FINAL DRAINAGE REPORT
FOR
HONOR CHARTER SCHOOL
LOCATED AT
8250 BENT GRASS MEADOWS DRIVE
PEYTON, EL PASO COUNTY, CO 80831
PCD FILE NO. PPR2615

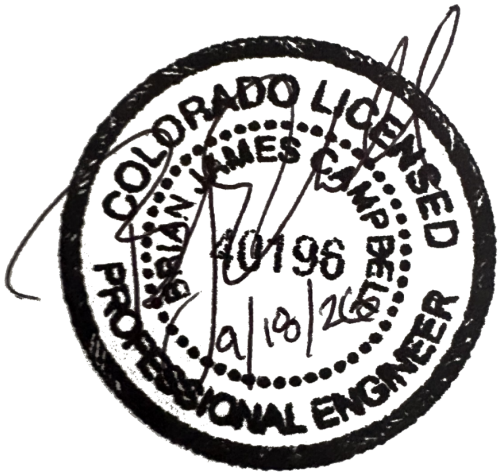
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April 2026



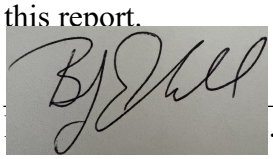
DEVELOPER'S STATEMENT

I, the developer have read and will comply with all of the requirements specified in this drainage report and plan.

Honor Charter School Bulding Corporation
Business Name
By: Pamela L Sweeris
Title: Agent
Address: 9200 E Mineral Ave Ste 100, Centennial CO 80112

ENGINEER'S STATEMENT

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.



. #40196

09/18/2026
Date

EL PASO COUNTY

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

Daniel Torres, P.E.
Digitally signed by Daniel Torres, P.E.
Reason: Authorized signatory as County Engineer designee
Date: 2026.09.24 22:33:46-06'00'

9/24/2026

Joshua J. Palmer, P.E.
County Engineer / ECM Administrator

Date

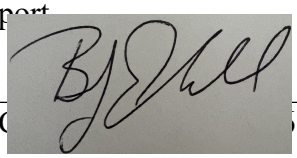
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_____ 09/18/2026
Brian C[illegible] Date

EL PASO COUNTY

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

_____ _____
_____ _____
Joshua J. Palmer, P.E. Date
County Engineer / ECM Administrator

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1. GENERAL SITE LOCATION AND DESCRIPTION

A. LOCATION

The Site is located 8250 Bent Grass Meadows Drive located near Falcon in El Paso County, Colorado. The Site is bounded to the north by Woodmen Hills Filing No. 3, to the east by residential, to the south by Bent Grass Meadows Drive, and to the west by Falcon Meadows at Bent Grass Residential Filing No. 2.

B. DESCRIPTION OF PROPERTY

The Site consists of approximately 8.98 acres of existing, undeveloped land that is currently housing a local sediment pond for drainage from surrounding developments. To the north, the ground surface is covered with native grass and weeds, with some small trees in the vicinity. The existing topography is generally sloping to the southeast across the Site although there is a roughly defined swale along the west side of the site that captures existing off-site flows from the north and west and conveys them to the existing on-site sediment pond. The existing sediment pond allows 63.5 cfs to discharge in the 100-year event. The flows through this site outfall over the curb to Bent Grass Meadows Drive and are generally then conveyed to the east to the roadside drainage swale along the west side of Meridian Road. A portion of flows are assumed to be bypassing through the neighborhood to the south via curb and gutter and ultimately discharging through Bent Grass Pond 1. Per descriptions in the MDDP & DBPS Amendment for the Bent Grass Development prepared by Galloway & Company, Inc dated Jan 2021 and revised September 2021, the existing conditions currently allow 33.2 cfs of the 100-yr storm flow to be conveyed in the Bent Grass Meadows Roadway. The remainder of flows (30.3 cfs) are assumed to outfall through Bent Grass Residential Filing No.1 through Bent Grass Pond 1. These flows were not described in the Bent Grass Residential Filing No. 1 drainage report but were documented in the Bent Grass MDDP & DBPS Amendment. This site is not in the 100 or 500 yr floodplain and it is in FEMA Zone x per the Firmette in Appendix C.

According to the Natural Resources Conversation Service (NRCS) Web Soil Survey, the native soils in this area are primarily Columbine gravelly sandy loam, 0 to 3 percent slopes (Map Unit Symbol #19), which is a Type A soil from 0 to 14 inches, and Type C from 14 to 60 inches.

Based on the Geotechnical Evaluation Report prepared by Vivid Engineering Group and dated March 30th of 2026, the groundwater was found to range somewhere between 7-9 feet along the northern areas of the site and depressed areas within the building envelope. The bore locations along the south side of the site generally either did not encounter groundwater or it was encountered around 9 feet deep. The proposed conditions will result in adding 2-5 feet of fill within the building envelope increasing depth to groundwater as encountered. There was no groundwater encountered in Bore B-8 located in northern part of the pond and there is up to 5 feet of excavation in the north end of the pond. The northern side

of the site has generally less than 2 feet of cut. We do not anticipate the finished grades to expose ground water tables and generally would have 5 feet or more of separation from the encountered groundwater depths. Please refer to Geotechnical Evaluation Report in Appendix G.

Please refer to the NRCS soils information in Appendix G.

Existing drainage facilities downstream of the site include existing culverts at the intersection of Bent Grass Meadows Drive and Meridian Road to the east of the site.

2. DRAINAGE BASINS AND SUB-BASINS

A. MAJOR BASIN DESCRIPTION

The subject site is located within the Falcon Drainage Basin Planning Study. Please refer to the Appendix F for excerpts from the Falcon Drainage Basin Planning Study. The historic 100-year runoff for the subject site is 12.66 cfs of on-site flow per rational calculations. Additionally, there is 72.5 cfs and 1.6 cfs of off-site flows from the north and the west respectively that flow through the site. The runoff from the site will be discharged to the north side of the intersection of Meridian and Bent Grass Meadows into roadside drainage swale on the west side of Meridian.

The drainage basin has been divided into sub-basins and analyzed for individual sub-basin characteristics such as runoff coefficients and peak runoff flows. For existing conditions, the on-site area has been divided into 3 onsite sub-basins EX1, EX2, and EX3. For post-development conditions, the basin has been divided into 7 onsite sub-basins: A1, A2, A3, A4, A5, A6, and A7. The runoff from these sub-basins is captured by proposed storm drain systems and conveyed to the detention pond located in the southeast corner of the site.

Drainage will generally be conveyed via sheet flow, grass swales, and curb and gutters to strategically placed inlets and will be routed southeast to the onsite detention pond in Basin A3. The discharge rates from the detention pond will not be allowed to exceed historical flow rate of 4.5 cfs per CUHP as shown in the MHFD Detention Spreadsheet in Appendix E.

Hydrologic and hydraulic calculations have been provided with this drainage report. See Appendix D and E for calculation spreadsheets.

EXISTING SUB-BASIN DESCRIPTION

<u>Off-site Basin OS-25</u>

Basin OS-25 has been derived from the Bent Grass Meadows MDDP and is shown for reference only. Per the Bent Grass Meadows MDDP, a total of 72.5 cfs

is being routed through Basin OS-25 onto site during the 100-year storm event. This flow has been mitigated via routing the 72.5 cfs through a proposed drainage swale to an outlet structure and pipe, which then in combination with the flow overtopping to Bent Grass Meadows Roadway conveys the runoff to the Roadside drainage swale along Meridian Road. Refer to Appendix F for the Bent Grass Meadows excerpt and Appendix E for the proposed drainage swale calculations.

Off-site Basin F-1

Basin F-1 has been derived from the Bent Grass Meadows MDDP is shown for reference only. Per the Bent Grass Meadows MDDP, Basin F-1 outlets approximately 0.6 cfs and 1.6 cfs onto site during the 5-year and 100-year storm event. This flow is captured with in Basin A4, and is conveyed to the Pond 1. This additional cfs has been accounted for within pipe sizing, but has not been included in the on-site pond storage. The proposed off-site storm pipe is sized to convey this is 0.6 cfs and 1.6 cfs in the 5-year and 100-year storm.

Basin EX1

Basin EX1 consists of the western half of the site area. This basin consists of 4.96 acres of native grasses and weeds and has been analyzed with an impervious of 20%. Runoff surface flows to the southern portion of the basin where it collects in an existing sediment pond. Overflow from the sediment pond overtops a riprap overflow (Design Point E1) into Basin EX3 and then continues south into existing ROW and Bent Grass Meadows Drive. The final outfall for the storm runoff is a swale along Meridian Road via Bent Grass Meadows Drive. Storm runoff for the 5-yr and 100-yr storm are 1.66 cfs and 6.70 cfs respectively.

Basin EX2

Basin EX2 consists of the Northeast portion of the site. This basin consists of 2.05 acres of native grasses and weeds and has been analyzed with an impervious of 20%. Runoff surface flows to the southern portion of the basin where it collects in an existing depression. When flows overtop the depression (Design Point E2), they flow to the southeast into Basin EX3. Final outfall is a swale along Meridian Road via Bent Grass Meadows Drive and Basin EX3. Storm runoff for the 5-yr and 100-yr storm are 0.67 cfs and 2.73 cfs respectively.

Basin EX3

Basin EX3 consists of the southeastern portion of the site. This basin consists of 1.97 acres of native grasses and weeds and has been analyzed with an imperviousness of 20%. Runoff flows to the southeast offsite into existing ROW of Bent Grass Meadows Drive (Design Point E3). The final outfall for the storm runoff is a swale along Meridian Road via Bent Grass Meadows Drive. Storm runoff for the 5-yr and 100-yr storm are 0.80 cfs and 3.24 cfs respectively.

PROPOSED SUB-BASIN DESCRIPTION

Basin A1

Basin A1 (0.94 acres) is located to the northwest of the building including a portion of the building roof. It consists of proposed drive aisles, landscaping, sidewalk, and roof and has an impervious percentage of 49.2%. Runoff will generally overland flow southeast via landscape and gutters into a 5' Type R inlet (S1) and through a 24" HDPE private storm pipe (P1) which ultimately discharges to Pond 1. Final outfall from Pond 1 is a swale alongside the west side of Meridian Road. The 5-yr and 100-yr flow produced from this basin are 1.29 cfs and 3.08 cfs respectively.

Basin A2

Basin A2 (2.28 acres) is located to the northeast of the building including a portion of the building roof. It consists of proposed drive aisles, landscaping, sidewalk, and roof and has an impervious percentage of 45.4%. Runoff will generally flow southeast via landscape swales and gutters into a 5' Type R inlet (S2) and through a private 24" HDPE storm pipe (P2) which ultimately discharges to Pond 1. Final outfall for Pond 1 is a swale alongside the west side of Meridian Road. The 5-yr and 100-yr flow produced from this basin are 2.58 cfs and 6.39 cfs respectively.

Basin A3.1

Basin A3.1 (1.62 acres) is located to the northeast of the building. It entirely consists of landscaping and has an imperviousness percentage of 20%. Runoff is conveyed south via landscape swale to an area inlet (I3) and outlets to Pond 1. Final outfall for Pond 1 is a swale alongside the west side of Meridian Road. The 5-yr and 100-yr flow from this basin are 0.25 cfs and 1.02 cfs respectively.

Basin A3.2

Basin A3.2 (1.45 acres) is located to the southeast of the building including a portion of the building roof. It consists of proposed drive aisles, landscaping, sidewalk, detention pond, playground area, and roof and has an impervious percentage of 35.0%. Runoff will generally flow south via both curb conveyance and overland flow from the north into Pond 1. Flow from curb conveyance will outlet via curb cut and riprap swale into a designed forebay located in Pond 1. Pond 1 outlets into structure (S3) and then into a private 18" RCP storm pipe (P3). Flow will then ultimately discharge to the off-site storm system flowing east along Bent Grass Meadows drive. The 5-yr and 100-yr flow produced from this basin are 1.14 cfs and 3.26 cfs respectively.

Basin A4

Basin A4 (1.52 acres) is located to the southwest of the building, including a portion of the building roof and the western side of the proposed parking lot. It consists of proposed drive aisles, parking, landscaping, sidewalk, trash enclosure, and roof and has an impervious percentage of 65.3%. Runoff will generally flow

southwest into two 5' Type R curb inlets (S4 and S7) and discharge to the east via a private 24" HDPE storm pipe (P4). P4 ultimately discharges to Pond 1. The 5-yr and 100-yr flow produced from this basin are 3.27 cfs and 6.79 cfs respectively. In addition, 1.6 cfs is being conveyed from Basin F-2 into Basin A4, an offsite basin referenced above. Pipe P4 has been sized to carry this flow, refer to Appendix E for calculations.

Basin A5

Basin A5 (0.62 acres) is the eastern portion of the proposed parking lot and includes a portion of the building roof. It consists of proposed drive aisles, parking, landscaping, sidewalk, and roof and has an impervious percent of 85.3%. Runoff will generally flow southeast into two 5' Type R curb inlets (S5 and S8) and discharge to the east via a private 24" HDPE storm pipe (P5). P5 ultimately discharges to Pond 1. Final outfall for Pond 1 is a swale alongside the west side of Meridian Road. The 5-yr and 100-yr flow produced from this basin are 2.22 cfs and 4.10 cfs respectively.

Basin A6

Basin A6 (1.28 acres) is located along the north and eastern property lines of the site. It consists of native vegetation and has an impervious percent of 20.3%. Runoff will generally be conveyed via Grass channel to the east and then to the south, where it is collected and conveyed into a private 30" RCP storm pipe (P6) and headwall. This flow combines with flow from Pond 1 and P3 into a public off-site 30" RCP storm pipe which ultimately discharges into the regional channel along west side of Meridian Road. Refer to Appendix E for the offsite public pipe sizing calculations. The 5-yr and 100-yr flow produced from this basin are 0.48 cfs and 1.93 cfs respectively. In addition to basin runoff, bypass flows from Basin OS-25 will be routed through the basin.

As Basin A6 acts as a bypass for offsite flow from Basin OS-25, flow will fill up the proposed pipe and headwall until it overtops the inlet structure and flows into Bent Grass Meadows Drive. This will only happen during the maximum 100-year storm event. The overtopping flow and affect on Bent Grass Meadows Drive have been calculated in Appendix E.

The proposed grass lined channel is a self-treating separate pervious area, ensuring that all runoff from Basin A6 is treated for water quality. Refer to Appendix E for swale hydraulic calculations.

Basin A7

Basin A7 (0.26 acres) is located along the south property line of the site. It consists of proposed entrances, parking, landscaping, and sidewalk and has an impervious percent of 45.9%. Runoff will generally sheetflow to the south off the property, where it is collected in the ROW curb and gutter along the north side of Bent Grass Meadows Drive. The 5-yr and 100-yr flow produced from this basin are 0.42 cfs and 1.04 cfs respectively.

Runoff from Basin A7 will go directly into ROW, but the flow of 1.04 cfs in the 100-yr rainfall event is negligible to the total flow within Bent Grass Meadows Drive. Per ECM Appendix I.6.3.A.1.a, flows from A7 have been excluded from WQCV requirements, as the total area does not exceed 1 acre and it is not practicable to create a separate PCM for treatment of flows.

While Basins A6 and A7 are considered on-site basins, they will not be routed to Pond 1 and have not been included within Pond 1 sizing volume. Runoff in Basin A6 is treated for WQCV standards within the basin.

Refer to Appendix D for and E for all hydrologic and hydraulic calculations.

3. DRAINAGE DESIGN CRITERIA

A. REGULATIONS

This report has been prepared in general accordance with the Mile High Flood District/Urban Storm Drainage Criteria Manual (USDCM), City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage Criteria Manual as revised in May 2014.

B. HYDROLOGIC CRITERIA

The subject site consists of approximately 8.98 acres. The site is currently undeveloped and the proposed project will consist of a proposed school building, parking lots, drive lanes, landscape areas, and detention Pond 1.

The subject site is located within the Falcon Drainage Basin Planning Study, as shown in the Bent Grass Development MDDP and DBPS Amendment, January 2021, prepared by Galloway. All onsite and offsite flow is directed east via curb and gutter and 30" public off-site storm drain pipe to the roadside drainage swale along the west side of Meridian road, which is in compliance with the Bent Grass Development MDDP. The Bent Grass Development MDDP and DBPS states the pipe should be 42". Per discussions with EPC, a 30" public storm drain is all that is required to maintain current runoff conditions during the major 100-year storm.

Headwater Condition at Culvert

All minor storm events will be conveyed through the 30" pipe to the existing swale alongside Meridian Road. For the 100-year storm, all flows will be directed through the pipe with exception of up to 33.2 cfs which overtops the headwall and is conveyed via swale over the sidewalk into the Bent Grass Meadows Roadway. At an overflow rate of 33.2 cfs, the north curb would retain 22.63 cfs and the remaining 10.57 cfs will overtop the crest of the road to the south curb line. The headwater calculations (culvert report) in the appendix shows that the 100-year discharge of 80.43 cfs through the pipe will allow slightly less flow (32.87 cfs) to overtop than the 33.2 cfs permitted. The headwater at the headwall rises to an

elevation of 6956.43 at the peak 100-year flow and discharges at a rate of 32.87 cfs. Refer to Appendix E for flow/headwater calculations and exhibits of the overflow and spread onto Bent Grass Meadows Drive.

Runoff from impervious and pervious surfaces because of the proposed development will be routed through Pond 1. The controlled discharge from the detention pond will be released from the southeast corner of the subject site to a proposed 30" pipe to carry it to the roadside drainage swale along the west side of Meridian road.

Evaluation of the Stability of the North/East Channel

The channel stability has been evaluated using HEC-RAS. From the Northeast corner of the swale and along the channel for the 100-year event exceeds the recommended Froude number. It has been determined that the channel will be permanently lined within 10' upstream of the northeast corner as well as downstream along the east side with turf reinforcement mat (Vmax S200 or equivalent) in order to stabilize the channel surface. The maximum depth in the channel was designed utilizing a higher Mannings n of 0.08 (using Hydraflow) and results in a slower velocity and a maximum water depth of 1.95 feet. That still allows 1.05 feet of freeboard in the slow overgrown condition. HEC-RAS modelling was completed utilizing a lower Mannings n of 0.03 to see the effects of higher velocity and higher shear force. In HEC-RAS modeling, there was a maximum depth of 1.14 feet (1.86 feet of freeboard) and a maximum shear of 0.73 psf. See appendix E for calculations.

Existing Site Runoff

Design Point E1 shows the existing runoff location. For the point of this analysis, runoff from Basins E1, E2, and E3 have been combined within Design Point E1, though portions of runoff will sheet flow into the ROW further west of E1. E1 has a total historical 100-year flow rate of 12.66 cfs running off from the existing site per the rational calculations.

Proposed Site Runoff

Pond 1 outlet structure S3 has been designed to release at a 100-year flow rate of 4.4 cfs during the 100-year storm. Basin A6 is unable to be captured since it houses the off-site stormwater channel and discharges an on-site 100-year flow rate of 1.93 cfs. Basin A7 is unable to be captured since it is composed of landscape areas and drive entrances on the downhill side of ridges and curbs to contain water on-site. This basin discharges an on-site 100-year flow rate of 1.04 cfs. Combined, the proposed 100-year flow rate from the site is 7.37 cfs and is less than the existing historical on-site flow rate (12.66 cfs).

Existing Off-site Run-on Discharge

Per the MDDP, the existing conditions allow for 63.5 cfs to be discharged out of the existing sediment pond to Bent Grass Meadows drive. Of that 33.2 cfs is

conveyed in Bent Grass Meadows roadway. The remaining 30.3 cfs is discharged to the south through Bent Grass Filing No. 1.

Existing Off-site Run-on Discharge

For the post-construction condition, the proposed stormwater channels will convey the off-site run-on flows through a proposed 30" pipe with only the 33.2 cfs of the off-site flow being discharged to the Bent Grass Meadows roadway matching the current existing historical conditions. The remaining flows will be piped via the proposed 30" pipe to the roadside drainage swale along Meridian Road. Refer to Appendix E for calculations and exhibits of the over flow and spread onto Bent Grass Meadows Drive.

C. HYDRAULIC CRITERIA

This report has been prepared in general accordance with the Mile High Flood District/Urban Storm Drainage Criteria Manual (USDCM), City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage Criteria Manual as revised in May 2014.

The design storms for this project are the 5-year and the 100-year recurrence intervals. Runoff is calculated using the Rational Method since the total project and all basins are smaller than 160 acres. The Rational calculations are estimates based on site areas and assumed uses within the proposed basins. Refer to Appendix E for Hydraulic computations.

4. DRAINAGE FACILITY DESIGN

A. GENERAL CONCEPT AND DESIGN

On-site Conveyance and Storage

The overall development has been analyzed for water quality treatment and the impacts of the 10-year minor storm event and the 100-year major storm event as well as adherence to the Bent Grass Development MDDP and DBPS Amendment. The contributing areas to be controlled by Pond 1 outlet structure is 7.44 acres. The additional 1.54 acres are either exempt from treatment or treated within self-treating pervious areas. Refer to Basin descriptions above for details. The contributing area will be conveyed to the proposed detention Pond 1 via underground storm drain system and overland flow for detention and treatment. The water quality treatment volume and storage for the 100-year event will be provided by the full spectrum extended detention which includes forebays within the pond and a micro pond at the outlet structure for sediment removal. An outlet at the southeast corner of the detention pond will allow discharge at a 100-year peak flow rate of 4.4 cfs into the proposed 30" public offsite drainage system being developed with this project.

Off-site Run-on Conveyance

For conveying the 100-year off-site runoff through the site, the full 72.5 cfs from the north will be captured in a drainage channel along the north and flow to the northeast corner and then south to the proposed off-site pipe system. For the 100-year condition, approximately 33.2 cfs will overtop the curb and be conveyed via the Bent Grass Meadows roadway following existing conditions. The remainder of the 72.5 cfs that is being bypassed will be captured and conveyed in the proposed 30" public storm pipe that will run along the north side of Bent Grass Meadows drive. The 1.6 cfs from Basin F-1 (See sections of the MDDP) to the west will be captured via vegetated swales and conveyed through the on-site storm infrastructure to be conveyed through the pond. The proposed off-site storm drain will flow approximately 2000 ft to the east and outlet to the north of the intersection of Bent Grass Meadows Drive and Meridian Road to the Roadside Drainage Swale. Refer to Appendix E for calculations and exhibits of the over flow and spread onto Bent Grass Meadows Drive.

The drainage improvements designed for this proposed development will provide detention and water quality treatment for the project site 100-year event for on-site flows and conveyance of the 100-year storm event for off-site flows.

Riprap Design

Riprap has been designed to meet the minimum requirements for Forebay riprap sizing and also sized per MHFD requirements. Refer to Appendix E for forebay sizing calculations and riprap sizing requirements. Per forebay riprap sizing, D_{50} = 12" minimum. While some of the riprap might be allowed as a smaller size of riprap, all onsite riprap will be Type M with a minimum depth of 24" per ECM standards.

Based on the FHWA HEC-14 outlet protection equation using an outlet velocity of 8.20 ft/s, flow of 47.03 cfs (flow is derived from the 36" elliptical pipe releasing into meridian way), channel slope of 0.50%, rock specific gravity of 2.65, and a stability coefficient of 0.86, the required median riprap stone size is calculated as D_{50} = 1.47 ft (17.6 in.). Since El Paso County specifies standard riprap gradations, the calculated D_{50} corresponds to Type H Riprap, which has a nominal D_{50} of 18 inches, making Type H Riprap the appropriate selection for this outlet protection. The flow is derived from the 36" elliptical pipe discharging into meridian way.

B. DETENTION

The proposed drainage patterns will follow existing drainage patterns, with all of the site ultimately discharging to the southeast through proposed storm drain system, including an off-site 30" public storm drain system which runs approximately 2000 ft to the east and outlet to the north of the intersection of Bent Grass Meadows Drive and Meridian Road to the Roadside Drainage Swale.

The onsite detention Pond 1 shall be a private, full spectrum pond, which includes water quality (WQ), excess urban runoff volume (EURV) and 100-year volume.

Stage 1 will be WQ; Stage 2 will be EURV and Stage 3 will be the 100-year volume. Honor Charter will be responsible for maintenance of the pond and outlet structure.

The required WQ volume is 0.128 ac-ft and the provided volume is 0.131 ac-ft with a release rate of 0.1 cfs. The WQ surface elevation is 6954.88 ft. The required EURV volume is 0.426 ac-ft (including WQ) and the provided volume is 0.430 ac-ft at a release rate of 0.3 cfs. The EURV water surface elevation is 6955.75 ft. The required 100-year volume is 0.679 ac-ft and the provided volume is 0.684 ac-ft at a release rate of 4.4 cfs. The 100-year water surface elevation is 6956.34 ft.

The pond will have an emergency overflow spillway for a plugged outlet condition or for a storm event greater than the 100-year event overtopping only in the case the water surface elevation exceeds 6956.35. The emergency overflow will overtop the eastern pond edge and flow into the proposed grass channel within Basin A6. The emergency overflow spillway has been designed to be 20' long and have a water depth of +/-5.5 inches. The runoff through the spillway was calculated by assuming a plugged outlet and summing post development 100-year peak flows that discharge through the pond including off-site basin F-1 for the most extreme case. The spillway crest elevation is 6956.35 and the freeboard elevation will be 6957.35 feet.

The detention pond will release via a private 18" RCP storm drain into a proposed 96" storm manhole as part of the off-site system within Bent Grass Meadows. Runoff is then conveyed in the proposed public 30" RCP along Bent Grass Meadows ultimately discharging on the north side of Bent Grass Meadows into the roadside drainage swale along the west side of Meridian Road.

The 100-year overflow spillway for the off-site flows overtops the headwall at 0.54 feet of depth into an overflow path and drains to Bent Grass Meadows drive and spills over the proposed sidewalk. The overflow path is graded to convey the 33.2 cfs to the roadway at 0.5 feet of depth. As flows overtop the sidewalk, flows will spread out and decrease in depth with a maximum flow rate of 33.2 cfs. Rip rap has been placed to reinforce the overflow path from the headwall to the sidewalk. The north curb line of Bent Grass Meadows Drive can accept a portion of this flow (22.63 cfs) per DCM Table 6-1. A portion of the runoff will overtop the centerline and flow (10.57 cfs) to the south curb line of Bent Grass Meadows Drive. Refer to Appendix E for overflow volume and location. An emergency drive aisle of 20' is still open during this time.

C. STORMWATER QUALITY

Water quality for the subject development will be provided with the proposed extended detention pond and self-treating landscape areas. The outlet structure for the pond contains an orifice plate to limit the release and provide water quality for the development site.

The required water quality capture volume is 0.12 ac-ft and the water quality capture volume provided is 0.12 ac-ft at an elevation of 6955.08 ft. The water quality volume drains within 42 hours. The 100-year event volume drains within 60 hours.

The detention pond and outlet structure shall be regularly inspected and maintained by the property owner (at least 1 time every six months and 2 times per year). The inspections should include a log for the date, items inspected, maintenance actions and any updates to the drainage system. Maintenance access is an all-weather path on the south side of the structure. Maintenance shall follow Chapter 6: BMP Maintenance of the MHFD, Volume III.

Stormwater quality and erosion control measures will be addressed by applying Best Management Practices in general accordance with Urban Drainage Volume 3. A SWMP will be prepared for the site and will provide more detail on BMPs during construction and post-construction BMPs.

5. Four Step Process
    A. Runoff Reduction Proposed: Storm runoff sheet flows over pervious areas wherever possible to slow runoff and increase time of concentration to storm water system. Runoff is collected in a pervious detention basin to allow infiltration and slow water impact on County stormwater infrastructure.

    B. Stabilization of drainage ways: All drainage ways are stabilized with pervious landscaping where possible.

    C. Proposed Stormwater Quality Capture Volume (WQCV) proposed: Proposed on-site runoff is collected and diverted to Pond 1, which releases at a pre-determined rate to ensure WQCV standards are met.

    Portions of the site that do not drain to Pond 1 are either exempt from this condition per ECM Appendix I.6.3.A.1.a, or are treated as a self-treating separate pervious area excluded per ECM Appendix I.6.1.B.6. Refer to Basin descriptions for details.

    D. Identify Best Management Practices (BMP's) to be used to control industrial and commercial pollutants: Refer to prepared SWMP and GEC plans for proposed BMP's as well as maintenance and care thereof.

6. SEDIMENT/EROSION CONTROL

The following practices/methods shall be implemented as a part of the overall sediment/erosion control for the proposed site:

- Silt Fence

- Inlet Protection
- Materials Handling and Spill Prevention (Concrete Washout Area)
- Stabilized Staging Area for Material/Equipment Storage
- Vehicle Tracking Control Pad
- Sanitary Facilities
- Curb Socks
- Seeding & Mulching
- Riprap

7. CONCLUSION

A. COMPLIANCE WITH STANDARDS

This project is in general compliance with the City of Colorado Springs/El Paso County Drainage Criteria Manual and the Mile High Flood District for storm water design. *Urban Storm Drainage Criteria Manuals Volume I and III* have been utilized in the placement of best management practices and design of the stormwater system regarding imperviousness and runoff coefficients. Adequate storm water treatment has been provided, and the peak flows have been reduced to below pre-development conditions for 10-year and 100-year rates.

B. DRAINAGE COMPLIANCE

The purpose of this report is to define and analyze existing and developed runoff quantities and conveyance methods for the Honor Charter School development. The design of the site was based on the 10-year and 100-year storm events. The streets and drainage conveyance facilities were designed to meet these events. The design of the release points from the site shows reduction in peak flows. No foreseeable negative impacts on the surrounding properties and drainage infrastructure are anticipated. The drainage is in accordance with requirements and criteria established by El Paso County and the Bent Grass Development MDDP and DBPS Amendment.

8. REFERENCES

Drainage Criteria Manual, Volumes 1-3. Urban Storm Drainage Criteria Manual. Updated March 2024.

