



Title: Greenway to Cedar Regional Trail Connection and Streambank Restoration Feasibility Report

Prepared by: Gabriel Sherman
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Purpose:

To provide the Board of Managers an update on the Greenway to Cedar Regional Trail Connection and Streambank Restoration feasibility study and seek Board direction on next steps.

Background:

Since 2009, the Minnehaha Creek Watershed District (MCWD) has worked with municipal and private partners on a series of projects in the highly urbanized corridor between West 34th Street and Meadowbrook Lake (Hopkins and St. Louis Park) to address downstream water quality and quantity issues, lack of recreational access to Minnehaha Creek, and catalyze economic development. A conceptual design for the Minnehaha Creek Greenway encompassing these projects and identifying future projects in the corridor was developed in 2012, and the partnership approach to these projects was distilled into the Balanced Urban Ecology policy adopted by the Board in 2014. With the 325 Blake Road Restoration and Redevelopment underway, the Greenway to Cedar Trail Connection and Streambank Restoration project represents the remaining gap in the network of trails and greenspace.

This project will bring the Greenway trail under the newly constructed SWLRT corridor, creating the final trail connection between the Minnehaha Creek Preserve and the Cedar Lake LRT Regional Trail by 325 Blake Road. With the completion of this project and 325 Blake Road, uninterrupted pedestrian infrastructure along Minnehaha Creek will exist between Methodist Hospital in St. Louis Park and Cottageville Park in Hopkins. This project also provides an opportunity to stabilize the streambanks and enhance the riparian zone of the stretch of Minnehaha Creek between 325 Blake Road and the Minnehaha Creek Preserve.

Initial feasibility work was conducted in 2015/2016 by Wenck (now Stantec) and resulted in two potential trail alignments between Minnehaha Creek Preserve and the Cedar Lake LRT Regional Trail. Since that time, significant construction of the SWLRT has occurred, requiring an updated and more detailed feasibility study to analyze as-built grades and elevations and current stream and riparian conditions. On August 11, 2022, the Board of Managers authorized staff to contract with Stantec and Inter-Fluve to conduct an updated feasibility study, consisting of the following tasks:

- **Task 1: Site Investigation** – Site investigation to collect topographic survey data, tree survey information, and a site walkthrough with MCWD staff.
- **Task 2: Updated Schematic Design** – Update the previously developed schematic trail designs to incorporate data collected in Task 1 and contract with Inter-Fluve to identify pre-concept level channel modifications to the schematic designs.

In addition to these consultant-led tasks, MCWD staff worked closely with St. Louis Park during feasibility to understand the city's trail design requirements, maintenance preferences, and potential funding sources. The city is highly supportive of this trail connection and will remain engaged throughout design and construction. MCWD staff also continued to have conversations with adjacent property owners during feasibility to keep them apprised of the process.

The feasibility study resulted in two modified alignment options, each of which requires some degree of floodplain fill. To ensure the floodplain fill could be mitigated within the project boundaries, staff directed Inter-Fluve to conduct a HEC-RAS modeling exercise to determine the project impacts and identify areas for compensatory storage.

June 22, 2023 MCWD Board Meeting

At the June 22, 2023 MCWD Board Meeting, staff will present the results of the feasibility study and supplemental hydraulic modeling, as well as a status update on partner engagement. Staff will seek Board direction on a preferred alignment to advance to project ordering and move the preferred alignment into final design.

Attachments:

- Attachment 1: Greenway to Cedar Trail Connection Feasibility Memorandum



Memo

To: Gabe Sherman, MCWD
Michael Hayman, MCWD

From: Nick Wyers, PE
Rena Weis, EIT
Chris Meehan, PE

Project/File: 227703704

Date: February 10, 2023
Revised May 19, 2023

Reference: Cedar to Greenway Trail Connection

Introduction

This memo documents the updated feasibility study that was completed to progress design for the proposed trail between the Cedar Lake Trail and Meadowbrook Road in St. Louis Park. This work described within this document builds off the concept design that was completed in 2015/2016 and accounts for construction progress and changes to the original design at the SWLRT site. Two potential trail configurations were evaluated and are further described below. Streambank stabilization practices and habitat improvement opportunities between the 325 Blake Road North site and Meadowbrook Road were also identified by Inter-Fluve and are described in the attached memo.

Data Collection

Topographic and tree survey were completed on site to inform the feasibility study. Land surface, notable features, utilities, rail bridges, and key features of Minnehaha Creek were surveyed along the corridor of interest. A benchmark was established just north of Powell Road, in the boulevard, and permanent benchmarks were surveyed as well (i.e. fire hydrant top nuts, etc.). The tree survey noted tree species, condition, location, and diameter at breast height (DBH) of all trees greater than 6-inches within the proposed trail corridor and construction access routes. All trees with diameters greater than 6-inches were tagged. Survey data is provided as an attachment to this memo (CAD format). A spreadsheet containing tree survey data is also provided.

Alignment Design Considerations

Two trail alignments were evaluated. Key design criteria include maintainability, user experience, user accessibility, and natural resource impacts. Features of the two proposed alignments are relatively interchangeable with each other.

Option 1 accommodates a maximum speed of 16 mph, and Option 2 accommodates a maximum speed of 12 mph. Each option is split into two exhibits on the provided drawings. Maximum speeds are per MnDOT Bicycle Facility Design Manual guidelines and are directly related to minimum allowable turn radii.

The proposed trail would ultimately be maintained by the City of St Louis Park, and as such, it is important to ensure the trail will be maintainable with the City's standard equipment; particularly for snow clearing in the winter months. The City uses standard F150 pickup trucks with 8 ft wide plows for snow clearing, which require 10 ft wide trails and 10 ft vertical clearance. Both trail alignments considered meet these

Reference: Cedar to Greenway Trail Connection

dimensional criteria. The radii associated with the 16 mph trail design will most easily accommodate pickup trucks, while the 12 mph trail design may require use of skid-steers.

The current MnDOT ADA standards are utilized in the preliminary grading layout. Some of these standards include a maximum 2% cross slope, a maximum 5% running slope, and current curb ramp standards for widths and slopes. The maximum running slope shown on the feasibility drawings is 4.30% and 4.89% for Option 1 and Option 2, respectively, which satisfies ADA requirements. The cross slope of the trail in both Option 1 and Option 2 is no greater than 2%, satisfying ADA requirements.

