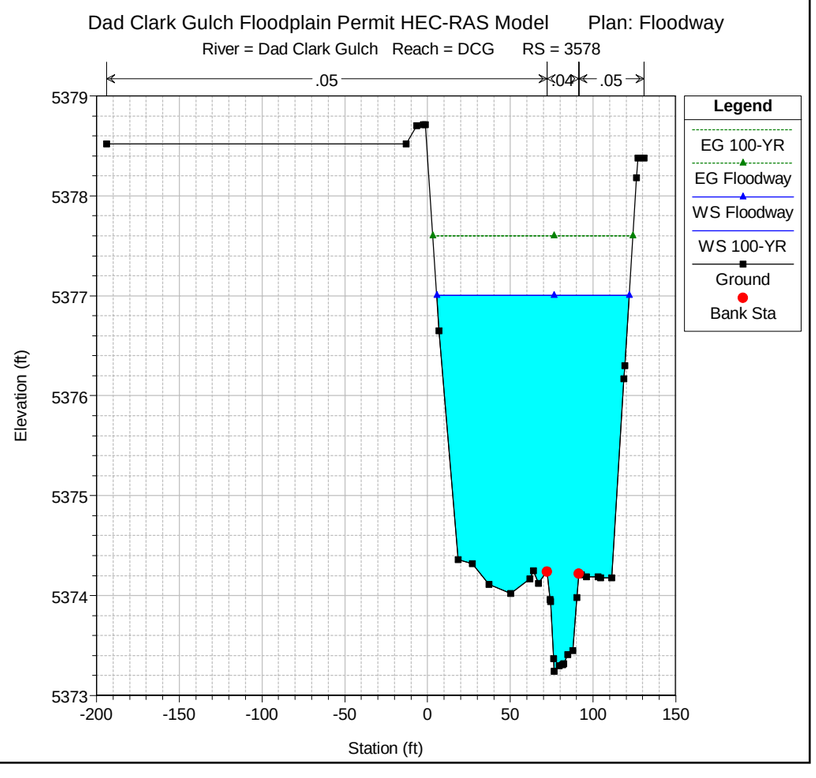

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3705 FHAD 50.0
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

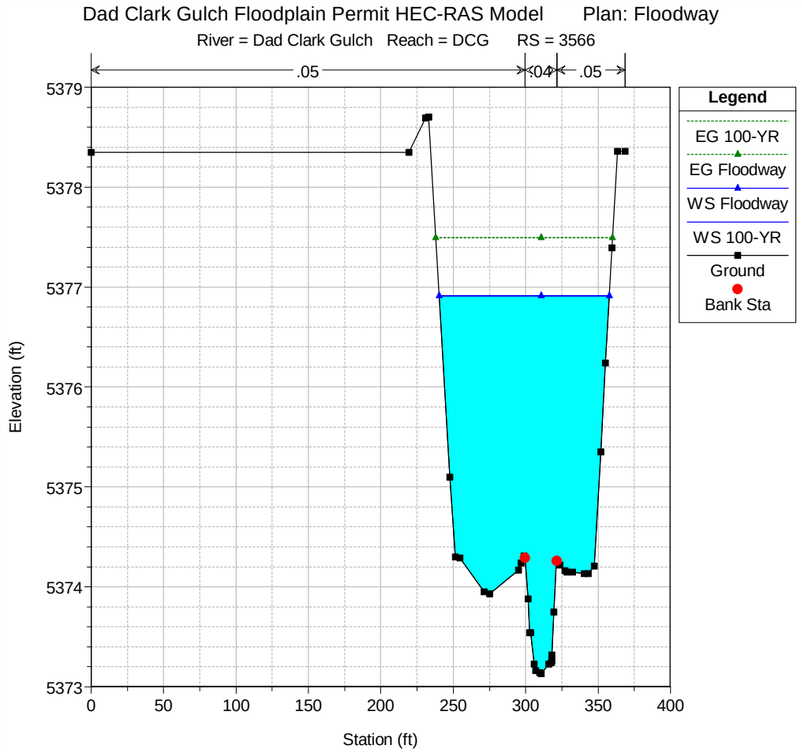

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3705 FHAD 50.0
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

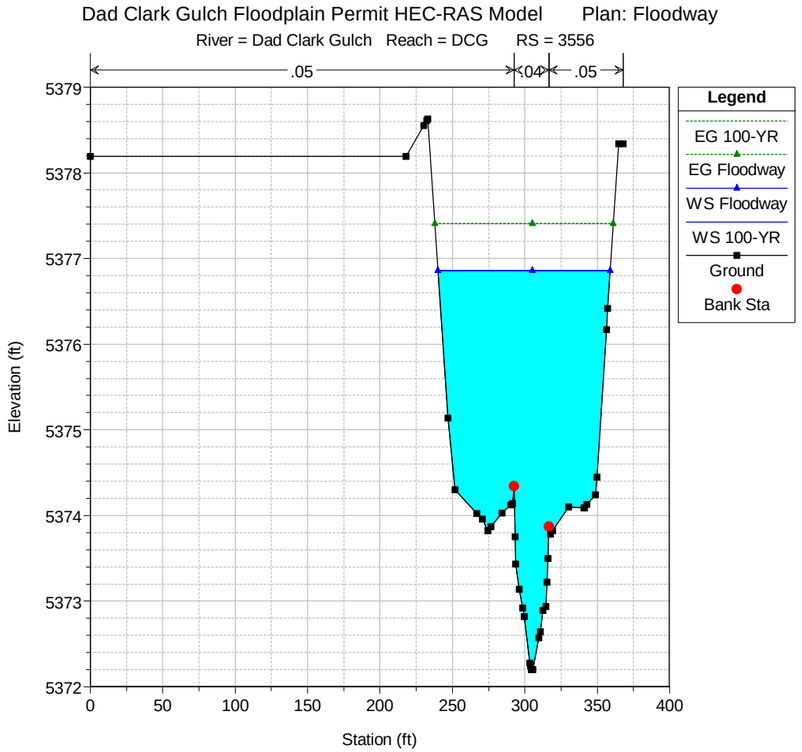

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3662
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

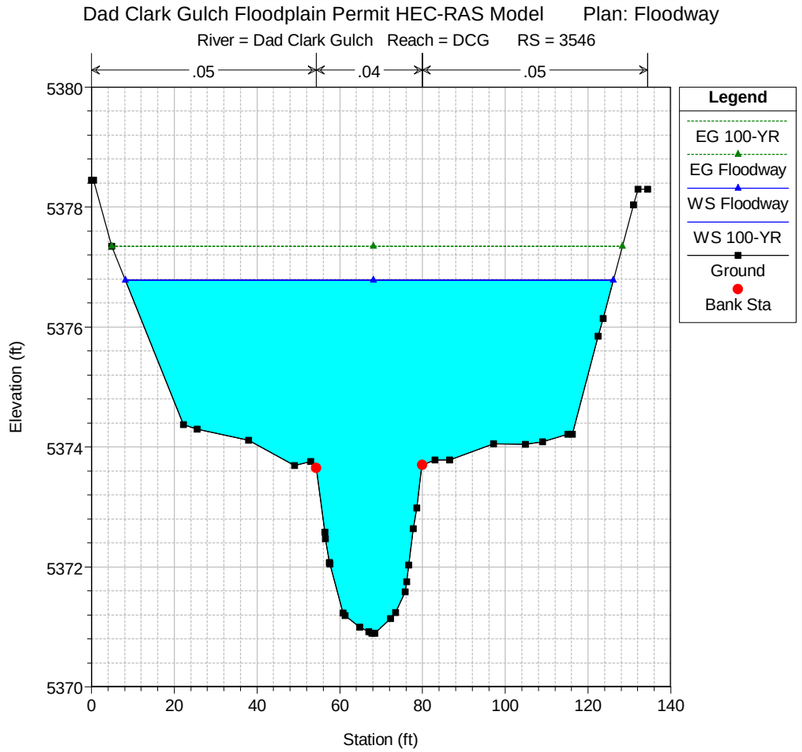

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3629
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

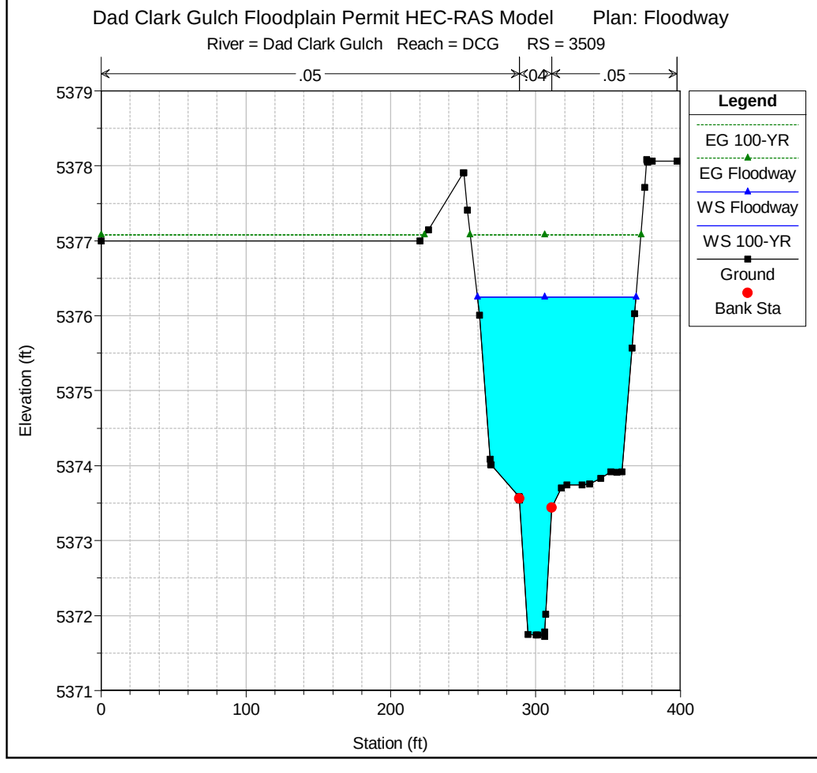

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3598
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

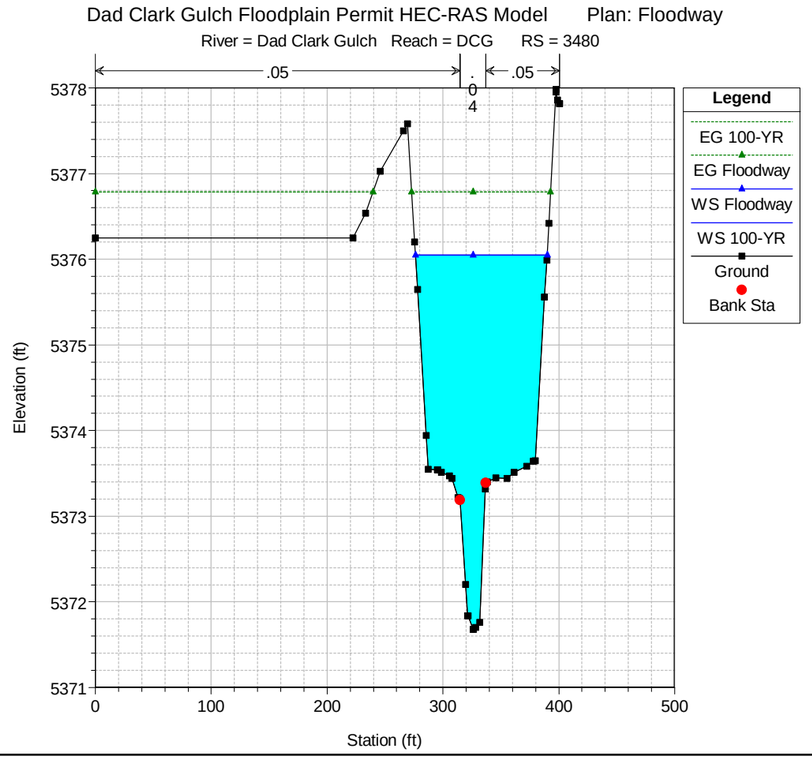

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3578
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

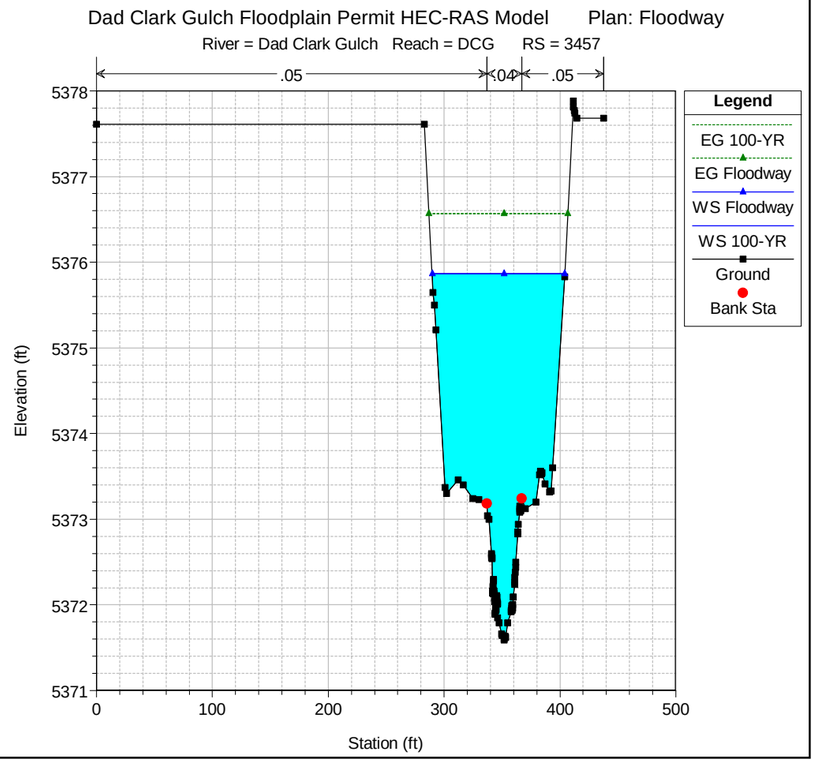

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3566
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3556
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3546
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

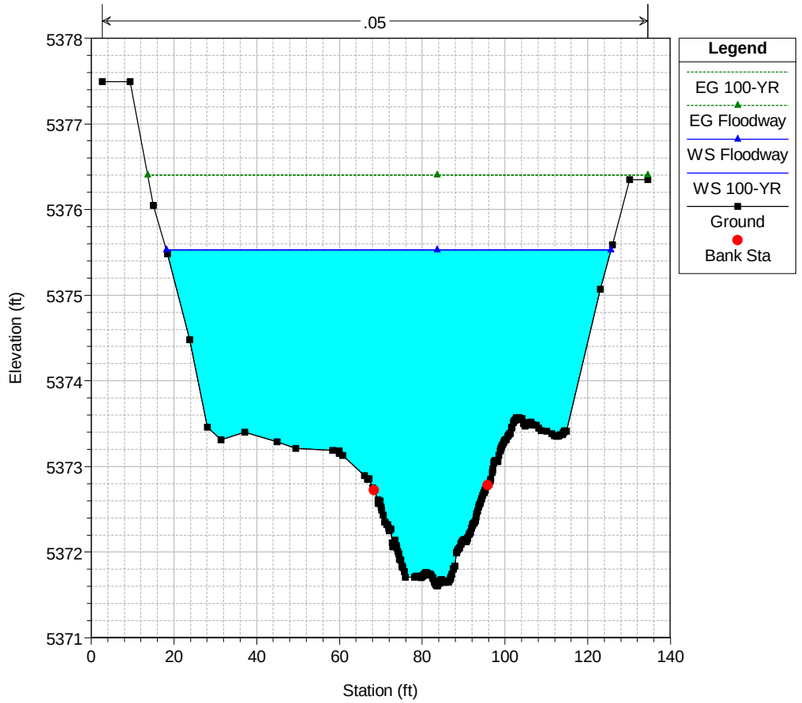

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3509
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3480
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3457
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

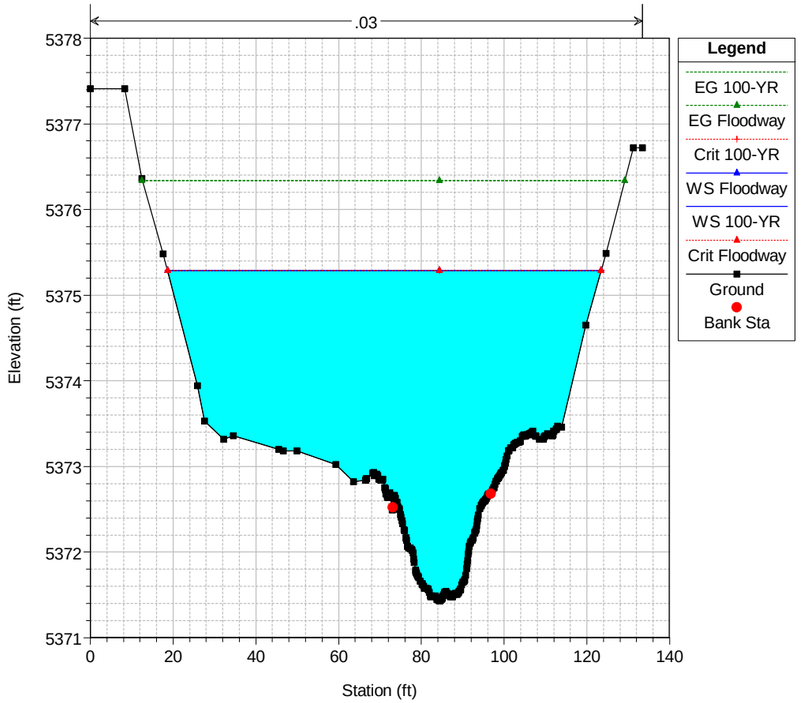
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3444



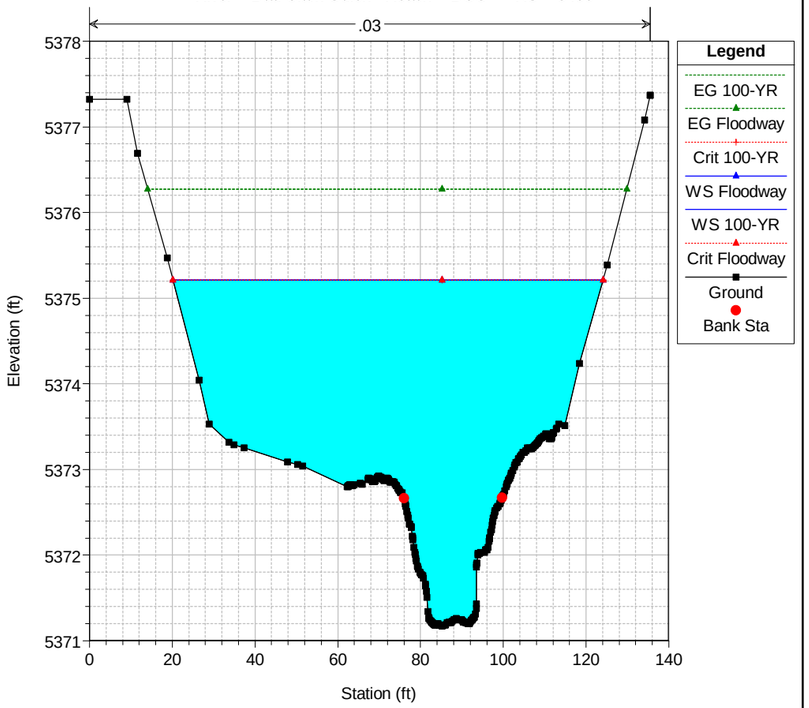
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3439



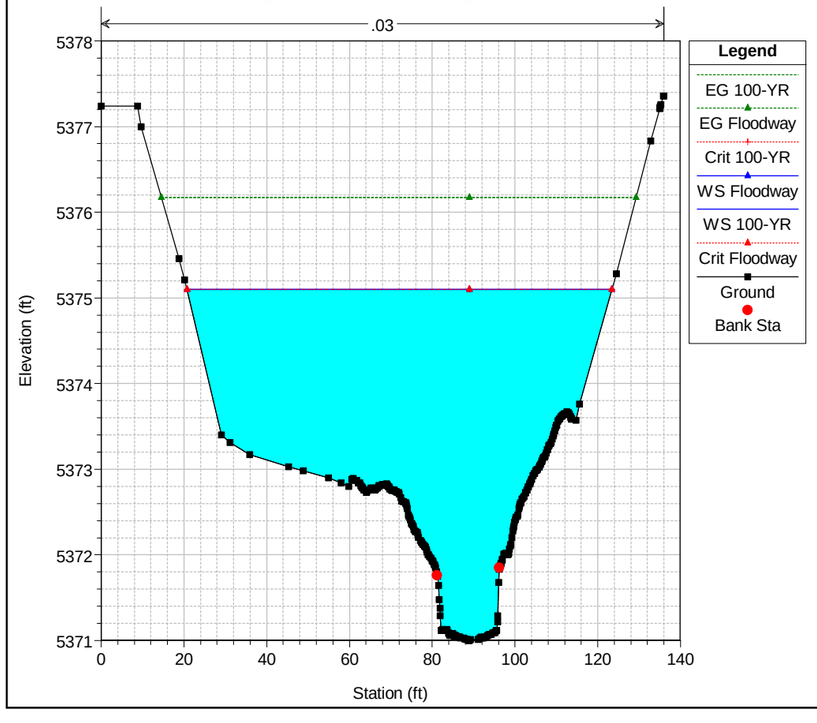
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3435



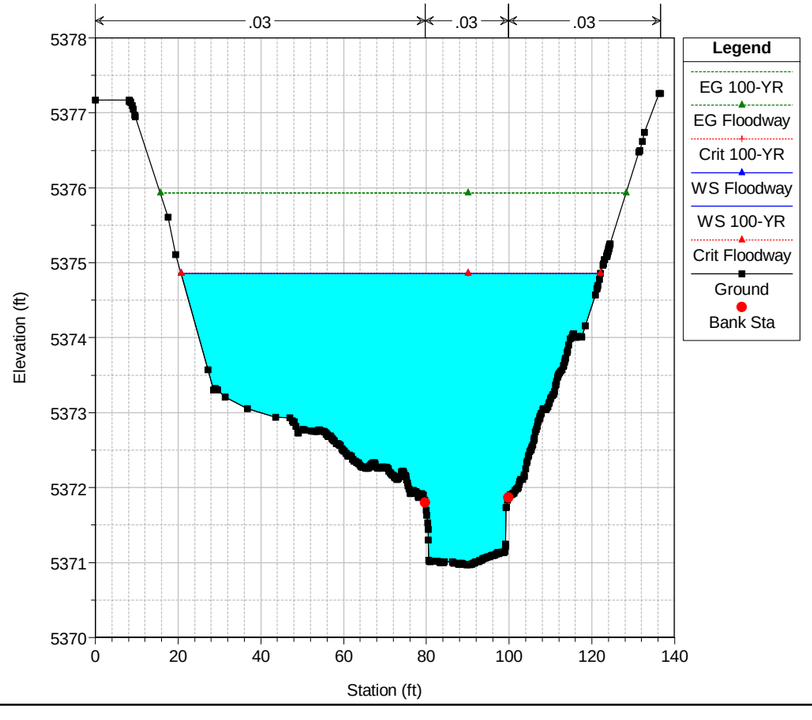
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3430



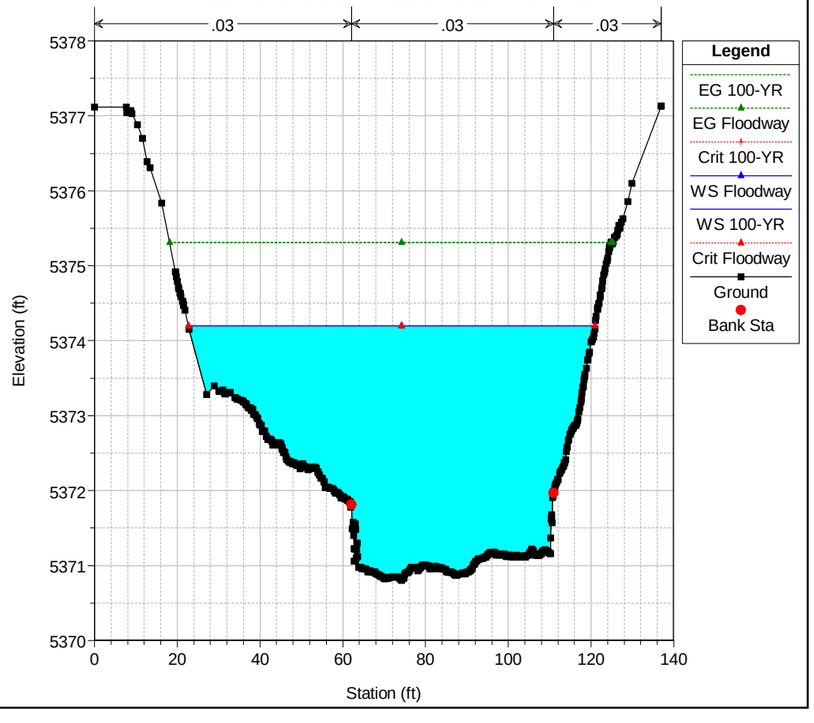
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

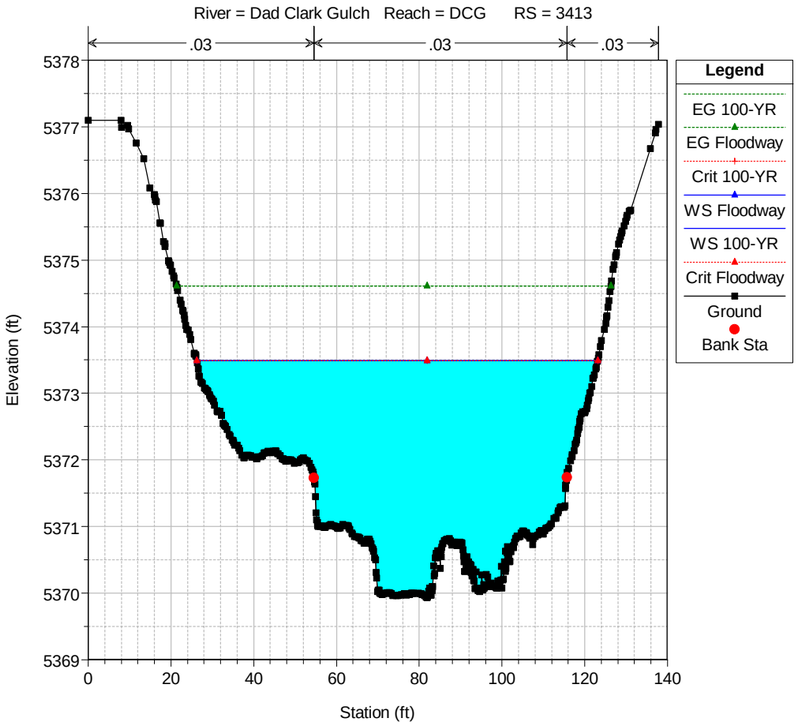
River = Dad Clark Gulch Reach = DCG RS = 3424

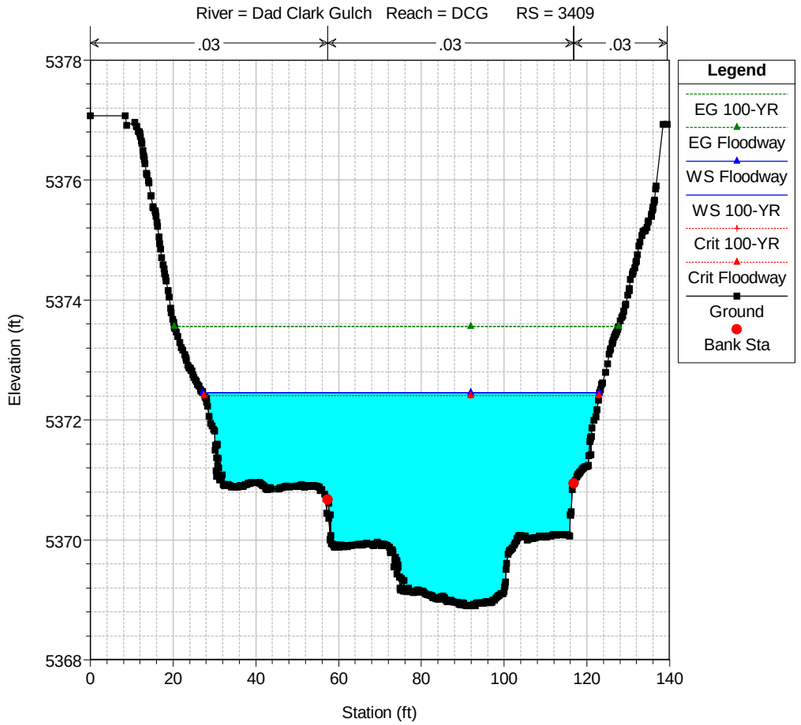


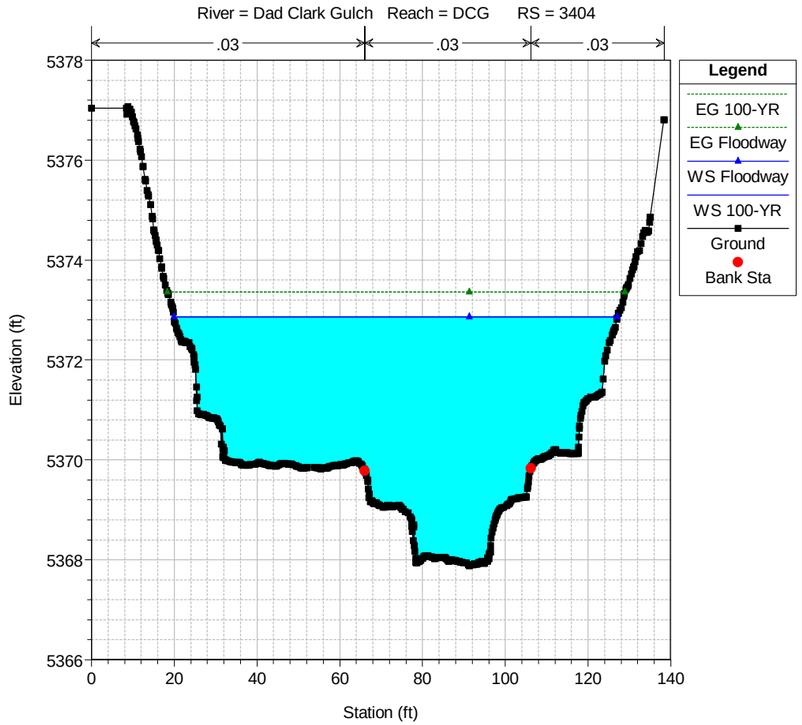
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

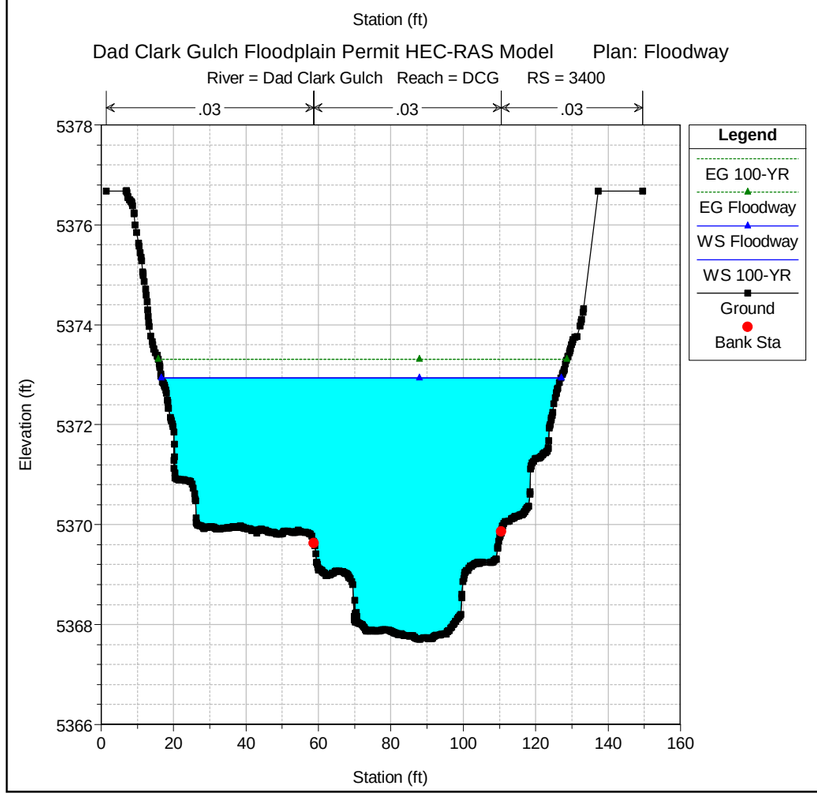
River = Dad Clark Gulch Reach = DCG RS = 3417

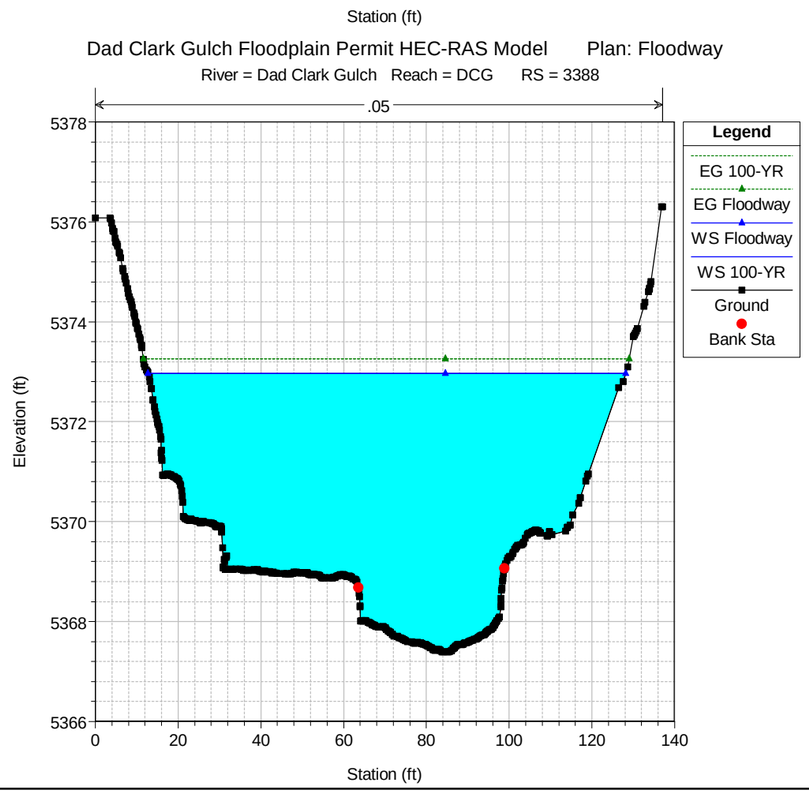


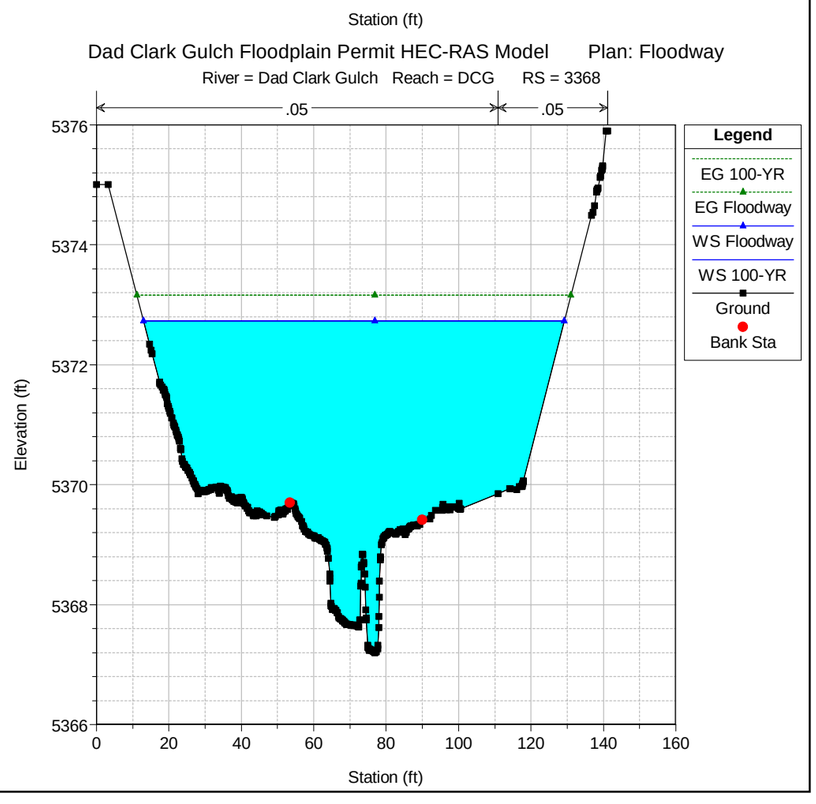

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3413
.03
.03
.03
Legend
EG 100-YR
EG Floodway
Crit 100-YR
WS Floodway
WS 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3409
.03
.03
.03
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Crit 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3404
.03
.03
.03
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

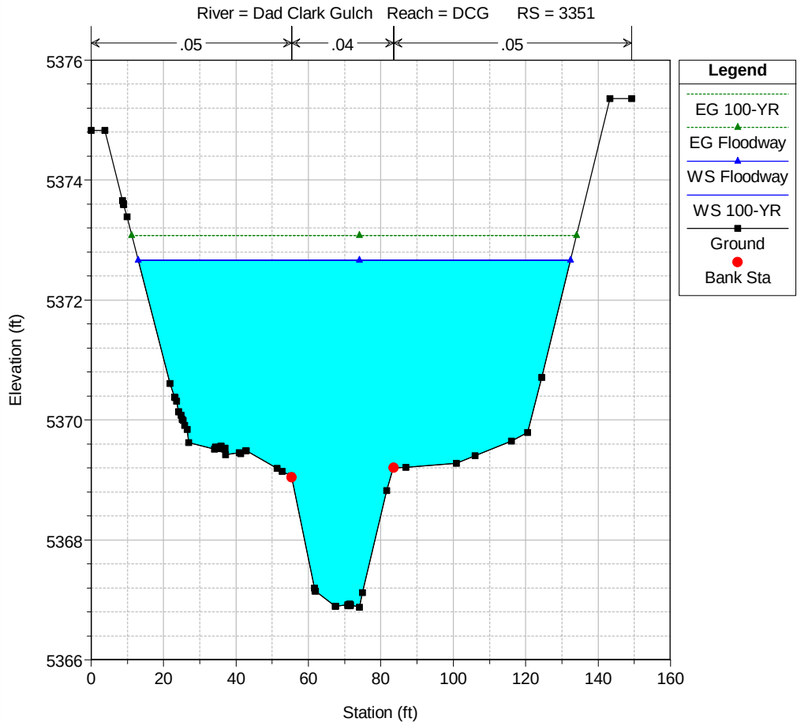

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3400
.03
.03
.03
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3388
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3368
.05
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

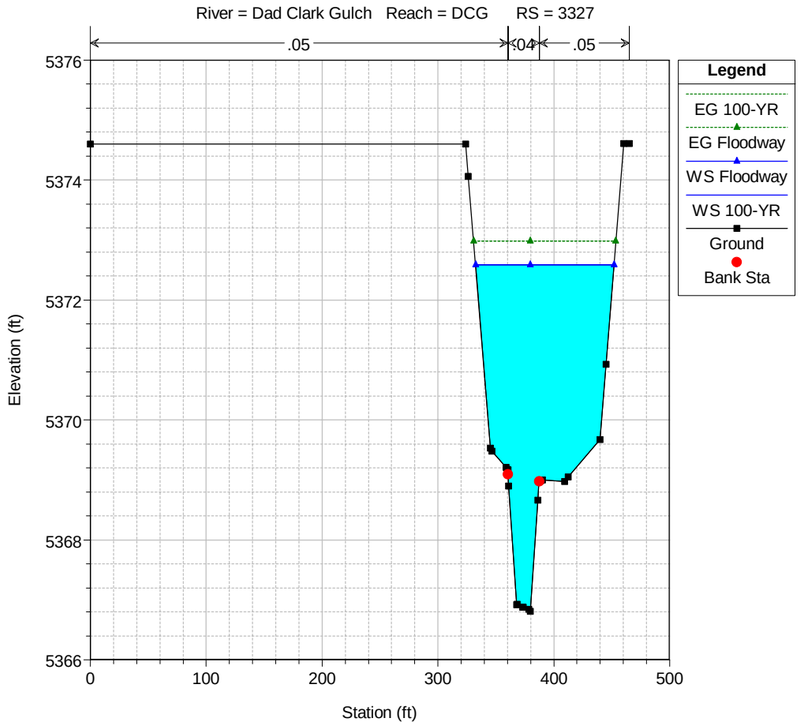
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3351



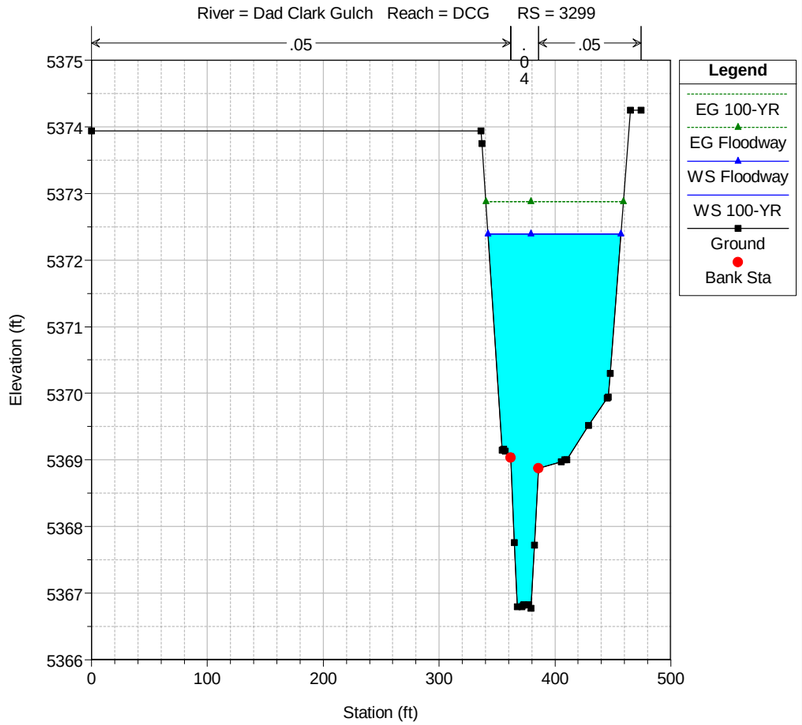
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3327



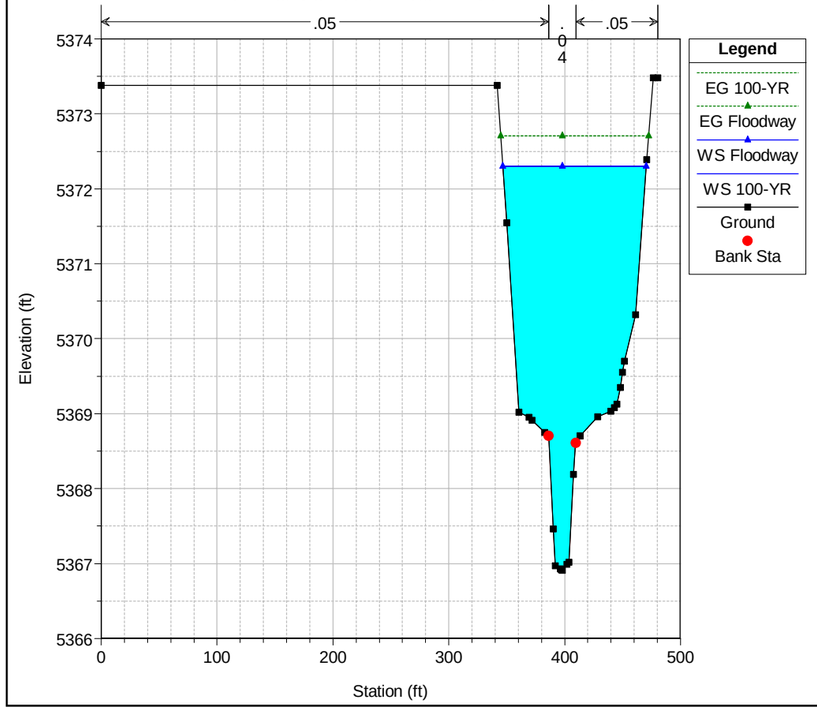
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3299



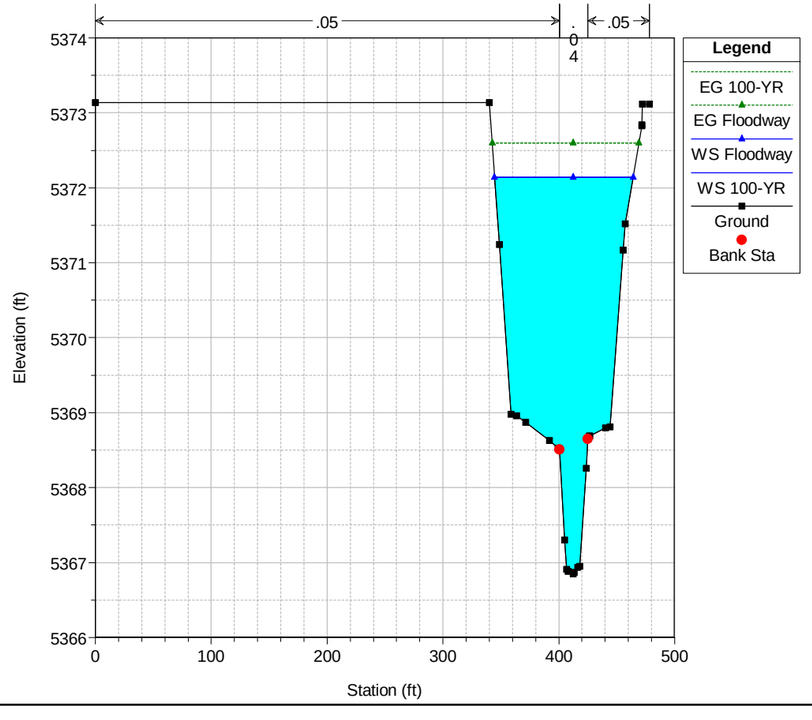
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3262



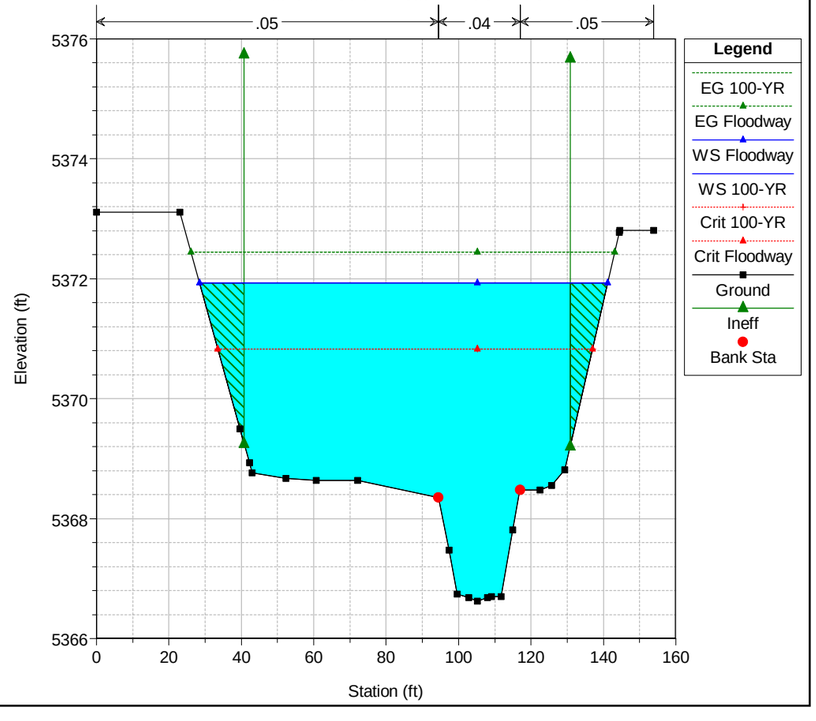
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

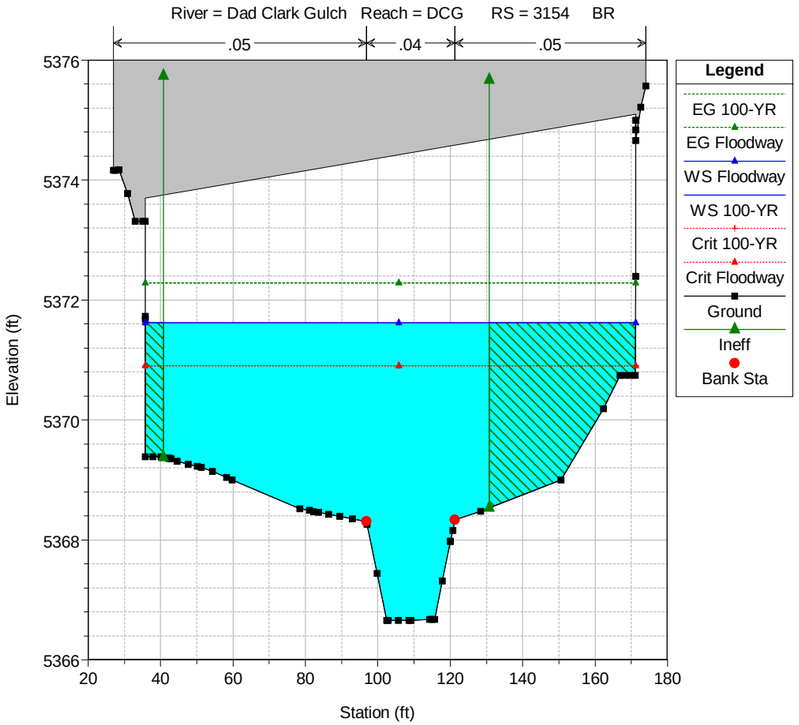
River = Dad Clark Gulch Reach = DCG RS = 3237

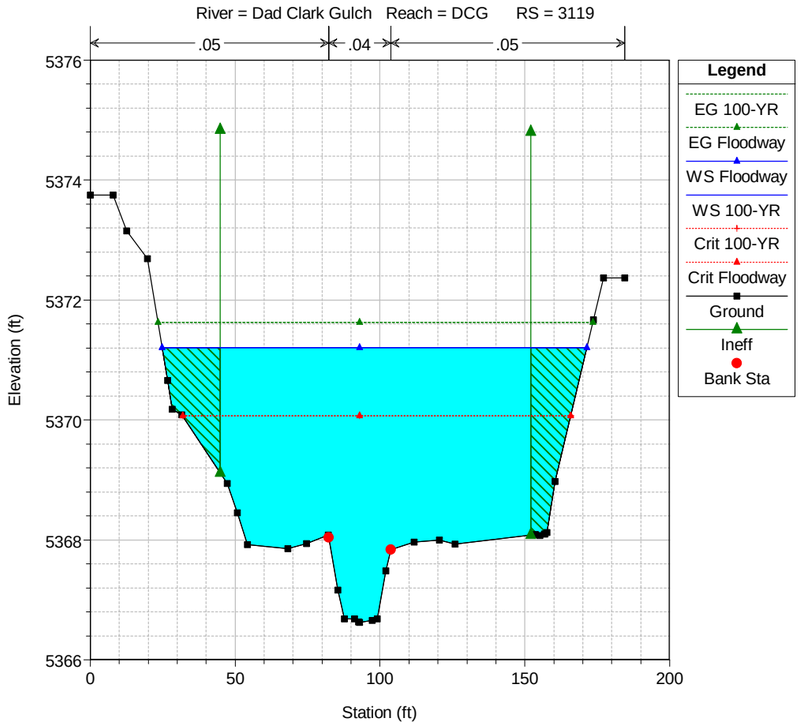


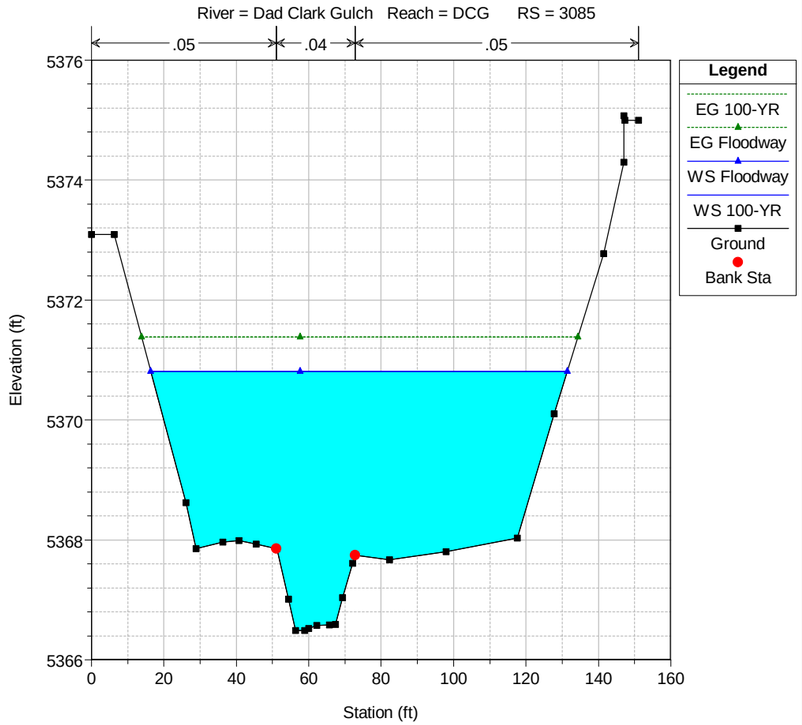
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

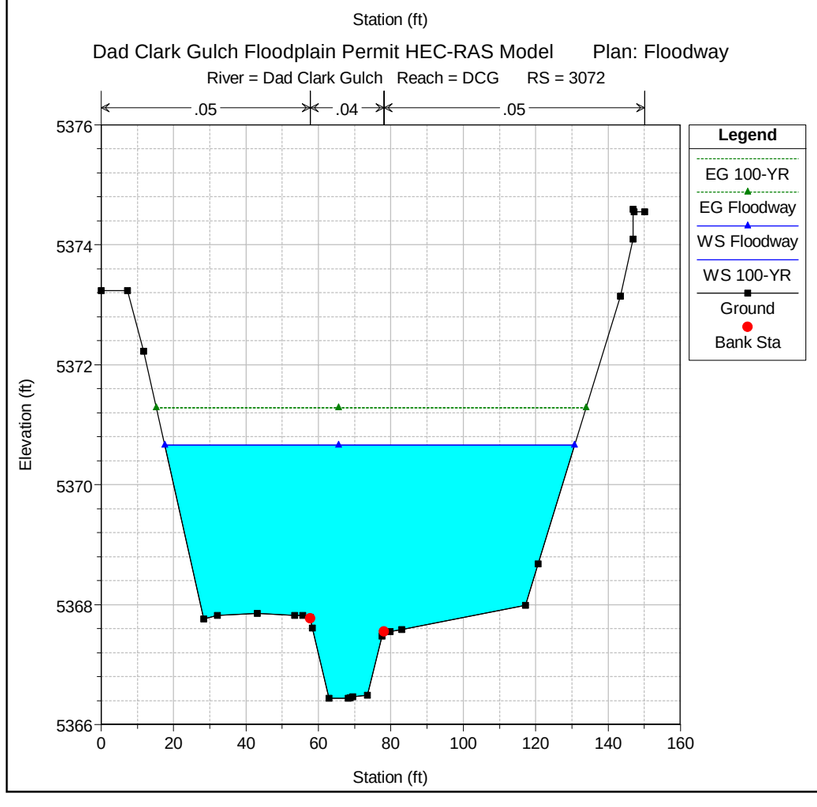
River = Dad Clark Gulch Reach = DCG RS = 3202

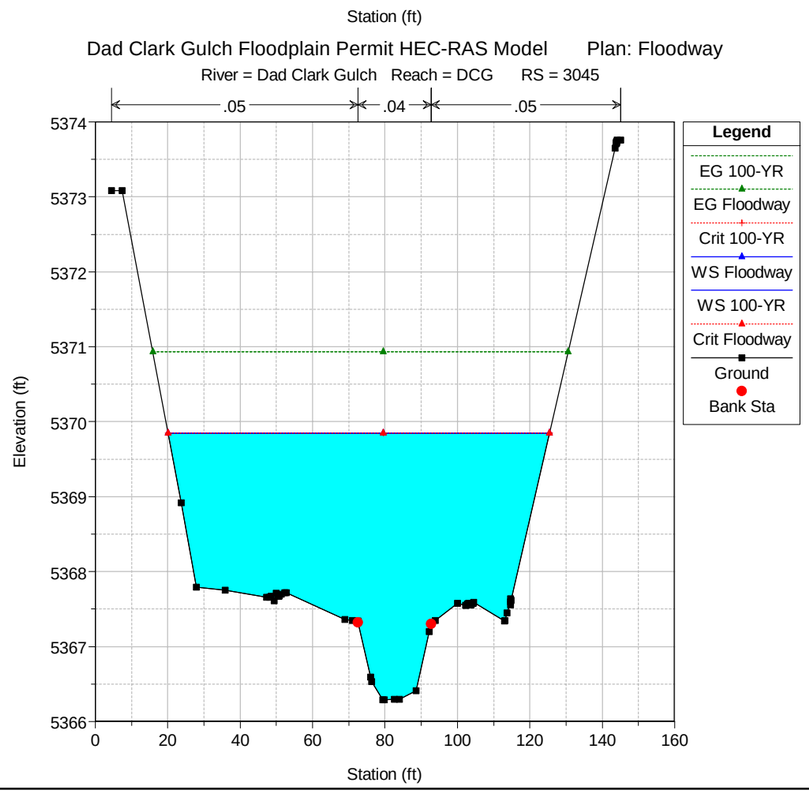


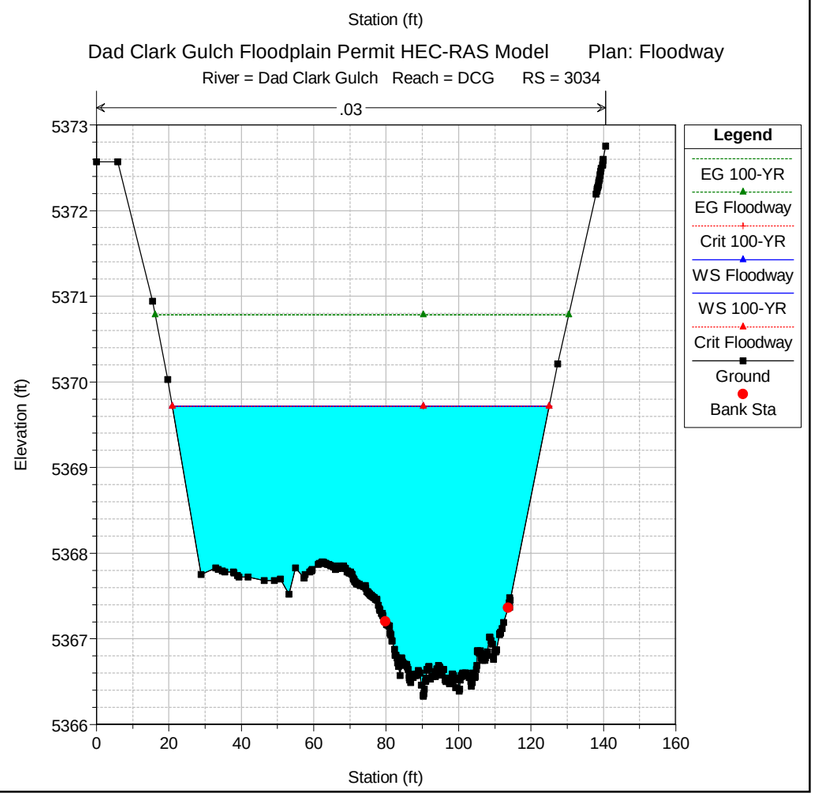

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3154 BR
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Crit 100-YR
Crit Floodway
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3119
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Crit 100-YR
Crit Floodway
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3085
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

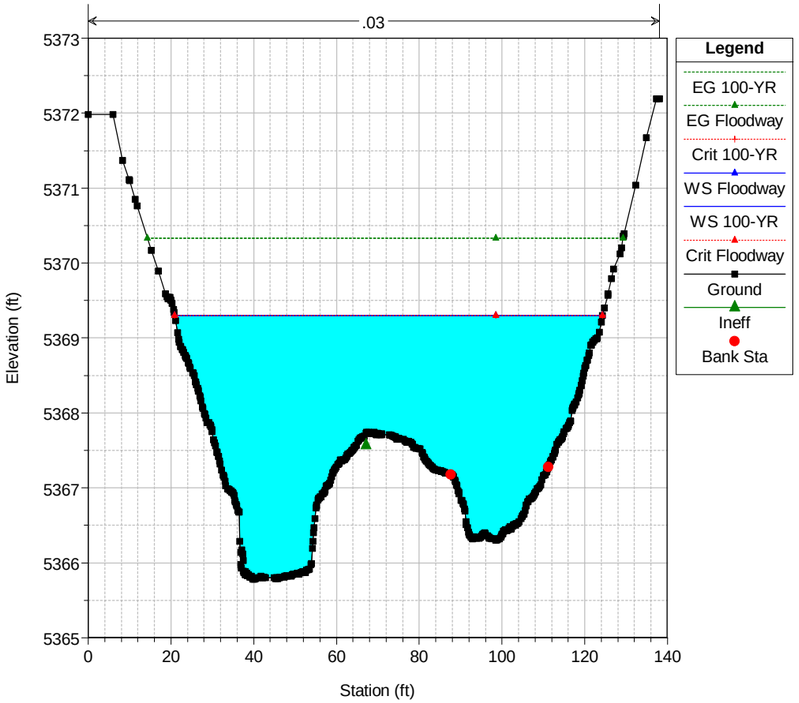

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3072
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3045
.05
.04
.05
Legend
EG 100-YR
EG Floodway
Crit 100-YR
WS Floodway
WS 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 3034
.03
Legend
EG 100-YR
EG Floodway
Crit 100-YR
WS Floodway
WS 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)

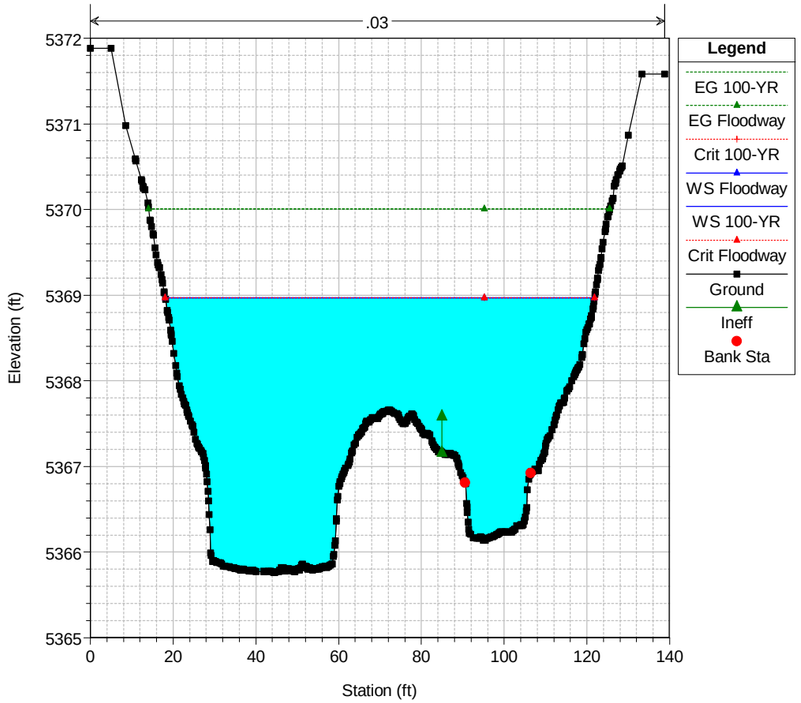
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3019



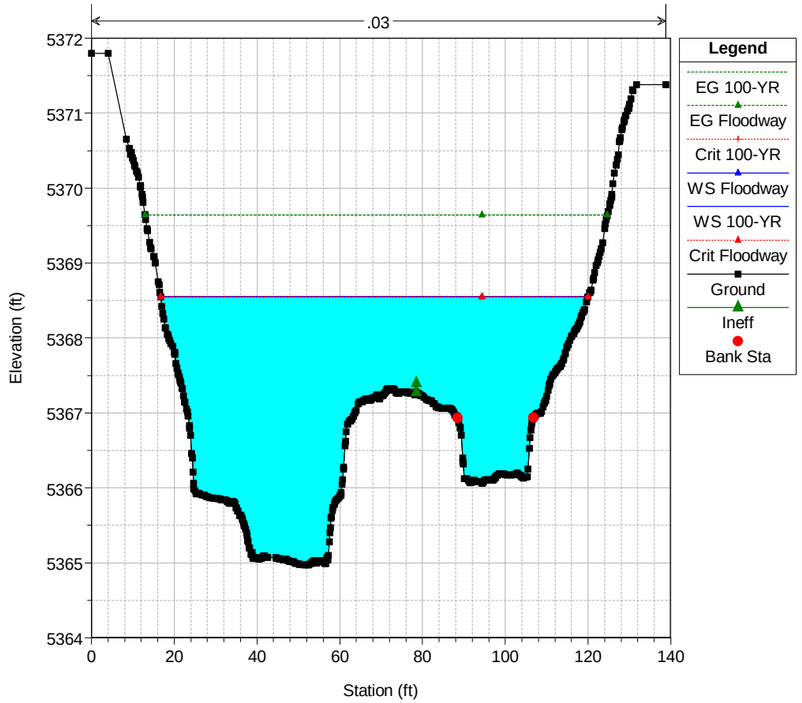
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3014



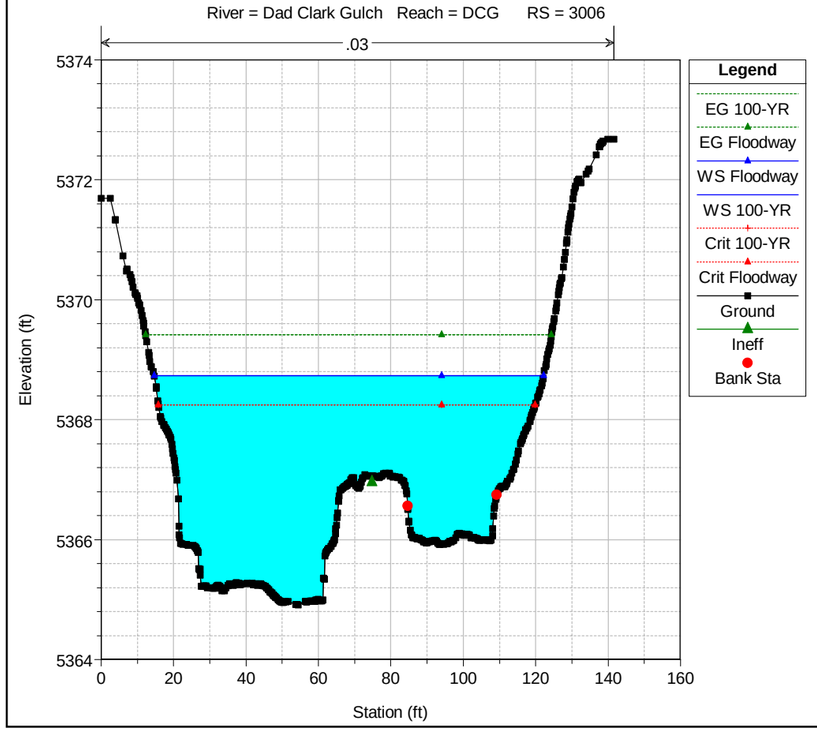
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3011



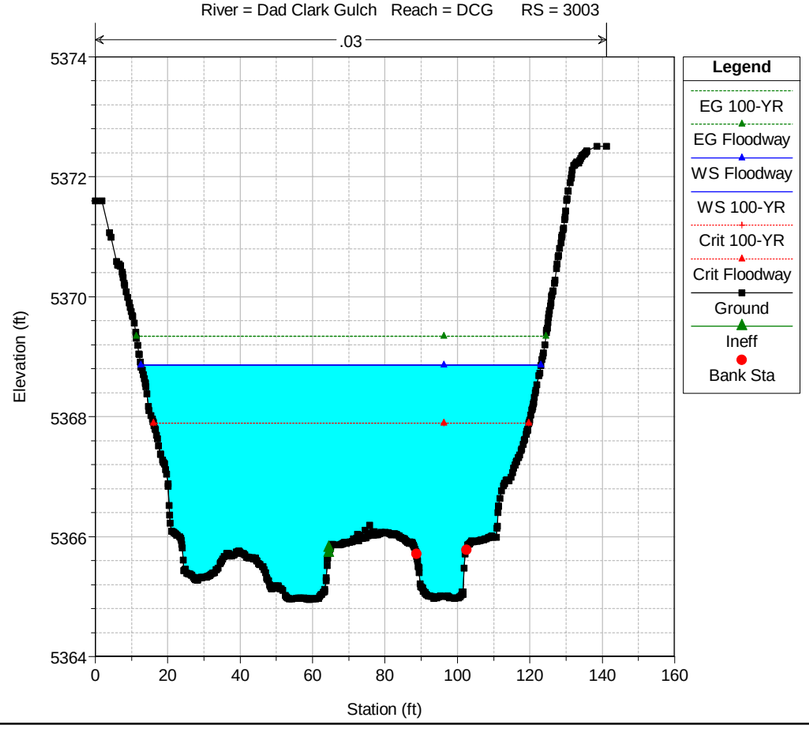
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3006



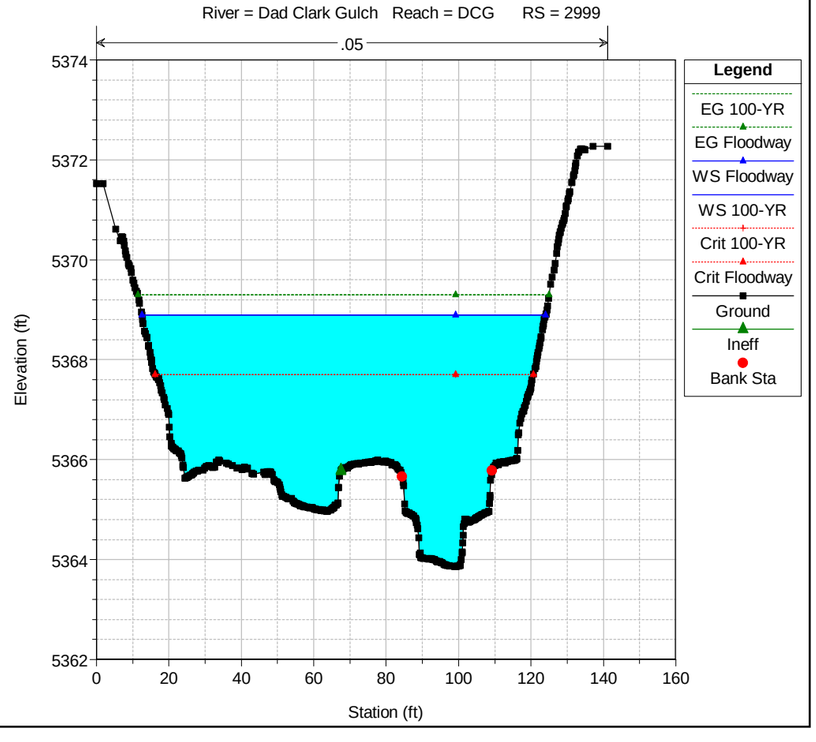
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 3003



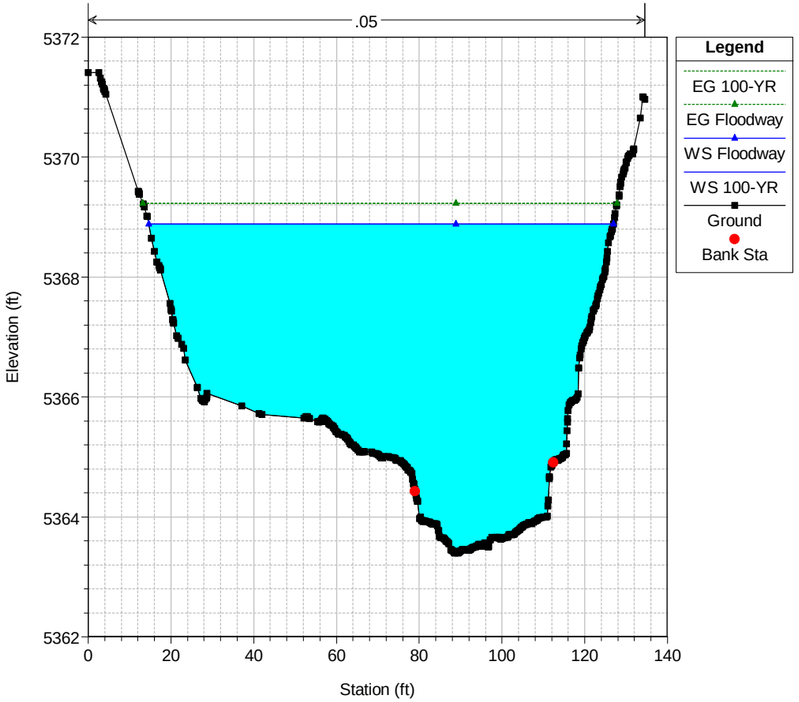
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 2999



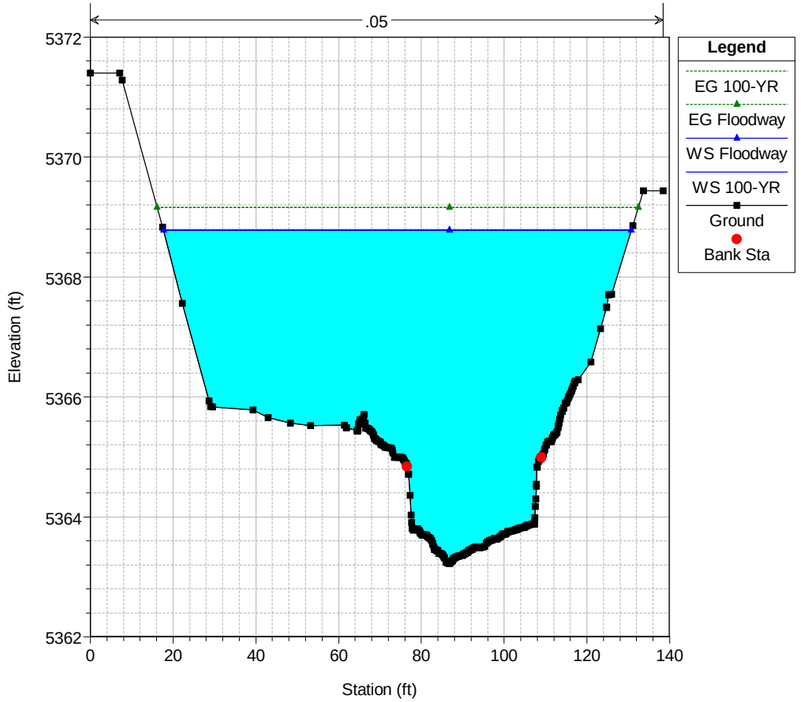
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 2987



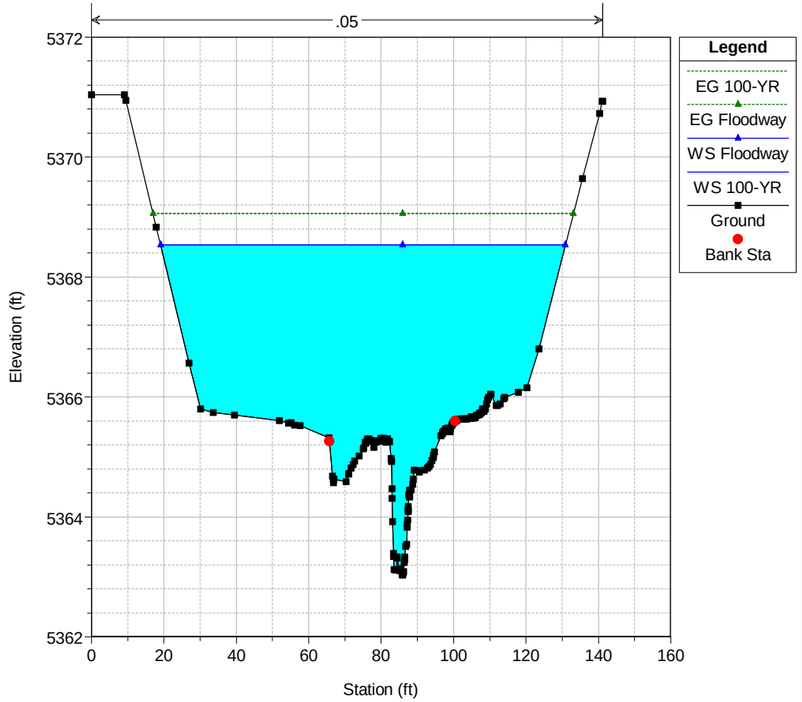
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 2972



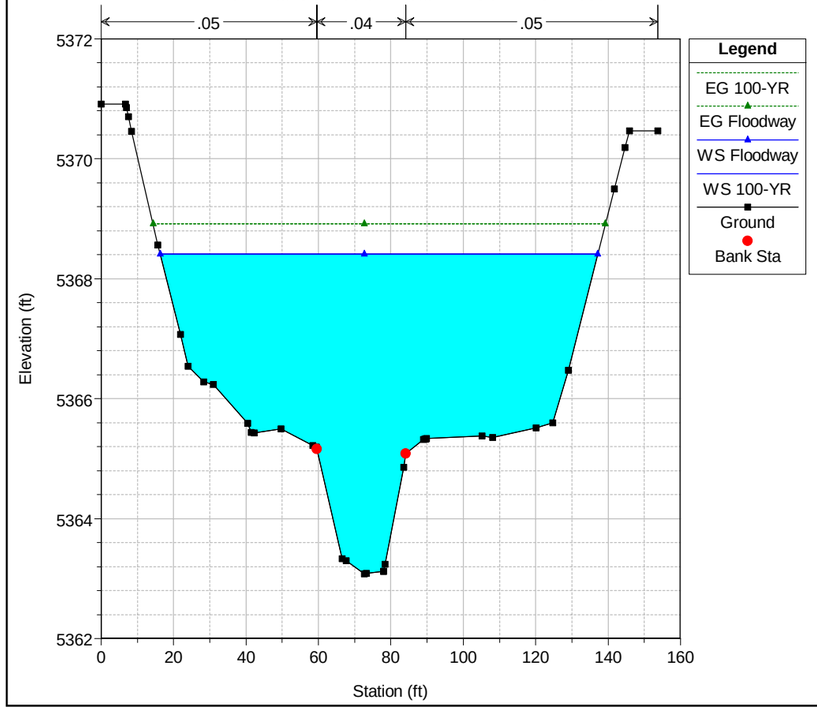
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 2957



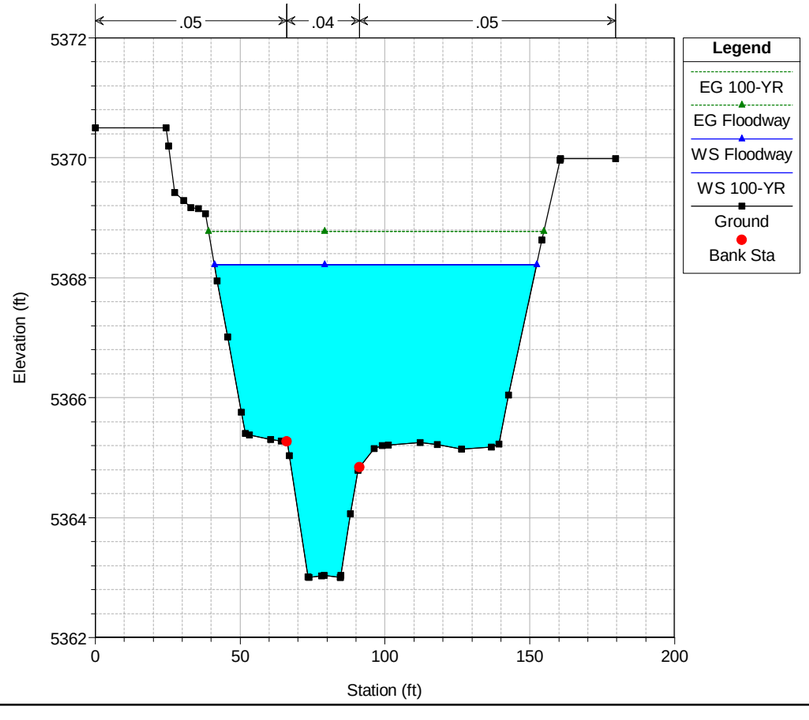
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 2936



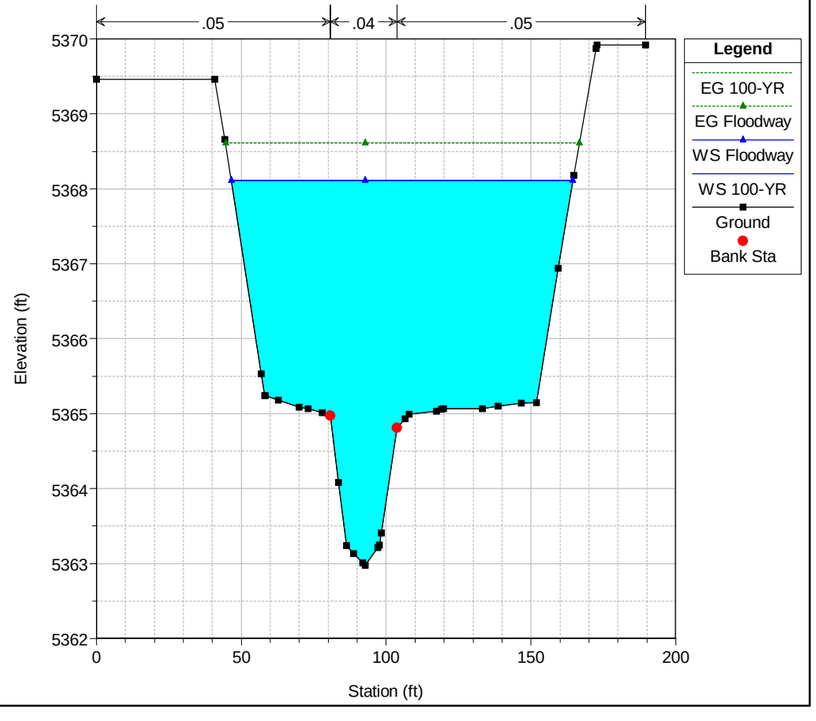
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

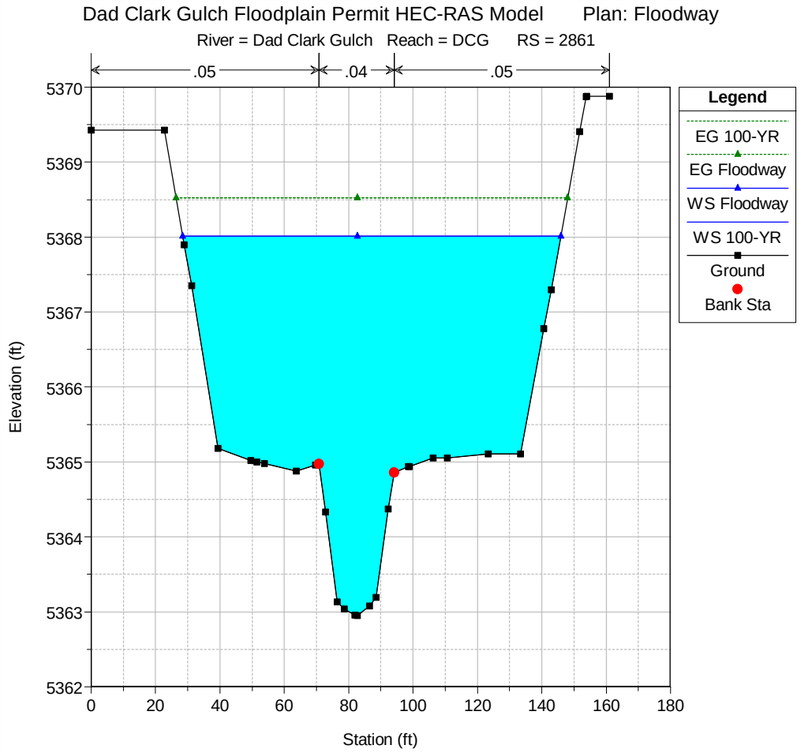
River = Dad Clark Gulch Reach = DCG RS = 2908

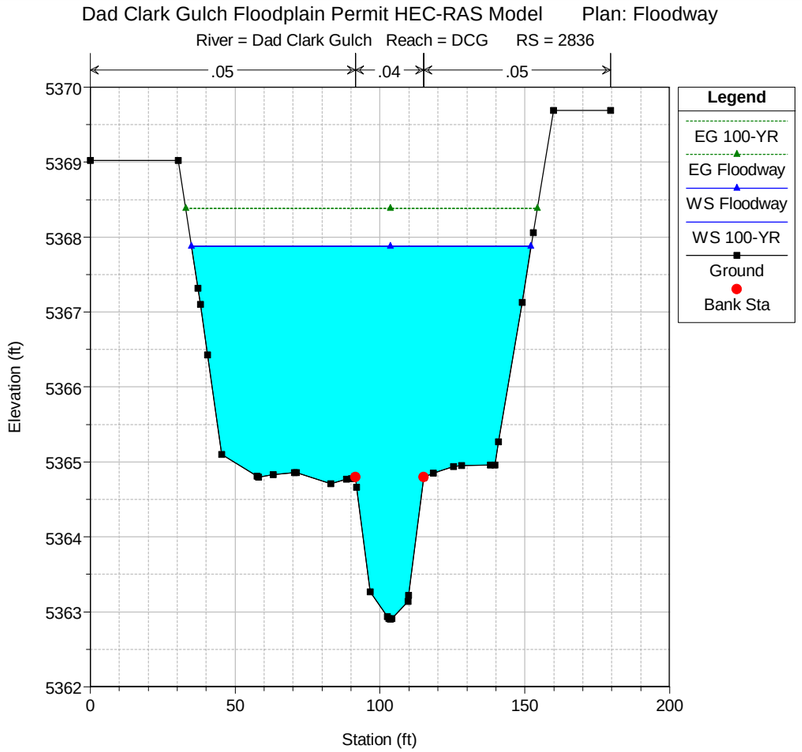


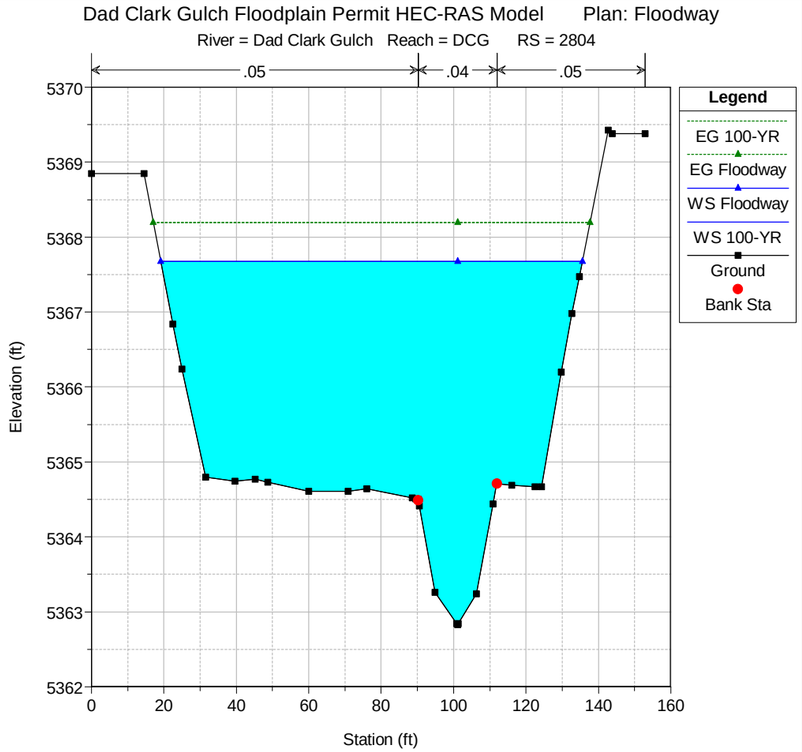
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

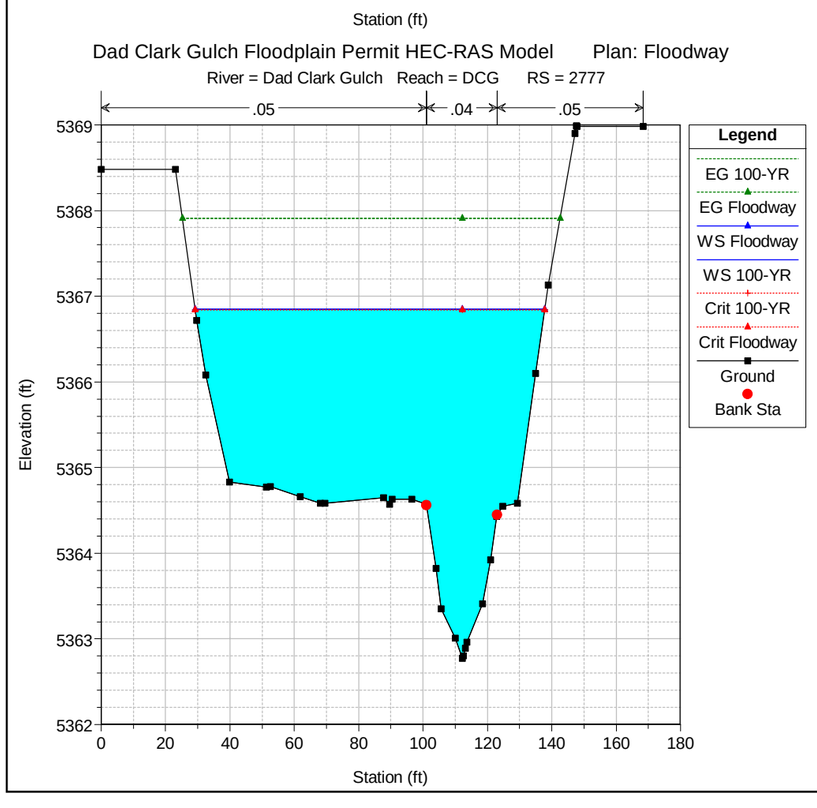
River = Dad Clark Gulch Reach = DCG RS = 2878

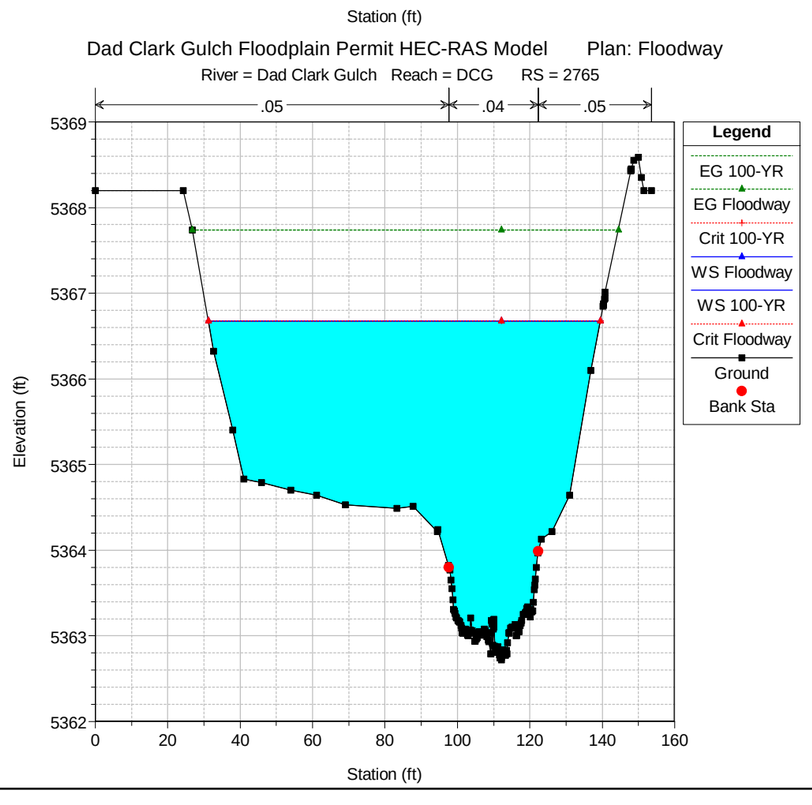


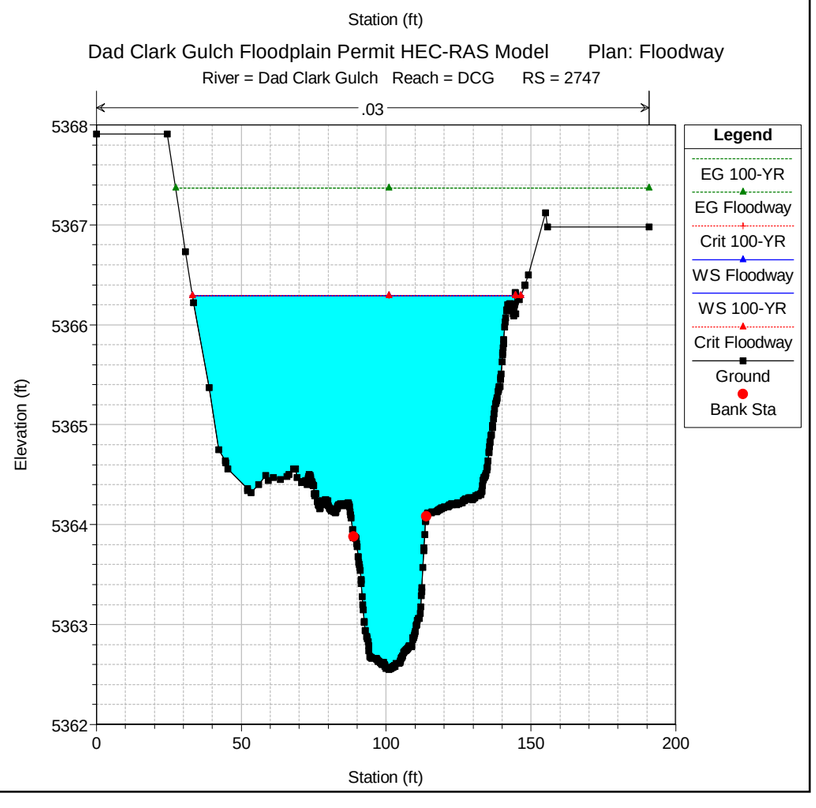

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2861
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

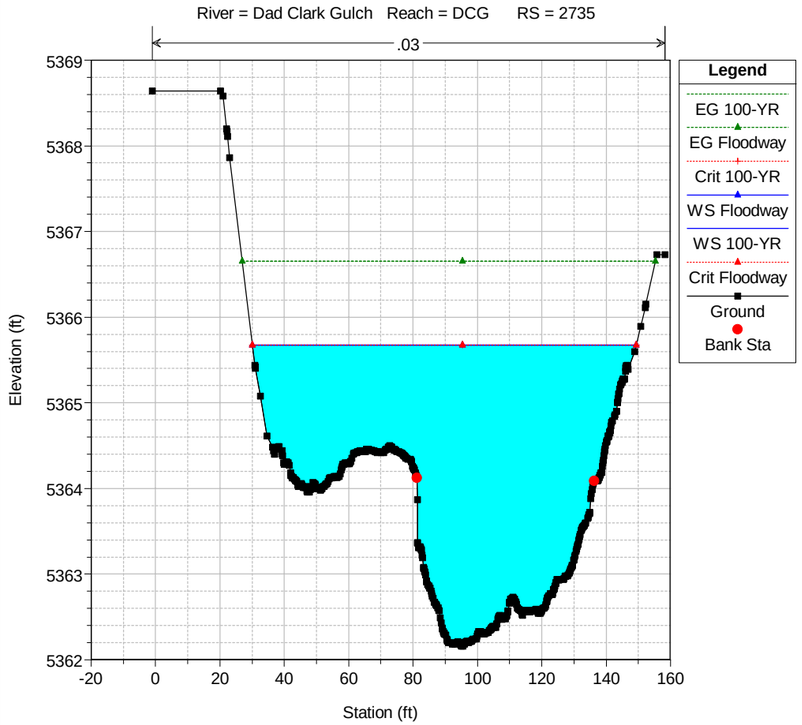

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2836
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

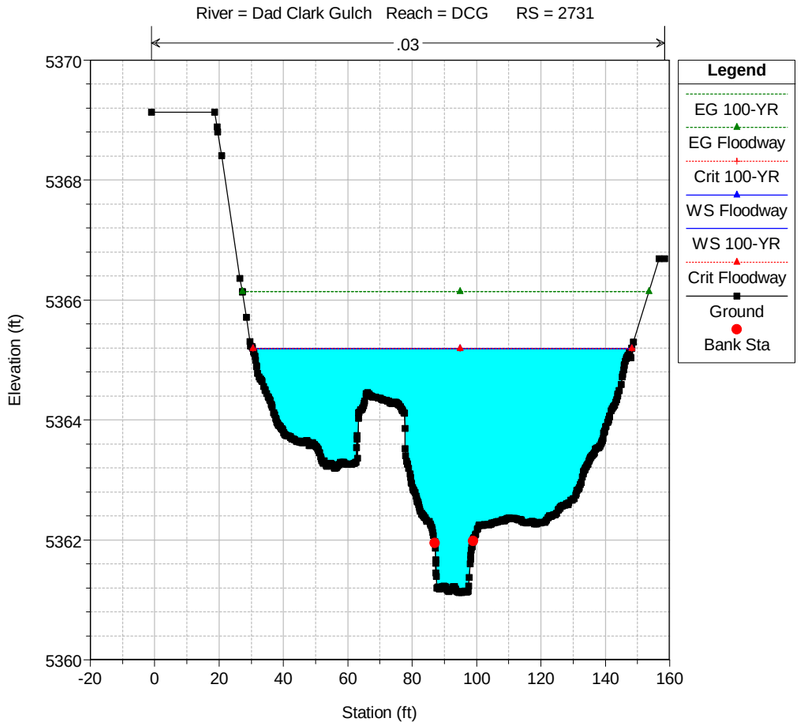

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2804
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

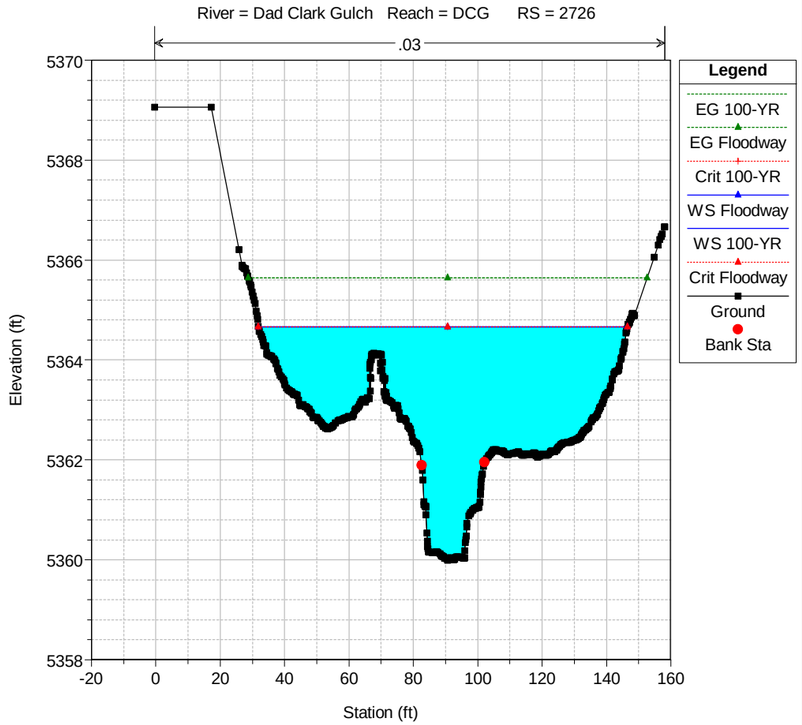

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2777
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Crit 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)

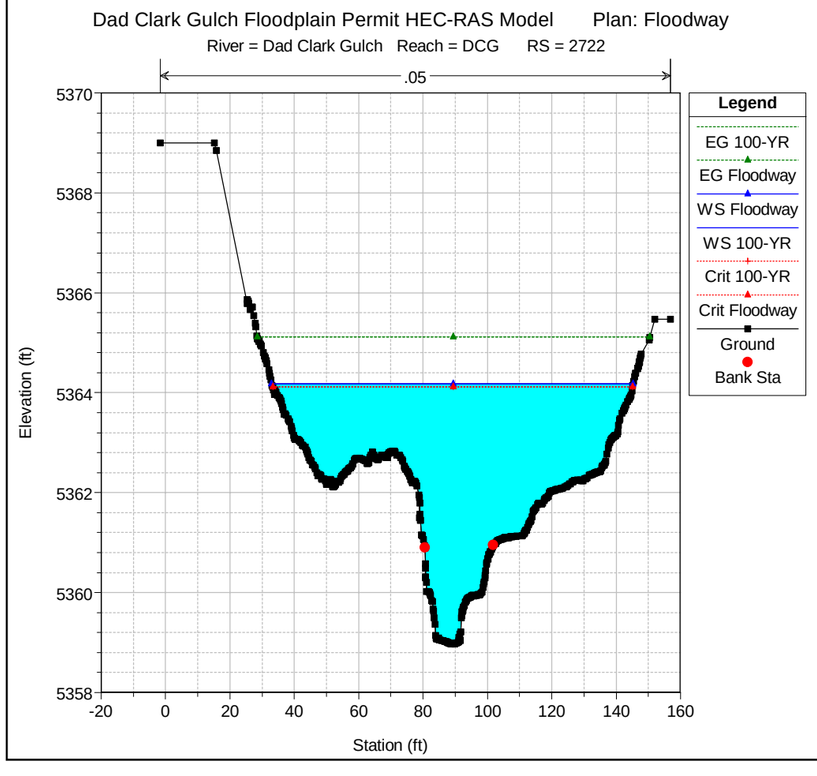

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2765
.05
.04
.05
Legend
EG 100-YR
EG Floodway
Crit 100-YR
WS Floodway
WS 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)

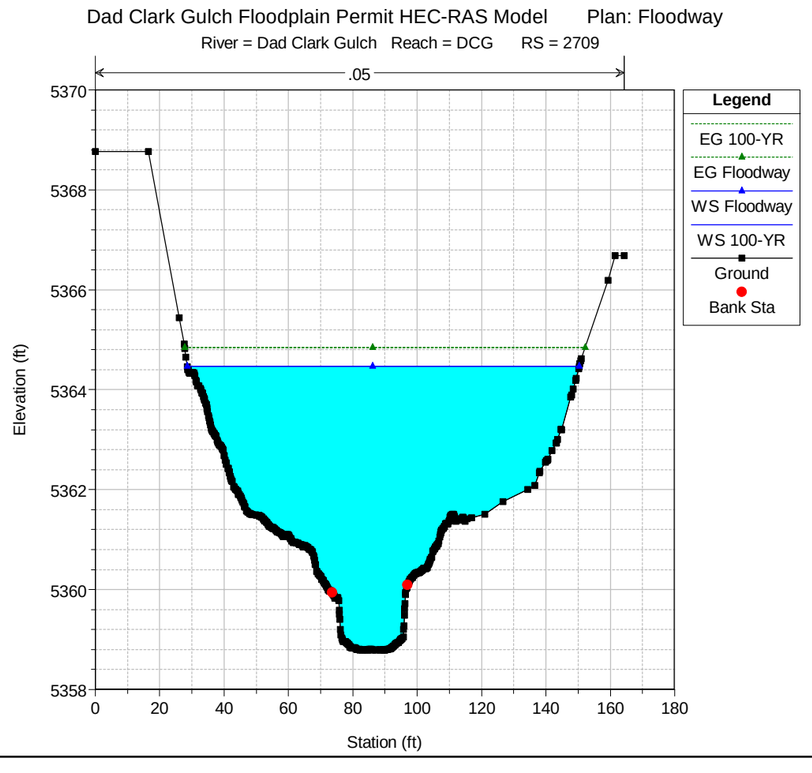

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2747
.03
Legend
EG 100-YR
EG Floodway
Crit 100-YR
WS Floodway
WS 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)

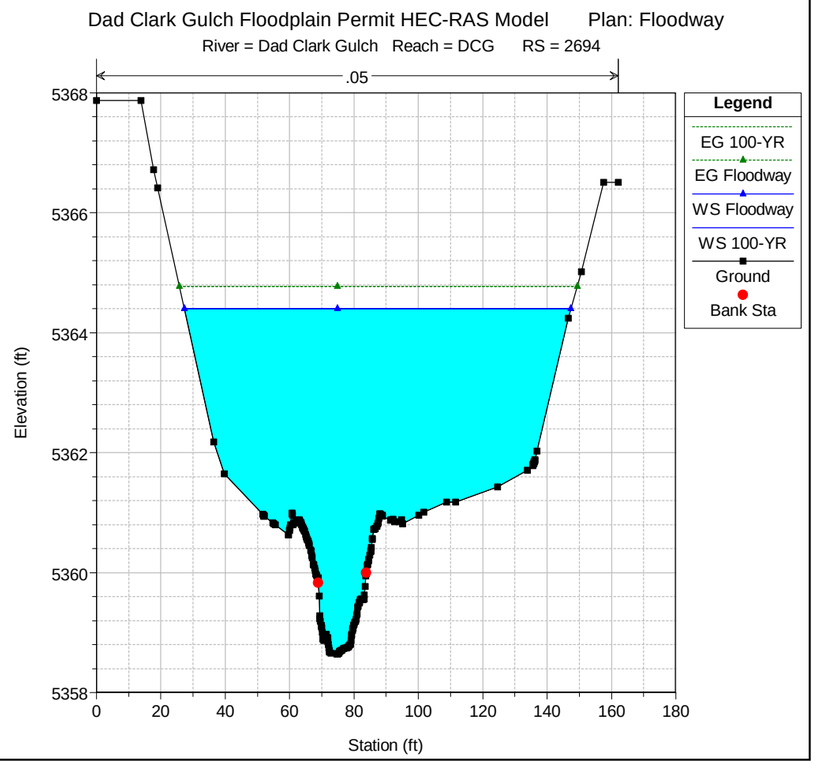

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2735
.03
Legend
EG 100-YR
EG Floodway
Crit 100-YR
WS Floodway
WS 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)

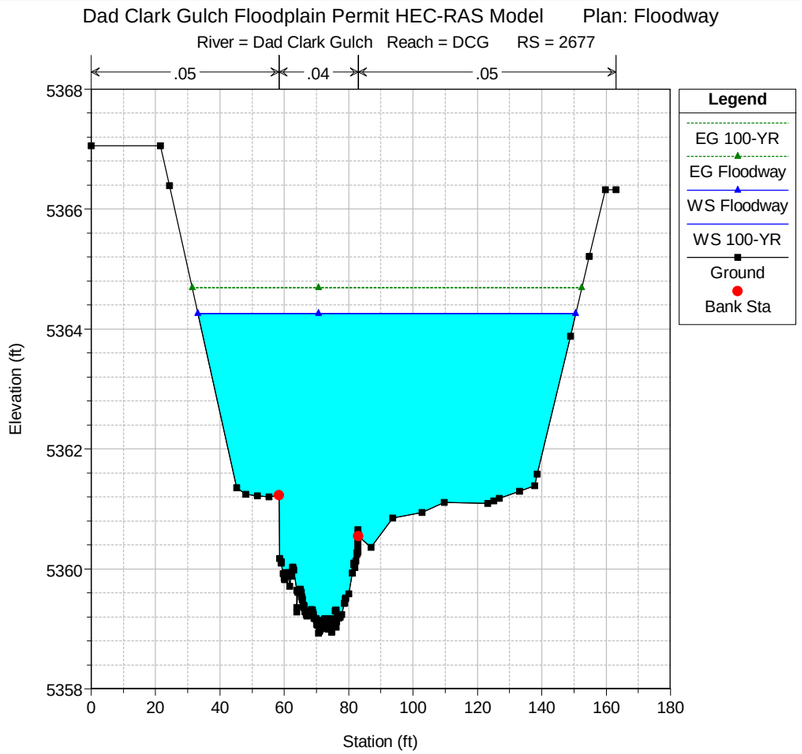

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2731
.03
Legend
EG 100-YR
EG Floodway
Crit 100-YR
WS Floodway
WS 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)

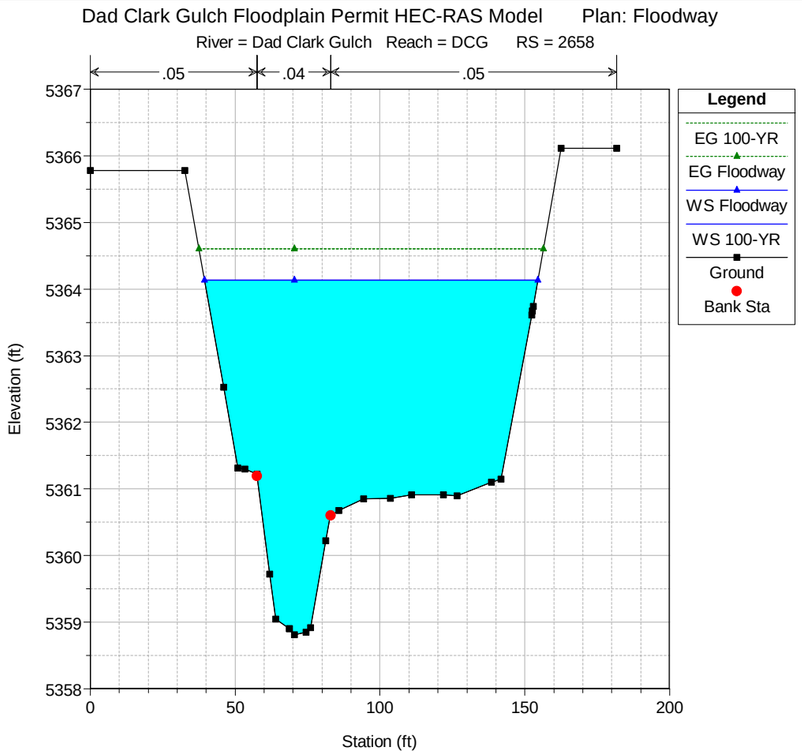

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2726
.03
Legend
EG 100-YR
EG Floodway
Crit 100-YR
WS Floodway
WS 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)

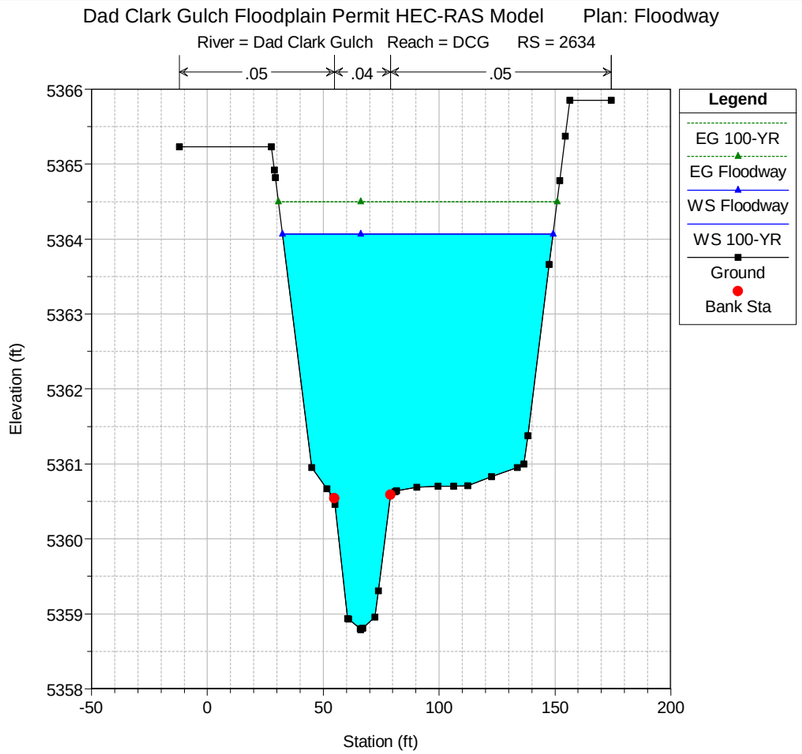

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2722
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Crit 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)

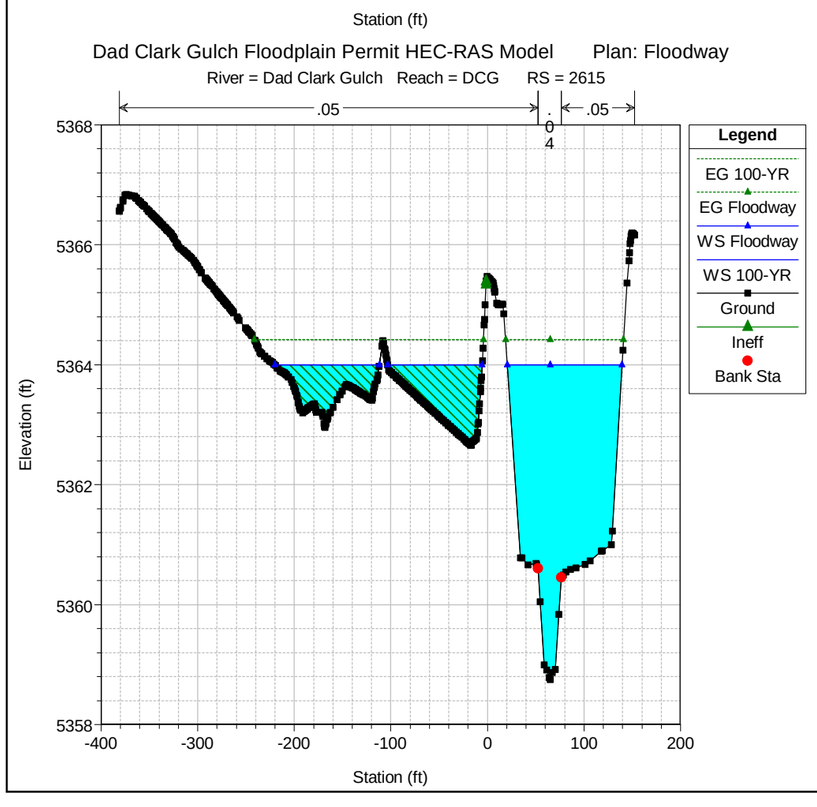

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2709
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

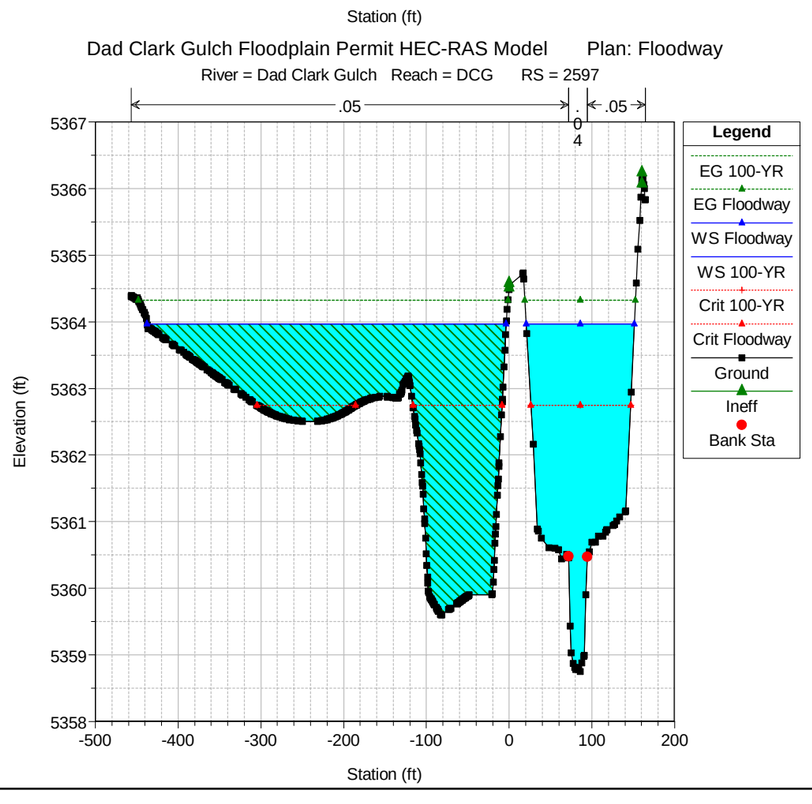

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2694
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

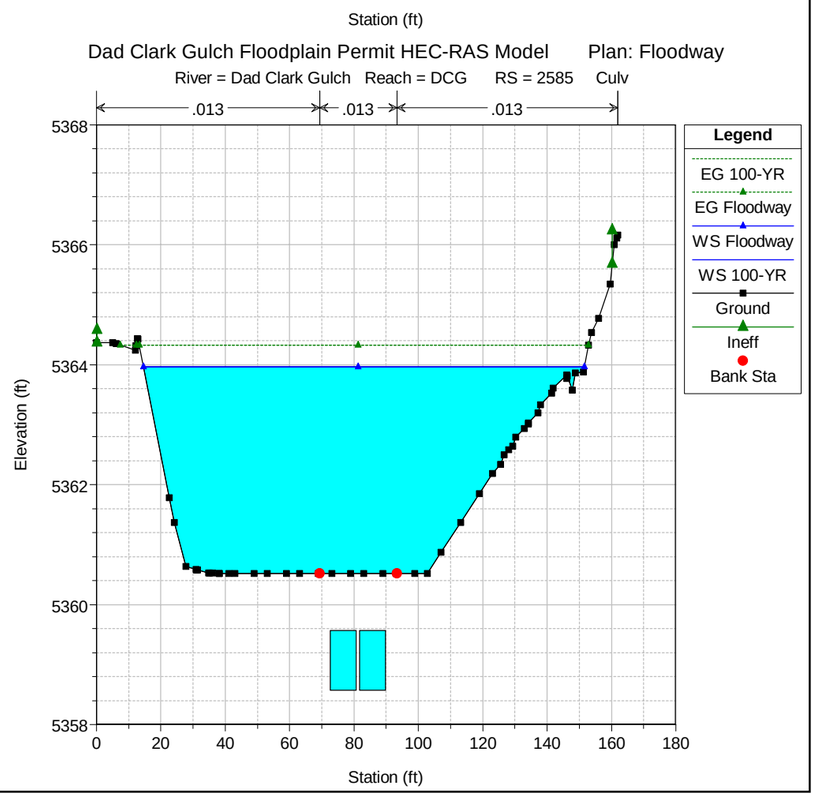

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2677
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2658
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2634
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

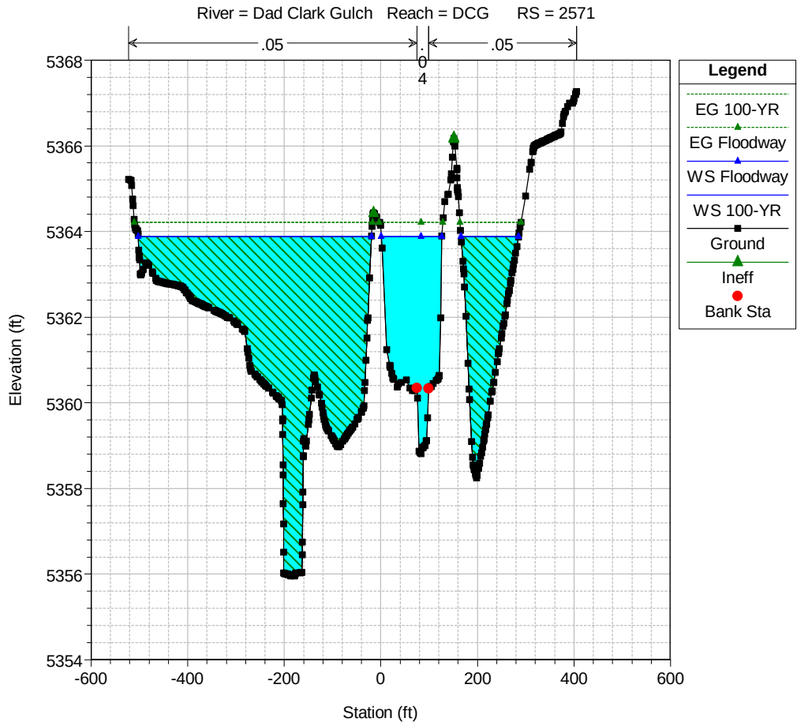

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2615
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2597
.05
.04
.05
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Crit 100-YR
Crit Floodway
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2585 Culv
.013
.013
.013
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

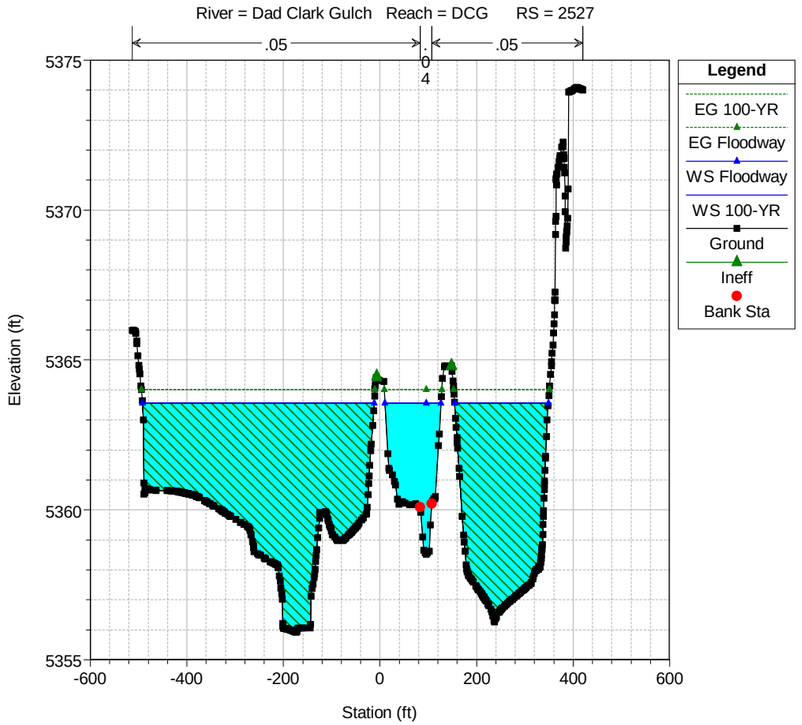
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 2571



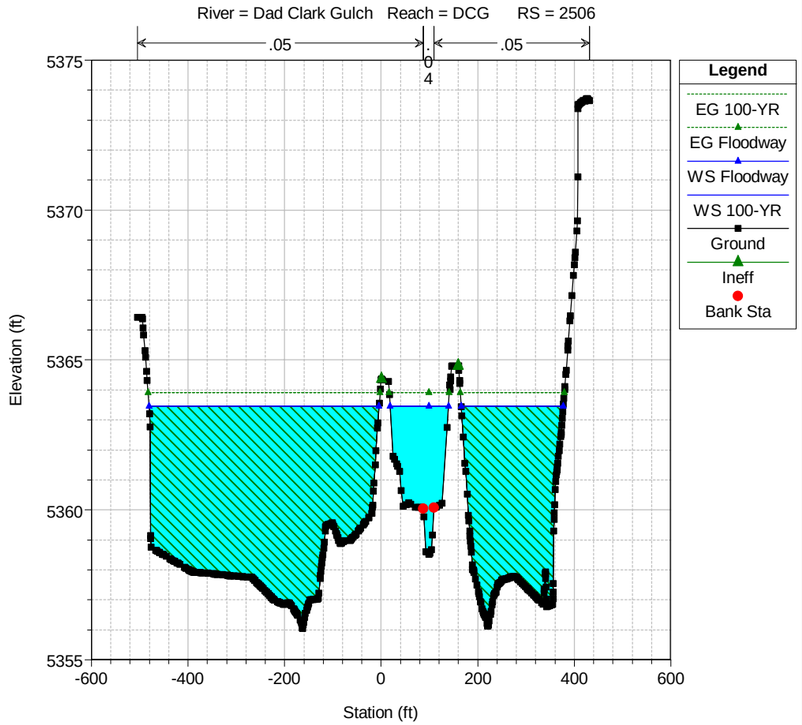
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 2527



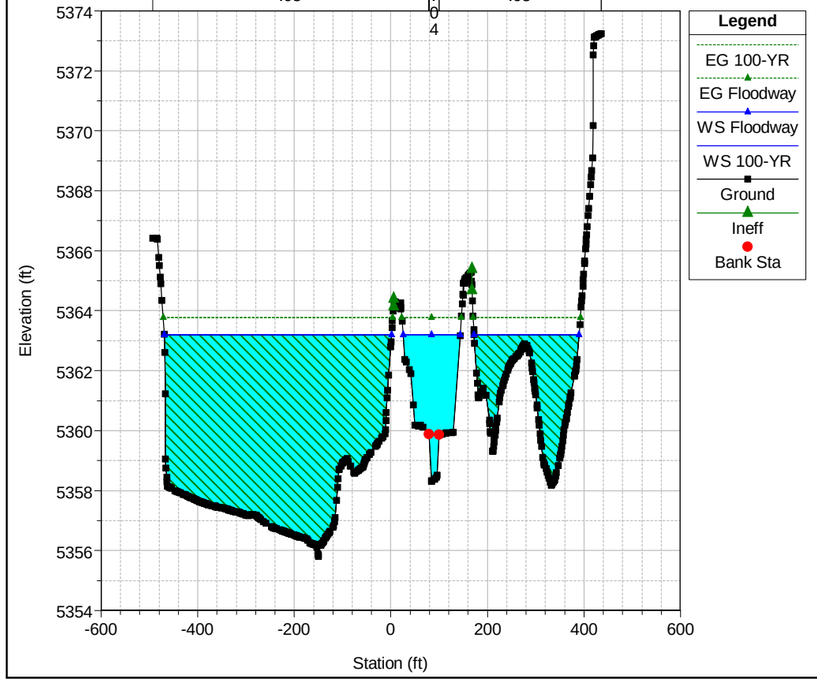
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 2506



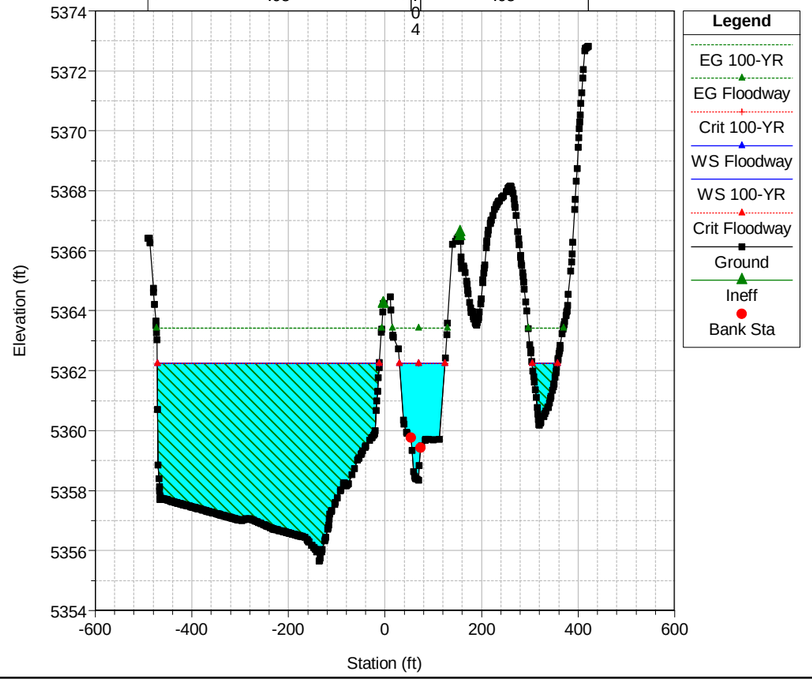
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 2480



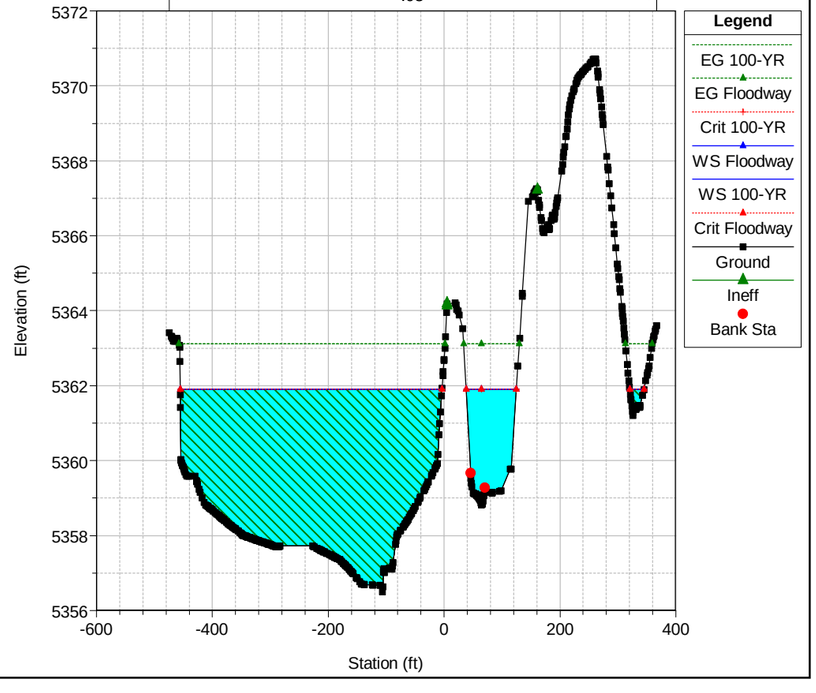
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

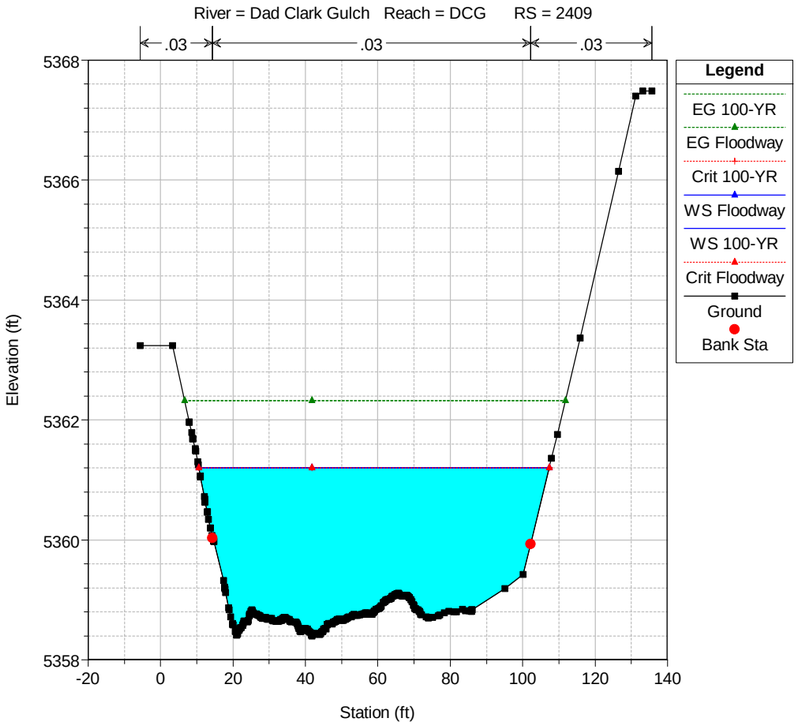
River = Dad Clark Gulch Reach = DCG RS = 2451

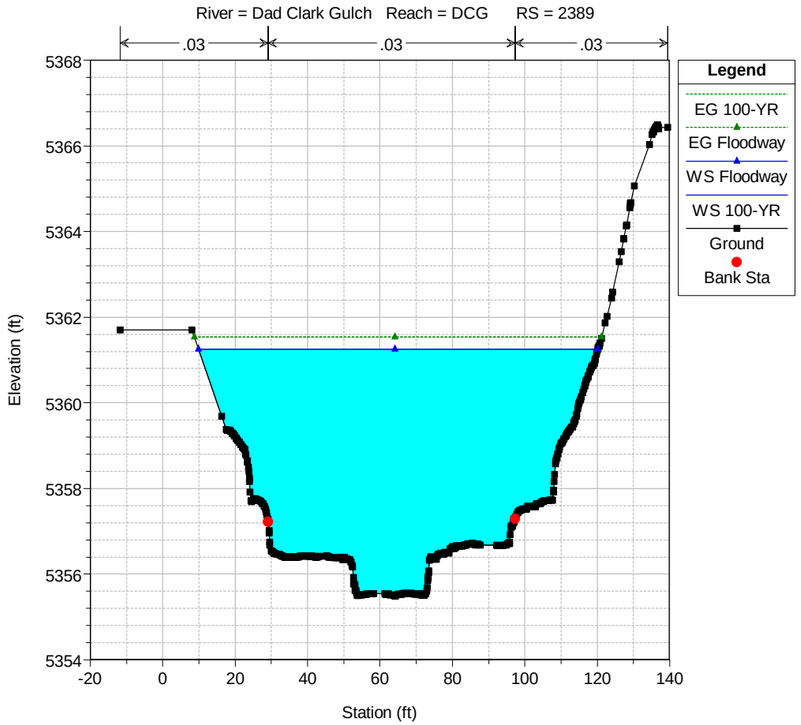


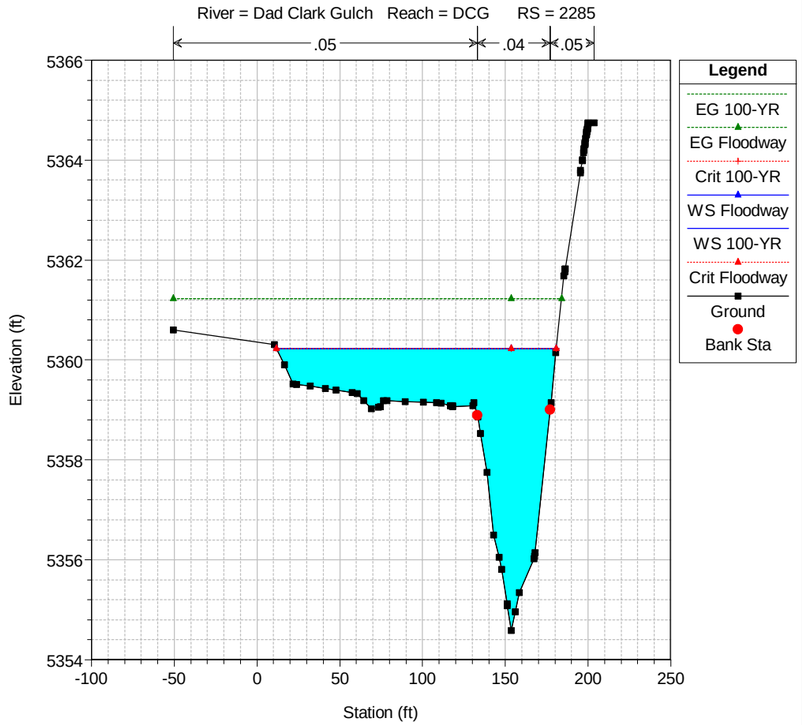
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

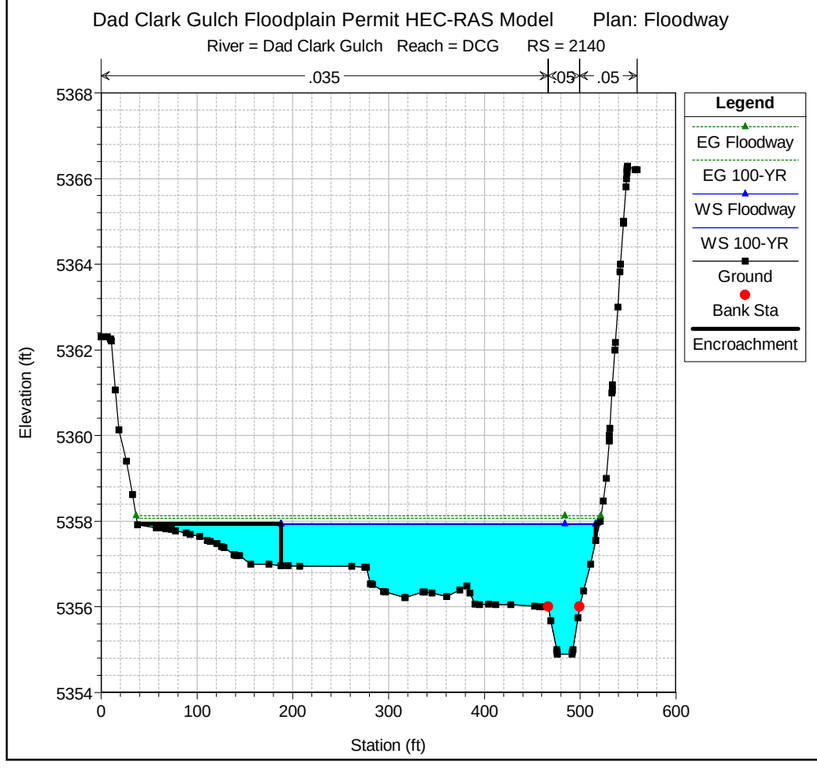
River = Dad Clark Gulch Reach = DCG RS = 2425