City of Colorado Springs/El Paso County Drainage Criteria Manual

Bent Grass Development MDDP and DBPS Amendment for the Bent Grass Development prepared by Galloway & Company, Inc dated Jan 2021 and revised September 2021

9. APPENDICES

A. VICINITY MAP
B. STORMWATER PLANS
C. FEMA FIRM MAP
D. HYDROLOGIC COMPUTATIONS
E. HYDRAULIC COMPUTATIONS
F. SECTIONS FROM BENT GRASS MDDP/DBPS AMENDMENT & FALCON DRAINAGE BASIN STUDY
G. SOILS REPORT
H. GRADING AND STORM DRAINAGE PLANS
I. GEOTECH REPORT
J. EXISTING AND PROPOSED DEVELOPMENT MAPS

APPENDIX A

VICINITY MAP



VICINITY MAP

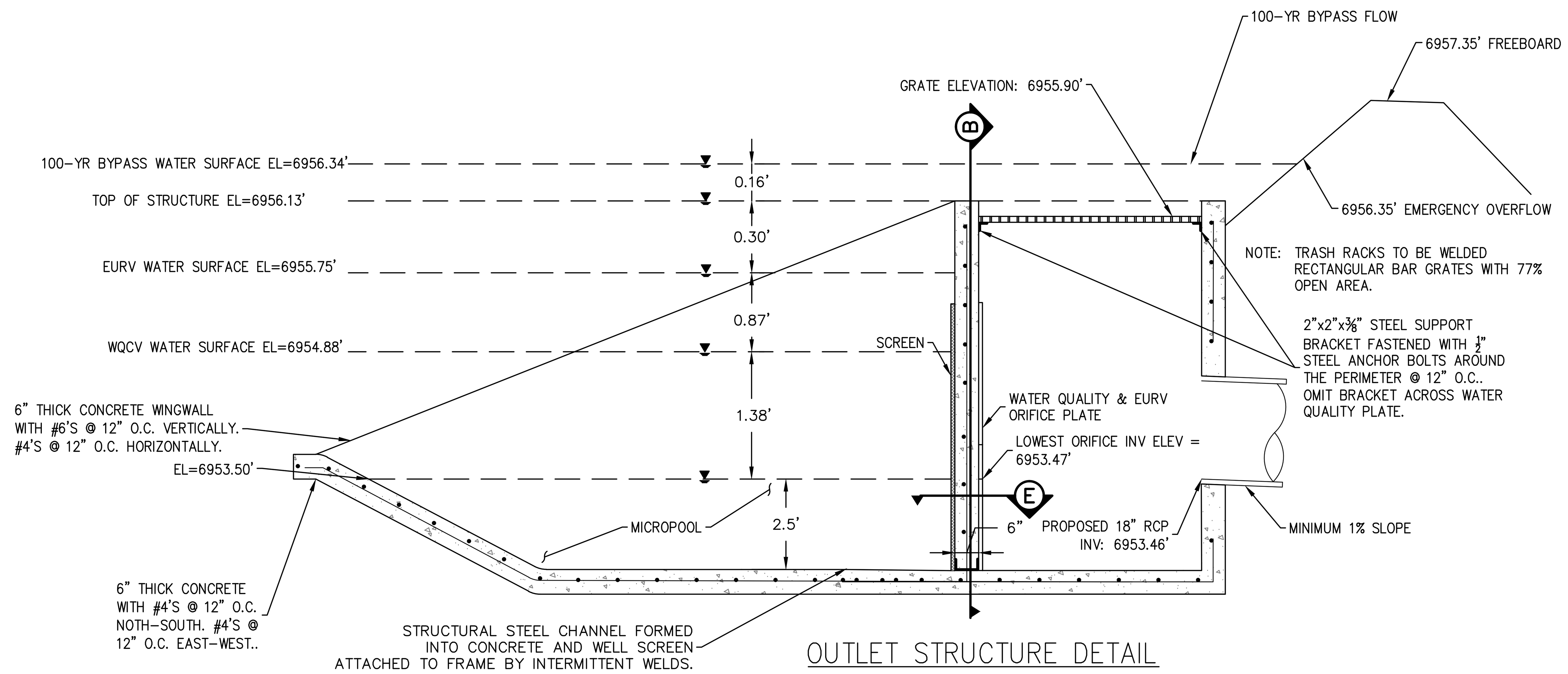
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APPENDIX B

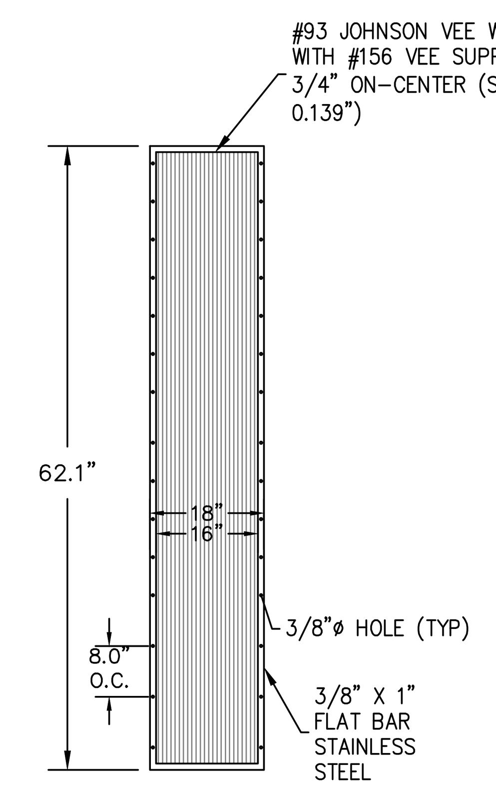
STORMWATER PLANS

NOTE:

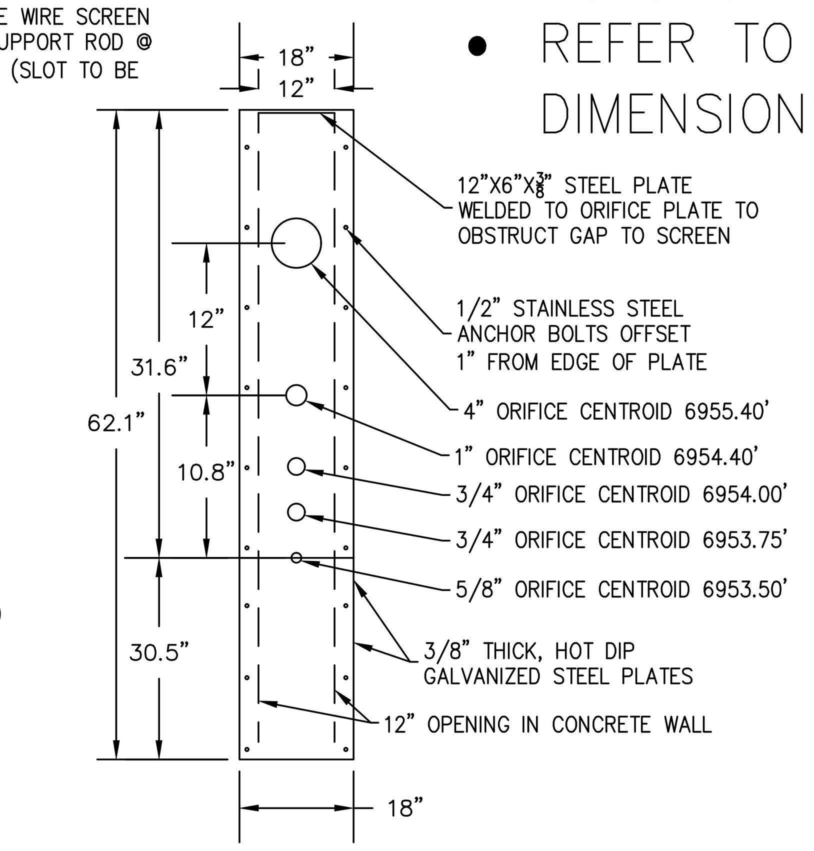
- MINIMUM COMPRESSIVE STRENGTH = 4,000 PSI
- REFER TO GRADING DETAILS SHEETS FOR POND GRADING
- REFER TO STORMWATER PLAN FOR DIMENSIONS ON POND/POND COMPONENTS



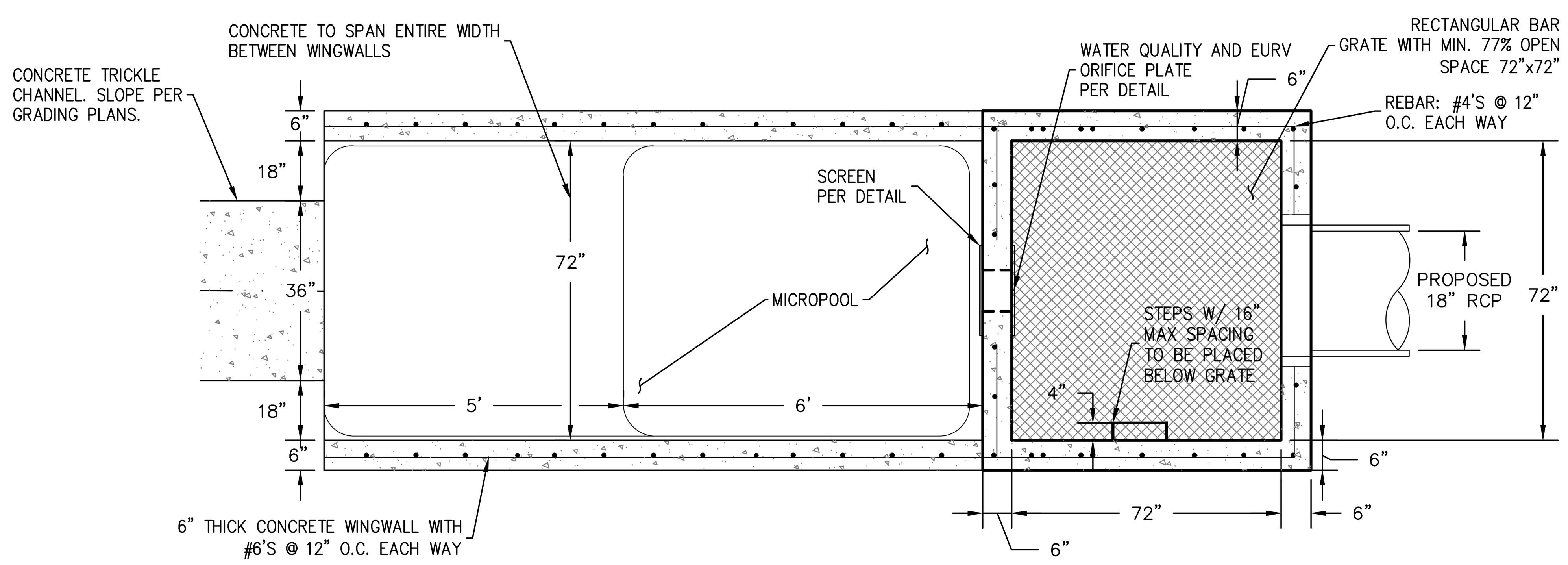
OUTLET STRUCTURE DETAIL
ELEVATION VIEW
NOT TO SCALE



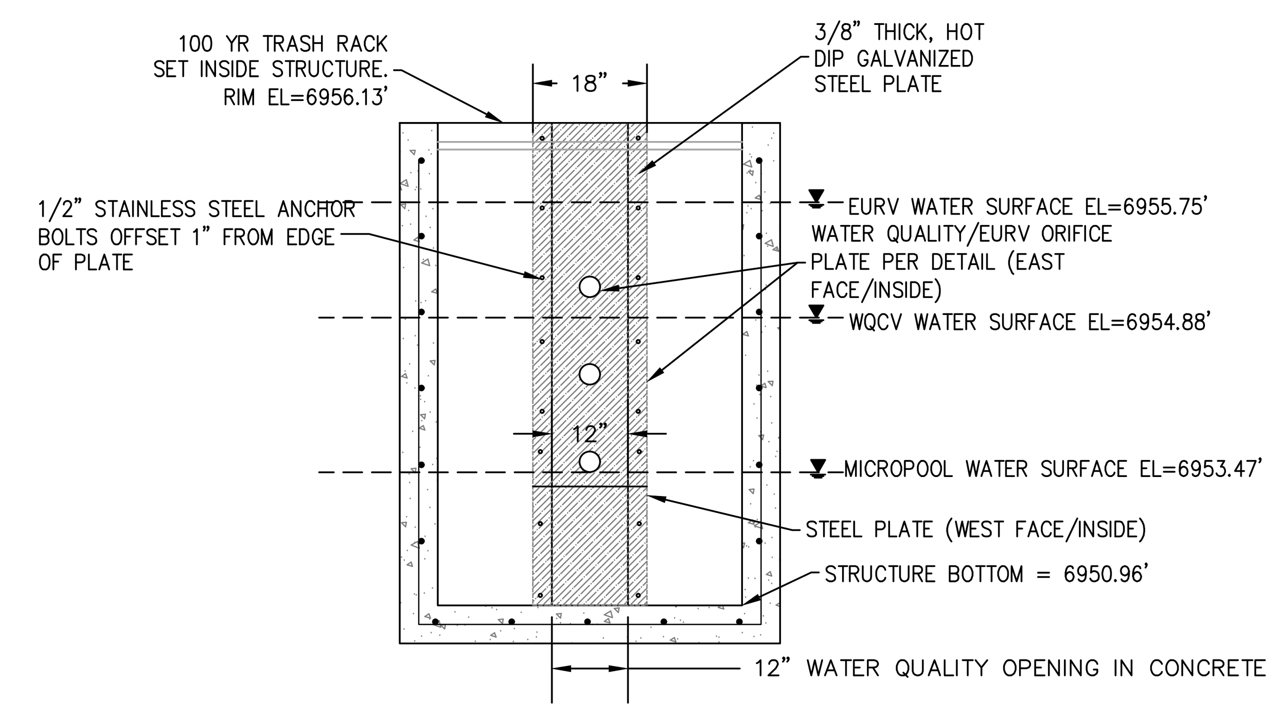
SCREEN DETAIL
NOT TO SCALE



WATER QUALITY PLATE DETAIL
NOT TO SCALE



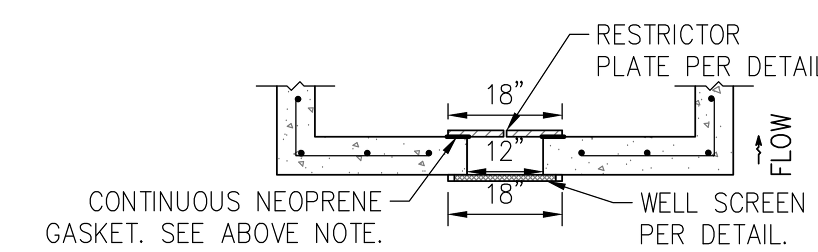
OUTLET STRUCTURE DETAIL
PLAN VIEW
NOT TO SCALE



SECTION B
WATER QUALITY PLATE DETAIL
NOT TO SCALE

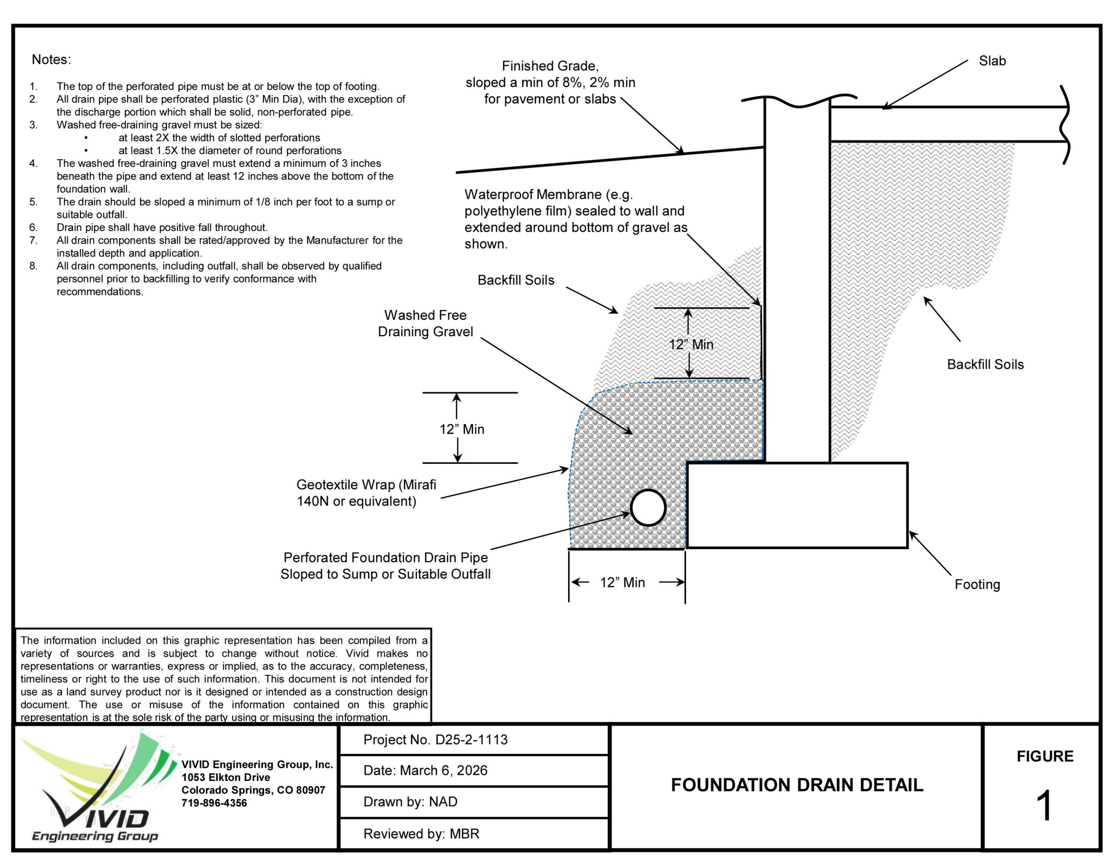
GASKET NOTE:
THE GASKET SHALL BE MADE OF 1/4-IN THICK, 60 DUROMETER EPDM RUBBER IN A CONTINUOUS SHEET THE SIZE OF THE ORIFICE PLATE. THE SHEET SHALL BE PLACED BETWEEN THE ORIFICE PLATE AND THE CONCRETE WALL, WITH THE WIDTH OF THE OVERLAPPING BETWEEN THE PLATE AND CONCRETE. OPENINGS SHALL BE CUT INTO THE SHEET CORRESPONDING TO THE PLATE BOLT HOLES AND THE CONCRETE WALL OPENING. CUTS WILL BE MADE EITHER BY THE CONTRACTOR IN THE FIELD OR BY THE MANUFACTURE.

GASKET WILL MEET ABOVE STATEMENT OR BE AN EQUIVALENT GASKET APPROVED BY EPC. NOTE THAT CAULK IS NOT AN APPROVED EQUIVALENT AND WILL NOT BE ACCEPTED BY EPC

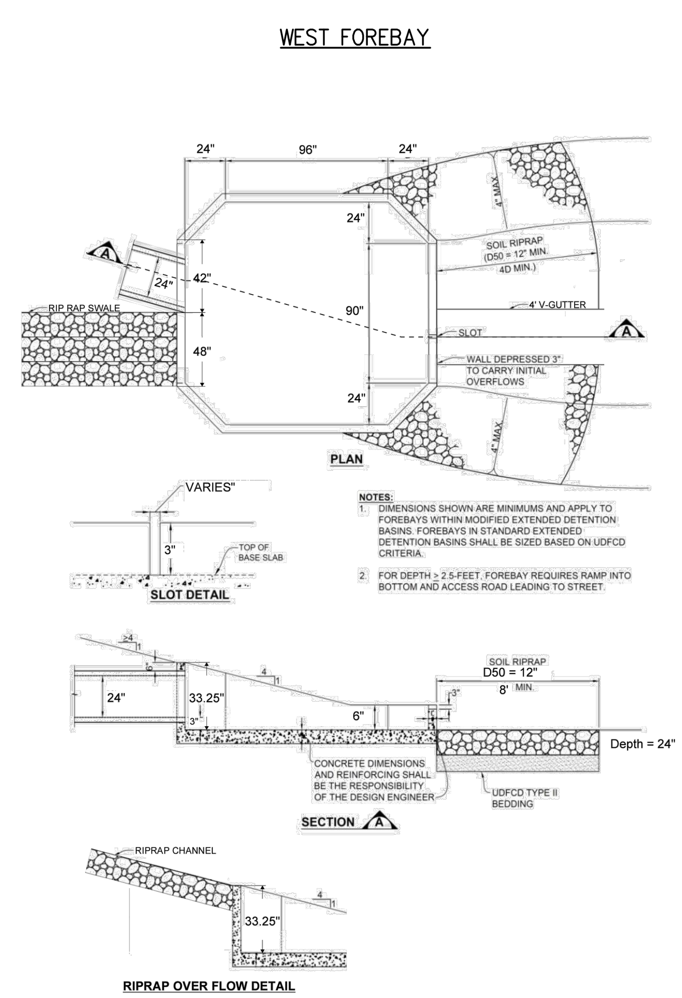


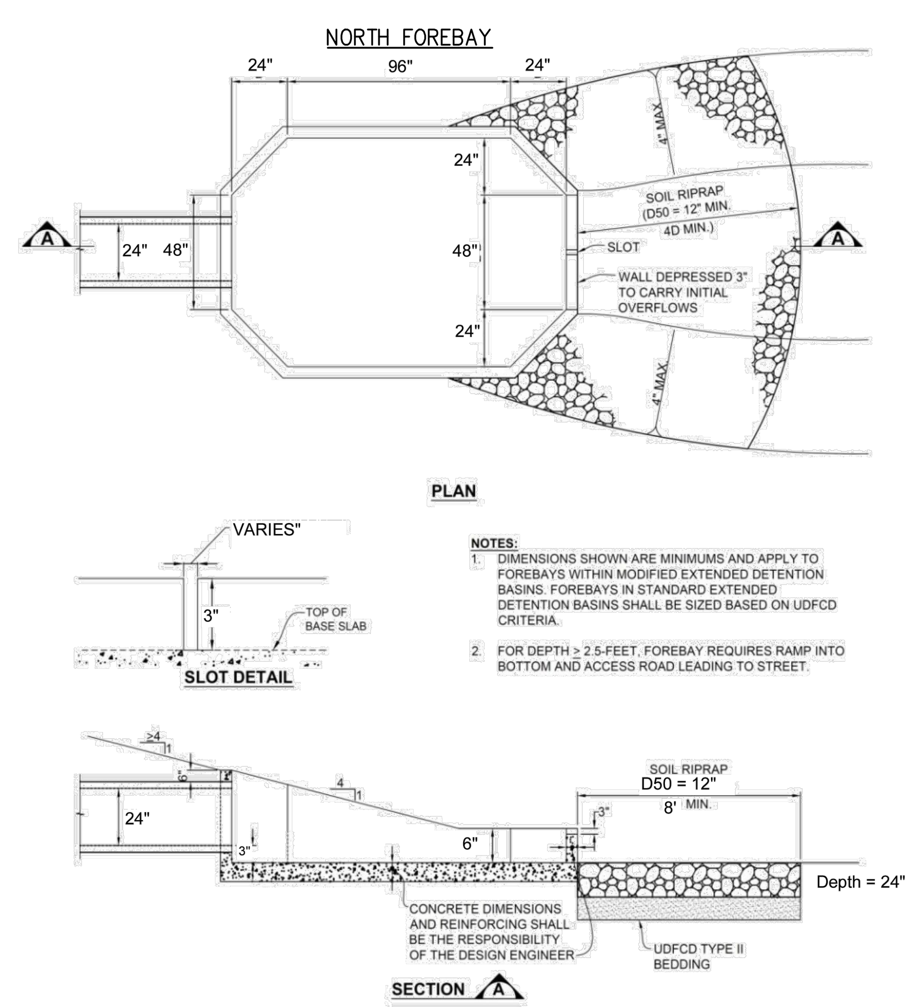
OUTLET STRUCTURE SECTION E
NOT TO SCALE

1 OUTLET STRUCTURE DETAIL
NTS



2 FOUNDATION DRAIN DETAIL
NTS





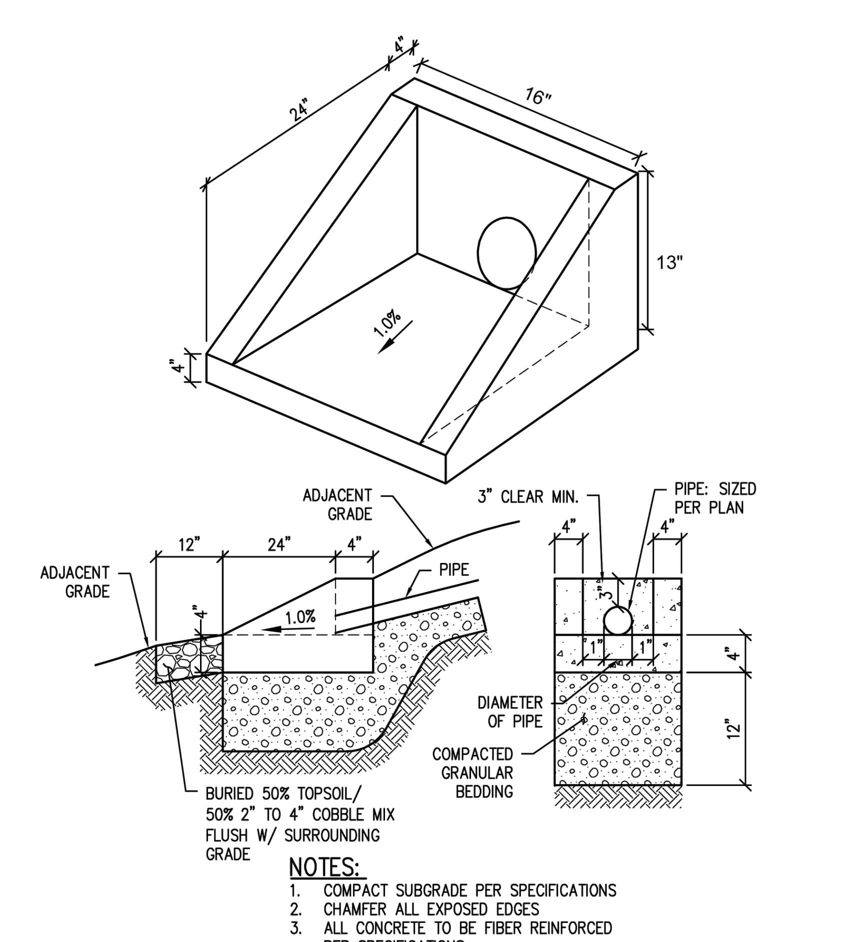
PER EPC ECM TABLE 10-7, D50 = 12" IS TYPE M RIPRAP
ALL ONSITE RIPRAP TO BE 24" DEEP TYPE M RIPRAP

Refer to Drainage Report for Basin Delineation and forebay sizing calculations

Basins A4 and A5 Outfall (West Pond FES):
Weir Width = 3.4"

Basins A1, A2 and A3.1 Outfall (North Pond FES):
Weir Width = 3.3"

3 FOREBAY DETAILS
NTS



4 SMALL PIPE HEADWALL DETAIL
NTS

PCD FILE NO. PPR2615

PREPARED UNDER THE SUPERVISION OF TAIT & ASSOCIATES, INC.

BRIAN CAMPBELL
COLORADO P.E. #40196

NO.	DESCRIPTION	BY	DATE

REVISIONS

TAIT & ASSOCIATES
Since 1964
320 North Lincoln Avenue
Loveland, CO 80537
p: 970.613.1447
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ENGINEERING ENVIRONMENTAL BUILDING LAND
Santa Ana, San Luis Obisbo, Sacramento, Riverside, Denver, Boise, Dallas

STORM DETAILS 2

HONOR CHARTER SCHOOL
HIGHMARK SCHOOL DEVELOPMENT
8250 BENT GRASS MEADOWS DR.