During the site visit, we observed large boulders / riprap beneath the rail bridges, which was placed as part of the SWLRT project. This rock will need to be moved prior to construction of a trail. The rock has little salvage value, since it is limestone based and is not suitable for use on water resources projects due to high erodibility. We estimate the quantity of rock to be 150 cubic yards.

Both trail alignments are expected to result in floodplain impacts, due to the work's proximity to Minnehaha Creek. Estimated floodplain impacts are 700 CY and 220 CY for Option 1 (16 mph) and Option 2 (12 mph), respectively.

As the trail design is further refined, utility conflicts will need to be evaluated. Most notably, there is a City watermain crossing over the creek, which intersects the proposed trail alignment, as well as a 48-inch CMP storm sewer outfall into the creek in the location of the proposed trail. Other smaller storm sewer outfalls are also present into the creek along the trail alignment. The Option 2 (12 mph) alignment cuts into the pipe cover of the watermain alignment. These impacts may require insulation of the watermain if route is selected. The 48-inch CMP outfall could possibly be downsized, as regional diversions in the area have likely reduced the required capacity the pipe, but an assessment of the contributing drainage area would be required to further inform the recommended solution. Smaller existing outfalls to the creek may be able to be consolidated into fewer pipes, reducing the number of instances when pipes cross beneath the trail. Other private utilities may be in the way adjacent to the road or the bike trail, these should be deep enough to avoid impact, but will be coordinated on final design.

Alignment Tradeoff Considerations

Both alignments were reviewed with MCWD staff, and the following tradeoffs were identified.

Option 1 (16 mph)

- Faster speed limit
- Shorter length, fewer curves, nicer overall user experience through trees south of rail bridges (see Exhibit 2)
- More tree removals (see Exhibit 2)
- More floodplain fill & bank stabilization south of rail bridges (see Exhibit 2)
- Larger trail radii north of rail bridges, resulting in easier winter maintenance & snow clearing (see Exhibit 6)

Reference: Cedar to Greenway Trail Connection

- More floodplain fill north of rail bridges (see Exhibit 3)
- Requires encroachment on private property (see Exhibit 3)
- Approximately \$780,000 project cost

Option 2 (12 mph)

- Avoids impacts to trees south of rail bridge, resulting in more winding trail closer to the street, which may not be desirable to users (see Exhibit 4)
- Avoids creek impacts and minimizes floodplain fill south of rail bridges (see Exhibit 4)
- Tight trail radii north of rail bridges will result in reduced navigability during winter snow clearing (see Exhibit 7)
- Minimizes floodplain fill north of rail bridges (see Exhibit 5)
- Contained to public property (see Exhibit 5)
- Approximately \$640,000 project cost

Opinion of Probable Cost

An opinion of probable cost (OPC) was prepared for each alignment option. The OPCs include items required for both civil (Stantec) and ecological / streambank (Inter-Fluve) portions of construction. Costs associated with a base bid of critical work to construct the trail connection and a bid alternate of supplemental streambank stabilization work were estimated for each alignment option. The OPCs assume 30 percent contingency of estimated construction subtotal costs. The OPCs assume legal, engineering, admin, and finance costs as 30 percent of construction cost including contingency.

The base bid for Option 1 is estimated to cost approximately \$780,000, while the base bid for Option 2 is estimated to cost approximately \$640,000. Major differences in cost between the two alignments are primarily driven by tree removals and earthwork. Additional costs could be incurred if retaining walls or other structural measures are deemed necessary as design progresses. Note that if the bid alternate items are completed separately from the trail construction at a later time, the cost of that alternate work will be higher due to reduced efficiencies. See attached Opinion of Probable Costs for further detail.

Permitting Discussion

Both alignment options involve natural resource impacts that will require permits from MCWD and other regulatory agencies. We anticipate that the other regulatory agencies with jurisdiction are the MnDNR; USACE; and City of St Louis Park, serving in the capacity of Local Floodplain Administrator. Key activities triggering regulatory authority are work in public waterbodies associated with floodplain fill and streambank stabilization. We anticipate that a Work in Public Waters Permit and USACE 404 permit will need to be obtained, as well as a no-rise certificate approved by the City. Required MCWD permits will include Floodplain Alteration; Streambank & Shoreline Stabilization; Erosion Control; and possibly Waterbody Crossings & Structures, depending on the scope of work associated with altering outfalls to the creek.