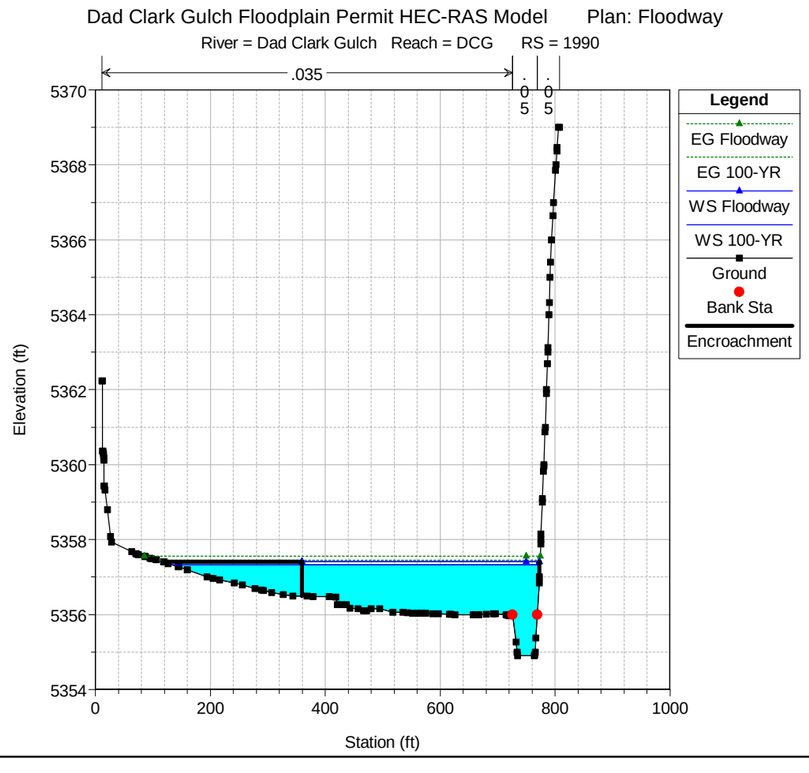


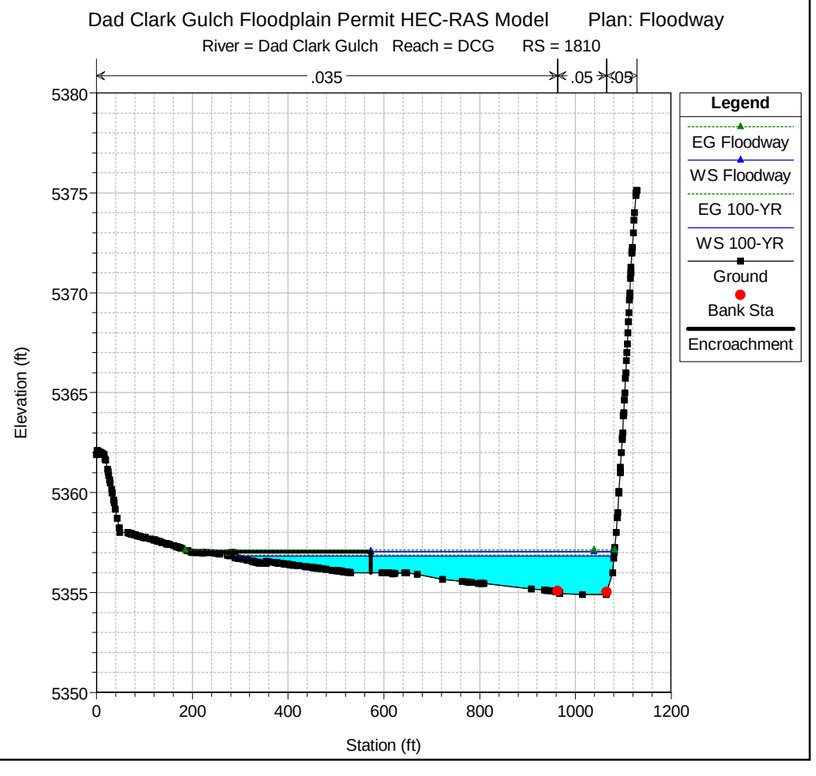

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2409
.03
.03
.03
Legend
EG 100-YR
EG Floodway
Crit 100-YR
WS Floodway
WS 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)

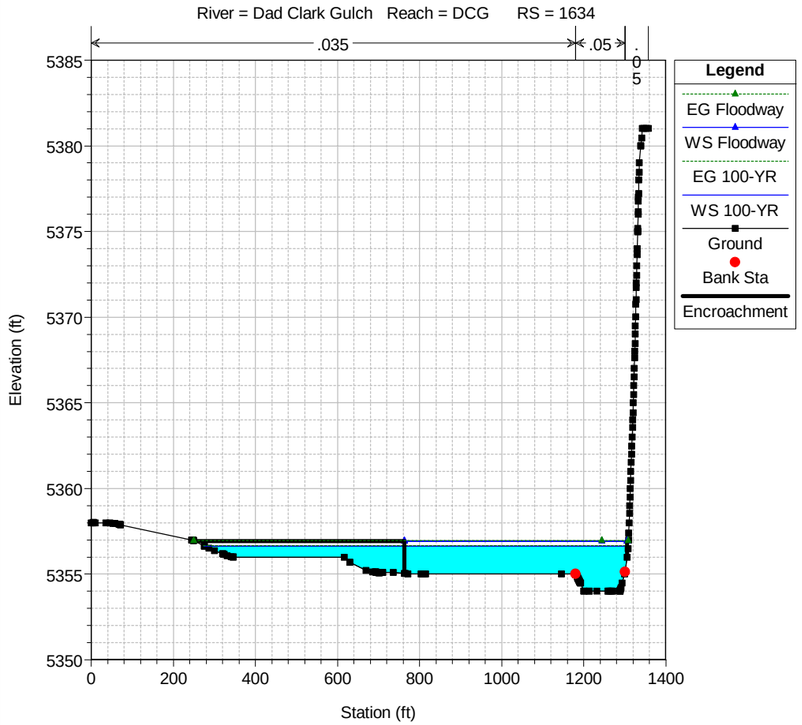

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2389
.03
.03
.03
Legend
EG 100-YR
EG Floodway
WS Floodway
WS 100-YR
Ground
Bank Sta
Elevation (ft)
Station (ft)

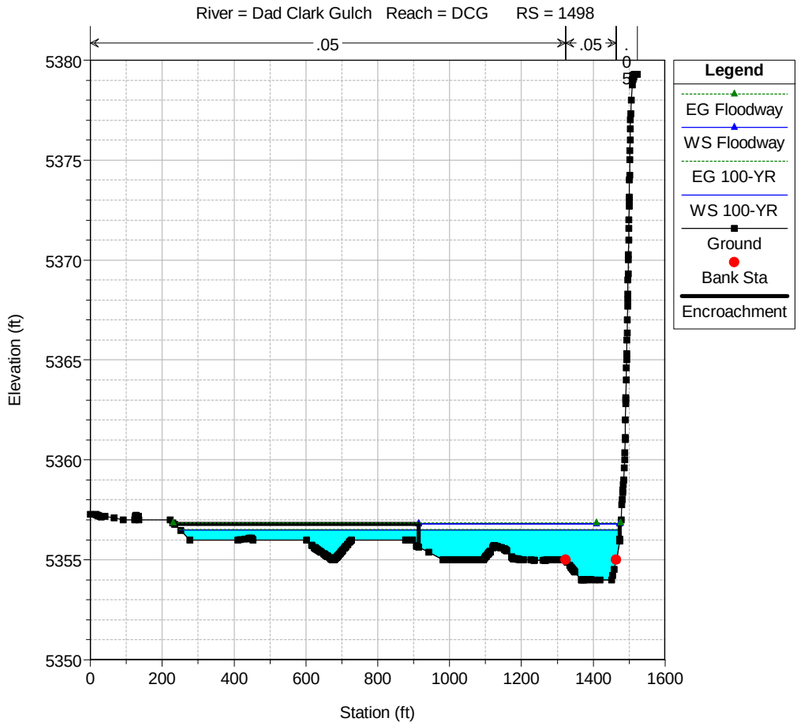

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2285
.05
.04
.05
Legend
EG 100-YR
EG Floodway
Crit 100-YR
WS Floodway
WS 100-YR
Crit Floodway
Ground
Bank Sta
Elevation (ft)
Station (ft)

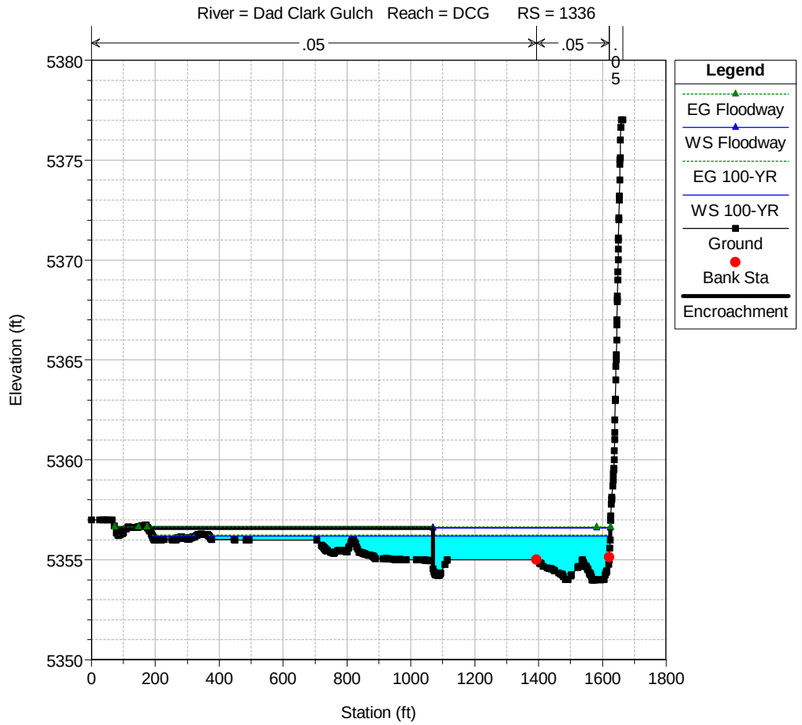

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 2140
.035
.05
.05
Legend
EG Floodway
EG 100-YR
WS Floodway
WS 100-YR
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

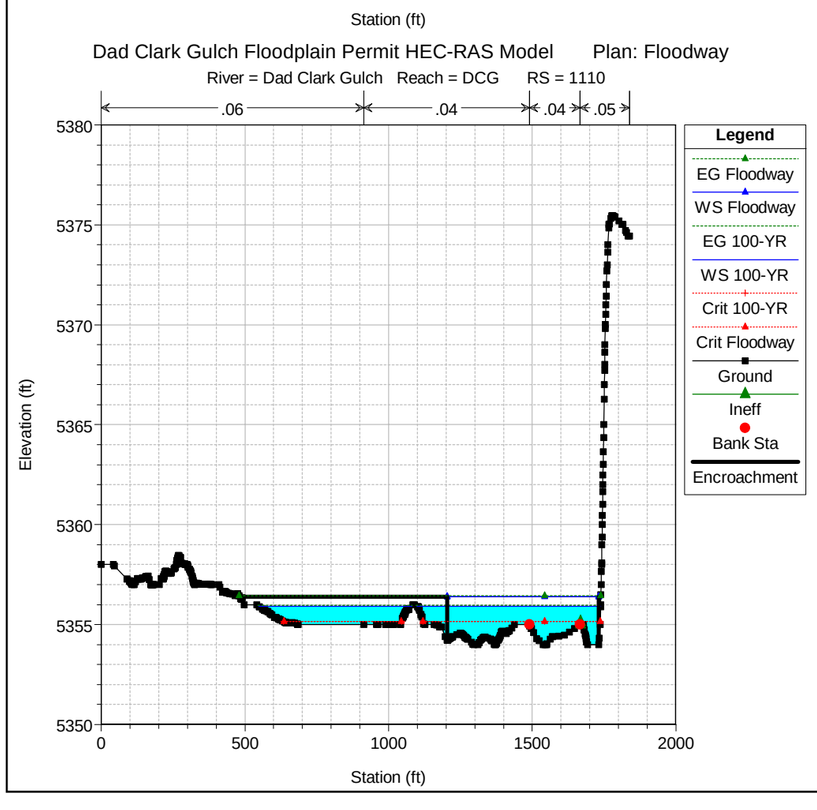

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 1990
.035
.05
.05
Legend
EG Floodway
EG 100-YR
WS Floodway
WS 100-YR
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

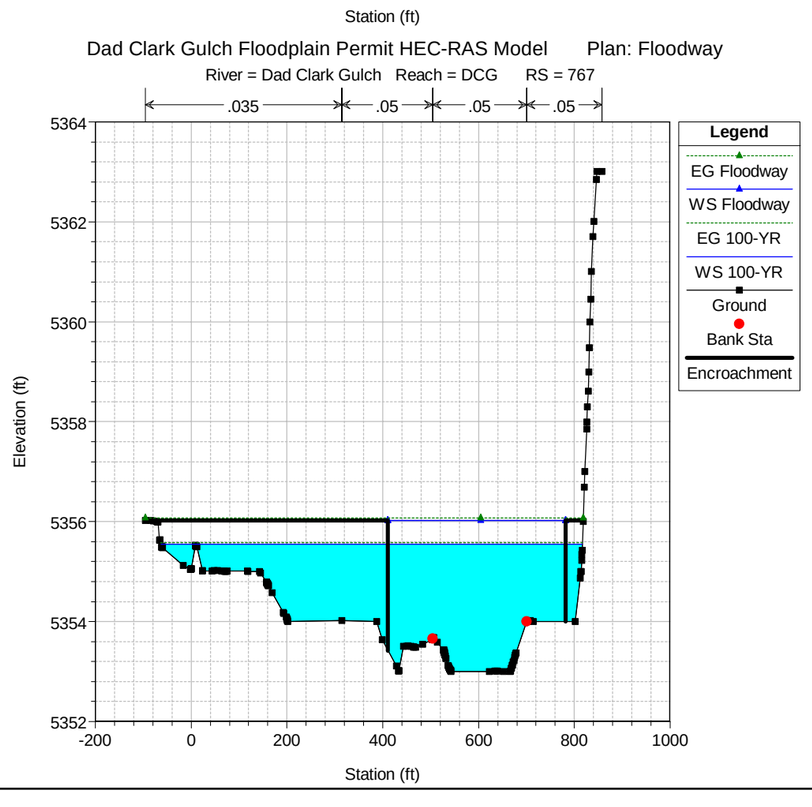

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 1810
.035
.05
.05
Legend
EG Floodway
WS Floodway
EG 100-YR
WS 100-YR
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

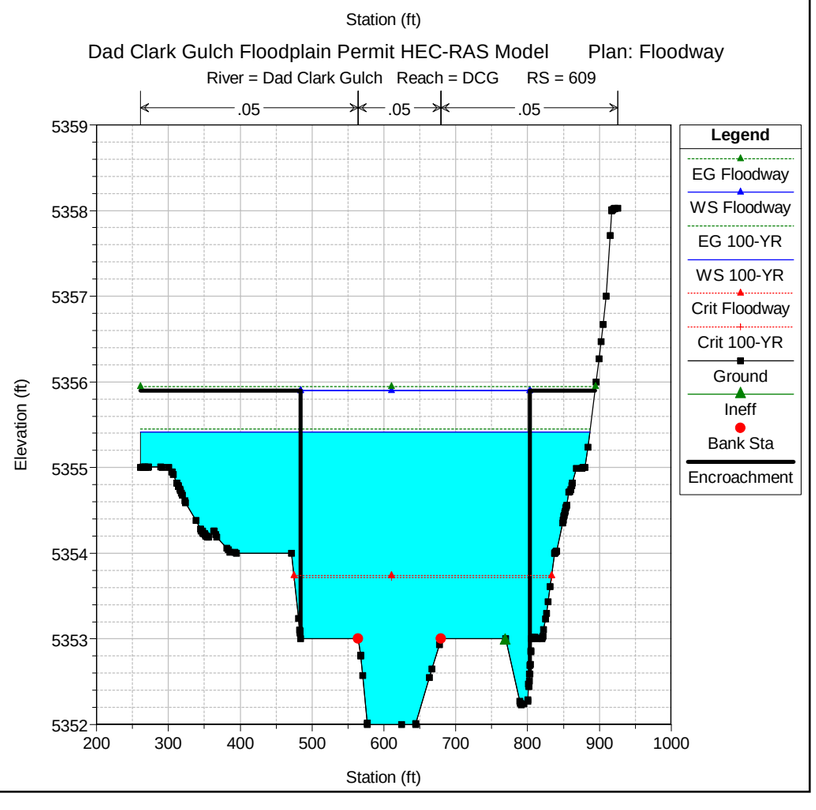

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 1634
.035
.05
.05
Legend
EG Floodway
WS Floodway
EG 100-YR
WS 100-YR
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 1498
.05
.05
.05
Legend
EG Floodway
WS Floodway
EG 100-YR
WS 100-YR
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 1336
.05
.05
.05
Legend
EG Floodway
WS Floodway
EG 100-YR
WS 100-YR
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

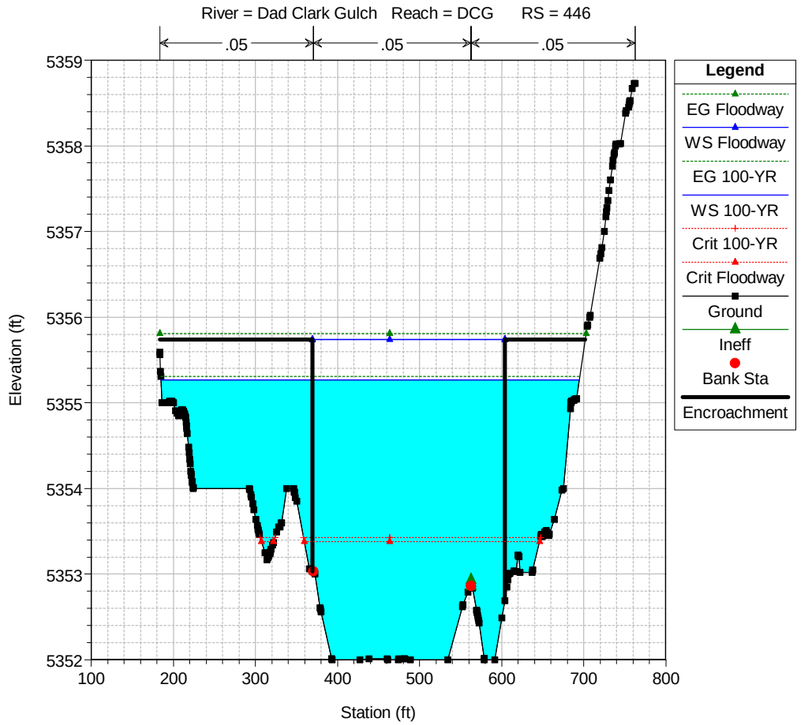

Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 1110
.06
.04
.04
.05
Legend
EG Floodway
WS Floodway
EG 100-YR
WS 100-YR
Crit 100-YR
Crit Floodway
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 767
.035
.05
.05
.05
Legend
EG Floodway
WS Floodway
EG 100-YR
WS 100-YR
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway
River = Dad Clark Gulch Reach = DCG RS = 609
.05
.05
.05
Legend
EG Floodway
WS Floodway
EG 100-YR
WS 100-YR
Crit Floodway
Crit 100-YR
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

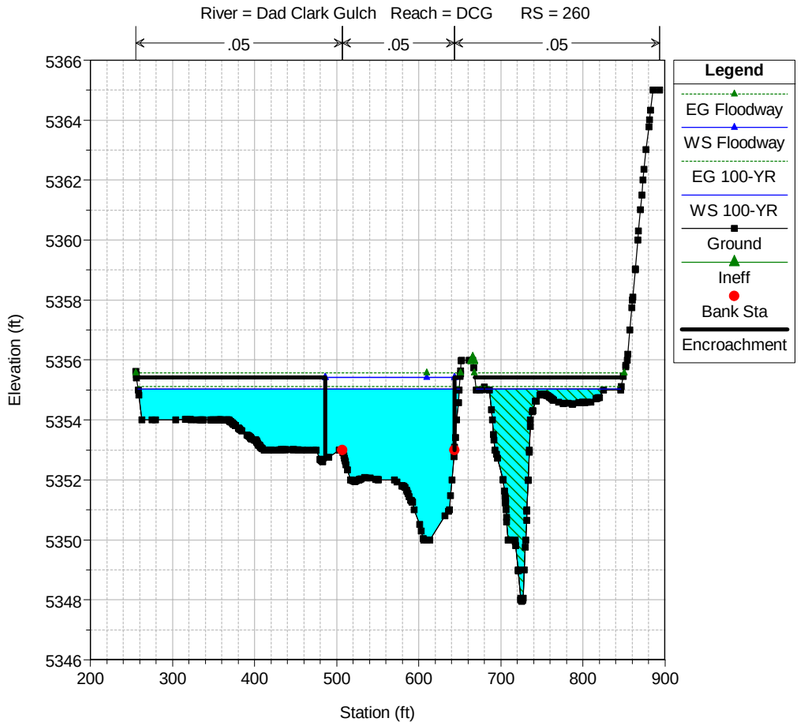
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 446



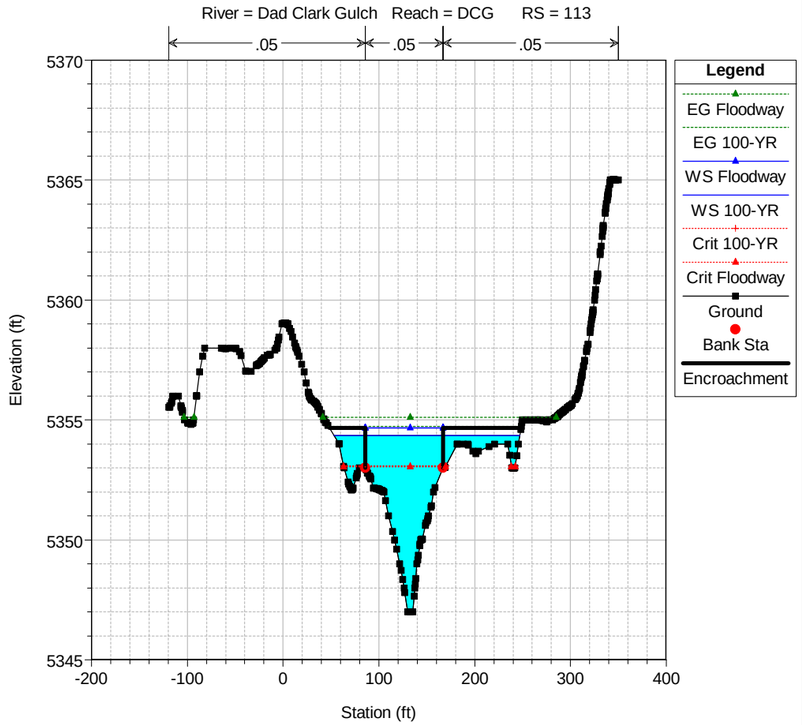
Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 260



Dad Clark Gulch Floodplain Permit HEC-RAS Model Plan: Floodway

River = Dad Clark Gulch Reach = DCG RS = 113



HEC-RAS Plan: Floodway River: Dad Clark Gulch Reach: DCG

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	3705 FHAD 50.0	100-YR	1780.00	5375.00	5378.46		5379.03	0.008212	6.08	294.11	126.74	0.69
DCG	3705 FHAD 50.0	Floodway	1780.00	5375.00	5378.46		5379.03	0.008212	6.08	294.11	126.74	0.69
DCG	3662	100-YR	1780.00	5373.47	5377.71		5378.58	0.011399	9.44	269.74	108.61	0.85
DCG	3662	Floodway	1780.00	5373.47	5377.71		5378.58	0.011399	9.44	269.74	108.61	0.85
DCG	3629	100-YR	1780.00	5373.38	5377.42		5378.16	0.010570	9.02	283.93	110.34	0.83
DCG	3629	Floodway	1780.00	5373.38	5377.42		5378.16	0.010570	9.02	283.93	110.34	0.83
DCG	3598	100-YR	1780.00	5373.48	5377.13		5377.83	0.011112	8.78	284.11	112.60	0.84
DCG	3598	Floodway	1780.00	5373.48	5377.13		5377.83	0.011112	8.78	284.11	112.60	0.84
DCG	3578	100-YR	1780.00	5373.24	5377.00		5377.60	0.009147	8.06	306.54	116.21	0.76
DCG	3578	Floodway	1780.00	5373.24	5377.00		5377.60	0.009147	8.06	306.54	116.21	0.76
DCG	3566	100-YR	1780.00	5373.13	5376.91		5377.49	0.008597	7.86	311.89	117.42	0.74
DCG	3566	Floodway	1780.00	5373.13	5376.91		5377.49	0.008597	7.86	311.89	117.42	0.74
DCG	3556	100-YR	1780.00	5372.20	5376.86		5377.41	0.006701	7.58	332.32	118.89	0.66
DCG	3556	Floodway	1780.00	5372.20	5376.86		5377.41	0.006701	7.58	332.32	118.89	0.66
DCG	3546	100-YR	1780.00	5370.89	5376.78		5377.35	0.004758	7.44	351.41	117.96	0.58
DCG	3546	Floodway	1780.00	5370.89	5376.78		5377.35	0.004758	7.44	351.41	117.96	0.58
DCG	3509	100-YR	1780.00	5371.72	5376.25		5377.08	0.009875	9.26	280.42	109.41	0.81
DCG	3509	Floodway	1780.00	5371.72	5376.25		5377.08	0.009875	9.26	280.42	109.41	0.81
DCG	3480	100-YR	1780.00	5371.68	5376.05		5376.78	0.009494	8.85	291.92	113.62	0.79
DCG	3480	Floodway	1780.00	5371.68	5376.05		5376.78	0.009494	8.85	291.92	113.62	0.79
DCG	3457	100-YR	1780.00	5371.59	5375.86		5376.57	0.008978	8.20	295.26	114.58	0.76
DCG	3457	Floodway	1780.00	5371.59	5375.86		5376.57	0.008978	8.20	295.26	114.58	0.76
DCG	3444	100-YR	1780.00	5371.61	5375.53		5376.41	0.016963	8.86	250.87	107.46	0.83
DCG	3444	Floodway	1780.00	5371.61	5375.53		5376.41	0.016963	8.86	250.87	107.46	0.83
DCG	3439	100-YR	1780.00	5371.43	5375.29	5375.29	5376.34	0.007951	9.84	229.50	104.76	0.95
DCG	3439	Floodway	1780.00	5371.43	5375.29	5375.29	5376.34	0.007951	9.84	229.50	104.76	0.95
DCG	3435	100-YR	1780.00	5371.17	5375.21	5375.21	5376.27	0.007718	9.85	230.15	103.89	0.93
DCG	3435	Floodway	1780.00	5371.17	5375.21	5375.21	5376.27	0.007718	9.85	230.15	103.89	0.93
DCG	3430	100-YR	1780.00	5371.00	5375.10	5375.10	5376.17	0.007564	10.58	230.64	102.71	0.93
DCG	3430	Floodway	1780.00	5371.00	5375.10	5375.10	5376.17	0.007564	10.58	230.64	102.71	0.93
DCG	3424	100-YR	1780.00	5370.97	5374.86	5374.86	5375.93	0.007475	10.10	229.99	101.32	0.92
DCG	3424	Floodway	1780.00	5370.97	5374.86	5374.86	5375.93	0.007475	10.10	229.99	101.32	0.92
DCG	3417	100-YR	1780.00	5370.80	5374.20	5374.20	5375.31	0.007664	9.10	223.93	98.33	0.90
DCG	3417	Floodway	1780.00	5370.80	5374.20	5374.20	5375.31	0.007664	9.10	223.93	98.33	0.90
DCG	3413	100-YR	1780.00	5369.93	5373.49	5373.49	5374.61	0.008509	8.85	218.84	96.85	0.91
DCG	3413	Floodway	1780.00	5369.93	5373.49	5373.49	5374.61	0.008509	8.85	218.84	96.85	0.91
DCG	3409	100-YR	1780.00	5368.90	5372.46	5372.41	5373.56	0.008243	8.84	221.10	95.98	0.92
DCG	3409	Floodway	1780.00	5368.90	5372.46	5372.41	5373.56	0.008243	8.84	221.10	95.98	0.92
DCG	3404	100-YR	1780.00	5367.88	5372.87		5373.36	0.002503	6.32	332.90	107.18	0.54
DCG	3404	Floodway	1780.00	5367.88	5372.87		5373.36	0.002503	6.32	332.90	107.18	0.54
DCG	3400	100-YR	1780.00	5367.71	5372.94		5373.31	0.001643	5.36	379.76	110.38	0.44
DCG	3400	Floodway	1780.00	5367.71	5372.94		5373.31	0.001643	5.36	379.76	110.38	0.44
DCG	3388	100-YR	1780.00	5367.39	5372.97		5373.26	0.003177	4.98	430.54	115.39	0.38
DCG	3388	Floodway	1780.00	5367.39	5372.97		5373.26	0.003177	4.98	430.54	115.39	0.38
DCG	3368	100-YR	1780.00	5367.20	5372.73		5373.16	0.006718	5.88	348.66	116.31	0.51
DCG	3368	Floodway	1780.00	5367.20	5372.73		5373.16	0.006718	5.88	348.66	116.31	0.51
DCG	3351	100-YR	1780.00	5366.88	5372.66		5373.08	0.003490	6.38	395.34	119.40	0.50
DCG	3351	Floodway	1780.00	5366.88	5372.66		5373.08	0.003490	6.38	395.34	119.40	0.50
DCG	3327	100-YR	1780.00	5366.81	5372.59		5372.98	0.003330	6.27	402.82	119.46	0.49
DCG	3327	Floodway	1780.00	5366.81	5372.59		5372.98	0.003330	6.27	402.82	119.46	0.49
DCG	3299	100-YR	1780.00	5366.77	5372.39		5372.88	0.004312	7.04	366.47	114.61	0.55
DCG	3299	Floodway	1780.00	5366.77	5372.39		5372.88	0.004312	7.04	366.47	114.61	0.55
DCG	3262	100-YR	1780.00	5366.91	5372.30		5372.71	0.003833	6.56	396.43	123.84	0.52
DCG	3262	Floodway	1780.00	5366.91	5372.30		5372.71	0.003833	6.56	396.43	123.84	0.52

HEC-RAS Plan: Floodway River: Dad Clark Gulch Reach: DCG (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	3237	100-YR	1780.00	5366.85	5372.14		5372.60	0.004354	6.89	373.36	119.50	0.55
DCG	3237	Floodway	1780.00	5366.85	5372.14		5372.60	0.004354	6.89	373.36	119.50	0.55
DCG	3202	100-YR	1780.00	5366.62	5371.93	5370.83	5372.45	0.004624	7.10	332.93	112.66	0.57
DCG	3202	Floodway	1780.00	5366.62	5371.93	5370.83	5372.45	0.004624	7.10	332.93	112.66	0.57
DCG	3154		Bridge									
DCG	3119	100-YR	1780.00	5366.62	5371.21	5370.07	5371.63	0.004566	6.52	364.16	146.67	0.56
DCG	3119	Floodway	1780.00	5366.62	5371.21	5370.07	5371.63	0.004566	6.52	364.16	146.67	0.56
DCG	3085	100-YR	1780.00	5366.49	5370.81		5371.39	0.007336	7.87	320.97	115.09	0.70
DCG	3085	Floodway	1780.00	5366.49	5370.81		5371.39	0.007336	7.87	320.97	115.09	0.70
DCG	3072	100-YR	1780.00	5366.44	5370.66		5371.28	0.008092	8.22	310.30	113.21	0.73
DCG	3072	Floodway	1780.00	5366.44	5370.66		5371.28	0.008092	8.22	310.30	113.21	0.73
DCG	3045	100-YR	1780.00	5366.29	5369.85	5369.85	5370.93	0.017479	10.79	237.30	105.24	1.05
DCG	3045	Floodway	1780.00	5366.29	5369.85	5369.85	5370.93	0.017479	10.79	237.30	105.24	1.05
DCG	3034	100-YR	1780.00	5366.33	5369.72	5369.72	5370.78	0.008548	9.37	224.97	104.08	0.95
DCG	3034	Floodway	1780.00	5366.33	5369.72	5369.72	5370.78	0.008548	9.37	224.97	104.08	0.95
DCG	3019	100-YR	1780.00	5366.30	5369.30	5369.30	5370.33	0.009162	9.07	222.63	103.36	0.98
DCG	3019	Floodway	1780.00	5366.30	5369.30	5369.30	5370.33	0.009162	9.07	222.63	103.36	0.98
DCG	3014	100-YR	1780.00	5366.14	5368.97	5368.97	5370.00	0.009266	9.10	222.17	103.77	0.98
DCG	3014	Floodway	1780.00	5366.14	5368.97	5368.97	5370.00	0.009266	9.10	222.17	103.77	0.98
DCG	3011	100-YR	1780.00	5366.06	5368.55	5368.55	5369.64	0.010075	8.58	215.61	103.19	0.99
DCG	3011	Floodway	1780.00	5366.06	5368.55	5368.55	5369.64	0.010075	8.58	215.61	103.19	0.99
DCG	3006	100-YR	1780.00	5365.92	5368.73	5368.24	5369.41	0.004993	6.70	272.17	107.48	0.72
DCG	3006	Floodway	1780.00	5365.92	5368.73	5368.24	5369.41	0.004993	6.70	272.17	107.48	0.72
DCG	3003	100-YR	1780.00	5364.97	5368.86	5367.89	5369.34	0.002891	6.30	325.26	110.52	0.57
DCG	3003	Floodway	1780.00	5364.97	5368.86	5367.89	5369.34	0.002891	6.30	325.26	110.52	0.57
DCG	2999	100-YR	1780.00	5363.86	5368.89	5367.70	5369.30	0.005895	5.93	357.05	111.55	0.50
DCG	2999	Floodway	1780.00	5363.86	5368.89	5367.70	5369.30	0.005895	5.93	357.05	111.55	0.50
DCG	2987	100-YR	1780.00	5363.40	5368.88		5369.23	0.003900	5.45	398.02	112.33	0.42
DCG	2987	Floodway	1780.00	5363.40	5368.88		5369.23	0.003900	5.45	398.02	112.33	0.42
DCG	2972	100-YR	1780.00	5363.22	5368.78		5369.16	0.004411	5.73	382.69	113.10	0.45
DCG	2972	Floodway	1780.00	5363.22	5368.78		5369.16	0.004411	5.73	382.69	113.10	0.45
DCG	2957	100-YR	1780.00	5363.03	5368.54		5369.06	0.008987	6.47	315.88	111.83	0.59
DCG	2957	Floodway	1780.00	5363.03	5368.54		5369.06	0.008987	6.47	315.88	111.83	0.59
DCG	2936	100-YR	1780.00	5363.08	5368.41		5368.92	0.004939	7.22	359.50	120.84	0.59
DCG	2936	Floodway	1780.00	5363.08	5368.41		5368.92	0.004939	7.22	359.50	120.84	0.59
DCG	2908	100-YR	1780.00	5363.00	5368.22		5368.78	0.005444	7.48	337.95	111.29	0.61
DCG	2908	Floodway	1780.00	5363.00	5368.22		5368.78	0.005444	7.48	337.95	111.29	0.61
DCG	2878	100-YR	1780.00	5362.98	5368.11		5368.61	0.005266	7.27	353.89	117.90	0.60
DCG	2878	Floodway	1780.00	5362.98	5368.11		5368.61	0.005266	7.27	353.89	117.90	0.60
DCG	2861	100-YR	1780.00	5362.95	5368.01		5368.53	0.005461	7.34	349.27	117.44	0.61
DCG	2861	Floodway	1780.00	5362.95	5368.01		5368.53	0.005461	7.34	349.27	117.44	0.61
DCG	2836	100-YR	1780.00	5362.90	5367.88		5368.38	0.005489	7.29	349.09	117.19	0.61
DCG	2836	Floodway	1780.00	5362.90	5367.88		5368.38	0.005489	7.29	349.09	117.19	0.61
DCG	2804	100-YR	1780.00	5362.83	5367.68		5368.20	0.006067	7.46	340.63	116.52	0.64
DCG	2804	Floodway	1780.00	5362.83	5367.68		5368.20	0.006067	7.46	340.63	116.52	0.64
DCG	2777	100-YR	1780.00	5362.77	5366.85	5366.84	5367.91	0.016044	10.54	243.71	108.60	1.01
DCG	2777	Floodway	1780.00	5362.77	5366.85	5366.84	5367.91	0.016044	10.54	243.71	108.60	1.01
DCG	2765	100-YR	1780.00	5362.72	5366.68	5366.68	5367.74	0.014915	10.23	246.50	108.25	0.95
DCG	2765	Floodway	1780.00	5362.72	5366.68	5366.68	5367.74	0.014915	10.23	246.50	108.25	0.95
DCG	2747	100-YR	1780.00	5362.55	5366.29	5366.29	5367.37	0.008282	10.02	230.91	113.30	0.96
DCG	2747	Floodway	1780.00	5362.55	5366.29	5366.29	5367.37	0.008282	10.02	230.91	113.30	0.96
DCG	2735	100-YR	1780.00	5362.16	5365.68	5365.68	5366.65	0.007110	8.56	241.96	119.20	0.87
DCG	2735	Floodway	1780.00	5362.16	5365.68	5365.68	5366.65	0.007110	8.56	241.96	119.20	0.87

HEC-RAS Plan: Floodway River: Dad Clark Gulch Reach: DCG (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	2731	100-YR	1780.00	5361.12	5365.19	5365.19	5366.14	0.007548	10.14	244.14	117.71	0.90
DCG	2731	Floodway	1780.00	5361.12	5365.19	5365.19	5366.14	0.007548	10.14	244.14	117.71	0.90
DCG	2726	100-YR	1780.00	5359.99	5364.67	5364.67	5365.65	0.006463	9.83	250.11	114.73	0.85
DCG	2726	Floodway	1780.00	5359.99	5364.67	5364.67	5365.65	0.006463	9.83	250.11	114.73	0.85
DCG	2722	100-YR	1780.00	5358.97	5364.18	5364.11	5365.12	0.015458	9.48	256.68	112.26	0.79
DCG	2722	Floodway	1780.00	5358.97	5364.18	5364.11	5365.12	0.015458	9.48	256.68	112.26	0.79
DCG	2709	100-YR	1780.00	5358.79	5364.47		5364.85	0.004536	6.07	390.23	121.78	0.46
DCG	2709	Floodway	1780.00	5358.79	5364.47		5364.85	0.004536	6.07	390.23	121.78	0.46
DCG	2694	100-YR	1780.00	5358.64	5364.40		5364.77	0.004973	6.26	383.39	120.10	0.47
DCG	2694	Floodway	1780.00	5358.64	5364.40		5364.77	0.004973	6.26	383.39	120.10	0.47
DCG	2677	100-YR	1780.00	5358.93	5364.26		5364.69	0.004585	6.58	372.26	117.47	0.53
DCG	2677	Floodway	1780.00	5358.93	5364.26		5364.69	0.004585	6.58	372.26	117.47	0.53
DCG	2658	100-YR	1780.00	5358.81	5364.13		5364.60	0.004499	6.88	363.94	115.11	0.56
DCG	2658	Floodway	1780.00	5358.81	5364.13		5364.60	0.004499	6.88	363.94	115.11	0.56
DCG	2634	100-YR	1780.00	5358.79	5364.07		5364.50	0.004184	6.70	377.23	116.86	0.54
DCG	2634	Floodway	1780.00	5358.79	5364.07		5364.50	0.004184	6.70	377.23	116.86	0.54
DCG	2615	100-YR	1780.00	5358.75	5364.00		5364.42	0.004201	6.65	380.50	324.45	0.54
DCG	2615	Floodway	1780.00	5358.75	5364.00		5364.42	0.004201	6.65	380.50	324.45	0.54
DCG	2597	100-YR	1780.00	5358.75	5363.97	5362.75	5364.33	0.003640	6.28	415.10	564.84	0.50
DCG	2597	Floodway	1780.00	5358.75	5363.97	5362.75	5364.33	0.003640	6.28	415.10	564.84	0.50
DCG	2585		Culvert									
DCG	2571	100-YR	1780.00	5358.81	5363.89		5364.22	0.003308	5.90	423.06	726.86	0.48
DCG	2571	Floodway	1780.00	5358.81	5363.89		5364.22	0.003308	5.90	423.06	726.86	0.48
DCG	2527	100-YR	1780.00	5358.52	5363.55		5364.02	0.004781	6.97	362.94	789.76	0.58
DCG	2527	Floodway	1780.00	5358.52	5363.55		5364.02	0.004781	6.97	362.94	789.76	0.58
DCG	2506	100-YR	1780.00	5358.53	5363.47		5363.92	0.004874	7.02	368.28	808.61	0.58
DCG	2506	Floodway	1780.00	5358.53	5363.47		5363.92	0.004874	7.02	368.28	808.61	0.58
DCG	2480	100-YR	1780.00	5358.32	5363.21		5363.77	0.006142	7.77	337.65	805.81	0.65
DCG	2480	Floodway	1780.00	5358.32	5363.21		5363.77	0.006142	7.77	337.65	805.81	0.65
DCG	2451	100-YR	1780.00	5358.34	5362.24	5362.24	5363.43	0.017041	11.11	227.43	606.04	1.04
DCG	2451	Floodway	1780.00	5358.34	5362.24	5362.24	5363.43	0.017041	11.11	227.43	606.04	1.04
DCG	2425	100-YR	1780.00	5358.82	5361.91	5361.91	5363.11	0.009406	9.57	204.95	562.52	1.00
DCG	2425	Floodway	1780.00	5358.82	5361.91	5361.91	5363.11	0.009406	9.57	204.95	562.52	1.00
DCG	2409	100-YR	1780.00	5358.40	5361.20	5361.20	5362.32	0.009558	8.53	211.97	96.75	0.98
DCG	2409	Floodway	1780.00	5358.40	5361.20	5361.20	5362.32	0.009558	8.53	211.97	96.75	0.98
DCG	2389	100-YR	1780.00	5355.49	5361.26		5361.54	0.000965	4.46	438.91	110.28	0.35
DCG	2389	Floodway	1780.00	5355.49	5361.26		5361.54	0.000965	4.46	438.91	110.28	0.35
DCG	2285	100-YR	1780.00	5354.59	5360.23	5360.23	5361.23	0.009935	8.80	281.05	169.10	0.80
DCG	2285	Floodway	1780.00	5354.59	5360.23	5360.23	5361.23	0.009935	8.80	281.05	169.10	0.80
DCG	2140	100-YR	1780.00	5354.90	5357.92		5358.07	0.004163	3.74	587.82	482.16	0.40
DCG	2140	Floodway	1780.00	5354.90	5357.94		5358.13	0.003791	3.59	526.34	328.49	0.38
DCG	1990	100-YR	1780.00	5354.90	5357.33		5357.45	0.004244	3.33	651.63	640.59	0.39
DCG	1990	Floodway	1780.00	5354.90	5357.41		5357.56	0.003810	3.23	573.88	413.28	0.37
DCG	1810	100-YR	1780.00	5354.90	5356.81		5356.88	0.002623	2.33	838.19	791.19	0.30
DCG	1810	Floodway	1780.00	5354.90	5357.06		5357.14	0.001654	2.01	821.82	507.09	0.24
DCG	1634	100-YR	1780.00	5354.00	5356.65		5356.67	0.000673	1.42	1392.33	1032.76	0.16
DCG	1634	Floodway	1780.00	5354.00	5356.93		5356.97	0.000602	1.44	1144.54	541.75	0.15
DCG	1498	100-YR	1780.00	5354.00	5356.49		5356.53	0.001761	2.17	1270.17	1225.19	0.25
DCG	1498	Floodway	1780.00	5354.00	5356.80		5356.85	0.001303	2.03	1057.78	558.27	0.22
DCG	1336	100-YR	1780.00	5354.00	5356.20		5356.24	0.002085	2.00	1248.27	1391.84	0.26
DCG	1336	Floodway	1780.00	5354.00	5356.60		5356.64	0.001409	1.88	1040.31	554.19	0.22
DCG	1110	100-YR	1780.00	5354.00	5355.92	5355.17	5355.95	0.001297	1.72	1296.32	1172.20	0.25
DCG	1110	Floodway	1780.00	5354.00	5356.39	5355.16	5356.43	0.000978	1.80	1019.80	526.65	0.23

HEC-RAS Plan: Floodway River: Dad Clark Gulch Reach: DCG (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DCG	901		Lat Struct									
DCG	767	100-YR	1780.00	5353.00	5355.55		5355.58	0.000887	1.58	1317.04	879.55	0.18
DCG	767	Floodway	1780.00	5353.00	5356.02		5356.08	0.001067	1.95	966.55	371.12	0.20
DCG	609	100-YR	1780.00	5352.00	5355.41	5353.72	5355.45	0.000854	1.88	1233.49	625.29	0.19
DCG	609	Floodway	1780.00	5352.00	5355.90	5353.74	5355.94	0.000713	1.89	1031.12	318.88	0.17
DCG	446	100-YR	1780.00	5352.00	5355.26	5353.43	5355.31	0.000888	1.90	1111.51	509.21	0.19
DCG	446	Floodway	1780.00	5352.00	5355.74	5353.38	5355.81	0.000955	2.16	836.50	233.99	0.20
DCG	260	100-YR	1780.00	5350.00	5355.03		5355.11	0.001371	2.55	863.97	564.70	0.24
DCG	260	Floodway	1780.00	5350.00	5355.42		5355.57	0.001803	3.10	590.21	157.41	0.28
DCG	113	100-YR	1780.00	5347.00	5354.35	5353.10	5354.73	0.005265	5.17	399.78	194.00	0.47
DCG	113	Floodway	1780.00	5347.00	5354.68	5353.05	5355.12	0.005266	5.32	334.50	81.59	0.46

				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)	(ft/s)	(ft)
DCG	3705	FHAD 50.0	100-YR	1780	5375	5378.46		5379.03	0.00821	6.08	294.11	126.74	0.69				
DCG	3705	FHAD 50.0	Floodway	1780	5375	5378.46		5379.03	0.00821	6.08	294.11	126.74	0.69	0	0	0	0
DCG		3662	100-YR	1780	5373.47	5377.71		5378.58	0.0114	9.44	269.74	108.61	0.85				
DCG		3662	Floodway	1780	5373.47	5377.71		5378.58	0.0114	9.44	269.74	108.61	0.85	0	0	0	0
DCG		3629	100-YR	1780	5373.38	5377.42		5378.16	0.01057	9.02	283.93	110.34	0.83				
DCG		3629	Floodway	1780	5373.38	5377.42		5378.16	0.01057	9.02	283.93	110.34	0.83	0	0	0	0
DCG		3598	100-YR	1780	5373.48	5377.13		5377.83	0.01111	8.78	284.11	112.6	0.84				
DCG		3598	Floodway	1780	5373.48	5377.13		5377.83	0.01111	8.78	284.11	112.6	0.84	0	0	0	0
DCG		3578	100-YR	1780	5373.24	5377		5377.6	0.00915	8.06	306.54	116.21	0.76				
DCG		3578	Floodway	1780	5373.24	5377		5377.6	0.00915	8.06	306.54	116.21	0.76	0	0	0	0
DCG		3566	100-YR	1780	5373.13	5376.91		5377.49	0.0086	7.86	311.89	117.42	0.74				
DCG		3566	Floodway	1780	5373.13	5376.91		5377.49	0.0086	7.86	311.89	117.42	0.74	0	0	0	0
DCG		3556	100-YR	1780	5372.2	5376.86		5377.41	0.0067	7.58	332.32	118.89	0.66				
DCG		3556	Floodway	1780	5372.2	5376.86		5377.41	0.0067	7.58	332.32	118.89	0.66	0	0	0	0
DCG		3546	100-YR	1780	5370.89	5376.78		5377.35	0.00476	7.44	351.41	117.96	0.58				
DCG		3546	Floodway	1780	5370.89	5376.78		5377.35	0.00476	7.44	351.41	117.96	0.58	0	0	0	0
DCG		3509	100-YR	1780	5371.72	5376.25		5377.08	0.00988	9.26	280.42	109.41	0.81				
DCG		3509	Floodway	1780	5371.72	5376.25		5377.08	0.00988	9.26	280.42	109.41	0.81	0	0	0	0
DCG		3480	100-YR	1780	5371.68	5376.05		5376.78	0.00949	8.85	291.92	113.62	0.79				
DCG		3480	Floodway	1780	5371.68	5376.05		5376.78	0.00949	8.85	291.92	113.62	0.79	0	0	0	0
DCG		3457	100-YR	1780	5371.59	5375.86		5376.57	0.00898	8.2	295.26	114.58	0.76				
DCG		3457	Floodway	1780	5371.59	5375.86		5376.57	0.00898	8.2	295.26	114.58	0.76	0	0	0	0
DCG		3444	100-YR	1780	5371.61	5375.53		5376.41	0.01696	8.86	250.87	107.46	0.83				
DCG		3444	Floodway	1780	5371.61	5375.53		5376.41	0.01696	8.86	250.87	107.46	0.83	0	0	0	0
DCG		3439	100-YR	1780	5371.43	5375.29	5375.29	5376.34	0.00795	9.84	229.5	104.76	0.95				
DCG		3439	Floodway	1780	5371.43	5375.29	5375.29	5376.34	0.00795	9.84	229.5	104.76	0.95	0	0	0	0
DCG		3435	100-YR	1780	5371.17	5375.21	5375.21	5376.27	0.00772	9.85	230.15	103.89	0.93				
DCG		3435	Floodway	1780	5371.17	5375.21	5375.21	5376.27	0.00772	9.85	230.15	103.89	0.93	0	0	0	0
DCG		3430	100-YR	1780	5371	5375.1	5375.1	5376.17	0.00756	10.58	230.64	102.71	0.93				
DCG		3430	Floodway	1780	5371	5375.1	5375.1	5376.17	0.00756	10.58	230.64	102.71	0.93	0	0	0	0
DCG		3424	100-YR	1780	5370.97	5374.86	5374.86	5375.93	0.00748	10.1	229.99	101.32	0.92				
DCG		3424	Floodway	1780	5370.97	5374.86	5374.86	5375.93	0.00748	10.1	229.99	101.32	0.92	0	0	0	0
DCG		3417	100-YR	1780	5370.8	5374.2	5374.2	5375.31	0.00766	9.1	223.93	98.33	0.9				
DCG		3417	Floodway	1780	5370.8	5374.2	5374.2	5375.31	0.00766	9.1	223.93	98.33	0.9	0	0	0	0
DCG		3413	100-YR	1780	5369.93	5373.49	5373.49	5374.61	0.00851	8.85	218.84	96.85	0.91				
DCG		3413	Floodway	1780	5369.93	5373.49	5373.49	5374.61	0.00851	8.85	218.84	96.85	0.91	0	0	0	0
DCG		3409	100-YR	1780	5368.9	5372.46	5372.41	5373.56	0.00824	8.84	221.1	95.98	0.92				
DCG		3409	Floodway	1780	5368.9	5372.46	5372.41	5373.56	0.00824	8.84	221.1	95.98	0.92	0	0	0	0
DCG		3404	100-YR	1780	5367.88	5372.87		5373.36	0.0025	6.32	332.9	107.18	0.54				
DCG		3404	Floodway	1780	5367.88	5372.87		5373.36	0.0025	6.32	332.9	107.18	0.54	0	0	0	0
DCG		3400	100-YR	1780	5367.71	5372.94		5373.31	0.00164	5.36	379.76	110.38	0.44				
DCG		3400	Floodway	1780	5367.71	5372.94		5373.31	0.00164	5.36	379.76	110.38	0.44	0	0	0	0
DCG		3388	100-YR	1780	5367.39	5372.97		5373.26	0.00318	4.98	430.54	115.39	0.38				
DCG		3388	Floodway	1780	5367.39	5372.97		5373.26	0.00318	4.98	430.54	115.39	0.38	0	0	0	0
DCG		3368	100-YR	1780	5367.2	5372.73		5373.16	0.00672	5.88	348.66	116.31	0.51				
DCG		3368	Floodway	1780	5367.2	5372.73		5373.16	0.00672	5.88	348.66	116.31	0.51	0	0	0	0
DCG		3351	100-YR	1780	5366.88	5372.66		5373.08	0.00349	6.38	395.34	119.4	0.5				
DCG		3351	Floodway	1780	5366.88	5372.66		5373.08	0.00349	6.38	395.34	119.4	0.5	0	0	0	0
DCG		3327	100-YR	1780	5366.81	5372.59		5372.98	0.00333	6.27	402.82	119.46	0.49				
DCG		3327	Floodway	1780	5366.81	5372.59		5372.98	0.00333	6.27	402.82	119.46	0.49	0	0	0	0
DCG		3299	100-YR	1780	5366.77	5372.39		5372.88	0.00431	7.04	366.47	114.61	0.55				
DCG		3299	Floodway	1780	5366.77	5372.39		5372.88	0.00431	7.04	366.47	114.61	0.55	0	0	0	0
DCG		3262	100-YR	1780	5366.91	5372.3		5372.71	0.00383	6.56	396.43	123.84	0.52				
DCG		3262	Floodway	1780	5366.91	5372.3		5372.71	0.00383	6.56	396.43	123.84	0.52	0	0	0	0
DCG		3237	100-YR	1780	5366.85	5372.14		5372.6	0.00435	6.89	373.36	119.5	0.55				
DCG		3237	Floodway	1780	5366.85	5372.14		5372.6	0.00435	6.89	373.36	119.5	0.55	0	0	0	0

			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)	(ft/s)	(ft)
DCG	3202	100-YR	1780	5366.62	5371.93	5370.83	5372.45	0.00462	7.1	332.93	112.66	0.57				
DCG	3202	Floodway	1780	5366.62	5371.93	5370.83	5372.45	0.00462	7.1	332.93	112.66	0.57	0	0	0	0
DCG	3154		Bridge													
DCG	3119	100-YR	1780	5366.62	5371.21	5370.07	5371.63	0.00457	6.52	364.16	146.67	0.56				
DCG	3119	Floodway	1780	5366.62	5371.21	5370.07	5371.63	0.00457	6.52	364.16	146.67	0.56	0	0	0	0
DCG	3085	100-YR	1780	5366.49	5370.81		5371.39	0.00734	7.87	320.97	115.09	0.7				
DCG	3085	Floodway	1780	5366.49	5370.81		5371.39	0.00734	7.87	320.97	115.09	0.7	0	0	0	0
DCG	3072	100-YR	1780	5366.44	5370.66		5371.28	0.00809	8.22	310.3	113.21	0.73				
DCG	3072	Floodway	1780	5366.44	5370.66		5371.28	0.00809	8.22	310.3	113.21	0.73	0	0	0	0
DCG	3045	100-YR	1780	5366.29	5369.85	5369.85	5370.93	0.01748	10.79	237.3	105.24	1.05				
DCG	3045	Floodway	1780	5366.29	5369.85	5369.85	5370.93	0.01748	10.79	237.3	105.24	1.05	0	0	0	0
DCG	3034	100-YR	1780	5366.33	5369.72	5369.72	5370.78	0.00855	9.37	224.97	104.08	0.95				
DCG	3034	Floodway	1780	5366.33	5369.72	5369.72	5370.78	0.00855	9.37	224.97	104.08	0.95	0	0	0	0
DCG	3019	100-YR	1780	5366.3	5369.3	5369.3	5370.33	0.00916	9.07	222.63	103.36	0.98				
DCG	3019	Floodway	1780	5366.3	5369.3	5369.3	5370.33	0.00916	9.07	222.63	103.36	0.98	0	0	0	0
DCG	3014	100-YR	1780	5366.14	5368.97	5368.97	5370	0.00927	9.1	222.17	103.77	0.98				
DCG	3014	Floodway	1780	5366.14	5368.97	5368.97	5370	0.00927	9.1	222.17	103.77	0.98	0	0	0	0
DCG	3011	100-YR	1780	5366.06	5368.55	5368.55	5369.64	0.01008	8.58	215.61	103.19	0.99				
DCG	3011	Floodway	1780	5366.06	5368.55	5368.55	5369.64	0.01008	8.58	215.61	103.19	0.99	0	0	0	0
DCG	3006	100-YR	1780	5365.92	5368.73	5368.24	5369.41	0.00499	6.7	272.17	107.48	0.72				
DCG	3006	Floodway	1780	5365.92	5368.73	5368.24	5369.41	0.00499	6.7	272.17	107.48	0.72	0	0	0	0
DCG	3003	100-YR	1780	5364.97	5368.86	5367.89	5369.34	0.00289	6.3	325.26	110.52	0.57				
DCG	3003	Floodway	1780	5364.97	5368.86	5367.89	5369.34	0.00289	6.3	325.26	110.52	0.57	0	0	0	0
DCG	2999	100-YR	1780	5363.86	5368.89	5367.7	5369.3	0.0059	5.93	357.05	111.55	0.5				
DCG	2999	Floodway	1780	5363.86	5368.89	5367.7	5369.3	0.0059	5.93	357.05	111.55	0.5	0	0	0	0
DCG	2987	100-YR	1780	5363.4	5368.88		5369.23	0.0039	5.45	398.02	112.33	0.42				
DCG	2987	Floodway	1780	5363.4	5368.88		5369.23	0.0039	5.45	398.02	112.33	0.42	0	0	0	0
DCG	2972	100-YR	1780	5363.22	5368.78		5369.16	0.00441	5.73	382.69	113.1	0.45				
DCG	2972	Floodway	1780	5363.22	5368.78		5369.16	0.00441	5.73	382.69	113.1	0.45	0	0	0	0
DCG	2957	100-YR	1780	5363.03	5368.54		5369.06	0.00899	6.47	315.88	111.83	0.59				
DCG	2957	Floodway	1780	5363.03	5368.54		5369.06	0.00899	6.47	315.88	111.83	0.59	0	0	0	0
DCG	2936	100-YR	1780	5363.08	5368.41		5368.92	0.00494	7.22	359.5	120.84	0.59				
DCG	2936	Floodway	1780	5363.08	5368.41		5368.92	0.00494	7.22	359.5	120.84	0.59	0	0	0	0
DCG	2908	100-YR	1780	5363	5368.22		5368.78	0.00544	7.48	337.95	111.29	0.61				
DCG	2908	Floodway	1780	5363	5368.22		5368.78	0.00544	7.48	337.95	111.29	0.61	0	0	0	0
DCG	2878	100-YR	1780	5362.98	5368.11		5368.61	0.00527	7.27	353.89	117.9	0.6				
DCG	2878	Floodway	1780	5362.98	5368.11		5368.61	0.00527	7.27	353.89	117.9	0.6	0	0	0	0
DCG	2861	100-YR	1780	5362.95	5368.01		5368.53	0.00546	7.34	349.27	117.44	0.61				
DCG	2861	Floodway	1780	5362.95	5368.01		5368.53	0.00546	7.34	349.27	117.44	0.61	0	0	0	0
DCG	2836	100-YR	1780	5362.9	5367.88		5368.38	0.00549	7.29	349.09	117.19	0.61				
DCG	2836	Floodway	1780	5362.9	5367.88		5368.38	0.00549	7.29	349.09	117.19	0.61	0	0	0	0
DCG	2804	100-YR	1780	5362.83	5367.68		5368.2	0.00607	7.46	340.63	116.52	0.64				
DCG	2804	Floodway	1780	5362.83	5367.68		5368.2	0.00607	7.46	340.63	116.52	0.64	0	0	0	0
DCG	2777	100-YR	1780	5362.77	5366.85	5366.84	5367.91	0.01604	10.54	243.71	108.6	1.01				
DCG	2777	Floodway	1780	5362.77	5366.85	5366.84	5367.91	0.01604	10.54	243.71	108.6	1.01	0	0	0	0
DCG	2765	100-YR	1780	5362.72	5366.68	5366.68	5367.74	0.01492	10.23	246.5	108.25	0.95				
DCG	2765	Floodway	1780	5362.72	5366.68	5366.68	5367.74	0.01492	10.23	246.5	108.25	0.95	0	0	0	0
DCG	2747	100-YR	1780	5362.55	5366.29	5366.29	5367.37	0.00828	10.02	230.91	113.3	0.96				
DCG	2747	Floodway	1780	5362.55	5366.29	5366.29	5367.37	0.00828	10.02	230.91	113.3	0.96	0	0	0	0
DCG	2735	100-YR	1780	5362.16	5365.68	5365.68	5366.65	0.00711	8.56	241.96	119.2	0.87				
DCG	2735	Floodway	1780	5362.16	5365.68	5365.68	5366.65	0.00711	8.56	241.96	119.2	0.87	0	0	0	0
DCG	2731	100-YR	1780	5361.12	5365.19	5365.19	5366.14	0.00755	10.14	244.14	117.71	0.9				
DCG	2731	Floodway	1780	5361.12	5365.19	5365.19	5366.14	0.00755	10.14	244.14	117.71	0.9	0	0	0	0
DCG	2726	100-YR	1780	5359.99	5364.67	5364.67	5365.65	0.00646	9.83	250.11	114.73	0.85				

			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)	(ft/s)	(ft)
DCG	2726	Floodway	1780	5359.99	5364.67	5364.67	5365.65	0.00646	9.83	250.11	114.73	0.85	0	0	0	0
DCG	2722	100-YR	1780	5358.97	5364.14	5364.11	5365.12	0.01607	9.63	253.17	112.05	0.8				
DCG	2722	Floodway	1780	5358.97	5364.14	5364.11	5365.12	0.01607	9.63	253.17	112.05	0.8	0	0	0	0
DCG	2709	100-YR	1780	5358.79	5364.45		5364.83	0.00461	6.1	388.21	121.67	0.46				
DCG	2709	Floodway	1780	5358.79	5364.45		5364.83	0.00461	6.1	388.21	121.67	0.46	0	0	0	0
DCG	2694	100-YR	1780	5358.64	5364.39		5364.76	0.00506	6.3	381.22	119.93	0.48				
DCG	2694	Floodway	1780	5358.64	5364.39		5364.76	0.00506	6.3	381.22	119.93	0.48	0	0	0	0
DCG	2677	100-YR	1780	5358.93	5364.24		5364.67	0.00468	6.62	369.79	117.3	0.54				
DCG	2677	Floodway	1780	5358.93	5364.24		5364.67	0.00468	6.62	369.79	117.3	0.54	0	0	0	0
DCG	2658	100-YR	1780	5358.81	5364.11		5364.59	0.0046	6.94	361.19	114.91	0.57				
DCG	2658	Floodway	1780	5358.81	5364.11		5364.59	0.0046	6.94	361.19	114.91	0.57	0	0	0	0
DCG	2634	100-YR	1780	5358.79	5364.04		5364.48	0.00428	6.75	374.27	116.66	0.55				
DCG	2634	Floodway	1780	5358.79	5364.04		5364.48	0.00428	6.75	374.27	116.66	0.55	0	0	0	0
DCG	2615	100-YR	1780	5358.75	5363.97		5364.4	0.00431	6.71	377.32	118.32	0.55				
DCG	2615	Floodway	1780	5358.75	5363.97		5364.4	0.00431	6.71	377.32	118.32	0.55	0	0	0	0
DCG	2597	100-YR	1780	5358.75	5363.94	5362.75	5364.3	0.00374	6.35	411.4	130.68	0.51				
DCG	2597	Floodway	1780	5358.75	5363.94	5362.75	5364.3	0.00374	6.35	411.4	130.68	0.51	0	0	0	0
DCG	2585		Culvert													
DCG	2571	100-YR	1780	5358.81	5363.89		5364.21	0.0033	5.9	422.9	124.62	0.48				
DCG	2571	Floodway	1780	5358.81	5363.89		5364.21	0.0033	5.9	422.9	124.62	0.48	0	0	0	0
DCG	2527	100-YR	1780	5358.52	5363.55		5364.02	0.00479	6.98	362.72	116.2	0.58				
DCG	2527	Floodway	1780	5358.52	5363.55		5364.02	0.00479	6.98	362.72	116.2	0.58	0	0	0	0
DCG	2506	100-YR	1780	5358.53	5363.46		5363.92	0.00488	7.02	368.05	121.05	0.58				
DCG	2506	Floodway	1780	5358.53	5363.46		5363.92	0.00488	7.02	368.05	121.05	0.58	0	0	0	0
DCG	2480	100-YR	1780	5358.32	5363.21		5363.77	0.00615	7.76	337.47	118.27	0.65				
DCG	2480	Floodway	1780	5358.32	5363.21		5363.77	0.00615	7.76	337.47	118.27	0.65	0	0	0	0
DCG	2451	100-YR	1780	5358.34	5362.24	5362.24	5363.43	0.01695	11.09	227.84	94.1	1.04				
DCG	2451	Floodway	1780	5358.34	5362.24	5362.24	5363.43	0.01695	11.09	227.84	94.1	1.04	0	0	0	0
DCG	2425	100-YR	1780	5358.82	5361.91	5361.91	5363.12	0.00944	9.69	205.25	86.51	1.01				
DCG	2425	Floodway	1780	5358.82	5361.91	5361.91	5363.12	0.00944	9.69	205.25	86.51	1.01	0	0	0	0
DCG	2409	100-YR	1780	5358.4	5361.2	5361.2	5362.32	0.00956	8.53	211.97	96.75	0.98				
DCG	2409	Floodway	1780	5358.4	5361.2	5361.2	5362.32	0.00956	8.53	211.97	96.75	0.98	0	0	0	0
DCG	2389	100-YR	1780	5355.49	5361.26		5361.54	0.00097	4.46	438.91	110.28	0.35				
DCG	2389	Floodway	1780	5355.49	5361.26		5361.54	0.00097	4.46	438.91	110.28	0.35	0	0	0	0
DCG	2285	100-YR	1780	5354.59	5360.23	5360.23	5361.23	0.00994	8.8	281.05	169.1	0.8				
DCG	2285	Floodway	1780	5354.59	5360.23	5360.23	5361.23	0.00994	8.8	281.05	169.1	0.8	0	0	0	0
DCG	2140	100-YR	1780	5354.9	5357.92		5358.07	0.00416	3.74	587.82	482.16	0.4				
DCG	2140	Floodway	1780	5354.9	5357.94		5358.13	0.00379	3.59	526.34	328.49	0.38	0.02	0.06	-0.15	-153.67
DCG	1990	100-YR	1780	5354.9	5357.33		5357.45	0.00424	3.33	651.63	640.59	0.39				
DCG	1990	Floodway	1780	5354.9	5357.41		5357.56	0.00381	3.23	573.88	413.28	0.37	0.08	0.11	-0.1	-227.31
DCG	1810	100-YR	1780	5354.9	5356.81		5356.88	0.00262	2.33	838.19	791.19	0.3				
DCG	1810	Floodway	1780	5354.9	5357.06		5357.14	0.00165	2.01	821.82	507.09	0.24	0.25	0.26	-0.32	-284.1
DCG	1634	100-YR	1780	5354	5356.65		5356.67	0.00067	1.42	1392.33	1032.76	0.16				
DCG	1634	Floodway	1780	5354	5356.93		5356.97	0.0006	1.44	1144.54	541.75	0.15	0.28	0.3	0.02	-491.01
DCG	1498	100-YR	1780	5354	5356.49		5356.53	0.00176	2.17	1270.17	1225.19	0.25				
DCG	1498	Floodway	1780	5354	5356.8		5356.85	0.0013	2.03	1057.78	558.27	0.22	0.31	0.32	-0.14	-666.92
DCG	1336	100-YR	1780	5354	5356.2		5356.24	0.00209	2	1248.27	1391.84	0.26				
DCG	1336	Floodway	1780	5354	5356.6		5356.64	0.00141	1.88	1040.31	554.19	0.22	0.4	0.4	-0.12	-837.65
DCG	1110	100-YR	1780	5354	5355.92	5355.17	5355.95	0.0013	1.72	1296.32	1172.2	0.25				
DCG	1110	Floodway	1780	5354	5356.39	5355.16	5356.43	0.00098	1.8	1019.8	526.65	0.23	0.47	0.48	0.08	-645.55
DCG	901		Lat Struct													
DCG	767	100-YR	1780	5353	5355.55		5355.58	0.00089	1.58	1317.04	879.55	0.18				
DCG	767	Floodway	1780	5353	5356.02		5356.08	0.00107	1.95	966.55	371.12	0.2	0.47	0.5	0.37	-508.43

DCG 1D Floodway Analysis Results

			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)	(ft/s)	(ft)
DCG	609	100-YR	1780	5352	5355.41	5353.72	5355.45	0.00085	1.88	1233.49	625.29	0.19				
DCG	609	Floodway	1780	5352	5355.9	5353.74	5355.94	0.00071	1.89	1031.12	318.88	0.17	0.49	0.49	0.01	-306.41
DCG	446	100-YR	1780	5352	5355.26	5353.43	5355.31	0.00089	1.9	1111.51	509.21	0.19				
DCG	446	Floodway	1780	5352	5355.74	5353.38	5355.81	0.00096	2.16	836.5	233.99	0.2	0.48	0.5	0.26	-275.22
DCG	260	100-YR	1780	5350	5355.03		5355.11	0.00137	2.55	863.97	564.7	0.24				
DCG	260	Floodway	1780	5350	5355.42		5355.57	0.0018	3.1	590.21	157.41	0.28	0.39	0.46	0.55	-407.29
DCG	113	100-YR	1780	5347	5354.35	5353.1	5354.73	0.00527	5.17	399.78	194	0.47				
DCG	113	Floodway	1780	5347	5354.68	5353.05	5355.12	0.00527	5.32	334.5	81.59	0.46	0.33	0.39	0.15	-112.41

MHFD LOMC Submittal - BFE Comparison Table

Project Name :	**Santa Fe Park South**
Flooding Source:	**Dad Clark Gulch**
Company:	**Westwood PS**
Completed By:	**Mark Scheurer**

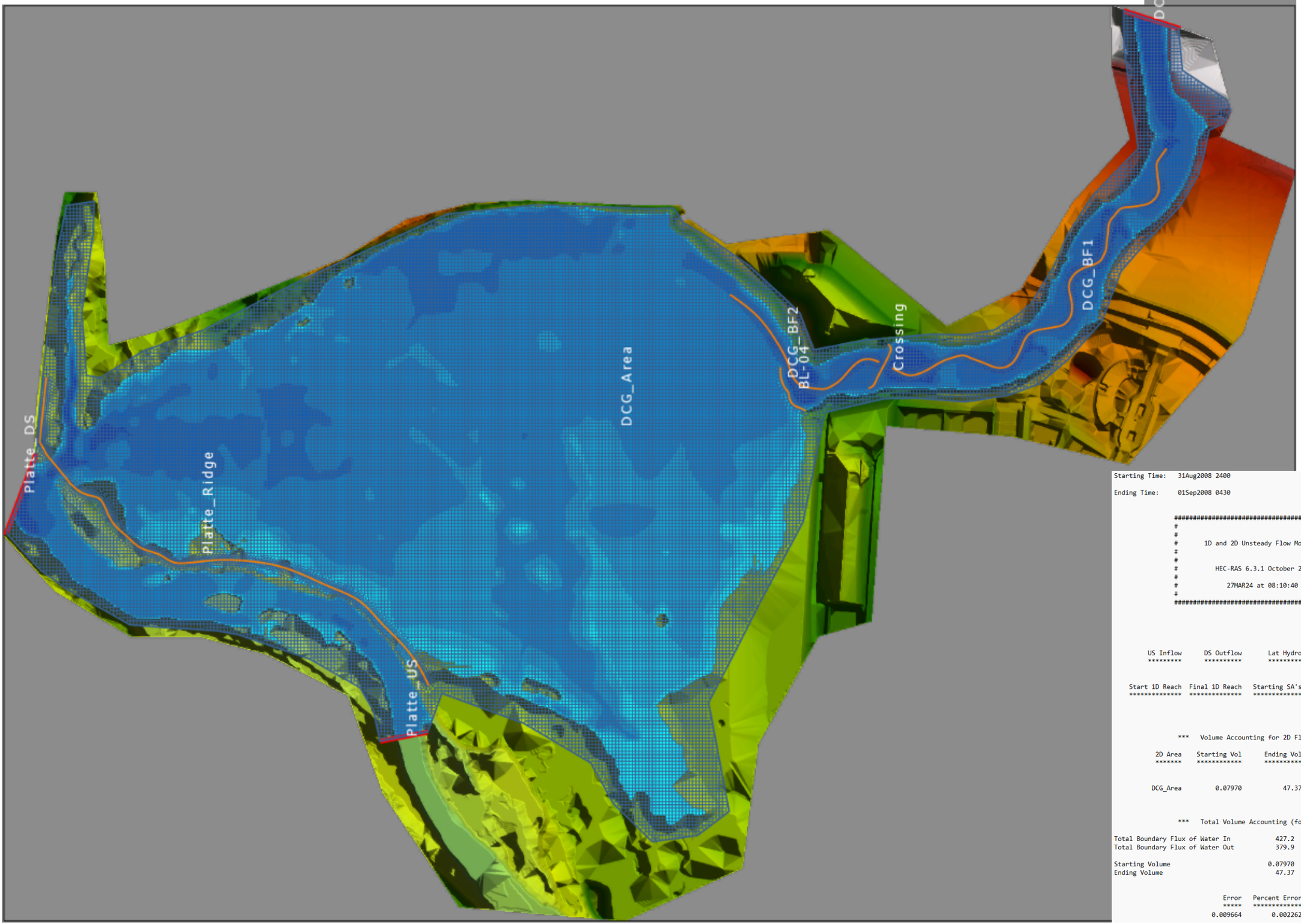
SOURCE DATA											COMPARISONS				
HYDRAULIC CROSS-SECTION INFO.						BASE FLOOD ELEVATIONS (NAVD)									
Effective Cross-Section ID (Letter)	Corrected Effective Cross-Section ID	Corrected Effective Stream Station	Existing Cross-Section ID	Proposed Cross-Section ID	Proposed Stream Station	EFFECTIVE	DUP. EFF.	COR. EFF.	EXISTING	PROPOSED	DUP. EFF vs. EFF.	COR. EFF. vs. EFF.	EX. vs. COR. EFF.	PP. vs. COR. EFF.	PP. vs. EFF.
						BFE	BFE	BFE	BFE	BFE	BFE	BFE	BFE	BFE	BFE
FHAD 50.0				3705	3075	5378.1				5378.5					0.36
											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
											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
											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
											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
											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
											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
											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
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											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
											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
											0.00	0.00	0.00	0.00	0.00

-- = Not applicable or no direct comparison available

5225.98 = Interpolated value or value pulled directly from the effective FIS profile

APPENDIX C
Proposed HEC-RAS 2D Results

HEC-RAS 2D MAXIMUM FLOOD EXTENTS




```
Starting Time:   31Aug2008 2400

Ending Time:     01Sep2008 0430

                ################################################
                #                                              #
                #                                              #
                #       1D and 2D Unsteady Flow Module         #
                #                                              #
                #                                              #
                #          HEC-RAS 6.3.1 October 2022          #
                #                                              #
                #             27MAR24 at 08:10:40              #
                #                                              #
                ################################################



        US Inflow      DS Outflow      Lat Hydro       SA Hydro     Groundwater      Diversions   Precip Excess
         *********      **********      *********       ********      ***********      **********   *************

    Start 1D Reach  Final 1D Reach   Starting SA's     Final SA's
     **************  **************   *************     **********



                ***   Volume Accounting for 2D Flow Area in Acre Feet   ***

          2D Area      Starting Vol       Ending Vol      Cum Inflow     Cum Outflow           Error   Percent Error
          *******      ************       **********      **********     ***********           *****   *************

          DCG_Area          0.07970            47.37           427.2           379.9        0.009664        0.002262

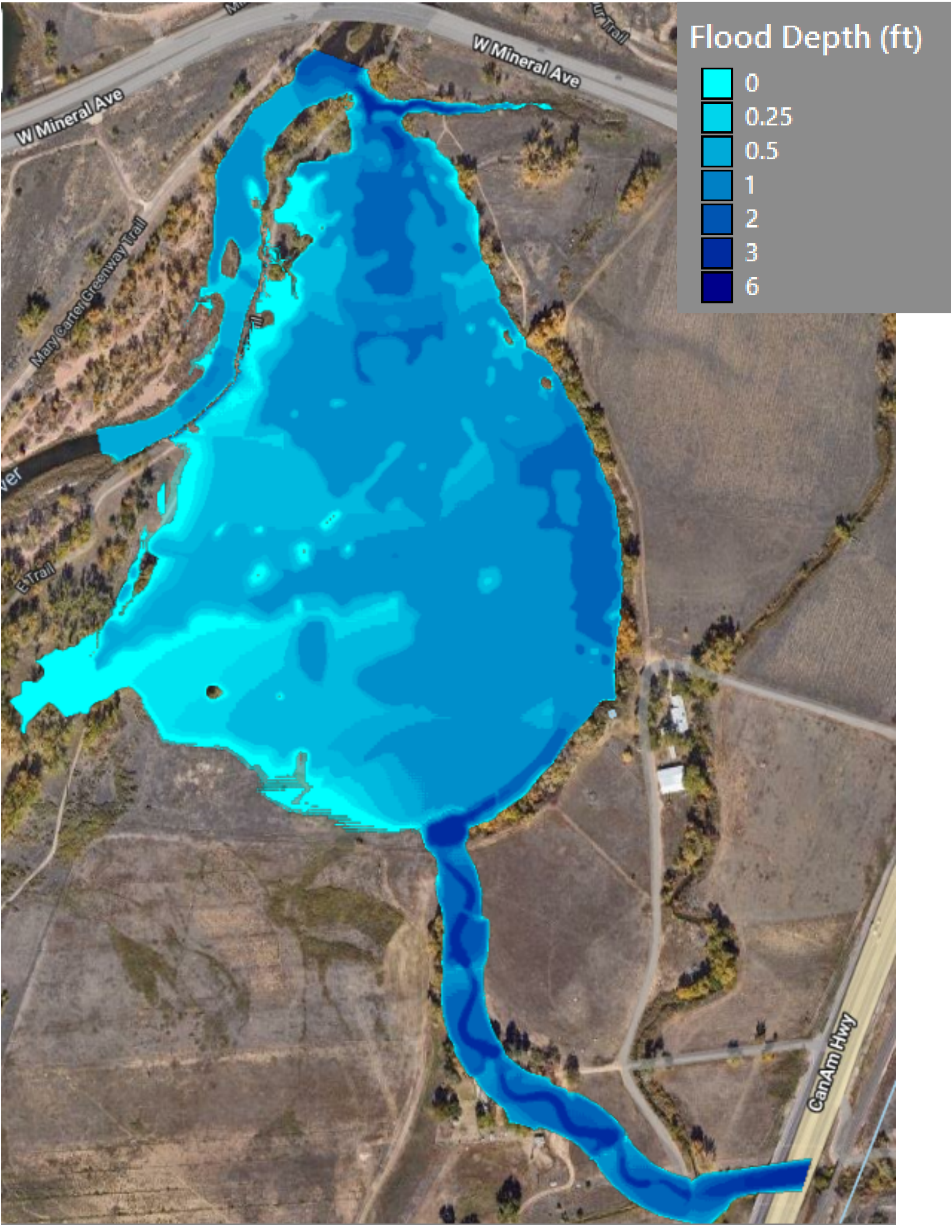

                ***   Total Volume Accounting (for the entire model) in Acre Feet   ***

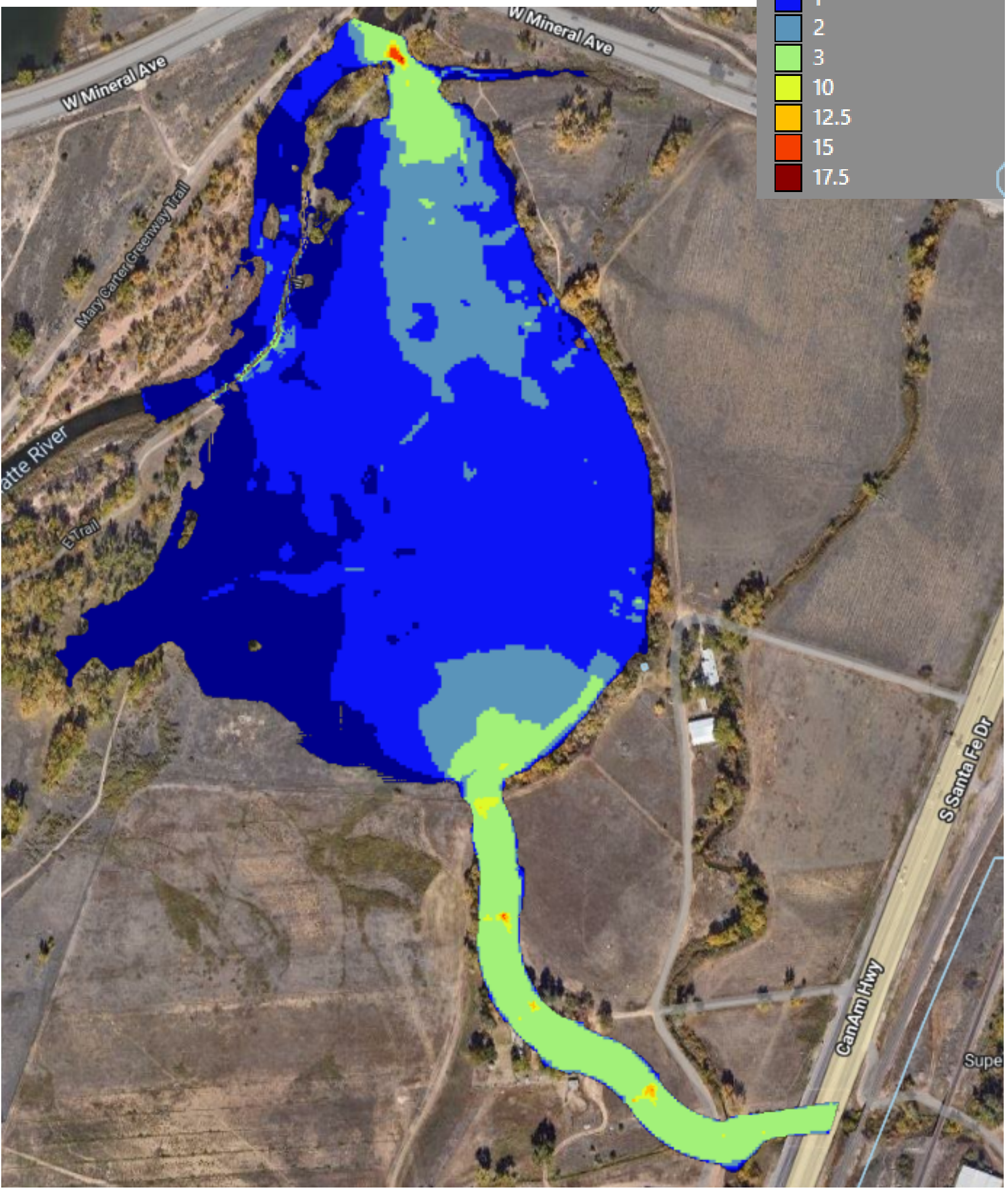
Total Boundary Flux of Water In            427.2
Total Boundary Flux of Water Out           379.9

Starting Volume                          0.07970
Ending Volume                              47.37


                                     Error   Percent Error
                                     *****   *************
                                  0.009664        0.002262
```

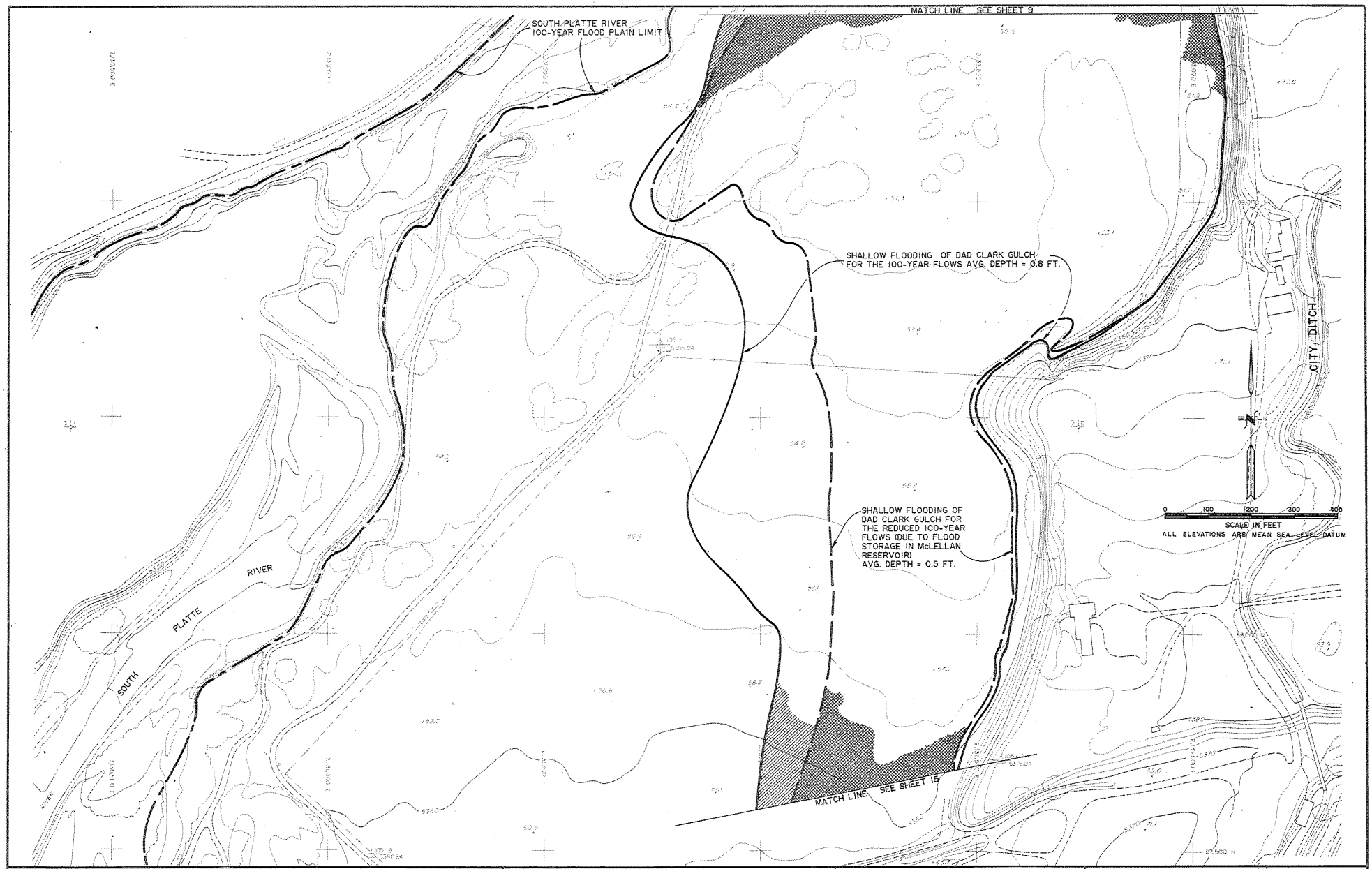

Platte_DS
Platte_Ridge
Platte_US
DCG_Area
DCG_BF2
BL-04
Crossing
DCG_BF1
DCG_Inflow
W Mineral Ave
Mineral Ave
Railroad Spur Trail
Mineral Ave Trail
Mary Carter Greenway Trail
South Platte River
E Trail
S Platte Pkwy
Conoco
S Santa Fe Dr
CanAm Hwy
Superior Towing Co
Tall Horse Riding Club


Flood Depth (ft)
0
0.25
0.5
1
2
3
6
W Mineral Ave
W Mineral Ave
Mary Carter Greenway Trail
E Trail
CanAm Hwy


Max Velocity (ft/s)
0
1
2
3
10
12.5
15
17.5
W Mineral Ave
W Mineral Ave
Mary Carter Greenway Trail
atte River
E Trail
S Santa Fe Dr
CanAm Hwy

APPENDIX D

Excerpts from the 1990 FHAD Study Report, SPR FIRM, Corrective Effective Summary



GROUND CONTROL SURVEY BY LANDMARK, LTD.
AERIAL PHOTOGRAPHY BY SCHARF & ASSOC.
TOPOGRAPHIC MAPPING BY LANDMARK, LTD.
CONTOUR INTERVAL 2 FT DATE FLOWN 4-13-89

CENTENNIAL ENGINEERING INC
ARVADA CO. 80001 420-0221
CEI JN. 906.00

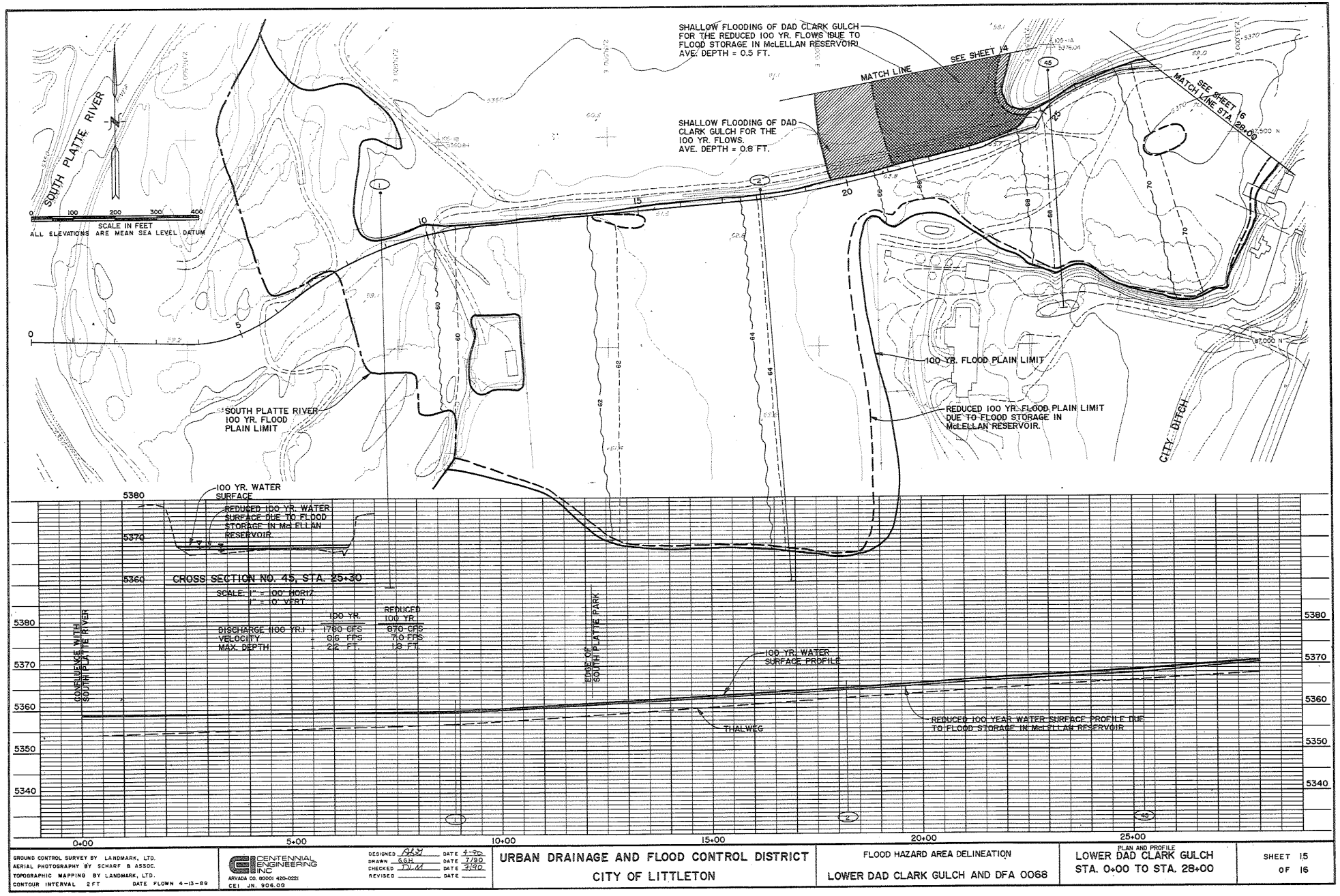
DESIGNED DJN DATE 4/90
DRAWN SGH DATE 7/90
CHECKED DJM DATE 7/90
REVISED ____ DATE ____

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
CITY OF LITTLETON

FLOOD HAZARD AREA DELINEATION
LOWER DAD CLARK GULCH AND DFA 0068

PLAN
DAD CLARK GULCH
SHALLOW FLOODING

SHEET 14
OF 16



GROUND CONTROL SURVEY BY LANDMARK, LTD.
AERIAL PHOTOGRAPHY BY SCHARF & ASSOC.
TOPOGRAPHIC MAPPING BY LANDMARK, LTD.
CONTOUR INTERVAL 2 FT DATE FLOWN 4-13-89

CENTENNIAL ENGINEERING INC
ARVADA CO. 80001 420-0221
CEI JN. 906.00

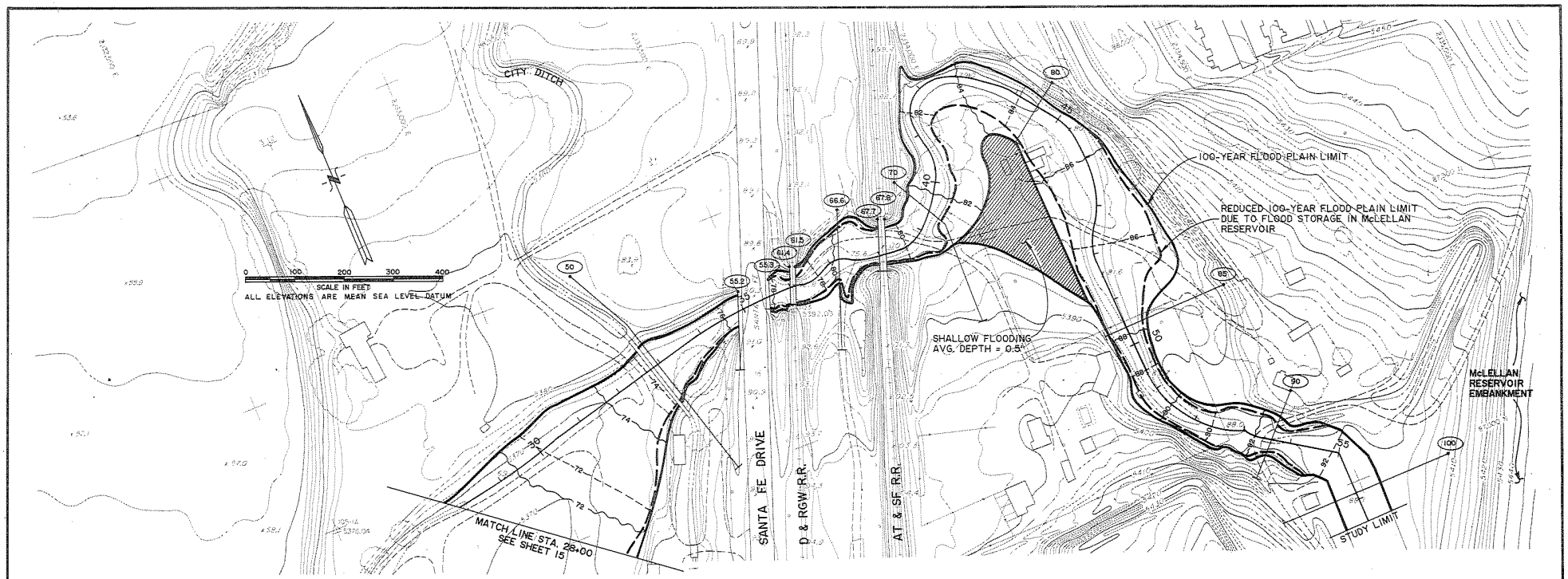
DESIGNED RBM DATE 1-90
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CHECKED RWM DATE 7/90
REVISED DATE

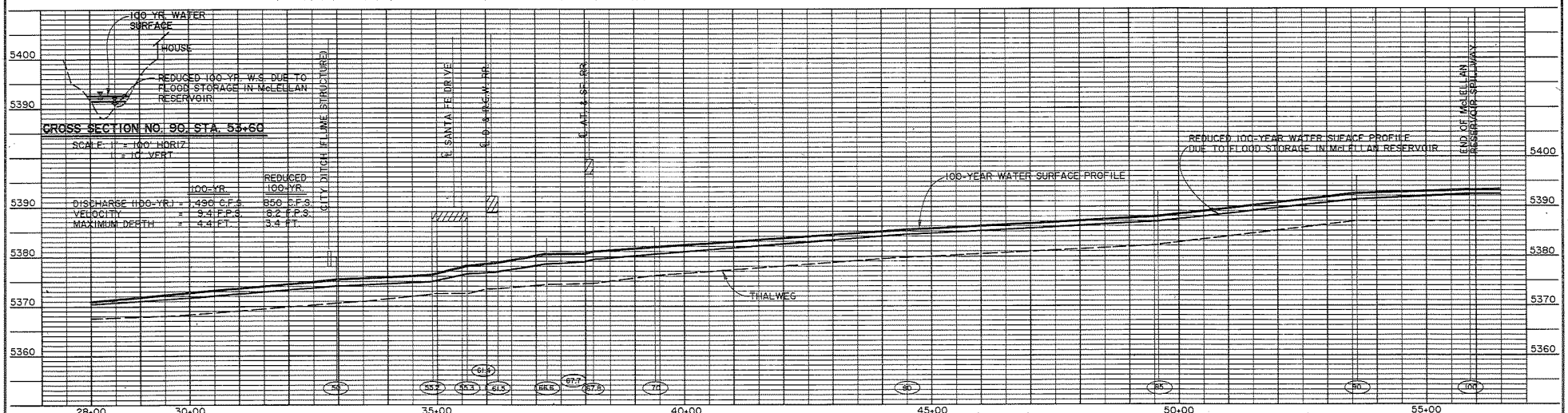
URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
CITY OF LITTLETON

FLOOD HAZARD AREA DELINEATION
LOWER DAD CLARK GULCH AND DFA 0068

PLAN AND PROFILE
LOWER DAD CLARK GULCH
STA. 0+00 TO STA. 28+00

SHEET 15
OF 16





GROUND CONTROL SURVEY BY LANDMARK, LTD.
AERIAL PHOTOGRAPHY BY SCHARF & ASSOC.
TOPOGRAPHIC MAPPING BY LANDMARK, LTD.
CONTOUR INTERVAL 2 FT DATE FLOWN 4-13-89

CENTENNIAL ENGINEERING INC
ARVADA CO. 80001 420-0221
CEI JN. 906.00

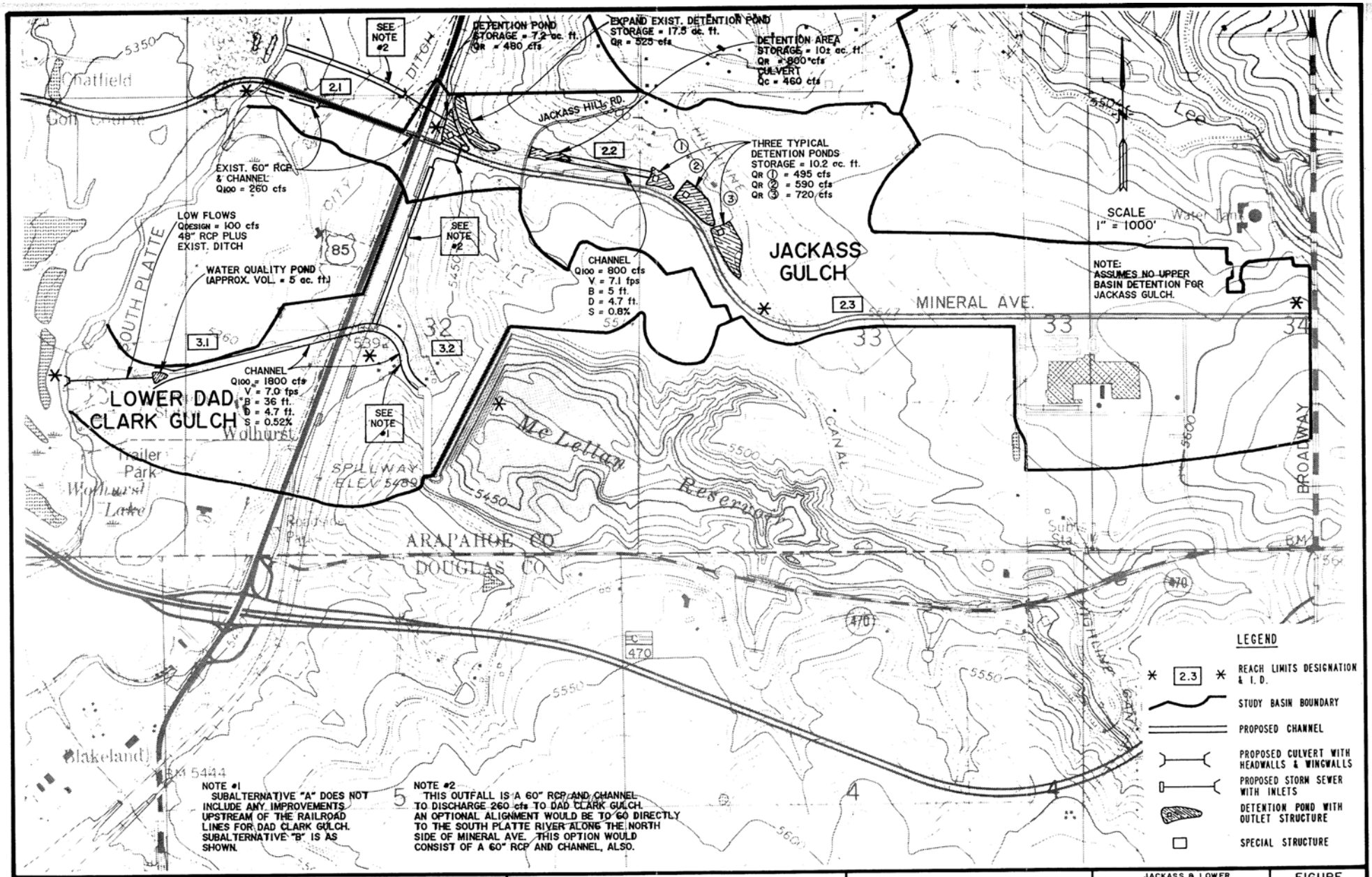
DESIGNED GHS DATE 4-90
DRAWN S.G.H. DATE 7/90
CHECKED D.M.M. DATE 7/90
REVISED ____ DATE ____

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
CITY OF LITTLETON

FLOOD HAZARD AREA DELINEATION
LOWER DAD CLARK GULCH AND DFA 0068

PLAN AND PROFILE
LOWER DAD CLARK GULCH
STA. 28+00 TO STA. 56+50

SHEET 16
OF 16



NOTE #1
SUBALTERNATIVE "A" DOES NOT INCLUDE ANY IMPROVEMENTS UPSTREAM OF THE RAILROAD LINES FOR DAD CLARK GULCH. SUBALTERNATIVE "B" IS AS SHOWN.

NOTE #2
THIS OUTFALL IS A 60" RCP AND CHANNEL TO DISCHARGE 260 cfs TO DAD CLARK GULCH. AN OPTIONAL ALIGNMENT WOULD BE TO GO DIRECTLY TO THE SOUTH PLATTE RIVER ALONG THE NORTH SIDE OF MINERAL AVE. THIS OPTION WOULD CONSIST OF A 60" RCP AND CHANNEL, ALSO.

BASE MAP UNITED STATES GEOLOGICAL SURVEY MAP LITTLETON QUAD HIGHLANDS RANCH QUAD	CENTENNIAL ENGINEERING INC DESIGNED ____ DATE ____ DRAWN ____ DATE ____ CHECKED ____ DATE ____ REVISED ____ DATE ____	URBAN DRAINAGE AND FLOOD CONTROL DISTRICT CITY OF LITTLETON	OUTFALL SYSTEMS PLANNING LOWER DAD CLARK GULCH AND DFA 0068	JACKASS & LOWER DAD CLARK BASINS OUTFALL SYSTEM SCHEMATIC ALTERNATIVE 1	FIGURE 3-2a CEI JN 906.00

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided by the Arapahoe County and Cities of Aurora and Littleton GIS depts. The coordinate system used for production of the digital FIRM is Universal Transverse Mercator, Zone 13N, referenced to the North American Datum of 1983 and the GRS 80 spheroid, Western Hemisphere.

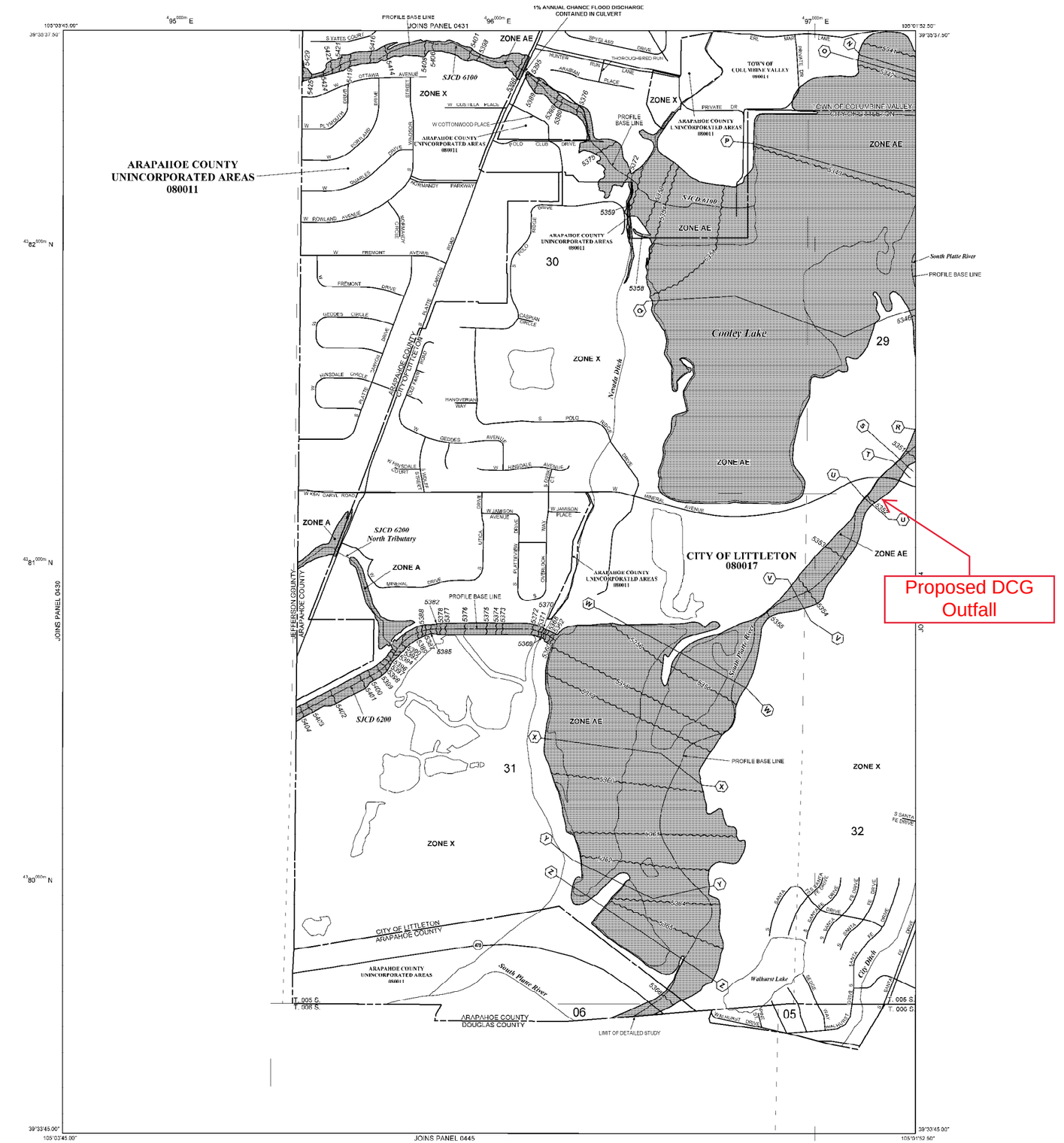
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a *Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA 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.

	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*

* Referenced 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
April 17, 1989

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
March 4, 1991 - December 3, 1993 - August 16, 1995
December 17, 2010 - to update map format, to change Special Flood Hazard Areas, and to change Base Flood Elevations

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

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0433K

FIRM

FLOOD INSURANCE RATE MAP

ARAPAHOE COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 433 OF 725
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ARAPAHOE COUNTY	080011	0433	K
COLUMBINE VALLEY, TOWN OF	080014	0433	K
LITTLETON, CITY OF	080017	0433	K

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
08005C0433K
MAP REVISED
DECEMBER 17, 2010

Federal Emergency Management Agency

Corrected Effective Standard Table

HEC-RAS Plan: EX Adj River: RIVER-1 Reach: Reach-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	100	PF 1	690.00	5390.05	5395.17		5395.20	0.000030	1.41	488.84	96.65	0.11
Reach-1	100	PF 2	1160.00	5390.05	5396.21		5396.27	0.000046	1.97	589.83	97.09	0.14
Reach-1	100	PF 3	1490.00	5390.05	5396.78		5396.87	0.000057	2.31	645.84	97.33	0.16
Reach-1	90	PF 1	690.00	5391.05	5394.17	5394.17	5395.08	0.020575	7.80	96.56	60.77	0.94
Reach-1	90	PF 2	1160.00	5391.05	5395.00	5395.00	5396.12	0.017139	8.87	153.45	76.14	0.91
Reach-1	90	PF 3	1490.00	5391.05	5395.47	5395.47	5396.71	0.015960	9.44	190.89	82.93	0.90
Reach-1	85	PF 1	690.00	5385.45	5389.54		5389.93	0.007094	5.08	139.12	64.24	0.57
Reach-1	85	PF 2	1160.00	5385.45	5390.49		5391.04	0.006464	6.02	206.79	77.47	0.57
Reach-1	85	PF 3	1490.00	5385.45	5390.98		5391.64	0.006631	6.66	246.27	90.54	0.59
Reach-1	80	PF 1	690.00	5383.05	5387.11		5387.40	0.003743	4.50	180.54	84.17	0.43
Reach-1	80	PF 2	1160.00	5383.05	5387.92		5388.37	0.004577	5.75	282.52	177.29	0.50
Reach-1	80	PF 3	1490.00	5383.05	5388.27		5388.80	0.005117	6.42	353.87	224.15	0.53
Reach-1	70	PF 1	810.00	5380.55	5383.38		5383.92	0.014269	5.89	138.70	83.28	0.77
Reach-1	70	PF 2	1380.00	5380.55	5384.27		5384.93	0.010617	6.61	223.19	112.03	0.71
Reach-1	70	PF 3	1780.00	5380.55	5384.85		5385.54	0.008724	6.82	297.36	143.91	0.66
Reach-1	67.8	PF 1	810.00	5377.85	5382.37		5382.70	0.007590	4.61	175.72	72.51	0.52
Reach-1	67.8	PF 2	1380.00	5377.85	5383.34		5383.82	0.008200	5.55	248.68	78.12	0.55
Reach-1	67.8	PF 3	1780.00	5377.85	5384.01		5384.55	0.007814	5.90	301.45	79.73	0.54
Reach-1	67.7	PF 1	810.00	5377.65	5381.80		5382.41	0.019154	6.25	129.54	70.03	0.81
Reach-1	67.7	PF 2	1380.00	5377.65	5382.91		5383.57	0.013584	6.55	210.78	77.12	0.70
Reach-1	67.7	PF 3	1780.00	5377.65	5383.67		5384.34	0.010877	6.58	270.36	78.90	0.63
Reach-1	66.6	PF 1	810.00	5377.25	5381.35		5381.59	0.004726	3.96	207.38	104.81	0.46
Reach-1	66.6	PF 2	1380.00	5377.25	5382.69		5382.94	0.003058	4.02	362.87	127.25	0.39
Reach-1	66.6	PF 3	1780.00	5377.25	5383.54		5383.77	0.002592	3.97	479.17	148.58	0.37
Reach-1	61.5	PF 1	810.00	5376.85	5379.86		5380.68	0.017611	7.27	111.43	42.76	0.79
Reach-1	61.5	PF 2	1380.00	5376.85	5380.97		5382.12	0.017648	8.58	160.84	45.89	0.81
Reach-1	61.5	PF 3	1780.00	5376.85	5381.63	5381.05	5382.92	0.024401	9.12	195.17	67.61	0.95
Reach-1	61.4	PF 1	810.00	5376.45	5379.66		5380.29	0.012587	6.39	126.85	46.18	0.68
Reach-1	61.4	PF 2	1380.00	5376.45	5380.77		5381.65	0.015873	7.50	184.03	61.70	0.77
Reach-1	61.4	PF 3	1780.00	5376.45	5381.41		5382.39	0.015174	7.96	223.73	64.25	0.75
Reach-1	55.3	PF 1	810.00	5375.75	5379.37	5378.44	5379.86	0.007668	5.60	144.53	50.95	0.59
Reach-1	55.3	PF 2	1380.00	5375.75	5380.42	5379.36	5381.16	0.008493	6.90	200.08	54.83	0.64
Reach-1	55.3	PF 3	1780.00	5375.75	5381.02	5379.91	5381.92	0.008995	7.62	233.54	57.04	0.66
Reach-1	55.2	PF 1	810.00	5375.65	5378.01	5377.94	5378.89	0.022433	7.52	107.65	55.59	0.95
Reach-1	55.2	PF 2	1380.00	5375.65	5378.76	5378.76	5380.07	0.023046	9.18	150.30	58.00	1.01
Reach-1	55.2	PF 3	1780.00	5375.65	5379.24	5379.24	5380.79	0.022353	9.98	178.35	58.62	1.01
Reach-1	50	PF 1	810.00	5373.85	5377.06	5375.87	5377.24	0.002956	3.67	255.03	119.30	0.38
Reach-1	50	PF 2	1380.00	5373.85	5377.86	5376.51	5378.13	0.003293	4.55	353.43	127.50	0.42
Reach-1	50	PF 3	1780.00	5373.85	5378.30	5376.87	5378.64	0.003522	5.07	410.77	132.05	0.44
Reach-1	45	PF 1	810.00	5369.35	5371.20	5371.20	5371.45	0.042477	7.17	223.23	395.22	1.19
Reach-1	45	PF 2	1380.00	5369.35	5371.41	5371.41	5371.76	0.044570	8.22	306.13	400.02	1.26
Reach-1	45	PF 3	1780.00	5369.35	5371.55	5371.55	5371.96	0.043279	8.66	361.63	403.30	1.26
Reach-1	2	PF 1	810.00	5365.45	5367.08	5366.55	5367.11	0.001876	1.47	620.05	847.33	0.27
Reach-1	2	PF 2	1380.00	5365.45	5367.35		5367.40	0.001917	1.67	849.15	849.60	0.28
Reach-1	2	PF 3	1780.00	5365.45	5367.52		5367.57	0.001917	1.78	989.90	850.99	0.29
Reach-1	1	PF 1	810.00	5359.55	5361.96	5361.96	5362.24	0.047389	4.25	192.61	373.82	1.03
Reach-1	1	PF 2	1380.00	5359.55	5362.20	5362.20	5362.57	0.039701	4.95	283.50	384.37	1.00
Reach-1	1	PF 3	1780.00	5359.55	5362.34	5362.34	5362.78	0.037705	5.37	337.80	390.54	1.00

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- [ ] Horizontal
- [ ] Horizontal+height
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Select the type of horizontal coordinate:

- [ ] Geodetic lat-long
- [ ] SPC
- [ ] UTM
- [ ] USNG

Select a height

- [ ] Ellipsoidal
- [ ] Orthometric

Enter lat-lon in decimal degrees

Lat

39.5733315092

Lon

-105.0292190909

or degrees-minutes-seconds

Lat

N

39-34-23.99343

Lon

W

105-01-45.18873

or drag map marker to a location of interest

Input reference frame
(historically called 'horizontal datum')

NAD27

Output reference frame
(historically called 'horizontal datum')

NAD83(2011)

Don't see a reference frame in the list?Click here *to learn more.*

Orthometric Height

5,392.120

Units of height

US Survey Feet

Input geopotential datum
(historically called 'vertical datum')

NGVD29

Output geopotential datum (historically called 'vertical datum')

NAVD88

SPC zone

CO C-0502

Submit

Click blue bar(s) to expand/collapse

Transformed Coordinate

Input Coordinate

Latitude

N39° 34′ 23.99343″
N393423.99343
39.5733315092

Longitude

E254° 58′ 14.81127″
W1050145.18873
-105.0292190909

Ellipsoid Height (usft)

Not given

Orthometric Height (usft)

5392.118

Reference Frame

NAD27

Geopotential Datum

NGVD29

Output Coordinate

Latitude

N39° 34′ 23.95433″
N393423.95433
39.5733206463

Longitude

E254° 58′ 12.86886″
W1050147.13114
-105.0297586511

Ellipsoid Height (usft)

Not given

Orthometric Height (usft)

5395.170

Reference Frame

NAD83(2011)

Geopotential Datum

NAVD88

Total Change + Uncertainty

Latitude

-0.03911″ ±0.001870″
(-1.206 m ±0.0577 m)*

Longitude

-1.94242″ ±0.002259″
(-46.361 m ±0.0539 m)*

Ellipsoid Height

Not given

Orthometric Height

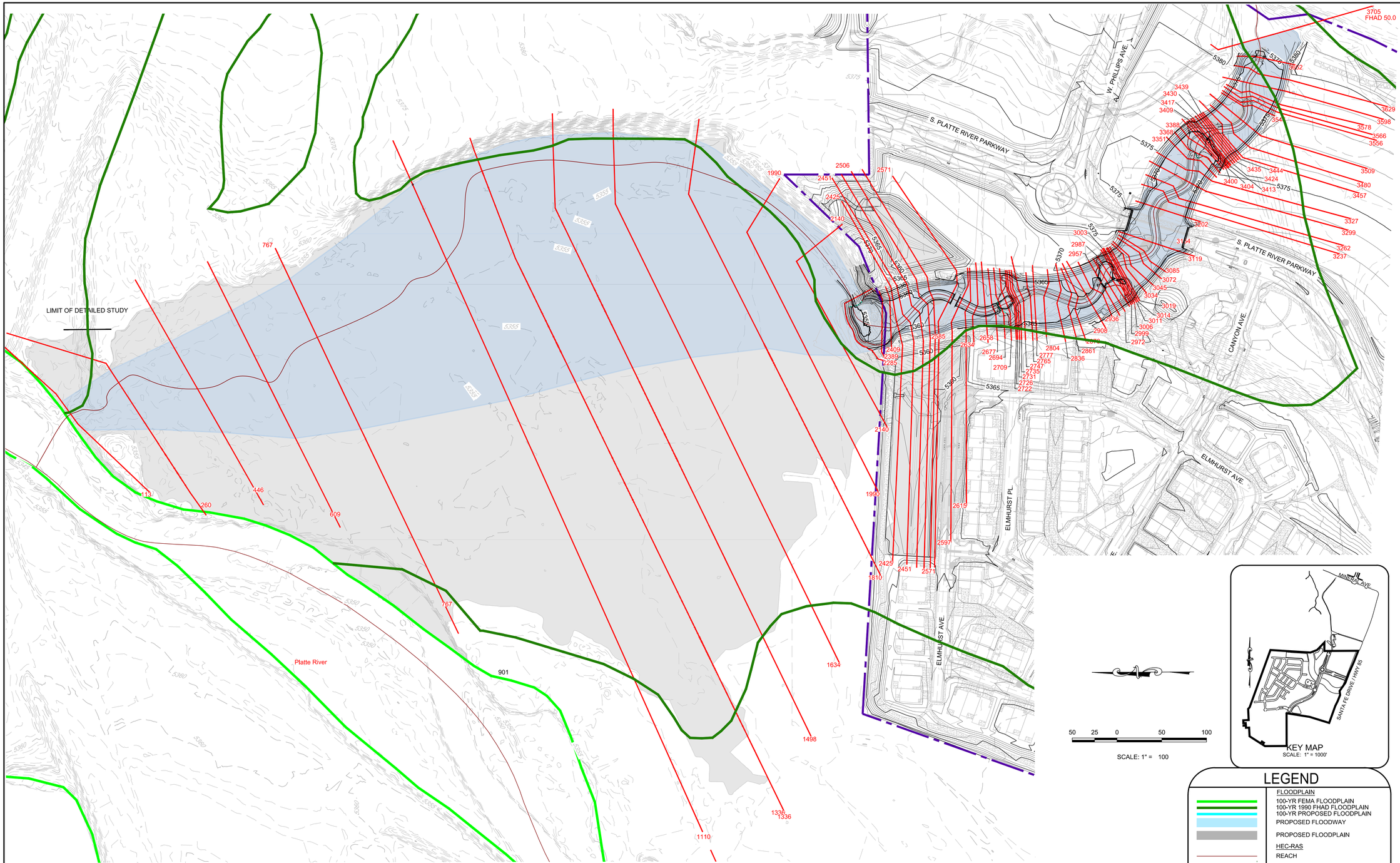
3.052 usft ±0.020 usft

*Approximate value to aid interpretation and not an actual distance. See TM NOS NGS 82 for more details.

Converted Coordinate

Customize Export

APPENDIX E
Floodplain Exhibit



River Sta	W.S. Elev (ft)
3705 FHAD 50.0	5378.46
3662	5377.71
3629	5377.42
3598	5377.13
3578	5377
3566	5376.91
3556	5376.86
3546	5376.78
3509	5376.25
3480	5376.05
3457	5375.86
3444	5375.53
3439	5375.29
3435	5375.21
3430	5375.1
3424	5374.86
3417	5374.2
3413	5373.49
3409	5372.46
3404	5372.87
3400	5372.94
3388	5372.97
3368	5372.73
3351	5372.66
3327	5372.59
3299	5372.39
3262	5372.3
3237	5372.14
3202	5371.93
3154	
3119	5371.21
3085	5370.81
3072	5370.66
3045	5369.85
3034	5369.72
3019	5369.3
3014	5368.97
3011	5368.55
3006	5368.73
3003	5368.86
2999	5368.89
2987	5368.88
2972	5368.78
2957	5368.54
2936	5368.41
2908	5368.22
2878	5368.11
2861	5368.01
2836	5367.88
2804	5367.68
2777	5366.85
2765	5366.68
2747	5366.29
2735	5365.68
2731	5365.19
2726	5364.67
2722	5364.14
2709	5364.45
2694	5364.39
2677	5364.24
2658	5364.11
2634	5364.04
2615	5363.97
2597	5363.94
2585	
2571	5363.89
2527	5363.55
2506	5363.46
2480	5363.21
2451	5362.24
2425	5361.91
2409	5361.2
2389	5361.26
2285	5360.23
2140	5357.92
1990	5357.33
1810	5356.81
1634	5356.65
1498	5356.49
1336	5356.2
1110	5355.92
901	
767	5355.55
609	5355.41
446	5355.26
260	5355.03
113	5354.35

LEGEND

- FLOODPLAIN
- 100-YR FEMA FLOODPLAIN
- 100-YR 1990 FHAD FLOODPLAIN
- 100-YR PROPOSED FLOODPLAIN
- PROPOSED FLOODWAY
- PROPOSED FLOODPLAIN
- HEC-RAS
- REACH
- 3450 PROPOSED HEC RAS CROSS SECTION
- PROPERTY BOUNDARY
- PROPOSED TOPOGRAPHY
- 5650 MAJOR CONTOUR
- MINOR CONTOUR
- EXISTING TOPOGRAPHY
- 5650 MAJOR CONTOUR
- MINOR CONTOUR

NAD83 COLORADO STATE PLANES, CENTRAL ZONE. NAVD88.

BENCHMARK
NGS DESIGNATION Q 23 BEING A 3-1/2 INCH DIAMETER BRASS DISK SET IN A CONCRETE POST 9 INCHES SQUARE, 17.7 FEET EAST OF THE PAVED SHOULDER OF NORTH BOUND US 85, 1.5 MILES SOUTH OF WEST MINERAL AVENUE. ELEVATION IS 5395.24 FEET.

BASIS OF BEARING
BEARINGS ARE BASED UPON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 32, TOWNSHIP 5 SOUTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEARING SOUTH 89°29'27" WEST, AS MONUMENTED AT THE NORTH QUARTER CORNER OF SAID SECTION 32 BY A FOUND 3-1/4 INCH DIAMETER ALUMINUM CAP IN A RANGE BOX SET BY PLS 25384 AND AT THE NORTHWEST CORNER OF SAID SECTION 32 BY A FOUND 3-1/4 INCH DIAMETER ALUMINUM CAP SET BY PLS 25384.

SHEET NUMBER 1	DRAWN BY: CVG	SCALE: AS SHOWN	SANTA FE PARK FHAD DAD CLARK GULCH FHAD FLOODPLAIN PERMIT WORKMAP	TOLL SOUTHWEST, LLC 10 INVERNESS DRIVE, SUITE 125 ENGLEWOOD, CO 80112 ATTN: BRAD DIXON PHONE: (303)-708-0730	Westwood 10333 E DRY CREEK RD. SUITE 400 ENGLEWOOD , CO 80112 TEL: 720.482.9526 Westwoodps.com Westwood Professional Services, Inc.	No.	Revisions	Date	Init.	Appr.	Date
	CHECKED BY: MS	FILE NO: 8.13.0325602									
	DATE: DECEMBER 2024										

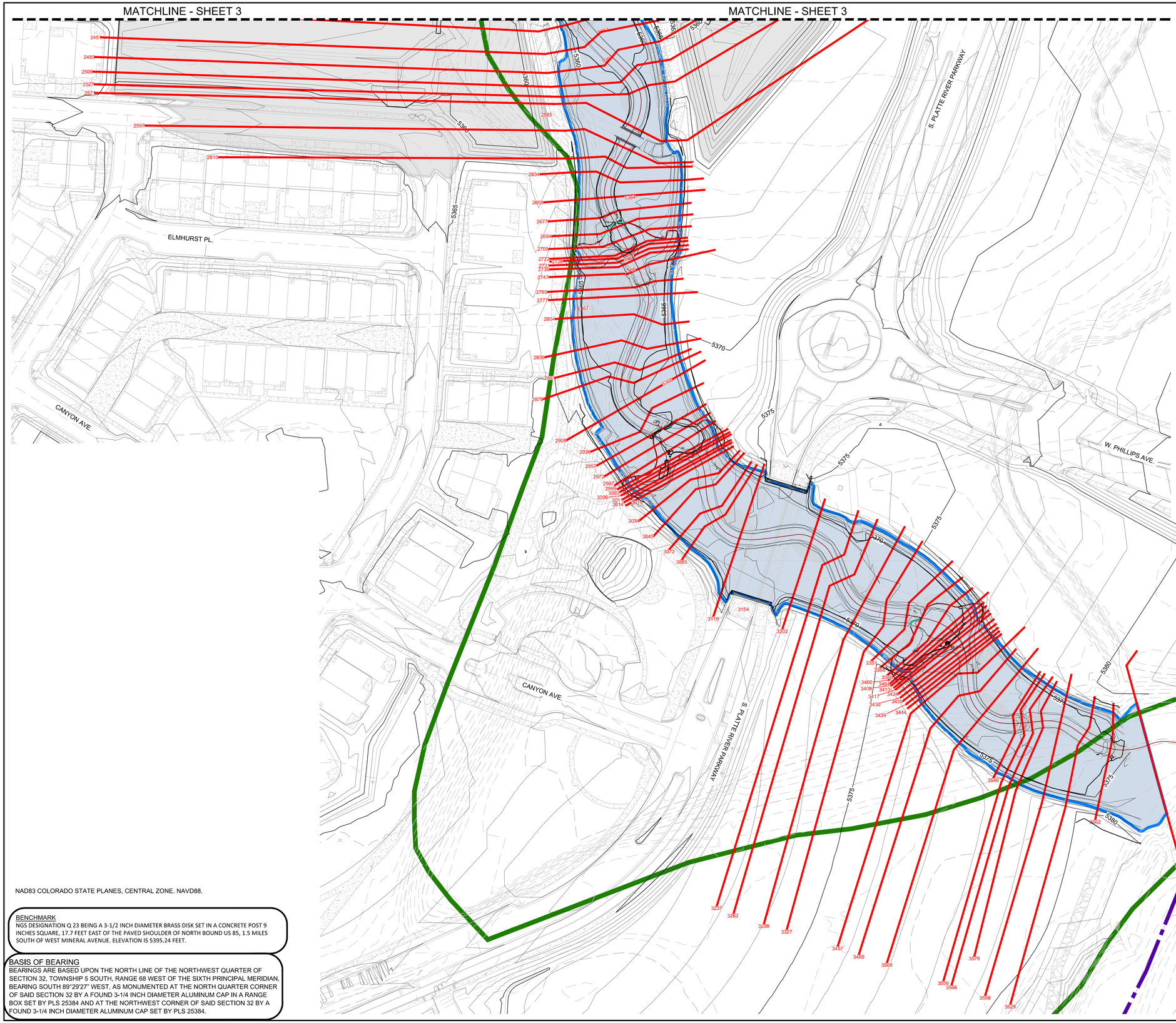
PREPARED UNDER THE SUPERVISION OF

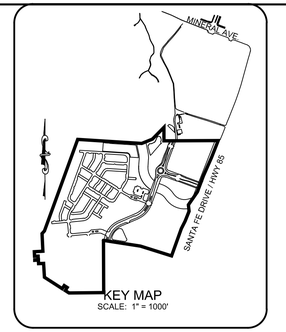
COLORADO REGISTERED MARK SCHEURER 48988 12/22/2024 PROFESSIONAL ENGINEER

MARK SCHEURER
COLORADO P.E. 48988

MATCHLINE - SHEET 3

MATCHLINE - SHEET 3





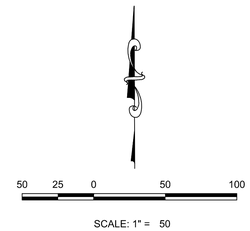
LEGEND

FLOODPLAIN
- 100-YR FEMA FLOODPLAIN
- 100-YR 1990 FHAD FLOODPLAIN
- 100-YR PROPOSED FLOODPLAIN
- PROPOSED FLOODWAY
- PROPOSED FLOODPLAIN

HEC-RAS
- REACH
- 3450 PROPOSED HEC RAS CROSS SECTION
- PROPERTY BOUNDARY

PROPOSED TOPOGRAPHY
- 5650 MAJOR CONTOUR
- MINOR CONTOUR

EXISTING TOPOGRAPHY
- 5650 MAJOR CONTOUR
- MINOR CONTOUR



NAD83 COLORADO STATE PLANES, CENTRAL ZONE. NAVD88.

BENCHMARK
NGS DESIGNATION Q 23 BEING A 3-1/2 INCH DIAMETER BRASS DISK SET IN A CONCRETE POST 9 INCHES SQUARE, 17.7 FEET EAST OF THE PAVED SHOULDER OF NORTH BOUND US 85, 1.5 MILES SOUTH OF WEST MINERAL AVENUE. ELEVATION IS 5395.24 FEET.

BASIS OF BEARING
BEARINGS ARE BASED UPON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 32, TOWNSHIP 5 SOUTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEARING SOUTH 89°29'27" WEST, AS MONUMENTED AT THE NORTH QUARTER CORNER OF SAID SECTION 32 BY A FOUND 3-1/4 INCH DIAMETER ALUMINUM CAP IN A RANGE BOX SET BY PLS 25384 AND AT THE NORTHWEST CORNER OF SAID SECTION 32 BY A FOUND 3-1/4 INCH DIAMETER ALUMINUM CAP SET BY PLS 25384.

No.	Revisions	Date	Init.	Appr.	Date

Westwood
10333 E DRY CREEK RD.
SUITE 400
ENGLEWOOD, CO 80112
TEL: 720.482.9526
Westwoodps.com
Westwood Professional Services, Inc.

TOLL SOUTHWEST, LLC
10 INVERNESS DRIVE, SUITE 125
ENGLEWOOD, CO 80112
ATTN: BRAD DIXON
PHONE: (303)-708-0730

SANTA FE PARK FHAD
DAD CLARK GULCH FHAD
FLOODPLAIN PERMIT WORKMAP

SCALE: AS SHOWN
FILE NO: 8.13.0325602

DRAWN BY: CVG
CHECKED BY: MS
DATE: DECEMBER 2024

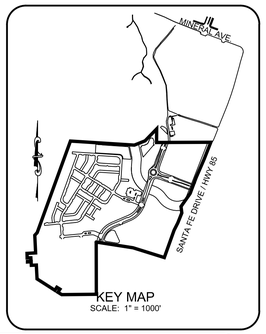
SHEET NUMBER 2

PREPARED UNDER THE SUPERVISION OF

COLORADO REGISTERED MARK SCHEURER 48988 12/22/2024 PROFESSIONAL ENGINEER

MARK SCHEURER
COLORADO P.E. 48988

MATCHLINE - SHEET 4



LEGEND

FLOODPLAIN
100-YR FEMA FLOODPLAIN
100-YR 1990 FHAD FLOODPLAIN
100-YR PROPOSED FLOODPLAIN
PROPOSED FLOODWAY
PROPOSED FLOODPLAIN

HEC-RAS
REACH
3450 PROPOSED HEC RAS CROSS SECTION

PROPERTY BOUNDARY

PROPOSED TOPOGRAPHY
5650 MAJOR CONTOUR
MINOR CONTOUR

EXISTING TOPOGRAPHY
5650 MAJOR CONTOUR
MINOR CONTOUR

50 25 0 50 100

SCALE: 1" = 50

NAD83 COLORADO STATE PLANES, CENTRAL ZONE. NAVD88.

BENCHMARK
NGS DESIGNATION Q 23 BEING A 3-1/2 INCH DIAMETER BRASS DISK SET IN A CONCRETE POST 9 INCHES SQUARE, 17.7 FEET EAST OF THE PAVED SHOULDER OF NORTH BOUND US 85, 1.5 MILES SOUTH OF WEST MINERAL AVENUE. ELEVATION IS 5395.24 FEET.

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MATCHLINE - SHEET 2

PREPARED UNDER THE SUPERVISION OF
COLORADO REGISTERED MARK SCHEURER 48988 12/23/2024 PROFESSIONAL ENGINEER
MARK SCHEURER
COLORADO P.E. 48988

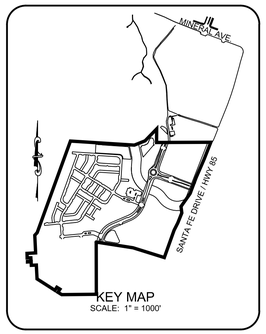
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SANTA FE PARK FHAD
DAD CLARK GULCH FHAD
FLOODPLAIN PERMIT WORKMAP

SCALE: AS SHOWN
FILE NO: 8.13.0325602
DRAWN BY: CVG
CHECKED BY: MS
DATE: DECEMBER 2024
SHEET NUMBER 3



KEY MAP
SCALE: 1" = 1000'

LEGEND

FLOODPLAIN
- 100-YR FEMA FLOODPLAIN
- 100-YR 1990 FHAD FLOODPLAIN
- 100-YR PROPOSED FLOODPLAIN
- PROPOSED FLOODWAY
- PROPOSED FLOODPLAIN

HEC-RAS
- REACH
- 3450 PROPOSED HEC RAS CROSS SECTION

- PROPERTY BOUNDARY

PROPOSED TOPOGRAPHY
- 5650 MAJOR CONTOUR
- MINOR CONTOUR

EXISTING TOPOGRAPHY
- 5650 MAJOR CONTOUR
- MINOR CONTOUR

50 25 0 50 100

SCALE: 1" = 50

LIMIT OF DETAILED STUDY

Platte River

NAD83 COLORADO STATE PLANES, CENTRAL ZONE. NAVD88.

BENCHMARK
NGS DESIGNATION Q 23 BEING A 3-1/2 INCH DIAMETER BRASS DISK SET IN A CONCRETE POST 9 INCHES SQUARE, 17.7 FEET EAST OF THE PAVED SHOULDER OF NORTH BOUND US 85, 1.5 MILES SOUTH OF WEST MINERAL AVENUE. ELEVATION IS 5395.24 FEET.