DRAWN: CW
DATE: 11/11/2024
CHECKED:
DATE:
REVISION #:
DATE:
JOB NO: CO1517

Sep 18, 2026 – 2:17pm by nramstetter X:\ENGINEERING\CO\CO15170 – Honor Charter School – Peyton, CO\ENG\Construction Drawings\CO1517-DT-UTIL.dwg

2/6/2024 Internal Review #1

APPENDIX C

FEMA FIRM MAP

National Flood Hazard Layer FIRMette

FEMA

104°37'14"W 38°57'20"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

104°36'37"W 38°56'52"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/12/2025 at 4:34 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX D

HYDROLOGIC COMPUTATIONS

Calculation of Peak Runoff using Rational Method

Designer: NR
Company: TAIT & Associates, Inc.
Date: 6/26/2026
Project: Honor Charter School
Location: El Paso County

Version 2.00 released May 2017

Cells of this color are for required user-input
Cells of this color are for optional override values
Cells of this color are for calculated results based on overrides

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S_i^{0.33}}$$

$$t_t = \frac{L_t}{60K\sqrt{S_t}} = \frac{L_t}{60V_t}$$

Computed $t_c = t_i + t_t$

Regional $t_c = (26 - 17i) + \frac{L_t}{60(14i + 9)\sqrt{S_t}}$

$t_{minimum}$ = 5 (urban)
$t_{minimum}$ = 10 (non-urban)

Selected $t_c = \max\{t_{minimum}, \min(\text{Computed } t_c, \text{Regional } t_c)\}$

Select UDFCD location for NOAA Atlas 14 Rainfall Depths from the pulldown list OR enter your own depths obtained from the NOAA website (click this link)

	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
1-hour rainfall depth, P1 (in) =	1.19	1.50	1.75	2.00	2.25	2.52	3.68
	a	b	c				
Rainfall Intensity Equation Coefficients =	28.50	10.00	0.786				

$$I(in/hr) = \frac{a * P_1}{(b + t_c)^c}$$

$$Q(cfs) = CIA$$

Subcatchment Name	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C							Overland (Initial) Flow Time					Channelized (Travel) Flow Time							Time of Concentration			Rainfall Intensity, I (in/hr)							Peak Flow, Q (cfs)						
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	Overland Flow Length L_i (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Overland Flow Slope S_i (ft/ft)	Overland Flow Time t_i (min)	Channelized Flow Length L_t (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Channelized Flow Slope S_t (ft/ft)	NRCS Conveyance Factor K	Channelized Flow Velocity V_t (ft/sec)	Channelized Flow Time t_t (min)	Computed t_c (min)	Regional t_c (min)	Selected t_c (min)	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
A1	0.94	A	49.2	0.33	0.35	0.36	0.40	0.45	0.49	0.57	100.00			0.030	9.44	139.00			0.015	15	1.84	1.26	10.71	18.83	10.71	3.13	3.95	4.61	5.27	5.92	6.63	9.69	0.98	1.29	1.58	1.97	2.48	3.08	5.20
A2	2.28	A	45.4	0.30	0.31	0.33	0.36	0.41	0.46	0.55	100.00			0.020	11.28	347.00			0.020	20	2.83	2.04	13.33	20.95	13.33	2.85	3.60	4.19	4.79	5.39	6.04	8.82	1.95	2.58	3.16	3.98	5.08	6.39	11.00
A3.1	0.62	A	20.0	0.10	0.11	0.12	0.14	0.20	0.27	0.38	65.00			0.020	11.46	178.00			0.020	20	2.83	1.05	12.51	24.38	12.51	2.93	3.70	4.31	4.93	5.55	6.21	9.07	0.19	0.25	0.32	0.44	0.67	1.02	2.15
A3.2	1.45	A	35.0	0.21	0.23	0.24	0.27	0.32	0.38	0.48	100.00			0.020	12.56	241.00			0.015	20	2.45	1.64	14.20	22.41	14.20	2.77	3.49	4.08	4.66	5.24	5.87	8.57	0.86	1.14	1.42	1.83	2.46	3.26	5.96
A4	1.52	A	65.3	0.48	0.50	0.52	0.55	0.58	0.62	0.68	20.00			0.020	3.86	695.00			0.015	20	2.45	4.73	8.58	20.11	8.58	3.41	4.30	5.02	5.73	6.45	7.22	10.55	2.50	3.27	3.94	4.77	5.71	6.79	10.82
A5	0.62	A	85.3	0.68	0.70	0.72	0.74	0.75	0.77	0.80	18.00			0.010	3.04	133.00			0.020	20	2.83	0.78	3.83	12.25	5.00	4.04	5.09	5.94	6.78	7.63	8.55	12.48	1.71	2.22	2.64	3.11	3.57	4.10	6.22
A6	1.28	A	20.3	0.11	0.11	0.12	0.15	0.20	0.27	0.38	30.00			0.020	7.77	1139.00			0.015	20	2.45	7.75	15.52	35.64	15.52	2.66	3.35	3.91	4.47	5.03	5.63	8.22	0.36	0.48	0.61	0.84	1.28	1.93	4.05
A7	0.26	A	45.9	0.30	0.32	0.33	0.37	0.42	0.47	0.55	20.00			0.020	5.02	5.00			0.015	20	2.45	0.03	5.05	18.24	5.05	4.03	5.07	5.92	6.77	7.61	8.52	12.45	0.32	0.42	0.51	0.65	0.83	1.04	1.78
Existing Conditions																																						
EX1	4.96	A	20.0	0.10	0.11	0.12	0.14	0.20	0.27	0.38	130.00			0.020	16.21	445.00			0.030	15	2.60	2.85	19.06	26.23	19.06	2.40	3.03	3.53	4.03	4.54	5.08	7.42	1.23	1.66	2.10	2.90	4.41	6.70	14.10
EX2	2.05	A	20.0	0.10	0.11	0.12	0.14	0.20	0.27	0.38	191.00			0.020	19.64	1.00			0.020	15	2.12	0.01	19.65	22.61	19.65	2.36	2.98	3.47	3.97	4.47	5.00	7.31	0.50	0.67	0.86	1.18	1.79	2.73	5.74
EX3	1.97	A	20.0	0.10	0.11	0.12	0.14	0.20	0.27	0.38	300.00			0.200	11.51	146.00			0.020	15	2.12	1.15	12.66	24.06	12.66	2.92	3.68	4.29	4.90	5.52	6.18	9.02	0.59	0.80	1.02	1.40	2.13	3.24	6.81

APPENDIX E

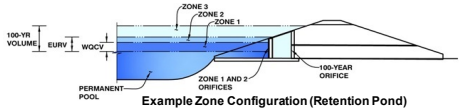
HYDRAULIC COMPUTATIONS

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.07 (June 2025)

Project: Honor Charter Academy

Basin ID: School Pond



Example Zone Configuration (Retention Pond)

Watershed Information

Selected SCM Type =	**EDB**	
Watershed Area =	7.44	acres
Watershed Length =	884	ft
Watershed Length to Centroid =	442	ft
Watershed Slope =	0.020	ft/ft
Watershed Imperviousness =	49.80%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User Overrides
Water Quality Capture Volume (WQCV) =	0.128	acre-feet	acre-feet
Excess Urban Runoff Volume (EURV) =	0.427	acre-feet	acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.314	acre-feet	1.19 inches
5-yr Runoff Volume (P1 = 1.5 in.) =	0.417	acre-feet	1.50 inches
10-yr Runoff Volume (P1 = 1.75 in.) =	0.500	acre-feet	1.75 inches
25-yr Runoff Volume (P1 = 2 in.) =	0.631	acre-feet	2.00 inches
50-yr Runoff Volume (P1 = 2.25 in.) =	0.759	acre-feet	2.25 inches
100-yr Runoff Volume (P1 = 2.52 in.) =	0.922	acre-feet	2.52 inches
500-yr Runoff Volume (P1 = 3.68 in.) =	1.600	acre-feet	3.68 inches
Approximate 2-yr Detention Volume =	0.274	acre-feet	
Approximate 5-yr Detention Volume =	0.361	acre-feet	
Approximate 10-yr Detention Volume =	0.441	acre-feet	
Approximate 25-yr Detention Volume =	0.539	acre-feet	
Approximate 50-yr Detention Volume =	0.602	acre-feet	
Approximate 100-yr Detention Volume =	0.679	acre-feet	

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.128	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.299	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.252	acre-feet
Total Detention Basin Volume =	0.679	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	

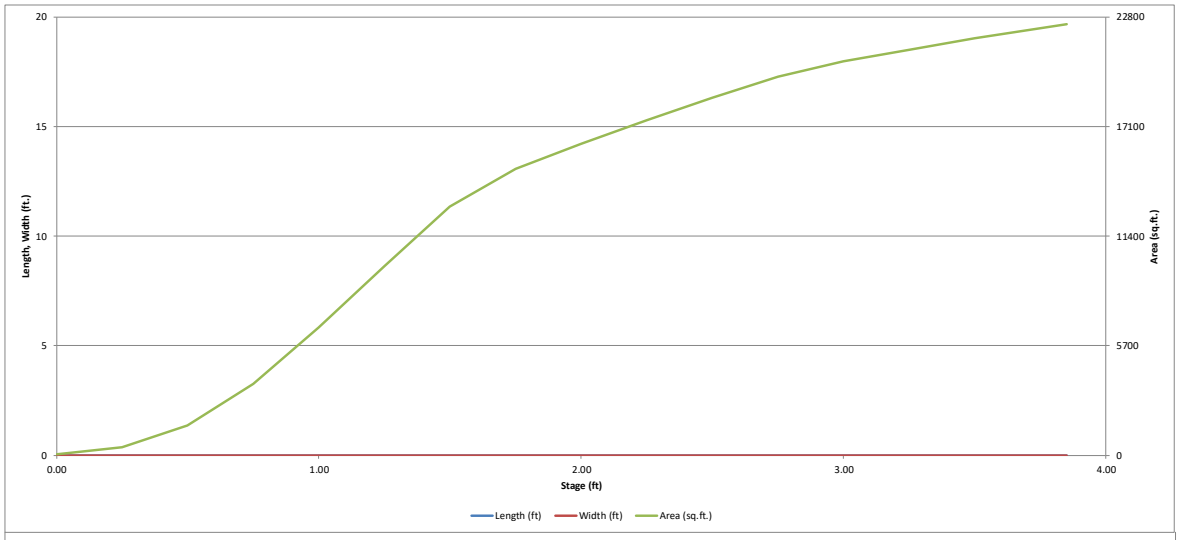
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	**user**	acre-feet

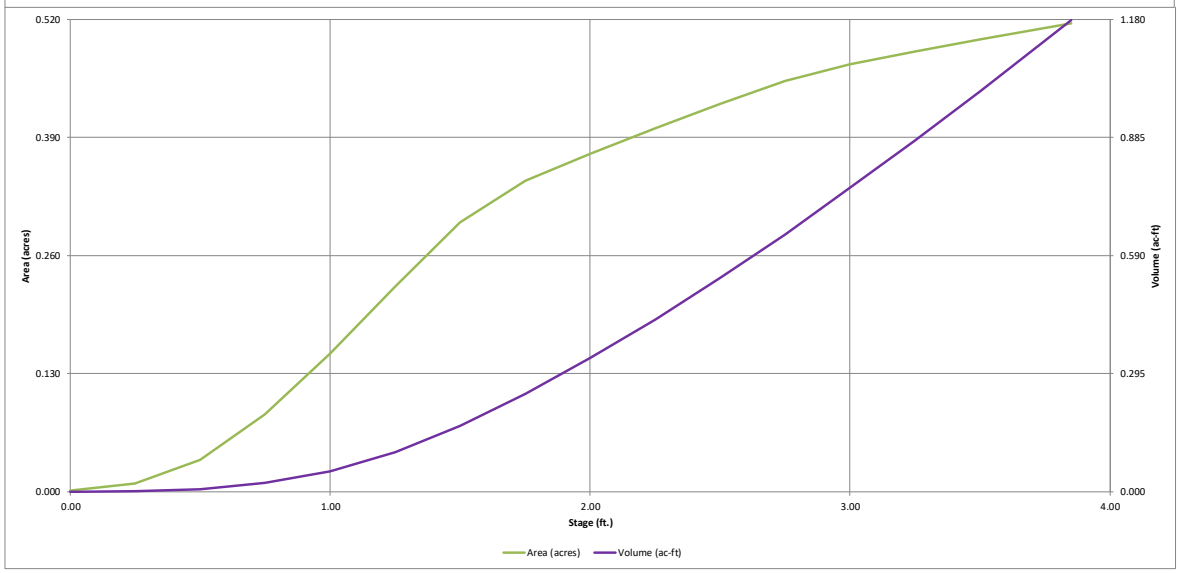
Depth Increment = 0.25 ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	61	0.001		
6953.75	--	0.25	--	--	--	401	0.009	58	0.001
6954	--	0.50	--	--	--	1,532	0.035	299	0.007
6954.25	--	0.75	--	--	--	3,718	0.085	956	0.022
6954.5	--	1.00	--	--	--	6,627	0.152	2,249	0.052
6954.75	--	1.25	--	--	--	9,834	0.226	4,306	0.099
6955	--	1.50	--	--	--	12,928	0.297	7,151	0.164
6955.25	--	1.75	--	--	--	14,914	0.342	10,632	0.244
6955.5	--	2.00	--	--	--	16,213	0.372	14,523	0.333
6955.75	--	2.25	--	--	--	17,423	0.400	18,727	0.430
6956	--	2.50	--	--	--	18,586	0.427	23,228	0.533
6956.25	--	2.75	--	--	--	19,707	0.452	28,015	0.643
6956.5	--	3.00	--	--	--	20,495	0.471	33,040	0.758
6956.75	--	3.25	--	--	--	21,104	0.484	38,240	0.878
6957	--	3.50	--	--	--	21,692	0.498	43,589	1.001
6957.35	--	3.85	--	--	--	22,461	0.516	51,316	1.178

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.07 (June 2025)



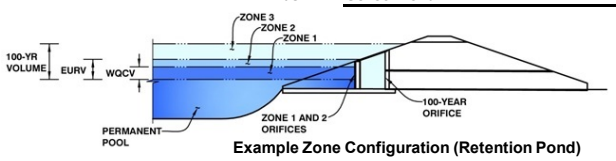


DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.07 (June 2025)

Project: **Honor Charter Academy**

Basin ID: **School Pond**



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	1.37	0.128	Orifice Plate
Zone 2 (EURV)	2.25	0.299	Orifice Plate
Zone 3 (100-year)	2.83	0.252	Weir&Pipe (Circular)
Total (all zones)		0.679	

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration SCM)

			Calculated Parameters for Underdrain		
Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)	Underdrain Orifice Area =	N/A	ft²
Underdrain Orifice Diameter =	N/A	inches	Underdrain Orifice Centroid =	N/A	feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation SCM)

			Calculated Parameters for Plate		
Centroid of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	N/A	ft²
Depth at top of Zone using Orifice Plate =	2.63	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	N/A	inches	Elliptical Slot Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	N/A	sq. inches	Elliptical Slot Area =	N/A	ft²

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	0.25	0.50	0.90	1.90			
Orifice Area (sq. inches)	0.31	0.44	0.44	0.79	12.57			

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected		Calculated Parameters for Vertical Orifice	Not Selected	Not Selected	
Invert of Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	N/A	N/A	ft²
Depth at top of Zone using Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	N/A	N/A	feet
Vertical Orifice Diameter =	N/A	N/A	inches				

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir and No Outlet Pipe)

	Zone 3 Weir	Not Selected		Calculated Parameters for Overflow Weir	Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	2.63	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	2.63	N/A	feet
Overflow Weir Front Edge Length =	6.00	N/A	feet	Overflow Weir Slope Length =	6.00	N/A	feet
Overflow Weir Grate Slope =	0.00	N/A	H:V	Grate Open Area / 100-yr Orifice Area =	16.11	N/A	
Horiz. Length of Weir Sides =	6.00	N/A	feet	Overflow Grate Open Area w/o Debris =	28.48	N/A	ft²
Overflow Grate Type =	Close Mesh Grate	N/A		Overflow Grate Open Area w/ Debris =	14.24	N/A	ft²
Debris Clogging % =	50%	N/A	%				

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 3 Circular	Not Selected		Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate	Zone 3 Circular	Not Selected	
Depth to Invert of Outlet Pipe =	0.00	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	1.77	N/A	ft²
Circular Orifice Diameter =	18.00	N/A	inches	Outlet Orifice Centroid =	0.75	N/A	feet
				Half-Central Angle of Restrictor Plate on Pipe =	N/A	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

			Calculated Parameters for Spillway		
Spillway Invert Stage=	2.85	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.37	feet
Spillway Crest Length =	20.00	feet	Stage at Top of Freeboard =	4.22	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.52	acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	1.18	acre-ft

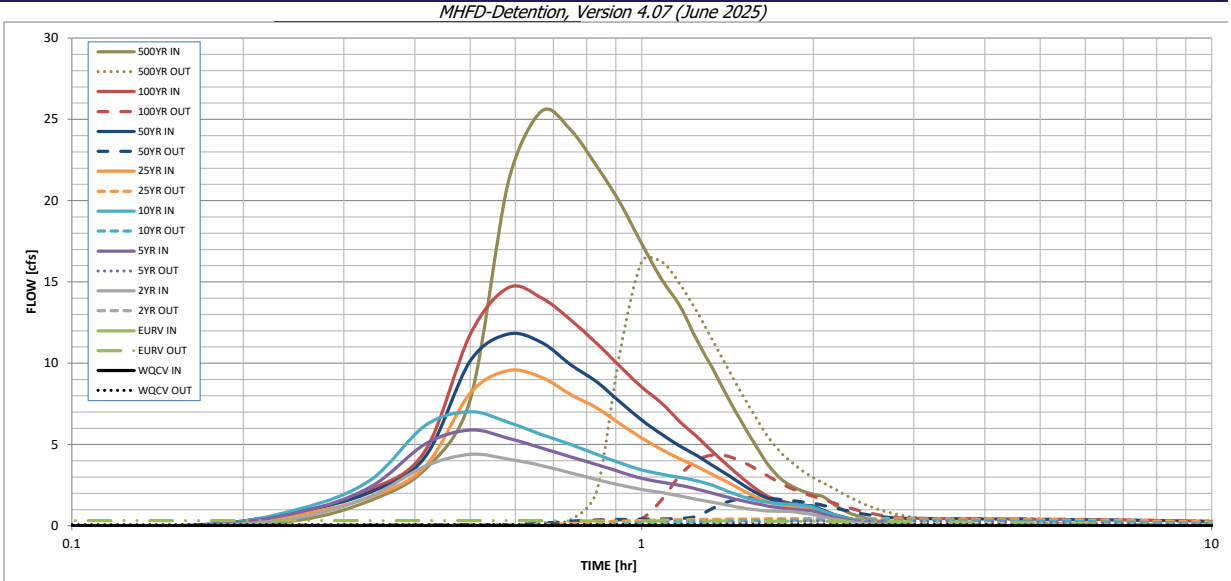
Routed Hydrograph Results

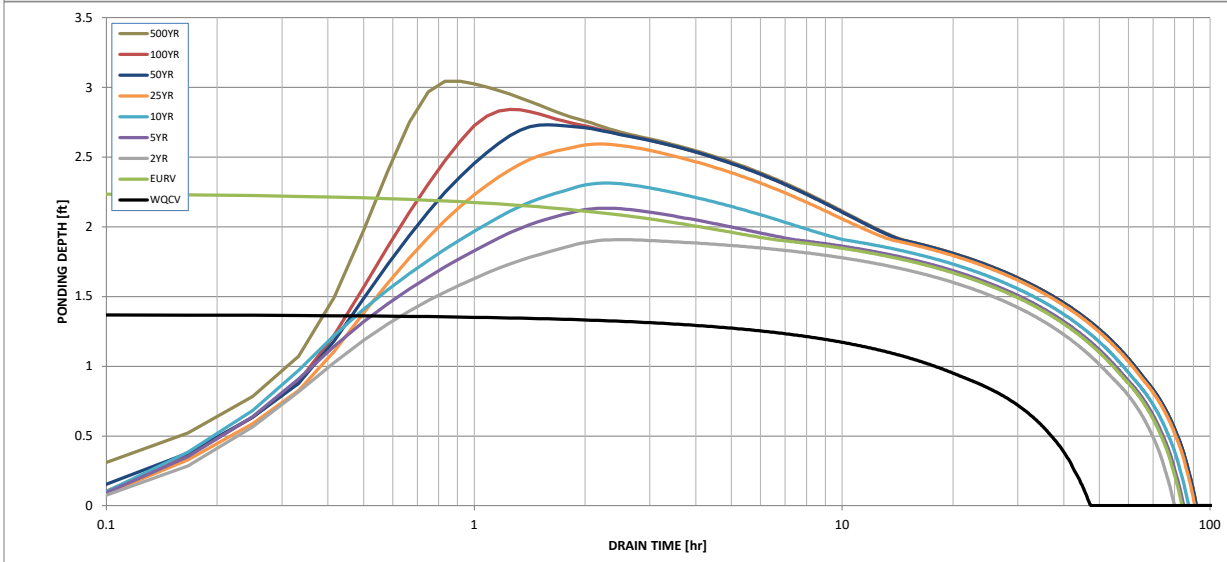
The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

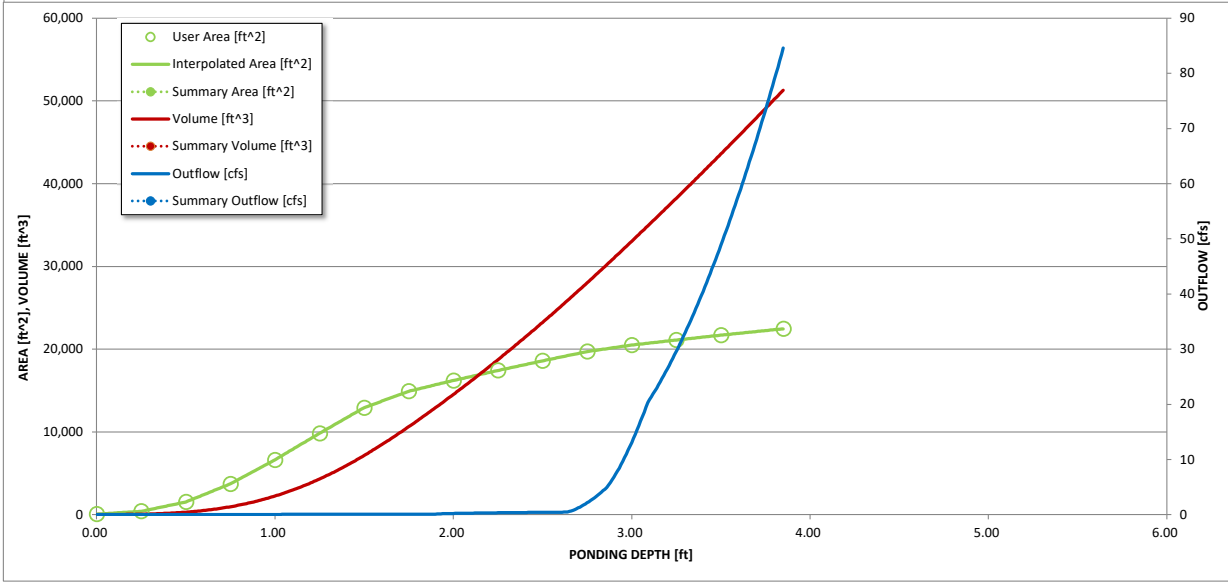
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52	3.68
CUHP Runoff Volume (acre-ft) =	0.128	0.427	0.314	0.417	0.500	0.631	0.759	0.922	1.600
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.314	0.417	0.500	0.631	0.759	0.922	1.600
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.1	0.3	0.4	1.6	2.9	4.5	11.1
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.02	0.04	0.05	0.21	0.39	0.61	1.49
Peak Inflow Q (cfs) =	N/A	N/A	4.4	5.9	7.0	9.5	11.8	14.7	25.5
Peak Outflow Q (cfs) =	0.1	0.3	0.1	0.3	0.4	0.4	1.7	4.4	16.2
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	1.1	1.0	0.3	0.6	1.0	1.5
Structure Controlling Flow =	Plate	Plate	Plate	Plate	Plate	Plate	Overflow Weir 1	Overflow Weir 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0.1	0.4
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	40	70	68	71	72	74	73	71	64
Time to Drain 99% of Inflow Volume (hours) =	**43**	76	73	77	79	81	81	80	76
Maximum Ponding Depth (ft) =	1.38	2.25	1.91	2.13	2.31	2.59	2.73	2.84	3.04
Area at Maximum Ponding Depth (acres) =	0.26	0.40	0.36	0.39	0.41	0.44	0.45	0.46	0.47
Maximum Volume Stored (acre-ft) =	0.131	0.430	0.297	0.383	0.454	0.572	0.630	0.684	0.777

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.07 (June 2025)







S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename:

Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

	SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
Time Interval	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.00 min	0:00:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0	0.00	0.00	0.00	0.00	0.00	0.06	0.01	0.35
	0:15:00	0	0.00	0.51	0.83	1.03	0.69	0.87	0.85	1.54
	0:20:00	0	0.00	1.80	2.36	2.79	1.76	2.06	2.21	3.48
	0:25:00	0	0.00	3.66	5.03	6.17	3.65	4.24	4.61	7.76
	0:30:00	0	0.00	4.39	5.88	7.01	8.15	10.15	11.78	21.14
	0:35:00	0	0.00	4.10	5.39	6.36	9.55	11.79	14.65	25.49
	0:40:00	0	0.00	3.72	4.79	5.62	9.14	11.28	14.03	24.35
	0:45:00	0	0.00	3.25	4.24	5.00	8.08	9.91	12.67	22.13
	0:50:00	0	0.00	2.85	3.78	4.39	7.26	8.86	11.23	19.85
	0:55:00	0	0.00	2.50	3.30	3.86	6.27	7.61	9.79	17.34
	1:00:00	0	0.00	2.23	2.92	3.44	5.40	6.50	8.54	15.16
	1:05:00	0	0.00	2.05	2.68	3.18	4.70	5.63	7.54	13.52
	1:10:00	0	0.00	1.83	2.49	2.97	4.11	4.90	6.40	11.40
	1:15:00	0	0.00	1.63	2.26	2.77	3.64	4.31	5.47	9.63
	1:20:00	0	0.00	1.44	2.00	2.48	3.14	3.70	4.53	7.87
	1:25:00	0	0.00	1.26	1.75	2.12	2.67	3.13	3.69	6.32
	1:30:00	0	0.00	1.10	1.54	1.81	2.20	2.55	2.94	4.95
	1:35:00	0	0.00	0.98	1.37	1.57	1.79	2.05	2.29	3.75
	1:40:00	0	0.00	0.92	1.22	1.45	1.48	1.67	1.81	2.92
	1:45:00	0	0.00	0.89	1.11	1.37	1.30	1.47	1.53	2.44
	1:50:00	0	0.00	0.87	1.03	1.32	1.20	1.35	1.37	2.14
	1:55:00	0	0.00	0.78	0.97	1.25	1.13	1.27	1.26	1.93
	2:00:00	0	0.00	0.69	0.90	1.15	1.08	1.21	1.19	1.78
	2:05:00	0	0.00	0.54	0.71	0.90	0.85	0.95	0.91	1.35
	2:10:00	0	0.00	0.42	0.54	0.69	0.64	0.72	0.68	0.99
	2:15:00	0	0.00	0.32	0.42	0.53	0.49	0.55	0.51	0.74
	2:20:00	0	0.00	0.24	0.32	0.40	0.37	0.42	0.39	0.56
	2:25:00	0	0.00	0.18	0.24	0.30	0.28	0.31	0.29	0.42
	2:30:00	0	0.00	0.14	0.17	0.22	0.20	0.23	0.22	0.31
	2:35:00	0	0.00	0.10	0.13	0.16	0.15	0.17	0.16	0.23
	2:40:00	0	0.00	0.07	0.09	0.12	0.11	0.12	0.12	0.17
	2:45:00	0	0.00	0.05	0.06	0.08	0.08	0.09	0.08	0.12
	2:50:00	0	0.00	0.03	0.04	0.05	0.05	0.06	0.05	0.07
	2:55:00	0	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.04
	3:00:00	0	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02
	3:05:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:10:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:15:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:20:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:25:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:30:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:35:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:40:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:00:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.07 (June 2025)

Summary Stage-Area-Volume-Discharge Relationships

The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically.

The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

Stage - Storage Description	Stage [ft]	Elevation [ft]	Area [ft ^{2}]	Area [acres]	Volume [ft ^{3}]	Volume [ac-ft]	Total Outflow [cfs]

For best results, include the stages of all grade slope changes (e.g. ISV and Floor) from the S-A-V table on Sheet 'Basin'.

Also include the inverts of all outlets (e.g. vertical orifice, overflow grate, and spillway, where applicable).

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Honor Charter School
Minor: 10-year
Major: 100-year

Worksheet Protected

INLET NAME	Inlet S1	Inlet S2	Inlet S4	Inlet S5	Inlet S7	Inlet S8
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET	STREET	STREET
Hydraulic Condition	In Sump	In Sump	In Sump	In Sump	In Sump	In Sump
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening
Number of Inlet Units	1	1	1	1	1	1

USER-DEFINED INPUT

User-Defined Peak Flows

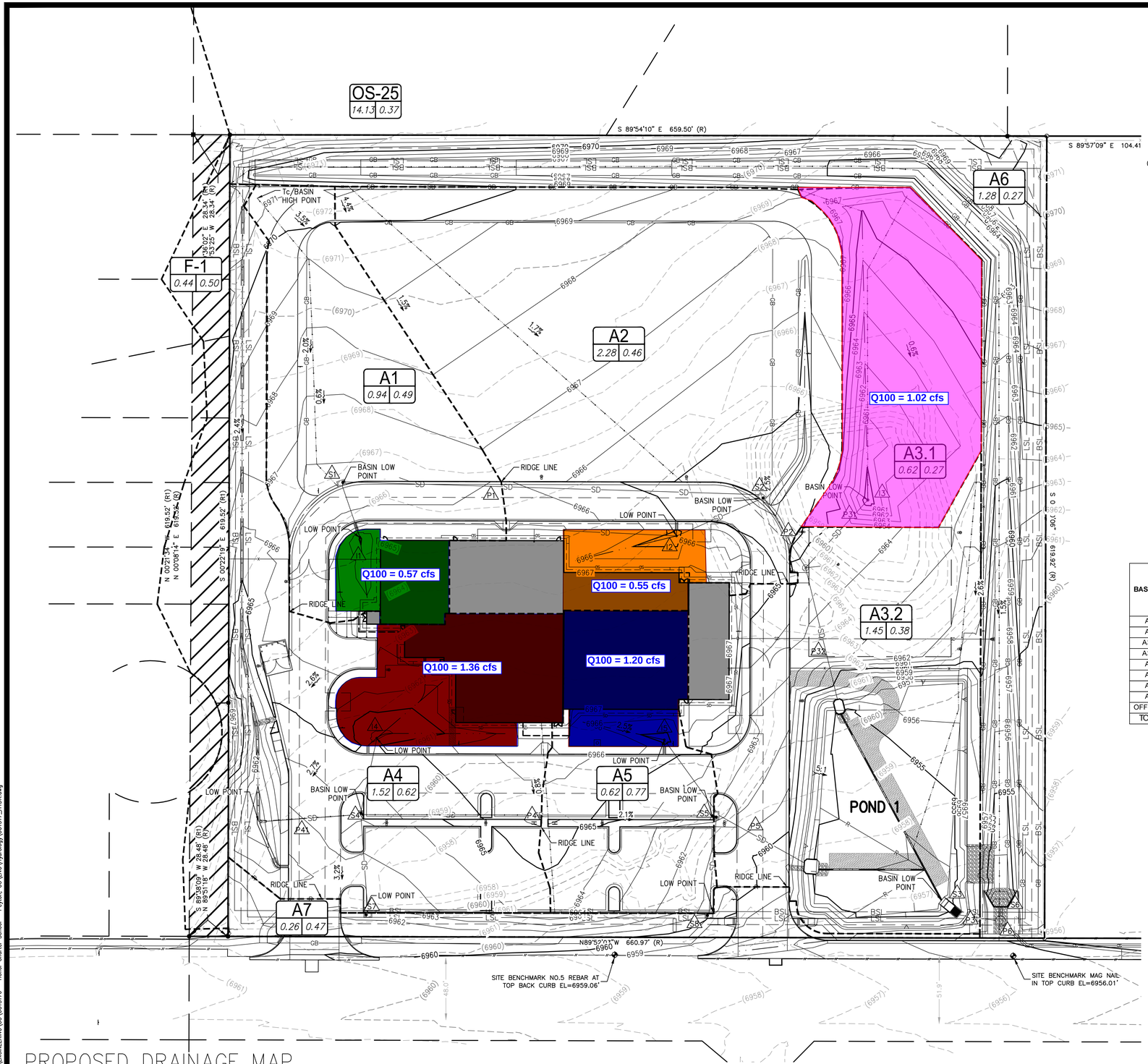
Minor Peak Flow, Q (cfs)	1.29	2.58	0.99	2.02	1.01	0.99
Major Peak Flow, Q (cfs)	3.08	6.39	1.46	3.07	1.54	1.50

Bypass (Carry-Over) Flow from Upstream Inlets must be organized from upstream (left) to downstream (right) in order for bypass flows to be linked.