Reference: Cedar to Greenway Trail Connection

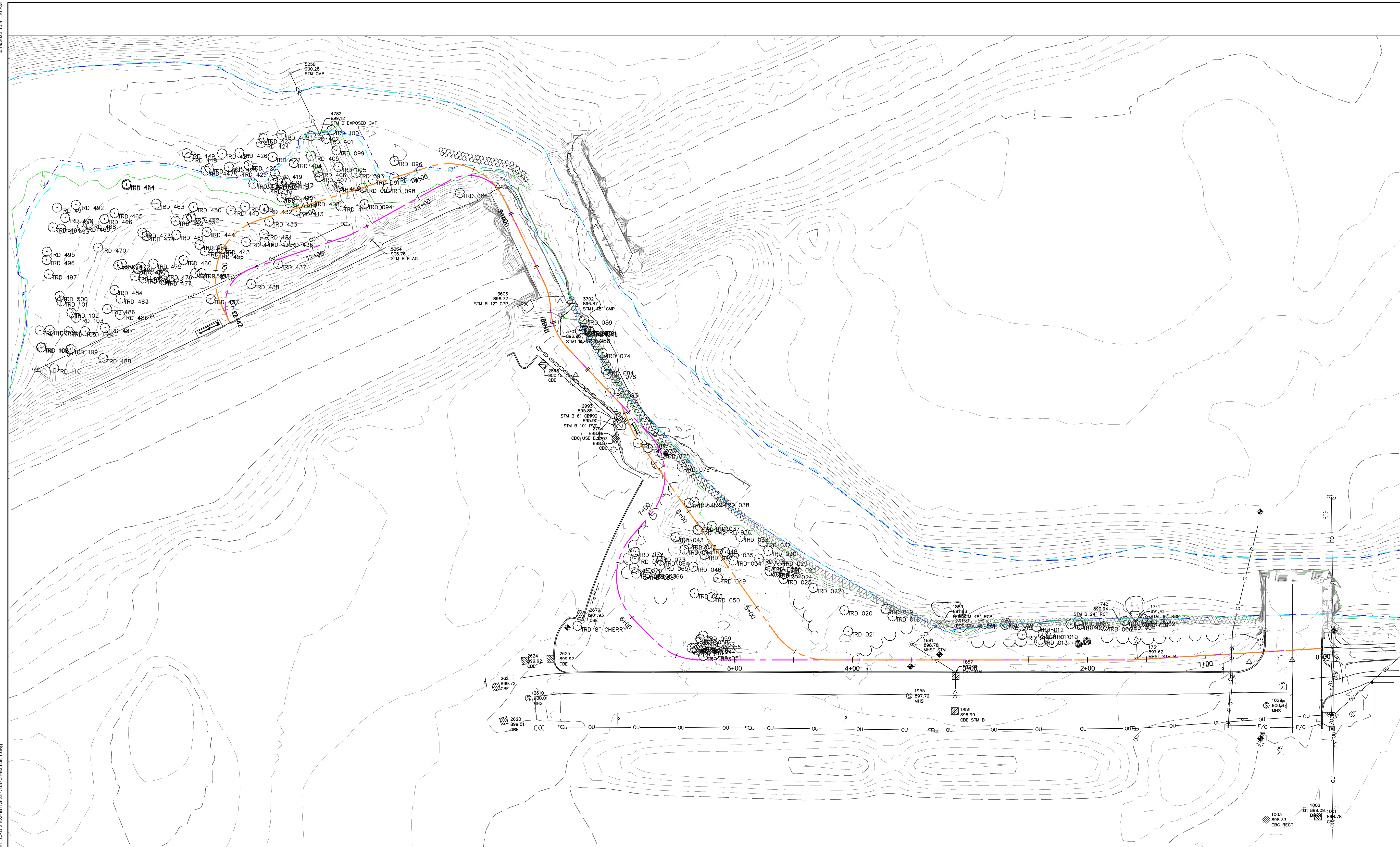
Note that the provided alignments depict the following three different estimated 100-year floodplain extents along the trail corridor:

1. XP-SWMM floodplain - taken from MCWD XP-SWMM model, drawn based on LiDAR
2. HEC-RAS floodplain - taken from Inter-Fluve's reach-specific HEC-RAS model, drawn based on LiDAR
3. Interpolated survey floodplain - XP-SWMM floodplain elevation, drawn based on surveyed topography, rather than LiDAR

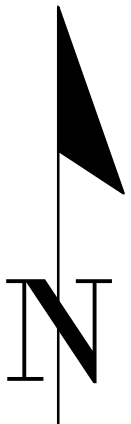
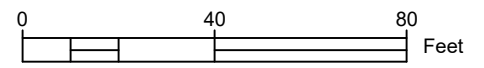
The interpolated survey floodplain extent is the most conservative, though floodplain modeling can and should be refined as design progresses.

Recommendations & Next Steps

Based on discussions with MCWD staff, it is recommended that the alignment shown by Option 1 be carried forward into design, based on Option 1's higher speed limit, better anticipated user experience, and larger radii to accommodate winter maintenance. However, Option 1 results in more significant natural resource impacts than Option 2, requiring more tree removal and more floodplain fill. Therefore, before design is advanced, it is recommended that floodplain modeling be completed to better evaluate the potential impacts and mitigation options for the anticipated floodplain fill. Furthermore, conversations should be facilitated with impacted property owners, as Option 1 does require the use of private property.



- - - - - OPTION 1 (16 MPH)
- - - - - OPTION 2 (12 MPH)
- - - - - FLOODPLAIN (SWMM)
- - - - - FLOODPLAIN (HEC-RAS)
- - - - - FLOODPLAIN (INTERPOLATED SURVEY)
- BANK RESTORATION AREA
- BANK RESTORATION AREA (ALTERNATE #1)