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MATCHLINE - SHEET 3

PREPARED UNDER THE SUPERVISION OF

COLORADO REGISTERED MARK SCHEURER 48988 12/22/2024 PROFESSIONAL ENGINEER

MARK SCHEURER
COLORADO P.E. 48988

No.	Revisions	Date	Init.	Appr.	Date

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DAD CLARK GULCH FHAD
FLOODPLAIN PERMIT WORKMAP

SCALE:	AS SHOWN	FILE NO:	8.13.0325602
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CHECKED BY:	MS		
DATE:	DECEMBER 2024		

SHEET NUMBER 4

MILE HIGH FLOOD DISTRICT

FHAD AGREEMENT TABLE: MODEL - PROFILE - MAP

PROJECT NAME: Santa Fe Park South

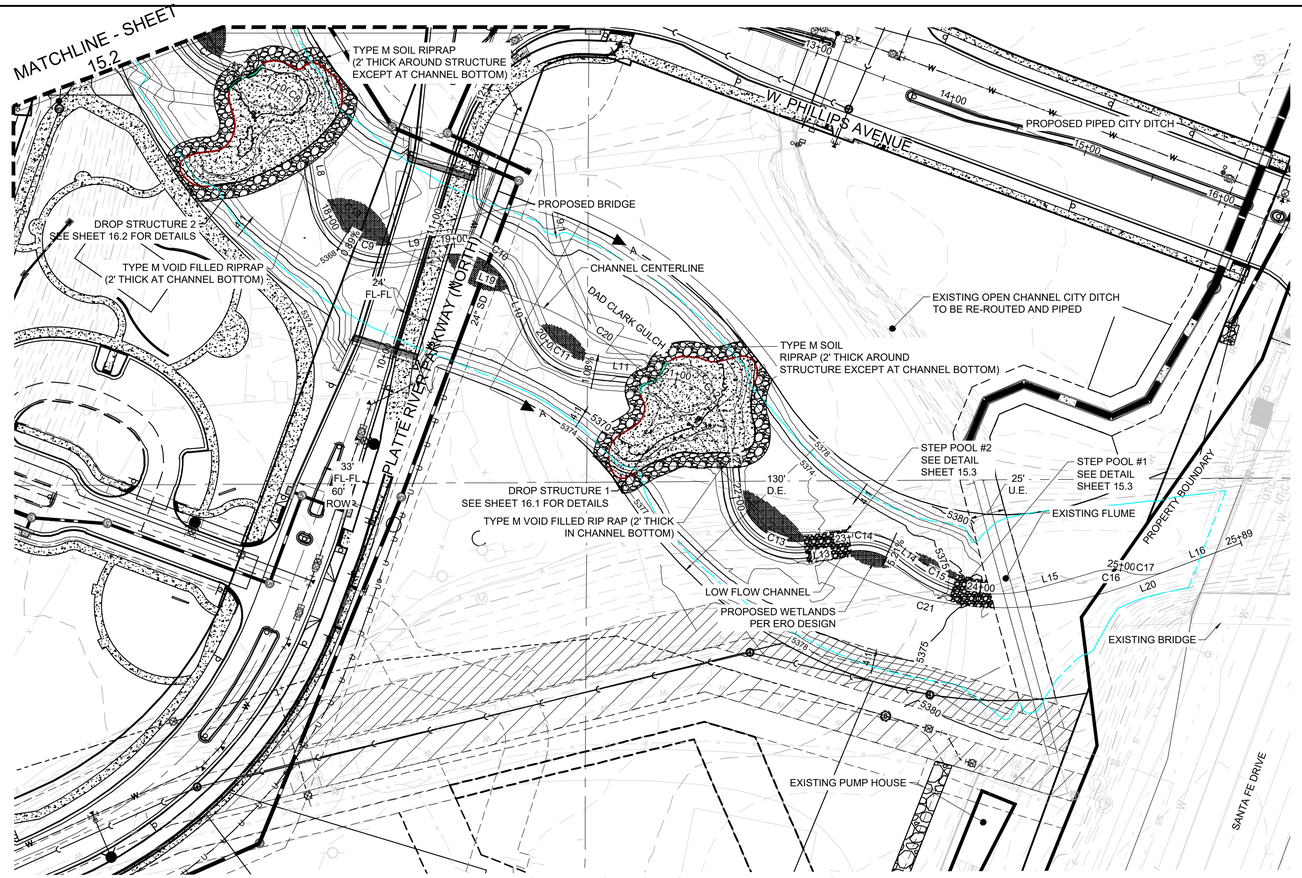
Community(ies): Santa Fe Park South
Flooding Source: Dad Clark Gulch
Reach(es): Mainstream

Engineer: Westwood PS
Page: 1 of 1
Date: 3/27/2024

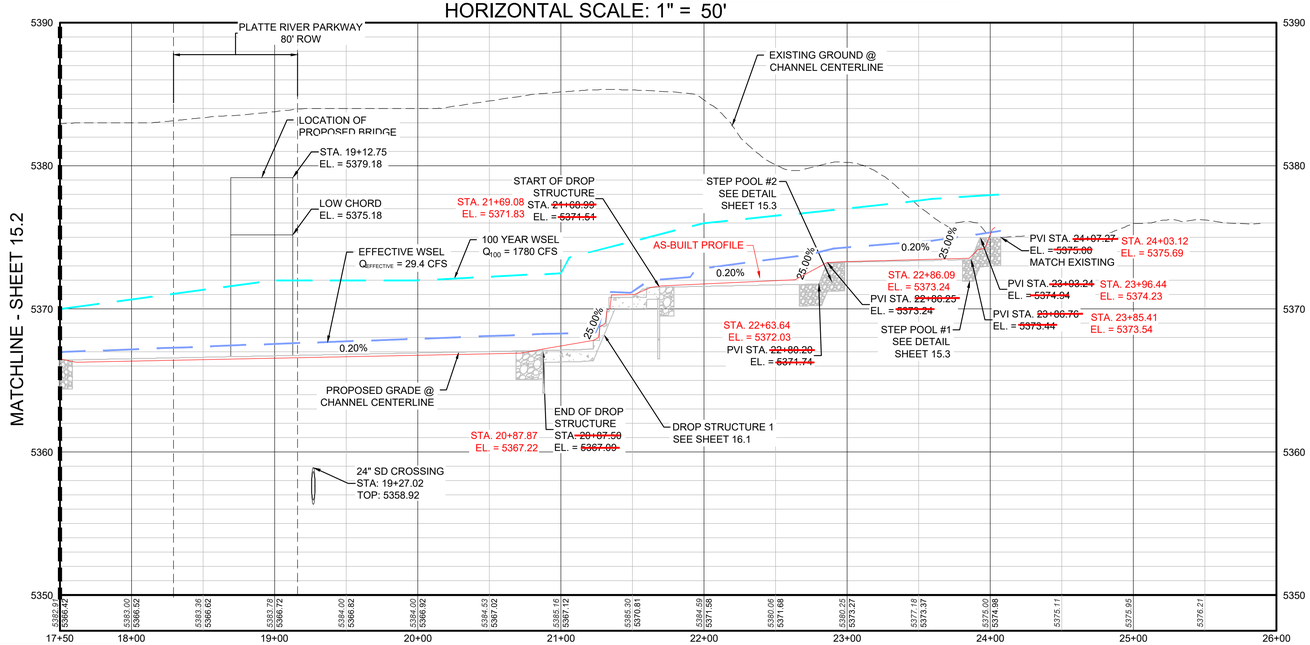
Reference Location (1)	Cross Section (2)	River Station (3)	Distance between XS, ft Model (4)	Distance between XS, ft Map (5)	Model/Map % Check (6)	Cumulative Distance, ft Model (7)	Cumulative Distance, ft Map (8)	Model/Map % Check (9)	FP Width, ft Model (10)	FP Width, ft Map (11)	Model/Map Diff. Check (12)	Model/Map % Check (13)	FW Width, ft Model (14)	FW Width, ft Map (15)	Model/Map Diff. Check (16)	Model/Map % Check (17)	BFE, ft Model (18)	BFE, ft Profile (19)	Model/Profile Diff. Check (20)	BFE Loc. (21)	Comments and/or Explanations (22)
Confluence with Platte River	113	113							194	194	0	0%	82	82	0	0%	5354.4	5354.4	0		Confluence with Platte River
	260	260	147	147	0%	147	147	0%	565	565	0	0%	157	157	0	0%	5355.0	5355.0	0		
	446	446	186	186	0%	333	333	0%	509	509	0	0%	234	234	0	0%	5355.3	5355.3	0		lateral weir connection to Platte
	609	609	163	163	0%	496	496	0%	625	625	0	0%	319	319	0	0%	5355.4	5355.4	0		lateral weir connection to Platte
	767	767	158	158	0%	654	654	0%	880	880	0	0%	371	371	0	0%	5355.6	5355.6	0		lateral weir connection to Platte
lateral weir connection to Platte	901	901																			lateral weir connection to Platte
	1110	1110	343	343	0%	997	997	0%	1172	1172	0	0%	527	527	0	0%	5355.9	5355.9	0		
	1336	1336	225	225	0%	1223	1223	0%	1392	1392	0	0%	554	554	0	0%	5356.2	5356.2	0		
	1498	1498	162	162	0%	1385	1385	0%	1225	1225	0	0%	558	558	0	0%	5356.5	5356.5	0		
	1634	1634	136	136	0%	1521	1521	0%	1033	1033	0	0%	542	542	0	0%	5356.7	5356.7	0		
	1810	1810	176	176	0%	1697	1697	0%	791	791	0	0%	507	507	0	0%	5356.8	5356.8	0		
	1990	1990	180	180	0%	1877	1877	0%	641	641	0	0%	413	413	0	0%	5357.3	5357.3	0		
	2140	2140	150	150	0%	2027	2027	0%	482	482	0	0%	328	328	0	0%	5357.9	5357.9	0		
	2285	2285	145	145	0%	2172	2172	0%	169	169	0	0%	169	169	0	0%	5360.2	5360.2	0		
	2389	2389	104	104	0%	2276	2276	0%	110	110	0	0%	110	110	0	0%	5361.3	5361.3	0		
	2409	2409	20	20	0%	2296	2296	0%	97	97	0	0%	97	97	0	0%	5361.2	5361.2	0		
	2425	2425	16	16	0%	2312	2312	0%	87	87	0	0%	87	87	0	0%	5361.9	5361.9	0		channel adjacent to pond
	2451	2451	26	26	0%	2338	2338	0%	94	94	0	0%	94	94	0	0%	5362.2	5362.2	0		channel adjacent to pond
	2480	2480	29	29	0%	2367	2367	0%	118	118	0	0%	118	118	0	0%	5363.2	5363.2	0		channel adjacent to pond
	2506	2506	27	27	0%	2393	2393	0%	121	121	0	0%	121	121	0	0%	5363.5	5363.5	0		channel adjacent to pond
	2527	2527	21	21	0%	2414	2414	0%	116	116	0	0%	116	116	0	0%	5363.6	5363.6	0		channel adjacent to pond
	2571	2571	44	44	0%	2459	2459	0%	125	125	0	0%	125	125	0	0%	5363.9	5363.9	0		channel adjacent to pond
Culvert	2585	2585																			Culvert
	2597	2597	25	25	0%	2484	2484	0%	131	131	0	0%	131	131	0	0%	5363.9	5363.9	0		channel adjacent to pond
	2615	2615	19	19	0%	2503	2503	0%	118	118	0	0%	118	118	0	0%	5364.0	5364.0	0		channel adjacent to pond
	2634	2634	19	19	0%	2521	2521	0%	117	117	0	0%	117	117	0	0%	5364.0	5364.0	0		
	2658	2658	24	24	0%	2545	2545	0%	115	115	0	0%	115	115	0	0%	5364.1	5364.1	0		
	2677	2677	19	19	0%	2564	2564	0%	117	117	0	0%	117	117	0	0%	5364.2	5364.2	0		
	2694	2694	17	17	0%	2581	2581	0%	120	120	0	0%	120	120	0	0%	5364.4	5364.4	0		
	2709	2709	15	15	0%	2596	2596	0%	122	122	0	0%	122	122	0	0%	5364.5	5364.5	0		
	2722	2722	13	13	0%	2609	2609	0%	112	112	0	0%	112	112	0	0%	5364.1	5364.1	0		
	2726	2726	4	4	0%	2613	2613	0%	115	115	0	0%	115	115	0	0%	5364.7	5364.7	0		
	2731	2731	5	5	0%	2618	2618	0%	118	118	0	0%	118	118	0	0%	5365.2	5365.2	0		
	2735	2735	5	5	0%	2622	2622	0%	119	119	0	0%	119	119	0	0%	5365.7	5365.7	0		
	2747	2747	11	11	0%	2634	2634	0%	113	113	0	0%	113	113	0	0%	5366.3	5366.3	0		
	2765	2765	18	18	0%	2652	2652	0%	108	108	0	0%	108	108	0	0%	5366.7	5366.7	0		
	2777	2777	12	12	0%	2665	2665	0%	109	109	0	0%	109	109	0	0%	5366.9	5366.9	0		
	2804	2804	27	27	0%	2691	2691	0%	117	117	0	0%	117	117	0	0%	5367.7	5367.7	0		
	2836	2836	32	32	0%	2723	2723	0%	117	117	0	0%	117	117	0	0%	5367.9	5367.9	0		
	2861	2861	26	26	0%	2749	2749	0%	117	117	0	0%	117	117	0	0%	5368.0	5368.0	0		
	2878	2878	16	16	0%	2765	2765	0%	118	118	0	0%	118	118	0	0%	5368.1	5368.1	0		
	2908	2908	30	30	0%	2795	2795	0%	111	111	0	0%	111	111	0	0%	5368.2	5368.2	0		
	2936	2936	28	28	0%	2823	2823	0%	121	121	0	0%	121	121	0	0%	5368.4	5368.4	0		
	2957	2957	21	21	0%	2844	2844	0%	112	112	0	0%	112	112	0	0%	5368.5	5368.5	0		
	2972	2972	15	15	0%	2859	2859	0%	113	113	0	0%	113	113	0	0%	5368.8	5368.8	0		
	2987	2987	15	15	0%	2874	2874	0%	112	112	0	0%	112	112	0	0%	5368.9	5368.9	0		
	2999	2999	12	12	0%	2886	2886	0%	112	112	0	0%	112	112	0	0%	5368.9	5368.9	0		
	3003	3003	4	4	0%	2890	2890	0%	111	111	0	0%	111	111	0	0%	5368.9	5368.9	0		
	3006	3006	3	3	0%	2893	2893	0%	107	107	0	0%	107	107	0	0%	5368.7	5368.7	0		
	3011	3011	5	5	0%	2898	2898	0%	103	103	0	0%	103	103	0	0%	5368.6	5368.6	0		
	3014	3014	3	3	0%	2901	2901	0%	104	104	0	0%	104	104	0	0%	5369.0	5369.0	0		
	3019	3019	5	5	0%	2906	2906	0%	103	103	0	0%	103	103	0	0%	5369.3	5369.3	0		
	3034	3034	15	15	0%	2921	2921	0%	104	104	0	0%	104	104	0	0%	5369.7	5369.7	0		
	3045	3045	12	12	0%	2932	2932	0%	105	105	0	0%	105	105	0	0%	5369.9	5369.9	0		
	3072	3072	26	26	0%	2959	2959	0%	113	113	0	0%	113	113	0	0%	5370.7	5370.7	0		
	3085	3085	13	13	0%	2972	2972	0%	115	115	0	0%	115	115	0	0%	5370.8	5370.8	0		
	3119	3119	35	35	0%	3006	3006	0%	147	147	0	0%	147	147	0	0%	5371.2	5371.2	0		
Bridge	3154	3154																			Bridge
	3202	3202	22	22	0%	3028	3028	0%	113	113	0	0%	113	113	0	0%	5371.9	5371.9	0		
	3237	3237	35	35	0%	3063	3063	0%	120	120	0	0%	120	120	0	0%	5372.1	5372.1	0		
	3262	3262	25	25	0%	3088	3088	0%	124	124	0	0%	124	124	0	0%	5372.3	5372.3	0		
	3299	3299	38	38	0%	3126	3126	0%	115	115	0	0%	115	115	0	0%	5372.4	5372.4	0		
	3327	3327	27	27	0%	3153	3153	0%	119	119	0	0%	119	119	0	0%	5372.6	5372.6	0		
	3351	3351	25	25	0%	3178	3178	0%	119	119	0	0%	119	119	0	0%	5372.7	5372.7	0		
	3368	3368	17	17	0%	3195	3195	0%	116	116	0	0%	116	116	0	0%	5372.7	5372.7	0		
	3388	3388	20	20	0%	3215	3215	0%	115	115	0	0%	115	115	0	0%	5373.0	5373.0	0		
	3400	3400	11	11	0%	3226	3226	0%	110	110	0	0%	110	110	0	0%	5372.9	5372.9	0		
	3404	3404	5	5	0%	3231	3231	0%	107	107	0	0%	107	107	0	0%	5372.9	5372.9	0		
	3409	3409	4	4	0%	3235	3235	0%	96	96	0	0%	96	96	0	0%	5372.5	5372.5	0		
	3413	3413	5	5	0%	3240	3240	0%	97	97	0	0%	97	97	0	0%	5373.5	5373.5	0		
	3417	3417	4	4	0%	3244	3244	0%	98	98	0	0%	98	98	0	0%	5374.2	5374.2	0		
	3424	3424	7	7	0%	3250	3250	0%	101	101	0	0%	101	101	0	0%	5374.9	5374.9	0		
	3430	3430	6	6	0%	3256	3256	0%	103	103	0	0%	103	103	0	0%	5375.1	5375.1	0		
	3435	3435	5	5	0%	3261	3261	0%	104	104	0	0%	104	104	0	0%	5375.2	5375.2	0		
	3439	3439	5	5	0%	3266	3266	0%	105	105	0	0%	105	105	0	0%	5375.3	5375.3	0		
	3444	3444	5	5	0%	3271	3271	0%	107	107	0	0%	107	107	0	0%	5375.5	5375.5	0		
	3457	3457	13	13	0%	3284	3284	0%	115	115	0	0%	115	115	0	0%	5375.9	5375.9	0		
	3480	3480	23	23	0%	3307	3307	0%	114	114	0	0%	114	114	0	0%	5376.1	5376.1	0		
	3509	3509	29	29	0%	3335	3335	0%	109	109	0	0%	109	109	0	0%	5376.3	5376.3	0		
	3546	3546	37	37	0%	3372	3372	0%	118	118	0	0%	118	118	0	0%	5376.8	5376.8	0		
	3556	3556	10	10	0%	3382	3382	0%	119	119	0	0%	119	119	0	0%	5376.9	5376.9	0		
	3566	3566	10	10	0%	3392	3392	0%	117	117	0	0%	117	117	0	0%	5376.9	5376.9	0		
	3578	3578	12	12	0%	3404	3404	0%	116	116	0	0%	116	116	0	0%	5377.0	5377.0	0		
	3598	3598	21	21	0%	3425	3425	0%	113	113	0	0%	113	113	0	0%	5377.1	5377.1	0		
	3629	3629	30	30	0%	3455	3455	0%	110	110	0	0%	110	110	0	0%	5377.4	5377.4	0		
	3662	3662	33	33	0%	3488	3488	0%	109	109	0	0%	109	109	0	0%	5377.7	5377.7	0		
FHAD 50.0	3705	3705	43	43	0%	3531	3531	0%	127	127	0	0%	127	127	0	0%	5378.5	5378.5	0		D/S of McKellan Reservoir
TOLERANCES			+/- 5% of Model			+/-5% of Cumulative Model			Largest value: 25 feet or 5%								+/- 0.5ft				

APPENDIX F

Channel Plan and Profile As-Builts
Platte River Parkway Bridge



PLAN: DAD CLARK GULCH STA: 17+50.00 TO 28+00.00
HORIZONTAL SCALE: 1" = 50'



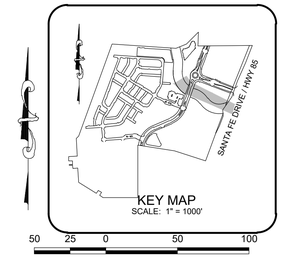
PROFILE: DAD CLARK GULCH STA: 17+50.00 TO 26+00.00
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'

CALL 811
TWO WORKING DAYS
BEFORE YOU DIG
1-800-922-1987

N:\PROJECTS\30325601 SANTA FE PARK\CAD\ENGINEERING\SHEET SETS\CD'S\AS-BUILTS\CHANNEL P&P - AS BUILT.DWG, JGORMAN, 12/11/2024

CURVE TABLE			
CURVE NO.	RADIUS	LENGTH	CHORD DIRECTION
C7	45.00'	69.67'	S22°50'58"E
C8	45.00'	44.98'	S38°33'46"E
C9	45.00'	69.76'	S54°20'03"E
C10	45.00'	60.51'	S60°13'10"E
C11	45.00'	48.59'	S52°37'47"E
C12	45.00'	61.72'	S44°16'22"E
C13	45.00'	73.28'	S51°38'03"E
C14	45.00'	37.14'	S74°38'40"E
C15	98.11'	93.78'	S78°23'14"E
C17	45.00'	27.84'	N87°15'16"E
C19	295.00'	380.68'	S32°42'19"E
C20	250.00'	161.45'	S51°10'21"E
C21	250.00'	339.46'	S71°34'13"E

LINE TABLE		
LINE NO.	LENGTH	DIRECTION
L7	39.14'	S67°12'02"E
L8	46.65'	S9°55'30"E
L9	38.24'	N81°15'23"E
L10	33.19'	S21°41'43"E
L11	59.44'	S83°33'50"E
L12	37.64'	S4°58'53"E
L13	31.57'	N81°42'47"E
L14	7.19'	S51°00'07"E
L15	42.63'	N74°13'39"E
L16	83.95'	N69°31'51"E
L19	52.85'	S69°40'26"E
L20	83.95'	N69°31'51"E



LEGEND

- PROPOSED REDUCER
- PROPOSED VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED WL FITTING
- PROPOSED FLARED END SECTION
- PROPOSED CAP WITH END OF LINE BLOWOFF
- PROPOSED BUTTERFLY VALVE
- PROPOSED WATER LINE
- PROPOSED WATER LATERAL W/ METER
- PROPOSED SEWER LINE WITH MANHOLE
- PROPOSED SEWER LATERAL
- PROPOSED STREET LIGHT
- PROPOSED STORM DRAIN INLET
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED STORM DRAIN
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK RAMP
- EASEMENT LINE
- SECTION LINE
- RIGHT-OF-WAY
- PROPERTY LINE
- EDGE OF PAVEMENT
- PROPOSED DIRECTION OF FLOW
- 1.0% PROPOSED SLOPE & DIRECTION
- 5615 EXISTING 5' CONTOUR
- 5618 EXISTING 1' CONTOUR
- 5620 PROPOSED 5' CONTOUR
- 5607 PROPOSED 1' CONTOUR
- 100 YEAR HGL
- 5 YEAR HGL
- PUBLIC STORM INFRASTRUCTURE OWNED AND MAINTAINED BY THE CITY OF LITTLETON

TABLE 1. MIX REQUIREMENTS FOR TYPE VL AND L VOID-FILLED RIPRAP (D_{50} = 6 TO 9 INCH)		
APPROPRIATE PROPORTIONS (BY VOLUME)	MATERIAL TYPE	MATERIAL DESCRIPTION
6 PARTS	RIPRAP	D_{50} = 6 INCH (TYPE VL) OR D_{50} = 9 INCH (TYPE L), SEE TABLE 3
1 PART	VOID-FILL MATERIAL	VTC (VEHICLE TRACKING CONTROL) ROCK (CRUSHED ROCK WITH 100% PASSING 4-INCH SIEVE, 50-70% PASSING 3-INCH SIEVE, 0-10% PASSING 2-INCH SIEVE)
1 PART	VOID-FILL MATERIAL	4-INCH MINUS PIT RUN SURGE (ROUND RIVER ROCK AND SAND, WELL GRADED, 90-100% PASSING 4-INCH SIEVE, 70-80% PASSING 1½-INCH SIEVE, 40-60% PASSING ⅜-INCH SIEVE, 10-30% PASSING #16 SIEVE)
1 PART	VOID-FILL MATERIAL	TYPE II BEDDING (CRUSHED ROCK WITH 100% PASSING 3-INCH SIEVE, 20-90% PASSING ½-INCH SIEVE, 0-20% PASSING #4 SIEVE, 0-3% PASSING #200 SIEVE)
½ TO 1 PART	VOID-FILL MATERIAL	NATIVE TOPSOIL

VOID-FILLED RIPRAP PLACEMENT AND GRADATION

TABLE 2. MIX REQUIREMENTS FOR TYPE M AND H VOID-FILLED RIPRAP (D_{50} = 12 TO 18 INCH)		
APPROPRIATE PROPORTIONS (BY VOLUME)	MATERIAL TYPE	MATERIAL DESCRIPTION
6 PARTS	RIPRAP	D_{50} = 12-INCH (TYPE M) OR D_{50} = 18-INCH (TYPE H), SEE TABLE 3
2 PART	VOID-FILL MATERIAL	7-INCH MINUS CRUSHED ROCK SURGE (100% PASSING 7-INCH SIEVE, 80-100% PASSING 6-INCH SIEVE, 35-50% PASSING 3-INCH SIEVE, 10-20% PASSING ½-INCH SIEVE)
1 PART	VOID-FILL MATERIAL	VTC (VEHICLE TRACKING CONTROL) ROCK (CRUSHED ROCK WITH 100% PASSING 4-INCH SIEVE, 50-70% PASSING 3-INCH SIEVE, 0-10% PASSING 2-INCH SIEVE)
1 PART	VOID-FILL MATERIAL	4-INCH MINUS PIT RUN SURGE (ROUND RIVER ROCK AND SAND, WELL GRADED, 90-100% PASSING 4-INCH SIEVE, 70-80% PASSING 1½-INCH SIEVE, 40-60% PASSING ⅜-INCH SIEVE, 10-30% PASSING #16 SIEVE)
1 PART	VOID-FILL MATERIAL	TYPE II BEDDING (CRUSHED ROCK WITH 100% PASSING 3-INCH SIEVE, 20-90% PASSING ½-INCH SIEVE, 0-20% PASSING #4 SIEVE, 0-3% PASSING #200 SIEVE)
½ TO 1 PART	VOID-FILL MATERIAL	NATIVE TOPSOIL

TABLE 3. VOID-FILLED RIPRAP PLACEMENT AND GRADATION			
RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSION (INCHES)	D_{50}* (INCHES)
TYPE VL	70 - 100 50 - 70 35 - 50 2 - 10	12 9 6 2	6
TYPE L	70 - 100 50 - 70 35 - 50 2 - 10	15 12 9 3	9
TYPE M	70 - 100 50 - 70 35 - 50 2 - 10	21 18 12 4	12
TYPE H	70 - 100 50 - 70 35 - 50 2 - 10	30 24 18 6	18

*D_{50} = MEAN ROCK SIZE

NOTE: MIX ON SITE AND PRIOR TO PLACEMENT

VOID-FILLED RIPRAP PLACEMENT AND GRADATION NOTES:

1. WHERE "VOID-FILLED RIPRAP" IS DESIGNATED ON THE CONTRACT DRAWINGS, RIPRAP SHALL BE MIXED WITH THE MATERIALS AND ASSOCIATED PROPORTIONS LISTED IN TABLE 1 OR TABLE 2 TO FILL THE VOIDS OF THE RIPRAP.
2. THE MIX PROPORTIONS PROVIDED IN TABLE 1 AND TABLE 2 ARE APPROXIMATE AND ARE SUBJECT TO ADJUSTMENT BY THE ENGINEER.
3. THE RIPRAP AND VOID-FILLED MATERIALS SHALL BE STOCKPILED SEPERATELY AND THOROUGHLY MIXED PRIOR TO PLACEMENT AND SHALL BE INSTALLED AND COMPACTED SO THAT A DENSE, INTERLOCKED LAYER OF RIPRAP AND VOID-FILL MATERIAL IS PROVIDED WITH RIPRAP VOIDS COMPLETELY FILLED. THE LOOSE MATERIAL SHALL BE PLACED IN A SINGLE LIFT OF SUFFICIENT HEIGHT SUCH THAT FINAL GRADE WILL BE ACHIEVED UPON COMPACTED. IF THE COMPACTED MATERIAL IS BELOW FINAL GRADE, PLACEMENT OF ONLY THE SMALLER VOID-FILL MATERIALS TO ACHIEVE FINAL GRADE IS NOT PERMITTED. IN SUCH CASES IT IS NECESSARY TO ADD MORE STANDARD SIZED VOID-FILLED RIPRAP AND REMIX THE ENTIRE THICKNESS OF ROCK TO ACHIEVE THE DESIGN SECTION. SEGREGATION OF MATERIALS SHALL BE AVOIDED AND IN NO CASE SHALL THE COMBINED MATERIAL CONSIST PRIMARILY OF THE VOID-FILL MATERIALS. THE DENSITY AND INTERLOCKING NATURE OF RIPRAP IN THE MIXED MATERIAL SHALL ESSENTIALLY BE THE SAME AS IF THE RIPRAP WAS PLACED WITHOUT FILLING THE VOIDS.
4. COMPACTION OF THE VOID-FILLED RIPRAP SHALL BE PERFORMED BY WHEEL ROLLING WITH HEAVY RUBBER-TIRED EQUIPMENT (E.G. FRONT END LOADER). THE MOISTURE CONTENT OF THE MIXTURE SHALL BE AT OPTIMUM CONDITIONS PRIOR TO COMPACTION AND WATER SHALL BE ADDED, AS NECESSARY, AT THE DIRECTION OF THE ENGINEER.
5. ALL VOID-FILLED RIPRAP THAT IS BURIED WITH TOPSOIL SHALL BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO ANY TOPSOIL PLACEMENT.
6. THE MILE HIGH FLOOD DISTRICT WILL CONDUCT SITE VISITS DURING THE PROJECT CONSTRUCTION WITH OR NEAR THE CHANNEL TO OBSERVE CONSTRUCTION FOR CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. PLEAS CONTACT MHFD (303-455-6277) TO SCHEDULE A PRECONSTRUCTION MEETING. ALL STRUCTURAL AND GROUTED BOULDER WORK REQUIRE 48-HOURS PRIOR NOTICE TO ANY CONSTRUCTION OR CONCRETE PLACEMENT. STANDARDS AND SPECIFICATIONS FOR ALL OUTFALL AND CHANNEL WORK CAN BE ACCESSED AT WWW.MHFD.ORG UNDER THE REFERENCES SECTION. FAILURE TO NOTIFY MAY RESULT IN PROJECT INELIGIBILITY.
7. ALL ELEVATIONS SHOWN ARE FINISH ELEVATIONS AND WILL INCLUDE MINIMUM OF 6" OF TOPSOIL PLACED TO FINISH GRADES SHOWN.

NOTE: SOIL RIPRAP INFORMATION CAN BE FOUND ON SHEET 15.3.

AS-BUILT NOTE:

1. AS-BUILT INFORMATION PROVIDED BY AZTEC ON 9/23/2024 AND 11/25/2024.
2. AS-BUILT LOCATIONS AND ELEVATIONS ARE SHOWN IN RED AND DENOTES VALUES AS CONSTRUCTED, TO BE DISTINGUISHED FROM AMENDED VALUES THAT WERE STRUCK.

I, THOMAS E. KUTTRUS, HEREBY CERTIFY THAT THE AS-BUILT INFORMATION SHOWN ON THIS DRAWING ARE THE RESULT OF A FIELD SURVEY AND THAT THE DIMENSIONS AND ELEVATIONS NOTED AS AS-BUILT ARE REASONABLY ACCURATE.

COLORADO LICENSED
THOMAS E. KUTTRUS
36567
12/12/2024
PROFESSIONAL LAND SURVEYOR

PROFESSIONAL LAND SURVEYOR NO. 36567
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 EAST MINERAL AVE, SUITE 1, LITTLETON, COLORADO 80122

No.	Revisions	Date	Init.	Apprr.	Date

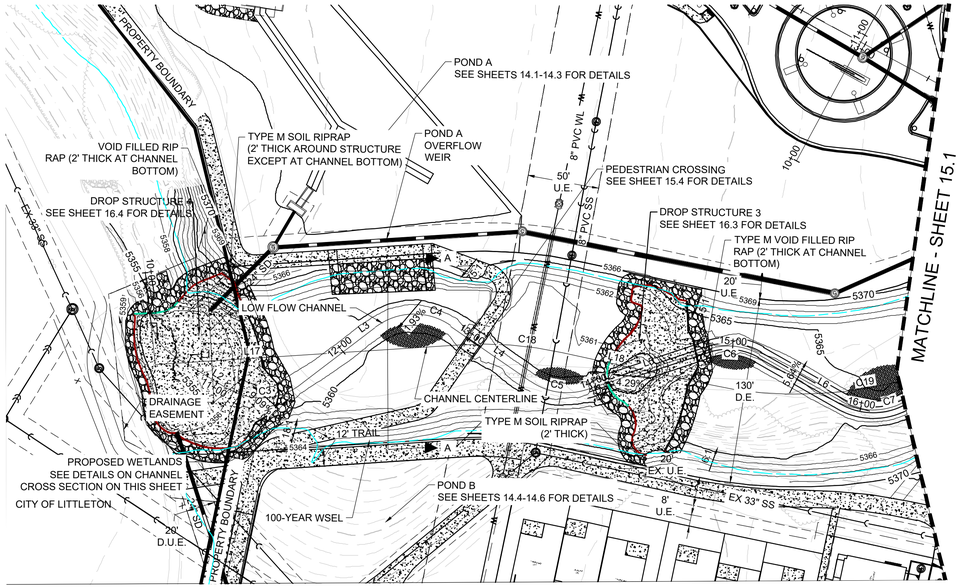
Westwood
10333 E DRY CREEK RD.
SUITE 400
ENGLEWOOD, CO 80112
TEL: 720.482.9526
Westwoodps.com
Westwood Professional Services, Inc.

TOLL SOUTHWEST, LLC
10 INVERNESS DRIVE, SUITE 125
ENGLEWOOD, CO 80112
ATTN: BRAD DIXON
PHONE: (303)-708-0730

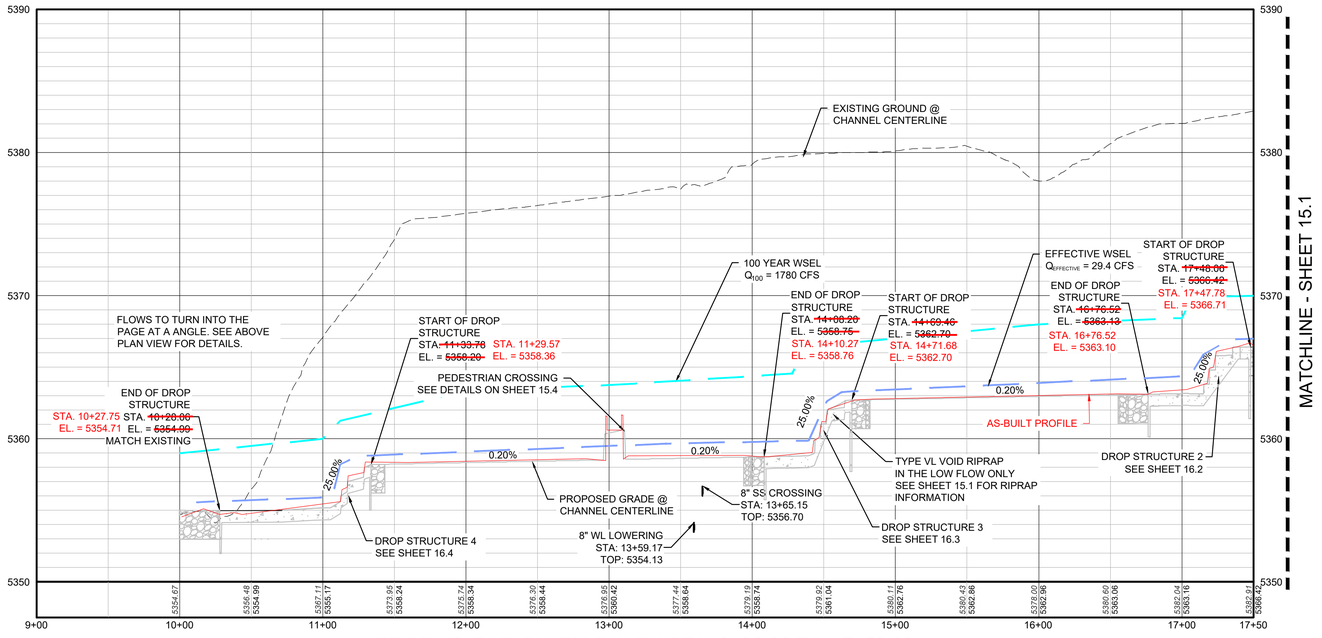
SANTA FE PARK SOUTH
LITTLETON - RD & DRAINAGE PLAN SET
DAD CLARK GULCH P&P 28+00.00 TO 17+50.00

SCALE: AS SHOWN
FILE NO: 8130325602
DRAWN BY:
CHECKED BY: BS
DATE:

SHEET NUMBER 15.1



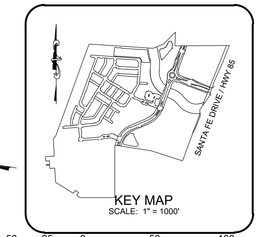
PLAN: DAD CLARK GULCH STA: 10+00.00 TO 17+50.00
HORIZONTAL SCALE: 1" = 50'



PROFILE: DAD CLARK GULCH STA: 9+00.00 TO 17+50.00
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'

CURVE TABLE			
CURVE NO.	RADIUS	LENGTH	CHORD DIRECTION
C1	35.01'	32.53'	S49°17'47"W
C3	45.00'	53.56'	S11°17'28"E
C4	45.00'	56.57'	S9°22'26"E
C5	45.00'	41.72'	S0°04'59"W
C6	45.00'	37.68'	S2°29'14"E
C7	45.00'	69.67'	S22°50'58"E
C18	260.00'	73.06'	S3°47'12"E
C19	295.00'	380.68'	S32°42'19"E

LINE TABLE		
LINE NO.	LENGTH	DIRECTION
L1	22.57'	S22°48'29"W
L2	21.00'	S22°48'29"W
L3	65.55'	S45°23'25"E
L4	67.80'	S26°38'34"W
L5	88.31'	S26°28'35"E
L6	66.04'	S21°30'07"W
L17	212.11'	S11°50'13"E



LEGEND

- PROPOSED REDUCER
- PROPOSED VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED WL FITTING
- PROPOSED FLARED END SECTION
- PROPOSED CAP WITH END OF LINE BLOWOFF
- PROPOSED BUTTERFLY VALVE
- PROPOSED WATER LINE
- PROPOSED WATER LATERAL W/ METER
- PROPOSED SEWER LINE WITH MANHOLE
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- PROPOSED STREET LIGHT
- PROPOSED STORM DRAIN INLET
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- PROPOSED SIDEWALK RAMP
- EASEMENT LINE
- SECTION LINE
- RIGHT-OF-WAY
- PROPERTY LINE
- EDGE OF PAVEMENT
- PROPOSED DIRECTION OF FLOW
- 1.0% PROPOSED SLOPE & DIRECTION
- 5615 EXISTING 5' CONTOUR
- 5616 EXISTING 1' CONTOUR
- 5620 PROPOSED 5' CONTOUR
- 5607 PROPOSED 1' CONTOUR
- 100 YEAR HGL
- 5 YEAR HGL
- PUBLIC STORM INFRASTRUCTURE OWNED AND MAINTAINED BY THE CITY OF LITTLETON

VOID-FILLED RIPRAP PLACEMENT AND GRADATION NOTES:

1. WHERE "VOID-FILLED RIPRAP" IS DESIGNATED ON THE CONTRACT DRAWINGS, RIPRAP SHALL BE MIXED WITH THE MATERIALS AND ASSOCIATED PROPORTIONS LISTED IN TABLE 1 OR TABLE 2 TO FILL THE VOIDS OF THE RIPRAP.
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3. THE RIPRAP AND VOID-FILLED MATERIALS SHALL BE STOCKPILED SEPERATELY AND THOROUGHLY MIXED PRIOR TO PLACEMENT AND SHALL BE INSTALLED AND COMPACTED SO THAT A DENSE, INTERLOCKED LAYER OF RIPRAP AND VOID-FILL MATERIAL IS PROVIDED WITH RIPRAP VOIDS COMPLETELY FILLED. THE LOOSE MATERIAL SHALL BE PLACED IN A SINGLE LIFT OF SUFFICIENT HEIGHT SUCH THAT FINAL GRADE WILL BE ACHIEVED UPON COMPACTED. IF THE COMPACTED MATERIAL IS BELOW FINAL GRADE, PLACEMENT OF ONLY THE SMALLER VOID-FILL MATERIALS TO ACHIEVE FINAL GRADE IS NOT PERMITTED. IN SUCH CASES IT IS NECESSARY TO ADD MORE STANDARD SIZED VOID-FILLED RIPRAP AND REMIX THE ENTIRE THICKNESS OF ROCK TO ACHIEVE THE DESIGN SECTION. SEGREGATION OF MATERIALS SHALL BE AVOIDED AND IN NO CASE SHALL THE COMBINED MATERIAL CONSIST PRIMARILY OF THE VOID-FILL MATERIALS. THE DENSITY AND INTERLOCKING NATURE OF RIPRAP IN THE MIXED MATERIAL SHALL ESSENTIALLY BE THE SAME AS IF THE RIPRAP WAS PLACED WITHOUT FILLING THE VOIDS.
4. COMPACTION OF THE VOID-FILLED RIPRAP SHALL BE PERFORMED BY WHEEL ROLLING WITH HEAVY RUBBER-TIRED EQUIPMENT (E.G. FRONT END LOADER). THE MOISTURE CONTENT OF THE MIXTURE SHALL BE AT OPTIMUM CONDITIONS PRIOR TO COMPACTION AND WATER SHALL BE ADDED, AS NECESSARY, AT THE DIRECTION OF THE ENGINEER.
5. WHERE INDICATED ON THE DRAWINGS, A SURFACE LAYER OF MOIST TOPSOIL SHALL BE PLACED OVER THE VOID-FILLED RIPRAP. 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.
6. ALL VOID-FILLED RIPRAP THAT IS BURIED WITH TOPSOIL SHALL BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO ANY TOPSOIL PLACEMENT.
7. THE MILE HIGH FLOOD DISTRICT WILL CONDUCT SITE VISITS DURING THE PROJECT CONSTRUCTION WITH OR NEAR THE CHANNEL TO OBSERVE CONSTRUCTION FOR CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. PLEAS CONTACT MHFD (303-455-6277) TO SCHEDULE A PRECONSTRUCTION MEETING. ALL STRUCTURAL AND GROUTED BOULDER WORK REQUIRE 48-HOURS PRIOR NOTICE TO ANY CONSTRUCTION OR CONCRETE PLACEMENT. STANDARDS AND SPECIFICATIONS FOR ALL OUTFALL AND CHANNEL WORK CAN BE ACCESSED AT WWW.MHFD.ORG UNDER THE REFERENCES SECTION. FAILURE TO NOTIFY MAY RESULT IN PROJECT INELIGIBILITY.
8. ALL ELEVATIONS SHOWN ARE FINISH ELEVATIONS AND WILL INCLUDE MINIMUM OF 6" OF TOPSOIL PLACED TO FINISH GRADES SHOWN.

AS-BUILT NOTE:

1. AS-BUILT INFORMATION PROVIDED BY AZTEC ON 9/23/2024 AND 11/25/2024.
2. AS-BUILT LOCATIONS AND ELEVATIONS ARE SHOWN IN RED AND DENOTES VALUES AS CONSTRUCTED, TO BE DISTINGUISHED FROM AMENDED VALUES THAT WERE STRUCK.

I, THOMAS E. KUTTRUS, HEREBY CERTIFY THAT THE AS-BUILT INFORMATION SHOWN ON THIS DRAWING ARE THE RESULT OF A FIELD SURVEY AND THAT THE DIMENSIONS AND ELEVATIONS NOTED AS AS-BUILT ARE REASONABLY ACCURATE.

COLORADO LICENSED THOMAS E. KUTTRUS 36567 12/12/2024 PROFESSIONAL LAND SURVEYOR

PROFESSIONAL LAND SURVEYOR NO. 36567
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 EAST MINERAL AVE, SUITE 1, LITTLETON,
COLORADO 80122

CALL 811
TWO WORKING DAYS
BEFORE YOU DIG
1-800-922-1987

No.	Revisions	Date	Init.	Apprv.	Date

Westwood
10333 E DRY CREEK RD.
SUITE 400
ENGLEWOOD, CO 80112
TEL: 720.482.9526
Westwoodps.com
Westwood Professional Services, Inc.

TOLL SOUTHWEST, LLC
10 INVERNESS DRIVE, SUITE 125
ENGLEWOOD, CO 80112
ATTN: BRAD DIXON
PHONE: (303)-708-0730

SANTA FE PARK SOUTH
LITTLETON - RD & DRAINAGE PLAN SET
DAD CLARK GULCH P&P 17+50.00 TO 10+00.00

SCALE:	FILE NO:
AS SHOWN	8130325602

DRAWN BY:	CHECKED BY:	BS
	DATE:	

SHEET NUMBER 15.2

N:\PROJECTS\30325601 SANTA FE PARK\CAD\ENGINEERING\SHEET SETS\CD\SAS-BUILTS\CHANNEL P&P - AS BUILT.DWG, JGORMAN, 12/11/2024

100002
5367.77
BM

100019
5373.97
BM

100018
5374.30
BM

I, THOMAS E. KUTTRUS, hereby verify that the as-built information shown on this drawing are the result of a field survey and that the dimensions and elevations noted as as-built are reasonably accurate.

COLORADO LICENSED
THOMAS E. KUTTRUS
36567
09/18/2024
PROFESSIONAL LAND SURVEYOR

PROFESSIONAL LAND SURVEYOR LICENSE NO. 36567
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 EAST MINERAL AVE, SUITE 1, LITTLETON, COLORADO 80122

100036
5375.87
BACK STEM WALL (TOP FORM)

100035
5375.33
BACK STEM WALL (TOP FORM)

100021
5373.55
CL BEAM (TOP BEAM)

100022
5373.65
CL BEAM (TOP BEAM)

100023
5373.75
CL BEAM (TOP BEAM)

100024
5373.62
CL BEAM (TOP BEAM)

100025
5373.50
CL BEAM (TOP BEAM)

100034
5375.33
BACK STEM WALL (TOP FORM)

100033
5375.34
BACK STEM WALL (TOP FORM)

100031
5374.32
TOP CORRUGATED METAL

100026
5374.13
CL BEAM (TOP BEAM)

100030
5374.39
TOP CORRUGATED METAL

100027
5374.19
CL BEAM (TOP BEAM)

100028
5374.26
CL BEAM (TOP BEAM)

100032
5375.83
BACK STEM WALL (TOP FORM)

100029
5374.45
TOP CORRUGATED METAL

100017
5376.98
BACK STEM WALL (TOP FORM)

100003
5374.86
CL BEAM (TOP BEAM)

100004
5374.98
CL BEAM (TOP BEAM)

100005
5375.09
CL BEAM (TOP BEAM)

100006
5374.97
CL BEAM (TOP BEAM)

100007
5374.85
CL BEAM (TOP BEAM)

100016
5376.85
BACK STEM WALL (TOP FORM)

100015
5376.99
BACK STEM WALL (TOP FORM)

100013
5375.65
TOP CORRUGATED METAL

100008
5375.49
CL BEAM (TOP BEAM)

100012
5375.74
TOP CORRUGATED METAL

100009
5375.58
CL BEAM (TOP BEAM)

100011
5375.83
TOP CORRUGATED METAL

100010
5375.68
CL BEAM (TOP BEAM)

100014
5376.99
BACK STEM WALL (TOP FORM)

0 6 12 24
1 inch = 12 ft.
DATE 2024-03-06
BWD

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

ASBUILT BRIDGE SHOTS AS OF 2024-03-06
SANTA FE

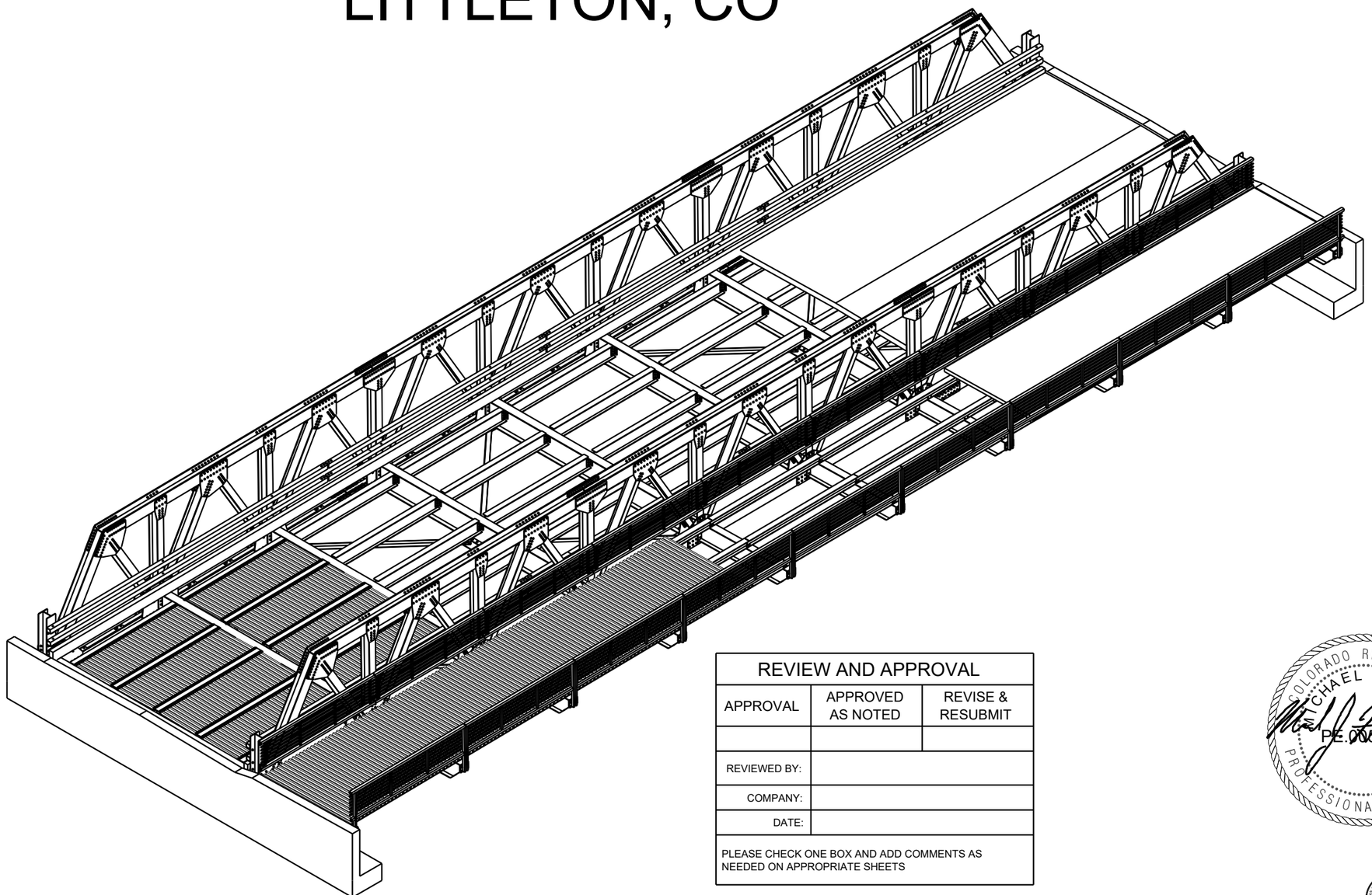
PREPARED FOR

SHEET 1 OF 1 SHEETS

JOB NO. 142122-05

N:\142122-05 - Santa Fe Park South Phase 1\Dwg\2024-03-06 - ASB BRIDGE SHOTS.dwg, 3/6/2024 4:25:07 PM, BDALTON

135'-0 1/2" x 28'-2"
SANTA FE SOUTH
LITTLETON, CO



REVIEW AND APPROVAL		
APPROVAL	APPROVED AS NOTED	REVISE & RESUBMIT
REVIEWED BY:		
COMPANY:		
DATE:		
PLEASE CHECK ONE BOX AND ADD COMMENTS AS NEEDED ON APPROPRIATE SHEETS		

01/26/2023

COLORADO REGISTERED
MICHAEL HEMANN
PE.0060434
PROFESSIONAL ENGINEER

AISC CERTIFIED FABRICATOR

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If discrepancies between the supplied information upon which the drawing is based and actual field conditions are encountered as site work progresses, these discrepancies must be reported to Contech immediately for re-evaluation of the design. Contech accepts no liability for designs based on missing, incomplete or inaccurate information supplied by others.

MARK	DATE	REVISION DESCRIPTION	BY
D	01/26/2023	REVISED AS NOTED	TJW
C	10/25/2022	NO CHANGES THIS SHEET	TJW
B	06/30/2022	NO CHANGES THIS SHEET	TJW
A	05/11/2022	REVISED AS NOTED	TJW
-	02/14/2022	INITIAL SUBMITTAL	TJW

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VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

PROJECT No.:	SEQ. No.:	DATE:
662583	010	02/14/2022
DESIGNED: MJH	DRAWN: TJW	
CHECKED: MJH	APPROVED: MJH	
SHEET NO.: 1 OF 19		

C:\Users\tyler.wenner\OneDrive - The Quikrete Companies\COLORADO\662583-10 LITTLETON\662583-10 LITTLETON REV D, CO\ 01/26/2023 02:58:01pm

GENERAL NOTES B

1. DESIGN PROCEDURE IS IN ACCORDANCE WITH "LRFD BRIDGE DESIGN SPECIFICATIONS", 2020 (9TH EDITION) BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO).
2. MATERIALS (UNLESS NOTED OTHERWISE):
   a. STRUCTURAL STEEL:
      i. HSS SECTIONS: ASTM A847
      ii. SHAPES: ASTM A588, OR A709-50 (50W)
      iii. PLATES: ASTM A588, OR A709-50 (50W)
      iv. ANGLES: ASTM A588, OR A709-50 (50W)
   b. STRUCTURAL BOLTS (TRUSSES): ASTM F3125 GRADE A325 U.N.O. TYPE 3 (WEATHERING) WITH MATCHING DH3 A563 NUTS & F436 WASHERS .
3. BRIDGE DESIGN IS BASED ON LOAD COMBINATIONS IN ACCORDANCE WITH AASHTO OF THE FOLLOWING LOADS
   a. BRIDGE DEAD LOAD
   b. BRIDGE DECK DEAD LOAD INCLUDING FUTURE OVERLAY:
      i. ROADWAY BRIDGE DECK INCLUDING FORMS – 105 PSF
      ii. FUTURE OVERLAY– 36.67 PSF (APPLIED TO ROADWAY ONLY)
      iii. PEDESTRIAN SIDEWALK DECK INCLUDING FORMS – 68 psf
   c. UTILITY ALLOWANCE = 5 psf
   d. LIVE LOAD:
      i. 2 LANES OF VEHICULAR LIVE LOAD
         1. HL-93 VEHICLE LOAD IN ACCORDANCE WITH AASHTO LRFD
         2. FATIGUE DESIGN BASED ON TWO-DIRECTIONAL TRAFFIC WITH AN ADT = 2500
      ii. 75 psf PEDESTRIAN LOADING APPLIED TO SIDEWALK
      iii. H10 MAINTENANCE VEHICLE APPLIED TO SIDEWALK
   e. WIND LOADING IN ACCORDANCE WITH "LRFD BRIDGE DESIGN SPECIFICATIONS", 2020 (9TH EDITION) BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
      i. Vu = 115 MPH
      ii. EXPOSURE B
      iii. Z = 33 FT
   f. BRIDGE RAILING DESIGNED FOR TL-1 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS APPENDIX A13.2 (RAIL HAS NOT BEEN CRASH TESTED)
4. BRIDGE TO BE BUILT TO THE REQUIREMENTS OF AWS D1.5.
5. ALL SHOP WELDING SHALL USE THE FLUX CORED ARC WELDING PROCESS.
6. ALL BOLTED CONNECTIONS ARE CONSIDERED TO BE PRETENSIONED OR SLIP-CRITICAL CONNECTIONS. ALL BOLTS ARE TO BE PRETENSIONED PER THE REQUIREMENTS OF SECTION 8.2 OF THE SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS BY RCSC.
7. ALL STRUCTURAL BOLTS, NUTS AND WASHERS SHALL BE FURNISHED IN THE AMOUNT OF 3% OR QUANTITY OF 10 (WHICHEVER IS GREATER) IN EXCESS OF THE NUMBER REQUIRED FOR EACH SIZE AND LENGTH.
8. IF BOLTS DO NOT SMOOTHLY ENGAGE UP TO SNUG-TIGHT, THERE MAY BE AN OBSTRUCTION WITHIN THE THREADS. THE BOLTS SHOULD BE REMOVED, THE THREADS ON THE BOLT AND NUT CLEANED AND RETAPPED IF NECCESSARY TO ALLOW SMOOTH INSTALLATION OF THE BOLT. (IF APPLICABLE).
9. MINIMUM SURFACE CONDITIONS:
   a. GUSSET PLATE (AND SHIM PLATES) TO TRUSS MEMBERS SHALL BE CLASS B: UNPAINTED BLAST-CLEANED SURFACE TO AAPC 6 OR BETTER.
   b. FLOOR BEAM, STRINGER, BRACE DIAGONAL, AND OUTRIGGER CONNECTIONS SHALL BE CLASS A :UNPAINTED CLEAN MILL SCALE.
10. MAINTENANCE NOTE: CONTECH ENGINEERED SOLUTIONS RECOMMENDS NOT APPLYING DE-ICEING OR DUST PROHIBITIVE CHEMICALS OR SALTS TO ANY PART OF THE BRIDGE STRUCTURE. IF DE-ICING OR DUST PROHIBITIVE CHEMICALS OR SALTS ARE APPLIED TO ANY PART OF THE BRIDGE STRUCTURE, CONTECH ENGINEERED SOLUTIONS WILL NOT BE RESPONSIBLE FOR ANY RESULTANT ACCELERATED CORROSION.

QUALITY ASSURANCE NOTES

1. FRACTURE CONTROL PLAN SHALL BE IMPLEMENTED.
2. ALL WELDS SHALL BE VISUALLY INSPECTED I.A.W. AWS SPECIFICATION BY AN AWS CERTIFIED WELDING INSPECTOR (CWI).
3. ROTATIONAL CAPACITY TESTING REQUIRED FOR HIGH STRENGTH BOLTS.
4. CHARPY V-NOTCH TESTING: BOTTOM CHORDS, GUSSET PLATES, SPLICE PLATES, DIAGONALS, VERTICALS, AND FLOOR BEAMS SHALL BE TESTED IN ACCORDANCE WITH ASTM A709 REQUIREMENTS FOR ZONE 2 (25FT-LBS @ 40ºf). TOP CHORDS, STRINGERS, AND BRACE DIAGONALS SHALL BE TESTED IN ACCORDANCE WITH ASTM A709 REQUIREMENTS FOR ZONE 2 (15FT-LBS @ 40ºf).
5. BUY AMERICA.
6. CERTIFIED MILL REPORTS REQUIRED.
7. WELD PROCEDURES REQUIRED.
8. CERTIFIED AISC SHOP REQUIRED.
9. WELDER QUALIFICATION TEST RECORDS REQUIRED.

FINISHING

1. CLEANING OF WEATHERING STEEL: ALL EXPOSED SURFACES OF STEEL SHALL BE CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SURFACES PREPARATION SPECIFICATIONS NO. 7 BRUSH-OFF BLAST CLEANING. SSPC-SP7-LATEST EDITION.
   a. EXPOSED SURFACES SHALL BE DEFINED AS THOSE SURFACES SEEN FROM THE DECK OR FROM OUTSIDE OF THE STRUCTURE.
   b. BELOW DECK ELEMENTS (STRINGERS, FLOOR BEAMS, BRACE DIAGONALS, OUTRIGGERS, ETC) SHALL ONLY REQUIRE SHOP MARKINGS TO BE WIPED CLEAN

DECK & CONCRETE NOTES B C

1. CONTECH ENGINEERED SOLUTIONS IS RESPONSIBLE FOR THE STRUCTURAL DESIGN OF THE CONCRETE DECK. ALL ISSUES RELATED TO MATERIAL SUPPLY, TESTING AND INSTALLATION IS OUTSIDE OF CONTECH ENGINEERED SOLUTIONS' RESPONSIBILITY.
2. CONCRETE MIX DESIGN, MATERIALS, MIXING, PLACEMENT, FINISHING AND TESTING NOT DEFINED SHALL BE IN ACCORDANCE WITH THE PROJECT CONTRACT DOCUMENTS. IF THESE ITEMS ARE NOT COVERED IN THE PROJECT CONTRACT DOCUMENTS THE REQUIREMENTS OF SECTION 552 OF FEDERAL HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14) SHALL BE USED. FP-14 CAN BE VIEWED OR DOWNLOADED AT: HTTP://FLH.FHWA.DOT.GOV/RESOURCES/SPECS/
3. MINIMUM MATERIAL REQUIREMENTS:
   a. CDOT CLASS D CONCRETE:
      i. f'c = 4,500 PSI
      ii. AIR CONTENT OF 5-8%
      iii. WATER CEMENT RATIO OF 0.44
   b. REINFORCING STEEL (EPOXY COATED):
      i. ASTM A615 OR AASHTO M31 GRADE 60
4. BARS MAY BE SPLICED IF REQUIRED. SPLICES SHALL BE STAGGERED EVERY OTHER BAR. REQUIRED SPLICE LENGTHS ARE AS FOLLOWS:

BAR SIZE	HOOK LENGTH	SPLICE LENGTH
#4	8"	25"
#5	9"	31"
#6	10"	37"

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CONTECH
www.ContechES.com
MAXIMUM LOAD LIMIT
HL-93 LIVE LOAD
JOB # 662583-10
DATE BUILT
STEADFAST BRIDGES
COLONIAL FLAT

BRIDGE PLAQUE

1-800-328-2047
CONTECH
www.ContechES.com
MAXIMUM LOAD LIMIT
20,000 LB VEHICLE PEDESTRIAN TRAFFIC
JOB # 662583-10
DATE BUILT
STEADFAST BRIDGES

SIDEWALK PLAQUE

01/26/2023
COLORADO REGISTERED MICHAEL HEMANN PE.0060434 PROFESSIONAL ENGINEER

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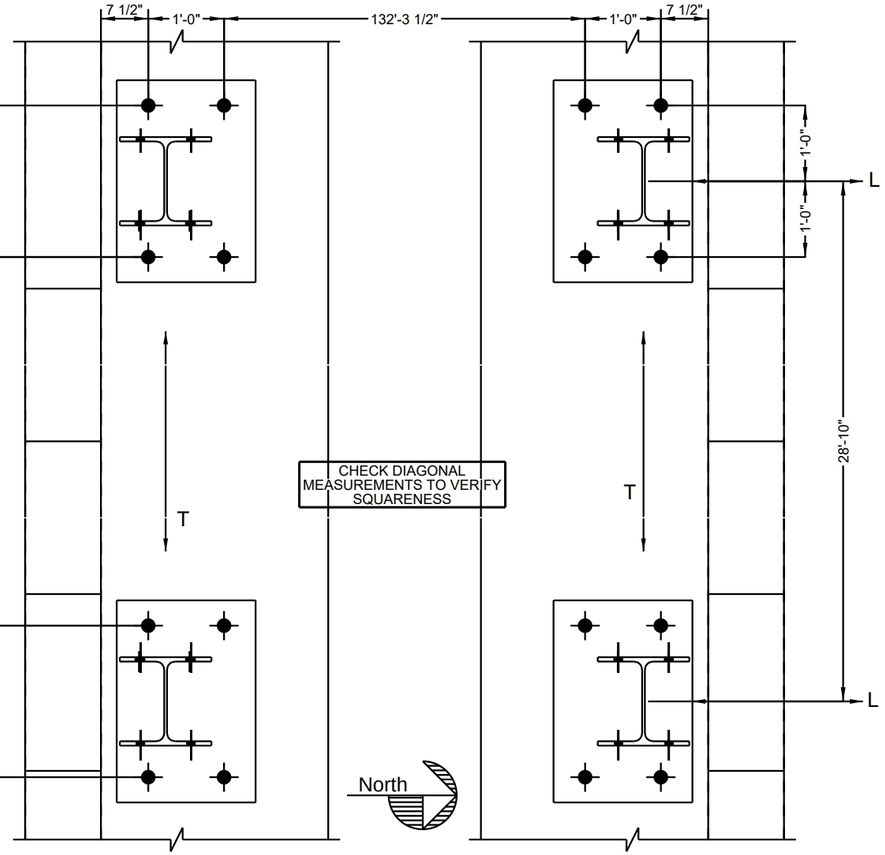
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STEADFAST BRIDGES
CONTECH CONTRACT DRAWING

135'-0 1/2" x 28'-2"
SANTA FE SOUTH
VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

PROJECT No.:	SEQ. No.:	DATE:
662583	010	02/14/2022
DESIGNED: MJH	DRAWN: TJW	
CHECKED: MJH	APPROVED: MJH	
SHEET NO.: 2 OF 19		

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SOUTH LOW FIXED END

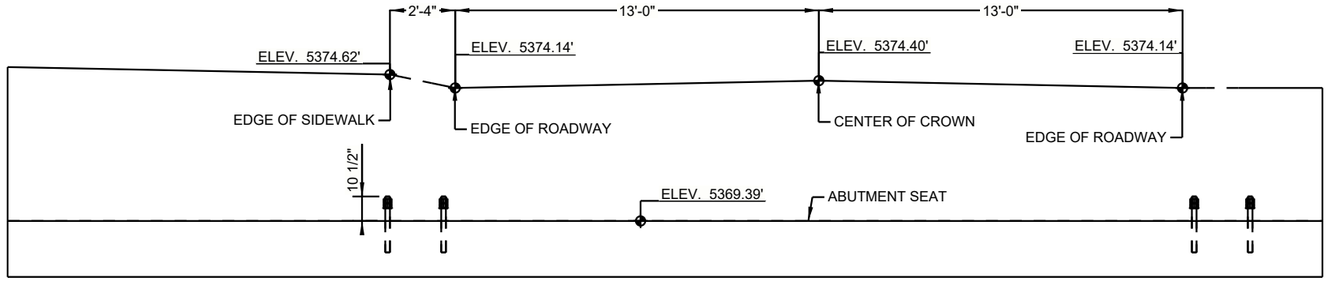
NORTH HIGH EXP'N END

ANCHOR BOLT PLAN

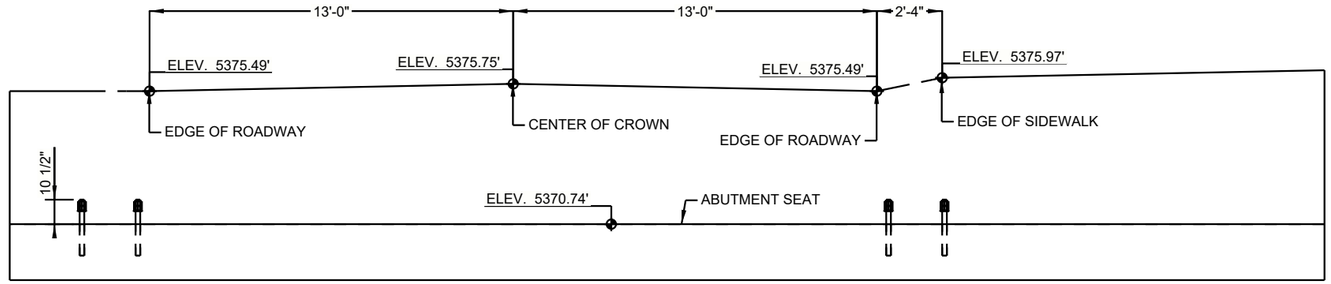
B

135'-0 1/2" x 28'-2" 2-LANE VEHICULAR TRUSS SANTA FE SOUTH	WEST TRUSS (CANTILEVER SIDEWALK TRUSS)						EAST TRUSS (TRUSS ONLY)					
BRIDGE REACTIONS PER BEARING	SOUTH (FIXED) ABUTMENT			NORTH (EXPANSION) ABUTMENT			SOUTH (FIXED) ABUTMENT			NORTH (EXPANSION) ABUTMENT		
	P (KIPS)	T (KIPS)	L (KIPS)	P (KIPS)	T (KIPS)	L (KIPS)	P (KIPS)	T (KIPS)	L (KIPS)	P (KIPS)	T (KIPS)	L (KIPS)
BRIDGE SELF WEIGHT (DC)	78.4			78.4			53.5			53.5		
CONCRETE DECK LOAD (DK)	170.4			170.4			88.9			88.9		
WEARING SURFACE (WS)	32.9			32.9			32.9			32.9		
UTILITY ALLOWANCE	4.4			4.4			4.4			4.4		
PEDESTRIAN LIVE LOAD (PL)	75.4			75.4			-14.6			-14.6		
LANE LOADING (LL)	43.2			43.2			43.2			43.2		
DESIGN TRUCKS (DT)	67.1			67.1			67.1			67.1		
DESIGN TRUCK IMPACT	22.2			22.2			22.2			22.2		
WIND LOAD +/-	11.8	23.7		11.8	16.5		11.8	23.7		11.8	16.5	
WIND UPLIFT WINDWARD	41.5			41.5			41.5			41.5		
20 PSF LEEWARD	13.9			13.9			13.9			13.9		
THERMAL LOAD (TU) +/-			42.3			42.3			26.3			26.3
BRAKING FORCE (BL) +/-	1.5		9.0	1.5		9.0	1.5		9.0	1.5		9.0
SEISMIC LOAD LONGITUDINAL (EQL) +/-	9.9		115.5	9.1			9.9		113.5	9.9		
SEISMIC LOAD TRANSVERSE (EAT) +/-	10.2	56.8		10.2	56.8		10.2	56.8		10.2	56.8	

"P" - VERTICAL LOAD
"T" - TRANSVERSE LOAD
"L" - LONGITUDINAL LOAD

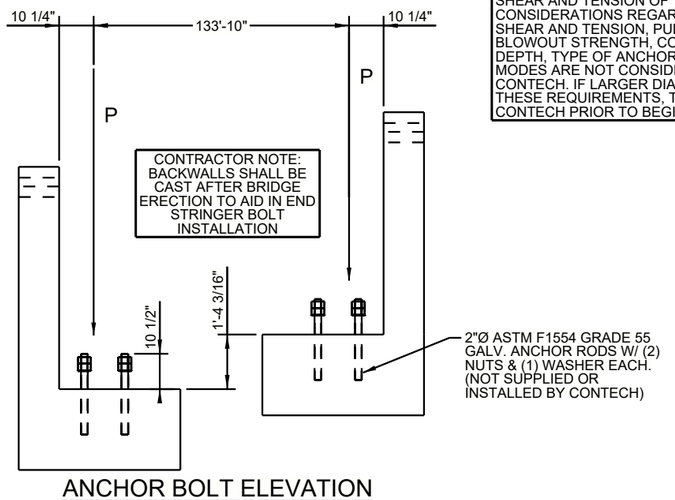


SOUTH LOW END ABUTMENT ELEVATION
LOOKING AT INSIDE FACE



NORTH HIGH END ABUTMENT ELEVATION
LOOKING AT INSIDE FACE

NOTE:
ANCHOR BOLTS ARE DESIGNED BY CONTECH FOR STEEL STRENGTH IN SHEAR AND TENSION OF THE ANCHOR BOLT ONLY. ALL DESIGN CONSIDERATIONS REGARDING CONCRETE BREAKOUT STRENGTH IN SHEAR AND TENSION, PULLOUT STRENGTH, CONCRETE SIDE-FACE BLOWOUT STRENGTH, CONCRETE PRYOUT STRENGTH, EMBEDMENT DEPTH, TYPE OF ANCHORAGE OR ANY OTHER CONCRETE FAILURE MODES ARE NOT CONSIDERED AND ARE NOT THE RESPONSIBILITY OF CONTECH. IF LARGER DIAMETER BOLTS ARE REQUIRED TO MEET ANY OF THESE REQUIREMENTS, THAT INFORMATION MUST BE PROVIDED TO CONTECH PRIOR TO BEGINNING ANY FABRICATION ON THE BRIDGE.



ANCHOR BOLT ELEVATION



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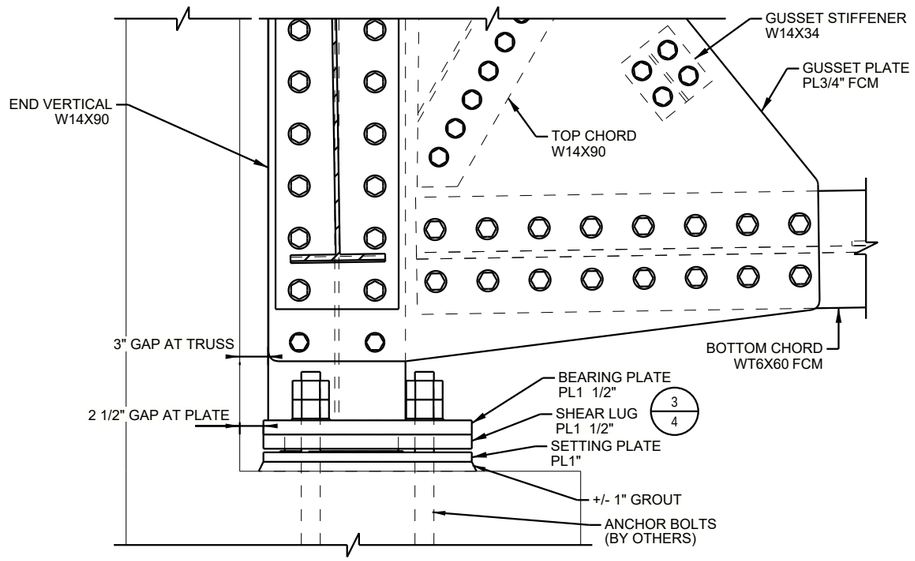
STEADFAST BRIDGES

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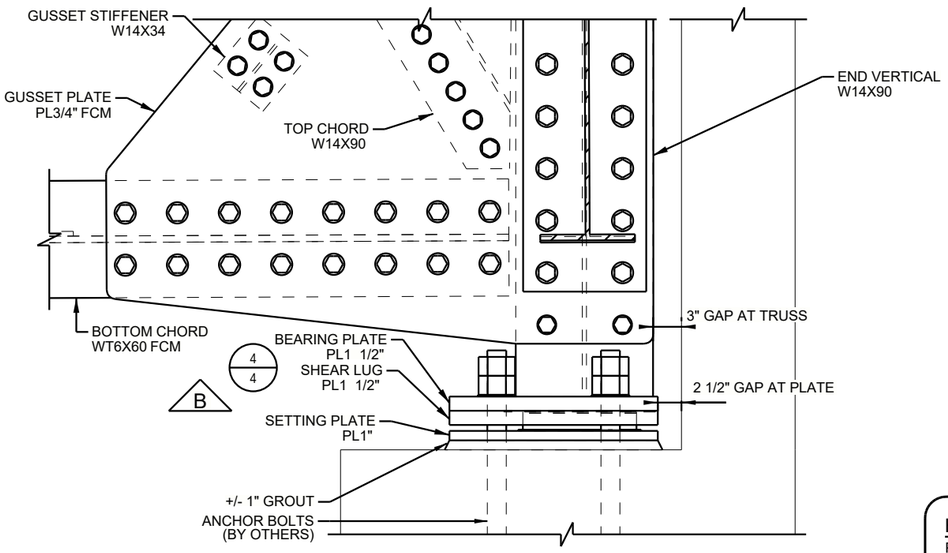
135'-0 1/2" x 28'-2"
SANTA FE SOUTH
VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

PROJECT No.:	SEQ. No.:	DATE:
662583	010	02/14/2022
DESIGNED: MJH	DRAWN: TJW	
CHECKED: MJH	APPROVED: MJH	
SHEET NO.: 3 OF 19		

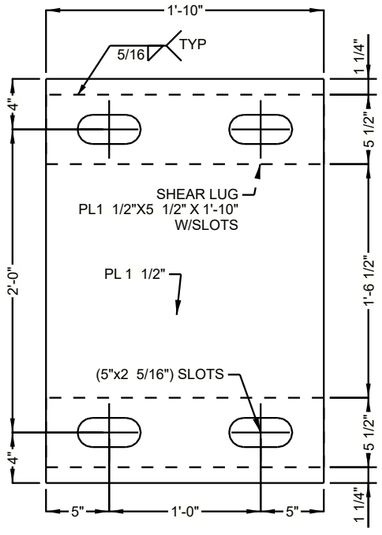
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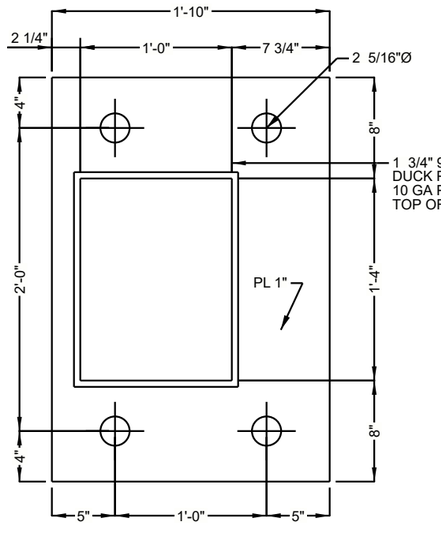
1/4 BEARING ELEVATION
SOUTH LOW FIXED END



2/4 BEARING ELEVATION
NORTH HIGH END EXP'N END

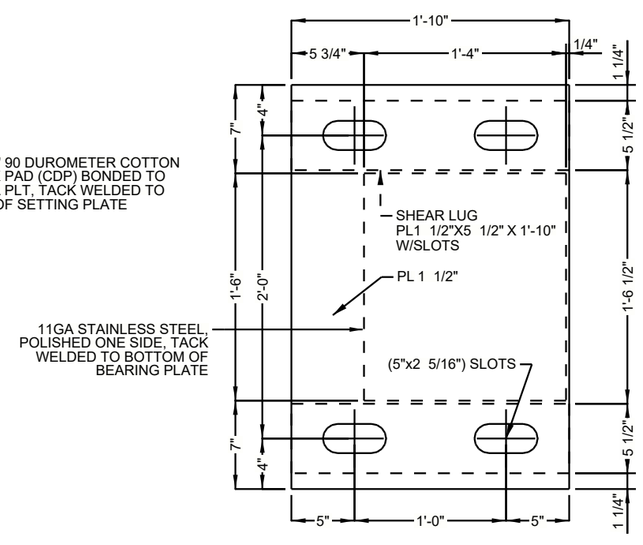


BEARING PLATE

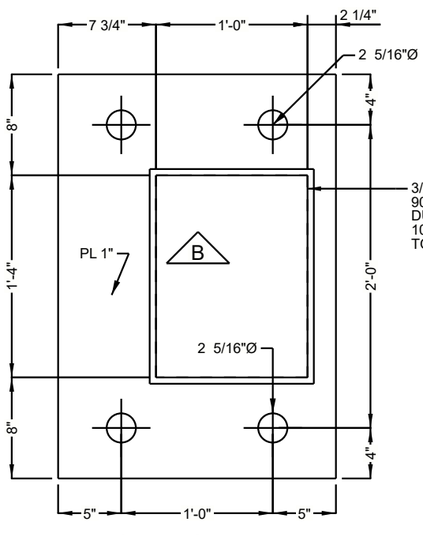


SETTING PLATE

3/4 FIXED END BEARING DETAILS



BEARING PLATE



SETTING PLATE

4/4 EXP'N END BEARING DETAILS

BEARING PAD SPECIFICATIONS

PREFORMED FABRIC REINFORCED
ELASTOMERIC TYPE PF

PHYSICAL PROPERTIES:

-ELASTOMER DUROMETER: 60±5 (SHORE A)
- FINISHED PAD DUROMETER: 90±5 (SHORE A)
-COMPRESSIVE STRENGTH: 18,000 PSI MAX
-MAXIMUM DESIGN PRESSURE: 1500 PSI
-AASHTO GRADE

GUIDE SPECIFICATIONS:

-MEETS DESIGN REQUIREMENTS OF AASHTO LRFD
-COMPLIES WITH MIL-C882-E MILITARY SPECIFICATION AND P.C.I.

01/26/2023
COLORADO REGISTERED
MICHAEL HEMANN
PE.0060434
PROFESSIONAL ENGINEER

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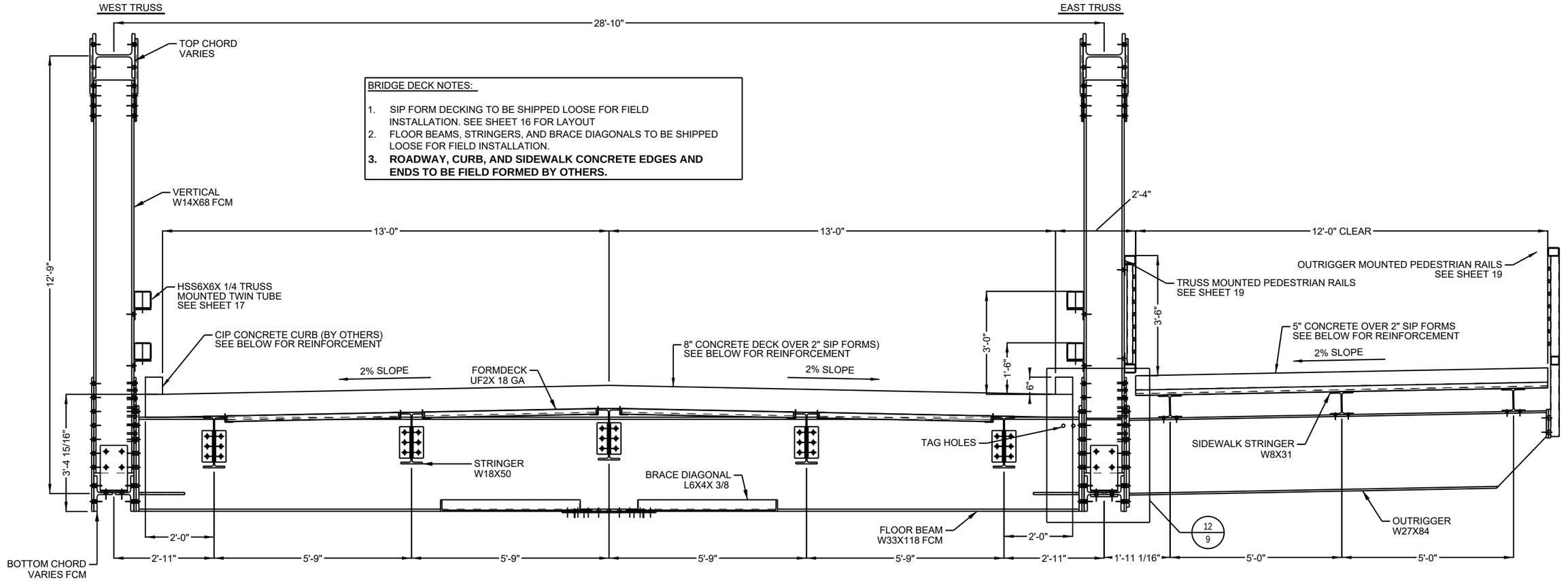
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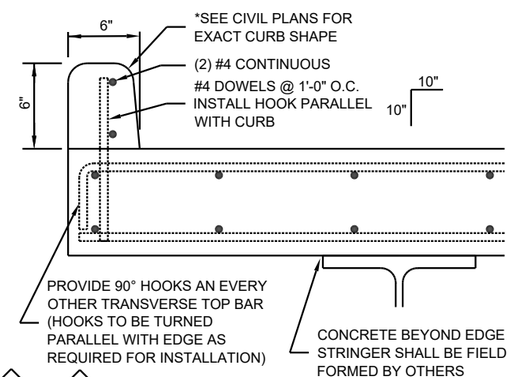
135'-0 1/2" x 28'-2"
SANTA FE SOUTH
VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

PROJECT No.:	SEQ. No.:	DATE:
662583	010	02/14/2022
DESIGNED: MJH	DRAWN: TJW	
CHECKED: MJH	APPROVED: MJH	
SHEET NO.: 4 OF 19		

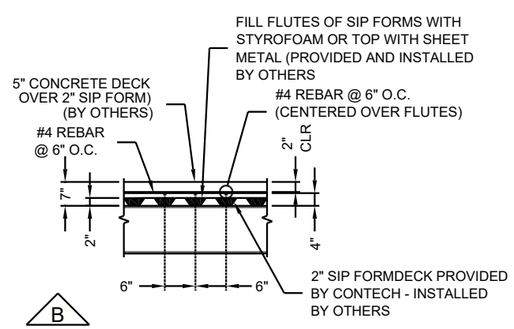
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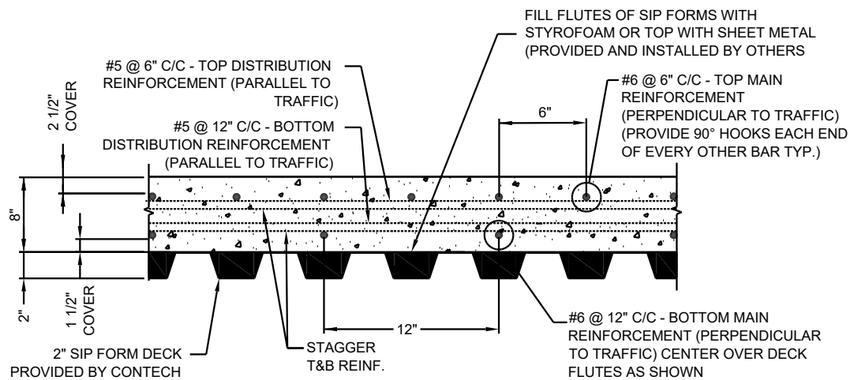
B
5
5
BRIDGE SECTION
(LOOKING NORTH)



C B
CURB REINFORCEMENT
*REINFORCEMENT SUPPLIED AND INSTALLED BY OTHERS



B
SIDEWALK CONCRETE DECK REINFORCEMENT
*REINFORCEMENT SUPPLIED AND INSTALLED BY OTHERS



B
CONCRETE DECK REINFORCEMENT
*REINFORCEMENT SUPPLIED AND INSTALLED BY OTHERS

01/26/2023
COLORADO REGISTERED
MICHAEL HEMANN
PE.0060434
PROFESSIONAL ENGINEER

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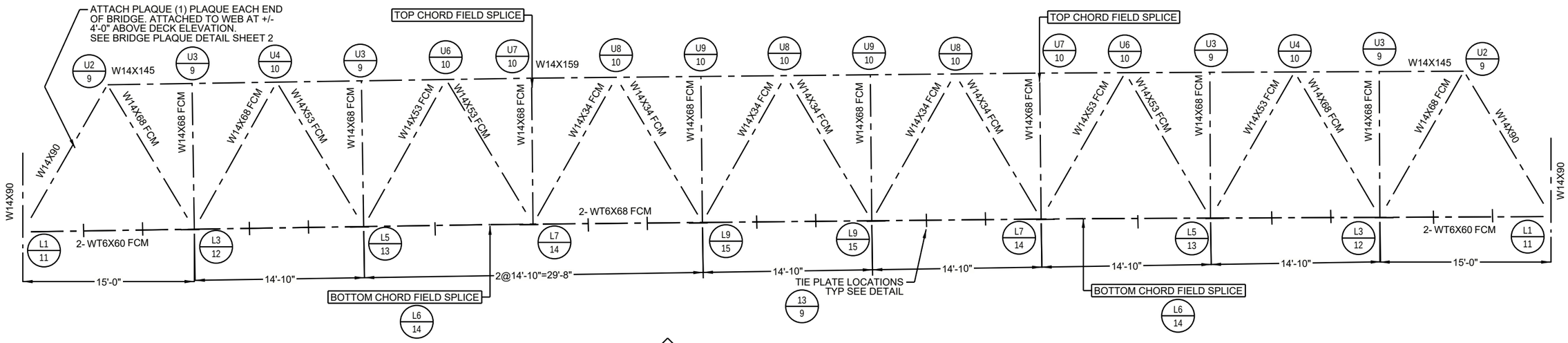
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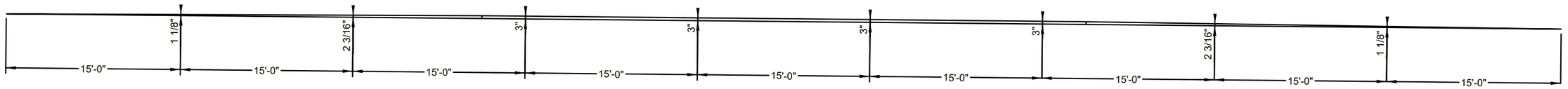
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VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

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SHEET NO.: 5 OF 19		

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B TRUSS ELEVATION



CAMBER DIAGRAM

01/26/2023

COLORADO REGISTERED MICHAEL HEMANN PE.0050434 PROFESSIONAL ENGINEER

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STEADFAST BRIDGES

CONTECH CONTRACT DRAWING

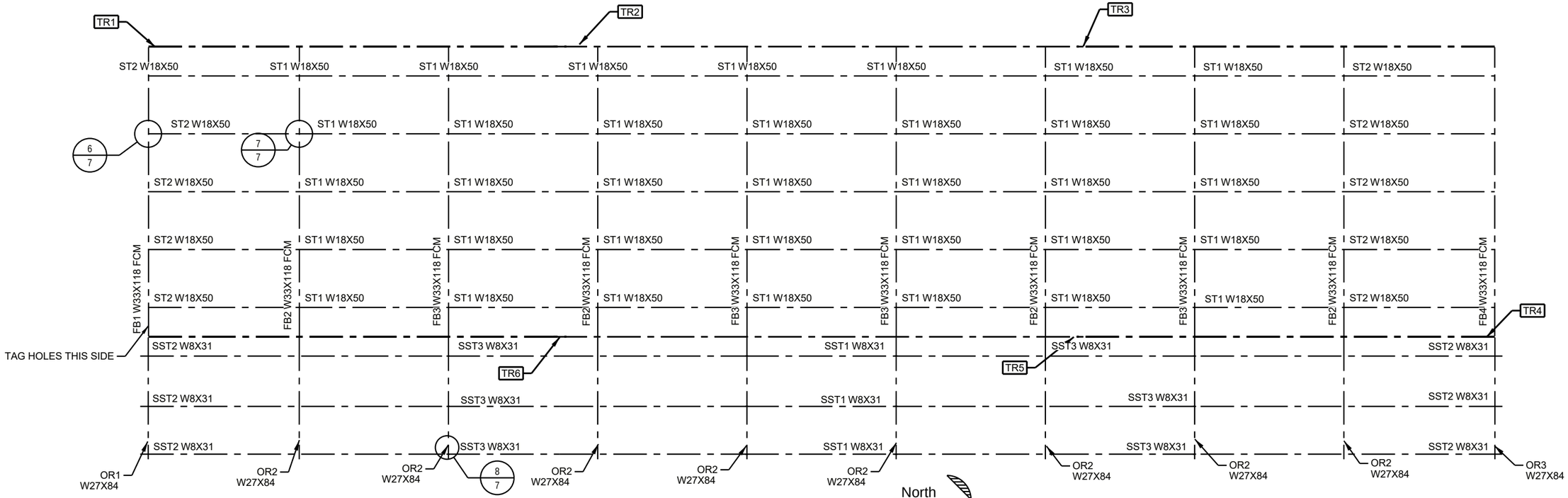
135'-0 1/2" x 28'-2"
SANTA FE SOUTH
VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

PROJECT No.:	SEQ. No.:	DATE:
662583	010	02/14/2022

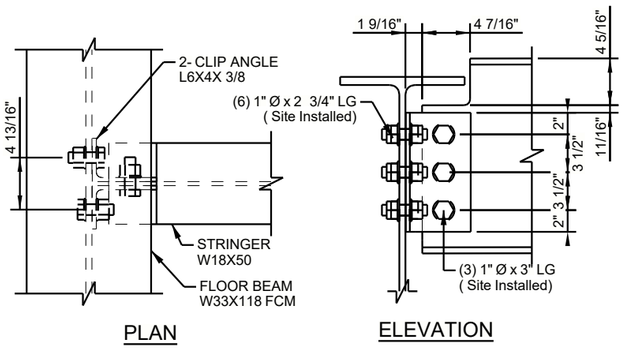
DESIGNED:	DRAWN:
MJH	TJW
CHECKED:	APPROVED:
MJH	MJH

SHEET NO.: 6 OF 19

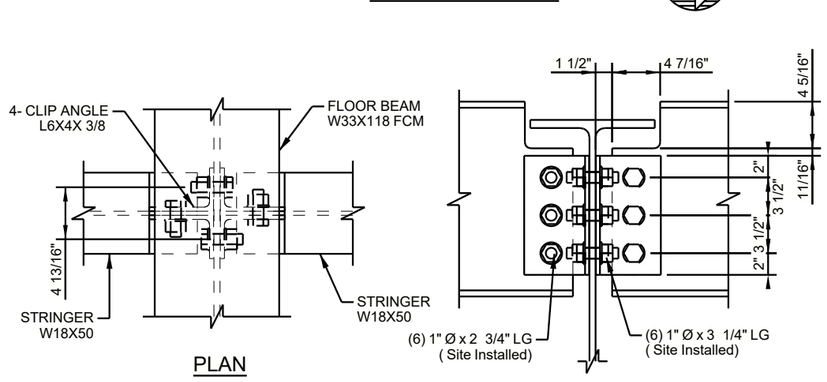
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FRAMING PLAN

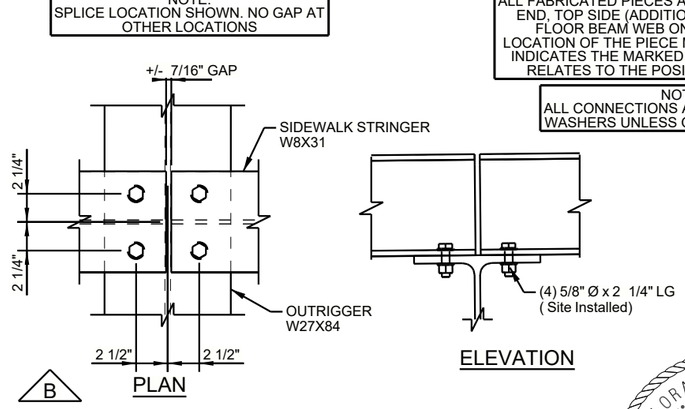


6/7 TYP END STRINGER CONNECTION
TYP (10) LOCATIONS



7/7 TYP STRINGER CONNECTION
TYP (40) LOCATIONS

NOTE:
SPLICE LOCATION SHOWN. NO GAP AT OTHER LOCATIONS



B
8/7 TYP SIDEWALK STRINGER CONNECTION
TYP (40) LOCATIONS

CONTRACTOR NOTE:
ALL FABRICATED PIECES ARE MARKED ON THE LEFT END, TOP SIDE (ADDITIONAL HOLES DRILLED IN FLOOR BEAM WEB ON MARKED END). THE LOCATION OF THE PIECE MARK ON THE PLAN VIEW INDICATES THE MARKED END OF THE PIECE AND RELATES TO THE POSITION WHEN ERECTED

NOTE:
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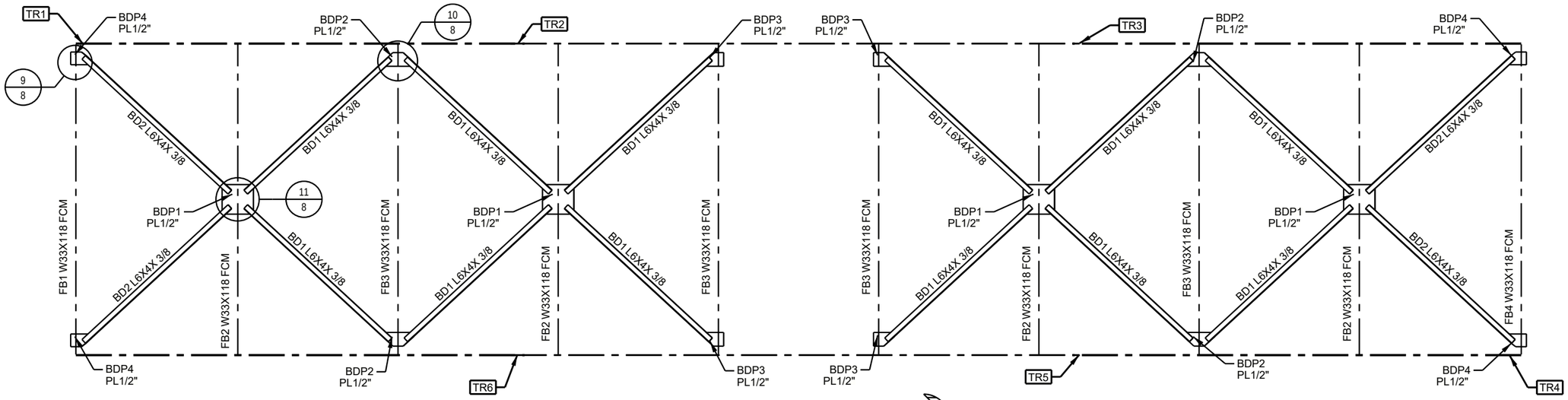
STEADFAST BRIDGES
CONTECH CONTRACT DRAWING

135'-0 1/2" x 28'-2"
SANTA FE SOUTH
VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

PROJECT No.:	SEQ. No.:	DATE:
662583	010	02/14/2022
DESIGNED: MJH	DRAWN: TJW	
CHECKED: MJH	APPROVED: MJH	
SHEET NO.: 7 OF 19		

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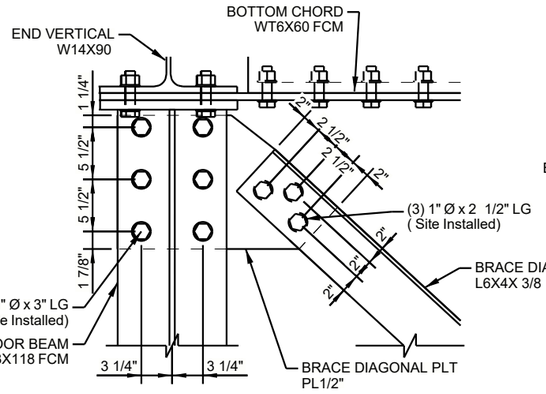


BRACING PLAN

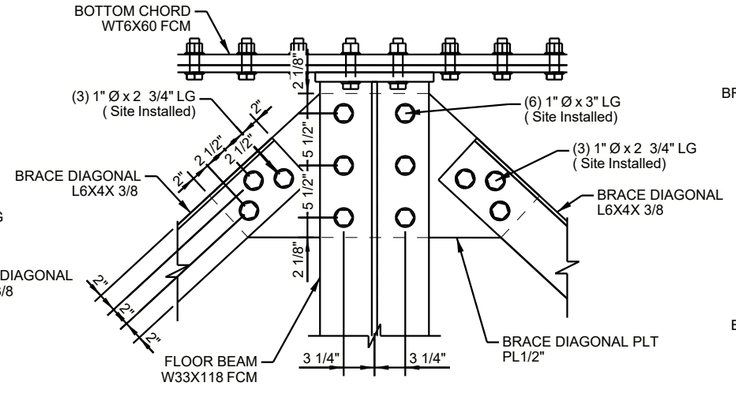
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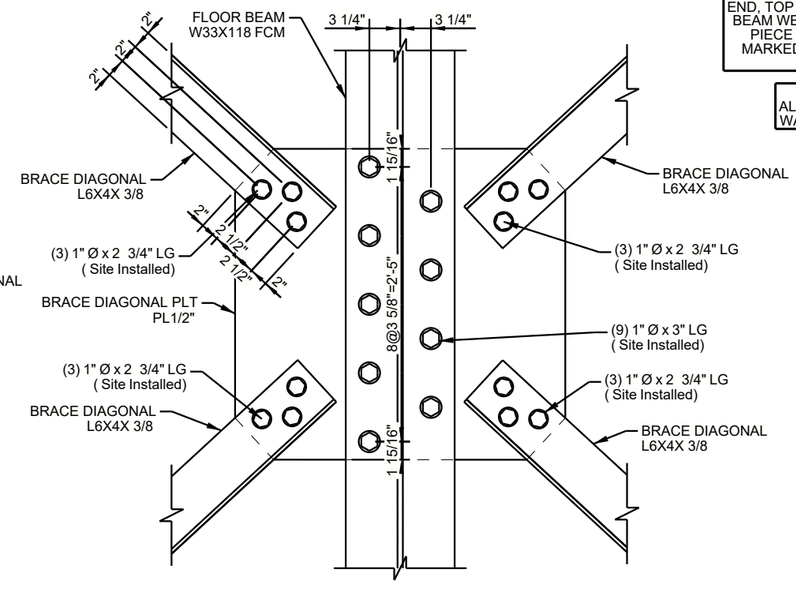
NOTE:
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9/8 TYP EDGE SINGLE B.D. CONNECTION
C TYP (8) LOCATIONS



10/8 TYP INTERIOR B.D. CONNECTION
C TYP (4) LOCATIONS



11/8 TYP MIDDLE B.D. CONNECTION
C TYP (4) LOCATIONS

01/26/2023
COLORADO REGISTERED MICHAEL HEMANN PE.0060434 PROFESSIONAL ENGINEER

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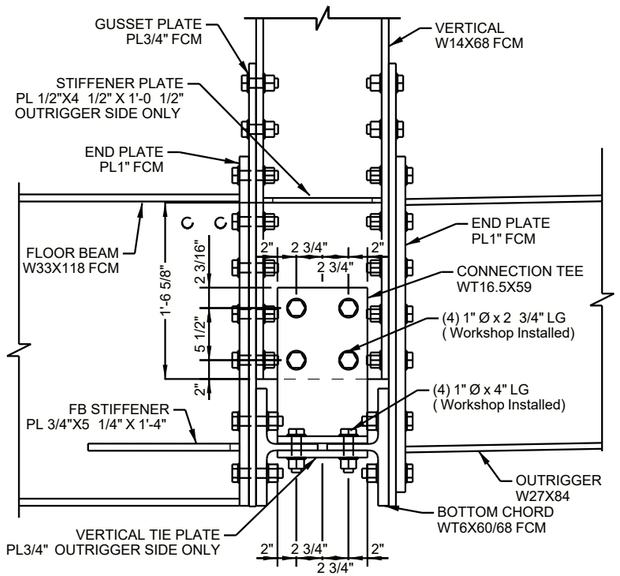
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STEADFAST BRIDGES
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135'-0 1/2" x 28'-2"
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VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

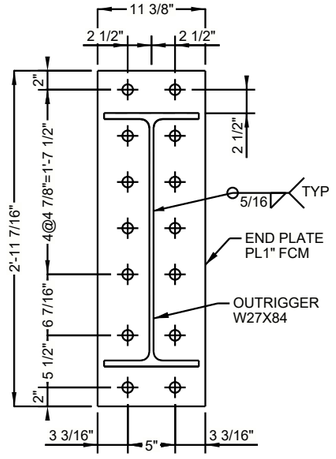
PROJECT No.:	SEQ. No.:	DATE:
662583	010	02/14/2022
DESIGNED: MJH	DRAWN: TJW	
CHECKED: MJH	APPROVED: MJH	
SHEET NO.: 8 OF 19		

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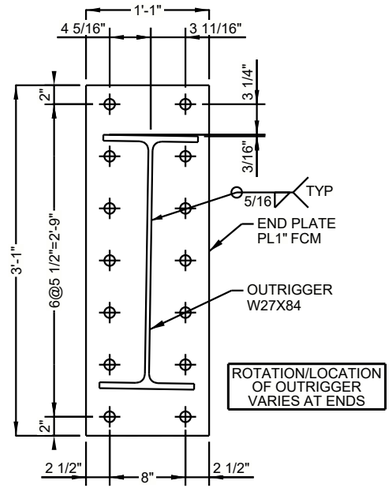


NOTICE:
VERTICAL TIE PLATE & VERTICAL STIFFENER PLATE ON CANTILEVER SIDE ONLY. USE 3" LG BOLTS FOR OTHER SIDE

C B 12/5 CONNECTION DETAIL

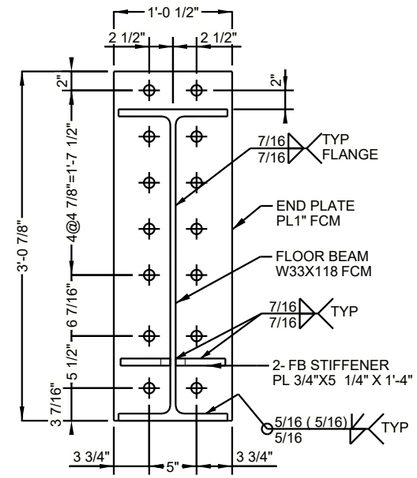


INTERIOR OUTRIGGERS

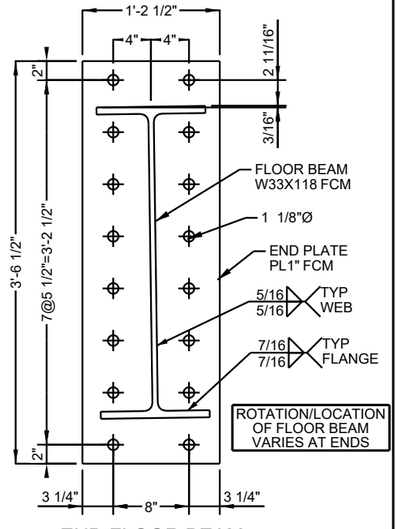


END OUTRIGGERS

C B SECTION A-A
OUTRIGGER END PLATE DETAIL



INTERIOR FLOOR BEAM

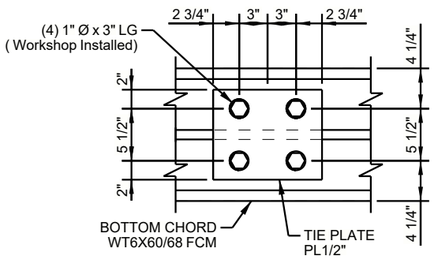


END FLOOR BEAM

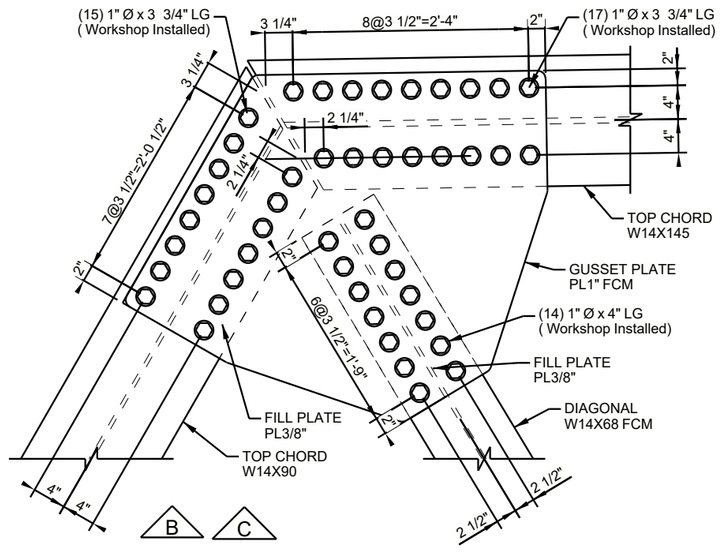
C SECTION B-B
FLOOR BEAM END PLATE DETAIL

NOTICE:
SQUARE CORNER ON GUSSET PLATE GOES ON CHORD TOWARDS CENTER OF BRIDGE

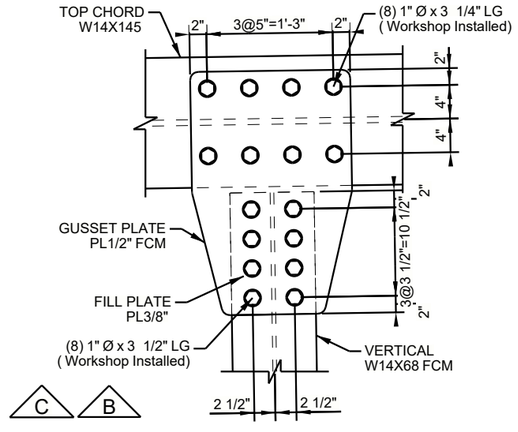
NOTE:
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13/6 TIE PLATE DETAIL
TYP (32) LOCATIONS



U2/6 GUSSET CONNECTION
TYP BOTH FACES (4) LOCATIONS



U3/6 GUSSET CONNECTION
TYP BOTH FACES (8) LOCATIONS

01/26/2023

COLORADO REGISTERED
MICHAEL HEMANN
PE.0060434
PROFESSIONAL ENGINEER

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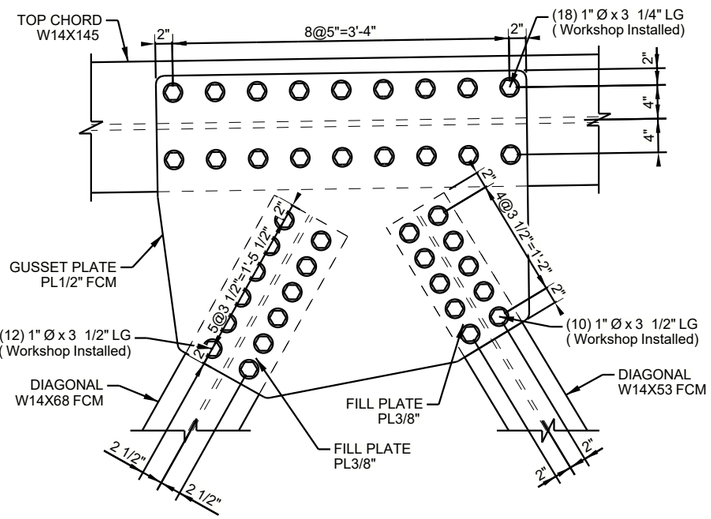
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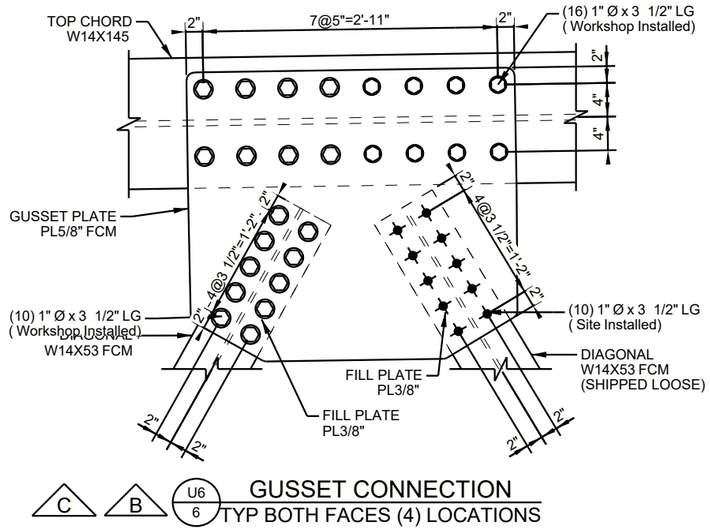
135'-0 1/2" x 28'-2"
SANTA FE SOUTH
VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

PROJECT No.:	SEQ. No.:	DATE:
662583	010	02/14/2022
DESIGNED: MJH		DRAWN: TJW
CHECKED: MJH		APPROVED: MJH
SHEET NO.: 9 OF 19		

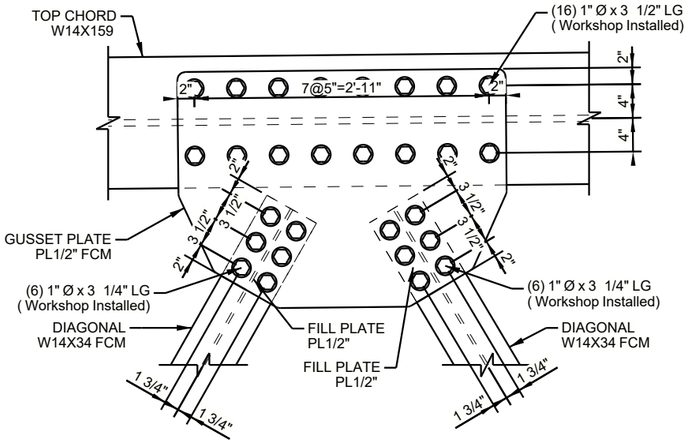
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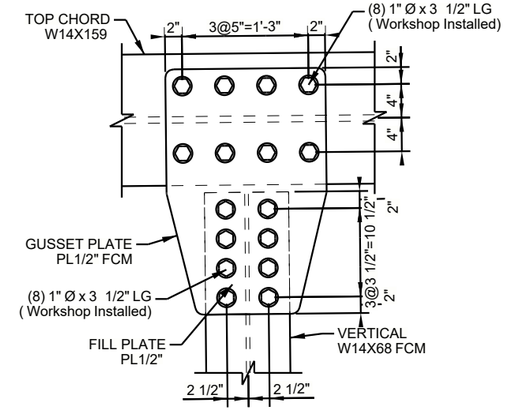
C B U4 6 GUSSET CONNECTION
TYP BOTH FACES (4) LOCATIONS



C B U6 6 GUSSET CONNECTION
TYP BOTH FACES (4) LOCATIONS

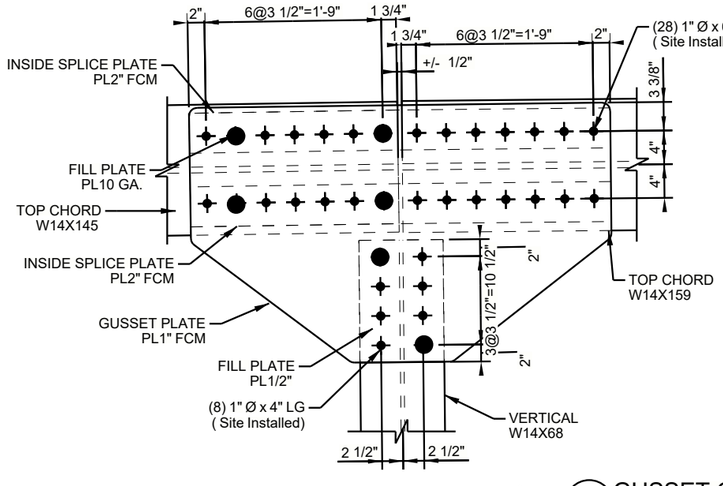


C B U8 6 GUSSET CONNECTION
TYP BOTH FACES (6) LOCATIONS



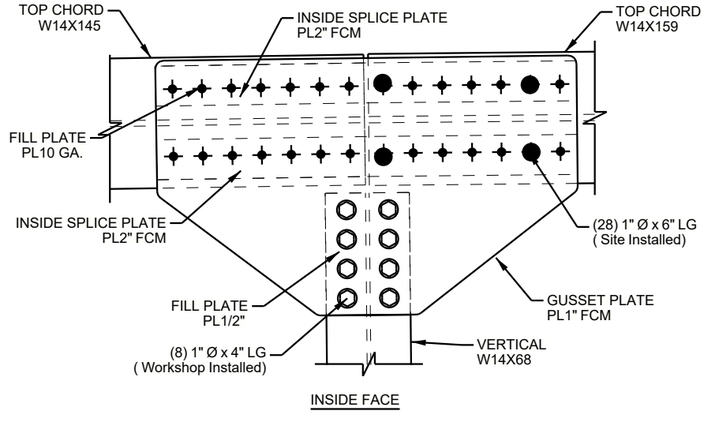
B U9 6 GUSSET CONNECTION
C TYP BOTH FACES (4) LOCATIONS

● = INDICATES TEMPORARY SHIPPING BOLT



OUTSIDE FACE

B U7 6 GUSSET CONNECTION
C TYP (4) LOCATIONS



INSIDE FACE

CONTRACTOR NOTE:
REMOVE ALL TEMPORARY BOLTS AND DISCARD

SHOP NOTE:
USE TEMPORARY SHIPPING BOLTS AS REQUIRED TO ATTACH & SECURE ALL PLATES TO TRUSS FOR SHIPMENT. ATTACH HALF OF THE SPLICE PLATES TO EACH TRUSS. TEMPORARY BOLTS TO BE INSTALLED WITH THE NUTS FACING OUT

NOTICE:
SQUARE CORNER ON GUSSET PLATE GOES ON CHORD TOWARDS CENTER OF BRIDGE

NOTE:
ALL CONNECTIONS ARE W/ (1) NUT & (2) WASHERS UNLESS OTHERWISE NOTED

NOTE:
ALL DIMENSIONS ARE SIMILAR INSIDE/OUTSIDE FACE

01/26/2023
COLORADO REGISTERED
MICHAEL HEMANN
PE.0060434
PROFESSIONAL ENGINEER

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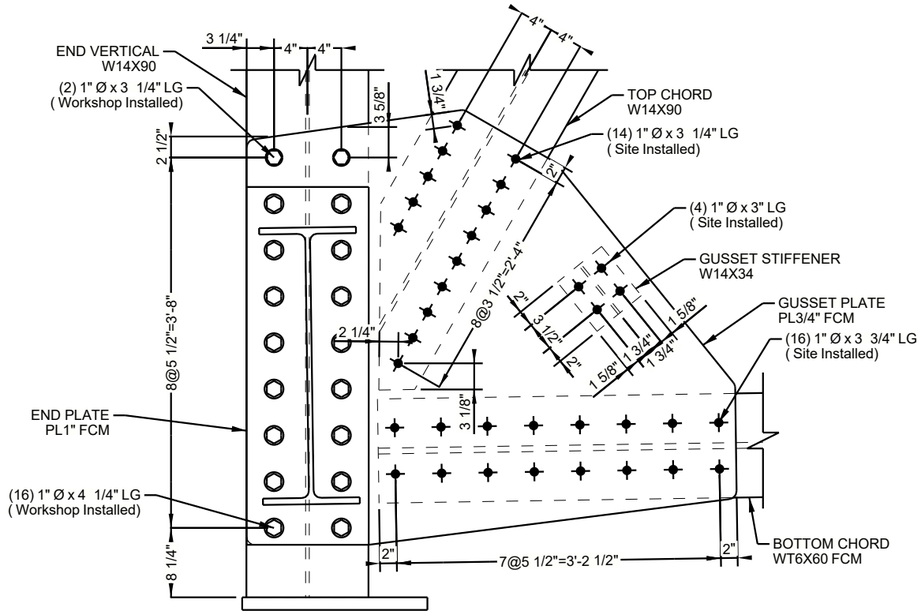
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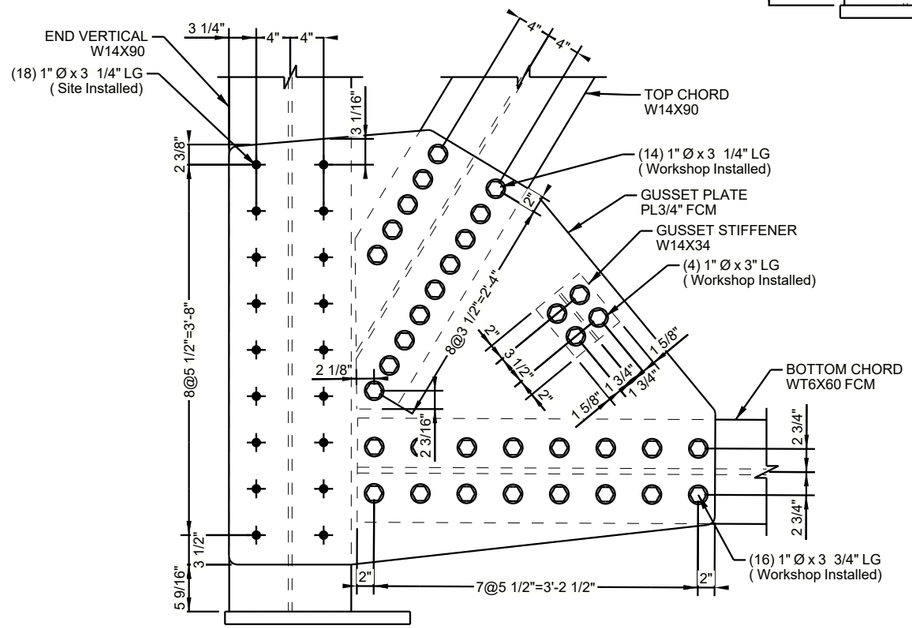
135'-0 1/2" x 28'-2"
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LITTLETON, CO

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662583	010	02/14/2022
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SHEET NO.: 10 OF 19		

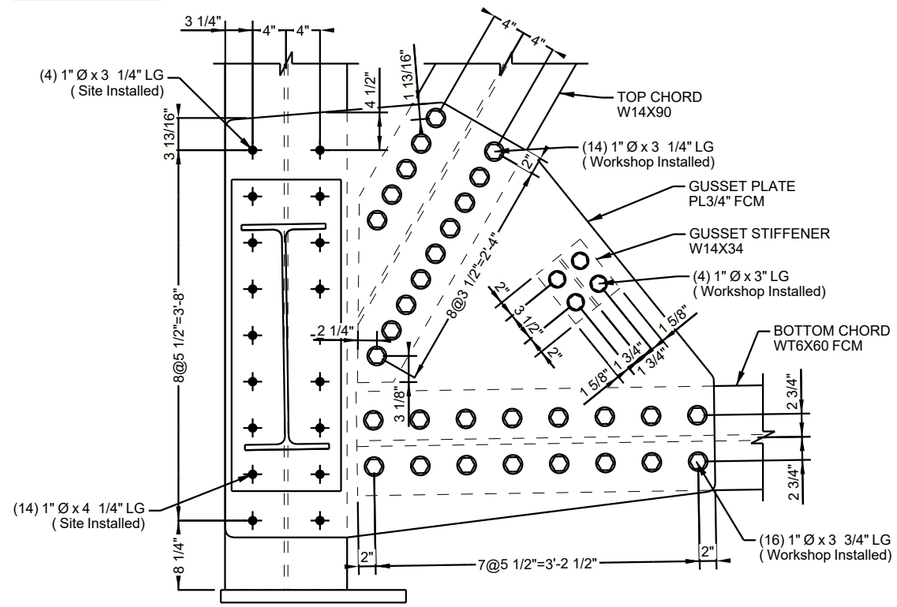
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TYP ALL INSIDE FACE



TR1,2,3 OUTSIDE FACE



TR4,5,6 OUTSIDE FACE

C B L1 6 GUSSET CONNECTION
TYP (4) LOCATIONS

B

CONTRACTOR NOTE:
REMOVE ALL TEMPORARY BOLTS AND DISCARD

SHOP NOTE:
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NOTICE:
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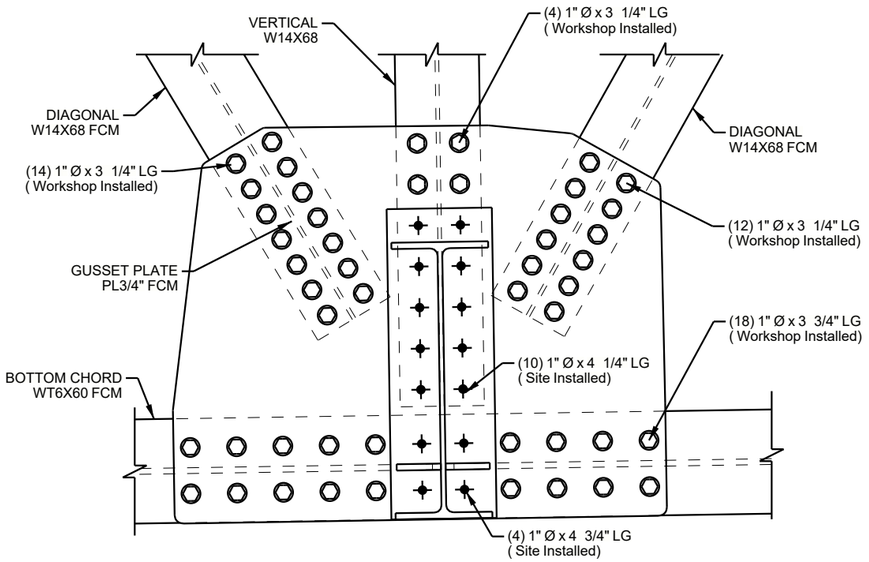
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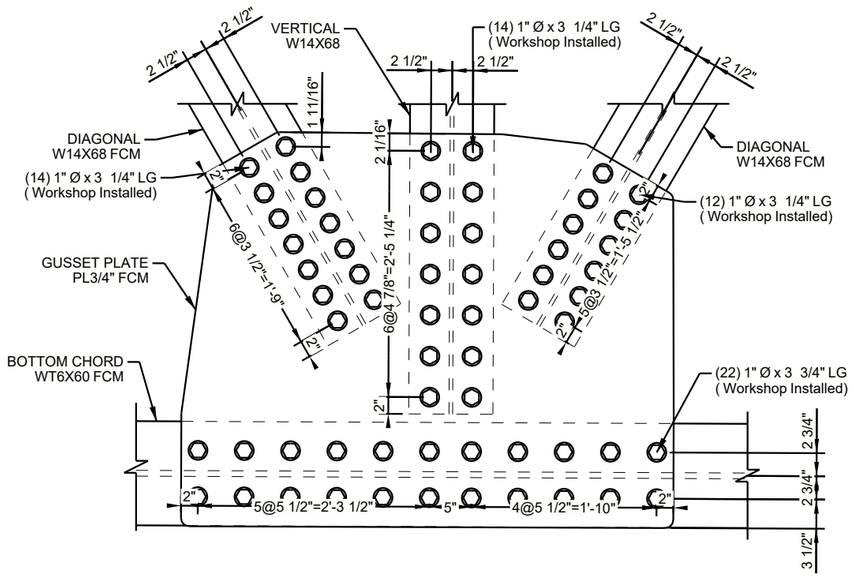
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LITTLETON, CO

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CHECKED: MJH	APPROVED: MJH	
SHEET NO.: 11 OF 19		

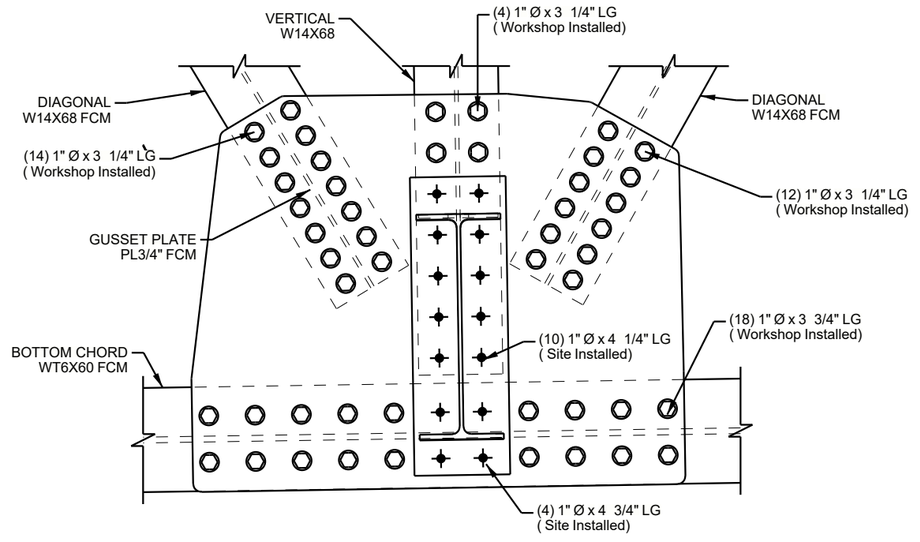
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TYP ALL INSIDE FACE



TR1,2,3 OUTSIDE FACE



TR4,5,6 OUTSIDE FACE

C B L3 6 GUSSET CONNECTION
TYP (4) LOCATIONS

B NOTE:
ALL DIMENSIONS ARE SIMILAR
INSIDE/OUTSIDE FACE

CONTRACTOR NOTE:
REMOVE ALL TEMPORARY BOLTS AND DISCARD

SHOP NOTE:
USE TEMPORARY SHIPPING BOLTS AS REQUIRED TO ATTACH & SECURE ALL PLATES TO TRUSS FOR SHIPMENT. ATTACH HALF OF THE SPLICE PLATES TO EACH TRUSS. TEMPORARY BOLTS TO BE INSTALLED WITH THE NUTS FACING OUT

NOTICE:
SQUARE CORNER ON GUSSET PLATE GOES ON CHORD TOWARDS CENTER OF BRIDGE

NOTE:
ALL CONNECTIONS ARE W/ (1) NUT & (2) WASHERS UNLESS OTHERWISE NOTED



01/26/2023

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A	05/11/2022	REVISED AS NOTED	TJW
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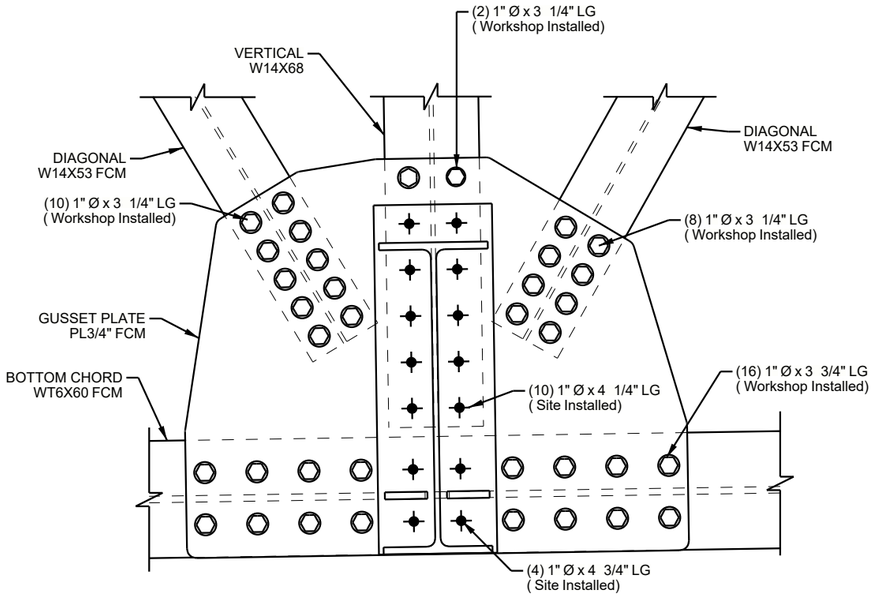
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135'-0 1/2" x 28'-2"
SANTA FE SOUTH
VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

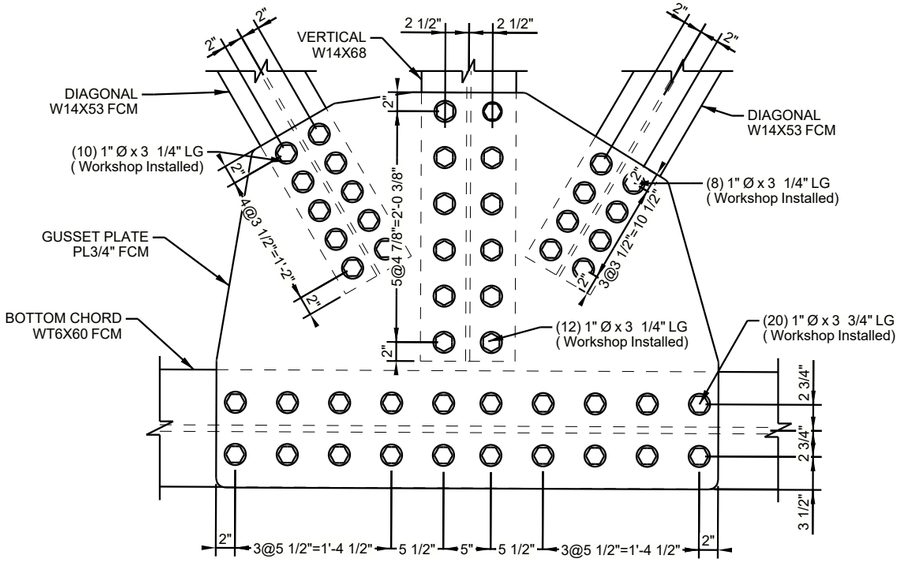
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662583	010	02/14/2022
DESIGNED: MJH	DRAWN: TJW	
CHECKED: MJH	APPROVED: MJH	
SHEET NO.: 12 OF 19		

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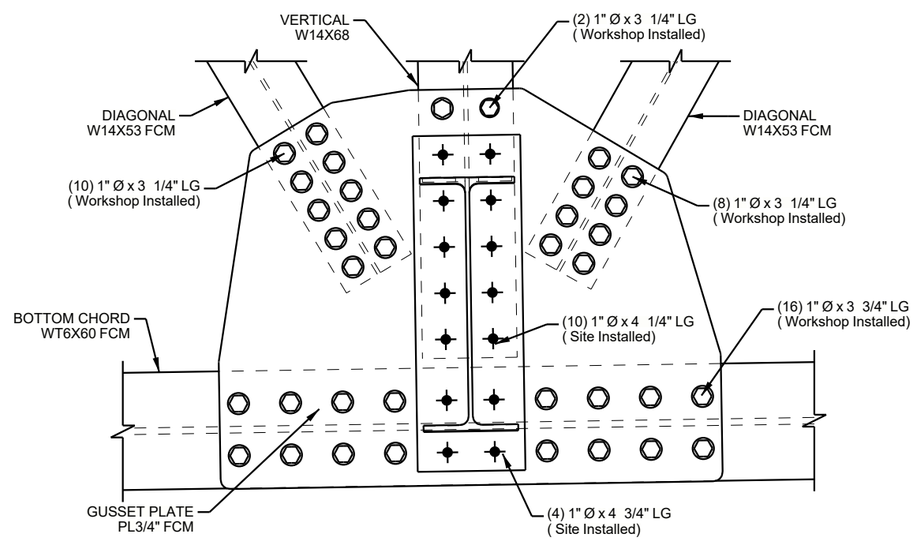
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TYP ALL INSIDE FACE



TR1,2,3 OUTSIDE FACE



TR4,5,6 OUTSIDE FACE

C B L5 6 GUSSET CONNECTION
TYP (4) LOCATIONS

B NOTE:
ALL DIMENSIONS ARE SIMILAR
INSIDE/OUTSIDE FACE

CONTRACTOR NOTE:
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SHOP NOTE:
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NOTE:
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MICHAEL HEMANN
PE.0050434
PROFESSIONAL ENGINEER

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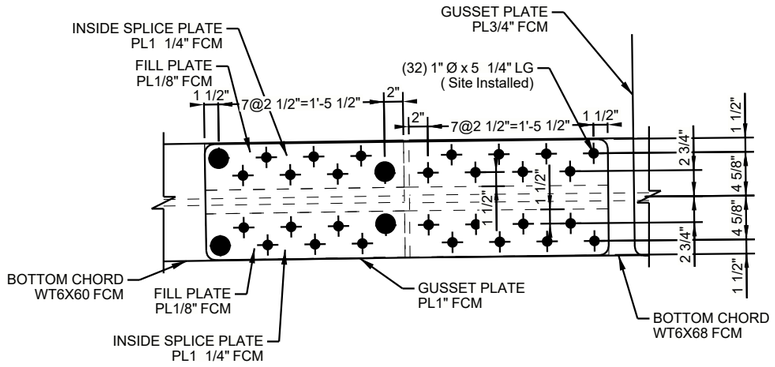
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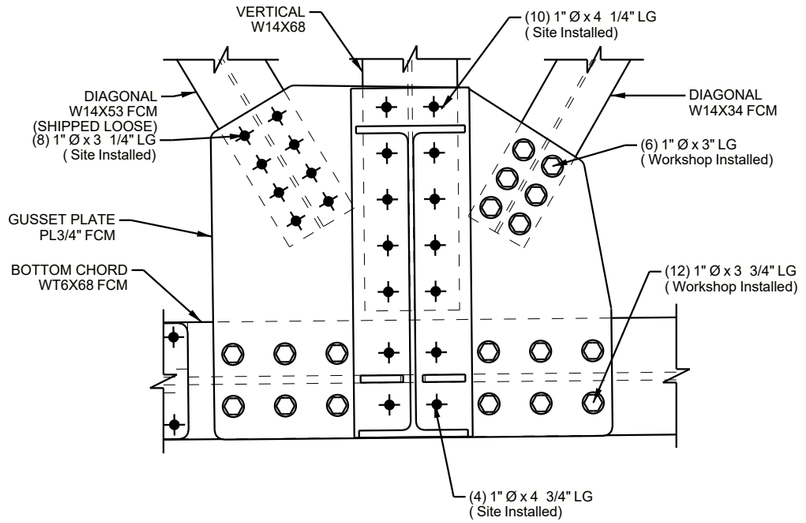
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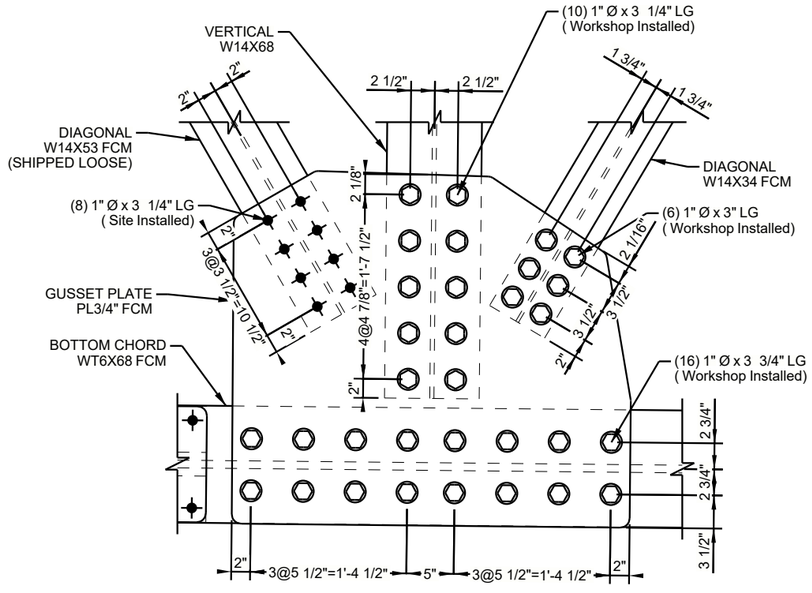
● = INDICATES TEMPORARY SHIPPING BOLT



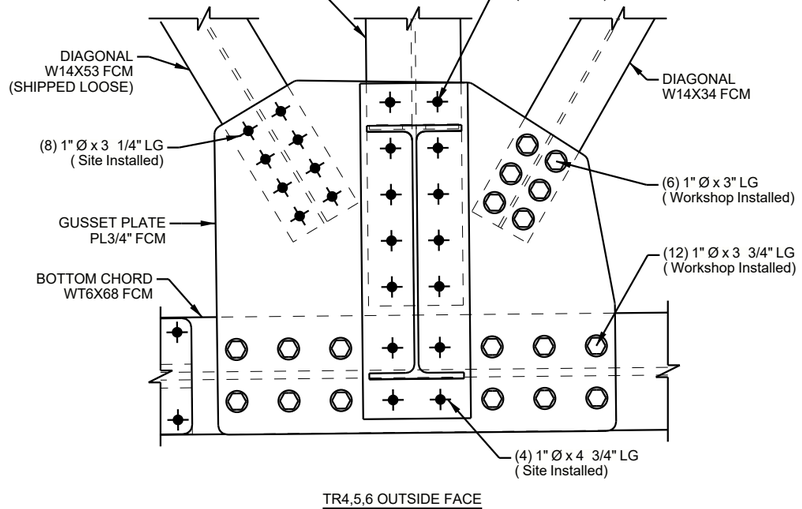
C L6/6 GUSSET CONNECTION
TYP BOTH FACES (4) LOCATIONS



TYP ALL INSIDE FACE



TR1,2,3 OUTSIDE FACE



TR4,5,6 OUTSIDE FACE

C B L7/6 GUSSET CONNECTION
TYP (4) LOCATIONS

B NOTE:
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INSIDE/OUTSIDE FACE

CONTRACTOR NOTE:
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NOTICE:
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MICHAEL HEMANN
PE.0060434
PROFESSIONAL ENGINEER

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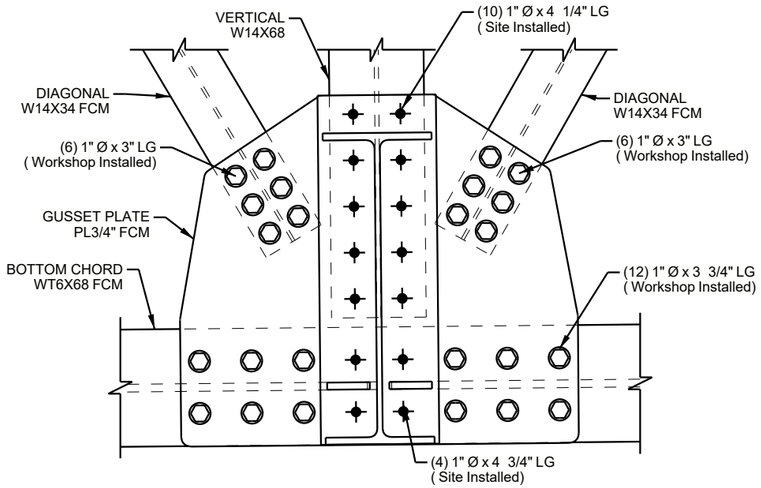
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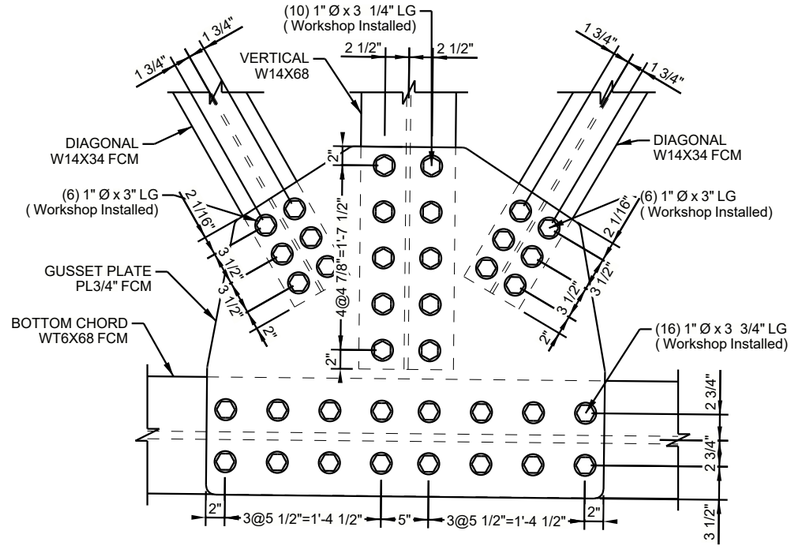
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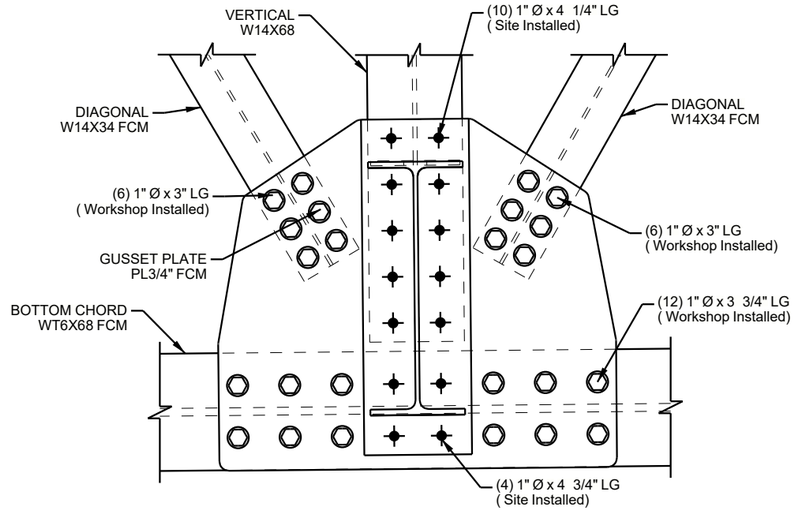
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TYP ALL INSIDE FACE



TYP ALL INSIDE FACE



TR4,5,6 OUTSIDE FACE

B NOTE:
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CONTRACTOR NOTE:
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PE.0060434
PROFESSIONAL ENGINEER

C B L9/6 GUSSET CONNECTION
TYP (4) LOCATIONS

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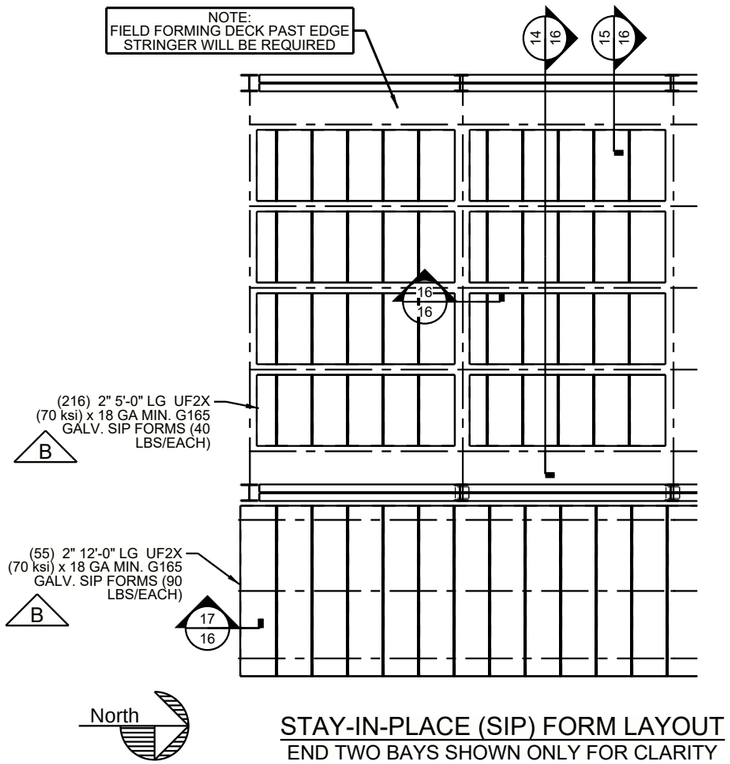
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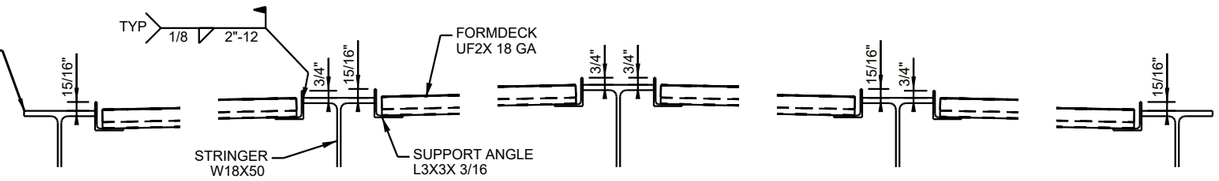
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STAY-IN-PLACE (SIP) FORM LAYOUT

END TWO BAYS SHOWN ONLY FOR CLARITY

NOTE:
FIELD FORMING DECK PAST EDGE
STRINGER WILL BE REQUIRED



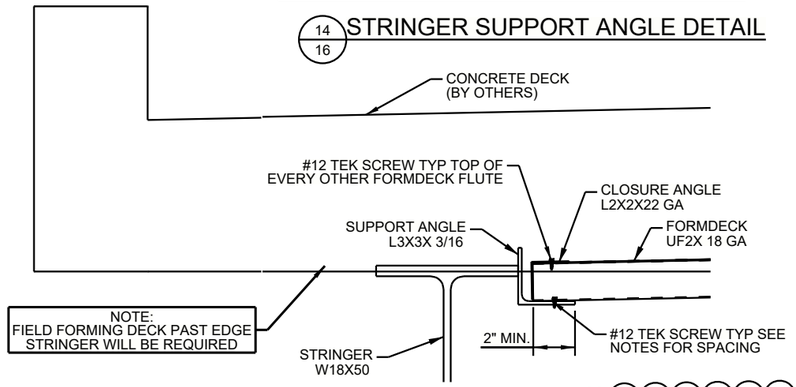
CONTRACTOR NOTE:
DIMENSIONS ARE FROM TOP OF STRINGER TO TOP OF SUPPORT ANGLE AND ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING THE FINISHED ROADWAY GRADES AS REQUIRED

14/16 STRINGER SUPPORT ANGLE DETAIL

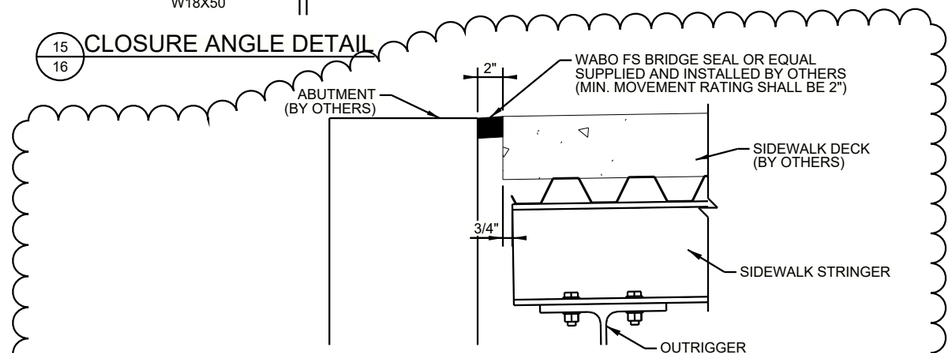
NOTE:
L2X2X22GA GALV CLOSURE ANGLES
SHIPPED IN 10'-0" LG SECTIONS
L3X3X 3/16 SUPPORT ANGLES
SHIPPED IN 40'-0" LG SECTIONS

CONTRACTOR NOTE:
SIP DECKING WILL REQUIRE CUTTING TO FIT BETWEEN FLOOR BEAMS & END FLOOR BEAMS. FIELD FORMING WILL BE REQIRED AT THESE LOCATIONS

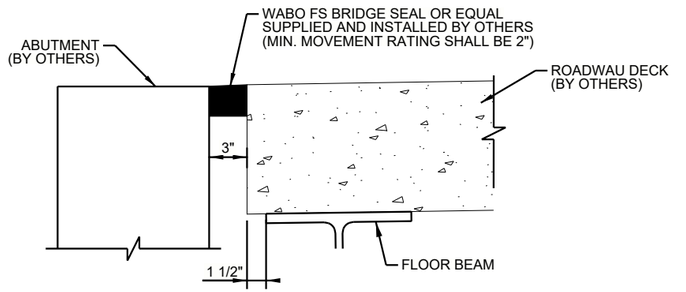
CONTRACTOR OWNER NOTE:
FIELD FORMING EDGES AND ENDS OF BOTH SIDEWALK AND TRUSS DECK SUPPLIED AND INSTALLED BY OTHERS. EXPANSION JOINT/SEAL TO BE SUPPLIED AND INSTALLED BY OTHERS.