Receive Bypass Flow from:						
Bypass Flow Description (Optional):						
Minor Bypass Flow Received, Q_b (cfs)						
Major Bypass Flow Received, Q_b (cfs)						

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	1.29	2.58	0.99	2.02	1.01	0.99
Major Total Design Peak Flow, Q (cfs)	3.08	6.39	1.46	3.07	1.54	1.50
Minor Inlet Interception Capacity, Q_a (cfs)	5.38	5.38	5.38	5.38	5.38	5.38
Major Inlet Interception Capacity, Q_a (cfs)	5.38	7.51	5.38	5.38	5.38	5.38
Minor Flow Bypassed Downstream, Qb (cfs)	N/A	N/A	N/A	N/A	N/A	N/A
Major Flow Bypassed Downstream, Qb (cfs)	N/A	N/A	N/A	N/A	N/A	N/A
Minor Flow Capture Percentage, C%	100%	100%	100%	100%	100%	100%
Major Flow Capture Percentage, C%	100%	100%	100%	100%	100%	100%



N

0 40' 80'

SCALE: 1" = 40'

SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY/ ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF CONSTRUCTION/DISTURBANCE
- W — EXISTING WATER LINE
- SS — EXISTING SEWER LINE
- T — PROPOSED TELEPHONE SERVICE LINE
- PROPOSED ELECTRIC SERVICE LINE
- W — PROPOSED WATER SERVICE LINE
- SS — PROPOSED SS SERVICE LINE
- SD — PROPOSED STORM DRAIN
- R — PROPOSED RIDGELINE
- GB — PROPOSED GRADE BREAK
- PROPOSED CURB
- PROPOSED TOP OF POND
- PROPOSED BOTTOM OF POND
- GRADING DETAIL BOUNDARY
- PROPOSED SS CLEANOUT
- PROPOSED BACKFLOW PREVENTOR
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- (40.00)ES — EXISTING ELEVATION
- 40.00FS — PROPOSED ELEVATION
- (2940) — EXISTING CONTOUR
- 2940 — PROPOSED CONTOUR
- (5.2%) — EXISTING SLOPE
- 5.4% — PROPOSED SLOPE
- EXISTING INLET
- PROPOSED INLET
- PROPOSED STORM INFRASTRUCTURE
- D — PROPOSED STORM MANHOLE
- PROPOSED TEE / THRUST BLOCK
- PROPOSED FLARED-END SECTION
- EXISTING SANITARY SEWER MANHOLE
- LONGEST FLOW PATH

BASIN ID	TOTAL AREA (AC)	TOTAL DISTURBED AREA (AC)	AREA TRIB TO POND 1 (AC)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.3.A.1.A (<20% OF SITE & UNTREATABLE)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.1.B.6 (SELF-TREATING LANDSCAPE AREAS)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.1.B.3 (EXISTING ROADWAY AREAS)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.1.B.4 (UNDERGROUND UTILITIES/STORM)
A1	0.94	0.94	0.94				
A2	2.28	2.28	2.28				
A3.1	0.62	0.62	0.62				
A3.2	1.45	1.45	1.45				
A4	1.52	1.52	1.52				
A5	0.62	0.62	0.62				
A6	1.28	1.28			1.28		
A7	0.26	0.26		0.26			
OFF-SITE	0.87					0.30	0.57
TOTAL	9.84	8.97	7.43	0.26	1.28	0.30	0.57

DRAINAGE LEGEND:

- DESIGN POINT — X
- PROPOSED SLOPE — 2.0%
- EXISTING SLOPE — (1.0%)
- BASIN LIMITS
- LIMIT OF DISTURBANCE
- Tc FLOW PATH

A = BASIN DESIGNATION
B = AREA IN ACRES
C = 100-YR RUNOFF COEFFICIENT

PROPOSED DRAINAGE MAP

UNAUTHORIZED CHANGES & USES

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES OF THESE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS PRIOR TO CONSTRUCTION. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

Know what's below Call before you dig.

NOTE TO CONTRACTOR

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES, PIPES, AND/OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THERE MAY BE EXISTING UTILITIES NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION OF THOSE UNDERGROUND UTILITIES TO BE USED PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

BASIS OF BEARINGS:
BEARINGS ARE BASED ON THE WESTERLY BOUNDARY OF THE SUBJECT PARCEL COINCIDENT WITH THE EASTERLY BOUNDARY OF THE BENT GRASS RESIDENTIAL FILING NO.2, MONUMENTED ON THE NORTH END WITH A NO.5 REBAR & 1-3/8" RED PLASTIC CAP MARKED "ALC PLS 38087", FOUND FLUSH WITH GRADE, AND ON THE SOUTH END WITH A NO. 4 REBAR & 1" ORANGE PLASTIC CAP MARKED "PLS 38141", RECOVERED 0.6' BELOW GRADE, AND IS ASSUMED TO BEAR N 00°08'14" E A MEASURED DISTANCE OF 619.52 FEET.

BENCHMARK:
ELEVATIONS ARE BASED ON THE PROJECT BENCHMARK IDENTIFIED AS JK0239 ELEVATION=6902.3' (NAVD88). PER DATA PUBLISHED BY THE NATIONAL GEODETIC SURVEY.

FOR REVIEW ONLY NOT FOR CONSTRUCTION

PCD FILE NO. PRR2615

PREPARED UNDER THE SUPERVISION OF TAI & ASSOCIATES, INC.

BRIAN CAMPBELL
COLORADO P.E. #40196

NO.	DESCRIPTION	REVISIONS	BY	DATE

TAIT & ASSOCIATES
ENGINEERING ENVIRONMENTAL BUILDING LAND
Since 1964
Santa Ana Sacramento Dallas
San Luis Obispo Riverside Denver
Boise
320 North Lincoln Avenue
Loveland, CO 80537
p: 970.613.1447
www.tait.com

PROPOSED DRAINAGE MAP

HONOR CHARTER SCHOOL
HIGHMARK SCHOOL DEVELOPMENT
8250 BENT GRASS MEADOWS DR.

DRAWN: CW
DATE: 06/25/2026
CHECKED:
DATE:
REVISION #:
DATE:
JOB NO. CO1517

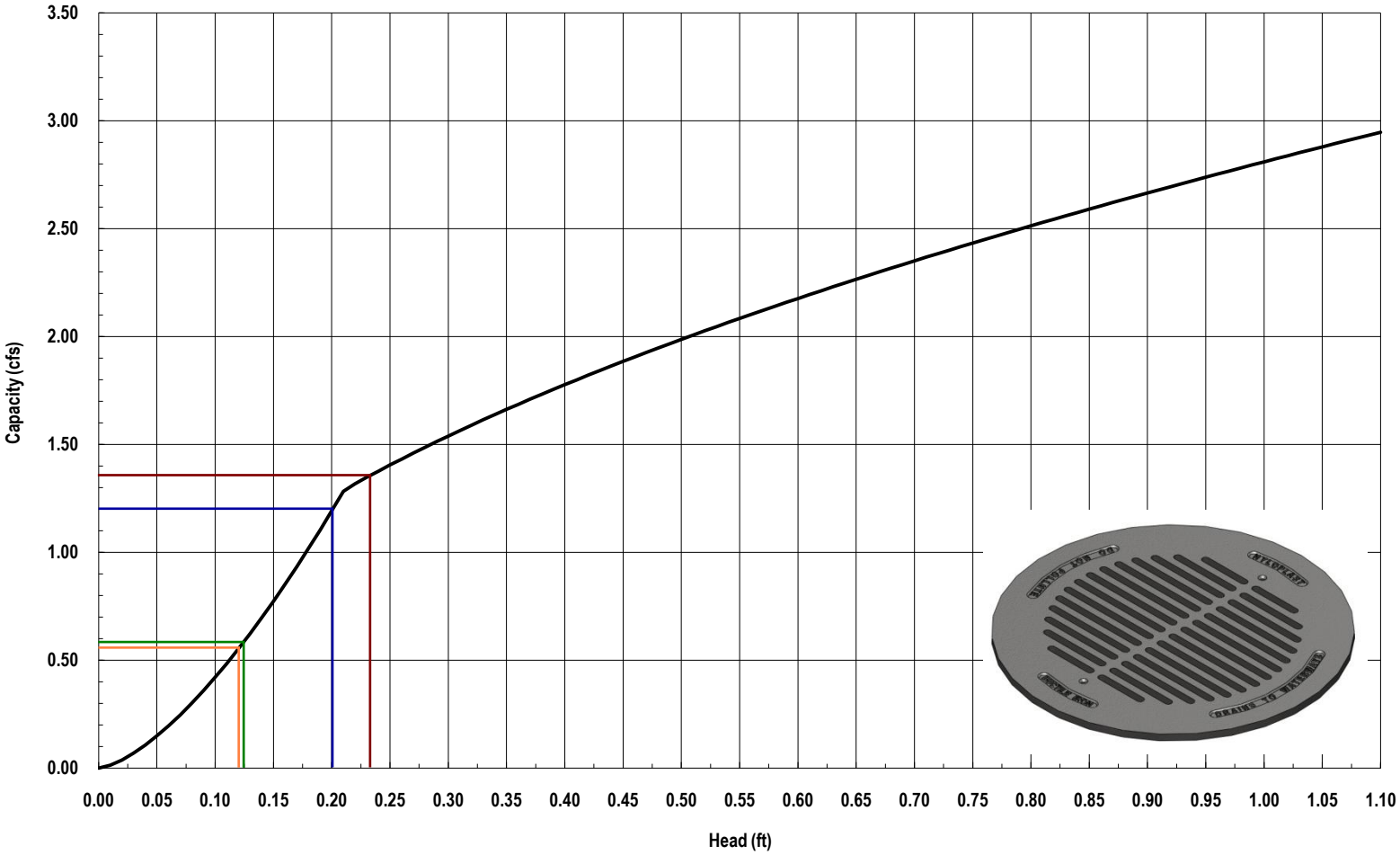
DR2

2/6/2024 Internal Review #1

FOR REVIEW ONLY - NOT FOR CONSTRUCTION

Jun 26, 2026 - 11:59am by rramstetter X:\ENGINEERING\CO\CO1517\0 - Honor Charter School - Peyton, CO\ENG\Hydrology\CO1517_HYDR.dwg

Nyloplast 18" Drop In Grate Inlet Capacity Chart

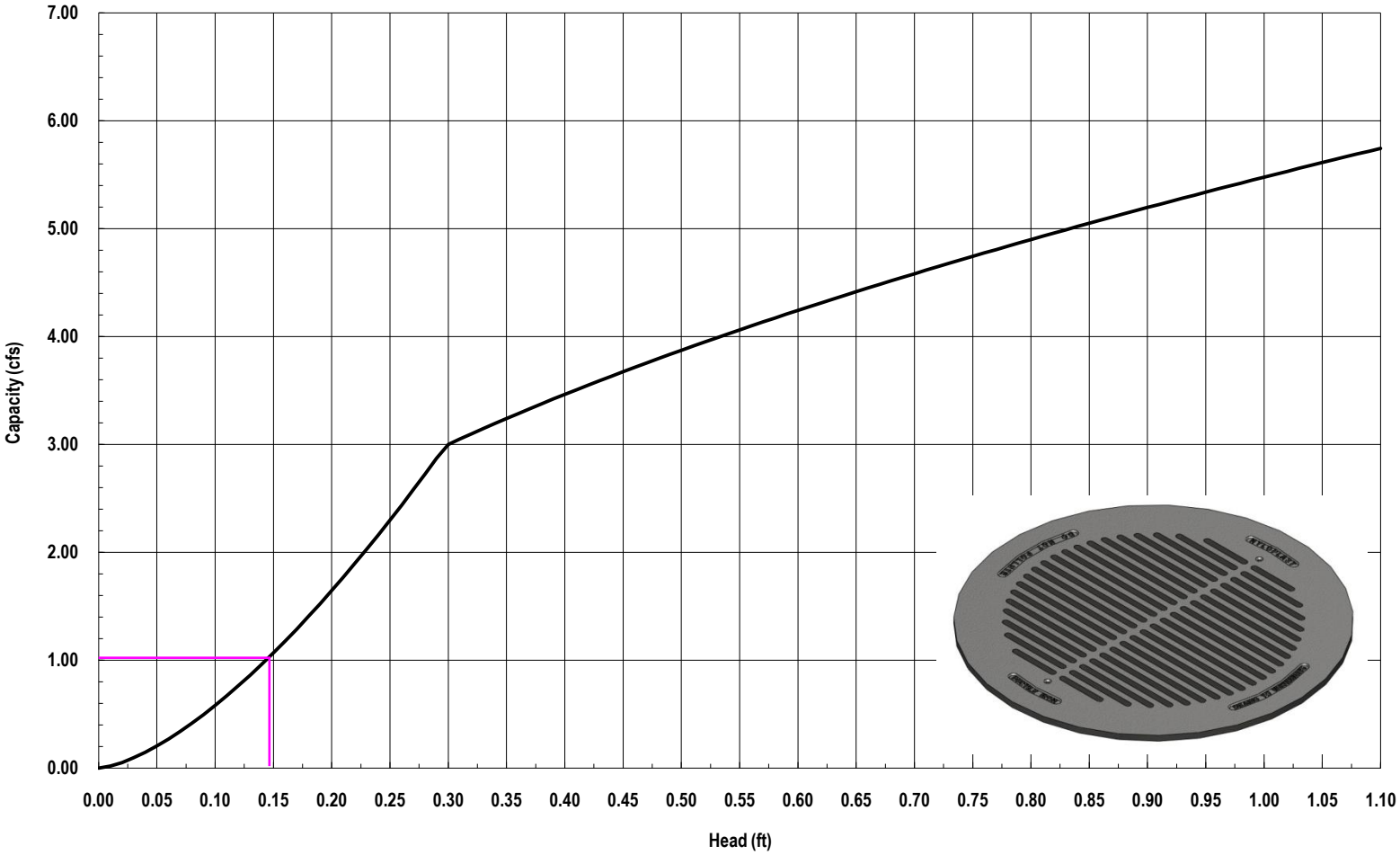


NW INLET (I1)
Qreq = 0.57 CFS --> 0.123 FT
NE INLET (I2)
Qreq = 0.55 CFS --> 0.125 FT

SW INLET (I4)
Qreq = 1.36 CFS --> 0.23 FT
SE INLET (I5)
Qreq = 1.20 CFS --> 0.20 FT

Nyloplast®
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490
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Nyloplast 24" Drop In Grate Inlet Capacity Chart



INLET (I3)
Qreq = 1.02 CFS --> 0.14 FT

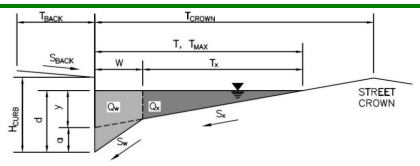
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(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490
© Nyloplast Inlet Capacity Charts June 2012

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Honor Charter School**

Inlet ID: **Inlet S1**



Gutter Geometry:

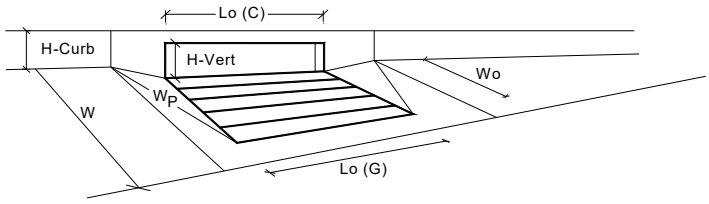
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	5.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =		ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	30.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.046	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	30.0	30.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is not applicable to Sump Condition				
MAJOR STORM Allowable Capacity is not applicable to Sump Condition	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



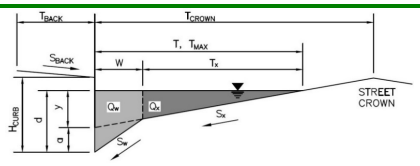
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (CDOT Type R Curb Opening)	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.33	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**5.4**	**5.4**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	1.29	3.08	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Honor Charter School**

Inlet ID: **Inlet S2**



Gutter Geometry:

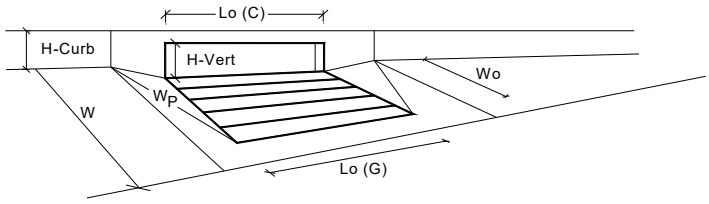
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	5.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.025	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.012	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	30.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.041	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	30.0	30.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is not applicable to Sump Condition				
MAJOR STORM Allowable Capacity is not applicable to Sump Condition	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet (CDOT Type R Curb Opening)	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	7.0	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.33	0.42	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**5.4**	**7.5**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	2.6	6.4	cfs

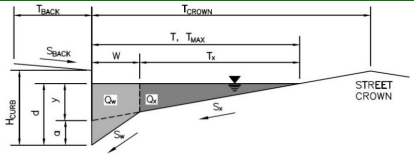
MHFD-Inlet, Version 6.00 (August 2025)

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Honor Charter School**

Inlet ID: **Inlet S4**



Gutter Geometry:

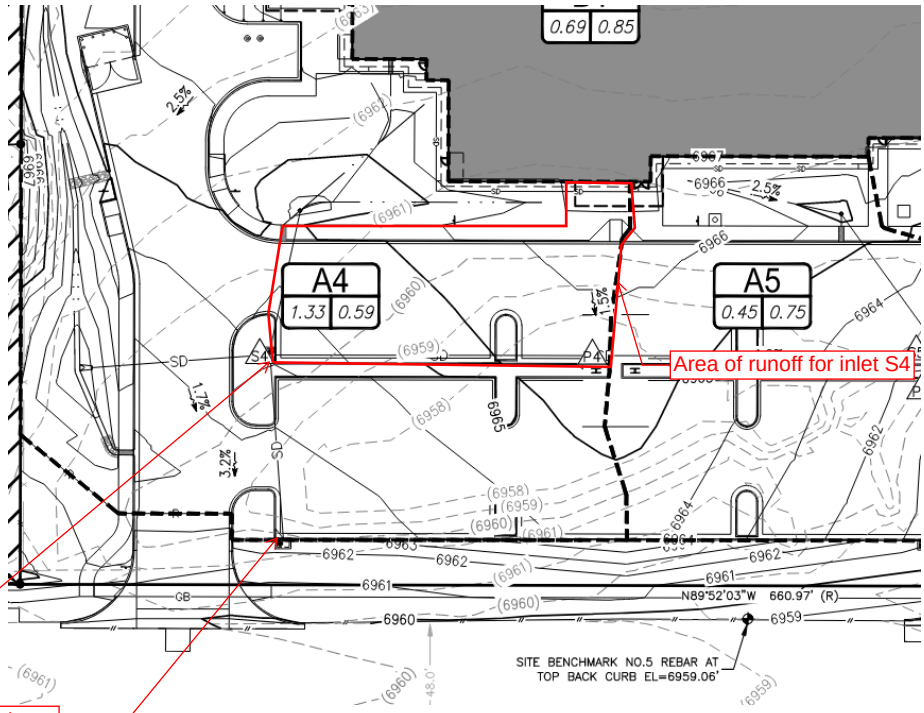
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	5.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =		ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.012	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	30.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	30.0	30.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

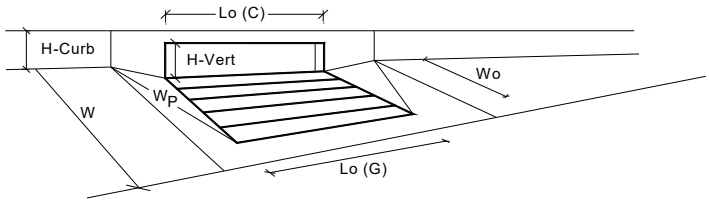
	Minor Storm	Major Storm	
Q_{allow} =	**SUMP**	**SUMP**	**cfs**



Basin A4 has two Type R Inlets. Both have identical runoff areas and impervious percents. This calculation confirms capacity for both inlets.

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



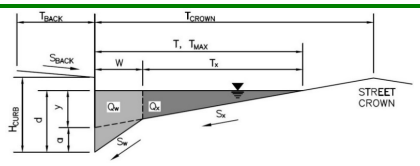
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (CDOT Type R Curb Opening)	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.33	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**5.4**	**5.4**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	1.1	1.6	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **Honor Charter School**

Inlet ID: **Inlet S5**



Gutter Geometry:

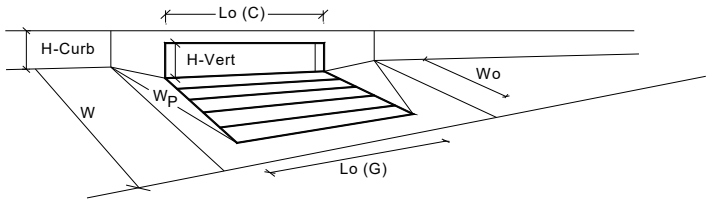
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	5.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =		ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.012	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	30.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.036	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	30.0	30.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is not applicable to Sump Condition				
MAJOR STORM Allowable Capacity is not applicable to Sump Condition	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet (CDOT Type R Curb Opening)	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.33	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**5.4**	**5.4**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	2.0	3.1	cfs

Basin A5 has two Type R Inlets. This calculation was computed by sizing one Type R to capture the flow of the entire basin. Since one Type R inlet can capture the entire basin's flow, both inlets are assumed to have enough capacity for their portion of the basins flow.

Channel Report

Basin A1 Design Point P1 - 5 Year

Circular

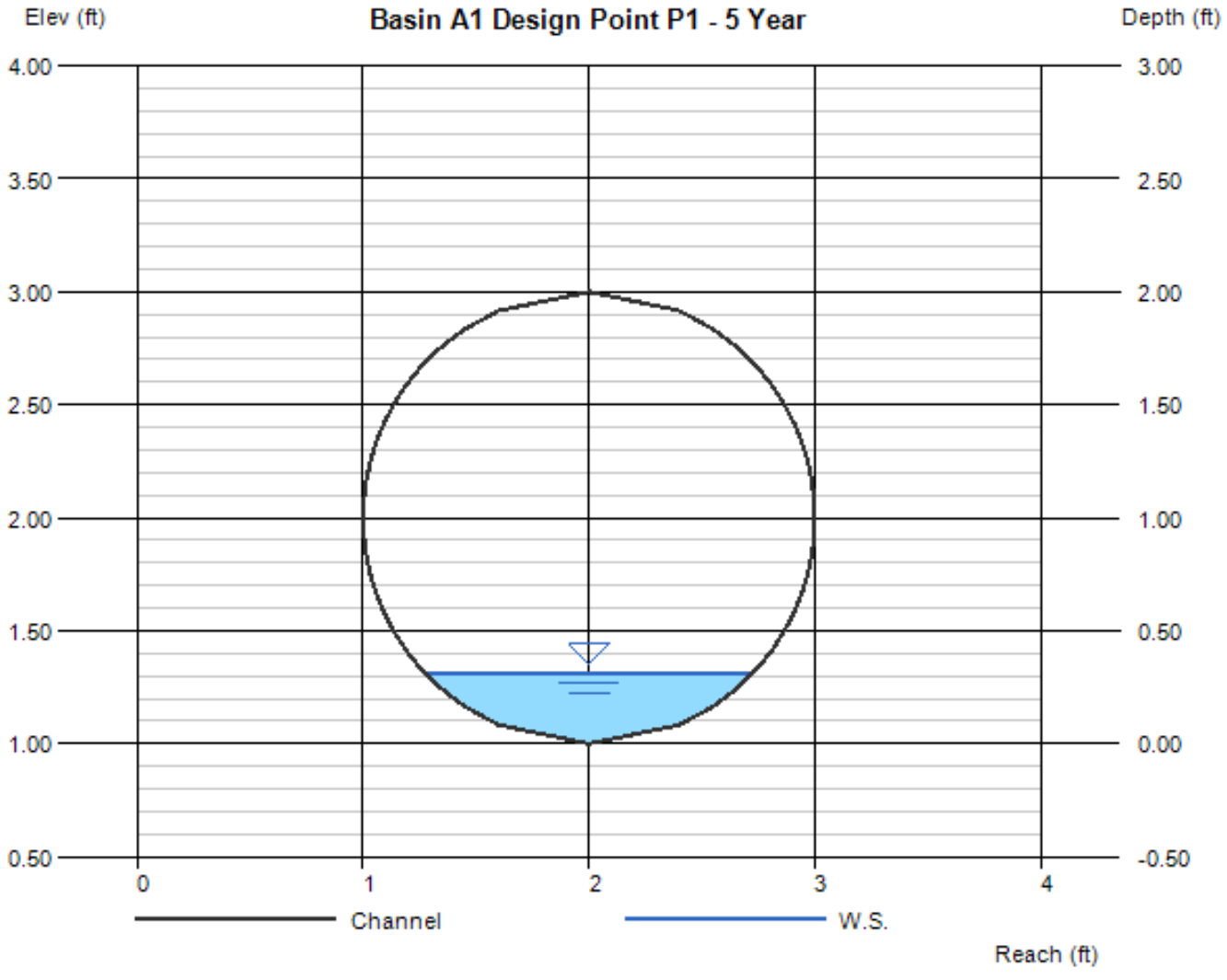
Diameter (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.10
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.29

Highlighted

Depth (ft)	= 0.31
Q (cfs)	= 1.290
Area (sqft)	= 0.31
Velocity (ft/s)	= 4.15
Wetted Perim (ft)	= 1.62
Crit Depth, Yc (ft)	= 0.40
Top Width (ft)	= 1.45
EGL (ft)	= 0.58



Channel Report

Basin A1 Design Point P1 - 100 Year

Circular

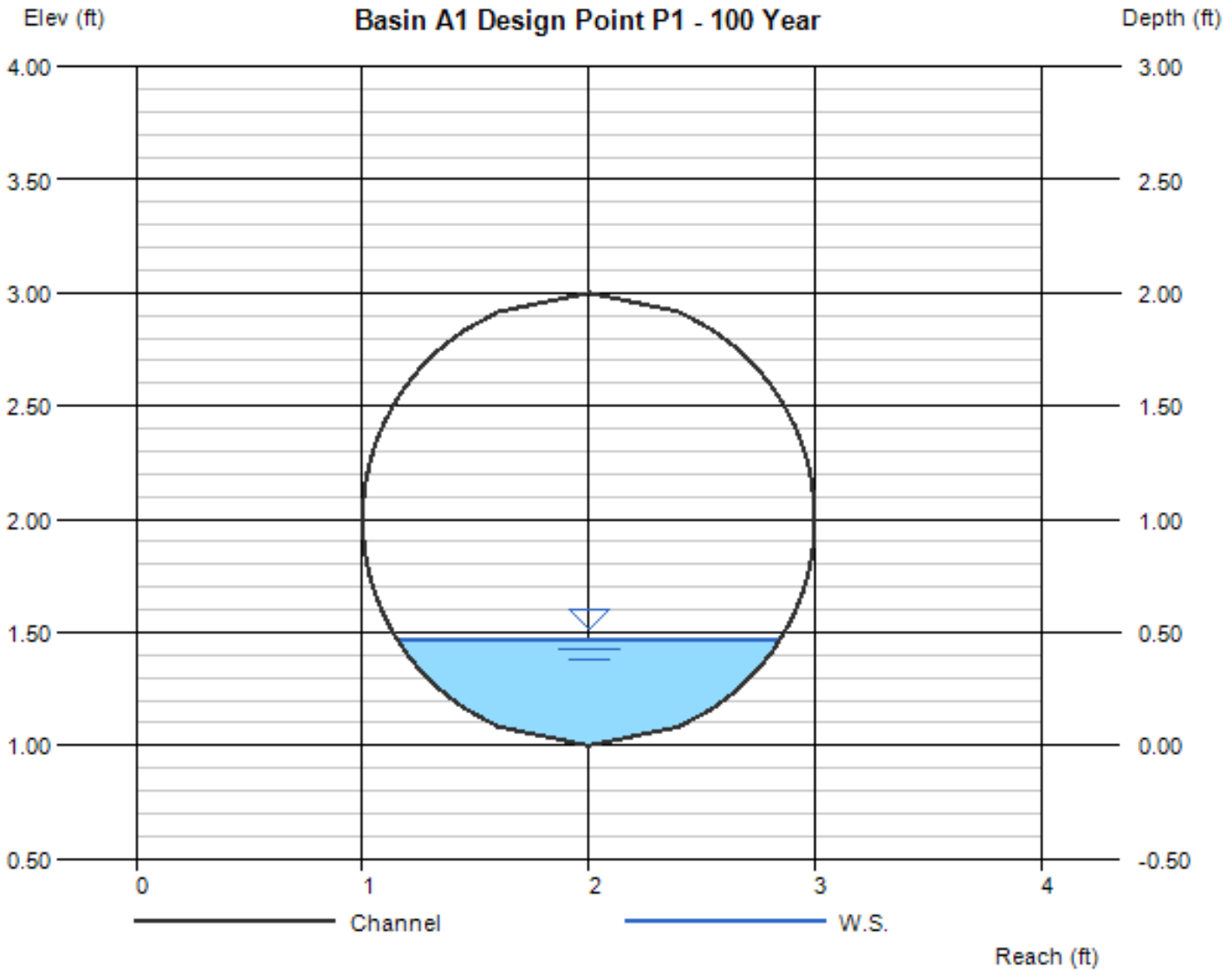
Diameter (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.10
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.08

Highlighted

Depth (ft)	= 0.47
Q (cfs)	= 3.080
Area (sqft)	= 0.57
Velocity (ft/s)	= 5.43
Wetted Perim (ft)	= 2.03
Crit Depth, Yc (ft)	= 0.61
Top Width (ft)	= 1.70
EGL (ft)	= 0.93



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

Basin A2 Design Point P2 - 5 Year

Circular

Diameter (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.10
N-Value	= 0.012