**MCWD CEDAR-GREENWAY
 TRAIL CONNECTION**
 CITY OF HOPKINS
 DAKOTA COUNTY, MINNESOTA

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ISSUE NO.	0
DESCRIPTION	FEASIBILITY STUDY
DATE	11/04/2022

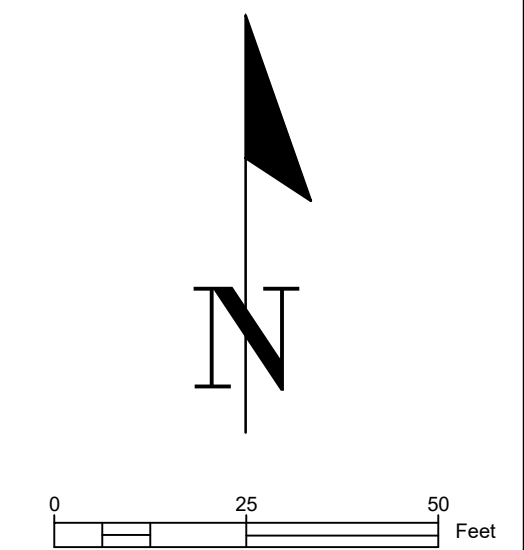
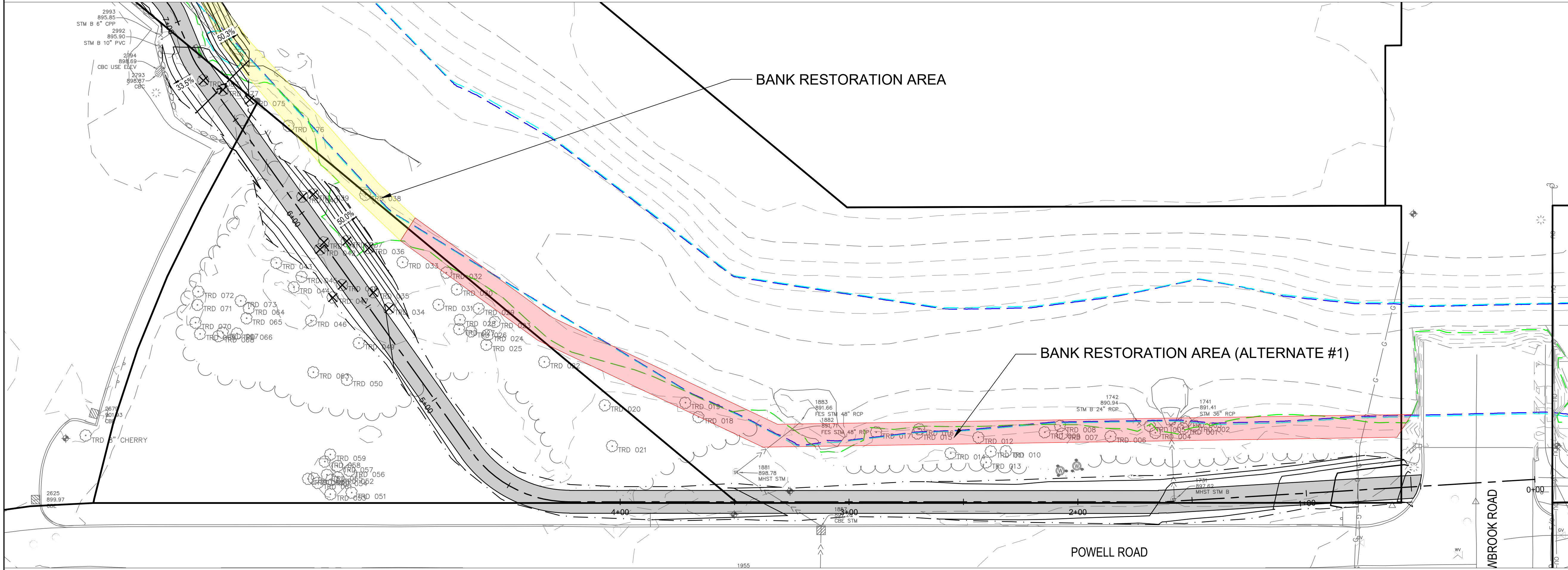
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PROJECT NO.:	227703704
DWN BY:	JRP
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ISSUE DATE:	11/04/2022