15/16 CLOSURE ANGLE DETAIL



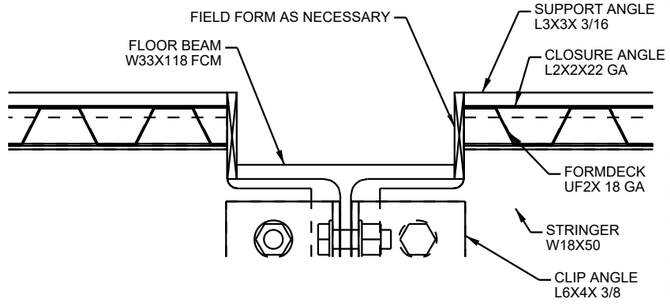
D 17/16 SIDEWALK JOINT DETAIL



D 18/16 ROADWAY JOINT DETAIL

STAY-IN-PLACE (SIP) FORM INSTALLATION NOTES

1. THE CONTRACTOR MUST EXERCISE CARE TO CONTROL TRAFFIC AND STORAGE OF MATERIALS ON THE FORM DECK BEFORE CONCRETE IS PLACED.
2. SIP FORM SUPPORTS SHALL BE INSTALLED AS DETAILED PRIOR TO SIP FORM INSTALLATION.
3. SIP FORM DECK SHALL BE TIGHT FITTING WITH A GAP NO LARGER THAN 1/4" IN ANY DIRECTION.
4. SIP FORM DECK SHALL BEAR A MINIMUM OF 2" ON ALL SUPPORTS.
5. SIP FORM DECK SHALL BE FIELD ATTACHED TO DECK SUPPORTS WITH #12-24 X 1 1/4" SELF-DRILLING FASTENERS WITH 1" O.D. WASHERS, 1" x 3/16" POWER ACTUATED FASTENERS, OR 5/8" PUDDLE WELDS. SUPPLIED AND INSTALLED BY OTHERS
   a. SIP DECK SHALL BE ATTACHED ALONG SUPPORT MEMBERS AS FOLLOWS.
      i. UF2X – 30/3 FASTENER PATTERN
   b. SIP DECK SHALL BE ATTACHED ALONG SIDELAPS @ 1'-6" O.C. MAX.
6. SIP FORMS SHALL BE FASTENED TO SUPPORTS IMMEDIATELY AFTER PLACEMENT TO FORM A SAFE WORKING PLATFORM.
7. CONCRETE SHALL NOT BE DUMPED ON SIP FORMS TO A DEPTH GREATER THAN 10" ABOVE THE TOP OF FORM.
8. ADDITIONAL CONCRETE REQUIRED DUE TO INCORRECTLY INSTALLED SIP FORMS OR ACCESSORIES SHALL BE AT THE EXPENSE OF THE CONTRACTOR.



16/16 FIELD FORMING AT FLOOR BEAM

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MICHAEL HEMANN
PE.0060434
PROFESSIONAL ENGINEER

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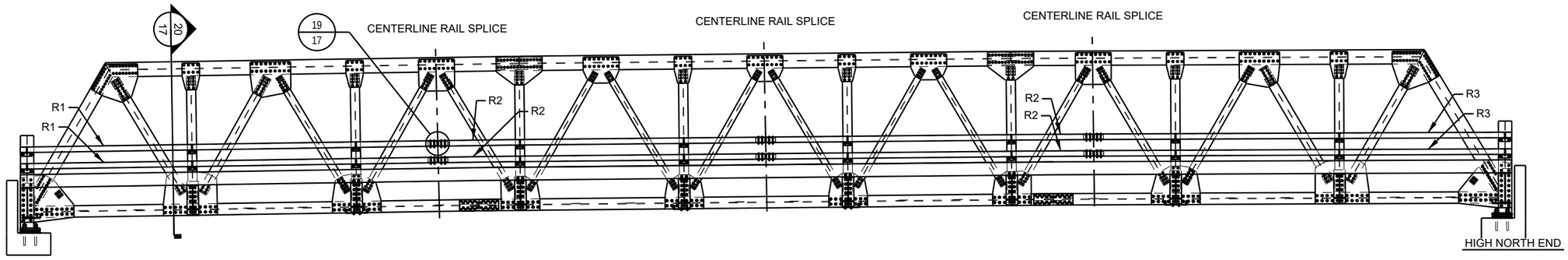
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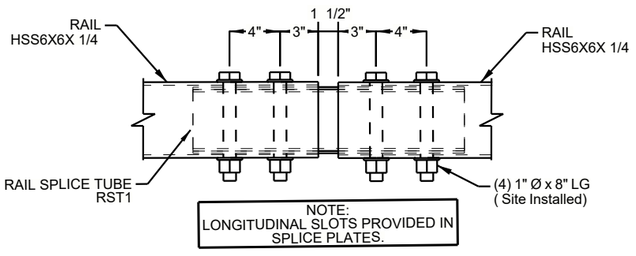
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662583	010	02/14/2022
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CHECKED: MJH	APPROVED: MJH	
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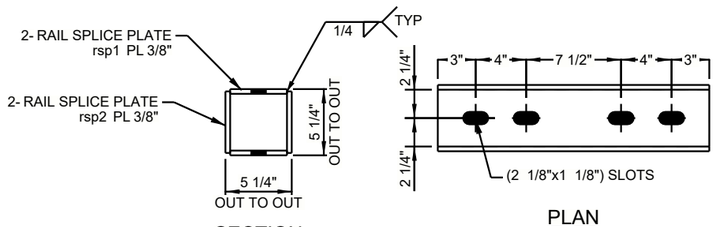
INSTALLATION NOTE:
VEHICULAR GUARDRAILS SHALL BE SHIPPED LOOSE FOR FIELD INSTALLATION AFTER BRIDGE ERECTION (BY OTHERS). RAILS SHALL BE INSTALLED AFTER THE CONCRETE DECK HAS BEEN POURED TO INSURE PROPER ALIGNMENT.

TRUSS MOUNTED GUARDRAIL ELEVATION
(LOOKING AT INSIDE FACE)

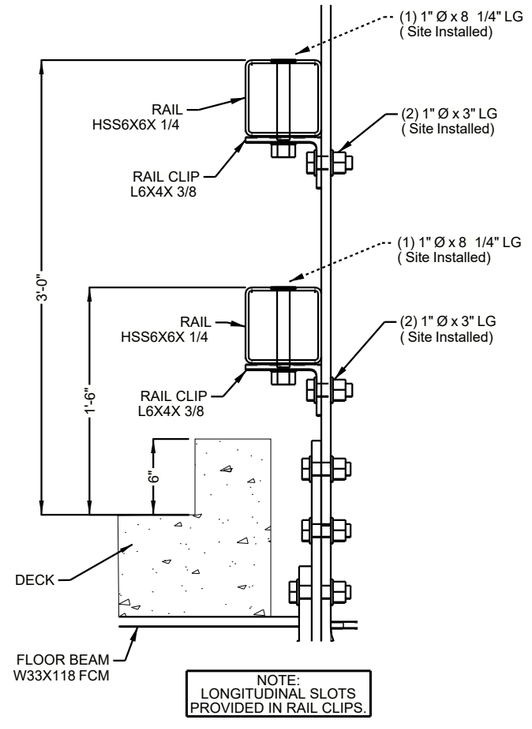


NOTE:
LONGITUDINAL SLOTS PROVIDED IN SPLICE PLATES.

19/17 RAIL SPLICE



12 ~ RST1



NOTE:
LONGITUDINAL SLOTS PROVIDED IN RAIL CLIPS.

20/17 RAIL CONNECTION
TYP ALL VERTICALS

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MICHAEL HEMANN
PE.0050434
PROFESSIONAL ENGINEER

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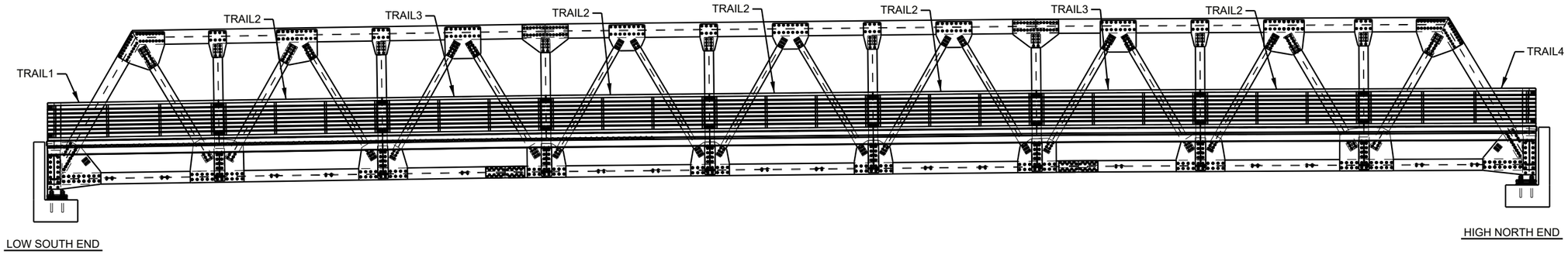
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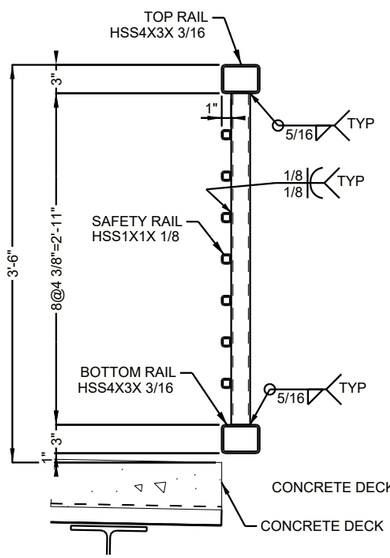
135'-0 1/2" x 28'-2"
SANTA FE SOUTH
VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

PROJECT No.:	SEQ. No.:	DATE:
662583	010	02/14/2022
DESIGNED: MJH	DRAWN: TJW	
CHECKED: MJH	APPROVED: MJH	
SHEET NO.: 17 OF 19		

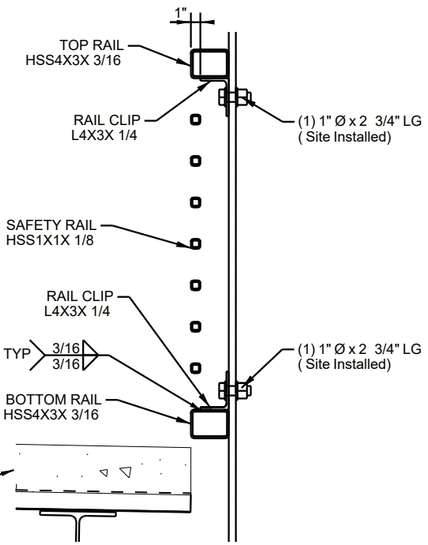
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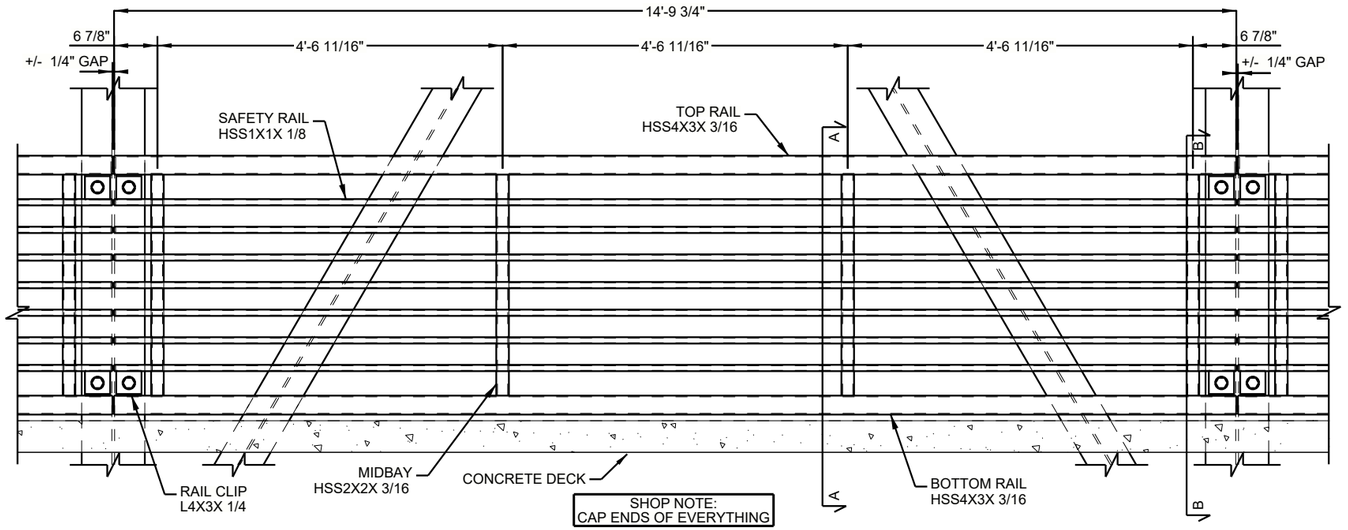
TRUSS MOUNTED SAFETY RAIL ELEVATION



SECTION A-A
TYP MIDBAY



SECTION B-B
TYP EACH VERTICAL



SINGLE BAY RAIL DETAIL
(SIMILAR AT ENDS)

NOTE:
LONGITUDINAL SLOTS PROVIDED IN RAIL CLIPS.

INSTALLATION NOTE:
PEDESTRIAN RAIL SECTIONS SHALL BE SHIPPED LOOSE FOR FIELD INSTALLATION AFTER BRIDGE ERECTION (BY OTHERS). RAILS SHALL BE INSTALLED AFTER THE CONCRETE DECK HAS BEEN POURED TO INSURE PROPER ALIGNMENT.

01/26/2023

COLORADO REGISTERED
MICHAEL HEMANN
PE.0050434
PROFESSIONAL ENGINEER

AISC CERTIFIED FABRICATOR

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MARK	DATE	REVISION DESCRIPTION	BY
D	01/26/2023	REVISED AS NOTED	TJW
C	10/25/2022	NO CHANGES THIS SHEET	TJW
B	06/30/2022	NO CHANGES THIS SHEET	TJW
A	05/11/2022	REVISED AS NOTED	TJW
-	02/14/2022	INITIAL SUBMITTAL	TJW

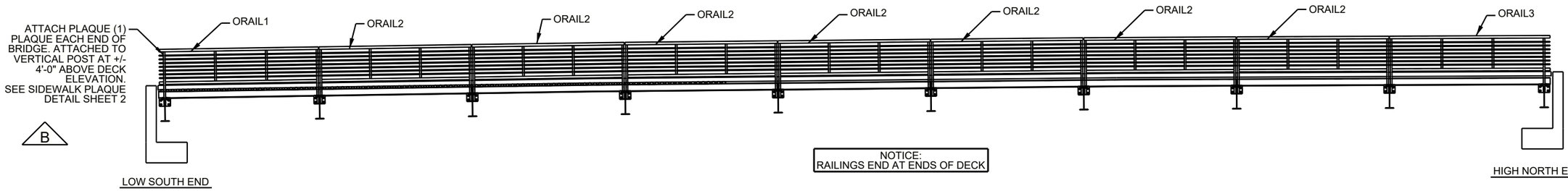
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www.ContechES.com
19060 Cr 66 Greeley, CO 80631
800-328-2047 320-345-9126 320-566-3148 FAX

STEADFAST BRIDGES
CONTECH
CONTRACT
DRAWING

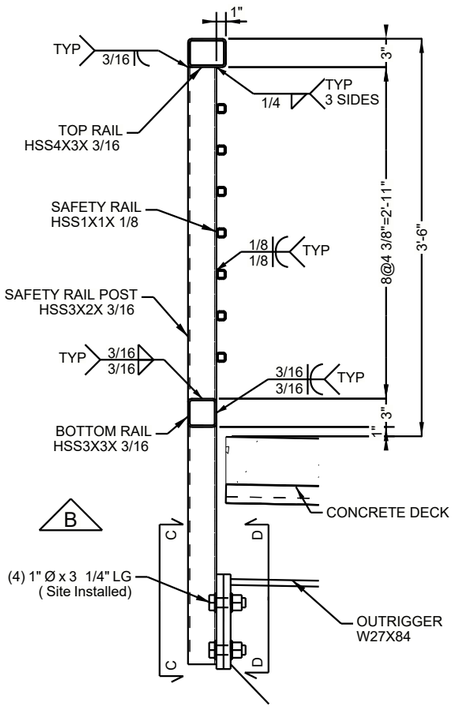
135'-0 1/2" x 28'-2"
SANTA FE SOUTH
VEHICULAR TRUSS - COLONIAL FLAT
LITTLETON, CO

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662583	010	02/14/2022
DESIGNED: MJH	DRAWN: TJW	
CHECKED: MJH	APPROVED: MJH	
SHEET NO.: 18 OF 19		

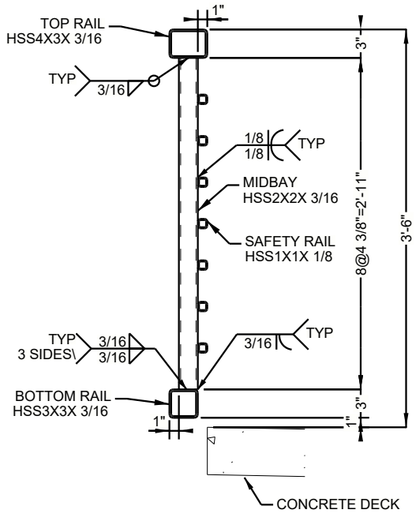
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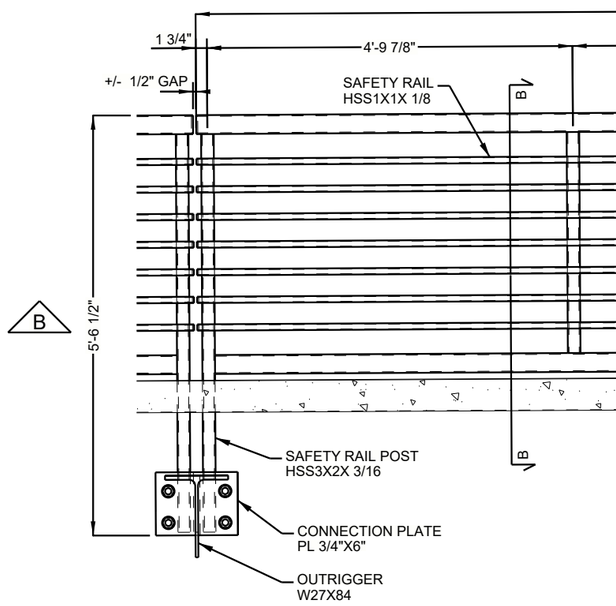
OUTRIGGER MOUNTED SAFETY RAILS



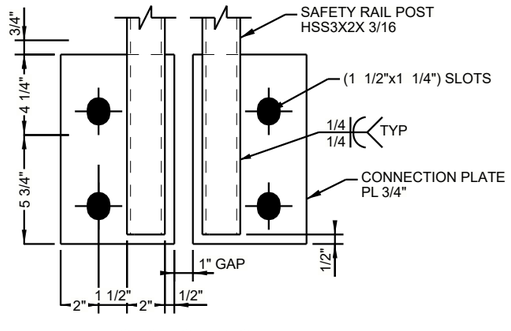
SECTION A-A
TYP EACH OUTRIGGER



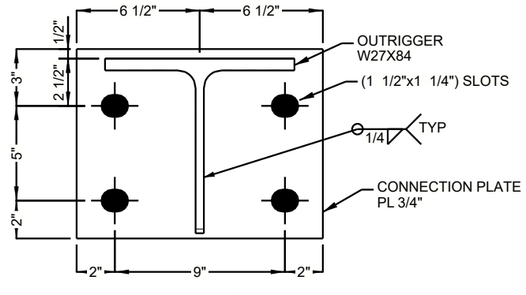
SECTION B-B
TYP MIDBAY



SHOP NOTE:
CAP ENDS OF ALL MEMBERS



SECTION C-C



SECTION D-D

SINGLE BAY RAIL DETAIL
(SIMILAR AT ENDS)

INSTALLATION NOTE:
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01/26/2023
COLORADO REGISTERED
MICHAEL HEMANN
PE.0060434
PROFESSIONAL ENGINEER

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STEADFAST BRIDGES
CONTECH CONTRACT DRAWING

135'-0 1/2" x 28'-2"
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SHEET NO.: 19 OF 19		

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APPENDIX G
Fence Plans

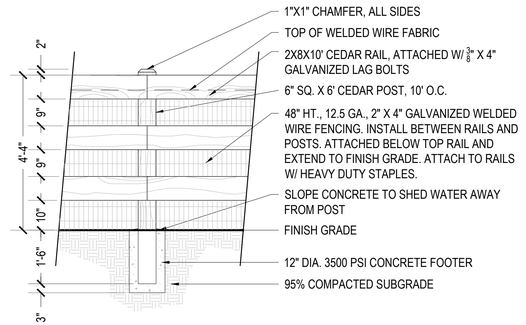
SANTA FE PARK SOUTH SITE DEVELOPMENT PLAN

SANTA FE PARK SOUTH SUBDIVISION FILING No. 1
EAST HALF OF SECTION 31 AND THE WEST HALF OF SECTION 32, TOWNSHIP 5 SOUTH,
RANGE 68 WEST OF THE 6TH PRINCIPAL MERIDIAN., CITY OF LITTLETON,
COUNTY OF ARAPAHOE, STATE OF COLORADO
PORTIONS OF ZONE PARCELS C AND G AND ALL OF ZONE PARCEL F, H, AND I
OF THE SANTA FE PARK GENERAL PLANNED DEVELOPMENT PLAN
61.984 ACRES
CASE NUMBER: SDP 20-0007

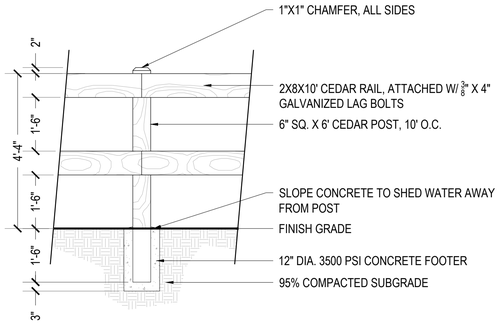


1 MASTER FENCING PLAN
Scale: 1'=100"

SCALE: 1"=100'
0 50 100 200 NORTH



2 3 RAIL FENCE
Scale: NTS



3 2 RAIL FENCE
Scale: NTS

pcs group inc.
p.o. box 19527
denver, co 80219
t 303.531.4905 f 303.531.4906
www.pcsgroupco.com
people creating spaces
pcs group inc.

TOLL BROTHERS
10 INVERNESS DRIVE, SUITE 125
ENGLEWOOD, CO 80112
ATTN: GREG SAIA
PHONE: (303)-708-0730 X 225

SANTA FE PARK SOUTH
SITE DEVELOPMENT PLAN
MASTER FENCING PLAN

SCALE: AS SHOWN
FILE NO: 8.13.0325602
DRAWN BY: PCS
CHECKED BY: PMS
DATE: 11.16.2022

No.	Revisions	Date

SHEET NUMBER 47

CALL 811
TWO WORKING DAYS
BEFORE YOU DIG
1-800-922-1987
UNCC UTILITY NOTIFICATION CENTER OF COLORADO

Staff Communication

File #: ID# 25-116, **Version:** 1

Agenda Date: 05/20/2025

Subject:
Motion to approve Council recommended appointments to the 2025-2026 Charter Review Committee

From:	James L. Becklenberg, City Manager
Prepared by:	Colleen L. Norton, City Clerk
Presentations:	N/A

PURPOSE:
Does council support formal appointment of members to the Charter Review Committee (CRC)?

LONG-TERM OUTCOME(S) SERVED:
High-Quality Governance

DISCUSSION:
The Littleton City Charter, Sec. 124, directs that council shall periodically appoint/convene a Charter Review Committee to perform a comprehensive review of all charter sections and make recommendations to council for amendments and deletions; it has been more than 10 years since a Charter Review Committee was convened.

BACKGROUND:
Creation of the 2025-2026 Charter Review Committee (CRC) was formally adopted by Resolution 39-2025. Staff has requested that each council member provide the names of not-less-than two City of Littleton residents to form the CRC, which shall serve in an advisory capacity to council, reviewing existing charter sections and making recommendations to council on revisions based on best practices in similar municipalities, any adopted legislation that now makes a section(s) contradictory, or other clean-up as needed. Each council member provided names of citizens, ensuring there is ample support from all districts, as well as at-large.

Prior Actions or Discussions
April 8, 2025, study session: Council was provided background on the last CRC convened in 2013/2014. Council provided direction to staff to bring forward a resolution to convene a new CRC.

April 15, 2025, regular meeting: Council approved Resolution 39-2025, approving the creation of a Charter Review Committee.

FISCAL IMPACTS:
While there are no direct costs associated with the creation of the CRC, some recommendations from the committee may require community outreach and education for which there would costs associated with that process. Any recommended changes to the charter put forth as ballot measures would also incur a cost

associated with the shared expense of a coordinated election.

STAFF RECOMMENDATION:
Staff recommends formal appointment of all CRC members.

ALTERNATIVES:
N/A

PROPOSED MOTION:
I move to approve Council recommended appointments to the 2025-2026 Charter Review Committee.

2025-2026 Charter Review Committee		
City Council Appointees		
Mayor Schlachter	Debbie Brinkman	Pat Cronenberger
Mayor Pro Tem Barr	Sarah Hernandez	Phil McCart
Council Member Driscoll	Carrie Wheeler	John Schmidt
Council Member Grove	Kent Bagley	Carol Brzeczek
Council Member Peters	Jose Briones	Billy Gooch
Council Member Reichardt	Phil Cooper	Dan Curran
Council Member Zink	Tamsen Sear	Denise Weed

Staff Communication

File #: Resolution 54-2025, **Version:** 1

Agenda Date: 05/20/2025

Subject:
Resolution 54-2025: Approving an IGA between the Colorado Department of Human Services and the Littleton Police Department for Co-Responder Programs

From:	James L. Becklenberg, City Manager
Prepared by:	Doug Stephens, Chief of Police
Presentations:	N/A

PURPOSE:
This IGA addresses the acceptance and use of grant funds awarded to the LPD by the Colorado Department of Human Services for the department's Co-Responder Program.

LONG-TERM OUTCOME(S) SERVED:
Safe Community

DISCUSSION:
The IGA details requirements for both parties regarding grant funding awarded to the LPD for reimbursement of expenses related to the department's Co-Responder Program. The LPD was awarded $108,535 in grant funding for the 2025 State of Colorado fiscal year (7/1/25 - 6/30/26).

BACKGROUND:
The LPD has operated a successful Co-Responder Program since 2018 in partnership with AllHealth Network. Co-Responders are licensed mental health clinicians who accompany LPD officers on calls for service related to individuals experiencing mental health crises. Over the years the Co-Responder Program has expanded from one part-time Co-Responder to its current staffing of two full-time Co-Responders and a full-time Crisis Case Manager. The goal of the Co-Responder Program is to provide immediate access to mental health services, including crisis de-escalation, for those in need at the time of the crisis. Research has shown immediate access to services has been beneficial in reducing repeat calls for chronic service users, as well as being more successful in long-term solutions for those in need.

Funding for the Co-Responder Program has been a collaborative effort between the City of Littleton and AllHealth Network. A significant portion of AllHealth's funding has come from a state grant for mental health services. The city's funding has been provided through the general fund as part of the police department's annual budget allocation. For fiscal year 2025, the State of Colorado Department of Human Services elected to stop awarding this type of grant funding to private entities and instead award it to county and municipal agencies who participate in Co-Responder Programs. In our case, essentially the state has transferred their grant funding from AllHealth directly to the police department. The funding will be used to reimburse a portion of the costs associated with the department's Co-Responder Program, including staffing for Co-Responders and

Crisis Case Managers.

FISCAL IMPACTS:
The police department currently contracts with AllHealth Network to provide licensed clinicians to serve as Co-Responders and Crisis Case Managers. The department's 2025 (1/1/25 - 12/31/25) contract with AllHealth is $248,612 ($98,457 Jan-Jun and $150,155.34 Jul-Dec). The second half of the year's contract was contingent on the LPD receiving the grant funding in this IGA and that funding is figured into the increased cost compared to the first half of the contract. This grant funding becomes available for use 7/1/25 and will be used to offset costs for the AllHealth contract after that date.

There is no fiscal impact, either positive or negative, as this grant funding had previously been awarded to AllHealth and resulted in a lesser cost for their services to the department. Now that the funding is awarded to the police department, AllHealth has passed on the equivalent increase in costs for their services due to their loss of the grant funding.

STAFF RECOMMENDATION:
Staff recommends approval of the resolution approving an IGA between the Colorado Department of Human Services and the Littleton Police Department for Co-Responder Programs.

ALTERNATIVES:
N/A

PROPOSED MOTION:
I move to approve Resolution 54-2025 approving an IGA between the Colorado Department of Human Services and the Littleton Police Department for Co-Responder Programs.

CITY OF LITTLETON, COLORADO

Resolution No. 54

Series, 2025

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LITTLETON, COLORADO, APPROVING AN IGA BETWEEN THE COLORADO DEPARTMENT OF HUMAN SERVICES AND THE LITTLETON POLICE DEPARTMENT FOR CO-RESPONDER PROGRAMS

WHEREAS, the Littleton Police Department seeks to provide valuable crisis intervention services to community members experiencing mental health crises; and

WHEREAS, the Littleton Police Department operates a Co-Responder Program in partnership with AllHealth Network that utilizes licensed mental health clinicians and crisis case managers to provide immediate mental health services to community members experiencing mental health crises; and

WHEREAS, the Colorado Department of Human Services has provided grant funding to the Littleton Police Department to offset costs associated with the department's Co-Responder Program; and

WHEREAS, the Littleton Community benefits from the Co-Responder Program's ability to provide essential crisis intervention services.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF LITTLETON, COLORADO, THAT:

The Intergovernmental Agreement between the Colorado Department of Human Services and the Littleton Police Department for Co-Responder Programs is hereby approved.

INTRODUCED, READ AND ADOPTED at a regularly scheduled meeting of the City Council of the City of Littleton, Colorado, on the 20th day of May 2025, at 6:30 p.m. at the Littleton Center, 2255 West Berry Avenue, Littleton, Colorado.

ATTEST:

_____	_____
Colleen L. Norton	Kyle Schlachter
CITY CLERK	MAYOR

APPROVED AS TO FORM:

_____
Reid Betzing
CITY ATTORNEY

COLORADO
Financial Services
Department of Human Services
Division of Contracts and Procurement

State of Colorado
Department of Human Services Contract

Signature and Cover Pages

CMS #:
26 IBEH 198176

eClearance#:
2505579

State Agency
Colorado Department of Human Services
Behavioral Health Administration

Contract Maximum Amount
Initial Term
State Fiscal Year 2026 $108,535.00

Extension Terms
None

Maximum Amount for
All Fiscal Years $108,535.00

Pricing/Funding
Price Structure: Cost Reimbursement
Contractor shall invoice: Monthly
Fund Source: State General Fund

Contractor
City of Littleton for the use and benefit of the Littleton Police Department

Contractor's State of Incorporation: CO

Contract Performance Beginning Date
The later of the Effective Date or July 1, 2025

Initial Contract Expiration Date
June 30, 2026

Except as stated in **§2.D**, the total duration of this Contract, including the exercise of any options to extend, shall not exceed 5 Years from its Performance Beginning Date.

Options
The State shall have the following options if indicated with "Yes," as further described in §2.C and §5.B.v:
Option to Extend Term per §2.C: Yes.
Option to Increase or Decrease Maximum Amount per §5.B.v: Yes.

Insurance

Contractor shall maintain the following insurance if indicated with "Yes," as further described in §10:

Worker's Compensation: Yes
General Liability: Yes
Automobile Liability: Yes
Protected Information: Yes
Professional Liability Insurance: Yes
Cyber/Net. Security-Privacy Liability Insurance: No
Crime Insurance: No

State Representative

Monique Maurice, Chief Financial Officer
Behavioral Health Administration
710 South Ash Street C140
Denver CO 80204
monique.maurice@state.co.us

Miscellaneous

Authority to enter into this Contract exists in: C.R.S. 27-60-104
Law-Specified Vendor Statute (if any): N/A
Procurement Method: Request for Proposal
Solicitation Number (if any): RFP IBEH 2025*152

Contractor Representative

Doug Stephens, Chief of Police
Littleton Police Department
2255 West Berry Avenue
Littleton, CO 80120
dstephens@littletongov.org

Exhibits

The following Exhibits are attached and incorporated into this Contract:
Exhibit A – Statement of Work
Exhibit B – Budget
Exhibit C – Miscellaneous Provisions
Exhibit D – HIPAA BAA

Contract Purpose

The purpose of this project is to create, sustain, or expand Co-Responder Programs, which dispatch behavioral health Co-Responders along with law enforcement, or provide a joint secondary response on calls for service wherein behavioral health appears to be a relevant factor.

Signature Page Begins on Next Page

The rest of this page is intentionally left blank.

COLORADO
Financial Services
Department of Human Services
Division of Contracts and Procurement

The parties hereto have executed this contract

Each person signing this Contract represents and warrants that he or she is duly authorized to execute this Contract and to bind the Party authorizing his or her signature.

Contractor

City of Littleton for the use and benefit of the Littleton Police Department

_____

By: Kyle Schlachter, Mayor

Date: _____

Approved as to form:

_____

By: Reid Betzing, City Attorney

Date: _____

State of Colorado

Jared S. Polis, Governor
Department of Human Services
Michelle Barnes, Executive Director

_____

By: Dannette R. Smith, Commissioner
Behavioral Health Administration

Date: _____

In accordance with §24-30-202 C.R.S., this Contract is not valid until signed and dated below by the State Controller or an authorized delegate.

State Controller

Robert Jaros, CPA, MBA, JD

_____

By: Telly Belton/Toni Williamson/Amanda Rios

Effective Date:_____

-- Signature and Cover Pages End --

COLORADO
Financial Services
Department of Human Services
Division of Contracts and Procurement

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1. Parties

This Contract is entered into by and between Contractor named on the Signature and Cover Pages for this Contract (the "Contractor"), and the STATE OF COLORADO acting by and through the Department of Human Services (the "State" or "CDHS"). Contractor and the State agree to the terms and conditions in this Contract.

2. Term and Effective Date

A. Effective Date

This Contract shall not be valid or enforceable until the Effective Date. The State shall not be bound by any provision of this Contract before the Effective Date, and shall have no obligation to pay Contractor for any Work performed or expense incurred before the Effective Date or after the expiration or sooner termination of this Contract.

B. Initial Term

The Parties' respective performances under this Contract shall commence on the Contract Performance Beginning Date shown on the Signature and Cover Pages for this Contract and shall terminate on the Initial Contract Expiration Date shown on the Signature and Cover Pages for this Contract (the "Initial Term") unless sooner terminated or further extended in accordance with the terms of this Contract.

C. Extension Terms – State's Option

If the Signature and Cover Pages for this Contract shows that the State has the Option to Extend Term, then the State, at its discretion, shall have the option to extend the performance under this Contract beyond the Initial Term for a period, or for successive periods, at the same rates and under the same terms specified in the Contract (each such period an "Extension Term"). In order to exercise this option, the State shall provide written notice to Contractor in a form substantially equivalent to §23 "Sample Option Letter." The State may include and incorporate a revised budget with the option letter, as long as the revised budget does not unilaterally change rates or terms specified in the Contract. Except as stated in §2.D, the total duration of this Contract, including the exercise of any options to extend, shall not exceed 5 years from its Performance Beginning Date, or the number of years specified on the Signature and Cover Pages if such number is less than 5 years, absent prior approval from the Chief Procurement Officer in accordance with the Colorado Procurement Code.

D. End of Term Extension

If this Contract approaches the end of its Initial Term, or any Extension Term then in place, the State, at its discretion, upon written notice to Contractor as provided in §15, may unilaterally extend such Initial Term or Extension Term for a period not to exceed 2 months (an "End of Term Extension" or "Holdover"), regardless of whether additional Extension

Terms are available or not. Any such extension shall be under the same terms and conditions of the operative Contract including, but not limited to, prices, rates, and service delivery requirements. The provisions of this Contract in effect when such notice is given shall remain in effect during the End of Term Extension. The End of Term Extension shall automatically terminate upon execution of a replacement contract or modification extending the total term of the Contract.

E. Early Termination in the Public Interest

The State is entering into this Contract to serve the public interest of the State of Colorado as determined by its Governor, General Assembly, or Courts. If this Contract ceases to further the public interest of the State, the State, in its discretion, may terminate this Contract in whole or in part. A determination that this Contract should be terminated in the public interest shall not be equivalent to a State right to terminate for convenience. This subsection shall not apply to a termination of this Contract by the State for Breach of Contract by Contractor, which shall be governed by §12.A.i.

i. Method and Content

The State shall notify Contractor of such termination in accordance with §15. The notice shall specify the effective date of the termination and whether it affects all or a portion of this Contract, and shall include, to the extent practicable, the public interest justification for the termination.

ii. Obligations and Rights

Upon receipt of a termination notice for termination in the public interest, Contractor shall be subject to the rights and obligations set forth in §12.A.i.a.

iii. Payments

If the State terminates this Contract in the public interest, the State shall pay Contractor an amount equal to the percentage of the total reimbursement payable under this Contract that corresponds to the percentage of Work satisfactorily completed and accepted, as determined by the State, less payments previously made. Additionally, if this Contract is less than 60% completed, as determined by the State, the State may reimburse Contractor for a portion of actual out-of-pocket expenses, not otherwise reimbursed under this Contract, incurred by Contractor which are directly attributable to the uncompleted portion of

Contractor's obligations, provided that the sum of any and all reimbursement shall not exceed the maximum amount payable to Contractor hereunder.

3. Definitions

The following terms shall be construed and interpreted as follows:

A. **"Breach of Contract"** means the failure of a Party to perform any of its obligations in accordance with this Contract, in whole or in part or in a timely or satisfactory manner. The institution of proceedings under any bankruptcy, insolvency, reorganization, or similar law, by or against Contractor, or the appointment of a receiver or similar officer for Contractor or any of its property, which is not vacated or fully stayed within 30 days after the institution of such proceeding, shall also constitute a breach. If Contractor is debarred or suspended under § 24-109-105, C.R.S. at any time during the term of this Contract, then such debarment or suspension shall constitute a breach.

B. **"Business Day"** means any day in which the State is open and conducting business, but shall not include Saturday, Sunday or any day on which the State observes one of the holidays as listed in § 24-11-101(1) C.R.S.

C. **"Chief Procurement Officer"** means the individual to whom the Executive Director has delegated his or her authority pursuant to § 24-102-202, C.R.S. to procure or supervise the procurement of all supplies and services needed by the State.

D. **"CJI"** means criminal justice information collected by criminal justice agencies needed for the performance of their authorized functions, including, without limitation, all information defined as criminal justice information by the U.S. Department of Justice, Federal Bureau of Investigation, Criminal Justice Information Services Security Policy, as amended and all Criminal Justice Records as defined under 24-72-302 C.R.S.

E. **"Contract"** means this agreement, including all attached Exhibits, all documents incorporated by reference, all referenced statutes, rules and cited authorities, and any future modifications thereto. For purposes of clarification and the removal of any doubt, subject to any future modifications thereto, the Signature and Cover Pages and Sections 1 through 21, as identified in the Table of Contents herein above, shall constitute the "main body" of this Contract exclusively.

F. **"Contract Funds"** means the funds that have been appropriated, designated, encumbered, or otherwise made available for payment by the State under this Contract.

G. **"CORA"** means the Colorado Open Records Act, § § 24-72-200.1 et. seq., C.R.S.

H. **"Deliverable"** means the outcome to be achieved or output to be provided, in the form of a tangible object or software that is produced as a result of Contractor's Work that is intended to be delivered to the State by the Contractor.

I. **"Effective Date"** means the date on which this Contract is approved and signed by the Colorado State Controller or designee, as shown on the Signature Page for this Contract. If this Contract is for a Major Information Technology Project, as defined in §24-37.5-102(2.6), then Effective Date of this Contract shall be the later of the date on which this Contract is approved and signed by the State's Chief Information Officer or authorized delegate or the date on which this Contract is approved and signed by the State Controller or authorized delegate, as shown on the Signature and Cover Page for this Contract.

J. **"End of Term Extension"** means the time period defined in §2.D.

K. **"Exhibits"** means the exhibits and attachments included with this Contract as shown on the Signature and Cover Pages for this Contract.

L. **"Extension Term"** means the time period defined in §2.C.

M. **"Goods"** means any movable material acquired, produced, or delivered by Contractor as set forth in this Contract and shall include any movable material acquired, produced, or delivered by Contractor in connection with the Services.

N. **"Incident"** means any accidental or deliberate event that results in or constitutes an imminent threat of the unauthorized access, loss, disclosure, modification, disruption, or destruction of any communications or information resources of the State, which are included as part of the Work, as described in §§24-37.5-401, et. seq., C.R.S. Incidents include, without limitation, (i) successful attempts to gain unauthorized access to a State system or State Records regardless of where such information is located; (ii) unwanted disruption or denial of service; (iii) the unauthorized use of a State system for the processing or storage of data; or (iv) changes to State system hardware, firmware, or software characteristics without the State's knowledge, instruction, or consent.

O. **"Initial Term"** means the time period defined in §2.B.

P. **"Party"** means the State or Contractor, and "Parties" means both the State and Contractor.

Q. **"PCI"** means payment card information including any data related to credit card holders' names, credit card numbers, or other credit card information as may be protected by State or federal law.

R. **"PHI"** means any individually identifiable health information, transmitted or maintained in electronic or any form or medium, including but not limited to demographic information,, (i) that relates to the past, present or future physical or mental condition of an individual; the provision of health care to an individual; or the past, present or future payment for the provision of health care to an individual; and (ii) that identifies the individual or with respect to which there is a reasonable basis to believe the information can be used to identify the individual. PHI includes, but is not limited to, any information defined as Individually Identifiable Health Information by the Federal Health Insurance Portability and Accountability Act.

S. **"PII"** means personally identifiable information including, without limitation, any information maintained by the State about an individual that can be used to distinguish or trace an individual's identity, such as name, social security number, date and place of birth, mother's maiden name, or biometric records; and any other information that is linked or linkable to an individual, such as medical, educational, financial, and employment information. PII includes, but is not limited to, all information defined as personally identifiable information in § 24-72-501 and 24-73-101, C.R.S. "PII" shall also mean "Personal Identifying Information" as set forth in § 24-74-102, et. seq., C.R.S.

T. **"Services"** means the services to be performed by Contractor as set forth in this Contract, and shall include any services to be rendered by Contractor in connection with the Goods.

U. **"State Confidential Information"** means any and all State Records not subject to disclosure under CORA. State Confidential Information shall include, but is not limited to, PII, PHI, PCI, Tax Information, CJI, Educational Records, Substance Use Disorder Information, and State personnel records not subject to disclosure under CORA. State Confidential Information shall not include information or data concerning individuals that is not deemed confidential but nevertheless belongs to the State, which has been communicated, furnished, or disclosed by the State to Contractor which (i) is subject to disclosure pursuant to CORA; (ii) is already known to Contractor without restrictions at the time of its disclosure to Contractor; (iii) is or subsequently becomes publicly available without breach of any obligation owed by Contractor to the State; (iv) is disclosed to Contractor, without confidentiality obligations, by a third party who has the right to disclose such information; or (v) was independently developed without reliance on any State Confidential Information.

V. **"State Fiscal Rules"** means the fiscal rules promulgated by the Colorado State Controller pursuant to § 24-30-202(13)(a), C.R.S.

W. **"State Fiscal Year"** means a 12 month period beginning on July 1 of each calendar year and ending on June 30 of the following calendar year. If a single calendar year follows the term, then it means the State Fiscal Year ending in that calendar year.

X. **"State Records"** means any and all State data, information, and records, regardless of physical form, including, but not limited to, information subject to disclosure under CORA.

Y. **"Subcontractor"** means any third-parties engaged by Contractor to aid in performance of the Work.

Z. **"Tax Information"** means federal and State of Colorado tax information including, without limitation, federal and State tax returns, return information, and such other tax-related information as may be protected by federal and State law and regulation. Tax information includes but is not limited to all information defined as federal tax information in Internal Revenue Service Publication 1075.

AA. **"Work"** means the Goods delivered and Services performed pursuant to this Contract.

BB. **"Work Product"** means the tangible and intangible results of the Work, whether finished or unfinished, including drafts. Work Product includes, but is not limited to, documents, text, software (including source code), research, reports, proposals, specifications, plans, notes, studies, data, images, photographs, negatives, pictures, drawings, designs, models, surveys, maps, materials, ideas, concepts, know-how, and any other results of the Work. "Work Product" does not include any material that was developed prior to the Effective Date that is used, without modification, in the performance of the Work.

Any other term used in this Contract that is defined in an Exhibit shall be construed and interpreted as defined in that Exhibit.

4. Statement of Work

Contractor shall complete the Work as described in this Contract and in accordance with the provisions of the Exhibits. The State shall have no liability to compensate Contractor for the delivery of any goods or the performance of any services that are not specifically set forth in this Contract.

5. Payments to Contractor

A. Maximum Amount

Payments to Contractor are limited to the unpaid, obligated balance of the Contract Funds. The State shall not pay Contractor any amount under this Contract that exceeds the Contract Maximum for that term shown on the Signature and Cover Pages for this Contract.

B. Payment Procedures

i. Invoices and Payment

a. The State shall pay Contractor in the amounts and in accordance with the Exhibits.
b. Contractor shall initiate payment requests by invoice to the State, in a form and manner approved by the State. Invoicing is a material component of Contract performance and corresponding Deliverables. Invoices shall be due to the State within 45 days of work performed by the Contractor, unless otherwise stated in the Exhibits hereto. Invoicing shall be done accurately and per any specifications set forth in the Exhibits hereto. Time is of the essence in this regard. If Contractor fails to timely and/or properly invoice the State, the State may not be obligated to pay the bill resulting from said invoice. Failure to timely and/or properly invoice the State is a material breach of this Contract which would be cause for the State to refuse payment and/or terminate the contract on these grounds in whole or in part, at the State's discretion.
c. The State shall pay each invoice within 45 days following the State's receipt of that invoice, so long as the amount invoiced correctly represents Work completed by Contractor and previously accepted by the State during the term that the invoice covers. If the State determines that the amount of any invoice is not correct, then Contractor shall make all changes necessary to correct that invoice.
d. The acceptance of an invoice shall not constitute acceptance of any Work performed or deliverables provided under the Contract.

ii. Interest

Amounts not paid by the State within 45 days of the State's acceptance of the invoice shall bear interest on the unpaid balance beginning on the 45th day at the rate of 1% per month, as required by §24-30-202(24)(a), C.R.S., until paid in full; provided, however, that interest shall not accrue on unpaid amounts that the State disputes in writing. Contractor shall invoice the State separately for accrued interest on delinquent amounts, and the invoice shall reference the delinquent payment, the number of day's interest to be paid and the interest rate.

iii. Payment Disputes

If Contractor disputes any calculation, determination or amount of any payment, Contractor shall notify the State in writing of its dispute within 30 days following the earlier to occur of Contractor's receipt of the payment or notification of the determination or calculation of the payment by the State. The State will review the information presented by Contractor and may make changes to its determination based on this review. The calculation, determination or payment amount that results from the State's review shall not be subject to additional dispute under this subsection. No payment subject to a dispute under this subsection shall be due until after the State has concluded its review, and the State shall not pay any interest on any amount during the period it is subject to dispute under this subsection.

iv. Available Funds-Contingency-Termination

The State is prohibited by law from making commitments beyond the term of the current State Fiscal Year. Payment to Contractor beyond the current State Fiscal Year is contingent on the appropriation and continuing availability of Contract Funds in any subsequent year (as provided in the Colorado Special Provisions). If federal funds or funds from any other non-State funds constitute all or some of the Contract Funds the State's obligation to pay Contractor shall be contingent upon such non-State funding continuing to be made available for payment. Payments to be made pursuant to this Contract shall be made only from Contract Funds, and the State's liability for such payments shall be limited to the amount remaining of such Contract Funds. If State, federal or other funds are not appropriated, or otherwise become unavailable to fund this Contract, the State may, upon written notice, terminate this Contract, in whole or in part, without incurring further liability. The State shall, however, remain obligated to pay for Services and Goods that are delivered and accepted prior to the effective date of notice of termination, and this termination shall otherwise be treated as if this Contract were terminated in the public

interest as described in §2.E.

v. Option to Increase Maximum Amount

If the Signature and Cover Pages for this Contract show that the State has the Option to Increase or Decrease Maximum Amount, then the State, at its discretion, shall have the option to increase or decrease the statewide quantity of Goods and Services based upon the rates established in this Contract, and increase or decrease the maximum amount payable accordingly. In order to exercise this option, the State shall provide written notice to Contractor in a form substantially equivalent to §23 "Sample Option Letter." Delivery of Goods and performance of Services shall continue at the same rates and terms as described in this Contract. The State may include and incorporate a revised budget with the option letter, as long as the revised budget does not unilaterally change rates or terms specified in the Contract.

6. Reporting – Notification

A. Quarterly Reports.

In addition to any reports required pursuant to §17 or pursuant to any other Exhibit, for any contract having a term longer than three months, Contractor shall submit, on a quarterly basis, a written report specifying progress made for each specified performance measure and standard in this Contract. Such progress report shall be in accordance with the procedures developed and prescribed by the State. Progress reports shall be submitted to the State at the time or times specified by the State in this Contract, or, if no time is specified in this Contract, not later than five Business Days following the end of each calendar quarter.

B. Litigation Reporting

If Contractor is served with a pleading or other document in connection with an action before a court or other administrative decision making body, and such pleading or document relates to this Contract or may affect Contractor's ability to perform its obligations under this Contract, Contractor shall, within 5 days after being served, notify the State of such action and deliver copies of such pleading or document to the State's principal representative identified on the Signature and Cover Pages for this Contract.

C. Performance Outside the State of Colorado or the United States, § 24-102-206 C.R.S.

To the extent not previously disclosed in accordance with §24-102-206, C.R.S., Contractor shall provide written notice to the State, in accordance with §15 and in a form designated by the State, within 20 days following the earlier to occur of Contractor's decision to perform Services outside of the State of Colorado or the United States, or its execution of an agreement with a Subcontractor to perform, Services outside the State of Colorado or the United States. Such notice shall specify the type of Services to be performed outside the State of Colorado or the United States and the reason why it is necessary or advantageous to perform such Services at such location or locations, and such notice shall be a public record. Knowing failure by Contractor to provide notice to the State under this section shall constitute a Breach of Contract. This section shall not apply if the Contract Funds include any federal funds.

7. Contractor Records

A. Maintenance

Contractor shall maintain a file of all documents, records, communications, notes and other materials relating to the Work (the "Contractor Records"). Contractor Records shall include all documents, records, communications, notes and other materials maintained by Contractor that relate to any Work performed by Subcontractors, and Contractor shall maintain all records related to the Work performed by Subcontractors required to ensure proper performance of that Work. Contractor shall maintain Contractor Records until the last to occur of:

i. the date three years after the date this Contract expires or is terminated,
ii. final payment under this Contract is made,
iii. the resolution of any pending Contract matters, or
iv. if an audit is occurring, or Contractor has received notice that an audit is pending, the date such audit is completed and its findings have been resolved (the "Record Retention Period").

B. Inspection

Contractor shall permit the State, the federal government, and any duly authorized agent of a governmental entity, to audit, inspect, examine, excerpt, copy and transcribe Contractor Records during the Record Retention Period. Contractor shall make Contractor Records available during normal business hours at Contractor's office or place of business, or

at other mutually agreed upon times or locations, upon no fewer than two Business Days' notice from the State, unless the State determines that a shorter period of notice, or no notice, is necessary to protect the interests of the State.

C. Monitoring

The State, the federal government, and any other duly authorized agent of a governmental agency, in its discretion, may monitor Contractor's performance of its obligations under this Contract using procedures as determined by the State. The State shall monitor Contractor's performance in a manner that does not unduly interfere with Contractor's performance of the Work.

D. Final Audit Report

Contractor shall promptly submit to the State a copy of any final audit report of an audit performed on Contractor's records that relates to or affects this Contract or the Work, whether the audit is conducted by Contractor or a third party.

8. Confidential Information-State Records

A. Confidentiality

Contractor shall keep confidential, and cause all Subcontractors to keep confidential, all State Records, unless those State Records are publicly available. Contractor shall not, without prior written approval of the State, use, publish, copy, disclose to any third party, or permit the use by any third party of any State Records, except as otherwise stated in this Contract, permitted by law or approved in writing by the State. Contractor shall provide for the security of all State Confidential Information in accordance with all policies promulgated by the Colorado Office of Information Security and all applicable laws, rules, policies, publications, and guidelines. If Contractor or any of its Subcontractors will or may receive the following types of data, Contractor or its Subcontractors shall provide for the security of such data according to the following:

i. the most recently promulgated IRS Publication 1075 for all Tax Information and in accordance with the Safeguarding Requirements for Federal Tax Information attached to this Contract as an Exhibit, if applicable,
ii. the most recently updated PCI Data Security Standard from the PCI Security Standards Council for all PCI,
iii. the most recently issued version of the U.S. Department of Justice, Federal Bureau of Investigation, Criminal Justice Information Services Security

Policy for all CJI, and (iv) the federal Health Insurance Portability and Accountability Act for all PHI and the HIPAA Business Associate Agreement attached to this Contract, if applicable. Contractor shall immediately forward any request or demand for State Records to the State's Principal Representative.

B. Other Entity Access and Nondisclosure Agreements

Contractor may provide State Records to its agents, employees, assigns and Subcontractors as necessary to perform the Work, but shall restrict access to State Confidential Information to those agents, employees, assigns and Subcontractors who require access to perform their obligations under this Contract. Contractor shall ensure all such agents, employees, assigns, and Subcontractors sign agreements containing nondisclosure provisions at least as protective as those in this Contract, and that the nondisclosure provisions are in force at all times the agent, employee, assign or Subcontractor has access to any State Confidential Information. Contractor shall provide copies of those signed nondisclosure provisions to the State upon execution of the nondisclosure provisions if requested by the State.

C. Use, Security, and Retention

Contractor shall use, hold and maintain State Confidential Information in compliance with any and all applicable laws and regulations only in facilities located within the United States, and shall maintain a secure environment that ensures confidentiality of all State Confidential Information. Contractor shall provide the State with access, subject to Contractor's reasonable security requirements, for purposes of inspecting and monitoring access and use of State Confidential Information and evaluating security control effectiveness. Upon the expiration or termination of this Contract, Contractor shall return State Records provided to Contractor or destroy such State Records and certify to the State that it has done so, as directed by the State. If Contractor is prevented by law or regulation from returning or destroying State Confidential Information, Contractor warrants it will guarantee the confidentiality of, and cease to use, such State Confidential Information.

D. Incident Notice and Remediation

If Contractor becomes aware of any Incident, Contractor shall notify the State immediately and cooperate with the State regarding recovery, remediation, and the necessity to involve law enforcement, as determined by the State. Unless Contractor can establish that Contractor and its Subcontractors are not the cause or source of the Incident, Contractor shall

be responsible for the cost of notifying each person who may have been impacted by the Incident. After an Incident, Contractor shall take steps to reduce the risk of incurring a similar type of Incident in the future as directed by the State, which may include, but is not limited to, developing and implementing a remediation plan that is approved by the State, at no additional cost to the State. The State may adjust or direct modifications to this plan in its sole discretion, and Contractor shall make all modifications as directed by the State. If Contractor cannot produce its analysis and plan within the allotted time, the State, in its discretion, may perform such analysis and produce a remediation plan, and Contractor shall reimburse the State for the actual costs thereof. The State may, in its sole discretion and at Contractor's sole expense, require Contractor to engage the services of an independent, qualified, State-approved third party to conduct a security audit. Contractor shall provide the State with the results of such audit and evidence of Contractor's planned remediation in response to any negative findings.

E. Data Protection and Handling

Contractor shall ensure that all State Records and Work Product in the possession of Contractor or any Subcontractors are protected and handled in accordance with the requirements of this Contract, including the requirements of any Exhibits hereto, at all times.

F. Safeguarding PII

If Contractor or any of its subcontractors will or may receive PII under this Contract, Contractor shall provide for the security of such PII, in a manner and form acceptable to the State, including, without limitation, State non-disclosure requirements, use of appropriate technology, security practices, computer access security, data access security, data storage encryption, data transmission encryption, security inspections, and audits. Contractor shall be a "third-party service provider" as defined in §24-73-103(1)(i), C.R.S. and shall maintain security procedures and practices consistent with §§24-73-101 et seq., C.R.S. in addition, as set forth in § 24-74-102, et. seq., C.R.S., Contractor, including, but not limited to, Contractor's employees, agents and subcontractors, agrees not to share any PII with any third parties for the purpose of investigating for, participating in, cooperating with, or assisting with federal immigration enforcement. If Contractor is given direct access to any State databases containing PII, Contractor shall execute, on behalf of itself and its employees, the certification described in Section 21 below on an annual basis Contractor's duty and obligation to certify as set forth in Section 21 below shall continue as long as Contractor has direct access to any State databases containing PII. If Contractor uses any subcontractors to perform Services requiring direct access to state databases containing PII, Contractor shall require such subcontractors to

execute and deliver the certification to the State on an annual basis, so long as the subcontractor has access to State databases containing PII.

9. Conflicts of Interest

A. Actual Conflicts of Interest

Contractor shall not engage in any business or activities, or maintain any relationships that conflict in any way with the full performance of the obligations of Contractor under this Contract. Such a conflict of interest would arise when a Contractor or Subcontractor's employee, officer or agent were to offer or provide any tangible personal benefit to an employee of the State, or any member of his or her immediate family or his or her partner, related to the award of, entry into or management or oversight of Contract.

B. Apparent Conflicts of Interest

Contractor acknowledges that, with respect to this Contract, even the appearance of a conflict of interest shall be harmful to the State's interests. Absent the State's prior written approval, Contractor shall refrain from any practices, activities or relationships that reasonably appear to be in conflict with the full performance of Contractor's obligations under this Contract.

C. Disclosure To the State

If a conflict or the appearance of a conflict arises, or if Contractor is uncertain whether a conflict or the appearance of a conflict has arisen, Contractor shall submit to the State a disclosure statement setting forth the relevant details for the State's consideration. Failure to promptly submit a disclosure statement or to follow the State's direction in regard to the actual or apparent conflict constitutes a breach of this Contract.

D. Contractor acknowledges that all state employees are subject to the ethical principles described in §24-18-105, C.R.S. Contractor further acknowledges that state employees may be subject to the requirements of §24-18-105, C.R.S. with regard to this contract.

10. Insurance

Contractor shall obtain and maintain, and ensure that each Subcontractor shall obtain and maintain, insurance as specified in this section at all times during the term of this Contract to the extent that such insurance policies are required as shown on the Signature

and Cover Page for this Contract. All insurance policies required by this Contract shall be issued by insurance companies as approved by the State. These insurance requirements shall not be construed as caps or limitations on liability.

A. Workers' Compensation

Workers' compensation insurance as required by state statute, and employers' liability insurance covering all Contractor or Subcontractor employees acting within the course and scope of their employment.

B. General Liability

Commercial general liability insurance covering premises operations, fire damage, independent contractors, products and completed operations, blanket contractual liability, personal injury, and advertising liability with minimum limits as follows:

i. $1,000,000 each occurrence;
ii. $1,000,000 general aggregate;
iii. $1,000,000 products and completed operations aggregate; and
iv. $50,000 any one fire.

C. Automobile Liability

Automobile liability insurance covering any auto (including owned, hired and non-owned autos) with a minimum limit of $1,000,000 each accident combined single limit.

D. Protected Information

Liability insurance covering all civil, regulatory, and statutory damages, contractual damages, data breach management exposure, and all loss income or extra expense as a result of actual or alleged breach, violation or infringement of a right to privacy, consumer data protection law, confidentiality or other legal protection for personal information as well as State Confidential Information with minimum limits as follows:

i. $1,000,000 each occurrence; and
ii. $2,000,000 general aggregate.
iii. Notwithstanding sections D(i) and (ii) above, if Contractor has State Confidential Information for 10 or fewer individuals or revenues of $250,000 or less, Contractor shall maintain limits of not less than $50,000.

iv. Notwithstanding sections D(i) and (ii) above, if Contractor has State Confidential Information for 25 or fewer individuals or revenues of $500,000 or less, Contractor shall maintain limits of not less than $100,000.

E. Professional Liability Insurance

Professional liability insurance covering any damages caused by an error, omission or any negligent act with minimum limits as follows:

i. $1,000,000 each occurrence; and
ii. $1,000,000 general aggregate.

F. Crime Insurance

Crime insurance including employee dishonesty coverage with minimum limits as follows:

i. $1,000,000 each occurrence; and
ii. $1,000,000 general aggregate.

G. Cyber/Network Security and Privacy Liability

Liability insurance covering civil, regulatory, and statutory damages, contractual damages, data breach management exposure, and any loss of income or extra expense as a result of actual or alleged breach, violation or infringement of right to privacy, consumer data protection law, confidentiality or other legal protection for personal information, as well as State Confidential Information with minimum limits as follows:

i. $1,000,000 each occurrence; and
ii. $2,000,000 general aggregate.

H. Additional Insured

The State shall be named as additional insured on all commercial general liability policies (leases and construction contracts require additional insured coverage for completed operations) required of Contractor and Subcontractors.

I. Primacy of Coverage

Coverage required of Contractor and each Subcontractor shall be primary and noncontributory over any insurance or self-insurance program carried by Contractor or the State.

J. Cancellation

The above insurance policies shall include provisions preventing cancellation or non-renewal, except for cancellation based on non-payment of premiums, without at least 30 days prior notice to Contractor and Contractor shall forward such notice to the State in accordance with §15 within seven days of Contractor's receipt of such notice.

K. Subrogation Waiver

All insurance policies secured or maintained by Contractor or its Subcontractors in relation to this Contract shall include clauses stating that each carrier shall waive all rights of recovery under subrogation or otherwise against Contractor or the State, its agencies, institutions, organizations, officers, agents, employees, and volunteers.

L. Public Entities

If Contractor is a "public entity" within the meaning of the Colorado Governmental Immunity Act, §§24-10-101, et seq., C.R.S. (the "GIA"), Contractor shall maintain, in lieu of the liability insurance requirements stated above, at all times during the term of this Contract such liability insurance, by commercial policy or self-insurance, as is necessary to meet its liabilities under the GIA. If a Subcontractor is a public entity within the meaning of the GIA, Contractor shall ensure that the Subcontractor maintains at all times during the terms of this Contract, in lieu of the liability insurance requirements stated above, such liability insurance, by commercial policy or self-insurance, as is necessary to meet the Subcontractor's obligations under the GIA.

M. Certificates

Contractor shall provide to the State certificates evidencing Contractor's insurance coverage required in this Contract within seven Business Days following the Effective Date. Contractor shall provide to the State certificates evidencing Subcontractor insurance coverage required under this Contract within seven Business Days following the Effective Date, except that, if Contractor's subcontract is not in effect as of the Effective Date, Contractor shall provide to the State certificates showing Subcontractor insurance coverage

required under this Contract within seven Business Days following Contractor's execution of the subcontract. No later than 15 days before the expiration date of Contractor's or any Subcontractor's coverage, Contractor shall deliver to the State certificates of insurance evidencing renewals of coverage. At any other time during the term of this Contract, upon request by the State, Contractor shall, within seven Business Days following the request by the State, supply to the State evidence satisfactory to the State of compliance with the provisions of this section.

11. Breach of Contract

In the event of a Breach of Contract, the aggrieved Party shall give written notice of breach to the other Party. If the notified Party does not cure the Breach of Contract, at its sole expense, within 30 days after the delivery of written notice, the Party may exercise any of the remedies as described in §12 for that Party. Notwithstanding any provision of this Contract to the contrary, the State, in its discretion, need not provide notice or a cure period and may immediately terminate this Contract in whole or in part or institute any other remedy in the Contract in order to protect the public interest of the State; or if Contractor is debarred or suspended under §24-109-105, C.R.S., the State, in its discretion, need not provide notice or cure period and may terminate this Contract in whole or in part or institute any other remedy in this Contract as of the date that the debarment or suspension takes effect.

12. Remedies

A. State's Remedies

If Contractor is in breach under any provision of this Contract and fails to cure such breach, the State, following the notice and cure period set forth in §11, shall have all of the remedies listed in this section in addition to all other remedies set forth in this Contract or at law. The State may exercise any or all of the remedies available to it, in its discretion, concurrently or consecutively.

i. Termination for Breach of Contract

In the event of Contractor's uncured breach, the State may terminate this entire Contract or any part of this Contract. Contractor shall continue performance of this Contract to the extent not terminated, if any.

a. Obligations and Rights

To the extent specified in any termination notice, Contractor shall not incur further obligations or render further performance past the effective date of such notice, and shall terminate outstanding orders and subcontracts with third parties. However, Contractor shall complete and deliver to the State all Work not cancelled by the termination notice, and may incur obligations as necessary to do so within this Contract's terms. At the request of the State, Contractor shall assign to the State all of Contractor's rights, title, and interest in and to such terminated orders or subcontracts. Upon termination, Contractor shall take timely, reasonable and necessary action to protect and preserve property in the possession of Contractor but in which the State has an interest. At the State's request, Contractor shall return materials owned by the State in Contractor's possession at the time of any termination. Contractor shall deliver all completed Work Product and all Work Product that was in the process of completion to the State at the State's request.

b. Payments

Notwithstanding anything to the contrary, the State shall only pay Contractor for accepted Work received as of the date of termination. If, after termination by the State, the State agrees that Contractor was not in breach or that Contractor's action or inaction was excusable, such termination shall be treated as a termination in the public interest, and the rights and obligations of the Parties shall be as if this Contract had been terminated in the public interest under §2.E.

c. Damages and Withholding

Notwithstanding any other remedial action by the State, Contractor shall remain liable to the State for any damages sustained by the State in connection with any breach by Contractor, and the State may withhold payment to Contractor for the purpose of mitigating the State's damages until such time as the exact amount of damages due to the State from Contractor is determined. The State may withhold any amount that may be due Contractor as the State deems necessary to protect the State against loss including, without limitation, loss as a result of outstanding liens and excess costs incurred by the State in procuring from third parties replacement Work as cover.

ii. Remedies Not Involving Termination

The State, in its discretion, may exercise one or more of the following additional remedies:

a. Suspend Performance

Suspend Contractor's performance with respect to all or any portion of the Work pending corrective action as specified by the State without entitling Contractor to an adjustment in price or cost or an adjustment in the performance schedule. Contractor shall promptly cease performing Work and incurring costs in accordance with the State's directive, and the State shall not be liable for costs incurred by Contractor after the suspension of performance.

b. Withhold Payment

Withhold payment to Contractor until Contractor corrects its Work.

c. Deny Payment

Deny payment for Work not performed, or that due to Contractor's actions or inactions, cannot be performed or if they were performed are reasonably of no value to the state; provided, that any denial of payment shall be equal to the value of the obligations not performed.

d. Intellectual Property

If any Work infringes, or if the State in its sole discretion determines that any Work is likely to infringe, a patent, copyright, trademark, trade secret or other intellectual property right, Contractor shall, as approved by the State, (i) secure that right to use such Work for the State and Contractor; (ii) replace the Work with noninfringing Work or modify the Work so that it becomes noninfringing; or, (iii) remove any infringing Work and refund the amount paid for such Work to the State.

B. Contractor's Remedies

If the State is in breach of any provision of this Contract and does not cure such breach, Contractor, following the notice and cure period in §11 and the dispute resolution process in §14, shall have all remedies available at law and equity.

13. State's Right of Removal

The State retains the right to demand, at any time, regardless of whether Contractor is in breach, the immediate removal of any of Contractor's employees, agents, or subcontractors from the work whom the State, in its sole discretion, deems incompetent, careless, insubordinate, unsuitable, or otherwise unacceptable or whose continued relation to this Contract is deemed by the State to be contrary to the public interest or the State's best interest.

14. Dispute Resolution

A. Initial Resolution

Except as herein specifically provided otherwise, disputes concerning the performance of this Contract which cannot be resolved by the designated Contract representatives shall be referred in writing to a senior departmental management staff member designated by the State and a senior manager designated by Contractor for resolution.

B. Resolution of Controversies

If the initial resolution described in §14.A fails to resolve the dispute within 10 Business Days, Contractor shall submit any alleged breach of this Contract by the State to the Procurement Official of CDHS as described in §24-102-202(3), C.R.S. for resolution in accordance with the provisions of §24-106-109, C.R.S., and §§24-109-101.1 through 24-109-505, C.R.S., (the "Resolution Statutes"), except that if Contractor wishes to challenge any decision rendered by the Procurement Official, Contractor's challenge shall be an appeal to the Executive Director of the Department of Personnel and Administration, or their delegate, under the Resolution Statutes before Contractor pursues any further action as permitted by such statutes. Except as otherwise stated in this Section, all requirements of the Resolution Statutes shall apply including, without limitation, time limitations.

15. Notices and Representatives

Each individual identified on the Signature and Cover Pages shall be the principal representative of the designating Party. All notices required or permitted to be given under this Contract shall be in writing, and shall be delivered (A) by hand with receipt required, (B) by certified or registered mail to such Party's principal representative at the address set forth on the Signature and Cover Pages for this Contract or (C) as an email with read receipt requested to the principal representative at the email address, if any, set forth on the Signature and Cover Pages for this Contract. If a Party delivers a notice to another through email and the email is undeliverable, then, unless the Party has been provided with an alternate email contact, the Party delivering the notice shall deliver the notice by hand with receipt required or by certified or registered mail to such Party's principal representative at the address set forth below. Either Party may change its principal representative or principal representative contact information by notice submitted in accordance with this section without a formal amendment to this Contract. Unless otherwise provided in this Contract, notices shall be effective upon delivery of the written notice.

16. Rights in Work Product and Other Information

A. Work Product

i. Copyrights

To the extent that the Work Product (or any portion of the Work Product) would not be considered works made for hire under applicable law, Contractor hereby assigns to the State, the entire right, title, and interest in and to copyrights in all Work Product and all works based upon, derived from, or incorporating the Work Product; all copyright applications, registrations, extensions, or renewals relating to all Work Product and all works based upon, derived from, or incorporating the Work Product; and all moral rights or similar rights with respect to the Work Product throughout the world. To the extent that Contractor cannot make any of the assignments required by this section, Contractor hereby grants to the State a perpetual, irrevocable, royalty-free license to use, modify, copy, publish, display, perform, transfer, distribute, sell, and create derivative works of the Work Product and all works based upon, derived from, or incorporating the Work Product by all means and methods and in any format now known or invented in the future. The State may assign and license its rights under this license.

ii. Patents

In addition, Contractor grants to the State (and to recipients of Work Product distributed by or on behalf of the State) a perpetual, worldwide, no-charge, royalty-free, irrevocable patent license to make, have made, use, distribute, sell, offer for sale, import, transfer, and otherwise utilize, operate, modify and propagate the contents of the Work Product. Such license applies only to those patent claims licensable by Contractor that are necessarily infringed by the Work Product alone, or by the combination of the Work Product with anything else used by the State.

iii. Assignments and Assistance

Whether or not Contractor is under contract with the State at the time, Contractor shall execute applications, assignments, and other documents, and shall render all other reasonable assistance requested by the State, to enable the State to secure patents, copyrights, licenses and other intellectual property rights related to the Work Product. To the extent that Work Product would fall under the definition of “works made for hire” under 17 U.S.C.S. §101, the Parties intend the Work Product to be a work made for hire. Contractor

assigns to the State and its successors and assigns, the entire right, title, and interest in and to all causes of action, either in law or in equity, for past, present, or future infringement of intellectual property rights related to the Work Product and all works based on, derived from, or incorporating the Work Product.

B. Exclusive Property of The State

Except to the extent specifically provided elsewhere in this Contract, all State Records, documents, text, software, (including source code), research, reports, proposals, specifications, plans, notes, studies, data, images, photographs, negatives, pictures, drawings, designs, models, surveys, maps, materials, ideas, concepts, know-how, and information provided by or on behalf of the State to Contractor are the exclusive property of the State (collectively, "State Materials"). Contractor shall not use, willingly allow, cause or permit Work Product or State Materials to be used for any purpose other than the performance of Contractor's obligations in this Contract without the prior written consent of the State. Upon termination of this Contract for any reason, Contractor shall provide all Work Product and State Materials to the State in a form and manner as directed by the State.

C. Exclusive Property of Contractor

Contractor retains the exclusive rights, title, and ownership to any and all pre-existing materials owned or licensed to Contractor including, but not limited to, all pre-existing software, licensed products, associated source code, machine code, text images, audio and/or video, and third-party materials, delivered by Contractor under the Contract, whether incorporated in a Deliverable or necessary to use a Deliverable (collectively, "Contractor Property"). Contractor Property shall be licensed to the State as set forth in this Contract or a State approved license agreement:

i. entered into as exhibits to this Contract;
ii. obtained by the State from the applicable third-party vendor; or
iii. in the case of open source software, the license terms set forth in the applicable open source license agreement.

17. Statewide Contract Management System

If the maximum amount payable to Contractor under this Contract is $100,000 or greater, either on the Effective Date or at any time thereafter, this section shall apply. Contractor agrees to be governed by and comply with the provisions of §§24-106-103, 24-102-206, 24-106-106, and 24-106-107, C.R.S. regarding the monitoring of vendor performance and the reporting of contract performance information in the State's contract management system ("Contract Management System" or "CMS"). Contractor's performance shall be subject

to evaluation and review in accordance with the terms and conditions of this Contract, Colorado statutes governing CMS, and State Fiscal Rules and State Controller Policies.

18. General Provisions

A. Assignment

Contractor's rights and obligations under this Contract are personal and may not be transferred or assigned without the prior, written consent of the State. Any attempt at assignment or transfer without such consent shall be void. Any assignment or transfer of Contractor's rights and obligations approved by the State shall be subject to the provisions of this Contract.

B. Subcontracts

Unless other restrictions are required elsewhere in this Contract, Contractor shall not enter into any subcontract in connection with its obligations under this Contract without providing notice to the State. The State may reject any such subcontract, and Contractor shall terminate any subcontract that is rejected by the State and shall not allow any Subcontractor to perform any Work after that Subcontractor's subcontract has been rejected by the State. Contractor shall submit to the State a copy of each such subcontract upon request by the State. All subcontracts entered into by Contractor in connection with this Contract shall comply with all applicable federal and state laws and regulations, shall provide that they are governed by the laws of the State of Colorado, and shall be subject to all provisions of this Contract.

C. Binding Effect

Except as otherwise provided in §18.A., all provisions of this Contract, including the benefits and burdens, shall extend to and be binding upon the Parties' respective successors and assigns.

D. Authority

Each Party represents and warrants to the other that the execution and delivery of this Contract and the performance of such Party's obligations have been duly authorized.

E. Captions and References

The captions and headings in this Contract are for convenience of reference only, and shall not be used to interpret, define, or limit its provisions. All references in this Contract to sections (whether spelled out or using the § symbol), subsections, exhibits or other attachments, are references to sections, subsections, exhibits or other attachments contained herein or incorporated as a part hereof, unless otherwise noted.

F. Counterparts

This Contract may be executed in multiple, identical, original counterparts, each of which shall be deemed to be an original, but all of which, taken together, shall constitute one and the same agreement.

G. Entire Understanding

This Contract represents the complete integration of all understandings between the Parties related to the Work, and all prior representations and understandings related to the Work, oral or written, are merged into this Contract. Prior or contemporaneous additions, deletions, or other changes to this Contract shall not have any force or effect whatsoever, unless embodied herein.

H. Digital Signatures

If any signatory signs this Contract using a digital signature in accordance with the Colorado State Controller Contract, Grant and Purchase Order Policies regarding the use of digital signatures issued under the State Fiscal Rules, then any agreement or consent to use digital signatures within the electronic system through which that signatory signed shall be incorporated into this Contract by reference.

I. Modification

Except as otherwise provided in this Contract, any modification to this Contract shall only be effective if agreed to in a formal amendment to this Contract, properly executed and approved in accordance with applicable Colorado State law and State Fiscal Rules. Modifications permitted under this Contract, other than contract amendments, shall conform to the policies issued by the Colorado State Controller.

J. Statutes, Regulations, Fiscal Rules, and Other Authority.

Any reference in this Contract to a statute, regulation, State Fiscal Rule, fiscal policy or other authority shall be interpreted to refer to such authority then current, as may have been changed or amended since the Effective Date of this Contract.

K. Order of Precedence

In the event of a conflict or inconsistency between this Contract and any Exhibits or attachments such conflict or inconsistency shall be resolved by reference to the documents in the following order of priority:

i. HIPAA Business Associate Agreement (if any).
ii. Federal Provisions (if any).
iii. Colorado Special Provisions in §19 of the main body of this Contract.
iv. Information Technology Provisions Exhibit (if any).
v. The provisions of the other sections of the main body of this Contract.
vi. PII Certification (if any)
vii. Any other Exhibit(s) shall take precedence in alphabetical order.

L. External Terms and Conditions

Notwithstanding anything to the contrary herein, the State shall not be subject to any provision included in any terms, conditions, or agreements appearing on Contractor's or a Subcontractor's website or any provision incorporated into any click-through or online agreements related to the Work unless that provision is specifically referenced in this Contract.

M. Severability

The invalidity or unenforceability of any provision of this Contract shall not affect the validity or enforceability of any other provision of this Contract, which shall remain in full force and effect, provided that the Parties can continue to perform their obligations under this Contract in accordance with the intent of the Contract.

N. Survival of Certain Contract Terms

Any provision of this Contract that imposes an obligation on a Party after termination or expiration of the Contract shall survive the termination or expiration of the Contract and shall be enforceable by the other Party.

O. Taxes

The State is exempt from federal excise taxes under I.R.C. Chapter 32 (26 U.S.C., Subtitle D, Ch. 32) (Federal Excise Tax Exemption Certificate of Registry No. 84-730123K) and from State and local government sales and use taxes under §§39-26-704(1), et seq. C.R.S. (Colorado Sales Tax Exemption Identification Number 98-02565). The State shall not be liable for the payment of any excise, sales, or use taxes, regardless of whether any political subdivision of the state imposes such taxes on Contractor. Contractor shall be solely responsible for any exemptions from the collection of excise, sales or use taxes that Contractor may wish to have in place in connection with this Contract.

P. Third Party Beneficiaries

Except for the Parties' respective successors and assigns described in §18.A., this Contract does not and is not intended to confer any rights or remedies upon any person or entity other than the Parties. Enforcement of this Contract and all rights and obligations hereunder are reserved solely to the Parties. Any services or benefits which third parties receive as a result of this Contract are incidental to the Contract, and do not create any rights for such third parties.

Q. Waiver

A Party's failure or delay in exercising any right, power, or privilege under this Contract, whether explicit or by lack of enforcement, shall not operate as a waiver, nor shall any single or partial exercise of any right, power, or privilege preclude any other or further exercise of such right, power, or privilege.

R. Cora Disclosure

To the extent not prohibited by federal law, this Contract and the performance measures and standards required under §24-106-107, C.R.S., if any, are subject to public release through the CORA.

S. Standard and Manner of Performance

Contractor shall perform its obligations under this Contract in accordance with the highest standards of care, skill and diligence in Contractor's industry, trade, or profession.

T. Licenses, Permits, and Other Authorizations.

Contractor shall secure, prior to the Effective Date, and maintain at all times during the term of this Contract, at its sole expense, all licenses, certifications, permits, and other authorizations required to perform its obligations under this Contract, and shall ensure that all employees, agents and Subcontractors secure and maintain at all times during the term of their employment, agency or subcontract, all licenses, certifications, permits and other authorizations required to perform their obligations in relation to this Contract.

U. Indemnification

i. Applicability

This entire §18.U does not apply to Contractor if Contractor is a "public entity" within the meaning of the GIA.

ii. General Indemnification

Contractor shall indemnify, save, and hold harmless the State, its employees, agents and assignees (the "Indemnified Parties"), against any and all costs, expenses, claims, damages, liabilities, court awards and other amounts (including attorneys' fees and related costs) incurred by any of the Indemnified Parties in relation to any act or omission by Contractor, or its employees, agents, Subcontractors, or assignees in connection with this Contract.

iii. Confidential Information Indemnification

Disclosure or use of State Confidential Information by Contractor in violation of §8 may be cause for legal action by third parties against Contractor, the State, or their respective agents. Contractor shall indemnify, save, and hold harmless the Indemnified Parties, against any and all claims, damages, liabilities, losses, costs, expenses (including attorneys' fees and costs) incurred by the State in relation to any act or omission by Contractor, or its employees, agents, assigns, or Subcontractors in violation of §8.

iv. Intellectual Property Indemnification

Contractor shall indemnify, save, and hold harmless the Indemnified Parties, against any and all costs, expenses, claims, damages, liabilities, and other amounts (including attorneys' fees and costs) incurred by the Indemnified Parties in relation to any claim that

any Deliverable, Good or Service, software, or Work Product provided by Contractor under this Contract (collectively, "IP Deliverables"), or the use thereof, infringes a patent, copyright, trademark, trade secret, or any other intellectual property right. Contractor's obligations hereunder shall not extend to the combination of any IP Deliverables provided by Contractor with any other product, system, or method, unless the other product, system, or method is (a) provided by Contractor or Contractor's subsidiaries or affiliates; (b) specified by Contractor to work with the IP Deliverables; (c) reasonably required in order to use the IP Deliverables in its intended manner and the infringement could not have been avoided by substituting another reasonably available product, system, or method capable of performing the same function; or (d) is reasonably expected to be used in combination with the IP Deliverables.

v. Accessibility

a. Contractor shall comply with and the Work Product provided under this Contract shall be in compliance with all applicable provisions of §§24-85-101, et seq., C.R.S., and the ***Accessibility Standards for Individuals with a Disability***, as established by the Governor's Office of Information Technology (OIT), pursuant to Section §24-85-103 (2.5), C.R.S. Contractor shall also comply with all State of Colorado technology standards related to technology accessibility and with Level AA of the most current version of the Web Content Accessibility Guidelines (WCAG), incorporated in the State of Colorado technology standards.
b. The State may require Contractor's compliance to the State's Accessibility Standards to be determined by a third party selected by the State to attest to Contractor's Work Product and software is in compliance with §§24-85-101, et seq., C.R.S., and the ***Accessibility Standards for Individuals with a Disability*** as established by the Office of Information Technology pursuant to Section §24-85-103 (2.5), C.R.S.
c. Accessibility Indemnification: Contractor shall indemnify, save, and hold harmless the state, its employees, agents and assignees (collectively, the "Indemnified Parties"), against any and all costs, expenses, claims, damages, liabilities, court awards and other amounts (including attorneys' fees and related costs) incurred by any of the Indemnified Parties in relation to Contractor's failure to comply with §§24-85-101, et seq., C.R.S., or the ***Accessibility Standards for Individuals with a Disability*** as established by the Office of Information Technology pursuant to Section §24-85-103 (2.5), C.R.S.

V. Other

i. Compliance with State and Federal Law, Regulations, & Executive Orders

Contractor shall comply with all State and, if Federal funding is involved, Federal law, regulations, executive orders, State and Federal Awarding Agency policies, procedures, directives, and reporting requirements at all times during the term of this Contract.

19. Colorado Special Provisions (Colorado Fiscal Rule 3-3)

These Special Provisions apply to all contracts except where noted in {grey highlighted braces}.

A. Statutory Approval. § 24-30-202(1), C.R.S.

This Contract shall not be valid until it has been approved by the Colorado State Controller or designee. If this Contract is for a Major Information Technology Project, as defined in §24-37.5-102(2.6), C.R.S., then this Contract shall not be valid until it has been approved by the State's Chief Information Officer or designee.

B. Fund Availability. § 24-30-202(5.5), C.R.S.

Financial obligations of the State payable after the current State Fiscal Year are contingent upon funds for that purpose being appropriated, budgeted, and otherwise made available.

C. Governmental Immunity.

Liability for claims for injuries to persons or property arising from the negligence of the State, its departments, boards, commissions committees, bureaus, offices, employees and officials shall be controlled and limited by the provisions of the Colorado Governmental Immunity Act, §24-10-101, et seq., C.R.S.; the Federal Tort Claims Act, 28 U.S.C. Pt. VI, Ch. 171 and 28 U.S.C. 1346(b), and the State's risk management statutes, §§24-30-1501, et seq. C.R.S. No term or condition of this Contract shall be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protections, or other provisions, contained in these statutes.

D. Independent Contractor.

Contractor shall perform its duties hereunder as an independent contractor and not as an employee. Neither Contractor nor any agent or employee of Contractor shall be deemed to be an agent or employee of the State. Contractor shall not have authorization, express or implied, to bind the State to any agreement, liability or understanding, except as expressly set forth herein. Contractor and its employees and agents are not entitled to unemployment insurance or workers compensation benefits through the State and the State shall not pay for or otherwise provide such coverage for Contractor or any of its agents or employees. Contractor shall pay when due all applicable employment taxes and income taxes and local head taxes incurred pursuant to this Contract. Contractor shall (i) provide and keep in force workers' compensation and unemployment compensation insurance in the amounts required by law, (ii) provide proof thereof when requested by the State, and (iii) be solely responsible for its acts and those of its employees and agents.

E. Compliance With Law.

Contractor shall strictly comply with all applicable federal and State laws, rules, and regulations in effect or hereafter established, including, without limitation, laws applicable to discrimination and unfair employment practices.

F. Choice of Law, Jurisdiction, and Venue.

Colorado law, and rules and regulations issued pursuant thereto, shall be applied in the interpretation, execution, and enforcement of this Contract. Any provision included or incorporated herein by reference which conflicts with said laws, rules, and regulations shall be null and void. All suits or actions related to this Contract shall be filed and proceedings held in the State of Colorado and exclusive venue shall be in the City and County of Denver.

G. Prohibited Terms.

Any term included in this Contract that requires the State to indemnify or hold Contractor harmless; requires the State to agree to binding arbitration; limits Contractor's liability for damages resulting from death, bodily injury, or damage to tangible property; or that conflicts with this provision in any way shall be void ab initio. Nothing in this Contract shall be construed as a waiver of any provision of §24-106-109, C.R.S.

H. Software Piracy Prohibition.

State or other public funds payable under this Contract shall not be used for the acquisition, operation, or maintenance of computer software in violation of federal copyright laws or applicable licensing restrictions. Contractor hereby certifies and warrants that, during the term of this Contract and any extensions, Contractor has and shall maintain in place appropriate systems and controls to prevent such improper use of public funds. If the State determines that Contractor is in violation of this provision, the State may exercise any remedy available at law or in equity or under this Contract, including, without limitation, immediate termination of this Contract and any remedy consistent with federal copyright laws or applicable licensing restrictions.

I. Employee Financial Interest/Conflict of Interest. §§24-18-201 and 24-50-507, C.R.S.

The signatories aver that to their knowledge, no employee of the State has any personal or beneficial interest whatsoever in the service or property described in this Contract. Contractor has no interest and shall not acquire any interest, direct or indirect, that would conflict in any manner or degree with the performance of Contractor's services and Contractor shall not employ any person having such known interests.

J. Vendor Offset and Erroneous Payments. §§24-30-202(1) and 24-30-202.4, C.R.S.

[Not applicable to intergovernmental agreements] Subject to §24-30-202.4(3.5), C.R.S., the State Controller may withhold payment under the State's vendor offset intercept system for debts owed to State agencies for:

i. unpaid child support debts or child support arrearages;
ii. unpaid balances of tax, accrued interest, or other charges specified in §§39-21-101, et seq., C.R.S.;
iii. unpaid loans due to the Student Loan Division of the Department of Higher Education;
iv. amounts required to be paid to the Unemployment Compensation Fund; and
v. other unpaid debts owing to the State as a result of final agency determination or judicial action. The State may also recover, at the State's discretion, payments made to Contractor in error for any reason, including, but not limited to, overpayments or improper payments, and unexpended or excess funds received by Contractor by deduction from subsequent payments under this Contract, deduction from any payment due under any

other contracts, grants or agreements between the State and Contractor, or by any other appropriate method for collecting debts owed to the State.

20. Department of Human Services Provisions

A. Exclusion, Debarment and/or Suspension

Contractor represents and warrants that Contractor, its employees, agents, assigns, or Subcontractors, are not presently excluded from participation, debarred, suspended, proposed for debarment, declared ineligible, voluntarily excluded, or otherwise ineligible to participate in a "federal health care program" as defined in 42 U.S.C. § 1320a-7b(f) or in any other government payment program by any federal or State of Colorado department or agency. If Contractor, its employees, agents, assigns, or Subcontractors, are excluded from participation, or becomes otherwise ineligible to participate in any such program during the term of this Contract, Contractor shall notify the State in writing within three (3) days after such event. Upon the occurrence of such event, whether or not such notice is given to Contractor, the State may immediately terminate this Contract.

B. Emergency Planning

If Contractor provides Work that is an extension of State work performed as part of the State of Colorado Emergency Operations Plan or for a publicly funded safety net program, as defined by C.R.S. § 24-33.5-701 et seq., Contractor shall perform the Work in accordance with the State's Emergency Operations Plan or continuity of operations plan in the event of an emergency. If requested, Contractor shall provide a plan and reporting information to ensure compliance with the State's Emergency Operations Plan and C.R.S. § 24-33.5-701 et seq.

C. Restrictions On Public Benefits

If applicable, Contractor shall comply with C.R.S. §§ 24-76.5-101 – 103 exactly as the State is required to comply with C.R.S. §§ 24-76.5-101 – 103.

D. Discrimination

Contractor shall not:

i. discriminate against any person on the basis of gender, race, ethnicity, religion, national origin, age, sexual orientation, gender identity, citizenship status, education, disability, socio-economic status, or any other identity.

ii. exclude from participation in, or deny benefits to any qualified individual with a disability, by reason of such disability.

Any person who thinks he/she has been discriminated against as related to the performance of this Contract has the right to assert a claim, Colorado Civil Rights Division, C.R.S. §24-34-301, et seq.

E. Criminal Background Check

Pursuant to C.R.S. §27-90-111 and CDHS Policy VI-2.4, any independent contractor, and its agent(s), who is designated by the Executive Director or the Executive Director's designee to be a contracting employee under C.R.S. §27-90-111, who has direct contact with vulnerable persons in a state-operated facility, or who provides state-funded services that involve direct contact with vulnerable persons in the vulnerable person's home or residence, shall:

i. submit to and successfully pass a criminal background check, and
ii. report any arrests, charges, or summonses for any disqualifying offense as specified by C.R.S. §27-90-111 to the State.

Any Contractor or its agent(s), who does not comply with C.R.S. §27-90-111 and CDHS Policy VI-2.4, may, at the sole discretion of the State, be suspended or terminated.

F. Fraud Policy

Contractor shall comply with the current CDHS Fraud Policy.

G. C-Stat - Performance Based Program Analysis and Management Strategy (C-Stat Strategy)

Without any additional cost to the State, Contractor shall collect and maintain Contract performance data, as determined solely by the State. Upon request, Contractor shall provide the Contract performance data to the State. This provision does not allow the State to impose unilateral changes to performance requirements.

H. COVID-19 Pandemic

CDHS operates many facilities across the State and with regard to the COVID-19 Pandemic, Contractor may be subject to local or state public health orders, Department policy, individual facility policy, or any other requirement that could impose additional requirements on the Contractor. If so, Contractor shall promptly comply upon notice.

21. Third Party Certification for Access to PII Through a Database or Automated Network

Pursuant to § 24-74-105, C.R.S, if Contractor is to be granted access to Personal Identifying Information through a database or automated network that is not publicly available information, Contractor certifies, and will certify annually, under penalty of perjury that Contractor has not and will not use or disclose any Personal Identifying Information, as defined by § 24-74-102(1), C.R.S., for the purpose of investigating for, participating in, cooperating with, or assisting Federal Immigration Enforcement, including the enforcement of civil immigration laws, and the Illegal Immigration and Immigrant Responsibility Act, which is codified at 8 U.S.C. §§ 1325 and 1326, unless required to do so to comply with Federal or State law, or to comply with a court-issued subpoena, warrant or order.

If Contractor's agents, employees, assigns or Subcontractors require certification pursuant to § 24-74-105, C.R.S., Contractor shall require annually that its agents, employees, assigns or Subcontractors sign and date the following certifications as applicable, which shall be made available to the State upon request:

> **For an individual**: *Pursuant to § 24-74-105, C.R.S., I hereby certify under the penalty of perjury that I have not and will not use or disclose any Personal Identifying Information, as defined by § 24-74-102(1), C.R.S., for the purpose of investigating for, participating in, cooperating with, or assisting Federal Immigration Enforcement, including the enforcement of civil immigration laws, and the Illegal Immigration and Immigrant Responsibility Act, which is codified at 8 U.S.C. §§ 1325 and 1326, unless required to do so to comply with Federal or State law, or to comply with a court-issued subpoena, warrant or order.*
>
> **For and entity/organization**: *Pursuant to § 24-74-105, C.R.S., I, _____, on behalf of _____ (legal name of entity / organization) (the "Organization"), hereby certify under the penalty of perjury that the Organization has not and will not use or disclose any Personal Identifying Information, as defined by § 24-74-102(1), C.R.S., for the purpose of investigating for, participating in, cooperating with, or assisting Federal Immigration Enforcement, including the enforcement of civil immigration laws, and the Illegal Immigration and Immigrant Responsibility Act, which is codified at 8 U.S.C. §§ 1325 and 1326, unless required to do so to comply with Federal or State law, or to comply with a court-issued subpoena, warrant or order.*

I hereby represent and certify that I have full legal authority to execute this certification on behalf of the Organization.

22. Federal Provisions

A. Applicability of Provisions.

i. This Federal Provisions section shall apply in the event that the Contract is funded, in whole or in part, with an Award of Federal funds. Contractor shall confirm with their CDHS Contact for their Contract if this Contract is funded in whole or in part by federal funds. Where Federal funds are not used to fund this Contract, then this Federal Provisions section shall not apply, but remains in this Contract due to the template nature of this Contract.

ii. If the Contract is funded in whole or in part with Federal funds, and in the event of a conflict between this Federal Provisions section, the Special Provisions, the body of the Contract, or any attachments or exhibits made a part of the Contract, the provisions of this Federal Provisions section shall control. Exceptions to this are as follows:

a. If the Supplemental Provisions for Federal Awards Exhibit is attached to this Contract, then in the event of a conflict amongst provisions, the Supplemental Provisions for Federal Awards exhibit shall control over the provisions of this Federal Provisions section.

b. If the SLFRF Subrecipient Provisions Exhibit is attached to this Contract, then in the event of a conflict amongst provisions, the SLFRF Subrecipient Provisions Exhibit shall control over the provisions of this Federal Provisions section.

B. Compliance.

i. Contractor shall comply with all applicable provisions of the Transparency Act (the Federal Funding Accountability and Transparency Act of 2006 [Public Law 109-282], as amended by section 6202 of Public Law 110-252) all applicable provisions of the Uniform Guidance, and the regulations issued pursuant thereto, including but not limited to these federal Provisions. Any revisions to such provisions or regulations shall automatically become a part of these Federal Provisions, without the necessity of either party executing any further instrument. The State of Colorado may provide written notification to Contractor of such revisions, but such notice shall not be a condition precedent to the effectiveness of such revisions.

C. System for Award Management (SAM) and Unique Entity Id Requirements.

i. SAM. Contractor shall maintain the currency of its information in SAM until the Contractor submits the final financial report required under the Award or receives final payment, whichever is later. Contractor shall review and update SAM information at least annually after the initial registration, and more frequently if required by changes in its information.

ii. Unique Entity ID. Contractor shall provide its Unique Entity ID to its Recipient, and shall update Contractor's information at http://www.sam.gov at least annually after the initial registration, and more frequently if required by changes in Contractor's information.

D. Contract Provisions Required by Uniform Guidance Appendix II To Part 200.

i. **Contracts for more than the simplified acquisition threshold**, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate. The simplified acquisitions threshold is $250,000

ii. **All contracts in excess of $10,000 must address termination for cause and for convenience** by the non-Federal entity including the manner by which it will be effected and the basis for settlement.

iii. **Equal Employment Opportunity.** Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 relating to Equal Employment Opportunity," and implementing regulations at 41 CFR Part 60, "Office of federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

iv. **Davis-Bacon Act**, as amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the

current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

v. **Contract Work Hours and Safety Standards Act** (40 U.S.C. 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

vi. **Rights to Inventions Made Under a Contract or Agreement**. If the Federal award meets the definition of "funding agreement" under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

vii. **Clean Air Act (42 U.S.C. 7401-7671q.) and the federal Water Pollution Control Act (33 U.S.C. 1251-1387)**, as amended - Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-

1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

viii. **Debarment and Suspension** (Executive Orders 12549 and 12689) - A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

ix. Byrd Anti-Lobbying Amendment (31 U.S.C. 1352) - Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

x. Prohibition on certain telecommunications and video surveillance services or equipment §2 CFR 200.216

a. Recipients and sub recipients are prohibited from obligating or expending loan or grant funds to:
    1) Procure or obtain;
    2) Extend or renew a contract to procure or obtain; or
    3) Enter into a contract (or extend a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

xi. **Contracts with small and minority businesses, women's business enterprises, and labor surplus area firms. (2 CFR §200.321).** The non-Federal entity must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

xii. **Domestic preferences for procurements. (2 CFR §200.322)** As appropriate and to the extent consistent with law, the non-Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum,

steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.

xiii. **Procurement of recovered materials. (2 CFR §200.323)** A non-Federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

E. Termination for Convenience of the Government

i. Pursuant to §4.2 of these Federal Provisions, the State of Colorado may terminate this contract, in whole or in part, when it is in the Government's interest. Solicitations and contracts shall include clauses as required by FAR 49.502 (2023). Termination for convenience of the government shall comply with the following provisions of the Federal Acquisition Regulations:

a. For Fixed Price Contracts: FAR 52.249-2 (2023)
b. For Contracts for Personal Services: FAR 52.249-12 (2023)
c. For Construction Contracts for Dismantling, Demolition, or Removal of Improvements: FAR 52.249-3 (2023)
d. For Educational and Other Nonprofit Institutions: FAR 52.249-5 (2023)

F. Event of Default.

i. Failure to comply with these Federal Provisions shall constitute an event of default under the Contract and the State of Colorado may terminate the Contract upon 30 days prior written notice if the default remains uncured five calendar days following the termination of the 30 day notice period. This remedy will be in addition to any other remedy available to the State of Colorado under the Contract, at law or in equity.

23. Sample Option Letter

SAMPLE OPTION LETTER (If Applicable)

1. State Agency

[Insert Department's or IHE's Full Legal Name]

2. Contractor

[Insert Contractor's Full Legal Name, including "Inc.", "LLC", etc...]

3. Current Contract Maximum Amount

Initial Term

[State Fiscal Year 20xx	$0.00]

Extension Terms

[State Fiscal Year 20xx	$0.00
State Fiscal Year 20xx	$0.00
State Fiscal Year 20xx	$0.00
State Fiscal Year 20xx	$0.00]
Total for All State Fiscal Years	[$0.00]

Option Letter Number

[Insert the Option Number (e.g. "1" for the first option)]

4. Original Contract Number

[Insert CMS number or Other Contract Number of the Original Contract]

5. Option Contract Number

[Insert CMS number or Other Contract Number of this Option]

Contract Performance Beginning Date

[Month Day, Year]

Current Contract Expiration Date

[Month Day, Year]

1. Options:

- Option to extend for an Extension Term
- Option to change the quantity of Goods under the Contract
- Option to change the quantity of Services under the Contract
- Option to modify Contract rates
- Option to initiate next phase of the Contract

• Required Provisions:

A. **%For use with Option 1(A):%** In accordance with Section(s) [Number] of the Original Contract referenced above, the State hereby exercises its option for an additional term, beginning [Insert start date] and ending on the current contract expiration date shown above, at the rates stated in the Original Contract, as amended.

B. **%For use with Options 1(B and C):%** In accordance with Section(s) [Number] of the Original Contract referenced above, the State hereby exercises its option to [Increase/Decrease] the quantity of the [Goods/Services or both] at the rates stated in the Original Contract, as amended.

C. **%For use with Option 1(D):%** In accordance with Section(s) [Number] of the Original Contract referenced above, the State hereby exercises its option to modify the Contract rates specified in [Exhibit/Section] [Number/Letter]. The Contract rates attached to this Option Letter replace the rates in the Original Contract as of the Option Effective Date of this Option Letter.

D. **%For use with Option 1(E):%** In accordance with Section(s) [Number] of the Original Contract referenced above, the State hereby exercises its option to initiate Phase [indicate which Phase: 2, 3, 4, etc.,] which shall begin on [Insert start date] and end on [Insert ending date] at the cost/price specified in Section [Number].

E. **%For use with all Options that modify the Contract Maximum Amount:%** The Contract Maximum Amount table on the Contract's Signature and Cover Page is hereby deleted and replaced with the Current Contract Maximum Amount table shown above.

- **OPTION EFFECTIVE DATE:**

The effective date of this Option Letter is upon approval of the State Controller [or [_____], whichever is later].

Sample Only – Do Not Sign

Signature page begins on next page.

STATE OF COLORADO	STATE CONTROLLER
Jared Polis, Governor	**Robert Jaros, CPA, MBA, JD**
[INSERT-Name of Agency or IHE]	
[INSERT-Name & Title of Head of Agency or IHE]	
By: Name & of Title Person Signing for Agency or IHE	By: Telly Belton/Toni Williamson/Amanda Rios
Date: _____	Option Effective Date: _____
	In accordance with §24-30-202 C.R.S., this Option is not valid until signed and dated above by the State Controller or an authorized delegate.

Sample Only – Do Not Sign

Exhibit A – Statement of Work

Article 1
Purpose and Target Population

1.1 Purpose

Co-Responder Programs ("Programs") create and foster partnerships between behavioral health professionals and law enforcement, (which may include other first responders if necessary). Co-Responder Programs identify calls for police service where behavioral health (mental health and/or substance use) appear to be a relevant factor and then provide effective responses to individuals in crisis and those with behavioral health needs. The law enforcement officer and the behavioral health specialist's combined expertise aims to improve de-escalation of situations, deflect individuals away from involvement with the criminal justice system and/or unnecessary hospitalization, and link them to appropriate services.

Taking population density and other available resources into consideration, the program and team structure varies between locations to best meet the needs of the community and the partnering agencies. There are generally two approaches, a primary or secondary response model. A primary response is that which the clinician is paired with an officer for joint response, and typically the officer's time is dedicated to the program; Secondary response is that which the clinician responds to requests from officers or dispatch and is not generally paired directly with an officer.

The purpose of this project is to create, sustain, or expand Co-Responder Programs, which dispatch behavioral health Co-Responders along with law enforcement, or provide a joint secondary response on calls for service wherein behavioral health appears to be a relevant factor. The behavioral health provider can provide assessment, crisis intervention services, and referrals on scene. They may also provide follow-up and connections to additional resources when necessary.

1.2 Target Population

Individuals who have been brought to the attention of law enforcement and appear to be experiencing a behavioral health crisis or who have other behavioral health needs, as determined by the awarded Contractor and their Program policies. This includes individuals at risk for low-level offenses, misdemeanor crimes, and individuals who have had repeated contact with law enforcement. The awarded Contractor may expand eligibility criteria to meet specific community needs.

Article 2

Definitions and Acronyms

2.1 **"BAA"** means Business Associate Agreement, as defined in Exhibit C - HIPAA Business Associate Addendum - Qualified Service Organization Addendum.

2.2 **"BHA"** means Behavioral Health Administration established in Section 27-50-102, C.R.S.

2.3 **"CDHS"** means Colorado Department of Human Services which is the principal department of the Colorado state government that operates the state's social services.

2.4 **"Co-Responder Program"** means Co-Responder Programs, which dispatch behavioral health Co-Responders along with law enforcement, or provide a joint secondary response on calls for service wherein behavioral health appears to be a relevant factor.

2.5 "**Contract**" means this statement of work, including all other Exhibits associated with this Request for Applications (RFA). Hereinto incorporated by reference, all referenced statutes, rules and cited authorities, and any future modifications thereto.

2.6 "**Contractor**" means the awarded party with whom the BHA will enter into an agreement.

2.7 **"Critical Incident"** means a situation in which death, physical assault and/or serious injuries are sustained by Program staff or clients that occurs during a Co-Responder intervention or response.

2.8 **"HIPAA"** means the Health Insurance Portability and Accountability Act of 1996.

2.9 **"Program"** means Co-Responder program.

2.10 **"Program/Project Manager"** means the person responsible and accountable for managing the Contractor's Co-Responder Program.

2.11 **"Program Coordination Group"** means the group that oversees the Program's implementation and progress.

2.12 **"RNR"** means the Risk-Need-Responsivity model of assessment and treatment to determine risk of recidivism, criminogenic needs, and responsivity of interventions.

2.13 "**Steering Committee"** means the group responsible for guiding any changes or issues around the implementation and development of the Program.

Article 3

Activities and Services

3.1 Allowable Uses of Funding

The Contractor may use funds to support, with the approval of BHA, items including but not limited to, the following:

(a) Program personnel, project management and community engagement.
(b) Temporary services and treatments necessary to stabilize a participant's condition, including necessary housing.
(c) Outreach.
(d) Direct costs for services.
(e) Specialized program training.
(f) Dedicated law enforcement resources, including overtime required for participation in operational meetings and training.
(g) Training and technical assistance from experts in the implementation of Co-Responder Services Programs in other jurisdictions.
(h) Collecting and maintaining the data necessary for program evaluation.

3.2 Work Plan

(a) The Contractor shall provide BHA with a Work Plan as part of the application, using the BHA-provided template, for review and approval. See RFA Exhibit G - Co-Responder Work Plan document.
(b) The Contractor shall meet with BHA monthly to review progress on the work plan.
(c) An updated Work Plan must be submitted on an annual basis, at a minimum, for review and approval.
    i. Report Title: Revised Work Plan
    ii. Deadline: Due 30 days from Contract Effective Date and annually thereafter
    iii. Deliverables: Program Manager shall provide email address during contract execution process

3.3 The Contractor shall respond to communications from the BHA within five (5) calendar days.

3.4 Start-up Period for Project Development

The Contractor shall be permitted a start-up period of up to three (3) months from the date of execution of the contract. At the end of this period, the Contractor shall be expected to have all required program partnerships and contracts finalized and be ready

to begin program operations. If the Contractor is unable to implement the program within three months' time, the Contractor will be placed on a performance improvement plan and the Contractor shall work with BHA on drafting and meeting this performance improvement plan.

3.5 Steering Committee

(a) The Contractor shall develop and maintain a Steering Committee to oversee the implementation and ongoing development of the Program for the duration of the Contract term. The Steering Committee shall meet at least biannually to discuss, problem-solve and/or guide any changes or issues around the implementation and ongoing development of the Program. The Steering Committee shall include high-level, decision-making representatives from each of the key local stakeholder disciplines listed below:

  i. Lead law enforcement agency representative.
  ii. Behavioral health service provider representative.
  iii. Impacted individual and/or consumer or family member.
  iv. Local hospital representative and;
  v. Crisis Services representative.

(b) The Contractor shall also include other entities in the Steering Committee, which in its determination, are integral to the success of the Program. Entities may include prosecutors, jail administrators, advocacy groups, and harm reduction agencies.

(c) The Steering Committee shall be charged with the following:

  i. To perform an initial examination of the nature of the problem to help develop the Program's objectives and design.
  ii. To consider how the Program relates to other local criminal justice or behavioral health partnerships that may be in place or are in the process of being established.
  iii. To support a forum for planning decisions during the implementation phase, and to provide ongoing leadership, problem-solving and design modifications throughout the life of the Program.
  iv. To designate appropriate staff to make up a Program Coordination Group.
  v. To identify any barriers to the Program's success and help reduce and resolve the impacts of barriers on the Program (such as identification of facilities).

vi. To develop procedures to ensure that essential information is shared in an appropriate and timely manner.

1) Report Title: Steering Committee & Program Coordination Group Rosters
2) Deadline: Sixty (60) days after contract execution and as updated
3) Deliverables: cdhs_bhadeliverables@state.co.us

3.6 Program Coordination Group

(a) The Contractor shall develop and maintain a Program Coordination Group to guide and support the Program operations. If the creation of two separate groups is unrealistic due to workforce and/or resource limitations, this Program Coordination Group may be the same as the Steering Committee.

(b) The Program Coordination Group shall:

i. Oversee officer and Program training implementation, as specified in Article 3.11 below.
ii. Measure the Program's progress toward achieving stated goals.
iii. Resolve ongoing challenges to the Program's effectiveness; and
iv. Inform agency leaders and other policymakers of Program costs, developments, and progress.

(c) The Contractor shall designate a law enforcement Program Champion within each partnering law enforcement agency to serve as the agency's representative on the Program Coordination Group.

1) Report Title: Steering Committee & Program Coordination Group Rosters
2) Deadline: Sixty (60) days after contract execution and as updated
3) Deliverables: cdhs_bhadeliverables@state.co.us

3.7 Program Manager

The Contractor shall select a Program/Project Manager ("Manager"), and establish the Manager's role, responsibilities, and authority, which shall include support of the Steering Committee and the Program Coordination Group. The Program Manager is the point person for BHA through the life of the contract. The Contractor shall communicate via email to BHA any changes to the Manager's contact information within one business day of change.

3.8 Project Director

Contractor shall identify a Project Director who is employed by the Contractor and has decision making authority for the Contractor. The Project Director holds overall

responsibility for ongoing program administration and fiscal oversight initially and is the point of contact for BHA through the contracting process, if awarded. The Contractor shall communicate via email to BHA any changes to the Director's contact information within one business day of change

3.9 Partnership Agreements

The Contractor shall develop partnership agreements with other local criminal justice agencies, behavioral health agencies or government agencies, to address any key challenges inherent in multidisciplinary collaboration. Partnership agreements shall include a description of how partners collectively identified the need for the project, and individualized letters of support outlining each partner's level of participation and commitment in the Program, responsibilities to the Program (policy and/or operational), resources they will contribute, and processes in collecting and sharing data. The Contractor, or any other party or partnership, does not have authority to negotiate or enter into any agreements on behalf of CDHS or the BHA.

(a) Report Title: Partnership Agreement(s)
(b) Deadline: Upon execution of a partnership agreement(s)
(c) Deliverables: The Program Manager shall provide an email address during the contract execution process

3.10 Data Sharing Agreements

The Contractor shall ensure a data-sharing Business Associates Agreement ("BAA") is developed and put in place between the partner agencies, as applicable by law. The data-sharing agreement shall ensure that each partner agency complies with the terms of the HIPAA-BAA and 42 CFR Part 2.

3.11 Program, Policies, and Procedures

(a) The Contractor shall develop and maintain Program policies and procedures, subject to BHA review and approval.
(b) The Contractor shall submit a draft copy of each of the policies and procedures required under this Section 3.10 (Program Policies and Procedures), to BHA for review and comment. The Contractor shall work with BHA to resolve all comments from BHA and incorporate any agreed revisions in the final policies and procedures.
    i. Report Title: Program Policies and Procedures Document
    ii. Deadline: Draft document due to BHA ninety (90) days from Contract Effective Date. Final document due to BHA thirty (30) days from reviewed

draft sent from BHA to Contractor. Subsequent updates to policies and procedures due to BHA within ten (10) days of changes

iii. Deliverables: Program Manager shall provide email address during contract execution process.

(c) The Contractor shall ensure that specific policies and procedures are developed and implemented for the following aspects of the Program.

i. Target Population and Eligibility Criteria

The Contractor shall identify the target population, develop eligibility criteria, and develop Program policies to identify individuals who will be referred to the Program. The Contractor shall ensure that the referrals include individuals at risk for low-level offenses and misdemeanor crimes and individuals who have had repeated contact with law enforcement. The Contractor may expand eligibility criteria to meet specific community needs.

ii. Call Taker and Dispatcher

The Contractor shall develop, or ensure the development of, policies and procedures for call takers and dispatchers. These shall include, but are not limited to:

1) The specific information call takers must gather from calls.
2) Policies specifying the means by which dispatchers are informed of staffing patterns, including up to date information during shifts.
3) Clear definitions of the geographic coverage areas designated and eligible for law enforcement and behavioral health Co-Responder calls.

(d) Stabilization, Observation, and Disposition

The Contractor shall develop policies and procedures to help guide law enforcement officers and/or behavioral health Co-Responders resolve encounters with the least restrictive environment appropriate for the circumstances.

(e) Transportation and Custodial Transfer

The Contractor shall develop policies and procedures to help guide effective and efficient transportation and custodial transfers. The policies shall at a minimum:

i. Identify facilities capable of assuming custodial responsibility, which are available at all times, have personnel qualified to conduct a behavioral health evaluation, and do not turn away people brought by law enforcement without specific reasons.

ii. Establish resources to connect individuals with, including friends, family members, peer support groups, or crisis centers, when available in non-custodial situations.

iii. Engage the services of the individual's current behavioral health provider or a crisis team.

(f) Critical Incident Policy

Contractor shall develop and maintain a policy for review of critical incidents (including death, physical assault and/or serious injuries sustained by Program staff or clients) ("Critical Incidents") that occur during a Program intervention or response and adhere to Critical Incident Reporting in Section 3.18.

(g) Information Exchange and Confidentiality

The Steering Committee shall develop procedures to ensure that essential information is shared in an appropriate manner. Information shall be shared in a way that protects individuals' confidentiality rights as treatment consumers and constitutional rights as possible defendants. Individuals with behavioral health disorders who have been in contact with a behavioral health agency should be offered an opportunity to provide consent in advance for behavioral health providers to share specified information with law enforcement authorities if an incident occurs (sometimes called an advance directive).

3.12 Program Training and Cross-Training

(a) State Program Meeting Requirements.

The Contractor shall attend an orientation session (mandatory only in the Contractor's first year under the Program), monthly Program progress status meetings with the BHA manager, and other required Program meetings and training throughout the term of the Program.

i. Report Title: Monthly Program Progress Status meetings

ii. Deadline: Monthly (day and time shall be mutually agreed upon after contract execution)

iii. Deliverables: Program Manager shall provide virtual meeting link upon identifying mutually agreed upon day and time

(b) Contractor Training

The Contractor shall provide necessary training for Contractor's Program to include:

i. Officer Training

The Contractor shall provide officer training to improve officers' responses to people with behavioral health needs and to educate officers on the Program. The Contractor shall determine the amount of training necessary to ensure, at a minimum, that there is a group of officers sufficient to cover all time shifts and geographic districts.

ii. Cross-Training

The Contractor shall provide opportunities to behavioral health personnel and other stakeholders to help improve cross-system understanding of agencies' roles and responsibilities, law enforcement issues, program policies and procedures, information sharing, safety, and other opportunities to see policies translated into action.

3.13 Service Area

The Contractor shall define the service area that best meets the community's needs and submit to BHA for approval.

3.14 Individualized Service Provision

The Contractor's Program shall link individuals referred to or contacted by the Program to community-based behavioral health supports and services, as appropriate.

3.15 The Non-Displacement of Resources

The Contractor shall ensure Program participants do not receive preferential access to resources if it would prevent others on waitlists, or who had previously secured a resource, from being served.

3.16 Evidence-Based Practices

The Contractor shall use evidence-based and promising practices within the screening and service delivery structure, as appropriate, to support effective outcomes. The use of a risk/need/responsivity (RNR) model is encouraged to assess various factors such as substance use disorders, mental illness, cognitive or physical impairments, financial issues, family dynamics, housing instability, developmental disabilities, low literacy levels, and lack of reliable transportation, all of which may need to be addressed to support success.

3.17 Staff Time Tracking and Invoicing

The Contractor shall ensure expenses and staff time are tracked and invoiced separately for each Program or funding stream.

3.18 Subcontractor or Partnership Contract Execution and Termination

The Contractor shall submit all their subcontract copies related to this project to cdhs_bhadeliverables@state.co.us upon execution of the contract or within thirty (30) days of subcontract execution. In the event of a termination of a partnership with a subcontractor, such as a case management, service provider, or individuals providing these services internally the Contractor shall transition to a new partnership no later than thirty (30) days from termination to ensure continuity of care for all participants of the Program. The Contractor shall communicate any subcontractor termination via email to the BHA Program Manager within one (1) business day.

(a) Report Title: Subcontractor Executed Copies

(b) Deadline: Upon execution of subcontracts

(c) Deliverables: cdhs_bhadeliverables@state.co.us

3.19 Critical Incident Reporting

If a Critical Incident (including death, physical assault and/or serious injuries sustained by Program staff or clients) occurs during a Co-Responder intervention or response, the Contractor shall make the appropriate selection on the BHA data collection form and inform the BHA Program Manager within three (3) days to determine any additional actions.

3.20 Period of Performance

From contract execution - June 30, 2026. Potential renewal of contract is subject to approval by the BHA Program Manager for each state fiscal year, if funding allows, and is subject to compliance and contract performance. State fiscal years end on June 30th. New fiscal years begin July 1st.

Article 4
Minimum Qualifications

4.1 The Contractor shall create, sustain, or expand a Co-Responder program in the community they serve.

4.2 The Contractor shall partner with behavioral health specialists to best meet the needs of the community and partnering agencies, taking population density and other available resources into consideration.

4.3 Behavioral health Co-Responders shall be dispatched along with law enforcement or may provide a joint secondary response on these calls.

4.4 The behavioral health provider shall offer assessment and crisis intervention services at the scene, provide referral information to the individual, and provide follow-up, when necessary.

4.5 The Contractor shall implement and maintain the Program for its community by collaborating with key stakeholders to ensure service delivery, training, and resource coordination.

4.6 The Contractor shall collect data, measure outcomes, and report Program outcomes to the State to assist in determining the effectiveness of the Program.

(a) Report Title: Monthly data reporting

(b) Deadline: Fifteen (15) days after the end of the reporting month

(c) Deliverables: cdhs_bhadeliverables@state.co.us

Article 5
Deliverables

5.1 Deliverables Table

The Contractor shall provide the deliverables in accordance with the dates outlined in the table below to cdhs_bhadeliverables@state.co.us, unless otherwise specified. Deliverable deadlines occurring after contract end date are contingent upon contract renewal. Deadlines may be altered administratively.

Deliverable (emailed to cdhs_bhadeliverables@state.co.us)	Deadline	Contract Reference
Revised Work Plan	Due 30 days from Contract Effective Date and annually thereafter	Exhibit A, SOW, Article 3.2
Program Policies and Procedures Document	During implementation phase: 1. Draft document due to BHA ninety (90) days from Contract Effective Date. 2. Final document due to BHA thirty (30) days from reviewed draft sent from BHA to Contractor.	Exhibit A, SOW, Article 3.10

	Subsequent updates to policies and procedures due to BHA within ten (10) days of changes.	
Partnership agreement(s) copies	Upon execution of partnership agreement(s)	Exhibit A, SOW, Article 3.8
Monthly Progress Status Meeting	Monthly	Exhibit A, SOW, Article 3.11
Data reporting (Using BHA provided template upon the contract execution)	Fifteen (15) days after the end of the reporting month	Exhibit A, SOW, Article 4.6
Subcontract(s) copies	Upon execution of subcontract(s)	Exhibit A, SOW, Article 3.17
Steering Committee and Policy Coordination Group Member Rosters	Sixty (60) days after contract execution and as updated	Exhibit A, SOW, Articles 3.5 and 3.6

Article 6

Performance Outcome Measures

6.1 Measure: Number of referrals received and responded to by Program
Outcome Goal: Of the total number of Program referrals, 70% or more will receive a response.

6.2 Measure: Number of calls that do not result in arrest.
Outcome Goal: Of the total number of active Co-Responder calls, 90% or more will not result in arrest when there is no cause for mandatory arrest (at the discretion of the officer).

6.3 Measure: Number of interventions, services and resource linkage provided to individuals contacted by the Program.
Outcome Goal: Of the total number of individuals contacted, 70% will receive one or more intervention, service, or linkage to resources.

COLORADO
Behavioral Health Administration

Exhibit B: FY26 Annual Budget

BHA Program	Co-Responder

Agency Name	Littleton Police Department	**Program Contact Name, Title**	Commander Hal Mandler
		Phone	303-795-3889
		Email	hmandler@littletongov.org
Budget Period	FY 26: 07.01.2025 - 06.30.2026	**Fiscal Contact Name, Title**	Commander Hal Mandler
		Phone	303-795-3889
		Email	hmandler@littletongov.org
Project Name	Littleton Police Department Co-Responder Program	**Date Completed**	4/3/2025

All budget numbers are estimates. Contract billing will be on a cost reimbursement basis for actual expenses incurred.

Expenditure Categories					
Personnel Services / Salaried Employees					Annual Budget
Position Title	Description of Work	Gross or Annual Salary	Fringe	Percent of Time on Project	Total Amount Requested from BHA
					$ -
Personnel Services / Hourly Employees					Annual Budget
Position Title	Description of Work	Hourly Wage	Hourly Fringe	Total # of Hours on Project	Total Amount Requested from BHA
					$ -
				Total Personnel Services (including fringe benefits)	$ -
Contractors / Consultants (payments to third parties or entities)					Annual Budget
Contractor Name	Description of Work		Rate	Quantity	Total Amount Requested from BHA
AllHealth Network	Two co-responder positions (personnel are embedded within the Police Department, riding with officers responding to 9-1-1 calls to de-escalate, assess, and provide crisis interventions) - to include hourly rate, shift differential, overtime, benefits, and payroll taxes		$ 14,666.00	1	$ 14,666.00
AllHealth Network	One Crisis Case Manager position (embedded in the Police Department, riding with officers responding to high resource needs, unhoused population, and complete cases) - to include hourly rate, shift differential, overtime, benefits, and payroll taxes		$ 70,034.00	1	$ 70,034.00

City of Littleton Contract ID 3195

AllHealth Network	Program Manager who provides clinical supervision of all clinical personnel and completed administrative work such as scheduling, programming, timesheets, etc.	$ 23,835.00	1	$ 23,835.00
			Total Contractors/Consultants	**$ 108,535.00**
	Subawards			Annual Budget
Contractor Name	Description of Work	Rate	Quantity	Total Amount Requested from BHA
				$ -
			Total Subawards	**$ -**
	Travel			Annual Budget
Contractor Name	Description of Work	Rate	Quantity	Total Amount Requested from BHA
				$ -
			Total Travel	**$ -**
	Supplies & Operating Expenses			Annual Budget
Item	Description of Item	Rate	Quantity	Total Amount Requested from BHA
				$ -
			Total Supplies & Operating Expenses	**$ -**
			TOTAL DIRECT COSTS (TDC)	**$ 108,535.00**
	Exclusions from Indirect Cost Base expenses per OMB 2CFR § 196			
			Subaward in excess of $50,000	$ -
			Rent	$ -
			Equipment	$ -
			Other	$ -
			Total Expenses per OMB 2CFR § 200	$ -
			MODIFIED TOTAL DIRECT COSTS (MTDC)	**$ 108,535.00**
	Indirect Costs			Annual Budget
Indirect Cost	Description of Item		Percentage	Total Amount Requested
				$ -
			Total Indirect	$ -
			TOTAL Request	**$ 108,535.00**

The Parties may mutually agree, in writing, to modify the Budget administratively using an BHA Budget Reallocation form

Exhibit C – Miscellaneous Provisions

I. General Provisions and Requirements

A. Finance and Data Protocols

The Contractor shall comply with the Behavioral Health Administration's (BHA) most current Finance and Data Protocols and the Behavioral Health Accounting and Auditing Guidelines, made a part of this Contract by reference.

B. Marketing and Communications

The Contractor shall comply with the following marketing and communications requirements:

1. Reports or Evaluations.

   All reports or evaluations funded by BHA must be reviewed by BHA staff, including program, data, and communications, over a period of no fewer than fifteen business days. The Contractor may be asked to place a report or evaluation on a BHA template and the report or evaluation is required to display the BHA logo. The Contractor shall submit the finished document to BHA in its final format and as an editable Word or Google document.

2. Press Releases.

   All press releases about work funded by BHA must note that the work is funded by the Colorado Department of Human Services, Behavioral Health Administration. Press releases about work funded by BHA must be reviewed by BHA program and communications staff over a period of no fewer than five business days.

3. Marketing Materials.

   Contractor shall include the current Colorado Department of Human Services, Behavioral Health Administration logo on any marketing materials, such as brochures or fact sheets, that advertise programs to be funded by this Contract. Contractor shall submit marketing materials to BHA Communications Team for approval prior to release. BHA's Communications Team shall provide feedback or approval within five business days

4. All Other Documents.

   All other documents published by the Contractor about its BHA-funded work, including presentations or website content, should mention the Colorado Department of Human Services, Behavioral Health Administration as a funder.

5. Opinion of BHA.

   BHA may require the Contractor to add language to documents that mention BHA reading: “The views, opinions and content expressed do not necessarily reflect the views, opinions or policies of the Colorado Department of Human Services, Behavioral Health Administration.”

C. Start-Up Costs

   If the State reimburses the Contractor for any start-up costs and the Contractor closes the program or facility within three years of receipt of the start-up costs, the Contractor shall reimburse the State for said start-up costs within sixty days of the closure. The Contractor is not required to reimburse the State for start-up costs if the facility or program closure is due to BHA eliminating funding to that specific program and/or budget line item.

D. Immediate Notification of Closures or Reductions in Force

   If the Contractor intends to close a facility or program, it shall notify the BHA Contracts Unit at least five business days prior to the closure. Similarly, if the Contractor, or any sub-contractor provider, intends to conduct a reduction in force which affects a program funded through this contract, the Contractor shall notify the BHA Contracts Unit at least five business days prior to the layoffs.

E. Licensing and Designation Database Electronic Record System (LADDERS)

   The Contractor shall use LADDERS (http://www.colorado.gov/ladders) as needed and/or as required by rule to submit applications for BHA licensing and designation, keep current all provider directory details, and submit policies and procedures.

F. Contract Contact Procedure

   The Contractor shall submit all requests for BHA interpretation of this Contract or for amendments to this Contract to the BHA Contract Manager.

G. Procurement Requirement

   The Contractor shall comply with all the provisions and requirements of RFP,IBEH,202500000152 and with Contractor’s solicitation response thereto.

H. Continuity of Operations Plan

1. In the event of an emergency resulting in a disruption of normal activities, BHA may request that Contractor provide a plan describing how Contractor will ensure the execution of essential functions of the Contract, to the extent possible under the circumstances of the inciting emergency ("Continuity of Operations Plan" or "Plan").
2. The Continuity of Operations Plan must be specific and responsive to the circumstances of the identified emergency.
3. BHA will provide formal notification of receipt of the Continuity of Operations Plan to the Contractor.
4. The Continuity of Operations Plan will not impact or change the budget or any other provisions of the contract, and Contractor's performance will be held to the same standards and requirements as the original Contract terms, unless otherwise specified in the Continuity of Operations Plan.
    a. Any submitted Continuity of Operations Plan will be ratified as an amendment to the contract as soon as possible.
5. Contractor shall communicate, in a format mutually agreed upon by BHA and Contractor staff, on a frequency that supports the monitoring of services under the Continuity of Operations Plan. If adjustments are needed to the Plan, such adjustments will be made in writing and accompanied by written notice of receipt from BHA.
    a. As part of the BHA/Contractor communication during the emergency, Contractor and BHA will evaluate whether the emergency has resolved such that normal operations may be resumed.
    b. Contractor and BHA will agree in writing when the emergency is sufficiently resolved and agree to a closeout period that is four weeks or less.
    c. BHA will submit notice accepting the termination of the Continuity of Operations Plan to the Contractor as the final action for any qualifying emergency response.

I. Cultural Responsiveness in Service Delivery

1. The Behavioral Health Administration expects funding dollars to support equity in access, services provided, and behavioral health outcomes among individuals of all cultures, gender identities, sexual orientations, races, and ethnicities. Accordingly, Contractors should collect and use data to: (1) identify priority populations vulnerable to health disparities encompassing the contractor's entire geographic service area (e.g., racial, ethnic, limited English speaking, indigenous, sexual orientation, gender identity groups, etc.) and (2) implement strategies to decrease the disparities in access, service use, and outcomes—both within those subpopulations and in comparison to the general population.
2. One strategy for addressing health disparities is the use of the recently revised National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care (CLAS). The U.S. Department of Health and Human Services (HHS) Think Cultural Health website (https://thinkculturalhealth.hhs.gov) also features information, continuing education opportunities, resources, and more for health and health care professionals to learn about culturally and linguistically appropriate services, or CLAS.
3. Contractors providing direct behavioral health prevention, treatment, or recovery services shall submit one of the following two documents to cdhs_BHAdeliverables@state.co.us by August 31 annually:
    a. If a provider has completed an equity plan that identifies how they will address health equity, they can submit the plan or
    b. Submit a completed CLAS checklist that follows this HHS format: https://thinkculturalhealth.hhs.gov/assets/pdfs/AnImplementationChecklistfortheNationalCLASStandards.pdf

J. Prohibition on Marijuana

Funds may not be used, directly or indirectly, to purchase, prescribe, or provide marijuana or treatment using marijuana. Treatment in this context includes the treatment of opioid use disorder. Funds also cannot be provided to any individual who or organization that provides or permits marijuana use for the purposes of treating substance use or mental disorders. This prohibition does not apply to those providing such treatment in the context of clinical research permitted by the DEA and under an FDA-approved investigational new drug application where the article being evaluated is marijuana or a constituent thereof that is otherwise a banned controlled substance under federal law.

K. Monitoring Requirements

If the Contractor is a subrecipient of federal funds, the Contractor shall comply with monitoring requirements indicated by the Contractor's risk level determined by the subrecipient risk assessment form completed by Contractor, which may include but are not limited to:

1. Monthly or quarterly monitoring calls
2. Invoice supporting documentation, for example: timesheets, logs of travel, or wraparound service costs
3. Routine programmatic reports
4. Technical assistance and training
5. Site visits

II. Use of Subcontracts

A. Services described in this Contract may be performed by Contractor or by a subcontractor, except where this Contract states explicitly that a service must not be subcontracted.

B. Contractor shall ensure that its subcontractors perform to the terms of this Contract as set forth in the Contract provisions.

C. Any subcontract for services must include, at a minimum, the following:

D. The Contractor shall provide to BHA a copy of any proposed subcontract between the Contractor and any potential provider of services to fulfill any requirements of this Contract, to cdhs_BHAdeliverables@state.co.us within thirty days of subcontract execution.

1. A description of each partner's participation
2. Responsibilities to the program (policy and/or operational)
3. Resources the subcontractor will contribute, reimbursement rates, services to be included and processes in collecting and sharing data and the most recent CDHS version of the HIPAA Business Associates Addendum, if this Contract contains the HIPAA Business Associates Addendum/Qualified Service Organization Addendum as an exhibit
4. A copy of this Contract and all its terms and conditions

E. BHA reserves the right to require Contractor to renegotiate subcontracts where necessary to adhere to the terms of this Contract.

F. Subcontractor/Partnership Termination. In the event where partnerships with a subcontractor such as a treatment provider is terminated, the Contractor shall transition to a new partnership no later than thirty days from termination to ensure continuity of care for all participants of the program.

III. Financial Requirements

A. Funding Sources

The Contractor shall identify all funds delivered to subcontractors as state general fund, state cash funds, or federal grant dollars in Exhibit B, "Budget." If federal grant dollars, the Contractor shall communicate the CFDA number to all sub-contractors in their sub-contracts.

B. Program Income

Program income generated through grant funded programs are additive funding that must be utilized for a consistent purpose as outlined in 2 CFR 200.307(e)(2). If Contractor charges and receives fees for services, or otherwise receives income associated with the sponsored program, this is considered program income and is required to be tracked and managed in accordance with the conditions of the award.

C. Budget Reallocations

The Contractor may reallocate funds between the budget categories of this contract, up to ten percent of the total contract amount, upon written approval by BHA, without a contract amendment. Any allowable reallocation is still subject to the limitations of the Not to Exceed and the Maximum Amount Available per Fiscal Year.

D. Payment Terms

1. The Contractor shall invoice monthly for services, no later than the twentieth of the month following when services are provided.
2. The Contractor shall utilize the invoice template(s) provided by BHA. Contractor shall comply with the invoicing instructions contained within the invoice template, and requests for supporting documentation.
3. All payment requests shall be submitted electronically to CDHS_BHApayment@state.co.us.
4. Year-end invoice estimates are due by June 15th. Final invoice requests in excess of the submitted estimates are payable contingent on available funds.
5. Final invoices are due no later than August 30th.
6. If the Contractor is a recipient of Federal Funds, final invoices are due no later than forty-five days after the end date of the grant.
7. Invoices for the prior fiscal year received by August 30th which require revisions must be final by September 10th or they may not be paid.
8. Any requests for payment received after September 10th for the prior state fiscal year or after December 10th for the prior federal fiscal year cannot be processed by BHA.
9. The State will make payment on invoices within forty-five days of receipt of a correct and complete invoice to CDHS_BHApayment@state.co.us. Consequently, the Contractor must have adequate solvency to pay its expenses up to forty-five days after invoice submission to the State.

Exhibit D - HIPAA Business Associate Agreement

This HIPAA Business Associate Agreement ("Agreement") between the State and Contractor is agreed to in connection with, and as an exhibit to, the Contract. For purposes of this Agreement, the State is referred to as "Covered Entity" and the Contractor is referred to as "Business Associate". Unless the context clearly requires a distinction between the Contract and this Agreement, all references to "Contract" shall include this Agreement.