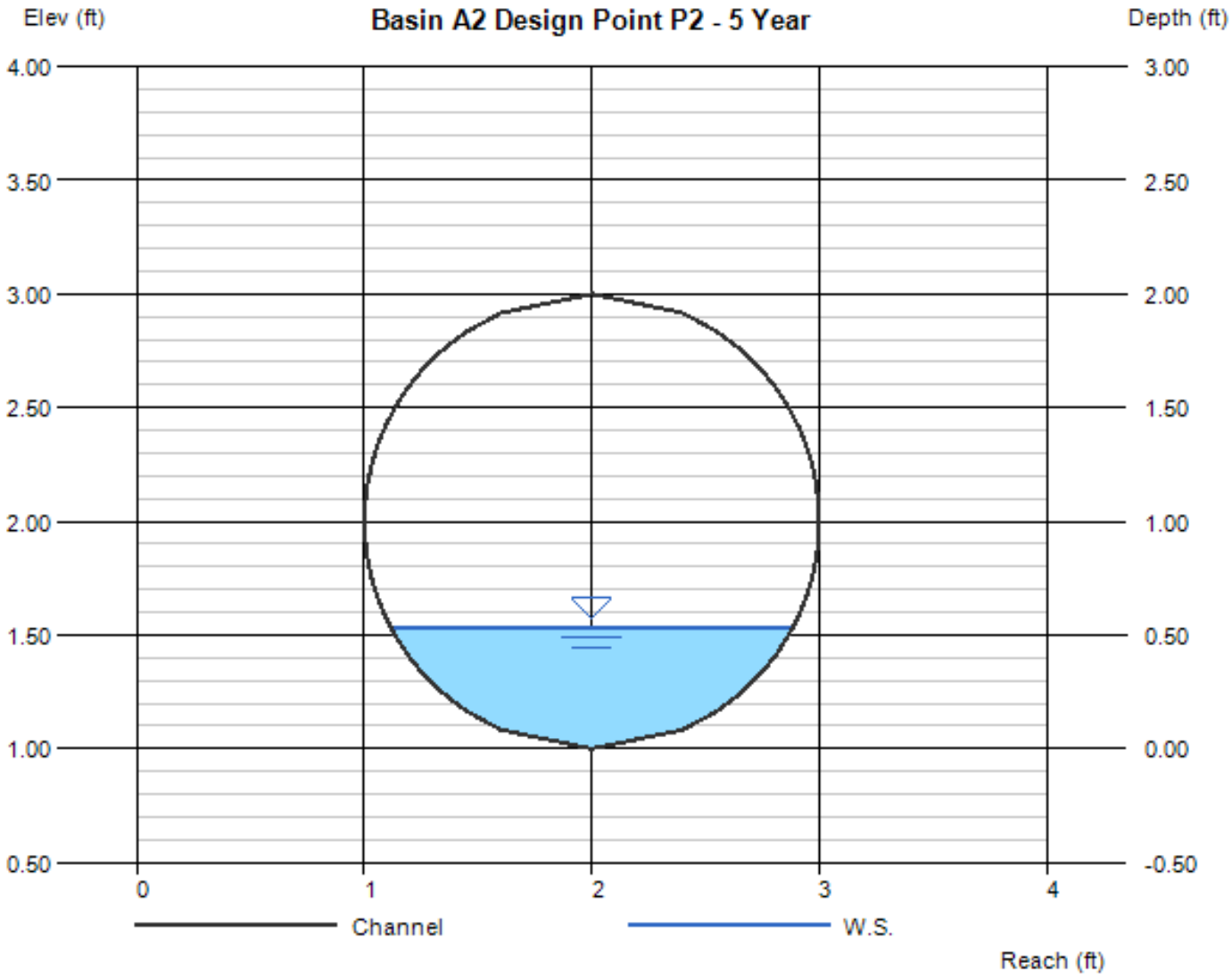
Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.87

Highlighted

Depth (ft)	= 0.53
Q (cfs)	= 3.870
Area (sqft)	= 0.67
Velocity (ft/s)	= 5.76
Wetted Perim (ft)	= 2.17
Crit Depth, Yc (ft)	= 0.69
Top Width (ft)	= 1.77
EGL (ft)	= 1.05

+1.29 cfs (Basin A1)
+2.58 cfs (Basin A2)
= 3.87 cfs



Channel Report

Basin A2 Design Point P2 - 100 Year

Circular

Diameter (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.10
N-Value	= 0.012

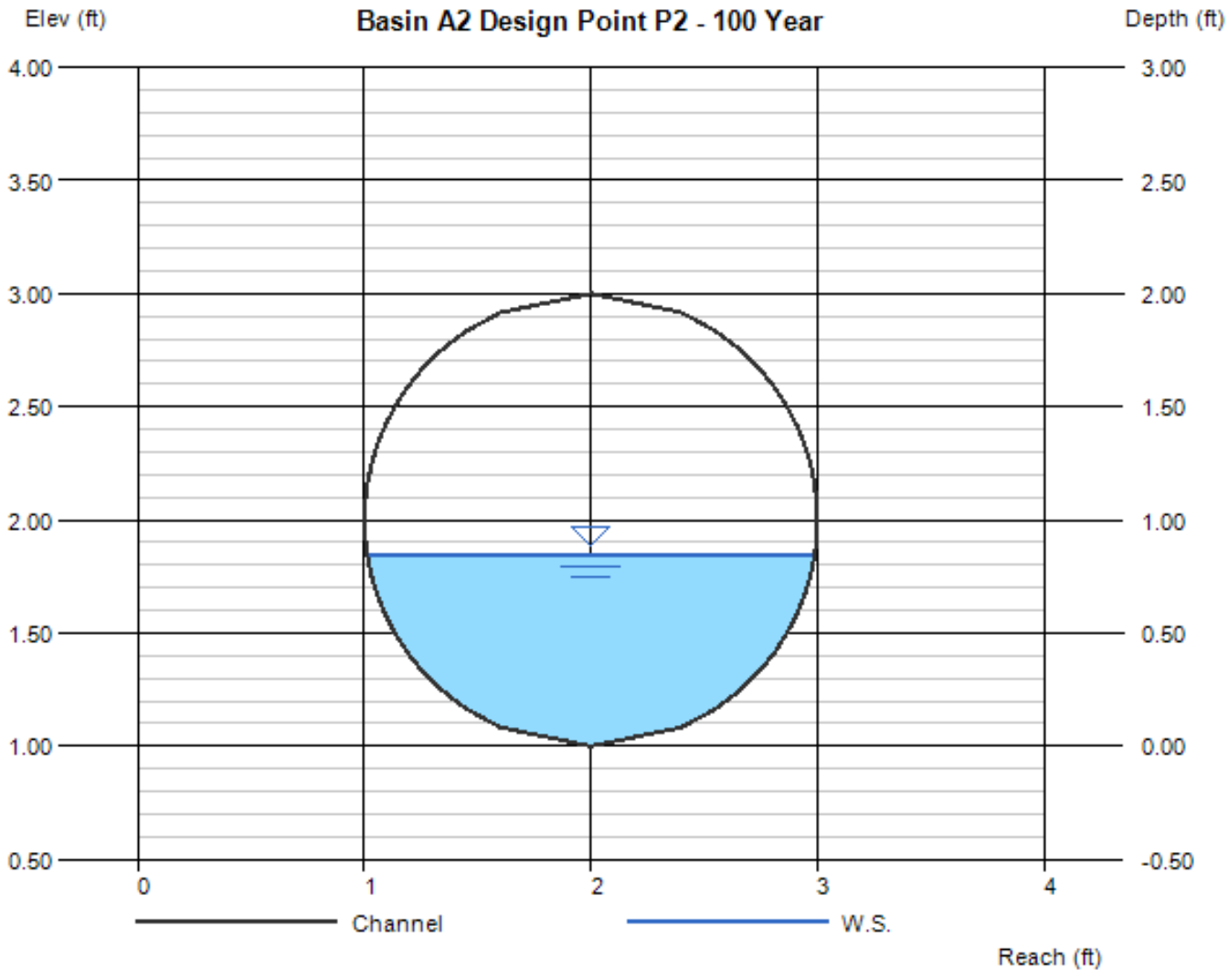
Calculations

Compute by:	Known Q
Known Q (cfs)	= 9.46

Highlighted

Depth (ft)	= 0.84
Q (cfs)	= 9.460
Area (sqft)	= 1.26
Velocity (ft/s)	= 7.50
Wetted Perim (ft)	= 2.83
Crit Depth, Yc (ft)	= 1.10
Top Width (ft)	= 1.98
EGL (ft)	= 1.71

+3.08 cfs (Basin A1)
+6.39 cfs (Basin A2)
= 9.47 cfs



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

Basin A3 Design Point P31 - 5 Year

Circular

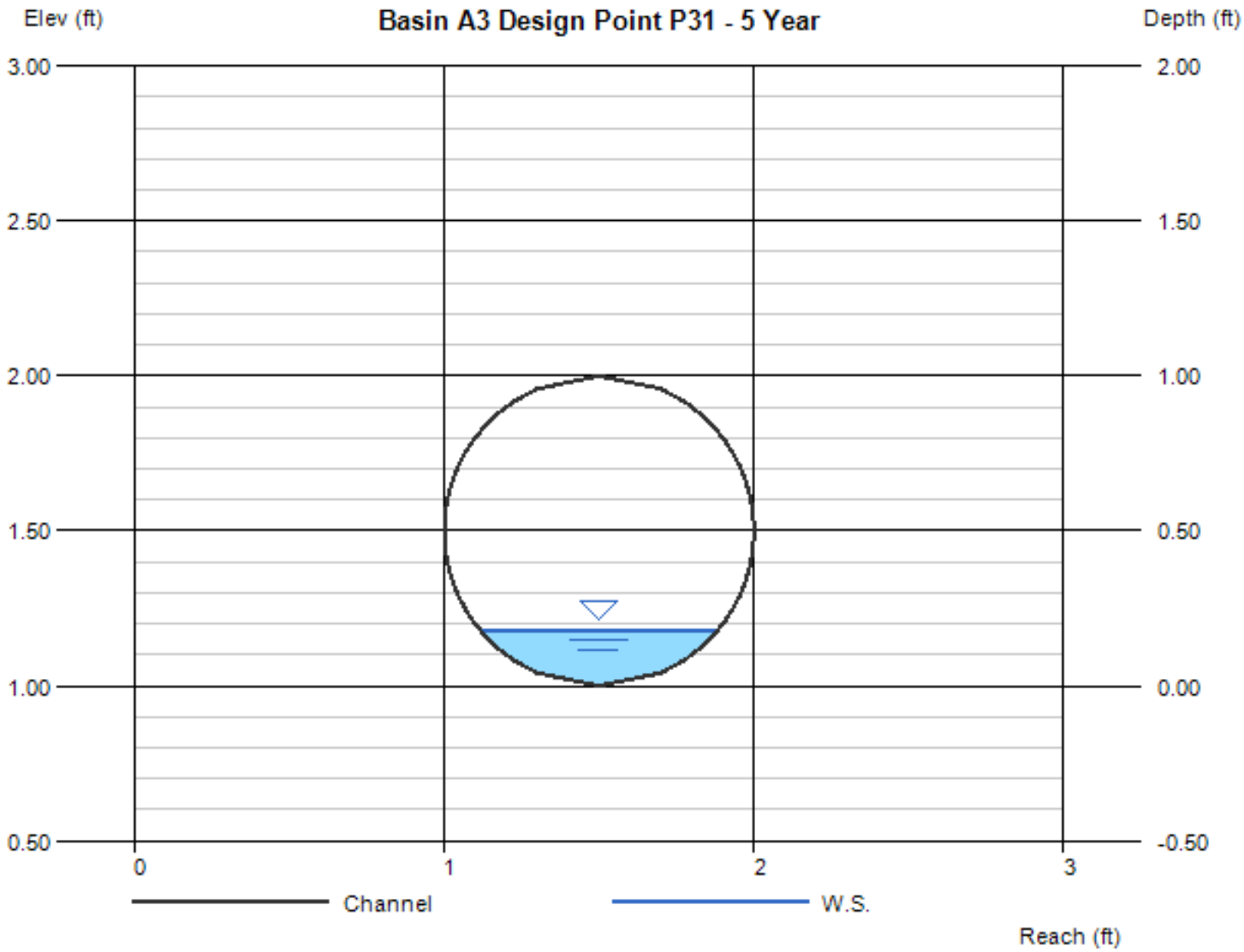
Diameter (ft)	= 1.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.00
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.25

Highlighted

Depth (ft)	= 0.18
Q (cfs)	= 0.250
Area (sqft)	= 0.10
Velocity (ft/s)	= 2.57
Wetted Perim (ft)	= 0.88
Crit Depth, Yc (ft)	= 0.21
Top Width (ft)	= 0.77
EGL (ft)	= 0.28



Channel Report

Basin A3 Design Point P31 - 100 Year

Circular

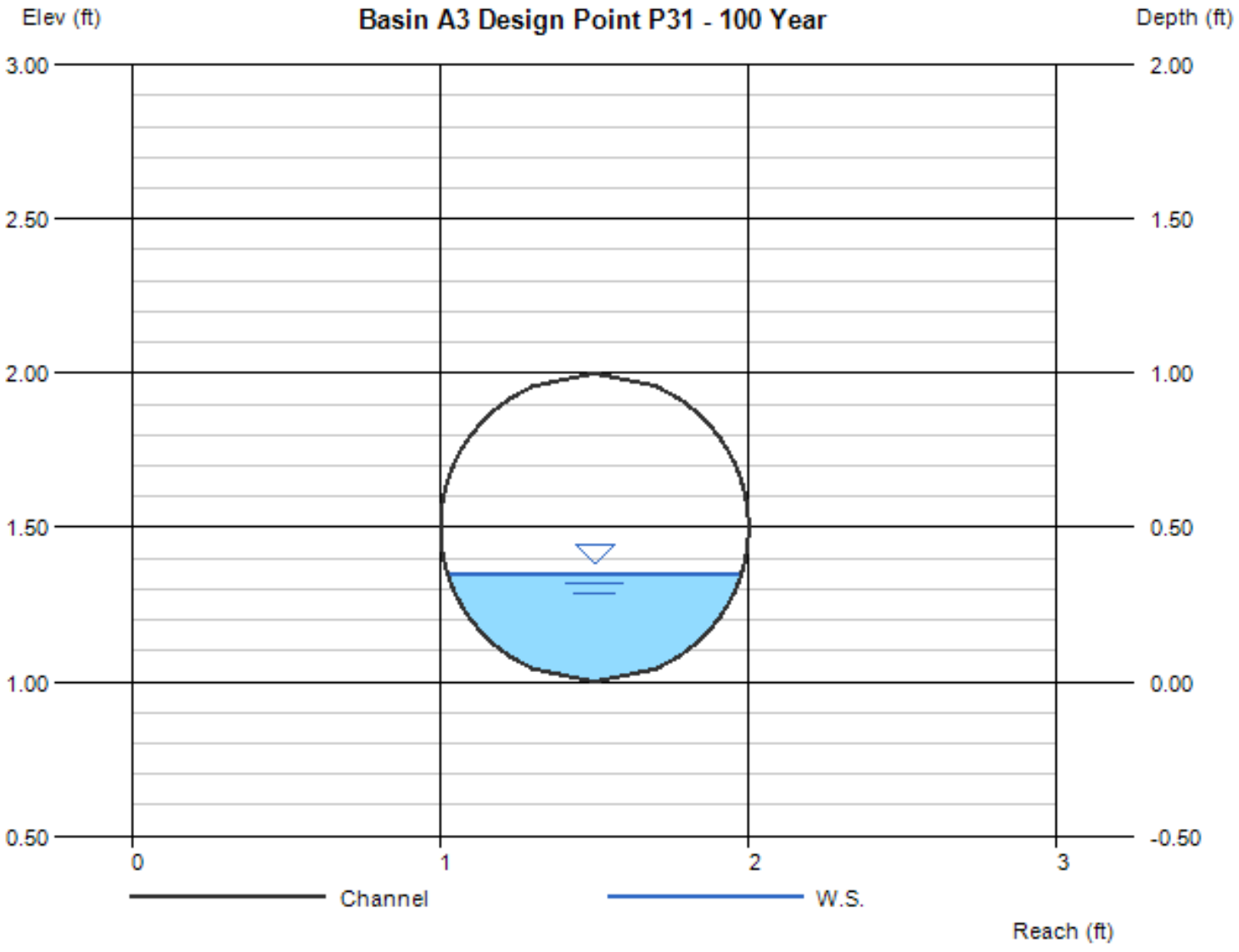
Diameter (ft)	= 1.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.00
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.02

Highlighted

Depth (ft)	= 0.35
Q (cfs)	= 1.020
Area (sqft)	= 0.25
Velocity (ft/s)	= 4.13
Wetted Perim (ft)	= 1.27
Crit Depth, Yc (ft)	= 0.43
Top Width (ft)	= 0.96
EGL (ft)	= 0.62



Channel Report

Basin A3.2 Design Point P32 - 5 Year

Circular

Diameter (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.00
N-Value	= 0.012

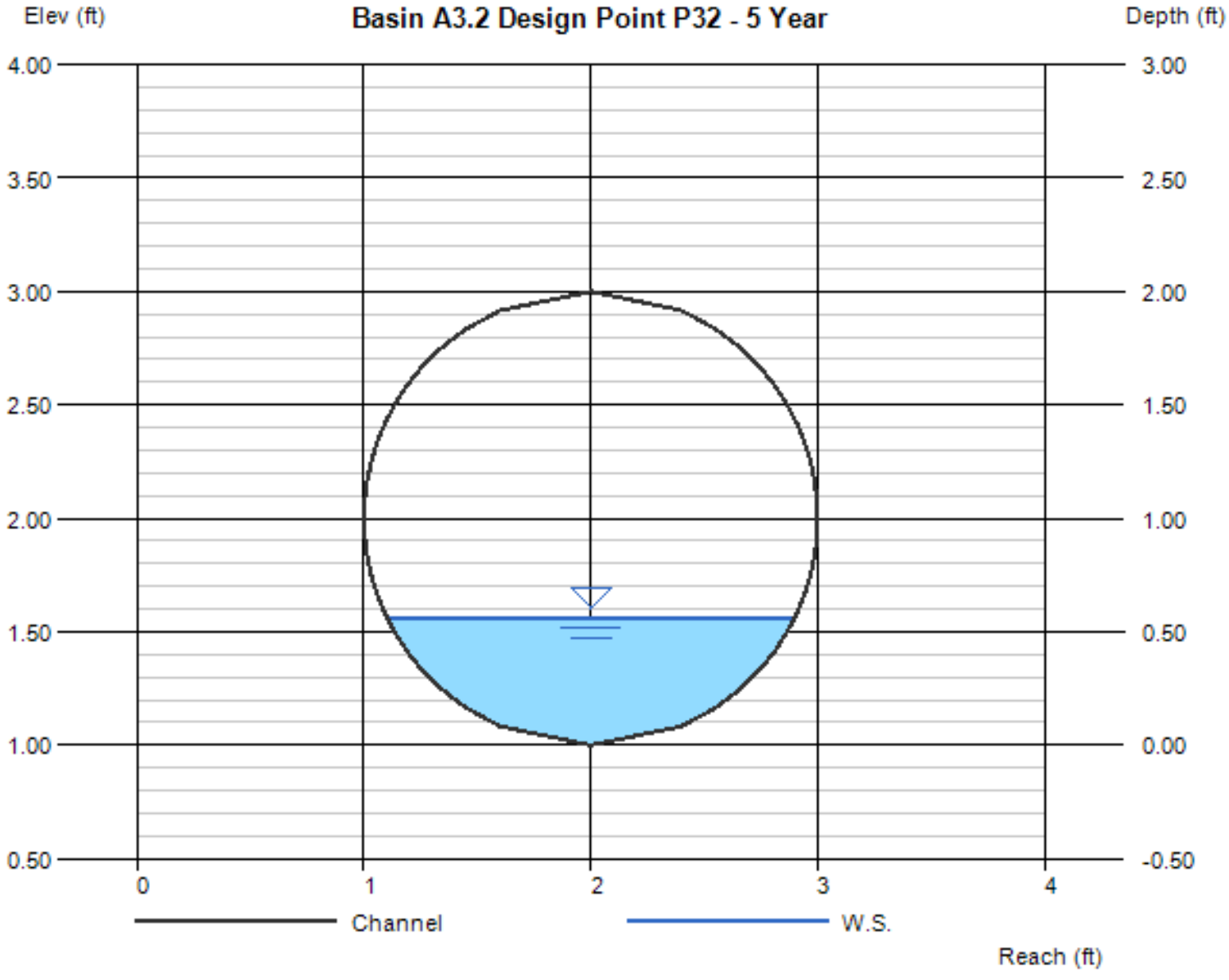
Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.12

Highlighted

Depth (ft)	= 0.56
Q (cfs)	= 4.120
Area (sqft)	= 0.73
Velocity (ft/s)	= 5.66
Wetted Perim (ft)	= 2.24
Crit Depth, Yc (ft)	= 0.71
Top Width (ft)	= 1.80
EGL (ft)	= 1.06

+1.29 cfs (Basin A1)
+2.58 cfs (Basin A2)
+0.25 cfs (Basin A3.1)
= 4.12 cfs



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

Basin A3.2 Design Point P32 - 100 Year

Circular

Diameter (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.00
N-Value	= 0.012

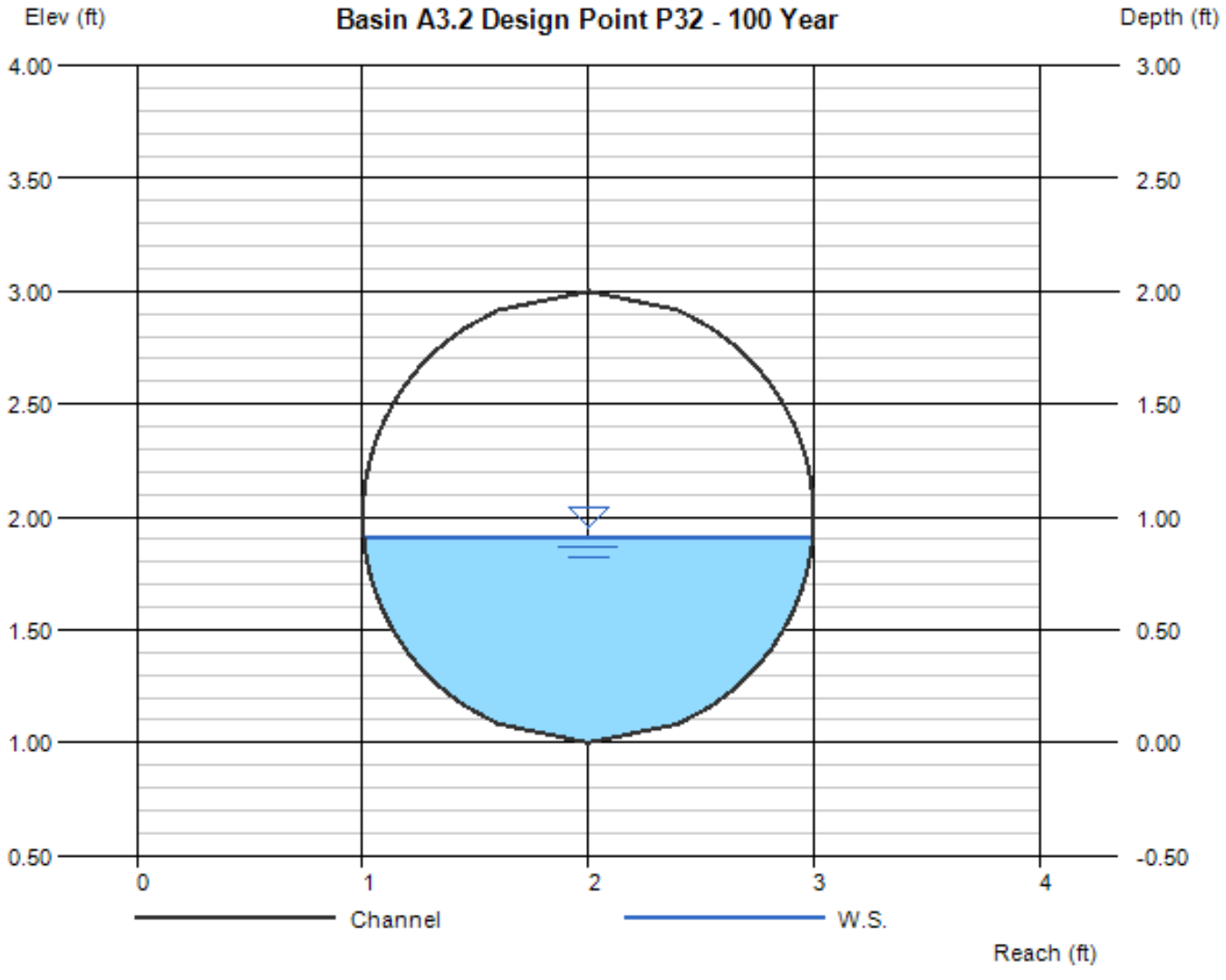
Calculations

Compute by:	Known Q
Known Q (cfs)	= 10.49

Highlighted

Depth (ft)	= 0.91
Q (cfs)	= 10.49
Area (sqft)	= 1.40
Velocity (ft/s)	= 7.49
Wetted Perim (ft)	= 2.97
Crit Depth, Yc (ft)	= 1.16
Top Width (ft)	= 1.99
EGL (ft)	= 1.78

+3.08 cfs (Basin A1)
+6.39 cfs (Basin A2)
+1.02 cfs (Basin A3.1)
= 10.49 cfs



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

Basin A4 Design Point P4 - 5 Year

Circular

Diameter (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.00
N-Value	= 0.012

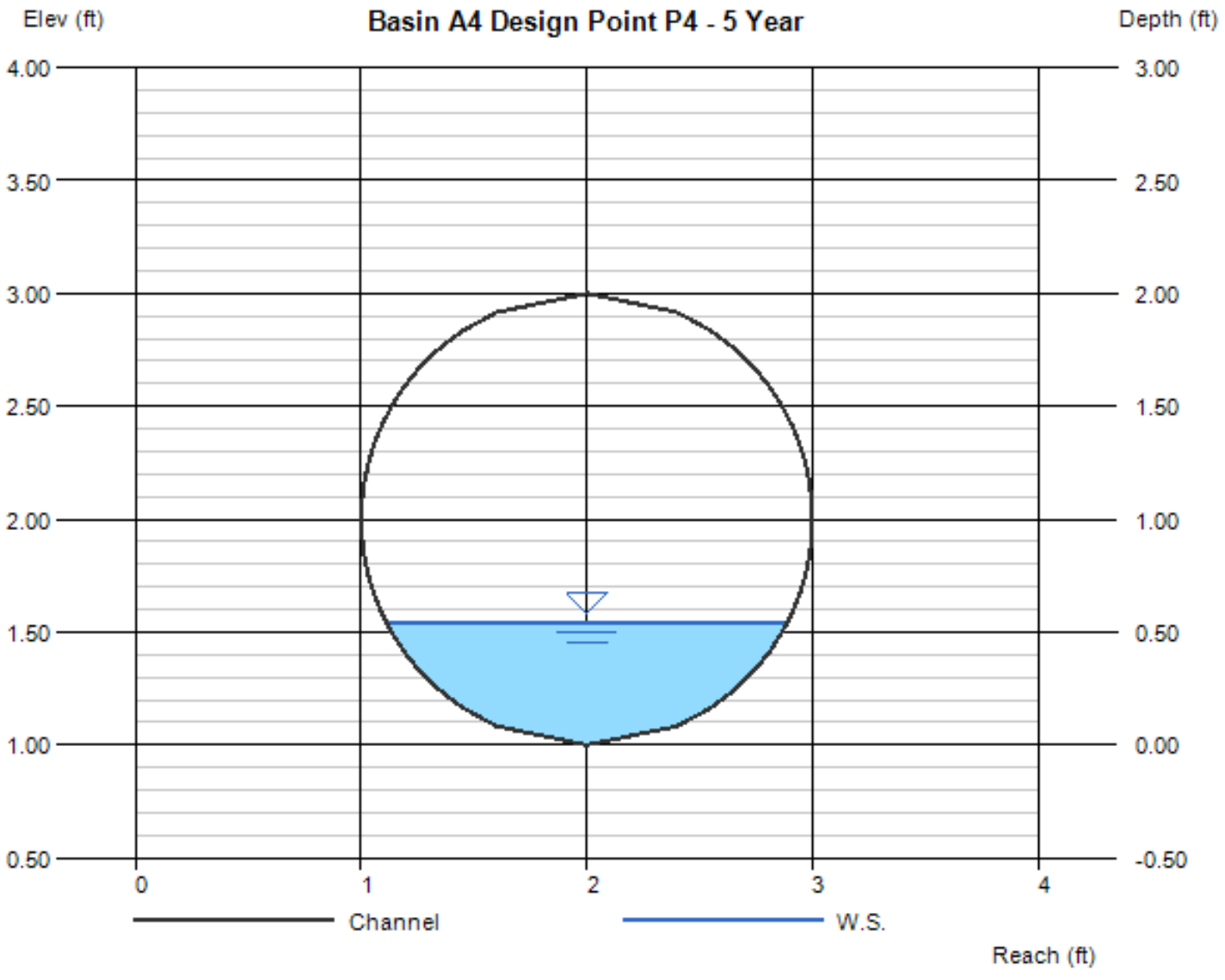
Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.87

Highlighted

Depth (ft)	= 0.54
Q (cfs)	= 3.870
Area (sqft)	= 0.69
Velocity (ft/s)	= 5.63
Wetted Perim (ft)	= 2.19
Crit Depth, Yc (ft)	= 0.69
Top Width (ft)	= 1.78
EGL (ft)	= 1.03

+3.27 cfs (Basin A4)
+0.6 cfs (Off-site Basin F-1)
= 3.87 cfs



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

Basin A4 Design Point P4 - 100 Year

Circular

Diameter (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.00
N-Value	= 0.012