ISSUE NO.:	0

SHEET TITLE:
 OVERALL ALIGNMENT PLAN
 SHEET NO.:

EXHIBIT 1

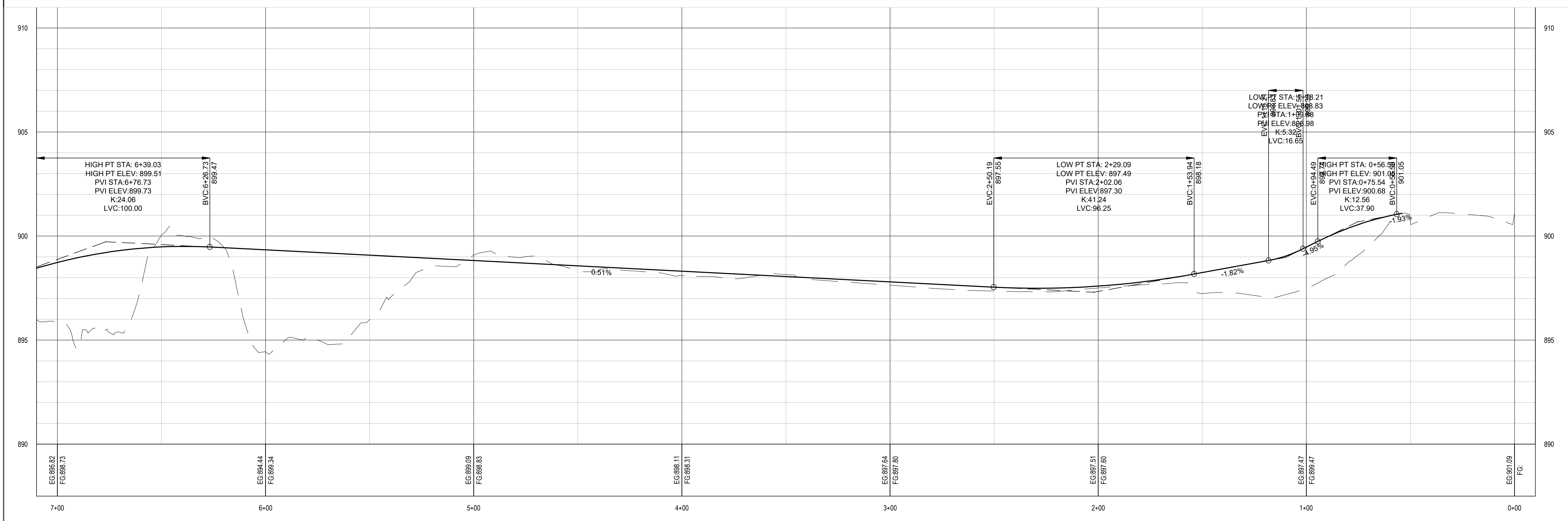
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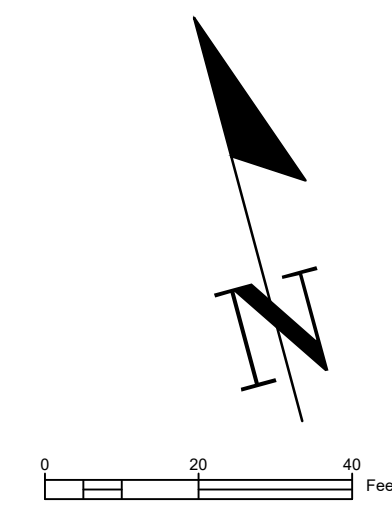
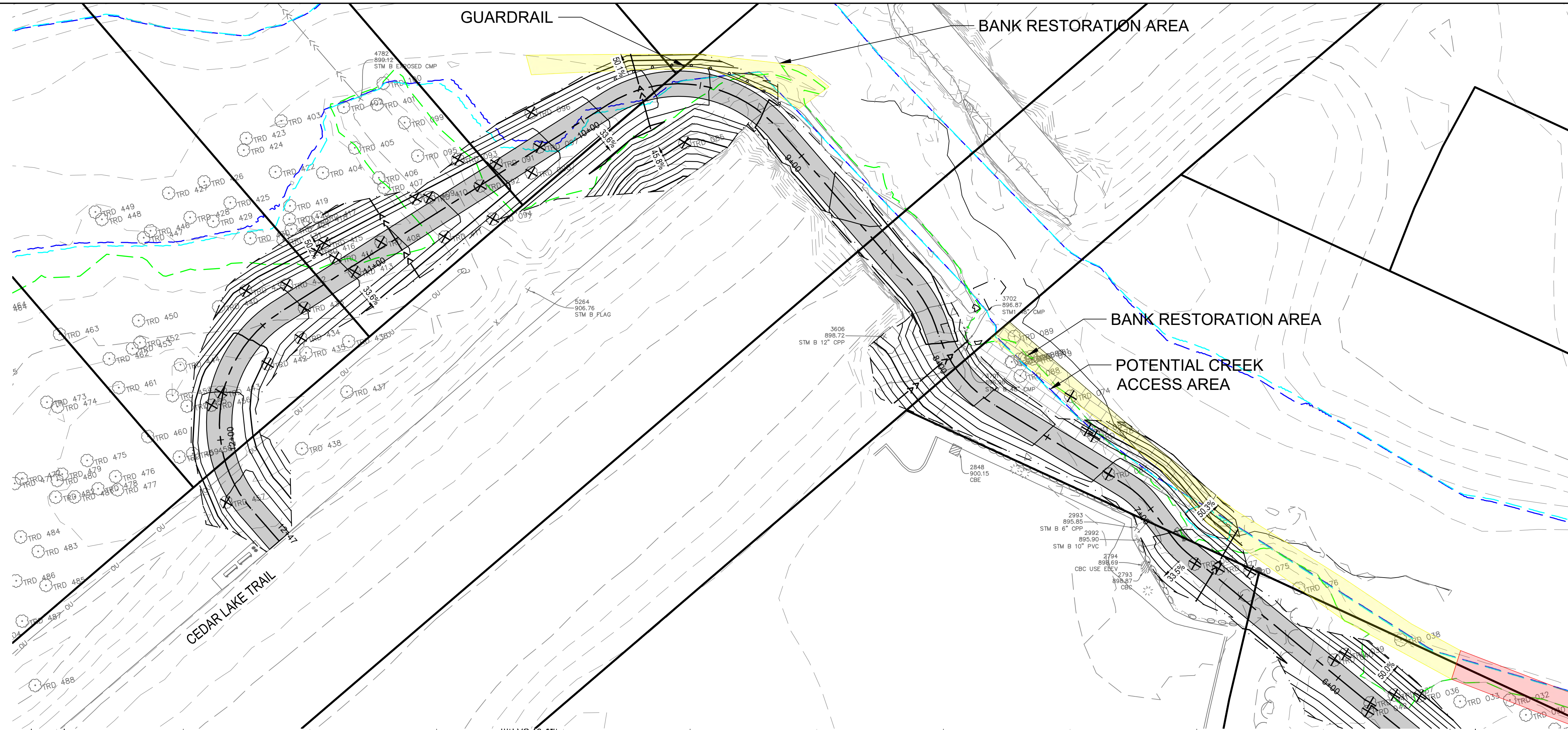
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ISSUE NO.	0		
SHEET TITLE	OPTION 1 - 16 MPH		
SHEET NO.	EXHIBIT 2		