1. Purpose

Covered Entity wishes to disclose information to Business Associate, which may include Protected Health Information ("PHI"). The Parties intend to protect the privacy and security of the disclosed PHI in compliance with the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), Pub. L. No. 104-191 (1996) as amended by the Health Information Technology for Economic and Clinical Health Act ("HITECH Act") enacted under the American Recovery and Reinvestment Act of 2009 ("ARRA") Pub. L. No. 111–5 (2009), implementing regulations promulgated by the U.S. Department of Health and Human Services at 45 C.F.R. Parts 160, 162 and 164 (the "HIPAA Rules") and other applicable laws, as amended. Prior to the disclosure of PHI, Covered Entity is required to enter into an agreement with Business Associate containing specific requirements as set forth in, but not limited to, Title 45, Sections 160.103, 164.502(e) and 164.504(e) of the Code of Federal Regulations ("C.F.R.") and all other applicable laws and regulations, all as may be amended.

2. Definitions

The following terms used in this Agreement shall have the same meanings as in the HIPAA Rules: Breach, Data Aggregation, Designated Record Set, Disclosure, Health Care Operations, Individual, Minimum Necessary, Notice of Privacy Practices, Protected Health Information, Required by Law, Secretary, Security Incident, Subcontractor, Unsecured Protected Health Information, and Use.

The following terms used in this Agreement shall have the meanings set forth below:

A. **Business Associate**. "Business Associate" shall have the same meaning as the term "business associate" at 45 C.F.R. 160.103, and shall refer to Contractor.

B. **Covered Entity**. "Covered Entity" shall have the same meaning as the term "covered entity" at 45 C.F.R. 160.103, and shall refer to the State.

C. **Information Technology and Information Security.** "Information Technology" and "Information Security" shall have the same meanings as the terms "information technology" and "information security", respectively, in §24-37.5-102, C.R.S.

Capitalized terms used herein and not otherwise defined herein or in the HIPAA Rules shall have the meanings ascribed to them in the Contract.

3. Obligations and Activities of Business Associate

A. **Permitted Uses and Disclosures.**

i. Business Associate shall use and disclose PHI only to accomplish Business Associate's obligations under the Contract.

ii. To the extent Business Associate carries out one or more of Covered Entity's obligations under Subpart E of 45 C.F.R. Part 164, Business Associate shall comply with any and all requirements of Subpart E that apply to Covered Entity in the performance of such obligation.

iii. Business Associate may disclose PHI to carry out the legal responsibilities of Business Associate, provided, that the disclosure is Required by Law or Business Associate obtains reasonable assurances from the person to whom the information is disclosed that:

a. the information will remain confidential and will be used or disclosed only as Required by Law or for the purpose for which Business Associate originally disclosed the information to that person, and;

b. the person notifies Business Associate of any Breach involving PHI of which it is aware.

iv. Business Associate may provide Data Aggregation services relating to the Health Care Operations of Covered Entity. Business Associate may de-identify any or all PHI created or received by Business Associate under this Agreement, provided the de-identification conforms to the requirements of the HIPAA Rules.

B. **Minimum Necessary.** Business Associate, its Subcontractors and agents, shall access, use, and disclose only the minimum amount of PHI necessary to

accomplish the objectives of the Contract, in accordance with the Minimum Necessary Requirements of the HIPAA Rules including, but not limited to, 45 C.F.R. 164.502(b) and 164.514(d).

C. **Impermissible Uses and Disclosures**.

i. Business Associate shall not disclose the PHI of Covered Entity to another covered entity without the written authorization of Covered Entity.

ii. Business Associate shall not share, use, disclose or make available any Covered Entity PHI in any form via any medium with or to any person or entity beyond the boundaries or jurisdiction of the United States without express written authorization from Covered Entity.

D. **Business Associate's Subcontractors**.

i. Business Associate shall, in accordance with 45 C.F.R. 164.502(e)(1)(ii) and 164.308(b)(2), ensure that any Subcontractors who create, receive, maintain, or transmit PHI on behalf of Business Associate agree in writing to the same restrictions, conditions, and requirements that apply to Business Associate with respect to safeguarding PHI.

ii. Business Associate shall provide to Covered Entity, on Covered Entity's request, a list of Subcontractors who have entered into any such agreement with Business Associate.

iii. Business Associate shall provide to Covered Entity, on Covered Entity's request, copies of any such agreements Business Associate has entered into with Subcontractors.

E. **Access to System**. If Business Associate needs access to a Covered Entity Information Technology system to comply with its obligations under the Contract or this Agreement, Business Associate shall request, review, and comply with any and all policies applicable to Covered Entity regarding such system including, but not limited to, any policies promulgated by the Office of Information Technology and available at http://oit.state.co.us/about/policies.

F. **Access to PHI**. Business Associate shall, within ten days of receiving a written request from Covered Entity, make available PHI in a Designated Record Set to

Covered Entity as necessary to satisfy Covered Entity's obligations under 45 C.F.R. 164.524.

G. **Amendment of PHI**.

i. Business Associate shall within ten days of receiving a written request from Covered Entity make any amendment to PHI in a Designated Record Set as directed by or agreed to by Covered Entity pursuant to 45 C.F.R. 164.526, or take other measures as necessary to satisfy Covered Entity's obligations under 45 C.F.R. 164.526.

ii. Business Associate shall promptly forward to Covered Entity any request for amendment of PHI that Business Associate receives directly from an Individual.

H. **Accounting Rights**. Business Associate shall, within ten days of receiving a written request from Covered Entity, maintain and make available to Covered Entity the information necessary for Covered Entity to satisfy its obligations to provide an accounting of Disclosure under 45 C.F.R. 164.528.

I. **Restrictions and Confidential Communications**.

i. Business Associate shall restrict the Use or Disclosure of an Individual's PHI within ten days of notice from Covered Entity of:

a. a restriction on Use or Disclosure of PHI pursuant to 45 C.F.R. 164.522; or

b. a request for confidential communication of PHI pursuant to 45 C.F.R. 164.522.

ii. Business Associate shall not respond directly to an Individual's requests to restrict the Use or Disclosure of PHI or to send all communication of PHI to an alternate address.

iii. Business Associate shall refer such requests to Covered Entity so that Covered Entity can coordinate and prepare a timely response to the requesting Individual and provide direction to Business Associate.

J. **Governmental Access to Records**. Business Associate shall make its facilities, internal practices, books, records, and other sources of information, including PHI, available to the Secretary for purposes of determining compliance with the HIPAA Rules in accordance with 45 C.F.R. 160.310.

K. **Audit, Inspection and Enforcement.**

i. Business Associate shall obtain and update at least annually a written assessment performed by an independent third party reasonably acceptable to Covered Entity, which evaluates the Information Security of the applications, infrastructure, and processes that interact with the Covered Entity data Business Associate receives, manipulates, stores and distributes. Upon request by Covered Entity, Business Associate shall provide to Covered Entity the executive summary of the assessment.

ii. Business Associate, upon the request of Covered Entity, shall fully cooperate with Covered Entity's efforts to audit Business Associate's compliance with applicable HIPAA Rules. If, through audit or inspection, Covered Entity determines that Business Associate's conduct would result in violation of the HIPAA Rules or is in violation of the Contract or this Agreement, Business Associate shall promptly remedy any such violation and shall certify completion of its remedy in writing to Covered Entity.

L. **Appropriate Safeguards.**

i. Business Associate shall use appropriate safeguards and comply with Subpart C of 45 C.F.R. Part 164 with respect to electronic PHI to prevent use or disclosure of PHI other than as provided in this Agreement.

ii. Business Associate shall safeguard the PHI from tampering and unauthorized disclosures.

iii. Business Associate shall maintain the confidentiality of passwords and other data required for accessing this information.

iv. Business Associate shall extend protection beyond the initial information obtained from Covered Entity to any databases or collections of PHI containing information derived from the PHI. The provisions of this section shall be in force unless PHI is de-identified in conformance to the requirements of the HIPAA Rules.

M. **Safeguard During Transmission.**

i. Business Associate shall use reasonable and appropriate safeguards including, without limitation, Information Security measures to ensure that all transmissions of PHI are authorized and to prevent use or disclosure of PHI other than as provided for by this Agreement.

ii. Business Associate shall not transmit PHI over the internet or any other insecure or open communication channel unless the PHI is encrypted or otherwise safeguarded with a FIPS-compliant encryption algorithm.

N. **Reporting of Improper Use or Disclosure and Notification of Breach**.

i. Business Associate shall, as soon as reasonably possible, but immediately after discovery of a Breach, notify Covered Entity of any use or disclosure of PHI not provided for by this Agreement, including a Breach of Unsecured Protected Health Information as such notice is required by 45 C.F.R. 164.410 or a breach for which notice is required under §24-73-103, C.R.S.

ii. Such notice shall include the identification of each Individual whose Unsecured Protected Health Information has been, or is reasonably believed by Business Associate to have been, accessed, acquired, or disclosed during such Breach.

iii. Business Associate shall, as soon as reasonably possible, but immediately after discovery of any Security Incident that does not constitute a Breach, notify Covered Entity of such incident.

iv. Business Associate shall have the burden of demonstrating that all notifications were made as required, including evidence demonstrating the necessity of any delay.

O. **Business Associate's Insurance and Notification Costs**.

i. Business Associate shall bear all costs of a Breach response including, without limitation, notifications, and shall maintain insurance to cover:

a. loss of PHI data;

b. Breach notification requirements specified in HIPAA Rules and in §24-73-103, C.R.S.; and

c. claims based upon alleged violations of privacy rights through improper use or disclosure of PHI.

ii. All such policies shall meet or exceed the minimum insurance requirements of the Contract or otherwise as may be approved by Covered Entity (e.g., occurrence basis, combined single dollar limits, annual aggregate dollar limits, additional insured status, and notice of cancellation).

iii. Business Associate shall provide Covered Entity a point of contact who possesses relevant Information Security knowledge and is accessible 24 hours per day, 7 days per week to assist with incident handling.

iv. Business Associate, to the extent practicable, shall mitigate any harmful effect known to Business Associate of a Use or Disclosure of PHI by Business Associate in violation of this Agreement.

P. **Subcontractors and Breaches**.

i. Business Associate shall enter into a written agreement with each of its Subcontractors and agents, who create, receive, maintain, or transmit PHI on behalf of Business Associate. The agreements shall require such Subcontractors and agents to report to Business Associate any use or disclosure of PHI not provided for by this Agreement, including Security Incidents and Breaches of Unsecured Protected Health Information, on the first day such Subcontractor or agent knows or should have known of the Breach as required by 45 C.F.R. 164.410.

ii. Business Associate shall notify Covered Entity of any such report and shall provide copies of any such agreements to Covered Entity on request.

Q. **Data Ownership**.

i. Business Associate acknowledges that Business Associate has no ownership rights with respect to the PHI.

ii. Upon request by Covered Entity, Business Associate immediately shall provide Covered Entity with any keys to decrypt information that the Business Association has encrypted and maintains in encrypted form, or shall provide such information in unencrypted usable form.

R. **Retention of PHI**. Except upon termination of this Agreement as provided in Section 5, below, Business Associate and its Subcontractors or agents shall

retain all PHI throughout the term of this Agreement, and shall continue to maintain the accounting of disclosures required under Section 3.h, above, for a period of six years.

4. Obligations of Covered Entity

A. **Safeguards During Transmission**. Covered Entity shall be responsible for using appropriate safeguards including encryption of PHI, to maintain and ensure the confidentiality, integrity, and security of PHI transmitted pursuant to this Agreement, in accordance with the standards and requirements of the HIPAA Rules.

A. **Notice of Changes**.

i. Covered Entity maintains a copy of its Notice of Privacy Practices on its website. Covered Entity shall provide Business Associate with any changes in, or revocation of, permission to use or disclose PHI, to the extent that it may affect Business Associate's permitted or required uses or disclosures.

ii. Covered Entity shall notify Business Associate of any restriction on the use or disclosure of PHI to which Covered Entity has agreed in accordance with 45 C.F.R. 164.522, to the extent that it may affect Business Associate's permitted use or disclosure of PHI.

5. Termination

A. **Breach**.

i. In addition to any Contract provision regarding remedies for breach, Covered Entity shall have the right, in the event of a breach by Business Associate of any provision of this Agreement, to terminate immediately the Contract, or this Agreement, or both.

ii. Subject to any directions from Covered Entity, upon termination of the Contract, this Agreement, or both, Business Associate shall take timely, reasonable, and necessary action to protect and preserve property in the possession of Business Associate in which Covered Entity has an interest.

B. **Effect of Termination**.

i. Upon termination of this Agreement for any reason, Business Associate, at the option of Covered Entity, shall return or destroy all PHI that Business Associate, its agents, or its Subcontractors maintain in any form, and shall not retain any copies of such PHI.

ii. If Covered Entity directs Business Associate to destroy the PHI, Business Associate shall certify in writing to Covered Entity that such PHI has been destroyed.

iii. If Business Associate believes that returning or destroying the PHI is not feasible, Business Associate shall promptly provide Covered Entity with notice of the conditions making return or destruction infeasible. Business Associate shall continue to extend the protections of Section 3 of this Agreement to such PHI, and shall limit further use of such PHI to those purposes that make the return or destruction of such PHI infeasible.

6. Injunctive Relief

Covered Entity and Business Associate agree that irreparable damage would occur in the event Business Associate or any of its Subcontractors or agents use or disclosure of PHI in violation of this Agreement, the HIPAA Rules or any applicable law. Covered Entity and Business Associate further agree that money damages would not provide an adequate remedy for such Breach. Accordingly, Covered Entity and Business Associate agree that Covered Entity shall be entitled to injunctive relief, specific performance, and other equitable relief to prevent or restrain any Breach or threatened Breach of and to enforce specifically the terms and provisions of this Agreement.

7. Limitation of Liability

Any provision in the Contract limiting Contractor's liability shall not apply to Business Associate's liability under this Agreement, which shall not be limited.

8. Disclaimer

Covered Entity makes no warranty or representation that compliance by Business Associate with this Agreement or the HIPAA Rules will be adequate or satisfactory for Business Associate's own purposes. Business Associate is solely responsible for all decisions made and actions taken by Business Associate regarding the safeguarding of PHI.

9. Certification

Covered Entity has a legal obligation under HIPAA Rules to certify as to Business Associate's Information Security practices. Covered Entity or its authorized agent or contractor shall have the right to examine Business Associate's facilities, systems, procedures, and records, at Covered Entity's expense, if Covered Entity determines that examination is necessary to certify that Business Associate's Information Security safeguards comply with the HIPAA Rules or this Agreement.

10. Amendment

A. **Amendment to Comply with Law**. The Parties acknowledge that state and federal laws and regulations relating to data security and privacy are rapidly evolving and that amendment of this Agreement may be required to provide procedures to ensure compliance with such developments.

i. In the event of any change to state or federal laws and regulations relating to data security and privacy affecting this Agreement, the Parties shall take such action as is necessary to implement the changes to the standards and requirements of HIPAA, the HIPAA Rules and other applicable rules relating to the confidentiality, integrity, availability and security of PHI with respect to this Agreement.

ii. Business Associate shall provide to Covered Entity written assurance satisfactory to Covered Entity that Business Associate shall adequately safeguard all PHI, and obtain written assurance satisfactory to Covered Entity from Business Associate's Subcontractors and agents that they shall adequately safeguard all PHI.

iii. Upon the request of either Party, the other Party promptly shall negotiate in good faith the terms of an amendment to the Contract embodying written assurances consistent with the standards and requirements of HIPAA, the HIPAA Rules, or other applicable rules.

iv. Covered Entity may terminate this Agreement upon 30 days' prior written notice in the event that:

a. Business Associate does not promptly enter into negotiations to amend the Contract and this Agreement when requested by Covered Entity pursuant to this Section; or

b. Business Associate does not enter into an amendment to the Contract and this Agreement, which provides assurances regarding the safeguarding of PHI sufficient, in Covered Entity's sole discretion, to satisfy the standards and requirements of the HIPAA, the HIPAA Rules and applicable law.

B. **Amendment of Appendix**. The Appendix to this Agreement may be modified or amended by the mutual written agreement of the Parties, without amendment of this Agreement. Any modified or amended Appendix agreed to in writing by the Parties shall supersede and replace any prior version of the Appendix.

11. Assistance in Litigation or Administrative Proceedings

Covered Entity shall provide written notice to Business Associate if litigation or administrative proceeding is commenced against Covered Entity, its directors, officers, or employees, based on a claimed violation by Business Associate of HIPAA, the HIPAA Rules or other laws relating to security and privacy or PHI. Upon receipt of such notice and to the extent requested by Covered Entity, Business Associate shall, and shall cause its employees, Subcontractors, or agents assisting Business Associate in the performance of its obligations under the Contract to, assist Covered Entity in the defense of such litigation or proceedings. Business Associate shall, and shall cause its employees, Subcontractor's and agents to, provide assistance, to Covered Entity, which may include testifying as a witness at such proceedings. Business Associate or any of its employees, Subcontractors or agents shall not be required to provide such assistance if Business Associate is a named adverse party.

12. Interpretation and Order of Precedence

Any ambiguity in this Agreement shall be resolved in favor of a meaning that complies and is consistent with the HIPAA Rules. In the event of an inconsistency between the Contract and this Agreement, this Agreement shall control. This Agreement supersedes and replaces any previous, separately executed HIPAA business associate agreement between the Parties.

13. Survival

Provisions of this Agreement requiring continued performance, compliance, or effect after termination shall survive termination of this contract or this agreement and shall be enforceable by Covered Entity.

Appendix to HIPAA Business Associate Agreement

This Appendix ("Appendix") to the HIPAA Business Associate Agreement ("Agreement") is s an appendix to the Contract and the Agreement. For the purposes of this Appendix, defined terms shall have the meanings ascribed to them in the Agreement and the Contract. Unless the context clearly requires a distinction between the Contract, the Agreement, and this Appendix, all references to "Contract" or "Agreement" shall include this Appendix.

1. Purpose

This Appendix sets forth additional terms to the Agreement. Any sub-section of this Appendix marked as "Reserved" shall be construed as setting forth no additional terms.

2. Additional Terms

A. **Additional Permitted Uses**. In addition to those purposes set forth in the Agreement, Business Associate may use PHI for the following additional purposes:

i. Reserved.

B. **Additional Permitted Disclosures**. In addition to those purposes set forth in the Agreement, Business Associate may disclose PHI for the following additional purposes:

i. Reserved.

C. **Approved Subcontractors**. Covered Entity agrees that the following Subcontractors or agents of Business Associate may receive PHI under the Agreement:

i. Reserved.

D. **Definition of Receipt of PHI**. Business Associate's receipt of PHI under this Contract shall be deemed to occur, and Business Associate's obligations under the Agreement shall commence, as follows:

i. Reserved.

E. **Additional Restrictions on Business Associate**. Business Associate agrees to comply with the following additional restrictions on Business Associate's use and disclosure of PHI under the Contract:

i. Reserved.

F. **Additional Terms**. Business Associate agrees to comply with the following additional terms under the Agreement:

i. Reserved.

File #: Resolution 45-2025, **Version:** 1

Agenda Date: 05/20/2025

Subject:
Resolution 45-2025: Approving a Construction Contract with TAK Broadband, LLC for the Littleton Boulevard Fiberoptics Installation for Traffic Operations Project, City Project No. 21-37

From:	James L. Becklenberg, City Manager
Prepared by:	Brent Soderlin, Director of Public Works & Utilities
	Brent Thompson, City Engineer
	Matthew Matuszewski, CIP Manager
Presentations:	N/A

PURPOSE:
Approving a Construction Contract with TAK Broadband, LLC for the Littleton Boulevard Fiberoptics Installation for Traffic Operations Project, City Project No. 21-37.

LONG-TERM OUTCOME(S) SERVED:
Safe Community; High Quality Governance

DISCUSSION:
The City of Littleton's Public Works Department is responsible for the operations and maintenance of traffic signals within the city, including signal timing and signal phasing. Fiberoptic communications are necessary to securely and rapidly communicate between traffic control systems and the traffic signal control network. Traffic safety through the city is critical as highlighted in the city's Transportation Master Plan. Traffic congestion and traffic signal operational efficiency are issues that routinely and adversely affect many citizens and rank high on topics of concern in community surveys.

The City of Littleton's safety, communications and operational success requires a reliable, secure and high-speed fiber network. The City of Littleton operates many buildings and traffic signals throughout its municipal boundaries. An interconnected fiber network, whether connecting to facilities or traffic signals, provides frequent and reliable communications with these infrastructure assets and city staff, including emergency services.

This proposed fiber communications upgrade project on Littleton Boulevard will establish new fiberoptic connections for the City of Littleton and Arapahoe County to accommodate future shared traffic operations and traffic management information. The proposed route will provide fiber on West Littleton Boulevard, connecting ten traffic signals, one pedestrian signal, and one emergency signal to the Littleton Center and existing fiber backbone in Broadway. A separate connection to the County Line Road and Erickson Boulevard signal will be constructed, connecting to the existing CDOT fiber on Santa Fe Drive. A third segment included in this project will extend the fiber network south on Datura Street from Littleton Boulevard, connecting five city facilities

including the Littleton Museum, Littleton Museum Collections Building, Littleton Municipal Courthouse, Littleton Center and Bemis Library. The installation of this new fiber network will eliminate the need for the city to lease fiber from Comcast, which currently costs the city about $5,000 per month.

The City of Littleton advertised an Invitation for Bids for construction of the Littleton Boulevard Fiberoptics Installation for Traffic Operations Project. The formal solicitation for the project closed on April 18th and all bids were reviewed for completeness and accuracy. TAK Broadband, LLC was identified as the lowest and most qualified bidder. Approval of this resolution would authorize a contract with TAK Broadband, LLC for construction of the Littleton Boulevard Fiberoptics Installation for Traffic Operations Project, City Project No. 21-37.

BACKGROUND:
The City of Littleton's safety, communications and operational success requires a reliable, secure and high-speed interconnected fiber network. The City of Littleton operates buildings and traffic signals throughout its municipal boundaries. Whether connecting to facilities or signals, a well-built fiber network provides reliable communications with other infrastructure assets and facilities, including emergency services. The traffic signals rely on communications and are critical to traffic safety, as highlighted in the Transportation Master Plan. Establishing an interconnected fiber network for municipal and emergency management services use ensures that the city and its partners can provide rapid and reliable communications throughout their networks to keep staff informed and the public safe.

The Littleton Boulevard Fiberoptics Installation for Traffic Operations Project serves as the next segment in the backbone fiber system identified in the Transportation Master Plan and Fiber Master Plan, which identify the need for Intelligent Transportation Systems technologies along key transportation corridors. This fiberoptic project will allow staff to undertake traffic signal equipment upgrades along Littleton Boulevard, connect to the fiber installed as part of the first phase of the Broadway Fiberoptic Project completed in 2024, and further the city's inter-agency collaboration. Future fiber installation projects are planned in the 5-year Capital Improvement Plan on the southern segment of Broadway to C470 (2027).

Key project elements include:

- The installation of fiber optics will provide reliable and efficient communication for the upgraded signal equipment along Littleton Boulevard from Rio Grande Street to Broadway.
- The equipment currently operating the four signalized intersections within the project area is outdated, preventing the ability for safety upgrades. The upgraded equipment will provide more consistency throughout Littleton for improved maintenance and management of the signal system.
- This project will not only enhance the communication network but aims to develop redundancy of the City's traffic communication network. The addition of fiber along this segment of Littleton Boulevard is a key step in creating a complete fiber loop around the city, allowing staff to maintain communication with its traffic assets while repairs are being completed in the event of unintentional fiber damage. This means that even if one section of the fiber is cut, communication can still be maintained through alternative routes within the fiber loop. This feature significantly improves the resilience and reliability of the communication system, ensuring uninterrupted communication between the traffic signals and the Littleton Central Traffic Control System in the Littleton Center.
- This project will provide access to a larger fiber traffic communication network for the jurisdictions connected in the first phase of the Broadway Fiberoptic Project (Littleton, Arapahoe County, and Centennial), and make further steps towards a vision of a future regional traffic operations center.

The Littleton Boulevard Fiberoptics Installation for Traffic Operations Project is divided into three tasks.

- The first task will splice into the existing fiber backbone on Broadway at West Littleton Boulevard, install fiber cable on West Littleton Boulevard from Broadway to Rio Grande Street, then proceed north to the Littleton Center and Arapahoe County Building.
- The second task will extend the fiber network south on Datura Street from Littleton Boulevard to the Littleton Museum, Littleton Museum Collections Building, and Bemis Library.
- The final task will splice the new fiber into the Colorado Department of Transportation's fiber backbone along Santa Fe Drive in order to connect the County Line Road and Erickson Boulevard signalized intersection.

This proposed communications upgrade project will continue installation of fiber connections for the City of Littleton and Arapahoe County to accommodate future shared traffic operations and traffic management information. The project will extend the reach of the fiber network installed with the Broadway Fiberoptic Project completed in 2024.

There are 432 strands of fiber installed along the alignment of the completed Broadway Fiberoptic project. Arapahoe County and the City of Centennial will be allowed to access this fiber, the details of which are outlined in a separate agreement. The 432 fiber strands will also be installed on the Littleton Boulevard Project. As part of access to this new fiber on Littleton Boulevard, Arapahoe County has agreed to contribute funding towards the project. A separate agreement with Arapahoe County will be brought before council at a future date which will outline the details of cost sharing and fiber sharing.

Prior Actions or Discussions

The construction of this project has not previously been discussed with city council.

FISCAL IMPACTS:

The proposed construction contract with TAK Broadband, LLC for the Littleton Boulevard Fiberoptics Installation for Traffic Operations Project is $586,370.00. Arapahoe County is contributing $116,279.00. The city costs of $470,091.00 will be funded from Transportation Impact Fees.

STAFF RECOMMENDATION:

Staff recommends approval of the resolution approving a construction contract.

ALTERNATIVES:

The alternative for approval of this resolution would be to reject the construction of the project. This would postpone connectivity of high-speed fiber to the city's and Arapahoe County's transportation and facilities assets. Currently, Littleton and the County rely upon lease agreements with fiber providers, which are costly and less reliable than a private City and County network.

PROPOSED MOTION:

I move to approve Resolution 45-2025 approving Construction Contract with TAK Broadband, LLC for the Littleton Boulevard Fiberoptics Installation for Traffic Operations Project, City Project No. 21-37.

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CITY OF LITTLETON, COLORADO

Resolution No. 45

Series, 2025

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LITTLETON, COLORADO, APPROVING A CONSTRUCTION CONTRACT BETWEEN THE CITY OF LITTLETON AND TAK BROADBAND, LLC FOR THE LITTLETON BOULEVARD FIBEROPTICS INSTALLATION FOR TRAFFIC OPERATIONS PROJECT - CITY PROJECT NO. 21-37

WHEREAS pursuant to Section 1-15-62(a) of the Littleton Municipal Code, City Council approval is a condition precedent to the approval of an Agreement in which the total value of the Agreement is over five hundred thousand dollars and 00/100 cents $500,00.00); and

WHEREAS the City issued an Invitation for Bid soliciting bids for the Littleton Boulevard Fiberoptics Installation for Traffic Operations Project, City Project No. 21-37; and

WHEREAS the contractor, TAK Broadband, LLC submitted a response to perform the project and the city, after examination of the contractor's submittal, has determined that the contractor has the requisite background, pricing, bond, and expertise to provide the requested work; and

WHEREAS city staff recommends acceptance of the contractor's proposal for work in accordance with the issued Invitation for Bid; and

WHEREAS, the city and TAK Broadband, LLC desire to enter into an agreement in which TAK Broadband, LLC will perform work in accordance with the terms and conditions outlined in the agreement, in substantially the same form attached hereto as Exhibit "A".

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF LITTLETON, COLORADO, THAT:

Section 1. The Littleton City Council hereby approves the construction contract by and between the City of Littleton and TAK Broadband, LLC, for the Littleton Boulevard Fiberoptics Installation for Traffic Operations Project, City Project No. 21-37, in substantially the same form attached hereto as Exhibit "A," and authorizes the Mayor, or authorized designee, to execute the same on behalf of the City of Littleton.

Section 2. The Resolution shall take effect upon its approval by the Littleton City Council.

INTRODUCED, READ, AND ADOPTED at a regularly scheduled meeting of the City Council of the City of Littleton, Colorado, on the 20th day of May 2025, at 6:30 p.m. at the Littleton Center, 2255 West Berry Avenue, Littleton, Colorado.

ATTEST:

_____
Colleen L. Norton
CITY CLERK

_____
Kyle Schlachter
MAYOR

APPROVED AS TO FORM:

_____
Reid Betzing
CITY ATTORNEY

CONSTRUCTION CONTRACT

THIS CONSTRUCTION CONTRACT ("Contract") is made and entered into on the date of the last signature set forth below, by and between the City of Littleton, a municipal corporation within the State of Colorado ("City"), and TAK Broadband, LLC, a Colorado limited liability company ("Contractor"). The Contractor and the City are referred to as a "Party" or collectively the "Parties."

RECITALS AND REPRESENTATIONS

WHEREAS the City issued a solicitation for bids no. 11-2025, and the Contractor submitted a bid to perform the work; and

WHEREAS the City has elected to accept the Contractor's bid.

NOW, THEREFORE, in consideration of the mutual covenants herein set forth, the Parties agree as follows:

1.1 **Contract Documents and Exhibits**. The term "Contract Documents" consist of this Contract together with the following:

Exhibit A	Scope of Work
Exhibit B	Bid Schedule
Exhibit C	General Conditions
Exhibit D	Construction Contract Forms
Exhibit E	Drawings and Specifications
Exhibit F	Special Conditions

All exhibits referred to in this Contract are attached hereto and are, by reference, incorporated herein for all purposes. In the event any matter, term, provision, or condition that is the subject of this Contract requires clarification or is in dispute, or is the subject of a difference of opinion, the purpose and intent of the Contract shall be first ascertained by reference to the Contract Documents in their entirety. In the event of any dispute or differences between the respective documents that constitute the Contract Documents, then the Contractor shall secure the written instructions from the City before proceeding with the performance of the services affected by such conflicts, omissions or discrepancies.

1.2 **Project.** The Contractor shall commence and complete the Scope of Work ("Work"), **Exhibit A**, in accordance with the Contract Documents, as defined herein. The Contractor agrees to perform and complete the Work in a proper and workmanlike manner, consistent with the highest standards of professional and construction practices and in full compliance with, and as required by or pursuant to, this Contract, and with the greatest economy, efficiency, and expedition consistent therewith, with only new, undamaged and first quality equipment, materials and supplies. The Contractor shall, at its own expense, furnish all labor,

materials, tools, supplies, machinery, utilities, permits, licenses, and other equipment that may be necessary for the completion of the Work, as outlined in the Contract Documents. No work shall commence until a Notice to Proceed has been issued, and if required by the City, until after approval by the City Council in accordance with the City Charter and City Code.

1.3 **Commencement and Completion of the Project**. The Contractor understands and agrees that all Work required under this Contract shall be fully completed, as set forth in the Contract Documents, within **154 calendar days of the date of the Notice to Proceed**. The Contractor acknowledges and understands that it is an essential term of this Contract that Contractor maintain a rate of progress in the Work that will result in completion of the Work in accordance with the Contract Documents, and to that end, Contractor agrees to proceed with all due diligence to complete the Work in a timely manner in accordance with the Contract Documents.

1.4 **Contract Price**. The City accepts the Contractor's bid for the estimated quantities and costs as set forth in the Bid Schedule, **Exhibit B**, in the total amount of **$586,370.00**. The City shall make payment(s) to Contractor in the manner and at such times as set forth in the General Conditions of such amounts as are required by the Contract Documents. The City shall deduct and retain five (5) percent from the total amount of each approved invoice, including Change Orders. The City may also deduct in addition to retainage as stated above, the additional amount(s) of any and all outstanding claims pursuant to Colorado Revised Statute ("C.R.S.") §38-26-107 from each approved invoice. The City has appropriated sufficient funds for the completion of this work.

1.5 **Payments to Constitute Current Expenditures.**

1.5.1 Notwithstanding any other term, provision, or condition herein, all financial obligations of the City are contingent on funds for that purpose being appropriated, budgeted and otherwise made available by the City Council. The City's obligations under the Contract shall not constitute a multiple-fiscal year direct or indirect debt or other financial obligation of the City within the meaning of Article X, Section 20 of the Colorado Constitution.

1.5.2 Further, pursuant to 103.6(2) of Article 91, Title 24, C.R.S., no Change Order, Amendment, or other form of order or directive by the City which requires additional compensable work to be performed, and which work causes the aggregate amount payable under this Contract to exceed the amount appropriated for the original Contract, shall be executed, or shall work be performed by the Contractor, unless the City provides written assurances to the Contractor that lawful appropriations to cover the costs of such additional work have been made or unless such work is covered under a remedy-granting provision of this Contract. For purposes of this

paragraph, "remedy-granting provision" shall be defined as set forth in C.R.S. §24-91-103.6(4).

1.6 **Confidentiality.** Notwithstanding any provision in the Contract Documents to the contrary, the City is obligated to comply with the Colorado Open Records Act (C.R.S. §§24-72-101 *et seq.*), which may require the City to disclose all or a portion of communications relating to the Contract, or terms of same, or of any transaction under the Contract, and other related matters. The Contractor shall familiarize itself with the Colorado Open Records Act. In no event shall the City be liable to the Contractor for the disclosure of all or a portion of communications, or relating documents, or electronic imaging, including all documents and exhibits that may be included as part of this Contract.

1.7 **Insurance.**

1.7.1 The Contractor shall not commence work, and shall not allow any subcontractor to commence work, until it has obtained all insurance required herein and such insurance has been approved by City. For the duration of the Contract, the Contractor must maintain the insurance coverage required in this section. The City's acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Contract shall not act as a waiver of the Contractor's breach of Contract or of any of the City's rights or remedies under this Contract.

1.7.2 The Contractor shall not be relieved of any liability, claims, demands, or other obligations assumed pursuant to the Contract Documents by reason of its failure to procure or maintain insurance, or by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.

1.7.3 The Contractor shall procure and maintain at its own cost and shall cause each subcontractor of the Contractor to procure and maintain at its own cost (or shall insure the activity of Contractor's subcontractors in Contractor's own policy with respect to), the minimum insurance coverages listed below. Such coverages shall be procured and maintained with forms and insurers acceptable to the City. All coverages shall be continuously maintained from the date of commencement of the Work. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage.

1. Workers' Compensation and Employers' Liability insurance with minimum limits of FIVE HUNDRED THOUSAND DOLLARS ($500,000) each accident, FIVE HUNDRED THOUSAND DOLLARS ($500,000) disease - policy limit, and FIVE HUNDRED THOUSAND DOLLARS ($500,000) disease - each employee. The policy shall cover obligations imposed

by the Workers' Compensation Act of Colorado and any other applicable laws for any employee engaged in the performance of Work.

2. Commercial General Liability insurance with minimum combined single limits of ONE MILLION DOLLARS ($1,000,000) each occurrence and TWO MILLION DOLLARS ($2,000,000) aggregate. The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, independent contractors, products, and both ongoing and completed operations. The policy shall include coverage for explosion, collapse, and underground hazards (XCU). The policy shall contain a severability of interests provision.

3. Comprehensive Automobile Liability insurance with a minimum combined single limit for bodily injury and property damage of ONE MILLION DOLLARS ($1,000,000) with respect to each of Contractor's owned, hired and/or non-owned vehicles assigned to or used in performance of the Work. The policy shall contain a severability of interests provision.

4. Installation Floater/Inland Marine insurance with minimum limits of not less than the insurable value of the work to be performed at completion. The value shall include the aggregate value of any City-furnished equipment and materials to be erected or installed by the Contractor not otherwise insured. The policy shall protect the Contractor and the City from all insurable risks of physical loss or damage to materials and equipment not otherwise covered, while in warehouses or storage areas, during installation, during testing, and after the Work under this Contract is completed. The policy shall be of the "all risks" type, with coverages designed for the circumstances which may occur in the particular Work to be performed under this Contract. The policy shall provide for losses to be payable to the Contractor and the City as their interests may appear. The policy shall contain a provision that in the event of payment for any loss under the coverage provided, the insurance company shall have no rights of recovery against the Contractor or the City.

1.7.4 The City of Littleton shall be included as additional insured for Commercial General Liability and Comprehensive Automobile Liability insurance. The

City of Littleton shall be included as additional insured or loss payee for Installation Floater/Inland Marine insurance. All policies of insurance providing additional insured status shall be primary insurance, and any insurance carried by the City, its officers, or its employees, shall be excess and not contributory insurance to that provided by Contractor. The additional insured endorsement for the Commercial General Liability insurance required above shall not contain any exclusion for bodily injury or property damage arising from completed operations. The Contractor shall be solely responsible for any deductible losses under each of the policies required above.

1.7.5 Certificates of insurance shall be completed by the Contractor's insurance company as evidence that policies providing the required coverages, conditions, and minimum limits are in full force and effect, and shall be subject to review and approval by the City. The certificate cannot contain "endeavor to" language in the portion of the certificate addressing cancellation. The City of Littleton shall be included as Certificate Holder. The City reserves the right to request and receive a certified copy of any policy and any endorsement thereto.

1.7.6 The coverages afforded under the policies shall not be cancelled, terminated or materially changed until at least thirty (30) days' prior written notice has been given to the City. Failure on the part of the Contractor to procure or maintain policies providing the required coverages, conditions, and minimum limits shall constitute a material breach of Contract upon which the City may immediately terminate the Contract, or at its discretion may procure or renew any such policy or any extended reporting period thereto and may pay any and all premiums in connection therewith, and all monies so paid by the City shall be repaid by Contractor to the City upon demand, or the City may offset the cost of the premiums against any monies due to Contractor from the City.

1.7.7 The Parties hereto understand and agree that the City is relying on, and does not waive or intend to waive by any provision of this Contract, the monetary limitations (presently $387,000 per person and $1,093,000 per occurrence) or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, C.R.S. § 24-10-101 et seq., as from time to time amended, or otherwise available to the City, its officers, or its employees.

1.8 **Taxes.** The City of Littleton is not subject to taxation. The Contractor shall not invoice the City for any state, federal or local taxes whatsoever. Upon written notification by the City, the Contractor shall reimburse the City in a timely manner for any taxes erroneously paid by the City.

1.9 **Waiver of Breach.** A waiver by any Party to the Contract or the breach of any term or provision of the Contract shall not operate or be construed as a waiver of any subsequent breach by either Party.

1.10 **No Third-Party Beneficiaries.** It is expressly understood and agreed that enforcement of the terms and conditions of this Contract, and all rights of action relating to such enforcement, shall be strictly reserved to the City and the Contractor and nothing contained in this Contract shall give or allow any such claim or right of action to any other third-party on this Contract. It is the express intention of the City and the Contractor that any person other than the City or the Contractor receiving services or benefits under this Contract shall be deemed to be an incidental beneficiary only.

1.11 **Independent Contractor.** The Contractor shall perform the Work as an independent contractor and shall not be deemed by virtue of this Contract to have entered into any partnership, joint venture, employer/employee or other relationship with the City other than as a contracting party and independent contractor.

1.12 **Non-Discrimination.** In connection with the performance of the Work, the Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ethnicity, citizenship, immigration status, sex, gender, age, sexual orientation, gender identity or gender expression, marital status, source of income, military status, protective hairstyle, genetic information, pregnancy, or disability, or any other status protected by applicable law. The Contractor will take affirmative action to ensure applicants are employed, and employees are treated during employment, without regard to their race, color, religion, national origin, ethnicity, citizenship, immigration status, sex, gender, age, sexual orientation, gender identity or gender expression, marital status, source of income, military status, protective hairstyle, genetic information, pregnancy, disability, or any other status protected by applicable law. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

1.13 **Indemnification.** The Contractor agrees to investigate, defend, indemnify and hold harmless the City, its officers, employees, insurers, and self-insurance pool, from and against all liability, claims and demands on account of any losses, injuries, and damages, including but not limited to, alleged personal injury claims, and/or death claims, or property damage claims, or errors and omissions, which arise solely out of the Contractor’s and/or any of its agents' officers or employees performance of the Contractor’s obligations under this Contract. The City is prohibited by Article XI, Section 1, Colorado Constitution, from indemnifying any individual or entity. Therefore, the City does not indemnify the Contractor, successors, or assigns under this Contract. Notwithstanding the foregoing, nothing

herein is intended to constitute a covenant, promise, or agreement to indemnify and hold harmless the City from any liability or damages directly caused by or attributable to the City's own negligence, nor is anything herein intended to be nor may be construed as a waiver of the immunities, protections, or limitations on damages provided to the City by the Colorado Governmental Immunity Act, C.R.S. §§24-10-101 et seq., as it may from time to time be amended.

1.14 **Governing Law and Venue.** The Contract shall be governed by the laws of the State of Colorado. Venue for any action arising under the Contract or for the enforcement of the Contract shall be in the appropriate court for Arapahoe County, Colorado.

1.15 **Additional Documents or Action**. The Parties agree to execute any additional documents and to take any additional action that is necessary to carry out this Contract.

1.16 **Binding Effect.** This Contract shall inure to the benefit of, and be binding upon, the Parties, their respective legal representatives, successors, heirs, and assigns; provided, however, that nothing in this paragraph shall be construed to permit the assignment of this Contract except as otherwise expressly authorized herein.

1.17 **Integration, Amendment, and Severability.** This Contract represents the entire agreement between the Parties and there are no oral or collateral agreements or understandings. This Contract may be amended only by an instrument in writing signed by the Parties or as otherwise provided herein. If any other provision of this Contract is held invalid or unenforceable, no other provision shall be affected by such holding, and all of the remaining provisions of this Contract shall continue in full force and effect.

1.18 **Binding Authority.** The Contractor represents and affirms that the signature page hereof accurately states the full legal name of Contractor (whether as a corporation, partnership, limited liability company, sole proprietorship, or other), contains all requisite signature(s) on behalf of Contractor, has been properly acknowledged by attestation, notary acknowledgment, or both, and in all other respects is effective to bind Contractor, in accordance with all applicable statutes, regulations, resolutions, rules, bylaws, agreements, or similar sources of authority or limitation. This Contract may be executed in counterpart(s), each of which shall be deemed to be an original, and all of which, taken together, shall constitute one instrument.

1.19 **Subject to Legislative Approval and Compliance with Law.** The Contractor acknowledges and agrees that if a Change Order is required under the terms of the Contract, the City shall not incur any liability whatsoever for claims of payment, compensation, damages, or adjustment of any kind by the Contractor due to any delays for the required approvals and execution under Section 1.3 of the General Conditions, **Exhibit C**. The Contractor further acknowledges and agrees that this

Contract's execution may be contingent upon approval by the City Council, in compliance with all applicable provisions of the City Charter and City Code. The City shall not incur any liability whatsoever if this Contract is not approved by City Council.

1.20 **Notices.** All notices required under this Contract shall be in writing and shall be sent by registered or certified mail, return receipt requested, to the addresses of the Parties herein set forth. A Party may change its mailing address by giving written notice of such change of address to other Party.

Notice to City:	City of Littleton City Manager 2255 West Berry Avenue Littleton, CO 80120
Notice to Contractor:	TAK Broadband, LLC 4401 S Technology Drive Sioux Falls, SD 57106

1.21 **Force Majeure.** Neither Party shall be responsible for a delay in its respective performance under this Contract, other than a delay in payment for Work already performed, if such delay is caused by extraordinary weather conditions or other natural catastrophes, war, terrorist attacks, sabotage, computer viruses, riots, strikes, lockouts or other industrial disturbances, epidemics, pandemics, acts of governmental agencies or authorities, discovery of hazardous materials or differing and unforeseeable site conditions, or other events beyond the reasonable control of the claiming Party. Contractor shall be entitled to an equitable adjustment to the project schedule and compensation in the foregoing circumstances.

1.22 **Electronic Signatures and Electronic Records.** The Contractor consents to the use of electronic signatures by the City. The Contract, and any other documents requiring a signature hereunder, may be signed electronically by the City in the manner specified by the City. The Parties agree not to deny the legal effect or enforceability of the Contract solely because it is in electronic form or because an electronic record was used in its formation. The Parties agree not to object to the admissibility of the Contract in the form of an electronic record, or a paper copy of an electronic document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original.

DATED this ____ day of _____, 2025.

CITY OF LITTLETON, COLORADO

_____
Kyle Schlachter
MAYOR

ATTEST

_____
Colleen Norton
CITY CLERK

APPROVED AS TO FORM:

_____
Reid Betzing
CITY ATTORNEY

CONTRACTOR

_____ _____
Trent Edwards Date
CEO

Exhibit A
Scope of Work

The Contractor shall perform fiber installation, splicing, and terminating, conduit and pullbox installation, and other related improvements along Rio Grande St and Court Pl between Crestline Ave and Littleton Blvd; along Littleton Blvd between Court Pl and Broadway; on Datura St and Gallup between Littleton Blvd and Lake Ave; and on County Line Rd between Santa Fe and South Park Cir.

The City's right-of-way permit fee will be waived for Contractor.

Construction and construction management and inspection services are locally funded.

Exhibit B

BID SCHEDULE

ITEM NO.	DESCRIPTION	UNIT	UNIT COST	PROJECT TOTALS	
				TOTAL QUANTITY	TOTAL COST
202-00055	REMOVAL OF FIBER OPTIC CABLE	LF	$1	5390	$2,965
202-00200	REMOVAL OF SIDEWALK	SY	$66	20	$1,316
203-01597	POTHOLING	HOUR	$155	100	$15,500
208-00002	EROSION LOG TYPE 1 (12 INCH)	LF	$32	600	$19,059
208-00035	AGGREGATE BAG	LF	$94	120	$11,339
208-00045	CONCRETE WASHOUT STRUCTURE	EACH	$740	1	$740
208-00051	STORM DRAIN INLET PROTECTION (TYPE I)	LF	$205	30	$6,150
208-00052	STORM DRAIN INLET PROTECTION (TYPE II)	LF	$188	30	$5,630
208-00103	REMOVAL AND DISPOSAL OF SEDIMENT (LABOR)	HOUR	$86	20	$1,711
208-00105	REMOVAL AND DISPOSAL OF SEDIMENT (EQUIPMENT)	HOUR	$66	20	$1,316
208-00106	SWEEPING (SEDIMENT REMOVAL)	HOUR	$66	20	$1,316
212-00032	SOIL CONDITIONING	ACRE	$2,240	0.1	$224
212-00700	ORGANIC FERTILIZER	LB	$66	30	$1,987
212-00701	COMPOST (MECHANICALLY APPLIED)	CY	$74	7	$516
212-00704	MYCORRHIZAE	LB	$262	6	$1,572
212-00708	SEEDING (NATIVE) BROADCAST	ACRE	$12,442	0.1	$1,244
212-01200	LANDSCAPE RESTORATION	LS	$3,141	1	$3,141
213-00003	MULCHING (WEED FREE)	ACRE	$16,458	0.1	$1,646
213-00061	MULCH TACKIFIER	LB	$49	10	$488
216-00101	SOIL RETENTION BLANKET (STRAW-COCONUT) (PHOTODEGRADABLE CLASS 1)	SY	$15	100	$1,510
607-11525	FENCE (PLASTIC)	LF	$4	100	$375
608-00006	CONCRETE SIDEWALK (6 INCH)	SY	$145	20	$2,900
612-00260	LOCATION MARKER (FIBER OPTIC) (DOME)	EACH	$57	18	$1,019
613-00206	2 INCH ELECTRICAL CONDUIT (BORED)	LF	$9	16860	$150,841
613-01200	2 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	$15	340	$4,997
613-07023	PULL BOX (24"X36"X24")	EACH	$1,053	13	$13,688
613-07040	PULL BOX (30"X48"X24")	EACH	$1,559	5	$7,793
613-07195	PROOF CONDUIT	LF	$1	7380	$8,856
614-87015	BUFFER TUBE FAN OUT KIT	EACH	$487	6	$2,924
614-87024	FIBER OPTIC TERMINATION PANEL (24 FIBER)	EACH	$1,228	2	$2,455
614-87144	FIBER OPTIC TERMINATION PANEL (144 FIBER)	EACH	$4,438	1	$4,438
614-87350	TEST FIBER OPTIC CABLE	LS	$3,875	1	$3,875
614-87496	FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS)	LF	$3	2270	$7,298
614	FIBER OPTIC TERMINATION PANEL (48 FIBER)	EACH	$1,975	2	$3,950
614	ETHERNET SWITCH (INSTALL ONLY)	EACH	$662	5	$3,310
614	12 PORT PRE-TERMINATED PATCH PANEL AND PIGTAIL	EACH	$743	5	$3,717
614	SPLICE ENCLOSURE	EACH	$834	7	$5,840
614	INDOOR/OUTDOOR FIBER OPTIC CABLE (SINGLE MODE) (24 STRANDS)	LF	$3	4595	$12,713
614	INDOOR/OUTDOOR FIBER OPTIC CABLE (SINGLE MODE) (144 STRANDS)	LF	$10	665	$6,685
614	FIBER OPTIC CABLE (SINGLE MODE) (432 STRANDS)	LF	$5	10380	$47,402

626-00000	MOBILIZATION	LS	$850	1	$850
630-00000	FLAGGING	HOUR	$71	20	$1,412
630-00007	TRAFFIC CONTROL INSPECTION	DAY	$529	44	$23,294
630-00012	TRAFFIC CONTROL MANAGEMENT	DAY	$1,150	110	$126,500
630-80341	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	EACH	$47	56	$2,635
630-80342	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	EACH	$59	16	$941
630-80350	VERTICAL PANEL	EACH	$47	30	$1,412
630-80358	ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL (C TYPE)	EACH	$3,529	2	$7,059
630-80363	DRUM CHANNELIZING DEVICE (WITH LIGHT) (FLASHING)	EACH	$71	50	$3,529
630-80380	TRAFFIC CONE	EACH	$11	150	$1,588
630-85020	MOBILE ATTENUATOR	EACH	$2,353	2	$4,706
	FORCE ACCOUNT				
	==========				
700-70010	F/A MINOR CONTRACT REVISIONS	FA	$30,000	1	$30,000
700-70016	F/A FUEL COST ADJUSTMENT	FA	$1,000	1	$1,000
700-70380	F/A EROSION CONTROL	FA	$5,000	1	$5,000
700-70589	F/A ENVIRONMENTAL HEALTH & SAFETY MANAGEMENT	FA	$2,000	1	$2,000
				TOTAL	**$586,370**

Exhibit C
General Conditions

SECTION 1
SCOPE OF WORK

1.1. **PLANS AND SPECIFICATIONS**:

1.1.1. The Contractor shall perform all items of Work covered and stipulated in the Specifications, Bid Schedule, Contract, General Conditions and Special Provisions, together with any authorized alterations, Extra Work and Change Orders, all in accordance with the Plans. The Contractor shall furnish, unless otherwise provided in the Specifications and/or Special Provisions, all materials, implements, machinery, equipment, tools, supplies, transportation and labor necessary to perform and complete the Work.

1.1.2. The Contractor shall be responsible for taking all steps reasonably necessary to ascertain the nature and location of the Work, and the general and local conditions which can affect the Work or the cost of the Work. Failure by the Contractor to do so will not relieve it from responsibility for successfully performing Work without additional expense to the City. The City will not be responsible for any understanding or representations concerning conditions unless such understanding or representations are expressly stated in the Contract.

1.2. **SPECIAL WORK**: Should any construction or conditions which are not thoroughly stipulated or set forth by the Specifications be anticipated on any proposed Project, Special Conditions for such Work may be prepared and attached hereto as **Exhibit F,** and shall be considered as part of the Specifications, the same as though contained fully therein. Should any Special Conditions conflict with the Specifications, the Special Conditions will govern.

1.3. **CHANGES AND INCREASED OR DECREASED QUANTITIES OF WORK**:

1.3.1. Without invalidating the Contract, the Project Manager and/or City reserves and shall have the right, without notice to any Sureties, by written Change Order, to make any changes, from time to time, to the character and quantity of the Work, including but not limited to, the Drawings, Specifications, Plans or Addenda, as

may be considered necessary or desirable to complete fully and acceptably the Work in a satisfactory manner. Such Change Order shall set forth with specificity the changed Work to be done and shall set forth any changes or extensions to the time of completion.

1.3.2. *Increase in Cost and Required Approvals.*

i. Such Change Orders shall not increase the total cost of the Work, based on the original estimate of quantities and unit prices contained in the Bid Schedule, by more than 10% (ten percent) without the approval of the City of Littleton City Manager or authorized designee. Contractor shall be entitled to the cost of said increased units at the original price within the original bid, but not to an adjustment of unit price.

ii. In the event said Change Order increases the total cost of the Contract based upon the unit price bid by more than 10% (ten percent), an equitable adjustment will be made and the Contract modified accordingly by a written Change Order, to be approved by the City of Littleton City Manager or authorized designee, and subject to City Council approval; provided, however, that except for claims based on errors in the Contract, no claim for change hereunder will be allowed for cost incurred more than twenty (20) days before the Contractor gives written notice as herein required; and in the case of errors in the Contract for which the City is responsible, the adjustment will be increased costs, reasonably incurred by the Contractor in attempting to comply with such errors in the Contract.

iii. Any Change Order or other amendment that increases the total cost of the Contract to be equal to or greater than five hundred thousand and 00/100 dollars ($500,000.00) shall require the approval of City Council.

iv. In case a satisfactory adjustment in price cannot be reached for any item requiring a written Change Order, the City reserves the right to terminate the Contract as to said item as it applies to the terms in question and make such arrangements as may be deemed necessary to complete the Work.

v. The Contractor shall require subcontractors to certify to the best of their knowledge and belief that the cost and pricing data submitted are accurate, complete, and current as of the date of execution, which date shall be as close as possible to the date of agreement on the negotiated price of the Change Order.

vi. The Contractor shall not start Work on any alteration until the agreement, whether by Change Order or more formal amendment, setting forth the adjusted prices has been executed by the City and the Contractor, subject to all requirements of Title 1, Chapter 15 of the City of Littleton Code and the City's procurement policy. All changes or approvals for increasing the

Work as required and authorized herein, shall be in written form and approved and signed by the City prior to the Work being done. All such writings and approvals shall be specific as to the nature of the Work and the quantities involved. Any Work performed without prior written approval of the City shall not be binding on the City.

1.3.3. *Field Order for Minor Changes.* The Project Manager ("Project Manager") may at any time, by issuing a Field Order, order minor changes in the Work not involving an increase or decrease in the Contract amount and not involving a change in the time for completion. If the Contractor believes that any order for minor changes in the Work involves changes in the Contract amount or time for completion, the Contractor shall not proceed with the minor changes so ordered and shall within seven (7) days of the receipt of such order notify the Project Manager in writing of the estimate of the changes in the amount and time for completion. Such estimate shall thereafter be treated as a Change Order Request.

1.3.4. *Equitable Adjustment.*

i. If the Contractor intends to assert a claim for an equitable adjustment under this Section, the Contractor shall, within 30 (thirty) days after receipt of a written Change Order or the furnishing of a written notice of requested changes by the Project Manager, submit to the Project Manager a written statement setting forth the general nature and monetary extent of such claim. No claim by the Contractor for an equitable adjustment hereunder will be allowed unless asserted as described above.

ii. In the event the Contractor and the City are unable to agree upon the Contractor's entitlement to an equitable adjustment or upon the amount thereof, or in the event that it is in the best interest of the City to have the Work proceed pending negotiation of amount of an equitable adjustment, the City may direct the Contractor to perform the Work in accordance with the Change Order, direction, instruction, interpretation, or determination, with any Work price adjustments and progress payments for the Work to be determined on a Force Account basis in accordance with Section 7.6 of the General Conditions. The Contractor shall continue diligently to perform the Work in accordance with the City's order, direction, instruction, interpretation, or determination during negotiations with respect to the Contractor's entitlement to an equitable adjustment hereunder or to the amount of any Work price adjustment hereunder or to the amount or any Work price adjustment or time extension. The Contractor and the City may agree on certain aspects of an equitable adjustment and take those aspects out of operation of Force Account provisions.

1.3.5. *Payments for Change Orders.*

i. Payment will not be made for Work or materials which are required under the Contract Documents and which are not specifically mentioned, indicated

or otherwise provided for in the Bid Schedule, if, in the opinion of the Project Manager, the Work or materials are susceptible of classification under or reasonably inferred to be included. in the Bid Schedule.

ii. In the event the Contractor is ordered to perform Work under this Section for which payments are not determined hereunder, which in the opinion of the City it is impracticable to have performed by the Contractor's own employees, the Contractor will, subject to the written approval of the Project Manager, be paid the actual cost of such Work and, in addition thereto, an amount of 10% (ten percent) of the actual costs to cover the Contractor's superintendence, administration and other overhead expenses. The terms and conditions of any subcontract which the Contractor may propose to enter into in connection with Work under the provisions of this Section, shall be subject to the written approval of the City before such subcontract is executed.

iii. In cases other than those described above, the City and the Contractor (on its own behalf and on behalf of its subcontractors) shall endeavor to negotiate a reasonable price and line adjustment in a Change Order on terms appropriate to the changed Work. The Contractor will be required to submit a sufficiently detailed price bid supported with sufficient documentation so that the City can determine that (1) the bid reflects all impacts on the Work from Work additions, deletions and modifications shown in the Change Order; (2) the proposed prices are set out in such a way that their reasonableness can be evaluated against prices based on adequate price competition, unit prices, established catalog or market prices of commercial items sold in substantial quantities to the general public, prices set by law or regulation, recognized published price lists and indices, independently developed cost estimate and other appropriate price comparisons; and (3) cost-increase provisions relating to Work changes are complied with, including but not limited to City of Littleton City Manager or City Council approvals. If any prices or other aspects are conditional, such as on firm orders being made by a certain date or the occurrence or non-occurrence of an event, the Contractor shall identify these aspects in the Change Order Request. A negotiated Change Order shall set forth prices, scheduling requirements, time extensions and all costs of any nature arising out of the issuance of a Change Order except for those cost and time aspects explicitly reserved on the face of the Change Order.

1.3.6. *Claims for Concealed or Unknown Conditions*. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents; or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing Party shall be given to the other Party promptly before conditions

are disturbed and in no event later than seven (7) days after first observance of the conditions. Site conditions which an experienced and prudent contractor could have anticipated by visiting the site, familiarizing themselves with the local conditions under which the work is to be performed and correlating observations with the requirements of the Contract Documents, shall not be considered as claims for concealed or unknown conditions, nor shall the locations of utilities which differ from locations provided by the utility companies. The Project Manager will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or the required time for, performance of any part of the Work, will recommend an equitable adjustment in the cost and/or time. If the Project Manager determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Project Manager shall so notify the Contractor in writing, stating the reasons. Claims by either Party in opposition to such determination must be made within twenty-one (21) days after the Project Manager has given notice of the decision. If the City and Contractor cannot agree on an adjustment in the cost and/or time, the adjustment shall be subject to further proceedings pursuant to Section 1.3.4 and Section 1.3.9 of the General Conditions, which shall apply to claims by either Party, notwithstanding language in said Sections that they apply only to claims brought by the Contractor.

1.3.7. *Inspection, Recordkeeping.* For any Change Orders, the Contractor shall maintain, and the City or the City's representatives shall have the right to examine books, records, documents and other evidence and accounting principles and practices sufficient to reflect properly all direct and indirect costs of whatever nature claimed to have been incurred and anticipated to be incurred for the performance of the Contract changes. At the request of the City, the Contractor shall submit any documents reasonably necessary to permit adequate evaluation of the cost or pricing data submitted including, but not limited to, computations, projections, price competition, catalog and market prices, etc. If inadequate or incomplete documentation is submitted, the City may refuse to complete negotiation until such a time that satisfactory documentation is submitted. The requirements of Section are in addition to other audit, inspection and record keeping provisions elsewhere in the Contract Documents.

1.3.8. Changes involving aggregate increases and decreases in excess of one hundred thousand dollars and 00/100 ($100,000.00) shall be subject to the following:

a. A change, defined for the purposes of this Section, involves aggregate increases and decreases in excess of one hundred thousand dollars and 00/100 ($100,000.00) if the total value of Work affected, without regard to any increases or decreases, exceeds this amount. For example, a Change Order adding Work in the amount of seventy-five thousand dollars and 00/100 ($75,000.00) and reducing Work in the amount of fifty-thousand dollars and 00/100 ($50,000.00) will be considered to involve aggregate increases and decreases of $125,000.00.

b. Pricing shall be reduced accordingly, and the Contract shall be modified in writing accordingly to reflect such reduction, if any price (including profit and fee) negotiated in connection with any price adjustment was increased by any significant sums because:

(1) The Contractor furnished cost or pricing data which were not complete, accurate, or current as certified in the Contractor's pricing data; or

(2) Adjustments or any subcontract provisions therein required, furnished costs or pricing data which were not complete, accurate, and current as certified in the subcontractor's pricing data.

Any reduction in the Contract price due to defective subcontractor data of a prospective subcontractor, when the subcontract was not subsequently awarded to such subcontractor, will be limited to the amount (plus applicable overhead and profit markup) by which the actual subcontract, was less than the prospective subcontract cost estimate submitted by the Contractor, provided the actual subcontract price was not affected by defective cost or pricing data; or the Contractor shall require subcontractors to certify to the best of their knowledge and belief that the cost and pricing data submitted are accurate, complete, and current as of the date of execution, which date shall be as close as possible to the date of agreement on the negotiated price of the Change Order.

1.3.9. In case a satisfactory adjustment in price cannot be reached for any item requiring a Change Order, the City reserves the right to terminate the Contract as to said item as it applies to the terms in question and make such arrangements as may be deemed necessary to complete the Work.

1.4. **OMITTED ITEMS**: The Project Manager may, in writing, order omitted from the Work any item other than Major Items, which are found by the Project Manager or City to be unnecessary to the Project and such omission shall not be a waiver of any condition of the Contract nor invalidate any of the provisions thereof. Major Items may be omitted by amendments to the Contract. The Contractor will be paid for all Work performed toward the completion of the item prior to such omission as provided in Section 7.5 of the General Conditions.

1.5. **EXTRA WORK**:

1.5.1. When additional Work is necessary for the proper completion of the Project for which no quantities or prices were given in the Contract, the same shall be called “Extra Work” and shall be performed by the Contractor when so directed in writing by the Project Manager. Extra Work shall be performed by the Contractor in accordance with these Specifications in a skillful and workmanlike manner and as

may be directed by the Project Manager.

1.5.2. Prices for Extra Work shall be itemized and covered by a Change Order. Pricing shall be submitted by the Contractor and approved by the City prior to the actual starting of such Work, in accordance with Section 1.3 of the General Conditions. Should the Parties be unable to agree on unit prices for the Extra Work or if this method of pricing is impractical, the Project Manager may instruct the Contractor to proceed with the Work by day labor or Force Account as hereinafter provided in Section 7.6. of the General Conditions. Claims for Extra Work not authorized in writing by the Project Manager prior to the Work being performed will be rejected and the Contractor shall not be compensated for.

1.5.3. Extra Work shall not include materials, labor or equipment which is incidental or appurtenant to the Work indicated on the drawings and in the Specifications. Such Work shall be completed and paid for as part of the Work to which it is appurtenant.

1.6. **UNAUTHORIZED WORK**: Work performed beyond the lines and grades shown on the Contract drawings, approved Work and Shop Drawings and Extra Work done without written authorization will be considered unauthorized work and the Contractor will receive no compensation therefore. If required by the City, unauthorized work shall be remedied, removed or replaced by the Contractor at the Contractor's expense. Upon failure of the Contractor to remedy, remove or replace unauthorized Work, the City may take action as provided in Section 2.11 of the General Conditions.

1.7. **MAINTENANCE AND CONTROL OF TRAFFIC**:

1.7.1. Unless the Contract specifically provides for the closing to traffic of any local road or highway while construction is in progress, such road or highway shall be kept open to all traffic by the Contractor. The Contractor shall also provide and maintain in a safe condition temporary approaches, crossings or intersections with roads and highways.

1.7.2. The Contractor will provide their own traffic control, including flagging, traffic control supervisor, and traffic control devices for the duration of the Project per the most current edition of the Manual on Uniform Traffic Control Devices (“MUTCD”). Traffic control plans will be required for City review and approval prior to commencement on Work.

1.7.3. The Contractor shall bear all expense of maintaining traffic over the section of road affected by the Work to be done under this Contract, and of constructing and maintaining such approaches, crossings, intersections and any accessory features without direct compensation, except as otherwise provided.

1.8. **REMOVAL AND DISPOSAL OF STRUCTURES AND OBSTRUCTIONS:** All structures or obstructions found on the site and shown on the Plans which are not to remain in place or which are not to be used in the new construction shall be removed as

directed by the Project Manager. Unless specified in the Contract, this Work will not be paid for separately but will be included in the price bid for that portion of the Work requiring the removal of the obstruction. All material found on the site or removed therefrom shall become the property of the Contractor unless otherwise indicated. Materials determined by the Project Manager to be unsuitable for backfill shall be disposed of off the site at the Contractor's expense.

1.9. **USE OF MATERIALS FOUND ON THE WORK**:

1.9.1. The Contractor, with the approval of the Project Manager, may use in the proposed construction, any stone, sand, or gravel found on the site. The Contractor will not be paid for such excavation unless specifically stated in the Contract, and the Contractor shall replace with other suitable material, without compensation, all of that portion of the material so removed and used as was contemplated for use in the embankments or otherwise. If it was intended that any or all of the material so excavated and used was to have been wasted, then the Contractor will not be required to replace it. The Contractor shall not excavate any material from the site which is not within the excavation as indicated by the slope and grade lines, without being authorized in writing by the Project Manager.

1.9.2. Specific job mix designs conforming to specifications for any Work shall be submitted for Project Manager approval within 10 (ten) days of the Notice to Proceed, or a minimum of seven (7) days prior to use of the material. This material approval applies to asphaltic concrete paving materials, concrete, aggregate base course, and fine grading material.

1.10. **FINAL CLEAN UP**:

1.10.1. During the Project's final cleanup, the Contractor shall remove from the site(s) all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The streets and adjacent properties in the Project shall be repaired to as good or better condition than existed prior to construction. This shall include removal of all dirt or mud from streets and lawns. No extra payment shall be made for these items. The Contractor shall leave the site(s) in a neat and presentable condition.

1.10.2. The Contractor shall provide written notification to the Project Manager that the Work is complete and the site is ready for final inspection. If the Project Manager determines that the Work is not complete, they will immediately notify the Contractor in writing stating the reasons. If the Project Manager determines the Work is complete, the City will inspect the Work within seven (7) r days and prepare a final cleanup list. When the final cleanup list is completed by the Contractor and inspected by the Project Manager, the Project Manager will initiate the acceptance and final payment procedures as set forth in Section 7.9 of the General Conditions. The final cleanup shall be completed before the expiration of the Contract's term as set forth in the Contract Documents.

1.11. **DELAYS**: No payment, compensation, damages, or adjustment of any kind, other than extension of time if received in writing from the City shall be made to, or claimed by, the Contractor because of hindrances or delays from any cause in the commencement, prosecution, or completion of the Work, whether caused by the City or any other party and whether avoidable or unavoidable other than as set forth in a Change Order described fully above.

SECTION 2
CONTROL OF THE WORK

2.1. **AUTHORITY OF PROJECT MANAGER**: The Project Manager shall decide any and all questions which may arise as to the quality and acceptability of the materials furnished, the Work performed, the manner of performance and the rate of progress of the Work. The Project Manager shall decide all questions which may arise as to the interpretation of the Plans and Specifications, all questions as to acceptable fulfillment of the Contract, all disputes and mutual rights by the contractors if there be more than one contractor on the Work, and all questions as to compensation. The decision of the Project Manager shall be final and shall have executive authority to make effective such decisions and to enforce the Contractor to carry out all orders promptly.

2.2. **PLANS AND SHOP DRAWINGS**:
This Section 2.2 shall be included in all subcontracts hereunder at all times.

2.2.1. The Contractor shall bring discrepancies between different Plans, or between Plans and Specifications, or regulations and codes covering the Work to the attention of the Project Manager in writing. In the event such discrepancies exist and the Project Manager is not so notified, the Project Manager shall reserve the right to exercise sole arbitration authority. It is mutually agreed that all authorized alterations affecting the requirements and information given on the approved Plans shall be in writing and approved by the Project Manager.

2.2.2. The Plans will be supplemented by Shop Drawings as necessary to adequately control the Work or as specified. Shop Drawings are not part of the Contract Documents. Shop Drawings may consist of drawings, diagrams, illustrations, schedules, calculations, and other data prepared by the Contractor, subcontractor, manufacturer, supplier, or distributor, which illustrate how specific portions of the Work shall be fabricated and/or installed in accordance with the Plans and Specifications. Any Work performed prior to the City’s approval of Shop Drawings will be at the Contractor's risk and expense.

2.2.3. The Project Manager may request additional details and require the Contractor to make changes in the design which are necessary to conform to the provisions and intent of these Specifications without additional cost to the City.

2.2.4. Approval of the Shop Drawings by the Project Manager shall not be construed as a complete check and verification but will indicate that general conformance with the design concept and general compliance with the information given in the Contract has been achieved. Any information or action to be taken as set forth in the Shop Drawings is subject to the requirements of the Plans and Specifications. The Contractor shall be responsible for all dimensions and quantities shown on the Shop Drawings. The Project Manager shall be notified in writing and shall take appropriate action for any information in the Shop Drawings that deviates from the requirements of the Contract Documents.

2.2.5. Approval by the Project Manager of the Contractor's Shop Drawings shall not relieve the Contractor of its obligation to meet all requirements of the Plans and Specifications and shall not relieve the Contractor of its responsibility for the correctness of the Shop Drawings.

2.2.6. Five (5) sets of Shop Drawings shall be submitted to the Project Manager either in hard copy format or electronic format. No faxed copies will be accepted. After inspection, two sets will be returned to the Contractor; one for the Contractor's use and the other for the fabricator or supplier's use. Shop Drawings being returned will be stamped to indicate the following:

i) Shop Drawings approved for use in construction will have one of the following statements checked: Approved; No Exception Taken; or Approved as Noted; or

ii) Shop Drawings to be corrected or redrawn and resubmitted for approval will have one of the following statements checked: Revise as Noted; Resubmit; or Rejected.

If Shop Drawings are returned for correction, corrections shall be made and the corrected drawings shall be resubmitted by the Contractor in the same manner as the first submittal. The time required for approval of each submittal will not exceed four (4) weeks after Shop Drawings are received by the Project Manager.

It is the intent that no more than two submittals will be required. If, however, additional submittals are required by actions of the Contractor, the additional time for Shop Drawing approval will be borne by the Contractor. If additional submittals are required, or if Shop Drawing approval is delayed by actions of the Project Manager, and if the Contractor's controlling operations are delayed or interfered with by reason of the delay in Shop Drawing reviews, an extension of time commensurate with the delay in completion of the Work thus caused will be granted as provided herein.

Specifications for the Shop Drawings:

i) Electronic Shop Drawings and work drawings are preferred.

ii) All manually-drafted Shop Drawings shall be 34 inches long and 22 inches wide overall. There shall be a two-inch margin on the left side of the sheet and one-half inch margin on the other three sides. A

blank space, six inches by three inches, shall be left near the lower right-hand corner for an approval stamp. Computer drafted 11-inch by 17-inch drawings may be submitted.

a. Where design notes or catalogue cuts are required, they may be submitted on 8 1/2 inch by 11-inch sheets in lieu of the size mentioned above.

ii) There shall be a title block in the lower right-hand corner of each sheet. The title block shall show the City's name, structure number, the location of the structure, and the contents of the sheet.

iii) The Contract price will include the cost of furnishing all Shop Drawings. Shop Drawings and working drawings submitted to the Project Manager by the Contractor, subcontractor or any lower tier subcontractor pursuant to the Work, may be duplicated by the City and the City may use and disclose in any manner and for any purpose such Shop Drawings and working drawings delivered under this Contract.

2.3. **OPERATING MANUALS AND PARTS LISTS**: The Contractor shall submit four (4) complete operating manuals and parts lists to the Project Manager for all items of mechanical and electrical equipment incorporated into the Work.

2.4. **AS-BUILT DRAWINGS**: The Contractor shall maintain a set of drawings at the site, with all changes or deviations from the original drawings neatly marked thereon in brightly contrasting color. This shall be a separate set of drawings, not used for construction purposes, which shall be kept up-to-date as the job progresses and shall be made available for inspection by the Project Manager at all times. Upon completion of the Contract, this set of drawings shall be delivered to the Project Manager.

2.5. **CONFORMITY WITH PLANS AND ALLOWABLE DEVIATIONS**: Finished surfaces shall conform with lines, grades, cross sections and dimensions shown on the approved Plans. Any deviation from the approved Plans and working drawings, as may be required by the demands of construction, will in all cases be determined by the Project Manager and authorized in writing.

2.6. **COORDINATION OF SPECIFICATIONS, PLANS AND SPECIAL PROVISIONS**: The Specifications, Plans, Special Provisions, and all supplementary Plans and documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be cooperative to describe and provide for a complete Work. In case of discrepancy, figured dimensions, unless obviously incorrect, shall govern over scaled dimensions. Plans shall govern over Specifications and Special Provisions shall govern over both Plans and Specifications. The Contractor shall not use to its advantage any apparent error or omission in the Plans or Specifications. In the event the Contractor discovers any apparent error or discrepancy, the Contractor shall immediately request the Project Manager's interpretation and decision, and such decision shall be final. In the event contradiction and/or conflicts occur

in the Specifications not otherwise covered by Special Provisions, the Specifications deemed by the Project Manager to be most restrictive shall govern.

2.7. **CONSTRUCTION SURVEYING**: The Contractor will furnish and set all construction stakes. The Project Manager will review the stakes. The Contractor shall be held responsible for the proper preservation of all marks and stakes. If, in the opinion of the Project Manager, any marks or stakes have been willfully or carelessly disturbed or destroyed by the Contractor, its employees, or subcontractors, the cost of replacing them will be charged against the Contractor and be deducted from the final payment.

2.8. **RIGHT OF ENTRY**: At all times, the City shall have the right to enter and inspect the Project premises.

2.9. **AUTHORITY AND DUTIES OF INSPECTORS**:

2.9.1. All Work shall be subject to inspection and testing by the City at all reasonable times and at all places prior to acceptance. Inspectors, employed by the City, are authorized to inspect all Work done and all material furnished. Such inspection may extend to all of any part of the Work and to the preparation, fabrication, or manufacture of the materials to be used. The Inspector is not authorized to revoke, alter, or waive any requirements of the Plans and Specifications. The Inspector is authorized to call to the attention of the Contractor any failure of the Work or materials to conform to the Specifications and Contract Documents.

2.9.2. The Inspector shall have the authority to reject materials or suspend the Work until any question at issue can be referred to and decided by the Project Manager. If the Contractor refuses to suspend operations on verbal order, the Inspector shall issue a written order giving the reason for shutting down the Work. Work performed during the absence of the Inspector will not be accepted nor paid for by the City.

2.9.3. Inspections by the City or others shall not relieve the Contractor from its obligations to perform the Work in accordance with the requirements of the Contract Documents and to also inspect its own Work.

2.9.4. Any plan of action, method of work or construction procedure suggested to the Contractor by the City or City contractors, whether orally or in writing, if adopted or followed by the Contractor in whole or in part, shall be at the sole risk and responsibility of the Contractor.

2.9.5. The Inspector shall neither act as foreman or perform other duties for the Contractor nor interfere with the management of the Work by the Contractor. Any advice which the Inspector may give the Contractor shall, in no way, be construed as binding to the Project Manager in any way or releasing the Contractor from fulfilling any of the terms of the Contract.

2.10. **INSPECTION**:

2.10.1. Until final payment, all parts of the work may be subject to inspection and testing by the City. The Contractor shall furnish, at its own expense, all reasonable access, assistance, and facilities required by the City for such inspection and testing. The Contractor shall furnish the Project Manager with every reasonable facility for ascertaining whether the Work performed and materials used are in accordance with the requirements and intent of the Specifications and Contract. In the event of night Work, the Contractor shall furnish proper lighting to adequately perform and inspect the Work being performed.

2.10.2. Upon request from the Project Manager, the Contractor shall, at any time before acceptance of the Work, remove or uncover such portion of the finished Work as may be directed. After examination, the Contractor may restore said portions of the Work to the standard required by the Specifications. Should the Work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the coverage or making good of the parts removed, may be paid for as Extra Work; but should the Work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed, shall be at the Contractor's expense. Any Work performed or materials used by the Contractor without suitable supervision or inspection by the City shall be ordered removed and replaced at the Contractor's expense.

2.10.3. If the Contractor does not promptly replace rejected material or correct rejected workmanship, the City may (a) by separate Contract or otherwise, replace such material or correct such workmanship and charge the cost thereof to the Contractor; or (b) terminate the Contractor's right to proceed in accordance with this Agreement pursuant to Section 4.10 of the General Conditions. Such inspection and test is for the sole benefit of the City and shall not relieve Contractor of the responsibility of providing quality control measures to assure that the Work strictly complies with the Contract. No inspection or test by the City shall be construed as constituting or implying acceptance. Inspection or test shall neither relieve Contractor of responsibility for damage to or loss of the material prior to acceptance, nor in any way affect the continuing rights of the City after acceptance of the completed Work.

2.10.4. Any Work outside the normal five (5) day, forty (40) hour week will require the Project Manager or Inspector on the job. All inspection so required shall be done at the Contractor's expense and the cost thereof may be deducted from the final payment. Overtime inspection may be conducted by the City at the Contractor's expense at one hundred dollars and 00/100 ($100.00) per hour. The payment by the Contractor of overtime inspection fees shall not relieve the Contractor from the liquidated damages provisions as specified in Section 4.8 of the General Conditions.

2.11. **REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK**:

2.11.1. All Work which has been rejected or condemned by the City shall be repaired, or if it cannot be satisfactorily repaired, be removed and replaced at the Contractor's expense. At the Project Manager's discretion, the following unauthorized work shall neither be measured nor paid for by the City, and may need to be removed at the Contractor's sole expense:

i. Work performed beyond the lines and grades shown on the Plans, or as given, except as herein provided; or

ii. Work performed without giving timely notice to the Project Manager so the Project Manager may elect to be present to observe the Work in progress; or

iii. Any Extra Work or unclassified Work performed without prior City written authority and price agreement.

2.11.2. If directed by the City, should the Contractor fail to satisfactorily repair or remove and replace rejected, unauthorized, or condemned Work immediately after receiving formal notice from the Project Manager, the City may, at its sole discretion, recover for such defective Work on the Contractor's Bond or by action in a court having proper jurisdiction over such matters, or the City may employ labor and equipment and satisfactorily repair or remove and replace such Work and charge the cost of the same to the Contractor, which cost will be deducted from any payments due to the Contractor.

2.12. **SUPERVISION AND SUPERINTENDENCE**:

2.12.1. The Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor shall be responsible to see that the completed work complies with the Contract Documents.

2.12.2. The Contractor shall designate and keep on any work site at all times during its progress, a competent superintendent who shall not be replaced without prior written notice to the Project Manager. The Contractor shall provide contact information for the superintendent who may be reached twenty-four (24) hours per day. The superintendent will be the Contractor's representative at the site and shall have authority to act on behalf of the Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor. During periods when the Work is suspended, the Contractor shall make appropriate arrangements for any emergency work which may be required.

2.12.3. Whenever the superintendent is not present on any particular part of the Work where the Project Manager may desire to inform the Contractor relative to interpretation of the Plans and Specifications or to disapprove or reject materials or Work performed, the Project Manager may so inform the foreman or other

worker in charge of the particular part of the Work in reference to which the information is given. Information so given shall be as binding as if given to the superintendent.

2.12.4. The Contractor will be supplied with four (4) copies of the Plans, and three (3) copies of the Specifications and Special Provisions. The Contractor shall have available on the work site at all times one copy each of said Plans, Specifications and Special Provisions, exclusive of the set designated for as-built drawings in Section 2.4 of the General Conditions. Additional copies of Plans, Specifications and Special Provisions can be obtained by the Contractor at the cost of reproduction.

SECTION 3
CONTROL OF MATERIAL

3.1. **MATERIAL**:

3.1.1. Unless otherwise indicated in this Contract, equipment, material and products incorporated in the Work covered by this Contract, shall be new and of the grade specified for the purpose intended. Unless otherwise specifically indicated, reference to equipment, material, product, or patented process by trade names, make or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition, and the Contractor may, with permission from the Project Manager, use any equipment, material, article, or process which is equivalent to that named, subject to the requirements of this Section.

3.1.2. Within the scope of their authority, the Project Manager shall be the sole judge of the quality and suitability of proposed alternative equipment, material, article or process. The burden of proving the quality and suitability of the alternative shall be upon the Contractor. Information required by the Project Manager in judging an alternative shall be supplied by the Contractor at the Contractor's expense.

3.2. **APPROVAL AND ACCEPTANCE OF MATERIALS**:

3.2.1. Samples of all materials to be tested may be taken by the Project Manager or their authorized representative at the discretion of the Project Manager. Materials may be sampled either prior to shipment or after being received at the work site. All sampling, inspection, and testing shall be done in accordance with the Specifications contained in the Contract Documents.

3.2.2. The Contractor shall provide such facilities as the City may require for conducting field tests and for collecting and forwarding samples. The Contractor shall not use or incorporate into the Work any materials represented by the samples until tests have been approved by the City. Any material, which after approval, has for any reason become unfit for use, shall not be incorporated into the Work.

3.2.3. Tests or approvals by the Project Manager or others shall not relieve the Contractor from its obligations to perform the Work in accordance with the requirements of the Contract Documents.

3.3. **CITED SPECIFICATIONS; SAMPLES AND TESTS**:

3.3.1. Except as otherwise provided, sampling and testing of all materials, and the laboratory sampling and testing of equipment required under these Specifications, shall be in accordance with the current edition of the American Society for Testing Materials ("ASTM") publication of standards, adopted and in effect on the date of the City's solicitation for bids.

3.3.2. When designated, sampling and testing of materials shall be in accordance with the current edition of the American Standards Association ("ASA") Specifications; the current edition of The American Association of State Highway and Transportation Officials ("AASHTO") publication Standard Specification for Highway Materials and Methods of Sampling and Testing; the current edition of the American Water Works Association Specifications; the current edition of the Federal Specifications or the current edition of MIL Specifications adopted and in effect on the date of City's solicitation for bids.

3.3.3. The testing of all samples and materials shall be made at the expense of the City, when specified herein as by the City, unless the tests reveal nonconformance in which case said costs shall be reimbursed by the Contractor to the City. The Contractor shall furnish the required samples without charge to the City. The Contractor shall give sufficient notification of the placing of orders for materials in order to permit the Project Manager to arrange for appropriate testing.

3.4. **STORAGE**: Materials shall be stored to insure the preservation of their quality and fitness for the Work. When necessary, they shall be placed on wooden platforms, or other hard, clean surfaces and not on the ground and shall be placed under cover when directed. Stored materials shall be located to facilitate prompt inspection.

3.5. **SUBSTITUTION OF MATERIALS AFTER AWARD OF CONTRACT**: Substitution of equipment and materials of makes and types other than those specified and/or those approved in advance by the Project Manager will be considered for approval only as hereafter provided:

i. Proposed substitutes shall be equal or superior to items specified or previously approved.
ii. The Contractor shall submit any requests on its letterhead in duplicate within two (2) weeks after the date of Contract execution. The request for substitutions shall include a complete written list submitted at one time and must be accompanied by a statement outlining reasons for each requested substitution. The request shall include catalog number, technical data, cuts diagrams and such other descriptive data or samples as may be required,

and a detailed statement listing all significant details in which each item requested for approval differs from the item specified. Such listing or the failure to list such information shall not relieve the Contractor from providing properly functioning and/or fitting materials, regardless of the approval action taken by the Project Manager. If so requested by the Project Manager, the Contractor shall submit samples of both the specified material or equipment and the proposed substitute. In case of a difference in price, the City shall receive all benefits of the difference for any substitutions, and the Contract amount shall be altered by Change Order to credit the City with any savings so obtained.

3.6. **DEFECTIVE MATERIALS**: All materials not conforming to the requirements of the Specifications shall be considered defective. Whether in place or not, such material shall be removed immediately from the work site, unless otherwise permitted by the Project Manager. No rejected material, the defects of which have been subsequently corrected, shall be used without prior approval from the Project Manager. Upon failure of the Contractor to comply promptly with any order the Project Manager made under the provisions of this Section, the City shall have authority to remove defective materials and to deduct the cost of removal and replacement with specified materials from any moneys due or to become due to the Contractor, or said costs of removal and replacement may be recovered in any action by the City against the Contractor's Bond.

3.7. **PROPERTY RIGHTS IN MATERIALS**: The Contractor shall have no property right in materials after they have been attached, affixed or incorporated in the Work or the soil, or after payment has been made by the City to the Contractor for materials delivered to the work site or stored subject to or under the control of the City.

3.8. **DAMAGE TO THE WORK AND RESPONSIBILITY FOR MATERIALS**:

3.8.1. The Contractor shall be responsible for materials delivered and Work performed until completion and Final Acceptance of the entire construction thereof.

3.8.2. The Contractor shall bear the risk of injury, loss or damage to any and all parts of the Work for whatever cause, whether arising from the execution or from the non-execution of Work. The Contractor shall rebuild, repair or restore Work and materials which have been damaged or destroyed from any causes before completion and acceptance of the Work and shall bear the expense thereof. The Contractor shall provide security and drainage and erect temporary structures as necessary to protect the Work and materials from damage.

3.8.3. The Contractor shall be responsible for materials not delivered to the work site for which any progress payment has been made to the same extent as if the materials were so delivered.

SECTION 4
PERFORMANCE AND PROGRESS

4.1. **SUBCONTRACTING OR ASSIGNMENT OF WORK**:

4.1.1. No contractual relationship will be recognized under the Contract other than the contractual relationship between the City and Contractor.

4.1.2. No portion of the Contract shall be subcontracted, assigned or otherwise disposed of except with the written consent of the City and Surety, which consent shall not be unreasonably withheld.

4.1.3. Requests for permission to subcontract, assign or otherwise dispose of any portion of the Contract shall be in writing to the Project Manager and shall be accompanied by documents demonstrating the organization which will perform the Work is particularly experienced and equipped for such Work. Consent to subcontract, assign or otherwise dispose of any portion of the Contract shall not be construed to relieve the Contractor of any responsibility for the fulfillment of the Contract.

4.2. **COMMENCEMENT OF WORK**: The Contractor shall begin the Work within the prescribed amount of days set by the City in the written Notice to Proceed. The Contractor shall notify the Project Manager at least forty-eight (48) hours in advance of the time it intends to begin Work. Work shall be completed in the prescribed amount of days set by the City in the Contract Documents, including any Change Orders or amendment. The Contractor shall conduct Work in such a manner and with sufficient materials, equipment, and labor as is considered necessary to ensure its completion within the time limit set forth in the Contract. Should the prosecution of Work for any reason be discontinued by the Contractor, with the consent of the Project Manager, the Contractor shall notify the Project Manager at least forty-eight (48) hours in advance of resuming operations.

4.3. **LIMITATION OF OPERATIONS**: Each item of Work shall be performed to completion without delay and in no instance will the Contractor be permitted to transfer its force from uncompleted Work to new Work without the permission of the Project Manager. The Contractor shall not open up Work to the prejudice of Work already started.

4.4. **PROGRESS SCHEDULE**:

4.4.1. The Contractor shall prepare and submit to the Project Manager for approval five (5) days prior to the Preconstruction Conference, a practicable schedule, showing the order in which the Contractor proposes to carry on the Work, the date on which it will start the several salient features (including procurement of materials and equipment) and the contemplated dates for completing the same. The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of Work scheduled for completion at any time. The Contractor shall enter on the chart the actual progress at such intervals as directed by the Project Manager and shall immediately deliver three (3) copies thereof. If the Contractor fails to submit a progress schedule within the time herein prescribed, the Project Manager may withhold approval of progress payment estimates until such time as the Contractor submits the required progress schedule.

4.4.2. The Contractor shall perform the Work in accordance with the latest approved progress schedule. If the progress of items along the critical path is delayed, the Contractor shall revise its planning to include additional forces, equipment, shifts or hours as necessary to meet the time or times of completion specified in this Contract. Additional costs resulting therefrom will be borne by the Contractor. The Contractor shall make such changes when progress at any check period does not meet at least one of the following two tests:

i. The percentage of dollar value of completed Work with respect to the total amount of the Contract is within 10% (ten percent) of the percentage of the Contract time elapsed; or

ii. The percentage of dollar value of completed Work is within 10% (ten percent) of the dollar value which should have been performed according to the Contractor's network analysis previously approved by the Project Manager.

4.4.3. Failure of the Contractor to comply with the requirements under this Section will be grounds for determination that the Contractor is not performing the Work with such diligence as will ensure completion within the time of completion specified in this Contract. Upon such determination, the City may terminate the Contractor's right to proceed with the Work, or any separate part thereof, in accordance with the provisions contained herein. The City may extend the time periods reflected by Section 4.4.2 (i) or (ii) above, if it does not reasonably reflect upon the Contractor's prosecution of the Work.

4.5. **CHARACTER OF WORKMEN AND EQUIPMENT**:

4.5.1. The Contractor shall employ such superintendents, foremen, and workmen as are careful and competent, and the Project Manager may demand the dismissal of any person employed or subcontracted by the Contractor in, about, or upon the Work who misconduct themselves or act incompetently or negligently in the proper performance of their duties, or neglects or refuses to comply with the directions given. Such person or subcontractor shall not be employed again thereon without the written consent of the Project Manager. Should the Contractor continue to employ, or again employ such person or subcontractor, the Project Manager may withhold all payments which are or may become due, or the Project Manager may suspend the Work until such orders are complied with.

4.5.2. In the employment of labor, preference shall be given, other conditions being equal, to residents of the area wherein the Work is being performed, but no other preference (except as may be required by special labor provisions) or discrimination among citizens of the United States shall be made. No convict labor shall be employed.

4.5.3. The Contractor shall furnish such equipment as is considered necessary for the prosecution of the Work in an acceptable manner and at a satisfactory rate of progress. All equipment, tools, and machinery used for handling materials and

executing any part of the Work shall be subject to the approval of the Project Manager and shall be maintained in a satisfactory working condition. Equipment used on any portion of the Work shall be such that no injury to the Work, roadways, adjacent property, or other objects will result from its use. The Contract may be terminated if the Contractor fails to provide adequate equipment for the Work.

4.6. **TEMPORARY SUSPENSION OF WORK**: The City shall have the right to suspend, delay or interrupt the Work wholly or in part for such period as he may determine to be appropriate because of the failure on the part of the Contractor to properly perform the Work in accordance with the Contract, to carry out orders, or to remove defective material or Work. The Contractor shall not suspend the Work without written order given by the Project Manager, and prior to resuming Work shall give the Project Manager forty-eight (48) hours' prior notice to afford opportunity to reestablish supervision.

4.7. **DETERMINATION AND EXTENSION OF CONTRACT TIME FOR COMPLETION**:

4.7.1. The Contractor shall perform fully, entirely, and in a satisfactory and acceptable manner the Work, within the number of days stipulated in the Contract. Time will be assessed against the Contractor beginning with the actual date the Work is started in accordance with the Notice to Proceed. If the Contractor does not begin the Work within the limit as designated in the Notice to Proceed, the days shall start on the first day after the expiration of the limit as stated in the Notice to Proceed.

4.7.2. In adjusting the Contract time for the completion of the Project, all strikes, lockouts, unanticipated delays in transportation or any condition over which the Contractor has no control, and any suspensions ordered by the City for causes not the fault of the Contractor, shall be excluded from the computation of the Contract time for completion of the Work and the City may extend the time for completion in such amount as the conditions justify. In order to secure an extension of time for delays beyond its control, the Contractor, shall within 10 (ten) days from the beginning of any such delay, notify the Project Manager in writing of the causes of delay, where upon the Project Manager shall ascertain the facts and the extent of the delay and extend the time for completing the Work when, in their judgment, the findings of fact justify such an extension, and their finding of fact thereon shall be final and conclusive. No allowances will be made for delays or suspensions of the performance of the Work which are in the control of the Contractor.

4.7.3. If the satisfactory execution and completion of the Contract shall require Work or materials in greater amounts or quantities than those set forth in the Contract, then the Contract time shall automatically be increased in the same proportion as the cost of the additional Work bears to the original Work contracted for.

4.8. **FAILURE TO COMPLETE WORK ON TIME**:

4.8.1. The City and Contractor agree and recognize that time is of the essence for every time period set forth in the Contract Documents and that the City will suffer financial loss if the Work is not substantially complete within the time set forth in the Contract Documents. If the Contractor fails to fully perform and complete the Work in conformity with the provisions and conditions of the Contract within the specified time limit for such performance and completion, or within such further time as, in accordance with the provision of this Contract, shall be fixed or allowed for such performance and completion, the City and Contractor agree that as liquidated damages, and not as a penalty, for the delay in performance, the Contractor shall pay to the City the amount stipulated below for each and every calendar day that expires after the time set forth in the Contract Documents until the same is finally complete and ready for final payment as provided herein.

Original Contract Amount	Amount of Liquidated Damages Per Day
Less than $100,000	$300.00
$100,000 and less than $500,000	$600.00
$500,000 and less than $1,000,000	$1,000.00
$1,000,000 and over	$1,500.00

4.8.2. The City shall recover inspection charges and damages by deducting the amount thereof out of any moneys which may be due or may become due to the Contractor, and/or by an action at law against the Contractor or its Surety. It is understood and agreed that aside from any other penalty or damage, all costs of the Project Manager and inspection on behalf of the City may be charged to the Contractor and be deducted from any estimate or payment otherwise due and payable.

4.8.3. If the Contractor fails to pay such liquidated damages promptly upon demand therefor, the Surety shall pay such damages. In addition, and at the City's option, the City may withhold all or any part of such liquidated damages from any payment due the Contractor.

4.9. **ADJUSTMENT FOR SUSPENDED WORK**:

4.9.1. In the event the Contractor is ordered by the City, in writing, to suspend Work for some unforeseen cause not provided for in the Contract, and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the job during the period of shutdown. No allowance will be made for lost profits. The period of shutdown shall be computed from the date set out in the written order for Work to cease until the date of the written order for Work to resume. Claims for such compensation shall be filed with the City within 10 (ten) days of the date of written order to resume Work, or such claims will not be

considered. The Contractor shall submit with its claim substantiating papers covering the entire amount shown on the claim. The City shall take the claim under consideration, and may make such investigations as are deemed necessary, and shall be the sole judge as to the equitability of such claim and such decision shall be final.

4.9.2. Notwithstanding any provisions of this Contract to the contrary, no provision of this Section shall be construed as entitling the Contractor to compensation for delays due to inclement weather, delays due to failure of the Surety, for suspensions made at the request of the Contractor, or for any other delay provided for in the Contract Documents, Specifications, Special Provisions, Bid Schedule, Contract, Change Order or Field Order.

4.10. **TERMINATION OF CONTRACT FOR DEFAULT**:

4.10.1. The occurrence of any one or more of the following shall constitute an "Event of Default" of the Contract, for which the City may, at the City's option, terminate the Contract upon written notice to the Contractor:

i. The Contractor fails to start the Work on the date given in the Notice to Proceed, or the Contractor in any way abandons the Work;
ii. The Contractor's progress is insufficient to complete the Work within the specified time;
iii. The Contractor's willful or deliberate failure or violation to comply with any requirement of the Contract, including the Plans and Specifications and Special Provisions, or execution of Work by the Contractor in bad faith or otherwise not in accordance with its obligations;
iv. The Contractor fails to maintain any required Bonds, licenses, permits, and/or insurance as required in the Contract;
v. The Contractor fails to promptly repair, replace or remove any defects in materials or Work or any defects in materials or Work of any other nature, the correction of which has been directed in writing by the Project Manager;
vi. Substantial evidence of the Contractor's collusion for the purpose of illegally procuring a Contract or perpetrating fraud in the construction of Work;
vii. The Contractor files a voluntary petition in bankruptcy if a receiver is appointed for the Contractor or any of its property, or the insolvency of the Contractor;
viii. The Contractor allows any final judgment against it unsatisfied for a period of 10 (ten) days or longer, and makes an assignment for the benefit of creditors;
ix. The Contractor or any of its officers or employees are convicted, plead nolo contendre, enter into a formal agreement in which they admit guilt, enter a plea of guilty, or otherwise admit culpability to criminal offenses of bribery, kickbacks, collusive bidding, bid-rigging, anti-trust, fraud, undue influence, theft, extortion, or any offense of similar nature, in connection with the Contractor's business;
x. Other just causes for termination as determined by the City.

4.10.2. The City shall provide the Contractor and Surety with written notice of the City's intent to terminate. The Contractor and/or Surety shall have 10 (ten) days from receipt of notice to cure any default or to provide to the City a detailed plan, in writing, of how the Contractor will cure the causes for termination listed within the written notice. If a satisfactory effort has not been made by the Contractor or its Surety to correct the default within the prescribed period in the notice, or, if in the judgment of the City, any submitted written plan does not ensure satisfactory performance of the Work, the City may declare the Contract terminated and notify the Contractor and its Surety accordingly. Upon receipt of notice from the City that the Contract has been terminated, the Contractor shall immediately discontinue all operations. The City may then proceed with the Work in any lawful manner that it elects until completion.

4.10.3. The City reserves the right to take possession of any machinery, implements, tools, or materials of any description that shall be found upon the Work, to account for said equipment and materials, and to use the same to complete the Project. When the Work is thus finally completed, the total cost of the same will be computed. If the total cost is more than the Contract price, the difference shall be paid to the City either by the Contractor or its Surety. In case of termination, all expenses incident to ascertaining and collecting losses under the Bond, including City project management and legal services, shall be assessed against the Bond.

4.11. **TERMINATION FOR CONVENIENCE OF THE CITY**: This Contract and the performance of the Work hereunder may be terminated at any time, in whole or in part, for convenience. Any such termination shall be effected by delivery to the Contractor of a written notice ("Notice of Termination") specifying the extent to which performance of Work is terminated, the date upon which termination becomes effective, and any necessary actions to be taken by the Contractor to effectuate termination and close-out the Contract. If the Contract is terminated, the Contractor shall be paid on a prorated basis of Work satisfactorily completed, under the Work. The portion of Work satisfactorily completed but not yet accepted by the City shall be determined by the City.

4.12. **COOPERATION WITH OTHER CONTRACTORS**: In connection with the improvements under this Contract, the right is reserved by the City to award any Work not included in the Contract to another contractor for performance during the progress of this Contract, or to perform such Work with the City's forces, and the Contractor shall cooperate and so conduct its operation as to minimize the interference therewith, as directed by the Project Manager.

4.13. **TERMINATING OF CONTRACTOR'S RESPONSIBILITY**: This Contract will be considered complete when all Work and final cleanup has been finished, the Work has been accepted by the City, and all claims for payment of labor, materials, or services of

any kind used in connection with the Work have been settled for by the Contractor or its Surety. The Contractor will then be released from further obligation except as set forth in the Bond and for its responsibility for injury to persons or property arising from its duties and obligations under Section 7 of the General Conditions. The Bond executed for performance of this Contract shall be in full effect for a period of one (1) year following acceptance of the Work; except with regard to the representation regarding copyright infringement found in Section 6.4 the Bond shall remain in effect for three (3) years, and except with regard to the representation regarding patent infringement found in Section 6.4 the Bond shall remain in effect for six (6) years. Neither the final payment nor any provision in the Contract Documents shall relieve the Contractor of the responsibility for negligence or faulty materials or workmanship. The Contractor shall warrant its work to be free from faulty materials or workmanship for the period of two (2) years after Final Acceptance, and upon written notice, the Contractor shall remove any defect due thereto and pay for any damage due to other Work resulting there from which shall appear within the two-year period. Remedied Work shall carry the same warranty as the original Work starting with the date of acceptance of the replacement or repair. Payment to the Contractor will not relieve the Contractor of any obligation under this Contract.

SECTION 5
WARRANTY

5.1. SCOPE OF WARRANTY:

5.1.1. The Contractor warrants that the Work and all of its components shall be free from defects and flaws in design, workmanship, and materials; shall strictly conform to the requirements of this Contract; and shall be fit, sufficient and suitable for the purposes expressed in, or reasonably inferred from, this Contract. The warranty herein expressed shall be in addition to any other warranties expressed or implied by law, which are hereby reserved unto the City. In all emergencies the Contractor shall immediately remedy, repair, or replace, without cost to the City and to the entire satisfaction of the City, defects, damages or imperfections due to faulty materials or workmanship appearing in said Work within said period of not less than two (2) years from the date of Final Acceptance. Remedied Work shall carry the same warranty as the original Work starting with the date of acceptance of the replacement or repair. Payment to the Contractor will not relieve the Contractor of any obligation under this Contract.

5.1.2. The Contractor, at no additional expense to the City, shall also remedy damage to equipment, the site, or the buildings or the contents thereof which is the result of any failure or defect in the Work, and restore any Work damaged in fulfilling the requirements of the Contract. Should the Contractor fail to remedy any such failure or defect within a reasonable time after receipt of notice thereof, the City will have the right to replace, repair, or otherwise remedy such failure or defect at the Contractor's expense.

5.1.3. Subcontractors', manufacturers', and suppliers' warranties and guarantees, expressed or implied, respecting any part of the Work and any material used therein shall be deemed obtained and shall be enforced by the Contractor for the benefit of the City without the necessity of separate transfer or assignment thereof.

5.1.4. The rights and remedies of the City provided in this Section are in addition to and do not limit any rights and remedies afforded by the Contract or by law. The Contractor specifically waives all the provisions of Chapter 8 of Article 20 of Title 13, C.R.S. regarding defects in the Work under the Contract.

5.2. **CITY'S RIGHT TO CORRECT**: If, within five (5) business days after the City gives the Contractor notice of any defect, damage, flaw, unsuitability, nonconformity, or failure to meet warranty subject to correction by the Contractor, or if the Contractor neglects to make, or undertake with due diligence to make the necessary corrections, then the City shall be entitled to make, either with its own forces or with contract forces, the corrections and to recover from the Contractor all resulting costs, expenses, losses, or damages, including attorneys' fees and administrative expenses.

5.3. **WARRANTY PERIOD**: Except where longer periods of warranty are indicated for certain items, the Contractor warrants Work under the Contract to be free from faulty materials and workmanship for a period of not less than two (2) years from date of Final Acceptance, with one (1) of those years being covered by the Bond, as specified in this Contract. In cases of warranty work, which is not an emergency, all necessary repairs shall be made within a reasonable time not to exceed twenty (20) days after notice of the required repair is received by the Contractor. For those items of warranty work which cannot be completed within said twenty (20)-day period, the Parties shall negotiate a reasonable period of time.

SECTION 6
LEGAL RELATIONSHIP AND RESPONSIBILITY TO THE PUBLIC

6.1. **LAWS TO BE OBSERVED**: The Contractor shall at all times observe and comply with all Federal, State and local laws, codes, ordinances, and regulations, which pertain to and affect the conduct of the Work, and the Contractor and its Surety shall indemnify and save harmless the City and all its officers, agents, employees, or any of their heirs, successors or assigns against any claim, judgment, demand, costs, liability or expenses, including but not limited to attorney's fees and costs of suit arising from or based on the violation of any such law, ordinance, regulations, order, or decree, whether such claim, judgment, demand, costs, liability or expenses arises from actions by the Contractor, its employees, agents or subcontractors. Nothing contained herein shall be deemed to create liability for the Contractor for any design defects not managed by the Contractor.

6.2. **PERMITS AND LICENSES**: The Contractor shall, at its own expense, procure all permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the Work. Any costs incurred for these permits must be included in the unit costs.

6.3. **PAYMENT OF TAXES**:

6.3.1. With the exception of being exempt from City of Littleton Sales and Use taxes, the Contractor shall pay all sales and use taxes required to be paid, shall maintain such records in respect to its Work, which shall be separate and distinct from all other records maintained by the Contractor and shall be available for inspection by the City at any and all reasonable times, and shall furnish the City with such data, as may be necessary to enable the City to obtain any refunds of such taxes which may be available to the City under the laws, ordinances, rules or regulations applicable to such taxes. The Contractor shall require each of its subcontractors to pay all sales and use taxes required and to maintain such records and furnish the Contractor with such data as may be necessary to enable the City to obtain a refund of the taxes paid by such subcontractors.

6.3.2. In accordance with C.R.S. §§ 39-26-114 and 39-26-203, and the related regulation of the State of Colorado Department of Revenue, the Contractor shall apply to the State of Colorado Department of Revenue and secure prior to commencing Work, an exemption certificate which when issued by the State of Colorado Department of Revenue will enable the Contractor to purchase all materials free of State Sales and Use Taxes and Regional Transportation District ("RTD") Tax, provided that any building permit fee shall be included in any Bid Schedule with respect to the Work. Further, no Littleton sales and/or use tax shall be included in any billing with respect to the Work. This provision shall apply to all contractors, subcontractors and material suppliers. When Littleton sales tax is paid to licensed Littleton vendors for materials, which become part of the Work by a Contractor, the City of Littleton will refund that tax to the Contractor upon receipt of an application from the Contractor at the conclusion of the Contract. Accompanying the application must be the material receipt(s) displaying a description of the item(s) purchased, date of purchase, amount of purchase, tax paid and any other documentation and information which may be required by the City to substantiate the payment and validate a refund.

6.3.3. Contractors who purchase materials that become part of the Work that do not honor the exemption, and thereby who pay sales tax, will not be reimbursed for that tax payment by the City. The Contractor shall bear the risk of any added or increased taxes occurring during the performance of the Work. A change in taxes shall under no circumstances entitle the Contractor to an adjustment under the Contract.

6.4. **PATENTED DEVISES, MATERIALS AND PROCESSES**: If the Contractor is required or desires to use any design, device, material or processes covered by patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the patentee or patent owner. The Contractor shall warrant that the materials, equipment or devices used on or incorporated in the Work shall be delivered free of any rightful claim of any third-party for infringement of any United States patent or copyright. If notified

promptly in writing and given authority, information and assistance, the Contractor shall defend, or may settle, at its expense, any suit or proceeding against the City so far as based on a claimed patent or copyright infringement which would result in a breach of this warranty, and the Contractor shall pay all damages and costs awarded therein against the City due to such breach. In case any use of any materials, equipment or devices is in such suit held to constitute an infringement and such use is enjoined, the Contractor shall, at its expense and option, either procure for the City the right to continue using said materials, equipment or devices, or replace same with non-infringing materials, equipment or devices, or modify the same so it becomes non-infringing. The Contractor shall report to the City promptly and in reasonable written detail each notice or claim of patent or copyright infringement based on the performance of this Contract of which the Contractor has knowledge. In the event of any claim or suit against the City as a result of any alleged patent or copyright infringement arising out of the performance of this Contract or out of the use of any supplies furnished or Work or services performed hereunder, the Contractor shall furnish to the City when requested by the City, all evidence and information in possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the City except where the Contractor has agreed to indemnify the City. This clause shall be included in all subcontracts.

6.5. **SANITARY PROVISIONS**: The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of its employees as may be necessary to comply with the requirements and regulations of the State Department of Health and the Occupational Safety and Health Administration ("OSHA"). As stated in OSHA Construction Standard 1926.51 C, the Contractor shall supply temporary sanitary facilities as per the following table:

Number of Employees	Minimum Toilet Facilities
20 or less	1 Toilet
21 to 50	1 Toilet and 1 Urinal per 40 workers
51 or more	1 Toilet and 1 Urinal per 50 workers

This requirement to provide sanitary facilities will neither be measured nor paid for separately by the City, but shall be considered incidental to and included in the cost of the Work.

6.6. **PUBLIC CONVENIENCE AND SAFETY**:

6.6.1. The Contractor shall be solely and completely responsible for conditions of the Work site, including safety of all persons and property during performance of the Work. The Contractor shall fully comply with all applicable Federal, State and local laws, and rules and regulations governing safety of the public and workers. The Contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions on its own responsibility reasonably necessary to protect the life and health of employees on the job and the safety of the public,

and to protect property in connection with the performance of the Work. Materials stored on the site shall be so placed and the Work shall, at all times, be so conducted as to cause no greater obstruction to traffic than is considered necessary by the Project Manager.

6.6.2. The Contractor shall not close any road to the public except by the express permission of the City. When the improvement under construction is being used by the traveling public, special attention shall be paid to keeping both the sub-grade and surfacing in such condition that the public can travel in comfort and safety. The Contractor shall cooperate with the Project Manager in the regulation of traffic. If the Contractor constructs temporary bridges or temporary stream crossings, the Contractor's responsibility for accidents shall include the roadway approaches as well as the structures of such crossing.

6.6.3. The right of the Project Manager to conduct construction review or observation of the Contractor's performance will not include review or observation of the adequacy of the Contractor's safety measures in, on, or near the Work site.

6.7. **BARRICADES, SIGNS AND HAZARD MARKINGS**:

6.7.1. The Contractor shall provide, erect and maintain all necessary barricades, signs, danger signals and lights for the protection of the Work and the safety of the public. All barricades, signs and obstructions erected by the Contractor shall be illuminated at night and all devices for this purpose shall be kept illuminated from sunset to sunrise.

6.7.2. The Contractor shall be held responsible for all damage to the Work due to failure of barricades, signs, lights and watchman to protect it, and whenever evidence of such damage is found prior to acceptance, the Project Manager may order the damaged portion immediately removed and replaced by the Contractor without cost to the City if, in the opinion of the Project Manager, such action is justified. The Contractor's responsibility for the maintenance of barricades, signs and lights shall not cease until Work has been accepted.

6.8. **USE OF EXPLOSIVES**: When the use of explosives is necessary for the Work, the Contractor shall use the utmost care so as not to endanger life or property, and whenever directed by the Project Manager the number and size of the charges shall be reduced. The Contractor shall notify the proper representatives of any public services corporation, the City, any company, or any individual at least eight (8) hours in advance of any blasting which may damage property on, along, or adjacent to the site. The Contractor shall comply with the requirements of Title 9, Article 7 of the C.R.S., as amended, titled "Explosive Permits". The Contractor shall also be required, at a minimum, to notify the Littleton Fire Department and the Littleton Police Department. All explosives shall be stored in a secure manner and all storage places shall be marked clearly "DANGEROUS EXPLOSIVES," and shall be in care of competent watchmen at all times.

6.9. **PROTECTION AND RESTORATION OF PROPERTY**:

6.9.1. The Contractor shall not enter upon private property for any purpose without first obtaining permission, and shall be responsible for the preservation of all public and private property, sod, trees, fences, monuments, underground structures, etc., on and adjacent to the site(s) and shall use every precaution necessary to prevent damage or injury thereto. The Contractor shall protect carefully, from disturbance or damage, all land monuments and property markers until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.

6.9.2. The Contractor shall be responsible for all damage or injury to property of any character resulting from any act, omission, neglect or misconduct in his manner, or method of executing said Work, or due to its non-execution of said Work, or at any time due to defective Work or materials, and said responsibility shall not be released until the Work has been completed and accepted by the City.

6.9.3. The Contractor's attention is directed to the importance of protecting all public utilities encountered on all projects. Such utilities may include, but are not limited to, telephone, telegraph and power lines, water lines, sewer lines, gas lines, railroad tracks, and other overhead and underground utilities, cable television lines and facilities. Before any excavation is to begin in the vicinity of water lines, railroad tracks or structures, sewer lines, cable television lines, gas lines or telephone conduits, each utility company concerned must be notified in advance of such excavation, and such excavation shall not be made until an authorized representative of the utility company concerned is on the ground and has designated the location of their facilities.

6.9.4. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect or misconduct in the execution of the Work, or in consequence of the non-execution thereof on the part of the Contractor, the Contractor shall restore, at its own expense, such property to a condition similar or equal to that existing before such damage or injury was done by repairing, rebuilding, or otherwise restoring, as may be directed; or the Contractor shall make good such damage or injury in an acceptable manner. In case of the failure on the part of the Contractor to restore such property, or to have started action to make good such damage or injury, the City may upon forty-eight (48) hours' notice, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any moneys due or which may become due the Contractor under the Contract or prosecuted as a claim against the Contractor's Bond.

6.9.5. The cost of insurance for damages due to Contractor's operation or cost of protecting utilities where required to permit construction under this Contract shall be included in the original Contract prices for the Work.

6.10. **INDEMNIFICATION AND HOLD HARMLESS**: The Contractor and its Surety shall indemnify and save harmless the City, its officers, agents, employees, successors and assigns from all suits, demands, actions, or claims of any nature whatsoever brought or made against the City, its officers, agents, employees, successors or assigns from any injuries or damages sustained by any person, firm or corporation or property or resulting from or arising out of any neglect in safeguarding the Work; or through the use of unacceptable materials in the construction of the improvement; or as a result of any act or omission by the Contractor; or from the use, misuse, storage or handling of explosives; or on account of any claims or amounts recovered for any infringement of patent, trademark or copyright; or from any claims or amounts arising or recovered under Worker's Compensation laws, or any other law, by-law, ordinance, order or decree. Moneys due to the Contractor under and by virtue of the Work, as shall be considered necessary by the City, may be retained, or in case no money is due, the Contractor's Bond shall be held until such suit(s), action(s), or claim(s) for injuries or damages have been settled and satisfactory evidence has been furnished to the City.

6.11. **NO PERSONAL LIABILITY OF THE PROJECT MANAGER**: The Project Manager is an agent of City, and the Project Manager, its agents, heirs, successors and assignees shall have no liability to any third-party as a result of performance of this Contract.

6.12. **NO WAIVER OF LEGAL RIGHTS**: Inspection by the Project Manager or authorized City representatives, payment of money, payment for or acceptance of any Work or any extension of time, or possession taken by the City shall not operate as a waiver of any provision of the Contract, or any power therein provided. A waiver of any breach or term of the Contract shall not be deemed to be a waiver of any other or subsequent breach. The City reserves the right to correct any error that may be discovered in any estimate that may have been paid, and to adjust the same to meet the requirements of the Contract and Specifications. The City reserves the right to claim and recover, by process of law, sums as may be sufficient to correct any error or make good any deficit in the Work resulting from such error, dishonesty, or collusion discovered in the Work after the final payment has been made.

6.13. **RIGHTS-OF-WAY**: The City shall furnish all lands and rights-of-way required for completion of the Work. In acquiring rights-of-way, the City will proceed as expeditiously as possible, but in the event all rights-of-way or easements are not acquired prior to the beginning of construction, the Contractor shall begin Work on such lands and rights-of-way as have been acquired. No claim for damage will be allowed or shall be made by reason of the City's delay in obtaining lands, easements or rights-of-way. In the event of litigation or other delays in acquiring rights-of-way, the time allowed herein for completion will be extended to compensate for the time actually lost by such delay.

SECTION 7
MEASUREMENT AND PAYMENT

7.1. **BONDS**.

7.1.1. Contemporaneous with the Contractor's execution of this contract, the Contractor shall provide a Performance Bond and a Labor and Material Payment Bond as security for the faithful performance and payment of all the Contractor's obligations under the Contract Documents. All bonds shall be in the form prescribed by the City, executed by a surety company i) licensed to do business in the State of Colorado; ii) with a general rating of A and a financial size category of Class X or better in Best's Insurance Guide, each in the penal sum of the contract price; and iii) in conformance with C.R.S. §§ 38-26-105 and 106 ("Bonds"). All Bonds signed by an agent or attorney-in-fact shall be accompanied by a certified copy of the signatory's authority to act. The Contractor shall, at all times while providing, performing, or completing the Work including without limitation at all times while correcting any failure to meet warranty pursuant to Section 5 of the General Conditions, maintain and keep in force the Bonds at the Contractor's expense.

7.1.2. If the Surety for any Bond furnished by the Contractor is placed in a receivership or declared bankrupt, or its rights to do business in Colorado are terminated, or it ceases to meet the requirements specified herein, the Contractor shall within five (5) days thereafter substitute another Bond and Surety, both of which shall be acceptable to the City.

7.2. **MEASUREMENT OF WORK PERFORMED**: The determination of the amount of Work acceptably completed under the terms of the Contract, or as directed by the Project Manager in writing, will be made by the Project Manager based on measurements taken by them or their authorized representatives. These measurements will be taken according to the United States standard measure. All surface and linear measurements will be taken horizontally unless otherwise shown on Plans or otherwise specified. Structures shall be measured to the neat lines as shown on the Plans, or as directed in writing by the Project Manager.

7.3. **SCOPE OF PAYMENT**:

7.3.1. The Contractor shall accept the compensation, as herein provided, in full payment for furnishing all materials, equipment, labor, tools, and incidentals necessary to complete the Work and for performing all Work contemplated and embraced under the Contract; for loss or damage arising from the nature of the Work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the completion of the Work until the final acceptance by the City; for all risks of every description connected with the completion of the Work; for all expenses incurred in consequence of the suspension or discontinuance of the Work as herein specified; for any infringement of patent, trademark, or copyright; and for completing the Work according to the Plans and Specifications. Neither the payment of any partial payment nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective Work or material. No moneys payable under the Contract or any part thereof, except the

partial payment for the first month period, shall become due and payable until the Contractor satisfies to the City that it has fully settled or paid for all materials and equipment used in or upon the Work and labor done in connection therewith. The City, if it so elects, may pay any or all such bills, wholly or in part, and deduct the amount or amounts so paid from any monthly or final partial payment excepting the first estimate.

7.4. **PAYMENT FOR INCREASED OR DECREASED QUANTITIES**: When alterations in the Plans or quantities of Work are ordered and performed without a written Change Order or amendment, the Contractor shall accept payment in full at the Contract unit price for the actual quantities of Work done, and only upon the City's review and approval of said Work. No allowance will be made for lost profits. Increased or decreased Work without a written Change Order will be paid for as stipulated herein.

7.5. **PAYMENT FOR OMITTED ITEMS**:

7.5.1. For any item omitted from the Work, the City will pay the Contractor a fair and equitable amount for costs incurred directly related to such item prior to the date of the City's order to omit the item, subject to Section 1.4 of the General Conditions. No allowance will be made for lost profits in reimbursements to the Contractor for omitted items of Work. Acceptable materials ordered by the Contractor or delivered to the Work site prior to the date of cancellation, alteration, or suspension of the Work by order of the Project Manager will be paid for at the actual cost to the Contractor and shall thereupon become the property of the City.

7.5.2. The Contractor shall immediately submit certified statements covering all money expended in preparation for any omitted item, and shall be reimbursed for any money expended in preparation for Work on any omitted item when such preparation has no value to the remaining items of the Contract, or for a proportionate amount based on the total Contract price over which such preparation would ordinarily be distributed when other items are included in such preparation.

7.6. **EXTRA AND FORCE ACCOUNT WORK**:

7.6.1. Extra Work, for which no price is provided in the Bid Schedule, shall be covered by Change Order to be signed by both Parties before such Work is commenced. Extra Work will be paid for either at a lump sum, or unit prices agreed upon, or on a Force Account basis, subject to Section 1.5 of the General Conditions. For all labor, teams, and foremen in direct charge of the specific operations accomplished on a Force Account basis, the Contractor shall receive the current local rate of wage, to be agreed upon before starting the Work, to which shall be added 15% (fifteen percent) of the sum thereof to cover cost of supervision, the rental of small tools and ordinary equipment, additional Bond, Unemployment Insurance, all overhead and any other costs not specifically stated. In addition, the Contractor shall be paid a sum equal to the Worker's Compensation insurance premium, the

actual costs of Social Security taxes computed on the base rate for the class of Work involved for the actual amount of the payroll, and the public liability and property damage insurance premium; provided, however, that nothing in this Section will change the legal status of the relationship between the Parties to this Agreement. For all materials furnished and used by the Contractor on a Force Account basis, the Contractor shall receive the actual cost of such materials, including transportation charges as shown by original receipted bills, to which shall be added 15% (fifteen percent) of said actual cost.

7.6.2. For machine power tools or equipment, including fuel and lubricant, used on Force Account Work, payment for the same will be made on a rental basis at the rate agreed upon between the Contractor and the Project Manager, to which rate no percentage shall be added.

7.6.3. The compensation as herein provided shall be received by the Contractor as payment for Extra Work done on a Force Account basis and subject to any conditions or limitations as specified in Section 1.5 of the General Conditions. The Contractor shall make no claim for Force Account Work, unless performed on written order and in accordance therewith. The Contractor's representative and the Inspector shall compare records of Extra Work done on a Force Account basis at the end of each day. Copies of these records shall be made upon suitable forms provided for this purpose and signed by both the Inspector and the Contractor's representative, one copy being forwarded to the Project Manager and one copy to the Contractor.

7.6.4. All claims for Extra Work done on a Force Account basis shall be submitted each month to the Project Manager by the Contractor upon certified statements, or upon forms furnished by the City. Work performed prior to a written order by the Project Manager will not be paid for.

7.7. **PARTIAL PAYMENTS**:

7.7.1. Partial progress payments shall be made by the City to the Contractor for the percentage of the Work completed, subject to inspection and approval by the Project Manager. The City shall determine when work has been completed, and progress payments shall not constitute a waiver of the City’s right to require fulfillment of all terms of the Contract Documents and the delivery of all Work contemplated herein, complete and satisfactory to the City.

7.7.2. Once per month as the Work progresses, the Project Manager will make an estimate of the value of the Work performed and materials completed and in-place or delivered to the Work site in accordance with the Contract. Upon the Project Manager’s request, the Contractor shall furnish a detailed estimate of the total Contract price showing the amount included therein for each category of Work, to provide a basis for determining the amount of progress payments. The market value of materials and equipment delivered to the Work site but not yet

incorporated in the Work may, at the discretion of the City, be included with a progress payment. However, payment by the City for such materials and equipment shall not relieve the Contractor of the responsibility for the care of such materials and equipment; the City shall not be deemed to have assumed ownership of the materials or equipment until incorporated into the completed and accepted Work. Such increases to progress payments, if authorized, are intended only to reduce the cost of doing business with the City.

7.7.3. In accordance with C.R.S. § 24-91-103, where the Contract price exceeds one hundred fifty thousand dollars ($150,000.00), partial payments shall be authorized at the end of each calendar month, or as soon thereafter as practicable, to the Contractor upon satisfactory performance of the Contract. The City shall, from the total of the Contract estimate so ascertained, deduct an amount equivalent to five (5) percent of the whole, to be retained by the City until acceptance of the entire Contract and the balance of the sum equivalent to 95% (ninety-five percent) of the whole, shall be certified to by the Project Manager for payment.

7.7.4. The City shall retain from all progress payments an amount equal to all statutory claims filed against the Contractor pursuant to C.R.S. § 38-26-107. No partial payments except final payment will be made for a sum less than one thousand dollars ($l,000.00). The estimates will be approximate only, and all partial or monthly estimates and payments shall be subject to correction in the estimate and payment rendered following discovery of an error in any previous estimates or payments. Should any defective Work or material be discovered, or should a reasonable doubt arise as to the integrity of any part of the Work completed previous to the final acceptance and payment, the costs shall be deducted from the first payment rendered after the discovery of such Work an amount equal in value to the defective or questioned Work, and this Work will not be included in a subsequent estimate or payment until the defects have been remedied or the causes for doubt removed.

7.8. **PUNCH LIST AND FINAL ACCEPTANCE**. The Work shall be finally accepted when, and only when, the whole and all parts thereof shall have been completed to the satisfaction of City in full compliance with, and as required by or pursuant to, this Contract. Upon receipt of the Contractor's Written Notice of Completion, the City shall make a review of the Work and notify the Contractor in writing of all Punch List Work, if any, to be completed or corrected. Following the Contractor's completion or correction of all Punch List Work, the City shall review the Work and prepare and deliver to the Contractor either a written notice of additional Punch List Work to be completed or corrected or a written notice of Final Acceptance of the Work.

7.9. **ACCEPTANCE AND FINAL PAYMENT**:

7.9.1. Two (2) weeks after acceptance of the Work including final cleanup, the City shall initiate the acceptance and final payment procedures. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

Upon completion of the acceptance and final payment procedures, the Work will be considered accepted, the Contract considered complete, and, upon compliance with the provisions of State law, the final payment shall be executed and submitted to the Contractor.

7.9.2. The acceptance by the Contractor of the last payment as aforesaid shall operate as and shall be a release of the City from all claims for liability arising from the performance of the Work under the Contract, excepting any claims that may arise during the warranty period.

7.10. **LIENS.**

7.10.1. *Title*. Nothing in this Contract shall be construed as vesting in the Contractor any right of property in any equipment, materials, supplies, and other items provided under this Contract after they have been installed in, incorporated into, attached to, or affixed to, the Work or Work site. All such equipment, materials, supplies, and other items shall, upon being so installed, incorporated, attached or affixed, become the property of the City, but such title shall not release the Contractor from its duty to insure and protect the Work in accordance with the requirements of this Contract.

7.10.2. *Waivers of Lien*. The Contractor shall, from time to time at the City's request and in any event prior to final payment, furnish to the City such receipts, releases, affidavits, certificates, and other evidence as may be necessary to establish, to the reasonable satisfaction of the City, that no lien against the work or the public funds held by the City exists in favor of any person whatsoever for or by reason of any equipment, material, supplies, or other item furnished, labor performed, or other thing done in connection with the Work or this Contract ("Lien"), and that no right to file any Lien exists in favor of any person whatsoever.

7.10.3. *Removal of Liens*. If at any time any notice of any Lien is filed, the Contractor shall, promptly and without charge, discharge, remove, or otherwise dispose of such Lien. Until such discharge, removal, or disposition, the City shall have the right to retain from any money payable hereunder an amount that the City, in its sole judgment, deems necessary to satisfy such Lien and to pay the costs and expenses, including attorneys' fees and administrative expenses, of any actions brought in connection therewith or by reason thereof.

7.10.4. *Protection of City Only*. This Section shall not operate to relieve the Contractor's Surety or Sureties from any of their obligations under the Bonds, nor shall it be deemed to vest any right, interest, or entitlement in any subcontractor or supplier. The City's retention of funds pursuant to this Section shall be deemed solely for the protection of its own interests pending removal of such Liens by the Contractor, and the City shall have no obligation to apply such funds to such removal but may, nevertheless, do so where the City's interests would thereby be served.

7.11. **DEDUCTIONS.**

7.11.1. *City's Right To Withhold*. Notwithstanding any other provision of this Contract and without prejudice to any of the City's other rights or remedies, the City shall have the right at any time, to deduct and withhold from any progress or final payment that may be or become due under this Contract, such amount as may reasonably appear necessary to compensate the City for any actual or prospective loss due to:

i. Work that is defective, damaged, flawed, unsuitable, nonconforming, or incomplete;
ii. Claims or liens filed or reasonable evidence indicating probable filing of claims or liens from third-parties, regardless of merit;
iii. Failure of the Contractor to make payments properly and promptly to subcontractors for material or labor;
iv. Failure of the Contractor to complete any portion of the Work in compliance with an approved schedule;
v. Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract value;
vi. Failure of the Contractor to submit on a timely basis, any documentation required by the Contract Documents, including without limitation, monthly reports, schedules, or request for approval of subcontractors;
vii. Unauthorized Work or deviations by the Contractor from the Contract Documents;
viii. Damage to the City or to another contractor;
ix. State or local sales, use, or excise taxes from which the City is exempt;
x. Any other failure of the Contractor to perform any of its obligations under this contract; or
xi. The cost to the City, including attorneys' fees and administrative costs, of correcting any of the aforesaid matters or exercising any one or more of the City's remedies set forth within the Contract Documents.

7.11.2. *Release and Use of Withheld Funds*. The City shall be entitled to retain any and all amounts withheld pursuant to Section 7.11.1 above until the Contractor has either performed the obligations in question or furnished security for such performance satisfactory to the City. The City shall be entitled to apply any money withheld or any other money due to the Contractor under this Contract to reimburse itself for any and all costs, expenses, losses, damages, liabilities, suits, judgments, awards, attorneys' fees and administrative expenses incurred, suffered, or sustained by the City and chargeable to Contractor under this Contract.

7.11.3. *Waiver under C.R.S. § 38-26-107*. Execution of the Contract Documents by the Contractor shall constitute waiver by the Contractor to claim any right of payment of interest upon any such retained funds, or to claim any right of payment of interest upon funds withheld under the provisions of C.R.S. § 38-26-107.

SECTION 8
DISPUTES AND REMEDIES

8.1. DISPUTE RESOLUTION PROCEDURE.

8.1.1. *Notice of Disputes and Objections.* If the Contractor disputes or objects to any requirement, direction, instruction, interpretation, determination, or decision of the City, the Contractor may notify the City in writing of the issue and of the amount of any equitable adjustment to the Contract price or Contract time to which the Contractor claims it will be entitled as a result thereof; provided, however, that the Contractor shall, nevertheless, proceed without delay to perform the Work as required, directed, instructed, interpreted, determined, or decided by the City, without regard to such dispute or objection. Unless the Contractor so notifies the City within two (2) business days after receipt of such requirement, direction, instruction, interpretation, determination, or decision, the Contractor shall be conclusively deemed to have waived all such disputes or objections and all claims based thereon.

8.1.2. *Negotiation of Disputes and Objections.* To avoid and settle without litigation any such dispute or objection, the City and the Contractor agree to engage in good faith negotiations. Within 10 (ten) business days after the City's receipt of the Contractor's written notice of dispute or objection, a conference between the City and the Contractor shall be held to resolve the dispute. Within 10 (ten) business days after the end of the conference, the City shall render its final decision in writing to the Contractor. If the Contractor objects to the City's final decision, then it shall, within 10 (ten) business days give the City notice thereof and, in such notice, shall state its final demand for settlement of the dispute. Unless the Contractor so notifies the City, the Contractor shall be conclusively deemed to have agreed to and accepted the City's final decision and to have waived all claims based on such final decision.

8.2. **DISPUTED CLAIMS FOR EXTRA WORK**: In case the Contractor deems extra compensation is due for Work or material not covered in the Contract Documents, or not ordered by the Project Manager as Extra Work, the Contractor shall notify the Project Manager in writing of its intention to make claim for such extra compensation before beginning Work on which the Contractor bases the claim, and shall afford the Project Manager every facility for keeping actual cost of the Work. Failure on the part of the Contractor to give such notification or to afford the Project Manager proper facilities for keeping strict account of actual cost shall constitute a waiver of the claim for such extra compensation. The filing of such notice by the Contractor and the keeping of costs by the

Project Manager shall not in any way be construed to prove the validity of the claim. When the Work has been completed, the Contractor shall, within 10 (ten) days, file its claim for extra compensation with the Project Manager, who will review for consideration.

8.3. **CONTRACTOR'S REMEDIES**. If the City fails or refuses to satisfy a final demand made by the Contractor pursuant to Section 8.2 above, or to otherwise resolve the dispute which is the subject of such demand to the satisfaction of the Contractor, within 10 (ten) days following receipt of such demand, the Contractor shall be entitled to pursue such remedies, not inconsistent with the provisions of this Contract, as it may have in law or equity.

8.4. **CITY'S REMEDIES**. If it should appear at any time prior to final payment that an Event of Default, and has failed to cure any such Event of Default, as defined within Section 4.10 of the General Conditions, the City shall have the right, at its election and without prejudice to any other remedies provided by law or equity, to pursue any one or more of the following remedies:

i. The City may require the Contractor, within such reasonable time as may be fixed by the City, to complete or correct all or any part of the Work that is defective, damaged, flawed, unsuitable, nonconforming, or incomplete; to remove from the Work site any such work; to accelerate all or any part of the Work; and to take any or all other action necessary to bring the Contractor and the Work into strict compliance with this Contract.
ii. The City may perform or have performed all work necessary for the accomplishment of the results stated in (i) above and withhold or recover from the Contractor all the cost and expense, including attorneys' fees and administrative costs, incurred by the City in connection therewith.
iii. The City may accept the defective, damaged, flawed, unsuitable, nonconforming, incomplete, or dilatory Work or part thereof and make an equitable reduction in the Contract price.
iv. The City may terminate this Contract without liability for further payment of amounts due or to become due under this Contract, pursuant to Section 4.10 of the General Conditions.
    i. Upon any termination of this Contract or of the Contractor's rights under this Contract in accordance with Sections 4.10 or 4.11 of the General Conditions, and at the City's option exercised in writing, any or all subcontracts and supplier contracts of the Contractor shall be deemed to be assigned to the City without any further action being required, but the City shall not thereby assume any obligation for payments due under such subcontracts and supplier contracts for any Work provided or performed prior to such assignment.
v. The City may withhold from any progress or final payment, whether or not previously approved, or may recover from the Contractor any

and all costs including attorneys' fees and administrative expenses, incurred by the City as the result of any Event of Default or as a result of actions taken by the City in response to any Event of Default.

vi. The City may recover any damages suffered by the City.

8.5. **CITY'S SPECIAL REMEDY FOR DELAY**. If the Work is not completed by the Contractor in full compliance with and as required by or pursuant to this Contract, within the time as such time may be extended by Change Order, then the City may invoke its remedies under Section 8.4 of the General Conditions or may, in the exercise of its sole and absolute discretion, permit the Contractor to complete the Work but charge to the Contractor and deduct from any progress or final payments, whether or not previously approved, administrative expenses and costs for each day completion of the Work is delayed beyond the completion date, computed as set forth in Section 4.8 of the General Conditions, as well as any additional damages caused by such delay.

8.6. **ATTORNEY FEES:** In the event there is any dispute between the the Contractor or the Surety and the City, its officers, agents or employees, and the City, its officers, agents or employees prevail, the City, its officers, agents or employees shall be granted all of its costs, including but not limited to attorney's fees, court costs and expert witness fees.

SECTION 9
OTHER PROVISIONS

9.1. Wherever a number of days is specified in this Contract it shall mean calendar days unless otherwise specified.

9.2. When a delay on any aspect of the Work occurs, the Contractor, to the maximum extent possible, shall utilize its resources elsewhere in the Work. If the Contractor, after complying the maximum extent possible by the reassignment of its labor force, equipment and materials, alleges to have suffered damages due to delay, and the delay is caused in whole or in part by acts or omissions within the control of the City or persons acting on its behalf, then such a claim shall be treated as a Change Order request and shall be processed in accordance with the Change Order, audit and inspection requirements specified in the General Provisions or it shall be deemed forever waived. Nothing herein contained shall be interpreted so as to allow the Contractor to recover delay damages from the City for delays caused by acts of God, the acts or omissions of the Contractor, its subcontractors, employees or agents, or persons over which the City has no control.

9.3. Work performed by the Contractor under this Contract shall conform to reasonable and normal professional standards and the Contractor shall conduct itself at all times in a manner consistent with industry standards.

9.4. No reports, graphics or other material produced specifically for the City under this

Contract shall be the subject of an application for copyright or trademark by or on behalf of the Contractor.

9.5. No assignment of any claim or proceeds under this Contract shall be binding upon the City unless it shall be first notified thereof in writing.

DEFINITIONS

Whenever the following terms or pronouns are used in the Specifications and Contract Documents, the intent and meaning shall be as follows:

AWWA: American Water Works Association.

CHANGE ORDER: A written modification of the Contract, issued after award to the Contractor, authorizing an addition, deletion, or revision to the Work within the general scope of the Contract or authorizing an adjustment in the Contract price or time mutually agreed upon between the City and the Contractor.

CDOT: Colorado Department of Transportation.

CONTRACT OR CONTRACT DOCUMENTS: The written agreement executed between the City and the Contractor covering the performance of the Work and the furnishing of labor and materials, by which the Contractor is bound to perform the Work and furnish the labor and materials and by which the City is obligated to compensate at a mutually established and accepted rate or price.

CONTRACTOR: The individual, partnership, firm, or corporation executing the Contract, acting directly or through lawful agents or employees, primarily liable for the acceptable performance of the Work for which contracted, and for the payment of all legal debts pertaining to the Work.

DRAWINGS: The Plans, profiles, typical cross-sections, general cross-sections, elevations, schedules, and details which show locations, character, dimensions, and details of the Work.

DISTRICT: A legally constituted group of individuals who have joined together in order to facilitate construction of utility systems within the limits of their property. The district shall be represented by its authorized Board of Directors.

PROJECT MANAGER: The duly authorized representative of the City, acting directly or through an assistant or representative.

EQUIPMENT: All machinery, together with the necessary supplies for upkeep and maintenance, and all tools and apparatus necessary for the proper construction and acceptable completion of the Work.

EXTRA WORK: Work not provided for in the Contract as awarded but found to be essential to the satisfactory completion of the Contract, within its intended scope.

FIELD ORDER: A written order effecting minor change in the Work not involving an adjustment in the Contract price or an extension of the Contract time, issued by the Project Manager to the Contractor during construction.

FINAL ACCEPTANCE: An acknowledgment made by the City that all Work has been completed.

FORCE ACCOUNT: A method of payment, other than lump sum or unit price, for Work ordered by a Change Order.

INSPECTOR: An authorized representative of the City assigned to make all necessary inspection of the Work performed or being performed, or of the materials furnished or being furnished by the Contractor.

LABORATORY: The official testing laboratories of the City or such other laboratories as may be designated by the Project Manager.

NOTICE TO PROCEED: A written notice to the Contractor of the date on which it is to begin Work.

PAYMENT BOND: The approved form of security furnished by the Contractor and its Surety as a guarantee that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the Work, as provided by law.

PERFORMANCE BOND: The approved form of security furnished by the Contractor and its Surety as a guarantee of good faith and ability of the Contractor to execute the Work in accordance with the terms of the Plans, Specifications, and Contract. In lieu of a separate Performance Bond, a combination Performance, Labor and Material Payment Bond may be supplied by the Contractor.

PERFORMANCE, LABOR AND MATERIAL PAYMENT BOND: Security furnished by the Contractor and its Surety as a guarantee that the Contractor will pay in full all bills and accounts for materials and labor used in the Work and that it will execute the Work in accordance with the Contract.

PLANS: The official Plans, working drawings, or supplemental drawings or exact reproductions thereof, approved by the Project Manager which show the locations, character, dimensions, and details of the Work to be done and which are to be considered as part of the Contract, supplementary to the Specifications.

PROGRESS SCHEDULE: A construction schedule prepared by the Contractor in a bar-chart, critical path or other format acceptable to the Project Manager which includes the start and completion dates of all salient features of the Work.

SHOP DRAWINGS: All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a subcontractor, manufacturer, supplier, or distributor, which illustrate how specific portions of the Work shall be fabricated or installed.

SPECIAL PROVISIONS: The specific clauses setting forth conditions or requirements particular to the Work, covering work or materials involved in the bid and estimate, which are not thoroughly or satisfactorily stipulated in the General Provisions or Specifications.

SPECIFICATIONS: The directions, provisions, and requirements contained herein, supplemented by Special Provisions, pertaining to the method and manner of performing the Work, or to the quantities or the qualities of materials to be furnished under the Contract. Also includes Technical Specifications, part of the Contract Documents consisting of technical written descriptions for materials, equipment, construction systems, standards and workmanship.

STRUCTURES: Bridges, culverts, sewers, catch basins, retaining walls, manholes, headwalls, buildings, valve vaults and other features which may be encountered in the Work and not otherwise classified herein.

SUBCONTRACTOR: An individual, firm or corporation having a direct contract with the Contractor or the Contractor's subcontractor(s) for the performance of a part of the Work.

SUBSTANTIAL COMPLETION: The Work (or a specified part thereof) has progressed to the point where, in the opinion of the Project Manager, it is sufficiently complete in accordance with the Contract, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. For the purposes of final acceptance of the Work, Substantial Completion shall include cleanup of the Work site and all work areas.

SUPPLIER: Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design.