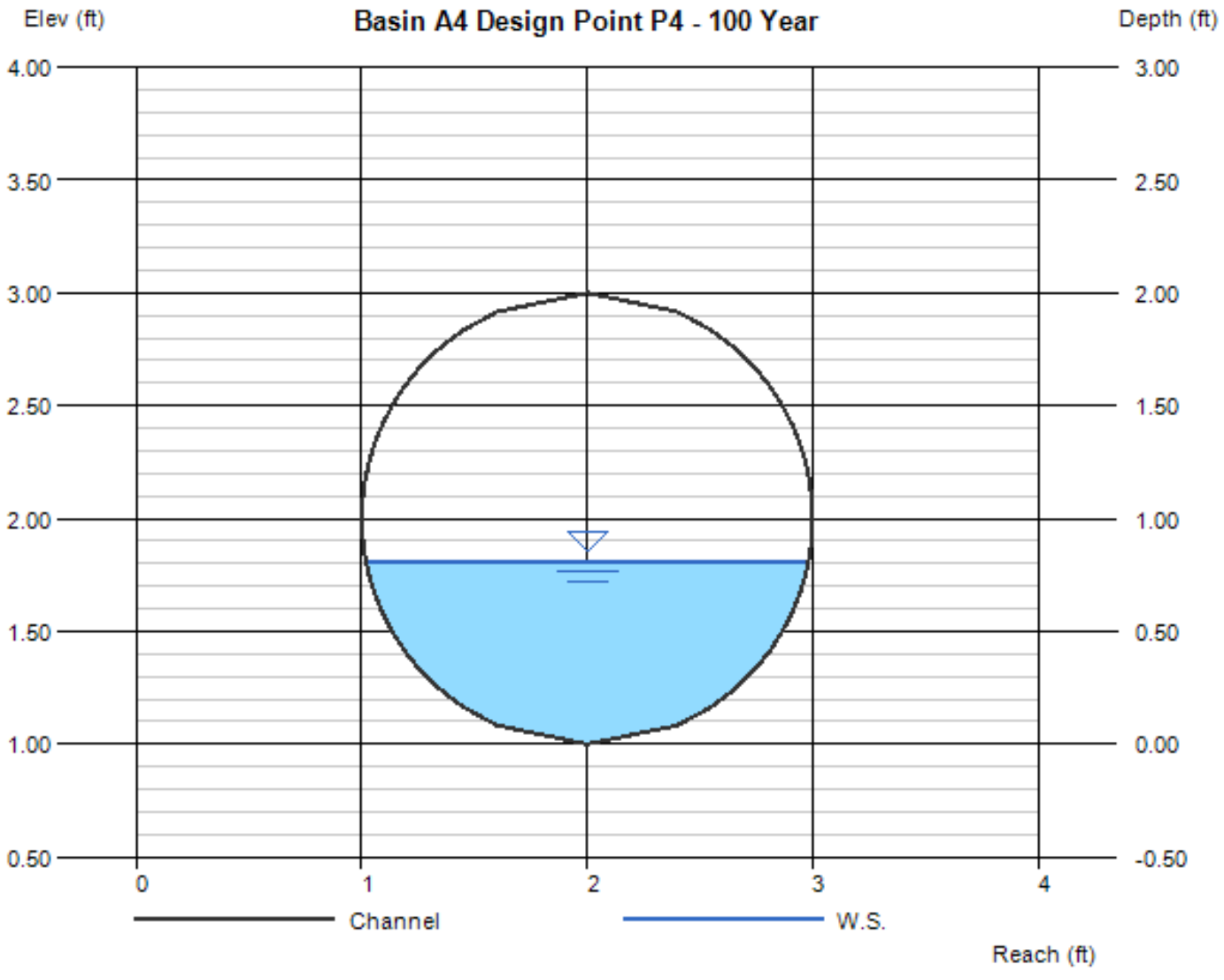
Calculations

Compute by:	Known Q
Known Q (cfs)	= 8.39

Highlighted

Depth (ft)	= 0.81
Q (cfs)	= 8.390
Area (sqft)	= 1.19
Velocity (ft/s)	= 7.03
Wetted Perim (ft)	= 2.76
Crit Depth, Yc (ft)	= 1.03
Top Width (ft)	= 1.96
EGL (ft)	= 1.58

+6.79 cfs (Basin A4)
+1.6 cfs (Off-site Basin F-1)
= 8.39 cfs



Channel Report

Basin A Design Point P41 - 5 Year

Pipe under the West drive aisle along parking

Circular

Diameter (ft)	= 1.25
Invert Elev (ft)	= 1.00
Slope (%)	= 0.60
N-Value	= 0.012

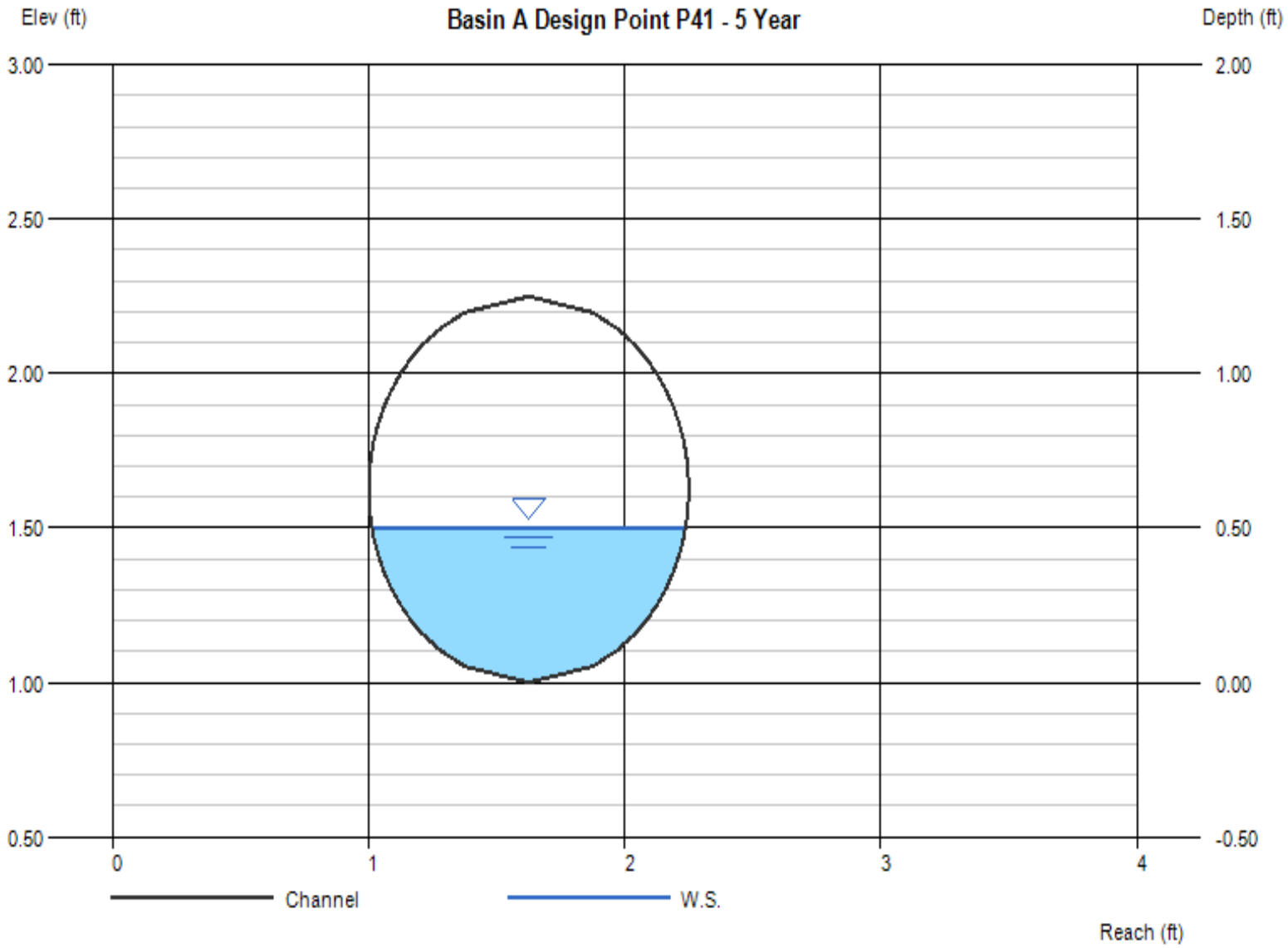
Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.82

Highlighted

Depth (ft)	= 0.50
Q (cfs)	= 1.820
Area (sqft)	= 0.46
Velocity (ft/s)	= 3.97
Wetted Perim (ft)	= 1.71
Crit Depth, Yc (ft)	= 0.54
Top Width (ft)	= 1.22
EGL (ft)	= 0.74

Basin composes the landscape and drive aisle along the west as well as off-site basin F-1



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

Basin A Design Point P41 - 100 Year

Pipe under the West drive aisle along parking

Circular

Diameter (ft)	= 1.25
Invert Elev (ft)	= 1.00
Slope (%)	= 0.60
N-Value	= 0.012

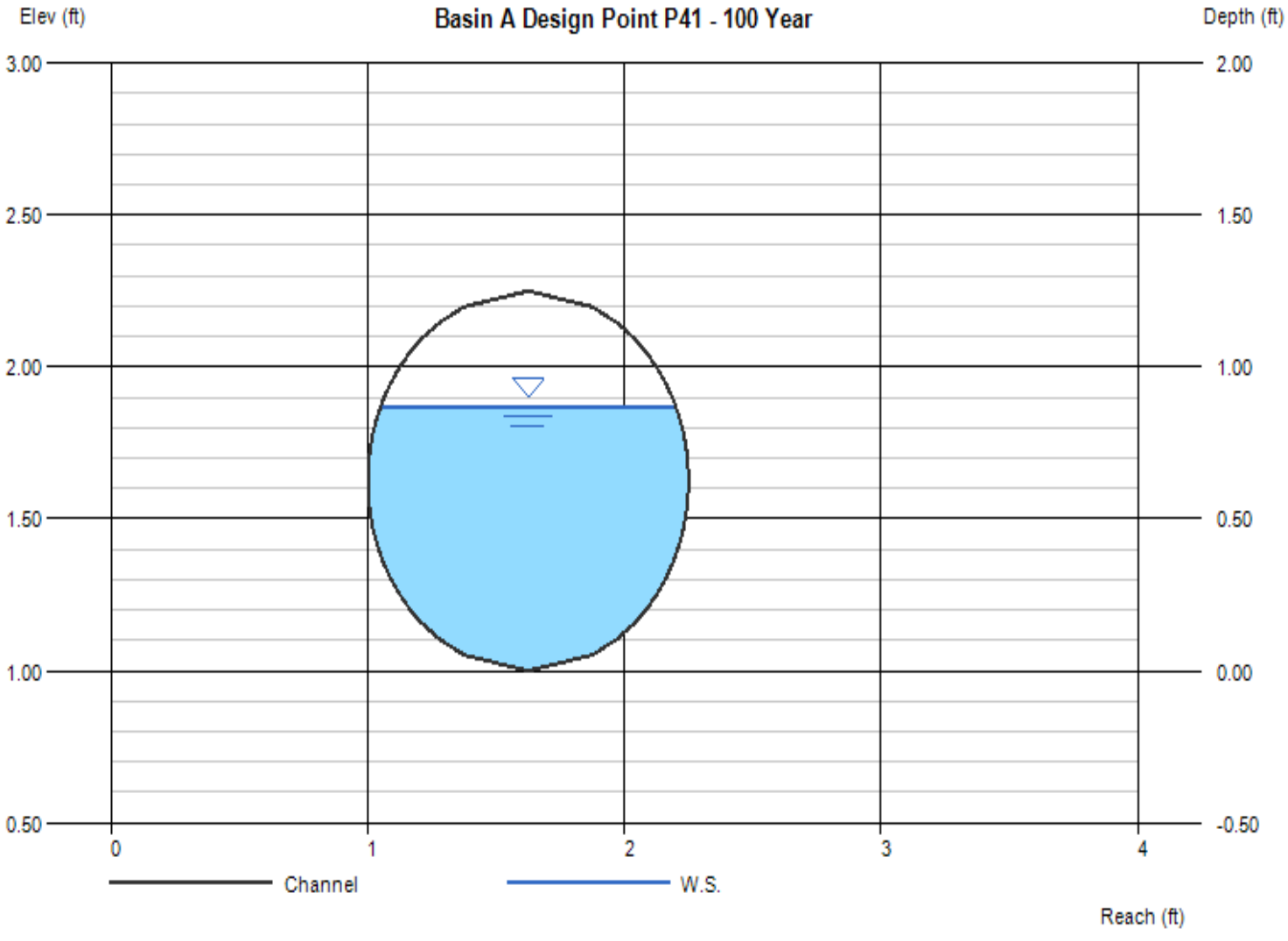
Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.47

Highlighted

Depth (ft)	= 0.87
Q (cfs)	= 4.470
Area (sqft)	= 0.91
Velocity (ft/s)	= 4.90
Wetted Perim (ft)	= 2.47
Crit Depth, Yc (ft)	= 0.86
Top Width (ft)	= 1.15
EGL (ft)	= 1.24

Basin composes the landscape and drive aisle along the west as well as off-site basin F-1



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

West Channel 5 Year Flow

Trapezoidal

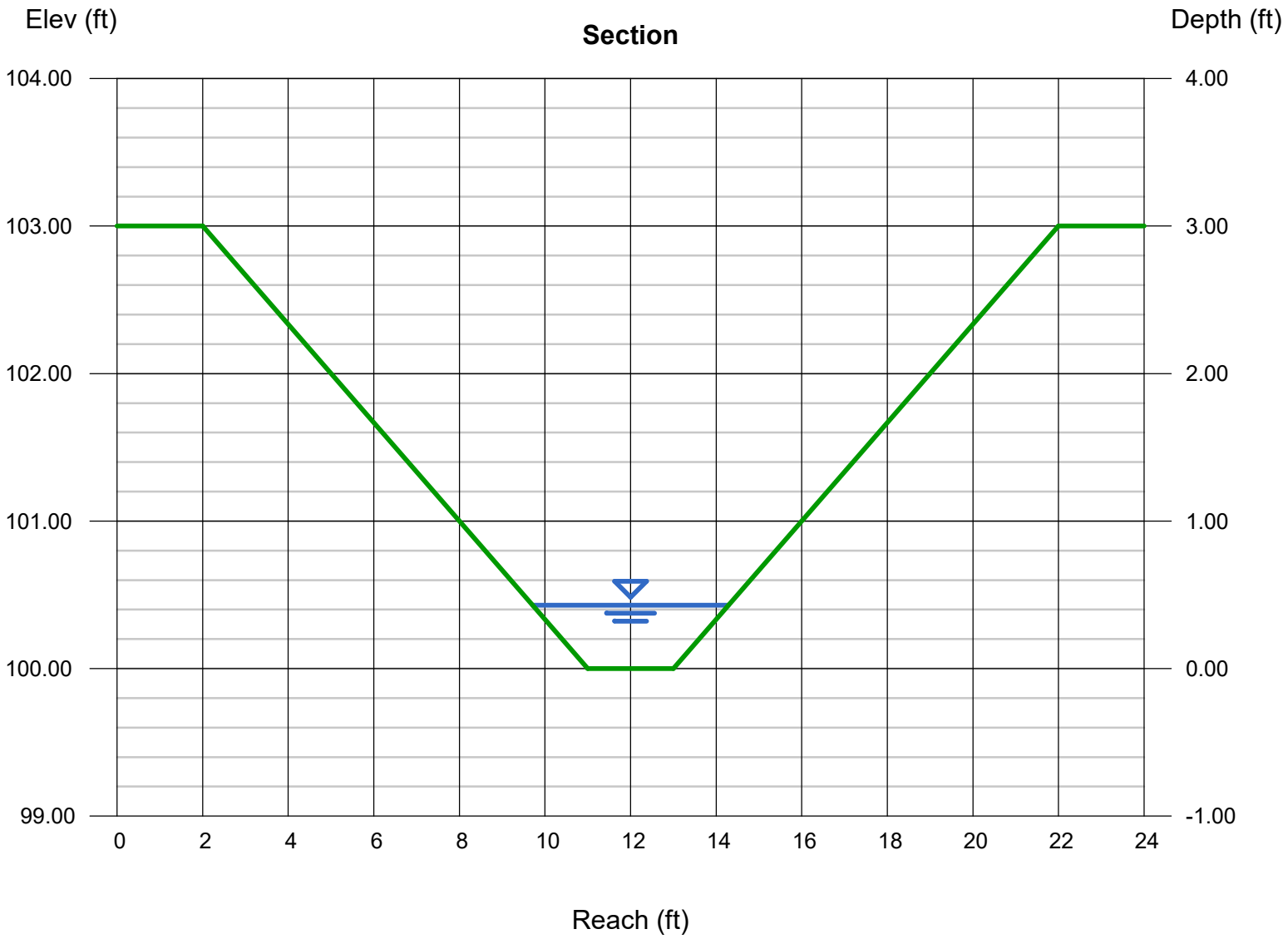
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 2.50
N-Value	= 0.080

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.82

Highlighted

Depth (ft)	= 0.43
Q (cfs)	= 1.820
Area (sqft)	= 1.41
Velocity (ft/s)	= 1.29
Wetted Perim (ft)	= 4.72
Crit Depth, Yc (ft)	= 0.26
Top Width (ft)	= 4.58
EGL (ft)	= 0.46



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

West Channel 100 Year Flow

Trapezoidal

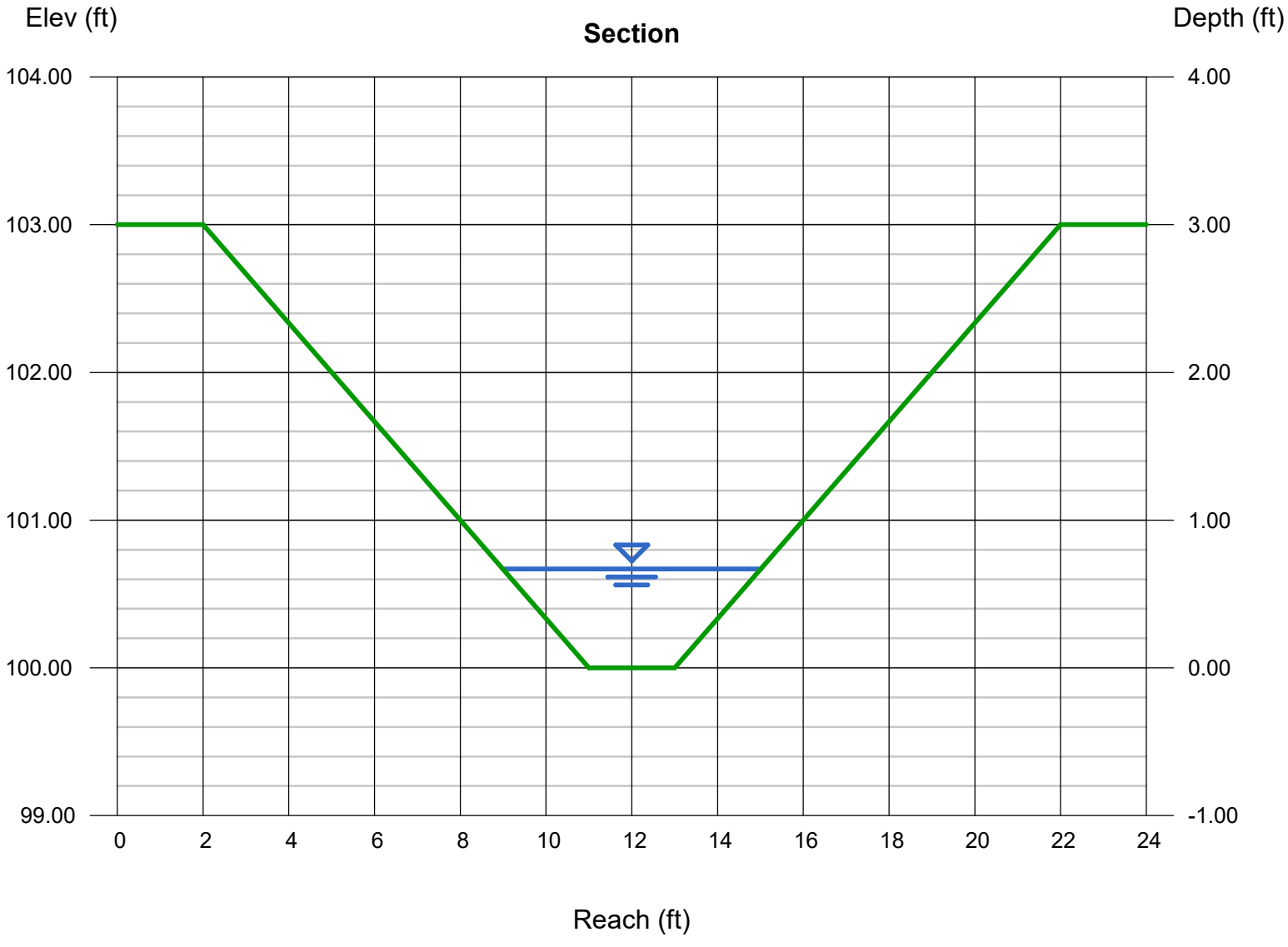
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 2.50
N-Value	= 0.080

Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.47

Highlighted

Depth (ft)	= 0.67
Q (cfs)	= 4.470
Area (sqft)	= 2.69
Velocity (ft/s)	= 1.66
Wetted Perim (ft)	= 6.24
Crit Depth, Yc (ft)	= 0.44
Top Width (ft)	= 6.02
EGL (ft)	= 0.71



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

Basin A5 Design Point P5 - 5 Year

Circular

Diameter (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.10
N-Value	= 0.012

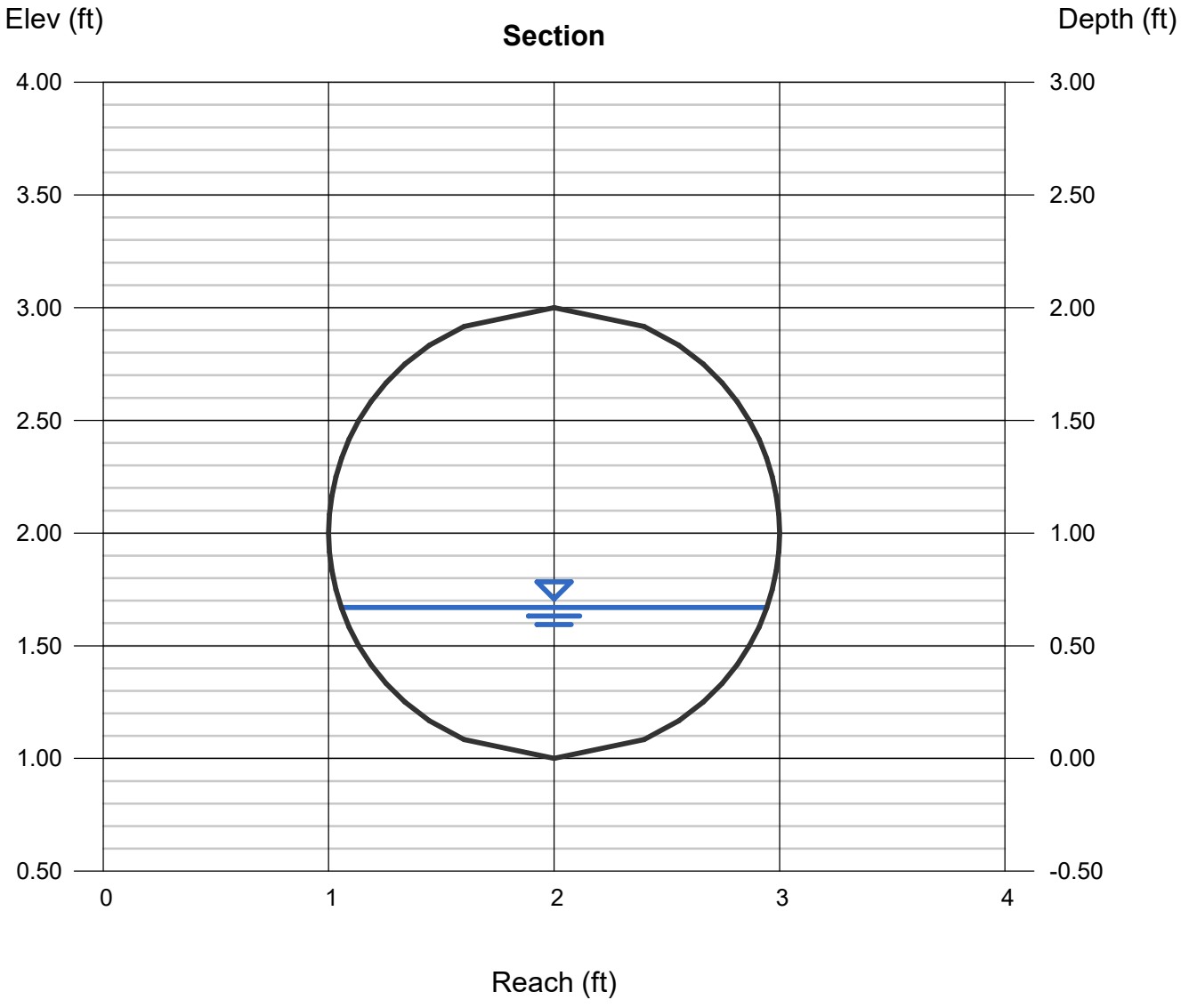
Calculations

Compute by:	Known Q
Known Q (cfs)	= 6.09

Highlighted

Depth (ft)	= 0.67
Q (cfs)	= 6.090
Area (sqft)	= 0.92
Velocity (ft/s)	= 6.59
Wetted Perim (ft)	= 2.47
Crit Depth, Yc (ft)	= 0.87
Top Width (ft)	= 1.89
EGL (ft)	= 1.35

+3.27 cfs (Basin A4)
+0.6 cfs (Off-site Basin F-1)
+2.22 cfs (Basin A5)
= 6.09 cfs



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

Basin A5 Design Point P5 - 100 Year

Circular

Diameter (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.10
N-Value	= 0.012

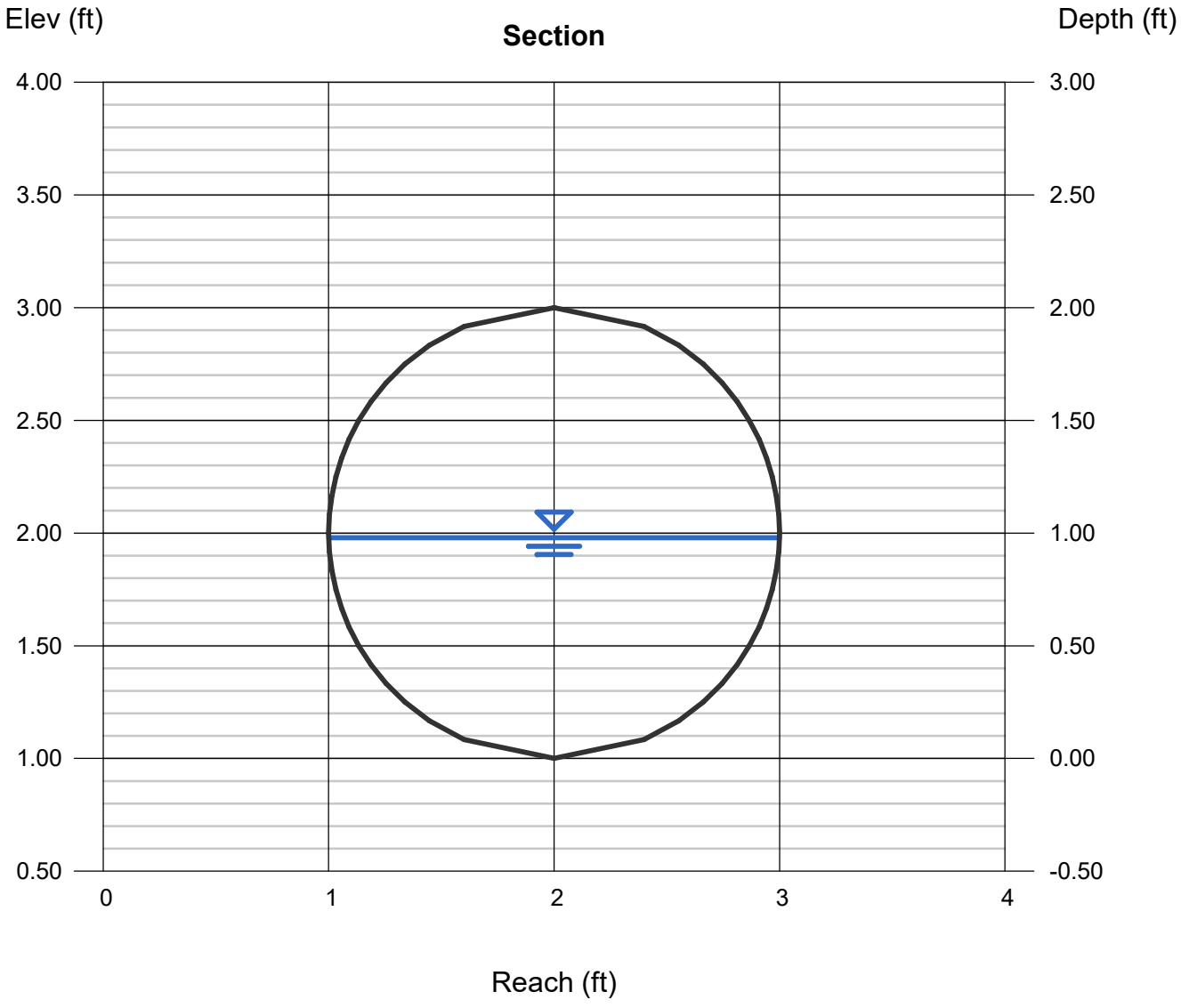
Calculations

Compute by:	Known Q
Known Q (cfs)	= 12.49

Highlighted

Depth (ft)	= 0.98
Q (cfs)	= 12.49
Area (sqft)	= 1.54
Velocity (ft/s)	= 8.11
Wetted Perim (ft)	= 3.11
Crit Depth, Yc (ft)	= 1.28
Top Width (ft)	= 2.00
EGL (ft)	= 2.00

+6.79 cfs (Basin A4)
+1.6 cfs (Off-site Basin F-1)
+4.10 cfs (Basin A5)
= 12.49 cfs