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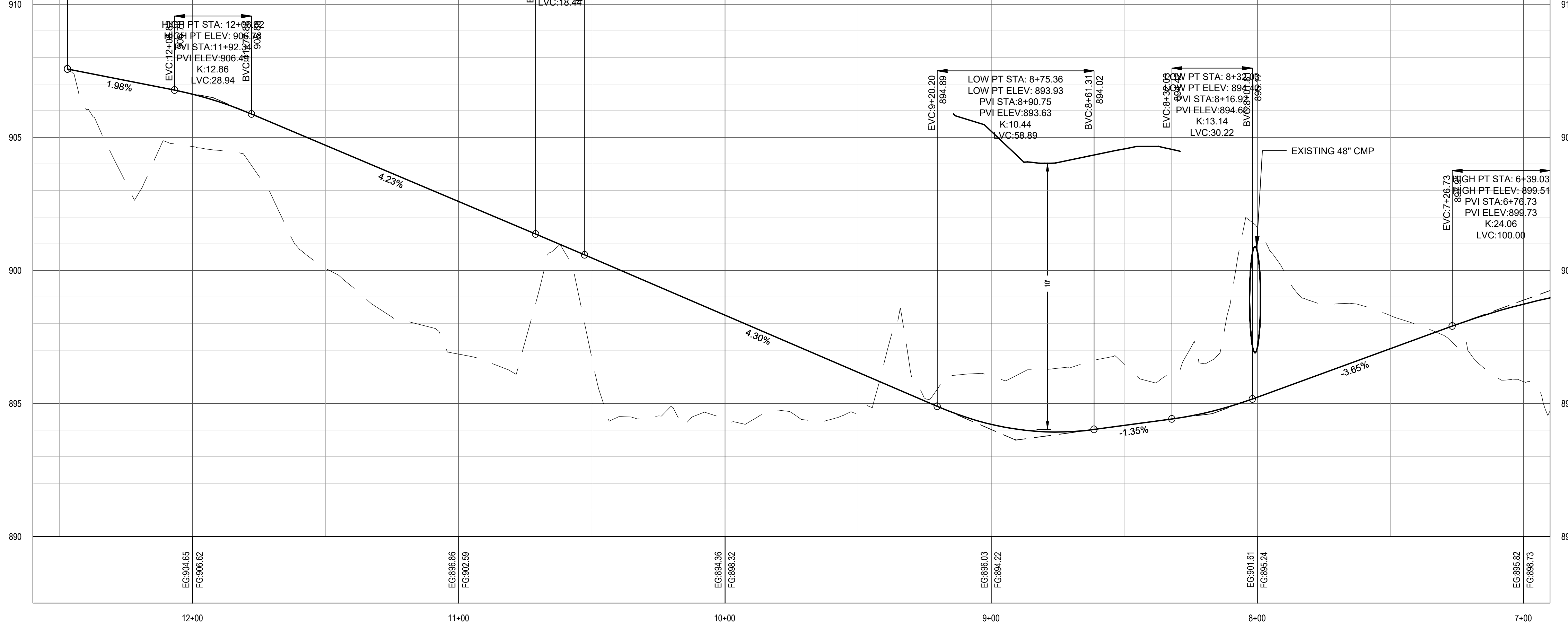
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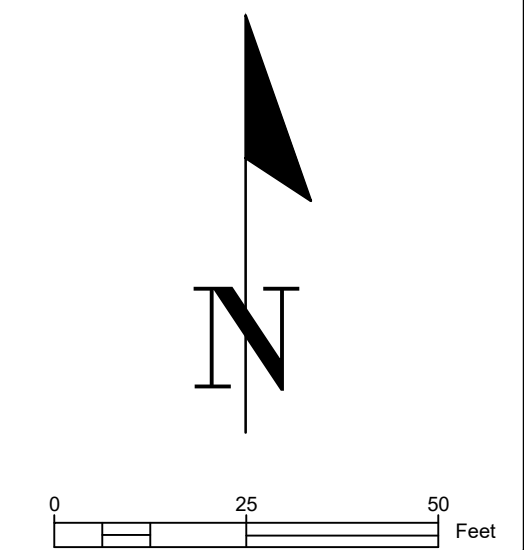
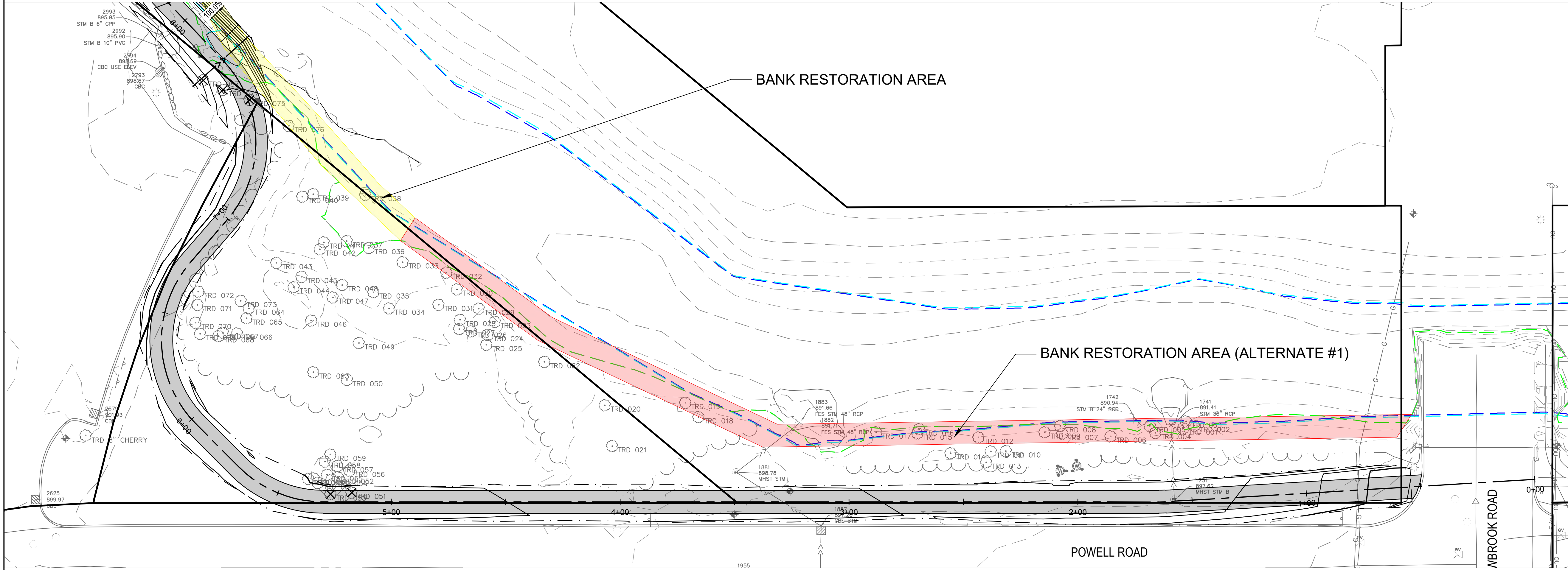
OPTION 1 - 16 MPH