SURETY: The corporate body or individuals who are bound by the Performance Bond; Payment Bond; or Performance, Labor and Material Payment Bond, with and for the Contractor who is responsible for the entire and satisfactory fulfillment of the Contract and for the payment of all debts incurred in fulfilling the Contract.

UNIT PRICE WORK: Work to be paid for on the basis of unit prices.

PERFORMANCE, LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that TAK Broadband, LLC (Contractor), as Principal (the "Principal") and Nationwide Mutual Insurance Company, a corporation organized under the laws of the State of Ohio, and authorized to transact business in the State of Colorado, as "Surety," jointly and severally, including their heirs, personal representatives, successors and assigns, are held and firmly bound unto the City of Littleton as Obligee, hereinafter called Owner, for the use and benefit of claimants as herein below defined, in the amount of Five Hundred Eighty Six Thousand Three Hundred Seventy and 00/100 Dollars ($ 586,370.00) , for the payment and interest as provided by law for the performance of the Contract between the Principal and the Owner, dated _____, 2025, for the Littleton Blvd Fiberoptics Installation project in accordance with drawings and specifications; which the Contract is made a part hereof, and is hereinafter referred to as the Contract, and incorporated by this reference.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal, at all times, shall promptly and faithfully perform said Contract, and shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contact, any authorized modifications thereof during the original term of the Contract, any extensions thereof that may be granted by the Owner, and during the term of any guarantee or warranty required under the Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense when the Owner may incur in making good any default, then the Principal and Surety shall have no obligation under this Bond, otherwise it shall remain in full force and effect for a period of one (1) year following execution of the Contract. Upon expiration, this Bond shall be extended by a continuation certificate for an additional one (1) year, and extended thereafter until the warranty period has expired in accordance with the terms of the Contract.

The Surety, for value received, agrees that no extension of time, change in, addition to, or other alteration or modification of the terms of the Contract or work to be performed there under or any other forbearance on the part of either the Owner or the Principal to the other shall in any way release or impact the Surety's liability or obligation on this Bond, and the Surety hereby waives notice of any extension of time, change in, addition to, or other alteration or forbearance.

Whenever the Owner terminates the Contract in accordance with the terms thereof, the Surety shall, within fifteen (15) calendar days after written notice of such termination, notify the Owner in writing of its election to complete the Contract in accordance with its terms and conditions, or notify the Owner that the Surety elects not to complete the Contract. If the Surety fails to provide the written notice within the fifteen

(15) calendar day period, then it will have deemed to have not elected to complete the Contract. Should the Surety elect to complete the Contract, then it shall, within fifteen (15) additional calendar days, following written notice of such election, obtain a bid or bids for submission to Owner for completing the Contract in accordance with its terms and conditions. The Surety shall arrange for a contract between bidder and Owner, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs, attorneys fees of the Owner and damages for which the Surety shall be liable hereunder, the amount set forth in the first paragraph hereof. In the event of termination, the Surety may not engage the Principal to complete the Contract, without prior written consent of the Owner, which consent may be withheld in the Owner's sole discretion. If the Surety elects to complete the Contract, then it shall be entitled to receive the balance of the Contract price, less i) any amounts paid by the Owner to the Principal; ii) costs incurred by the Owner in correcting the defective work; iii) any additional legal, design professional or other costs incurred by the Owner resulting from Principal's default; and iv) any liquidated damages caused by the delayed performance or nonperformance of the Principal. Any progress payments, less retainage, due but not paid at the date of termination shall be paid to the Surety so long as the Surety has agreed to indemnify the Owner for the amount thereof and no other claims have been made to such funds by subcontractors or suppliers in accordance with the Contract or any applicable law. In the event that the Surety elects not to complete the Contract, the Owner may then have work completed by such means and in such manner, as it may deem advisable. The Surety, in such event, shall at all times make available, as work progresses under the Contract between the Owner and new contractor, sufficient funds to pay the cost of completion of the Contract pursuant to the its terms together with the other amounts set forth above, but in no event shall the Surety be responsible for the payment of any sums to the Owner until the Owner has paid in full its total obligation under the terms of the original Contract, plus Change Orders or amendments less deductions and claims chargeable by law or by the Contract, if any, and less the retainage which will be disbursed as provided by the Contract and any applicable law.

Any proceeding, whether legal or equitable, under this Bond, except for claims for payment of labor and material, or copyright or patent infringement, must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

Further, the above named Principal and Surety hereby jointly and severally agree with the Owner that the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such Contract ("claimant"), and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs or machinery, equipment and tools, consumed or used in connection with the construction of such work, whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

The above-named Principal and Surety hereby jointly and severally agree with the Owner that every claimant, who has not been paid in full at any time up to and including the time of final settlement for the work contracted to be done, file with the Owner, a verified statement of the amount due and unpaid in accordance with Section 38-26-107, C.R.S. Provided, further, that no final settlement between the Owner and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied. The Owner shall not be liable for the payment of any costs, attorney fees, or other expenses of any such legal remedies a claimant may have against the Principal or Surety.

SIGNED this 8th day of May 20 25.

In the presence of:

TAK Broadband, LLC

(Contractor / Principal)

Nationwide Mutual Insurance Company

Mariana Walker

(Surety) Mariana Walker, Attorney-in-Fact



(Accompany this Bond with Attorney in-fact's authority from the Surety to execute the Bond, certified to include the date of the Bond.)

APPROVED FOR THE OWNER:

DocuSigned by:

Brent Soderlin

BRENT SODERLIN

DIRECTOR OF PUBLIC WORKS AND UTILITIES

Revised 07.2024

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS THAT:

Nationwide Mutual Insurance Company, an Ohio corporation

hereinafter referred to severally as the "Company" and collectively as "the Companies" does hereby make, constitute and appoint:

C STEPHENS GRIGGS; CHARLES R TETER III; CHRISTY M BRAILE; DANIELLE R CAPPS; DEBRA J SCARBOROUGH; ERIN C LAVIN; EVAN D SIZEMORE; HILLARY D SHEPARD; JEFFREY C CAREY; KELLIE A MEYER; KRISTIN D THURBER; LAUREN SCOTT; MARIANA WALKER; MARY T FLANIGAN; PATRICK T PRIBYL; REBECCA S LEAL; TAHITIA M FRY; VERONICA LAWVER;

each in their individual capacity, its true and lawful attorney-in-fact, with full power and authority to sign, seal, and execute on its behalf any and all bonds and undertakings, and other obligatory instruments of similar nature, in penalties not exceeding the sum of

UNLIMITED

and to bind the Company thereby, as fully and to the same extent as if such instruments were signed by the duly authorized officers of the Company; and all acts of said Attorney pursuant to the authority given are hereby ratified and confirmed.

This power of attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the board of directors of the Company:

"RESOLVED, that the president, or any vice president be, and each hereby is, authorized and empowered to appoint attorneys-in-fact of the Company, and to authorize them to execute and deliver on behalf of the Company any and all bonds, forms, applications, memorandums, undertakings, recognizances, transfers, contracts of indemnity, policies, contracts guaranteeing the fidelity of persons holding positions of public or private trust, and other writings obligatory in nature that the business of the Company may require; and to modify or revoke, with or without cause, any such appointment or authority; provided, however, that the authority granted hereby shall in no way limit the authority of other duly authorized agents to sign and countersign any of said documents on behalf of the Company."

"RESOLVED FURTHER, that such attorneys-in-fact shall have full power and authority to execute and deliver any and all such documents and to bind the Company subject to the terms and limitations of the power of attorney issued to them, and to affix the seal of the Company thereto; provided, however, that said seal shall not be necessary for the validity of any such documents."

This power of attorney is signed and sealed under and by the following bylaws duly adopted by the board of directors of the Company.

Execution of Instruments. Any vice president, any assistant secretary or any assistant treasurer shall have the power and authority to sign or attest all approved documents, instruments, contracts, or other papers in connection with the operation of the business of the company in addition to the chairman of the board, the chief executive officer, president, treasurer or secretary; provided, however, the signature of any of them may be printed, engraved, or stamped on any approved document, contract, instrument, or other papers of the Company.

IN WITNESS WHEREOF, the Company has caused this instrument to be sealed and duly attested by the signature of its officer the 20th day of August, 2021.

Antonio C. Albanese, **Vice President** of Nationwide Mutual Insurance Company

ACKNOWLEDGMENT

STATE OF NEW YORK COUNTY OF NEW YORK: ss
On this 20th day of August, 2021, before me came the above-named officer for the Company aforesaid, to me personally known to be the officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, deposes and says, that he is the officer of the Company aforesaid, that the seal affixed hereto is the corporate seal of said Company, and the said corporate seal and his signature were duly affixed and subscribed to said instrument by the authority and direction of said Company.

Stephanie Rubino McArthur
Notary Public, State of New York
No. 02MC6270117
Qualified in New York County
Commission Expires October 19, 2024

Notary Public
My Commission Expires
October 19, 2024

CERTIFICATE

I, Laura B. Guy, Assistant Secretary of the Company, do hereby certify that the foregoing is a full, true and correct copy of the original power of attorney issued by the Company; that the resolution included therein is a true and correct transcript from the minutes of the meetings of the boards of directors and the same has not been revoked or amended in any manner; that said Antonio C. Albanese was on the date of the execution of the foregoing power of attorney the duly elected officer of the Company, and the corporate seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority of said board of directors; and the foregoing power of attorney is still in full force and effect.

IN WITNESS WHEREOF, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of said Company this 8th day of May, 2025.

Assistant Secretary

BDJ 1(08-21)00

LOCKTON

UNCOMMONLY INDEPENDENT

May 12, 2025

TAK Broadband, LLC
4401 South Technology Drive
Sioux Falls, SD 57106

Re: City of Littleton Colorado
Bond # 7901254336
Bond Amount: $586,3700.00
Project Name: Littleton Blvd Fiberoptics Installation

To Whom It May Concern:

This letter will serve as your authority to date the Bonds and/or the Powers of Attorney on the above captioned project.

Very truly yours,

Nationwide Mutual Insurance Company

By: Mariana Walker
Mariana Walker
Attorney-in-Fact

NOTICE TO PROCEED
[Project Name and Number]

Date: _____

TO: **[Type Contractor Name]**
[Type Contractor Address]

You are hereby authorized to proceed on this date, [**Date**] with the work covered in the contract documents titled **[Project Name and Number]**. Work must commence within [**Number of Days in which construction must commence**] days of acceptance of this Notice to Proceed.

OWNER, CITY OF LITTLETON

By:_____Title:_____

CONTRACTOR ACCEPTANCE OF NOTICE TO PROCEED
By: _____
this _____ day of _____, 20___.
Title:_____

CONTRACTOR'S RECEIPT FOR FINAL PAYMENT

[Project Name and Number]

Date: _____

TO: **[Type Contractor Name]**
[Type Contractor Address]

The undersigned has accepted the City of Littleton's Check No. _____ dated _____, 20 ____ in the amount of _____ Dollars ($_____), as final payment of all sums due for work done under the Contract Documents titled **[Project Name and Number]**, as amended, and as complete performance by the Contractor of all obligations to be performed by it pursuant thereto. The Contractor acknowledges and agree that no future claims for additional payments shall be made.

CONTRACTOR

By:_____Title:_____

FINAL ACCEPTANCE AND WARRANTY INITIATION

[Project Name and Number]

Date: _____

TO: **[Type Contractor Name]**
[Type Contractor Address]

You are hereby notified that on the ___ day _____, 20___, the City of Littleton has accepted the construction work completed by _____, for the construction work covered under the contracts documents titled **[Project Name and Number].**

You are also notified that the warranty terms and conditions as set forth in the contract documents are initiated as of the date of this acceptance.

Final payment receipt form is attached within the contract documents for your convenience. Should this form not be returned within ten (10) calendar days, properly signed and approved, it will be assumed that lack of such performance constitutes informal giving of a receipt and satisfaction by the contractor for final settlement of all amounts due.

CITY OF LITTLETON

By:_____Title:_____

NOTICE OF END OF BASIC WARRANTY PERIOD

[Project Name and Number]

Date: _____

TO: _____

_____

_____

You are hereby notified that on the ____ day of _____ , 20____, the City of Littleton has ended the basic warranty period for the construction work completed by _____ for the construction work covered under the contract documents titled **[Project Name and Number].** The basic warranty two (2) years from the date of Final Acceptance and warranty initiation.

You are also notified that the contract provisions concerning additional warranties on remedied work; patented devices, materials, and processes which may have been used in this construction; or other expressed warranties are not relinquished by the owner as a result of the issuance of this notice.

CITY OF LITTLETON

By: _____
Title: _____

CITY OF LITTLETON
SPECIAL PROVISIONS
WEST LITTLETON BLVD COMMUNICATIONS UPGRADE
LITTLETON PROJECT NO. 21-37

All work shall be performed in accordance with the City of Littleton Standard Specifications and the Standard Specifications. The following special provisions supplement or modify the Standard Specifications. When specifications or special provisions contain both English units and SI units, the English units apply and are the specification requirement. Where reference is made to the Standard Specifications, it shall mean the Colorado Department of Transportation's 2023 Standard Specifications for Road and Bridge Construction.

PROJECT SPECIAL PROVISIONS

Description	Page	Date
Notice to Bidders	1	February 24, 2025
Commencement and Completion of Work (Calendar Day)	2	February 24, 2025
Revision of Section 101 Definitions And Terms	3	February 24, 2025
Revision of Sections 102 and 105 Contractor Submittals	4	February 24, 2025
Revision of Section 105 Cooperation Between Contractors	5	February 24, 2025
Revision of Section 105 New Construction Inventory	6	February 24, 2025
Revision of Section 108 Disincentive for Offline ITS Devices	8	February 24, 2025
Revision of Section 202 Removal of Fiber Optic Cable	13	February 24, 2025
Revision of Section 202 Removal of Sidewalk	14	February 24, 2025
Revision of Section 203 Potholing	15	February 24, 2025
Revision of Section 212 Landscape Restoration	16	February 24, 2025
Revision of Section 250 Environmental Health and Safety Management	17	February 24, 2025
Revision of Section 608 Concrete Sidewalk (6 Inch)	18	February 24, 2025
Revision of Section 612 Location Marker	19	February 24, 2025
Revision of Section 613 Electrical Conduit	20	February 24, 2025
Revision of Section 613 Pull Box	21	February 24, 2025
Revision of Section 613 Proof Conduit	23	February 24, 2025
Revision of Section 614 Fiber Optic Cable (Single Mode)	24	February 24, 2025
Revision of Section 614 Buffer Tube Fan Out Kit	31	February 24, 2025
Revision of Section 614 Fiber Optic Termination Panel	32	February 24, 2025
Revision of Section 614 Ethernet Switch (install only)	34	February 24, 2025
Revision of Section 614 12 Port Pre-terminated Patch Panel and Pigtail	35	February 24, 2025
Revision of Section 614 Fiber Optic Splice Closure	36	February 24, 2025
Revision of Section 614 Fiber Optic Fusion Splice	38	February 24, 2025
Revision of Section 614 Test Fiber Optic Cable	40	February 24, 2025
Revision of Section 614 Fiber Optic Pre-connectorized Cable	46	February 24, 2025
Revision of Section 614 Grounding and Bonding	49	February 24, 2025
Revision of Section 626 Mobilization	55	February 24, 2025
Revision of Section 630 Construction Zone Traffic Control	56	February 24, 2025
Force Account Items	60	February 24, 2025
Utilities	61	February 24, 2025

NOTICE TO BIDDERS

Pursuant to subsections 102.04 and 102.05, it is recommended that bidders on this project review the work site and plan details prior to submitting a proposal. Prospective bidders may contact the following listed authorized City representative prior to the Bid Question Submittal Deadline listed in the Bid Documents and questions and responses will be posted online from the Rocky Mountain E-Purchasing System at www.govbids.com, if such is prepared.

City Procurement Manager: Megan Sullivan - MSullivan@littletongov.org

The above referenced individual or their designee are the only representatives of the City with authority to provide any information, clarification, or interpretation regarding the plans, specifications, and any other contract documents or requirements.

COMMENCEMENT AND COMPLETION OF WORK (CALENDAR DAY)

The Contractor shall commence work under the Contract on or before the 15th day following Contract execution or the 30th day following the date of award, whichever comes later, unless such time for beginning the work is changed by the City in the "Notice to Proceed." The Contractor shall complete all work in 154 calendar days in accordance with the "Notice to Proceed."

Time will not be charged while awaiting delivery of materials at the discretion of the Engineer.

The project will be grouped into three separate "phases" as described below:

Phase 1 – Littleton Blvd fiber optic backbone installation: Consists of all steps necessary to fully install the fiber optic backbone between Broadway and the Littleton Center. This includes installation of 432 strand fiber optic cable and associated conduit, pull boxes, and all required testing of the fiber optic cable.

Phase 2 – Littleton Blvd lateral connections: Consists of all proposed work along the path of the 432 strand fiber optic backbone that is not included in Phase 1. This includes establishing communications to traffic signals on Littleton Blvd, establishing connections to the Littleton Center and Littleton Municipal Courthouse, all splicing of the 432 strand fiber optic cable, and associated fiber optic testing.

Phase 3 – Datura St and County Line Rd connections: Consists of all work to establish communications to the Littleton Museum, Littleton Museum Collections Building, and the Bemis Public Library, as well as all work to establish communications to the traffic signal at County Line Rd & Southpark Cir. This includes both infrastructure installation and testing.

Phase 1 of the project shall be completed in full no later than October 1, 2025. This includes installation, testing, and acceptance of all elements of Phase 1. The remaining phases shall be completed in accordance with the calendar days timeframe noted above.

REVISION OF SECTION 101
DEFINITIONS AND TERMS

Section 101 of the Standard Specifications is hereby revised for this project as follows:

Technical Specifications related to construction materials and methods for the Work under this Contract shall consist of the *State Department of Highways, Division of Highways, State of Colorado, Standard Specifications for Road and Bridge Construction* dated 2021.

Certain terms utilized in the Specifications referred to in the paragraph above shall be interpreted to have different meaning within the scope of this Contract. A summary of redefinitions of Subsection 101.02 follows:

Delete subsection 101.09 and replace with the following:

101.09 CDOT Resident Engineer. CDOT Resident Engineer shall mean Engineer.

Delete subsection 101.28 and replace with the following:

101.28 Department. Department shall mean City of Littleton.

Delete subsection 101.29 and replace with the following:

101.29 Engineer. Engineer shall mean the City of Littleton City Traffic Engineer, or his or her designee.

Delete subsection 101.51 and replace with the following:

101.51 Project Engineer. Project Engineer shall mean Engineer.

Delete subsection 101.58 and replace with the following:

101.58 Region Transportation Director. Region Transportation Director shall mean Engineer.

Delete subsection 101.76 and replace with the following:

101.76 State. State shall mean City of Littleton.

Section 101 is hereby revised for this project to include the following:

CDOT. CDOT shall mean City of Littleton.

Section 101 is hereby revised for this project to include the following:

Traffic Engineering Services or **TES.** Traffic Engineering Services shall mean the City of Littleton.

Section 101 is hereby revised for this project to include the following:

Staff Bridge. Staff Bridge shall mean Engineer.

REVISION OF SECTIONS 102 AND 105
CONTRACTOR SUBMITTALS

Section 102 of the Standard Specifications is hereby revised for this project to include the following:

101.02 Shop Drawings. A general term that includes drawings, diagrams, illustrations, samples, schedules, calculations, and other data which provide details of the construction of the work and details to be used by the Engineer for inspection. Shop drawings shall be prepared by the Contractor, subcontractors, manufacturers, suppliers, or distributors. Shop Drawings are submitted to the Engineer for formal review and returned to the Contractor in accordance with subsection 105.02(c). Shop drawings include data and annotations which illustrate the specific material, equipment, product features, and items which are incorporated.

Section 105 of the Standard Specifications is hereby revised for this project to include the following:

Only submittals applicable to the project are required.

In subsection 105.02, Table 105-1 shall include the following:

Section No.	Description	Type	Contractor P.E. Seal Required?
613	Location marker	Shop Drawing	No
613	Conduit	Show Drawing	No
613	Pull boxes	Shop Drawing	No
614	Fiber optic cable	Shop Drawing	No
614	Termination panels	Shop Drawing	No
614	Patch cables, and connectors	Shop Drawing	No
614	Splice kits	Shop Drawing	No
614	Splice closures	Shop Drawing	No
614	Pre-terminated patch panel and pig tails	Shop Drawing	No

REVISION OF SECTION 105
COOPERATION BETWEEN
CONTRACTORS

Section 105 of the Standard Specifications is hereby revised for this project and includes the following:

Subsection 105.12 shall be revised as follows:

The Contractor is hereby advised that other construction projects will be working concurrently within the project limits. The Contractor must cooperate fully with the Engineer's direction regarding coordination of project schedules, traffic control, public information, and any other coordination deemed necessary by the Engineer.

All cost associated with the foregoing requirements shall be incidental to the contract.

REVISION OF SECTION 105
NEW CONSTRUCTION
INVENTORY

Section 105 of the Standard Specifications are hereby revised for this project to include the following:

MATERIALS

Subsection 105.02(f), shall include the following:

In addition to standard paper documents, each as-built delivered to the City of Littleton will be accompanied by digital files relating to that submission

1. Digital files to be submitted must be in one of the following formats; in order of preference:
    a. GIS File
        i. File Geodatabase (.gdb)
        ii. Shapefile (.shp)
    b. AutoCAD to include all reference files, fonts, CTB file, and a layer index describing the data found on each layer

This work consists of the Contractor furnishing as-built documentation to the Engineer including coordinates and tabular data about attributes of newly constructed assets.

Requirements for submission

- Digital files shall be submitted referencing Colorado State Plane (CSP) Coordinates, Central Zone:

  Projected Coordinate System: NAD_1983_StatePlane_Colorado_Central_FIPS_0502_Feet

  Projection: Lambert_Conformal_Conic

  False_Easting: 3000000.00031608

  False_Northing: 999999.99999600

  Central_Meridian: -105.50000000

  Standard_Parallel_1: 38.45000000

  Standard_Parallel_2: 39.75000000

  Latitude_Of_Origin: 37.83333333

  Linear Unit: Foot_US

  Geographic Coordinate System: GCS_North_American_1983

  Datum: D_North_American_1983

  Prime Meridian: Greenwich

  Angular Unit: Degree

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REVISION OF SECTION 105
NEW CONSTRUCTION
INVENTORY

- File names for plans should include the Project Name, Address, or Development Name followed by type of drawing. File should not contain any space or special characters. Underscores (_) are acceptable in the file name.
    - Format: [Project Name or Address]_asbuilt.gdb
    - Example: ENG21_0000_asbuilt.gdb
- Data Integrity Requirements
    - Line features should be digitized as continuous solid lines.
    - Polyline features (e.g. building boundaries) should be closed entities (snapped closed at nodes or endpoints).
    - No annotation shall be included in any feature layer and no feature shall be included in any annotation layer. Annotation for each layer shall be placed in annotation layers
    - All errors in the digital submission identified by City staff (such as polygons not properly closing, lines not connecting to features, etc.) must be reviewed and corrected by a licensed professional prior to proceeding with plan/permit processes and permit issuance.

METHOD OF MEASUREMENT

New Construction Inventory will not be measured or paid for separately but will be considered incidental to the items being installed. This work shall include all labor, materials, and equipment required to complete the work.

REVISION OF SECTION 108
DISINCENTIVE FOR
OFFLINE ITS DEVICES

Section 108 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

The Contractor is responsible for all CDOT ITS devices and communications infrastructure contained within the limits of this project throughout the duration of the project.

Offline, as used in this specification, is defined as time during which data or video is not being received by a Colorado Operations Center or Traffic Management System Building or if a device is not operating at optimal performance.

CDOT ITS field devices covered under this special provision include, but are not limited to, CCTVs, MVRDs, RWISs, Ramp Meters, Traffic Signals, VMSs, ATRs, RSUs, and VSLs.

All planned outages need to follow the steps outlined in this section under General Instructions for Planned Services.

UNPLANNED ITS OUTAGES

An unplanned outage is considered to be any loss of network communications or device functionality that CDOT ITS did not receive proper advance notice of, as described above, and is due to the Contractor's negligence, and/or act or omission under their control as a result of project activities.

Impacts to ITS Network

If the Contractor damages a CDOT ITS fiber optic backbone, or if CDOT ITS loses communications or power to a node building or operations center as a result of the Contractor's negligence, act or omission under their control, the Contractor shall be charged a disincentive. This first-time network disincentive rate shall be $1,000 per hour, and an additional $2,000 per hour for a communications or power outage that results in loss of data and video to a node building or operations center.

- This disincentive rate shall increase to $2,000 per hour the second time, and an additional $3,000 per hour for a communications or power outage that results in loss of data and video to a node building or operations center. This increase of $1,000 per hour will continue for any further outages to the CDOT Network.
- Additionally, the Contractor shall be responsible for any charges involved with investigating such an outage and restoration of the ITS network to full working condition. These disincentive rates are in addition to any costs that may be levied by private utility owners for loss of communications.
- ITS Devices: For unplanned outages or outages where CDOT ITS does not receive advance notification and the outage is a result of project activities, the Contractor shall be charged a disincentive of $50 per hour for each device that is offline beginning at the time of the outage.

Impacts to Toll Revenue Collection

- Any closures of the Express Lanes, expected delays, or changes to the existing traffic configuration shall be coordinated with the Engineer at least 30 calendar days prior to the
- start of the work. The Express Lanes shall remain uninterrupted at all times during the construction phasing in both directions.
- All tolling equipment and infrastructure for the Express Lanes, including but not limited to license plate cameras, loops, automatic vehicle indicator antennas, variable toll rate message signs, cabinets, fiber communication, and power infrastructure shall remain uninterrupted at all times.

- Any impacts to toll revenue collection due to the closure of the Express Lane or disruption to the tolling equipment infrastructure, communication or power shall result in the contractor being assessed a disincentive of $1,200.00 per hour.

CONSTRUCTION REQUIREMENTS

Anytime Contractor work impacts a CDOT ITS device or system, the Contractor shall notify CDOT ITS immediately upon discovery of an outage. This notice, as well as advanced notices described below for planned outages, shall be provided to CDOT ITS Network Operations Center (NOC) at CDOT_ITS_Support@state.co.us by the Contractor or Project Engineer.

GENERAL INSTRUCTIONS FOR PLANNED SERVICES

All work that is service impacting requires the NOC to be properly notified. Service impacting work includes any work that could impede operation centers or groups of employees from typical job duties. Notification requesters are CDOT employees and project staff including ITS, traffic and specialty crews, temporary employees, contractors, and all other staff performing service impacting work. Notification requesters are responsible to communicate impacts to all customers associated with their planned work. Notifications are required for all work with impacts to any ITS, traffic signals, tunnel devices systems, networks, servers, security, and all other systems used to operate the highways. Requesters are responsible to provide accurate details in their request based on the requirements and process outlined in this document.

Allowable offline periods for all ITS field devices & switches shall be a 48-hour period and allowable offline periods for tolling equipment & switches shall be a 24-hour period. After the allowable offline period has expired disincentive rates will be charged.

No more than two ITS device locations shall be inoperable at any one time unless previously approved by the Engineer and CDOT ITS, specifically for cases where interconnected locations make it impossible to meet this requirement. The Contractor shall carefully ensure that other locations are not made inoperable during work and, if they are, those will be included in the maximum of two offline ITS locations allowed, unless previously approved by the Engineer and CDOT ITS.

For Emergency Requests, the requester must submit all details as soon as possible to the NOC, and the NOC will broadcast the notification within a 1-hour window of receiving the request.

Planned Service Involving ITS Fiber

Requirements to be Included in Planned Work Involving ITS Fiber:

For a standard fiber services request, requesters must submit the following information at least 10 business days in advance from the activity/work date.

- **Title for notification:** displaying a clear message of the purpose or activity.
- **Date and Time:** Need to include the date, as well as the estimated start time and restoral time for the work. Verify work falls into allowable maintenance windows. More information can be found below in the Maintenance Window and Moratorium section.
- **Description of activity:** Describe in detail what work will be taking place and why the work is taking place, project name and number if applicable or if this is maintenance work.
- **Service impact:** Describe in detail what services and devices will be impacted while the work is being performed.

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REVISION OF SECTION 108
DISINCENTIVE FOR
OFFLINE ITS DEVICES

- **Who will be affected:** Describe all customers impacted by the work or impact.
- **Location:** Describe all details including highway, direction, and mile marker or an area description from mile marker to mile marker.
- **MESD:** Submit ticket or change number if applicable as well as project name and number, if the notification is for an emergency, you must call the NOC to have a ticket created.
- **Audience:** Who does this notification affect and need to be sent out to?
- **Contact information**: Include your name, organization, email, and phone number. Also include the contact information for the contractor doing the fiber optic work in the field.

Planned Service with Temporary Offline ITS Devices

Requirements to be Included in the Temporary Offline Device Notification:

The following instructions are provided for information to the Contractor. The Contractor shall direct all questions regarding the Temporary Offline ITS Device Notification Form to the Project Engineer. Fill out the Temporary Offline ITS Device Notification form or email the following information to the Project Engineer and the ITS NOC at least 3 business days in advance of any planned device outage.

The form or email submission must include the following:

- Project Description / Location / Project # / Project Code (SA #)
- Provide this information, typically found on the title sheet of the plans.
- Project Engineer / Project Engineer Contact / Date
- Date the form will be submitted.
- Contractor / Contractor Representative / Contractor Rep Contact #
- Device Type / Highway / Direction / Mile Marker / Description of Device Location / Offline Date / Estimated Down Time / Online Date
- Contractor Notes: Fill in additional information the Contractor would like to communicate with the ITS NOC
- Maintenance Notes: To be filled in as needed by CDOT maintenance personnel.

Requirements to be Included with Planned Service in Node Buildings

The Contractor shall follow Revision 614 Contractor Node Building Entry Procedures when needing to access node buildings as part of their project.

All work involving the nodes power shall follow these requirements:

- NOC will be notified 14 business days in advance to allow CDOT to verify all backup power systems are working properly.
- Work can only be done during the approved maintenance windows.
- Power will be shut down in a responsible sequence that will not harm existing node components.
- All necessary precautions and preparations shall be made and coordinated with CDOT prior to power being turned off.
- Power may not be off for a period of longer than 45 minutes unless specifically authorized by the ITS Branch Manager.

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REVISION OF SECTION 108
DISINCENTIVE FOR
OFFLINE ITS DEVICES

Submitting a Request to Notify the NOC of Planned Work

Requesters can submit a request by emailing CDOT_ITS_Support@state.co.us with all of the details above included in the email.

MAINTENANCE WINDOWS AND MORITORIUMS

No work will be allowed to be done outside of maintenance windows or during moratoriums, unless approved by the ITS Branch Manager.

Purpose

The purpose is to document standard practices for maintenance periods for ITS, Traffic, Signals, and Tunnel devices, systems, networks, servers and security, and all other systems used to operate the highways. The CDOT ITS Branch has established a standard maintenance window and moratoriums that apply to all CDOT employees and projects including ITS, traffic and specialty crews, temporary employees, contractors, and all other staff with access to CDOT data centers, nodes, systems, and the fiber backbone.

The intent of a maintenance window and moratoriums is to avoid disrupting the operations of the transportation system, and therefore only allowing service impacting work during low traffic volume periods. Service impacting work includes any work that could impede operations centers or groups of employees from typical job duties.

Maintenance Windows

A maintenance window is defined as a designated time that is appropriate to perform service impacting work.

The established maintenance window is defined as:

- 8:00 pm to 4:00 am Sunday through Thursday (meaning work on a Thursday could begin at 8:00 pm and continue into Friday morning but should end by 4:00am).
- Specifically for planned fiber backbone cutovers the established maintenance window for projects is 9:00 pm to 4:00 am on a Sunday through Wednesday night, excluding holidays.

Moratoriums

A state of moratorium is defined as a designated time frame when all work that directly affects the ITS and Traffic network and systems is suspended. Moratoriums are put into effect to mitigate unplanned outages during holidays when a higher-than-average traffic volume is anticipated. A state of moratorium will be established for the following holidays:

- **Independence Day.** The moratorium will begin 2 business days* prior to the holiday and changes can resume the following business day.
- **Memorial Day**. The moratorium will begin the Thursday* prior to the holiday and changes can resume the following Tuesday.
- **Labor Day.** The moratorium will begin the Thursday* prior to the holiday and changes can resume the following Tuesday.
- **Thanksgiving Day.** The moratorium will begin Friday* prior to Thanksgiving Day and changes can resume the Monday following Thanksgiving Day.
- **Christmas Day and New Years Day**. The moratorium will begin 5 business days* prior to Christmas and changes can resume two business days after the New Year's Day holiday.

*Moratoriums begin at the beginning of the day

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REVISION OF SECTION 108
DISINCENTIVE FOR
OFFLINE ITS DEVICES

During the moratorium there will be no changes to switches, routers, servers, fiber, radios or software configurations (production environments), no node or data center access and/or no power work will be performed that impacts the CDOT and ITS Traffic network.

The following work on CDOT systems will not be allowed during a moratorium:

- Access to all node buildings and the data centers.
- All work on switches that are connected to the backbone, plugged into the network or are within a node building or data center.
- Any fiber lateral and/or backbone work, including splicing or access to any pull boxes or manholes where the fiber resides (the only exception is to perform locates to protect the fiber asset) system upgrades, system configurations, firewall changes, or any other changes that have the potential to interrupt the daily operations of CDOT. Field devices can continue to be repaired and maintained during moratorium if the work is isolated to the device, such as fixing pixel boards, cleaning cameras, or resetting a knocked down device.

Exceptions to a Moratorium or Working Outside an Established Maintenance Window
All non-emergency exceptions to the moratorium or maintenance window will have to be approved by the ITS Branch Manager or acting Branch Manager. Any exceptions related to traffic units (signals, ramp meters…) must include the approval of the Region Traffic Engineer. Exceptions must be documented in writing (email) prior to any work occurring. The request for exception must include a scope of work.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

All work, materials, and equipment required to reset, reconfigure, and perform cutover will not be measured and paid for separately, but shall be considered incidental to the work.

This disincentive is not a penalty but is based on costs associated with the disruption of corridor operations, information to the traveling public, and general safety of the traveling public.

There will be no incentive paid for this work.

The disincentive will be deducted from any monies owed to the Contractor for work performed.

In addition to those disincentives described above, the Contractor will be responsible to pay any penalties charged by private utility owners as a result of damage to their facilities.

REVISION OF SECTION 202
REMOVAL OF FIBER
OPTIC CABLE

Section 202 of the Standard Specifications is hereby revised as follows:

DESCRIPTION

Subsection 202.01 shall be revised to include the following:

This work consists of the removal and disposal of fiber optic cable.

CONSTRUCTION REQUIREMENTS

Subsection 202.02 shall be revised to include the following:

The Contractor shall remove and dispose of all fiber optic cables which are identified as such on the project. Removal of Fiber Optic Cable pay item shall include removal of fiber optic cable and other incidental materials comprising such item. At locations where the fiber optic cable is being replaced or the existing cabling and materials within the same conduit and infrastructure is not being abandoned, Contractor shall take appropriate precautions and exercise care to avoid damaging any existing cabling and equipment.

METHOD OF MEASUREMENT

Subsection 202.11 shall be revised to include the following:

Removal of Fiber Optic Cable will be measured by the actual lineal feet of cable that is removed and accepted.

BASIS OF PAYMENT

Subsection 202.12 shall be revised to include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Removal of Fiber Optic Cable	Linear Foot

Payment will be full compensation for all labor and materials required to complete the work.

REVISION OF SECTION 202
REMOVAL OF SIDEWALK

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

Subsection 202.01 shall include the following:

This work consists of removing concrete sidewalk to facilitate the installation of conduit and pull boxes.

CONSTRUCTION REQUIREMENTS

Subsection 202.01 shall include the following:

Sidewalk shall be removed by saw cut method.

METHOD OF MEASUREMENT

Subsection 202.11 shall include the following:

Removal of Sidewalk shall be measured by the square yard and shall include all labor and materials required to remove and properly dispose of the materials.

BASIS OF PAYMENT

Subsection 202.12 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
Removal of Sidewalk	Square Yard

REVISION OF SECTION 203
POTHOLING

Section 203 of the Standard Specifications is hereby revised for this Project as follows:

CONSTRUCTION REQUIREMENTS

Subsection 203.05 (f) shall be revised to include the following:

All existing utilities shall be potholed at each crossing of the directional bore within the Project limits. Pothole repair shall meet the City of Littleton's standard for street repairs.

METHOD OF MEASUREMENT

Subsection 203.11 (e) shall be revised to include the following:

Labor and Materials required for surface restoration following Potholing activities shall not be measured and paid separately but shall be included in the Work.

BASIS OF PAYMENT

Subsection 203.12 shall be revised to include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Potholing	Hour

REVISION OF SECTION 212
LANDSCAPE
RESTORATION

Section 212 of the Standard Specifications is hereby revised for this project as follows:

Subsection 212.03 shall include the following:

The Contractor shall replace any damaged landscape, including topsoil, sod (grass), irrigation system components, trees, shrubs, ground covers and mulch, to its original condition. Sod shall match existing. The Contractor shall coordinate with the Owner at least 5 working days in advance of starting work in the area. With proper and timely notification, the Owner shall mark and identify the irrigation system components. This is no way inclusive of all utilities or all of the irrigation system. No landscape shall be without watering services during the growing season. If the irrigation service is interrupted for more than three days, the Contractor shall be liable to hand/truck water and possibly all plant replacement in the affected landscape. Landscape Restoration shall be considered complete when the landscape and irrigation system is restored to its original condition and approved by the Owner. The Owner shall inspect all repair work to any irrigation components prior to burial and acceptance of said work. The Owner shall provide written acceptance of said work to the Engineer prior to the Engineer approving the work.

BASIS OF PAYEMENT

Subsection 212.08 shall include the following:

Pay Item	Pay Unit
Landscape Restoration	Lump Sum

Payment includes all labor, equipment and materials necessary to complete the work.

REVISION OF SECTION 250
ENVIRONMENTAL
HEALTH AND SAFETY
MANAGEMENT

Section 250 of the Standard Specifications is hereby revised for this project as follows:

Subsection 250.01 shall include the following:

Excavation and drilling activities associated with the proposed project may encounter soil and groundwater that may have been impacted by petroleum products or previous releases of hazardous substances. Workers shall be alert during excavations for any visual or olfactory signs of contamination. If soil and/or groundwater contamination is encountered, work will stop immediately and the procedures outlined in the project's material management plan and Section 250 of Standard Specifications for Road and Bridge Construction shall be followed. The Contractor shall be responsible for the required workers' health and safety.

If contaminated groundwater is encountered, all groundwater brought to the surface shall not be directly discharged (or allowed to run off) into a storm sewer, wetlands, ditch, or any waters of the State. The water shall be contained in tanks or drums and properly disposed in accordance with all local, state and federal regulations.

Subsection 250.03 shall include the following:

The Contractor shall prepare and follow the material management plan (MMP) to ensure hazardous materials and contaminated groundwater is handled properly. The MMP shall comply with the CDOT Standard Specifications.

The Contractor shall be responsible for the required worker health and safety and the public in accordance with all applicable local, state and federal regulations. If contaminated soil and/or groundwater are encountered, the Contractor's Health and Safety Officer and/or Monitoring Technician shall be called out to the site to supervise subsurface activities to ensure the safety of workers, as detailed in the CDOT Standard Specification 250 -Environmental, Health and Safety Management and this 250 Standard Specification revision. The City of Littleton will also be contacted.

For proper handling of asbestos-contaminated soil, if any, the Contractor will follow all applicable Solid and Hazardous Waste Regulations and the procedures listed in the project's material management plan (MMP). Asbestos contaminated soil removal must be performed by a Certified Asbestos Inspector (CABI) to determine what, if any, controls must be instituted to allow future activity in the excavation area.

Subsection 250.09 shall include the following:

All work including monitoring, sampling, handling, material disposal and analytical costs (if necessary) will be paid using the Force Account, Environmental Health and Safety Management.

REVISION OF SECTION 608
CONCRETE SIDEWALK
(6 INCH)

DESCRIPTION

Subsection 608.01 shall include the following:

This work consists of furnishing and installing concrete sidewalk following conduit or pull box installation.

BASIS OF PAYEMENT

Subsection 608.06 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Concrete Sidewalk (6 Inch)	Square Yard

REVISION OF SECTION 612
LOCATION MARKER

Section 612 of the Standard Specifications is hereby revised for this project as follows:

DESCRIPTION

Contractor shall furnish and install location markers for identifying fiber optic cable at locations shown on the plans.

MATERIALS

Location Marker (Fiber Optic) (Dome) shall be made of non-conductive high-density polymer, and shall be integrally white in color with an orange cap. All colors shall be stabilized against ultraviolet light such that they will not fade under continuous exposure to direct sunlight and conform to the American Public Works Association (APWA) Uniform Color Code for delineating underground utility lines. The marker shall retain dimensional stability in temperatures ranging from -40º F to 175º F.

The Location Marker (Fiber Optic) (Dome) shall include a label with the designation of "FIBER OPTIC CABLE". The label shall have black lettering on an orange background. The Contractor shall provide the label submittal to the Project Engineer.

CONSTRUCTION REQUIREMENTS

Location Marker (Fiber Optic) (Dome) shall be installed at all Pull Box locations that contain fiber optic cable as noted in the Plans.

METHOD OF MEASUREMENT

Location markers, labels and footing will be measured by the actual number of markers placed and accepted.

BASIS OF PAYMENT

Payment will be made under:

Pay Item	**Pay Unit**
Location Marker (Fiber Optic) (Dome)	Each

Payment will be full compensation for all work, materials and equipment required to place the markers at the locations shown on the plans, including excavation, backfill, and patching.

REVISION OF SECTION 613
ELECTRICAL CONDUIT

Section 613 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

Subsection 613.01 shall include the following:

This work consists of furnishing and installing underground conduit by trenched (plastic) and bored methods.

MATERIALS

Subsection 613.02 shall include the following:

The Contractor shall furnish Conduit materials in accordance with the requirements of the CDOT Standard Specifications and Standard Plans.

Where HDPE conduit is installed, and two (2) proposed conduits in a segment are specified in the plans, one conduit shall be orange in color, and the other shall be blue in color. Where one (1) HDPE conduit in a segment is specified in the plans, the conduit shall be orange in color.

CONSTRUCTION REQUIREMENTS

Subsection 613.07 shall include the following:

The Contractor shall install proposed conduit identified as plastic in the plans by open trenching method, unless otherwise approved by the Engineer at a minimum depth of 48 inches.

The Contractor shall install proposed conduit identified in the plans as bored by directional boring method, unless otherwise approved by the Engineer, at a minimum depth of 48 inches.

When bored conduit is specified on the plans, disruption of highway traffic will not be permitted.

Subsurface utility engineering (SUE) investigations were completed in January, 2022 for proposed segments of conduit to be bored. A SUE subset is included in the plans and SUE line work is overlaid on ITS subset.

The Contractor is referred to Revision of Section 105 New Construction Inventory for information specific to the as-built documentation that will be required for this project.

METHOD OF MEASUREMENT

Subsection 613.13 shall include the following:

Conduit will be measured by the actual linear feet of trench installed and shall include all labor and materials required for installation.

BASIS OF PAYMENT

Subsection 613.14 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
2 Inch Electrical Conduit (Bored)	Linear Foot
2 Inch Electrical Conduit (Plastic)	Linear Foot

REVISION OF SECTION 613
PULL BOX

Section 613 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

Subsection 613.01 shall include the following:

This work consists of furnishing and installing precast fiberglass-reinforced polymer concrete pull boxes at locations shown on the plans or established.

MATERIALS

Subsection 613.02 shall include the following:

Pull boxes in finished areas shall be designed for such installations and shall be stackable and manufactured of a precast fiberglass-reinforced polymer concrete material. Pull boxes shall be designed to support a minimum service load of 20,000 pounds over a 10 inch by 10 inch square. Pull boxes shall be verified by a 3rd Party Nationally Recognized Independent Testing Laboratory as meeting all test provisions of the current edition of the Society of Cable Telecommunications Engineers (SCTE) 77, Specification for Underground Enclosure Integrity, Tier 22 rating. Pull boxes shall be Underwriters Laboratories (UL) listed. Certification documents shall be submitted with material submittals.

Pull boxes 30 inches by 48 inches and larger shall have removable two-piece covers (also referred to as split lids) with a removable metal center support brace. Lid segment weight shall not exceed 100 pounds.

Pull box removable lids shall be provided with a skid-resistant surface and have the words “TRAFFIC” for traffic signal pull boxes and “TRAFFIC COMM” for City fiber optic traffic communications pull boxes physically impressed on their tops. Painting of words shall not be accepted. The cover shall be attached to the pull box body by means of screw-in bolts and shall have two lift slots in each lid to aid in the removal of the lid. Non-standard bolts shall not be used. Lift slots shall be rated for 3,000 pounds.

Pull boxes that are to be in traveled ways shall be outfitted with traffic bearing lids rated for HS 20-44 loads.

CONSTRUCTION REQUIREMENTS

Subsection 613.03 shall include the following:

A pull box shall be installed at locations specified on the plans, and as directed by the Engineer. The Contractor may be permitted to install, at their own expense, any additional pull box that is desired to help facilitate the work, with the approval of the Engineer.

A minimum of 12 inches of ¾ inch granite-gravel shall be installed as a base for the pull box. The granite-gravel shall be free of dirt and debris and spread evenly to facilitate a level base for the pull box. The Contractor shall ensure that sufficient compacting is made prior to the installation of granite-gravel to alleviate future settling. The granite-gravel base shall be covered with woven wire.

Pull boxes shall be installed so that the covers are level with curb or sidewalk grade or level with the surrounding ground when no grade is established. Pull boxes shall not be installed above the grade of the apron. Pull boxes installed on slopes greater than 5:1 shall include a 2 foot leveled area surrounding the apron. The concrete apron shall have a 1 percent slope away from the top of pull box to allow for drainage.

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REVISION OF SECTION 613
PULL BOX

Pull boxes shall not be installed in ADA ramps. The Contractor shall remove and re-construct ADA ramps damaged by the work.

The Contractor shall restore all landscaping and other disturbed surface materials impacted by the work. The Contractor is referred to Section 107.12 Protection and Restoration of Property and Landscape, of the Standard Specifications.

The Contractor is referred to Revision of Section 105 New Construction Inventory for information specific to the as-built documentation that will be required for this project.

METHOD OF MEASUREMENT

Subsection 613.13 shall include the following:

Pull Box will be measured by the actual number of pull boxes installed and accepted, and shall include base, lid(s), center support brace, required wording or graphics on lid, skid-resistance surface, lift slots, stainless steel bolts, excavation, backfill, concrete apron, ¾ inch granite-gravel, and all other equipment and materials necessary to complete the work.

Pull Box (Install Only) will be measured by the actual number installed and accepted, and will include excavation, backfill, ground rod, concrete apron, ¾ inch granite-gravel, and all other equipment and materials necessary to complete the work.

BASIS OF PAYMENT

Subsection 613.14 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Pull Box (24”x36”x24”)	Each
Pull Box (30”x48”x24”)	Each

REVISION OF SECTION 613
PROOF CONDUIT

Section 613 of the Standard Specifications is hereby revised for this Project as follows:

DESCRIPTION

This work consists of locating, verifying continuity and ability to pull new cable through the conduit, clearing if necessary, and installing pull tape and tracer wire in existing conduit in accordance with the Plans.

MATERIALS

Each conduit shall be equipped with a pull tape installed with or after all cabling for future use. The pull tape shall have a minimum tensile strength of 1800 pounds. The pull tape shall include a continuous 22-gauge tracer wire. Splices in the pull tape and tracer wire may occur inside manholes and pull boxes and shall not be permitted inside conduit. Pull tape shall be installed in conduits with electrical conductors carrying 50V or less.

A minimum 12-gauge tracer wire shall be included in at least one conduit within all conduit banks. The tracer wire shall be orange in color. In conduit banks with multiple conduits, the 12-gauge tracer wire and pull tape shall be installed in the same conduit with the fiber optic cable.

CONSTRUCTION REQUIREMENTS

All conduit and fittings installation shall conform to the NEC.

The contractor shall locate the ends of existing conduit in the field at locations identified on the plans, and the existing conduit shall be cleaned and cleared, and pull tape installed through the conduit.

The Contractor shall immediately notify the Engineer if conduit is found to be damaged, or is damaged during construction activities.

Upon verification of acceptable condition of the existing conduit run, the conduit end shall be immediately sealed using an approved conduit plug.

For existing conduits that contain existing cabling, the contractor shall protect existing cables in place while proofing conduit. Contractor shall be responsible for repairing any damage they cause to existing cabling.

METHOD OF MEASUREMENT

Payment will be made under:

Pay Item	**Pay Unit**
Proof Conduit	Linear Foot

REVISION OF SECTION 614
FIBER OPTIC CABLE
(SINGLE MODE)

Section 614 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

Subsection 614.01 shall include the following:

This work consists of furnishing and installing single mode fiber optic cable, tracer wire, and nylon pull tape into proposed and existing conduit as indicated on the project plans.

MATERIALS

Subsection 614.08 shall include the following:

All fiber optic cables shall be suitable for outdoor conduit installation into underground conduits. Fiber optic cables for installation inside of Littleton facilities shall be indoor/outdoor rated, as described in the Plans.

All fiber optic cable shall have compatible characteristics with other proposed and existing fiber optic cables. All optical cables furnished on this project shall meet the current version and/or revision of the following fiber optic industry standards:

(a) Electronic Industries Alliance (EIA)-359: Colors for Color Identification and Coding
(b) International Telecommunications Union – Telecommunications Standardization Sector - Recommendation G.652.D: Characteristics of a Single-Mode Optical Fibre and Cable
(c) Telecommunications Industry Association (TIA)-598: Optical Fiber Cable Color Coding
(d) TIA-455: General Requirements for Standard Test Procedures for Optical Fibers, Cables, Transducers, Sensors, Connecting and Terminating Devices, and Other Fiber Optic Components – Fiber Optic Test Procedures (FOTP) as listed below:
    1. FOTP-37 Low and High Temperature Cable/Maximum Bend Radius/Cable Aging
    2. FOTP-25 Impact Resistance
    3. FOTP-41 Compressive Strength
    4. FOTP-85 Cable Twist
    5. FOTP-104 Cable Cyclic Flexing
    6. FOTP-33 Maximum Tensile Load
    7. FOTP-3 Temperature
    8. FOTP-98 Cable Freezing
    9. FOTP-82 Water Penetration
    10. FOTP-81 Compound Drip Temperature
(e) International Organization for Standardization (ISO) – 9001: Quality Management Systems
(f) Rural Utilities Service (RUS) PE90a: Minimum Performance Specifications for Fiber Optic Cables
(g) Telcordia GR-20: Generic Requirements for Optical Fiber and Optical Fiber Cable

All cables shall be new and unused non-armored outdoor cable consisting of non-dispersion shifted, low water peak single-mode fiber strands free of surface imperfections and inclusions. Each single mode fiber strand shall consist of a doped silica core surrounded by a concentric silica cladding. The fiber shall be of matched clad design.

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REVISION OF SECTION 614
FIBER OPTIC CABLE
(SINGLE MODE)

(a) *Fiber Strands* shall meet the following minimum characteristics:

1. Typical core diameter of 9.0µm ± 1 µm
2. Cladding Diameter of 125 µm ± 1 µm
3. Core concentricity error: ≤ 0.6 µm
4. Cladding Non-circularity: ≤ 1.0 %
5. Coating Diameter (Colored): 245 ± 5 µm
6. Maximum Attenuation (Loose Tube): 0.35 dB//km at 1310 nm wavelength and 0.25 dB/km at 1550 nm wavelength2
   Revision of Section 614 Fiber Optic Cable (Single Mode)
7. Mode-Field Diameter: 9.20 ± 0.30 µm at 1310 nm wavelength and 10.40 ± 0.50 µm at 1550 nm wavelength
8. Attenuation at the Water Peak: 0.32 to 0.34 dB/km at 1383 ± 3 nm wavelength
9. Cutoff Wavelength: ≤1260 nm
10. Zero Dispersion Wavelength: 1300 nm to 1324 nm
11. Zero Dispersion Slope: ≤ 0.092 ps / (nm2 * km)
12. Polarization Mode Dispersion: ≤ 0.06 ps/ √km
13. Maximum Polarization Mode Dispersion at 0.01% distribution (PMDq): 0.20 ps/√km
14. Maximum Fiber Dispersion: ≤ 18 ps/(nm*km) at 1550 nm.
15. Fiber Curl: ≥ 4.0 m
16. Proof Tensile Test: 100 kpsi (0.69 GN/m2)
17. The fibers shall not adhere to the inside of the buffer tube.
18. The coating shall be a dual layered, UV cured acrylate applied by the fiber manufacturer. The coating shall be capable of being mechanically stripped with a force of 0.3 to 2.0 lbf.
19. Each single mode fiber strand shall be color coded with distinct and recognizable colors in accordance with the TIA-598.

(b) *Buffer Tubes*

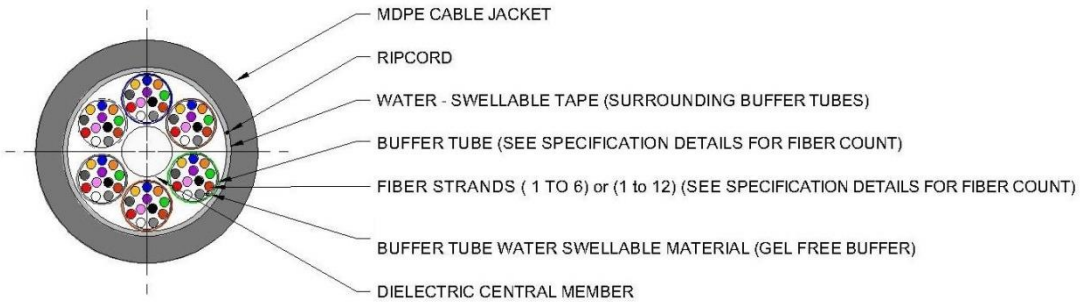
1. Each buffer tube shall contain 12 fiber strands and each lateral fiber cable shall have one buffer tube with 12 fiber strands.
2. Optical fibers shall be placed inside a loose buffer tube.
3. Each buffer tube shall be color coded with distinct and recognizable colors in accordance with TIA-598.
4. If fillers are required, they shall be placed in the inner layer of the fiber optic cable. The color sequences of the buffer tubes shall begin from the inside layer and progress outward.
5. Buffer tube black stripe shall be inlaid in the buffer tube material by means of co-extrusion when required.
6. In buffer tubes containing multiple fibers, the coloring shall be stable during temperature cycling and shall not be subjected to fading or smearing onto each other. Colorings shall not cause fibers to stick together.
7. Each buffer tube shall contain dry water blocking swellable yarns to prevent water from entering the individual buffer tubes. Swellable water blocking material shall be non-nutritive to fungus, electrically non-conductive and homogeneous. It shall be free from dirt and foreign matter and not require cleaning prior to splicing and placement into the splice closure tray. All fiber strands shall be thoroughly cleaned prior to fiber splicing. All dry water blocking material shall be uniformly distributed throughout the buffer tubes.

8. Buffer tubes shall be stranded around a central member of the cable using a reverse oscillation stranding process.
9. The buffer tubes shall be resistant to external forces and shall meet the buffer tube cold bend and shrink back requirements of RUS PE90a.

(c) *Fiber Cable*

1. Fillers may be included in the cable core to lend symmetry to the cable cross-section where needed and shall not be placed to interrupt the consecutive positioning of the buffer tubes. Fillers shall nominally match the outer diameter of fiber filled buffer tubes.
2. The central anti-buckling member of the cable shall consist of all dielectric, glass reinforced plastic (GRP) rod.
3. For single layer cables, a water swellable, (blocking) tape shall be applied longitudinally around the outside of the buffer tubes and fillers. The tape shall be held in place by a single polyester binder yarn. The water swellable tape shall be non-nutritive to fungus, electrically non-conductive, and homogenous. It shall also be free from dirt and foreign matter. Water blocking material shall be applied uniformly throughout the fiber cable to inhibit the ingress of water into the cable. Gel filled water-blocking compound shall not be allowed in the cable core interstices of the fiber optic cables.
4. When the fiber cable is provided with dual layer buffer tubes, both the inner and outer layer shall be provided with water swellable tape.
5. Binders shall be applied with sufficient tension to secure the buffer tubes to the central member without crushing the buffer tubes. The binders shall be non-hygroscopic, non-wicking, and dielectric with low shrinkage.
6. The cable shall contain at least one ripcord under the sheath for easy sheath removal.
7. Outer cable jacket shall have a consistent thickness throughout the entire cable length and shall be sheathed with medium density polyethylene (MDPE). Jacketing material shall be applied directly over the tensile strength members and water blocking tape. The MDPE jacket material shall be as defined by ASTM D1248, Type II, Category 4 and Grades J4, E7 and E8 and shall contain carbon black to provide ultraviolet light protection and shall not promote the growth of fungus.
8. The cable jacket shall be free of holes, splits and blisters and be of a consistent thickness.
9. Cable jackets shall be marked with the manufacturer's name, sequential foot markings, fiber type and count, month and year of manufacture and a telecommunication handset symbol, as required by Section 350G of the National Electrical Safety Code (NESC). The actual length of the cable shall be within 0 to 1 percent of the length markings. The marking shall be in contrasting color to the cable jacket. The height of the marking shall be easily readable.
10. The Contractor shall submit to the Project Engineer a detailed fiber optic cable specification sheet from the manufacturer for approval. The specification sheet shall be highlighted describing the water blocking material used for both the cable interstices and buffer tubes. Failure to fully describe the type of water blocking material shall result in the submittal being rejected and resubmitted with all highlighted information.
11. The diameter of the fiber optic cables shall not exceed 0.50 inch for 12 single mode fibers and 24 single mode fibers; 0.70 inch for 144 single mode fibers; and 0.85 inch for 432 single mode fibers.
12. The weight of the fiber optic cables shall not exceed 65 pounds/1,000 feet for 12 single mode fibers and 24 single mode fibers; 125 pounds/1,000 feet for 144 single mode fibers; and 175 pounds/1,000 feet for 432 single mode fibers.
13. The maximum working tension of the fiber optic cable shall be 600 lbf.

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REVISION OF SECTION 614
FIBER OPTIC CABLE
(SINGLE MODE)



Specification Detail 1

Typical Cross Section of Fiber Optic Cable to Be Provided Per This Specification
(Source: CDOT)

(d) *Environmental Parameters:* The following minimum environmental parameters shall be met.
1. Shipping, storage and operating temperature range of the cable shall be; -40°F to +158°F (-40°C to +70°C)
2. Operating temperature range of the cable shall be; -40°F to +158°F (-40°C to +70°C)
3. Installation temperature range of the cable shall be; -22°F to +140°F (-30°C to +60°C)

(e) *Quality Assurance*: The following minimum quality assurance requirements shall be met.
1. All optical fibers shall be 100 percent attenuation tested in accordance with Revision of Section 614 – Test Fiber Optic Cable. The attenuation of each fiber shall be provided with each cable reel.
2. The cable manufacturer shall be ISO 9001or TL 9000 registered.

(f) *Packaging*: The following minimum packaging parameters shall be met.
1. The complete cable shall be packaged for shipment on non-returnable wooden reels.
2. Top and bottom ends of the cable shall be available for testing.
3. Both ends of the cable shall be sealed to prevent the ingress of moisture.
4. Each reel shall have a weatherproof reel tag attached identifying the reel and cable.
5. Each cable shall be accompanied by a cable data sheet that contains significant information on the cable.
6. The cable reels shall not be stored nor shipped on their sides.

(g) Tracer Wire and Pull Tape
1. The pull tape shall be a flat, woven, polyester tape with an insulated metallic conductor (tracer wire) interwoven within the tape.
2. It shall be lubricated to reduce friction.
3. It shall be durably printed with sequential footage markings.
4. It shall have a minimum tensile strength of 900 pounds.
5. The metallic conductor (tracer wire) shall be a minimum #12 AWG tin coated solid copper with an extrusion friendly copolymer insulation.

(h) Patch Cables shall meet the following parameters:
1. It shall be single mode fiber optic cable
2. It shall be pre-connectorized duplex patch cables with LC connectors
3. It shall have a polyurethane jacket

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REVISION OF SECTION 614
FIBER OPTIC CABLE
(SINGLE MODE)

CONSTRUCTION REQUIREMENTS

Subsection 614.10 shall include the following:

Fiber optic cable shall be used for either main backbone cable or lateral cables that connect to communications cabinets and facilities. Splicing shall be conducted at splice locations shown on the Plans or as approved by the Engineer.

A minimum of one week prior to fiber optic work, the Contractor shall give the Engineer a detailed installation and splicing Method Statement and schedule. All installation, splicing, termination, and testing shall be listed on the schedule and Method Statement and revisions shall be re-submitted to the Engineer immediately. Installation of the fiber optic cable shall not be permitted until the Method Statement and schedule has been approved by the Engineer.

The Contractor shall be responsible for coordinating with third parties when installing and splicing proposed fiber optic cable adjacent to existing third party owned fiber optic infrastructure and when splicing proposed fiber optic cable to existing third party owned fiber optic cable. The Contractor shall keep the Project Engineer apprised of all coordination activities it performs with third parties as it pertains to this project.

The Contractor shall provide the Engineer with two copies of the cable manufacturer's installation instructions for all fiber optic cable. All installations shall be in accordance with the manufacturer's recommendations except as otherwise directed by the Engineer. All additional costs including fiber optic cable associated to damages caused by the Contractor's neglect of recommended procedures shall be the Contractor's responsibility.

Fiber optic cable including both backbone and lateral cables shall be installed in continuous runs as shown on the project plans. If cable end splices are not shown on the project plans, the Contractor shall include a detailed installation plan with the Method Statement showing cable installation lengths and cable end splice points. The fiber cable shall be installed in reel lengths that minimize the quantity of cable end splices. Under no conditions shall fiber optic cable be cut or spliced at intermediate points without express written direction from the Engineer.

The new fiber cable shall be installed in a manner which does not interfere with the integrity of existing cable and equipment and shall be installed in a manner which does not interfere with the maintenance of the traffic signal cable, wiring or equipment.

Blowing cable is an acceptable alternative to pulling cable. If the Contractor chooses to use this method, submittals for cable installation shall be submitted along with complete information on fiber installation equipment.

The maximum pulling tension shall be 600 pounds (2700 N) during installation (short term) and 200 pounds (890 N) long term installed.

All cables shall have a minimum bending radius based on the diameter of the cable and shall meet the following:

(a) Under max pulling tension – 20 (Twenty times the cable outside diameter)
(b) Unloaded, not under tension – 10 (Ten times the cable outside diameter)

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REVISION OF SECTION 614
FIBER OPTIC CABLE
(SINGLE MODE)

The fiber optic cable shall be installed in the conduit with a split-mesh cable grip to provide a firm hold on the exterior covering of the cable.

The manufacturer's recommended maximum allowable pull tension for cable pull lengths shall not be exceeded. The Contractor shall use a pulley system with a numerical readout indicating the cable tension. The pulley system shall be capable of alerting the installer when the cable pulling tension approaches the manufacturer's maximum allowable tension. The Contractor may supplement this procedure with a breakaway tension limiter set below the lowest recommended tensile limit of the cables being pulled. Intermediate pulleys shall be used at all pull boxes or manholes along the installation run to prevent cable damage.

If cable installation limits are met and the entire length cannot be installed completely from the shipping reel, installation shall be continued from the mid-point of the run. The Contractor shall first pull one-half of the cable from the reel at the mid-point through the conduit to one end of the run. The other half of the cable shall be removed from the reel and carefully placed on the ground in a figure eight pattern with a minimum loop diameter of 10 feet. While installing the remaining cable, care shall be taken to avoid dragging against the ground resulting in damage or excess bending of the cable. The Contractor shall not kink, twist or bend the cable during installation coiling and uncoiling.

The cable shall be continuously lubricated as it enters the conduit. The Contractor shall only use pulling lubricants recommended by the cable manufacturer. Liquid detergent shall not be used.

The Contractor shall furnish and install a pre-lubricated pull tape and tracer wire in the same conduit as the fiber is being installed. Spare pull tape and tracer wire shall remain in conduits after the installation of fiber for locating purposes and for future cable installations. Splicing of the pull tape and tracer wire, for continuity purposes, shall conform to the requirements of the pull tape manufacturer.

If the Contractor must install new cable in conduits that contain existing fiber optic cable or electrical wiring, the Contractor shall be responsible for all damage to the existing cables and wires. After this installation the Contractor shall perform a functional test of all the equipment connected by the existing fiber cables and electrical wiring to ensure proper working conditions. All costs associated with equipment testing and repairs shall be included in the cost of the fiber optic cable.

If an existing fiber optic cable is damaged during construction, it shall be removed from both points of termination and replaced, at no cost to the project.

In no case shall the conduit fill ratio of new conduit exceed the requirements of the National Electrical Code.

Lateral cables shall be installed in continuous runs from the backbone splice location to the communications cabinet. Odd length cables and reel ends are acceptable for lateral cables provided they are pre-tested and free of defects and are of sufficient lengths to achieve continuous runs.

Contractor shall furnish and install fiber optic cable slack coils as noted on the plans. A minimum of three strain relief locations within the traffic signal cabinet, as noted on the plans.

All fiber optic cables shall include identification labels attached to the cable in each pull box, manhole and communications cabinet. The label shall be provided with information reading the next location the cable can be accessed, including cable strand count, location name or description, type of access (box, cabinet) approximate distance, and general direction. Example notes include "96F S ~450 FT TO SPLICE IN BOX @ SWC" or "432F N ~1200 FT TO BOX @ NWC DWY".

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REVISION OF SECTION 614
FIBER OPTIC CABLE
(SINGLE MODE)

The Contractor shall furnish and install fiber optic cable slack coils as noted on the plans, unless otherwise directed by the Engineer.

Backbone and lateral buffer tubes and fiber strands shall be labeled on the splice tray prior to sealing of the closure or splice tray in the fiber optic termination panel. The Contractor shall ensure that all cable coils and splice closures are attached separately to the cable management hardware inside manholes in a manner which will allow for all splice closures to be removed separately for future maintenance purposes. In Pull Boxes, all cable coils shall be attached separately to the cable management hardware in a manner which allows for fiber optic cable to be removed separately.

The Contractor shall splice the lateral cable to pre-connectorized pigtails and install the connectors to the existing bulkheads within the existing termination panel at the traffic signal controller cabinet, as shown on the plans.

The Contractor shall submit a final documentation package. The final documentation package shall include the cable manufacturer's installation procedures, technical support documentation and material documentation. These documents shall match the original submittals provided to the Engineer.

The Contractor is referred to Revision of Section 105 New Construction Inventory for information specific to the as-built documentation that will be required for this project.

METHOD OF MEASUREMENT

Subsection 614.13 shall include the following:

Fiber Optic Cable shall be measured by the linear foot for both backbone and lateral cable and shall include all labor and materials required to install the cable to make a complete and operational system, including the following items:

(a) All associated materials, including pull tape, tracer wire, patch cables, splice closures, trays, and ancillary materials, including labor to install.
(b) Identification labels for backbone fiber and lateral fiber cables in each pull box, manhole, field cabinet, and network facility.
(c) Fiber optic testing and documentation of results, as required in Revision of Section 614 Test Fiber Optic Cable.
(d) Method statement and final documentation package.

BASIS OF PAYMENT

Subsection 614.14 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Indoor/Outdoor Fiber Optic Cable (Single Mode) (24 Strands)	Linear Foot
Indoor/Outdoor Fiber Optic Cable (Single Mode) (144 Strands)	Linear Foot
Fiber Optic Cable (Single Mode) (96 Strands)	Linear Foot
Fiber Optic Cable (Single Mode) (432 Strands)	Linear Foot

12-strand fiber optic laterals will be paid for separately under Revision of Section 614 – 12 Port Pre-Terminated Patch Panel and Pigtail

Testing fiber optic cable shall be measured and paid for separately. See Revision of Section 614 – Test Fiber Optic Cable project special provision.

REVISION OF SECTION 614
BUFFER TUBE FAN OUT
KIT

Section 614 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

For this project, the Buffer Tube Fan Out Kit shall be furnished and installed at Littleton facilities where new fiber optic cables will be terminated, as shown on the Plans.

MATERIALS

Buffer Tube Fan Out Kits shall match the number of fiber strands in the lateral fiber optic cable being terminated. Buffer tube fan-out kits shall be compatible with the fiber optic cable being terminated and shall be color-coded to match the lateral fiber strand color. Fan out kit buffer tubes shall be 900 um. The buffer tube fan out kit fiber strand length shall be sufficient for routing and placement in the termination panel.

CONSTRUCTION REQUIREMENTS

The Contractor shall install fiber optic buffer tube fan out kits on the new fiber optic cables into City of Littleton facilities, as shown in the Plans. The Contractor shall install fanned out cables on the ends of the fiber cable strands. Buffer tubes for lateral fiber strands shall be neatly coiled and secured within the field termination panels. Taping or leaving the buffer tubes unmanaged shall not be allowed.

BASIS OF PAYMENT

Payment will be made under:

Pay Item	**Pay Unit**
Buffer Tube Fan Out Kit	Each

Payment will be full compensation for all labor, materials and equipment required to complete the work.

REVISION OF SECTION 614
FIBER OPTIC TERMINATION PANEL

Section 614 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of furnishing and installing fiber optic termination panels for single mode fiber optic cables in City of Littleton facilities where new fiber optic cables are being terminated, as shown in the Plans.

MATERIALS

All termination panels shall be manufactured using aluminum and shall be finished with a powder coat finish. The termination panels shall accommodate lateral fiber optic cables as shown on the plans. All termination panels at field device locations shall be equipped with six port Straight Tip (ST) type bulkheads and be compliant with the 2010 Edition of Telcordia Technologies Generic Requirement (GR) GR-326 *Generic Requirements for Single Mode Optical Connectors and Jumper Assemblies*. The manufacturer shall perform acceptance testing for insertion loss and return loss with the test certification provided with each patch panel.

All termination panels shall have a labeling scheme that complies with details as shown on the plans.

All termination panels shall be compatible with the fiber optic cable being terminated.

24 port, 48 port, and 144 port termination panels for lateral fiber optic cables shall be provided to accommodate 24 ports, 48 ports, and 144 ports, respectively. Termination panels shall be compatible with a 19-inch equipment rack. The panels shall be provided with six port ST type bulkheads. Terminations within the patch panel shall be polished with an Ultra Physical Contact (UPC) finish. The panel shall be provided with covers for the remaining spaces. The termination panel shall have a slide out interior.

Bulkheads in all termination panels shall be metal. Plastic bulkheads will not be accepted.

CONSTRUCTION REQUIREMENTS

Termination panels shall be mounted in locations that allow for ease of access and shall not interfere with maintenance of the internal equipment. Termination panels shall be installed in 19-inch equipment racks.

Fiber terminations shall be as shown on the plans. The Contractor shall field terminate ST type bulkhead connectors on the ends of the lateral fiber cable strands and install them on the back side of the termination panel. The terminated connectors shall be nickel-plated with a ceramic ferrule and shall be polished with a UPC finish. Buffer tube fan out kits shall be paid for in accordance with the Revision of Section 614 – Buffer Tube Fan Out Kit.

All fiber terminations/splices for proposed patch panels shall be completed by the Contractor.

Instead of field terminating and polishing lateral fiber optic cables, the Contractor may use a single mode fiber pigtail that is factory terminated on 12 port ST type bulkhead and fusion splice the pigtail to the lateral fiber optic cable. If this method is used, the termination panel shall be sized and configured to accommodate splicing of the pigtail.

The Contractor shall use proper strain relief inside the termination panel for the fiber cable and fiber fan out strands per the manufacturer's recommendations. The use of tape to secure the individual fanned out strands to the bottom of the termination panel shall not be allowed. The Contractor shall allow enough slack in the terminated fiber to allow for opening and closing the termination panel without disturbing the terminated fiber.

All hardware shall be installed in accordance with manufacturer's recommendations. Method of Measurement

REVISION OF SECTION 614
FIBER OPTIC TERMINATION
PANEL

METHOD OF MEASUREMENT

Fiber Optic Termination Panels will be measured by the actual number of fiber optic termination panels installed and accepted and shall include all bulkheads, field terminations/splices for both proposed and existing termination panels, covers for empty bulkhead entries, labeling panels and all materials, hardware, labor and equipment necessary to complete the work.

BASIS OF PAYMENT

Payment will be made under:

Pay Item	Pay Unit
Fiber Optic Termination Panel (24 Fiber)	Each
Fiber Optic Termination Panel (48 Fiber)	Each
Fiber Optic Termination Panel (144 Fiber)	Each

REVISION OF SECTION 614
ETHERNET SWITCH
(INSTALL ONLY)

Section 614 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of the installation of an Ethernet Switch in traffic signal controller cabinets as shown in the Plans. Ethernet switches will be furnished by the City and will be stored at the City of Littleton Public Works Street Maintenance facility located at 1800 W. Belleview Ave., Littleton, CO 80120. The Contractor shall notify the City Public Works a minimum of 48 hours prior to picking up the Ethernet switch.

MATERIALS

The Contractor shall install the Ethernet switch furnished by the City. The Contractor shall coordinate all testing and installation procedures with the City of Littleton's Traffic Analyst. The Contractor shall contact Tim Weaver at 303-795-3834 for all testing and installation requirements.

The Ethernet Switch shall be installed in accordance with the details shown in the Plans and in accordance with manufacturer's recommendations.

Each Ethernet switch SFP port shall be populated with single mode SFP transceiver(s) as required by the switch manufacturer. Optical attenuators shall be required if they are necessary to reduce optical signal power to a receive level specified for the SFP transceivers based on the transmission loss of the corresponding link. SFP transceivers and optical attenuators shall not be paid for separately, but shall be included in the cost of the Ethernet Switch (Install Only) item.

At Ethernet Switch locations the Contractor shall provide patch cables for the connection of the Ethernet switch to the fiber optic patch panel per the Revision of Section 614 Fiber Optic Pre-connectorized Cable. The cable shall be a duplex cable, in lengths sufficient to span from the switch to the patch panel with a maximum of two feet of slack. Connectors shall match both the switch SFP module and the proposed patch panels. This shall not be paid for separately, but shall be included in the cost of the Ethernet Switch (Install Only) item.

CONSTRUCTION REQUIREMENTS

If for any reason the switch or any associated device modules are defective or are damaged by the Contractor, the item shall be removed and replaced at no additional cost to the project.

All associated hardware and software not listed in this specification that is required for a complete installation and shall be considered subsidiary and shall be included as part of the work.

The Contractor shall ground the Ethernet Switch per manufacturer recommendations.

METHOD OF MEASUREMENT

Ethernet Switch (Install Only) shall be measured by the actual number of switches accepted and installed and shall include all labor and materials required to install the switch to make a complete and operational system, including cabling, connectors, and optics.

BASIS OF PAYMENT

Payment will be made under:

Pay Item	**Pay Unit**
Ethernet Switch (Install Only)	Each

REVISION OF SECTION 614
12 PORT PRE-TERMINATED PATCH PANEL AND PIGTAIL

Section 614 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of furnishing and installing factory terminated fiber distribution units between proposed splice points and field communications cabinets as indicated on the project plans.

MATERIALS

Pre-terminated patch panel and pigtails shall utilize single mode fiber that meets the requirements outlined in Revision of Section 614 – Fiber Optic Cable (Single Mode). They shall have a 12 strand fiber count, a loose-tube cable type, and be compatible with all other single mode fiber optic cables being utilized on the project. The cable tail shall have a minimum tensile strength of 50 pounds, and a maximum attenuation of 0.4 dB/km when measured at 1310nm. The cable tail shall be of sufficient length to be installed through existing or proposed conduit between the field communications cabinet and the fiber optic splice point, including coiling, as noted in the Plans.

The patch panel end of the unit shall be equipped with 12 Straight Tip (ST) type connectors configured in a total of six rows (or "steps") with two connectors per row. Connectors shall have a typical insertion loss of no more than 0.2 dB per connector, with a maximum insertion loss of 0.4 dB. The connectors shall be tested for a minimum of 500 matings resulting in no more than 0.2 dB change in insertion loss. Patch panel dimensions shall not exceed 1.75 inches wide × 13.1 inches long × 1.75 inches deep. The patch panel shall be capable of being wall mounted or mounted to a standard equipment rack or DIN rails.

All components shall be rated for outdoor use and have an operating temperature of -40°F to 158°F (-40°C to +70°C).

CONSTRUCTION REQUIREMENTS

The patch panel end of the unit shall be installed in the field communications cabinet, and the fiber optic tail shall be pulled through existing or proposed conduit to the proposed splice point, as indicated on the Plans. The patch panel shall be mounted in the field communications cabinet in the orientation best suited for the space available in the cabinets and to prevent damage to cabling and connectors when the cabinet door is closed. All installation shall conform to the manufacturer's assembly and mounting requirements.

METHOD OF MEASUREMENT

12 Port Pre-terminated Patch Panel and Pigtail will be measured by the actual number of units installed and accepted. This shall include the length of the fiber optic tail from splice point to communications cabinet including required coiling length, as well as all mounting hardware, and all other materials, hardware, labor, and equipment necessary to complete the work.

BASIS OF PAYMENT

Payment will be made under:

Pay Item	Pay Unit
12 Port Pre-terminated Patch Panel and Pigtail	Each

REVISION OF SECTION 614
FIBER OPTIC SPLICE
CLOSURE

Section 614 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This item includes installing fiber optic splice closures and performing splicing of both fiber optic backbone and fiber optic lateral cables at locations shown on the plans.

MATERIALS

The fiber optic splice closures shall be furnished and installed by the Contractor.

The splice closures shall be dome type and shall meet the following minimum requirements:

(1) The closures shall seal, anchor and protect fiber optic cable splices.
(2) The closures shall have a minimum of six total cable entries.
(3) The closures shall be suitable for underground applications and shall be corrosion resistant, watertight and airtight.
(4) The closure splice trays shall have a hinged design with an upright locking mechanism for all splice trays.
(5) The closures shall have a sealing design that does not require glue, sealant, or new cable seals to re-enter the closure.
(6) The closure shall be bonded inside and outside and have an external ground lug
(7) The Contractor shall include all necessary accessories to complete splicing.
(8) The Contractor shall include all mounting hardware.
(9) The splice closure shall comply with Telcordia Generic Requirement (GR) GR-771.

The closures shall be sized to provide a capacity of twice the total number of strands for all cables entering the closure.

CONSTRUCTION REQUIREMENTS

The Contractor shall notify the Project Engineer of proposed daily splicing locations two business days prior to splicing and also the morning of proposed splicing. The Contractor shall contact the Project Engineer at least four hours prior to sealing the closure to allow inspection.

If the Project Engineer cannot be on site to inspect the open splice closure, a minimum of eight digital pictures shall be taken at varying angles of the interior of the splice closure showing all completed work as stated in this specification and shown on the Project Detail Sheet. The pictures shall include exposed fiber stands (both spliced and uncut) in all splice trays, fiber tray labeling and remaining buffer tubes showing appropriate coiling. One picture shall also include the complete re-assembly of all interior parts prior to final sealing. Once the closure and fiber coils are installed in the pull box, two pictures shall be taken showing the final installation of both the closure and the coiled fiber cable attached to the fiber management hardware. All pictures shall be organized per location and shall be submitted to the Project Engineer along with all final testing result documentation.

All splices shall be performed using the fusion splicing method. The fusion splicer shall be calibrated and certified at least once within the previous year from this project. The Contractor shall present all certification documentation to the Project Engineer prior to start of fiber splicing.

The optical fibers shall be fusion spliced and shall meet the requirements in the Revision of Section 614 – Test Fiber Optic Cable.

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REVISION OF SECTION 614 FIBER OPTIC SPLICE CLOSURE

The Contractor shall label each individual splice and buffer tube in all splice trays per the Project Detail Sheet included on the plans.

The Contractor shall cut and splice only those fiber strands shown to be spliced on the fiber splicing plan sheets. All unused buffer tubes and fiber strands shall remain uncut. After the fiber cable and proposed buffer tube is prepped for splicing, designated fiber strands in the buffer tube shall be cleaned in preparation for splicing. All uncut fiber strands shall be coiled in the tray. Remaining buffer tubes shall be neatly coiled, secured and stored in the storage area within the closure under the splice trays per the manufacturer's recommendations. Buffer tubes proposed for splicing shall be wrapped and secured to the splice tray with ties per the manufacturer's recommendations.

Bare fiber strands shall not be taped to the splice tray.

All fiber optic cables shall be secured and sealed at the closure entrances. All unused cable entries shall be plugged using an approved product from the manufacturer of the splice closure.

If the closure requires re-entry, it shall be conducted per the manufacturer's recommendation for re-entry and resealing. The Contractor shall use caution to prevent damage to the existing fiber strands, splices, and buffer tubes inside the splice closure. When sealing the closure for a second time, the Contractor shall follow all re-entry requirements of the manufacturer.

The Contractor shall ensure that the fiber optic splice closures and associated fiber cable coils fit adequately within the pull box splice locations shown on the plans, and shall securely mount the splice enclosure to the side of the pull box if shown on the project plans.

METHOD OF MEASUREMENT

Fiber Optic Splice Closure will be measured by the actual number of units installed and accepted. This shall include all materials, hardware, labor, and equipment necessary to complete the work.

BASIS OF PAYMENT

Payment will be made under:

Pay Item	Pay Unit
Splice Enclosure	Each

REVISION OF SECTION 614
FIBER OPTIC FUSION
SPLICE

Section 614 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

Subsection 614.01 shall include the following:

This work consists of performing fiber optic fusion splices as shown in the plans for each location.

MATERIALS

Subsection 614.08 shall include the following:

The Contractor shall furnish and install all materials required to complete the proposed Fiber Splice(s) and Proposed Fiber Splice(s) (Special) work shown on the plans, including all required splice kits, connectors and pigtails, adapters, jumpers, pigtails, ancillary hardware, calibrated splicing equipment and labor to perform the required work at locations shown on the plans and as directed by the Engineer.

Approximate fiber optic fusion splicing quantities are summarized in the plans.

CONSTRUCTION REQUIREMENTS

Subsection 614.10 shall include the following:

The Contractor will not be required to confirm that actual splice configurations match the plans, but will be permitted, upon written approval from the Engineer, to re-enter existing project splice closures, at the Contractor’s expense, to confirm information.

The Contractor shall provide a minimum of one (1) business day advance notice prior to re-entering any existing splice closures. In the case of splice closures that are not owned by the City of Littleton, the Contractor shall also provide a minimum of one (1) business day advance notice to the splice closure owner, prior to re-entering the splice closure. The Contractor shall provide the advance notice for re-entry into any project splice closure, regardless of when and by whom the splice closure was installed. If an advance notice period is also called for on the plans, the longer advance notice period shall apply, in case of discrepancy.

Fiber Optic Fusion Splices shall be conducted at cable end splice locations and mid-sheath splice locations shown on the plans, or as approved by the Engineer, except as noted herein.

All optical fiber splicing shall be performed using the fusion splicing technique, and according to the latest version of the manufacturer's cable installation procedures; industry accepted installation standards, codes, and practices; or as directed by the Engineer.

All optical fiber splicing shall be performed in accordance with these specifications and conforming to EIA/TIA standards.

A fusion splice machine shall be used to splice all optical fiber. All splicing equipment shall be cleaned and calibrated according to the manufacturer's recommendations prior to each splicing session at each location. Fiber optic strands exposed for splicing shall be cleaned of all gels and foreign materials with appropriate cleaning solvents or materials.

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REVISION OF SECTION 614
FIBER OPTIC FUSION
SPLICE

All splices shall match fiber and buffer tube colors as shown in the plans. Where a fiber cable is to be accessed for lateral or drop signal insertion, only the buffer tube containing the fiber to be accessed shall be opened and only the actual fiber to be accessed shall be cut. If a fiber end is not intended for use, the fiber shall be cut to a length equal to that of the fiber to be used and neatly laid into the splice tray. Pre-severed main backbone fibers shall be spliced to provide continuity to by-passed strands. The backbone fiber optic cable strand not being utilized for a lateral connection shall not be severed in any splice enclosures.

Any fibers exposed during splicing shall be treated with a protective coating and placed in a protective sleeve or housing to protect the fiber from damage or contaminants.

All splices shall be arc fusion spliced, and the ends shall be cleaved with a precision cleaver to create perpendicular ends. Fiber preparation prior to splicing shall include cleaning, cleaving, stripping, and polishing.

The Contractor shall test all optical fiber strands for loss across the splice in accordance to “Revision of Section 614 Test Fiber Optic Cable

All splices shall be enclosed within a splice closure or a splice tray, as approved by the Engineer.

BASIS OF PAYMENT

Subsection 614.14 shall include the following:

The cost of all labor and materials required for fiber optic fusion splice(s) will not be paid for separately, but shall be included in the cost of the fiber optic cable being spliced. This shall include all labor and materials required to splice fiber optic cables, as shown on the plans and described in this specification, including adjustments to splice configurations described herein to maintain network connectivity.

REVISION OF SECTION 614
TEST FIBER OPTIC CABLE

Section 614 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

Subsection 614.01 shall include the following:

This work shall consist of testing both new cable and existing fiber optic cable, including bi-directional OTDR tests and optical power meter tests both before and after proposed fiber optic work, from terminated and bare ends, from field and building locations throughout City.

MATERIALS

Subsection 614.08 shall include the following:

The guidelines for fiber optic cable testing include:

Test jumpers and patch cords must be of the same fiber core size and connector type as the cable system.

The light source and OTDR must operate with the range of 1310 nm and 1550 nm for testing in accordance with TIA-526-7.

The power meter and the light source must be set to the same wavelength during testing.

The OTDR shall be calibrated within the past 24 months and in accordance with the requirements of TIA/EIA-455-226. The power meter shall be calibrated within the past 24 months and traceable to the National Institute of Standards and Technology (NIST).

The following items are required to perform fiber optic cable tests:

(a) an OTDR;
(b) a test reel, if necessary;
(c) a light source at the appropriate wavelength;
(d) Optical Power Measurement Equipment; and
(e) Test Jumpers as specified below.
    1. CPR Test Jumper-1 and Test Jumper-2 shall be 1-5 meters long with connectors compatible with the light source and power meter and have the same fiber construction as the link segment being tested.

CONSTRUCTION REQUIREMENTS

Subsection 614.10 shall include the following:

(a) *Contractor Access to Network Facilities*

The Contractor's personnel may be required to complete background checks for short term access into secure network facilities required to complete the fiber optic testing within City facilities.

(b) *Optical Fiber Cable Testing with OTDR*

The Contractor shall perform an OTDR test of all fibers in all tubes on the reel prior to installation of the fiber. The test results shall be supplied to the Engineer prior to installation of the cable.

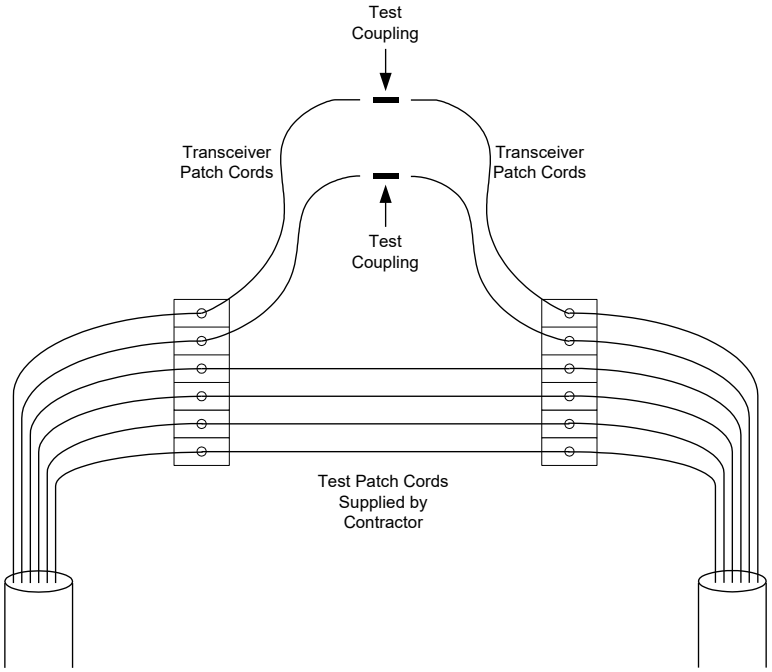
-2-
REVISION OF SECTION 614
TEST FIBER OPTIC CABLE

The Contractor shall test fiber optic cable prior to installation. Any cable damaged to any part of the end-to-end system, during construction and acceptance testing, shall be replaced at the Contractor's expense.

The Contractor shall perform OTDR fiber testing on all fibers in the completed end-to-end system. The Contractor shall also perform OTDR fiber testing for each existing end of the existing unused fiber strands. Testing shall consist of a bi-directional end-to-end OTDR trace performed per TIA -455-61. The system margin loss measurements shall be provided at 1310 and 1550nm.

If the Plans require installation of a fiber optic patch panel, the Contractor shall supply patch cords to patch all terminated fibers through the panel for all fiber testing. If patch cords are specified in the Plans for final equipment installation, these patch cords shall be connected using a test coupling for the end-to-end test.

If the City's existing dark fibers will be utilized on a project, the Contractor should perform OTDR fiber testing on these existing dark fibers prior to the commencement of any work to ensure that this infrastructure is not damaged and in good working order. If the Contractor opts not to perform the OTDR fiber testing on existing dark fibers prior to the initiation of any work, the Contractor shall be responsible for any dark fiber that is found to be damaged after final OTDR testing is performed and shall replace or repair the damaged dark fiber as approved by the Engineer.



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REVISION OF SECTION 614
TEST FIBER OPTIC CABLE

OTDR readings will be used to ensure proper installation, to troubleshoot faults, and to diagnose any damage caused to the fibers. OTDR signature traces will be used for documentation and maintenance. For fibers that are identified in the Plans to be left non-terminated, an OTDR shall be used to test end-to-end attenuation.

Loss numbers for the installed link shall be calculated by taking the sum of the bi-directional measurements and dividing that sum by two.

The Contractor shall use an OTDR that is capable of storing traces electronically and shall save each final trace.

To ensure the traces identify the end points of the fiber under test and the fiber designation, the Contractor shall use a test reel, if required, to eliminate the "dead zone" at the start of the trace so that the start of the fiber under test can be identified on the trace. Indicate the length of the test reel for all test results.

If the fiber designation is not indicated on the trace itself, the Contractor shall provide a cross-reference table between the stored trace file name and the fiber designation.

In compliance with TIA-455-61 "Measurement of Fiber or Cable Attenuation Using an OTDR" the Contractor shall record the following information during the test procedure:

1. Names of personnel conducting the test.
2. Type of test equipment used (manufacturer, model, serial number, calibration date).
3. Date test is being performed.
4. Optical source wavelength and spectral width.
5. Fiber identification.
6. End point locations.
7. Launch conditions.
8. Method of calculation for the attenuation or attenuation coefficient.
9. Acceptable link attenuation.

(c) *Optic Fiber Cable Testing with Optical Power Meter*

The Contractor shall conduct an Optical Power Meter Test for each fiber installed and each fiber that is spliced.

Fiber optic cable segments shall be tested in one direction at both the 1310 nm and 1550 nm wavelength.

In compliance with TIA -526-7 "Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant," the following information shall be recorded during the test procedure:

1. Names of personnel conducting the test.
2. Type of test equipment used (manufacturer, model, serial number, calibration date).
3. Date test is being performed.
4. Optical source wavelength and spectral width.
5. Fiber identification.

6. Reference power measurement (when not using a power meter with a Relative Power Measurement Mode).
7. Measured attenuation of the link segment.
8. Acceptable link attenuation.

(d) *Acceptable Attenuation Values*

Acceptable attenuation values shall be calculated for each fiber tested. These values represent the maximum acceptable test values for the Work.

SM Fiber. The general attenuation equation for any SM link segment is as follows:

- Acceptable Link Attn. = Cable Attn. + Connector Attn. + Splice Attn.
- 8.3 μm Single-mode Attenuation Coefficients:
- Cable Attn.=Cable Length (km) x (0.35 dB/km@1310 nm or 0.25 dB/km@1550 nm)
- Connector Attn. (LC connectors) = 0.50 dB per mated pair, excludes transceiver connectors on Ethernet switch
- Splice Attn. (Fusion) = 0.30 dB per fusion splice

(e) *Test Procedures*

If not already provided with the construction documents and prior to the initiation of any fiber testing, the Contractor shall submit a fiber testing plan to the Engineer for approval prior to beginning any of the fiber work. The fiber testing plan must outline all fibers that will be tested by the Contractor.

All fiber testing shall be performed on all fibers in the completed end-to-end system, as identified in the project plans. All system connectors, adapters and jumpers shall be cleaned as per manufacturer's instructions before each measurement is taken.

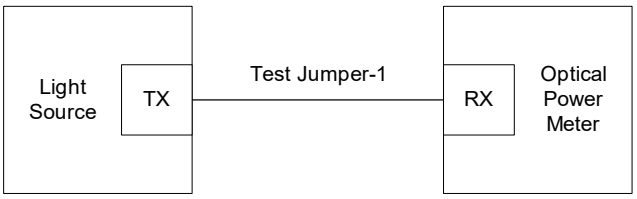
The Contractor shall not begin fiber optic testing until all work is complete. The Engineer will require the Contractor to repeat tests at the Contractor's sole expense, if fiber optic testing is performed before the work is completed. The Contractor shall notify the Engineer three (3) working days prior to testing. The Engineer may observe testing at some or all locations.

Testing shall be performed by qualified personnel that are competent for the task either through experience or certifications as approved by the Engineer prior to any testing activities. At least one of the technicians utilized by the Contractor for testing shall be certified by an accredited organization such as the Fiber Optic Association (FOA) or the Electronics Technician Association (ETA) and performs or provides oversight of the testing activities. Where the Contractor plans to utilize experienced personnel without formal certification from an approved accredited organization, a detail resume shall be provided for each individual outlining their planned involvement and submitted to the Engineer for review and approval prior to the individual's involvement in any testing activities.

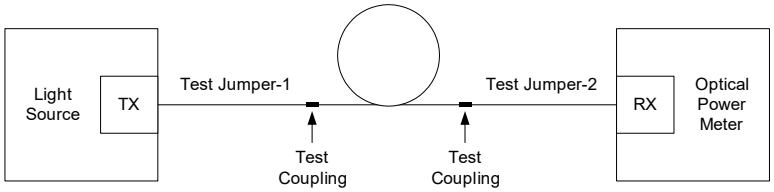
The Optical Power Meter fiber test shall be conducted as follows:

1. Clean the test jumper connectors and the test coupling per manufacturer's instructions.
2. Follow the test equipment manufacturer's initial adjustment instructions.
3. Connect Test Jumper-1 between the light source and the power meter. Avoid placing bends in the jumper that are less than 100 mm (4 inches) in diameter.

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REVISION OF SECTION 614
TEST FIBER OPTIC CABLE



4. If the power meter has a Relative Power Measurement Mode, select it. If it does not, reduce the Reference Power Measurement (Pref). If the meter can display power levels in dBm, select this unit of measurement to simplify subsequent calculations.
5. Disconnect Test Jumper-1 from the power meter. Do NOT disconnect the test jumper from the light source.
6. Attach Test Jumper-1 to one end of the cable plant to be measured and Test Jumper-2 to the other end.



7. Record the Power Measurement (Psum). If the power meter is in Relative Power Measurement Mode, the meter reading represents the true value. If the meter does not have a Relative Power Measurement Mode, perform the following calculation:
8. If Psum and Pref are in the same logarithmic units (dBm, dBu, etc.):
   A. CPR (dB) = Psum - Pref
   B. If Psum and Pref are in watts:
   C. CPR (dB)= 10 x log10 [Psum/Pref]

(f) *Test Acceptance*

The Contractor shall demonstrate that each Optical Power Test results in acceptable attenuation values.

The Contractor, solely at the Contractor's cost, shall remake any fusion splices that have test results exceeding acceptable attenuation values.

The Contractor, solely at the Contractor's cost, shall retest any fiber links that have been re-spliced.

The Contractor, solely at the Contractor's cost, shall bring any newly installed fiber optic link not meeting the requirements of this specification into compliance.

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REVISION OF SECTION 614
TEST FIBER OPTIC CABLE

Where the Contractor is utilizing existing fiber optic cable links, the Contractor shall test the existing cable(s) that they are working with prior to and after the work is completed. The Contractor shall submit their test results to the Engineer to confirm the condition of the cable prior to the initiation of work on existing cables and call attention to any existing damage it found through this examination. Likewise, the Contractor shall submit their test results to the Engineer to verify the condition of the cable after completion of work on the existing cables to substantiate that it wasn't damaged by the Contractor's operations and is in good working order. Any existing cables that were in good working order prior to the initiation of the Contractor's work, but shown to be damaged after completion of the work, shall be repaired and/or replaced solely at the Contractor's cost at the discretion of the Engineer.

(g) *Submittals*

In addition to the requirements in Revision to Section 105 Contractor Submittals, the Contractor shall submit test results documentation as both a hard copy and electronic copy to the Engineer.

After each reel test, the Contractor shall submit one hard copy of the OTDR trace for every fiber on the reel. After installation, the Contractor shall submit one hard copy of the OTDR trace for every spliced fiber. Hard copy traces shall be organized and bound in logical order in an 8 ½" x 11" hard cover binder.

The Contractor shall submit, after approval of the hard copy traces, electronic copies of all traces and appropriate software to allow reading the traces. The Engineer will approve all OTDR results prior to completion of the project. The Contractor shall submit one copy of the complete contract Plans, including additional drawings issued as part of any change orders, with any deviations clearly marked in color. Deviations to be noted and shall include but not be limited to the following:

1. Fiber Splice location;
2. Fiber Splice configuration; and
3. Termination layout.

METHOD OF MEASUREMENT

Subsection 614.13 shall include the following:

Testing of fiber optic cable will be measured by all fiber optic testing, re-testing, including all labor, materials, and document submittals necessary to complete the work.

BASIS OF PAYMENT

Subsection 614.14 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Test Fiber Optic Cable	Lump Sum

REVISION OF SECTION 614
FIBER OPTIC PRE-CONNECTORIZED CABLE

Section 614 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of the installation of single mode fiber optic pre-connectorized patch cables between the termination patch panel and the communications equipment optical ports in communication cabinets and network facilities.

MATERIALS

All fiber optic cables shall be suitable for outdoor conduit installation.

All fiber optic cable shall have compatible characteristics with other proposed and existing fiber optic cables. The single mode fiber shall meet or exceed the requirements of International Telecommunications Union – Telecommunications Standardization Sector - Recommendation G.652.D.

All cables shall be new and unused non-armored outdoor cable consisting of non-dispersion shifted, low water peak single-mode fiber strands free of surface imperfections and inclusions. Each single mode fiber strand shall consist of a doped silica core surrounded by a concentric silica cladding. The fiber shall be of matched clad design.

The measured attenuation of the connector (inclusive of coupler and mated test connector) shall not exceed an average of 0.3 decibel (dB) for all connectors provided. All connectors found in excess of 0.5 dB shall be rejected. Reflectance shall be less than -40 dB from 14ºF to 140ºF (-10ºC to +60ºC). The manufacturer shall have a program that periodically tests connectors to ensure that after 1000 re-matings, the attenuation will not change more than 0.2 dB.

The measured insertion loss shall be a maximum of 0.25 dB with a typical loss of 0.15 dB. Return loss shall be a maximum of -65 dB (Angle Physical Contact - APC) and -55 dB (Ultra Physical Contact -UPC) with a typical loss of -68 dB (APC) and -58 dB (UPC). The minimum cable bend radius shall be 15 times the outer diameter of the cable.

The connector shall be able to withstand an axial pull of 25 pounds with no physical damage to the connector and no permanent optical degradation more than 0.3 dB.

The pre-connectorized cables shall be provided with pre-connectorized connectors on both ends to match the termination patch panel bulkheads and communications equipment optical ports. Connectors shall be terminated by the manufacturer.

At network facilities, the Contractor shall provide pre-connectorized cables of sufficient length to span from the fiber termination patch panel bulkheads to the communications equipment optical port, with a maximum of two feet of slack cable. At communications cabinets, the Contractor shall provide pre-connectorized cables of sufficient length to span from the fiber termination patch panel bulkheads to the communications equipment optical port. This length shall be 4 feet maximum.

The connectors shall be nickel-plated with a ceramic ferrule and shall be polished to match the polish of the optical port that the connector will be plugged into.

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REVISION OF SECTION 614
FIBER OPTIC PRE-
CONNECTORIZED CABLE

The bend insensitive pre-connectorized patch cable shall meet the following specifications:

Patch Cable Connectors

- EIA, TIA-55 (FOCIS)
- UL94 V-O
- GR-326, Issue 3 Specifications
- Fiber Cable - Telcordia GR-409

The cables shall contain the exact number of loose tube fibers and bulkhead connectors to connect from the termination patch panel to the communications equipment optical ports. If the optical equipment transmits (Tx) and receives (Rx) data with a single optic, the pre-connectorized cable shall contain a single optical fiber (simplex). When the optical device transmits and receives data with two or four optics, or a network Ethernet switch small form factor pluggable optic module, the pre-connectorized cable shall be provided with two optical fibers (duplex) per pair of transmit and receive optics.

CONSTRUCTION REQUIREMENTS

Pre-connectorized cables shall be installed from the termination panel bulkheads to the communications equipment optical ports.

The Contractor's Installation technician shall have a minimum certification in International Municipal Signal Association (IMSA) Fiber Optics for ITS, Traffic, Fire Alarm, and Communications Systems or equivalent or better fiber optics certification.

At network facilities, the pre-connectorized cables shall be installed in the cable management hardware attached to equipment racks. At communication cabinets and traffic signal cabinets, the Contractor shall neatly route pre-connectorized cables between the fiber termination patch panel bulkheads and the communications equipment optical port. Appropriate cable management shall be used.

Prior to installation, the Contractor shall clean all pre-connectorized cable bulkhead connectors with lint-free fiber wipes moistened with Isopropyl Alcohol 99 percent U.S.P. After cleaning with alcohol, the Contractor shall clean the bulkhead with an optical connector cleaner to ensure that all residues are removed.

The Contractor shall submit manufacturer testing reports for pre-connectorized cables as part of the as-built documentation. The Contractor shall note the installation location on the test report for future reference.

At network facilities, the contractor shall apply an identification label at each end of each pre-connectorized patch cable. The identification label shall include information indicating the patch panel number, device being connected and communications equipment optical port.

At all communications cabinets, the contractor shall apply an identification label at each end of each pre-connectorized patch cable. The identification label shall include the wavelength, the termination panel port and the data transmitting description (example: Tx or Rx).

Patch cable labeling shall be as shown on the Plans.

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REVISION OF SECTION 614
FIBER OPTIC PRE-
CONNECTORIZED CABLE

METHOD OF MEASUREMENT

Fiber optic pre-connectorized cables and labeling will not be measured separately but will be considered subsidiary to the individual communications equipment items.

BASIS OF PAYMENT

Fiber optic pre-connectorized cables and labeling will not be paid for separately but will be considered subsidiary to the individual communications equipment items and shall include all labor, materials and equipment required to complete the work. Also included shall be all information labeling in network facilities and in field device communications cabinets

REVISION OF SECTION 614
GROUNDING AND
BONDING

Section 614 of the Standard Specifications is hereby revised for this project as follows:

DESCRIPTION

This work consists of grounding and bonding requirements at project locations for all Intelligent Transportation System (ITS)-related structures, poles, service pedestals and cabinets. The work covered in this section consists of labor, materials, and services required for a functional and unobtrusive grounding system.

(a) General. Provide comprehensive grounding and bonding for ITS-related equipment. The City of Littleton's target resistance to ground value is equal to or less than 10 Ω.

(b) Applicable Documents. Work performed in this section shall comply with the most current edition of the following codes and/or standards:

1. IEEE 81 – Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System
2. IEEE C2 – National Electrical Safety Code
3. NEMA GR 1 – Grounding Rod Electrodes and Grounding Rod Electrode Couplings
4. NFPA 70 – National Electrical Code
5. NFPA 70E – Standard for Electrical Safety in the Workplace
6. NFPA 780 – Standard for the Installation of Lightning Protection Systems
7. TIA-607 – Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises
8. UL 96 – Lightning Protection Components
9. UL 96A – Installation Requirements for Lightning Protection Systems
10. UL 467 – Grounding and Bonding Equipment

(c) Identify to the Project Engineer any conflicts between the requirements of codes/standards development organizations and the plans and specifications for this project.

(d) Submittals.

1. Provide cut-sheets of each type of product proposed for approval by the Project Engineer prior to commencement of work.

2. Provide a system plan, conductor routing, supports, connectors and ground rods along with connection, mounting and splicing details.

(e) Components.

1. Grounding electrodes (driven rods). Provide ground rods that meet or exceed the following requirements:

A. Preferred. Copper-clad steel ground rods (pointed) shall not be less than 0.625 inch diameter and a minimum of eight feet in length. It shall be UL certified and have a minimum plating thickness of 10 mil copper cladding.

B. Other Alternatives. Other ground rod types, such as chemical ground electrodes, may be considered based on site soil chemistry, adjacent electrically bonded structures, or if the installation must occur in a corrosive area, but must be approved by the Project Engineer in writing.

2. Grounding Electrode Conductor. The grounding electrode conductor shall be solid or stranded copper with a minimum size of #6 AWG, unless otherwise specified. The Contractor shall size the grounding electrode conductor in accordance with Article 250.66 of the NEC. Bare and insulated grounding electrode conductors shall be permitted, as approved by the Project Engineer. Insulated grounding electrode conductors shall be Type THWN and conform to the requirements of Article 310 of the NEC. Insulated grounding electrode conductors shall utilize a green jacket color. The grounding electrode conductor run shall be installed in one continuous run without a splice or joint, except as permitted in accordance with Article 250.64(C) of the NEC.

A. For bonding between a cabinet frame and busbar, a braided ground strap shall be utilized. The braided ground strap shall consist of non-insulated tinned copper flat braid wire with a minimum width of 0.5 inches and a thickness of 0.07 inches (based on estimated #6 AWG equivalence).

3. Grounding Connectors. Grounding connectors shall be provided for attachment to grounding electrodes, ground bus and ground lugs. Grounding and bonding connections shall be made by means of a compression connector, a mechanical connector, or an exothermic weld. Mechanical and compression connectors shall have only one conductor installed unless designed or UL-listed for more conductors. Mechanical connections shall only be permitted when a compression or exothermic connection cannot be made.

4. Ground Bus. Provide copper bar stock grounding busbar as shown on plans. If the dimensions of the busbar are not shown on the plans, the minimum size shall be 0.25 inch thick by 2 inches high by 6 inches wide and positions for five lugs, unless otherwise specified by the Project Engineer. Hole patterns on the busbar shall accommodate two-hole lugs in accordance with TIA-607 and hole spacing should not be less than 0.75 inch. Busbar must be wall mountable and UL certified. Stand-off brackets shall also be included and brackets shall be manufactured from 300 series stainless steel with stainless steel bolts and lock washers.

CONSTRUCTION REQUIREMENTS

(a) General. Install equipment, materials and devices in accordance with equipment manufacturer's written instructions and in compliance with applicable installation standards.

1. Connections.

A. Provide exothermically welded connections below grade and in areas exposed to visible moisture.

B. Provide heavy duty bolted clamped connections, UL listed, above grade and in areas where safety to personnel and structures dictate.

2. Installation.

A. Install one grounding electrode. Each grounding electrode shall be installed such that at least the entire length is in contact with the soil. Where a rock bottom is encountered, the grounding electrode installation shall conform to the requirements of Article 250.53(G) of the NEC. The grounding electrode system shall be installed within City of Littleton right-of-way.

B. Leave top of grounding electrode exposed for testing and for verifying quantities.

C. Measure the resistance of the installed grounding electrode with respect to the surrounding soil using an earth ground resistance tester.

D. If the results exceed 10 Ω, install a second grounding electrode a minimum of one electrode length away from the first grounding electrode. The bonding jumper used to connect grounding electrodes shall be installed and sized in accordance with Article 250.53(C) of the NEC.

E. Measure the resistance of the installed grounding electrode system with respect to the surrounding soil using an earth ground resistance tester.

F. Record and report results to Project Engineer in writing. The target resistance to ground is equal to or less than 10 Ω, however after installing two grounding electrodes, a resistance to ground value equal to or less than 25 Ω will be accepted by the City of Littleton. The Contractor shall be responsible for confirming the resistance to ground requirements with the various manufacturers of the equipment it procures for this project. Where manufacturers have more stringent resistance to ground requirements for operational performance and warranties, the Contractor shall be required to adhere to the manufacturer’s requirements for acceptance by the City of Littleton.

G. In the absence of low resistance soil conditions, the Project Engineer, at his/her sole discretion, may allow the use of the following: bentonite to fill the ground rod hole; chemical electrodes; or ground enhancement material. The Contractor shall obtain written permission from the Project Engineer prior to using the previously mentioned materials.

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REVISION OF SECTION 614
GROUNDING AND
BONDING

3. Surface Preparation

A. Ground Bus. An abrasive pad shall be used to remove any dirt, grease, oil and oxidation from the ground bus. A thin coating of antioxidant compound shall be applied to the connection point on the ground bus. Using stainless steel hardware, the Contractor shall tighten and torque to the value specified for the hardware grade, material and size. Only one lug shall be installed per a two-hole mounting on a bonding surface. Lugs shall not overlap or use the same mounting holes on a bonding surface. Due to thermal cycling anticipated in the field environment, the lock washer shall be substituted with flat washers and a cupped spring washer (i.e., Belleville washer), with the cup against the head of the bolt.

B. Other Surfaces. Clean the surface thoroughly where the grounding lug is to be connected. The grounding surface shall be clean of any paint, dirt, grease, oil, rust and other oxidation. A thin coating of antioxidant compound shall be applied to the connection point on the surface. Using stainless steel or silicon bronze hardware, the Contractor shall tighten and torque to the value specified for the hardware material and size. Lugs shall not overlap or use the same mounting holes on a bonding surface. The lock washer shall be substituted with flat washers and a cupped spring washer, with the cup against the head of the bolt.

C. Ground Attachment to Structures and Poles. The grounding electrode conductor shall be connected to the ground stud on a structure or within a pole using stainless steel nuts and cupped spring washers. The connector type for the grounding electrode conductor shall be a full circle connector sized appropriately for the diameter of the ground stud and the wire gauge of the conductor.

Where a ground stud does not exist on a structure or within a pole, the Contractor shall install a tapped and threaded hole to accommodate the grounding electrode conductor and screw. The connector type for the grounding electrode conductor shall be a full circle connector sized appropriately for the diameter of the screw and the wire gauge of the conductor. Stainless steel screws and cupped spring washers shall be included.

D. Grounding Connectors. The lug size, configuration and material for compression connectors shall be selected based on the grounding electrode conductor size and fastening conditions. The insulation shall be trimmed back so that the bared grounding electrode conductor is slightly longer than the barrel. After applying an antioxidant compound on the exposed grounding electrode conductor, insert the conductor so that is touches the end of the barrel as viewed through the inspection port. Ensure the grounding electrode conductor remains at the end of the barrel before making the first crimp nearest the tongue end and working toward the

conductor with the remaining crimps. The lug manufacturer's instructions shall be followed for the number of crimps and their location on the barrel. For exothermic welds to the grounding electrode conductor, select the mold and weld metal applicable to the conductor size and lug configuration. Clean and dry (using a torch) the grounding electrode conductor and the mold. Insert the conductor and lug into the mold. Close the handle clamp, lock the mold and then insert the disk into the mold. Pour the weld metal into the mold and apply the starting material over the weld metal and on the lip of the mold. Close the cover and ignite using a flint igniter.

After the reaction is complete, wait a minimum of 15 seconds and then open the mold and remove the finished lug connection. Clean any slag from the finished lug connection.

E. Grounding Connectors. The lug size, configuration and material for compression connectors shall be selected based on the grounding electrode conductor size and fastening conditions. The insulation shall be trimmed back so that the bared grounding electrode conductor is slightly longer than the barrel. After applying an antioxidant compound on the exposed grounding electrode conductor, insert the conductor so that is touches the end of the barrel as viewed through the inspection port. Ensure the grounding electrode conductor remains at the end of the barrel before making the first crimp nearest the tongue end and working toward the conductor with the remaining crimps. The lug manufacturer's instructions shall be followed for the number of crimps and their location on the barrel. For exothermic welds to the grounding electrode conductor, select the mold and weld metal applicable to the conductor size and lug configuration. Clean and dry (using a torch) the grounding electrode conductor and the mold. Insert the conductor and lug into the mold. Close the handle clamp, lock the mold and then insert the disk into the mold. Pour the weld metal into the mold and apply the starting material over the weld metal and on the lip of the mold. Close the cover and ignite using a flint igniter.

After the reaction is complete, wait a minimum of 15 seconds and then open the mold and remove the finished lug connection. Clean any slag from the finished lug connection.

4. Testing.

A. Testing shall be performed prior to connecting to utility ground in an effort to eliminate ground loops.

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REVISION OF SECTION 614
GROUNDING AND
BONDING

B. When the grounding electrodes are installed, they shall be measured for their effectiveness using the three-point, fall of potential method per IEEE 81 to measure the resistance of the installed grounding electrode configuration with respect to the surrounding soil using an earth ground resistance tester. The final measurement must be performed in the presence of the Project Engineer or City of Littleton's designated representative. Provide documentation to the Project Engineer of ground grid measurement results for each ITS site location tied to a single grounding system.

C. Contractor shall furnish its own earth ground resistance tester including stakes, clamps, cabling, transformers, and other required accessories needed to perform the testing. A copy of the earth ground resistance tester's NIST certification shall be provided to the Project Engineer as verification that the unit has been calibrated using standards and instruments traceable to international standards.

METHOD OF MEASUREMENT

Grounding and bonding will not be measured or paid for separately but will be considered subsidiary to the ITS field device, communications equipment, and cabinet items and shall include all labor, materials, equipment, testing and documentation required to complete the work.

REVISION OF SECTION 626
MOBILIZATION

Section 626 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

Subsection 626.01 is hereby revised to include:

This item also includes demobilization of equipment and supplies from this project site.

BASIS OF PAYMENT

Subsection 626.02 is hereby deleted and replaced by the following:

Two payments will be made for the mobilization item. 50% of the amount bid for mobilization will be paid at the completion of mobilization. The remaining 50% of the amount bid for mobilization will be paid at the completion of the project when the equipment has been demobilized.

Payment will be made under:

Pay Item	**Pay Unit**
Mobilization	Lump Sum

REVISION OF SECTION 630
CONSTRUCTION ZONE
TRAFFIC CONTROL

Section 630 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

Subsection 630.01 shall include the following:

This work consists of furnishing Method for Handling Traffic (MHT), coordinating with affected owners and tenants, implementing construction zone traffic control, and otherwise.

CONSTRUCTION REQUIREMENTS

In subsection 630.10(a), delete the 1st paragraph and replace with the following:

The Contractor shall control traffic in accordance with the Traffic Control Plan (TCP). The Contractor shall develop a TCP in cooperation with the Engineer. To implement the TCP, the Contractor shall develop and submit a Method for Handling Traffic (MHT) for each different phase of construction which shows the Contractor's proposed construction phasing and proposed traffic control devices consistent with the TCP. If at any time the Contractor desires to change the MHT, it shall be considered a different phase requiring a new MHT. The Contractor shall submit each MHT to the Engineer a minimum of two weeks before starting that phase.

Subsection 630.10 shall include the following:

Approval of the proposed MHT(s) by the Engineer does not relieve the Contractor of liability specifically assigned to him under the Contract.

The Contractor shall notify the Engineer by Thursday at 3:00 PM which streets the Contractor intends to work on the following week. This notification shall be made for all phases of construction.

The Contractor is directed to review the following resources for the required components of the Traffic Control Plan (TCP) for this project:

(a) The City's Traffic Control Plan (TCP) templates and
(b) The Manual on Uniform Traffic Control Devices (MUTCD)

Subsection 630.10(a)(5) shall include the following:

The Contractor shall coordinate the Access Maintenance Plan with, and based on the requirements of, all affected owners and tenants. The Access Maintenance Plan shall include documentation of this coordination, including the approval signature of each affected owner or tenant. Should the Contractor be unable to obtain approval and signatures, documentation of the efforts made to obtain said approval and signatures must be submitted. All access shall be maintained on surfaces equal to or better than those existing at the time the access is first disturbed. For short periods of time only as allowed by the Engineer, access may be maintained on aggregate base course surfaces.

The Contractor shall maintain access to all roadways, side streets, walkways, alleyways, driveways, and hike/bike paths at all times unless otherwise approved by the Engineer.

Parking areas temporarily disturbed by construction activities shall be restored to a useable condition during non-working hours. Such temporary parking shall utilize an all-weather surface.

The Contractor shall prepare the MHT to reflect the Access Maintenance Plan by detailing all barricades, ramps, signs, and temporary means of access to address the needs of the property owners or tenants.

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REVISION OF SECTION 630
CONSTRUCTION ZONE
TRAFFIC CONTROL

Prior to commencing any work which affects access to a property, the Access Maintenance Plan for that property must be submitted and approved by the Engineer.

Subsection 630.10(a)(6) shall include the following:

The Contractor shall maintain continuous access throughout the project for pedestrians, bicyclists, and disabled persons. When the existing access route is disturbed by construction, a temporary all-weather access shall be provided. All temporary access shall be a minimum of 5 feet wide and meet Americans with Disabilities Act (ADA) requirements. Acceptable all-weather surfacing shall be concrete or asphalt surface, or as approved by the Engineer. Delineation of pedestrian access through the work area shall be accomplished using temporary plastic fencing and appropriate signage.

When pedestrian crosswalks are temporarily closed at signalized intersections, the Contractor shall cover the pedestrian signal heads in accordance with section 630.19, cover pedestrian push buttons, and erect temporary regulatory signage prohibiting pedestrian crossings in accordance with the MUTCD.

Subsection 630.19 is added following subsection 630.18 as follows:

Temporary Masking and Adjusting Signals. Vehicular and pedestrian signal indications or portions thereof that conflict with the construction signing, markings, or Traffic Control Plan shall be completely covered by the Contractor so that none of the covered signal is visible to traffic. Overhead signal faces shall be temporarily reset as required to be positioned over the center of each left and through lane open to traffic, unless otherwise approved by the Engineer. Traffic signal faces shall be reset to their original or final location, as appropriate, at the completion of the MHT causing the need to reset.

Subsection 630.13 shall include the following:

The Contractor shall erect and maintain warning lights, signs, barricades, and sufficient safeguards around all excavations, embankments, and obstructions.

The Contractor shall install construction traffic control devices where they do not block or impede other existing traffic control devices or sidewalks for pedestrians, disabled persons, or bicyclists. The Contractor is restricted from storing any materials, construction traffic control devices, signs, etc. in any median area or park area.

Vertical cuts or fills greater than 1 inch resulting from construction operations adjacent to traffic lanes, or within the clear zone shall be temporarily sloped at a 6:1 or flatter slope, and delineated at 35 foot intervals immediately after removal operations to safeguard the traveling public.

Construction equipment used on this project shall meet the same minimum exhaust requirements as those specified by the manufacturer of the equipment.

The Contractor and subcontractors shall equip their construction vehicles with flashing amber lights. Equipment to be used at night shall also be equipped with flashing amber lights. Flashing amber lights on vehicles and equipment shall be visible from all directions.

Utilization of materials to be incorporated into the work may be permitted. However, any degradation or other contamination or destruction shall be corrected at the Contractor’s expense prior to acceptance.

During non-construction periods (evenings, weekends, holidays, etc.) all work shall be adequately protected to ensure the safety of vehicular and pedestrian traffic, as detailed in the Contractor’s MHTs. Excavations or holes shall be filled in or fenced when unattended.

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REVISION OF SECTION 630
CONSTRUCTION ZONE
TRAFFIC CONTROL

Whenever the Contractor removes, obliterates, or overlays any pavement markings, they shall replace them on a daily basis prior to opening the affected areas to traffic. All temporary pavement markings shall fully comply with the Standard Specifications and Special Provisions.

The Contractor shall not have construction equipment or materials in the lanes open to traffic any time.

All personal vehicle and construction equipment parking is prohibited where it conflicts with safety, access, or the flow of traffic. Landscaped areas, public park areas, and roadway shoulders shall be kept clear of parking and storage of all personal and construction equipment except where approved by the Engineer.

The Contractor shall not place tack coat on any surface to be paved where traffic will be forced to travel upon fresh bituminous materials.

The Contractor shall make arrangements with the Regional Transportation District (RTD) at 1560 Broadway, Suite 700, Denver, CO 80202 two business days prior to blocking access to existing bus stops within the project limits. When temporary bus stops are required by RTD, RTD will establish the new bus stop(s), and the Contractor shall accommodate access by furnishing and installing all-weather surface and delineation to the new bus stop. All lane closures shall be subject to the approval of the Engineer by MHT. Request for each closure shall be made at least 24 hours in advance of the time the lane closure is to be implemented. Lane closures will not be allowed to remain unless being utilized in continuum for the intended purpose for which they were set up.

During non-working hours, the roadways shall be restored to a safe travel conditions for the free flow of traffic. Any maintenance required restoring the roadways to this condition, including the pavement patching and grading, shall be done prior to opening the areas to traffic or completing work for the day.

The Contractor shall clean the roadway of all construction debris before opening it to traffic.

All flagging stations used at night shall be illuminated with floodlights. Street, highway lights and “high mast lighting” may be used for flagging station illumination when approved by the Engineer. Floodlights shall be located and directed so as not to interfere with the sight of any motorists, and the cost is to be included in the work.

Prior to removal and resetting of any sign the Contractor shall prepare a sign inventory and submit to the Engineer as a Working Drawing. Any signs damaged due to the Contractor’s operations shall be replaced in kind or repaired by the Contractor at no additional cost to the project.

The Contractor shall obtain the appropriate permits for work within the city right-of-way, consistent with Section 2.3 Construction Documents Related To Capital Improvements of the City’s Roadway Design & Construction Standards.

Daily logs shall be completed by the Contractor for every day traffic control devices are present on the job. Each log must specify the MHT(s) in use and confirm the devices were inspected and adjusted as needed.

Subsection 630.20 is added following subsection 630.19 as follows:

Permitted Work Times. Work that interferes with traffic will only be permitted during the following hours:

(a) The Contractor shall perform all the work on the roadway between the hours of 8:30 AM and 3:30 PM or as approved by the Engineer. Weekend and nighttime work will not be allowed without the prior written approval of the Engineer. During this time, only one lane can be closed on each approach.

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REVISION OF SECTION 630
CONSTRUCTION ZONE
TRAFFIC CONTROL

(b) The Contractor shall not work in a manner that directly or indirectly interferes with the flow of traffic between the hours of 5:30 AM and 8:30 AM Monday through Friday, between the hours of 3:30 PM to 6:30 PM Monday through Thursday, or after 2:00 PM on Fridays, unless otherwise authorized by the Engineer.
(c) The Contractor shall not perform work on Holidays.
(d) The Contractor shall not close lanes during special events.
(e) The Contractor shall coordinate lane closures with adjacent projects.
(f) The Contractor shall maintain business access(es) during business hours.
(g) The Contractor shall coordinate all of the work on the roadway during any special event with the City of Littleton.
(h) The Contractor shall adhere to the time restrictions detailed in the current edition of the CDOT Region 1 Lane Closure Strategy (available at www.codot.gov), for work that affects traffic on state highways or other roadways under the jurisdiction of CDOT, and discussed therein.

All costs incidental to temporary pavement markings for traffic control will not be paid for separately, but shall be included in the work.

All costs incidental to maintenance of access will not be paid for separately, but shall be included in the work.

All costs incidental to the foregoing requirements shall be included in the original contract prices for the project.

FORCE ACCOUNT ITEMS

This special provision contains the estimate for the force account item included in the Contract. The estimated amount marked with an asterisk will be added to the total bid to determine the amount of the performance and payment bonds. Force Account work shall be performed as directed by the Engineer.

BASIS OF PAYMENT

Payment will be made in accordance with subsection 109.04. Payment will constitute full compensation for all work necessary to complete the item.

Force account work valued at $5,000 or less, that must be performed by a licensed journeyman in order to comply with federal, state, or local codes, may be paid for after receipt of an itemized statement endorsed by the Contractor.

Force Account Item	Estimated Quantity	Amount
F/A Minor Contract Revisions	F.A.	$30,000
F/A Fuel Cost Adjustment	F.A.	$1,000
F/A Erosion Control	F.A.	$5,000
F/A Environmental Health and Safety Management	F.A.	$2,000

F/A Minor Contract Revisions – This item will cover the cost of unanticipated work that is determined to be necessary as work on the project progresses, which was not shown or described in the Contract plans and specifications. There will be no payment for this force account item unless written authorization is provided to the Contractor from the Engineer.

F/A Fuel Cost Adjustment – This work is described in the Standard Special Provision– Fuel Cost Adjustment to the contract to accommodate fluctuations in fuel prices.

F/A Erosion Control – This force account is to pay for any other erosion control items the TECS will need during the duration of this project. All items shall be pre-approved by the Project Engineer prior to installation or they will be at no cost to the project.

F/A Environmental Health & Safety Management – This item will cover the cost of sampling, testing, and disposal of contaminated water.

UTILITIES

The known utilities within the limits of this project are:

UTILITY	CONTACT/EMAIL	PHONE/FAX
Xcel Energy – Gas & Electric 10001 W. Hampden Lakewood, CO 80227	Scott Gomer scott.gomer@xcelenergy.com	(303) 716-2003
Century Link 5325 Zuni Street #728 Denver, CO 80221	Shelly Bergstrom shelly.bergstrom@lumen.com	(720) 501-5803 Office (303) 257-0027 Cell
Comcast 8490 North Umatilla Street Federal Heights, CO 80260	Jason Mollo jason_mollo@comcast.com Gregory Jaeger gregory_jaeger@comcast.com	(303) 241-1964
Zayo Bandwidth 4771 Walnut Street #100 Boulder, CO 80301	James Black jamesr.black@zayo.com	(719)-216-8508 Cell
Denver Water 1600 W 12th Ave Denver, CO 80204	Paul Peloquin paul.peloquin@denverwater.org	(303) 628-6620 Office (720) 808-3618 Cell
CDOT ITS 425C Corporate Circle Golden, CO 80401	Jill Scott jill.scott@state.co.us	(303) 512-5805 Office (303) 512-5878 Fax
CDOT Region 1 Traffic Operations 18500 E. Colfax Avenue Aurora, CO 80011	Chris Vokurka christopher.vokurka@state.co.us	(303) 512-4058 Office (303) 947-9779 Cell
City of Centennial 13133 E. Arapahoe Road Centennial, CO 80112	Anna Bunce abunce@centennialco.gov	(303) 325-8036
Arapahoe County 5334 S. Prince St Littleton, CO 80120	Mark Harkleroad mharkleroad@arapahoegov.com	(303) 795-4848
City of Littleton – Utilities Department 2255 W. Berry Ave Littleton, CO 80120	Tim Weaver tweaver@littleton.gov	(303) 795-3834

The work described in these plans and specifications requires full cooperation between the Contractor and the utility owners in accordance with Subsection 105.11 in conducting their respective operations, to complete the utility work with minimum delay to the project.

UTILITIES

PART 1 CONTRACTOR SHALL PERFORM THE WORK LISTED BELOW:

Coordinate project construction with the performance by the utility owner of each utility work element listed in Part 2 below. Perform preparatory work specified in Part 2 for each utility work element. Provide an accurate construction schedule that includes all utility work elements to the owner of each impacted utility.

Provide each utility owner with weekly updates to the schedule. Conduct detailed utility coordination meetings prior to each construction phase to coordinate all requirements and schedules, and provide other necessary accommodations as directed by the Engineer. Notify each utility owner in writing, with a copy to the Engineer, prior to the time each utility work element is to be performed by the utility owner. Provide the notice with the number of days specified in Part 2 immediately prior to the time the utility work must be begun to meet the project schedule.

Provide traffic control, as directed by the Engineer, for any utility work by the utility owner expected to be coordinated with construction. However, traffic control for utility work outside of typical project work hours shall be the responsibility of the utility owner.

Perform each utility work element for every utility owner listed here in Part 1. Notify each utility owner in advance of any work being done by the Contractor to its facility, so that the utility owner can coordinate its inspections for final acceptance of the work with the Engineer.

Project Limits – All Utility Owners

Prior to excavating, the Contractor shall positively locate all potential conflicts with existing underground utilities and proposed construction, as determined by the Contractor according to proposed methods and schedule of construction. The Contractor shall modify construction plans to avoid existing underground facilities as needed, and as approved by the Engineer. Please note that Colorado 811 marks only its members' facilities – Other facilities, such as ditches and drainage pipes may exist, and it is the Contractor's responsibility to investigate, locate and avoid such facilities.

NO UTILITY WORK EXPECTED.

PART 2 UTILITY OWNERS SHALL PERFORM THE WORK LISTED BELOW:

The City of Littleton Contractor shall provide traffic control for any utility work expected to be coordinated with construction, as directed by the City of Littleton Engineer. However, traffic control for utility work outside of typical project work hours shall be the responsibility of the utility owner. The utility owner shall prepare and submit to the City of Thornton a Method of Handling Traffic for utility work to be performed outside typical project work hours. The utility owner shall obtain approval of the Method of Handling traffic from the City of Littleton Engineer prior to beginning the utility work to be performed outside typical project work hours.

NO UTILITY WORK EXPECTED.

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UTILITIES

GENERAL:

The Contractor shall comply with Article 1.5 of Title 9, CRS ("Excavation Requirements") when excavating or grading is planned in the area of underground utility facilities. The Contractor shall notify all affected utilities at least two (2) business days, not including the actual day of notice, prior to commencing such operations. The Contractor shall contact Colorado 811 at phone no. **811**, to have locations of registered lines marked by member companies. All other underground facilities shall be located by contacting the respective owner. Utility service laterals shall also be located prior to beginning excavation or grading.

When utilizing trenchless excavation methods, the contractor shall coordinate project construction with each affected utility owner, pursuant to 2 C.C.R. 601-18 Sections 4.3.1 and 4.3.11, to ensure the new utility installation will follow best practices and not damage existing utilities. New utility installations shall adhere to the separation and construction requirements set by each utility owner. A variance of these requirements can be issued in urban areas when deemed reasonably necessary. Any such variance shall be coordinated with the utility owner.

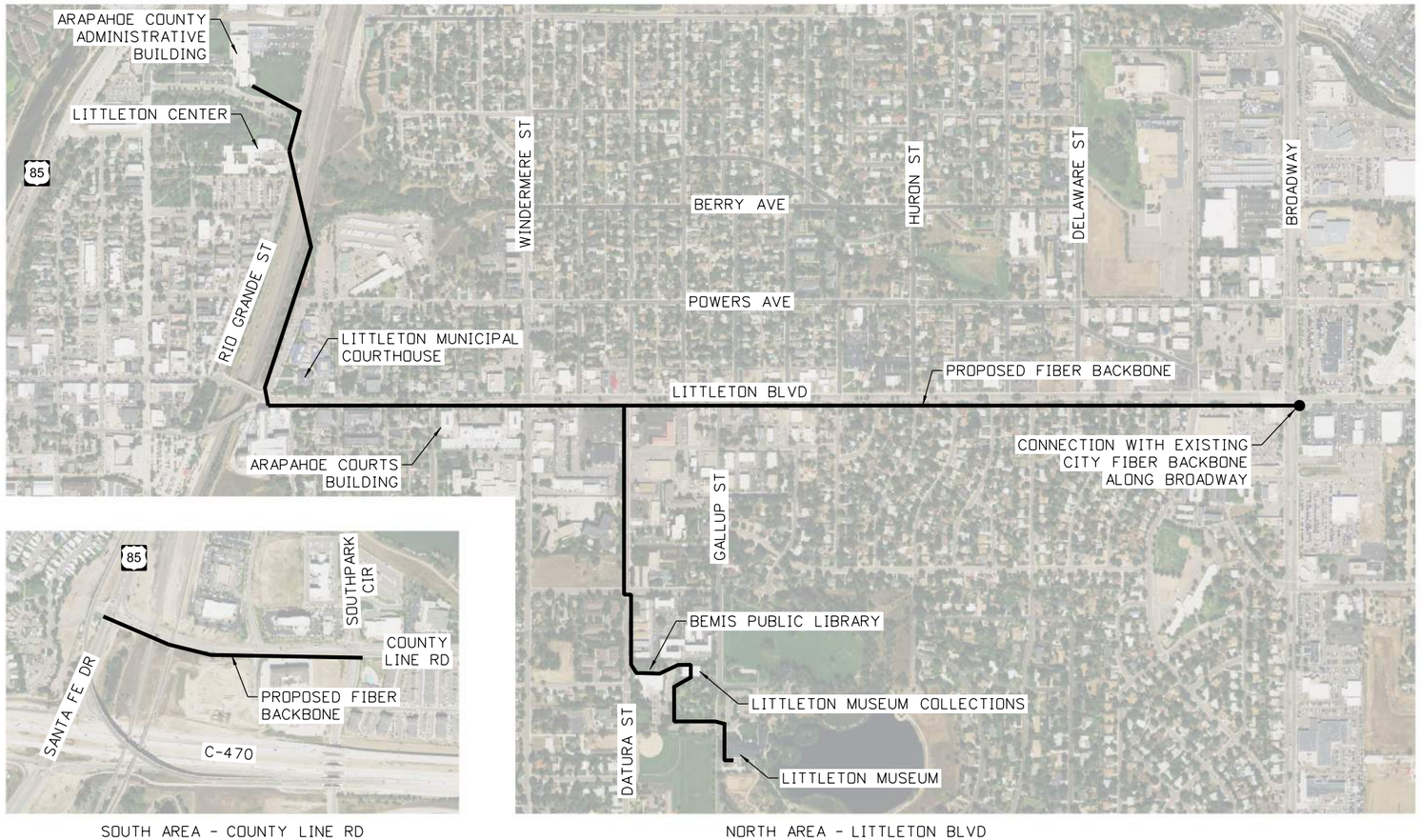
When the Contractor is working near or under high voltage distribution line, it shall be assumed the distribution line is energized and the Contractor shall not be closer than ten feet (10') in any direction from the energized conductors. If work will be within ten feet (10') of energized conductors, the Contractor shall call Xcel Energy's Builders Call Line Colorado ("BCLCO") 1-800-628-2121 a minimum of thirty (30) days in advance to arrange for an outage. An outage will be arranged if it is determined to be necessary. The outage will be a day-by-day situation. Typically, there is a fee charged when an electrical outage is required. However, this fee shall be waived for this project since the electric facilities are in public right-of-way. Xcel shall not charge a fee for this work.

The location of utility facilities as shown on the plan and profile sheets, and herein described, were obtained from the best available information.

All costs incidental to the foregoing requirements will not be paid for separately but shall be included in the work.

CITY OF LITTLETON
PUBLIC WORKS
STATE OF COLORADO

WEST LITTLETON BLVD COMMUNICATIONS UPGRADE
LITTLETON PROJECT NO. 21-37



PROJECT LOCATION MAP

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2	STANDARDS PLANS LIST
3-4	GENERAL NOTES
5-6	SUMMARY OF APPROXIMATE QUANTITIES
7-12	STORMWATER MANAGEMENT PLAN
13	CONSTRUCTION TRAFFIC CONTROL
14	CONSTRUCTION NOTES, LEGEND & TABULATION
15	ITS KEY MAP
16-26	ITS PLANS
27	NETWORK DIAGRAM
28-33	SPLICING DIAGRAMS
34-40	ITS DETAILS
41-57	SUBSURFACE UTILITY ENGINEERING PLANS

811 Know what's below. Call before you dig.

DGN MODEL: CDOT Default
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Print Date: 2/10/2025
File Name: 200420_Littleton Blvd-TITLE SHEET.dgn
Horiz. Scale: 1:1000 Vert. Scale: N/A

consor 1675 LARIMER ST, STE 400 DENVER, COLORADO 80202 PH: 303-339-0440 FAX: 303-325-7743

Sheet Revisions		
Date:	Comments	Init.

Littleton

CITY OF LITTLETON
2255 WEST BERRY AVENUE
LITTLETON, CO 80120
PHONE: 303-795-3700

As Constructed
No Revisions:
Revised:
Void:

Contract Information	
Contractor:	
Resident Engineer: name	
Project Engineer: name	
PROJECT STARTED: / /	ACCEPTED: / /
Comments:	

Project No./Code	
21-37	
Sheet Number	1

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COLORADO
DEPARTMENT OF TRANSPORTATION

M&S STANDARDS PLANS LIST

July 31, 2019

Revised on December 20, 2024

ALL OF THE M&S STANDARD PLANS, AS SUPPLEMENTED AND REVISED, APPLY TO THIS PROJECT WHEN USED BY DESIGNATED PAY ITEM OR SUBSIDIARY ITEM.

THE M&S STANDARD PLANS USED TO DESIGN THIS PROJECT ARE INDICATED BY A MARKED BOX ■, AND WILL BE ATTACHED TO THE PLANS. ALL OTHER M&S STANDARD PLANS ARE STILL ELIGIBLE FOR USE IN CONSTRUCTION IF APPROVED BY AN APPROPRIATE CDOT ENGINEER.