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

Basin A3.2 Design Point P3 - 5 Year

Circular

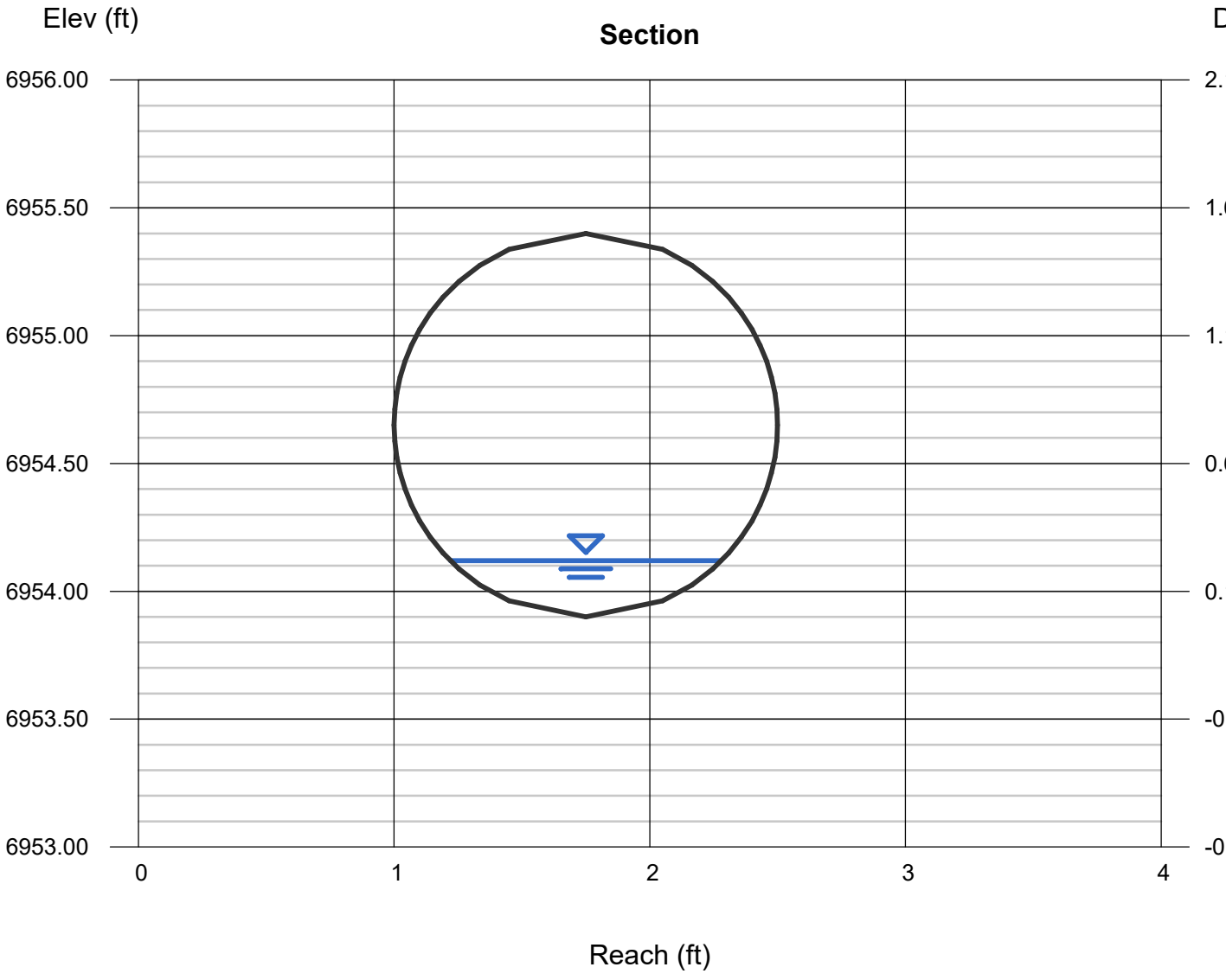
Diameter (ft)	= 1.50
Invert Elev (ft)	= 6953.90
Slope (%)	= 1.00
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.50

Highlighted

Depth (ft)	= 0.22
Q (cfs)	= 0.500
Area (sqft)	= 0.16
Velocity (ft/s)	= 3.06
Wetted Perim (ft)	= 1.18
Crit Depth, Yc (ft)	= 0.27
Top Width (ft)	= 1.07
EGL (ft)	= 0.37



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

Basin A3.2 Design Point P3 - 100 Year

Circular

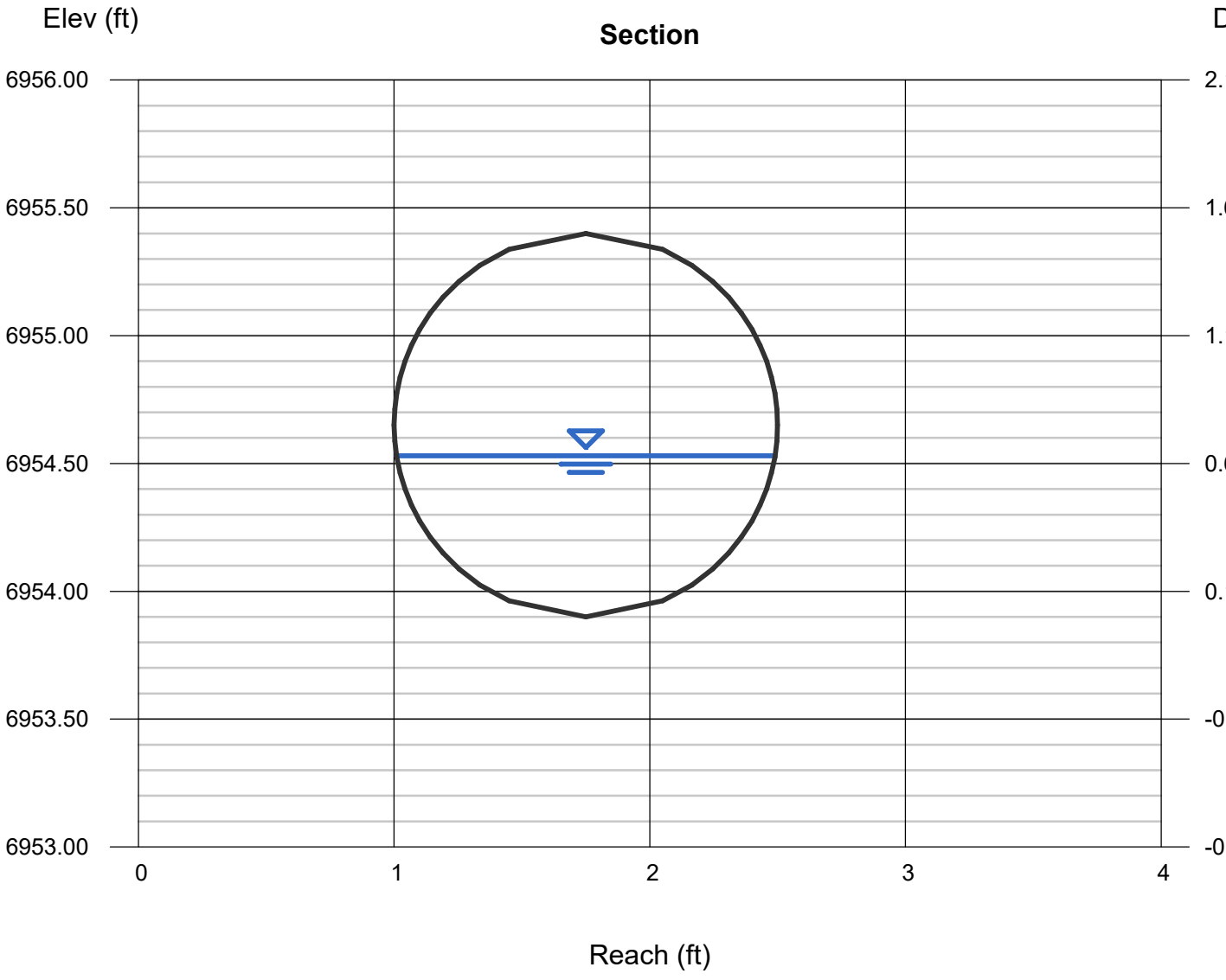
Diameter (ft)	= 1.50
Invert Elev (ft)	= 6953.90
Slope (%)	= 1.00
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.20

Highlighted

Depth (ft)	= 0.63
Q (cfs)	= 4.200
Area (sqft)	= 0.71
Velocity (ft/s)	= 5.92
Wetted Perim (ft)	= 2.12
Crit Depth, Yc (ft)	= 0.79
Top Width (ft)	= 1.48
EGL (ft)	= 1.17



Weir Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Jun 25 2026

100-year Emergency Overflow Detention Pond

Trapezoidal Weir

Crest	= Sharp
Bottom Length (ft)	= 20.00
Total Depth (ft)	= 1.00
Side Slope (z:1)	= 4.00

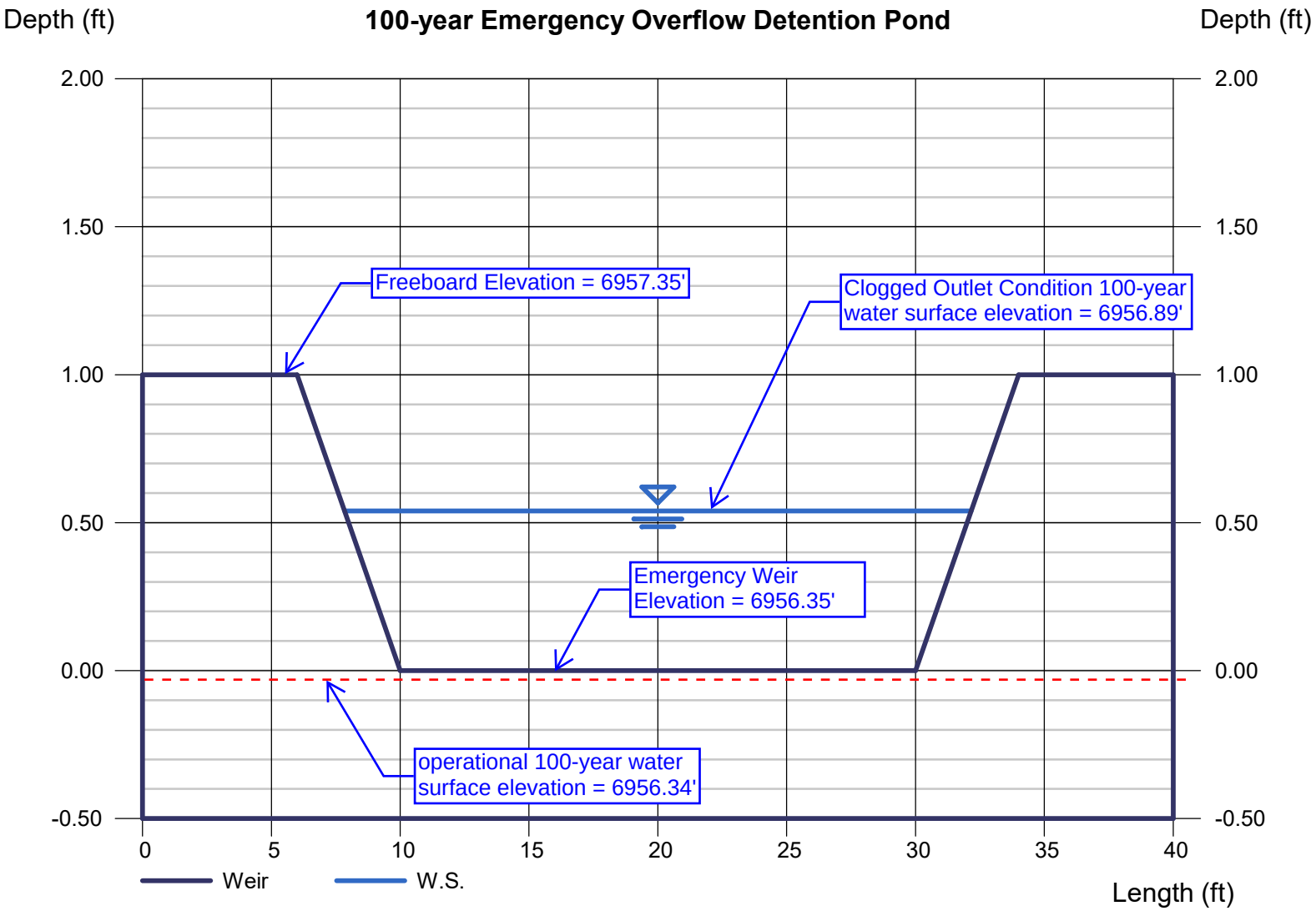
Highlighted

Depth (ft)	= 0.54
Q (cfs)	= 26.24
Area (sqft)	= 11.97
Velocity (ft/s)	= 2.19
Top Width (ft)	= 24.32

Calculations

Weir Coeff. Cw	= 3.10
Compute by:	Known Q
Known Q (cfs)	= 26.24

SUM OF ALL APPLICABLE ON-SITE BASIN PEAK FLOWS WITH OFF-SITE BASIN F-1



Culvert Report HEADWATER CALCULATIONS

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jul 17 2026

Headwater at Off-site Culvert

Invert Elev Dn (ft)	=	6931.80
Pipe Length (ft)	=	1946.00
Slope (%)	=	0.99
Invert Elev Up (ft)	=	6951.03
Rise (in)	=	30.0
Shape	=	Circular
Span (in)	=	30.0
No. Barrels	=	1
n-Value	=	0.011
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

Top Elevation (ft)	=	6955.92
Top Width (ft)	=	30.00
Crest Width (ft)	=	30.00

Calculations

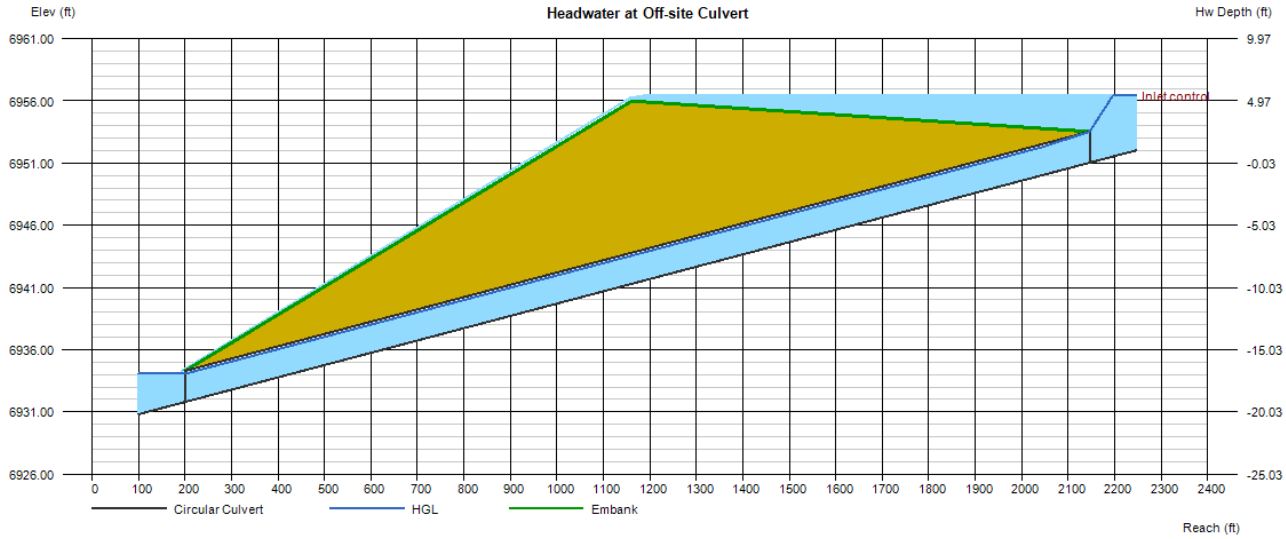
Qmin (cfs)	=	10.43
Qmax (cfs)	=	80.43
Tailwater Elev (ft)	=	5.15

Highlighted

Qtotal (cfs)	=	80.43
Qpipe (cfs)	=	47.56
Qovertop (cfs)	=	32.87
Veloc Dn (ft/s)	=	10.17
Veloc Up (ft/s)	=	10.17
HGL Dn (ft)	=	6934.06
HGL Up (ft)	=	6953.29
Hw Elev (ft)	=	6956.43
Hw/D (ft)	=	2.16
Flow Regime	=	Inlet Control

+72.5 cfs (Off-site basin OS-25 to the North)
+1.6 cfs (Off-site basin F-1 to the West)
+4.4 cfs (On-site pond Discharge)
+1.93 cfs (On-site Basin A6)
= 80.43 cfs Total flowing to the off-site pipe

Less than the 33.2 cfs to be Discharged Off-site to Bent Grass Meadows Drive Roadway



Channel Report

Off-site 30 inch Pipes 5-year at 1 percent

Circular

Diameter (ft)	= 2.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.012

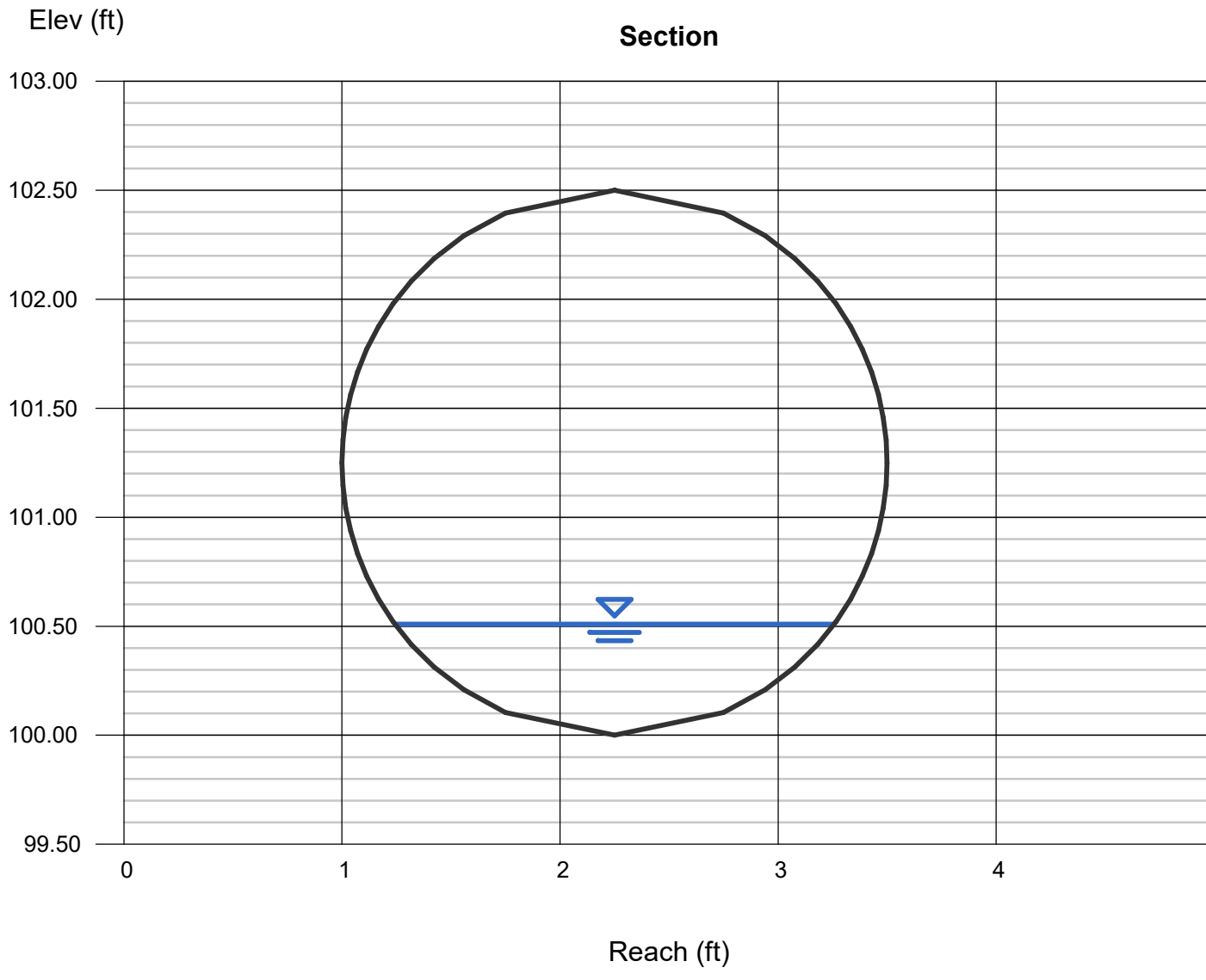
Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.08

Highlighted

Depth (ft)	= 0.51
Q (cfs)	= 4.080
Area (sqft)	= 0.72
Velocity (ft/s)	= 5.63
Wetted Perim (ft)	= 2.35
Crit Depth, Yc (ft)	= 0.67
Top Width (ft)	= 2.02
EGL (ft)	= 1.00

+2.7 cfs (Off-site North)
+0.6 cfs (Off-site West)
+0.48 cfs (On-site Basin A6)
+0.30 cfs (On-site Pond Discharge)
= 4.08 cfs (Discharge through Proposed Storm Pipe)



Channel Report

Off-site 30 inch Pipes 100-year at 1 percent

Circular

Diameter (ft)	= 2.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.012

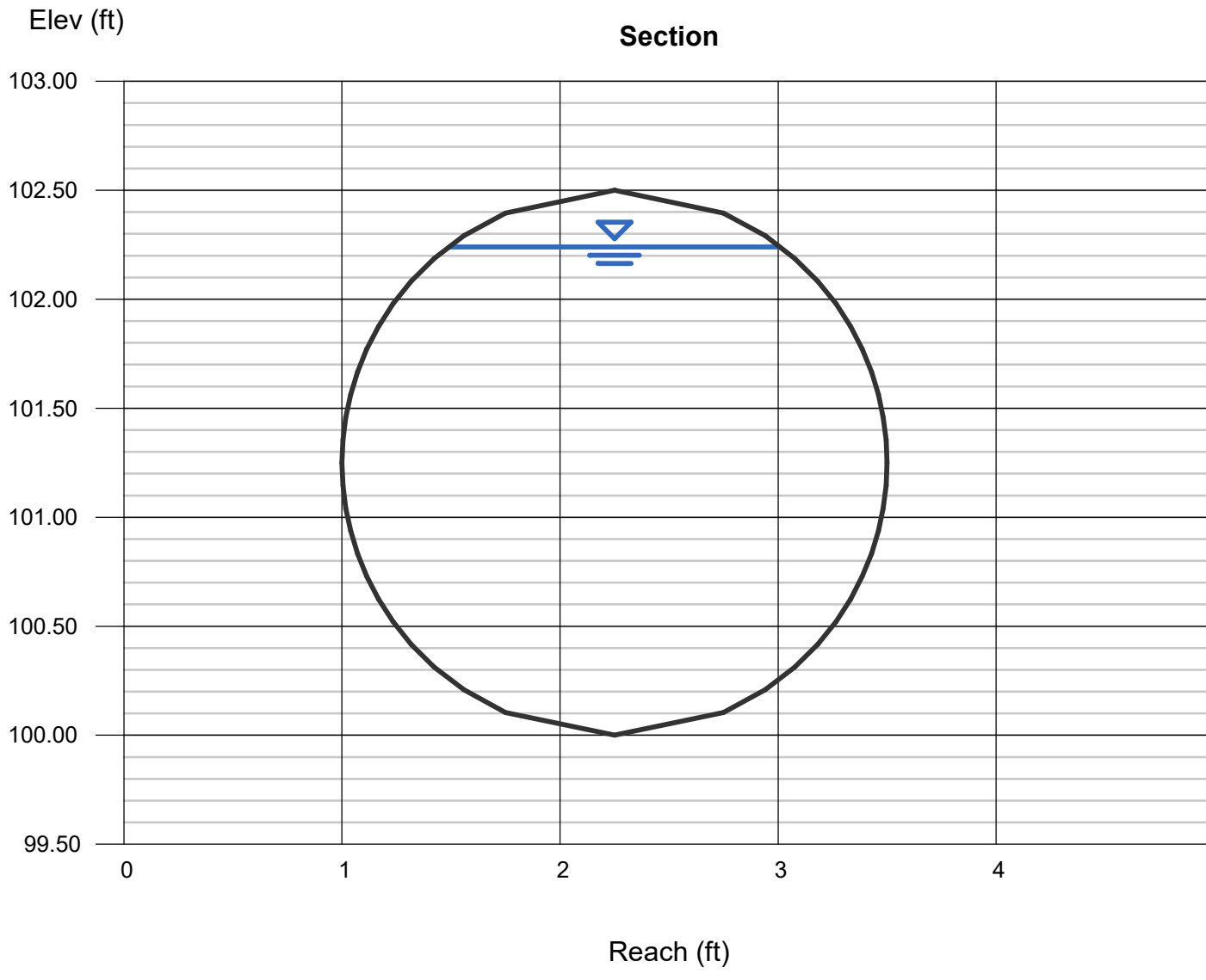
Calculations

Compute by:	Known Q
Known Q (cfs)	= 47.23

Highlighted

Depth (ft)	= 2.24
Q (cfs)	= 47.23
Area (sqft)	= 4.64
Velocity (ft/s)	= 10.18
Wetted Perim (ft)	= 6.21
Crit Depth, Yc (ft)	= 2.26
Top Width (ft)	= 1.53
EGL (ft)	= 3.85

+72.5 cfs (Off-site North)
+1.6 cfs (Off-site West)
+1.93 cfs (On-site Basin A6)
+4.4 cfs (On-site Pond Discharge)
-33.2 cfs (Off-site Discharge to Bent Grass Meadows Roadway)
= 47.23 cfs (Discharge through Proposed Storm Pipe.



Channel Report

Off-site 36 Inch Elliptical Eq Pipes 5-year at 0.5 percent

Circular

Diameter (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.012

Calculations

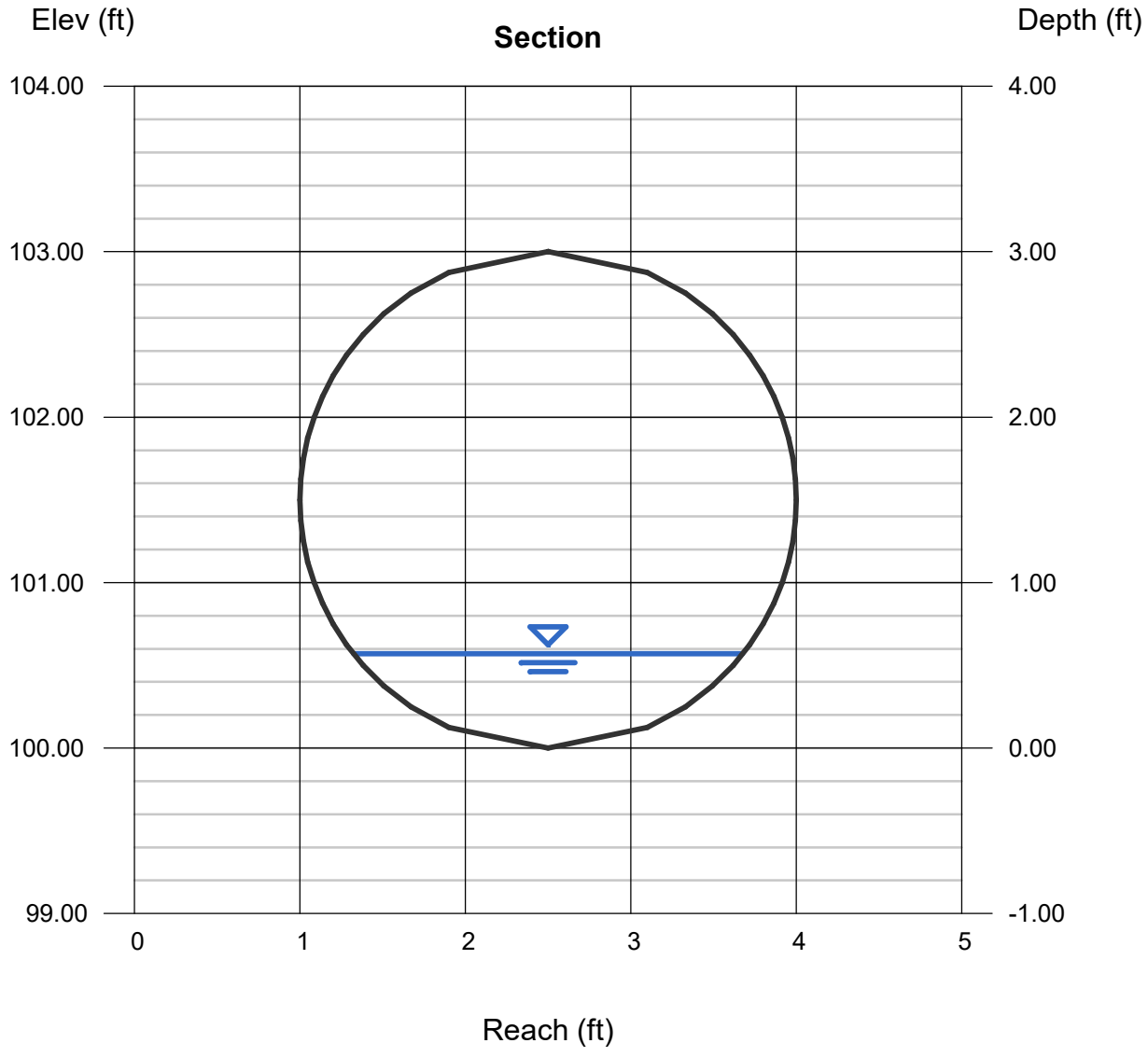
Compute by:	Known Q
Known Q (cfs)	= 4.08

Highlighted

Depth (ft)	= 0.57
Q (cfs)	= 4.080
Area (sqft)	= 0.94
Velocity (ft/s)	= 4.33
Wetted Perim (ft)	= 2.71
Crit Depth, Yc (ft)	= 0.63
Top Width (ft)	= 2.36
EGL (ft)	= 0.86

+2.7 cfs (Off-site North)
+0.6 cfs (Off-site West)
+0.48 cfs (On-site Basin A6)
+0.30 cfs (On-site Pond Discharge)
= 4.08 cfs (Discharge through Proposed Storm Pipe)

Note this is a 36" elliptical Equivalent pipe and should have maximum (full) capacity at 0.5% of around 51 cfs and should be hydraulically equivalent to a 36" circular pipe.