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EXHIBIT 3

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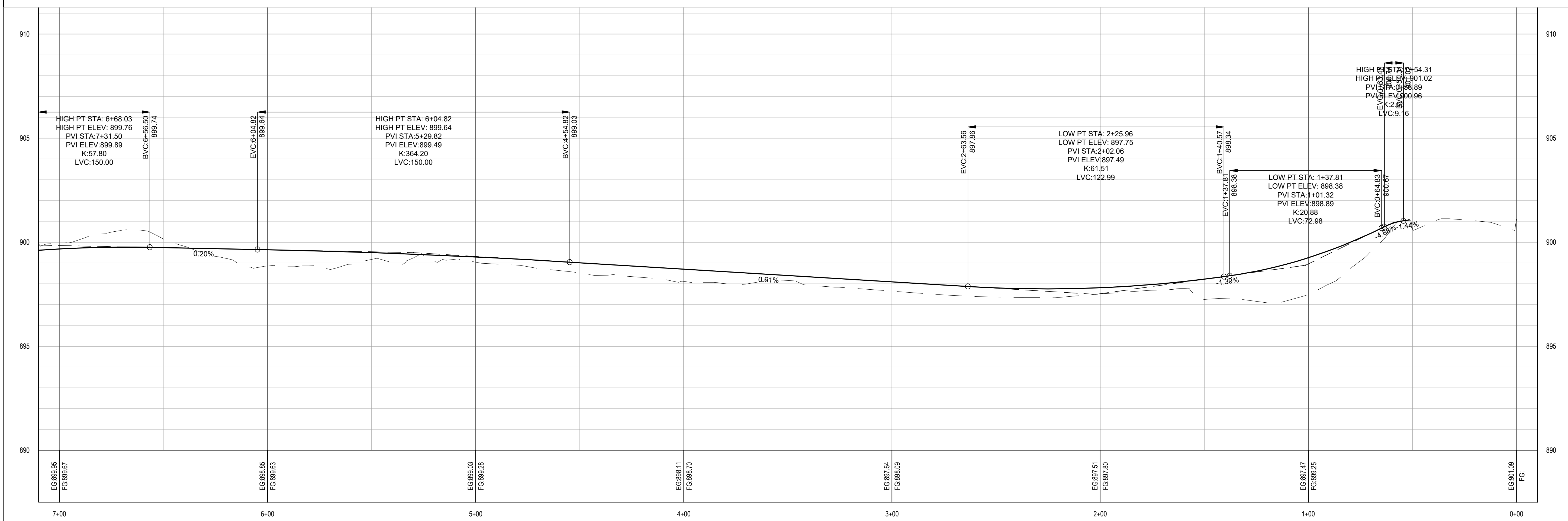
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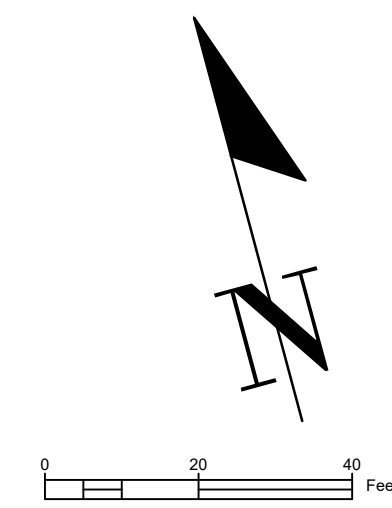
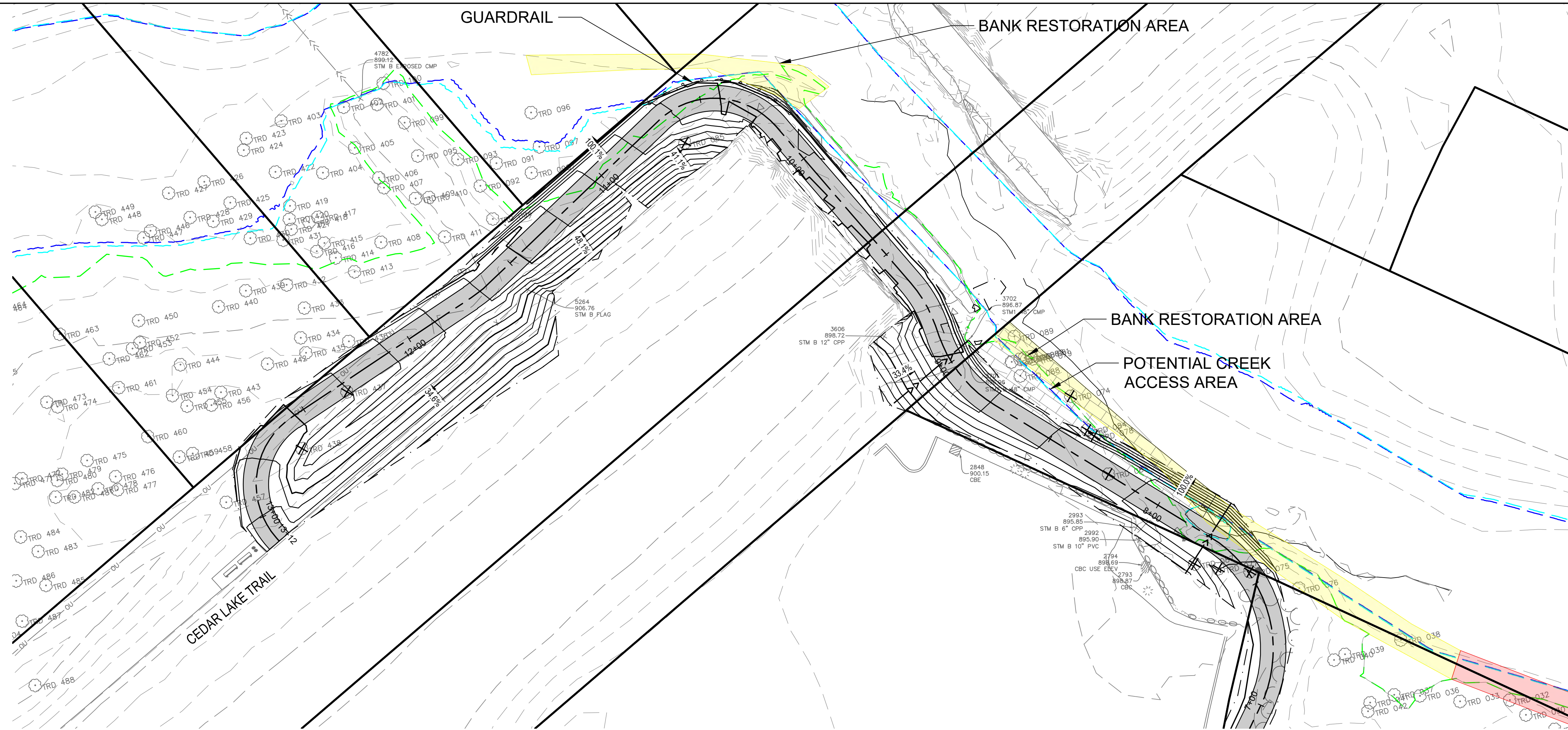
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ISSUE NO.:	0		
SHEET TITLE:	OPTION 2 - 12 MPH		
SHEET NO.:	EXHIBIT 4		