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STANDARDS PLANS LIST

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Project No./Code: 21-37

Sheet Number 2

GENERAL NOTES:

1. THIS PROJECT CONSISTS OF FIBER OPTIC CABLE INSTALLATION, SPLICING, AND TERMINATING; CONDUIT AND PULL BOX INSTALLATION; AND OTHER RELATED IMPROVEMENTS ALONG RIO GRANDE STREET AND COURT PLACE BETWEEN CRESTLINE AVENUE AND LITTLETON BOULEVARD, ALONG LITTLETON BOULEVARD BETWEEN COURT PLACE AND BROADWAY, ON DATURA STREET AND GALLUP STREET BETWEEN LITTLETON BOULEVARD AND LAKE AVENUE, AND ON COUNTY LINE ROAD BETWEEN SANTA FE DRIVE AND SOUTHPARK CIRCLE. REFER TO THE PROJECT SPECIAL PROVISIONS FOR MORE INFORMATION. ALL WORK SHALL BE IN ACCORDANCE WITH THE CITY OF LITTLETON'S STANDARDS, MANUALS, AND SPECIFICATIONS, THE COLORADO DEPARTMENT OF TRANSPORTATION'S (CDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2023 EDITION", CDOT'S "M & S STANDARD PLANS, 2019 EDITION", THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 EDITION", AND THE "NATIONAL ELECTRIC CODE (NEC)."
2. THE BID QUANTITIES OF THE PROJECT ARE THE RESULT OF A QUANTITY TAKEOFF BY THE ENGINEER. THE CONTRACTOR SHALL, HOWEVER, SATISFY HIMSELF AS TO THE ACCURACY OF ALL QUANTITIES AND BRING ANY DISCREPANCIES TO THE ATTENTION OF THE PROJECT ENGINEER, IN WRITING, AT THE EARLIEST OPPORTUNITY. ANY REQUIRED ITEM NOT SHOWN IN THE SUMMARY OF QUANTITIES SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE FIBER NETWORK AND WILL NOT BE PAID FOR SEPARATELY.
3. RIGHT-OF-WAY SHOWN ON THE PLANS IS BASED ON INFORMATION AVAILABLE AT TIME OF PRINT. THE INFORMATION IS PROVIDED TO THE CONTRACTOR TO IDENTIFY CONSTRUCTION CONSTRAINTS. PRIOR TO WORKING IN THE AREA, THE CONTRACTOR SHALL FIELD VERIFY THE APPARENT AVAILABLE RIGHT-OF-WAY (AS IDENTIFIED BY FENCES, MONUMENTS, BUILDINGS, MAINTAINED PRIVATE PROPERTY, ETC.) TO VERIFY CONSTRUCTION CONSTRAINTS. ALL CONSTRUCTION SHALL BE WITHIN CITY OF LITTLETON RIGHT-OF-WAY OR EASEMENTS.
4. PROPOSED CONDUIT ROUTING SHOWN ON THE PLANS IS DIAGRAMMATIC IN INTENT. CONTRACTOR SHALL MODIFY ROUTING AS NECESSARY TO AVOID EXISTING AND PROPOSED OBSTRUCTIONS.
5. ANY CURB AND GUTTER, ASPHALT PAVEMENT, CONCRETE PAVEMENT OR SIDEWALK, FACILITIES, OR LANDSCAPING WHICH IS TO REMAIN AND IS DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
6. WHERE IT IS REQUIRED TO CUT EXISTING PAVEMENT, THE CUTTING SHALL BE DONE TO A NEAT WORK LINE TO THE DESIRED DEPTH WITH A PAVEMENT CUTTING SAW OR OTHER METHOD AS APPROVED BY THE ENGINEER. THIS WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.
7. ALL WORK INSIDE TRAFFIC SIGNAL CABINETS SHALL BE PERFORMED BY AN INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION (IMSA) LEVEL II TRAFFIC SIGNAL TECHNICIAN. A COPY OF ALL RELEVANT LICENSES AND CERTIFICATIONS SHALL BE GIVEN TO THE PROJECT ENGINEER BEFORE WORK STARTS.
8. THE CONTRACTOR MUST SUBMIT TO THE PROJECT ENGINEER CUT SHEETS AND/OR MATERIAL DESCRIPTIONS OF ALL MATERIALS PRIOR TO PURCHASE FOR APPROVAL BY THE CITY OF LITTLETON. IN ADDITION, COPIES OF ALL MANUFACTURER'S RECOMMENDED INSTALLATION INSTRUCTIONS AND PROCEDURES FOR MATERIALS SHALL BE PROVIDED TO THE CITY PRIOR TO THE START OF THE WORK.
9. UPON COMPLETION OF THE WORK ,THE CONTRACTOR SHALL SUBMIT RECORD DRAWINGS, "AS-CONSTRUCTED" PLANS TO THE CITY OF LITTLETON SHOWING THE ACTUAL LOCATION OF CONDUIT, PULL BOXES, AND OTHER SIGNIFICANT WORK ITEMS AT NO ADDITIONAL COST TO THE PROJECT. "AS-CONSTRUCTED" PLANS SHALL BE THE CONSTRUCTION PLAN SET WITH CHANGES MARKED IN RED INK. THIS WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE PROJECT. DOCUMENTS IN THE FORM OF PRINTS SHALL BE SUBMITTED AT THE TIME THE SYSTEM ACCEPTANCE TESTS BEGIN.
10. THIS PROJECT INCLUDES PULLING COMMUNICATION CABLES THROUGH EXISTING CONDUIT. CONTRACTOR SHALL NOT DAMAGE ANY EXISTING CABLES IN THE EXISTING CONDUIT. CONTRACTOR SHALL NOTIFY THE APPROPRIATE AGENCY STAFF OF ANY DAMAGED, OR UNUSABLE, SEGMENTS OF EXISTING CONDUIT.
11. ALL RANGE POINTS, TIES, BENCHMARKS, OR SURVEY CONTROL POINTS WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION MUST BE SURVEYED PRIOR TO DISTURBING. THIS WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE WORK. ANY POINT DAMAGED SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
12. ALL STAGING AREAS SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR APPROVAL.
13. THE CONTRACTOR SHALL NOT CLOSE OR OBSTRUCT BUSINESS OR RESIDENTIAL DRIVEWAYS UNLESS APPROVED IN WRITING BY THE PROJECT ENGINEER.
14. NO CONSTRUCTION VEHICLES SHALL BE IN THE TRAVELED WAY AT ANY TIME WITHOUT APPROPRIATE CONSTRUCTION TRAFFIC CONTROL.
15. IN ADDITION TO THE ITEMS TABULATED THROUGHOUT THE PLAN SET, IT IS ESTIMATED THAT THE FOLLOWING ITEMS WILL BE REQUIRED FOR THIS PROJECT:

ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
626-00000	MOBILIZATION	LS	1

ENVIRONMENTAL NOTES

16. THERE SHALL BE NO STOCKPILING OR SIDE CASTING OF WASTE MATERIAL INCLUDING BUT NOT LIMITED TO PAINT CHIPS, ASPHALT, OR CONCRETE ADJACENT TO ANY DRAINAGE WAYS (INCLUDING DRY DRAINAGE WAYS).
17. DISPOSAL OF EXCESS MATERIAL OFF-SITE OR THE IMPORTING OF MATERIALS ON-SITE, REGARDLESS OF PROPERTY OWNERSHIP, MUST BE DONE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.
18. NO GROUNDWATER SHALL BE ALLOWED TO RUN OFF TO ANY STORM SEWER, DITCH, OR WATERS OF THE STATE. WATER SHALL BE CONTAINED, REMOVED FROM THE SITE, OR DISPOSED IN ACCORDANCE WITH LOCAL, STATE, OR FEDERAL REGULATIONS.
19. CONTROL MEASURES WILL BE IMPLEMENTED BEFORE, DURING, AND FOLLOWING CONSTRUCTION TO PREVENT DEBRIS OR CONSTRUCTION MATERIALS FROM ENTERING INTO EXISTING WATERWAY AND WETLAND AREAS. STRUCTURAL AND/OR NON-STRUCTURAL EROSION AND SEDIMENT CONTROL DEVICES WILL BE USED TO PREVENT THE MOVEMENT OF DRILLING FLUIDS, MUDS, CONCRETE, PETROLEUM PRODUCTS, AND SEDIMENT FROM EXPOSED AREAS INTO SURROUNDING DRAINAGES AND WETLAND AREAS TO PROTECT AQUATIC RESOURCES WITHIN AND ADJACENT TO THE PROJECT AREA. ALL TEMPORARY CONTROL MEASURES SHALL BE REMOVED FROM THE SITE UPON SUBMITTING THE INACTIVATION NOTICE.
20. THE CONTRACTOR SHALL KEEP ALL ENVIRONMENTALLY SENSITIVE AREAS, SUCH AS WATERWAYS, DITCHES, PRAIRIE DOG COLONIES, WETLANDS, DRAINAGE AREAS, AND OPEN SPACE, FREE AND CLEAR OF DEBRIS, MATERIALS, EQUIPMENT, AND VEHICLES. NO PARKING, STAGING, OR WORK SHALL BE ALLOWED IN ANY SUCH AREAS. THE CONTRACTOR SHALL REMOVE IN A TIMELY MANNER, ALL SEDIMENT, MUD, DEBRIS, OR OTHER POTENTIAL POLLUTANTS WHICH MAY BE DISCHARGED TO, OR ACCUMULATE IN, THE FLOW LINES AND PUBLIC RIGHTS-OF-WAY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT.
21. THE CONTRACTOR SHALL REPLACE ANY DAMAGED LANDSCAPE, INCLUDING BUT NOT LIMITED TO, TOPSOIL, GRASS, IRRIGATION SYSTEM COMPONENTS, TREES, SHRUBS, GROUND COVERS AND MULCH, TO ITS ORIGINAL CONDITION. SOD SHALL MATCH EXISTING. IN AREAS NOT SODDED, SEEDING (NATIVE), MULCHING (WEED FREE), AND MULCH TACKIFIER SHALL BE USED. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER'S LANDSCAPE MAINTENANCE PERSONNEL AT LEAST FIVE (5) WORKING DAYS IN ADVANCE OF STARTING WORK IN THE AREA. WITH PROPER AND TIMELY NOTIFICATION, THE OWNER'S LANDSCAPE MAINTENANCE PERSONNEL SHALL MARK AND IDENTIFY THE IRRIGATION SYSTEM COMPONENTS. THIS IS IN NO WAY ALL INCLUSIVE OF ALL UTILITIES OR ALL OF THE IRRIGATION SYSTEM. NO LANDSCAPE SHALL BE WITHOUT WATERING SERVICES DURING THE GROWING SEASON. IF THE IRRIGATION SERVICE IS INTERRUPTED FOR MORE THAN THREE DAYS, THE CONTRACTOR SHALL BE LIABLE TO HAND/TRUCK WATER AND POSSIBLY ALL PLANT REPLACEMENT IN THE AFFECTED LANDSCAPE. LANDSCAPE RESTORATION SHALL BE CONSIDERED COMPLETE WHEN THE LANDSCAPE AND IRRIGATION SYSTEM IS RESTORED TO ITS ORIGINAL CONDITION AND APPROVED BY THE MAINTAINING PERSONNEL. THE OWNER'S LANDSCAPE MAINTENANCE PERSONNEL, PRIOR TO BURIAL, SHALL INSPECT ALL REPAIR WORK TO ANY IRRIGATION COMPONENTS, AND PROVIDE ACCEPTANCE OF SAID WORK. WORK SHALL BE PAID FOR AS BID ITEM 212 – LANDSCAPE RESTORATION, UNLESS DAMAGE WAS DUE TO CONTRACTOR NEGLIGENCE.
22. WORKERS SHALL BE ALERT DURING EXCAVATIONS FOR ANY VISUAL OR OLFACTORY SIGNS OF CONTAMINATION. IF SOIL AND/OR GROUNDWATER CONTAMINATION IS ENCOUNTERED, WORK WILL STOP IMMEDIATELY AND THE PROCEDURES OUTLINED IN CDOT SPECIFICATION 250 SHALL BE FOLLOWED.
23. THE CONTRACTOR SHALL NOT PARK OR STAGE WITHIN ANY ADJACENT PARKS, RECREATION AREAS, OR OPEN SPACE, NOR SHALL CONSTRUCTION ACTIVITIES INTERFERE WITH ANY RECREATIONAL ACTIVITIES HAPPENING NEARBY. ALL SIDEWALKS, TRAILS, PARKS, CROSSWALKS, SCHOOLS, AND MULTI-USE PATHS SHALL REMAIN OPEN AND ACCESSIBLE TO USERS AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE ENGINEER.
24. STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES SHALL NOT CAUSE, HAVE THE REASONABLE POTENTIAL TO CAUSE, OR MEASURABLY CONTRIBUTE TO AN EXCEEDANCE OF ANY WATER QUALITY STANDARD.
25. CONSTRUCTION SHALL BE PHASED IN A MANNER TO LIMIT EARTH DISTURBING ACTIVITIES (I.E. THE ENTIRE PROJECT SITE SHOULD NOT BE DISTURBED IF CONSTRUCTION WILL ONLY BE OCCURRING IN ONE PARTICULAR SECTION).
26. ALL DRILLING FLUID SHALL BE CONTAINED AND NOT ALLOWED TO DISCHARGE INTO WETLANDS OR WATERWAYS. THE CONTRACTOR SHALL MONITOR FOR SURFACE RELEASES OF DRILLING FLUID AND STOP DRILLING OPERATIONS IF A SUDDEN OR UNEXPECTED LOSS OF DRILLING FLUID RETURNS IS OBSERVED UNTIL THE LOCATION OF ANY SURFACE RELEASE CAN BE IDENTIFIED. DISCHARGES OF DRILLING FLUID TO WETLANDS OR WATERWAYS SHALL BE REPORTED TO THE PROJECT ENGINEER IMMEDIATELY.
27. WHEN THE CONTRACTOR'S OPERATIONS ENCOUNTER ARCHAEOLOGICAL OR PALEONTOLOGICAL DISCOVERIES, ALL AFFECTED OPERATIONS SHALL CEASE AND THE CONTRACTOR SHALL NOTIFY THE ENGINEER. SEE SUBSECTION 107.23 OF THE CDOT STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.
28. BEST MANAGEMENT PRACTICES WILL BE ADHERED TO PREVENT THE SPREAD OF NOXIOUS WEEDS.

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GENERAL NOTES

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Structure Numbers:
Subset Sheets: 1 of 2

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Sheet Number 3

ENVIRONMENTAL NOTES (CONTINUED)

29. IN THE UNLIKELY EVENT THAT ASBESTOS CONTAINING MATERIAL (ACM) IS ENCOUNTERED, INCLUDING WITH BURIED UTILITIES, WORKERS MUST FOLLOW CDOT SPECIFICATION 250.07 – REGULATED ASBESTOS CONTAMINATED SOILS (RACS) MANAGEMENT AND CDOT REGULATED ASBESTOS-CONTAMINATED SOIL MANAGEMENT STANDARD OPERATING PROCEDURE. ADDITIONALLY, DEPENDING ON THE TYPE OF ACM, THIS MATERIAL MUST ALSO BE ABATED IN ACORDANCE WITH EITHER SECTION 5.5 OF THE SOLID WASTE REGULATIONS, OR REGULATION NO. 8 OF THE AIR QUALITY CONTROL COMMISSION REGULATIONS. WORKERS ON THIS PROJECT MUST FOLLOW CDOT SPECIFICATION 250 – ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT.

FIBER OPTIC NOTES

30. PULL BOX LOCATIONS ARE APPROXIMATE AND ARE SHOWN FOR INFORMATION PURPOSES ONLY. REFER TO THE PROJECT SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

31. ALL CONDUIT SHALL BE SCHEDULE 80 HDPE. BORED CONDUIT MAY ONLY BE USED WITHIN THE LIMITS OF THE SUBSURFACE UTILITY PLANS, AND SHALL BE AT A MINIMUM DEPTH OF 48 INCHES. ALL TRENCHED CONDUIT SHALL BE AT A MINIMUM DEPTH OF 48 INCHES.

32. AWG #12 SOLID CORE TRACER WIRE AND MULE TAPE SHALL BE INSTALLED BY THE CONTRACTOR AS SPECIFIED IN THE CONTRACT DOCUMENTS.

33. IF CONCRETE SIDEWALK IS REMOVED TO FACILITATE THE PLACEMENT OF CONDUIT OR PULL BOXES, THE ENTIRE SECTION FROM SCORELINE TO SCORELINE SHALL BE REMOVED AND REPLACED. CONCRETE SIDEWALK SHALL BE REPLACED TO MATCH EXISTING SIDEWALK DEPTH AND ELEVATION. REMOVED CONCRETE SHALL BE DISPOSED OF AT A LOCATION APPROVED BY THE PROJECT ENGINEER.IF POTHOLING IN A CONCRETE SIDEWALK, THE CONTRACTOR MAY BE ALLOWED TO PATCH THE SIDEWALK; HOWEVER, THIS WOULD BE AT THE DISCRETION OF THE PROJECT ENGINEER. NO PULL BOXES MAY BE PLACED IN THE SIDEWALK UNLESS APPROVED BY THE CITY ENGINEER. IT IS ESTIMATED THAT 20 SY OF SIDEWALK REMOVAL AND REPLACEMENT WILL BE REQUIRED FOR THIS PROJECT.

34. ALL EXCAVATIONS LEFT UNATTENDED SHALL BE FENCED WITH ORANGE SAFETY FENCE AND METAL POSTS DRIVEN INTO THE GROUND ON A MAXIMUM OF 10' CENTERS.

35. ALL FIBER WORK SHALL BE PER THE MANUFACTURER'S INSTRUCTION AND RECOMMENDATIONS. THIS SHALL INCLUDE ALL SPLICING, TERMINATION, FIBER OPTIC CLOSURE MANAGEMENT AND ALL OTHER MATERIALS PROVIDED.

36. THE CONTRACTOR SHALL ENSURE THAT THE MINIMUM BEND RADII OF THE FIBER OPTIC CABLES, PER THE CABLE MANUFACTURER'S SPECIFICATIONS ARE NOT VIOLATED AT ANY POINT DURING TRANSPORT, STORAGE, AND INSTALLATION OF THE FIBER OPTIC CABLE.

37. A MINIMUM FIFTY (50) FEET OF PROPOSED FIBER OPTIC CABLE SHALL BE COILED AT ALL PULL BOXES, ONE HUNDRED (100) FEET AT ALL MANHOLES, AND TEN (10) FEET AT ALL GROUND MOUNTED CABINETS. AT SPLICE POINT LOCATIONS SHOWN ON THE PLANS (EXISTING, PROPOSED, OR FUTURE), ONE HUNDRED (100) FEET OF CABLE SHALL BE COILED INSIDE THE PULL BOX OR MANHOLE.

38. ALL FIBER OPTIC CABLES INSTALLED BY THE CONTRACTOR SHALL BE LABELED AS SPECIFIED IN THE CONTRACT DOCUMENTS AND AS DIRECTED BY THE ENGINEER.

39. AT LOCATIONS THROUGHOUT THIS PROJECT EXISTING LITTLETON 2" CONDUIT HAS BEEN STUBBED UP NEAR MCI PULL BOXES. CONTRACTOR TO IDENTIFY THESE CONDUITS AND SWEEP THEM INTO THE PROPOSED PULL BOXES AS IDENTIFIED IN THE PLANS. IF POSSIBLE, CONTRACTOR SHALL UTILIZE THE EXISTING CONDUIT THE ENTIRE DISTANCE INTO THE PULL BOX. IF NECESSARY, CONTRACTOR MAY COUPLE NEW CONDUIT TO THE END OF EXISTING CONDUIT TO REACH THE PROPOSED PULL BOX LOCATION. 10 LF OF 2-INCH ELECTRICAL CONDUIT (PLASTIC) HAS BEEN INCLUDED IN THE QUANTITIES FOR THIS WORK AT EACH STUBBED UP CONDUIT LOCATION. MCI CONDUIT AND PULL BOXES SHALL NOT BE DISTURBED DURING THIS WORK.

40. THE CONTRACTOR SHALL SPLICE THE FIBER OPTIC CABLE ONLY AT APPROVED SPLICE LOCATIONS AS SHOWN ON THE PLANS. ALL BACKBONE FIBER OPTIC CABLE SHALL RUN CONTINUOUSLY AND UNSPLICED FROM END TO END WITH NO INTERMEDIATE REEL-TO-REEL SPLICES, UNLESS APPROVED BY THE PROJECT ENGINEER. IF THE PROJECT ENGINEER APPROVES REEL-TO-REEL SPLICES, THE COST OF THE SPLICING WORK SHALL BE INCLUDED IN BID ITEM 614 – FIBER OPTIC CABLE (SINGLE MODE). MID-SHEATH SPLICES SHALL BE PERFORMED AT LATERAL LOCATIONS AND ONLY FIBERS BEING SPLICED SHALL BE CUT.

41. IT IS ESTIMATED THAT 304 FIBER OPTIC FUSION SPLICES WILL BE REQUIRED FOR THIS PROJECT, WHICH INCLUDES 24 ADDITIONAL UNALLOCATED SPLICES NOT SHOWN ON THE SPLICING DIAGRAMS FOR OTHER ADDITIONAL SPLICING WORK AS DIRECTED BY THE ENGINEER. THE COST OF SPLICING WORK SHALL BE INCLUDED IN BID ITEM 614 – FIBER OPTIC CABLE (SINGLE MODE)

42. FOR NETWORK RELATED EQUIPMENT INSTALLATIONS, THE CONTRACTOR SHALL:

    A. SECURE TERMINATION PANELS, ETHERNET SWITCHES AND ASSOCIATED ELECTRICAL WIRING AND EQUIPMENT CABLING IN A WORKMANLIKE MANNER THAT DOES NOT INTERFERE WITH THE EQUIPMENT AND FUTURE MAINTENANCE ON THE CABINET.

    B. INSTALL FIBER OPTIC CABLES IN A LOCATION WHICH WILL NOT DAMAGE CABLE OR PATCH CABLES AND NOT BE DISTURBED BY FUTURE ROUTINE MAINTENANCE. STRAIN RELIEF AND CABLE LABEL SHALL BE INSTALLED.

    C. PRE-CONNECTORIZED FIBER PATCH CABLE SHALL BE LABELED WITH CORRESPONDING TRANSMIT (TX), RECEIVE (RX) WAVELENGTHS, TERMINATION PANEL PORT ASSIGNMENT AND DATA DIRECTION FROM DEVICE LOCATIONS AS PART OF THE REQUIRED LABELING.

43. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TESTING HARDWARE EQUIPMENT FOR THIS PROJECT. THIS SHALL INCLUDE BUT NOT BE LIMITED TO AN OPTICAL POWER METER AND OPTICAL TIME DOMAIN REFLECTOMETER (OTDR) ALONG WITH ANY OTHER FIBER OPTIC EQUIPMENT THAT MAY BE REQUIRED.

44. THE CONTRACTOR SHALL BI-DIRECTIONALLY TEST ALL FIBERS AT EACH CABLE END. FIBER SPLICES SHALL BE FUSION SPLICED AND SHALL NOT ADD MORE THAN 0.1 dB LOSS TO ANY INDIVIDUAL FIBER RUN. FIBER CABLES SHALL BE FURNISHED WITH SLACK AS SPECIFIED ON THE PLANS. FIBER TESTING CANNOT COMMENCE UNTIL ALL FIBER WORK FOR THAT SEGMENT IS COMPLETE. FIBER TESTING WORK SHALL BE INCLUDED IN THE COST OF BID ITEM 614 – TEST FIBER OPTIC CABLE.

45. FIBER ACCEPTANCE TEST RESULTS SHALL BE PROVIDED IN PAPER AND ELECTRONIC FORMATS UPON COMPLETION. THE CONTRACTOR SHALL PROVIDE ANY SOFTWARE NECESSARY TO VIEW ELECTRONIC TEST RESULTS. THIS SHALL BE INCLUDED IN THE COST OF BID ITEM 614 – TEST FIBER OPTIC CABLE.

UTILITY NOTES

46. UTILITIES ARE DEPICTED ON THESE PLANS IN ACCORDANCE WITH THEIR ACHIEVED "QUALITY LEVEL" AS DEFINED IN THE AMERICAN SOCIETY OF CIVIL ENGINEERS DOCUMENTATION ASCE 38 "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." RELIANCE UPON THESE DATA FOR RISK MANAGEMENT PURPOSES DURING BIDDING DOES NOT RELIEVE THE EXCAVATOR OR UTILITY OWNER FROM FOLLOWING ALL APPLICABLE UTILITY DAMAGE PREVENTION STATUTES, POLICIES, AND/OR PROCEDURES DURING EXCAVATION.

47. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SUBSECTION 105.11 OF THE STANDARD SPECIFICATIONS CONCERNING UTILITIES AND THE UTILITY SPECIFICATION FOR THIS PROJECT. THE PHYSICAL FEATURES WITHIN THE LIMITS OF THE PROJECT HAVE BEEN SHOWN BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL FEATURES, INCLUDING ALL UNDERGROUND AND ABOVE GROUND UTILITIES, PRIOR TO BEGINNING ANY WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FILED LOCATING AND VERIFYING ALL UTILITY INFORMATION. FOR UTILITY CONSTRUCTION COORDINATION, THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER FOR COLORADO AT 811.

48. POTHOLING WILL BE REQUIRED ON THIS PROJECT AND WILL BE PAID FOR SEPARATELY AS ITEM 203-01597 POTHOLING. IT IS ESTIMATED THAT 100 HOURS OF POTHOLING WILL BE REQUIRED FOR THIS PROJECT. THE CONTRACTOR SHALL LOCATE AND POTHOLE ALL POTENTIAL CONFLICTS WITH EXISTING BURIED UTILITY FACILITIES WITHIN THE PROPOSED CONSTRUCTION LIMITS, AS SHOWN BY FIELD LOCATION MARKINGS. IF A CONFLICT EXISTS, MODIFY PROPOSED CONSTRUCTION PLANS TO AVOID ALL EXISTING BURIED UTILITY FACILITIES. POTHOLING IN CONCRETE SHALL BE AT THE DIRECTION OF THE PROJECT ENGINEER.

49. THE CONTRACTOR SHALL COMPLY WITH ARTICLE 1.5 OF TITLE 9, CRS ("EXCAVATION REQUIREMENTS") WHEN EXCAVATING OR GRADING IS PLANNED IN THE AREA OF UNDERGROUND UTILITY FACILITIES. THE CONTRACTOR SHALL NOTIFY ALL AFFECTED UTILITIES AT LEAST TWO (2) BUSINESS DAYS, NOT INCLUDING THE ACTUAL DAY OF NOTICE, PRIOR TO COMMENCING SUCH OPERATIONS. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) AT PHONE NO. 811 OR 1-800-922-1987 TO HAVE LOCATIONS OF UNCC REGISTERED LINES MARKED BY MEMBER COMPANIES. ALL OTHER UNDERGROUND FACILITIES SHALL BE LOCATED BY CONTACTING THE RESPECTIVE OWNER. UTILITY SERVICE LATERALS SHALL BE LOCATED PRIOR TO BEGINNING EXCAVATION OR GRADING.

50. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND COORDINATING WITH THE APPROPRIATE UTILITY REPRESENTATIVES TO BE ONSITE DURING POTHOLING. THE CONTRACTOR SHALL REFER TO THE UTILITY PLANS AND/OR SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

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Print Date: 2/10/2025		Sheet Revisions			CITY OF LITTLETON 2255 WEST BERRY AVENUE LITTLETON, CO 80120 PHONE: 303-795-3700	As Constructed	GENERAL NOTES	Project No./Code
File Name: 200420_Littleton Blvd-GEN NOTES.dgn		Date:	Comments	Init.		No Revisions:		21-37
Horiz. Scale: N/A	Vert. Scale: N/A					Revised:	Designer: B. WALDMAN / Detailer: D. MURIE / Sheet Subset: G-NOTES	Structure Numbers / Subset Sheets: 2 of 2
consor 1675 LARIMER ST, STE 400 DENVER, COLORADO 80202 PH: 303-339-0440 FAX: 303-325-7743						Void:		Sheet Number 4

INDEX			CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ITS PLAN		GENERAL		PROJECT TOTALS	
BOOK	PAGE	SHEET				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.
			202-00055	REMOVAL OF FIBER OPTIC CABLE	LF	5,390				5,390	
			202-00200	REMOVAL OF SIDEWALK	SY			20		20	
			203-01597	POTHOLING	HOUR			100		100	
			208-00002	EROSION LOG TYPE 1 (12 INCH)	LF			600		600	
			208-00035	AGGREGATE BAG	LF			120		120	
			208-00045	CONCRETE WASHOUT STRUCTURE	EACH			1		1	
			208-00051	STORM DRAIN INLET PROTECTION (TYPE I)	LF			30		30	
			208-00052	STORM DRAIN INLET PROTECTION (TYPE II)	LF			30		30	
			208-00103	REMOVAL AND DISPOSAL OF SEDIMENT (LABOR)	HOUR			20		20	
			208-00105	REMOVAL AND DISPOSAL OF SEDIMENT (EQUIPMENT)	HOUR			20		20	
			208-00106	SWEEPING (SEDIMENT REMOVAL)	HOUR			20		20	
			212-00032	SOIL CONDITIONING	ACRE			0.1		0.1	
			212-00700	ORGANIC FERTILIZER	LB			30		30	
			212-00701	COMPOST (MECHANICALLY APPLIED)	CY			7		7	
			212-00704	MYCORRHIZAE	LB			6		6	
			212-00708	SEEDING (NATIVE) BROADCAST	ACRE			0.1		0.1	
			212-01200	LANDSCAPE RESTORATION	LS			1		1	
			213-00003	MULCHING (WEED FREE)	ACRE			0.1		0.1	
			213-00061	MULCH TACKIFIER	LB			10		10	
			216-00101	SOIL RETENTION BLANKET (STRAW-COCONUT) (PHOTODEGRADABLE CLASS 1)	SY			100		100	
			607-11525	FENCE (PLASTIC)	LF			100		100	
			608-00006	CONCRETE SIDEWALK (6 INCH)	SY			20		20	
			612-00260	LOCATION MARKER (FIBER OPTIC) (DOME)	EACH	18				18	
			613-00206	2 INCH ELECTRICAL CONDUIT (BORED)	LF	16,860				16,860	
			613-01200	2 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	340				340	
			613-07023	PULL BOX (24"X36"X24")	EACH	13				13	
			613-07040	PULL BOX (30"X48"X24")	EACH	5				5	
			613-07195	PROOF CONDUIT	LF	7,380				7,380	
			614-87015	BUFFER TUBE FAN OUT KIT	EACH	6				6	
			614-87024	FIBER OPTIC TERMINATION PANEL (24 FIBER)	EACH	2				2	
			614-87144	FIBER OPTIC TERMINATION PANEL (144 FIBER)	EACH	1				1	
			614-87350	TEST FIBER OPTIC CABLE	LS			1		1	
			614-87496	FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS)	LF	2270				2,270	

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Sheet Revisions

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As Constructed
No Revisions:
Revised:
Void:

SUMMARY OF APPROXIMATE QUANTITIES

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: SAQ
Structure Numbers:
Subset Sheets: 1 of 2

Project No./Code: 21-37

Sheet Number 5

INDEX			CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ITS PLAN		GENERAL		PROJECT TOTALS	
BOOK	PAGE	SHEET				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.
			614	FIBER OPTIC TERMINATION PANEL (48 FIBER)	EACH	2				2	
			614	ETHERNET SWITCH (INSTALL ONLY)	EACH	5				5	
			614	12 PORT PRE-TERMINATED PATCH PANEL AND PIGTAIL	EACH	5				5	
			614	SPLICE ENCLOSURE	EACH	7				7	
			614	INDOOR/OUTDOOR FIBER OPTIC CABLE (SINGLE MODE) (24 STRANDS)	LF	4,595				4,595	
			614	INDOOR/OUTDOOR FIBER OPTIC CABLE (SINGLE MODE) (144 STRANDS)	LF	665				665	
			614	FIBER OPTIC CABLE (SINGLE MODE) (432 STRANDS)	LF	10,380				10,380	
			626-00000	MOBILIZATION	LS			1		1	
			630-00000	FLAGGING	HOUR			20		20	
			630-00007	TRAFFIC CONTROL INSPECTION	DAY			44		44	
			630-00012	TRAFFIC CONTROL MANAGEMENT	DAY			110		110	
			630-80341	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	EACH			56		56	
			630-80342	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	EACH			16		16	
			630-80350	VERTICAL PANEL	EACH			30		30	
			630-80358	ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL (C TYPE)	EACH			2		2	
			630-80363	DRUM CHANNELIZING DEVICE (WITH LIGHT) (FLASHING)	EACH			50		50	
			630-80380	TRAFFIC CONE	EACH			150		150	
			630-85020	MOBILE ATTENUATOR	EACH			2		2	
				FORCE ACCOUNT							
				==========							
			700-70010	F/A MINOR CONTRACT REVISIONS	FA			1		1	
			700-70016	F/A FUEL COST ADJUSTMENT	FA			1		1	
			700-70380	F/A EROSION CONTROL	FA			1		1	
			700-70589	F/A ENVIRONMENTAL HEALTH & SAFETY MANAGEMENT	FA			1		1	

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Sheet Revisions		
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SUMMARY OF APPROXIMATE QUANTITIES

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: SAQ
Structure Numbers
Subset Sheets: 2 of 2

Project No./Code
21-37

Sheet Number 6

1. SITE DESCRIPTION

The Contractor shall comply with all CDOT contractual requirements. The SWMP Administrator for Construction shall update to reflect current project site conditions.

A. PROJECT SITE LOCATION: Work is being performed on Rio Grande Street and Court Place between Crestline Ave and Littleton Blvd, along Littleton Blvd between Court Place and Broadway, on Datura Street between Littleton Boulevard and Lake Avenue, and on County Line Road between Santa Fe Drive and Southpark Circle.

B. PROJECT SITE DESCRIPTION: This project will install fiber optic cable from the Littleton Center to various traffic signals and City facilities on or near Littleton Boulevard and County Line Road. Much of the proposed fiber will be installed through existing conduits, but new conduit will be installed in some locations using open trenching and directional boring. The project will also install pull boxes along the fiber optic alignment, and communications equipment in traffic signal cabinets and facilities.

C. PROPOSED SEQUENCING FOR MAJOR CONSTRUCTION ACTIVITIES: Conduit installation, pull box installation, communications equipment installation, fiber optic cable pulling and splicing.

D. ACRES OF DISTURBANCE:
1. Total area of construction site (LOC): N/A
2. Total area of proposed disturbance (LDA): 0.5 acres
3. Total area of seeding: 0.1 acres

E. EXISTING SOIL DATA: Soils within the limits of the project are approximately 26% sandy loam with low erodibility, 7% Bresser loam with moderate erodibility, and 66% Nunn loam with high erodibility. Data Source(s): USDA Web Soil Survey

F. EXISTING VEGETATION, INCLUDING PERCENT OF VEGETATIVE COVER: During design, the SWMP Administrator for Design in consultation with the Engineer will determine if the SWMP Administrator for Design or the SWMP Administrator for Construction will conduct the Vegetation Transects. If the site is disturbed, an Adequate Reference Site(s) may be utilized, refer to the permit.

Pre-Construction Date of survey: _____ Percent Existing Vegetative Cover: _____
Description of existing vegetation:
Method for determining percent vegetative cover:

Include a map or table showing transect locations, photos documenting pre-Construction vegetative cover, and methodology used to determine existing vegetative cover to SWMP tab 17:

Post-Construction Date of survey: _____ Percent Vegetative Cover: _____
Description of vegetation:
The method used to determine pre-construction percent cover shall be used to determine post construction percent cover.

Include map or table showing transect locations, photos documenting post-Construction vegetative cover, and methodology used to determine existing vegetative cover to SWMP tab 17:

2. STORMWATER MANAGEMENT CONTROLS FOR FIRST CONSTRUCTION ACTIVITIES

THE CONTRACTOR SHALL PERFORM THE FOLLOWING:

A. POTENTIAL POLLUTANT SOURCES
1. Refer to Potential Pollutant Sources in SWMP Section 4A. Evaluate, identify and describe all potential sources of pollutants at the site in accordance with subsection 107.25 and place any Control Measures required to contain potential pollutants.

B. OFFSITE DRAINAGE (RUN ON WATER)
1. Place Control Measures to address run-on water in accordance with subsection 208.03.

C. CONSTRUCTION DEWATERING:
1. Obtain a CDPS Dewatering Permit from CDPHE if conditions of their Low Risk Guidance for Discharges of Uncontaminated Groundwater to Land are not met; see subsections 107.02 and 107.25.

   Refer to CDPHE Low Risk Discharge Guidance Document of Uncontaminated Groundwater to Land. https://www.colorado.gov/pacific/sites/default/files/WQ%20LOW%20RISK%20GW.pdf

D. VEHICLE TRACKING CONTROL
1. Control Measures shall be implemented in accordance with subsection 208.04.

E. PERIMETER CONTROL
1. Perimeter control shall be established as the first item on the SWMP to prevent the potential for pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters.
2. Perimeter control may consist of berms, silt fence, erosion logs, existing landforms, or other Control Measures as approved.

3. QUALIFIED STORMWATER MANAGERS:

A. SWMP ADMINISTRATOR FOR DESIGN: CDOT Certified Individual responsible for developing SWMP Plan Sheets and SWMP Site Maps during the design phase.

Name/Title	Contact Information	Certification #
Elliott Heckler / Engineer	Phone: (303) 339-0440 Email: elliott.heckler@consoreng.com	ADC4F7E7

B. SWMP ADMINISTRATOR FOR CONSTRUCTION: (As defined in Subsection 208) The Contractor shall designate a SWMP Administrator for Construction. The SWMP Administrator for Construction shall become the operator for the SWMP and assume responsibility for all design changes to the SWMP implementation and maintenance in accordance to 208.03, the SWMP shall remain the property of CDOT. The SWMP Administrator for Construction shall be responsible for implementing, maintaining and revising SWMP, including the title and contact information. The activities and responsibilities of the SWMP Administrator for Construction shall address all aspects of the project's SWMP. (Update the information below for each new SWMP Administrator for Construction) (Copy of TECS Certification must also be included in the SWMP.)

Name/Title	Contact Information (phone & email)	TECS Certification #	Start Date	Engineer Approval

C. PERMANENT STABILIZATION SUBJECT MATTER EXPERT: This qualified individual will be either a Regional Environmental Staff member, or an Independent Contractor Controller (Independent Assurance Program). This expert is a project team leader responsible for ensuring project adherence to requirements of the 207 and 212 Project Special Provisions as follows, and will be available for questions regarding permanent stabilization requirements.

1. Review the Topsoil Management Plan and the Permanent Stabilization Site Maps.
2. Attend the Environmental Pre-construction Conference.
3. Coordinate the Site Pre-vegetation Conference.
4. Review and recommend approval of products.
5. Review and recommend approval of the Quantities Verification Prerequisite.
6. Attend the Substantial Landscape Completion Walkthrough.
7. Attend the Final Landscape Completion Walkthrough.

Name/Title	Contact Information

4. DURING CONSTRUCTION

The SWMP should be considered a "living document" that is continuously reviewed and modified. During construction, the following items shall be added, updated, or amended as needed by the Contractor in accordance with Section 208.

A. MATERIALS HANDLING AND SPILL PREVENTION: prior to construction commencing the Contractor shall submit a Spill Prevention, Control and Countermeasure Plan, see subsection 208.06. Materials handling shall be in accordance with subsection 208.06.

B. OTHER CDPS PERMITS: List applicable CDPS permits associated with the permitted site and activities.

C. STOCKPILE MANAGEMENT: shall be done in accordance with subsections 107.25 and 208.07

D. CONCRETE WASHOUT: Concrete wash out water or waste from field laboratories and paving equipment shall be contained in accordance with subsection 208.05.

E. SAW CUTTING: shall be done in accordance with subsections 107.25, 208.04, 208.05

F. STREET SWEEPING: shall be done in accordance with subsection 208.04

5. CONTROL MEASURE MAINTENANCE

A. Maintenance shall be in accordance with subsection 208.04 (f).

6. INTERIM AND PERMANENT STABILIZATION

The Contractor shall comply with all interim stabilization and permanent stabilization requirements in accordance with subsection 208.04(e).

A. SEEDING PLAN

The following seed mix(es) and rates are for broadcast seeding method as shown on the Permanent Stabilization Site Maps shall be used:

COMMON NAME	BOTANICAL NAME	LBS. PLS PER ACRE
Ephraim Cresled Wheatgrass	*Agropyron cristatum*	6.0
Sheep Fescur	*Festuca ovina*	5.0
Perennial Rye	*Lolium perenne*	4.0
Chewings Fescue	*Festuca rubra susp. commutate*	3.0
Milkweed	*Ascleplas spp.*	3.0
TOTAL		21.0

B. SEEDING APPLICATION: The following seeding methods shall be used for all areas which are not surfaced and as shown on the Permanent Stabilization Site Maps. Soil compaction shall be minimized for areas where permanent stabilization will be achieved through vegetative cover.

SEEDING METHOD (subsection 212.05)	ACRE
Seeding (Native) Broadcast, CDOT Pay Item 212-00708	0.1
TOTAL	0.1

The Contractor shall provide the location of where seed is stored and access to stored seed locations to the Engineer. Seed stored by the Contractor for longer than 30 days will be rejected.

C. MULCHING APPLICATION: Apply a minimum of 2 tons of certified weed free hay or 2 1/2 tons of certified weed free straw per acre and in accordance with Section 213, and mechanically crimp it into the soil in combination with an organic mulch tackifier.

1. Prior to winter shutdown or the summer seeding window closure: Uncompleted slopes shall be mulched with 2 tons of mulching (weed free) per acre, mechanically crimped into the topsoil in combination with an organic mulch tackifier in accordance with subsections 208 and 213.

D. SPECIAL REQUIREMENTS:

1. Soil amendments, seedbed preparation, and permanent stabilization mulching shall be accomplished within four working days of placing the topsoil on the de-compacted civil subgrades. If placed topsoil is not mulched with permanent stabilization mulch within four working days, the Contractor shall complete interim stabilization methods in accordance with subsection 208.04(e) at no additional cost to the Department.
2. Permanent stabilization mulching shall be accomplished within 24 hours of hydraulic application of native seed.
3. The Contractor shall submit a proposed Permanent Stabilization Phasing Plan to the Engineer for approval showing how the SWMP Permanent Stabilization Plans will be implemented to minimize damage to seeded areas.

E. SOIL AMENDMENT REQUIREMENTS: Minimum amendment material requirements for all disturbances to receive seeding (native).

0.1 Total Acres of Seeding (Native) Broadcast

Seeding (Native) Broadcast Pay Item	Pay Item	Description	Amount/Acre	Units	Total For This Method
	212-00700	Organic Fertilizer	300	Pounds	30
	212-00701	Compost (Mechanically Applied)	65	CY	7
	212-00704	Mycorrhizae	60	Pounds	6

F. SOIL RETENTION COVERING: On slopes and ditches requiring a blanket or turf reinforcement mat (trm), the blanket/trm shall be placed in lieu of mulch and mulch tackifier and placed after seeding (native). See SWMP Site Map for blanket/trm locations.

G. PERMANENT STABILIZATION APPLICATION UNDER STRUCTURES: Under structures shade patterns should be considered and the use of Median Cover Material (Stone) or other stabilized options with an approved Project Special Provision should be used. See SWMP Site Map for locations.

H. RESEEDING OPERATIONS/CORRECTIVE STABILIZATION:

Prior to partial acceptance.

1. All seeded areas shall be reviewed by the SWMP Administrator for Construction and or Engineer for bare soils caused by surface or wind erosion. Bare areas caused by surface or gully erosion, blown away mulch, etc. shall be re-graded, seeded, and have the designated mulching applied as necessary, at no additional cost to the project.

7. PRIOR TO PROJECT FINAL ACCEPTANCE

A. When directed by the Engineer, removal and disposal of temporary control measures shall be included in the cost of work.
B. At the end of the project, all ditch checks shall consist of either temporary erosion logs (or equivalent) or permanent riprap.
C. Refer to Specification 208.10 for Items to be completed prior to requesting partial acceptance of water quality work.

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Sheet Revisions

Date:	Comments	Init.

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CITY OF LITTLETON
2255 WEST BERRY AVENUE
LITTLETON, CO 80120
PHONE: 303-795-3700

As Constructed
No Revisions:
Revised:
Void:

STORMWATER MANAGEMENT PLAN

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: SWMP
Structure Numbers:
Subset Sheets: 2 of 6

Project No./Code: 21-37

Sheet Number 8

8. NARRATIVES:

Control Measure Matrices During Construction:

1. Control measure narratives have been included for the CDOT Standard Specifications and Standard Plan M-208 and M-216 along with any non-standard control measures approved during the design process. If a Non-Standard Control Measure not included in the SWMP is proposed and approved by the Engineer the SWMP Administrator for Construction shall do the following: Place an "X" in the column for non-standard and complete a Non-Standard Control Measure Specification and Narrative covering the what, when, where and why the control measure is being used shall be add to the SWMP. The appropriate "X" shall also be added to the implementation phase(s).
2. The SWMP Administrator for Construction shall place an "X" in the column In Use On Site when the control measure has been installed.
3. A "B" in the Initial Activities Column indicates that the control measure shall be installed **before** construction activity starts. Locations and quantities will be discussed during the Environmental Pre-Construction Conference with the Regional Water Pollution Control Manager.

STRUCTURAL Control Measures that may be potentially used on the project for erosion and sediment control; practices may include, but are not limited to:

APPLICATION, CONTROL MEASURE	NARRATIVE	M- 208 STANDARD or "X" for NON-STANDARD	IN USE ON SITE	CONTROL MEASURE IMPLEMENTATION PHASE		
				INITIAL ACTIVITIES	INTERIM ACTIVITIES	PERMANENT STABILIZATION
PROTECTION OF EXISTING WETLANDS *Fence (plastic) and erosion logs*	Fence (plastic) shall be placed in combination with erosion logs to prevent encroachment of construction traffic and sediment into state waters prior to start of construction disturbances. Fence (plastic) shall be placed adjacent to the wetlands; erosion logs shall be placed between the plastic fence and disturbance area. Logs shall be placed to direct flows away from or filter water running into wetlands from disturbance areas.					
PROTECTION OF EXISTING TREES/LANDSCAPING *Fence (plastic)*	Fence (plastic) shall be used in areas indicated in the plans to prevent encroachment of construction traffic and sediment for the protection of mature trees and/or existing landscaping prior to start of construction disturbances.			**B**	**X**	
CHECK DAM/DITCH CHECK *Erosion log, silt berm, silt dike, rock check dam*	Placed in ditches immediately upon completion of ditch grading to reduce velocity of runoff in ditch. For existing ditches, place prior to start of construction disturbances.	M-208				
Storm Drain Inlet Protection In Paved Roadways (Type 1, 2 and 3 as shown on M-208-1, sheet 5 of 11)	Manufactured storm drain inlet protection placed prior to construction disturbances as detailed in M-208-1, to protect existing inlets or immediately upon completion of new inlets to prevent sediment from entering the inlet throughout construction.	M-208		**B**	**X**	
Storm Drain Inlet Protection In Native Seed Areas (M-604 Standard Inlets Type C and D)	Erosion logs or aggregate bags placed around inlet grate to prevent sediment from entering inlet. Place prior to construction disturbances to protect existing inlets or immediately upon completion of new inlets.	M-208				
CULVERT INLET/OUTLET PROTECTION *Erosion logs, aggregate bags*	Placed at mouth of culvert inlets and over top of culvert at inlet and outlet where disturbance may be occurring adjacent to pipe to prevent sediment laden water from entering pipe or drainage. Place prior to start of construction disturbances.	M-208				
TYPE C, TYPE D AND TYPE 13 PROTECTION *Erosion logs, aggregate bags, erosion bales*	Placed around inlet grate or slope and ditch paving to prevent sediment from entering inlet. Place prior to start of construction disturbances.	M-208				
STOCKPILE PROTECTION *Temporary berm, erosion logs, aggregate bags**	Placed within specified distance, in accordance with subsection 208.06, from toe to contain sediment around stockpile. *Aggregate bags are easily moved and replaced for access during the work day. Place prior to start of stockpile, increase control as stockpile increases size.	M-208			**X**	
TOE OF FILL PROTECTION *Erosion logs, temporary berm, silt fence, topsoil windrow**	Place prior to slope/embankment work to capture sediment and protect and delinecte undisturbed areas. *Can be used to stockpile topsoil for salvage.	M-208				
PERIMETER CONTROL *Erosion logs, silt fence, temporary berm, topsoil windrow**	Placed prior to construction commencing to address potential run-on water from off site, and to divert around disturbed area. *Can be used to stockpile topsoil for salvage.	M-208		**B**	**X**	
SEDIMENT CONTROL/ *SLOPE CONTROL* *Silt fence, erosion logs*	Placed on the contour of a slope to contain and slow down construction runoff. Place prior to start of construction disturbances.	M-208		**B**	**X**	
TEMPORARY SEDIMENT TRAP	Used to capture sediment laden runoff from disturbed areas < 5 acres during construction. Place prior to start of construction disturbances. Outlets that withdraw water from or near the surface may be installed when discharging from basins and impoundments.	M-208				
EMBANKMENT PROTECTION OR TEMPORARY SLOPE DRAIN	Placed as a conduit or chute to drain runoff down slope and to prevent erosion of slope.	M-208				
OUTLET PROTECTION *Riprap, or approved other*	Material placed as energy dissipater to prevent erosion at outlet structure.	M-601-12				
CONCRETE WASHOUT *In-ground or fabricated*	Construction control, used for waste management of concrete and concrete equipment cleaning. Place prior to start of concrete activities.	M-208		**B**	**X**	
VEHICLE TRACKING PAD	Source control, placed to prevent tracking of sediment from disturbed area to offsite surface. Place prior to start of construction disturbances.	M-208				

Engineered SEDIMENT BASIN	Constructed early in project, prior to storm sewer/ditches and in accordance with 208.05(p) to capture storm flow. Outlet structure and/or outfall shall be modified for temporary sediment control using an approved non-standard detail. Outlets that withdraw water from or near the surface shall be installed when discharging from basins and impoundments, unless infeasible					
DEWATERING (Contractor is responsible for obtaining a permit from Colorado Department of Health and Environment.)	Shall be done in such a manner to prevent potential pollutants from entering state waters.					
TEMPORARY STREAM CROSSING	Constructed over stream or drainage to prevent discharge of pollutants from construction equipment into water.					
CLEAN WATER DIVERSION	Placed to divert clean surface or ground water around disturbance area to prevent it from mixing with construction runoff.					
OTHER						

NON-STRUCTURAL Control Measures that may be potentially used on the project for erosion and sediment control; practices may include, but are not limited to:
Erosion control devices are used to limit the amount of soil loss on site. Sediment control devices are designed to capture sediment on the project site.

APPLICATION, CONTROL MEASURE	NARRATIVE	M-STANDARD or "For NON-STANDARD	IN USE ON SITE	CONTROL MEASURE IMPLEMENTATION PHASE		
				INITIAL ACTIVITY	INTERIM ACTIVITIES	PERMANENT STABILIZATION
VEGETATIVE BUFFER STRIP Fence (plastic)	Finishing component for filtering sediment-laden runoff from disturbance area. Area within CDOT ROW or temporary easement to be identified on SWMP prior to construction starting.			X	X	X
GRADING APPLICATIONS (LANDFORM)	Existing or created landforms may be used as a control measure if they prevent sediment from entering or leaving the disturbance area. If a landform directs flow of water to a concentrated outfall point, the outfall point shall be protected to prevent erosion. Area to be identified on SWMP prior to construction starting.	M-208				
TOPSOIL MANAGEMENT STOCKPILE/SALVAGE Windrow or stockpile	Prior to any site disturbance work commencing, existing topsoil shall be scraped to a depth four inches or as specified, and placed in stockpiles or windrows. Upon completion of final grading, topsoil shall be evenly distributed over embankment to a depth of four inches or as specified.	M-208				
SURFACE ROUGHENING / GRADING TECHNIQUES	Temporary stabilization of disturbance and to minimize wind and erosion.					
SEEDING (TEMPORARY)	Temporary stabilization used for over wintering of disturbance or used to control erosion for areas scheduled for future construction.					
BONDED FIBER MATRIX or MULCHING (HYDRAULIC)	Not to be used in areas of concentrated flows, i.e. ditch lines. To be for either Interim or Permanent Stabilization placed as a surface cover for erosion control. May be used as surface cover when work is temporarily halted and as approved by the Engineer for stockpiles.					
Straw or Hay MULCH/MULCH TACKIFIER	Interim or Permanent Stabilization placed as a surface cover for erosion control and or seeding establishment. To be installed as Interim Stabilization as a surface cover when work is temporarily halted and as approved by the Engineer				X	X
SPRAY-ON MULCH BLANKET (Not to be used in areas of concentrated flows, i.e. ditch lines.)	Interim or Permanent Stabilization placed as a surface cover for erosion control and or seeding establishment. To be installed as temporary surface cover when work is temporarily halted and as approved by the Engineer					
SEEDING PERMANENT (NATIVE)	Permanent Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.					X
SOIL RETENTION BLANKET (SRB)	Permanent Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.	M-216			X	X
TURF REINFORCEMENT MAT (TRM)	Permanent Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas. Placed in channels or on slopes for erosion control, channel liner and seeding establishment.	M-216				
Sweeping	Source control, used to remove sediment tracked onto paved surfaces and to prevent sediment from entering drainage system. Sweep daily and at the end of the construction shift as needed. Kick brooms shall not be permitted.			X	X	X
OTHER						

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Sheet Revisions

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STORMWATER MANAGEMENT PLAN

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: SWMP
Structure Numbers
Subset Sheets: 4 of 6

Project No./Code
21-37

Sheet Number 10

9. TABULATION OF STORMWATER QUANTITIES

A. Control Measure sediment removal and disposal shall be paid for as: 208 Removal and Disposal of Sediment (Equipment) and 208 Removal and Disposal of Sediment (Labor). All other control measure maintenance shall be included in the cost of the control measure.

Pay Item	Description	Pay Unit	Initial Const	Interim Const.	Permanent Stabilization	*Total Quantity
208-00002	Erosion Log Type 1 (12 inch)	LF	600			600
208-00035	Aggregate Bag	LF	120			120
208-00045	Concrete Washout Structure	Each		1		1
208-00051	Storm Drain Inlet Protection (Type I)	LF	30			30
208-00052	Storm Drain Inlet Protection (Type II)	LF	30			30
208-00103	Removal and Disposal of Sediment (Labor)	Hour		20		20
208-00105	Removal and Disposal of Sediment (Equipment)	Hour		20		20
208-00106	Sweeping (Sediment Removal)	Hour		20		20
212-00032	Soil Conditioning	Acre			0.1	0.1
212-00700	Organic Fertilizer	Pounds			30	30
212-00701	Compost (Mechanically Applied)	CY			7	7
212-00704	Mycorrhizae	Pounds			6	6
212-00708	Seeding (Native) Broadcast	Acre			0.1	0.1
212-01200	Landscape Restoration	LS			1	1
213-00003	Mulching (Weed Free)	Acre			0.1	0.1
213-00061	Mulch Tackifier	LB			10	10
216-00101	Soil Retention Blanket (Straw/Coconut) (Photodegradable Class 1)	SY		100		100
607-11525	Fence (Plastic)	LF	100			100
700-70380	F/A Erosion Control	FA		1		1

*It is anticipated that additional control measures and control measure quantities not shown on the SWMP Site Maps shall be required on the project for unforeseen conditions and replacement of items that are beyond their useful service life, see subsections 208.03 and 208.04. **Quantities for all control measures shown above are estimated, and have been increased for unforeseen conditions and normal control measure life expectancy.** Quantities shall be adjusted according to the conditions encountered in the field as directed and approved by the Engineer. Payment shall be for the actual work completed and material used.
** F/A refers to CDOT's Force Account Pay Items.

10. BIOLOGICAL IMPACTS and DEWATERING

A. ENVIRONMENTAL IMPACTS:
1. Wetland Impacts: NO
2. Stream Impacts: NO
3. Threatened and Endangered Species: N/A

B. DEWATERING: (Not covered under the *CDPHE* guidance document *Low Risk Discharge Guidance Discharges of Uncontaminated Groundwater to Land*):
https://www.colorado.gov/pacific/sites/default/files/WQ%20LOW%20RISK%20GW.pdf
1. Dewatering: Refer to other environmental permits in accordance with subsection 107.02 and the permits contained in Tab 16 of the SWMP.
2. If groundwater does not meet water quality standards for receiving water a separate CDPS Dewatering Permit shall be obtained by the Contractor from CDPHE in accordance with subsections 107.02 and 107.25.

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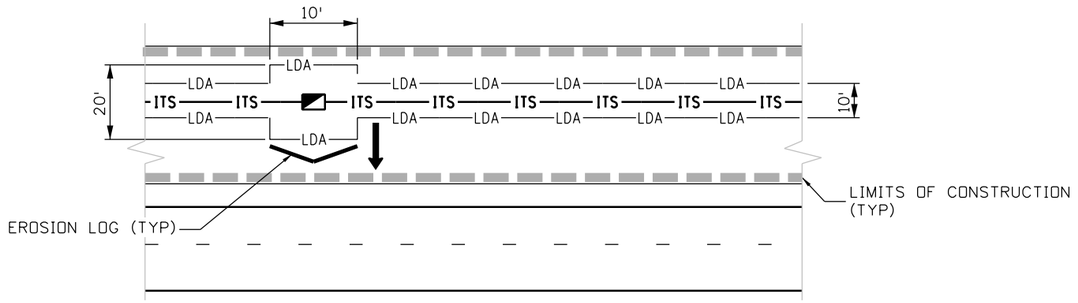
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STORMWATER MANAGEMENT PLAN

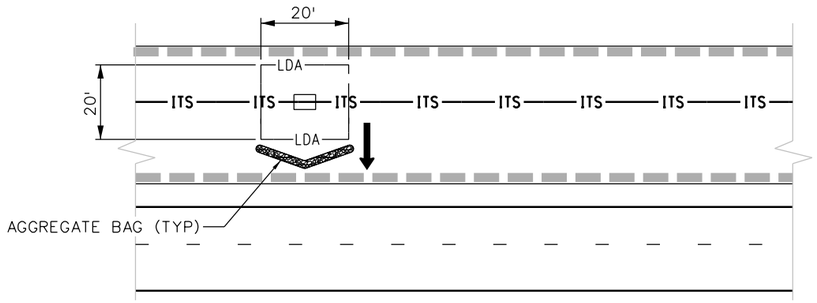
Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: SWMP
Structure Numbers
Subset Sheets: 5 of 6

Project No./Code: 21-37

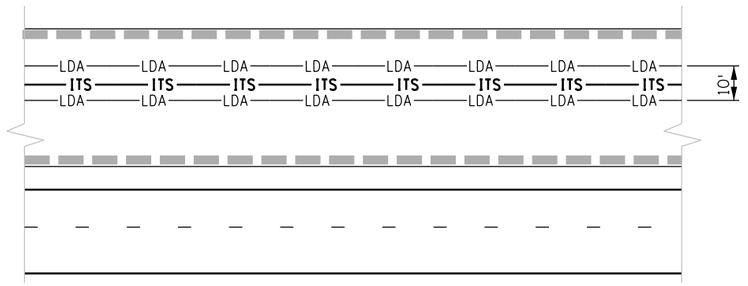
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TYPICAL PULL BOX EROSION CONTROL



TYPICAL BORE PIT EROSION CONTROL



TYPICAL CONDUIT TRENCH EROSION CONTROL

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STORMWATER MANAGEMENT PLAN TYPICALS

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: SWMP
Structure Numbers
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Project No./Code
21-37

Sheet Number 12

TABULATION OF TRAFFIC ENGINEERING ITEMS

ITEM NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY
630-00000	Flagging	HOUR	20
630-00007	Traffic Control Inspection	DAY	44
630-00012	Traffic Control Management	DAY	110
630-80341	Construction Traffic Sign (Panel Size A)	EACH	56
630-80342	Construction Traffic Sign (Panel Size B)	EACH	16
630-80350	Vertical Panel	EACH	30
630-80358	Advance Warning Flashing or Sequencing Arrow Panel (C Type)	EACH	2
630-80363	Drum Channelizing Device (With Light) (Flashing)	EACH	50
630-80380	Traffic Cone	EACH	150
630-85020	Mobile Attenuator	EACH	2

NOTES:

1. QUANTITIES LISTED IN THE TABULATION OF TEMPORARY TRAFFIC CONTROL ITEMS ARE SUMMARIZED BASED ON CONSTRUCTION WORK USING TYPICAL TRAFFIC CONTROLS SHOWN IN CASE NUMBERS 18 AND 19 OF THE CDOT M&S STANDARD PLAN S-630-1.

2. LITTLETON SHALL PAY FOR UP TO TWO (2) TEMPORARY TRAFFIC CONTROL LOCATIONS CONCURRENTLY AS SHOWN IN THE TABULATION OF TRAFFIC CONTROL ITEMS LISTED ABOVE. THE CONTRACTOR MAY CHOOSE TO WORK OR MAINTAIN DEVICES AT ADDITIONAL LOCATIONS AT THE CONTRACTOR'S EXPENSE.

3. ONLY ONE DAY OF TCI/TCM SHALL BE PAID ON ANY SINGLE DAY AND THEREFORE INCLUDES WORK AT ALL SITES. MULTIPLE TCI/TCM DAYS SHALL NOT BE PAID ON ANY SINGLE DAY WITHOUT APPROVAL FROM THE PROJECT ENGINEER.

4. ADDITIONAL ITEMS NEEDED TO PERFORM NIGHT WORK, IF ANY, SHALL NOT BE PAID FOR SEPARATELY AND SHALL BE INCLUDED IN THE COST OF THE WORK.

5. ANY EXISTING SIGN THAT CONFLICTS WITH TEMPORARY SIGNS SHALL BE MASKED OR REMOVED. THE COST OF MASKING EXISTING SIGNS SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.

6. THE CONTRACTOR SHALL MOVE ALL CONSTRUCTION TRAFFIC CONTROL DEVICES OUTSIDE OF THE CLEAR ZONE, OR REMOVE THEM ENTIRELY AT THE END OF EACH WORK DAY. NO DEVICES WILL BE ALLOWED TO REMAIN OVERNIGHT INSIDE OF THE CLEAR ZONE WITHOUT THE PROJECT ENGINEER'S APPROVAL.

SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES

SIGNS					
SIGN CODE	LEGEND	DIMENSIONS	ITEM 630-CONSTRUCTION TRAFFIC SIGN PANEL EACH		
			A	B	C
G20-10	XYZ/CONSTRUCTION/THANKS YOU/XXX-XXX-XXXX	48" x 48"		8	
G20-11	CONSTRUCTION INFORMATION SIGN	48" x 48"		8	
R2-10	BEGIN / DOUBLE / FINES / ZONE	24" x 30"	8		
R2-11	END / DOUBLE / FINES / ZONE	24" x 30"	8		
R9-9	SIDEWALK CLOSED	24" x 12"	4		
R9-11	SIDEWALK CLOSED AHEAD CROSS HERE	24" x 18"	4		
W20-1	ROAD WORK AHEAD	36" x 36"	8		
W20-4	ONE LANE / ROAD / XX FT	36" x 36"	8		
W20-5(R)	RIGHT LANE/CLOSED/AHEAD	36" x 36"	4		
W20-7	FLAGGER	36" x 36"	8		
W4-2(R)	RIGHT LANE ENDS	36" x 36"	4		
	SIGN TOTALS		56	16	

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CONSTRUCTION TRAFFIC CONTROL

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Detailer: D. MURIE
Sheet Subset: CTC
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Sheet Number 13

CONSTRUCTION NOTES

1. EXISTING LITTLETON PULL BOX
2. EXISTING GROUND MOUNTED TRAFFIC SIGNAL CABINET
3. EXISTING CONDUIT
4. EXISTING ARAPAHOE COUNTY MANHOLE
5. 2-INCH ELECTRICAL CONDUIT (BORED)
6. (2) 2-INCH ELECTRICAL CONDUIT (PLASTIC)
7. PROPOSED SPLICE POINT WITH NEW SPLICE ENCLOSURE (SEE SPLICE DIAGRAM)
8. PROPOSED PULL BOX (24"X36"X24")
9. PROPOSED PULL BOX (30"X48"X24")
10. EXISTING ARAPAHOE COUNTY PULL BOX
11. (2) 2-INCH ELECTRICAL CONDUIT (BORED)
12. 2-INCH ELECTRICAL CONDUIT (PLASTIC)
13. FIBER OPTIC TERMINATION PANEL (144 FIBER)
14. FIBER OPTIC TERMINATION PANEL (48 FIBER)
15. FIBER OPTIC TERMINATION PANEL (24 FIBER)
16. BUFFER TUBE FAN OUT KIT
17. NOT USED
18. EXISTING ARAPHAOE COUNTY CONDUIT
19. EXISTING CDOT CONDUIT
20. PROPOSED SPLICE POINT (SEE SPLICE DIAGRAM)
21. SWEEP EXISTING STUBBED UP CONDUIT(S) INTO EXISTING PULL BOX
22. EXISTING MCI PULL BOX
23. SWEEP EXISTING STUBBED UP CONDUIT(S) INTO PROPOSED PULL BOX
24. PROPOSED EDGE ETHERNET SWITCH (INSTALL ONLY)
25. INSTALL PRE-TERMINATED PATCH PANEL (12 PORT)
26. EXISTING CDOT SPLICE POINT
27. EXISTING CDOT TRAFFIC SIGNAL CABINET
28. EXISTING CDOT PULL BOX

WIRING NOTES

1. EXISTING CDOT 144 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)
2. EXISTING CDOT 12 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)
3. EXISTING LITTLETON 432 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)
4. INSTALL INDOOR/OUTDOOR 144 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)
5. INSTALL 432 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)
6. INSTALL 12 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)
7. EXISTING LITTLETON 12 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)
8. INSTALL INDOOR/OUTDOOR 24 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)
9. REMOVE EXISTING FIBER OPTIC CABLE
10. PROOF CONDUIT
11. INSTALL 96 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)

LEGEND

- EXISTING CABINET
- EXISTING MANHOLE
- EXISTING PULL BOX (SIZE VARIES)
- PROPOSED PULL BOX (SIZE VARIES)
- —FO— EXISTING CONDUIT W/ NEW FIBER
- – –FO– – - EXISTING CONDUIT W/ EXISTING FIBER
- —ITS— PROPOSED CONDUIT W/ NEW FIBER

ITS PLANS TABULATION

ITEM NO.	DESCRIPTION	UNIT	ITS PLAN 1	2	3	4	5	6	7	8	9	10	11	TOTALS
202-00055	REMOVAL OF FIBER OPTIC CABLE	LF	1125	1605						800	1860			5390
612-00260	LOCATION MARKER (FIBER OPTIC) (DOME)	EACH		1	3	3	2	3	2	2		1	1	18
613-00206	2 INCH ELECTRICAL CONDUIT (BORED)	LF		970	2900	3700	2900	2910	2040	1440				16860
613-01200	2 INCH ELECTRICAL CONDUIT (PLASTIC)	LF			90	20			50			80	100	340
613-07023	PULL BOX (24"X36"X24")	EACH		1	1	2	2	3	1	2		1		13
613-07040	PULL BOX (30"X48"X24")	EACH			2	1			1				1	5
613-07195	PROOF CONDUIT	LF	1135	1605						800	1860	1315	665	7380
614-87015	BUFFER TUBE FAN OUT KIT	EACH		1							5			6
614-87024	FIBER OPTIC TERMINATION PANEL (24 FIBER)	EACH		1							1			2
614-87144	FIBER OPTIC TERMINATION PANEL (144 FIBER)	EACH	1											1
614-87496	FIBER OPTIC CABLE (SINGLE MODE) (96 STRANDS)	LF										1615	655	2270
614	FIBER OPTIC TERMINATION PANEL (48 FIBER)	EACH									2			2
614	ETHERNET SWITCH (INSTALL ONLY)	EACH			2	1			1				1	5
614	12 PORT PRE-TERMINATED PATCH PANEL AND PIGTAIL	EACH			2	1			1				1	5
614	SPLICE ENCLOSURE	EACH	1	1	2	1			1				1	7
614	INDOOR/OUTDOOR FIBER OPTIC CABLE (SINGLE MODE) (24 STRANDS)	LF		560		355				1670	2010			4595
614	INDOOR/OUTDOOR FIBER OPTIC CABLE (SINGLE MODE) (144 STRANDS)	LF	665											665
614	FIBER OPTIC CABLE (SINGLE MODE) (432 STRANDS)	LF	770	1880	1700	1605	1550	1605	1270					10380

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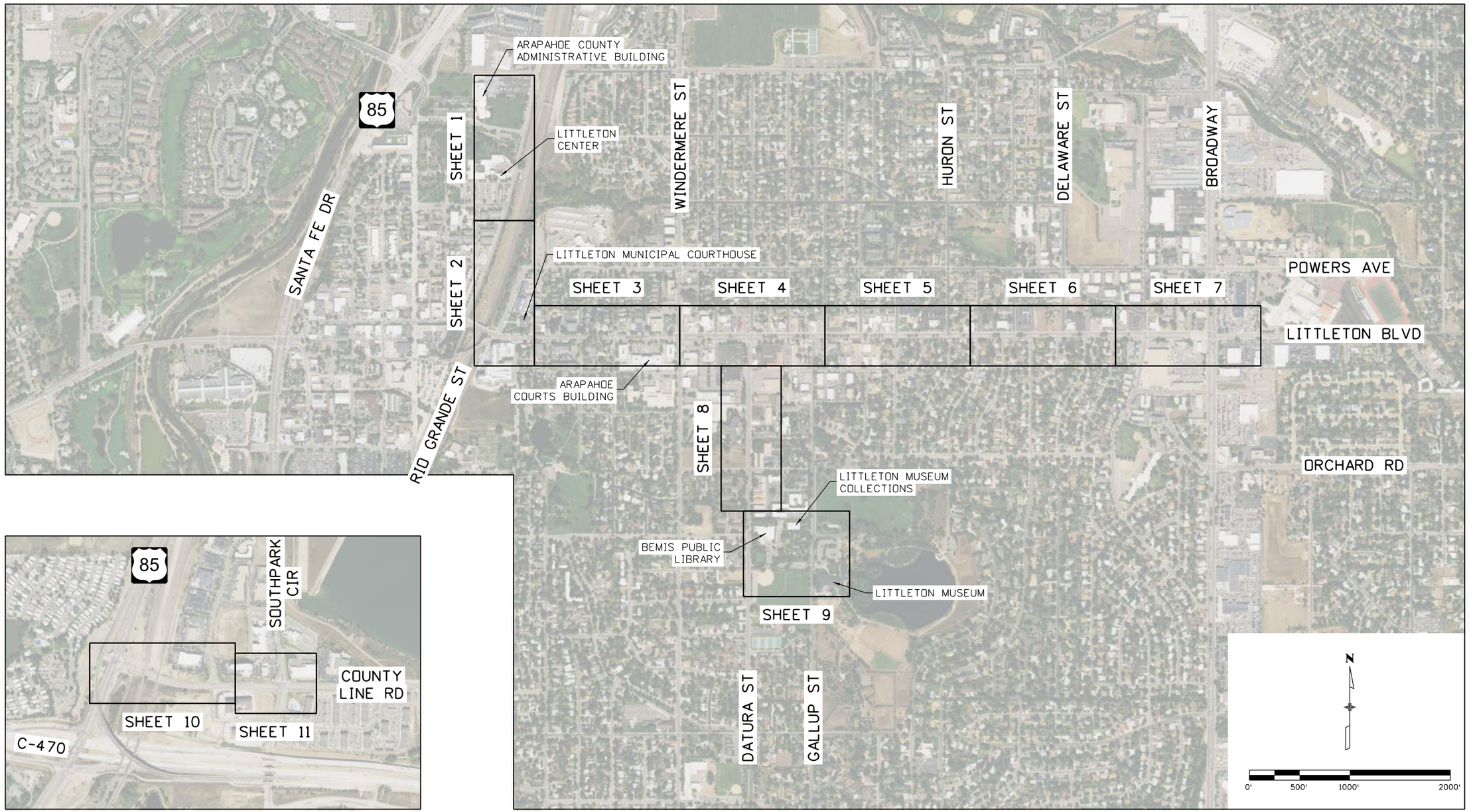
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CONSTRUCTION NOTES, LEGEND & TABULATION
Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: C-NOTES
Structure Numbers
Subset Sheets: 1 of 1

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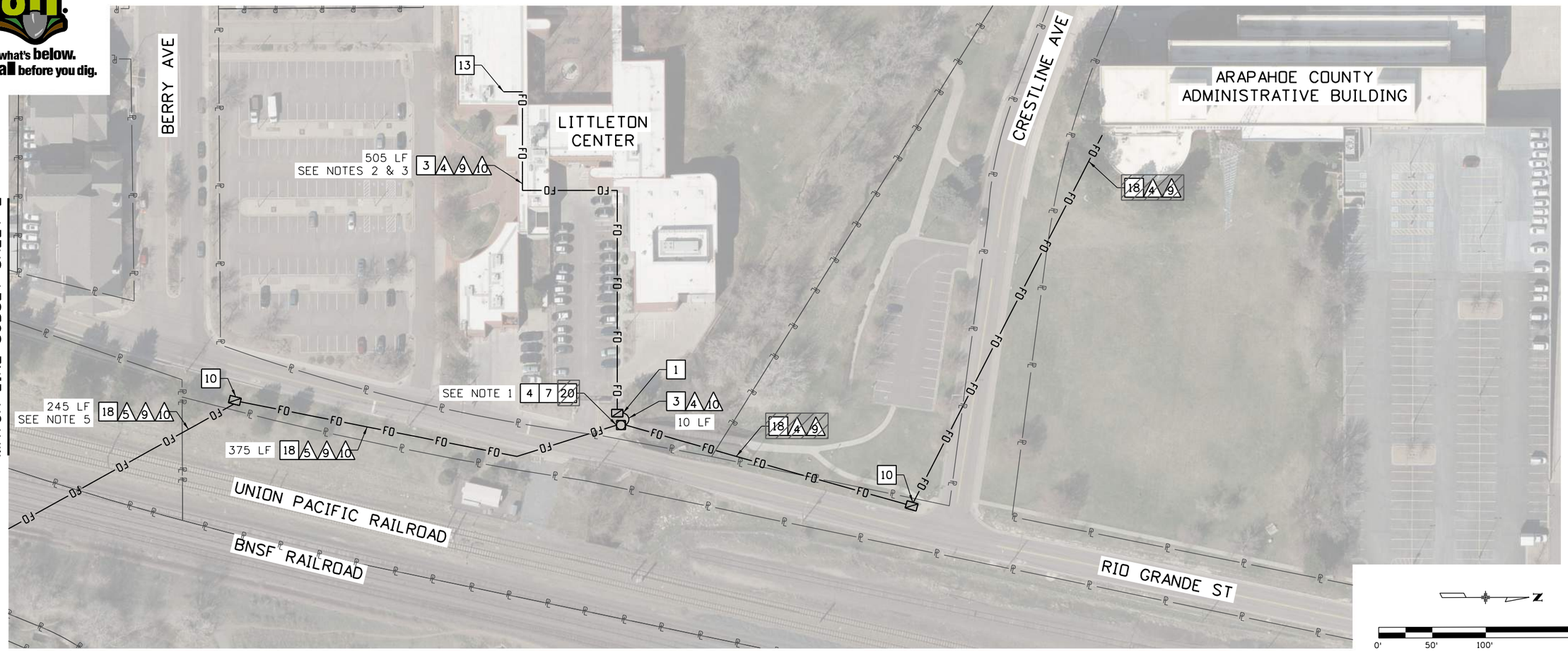
ITS KEY MAP

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: KEY
Structure Numbers:
Subset Sheets: 1 of 1

Project No./Code: 21-37

Sheet Number 15

Know what's below. Call before you dig.



CONSTRUCTION NOTES

1. EXISTING LITTLETON PULL BOX
3. EXISTING CONDUIT
4. EXISTING ARAPAHOE COUNTY MANHOLE
7. PROPOSED SPLICE POINT WITH NEW SPLICE ENCLOSURE (SEE SPLICE DIAGRAM)
10. EXISTING ARAPAHOE COUNTY PULL BOX
13. FIBER OPTIC TERMINATION PANEL (144 FIBER)
18. EXISTING ARAPHAOE COUNTY CONDUIT
20. PROPOSED SPLICE POINT (SEE SPLICE DIAGRAM)

WIRING NOTES

4. INSTALL INDOOR/OUTDOOR 144 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)
5. INSTALL 432 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)
9. REMOVE EXISTING FIBER OPTIC CABLE
10. PROOF CONDUIT

LEGEND

WORK TO BE COMPLETED BY OTHERS

NOTES

1. CONTRACTOR TO SPLICE NEW 432 STRAND FIBER BACKBONE TO THE NEW 144 STRAND FIBER OPTIC CABLE ENTERING LITTLETON CENTER AT THIS MANHOLE. AN ADDITIONAL 144 STRAND FIBER OPTIC CABLE BETWEEN THIS MANHOLE AND THE ARAPAHOE COUNTY ADMINISTRATIVE BUILDING WILL BE INSTALLED BY OTHERS AT A LATER DATE, AND WILL ALSO BE SPLICED TO THE LITTLETON FIBER OPTIC CABLES AT THIS MANHOLE. REFER TO SPLICING DIAGRAMS FOR MORE INFORMATION.
2. THE EXISTING 144 STRAND FIBER OPTIC CABLE ENTERING THE LITTLETON CENTER SHALL BE REPLACED WITH A NEW 144 STRAND FIBER OPTIC CABLE. THE NEW CABLE SHALL FOLLOW THE SAME CONDUIT PATH AS THE EXISTING CABLE, AND SHALL TERMINATE IN THE IT EQUIPMENT ROOM ON THE SECOND FLOOR OF THE FACILITY. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL FIELD VERIFY, CONFIRM CONTINUITY, PROOF THE EXISTING PROPOSED PATHWAY INTO THE BUILDING, AND CONFIRM THE CABLE LENGTH NOTED IN THE PLANS. THE CONTRACTOR SHALL SUBMIT A METHOD OF CABLE INSTALLATION TO THE CITY FOR REVIEW AND APPROVAL BY THE PROJECT ENGINEER. INSTALLATION SHALL NOT OCCUR UNTIL THE CONTRACTOR'S PROPOSED INSTALLATION METHOD HAS BEEN APPROVED BY THE CITY.
3. ALL WORK IN THE LITTLETON CENTER SHALL BE COORDINATED WITH SCOTT ROGERS AT (720) 281-5273 A MINIMUM OF ONE WEEK PRIOR TO PERFORMING THE WORK.
4. ALL WORK IMPACTING ARAPAHOE COUNTY INFRASTRUCTURE SHALL BE COORDINATED WITH MARK HARKLEROAD AT (303) 795-4848 A MINIMUM OF ONE WEEK PRIOR TO PERFORMING THE WORK.
5. THE FIBER OPTIC CABLE RUNNING BENEATH THE RAILROAD TRACKS SHALL BE INSTALLED FROM EAST TO WEST. CONTRACTOR SHALL PHASE WORK TO ENSURE THE INSTALLATION CAN OCCUR IN THIS DIRECTION. ADDITIONAL REEL-TO-REEL SPLICES TO MEET THIS REQUIREMENT SHALL NOT BE ALLOWED UNLESS APPROVED BY THE PROJECT ENGINEER PRIOR TO STARTING FIBER OPTIC INSTALLATION.

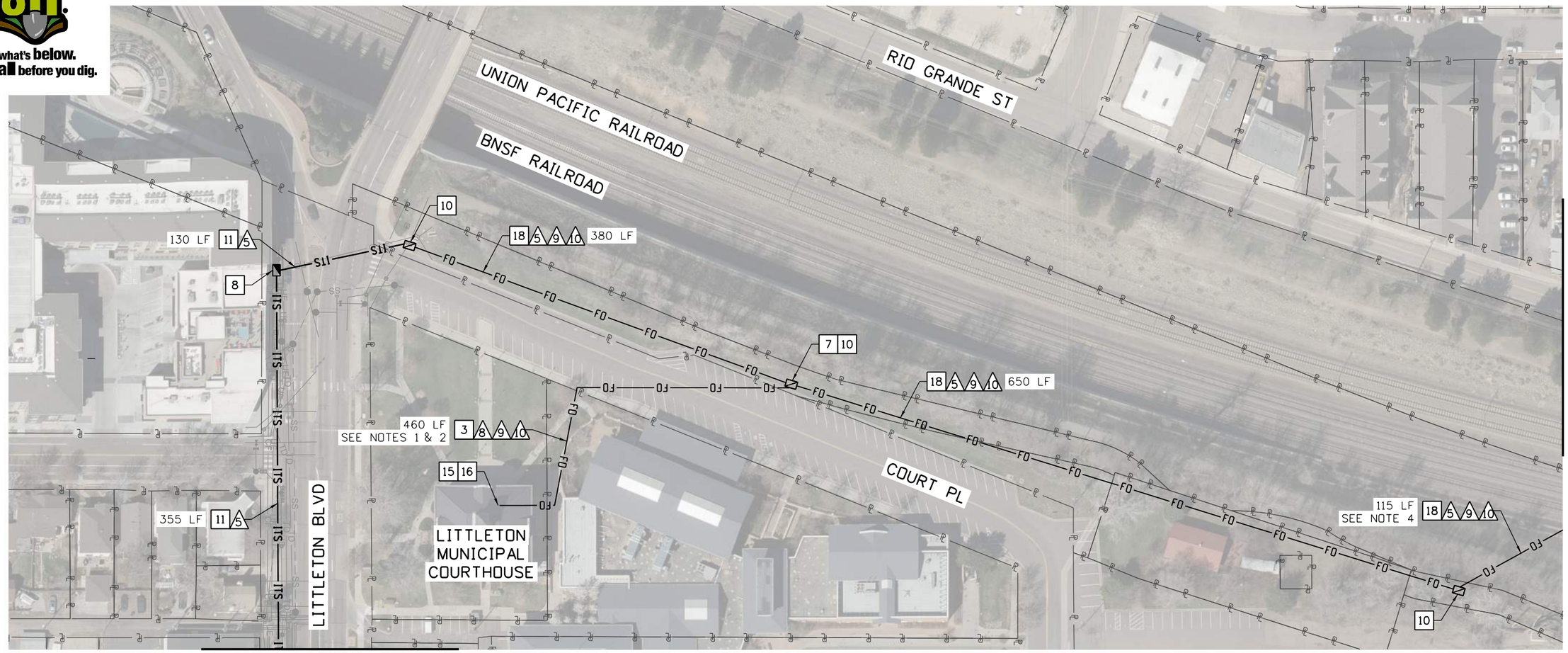
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As Constructed	LITTLETON BLVD ITS PLANS			Project No./Code
No Revisions:				21-37
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Void:	Detailer: D. MURIE			
	Sheet Subset: ITS	Subset Sheets: 1 of 11		Sheet Number 16

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CONSTRUCTION NOTES

- 3 EXISTING CONDUIT
- 7 PROPOSED SPLICE POINT WITH NEW SPLICE ENCLOSURE (SEE SPLICE DIAGRAM)
- 8 PROPOSED PULL BOX (24"X36"X24")
- 10 EXISTING ARAPAHOE COUNTY PULL BOX
- 11 (2) 2-INCH ELECTRICAL CONDUIT (BORED)
- 15 FIBER OPTIC TERMINATION PANEL (24 FIBER)
- 16 BUFFER TUBE FAN OUT KIT
- 18 EXISTING ARAPHAOE COUNTY CONDUIT

WIRING NOTES

- 5 INSTALL 432 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)
- 8 INSTALL INDOOR/OUTDOOR 24 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)
- 9 REMOVE EXISTING FIBER OPTIC CABLE
- 10 PROOF CONDUIT

NOTES

1. CONTRACTOR SHALL INSTALL PROPOSED LATERAL INTO THE LITTLETON MUNICIPAL COURTHOUSE BUILDING THROUGH EXISTING CONDUIT AND PATHWAYS OF THE EXISTING CABLE. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL FIELD VERIFY, CONFIRM CONTINUITY, PROOF THE EXISTING PROPOSED PATHWAY INTO THE BUILDING, AND CONFIRM THE CABLE LENGTH NOTED IN THE PLANS. THE CONTRACTOR SHALL SUBMIT A METHOD OF CABLE INSTALLATION TO THE CITY FOR REVIEW AND APPROVAL BY THE PROJECT ENGINEER. INSTALLATION SHALL NOT OCCUR UNTIL THE CONTRACTOR'S PROPOSED INSTALLATION METHOD HAS BEEN APPROVED BY THE CITY.
2. ALL WORK AT THE LITTLETON MUNICIPAL COURTHOUSE SHALL BE COORDINATED WITH SCOTT ROGERS AT (720) 281-5273 A MINIMUM OF ONE WEEK PRIOR TO PERFORMING THE WORK.
3. ALL WORK IMPACTING ARAPAHOE COUNTY INFRASTRUCTURE SHALL BE COORDINATED WITH MARK HARKLEROAD AT (303) 795-4848 A MINIMUM OF ONE WEEK PRIOR TO PERFORMING THE WORK.
4. THE FIBER OPTIC CABLE RUNNING BENEATH THE RAILROAD TRACKS SHALL BE INSTALLED FROM EAST TO WEST. CONTRACTOR SHALL PHASE WORK TO ENSURE THE INSTALLATION CAN OCCUR IN THIS DIRECTION. ADDITIONAL REEL-TO-REEL SPLICES TO MEET THIS REQUIREMENT SHALL NOT BE ALLOWED UNLESS APPROVED BY THE PROJECT ENGINEER PRIOR TO STARTING FIBER OPTIC INSTALLATION.

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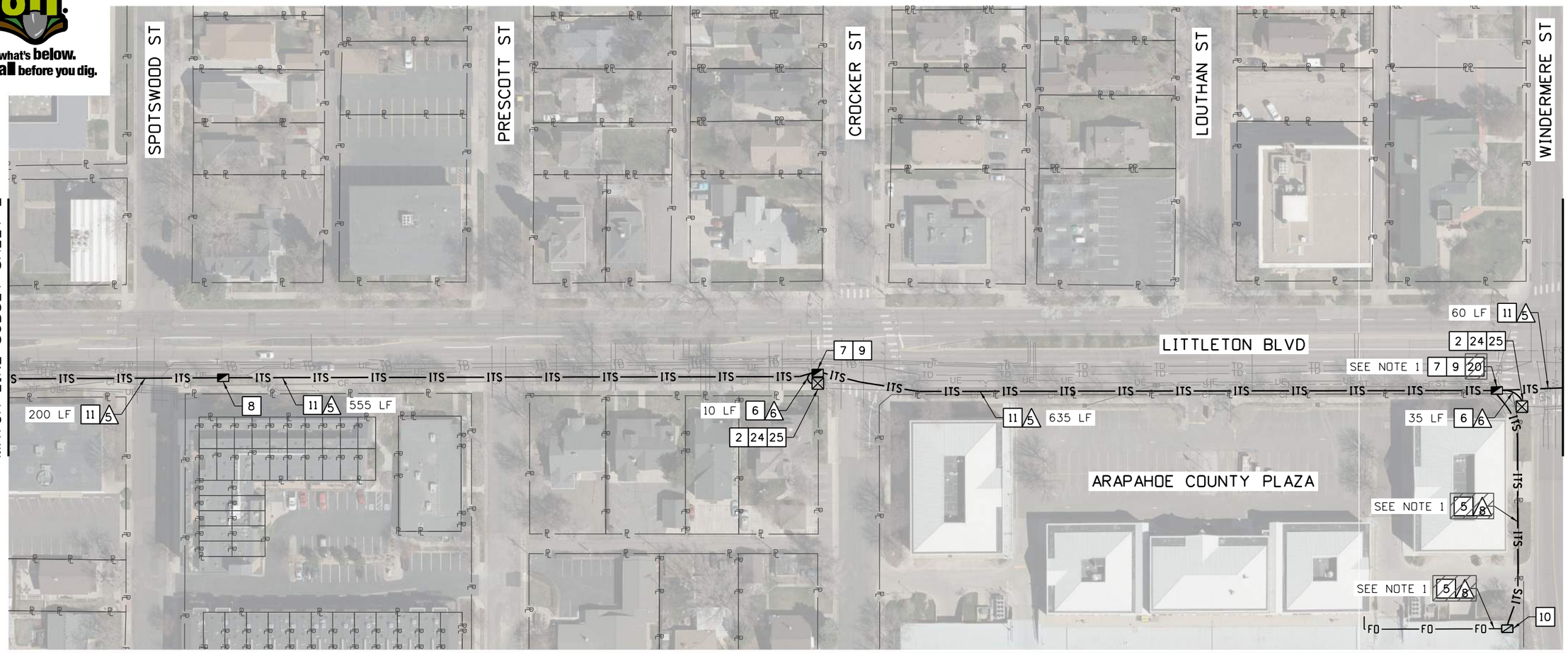
LITTLETON BLVD ITS PLANS

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: ITS
Structure Numbers:
Subset Sheets: 2 of 11

Project No./Code: 21-37

Sheet Number 17

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CONSTRUCTION NOTES

2 EXISTING GROUND MOUNTED TRAFFIC SIGNAL CABINET

5 2-INCH ELECTRICAL CONDUIT (BORED)

6 (2) 2-INCH ELECTRICAL CONDUIT (PLASTIC)

7 PROPOSED SPLICE POINT WITH NEW SPLICE ENCLOSURE (SEE SPLICE DIAGRAM)

8 PROPOSED PULL BOX (24"X36"X24")

9 PROPOSED PULL BOX (30"X48"X24")

10 EXISTING ARAPAHOE COUNTY PULL BOX

11 (2) 2-INCH ELECTRICAL CONDUIT (BORED)

20 PROPOSED SPLICE POINT (SEE SPLICE DIAGRAM)

24 PROPOSED EDGE ETHERNET SWITCH (INSTALL ONLY)

25 INSTALL PRE-TERMINATED PATCH PANEL (12 PORT)

WIRING NOTES

5 INSTALL 432 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)

6 INSTALL 12 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)

8 INSTALL INDOOR/OUTDOOR 24 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)

LEGEND

WORK TO BE COMPLETED BY OTHERS

NOTES

1. WORK TO ESTABLISH CONNECTIVITY TO ARAPAHOE COUNTY PLAZA TO BE COMPLETED BY OTHERS AFTER THE NEW FIBER BACKBONE ON LITTLETON BLVD HAS BEEN INSTALLED. THE LOCATION OF ARAPAHOE COUNTY INFRASTRUCTURE ON THIS SHEET IS APPROXIMATE AND SHALL BE VERIFIED WITH THE COUNTY PRIOR TO ACCESSING THIS INFRASTRUCTURE. ALL WORK IMPACTING ARAPAHOE COUNTY INFRASTRUCTURE SHALL BE COORDINATED WITH MARK HARKLEROAD AT (303) 795-4848 A MINIMUM OF ONE WEEK PRIOR TO PERFORMING THE WORK.

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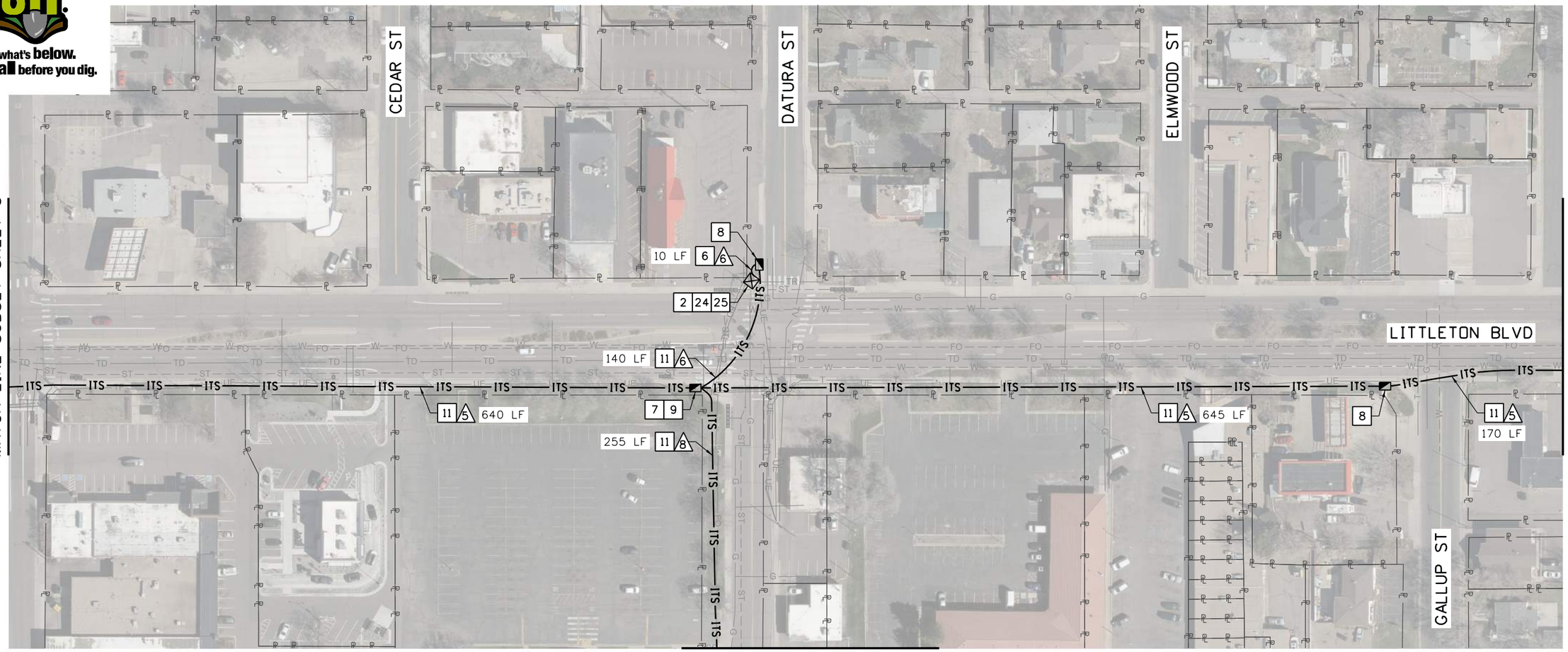
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No Revisions:	Designer: B. WALDMAN	Structure Numbers		21-37
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CONSTRUCTION NOTES

2 EXISTING GROUND MOUNTED TRAFFIC SIGNAL CABINET

6 (2) 2-INCH ELECTRICAL CONDUIT (PLASTIC)

7 PROPOSED SPLICE POINT WITH NEW SPLICE ENCLOSURE (SEE SPLICE DIAGRAM)

8 PROPOSED PULL BOX (24"X36"X24")

9 PROPOSED PULL BOX (30"X48"X24")

11 (2) 2-INCH ELECTRICAL CONDUIT (BORED)

24 PROPOSED EDGE ETHERNET SWITCH (INSTALL ONLY)

25 INSTALL PRE-TERMINATED PATCH PANEL (12 PORT)

WIRING NOTES

5 INSTALL 432 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)

6 INSTALL 12 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)

8 INSTALL INDOOR/OUTDOOR 24 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)

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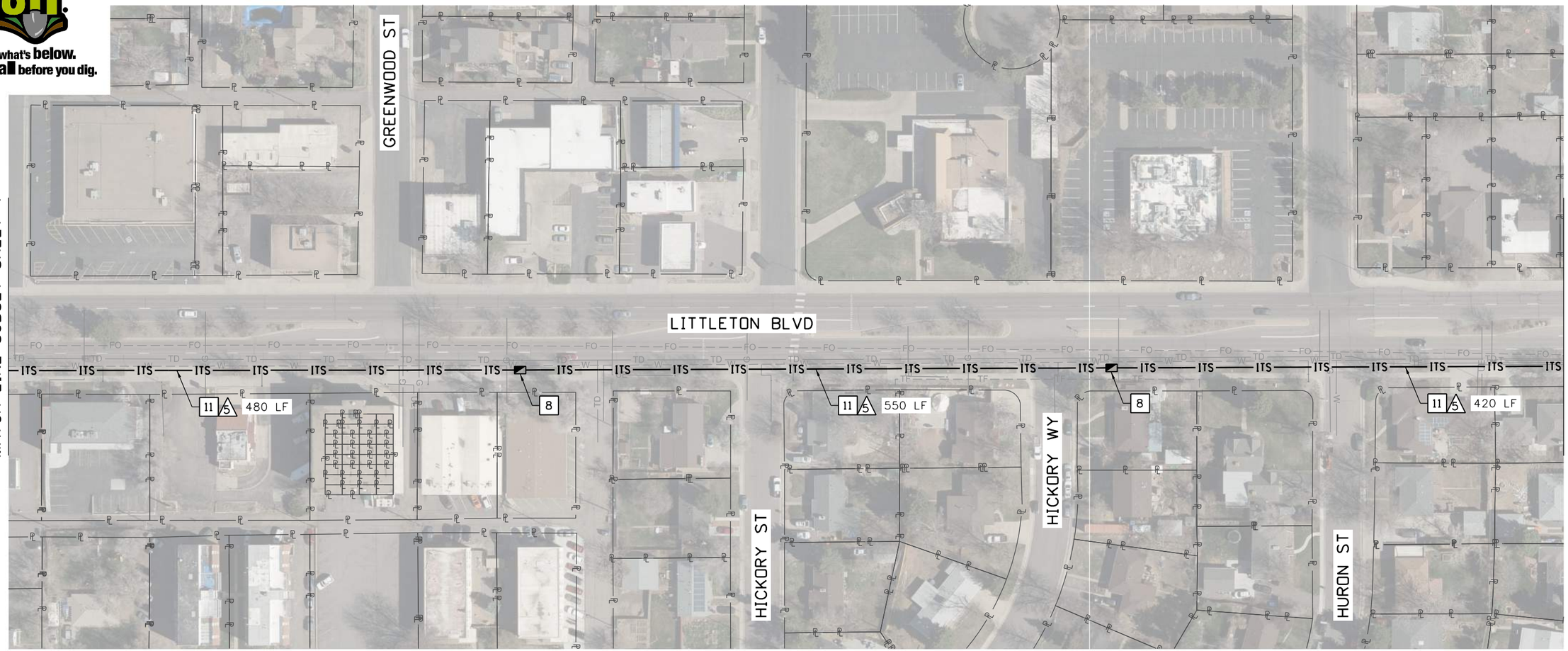
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ITS PLANS

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Detailer: D. MURIE
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Project No./Code
21-37

Sheet Number 19

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CONSTRUCTION NOTES

8 PROPOSED PULL BOX (24"X36"X24")

11 (2) 2-INCH ELECTRICAL CONDUIT (BORED)

WIRING NOTES

5 INSTALL 432 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)

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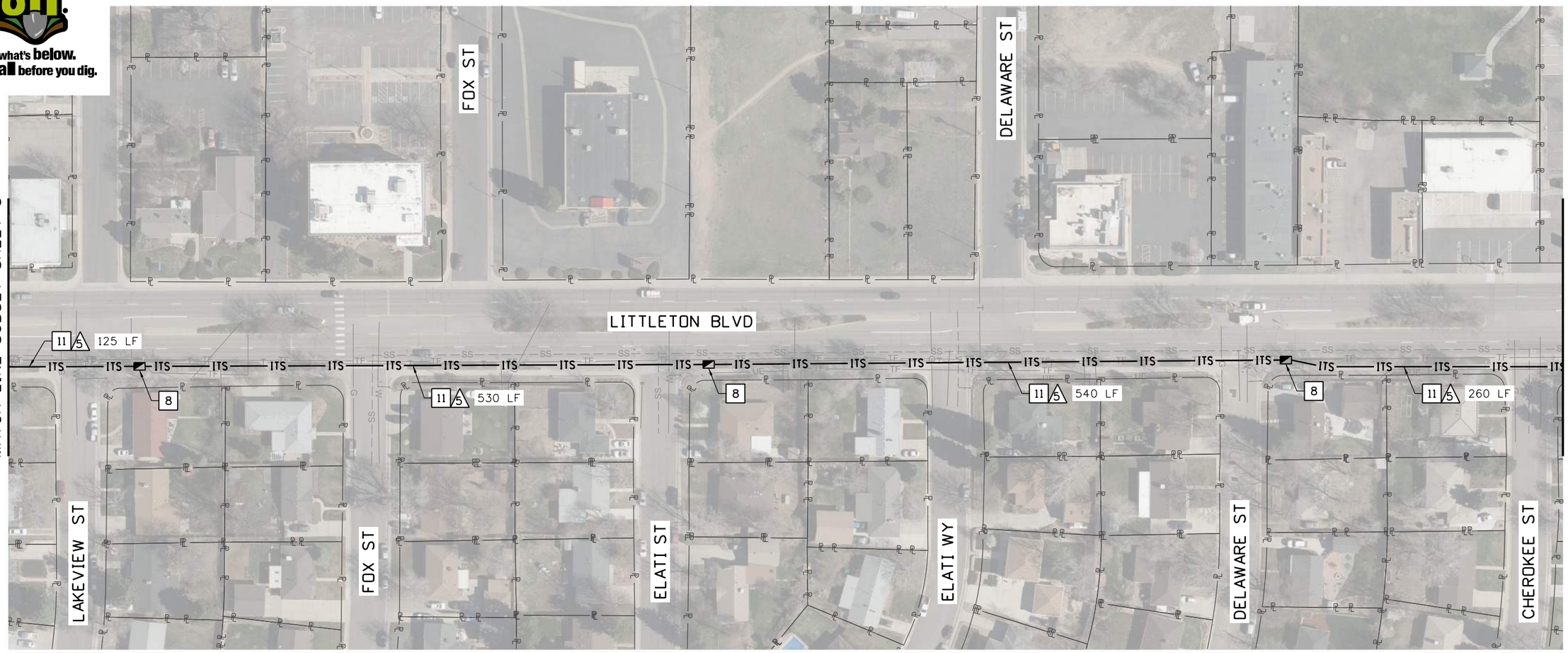
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21-37

Sheet Number 20

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Call before you dig.



CONSTRUCTION NOTES

8 PROPOSED PULL BOX (24"X36"X24")

11 (2) 2-INCH ELECTRICAL CONDUIT (BORED)

WIRING NOTES

5 INSTALL 432 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)

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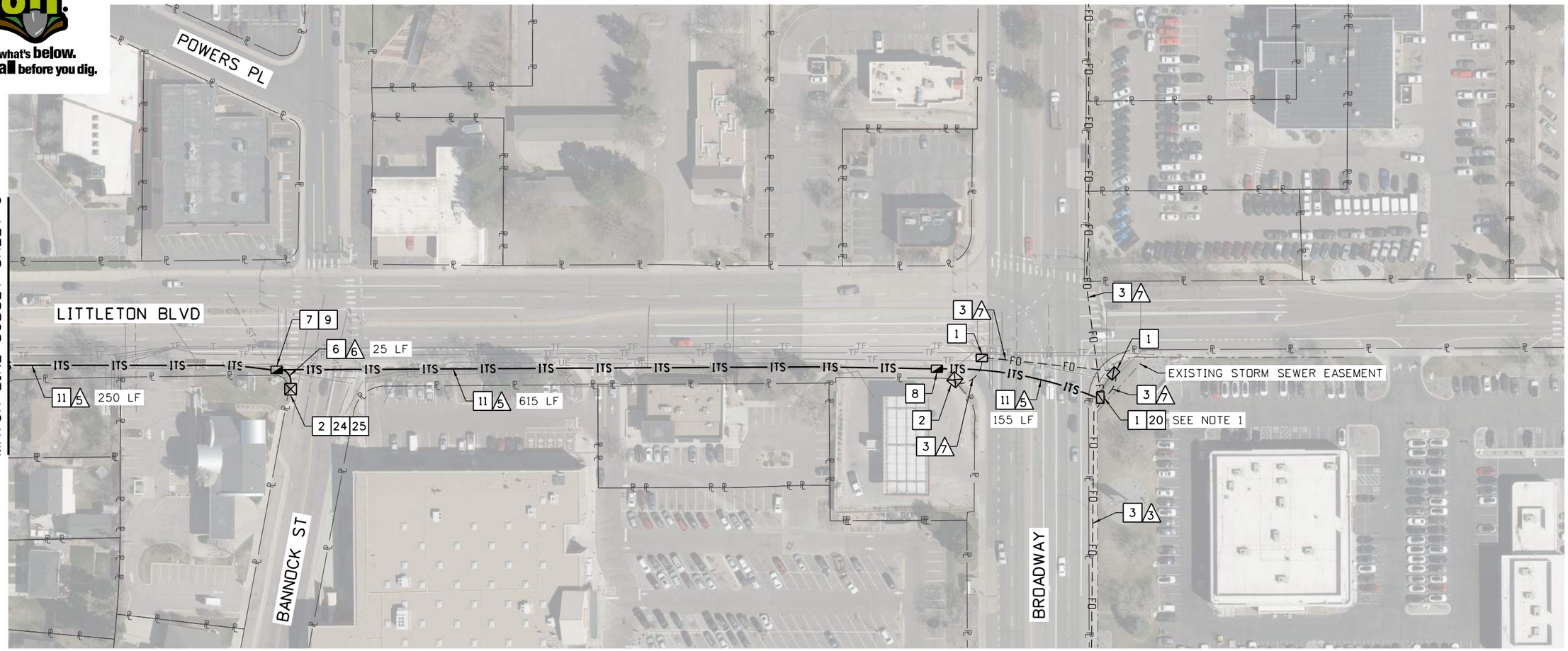
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21-37

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CONSTRUCTION NOTES

1. EXISTING LITTLETON PULL BOX
2. EXISTING GROUND MOUNTED TRAFFIC SIGNAL CABINET
3. EXISTING CONDUIT
6. (2) 2-INCH ELECTRICAL CONDUIT (PLASTIC)
7. PROPOSED SPLICE POINT WITH NEW SPLICE ENCLOSURE (SEE SPLICE DIAGRAM)
8. PROPOSED PULL BOX (24"X36"X24")
9. PROPOSED PULL BOX (30"X48"X24")
11. (2) 2-INCH ELECTRICAL CONDUIT (BORED)
20. PROPOSED SPLICE POINT (SEE SPLICE DIAGRAM)
24. PROPOSED EDGE ETHERNET SWITCH (INSTALL ONLY)
25. INSTALL PRE-TERMINATED PATCH PANEL (12 PORT)

WIRING NOTES

3. EXISTING LITTLETON 432 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)
5. INSTALL 432 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)
6. INSTALL 12 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)
7. EXISTING LITTLETON 12 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)

NOTES

1. A PULL BOX AND SPLICE CLOSURE WERE INSTALLED AT THE SOUTHEAST CORNER OF BROADWAY & LITTLETON BLVD AS PART OF THE SOUTH BROADWAY FIBER UPGRADE PROJECT. CONTRACTOR TO PULL LITTLETON BLVD BACKBONE TO THIS PULL BOX AND SPLICE TO THE BROADWAY BACKBONE USING THE PREVIOUSLY INSTALLED SPLICE ENCLOSURE. REFER TO SPLICING DIAGRAMS FOR PROPOSED FIBER ASSIGNMENTS.

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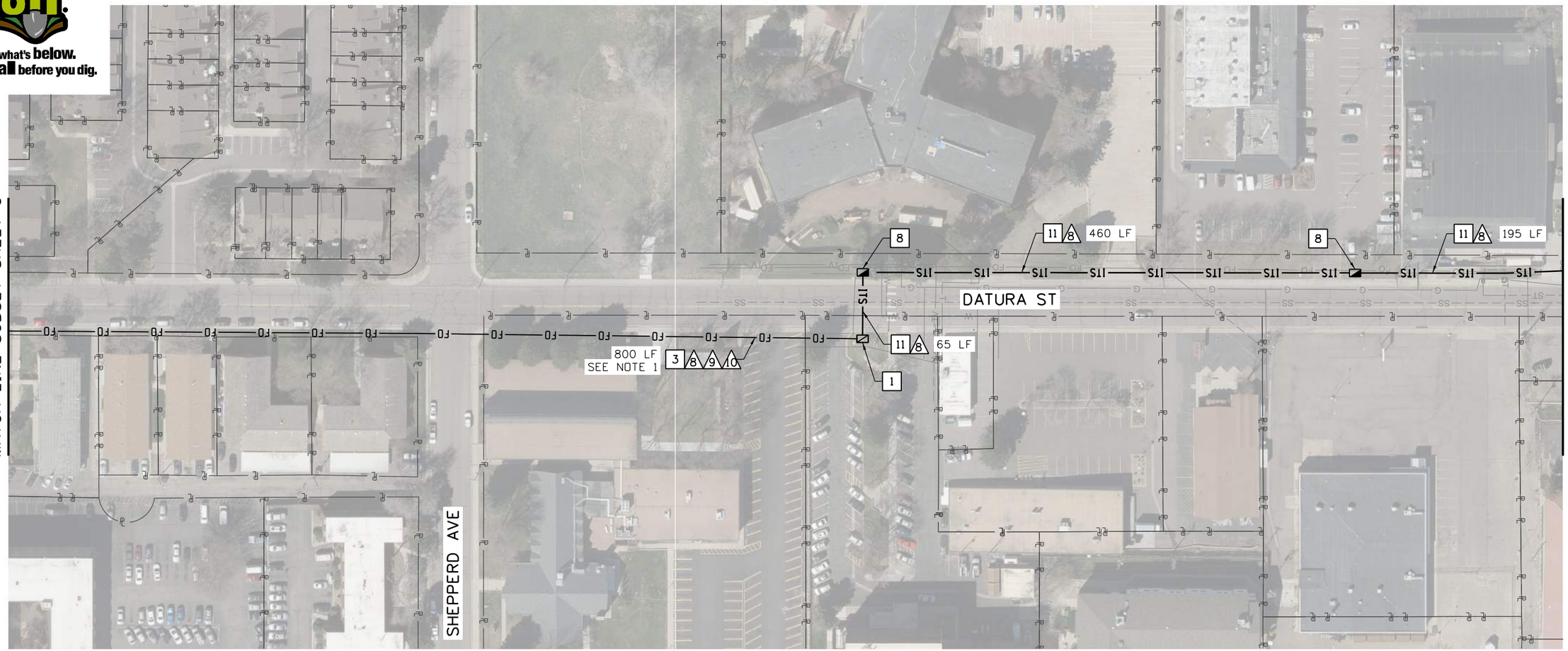
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Sheet Number 22



CONSTRUCTION NOTES

1. EXISTING LITTLETON PULL BOX
3. EXISTING CONDUIT
8. PROPOSED PULL BOX (24"X36"X24")
11. (2) 2-INCH ELECTRICAL CONDUIT (BORED)

WIRING NOTES

8. INSTALL INDOOR/OUTDOOR 24 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)
9. REMOVE EXISTING FIBER OPTIC CABLE
10. PROOF CONDUIT

NOTES

1. CONTRACTOR TO INSTALL NEW FIBER OPTIC CABLE IN EXISTING CONDUIT THAT CONTAINS AN EXISTING FIBER OPTIC CABLE. THE EXISTING FIBER OPTIC CABLE SHALL BE PROTECTED IN PLACE UNTIL THE NEW FIBER OPTIC CABLE HAS BEEN INSTALLED AND CONNECTIVITY HAS BEEN ESTABLISHED TO ALL LITTLETON FACILITIES INCLUDED ON THIS PROJECT. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DAMAGED OR UNUSABLE SEGMENTS OF EXISTING CONDUIT IMMEDIATELY UPON IDENTIFICATION. THE CONTRACTOR SHALL CONTACT SCOTT ROGERS AT (720) 281-5273 A MINIMUM OF ONE WEEK PRIOR TO PERFORMING THIS WORK.

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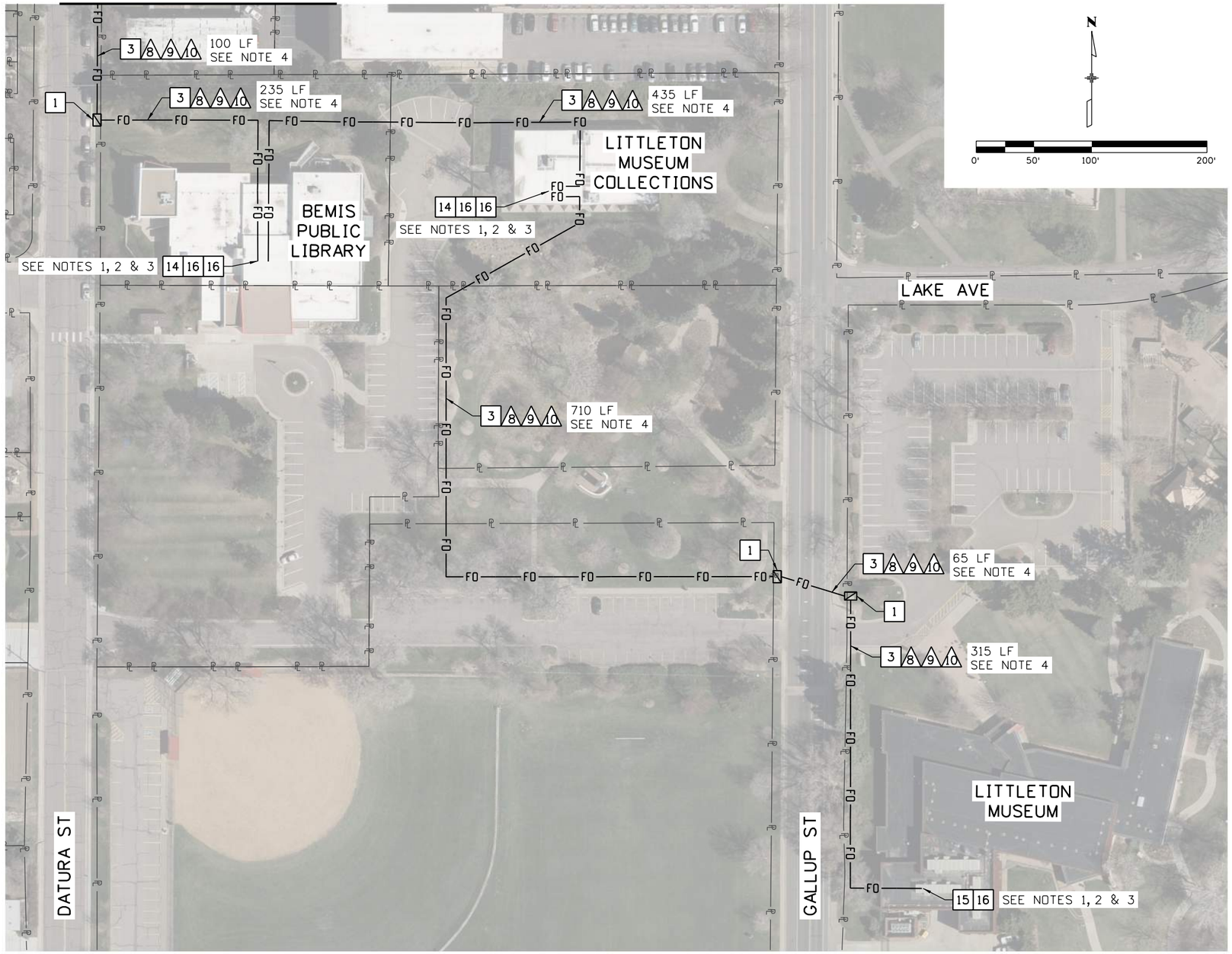
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Detailer: D. MURIE
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CONSTRUCTION NOTES

1. EXISTING LITTLETON PULL BOX
3. EXISTING CONDUIT
14. FIBER OPTIC TERMINATION PANEL (48 FIBER)
15. FIBER OPTIC TERMINATION PANEL (24 FIBER)
16. BUFFER TUBE FAN OUT KIT

WIRING NOTES

8. INSTALL INDOOR/OUTDOOR 24 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)
9. REMOVE EXISTING FIBER OPTIC CABLE
10. PROOF CONDUIT

NOTES

1. CONTRACTOR TO INSTALL SEPARATE FIBER OPTIC CABLES BETWEEN EACH BUILDING AS SHOWN ON THIS SHEET. THIS WILL RESULT IN TWO CABLES BEING TERMINATED IN THE BEMIS PUBLIC LIBRARY AND LITTLETON MUSEUM COLLECTIONS BUILDINGS. CONTRACTOR SHALL PATCH THE TWO PROPOSED CABLES TOGETHER TO ALLOW A CONTINUOUS CIRCUIT TO EACH OF THE DOWNSTREAM BUILDINGS. REFER TO THE SPLICING DIAGRAMS FOR FIBER ASSIGNMENTS AND PATCH CABLE CONFIGURATIONS.
2. PRIOR TO INSTALLATION OF NEW FIBER OPTIC CABLES INTO CITY FACILITIES, THE CONTRACTOR SHALL FIELD VERIFY, CONFIRM CONTINUITY, PROOF THE EXISTING PROPOSED PATHWAY INTO THE BUILDING, AND CONFIRM THE CABLE LENGTH NOTED ON THE PLANS. THE CONTRACTOR SHALL SUBMIT A METHOD OF CABLE INSTALLATION TO THE CITY FOR REVIEW AND APPROVAL BY THE PROJECT ENGINEER. INSTALLATION SHALL NOT OCCUR UNTIL THE CONTRACTOR'S PROPOSED INSTALLATION METHOD HAS BEEN APPROVED BY THE CITY.
3. ALL WORK AT THE BEMIS PUBLIC LIBRARY, THE LITTLETON MUSEUM COLLECTIONS BUILDING, AND THE LITTLETON MUSEUM SHALL BE COORDINATED WITH SCOTT ROGERS AT (720) 281-5273 A MINIMUM OF ONE WEEK PRIOR TO PERFORMING THE WORK.
4. CONTRACTOR TO INSTALL NEW FIBER OPTIC CABLE IN EXISTING CONDUIT THAT CONTAINS AN EXISTING FIBER OPTIC CABLE. THE EXISTING FIBER OPTIC CABLE SHALL BE PROTECTED IN PLACE UNTIL THE NEW FIBER OPTIC CABLE HAS BEEN INSTALLED AND CONNECTIVITY HAS BEEN ESTABLISHED TO ALL LITTLETON FACILITIES INCLUDED ON THIS PROJECT. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DAMAGED OR UNUSABLE SEGMENTS OF EXISTING CONDUIT IMMEDIATELY UPON IDENTIFICATION. THE CONTRACTOR SHALL CONTACT SCOTT ROGERS AT (720) 281-5273 A MINIMUM OF ONE WEEK PRIOR TO PERFORMING THIS WORK.

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CONSTRUCTION NOTES

1. EXISTING LITTLETON PULL BOX
3. EXISTING CONDUIT
6. (2) 2-INCH ELECTRICAL CONDUIT (PLASTIC)
8. PROPOSED PULL BOX (24"X36"X24")
12. 2-INCH ELECTRICAL CONDUIT (PLASTIC)
19. EXISTING CDOT CONDUIT
20. PROPOSED SPLICE POINT (SEE SPLICE DIAGRAM)
21. SWEEP EXISTING STUBBED UP CONDUIT(S) INTO EXISTING PULL BOX
22. EXISTING MCI PULL BOX
23. SWEEP EXISTING STUBBED UP CONDUIT(S) INTO PROPOSED PULL BOX
26. EXISTING CDOT SPLICE POINT
27. EXISTING CDOT TRAFFIC SIGNAL CABINET
28. EXISTING CDOT PULL BOX

WIRING NOTES

1. EXISTING CDOT 144 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)
2. EXISTING CDOT 12 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)
10. PROOF CONDUIT
11. INSTALL 96 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)

NOTES

1. DEDICATED CONDUIT AND PULL BOXES FOR THE LITTLETON FIBER OPTIC BACKBONE WERE INSTALLED AT THE INTERSECTION OF COUNTY LINE RD & SANTA FE DR DURING A RECENT SIGNAL UPGRADE PROJECT. CONTRACTOR TO PULL NEW FIBER OPTIC CABLE INTO THE EXISTING FIBER PULL BOX ON SOUTHEAST CORNER AND USE EXISTING CONDUIT TO REACH THE EXISTING PULL BOX ON THE SOUTHWEST CORNER. NEW CONDUIT SHALL BE INSTALLED BETWEEN THE EXISTING PULL BOX ON THE SOUTHWEST CORNER AND THE EXISTING CDOT SPLICE POINT FOR INSTALLATION OF THE NEW BACKBONE. PRIOR TO STARTING WORK IN THIS AREA, THE CONTRACTOR SHALL CONFIRM THE LOCATIONS OF THE EXISTING LITTLETON AND CDOT INFRASTRUCTURE AND ALERT THE PROJECT ENGINEER IMMEDIATELY OF ANY DISCREPANCIES. THE CONTRACTOR SHALL CONTACT JILL SCOTT WITH CDOT ITS GROUP AT (303) 512-5805 A MINIMUM OF TWO WEEKS PRIOR TO PERFORMING SPLICING OR ANY OTHER WORK THAT WILL IMPACT CDOT INFRASTRUCTURE

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Horiz. Scale: 1:100 Vert. Scale: As Noted			

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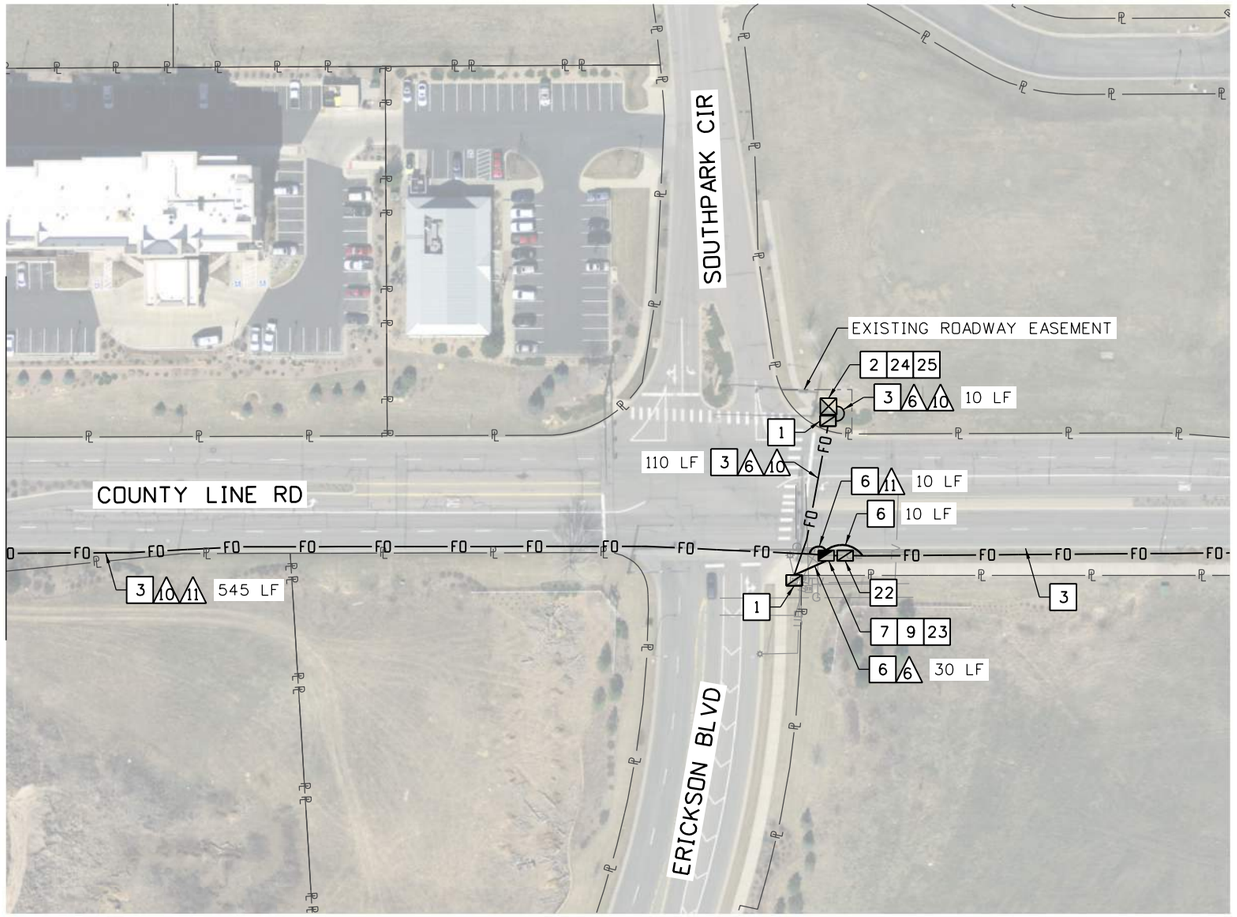
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COUNTY LINE RD
ITS PLANS

Designer:	B. WALDMAN	Structure Numbers	
Detailer:	D. MURIE		
Sheet Subset:	ITS	Subset Sheets:	10 of 11

Project No./Code
21-37
Sheet Number 25

Know what's below. Call before you dig.



CONSTRUCTION NOTES

1. EXISTING LITTLETON PULL BOX
2. EXISTING GROUND MOUNTED TRAFFIC SIGNAL CABINET
3. EXISTING CONDUIT
6. (2) 2-INCH ELECTRICAL CONDUIT (PLASTIC)
7. PROPOSED SPLICE POINT WITH NEW SPLICE ENCLOSURE (SEE SPLICE DIAGRAM)
9. PROPOSED PULL BOX (30"X48"X24")
22. EXISTING MCI PULL BOX
23. SWEEP EXISTING STUBBED UP CONDUIT(S) INTO PROPOSED PULL BOX
24. PROPOSED EDGE ETHERNET SWITCH (INSTALL ONLY)
25. INSTALL PRE-TERMINATED PATCH PANEL (12 PORT)

WIRING NOTES

6. INSTALL 12 STRAND FIBER OPTIC LATERAL CABLE (SINGLE MODE)
10. PROOF CONDUIT
11. INSTALL 96 STRAND FIBER OPTIC BACKBONE CABLE (SINGLE MODE)

N

0' 50' 100' 200'

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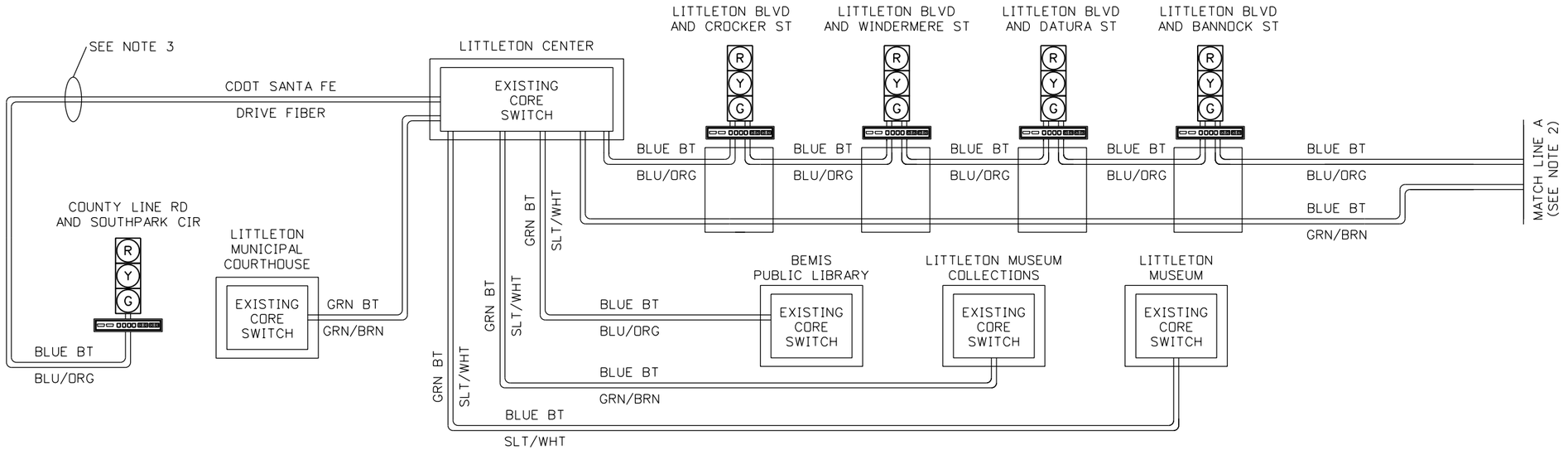
COUNTY LINE RD
ITS PLAN

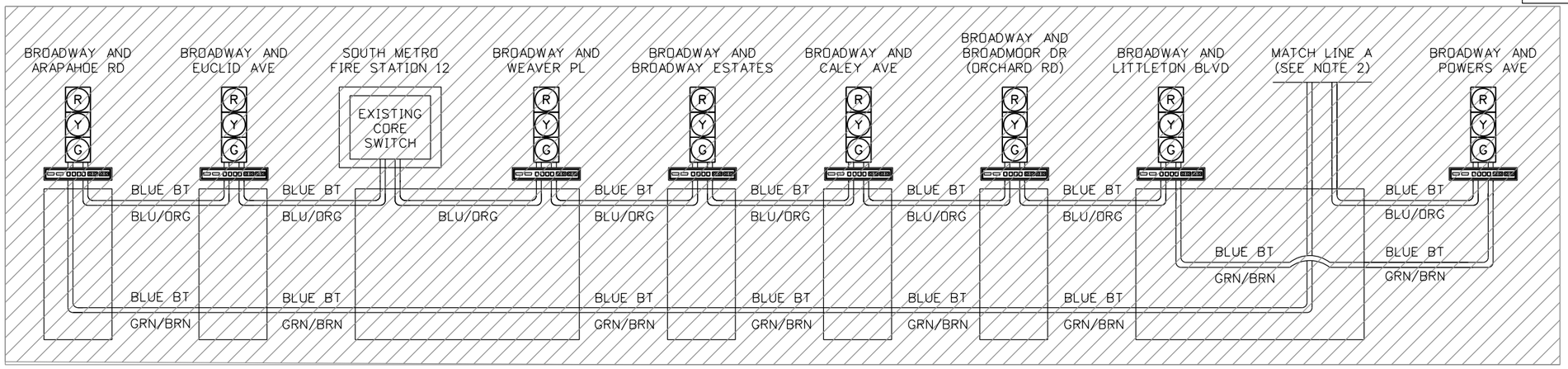
Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: ITS
Structure Numbers:
Subset Sheets: 11 of 11

Project No./Code
21-37

Sheet Number 26

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ABBREVIATIONS	
APPROX	APPROXIMATELY
AVE	AVENUE
BLK	BLACK
BLU	BLUE
BLVD	BOULEVARD
BRN	BROWN
BT	BUFFER TUBE
CIR	CIRCLE
DR	DRIVE
EX	EXISTING
GRN	GREEN
LF	LINEAR FEET
NE	NORTHEAST
NW	NORTHWEST
ORG	ORANGE
PB	PULL BOX
PL	PLACE
PR	PROPOSED
RD	ROAD
SE	SOUTHEAST
SLT	SLATE
ST	STREET
SW	SOUTHWEST
YEL	YELLOW
VLT	VIOLET
WHT	WHITE

NOTES:

1. THE CONTRACTOR SHALL PROCURE OPTICS FOR INSTALLATION BETWEEN SWITCHES BASED ON THE SWITCH MANUFACTURER'S REQUIREMENTS.
2. A 432 STRAND FIBER OPTIC BACKBONE WAS INSTALLED ALONG BROADWAY DURING THE SOUTH BROADWAY COMMUNICATIONS UPGRADE PROJECT. THE LITTLETON BLVD COMMUNICATIONS UPGRADE PROJECT WILL ESTABLISH A CONNECTION BETWEEN THIS EXISTING FIBER OPTIC CABLE AND THE LITTLETON CENTER.
3. COMMUNICATIONS SIGNAL FOR COUNTY LINE RD & SOUTHPARK CIR TRAFFIC SIGNAL TO BE BACKHAULED VIA CDOT'S EXISTING BACKBONE ON SANTA FE DRIVE.

BLUE BUFFER TUBE (BACKBONE)
FIBERS 1 (BLUE), 2 (ORANGE), 3 (GREEN), AND 4 (BROWN)

LEGEND

- FIBER STRAND
- CITY OF LITTLETON TRAFFIC SIGNAL LOCATION
- PULL BOX SPLICE POINT
- PROPOSED EDGE SWITCH
- EXISTING EDGE SWITCH
- FOR INFORMATION ONLY (COMPLETED DURING A PREVIOUS PACKAGE)

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NETWORK DIAGRAM

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: NETWORK
Structure Numbers:
Subset Sheets: 1 of 1

Project No./Code: 21-37

Sheet Number 27

LEGEND

1	BLUE	- - - - - - - -	UNUSED FIBER
2	ORANGE	■ ■	PROPOSED FIBER SPLICE
3	GREEN	○ ○	FIBER NOT LANDED
4	BROWN	▸——◂	PROPOSED PATCH CABLE
5	SLATE		
6	WHITE	COL	CITY OF LITTLETON
7	RED	EX	EXISTING
8	BLACK	PR	PROPOSED
9	YELLOW		
10	VIOLET		
11	ROSE		
12	AQUA		

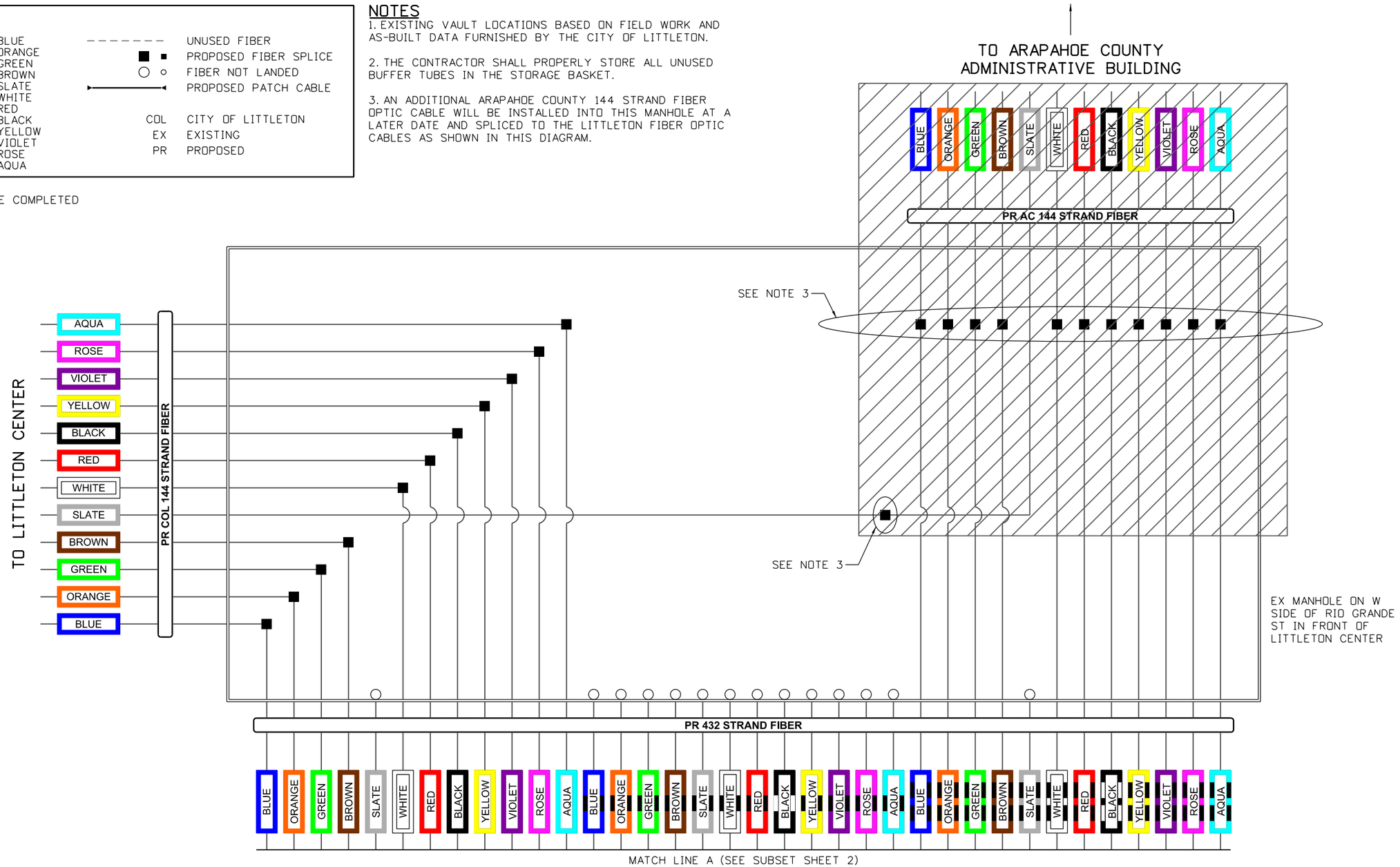
WORK TO BE COMPLETED BY OTHERS

NOTES

1. EXISTING VAULT LOCATIONS BASED ON FIELD WORK AND AS-BUILT DATA FURNISHED BY THE CITY OF LITTLETON.

2. THE CONTRACTOR SHALL PROPERLY STORE ALL UNUSED BUFFER TUBES IN THE STORAGE BASKET.

3. AN ADDITIONAL ARAPAHOE COUNTY 144 STRAND FIBER OPTIC CABLE WILL BE INSTALLED INTO THIS MANHOLE AT A LATER DATE AND SPLICED TO THE LITTLETON FIBER OPTIC CABLES AS SHOWN IN THIS DIAGRAM.



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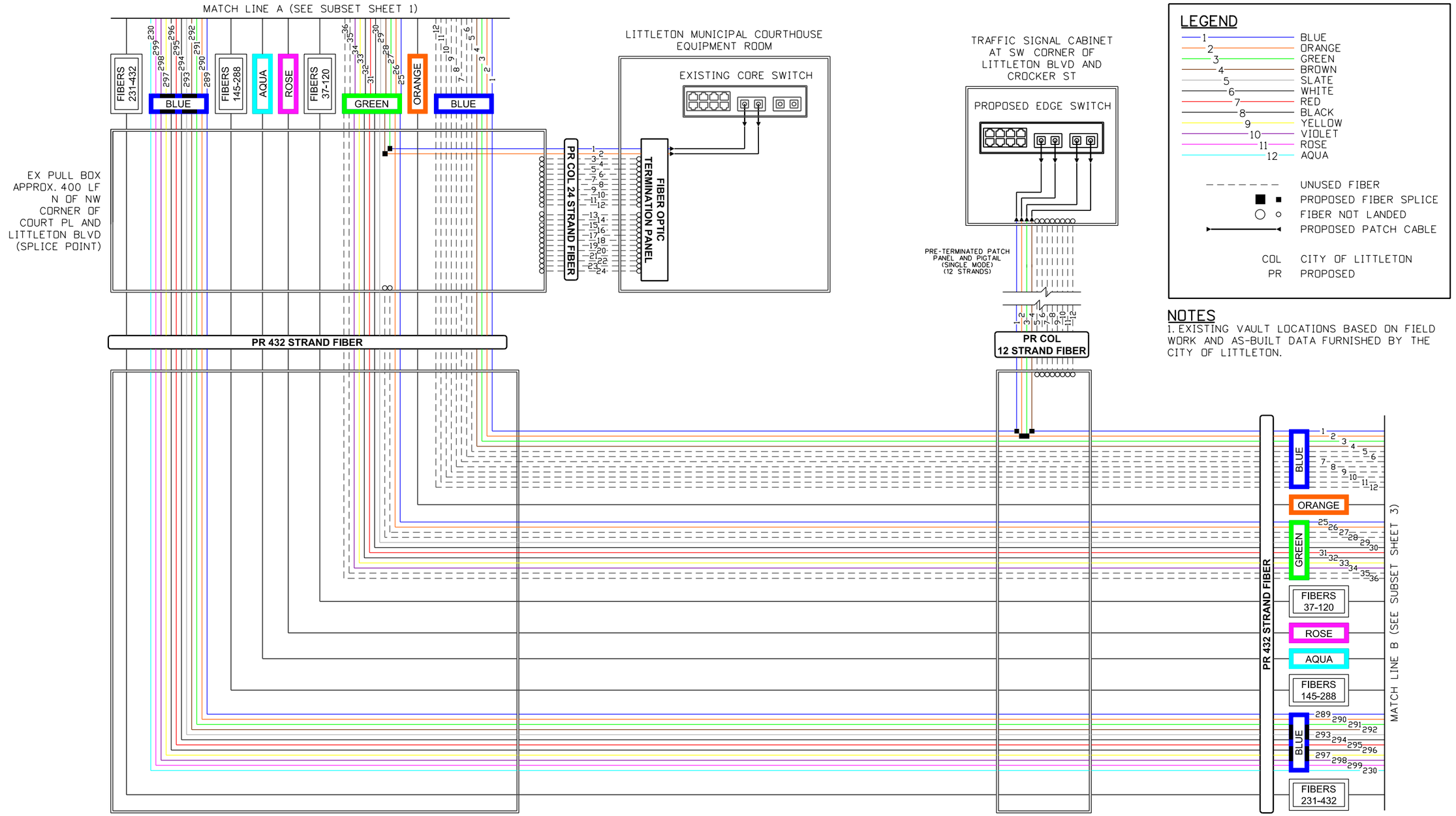
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RIO GRANDE ST
SPLICING DIAGRAMS

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: SPLICE
Structure Numbers:
Subset Sheets: 1 of 6

Project No./Code
21-37

Sheet Number 28



LEGEND

- BLUE
- ORANGE
- GREEN
- BROWN
- SLATE
- WHITE
- RED
- BLACK
- YELLOW
- VIOLET
- ROSE
- AQUA
- UNUSED FIBER
- PROPOSED FIBER SPLICE
- FIBER NOT LANDED
- PROPOSED PATCH CABLE
- COL CITY OF LITTLETON
- PR PROPOSED

NOTES

1. EXISTING VAULT LOCATIONS BASED ON FIELD WORK AND AS-BUILT DATA FURNISHED BY THE CITY OF LITTLETON.

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LITTLETON BLVD SPLICING DIAGRAMS

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: SPLICE
Structure Numbers:
Subset Sheets: 2 of 6

Project No./Code: 21-37

Sheet Number 29

TRAFFIC SIGNAL CABINET AT SW CORNER OF LITTLETON BLVD AND WINDERMERE ST

PROPOSED EDGE SWITCH

PRE-TERMINATED PATCH PANEL AND PIGTAIL (SINGLE MODE) (12 STRANDS)

PR COL 12 STRAND FIBER

ARAPAHOE COUNTY PLAZA EQUIPMENT ROOM

EXISTING CORE SWITCH

FIBER OPTIC TERMINATION PANEL

PR AC 24 STRAND FIBER

TRAFFIC SIGNAL CABINET AT NW CORNER OF LITTLETON BLVD AND DATURA ST

PROPOSED EDGE SWITCH

PRE-TERMINATED PATCH PANEL AND PIGTAIL (SINGLE MODE) (12 STRANDS)

PR COL 12 STRAND FIBER

LEGEND

1	BLUE
2	ORANGE
3	GREEN
4	BROWN
5	SLATE
6	WHITE
7	RED
8	BLACK
9	YELLOW
10	VIOLET
11	ROSE
12	AQUA
- - - - - - -	UNUSED FIBER
■ ■	PROPOSED FIBER SPLICE
○ ○	FIBER NOT LANDED
►——◄	PROPOSED PATCH CABLE
COL	CITY OF LITTLETON
PR	PROPOSED

PR 432 STRAND FIBER

BLUE 1-12

ORANGE 25-30

GREEN 31-36

FIBERS 37-120

ROSE

AQUA

FIBERS 145-288

BLUE 289-296

BLUE 297-299, 230

FIBERS 231-432

MATCH LINE B (SEE SUBSET SHEET 2)

SEE NOTE 2

PR PULL BOX AT SW CORNER OF LITTLETON BLVD AND WINDERMERE ST (SPLICE POINT)

PR COL 24 STRAND FIBER

BLUE 1-12

ORANGE 13-24

MATCH LINE D (SEE SUBSET SHEET 5)

PR PULL BOX AT SW CORNER OF LITTLETON BLVD AND DATURA ST (SPLICE POINT)

MATCH LINE C (SEE SUBSET SHEET 4)

WORK TO BE COMPLETED BY OTHERS

NOTES

1. EXISTING VAULT LOCATIONS BASED ON FIELD WORK AND AS-BUILT DATA FURNISHED BY THE CITY OF LITTLETON.

2. AN ADDITIONAL ARAPAHOE COUNTY 24 STRAND FIBER OPTIC CABLE WILL BE INSTALLED BY OTHERS INTO THIS PULL BOX AT A LATER DATE AND SPLICED TO THE 432 STRAND FIBER OPTIC BACKBONE.

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LITTLETON BLVD
SPLICING DIAGRAMS

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: SPLICE
Structure Numbers:
Subset Sheets: 3 of 6

Project No./Code: 21-37

Sheet Number 30

LEGEND

1 BLUE	UNUSED FIBER
2 ORANGE	PROPOSED FIBER SPLICE
3 GREEN	EXISTING FIBER SPLICE
4 BROWN	FIBER NOT LANDED
5 SLATE	PROPOSED PATCH CABLE
6 WHITE	EXISTING PATCH CABLE
7 RED	COL CITY OF LITTLETON
8 BLACK	PR PROPOSED
9 YELLOW	
10 VIOLET	
11 ROSE	
12 AQUA	

NOTES

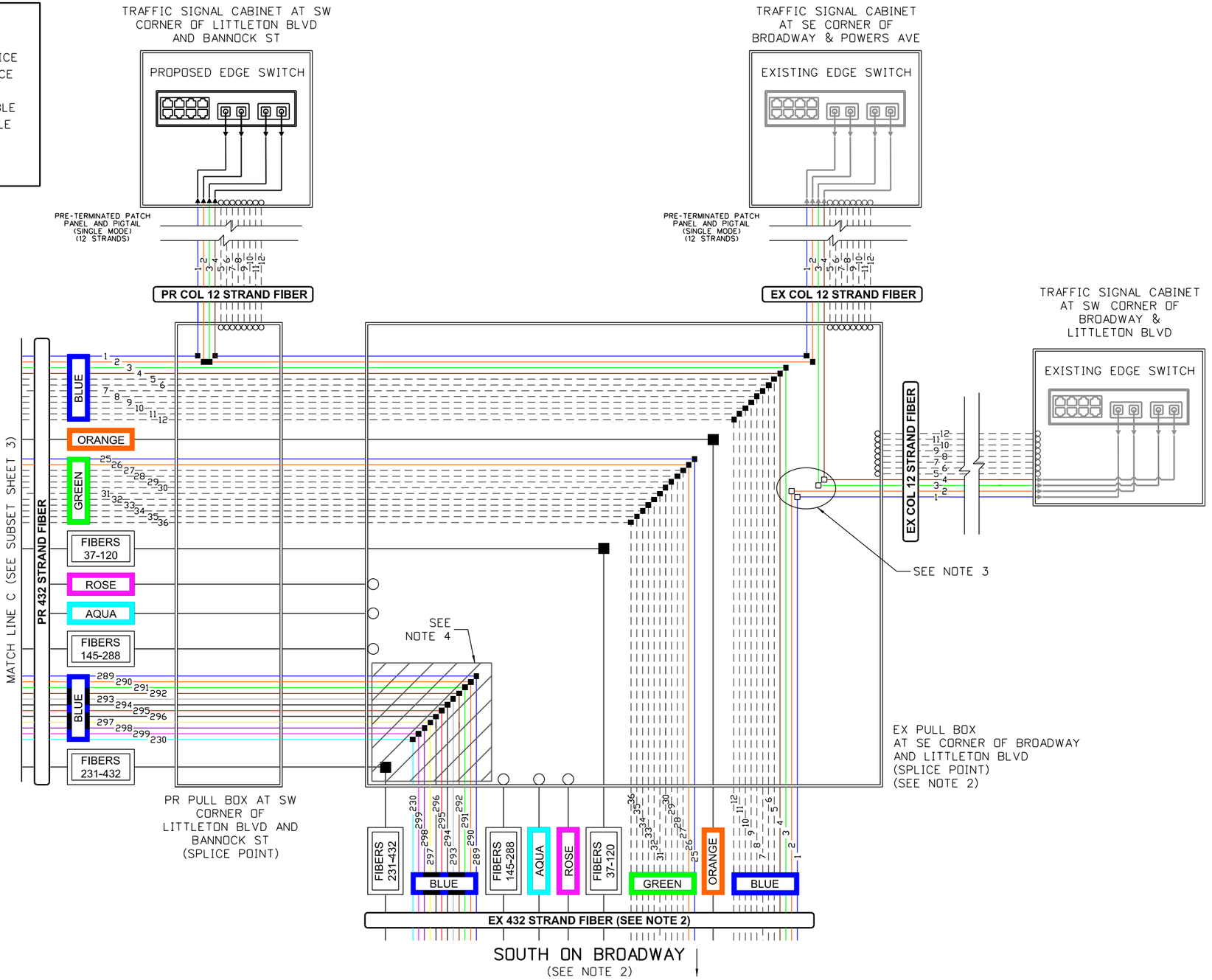
1. EXISTING VAULT LOCATIONS BASED ON FIELD WORK AND AS-BUILT DATA FURNISHED BY THE CITY OF LITTLETON.

2. FIBER OPTIC BACKBONE ON BROADWAY AND FIBER PULL BOX AT SE CORNER OF BROADWAY & LITTLETON BLVD WERE INSTALLED DURING THE SOUTH BROADWAY COMMUNICATIONS UPGRADE PROJECT. CONTRACTOR SHALL UTILIZE THE EXISTING SPLICE ENCLOSURE AT THIS LOCATION TO PERFORM THE ADDITIONAL SPLICES PROPOSED ON THIS PROJECT.

3. SPLICES CONNECTING THE BROADWAY & LITTLETON BLVD AND BROADWAY & POWERS AVE INTERSECTIONS TO THE BROADWAY FIBER BACKBONE CABLE WERE COMPLETED DURING THE SOUTH BROADWAY COMMUNICATIONS UPGRADE PROJECT. THESE SPLICES SHALL BE PROTECTED IN PLACE.

4. SPLICES OF ARAPAHOE COUNTY'S BACKBONE FIBERS 289-432 WILL BE COMPLETED BY OTHERS AT A LATER DATE.

WORK TO BE COMPLETED BY OTHERS



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Sheet Number 31

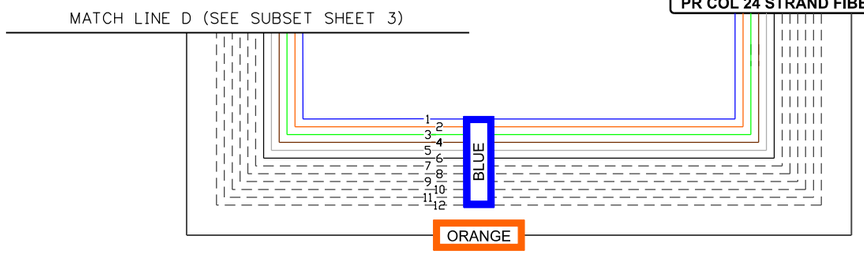
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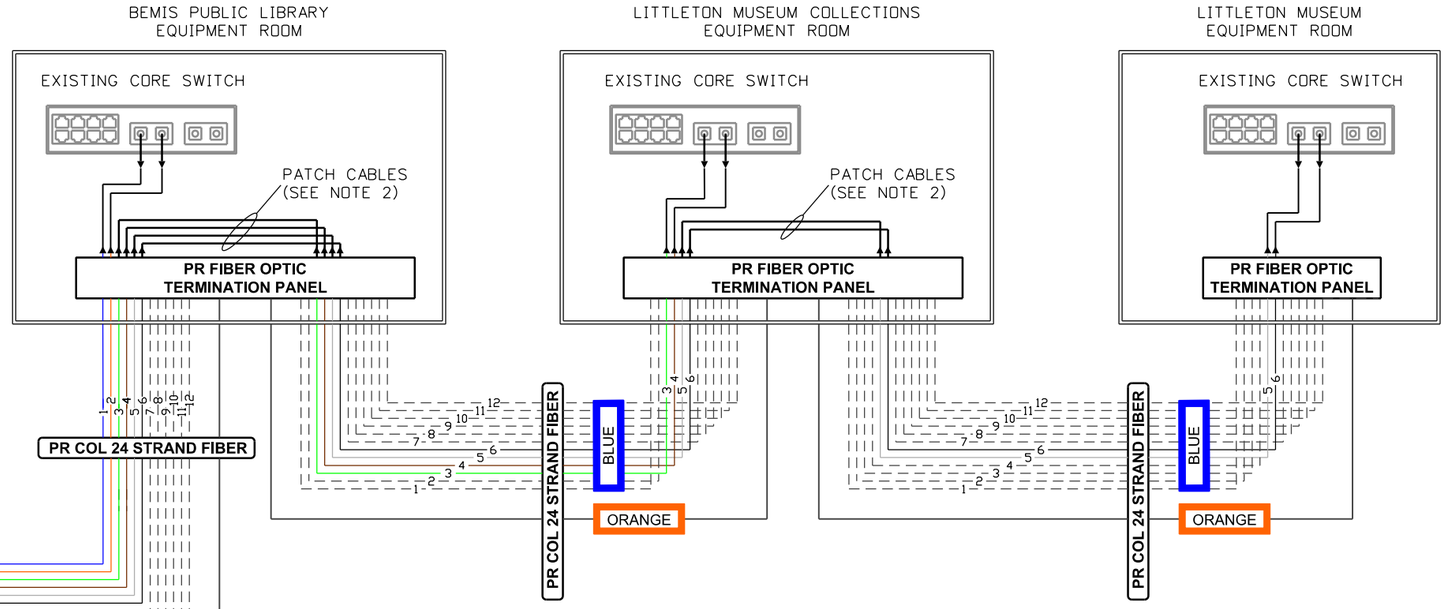
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2 ORANGE	PROPOSED FIBER SPLICE
3 GREEN	FIBER NOT LANDED
4 BROWN	PROPOSED PATCH CABLE
5 SLATE	
6 WHITE	COL CITY OF LITTLETON
7 RED	PR PROPOSED
8 BLACK	
9 YELLOW	
10 VIOLET	
11 ROSE	
12 AQUA	

NOTES

1. EXISTING VAULT LOCATIONS BASED ON FIELD WORK AND AS-BUILT DATA FURNISHED BY THE CITY OF LITTLETON.

2. CONTRACTOR TO PATCH FIBERS OF PROPOSED CABLES TOGETHER AS SHOWN ON THESE PLANS TO ALLOW CONNECTIVITY TO DOWNSTREAM BUILDINGS.





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DATURA ST, GALLUP ST
SPLICING DIAGRAMS

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: SPLICE
Structure Numbers:
Subset Sheets: 5 of 6

Project No./Code: 21-37

Sheet Number 32

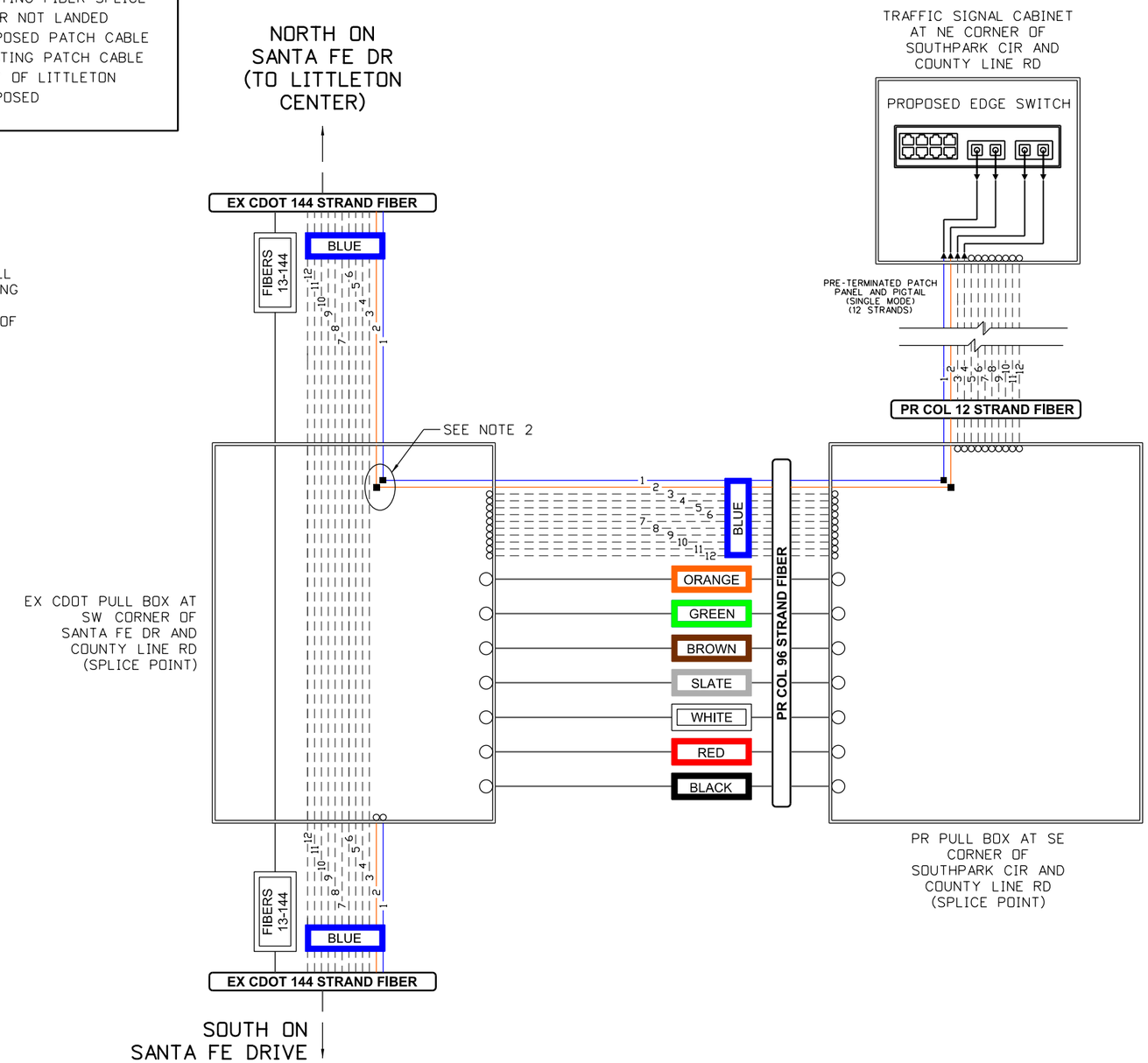
LEGEND

1 BLUE	UNUSED FIBER
2 ORANGE	PROPOSED FIBER SPLICE
3 GREEN	EXISTING FIBER SPLICE
4 BROWN	FIBER NOT LANDED
5 SLATE	PROPOSED PATCH CABLE
6 WHITE	EXISTING PATCH CABLE
7 RED	COL CITY OF LITTLETON
8 BLACK	PR PROPOSED
9 YELLOW	
10 VIOLET	
11 ROSE	
12 AQUA	

NOTES

1. EXISTING VAULT LOCATIONS BASED ON FIELD WORK AND AS-BUILT DATA FURNISHED BY THE CITY OF LITTLETON.

2. CONTRACTOR TO SPLICE PROPOSED LITTLETON FIBER BACKBONE TO EXISTING CDOT BACKBONE AT THE EXISTING CDOT PULL BOX. EXISTING FIBER OPTIC SPLICES SHALL BE PROTECTED IN PLACE, AND CONTRACTOR SHALL PERFORM ALL PROPOSED SPLICING AT THIS LOCATION WITHOUT DISTURBING THE EXISTING SPLICES. CONTRACTOR SHALL CONTACT JILL SCOTT WITH CDOT ITS GROUP (303) 512-5808 A MINIMUM OF TWO WEEKS PRIOR TO PERFORMING THIS WORK.



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Horiz. Scale: N/A				Revised:	Detailer: D. MURIE
consor 1675 LARIMER ST, STE 400 DENVER, COLORADO 80202 PH: 303-339-0440 FAX: 303-325-7743				Void:	Sheet Subset: SPLICE
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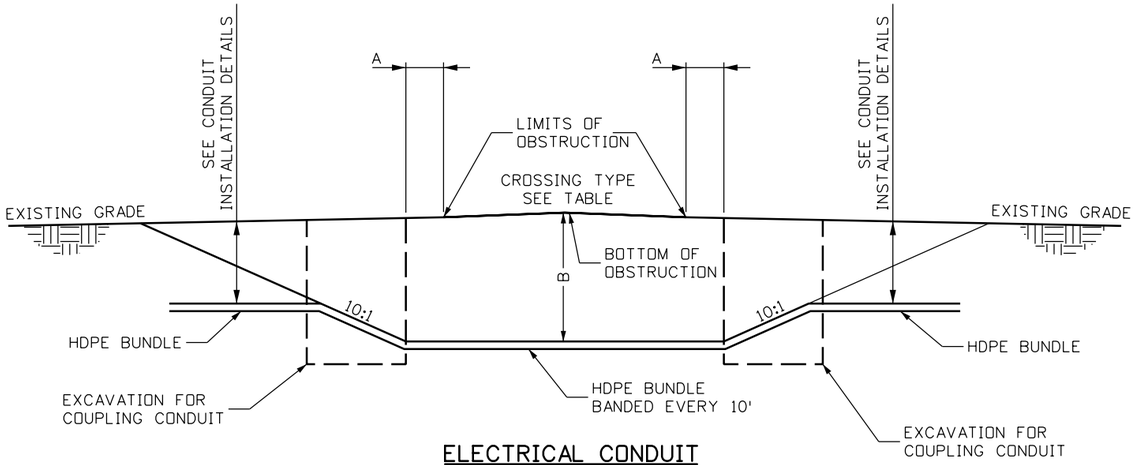
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Sheet Number 33

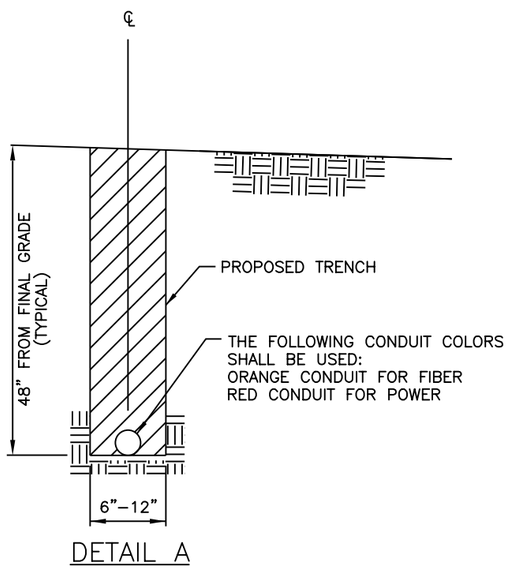
NOTES:

1. CONTRACTOR SHALL CONFORM TO THE APPLICABLE AGENCY REQUIREMENTS AND SPECIFICATION FOR BORE CROSSINGS.
2. EXCAVATIONS AND DISTURBANCE LIMITS REQUIRE SEEDING AND MULCHING OR LANDSCAPE RESTORATION.
3. CONTRACTOR SHALL BACKFILL AND REGRADE SITE TO MATCH EXISTING CONDITIONS.
4. CONTRACTOR MUST REPAIR ANY DAMAGE TO PAVEMENT CAUSED BY ERRANT BORING AT THEIR COST.
5. TRENCHES SHALL BE FILLED IN BY THE END OF THE WORK DAY. CONTRACTOR SHALL USE A BMP ON THE DOWNSTREAM SIDE OF ANY REMAINING SPOILS TO PREVENT THE TRANSPORT OF THE SEDIMENT DURING A RAIN EVENT.



ELECTRICAL CONDUIT (BORED) PROFILE

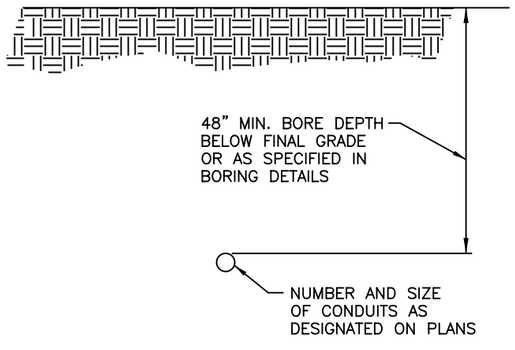
NTS



DETAIL A

TRENCHING IN FILL

NTS



DIRECTIONAL BORE

NTS

CROSSING TYPE	A	B
CULVERT	5' MIN	48" MIN
DRIVEWAY	5' MIN	48" MIN
DITCH	15' MIN	48" MIN
CROSS ROAD	15' MIN	48" MIN
FREEWAY	15' MIN	48" MIN
PRAIRIE DOGS	15' MIN	84" MIN
TREE	20' MIN	84" MIN
WATERWAY	50' MIN	48" MIN
WETLAND	50' MIN	48" MIN

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Print Date: 11/15/2024
File Name: 200420_DET01_Conduit Installation.dgn
Horiz. Scale: NTS Vert. Scale: As Noted

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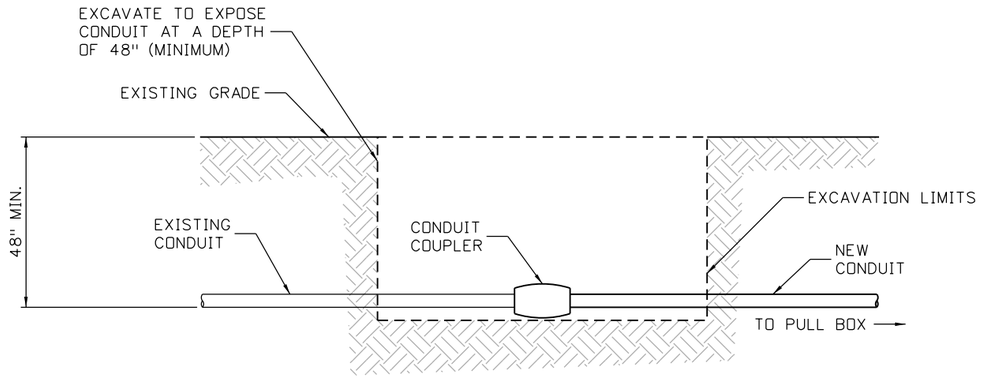
As Constructed
No Revisions:
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CONDUIT INSTALLATION ITS DETAIL

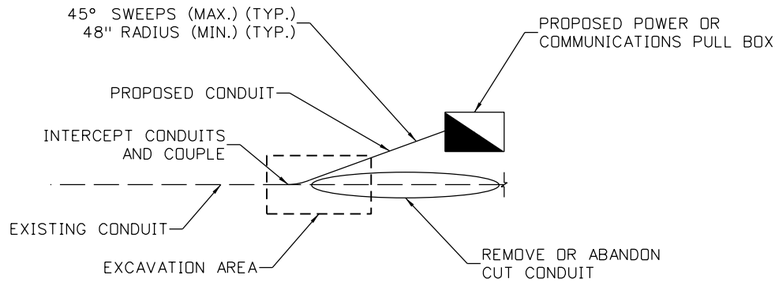
Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: DETAILS
Structure Numbers:
Subset Sheets: 1 of 7

Project No./Code: 21-37

Sheet Number 34



CONDUIT EXCAVATION AND COUPLING DETAIL



PROPOSED PULL BOX
CONDUIT COUPLING DETAIL

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Print Date: 11/15/2024
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CONDUIT COUPLING
ITS DETAIL

Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: DETAILS
Structure Numbers
Subset Sheets: 2 of 7

Project No./Code
21-37

Sheet Number 35

- DIRECTION OF FIBER OPTIC CABLE RUN (BACKBONE AND LATERAL CABLES)
- DEVICE ATTACHED (LATERAL CABLE)
- FOOTAGE MEASUREMENT AT PULL BOX OR MANHOLE (TMS) LOCATION (BACKBONE AND LATERAL CABLES)
- FIBER MANUFACTURER SERIAL NUMBER (BACKBONE AND LATERAL CABLES)
- NUMBER OF FIBERS IN CABLE (BACKBONE AND LATERAL CABLES)
- DATE OF INSTALLATION (BACKBONE AND LATERAL CABLES)

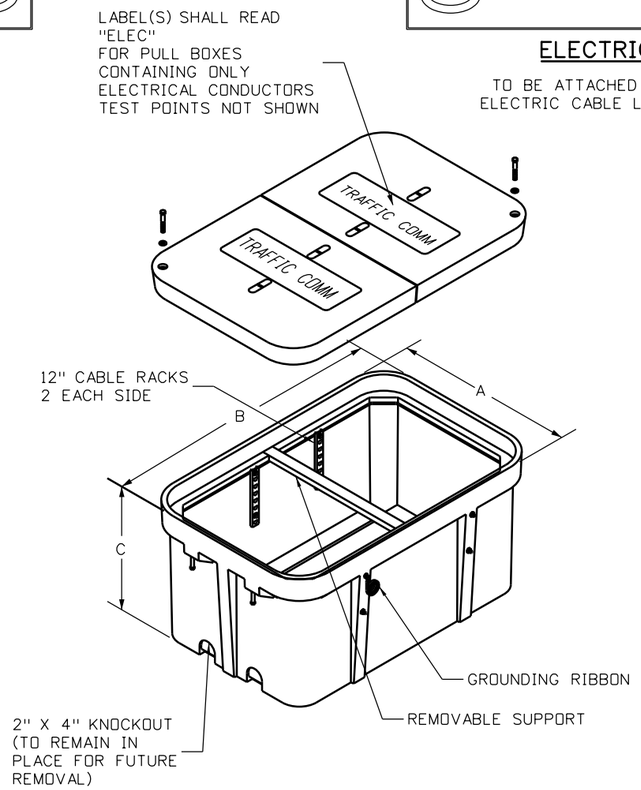
COMMUNICATIONS CABLE LABEL

TO BE ATTACHED BY PLASTIC TIE TO EACH COMMUNICATIONS CABLE LOCATED IN ALL PULL BOXES AND MANHOLES (TMS)

- FED FROM: DESCRIPTION OF SERVICE LOCATION / __LF __(DIRECTION) / THROUGH __PULL BOXES
- FEEDS: DESCRIPTION OF ITS CABINET / __LF __(DIRECTION) / THROUGH __PULL BOXES
- NUMBER OF CONDUCTORS AND SIZE (e.g. 3C#6)

ELECTRIC CABLE LABEL

TO BE ATTACHED BY PLASTIC TIE TO EACH ELECTRIC CABLE LOCATED IN ALL PULL BOXES



ITS PULL BOX

ITS PULL BOX TYPE	DIMENSIONS (INCHES)			KNOCKOUT	COILED TRACER WIRE (FEET)
	A	B	C	MOUSE HOLE TYPE	
24" X 36" X 24"	24	36	24	4	6
30" X 48" X 24"	30	48	24	4	6

PULL BOX NOTES:

1. CONDUITS DEPICTED ON THIS TYPICAL DETAIL ARE REPRESENTATIVE ONLY. NUMBER OF CONDUITS INSTALLED AND CONDUIT SIZE SHALL BE AS TABULATED AND SHOWN ON THE PLANS.
2. DESIGNATION FOR THE INSTALLATION OF ELECTRICAL WIRING AND FIBER OPTIC CABLE IN THE BACKBONE CONDUIT SYSTEM IS DESCRIBED IN THE PROJECT SPECIFICATIONS.
3. CONDUIT CENTERLINE SHALL BE ALIGNED WITHIN THE PULL BOX TO FACILITATE FIBER OPTIC CABLE PULLING.
4. CONDUIT PLUGS SHALL BE INSTALLED IN ALL CONDUITS, BOTH WITH AND WITHOUT WIRE OR CABLE AND SHALL BE INCLUDED IN THE COST OF ELECTRICAL CONDUIT ITEM.
5. WEATHERPROOF TAGS SHALL BE INSTALLED ON ALL COMMUNICATIONS AND ELECTRIC CABLES AND SHALL BE INCLUDED IN THE COST OF ELECTRICAL CONDUIT ITEM.
6. TRACER WIRE AND PULL TAPE SHALL BE INCLUDED IN THE COST OF ELECTRICAL CONDUIT ITEM FOR BOTH BACKBONE AND LATERAL CONDUIT RUNS.
   - IF INSTALLATION INCLUDES MULTIPLE RUNS OF CONDUIT, PULL TAPE SHALL BE INSTALLED IN EACH INDIVIDUAL CONDUIT, TRACER WIRE SHALL BE INSTALLED IN THE CONDUIT CONTAINING FIBER OPTIC CABLE.
   - IF INSTALLATION INCLUDES ONLY ONE RUN OF CONDUIT, PULL TAPE AND TRACER WIRE SHALL BE INSTALLED IN SAME CONDUIT AS FIBER CABLE.
7. ALL PULL BOX TYPES SHALL BE PAID FOR UNDER THE CORRESPONDING PULL BOX ITEM, AND SHALL BE SIZED AS TABULATED AND SHOWN IN THE PLANS.
8. PULL BOXES SHALL HAVE A CONCRETE APRON SLOPED AWAY FROM PULL BOX OPENING. THE COST OF THE CONCRETE APRON SHALL BE PAID FOR AS PART OF PULL BOX ITEM.
9. FIBER OPTIC CABLE COILS WITHIN PULL BOXES SHALL BE TIED TO EACH CABLE RACK. PLASTIC WIRE TIES SHALL NOT BE ALLOWED. CAUTION SHALL BE TAKEN TO COIL THE FIBER CABLE PER MANUFACTURER'S RECOMMENDATIONS.
10. WORK TO INSTALL PULL BOX SHALL INCLUDE BUT NOT BE LIMITED TO SAW CUTTING OF CONCRETE SIDEWALKS, REMOVAL OF PAVEMENT, CONCRETE, EARTHWORK, ALL LANDSCAPE RESTORATION. ALL MATERIAL SHALL BE CONTAINED BY AN APPROVED BMP AND NOT ALLOWED TO RUN OFF SITE.
11. PULL BOX TYPES AS DEPICTED ON THIS PROJECT DETAIL SHALL NOT BE INSTALLED IN THE ASPHALT OR CONCRETE SHOULDER OF THE ROADWAY.
12. ALL PULL BOXES AND COVERS LOCATED IN AREAS WITH NON-DELIBERATE VEHICULAR TRAFFIC MUST COMPLY WITH ALL TEST PROVISIONS OF LATEST EDITION OF THE ANSI/SCTE 77 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY" AND MUST MEET THE TIER 22 APPLICATION. MARKING SHOWING THE TIER 22 RATING MUST BE LABELED OR STENCILED ON THE INSIDE AND OUTSIDE OF THE BOX AND ON THE UNDERSIDE OF THE COVER.
13. COVER MUST BE SECURED TO PULL BOX USING 3/8-7 LAG THREAD HEX HEAD BOLTS.
14. A COMPLIANCE LETTER FROM THE MANUFACTURER OF THE PULL BOXES SHALL BE SUBMITTED ALONG WITH MATERIAL SUBMITTALS. THE COMPLIANCE LETTER SHALL INDICATE THAT THE PULL BOX MANUFACTURER HAS MET OR EXCEEDED ALL TEST PROVISIONS OF THE LATEST EDITION OF THE ANSI/SCTE 77 & ALL OF CDOT REQUIREMENTS LISTED IN PLAN DETAILS.
15. THE DEEP RECESS OF THE POLYMER CONCRETE PULL BOX SHALL BE CLEANED WITH AN ALCOHOL-BASED CLEANER PRIOR TO APPLYING LABELS.

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Print Date: 11/15/2024
File Name: 200420_DET03_Pull Boxes - Detail 1.dgn
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PULL BOX (1 OF 2)
ITS DETAIL

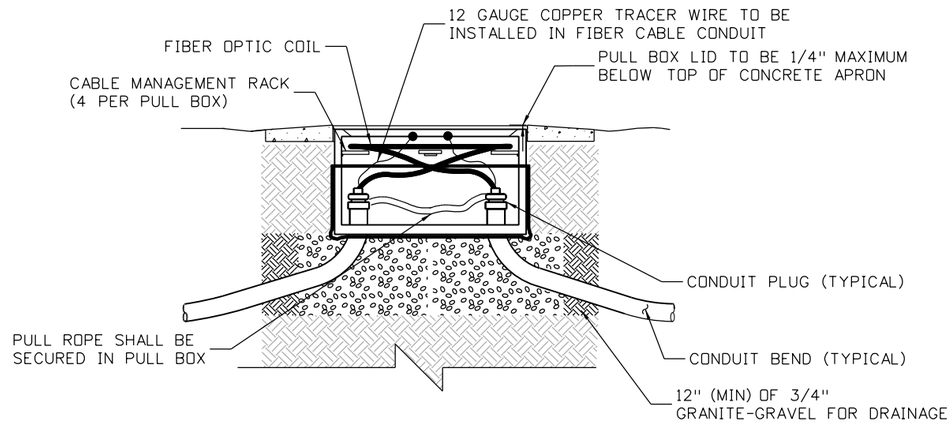
Designer: B. WALDMAN
Detailer: D. MURIE
Sheet Subset: DETAILS
Structure Numbers:
Subset Sheets: 3 of 7

Project No./Code: 21-37

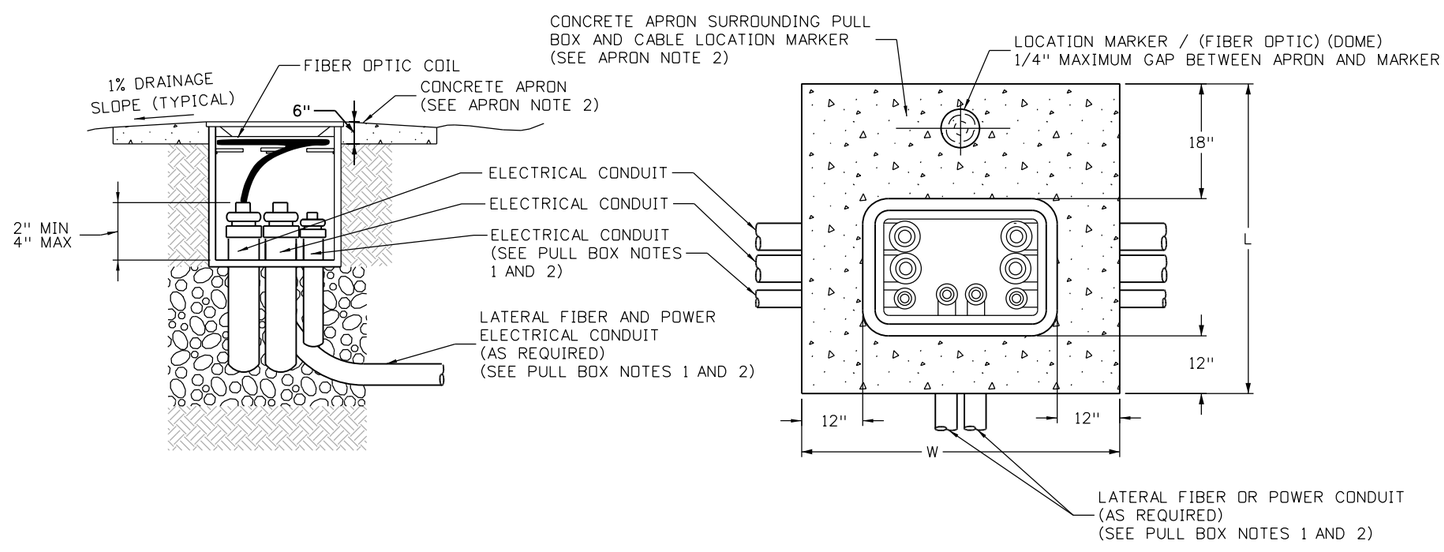
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ITS PULL BOX TYPE	CONCRETE APRON DIMENSIONS (INCHES) (SEE APRON NOTE 1)	
	W	L
24" X 36" X 24"	60	54
30" X 48" X 24"	72	60

APRON NOTES:
1. APRON DIMENSIONS MAY VARY BASED ON PULL BOX WALL THICKNESS.
2. WITH APPROVAL FROM ENGINEER, A SKID-RESISTANT PRECAST CONCRETE OR POLYMER CONCRETE APRON OF SIMILAR DIMENSIONS MAY BE USED. GROUND SHALL BE COMPACTED PER MANUFACTURER RECOMMENDATIONS.



CONDUIT BEND NOTES:
1. RADIUS MUST NOT BE LESS THAN 48" FOR CONDUIT CONTAINING FIBER
2. SWEEP MUST NOT BE GREATER THAN 45 DEGREES
3. DURING CABLE INSTALLATION, CONTRACTOR SHALL ENSURE NO DAMAGE TO CABLE OCCURS DUE TO FRICTION BETWEEN CONDUIT AND CABLE JACKET. THIS MAY REQUIRE INSTALLING TEMPORARY PVC SWEEPS ON HDPE CONDUIT ENDS.



ITS PULL BOX INSTALLATION

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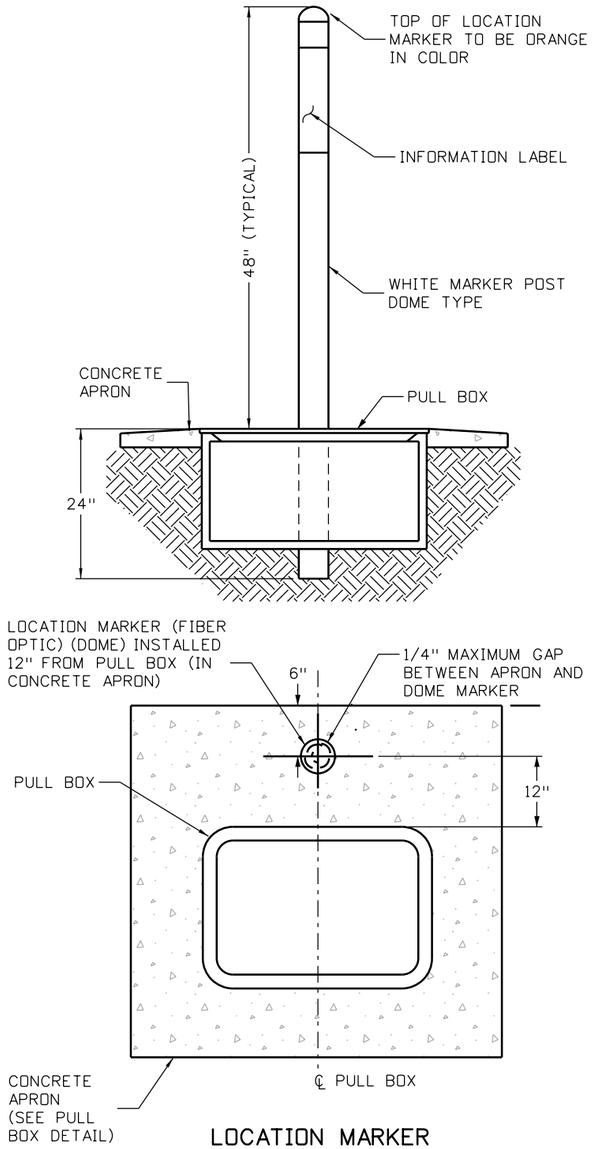
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PULL BOX (2 OF 2)
ITS DETAIL

Designer: B. WALDMAN
Detailer: D. MURIE
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Structure Numbers
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21-37

Sheet Number 37



LOCATION MARKER (FIBER OPTIC) (DOME) AT PULL BOXES

3" x 6' DOME TYPE POST



LOCATION MARKER INFORMATION LABELING

BLACK LETTERING ON ORANGE BACKGROUND LOCATION MARKER (FIBER OPTIC) (DOME)

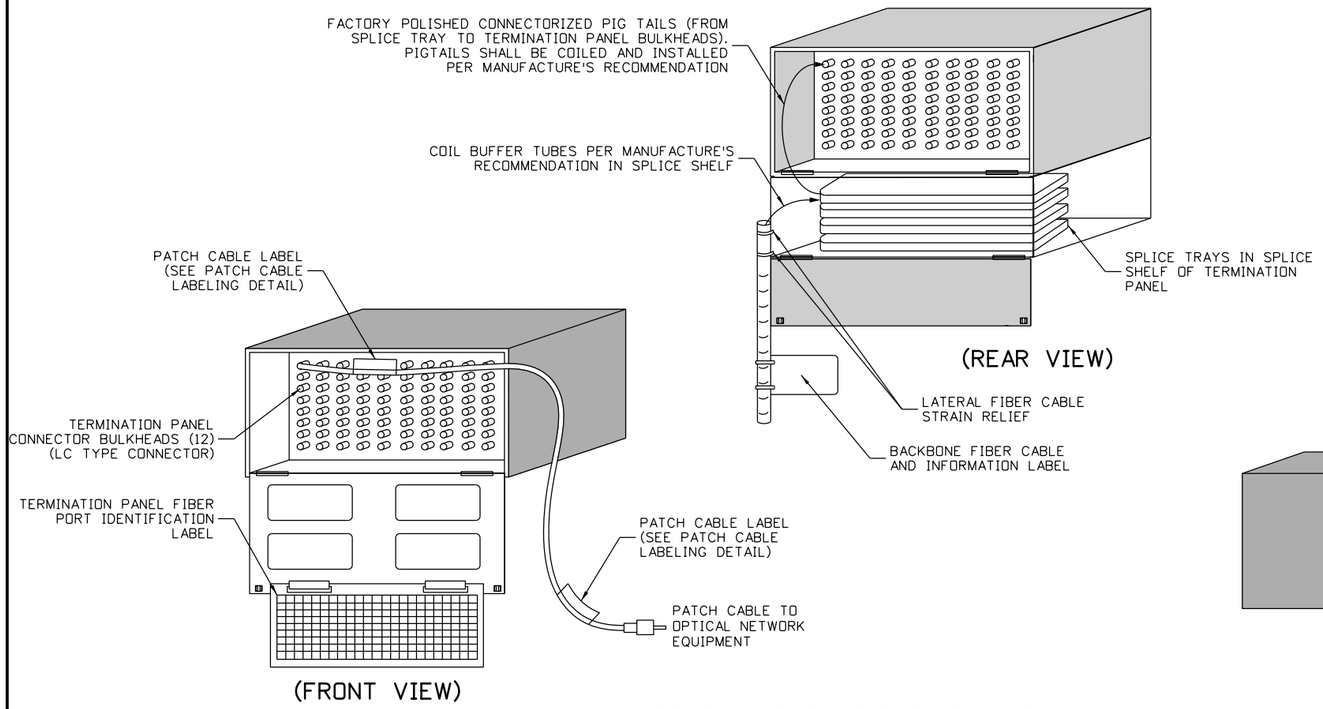
LOCATION MARKER INSTALLATION NOTES:

1. AREA AROUND LOCATION MARKER INSTALLATION SHALL BE RETURNED TO EXISTING GRADE AND CONDITION. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT BE INCLUDED IN THE COST OF LOCATION MARKER ITEM.
2. LOCATION MARKER (FIBER OPTIC) (DOME) SHALL BE INSTALLED AT EACH PULL BOX ALONG BOTH THE BACKBONE AND LATERAL FIBER OPTIC CABLE RUNS THROUGHOUT THE PROJECT.
3. CONCRETE FOOTING SUPPORT FOR LOCATION MARKER (FIBER OPTIC) (DOME) AT PULL BOX LOCATIONS SHALL BE INCLUDED IN THE COST OF EACH PULL BOX SHOWN IN THE PROJECT.
4. THE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER AN AS-BUILT DRAWING SHOWING THE INSTALLED LOCATIONS OF ALL MARKERS.
5. LOCATION MARKERS SHALL HAVE INFORMATION LABELS ATTACHED WITH ADHESIVE TO WITHSTAND HEAT AND COLD
6. WITH APPROVAL FROM ENGINEER A SKID RESISTANT, PRECAST CONCRETE OR POLYMER CONCRETE FOOTING SUPPORT OF SIMILAR DIMENSIONS MAY BE USED. GROUND SHALL BE COMPACTED PER MANUFACTURER RECOMMENDATIONS.

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Print Date: 11/15/2024		Sheet Revisions			CITY OF LITTLETON 2255 WEST BERRY AVENUE LITTLETON, CO 80120 PHONE: 303-795-3700
File Name: 200420_DET05_Location Marker.dgn		Date:	Comments	Init.	
Horiz. Scale: NTS Vert. Scale: As Noted					
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As Constructed	LOCATION MARKERS ITS DETAIL			Project No./Code
No Revisions:				21-37
Revised:	Designer: B. WALDMAN	Structure Numbers		
Void:	Detailer: D. MURIE			
	Sheet Subset: DETAILS	Subset Sheets: 5 of 7		Sheet Number 38

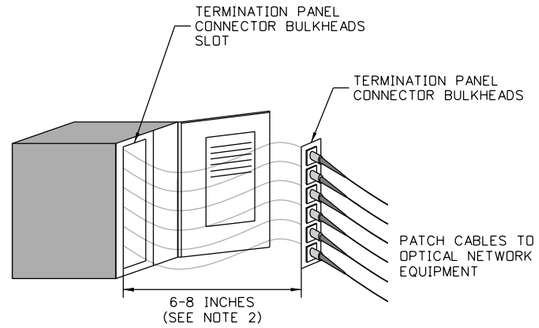


96 PORT OR LARGER TERMINATION PANEL

(TRAFFIC MANAGEMENT SYSTEM BUILDING)

NOTES:

1. WHEN A BACKBONE FIBER OPTIC CABLE IS BEING TERMINATED IN A NETWORK BUILDING TERMINATION PANEL, BUFFER TUBES SHALL BE SPLICED IN SPLICE TRAYS TO FACTORY POLISHED CONNECTORIZED PIG TAILS. NETWORK BUILDING TERMINATION PANEL SHALL HAVE A SPLICE SHELF WITH ADEQUATE STORAGE FOR BUFFER TUBE COILS AND SPLICE TRAYS.
2. THE CONTRACTOR SHALL PROVIDE SUFFICIENT FIBER OPTIC STRAND SLACK IN TERMINATION PANELS SO THE CONNECTOR BULKHEADS CAN BE REMOVED 6-8 INCHES FROM THE FRONT SIDE OF THE TERMINATION PANEL FOR FUTURE SERVICE AND MAINTENANCE.
3. PATCH CABLES USED TO CONNECT FROM A TERMINATION PANEL TO OPTICAL NETWORK EQUIPMENT IN A TRAFFIC MANAGEMENT SYSTEM BUILDING OR A FIELD CABINET SHALL HAVE AN INFORMATION LABEL ATTACHED TO BOTH ENDS.



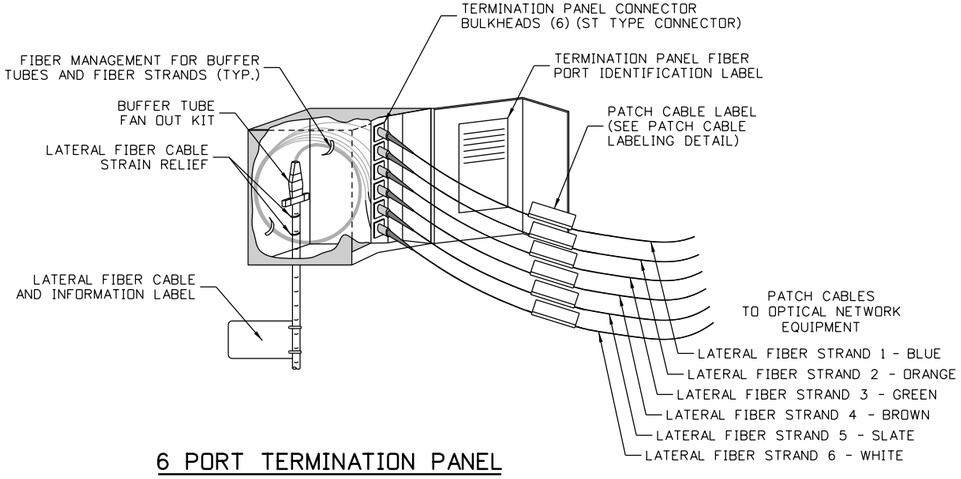
PATCH CABLE LABELING DETAIL

THE FOLLOWING INFORMATION SHALL BE SUPPLIED ON LABEL:

- TERMINATION PANEL PORT
- OPTICAL NETWORK EQUIPMENT PORT
- OPTICAL WAVELENGTH
- LOCATION AND DEVICES
- DATA DIRECTION AND NETWORK NODE BUILDING

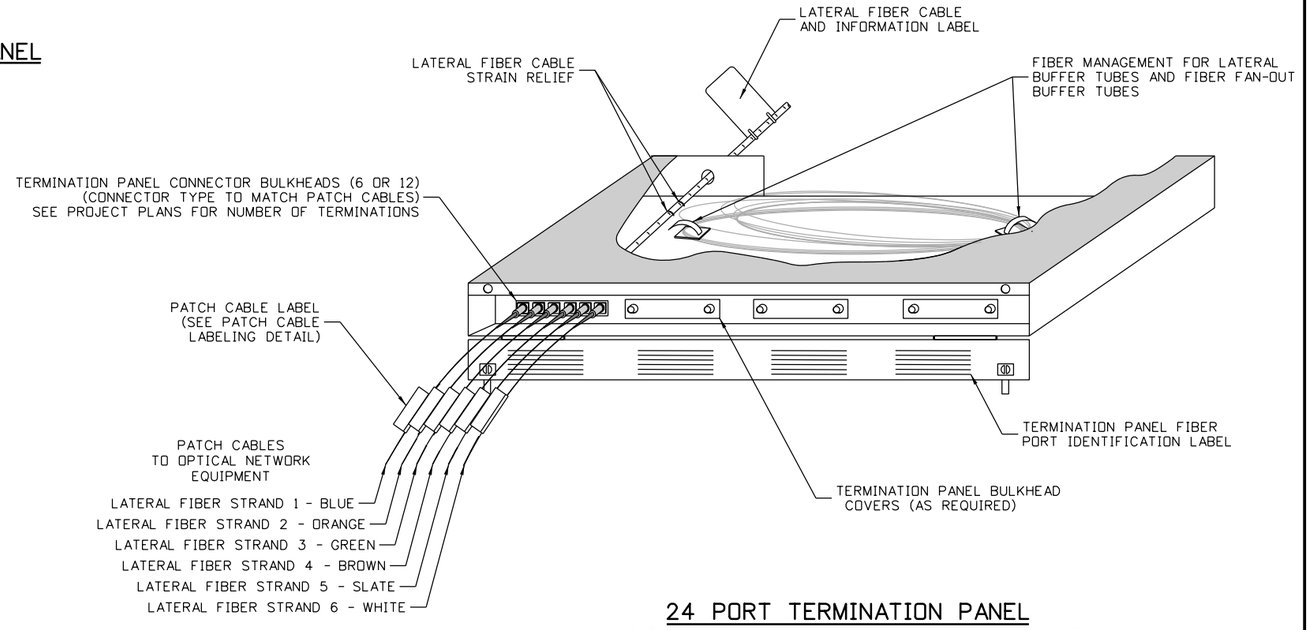
EXAMPLE LABEL:

TERMINATION PANEL PORT 1-2 CIENA 3930 PORT 9 1450NM 1-25 MM71 - NB VMS AND CCTV NB - 29TH STREET NODE



6 PORT TERMINATION PANEL

(FIELD CABINET)



24 PORT TERMINATION PANEL

(FIELD CABINET OR TRAFFIC MANAGEMENT SYSTEM BUILDING)

Print Date: 11/15/2024	Sheet Revisions			As Constructed	TERMINATION PANEL ITS DETAIL	Project No./Code
File Name: 200420_DET06_Termination Panel.dgn	Date:	Comments	Init.	No Revisions:		21-37
Horiz. Scale: NTS Vert. Scale: As Noted				Revised:	Designer: B. WALDMAN / Structure Numbers	
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					Sheet Subset: DETAILS / Subset Sheets: 6 of 7	Sheet Number 39

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NOTES:

1. WHERE NOTED IN THE PLANS, FIBER OPTIC CABLE SHALL BE SPLICED IN THE MANNER SHOWN. ADDITIONAL SPLICING WILL NOT BE ALLOWED UNLESS APPROVED BY THE PROJECT ENGINEER. IN NO CASE SHALL SPLICING CAUSE THE TOTAL OPTICAL SIGNAL TO EXCEED THE POWER BUDGET SPECIFIED BY THE NETWORK EQUIPMENT SPECIFICATION AND PROJECT SPECIFICATION.

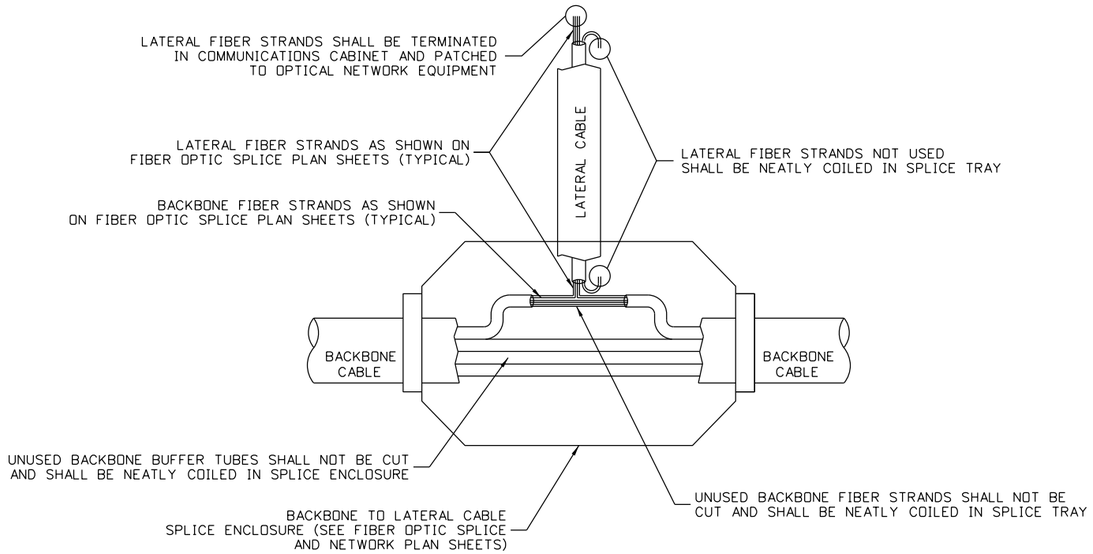
2. FIBER OPTIC CABLE SPLICES SHALL BE PLACED AND SEALED IN A WEATHERPROOF FIBER OPTIC SPLICE CLOSURE.

3. ONLY THE FIBER OPTIC BUFFER TUBES AND FIBER OPTIC STRANDS PROPOSED FOR SPLICING SHALL BE CUT AND ACCESSED FROM FIBER OPTIC CABLE. ALL OTHER FIBER OPTIC BUFFER TUBES SHALL REMAIN UNCUT AND SHALL BE NEATLY COILED IN SPLICE CLOSURE. ALL BARE FIBER STRANDS FROM THE PROPOSED FIBER OPTIC BUFFER TUBE SHALL BE NEATLY COILED IN THE SPLICE TRAY.

4. THE CONTRACTOR SHALL VERIFY DATA DIRECTIONS AT EACH SPLICE LOCATION AS IT PERTAINS TO THE OPERATION OF THE OPTICAL NETWORK EQUIPMENT PRIOR TO SPLICING.

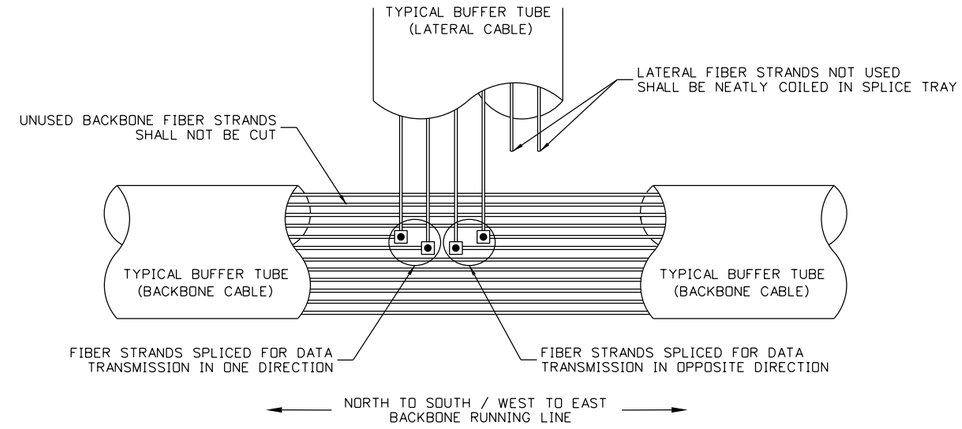
5. THE FUSION SPLICE METHOD SHALL BE THE ONLY ACCEPTABLE METHOD FOR SPLICING FIBER OPTIC STRANDS. AFTER THE FUSION SPLICE OF THE BACKBONE TO LATERAL CABLES ARE COMPLETE THEY SHALL BE PROTECTED BY FIBER OPTIC HEAT-SHRINKING SLEEVES AND INSERTED INTO THE SPLICE CHIPS SECURED TO THE SPLICE TRAY.

6. THE CONTRACTOR SHALL LABEL SPLICE TRAY IN THE BACKBONE TO LATERAL CABLE SPLICE CLOSURE WITH THE FOLLOWING INFORMATION:
   - BACKBONE BUFFER TUBE AND DIRECTION
   - LATERAL BUFFER TUBE AND DIRECTION
   - FOR SPLICES, LABEL BOTH THE BACKBONE FIBER STRANDS AND THE LATERAL FIBER STRANDS



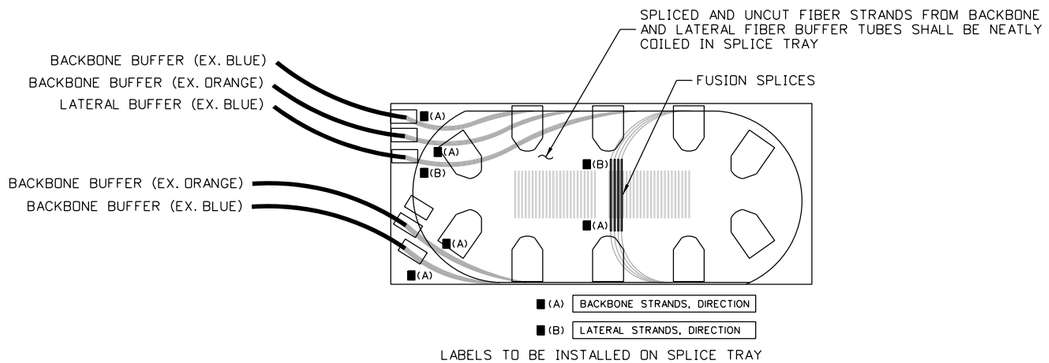
BACKBONE TO LATERAL CABLE SPLICING DETAIL

SCHEMATIC DETAIL ONLY



SPLICING DATA DIRECTION DETAIL

BUS NETWORK TOPOLOGY (DROP AND REPEAT/DAISY CHAIN)



LABELS TO BE INSTALLED ON SPLICE TRAY

BACKBONE TO LATERAL SPLICE TRAY LABELING DETAIL

Print Date: 11/15/2024	Sheet Revisions			As Constructed	FIBER OPTIC CABLE SPLICE ITS DETAIL
File Name: 200420_DET07_FO Cable Splice Non-CWDM.dgn	Date:	Comments	Init.	No Revisions:	Designer: B. WALDMAN
Horiz. Scale: NTS Vert. Scale: As Noted				Revised:	Detailer: D. MURIE
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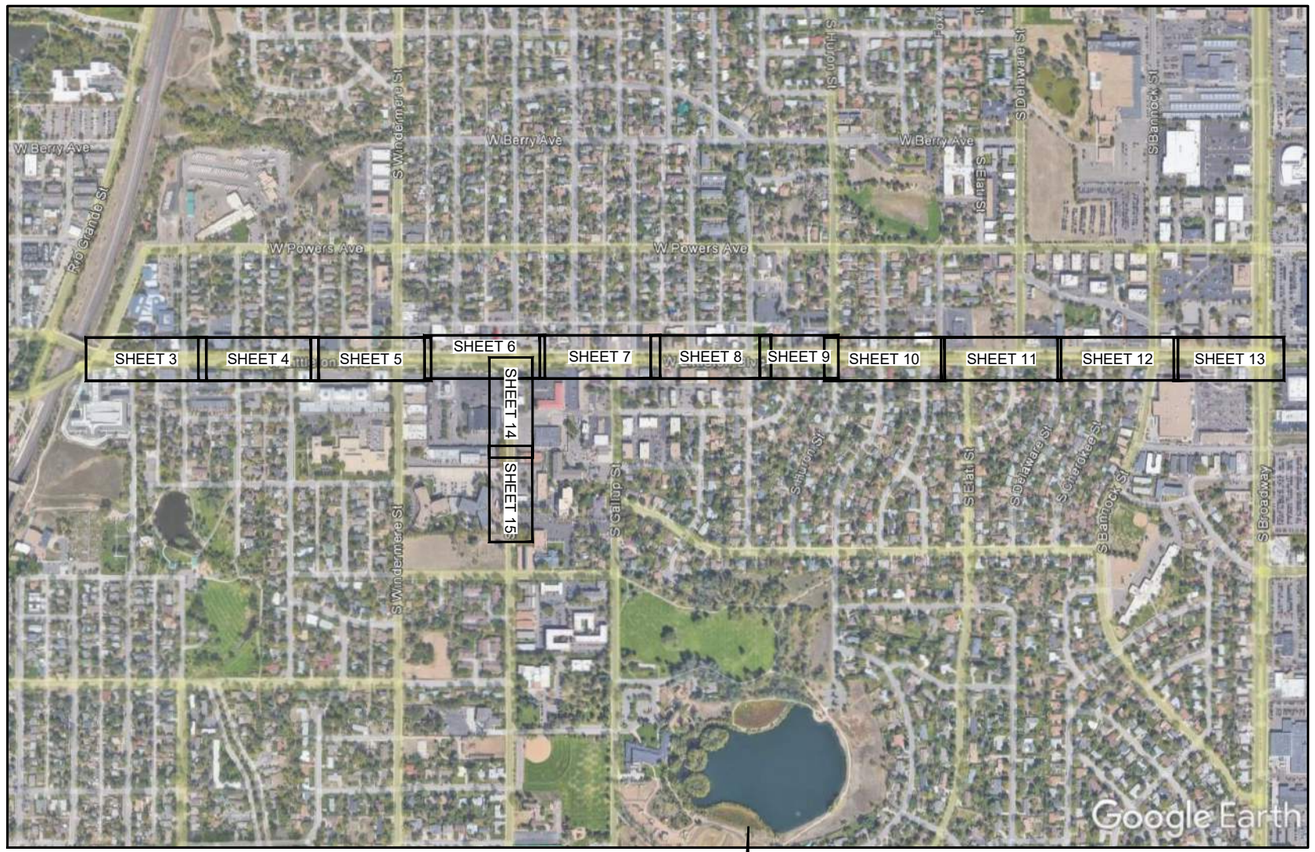
Project No./Code: 21-37

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WEST LITTLETON BLVD COMM UPGRADE

W LITTLETON BLVD



VICINITY MAP
SCALE: N.T.S.



VICINITY MAP
SCALE: N.T.S.

COLORADO LICENSED
KIERNAN G O'DONOVAN
33020
2/10/25
PROFESSIONAL ENGINEER

CAUTION: LOCATION OF EXISTING UTILITIES IS SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AS SUPPLIED BY THE UTILITY PROVIDERS INCLUDING TYPE, SIZE, LOCATION AND NUMBER OF UTILITIES. ALL SANITARY AND STORM SEWER ARE QUALITY LEVEL C UNLESS NOTED OTHERWISE. ACTUAL LOCATION WILL BE DETERMINED BY INSTALLING CONTRACTOR AT THE TIME OF CONSTRUCTION. ALL SANITARY SEWER SERVICES SHALL LOCATED AND MARKED BY INSTALLING CONTRACTOR AT TIME OF CONSTRUCTION UNLESS OTHERWISE REQUIRED BY LOCAL JURISDICTION. PRIOR TO DATE OF CONSTRUCTION INSTALLING CONTRACTOR SHALL VERIFY EXISTING UTILITIES WITH UNCC, AND/OR UTILITY COMPANIES AND/OR FACILITY OWNERS, AND/OR PRIVATE FACILITY OWNERS. FOR ADDITIONAL INFORMATION CONTACT: UNCC 1-800-922-1987. THE CONTRACTOR SHALL VERIFY EXISTENCE, SIZE, AND LOCATION OF EXISTING UTILITIES AND FACILITIES PRIOR TO CONSTRUCTION AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

CLIENT SHALL SAVE AND HOLD HARMLESS USIC, INC., ITS OFFICERS, AGENTS, AND EMPLOYEES AGAINST ALL LIABILITY INCLUDING DAMAGES, FINES, PENALTIES, DAMAGE TO PROPERTY OR INJURY OR DEATH OF ANY PERSON OR PERSONS ARISING OUT OF OR IN ANY WAY CONNECTED WITH, OR RESULTING FROM THE WORK TO BE PERFORMED HEREUNDER, INCLUDING BUT NOT LIMITED TO SUCH LIABILITY ARISING OUT OF, OR IN ANY WAY CONNECTED WITH, OR RESULTING FROM THE ACTS, NON-ACTS, NEGLIGENCE OR ALLEGED NEGLIGENCE OF USIC, INC., ITS OFFICERS, AGENTS, AND EMPLOYEES IN CONNECTION WITH THE WORK, HEREUNDER PROVIDED, HOWEVER THAT LIABILITY ARISING OUT OF THE SOLE AND EXCLUSIVE ACTS OF NEGLIGENCE OF USIC, INC., ITS OFFICERS, AGENTS, AND EMPLOYEES SHALL BE THE RESPONSIBILITY OF USIC, INC., SAID INDEMNIFICATION SHALL BE INCLUSIVE OF ALL COSTS AND ATTORNEYS' FEES AND/OR ANY JUDGMENT OR SETTLEMENT, RESULTING FROM EITHER CLAIM OR LITIGATION PURSUED AGAINST USIC, INC., ARISING OUT OF THIS AGREEMENT.

SHEET INDEX

1	COVER PAGE
2	LEGEND
3-16	UTILITY PLAN
17	EXISTING UTILITY QUALITY LEVEL DEFINITIONS

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Drawn By: CRG

SHEET TITLE: COVER PAGE

SHEET # 1

LEGEND:

- BORE BORE — PROPOSED BORE PATH
- TRENCH TRENCH — PROPOSED TRENCH
- ROW ROW — RIGHT OF WAY
- G G — NATURAL GAS LINE, (BY XCEL U.N.O.) (QUALITY LEVEL B)
- G G — NATURAL GAS LINE, (BY XCEL U.N.O.) (QUALITY LEVEL C OR D)
- P P — PETROLEUM PIPELINE (QUALITY LEVEL B)
- P P — PETROLEUM PIPELINE (QUALITY LEVEL C OR D)
- UE UE — UNDERGROUND ELECTRIC LINE (BY XCEL U.N.O.) (QUALITY LEVEL B)
- UE UE — UNDERGROUND ELECTRIC LINE (BY XCEL U.N.O.) (QUALITY LEVEL C OR D)
- OE OE — OVERHEAD ELECTRIC LINE (BY XCEL U.N.O.) (QUALITY LEVEL B)
- T T — TELEPHONE LINE (BY CENTURYLINK U.N.O.) (QUALITY LEVEL B)
- T T — TELEPHONE LINE (BY CENTURYLINK U.N.O.) (QUALITY LEVEL C OR D)
- TF TF — TELEPHONE FIBER LINE (BY CENTURYLINK U.N.O.) (QUALITY LEVEL B)
- TF TF — TELEPHONE FIBER LINE (BY CENTURYLINK U.N.O.) (QUALITY LEVEL C OR D)
- TD TD — TELEPHONE DUCT (BY CENTURYLINK U.N.O.) (QUALITY LEVEL B)
- TD TD — TELEPHONE DUCT (BY CENTURYLINK U.N.O.) (QUALITY LEVEL C OR D)
- CF CF — CABLE TV FIBER LINE (BY COMCAST U.N.O.) (QUALITY LEVEL B)
- CF CF — CABLE TV FIBER LINE(BY COMCAST U.N.O.) (QUALITY LEVEL C OR D)
- TV TV — CABLE TV LINE (BY COMCAST U.N.O.) (QUALITY LEVEL B)
- TV TV — CABLE TV LINE (BY COMCAST U.N.O.). (QUALITY LEVEL C OR D)
- FO FO — FIBER OPTIC LINE (QUALITY LEVEL B)
- FO FO — FIBER OPTIC LINE (QUALITY LEVEL C OR D)
- TR TR — TRAFFIC ELECTRIC LINE (BY CDOT, U.N.O.) (QUALITY LEVEL B)
- TR TR — TRAFFIC ELECTRIC LINE (BY CDOT, U.N.O.) (QUALITY LEVEL C OR D)
- W W — WATER LINE (CITY OF DENVER, U.N.O.) (QUALITY LEVEL B)
- W W — WATER LINE (CITY OF DENVER, U.N.O.) (QUALITY LEVEL C OR D)
- SS SS — SANITARY SEWER LINE (CITY OF DENVER, U.N.O.) (QUALITY LEVEL B)
- SS SS — SANITARY SEWER LINE (CITY OF DENVER, U.N.O.) (QUALITY LEVEL C OR D)
- ST ST — STORM SEWER LINE (CITY OF DENVER, U.N.O.) (QUALITY LEVEL B)
- ST ST — STORM SEWER LINE (CITY OF DENVER, U.N.O.) (QUALITY LEVEL C OR D)
- IR IR — IRRIGATION LINE (QUALITY LEVEL B)
- IR IR — IRRIGATION LINE (QUALITY LEVEL C OR D)
- MC MC — MISCELLANEOUS CONDUIT (QUALITY LEVEL B)
- X X X X X — FENCE LINE (QUALITY LEVEL B)

- E — ELECTRIC MANHOLE
- V — ELECTRIC VAULT
- E — ELECTRIC PEDESTAL
- E — ELECTRIC HANDHOLE
- T — ELECTRIC TRANSFORMER
- SC — ELECTRIC SWITCH CABINET
- GAS VALVE
- R — RISER POLE
- STREET LIGHT
- UTILITY POLE
- T — TELEPHONE MANHOLE
- T — TELEPHONE HANDHOLE
- T — TELEPHONE PEDESTAL
- X — TELEPHONE CROSS-BOX
- C — CATV HANDHOLE
- C — CATV PEDESTAL

- F — FIBER OPTIC MANHOLE
- F — FIBER OPTIC HANDHOLE
- TR — TRAFFIC HANDHOLE
- TR — TRAFFIC PEDESTAL
- TRAFFIC LIGHT
- FIRE HYDRANT
- WATER VALVE
- WM — WATER METER
- WATER VENT
- W — WATER MANHOLE
- S — SANITARY SEWER MANHOLE
- ST — STORM SEWER MANHOLE
- STORM SEWER INLET
- BORE PIT
- END OF MAIN

ABBREVIATIONS:

EOP	EDGE OF PAVEMENT
F/L	FLOW LINE
BOC	BACK OF CURB
BOW	BACK OF WALK
S/L	STREET LIGHT
F/O	FIBER OPTIC
MW	MILL WRAP
AL	ALUMINUM
CU	COPPER
CLN	CENTURYLINK LOCAL NETWORK
H2O	WATER
MH	MANHOLE
SS	SANITARY SEWER
STM	STORM SEWER
TELE	TELEPHONE
EOM	END OF MAIN
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
RE:	REFER TO

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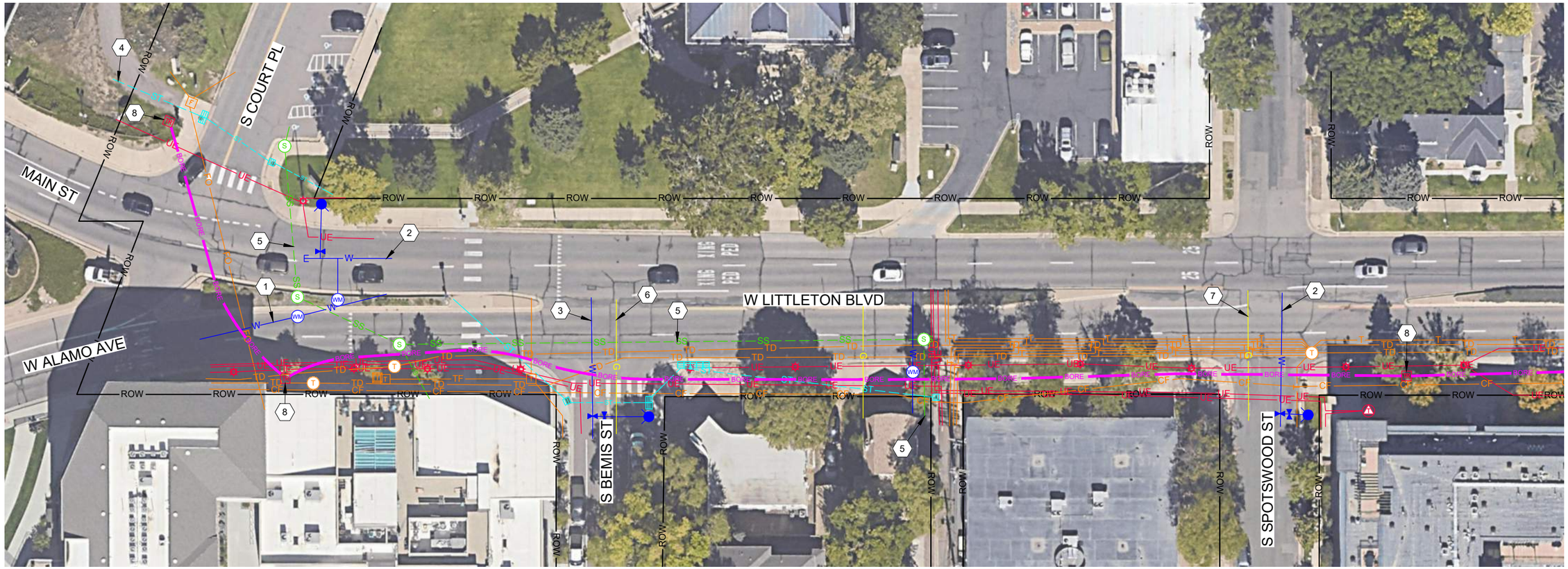
Start Date 2/7/25
Work Order# ----
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SHEET TITLE: LEGEND

SHEET # 2

KEYED NOTES

1. 30" WATER
2. 8" WATER
3. 12" WATER
4. 24" STORM SEWER
5. 8" SANITARY SEWER
6. 6" NATURAL GAS
7. 4" NATURAL GAS
8. NEW TRAFFIC HANDHOLE



UTILITY PLAN

50 0 50 100

SCALE: 1"= 50'

N

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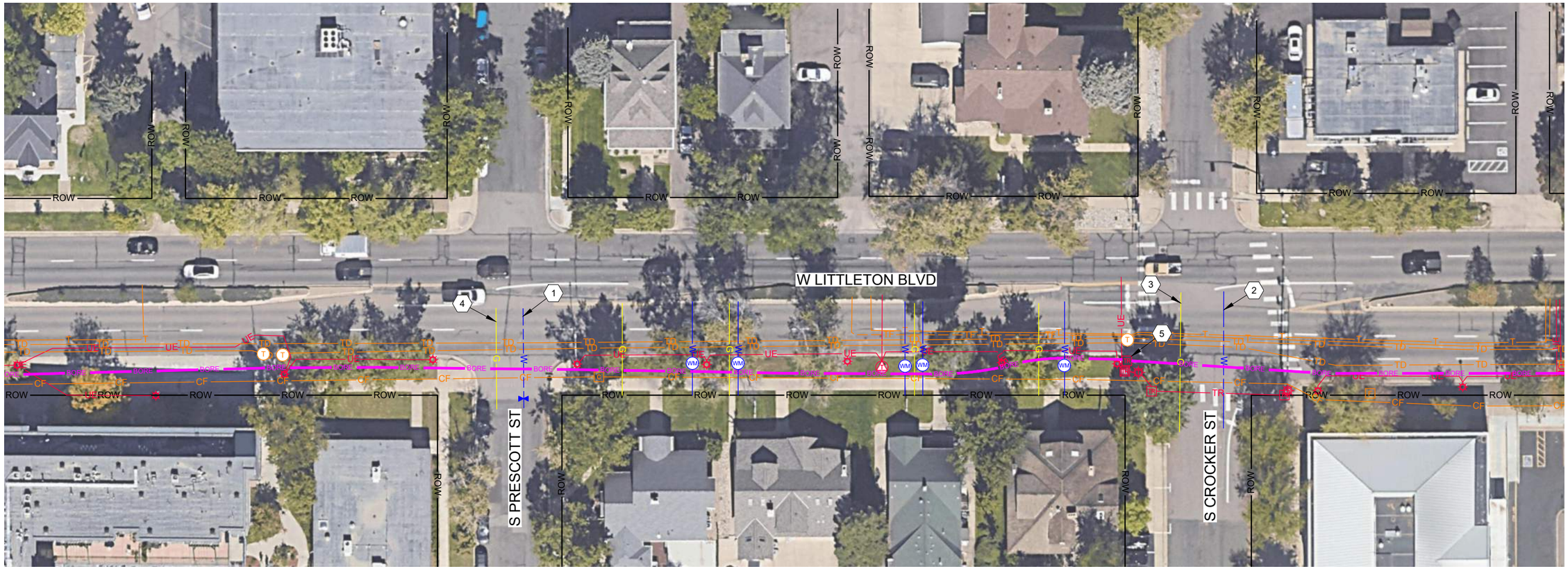
Start Date 2/7/25
Work Order# ----
Drawn By: CRG

SHEET TITLE: UTILITY PLAN

SHEET # 3

KEYED NOTES

1. 8" WATER
2. 6" WATER
3. 3" NATURAL GAS
4. 2" NATURAL GAS
5. NEW TRAFFIC HANDHOLE



UTILITY PLAN

50 0 50 100

SCALE: 1"= 50'

N

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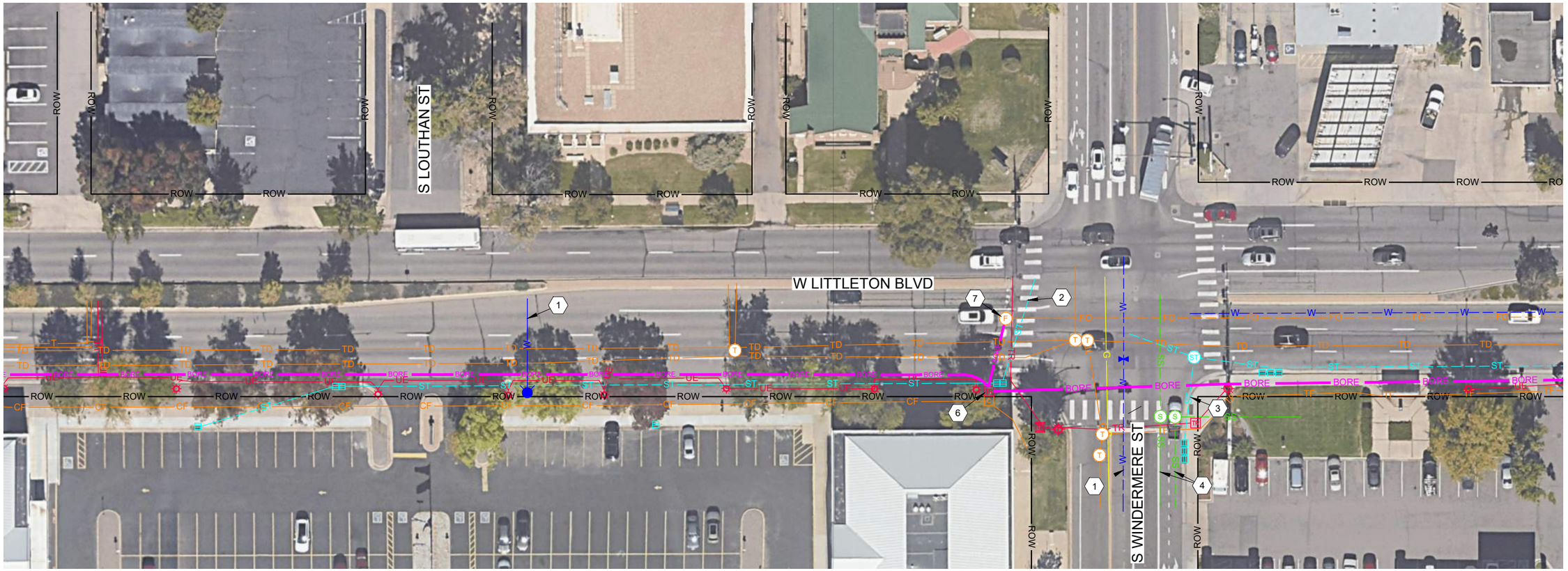
SHEET TITLE: UTILITY PLAN

SHEET # 4

KEYED NOTES

1. 6" WATER
2. 21" STORM SEWER
3. 18" STORM SEWER
4. 8" SANITARY SEWER
5. 4" PLASTIC NATURAL GAS
6. NEW TRAFFIC HANDHOLE
7. EXISTING LITTLETON FIBER MANHOLE

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UTILITY PLAN

50 0 50 100

SCALE: 1"= 50'

N

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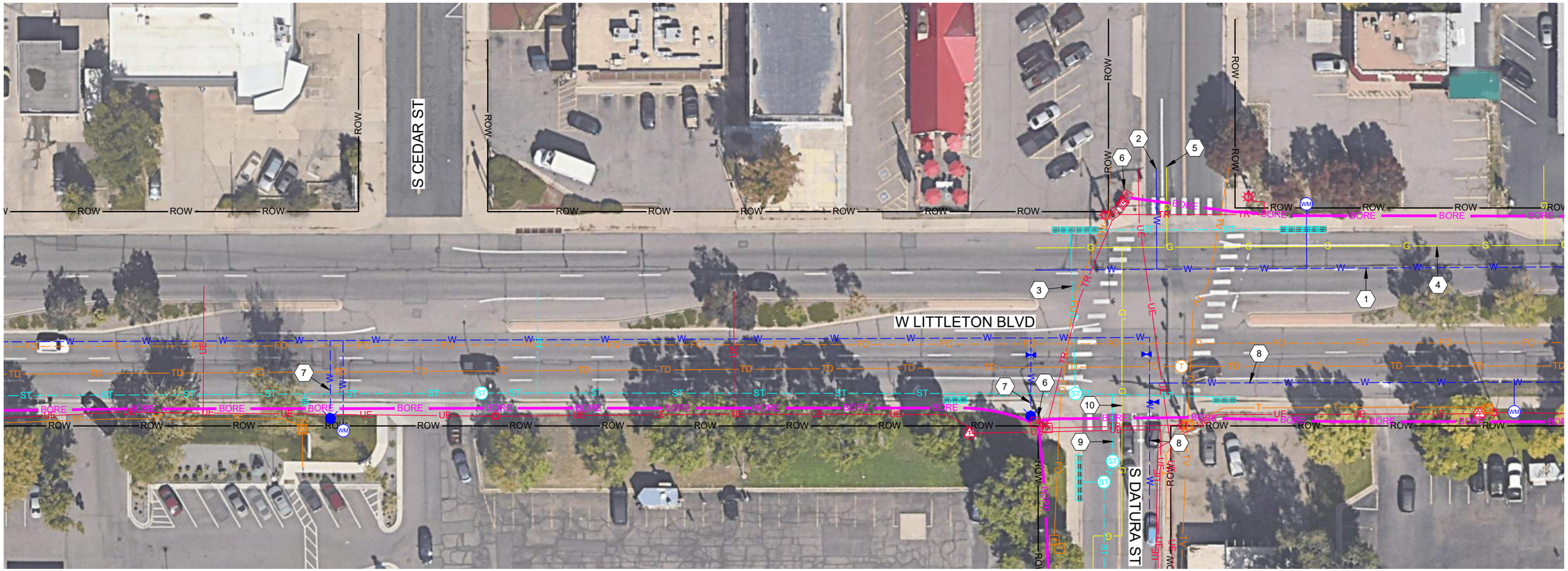
SHEET TITLE: UTILITY PLAN

SHEET #: 5

KEYED NOTES

1. 30" WATER
2. 16" WATER
3. 24" STORM SEWER
4. 5" NATURAL GAS
5. 2" NATURAL GAS
6. NEW TRAFFIC HANDHOLE
7. 6" WATER
8. 8" WATER
9. 48" STORM SEWER
10. NATURAL GAS (UNKNOWN SIZE OR MATERIAL)

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UTILITY PLAN

50 0 50 100

SCALE: 1"=50'

N

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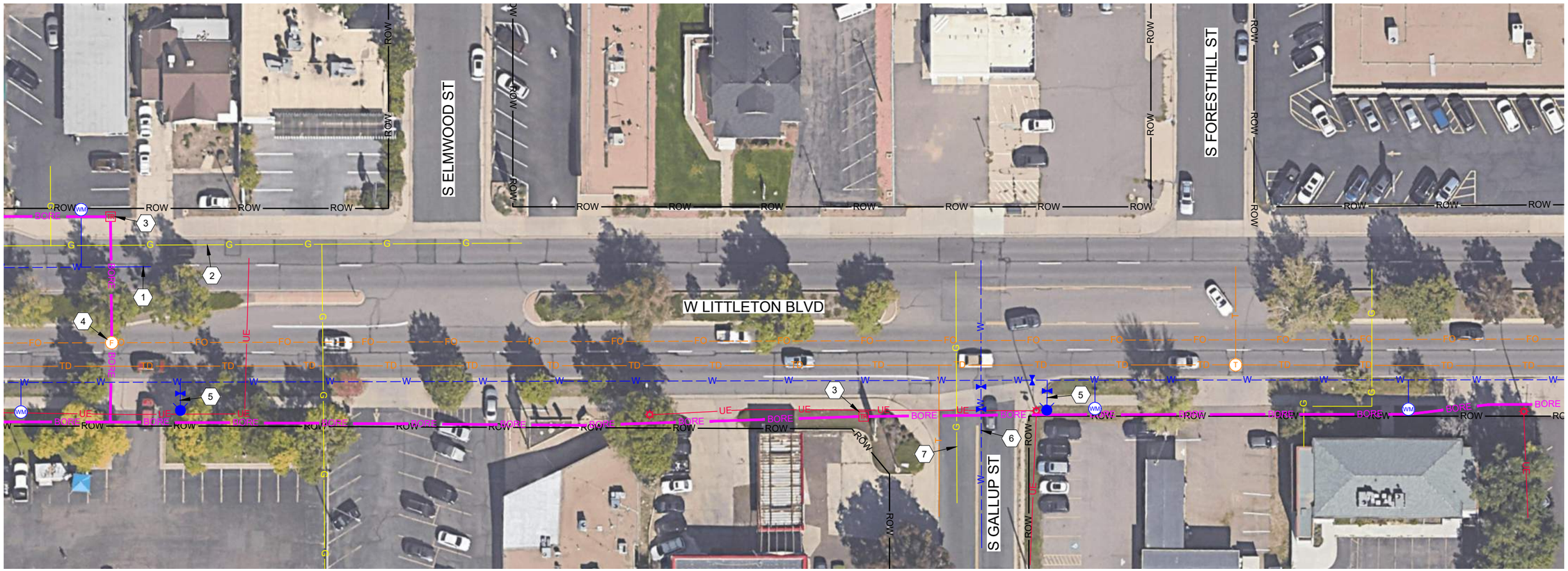
Start Date 2/7/25
Work Order# ----
Drawn By: CRG

SHEET TITLE: UTILITY PLAN

SHEET # 6

KEYED NOTES

1. 30" WATER
2. 5" NATURAL GAS
3. NEW TRAFFIC HANDHOLE
4. EXISTING LITTLETON FIBER MANHOLE
5. 6" WATER
6. 12" WATER
7. 4" STEEL NATURAL GAS



UTILITY PLAN

50 0 50 100

SCALE: 1"= 50'

N

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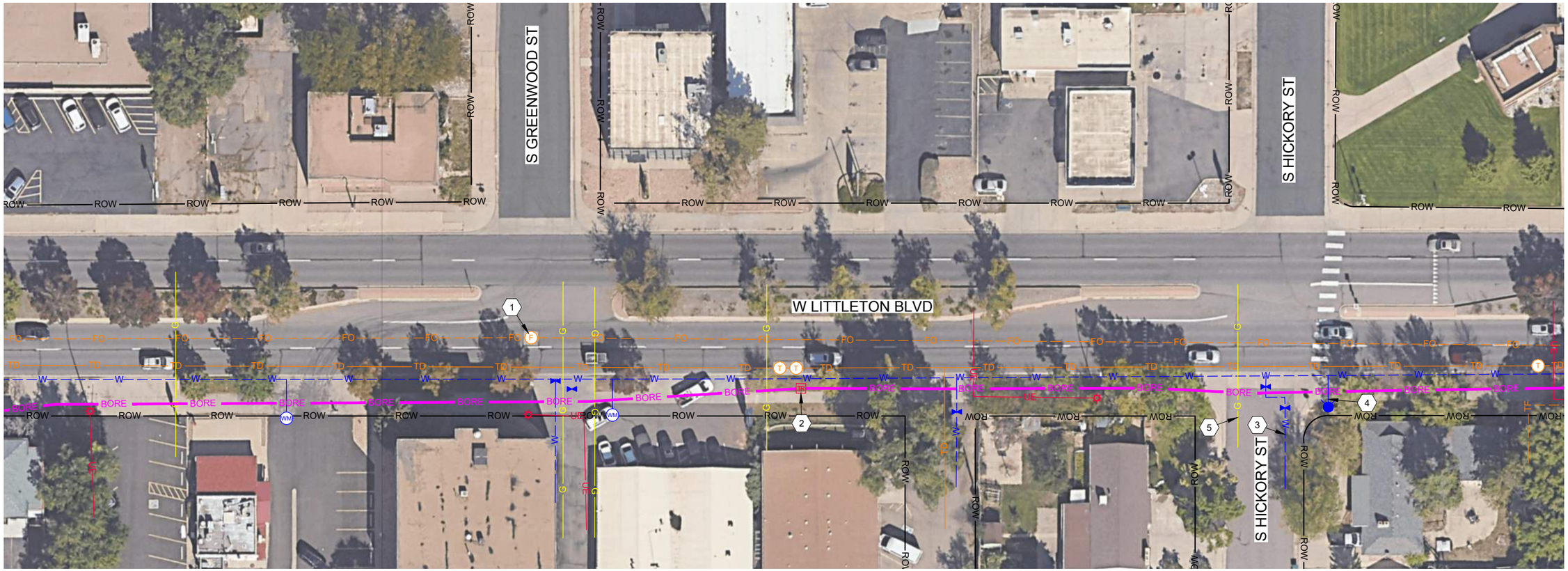
Start Date 2/7/25
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Drawn By: CRG

SHEET TITLE: UTILITY PLAN

SHEET # 7

KEYED NOTES

1. EXISTING LITTLETON FIBER MANHOLE
2. NEW TRAFFIC HANDHOLE
3. WATER (SIZE UNKNOWN)
4. 6" WATER
5. 2" STEEL NATURAL GAS



UTILITY PLAN

50 0 50 100

SCALE: 1"= 50'

N

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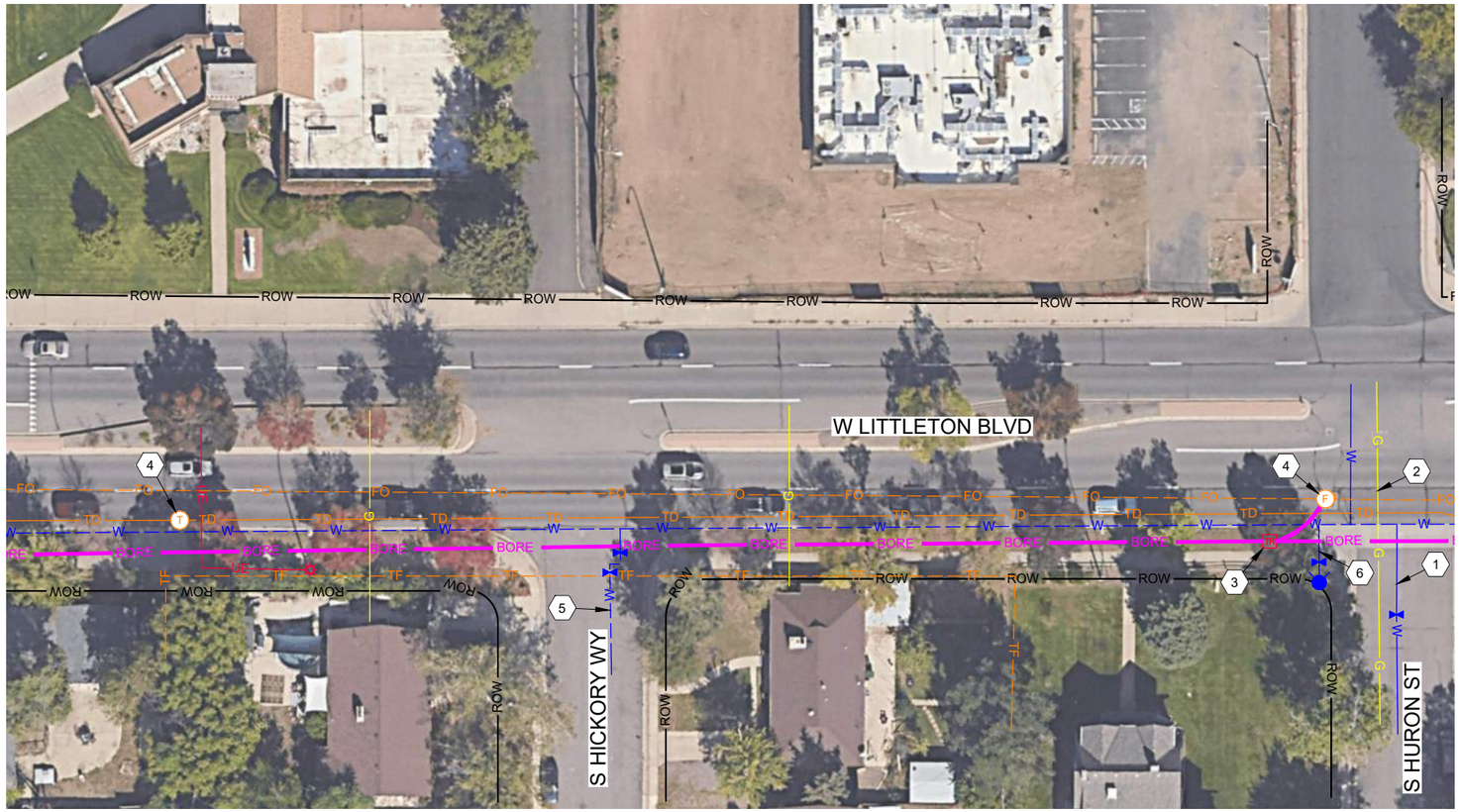
Start Date	2/7/25
Work Order#	----
Drawn By:	CRG

SHEET TITLE: UTILITY PLAN

SHEET #: 8

KEYED NOTES

1. 8" WATER
2. 2" NATURAL GAS
3. NEW TRAFFIC HANDHOLE
4. EXISTING LITTLETON FIBER MANHOLE
5. WATER (SIZE UNKNOWN)
6. 6" WATER



UTILITY PLAN

50 0 50 100

SCALE: 1"= 50'

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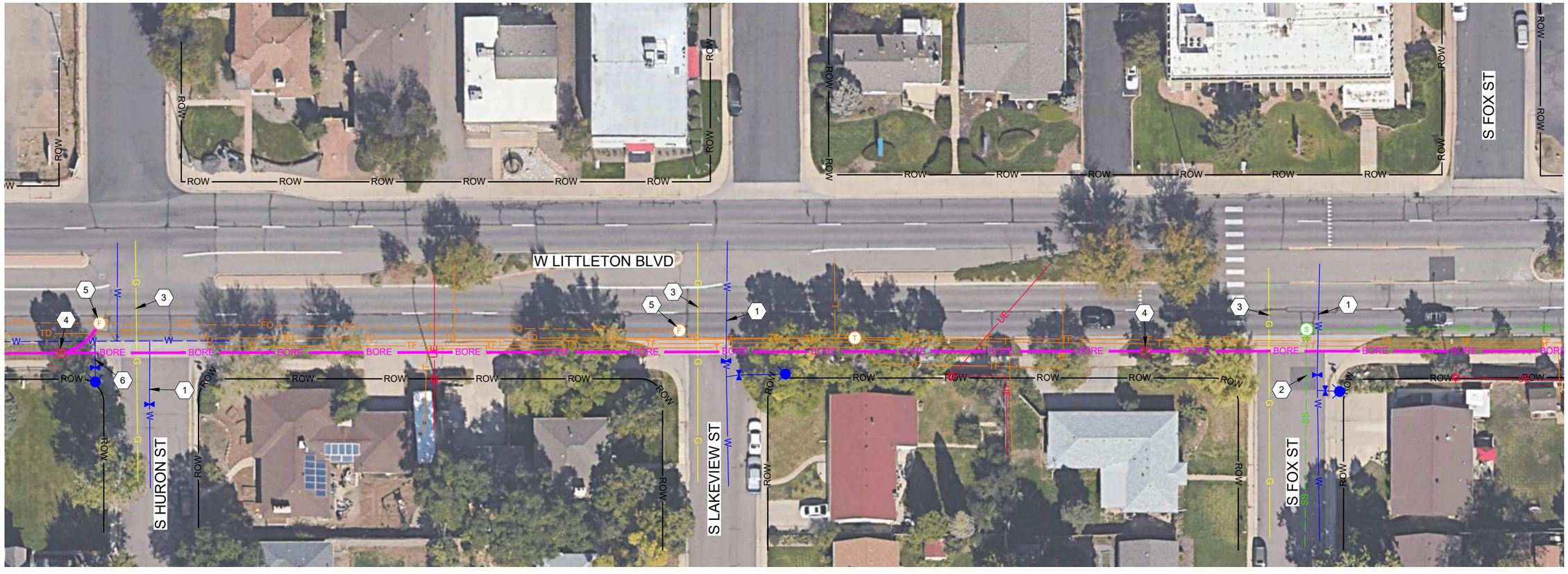
Start Date 2/7/25
Work Order# ----
Drawn By: CRG

SHEET TITLE: UTILITY PLAN

SHEET # 9

KEYED NOTES

1. 8" WATER
2. 8" SANITARY SEWER
3. 2" NATURAL GAS
4. NEW TRAFFIC HANDHOLE
5. EXISTING LITTLETON FIBER MANHOLE
6. 6" WATER



UTILITY PLAN

50 0 50 100

SCALE: 1"=50'

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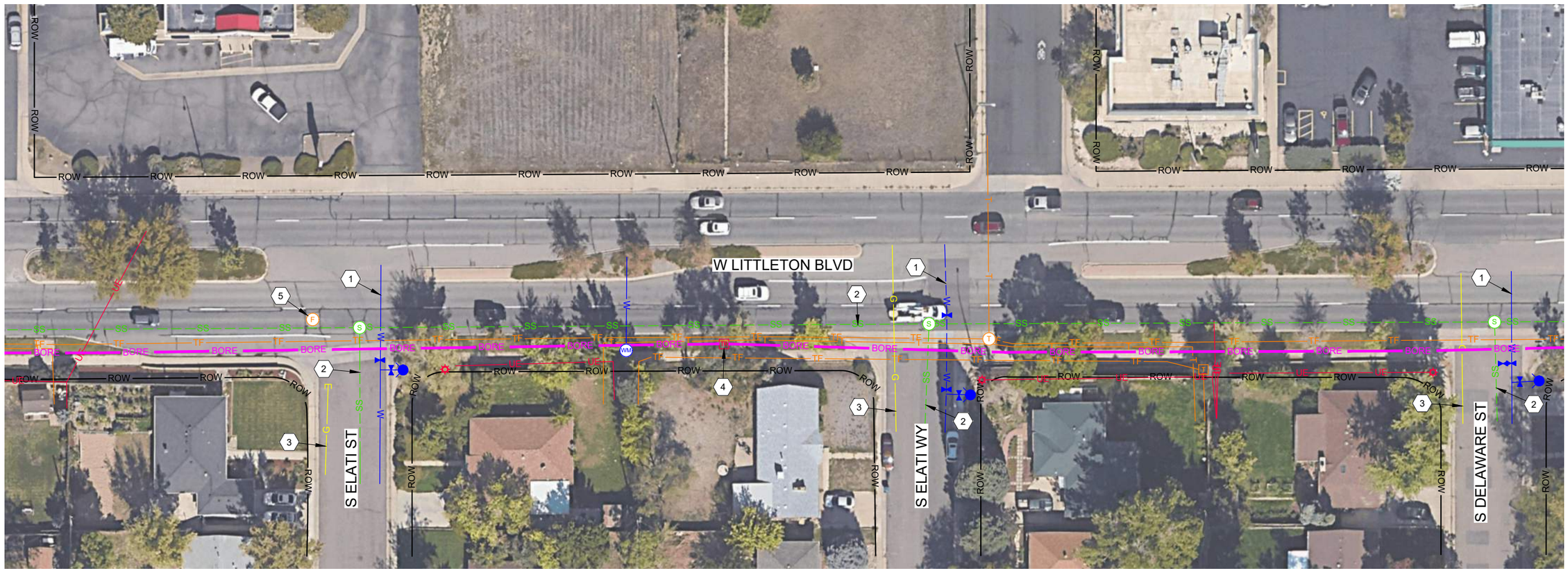
Start Date 2/7/25
Work Order# ----
Drawn By: CRG

SHEET TITLE: UTILITY PLAN

SHEET # 10

KEYED NOTES

1. 8" WATER
2. 8" SANITARY SEWER
3. 2" NATURAL GAS
4. NEW TRAFFIC HANDHOLE
5. EMPTY FIBER MANHOLE



UTILITY PLAN

50 0 50 100

SCALE: 1"= 50'

N

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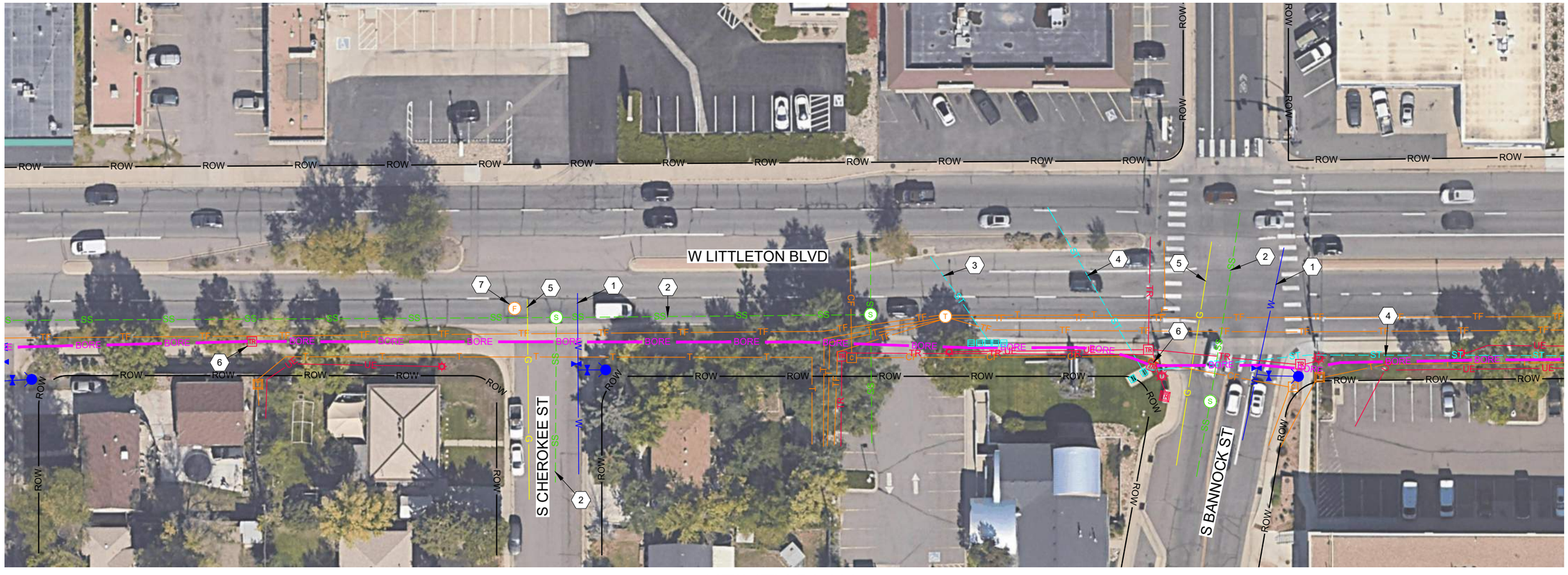
SHEET TITLE: UTILITY PLAN

SHEET # 11

KEYED NOTES

1. 8" WATER
2. 8" SANITARY SEWER
3. 24" STORM SEWER
4. 48" STORM SEWER
5. 2" NATURAL GAS
6. NEW TRAFFIC HANDHOLE
7. EMPTY FIBER MANHOLE

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UTILITY PLAN

50 0 50 100

SCALE: 1"=50'

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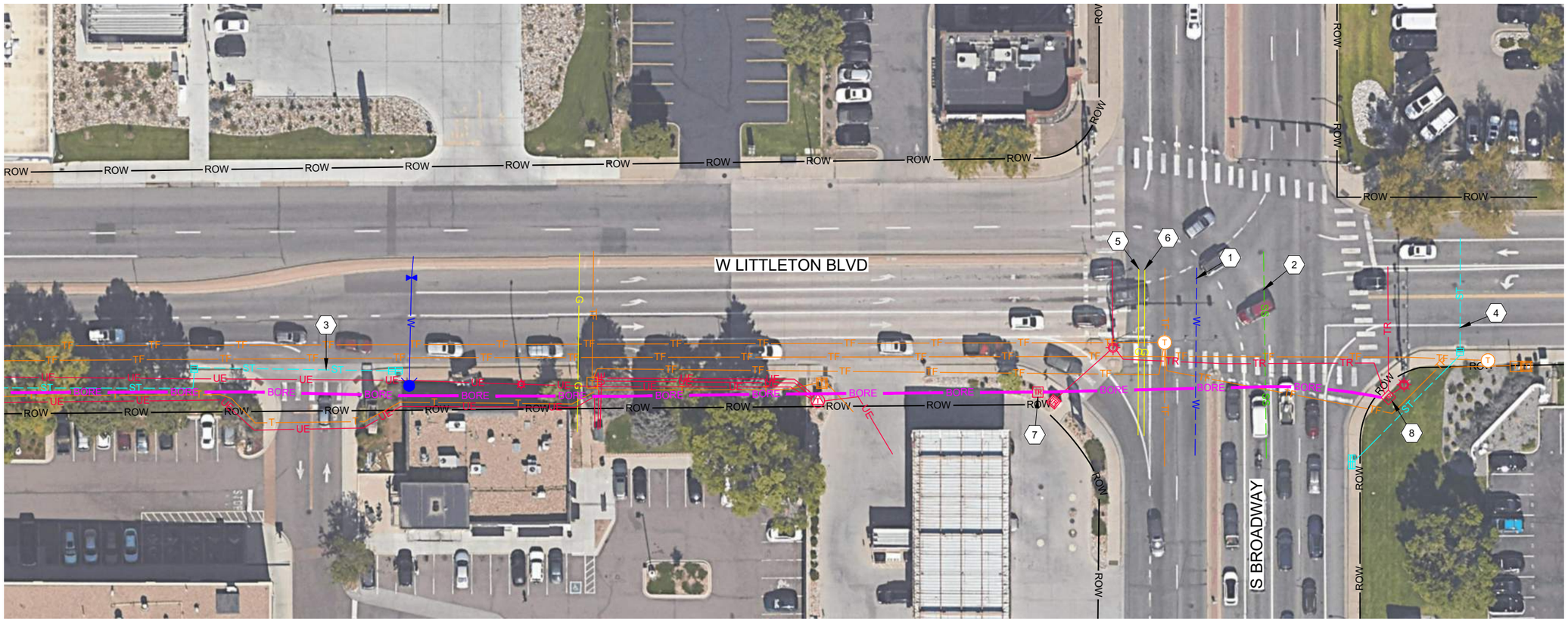
Start Date 2/7/25
Work Order# ----
Drawn By: CRG

SHEET TITLE: UTILITY PLAN

SHEET # 12

KEYED NOTES

1. 16" WATER
2. 8" SANITARY SEWER
3. 24" STORM SEWER
4. 12" STORM SEWER
5. 8" NATURAL GAS
6. 4" NATURAL GAS
7. NEW TRAFFIC HANDHOLE
8. EXISTING TRAFFIC HANDHOLE



UTILITY PLAN

50 0 50 100

SCALE: 1"=50'

N

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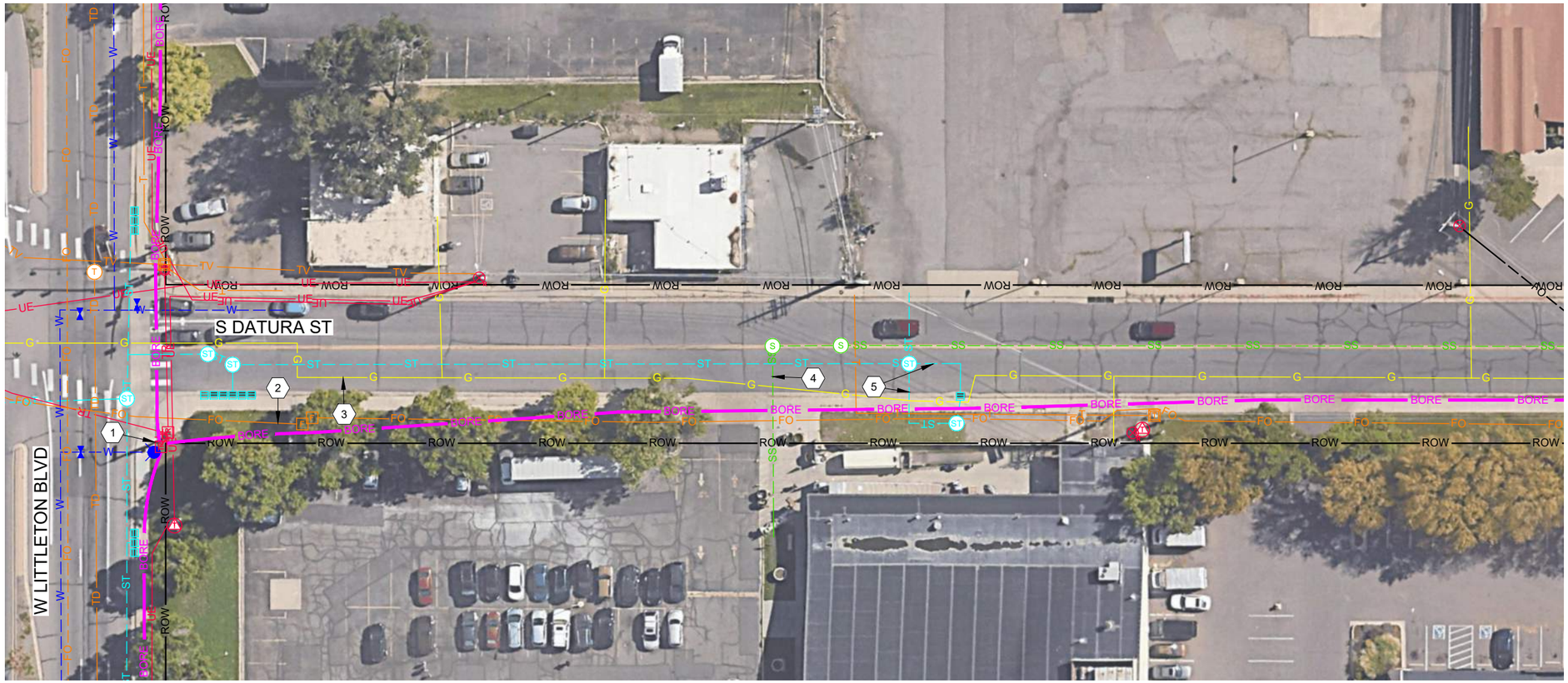
Start Date	2/7/25
Work Order#	----
Drawn By:	CRG

SHEET TITLE: UTILITY PLAN

SHEET #: 13

KEYED NOTES

1. NEW TRAFFIC HANDHOLE
2. MCI FIBER
3. NATURAL GAS (UNKNOWN SIZE OR MATERIAL)
4. 10" SANITARY SEWER
5. 21" STORM SEWER



UTILITY PLAN

50 0 50 100

SCALE: 1"= 50'

N

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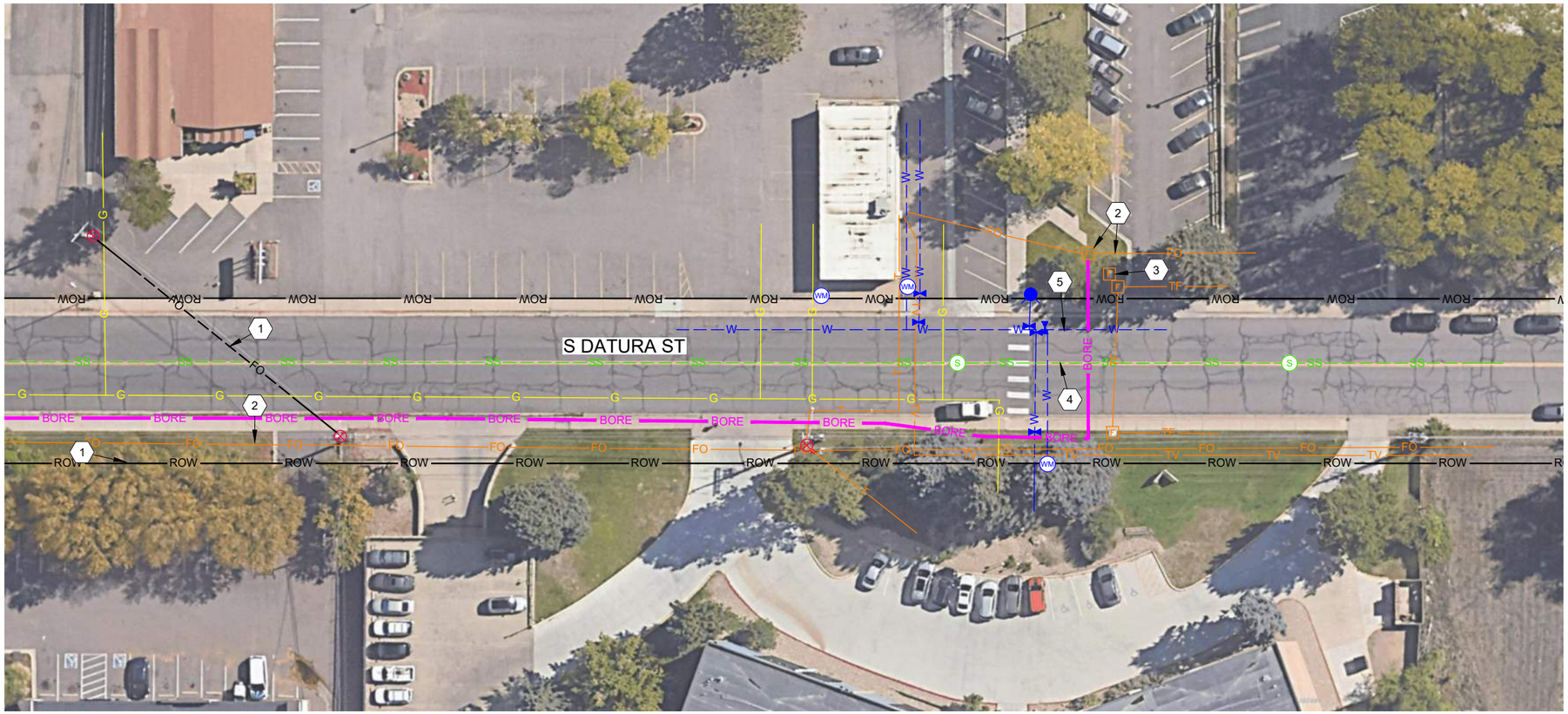
Start Date 2/7/25
Work Order# ----
Drawn By: CRG

SHEET TITLE: UTILITY PLAN

SHEET # 14

KEYED NOTES

1. CITY OF LITTLETON FIBER (AERIAL)
2. CITY OF LITTLETON FIBER
3. ZAYO FIBER HANDHOLE (ZAYO IN THE AREA)
4. 8" SANITARY SEWER
5. 8" WATER



UTILITY PLAN

50 0 50 100

SCALE: 1"=50'

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W LITTLETON BLVD
LITTLETON, CO

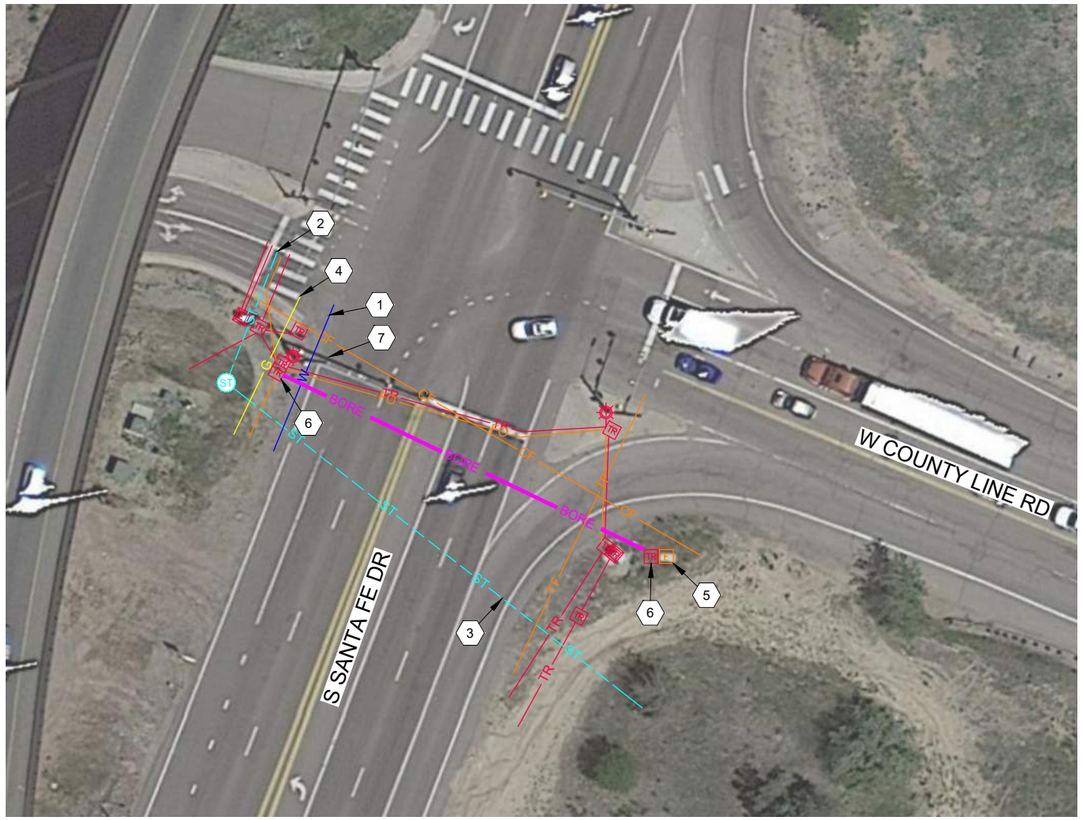
Start Date 2/7/25
Work Order# ----
Drawn By: CRG

SHEET TITLE: UTILITY PLAN

SHEET # 15

KEYED NOTES

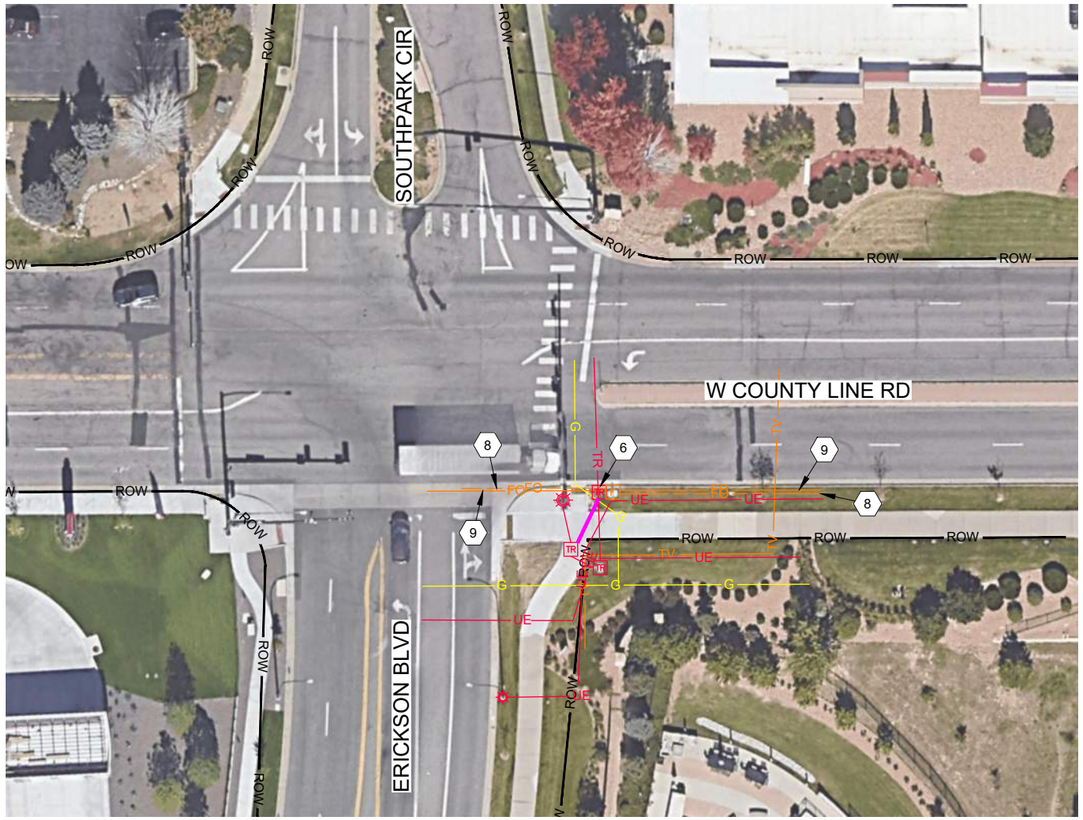
1. 16" WATER
2. 30" STORM SEWER
3. 36" STORM SEWER
4. 4" NATURAL GAS
5. EMPTY MCI HANDHOLE
6. NEW TRAFFIC HANDHOLE
7. ABANDONED FUSION BOND NATURAL GAS IN THE AREA
8. EMPTY MCI CONDUIT (NO TRACER WIRE)
9. MCI FIBER



UTILITY PLAN

50 0 50 100

SCALE: 1"= 50'



UTILITY PLAN

50 0 50 100

SCALE: 1"= 50'

COLORADO LICENSED
KIERNAN G. O'DONOVAN
33020
PROFESSIONAL ENGINEER

RECONN UTILITY SERVICES
A DIVISION OF USIC
9682 HANOVER CT W, HENDERSON, CO 80640
PH:(720) 465-9079
RECONNUS.COM

811 Know what's below. Call before you dig.

Client

consor

ISSUE / DATE

REVISION	02/07/25

Project Information

WEST LITTLETON BLVD COMM UPGRADE
W LITTLETON BLVD
LITTLETON, CO

Start Date 2/7/25
Work Order# ----
Drawn By: CRG

SHEET TITLE: UTILITY PLAN

SHEET # 16

ASCE-38 EXISTING UTILITY QUALITY LEVEL DEFINITIONS

Quality Level D ("QL D") information comes solely from existing utility records. It may provide an overall "feel" for the congestion of utilities, but it is often highly limited in terms of comprehensiveness and accuracy. Its usefulness may be limited to early design stage (project planning and route selection) activities or to projects with minimal planned excavations.

Quality Level C ("QL C") involves surveying visible above-ground utility facilities, such as manholes, valve boxes, posts, etc., and correlating this information with existing utility records (i.e., QL D data). When using this information, it is not unusual to find underground utilities that have been either omitted or erroneously plotted. QL C information may not, however, eliminate all inaccuracies; nor will it reveal an unrecorded line that has no surface features. Therefore, its usefulness may be limited to preliminary design reviews or to projects with minimal anticipated conflicts.

Quality Level B ("QL B") involves the use of surface geophysical techniques to determine the existence and horizontal position of underground utilities. This activity is called "designating". It further correlates utility records and surface topographical information, and may also help reveal unrecorded lines. Two-dimensional mapping information is obtained. This information may be sufficient to accomplish preliminary engineering goals, by helping the designer to determine where to place storm drainage systems, footers, foundations, and other design features in order to avoid conflicts with existing utilities. Slight adjustments in the design may produce substantial cost savings by eliminating utility relocations.

Quality Level A ("QL A ") involves the use of nondestructive digging equipment at discrete, critical points to determine the precise horizontal and vertical position of underground utilities, as well as the type, size, condition, material, and other characteristics. This activity is called "locating." It is the highest quality level presently available. This information, when combined with other surveyed and mapped information, allows the designer to infer plan and profile information, for use in making final design decisions. By knowing exactly where a utility is positioned in three dimensions, the designer can accurately determine the extent of a utility conflict, or can often make small adjustments in elevations or horizontal locations and avoid the need to relocate utilities. Additional information such as utility material, condition, size, soil contamination, and paving thickness also assists the designer and utility owner in their decisions. QL A information (in the form of test hole logs), when included in the project bid documents, may yield more favorable bids due to reduced contractor uncertainty about subsurface conditions.

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ISSUE / DATE

REVISION	02/07/25

Project Information

WEST LITTLETON BLVD COMM UPGRADE
W LITTLETON BLVD
LITTLETON, CO

Start Date 17 Aug 2022
Work Order#
Drawn By: CRG

SHEET TITLE: EXISTING UTILITY QUALITY LEVEL DEFINITIONS

SHEET # 17

Littleton Center
2255 West Berry Avenue
Littleton, CO 80120

City of Littleton

Staff Communication

File #: ID# 25-133, **Version:** 1

Agenda Date: 05/20/2025

Subject:
Motion to approve minutes of the May 6, 2025, regular city council meeting

Prepared by:	Wendy J. Shea-Tamag, Deputy City Clerk

RECORDING SECRETARY'S CERTIFICATION:
I hereby certify that the attached minutes are an accurate representation of motions made and action taken at the May 6, 2025, regular meeting of city council. I have also reviewed the video recording for the May 6, 2025, regular meeting of the Littleton City Council and certify that the video recording is a full, complete, and accurate record of the proceedings and there were no malfunctions in the video.

PROPOSED MOTION:
I move to approve the minutes for the May 6, 2025, regular meeting of city council.

powered by Legistar™

City of Littleton

Littleton Center
2255 West Berry Avenue
Littleton, CO 80120

Meeting Minutes - Draft

City Council

Tuesday, May 6, 2025 | **6:30 PM** | **Council Chamber**

Regular Meeting

1. Roll Call

Present: 7 - Mayor Schlachter, Mayor Pro-Tem Barr, Council Member Driscoll, Council Member Grove, Council Member Peters, Council Member Reichardt and Council Member Zink

2. Pledge of Allegiance

Led by Scout Troop 114

3. Approval of Agenda

4. Proclamations

a) ID# 25-114 Mayoral Proclamations

5. Public Comment

Mark Flink, Dist. III – Spur Trail

Andrew Ehrnstein, Dist. IV – City of Littleton flag/Spur Trail

Don Bruns, Dist. IV - Spur Trail

Greg Sullivan, Dist. IV – Costco gas stations

Paul Boehm, Dist. II – Neighborhood parking on Foresthill

Dee Boehm, Dist. II – Neighborhood parking on Foresthill

Steve Lowry, Dist. IV – Mineral Spur Trail

Brianne Surtzenberg, Dist. II - permit parking for Foresthill St/block

Pam Chadbourne, Dist. I – City of Littleton flag/Utility box at Mineral & Jackass Hill Rd/Flock license plate readers/protect citizen data/Boards and Commissions legal training

Ned Sterne, Dist. IV - Spur trail

6. Comments / Reports

a) Council Members

Council Member Reichardt - No report

Council Member Grove - Attended the Lone Tree State of the City and it was very informative. Attended a sustainability workshop that was put on by our Littleton Chamber. Attended ANZAC (Australia/New Zealand Army Corps) on April 23, which is Australia and New Zealand's Memorial Day. It was a nice ceremony, and there was a contingent from Australia participating here in Littleton. Encouraged people to attend the play "Get on Your Feet" at the Town Hall Arts Center. Along with Council Member Peters and staff met with South Suburban Parks & Recreation District and met with their new director.

Council Member Peters - No report

Council Member Zink - Attended opening day at Records on Main. Recommends them to music lovers.

Council Member Driscoll - The Downtown Development Authority is getting ready for the Block Party on June 14, 2025. Reminded folks that this week is Small Business Week (May 4-10) and encouraged everyone to support small business.

Mayor Pro Tem Barr - Attended the South Platte Renew river clean up and got a good lesson in storm water management. Attended the Green Business event at Kiln; learned that Littleton has a lot of green businesses. Addressed ADA laws; they are complex and we need to be conscientious of those with disabilities.

b) Mayor

This week is National Travel & Tourism week. Made people aware of visitlittleton.org and encouraged all to share it with friends and family. Attended the Arapahoe County Commissioners, Mayors and Managers meeting. South Metro Fire Rescue was there to talk about their budget situation. South Metro Fire will be attending Littleton's study session next week where they will discuss their budget situation. May 14, 2025 is the State of the City at Ashley Ridge on County Line. May 15, 2025 the Mile High Flood District will be going on the annual bus tour meeting starting at Reynold's Landing. Wished all the mother's a Happy Mother's Day on Sunday.

c) City Manager

An update regarding the traffic concerns near Littleton Brewing Company is that Littleton Police are increasing patrol in that area. Public Works is looking into installing a crosswalk in that area and are looking at other parking options. There is a handbook that all boards and commissions receive that we will make sure it is available on line.

d) City Attorney

The moratorium on gas stations will not affect Costco or the Quick Trip on Santa Fe and Mineral will be exempt from the moratorium. The housing development on faith/education land failed in the senate last night. The fairness and transparency in municipal court has passed the house and senate and is with Governor Polis. The city has taken a position against this and a number of other jurisdictions have asked the governor to veto this bill.

7. Scheduled Appearances

Colorado Asphalt Pavement Association (CAPA) for the 'City of Littleton – Reconstruction in Aberdeen Village'

8. Consent Agenda Items

Consent agenda items can be adopted by a simple motion. All ordinances must be read by title prior to a vote on the motion. Any consent agenda item may be removed at the request of a council member.

a) **Ordinance 04-2025** — Ordinance 04-2025: An ordinance on second reading amending Ordinance No. 23, Series of 2024, appropriating funds for the 2025 Annual Budget for all municipal purposes of the City of Littleton, Counties of Arapahoe, Douglas, and Jefferson, State of Colorado for the fiscal year beginning January 1, 2025, and ending December 31, 2025

approved on first reading

b) **Ordinance 05-2025** — Ordinance 05-2025: An ordinance on second reading of the City of Littleton, Colorado as the governing body of the City of Littleton Sewer Utility Enterprise, amending the 2025 Sewer Budget

approved on first reading

c) **Ordinance 06-2025** — Ordinance 06-2025: An ordinance on second reading of the City of Littleton, Colorado, as the governing body of the City of Littleton, Stormwater and Flood Management Utility Enterprise, amending the 2025 budget

approved on first reading

d) Resolution 42-2025 — Resolution 42-2025: Approving a construction contract with Chavez Construction, Inc. for the 2025 Mill & Overlay Project, City Project No. 25-03

approved

e) Resolution 44-2025 — Resolution 44-2025: Approving license agreements between the City of Littleton and the Regional Transportation District for construction of 1) Electric and Communication Facilities on the West Main Street Bridge over the Southwest Light Rail Line and 2) Electric Facilities on the West Alamo Avenue Bridge over the Southwest Light Rail Line

approved

f) ID# 25-113 — Motion to approve minutes of the April 15, 2025, regular city council meeting

approved

Approval of the Consent Agenda

Mayor Pro Tem Barr moved and Council Member Driscoll seconded to approve the consent agenda, items a through f. The vote is 7-0. The motion carries unanimously.

Aye: 7 - Mayor Schlachter, Mayor Pro-Tem Barr, Council Member Driscoll, Council Member Grove, Council Member Peters, Council Member Reichardt and Council Member Zink

9. General Business

a) Resolution 47-2025

Resolution 47-2025: Approving an Intergovernmental Agreement between the City of Littleton and the Board of County Commissioners of the County of Arapahoe, State of Colorado, regarding the 2025 contribution of Arapahoe County Open Space Program Funds for the Lee Gulch Trail Pedestrian Underpass

Mayor Pro Tem Barr moved and Council Member Reichardt seconded to approve Resolution 47-2025 approving an Intergovernmental Agreement between the City of Littleton and the Board of County Commissioners of the County of Arapahoe, State of Colorado regarding the 2025 contribution of Arapahoe County Open Space Program funds for the Lee Gulch Trail Pedestrian Underpass. The vote is 7-0. The motion carries unanimously.

Aye: 7 - Mayor Schlachter, Mayor Pro-Tem Barr, Council Member Driscoll, Council Member Grove, Council Member Peters, Council Member Reichardt and Council Member Zink

b) Resolution 48-2025

Resolution 48-2025: Approving an Intergovernmental Agreement between the City of Littleton and South Suburban Parks and Recreation District regarding funding contributions, construction, and maintenance of the Lee Gulch Trail Pedestrian Underpass Project

Mayor Pro Tem Barr moved and Council Member Peters seconded to approve Resolution 48-2025 approving an Intergovernmental Agreement between the City of Littleton and South Suburban Parks and Recreation District regarding funding contributions, construction, and maintenance of the Lee Gulch Trail Pedestrian Underpass Project. The vote is 7-0. The motion carries unanimously.

Aye: 7 - Mayor Schlachter, Mayor Pro-Tem Barr, Council Member Driscoll, Council Member Grove, Council Member Peters, Council Member Reichardt and Council Member Zink

c) Resolution 49-2025

Resolution 49-2025: Approving a third amendment to the Intergovernmental Agreement with Mile High Flood District, regarding design and construction of drainage and flood control improvements for Lee Gulch at Broadway

Mayor Pro Tem Barr moved and Council Member Reichardt seconded to approve Resolution 48-2025 approving a third amendment to the Intergovernmental Agreement with Mile High Flood District, regarding design and construction of drainage and flood control improvements for Lee Gulch at Broadway. The vote is 7-0. The motion carries unanimously.

Aye: 7 - Mayor Schlachter, Mayor Pro-Tem Barr, Council Member Driscoll, Council Member Grove, Council Member Peters, Council Member Reichardt and Council Member Zink

d) Resolution 18-2025 — Resolution 18-2025: Approving the first amendment to a construction agreement with E&M Concrete, LLC for the 2024 Miscellaneous Concrete Project, City Project No. 24-05

Council Member Reichardt moved and Council Member Zink seconded to approve Resolution 18-2025 approving the first amendment to a construction agreement with E&M Concrete, LLC for the 2024 Miscellaneous Concrete Project, City Project No. 24-05. The vote is 7-0. The motion carries unanimously.

Aye: 7 - Mayor Schlachter, Mayor Pro-Tem Barr, Council Member Driscoll, Council Member Grove, Council Member Peters, Council Member Reichardt and Council Member Zink

10. Ordinances on Second Reading and Public Hearings

a) Ordinance 03-2025 — Ordinance 03-2025: An ordinance on second reading approving a five-year master agreement with Xerox Corporation for print technology, software, and services

Mayor Schlachter opened the public hearing at 8:36 p.m.

Pam Chadbourne, Dist. I – opposed/privacy

Mayor Schlachter closed the public hearing at 8:39 p.m.

Mayor Pro Tem Barr moved and Council Member Driscoll seconded to approve Ordinance 03-2025 on second reading approving a five-year master agreement with Xerox for print technology, software, and services. The vote is 7-0. The motion carries unanimously.

Aye: 7 - Mayor Schlachter, Mayor Pro-Tem Barr, Council Member Driscoll, Council Member Grove, Council Member Peters, Council Member Reichardt and Council Member Zink

b) Ordinance 08-2025 — Ordinance 08-2025: An ordinance on second reading imposing a temporary moratorium on the submission, acceptance, processing, or approval of any new application related to fuel sales (retail) within the City of Littleton

Mayor Schlachter opened the public hearing at 8:55 p.m.

Pam Chadbourne, Dist. I - Opposed

Mayor Schlachter closed the public hearing at 8:58 p.m.

Mayor Pro Tem Barr moved and Council Member Reichardt seconded to approve Ordinance 08-2025 on second reading imposing a temporary moratorium on the submission, acceptance, processing, or approval of any new application related to fuel sales (retail) within the City of Littleton. The vote is 7-0. The motion carries unanimously.

Aye: 7 - Mayor Schlachter, Mayor Pro-Tem Barr, Council Member Driscoll, Council Member Grove, Council Member Peters, Council Member Reichardt and Council Member Zink

11. Adjournment

Mayor Schlachter adjourned the meeting at 9:08p.m.