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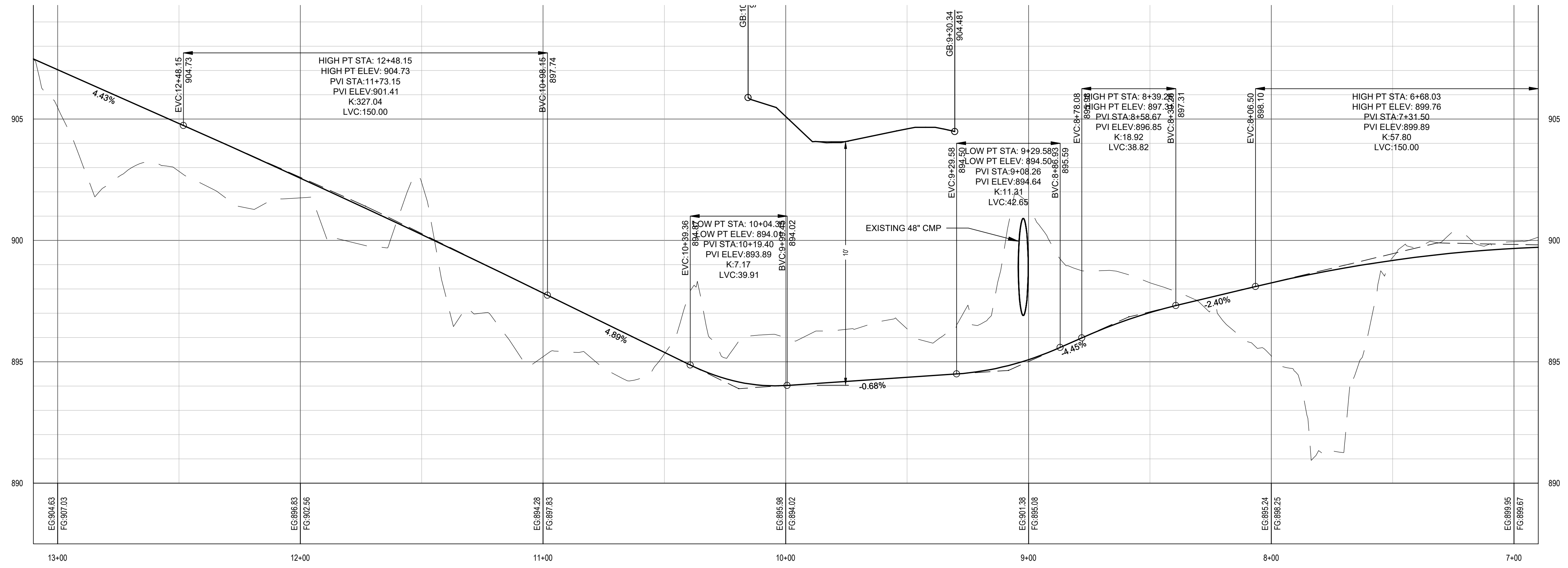
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PROJECT TITLE

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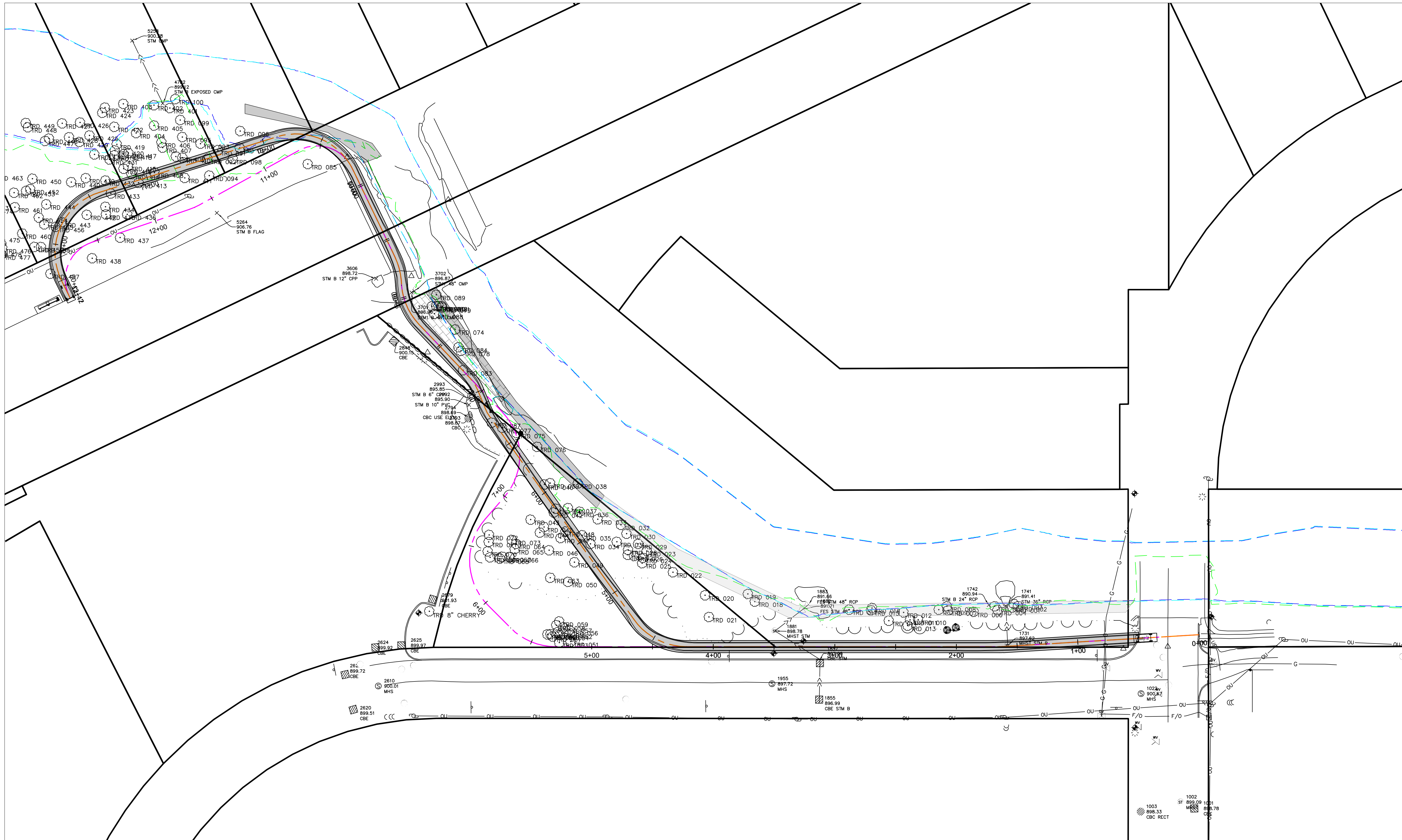
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SHEET TITLE:

OPTION 2 - 12 MPH

SHEET NO.:

EXHIBIT 5



- OPTION 1 (16 MPH)
- OPTION 2 (12 MPH)
- FLOODPLAIN (SWMM)
- FLOODPLAIN (HEC-RAS)
- FLOODPLAIN (INTERPOLATED SURVEY)

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ISSUE DATE:	11/04/2022
ISSUE NO.:	0
SHEET TITLE:	16 MPH VEHICLE TRACKING
SHEET NO.:	EXHIBIT 6