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jul 17 2026

Off-site 36 Inch Elliptical Eq Pipes 5-year at 0.5 percent

Circular

Diameter (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.012

Calculations

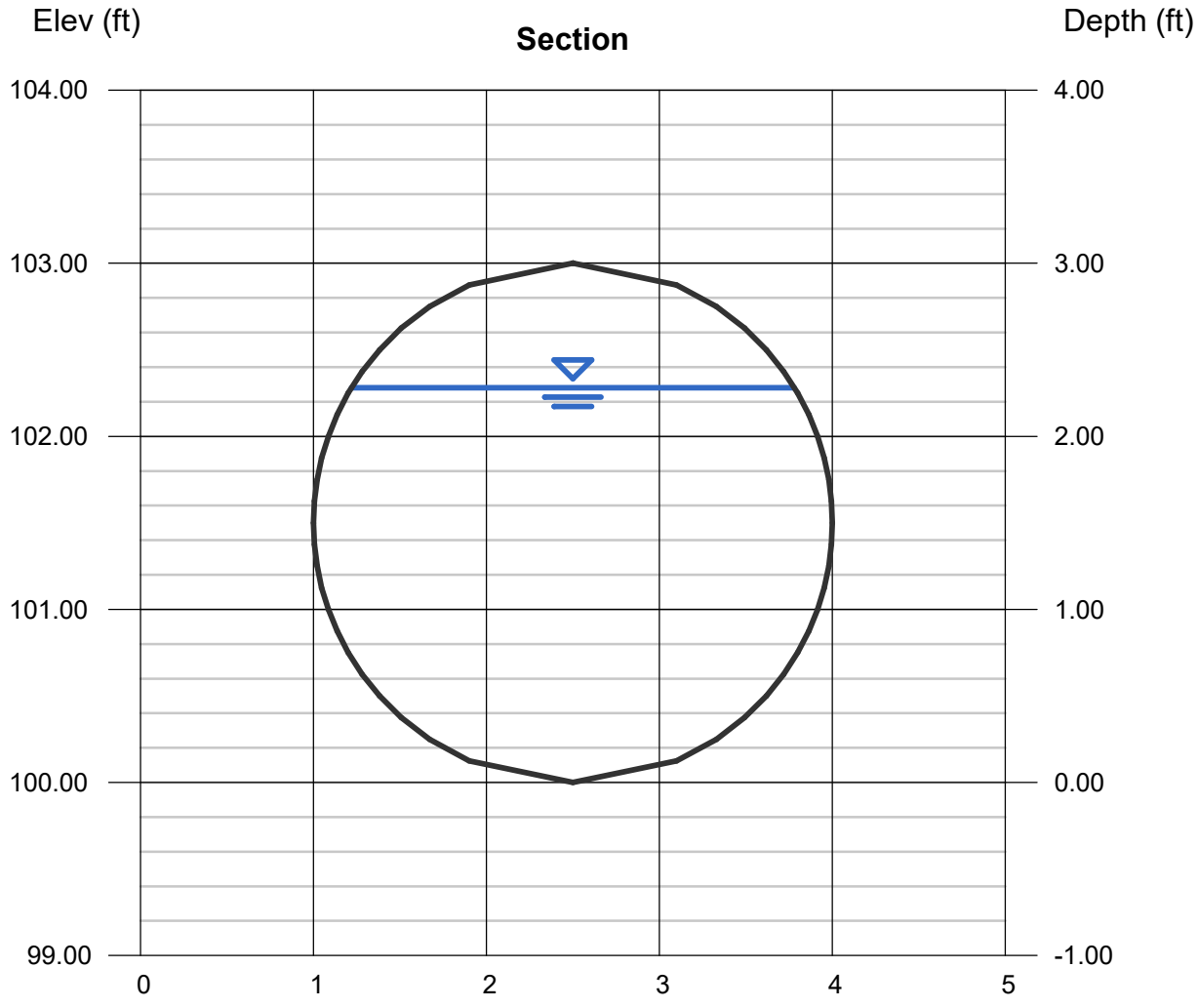
Compute by:	Known Q
Known Q (cfs)	= 47.23

Highlighted

Depth (ft)	= 2.28
Q (cfs)	= 47.23
Area (sqft)	= 5.77
Velocity (ft/s)	= 8.18
Wetted Perim (ft)	= 6.36
Crit Depth, Yc (ft)	= 2.24
Top Width (ft)	= 2.56
EGL (ft)	= 3.32

+72.5 cfs (Off-site North)
+1.6 cfs (Off-site West)
+1.93 cfs (On-site Basin A6)
+4.4 cfs (On-site Pond Discharge)
-33.2 cfs (Off-site Discharge to Bent Grass Meadows Roadway)
= 47.23 cfs (Discharge through Proposed Storm Pipe.

Note this is a 36" elliptical Equivalent pipe and should have maximum (full) capacity at 0.5% of around 51 cfs and should be hydraulically equivalent to a 36" circular pipe.



Weir Report

100-year Off-site Emergency Overtop Headwall

Trapezoidal Weir

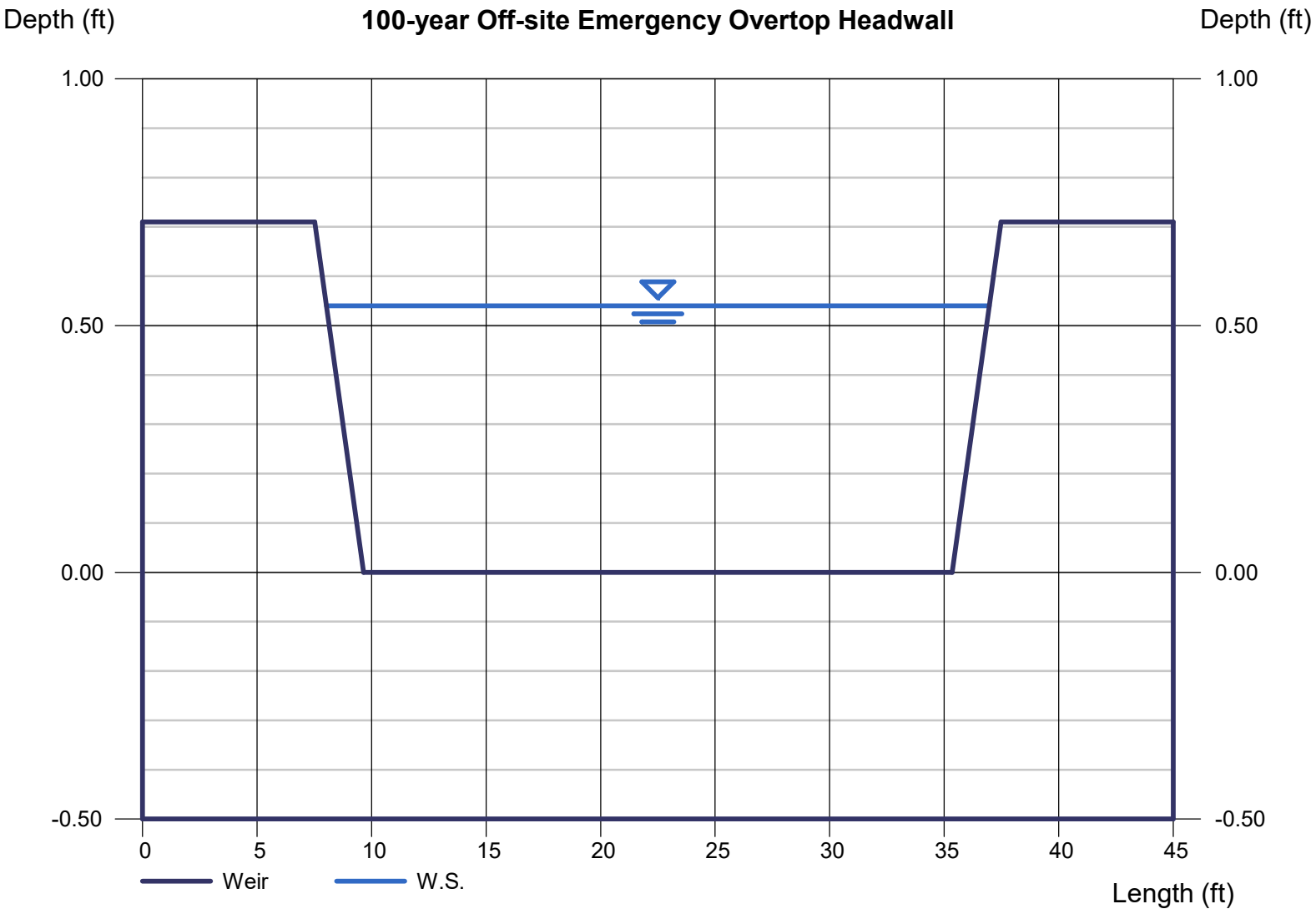
Crest	= Sharp
Bottom Length (ft)	= 25.70
Total Depth (ft)	= 0.71
Side Slope (z:1)	= 3.00

Highlighted

Depth (ft)	= 0.54
Q (cfs)	= 33.20
Area (sqft)	= 14.75
Velocity (ft/s)	= 2.25
Top Width (ft)	= 28.94

Calculations

Weir Coeff. Cw	= 3.10
Compute by:	Known Q
Known Q (cfs)	= 33.20



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Jun 25 2026

100 Year Offsite Emergency Overflow Path

User-defined

Invert Elev (ft)	= 55.69
Slope (%)	= 0.70
N-Value	= 0.030

Calculations

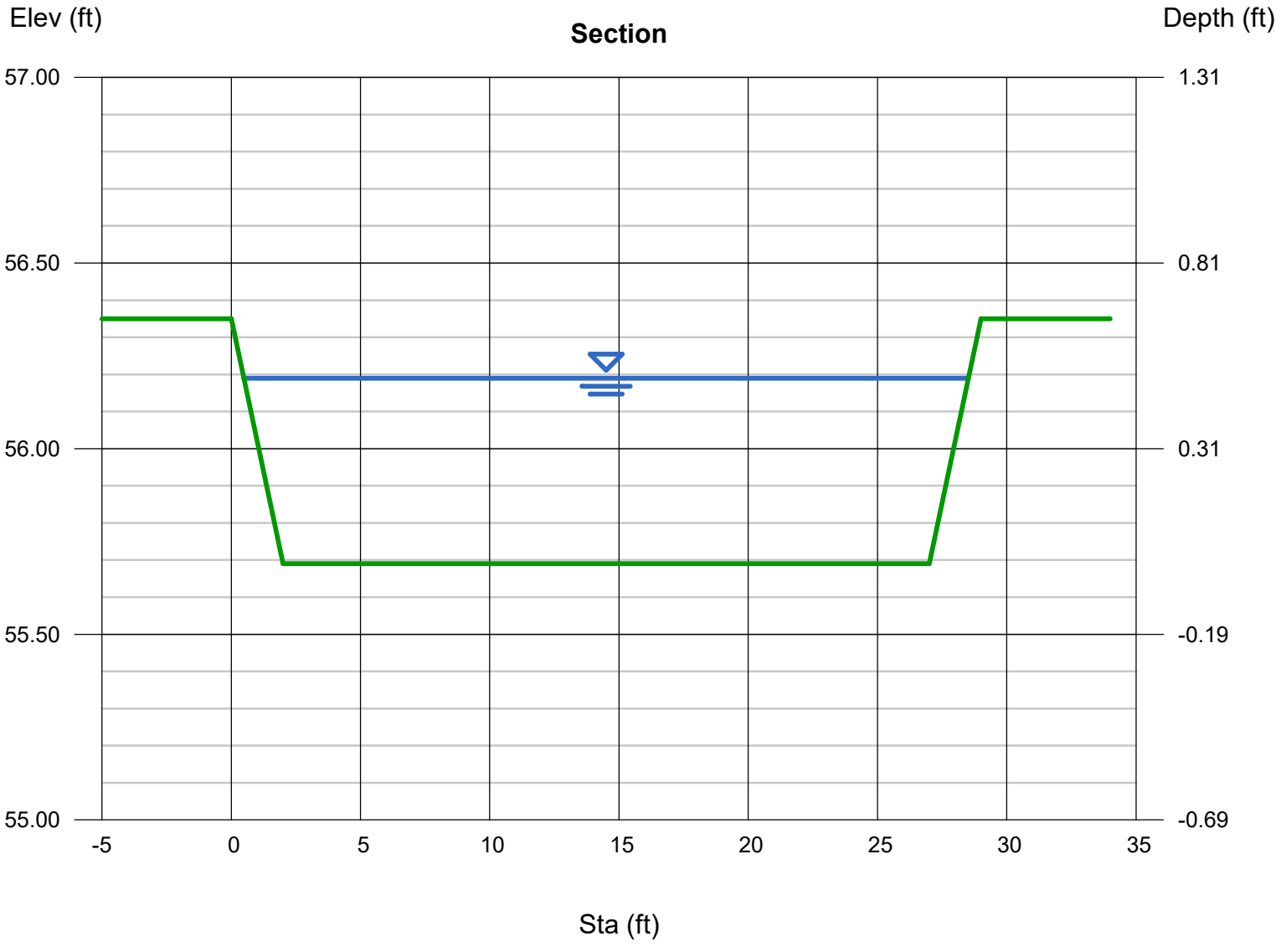
Compute by:	Known Q
Known Q (cfs)	= 33.20

Highlighted

Depth (ft)	= 0.50
Q (cfs)	= 33.20
Area (sqft)	= 13.26
Velocity (ft/s)	= 2.50
Wetted Perim (ft)	= 28.19
Crit Depth, Yc (ft)	= 0.38
Top Width (ft)	= 28.03
EGL (ft)	= 0.60

(Sta, El, n)-(Sta, El, n)...

(0.00, 56.35)-(2.00, 55.69, 0.030)-(27.00, 55.69, 0.030)-(29.00, 56.35, 0.030)



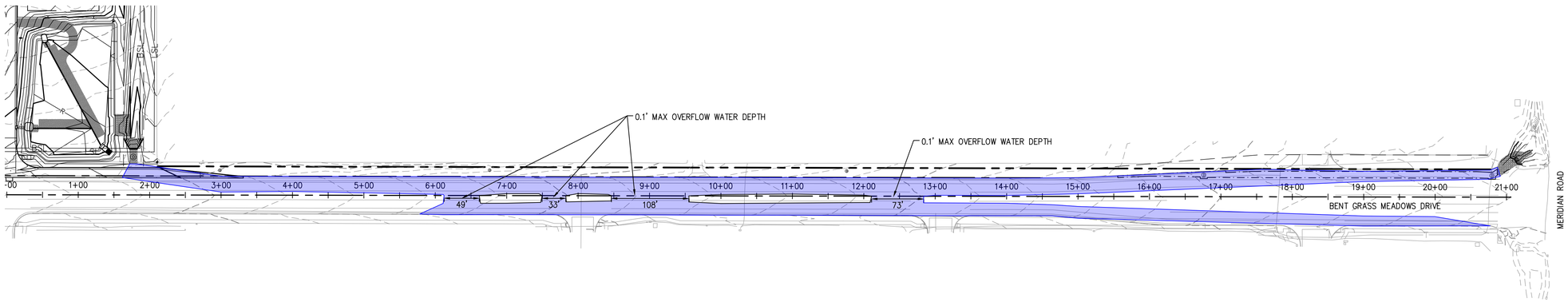
LEGEND

- 100-YR WATER SURFACE ELEVATION
- EXISTING SURFACE
- PROPOSED SURFACE
- ROW LINE
- ALIGNMENT
- RIP RAP
- STORM MANHOLE
- FLARED END SECTION
- PROPOSED CURB
- EXISTING CURB
- EXISTING IMPROVEMENT

N

0 80' 160'

SCALE: 1" = 80'



100 YEAR STORM OVERFLOW EXHIBIT

THIS EXHIBIT WAS PREPARED TO SHOW THE PROJECTED 33.2 CFS TO BE CONVEYED VIA THE NORTH AND SOUTH GUTTER OF BENT GRASS MEADOWS DRIVE. AT 33.2 CFS OVERTOPPING THE CURB, THE NORTH GUTTER HAS A MAXIMUM CAPACITY OF 22.63 CFS, LEAVING 10.57 CFS TO OVERTOP INTO THE SOUTHERN CURB AND GUTTER.

DRAWN: CW
DATE: 06/22/2026
CHECKED: BC
DATE: 06/22/2026
JOB NO: CO1517

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www.tait.com

100 YEAR STORM OVERFLOW EXHBIIT

HONOR CHARTER
HIGHMARK SCHOOL DEVELOPMENT
BENT GRASS MEADOWS DR. 80831

06/22/2026 EXHIBIT xx

Jun 22, 2026 – 1:42pm by cwilkerson K:\FNO\FTERN\COM\01517 – Honor Charter School – Parton, CO\Civil\Exhibit\Offsite Storm Exhibit\01517 FSTE Offsite Storm Improvement.dwg

LEGEND

- 100-YR WATER SURFACE ELEVATION
- EXISTING SURFACE
- PROPOSED SURFACE
- CENTERLINE
- FLOWLINE

SCALE:
HORIZONTAL: 1" = 10'
VERTICAL: 1" = 1'

DRAWN: CW
DATE: 06/22/2026
CHECKED: BC
DATE: 06/22/2026
JOB NO: CO1517

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100 YEAR OFFSITE STORM DRAIN EXHIBIT

HONOR CHARTER
HIGHMARK SCHOOL DEVELOPMENT
BENT GRASS MEADOWS DR. 80831

06/22/2026 EXHIBIT xx

Jun 22, 2026 – 11:10am by cwilkerson K:\ENGINEERING\COMMON\STD – Honor Charter School – Peyton, CO\Civil\Cad\Offsite Storm Cad\COMMON\18 EXH Offsite Storm Improvement.dgn

LEGEND

- 100-YR WATER SURFACE ELEVATION
- EXISTING SURFACE
- PROPOSED SURFACE
- CENTERLINE
- FLOWLINE

SCALE:
HORIZONTAL: 1" = 10'
VERTICAL: 1" = 1'

DRAWN: CW
DATE: 06/22/2026
CHECKED: BC
DATE: 06/22/2026
JOB NO: CO1517

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Loveland, CO 80537
p: 970.613.1447
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100 YEAR OFFSITE STORM DRAIN EXHIBIT

HONOR CHARTER
HIGHMARK SCHOOL DEVELOPMENT
BENT GRASS MEADOWS DR. 80831

06/22/2026 EXHIBIT xx

Jun 22, 2026 – 11:10am by cwilkerson K:\ENGINEERING\CO\CO1517D – Honor Charter School – Peyton, CO\Civil\Cad\Offsite Storm Cad\CO1517 EXH Offsite Storm Improvement.dgn

15+00

16+00

17+00

18+00

LEGEND

- 100-YR WATER SURFACE ELEVATION
- EXISTING SURFACE
- PROPOSED SURFACE
- CENTERLINE
- FLOWLINE

19+00

20+00

SCALE:
HORIZONTAL: 1" = 10'
VERTICAL: 1" = 1'

DRAWN: CW
DATE: 06/22/2026
CHECKED: BC
DATE: 06/22/2026
JOB NO: CO1517

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p: 970.613.1447
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100 YEAR OFFSITE STORM DRAIN EXHIBIT

HONOR CHARTER
HIGHMARK SCHOOL DEVELOPMENT
BENT GRASS MEADOWS DR. 80831

06/22/2026 EXHIBIT xx

Jun 22, 2026 – 1:10pm by cwilkerson – K:\ENGINEERING\COMMON\STD – Honor Charter School – Peyton, CO\Civil\Cad\Utilities Storm Cad\MOD\SHP EXH - Offsite Storm Improvement.dgn

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

North Channel 5 Year Flow

Trapezoidal

Bottom Width (ft)	= 12.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 0.80
N-Value	= 0.080

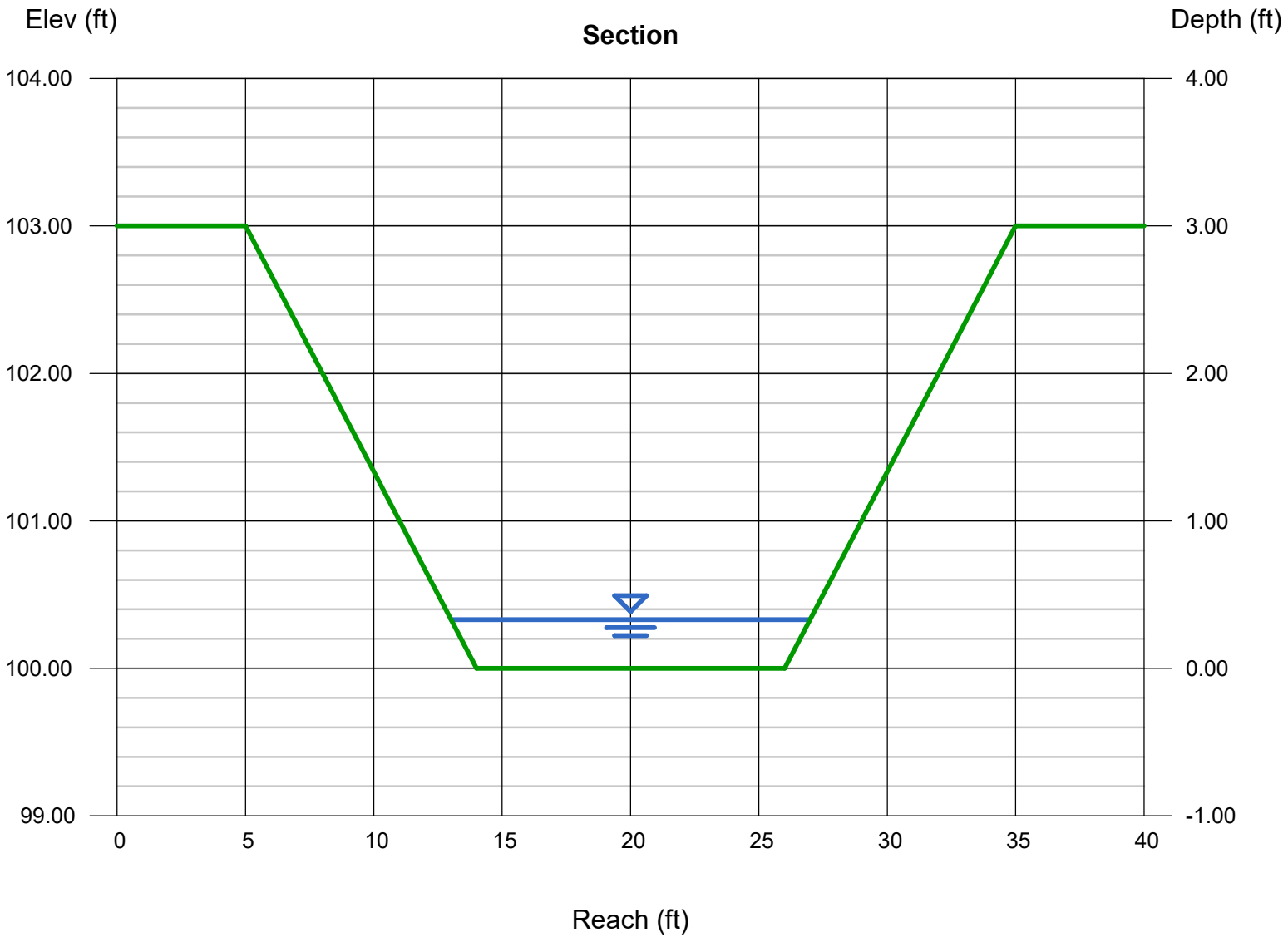
Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.18

Highlighted

Depth (ft)	= 0.33
Q (cfs)	= 3.180
Area (sqft)	= 4.29
Velocity (ft/s)	= 0.74
Wetted Perim (ft)	= 14.09
Crit Depth, Yc (ft)	= 0.13
Top Width (ft)	= 13.98
EGL (ft)	= 0.34
FROUDE NUMBER	= 0.24

Basin OS-25 (2.7) +
Basin A6 (0.48)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

North Channel 100 Year Flow

Trapezoidal

Bottom Width (ft)	= 12.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 0.80
N-Value	= 0.080

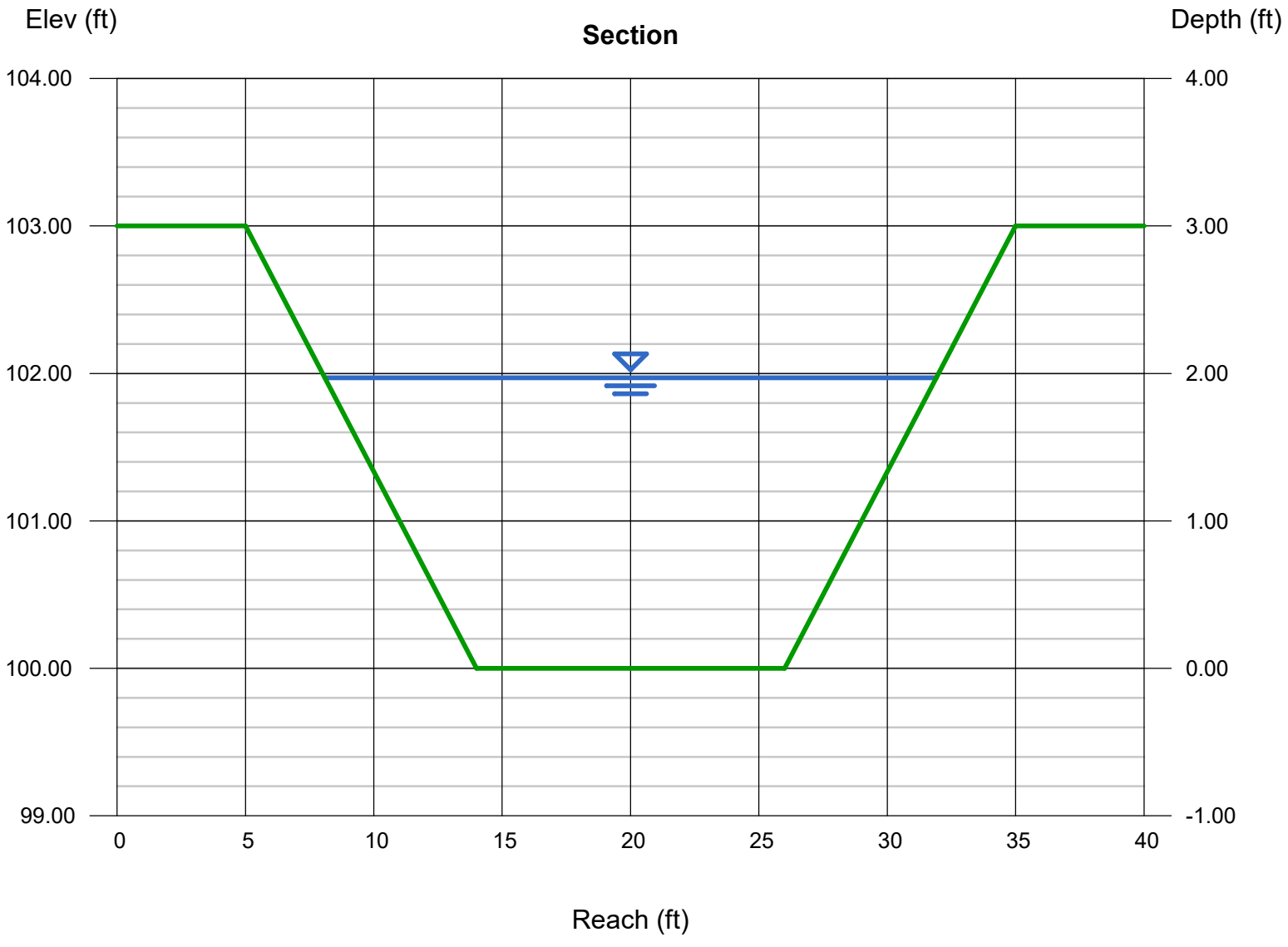
Calculations

Compute by:	Known Q
Known Q (cfs)	= 74.43

Highlighted

Depth (ft)	= 1.97
Q (cfs)	= 74.43
Area (sqft)	= 35.28
Velocity (ft/s)	= 2.11
Wetted Perim (ft)	= 24.46
Crit Depth, Yc (ft)	= 0.98
Top Width (ft)	= 23.82
EGL (ft)	= 2.04
FROUDE NUMBER	= 0.31

Basin OS-25 (72.5) +
Basin A6 (1.93)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

East Channel 5 Year Flow

Trapezoidal

Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 2.10
N-Value	= 0.080

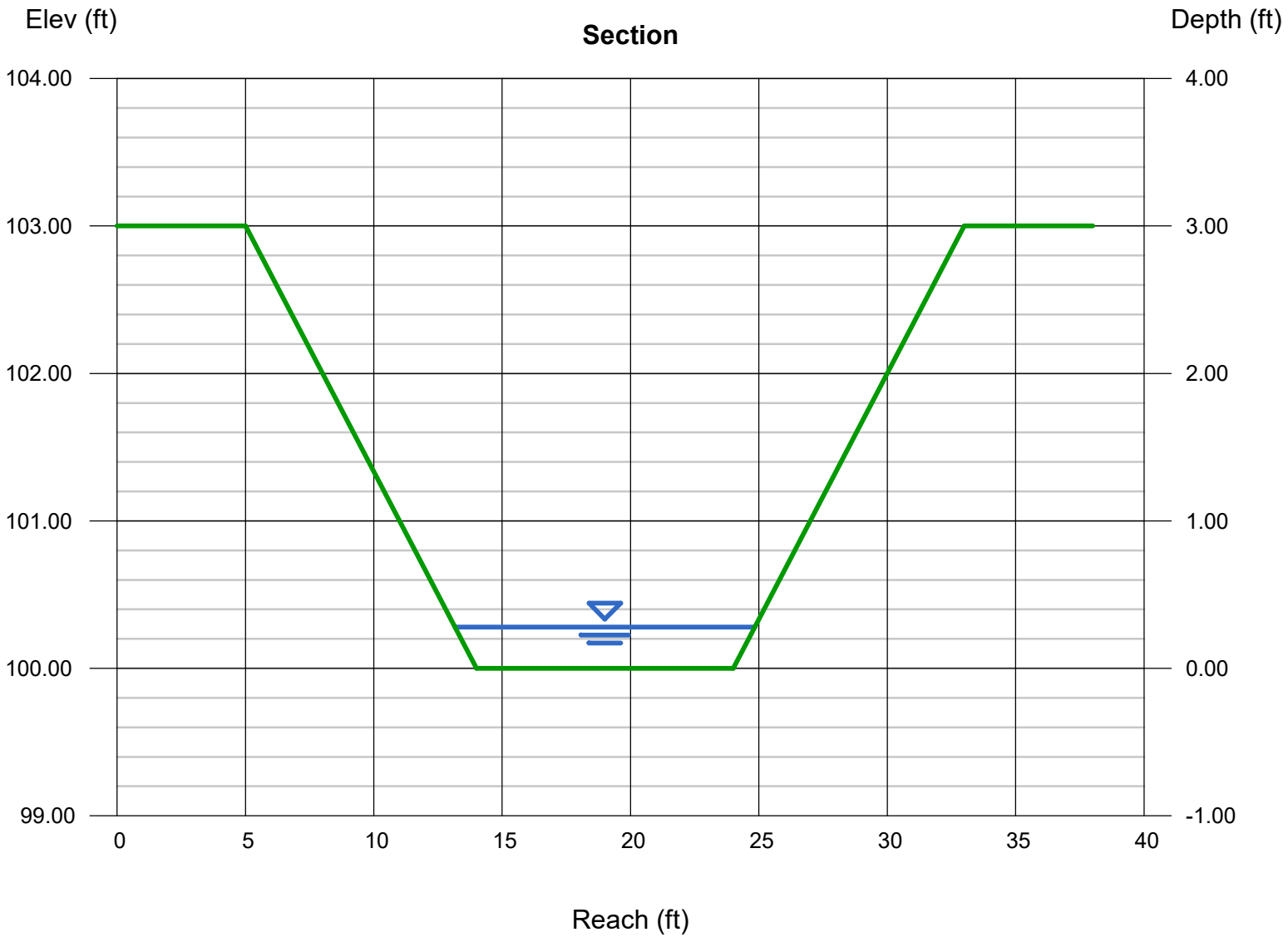
Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.18

Highlighted

Depth (ft)	= 0.28
Q (cfs)	= 3.180
Area (sqft)	= 3.04
Velocity (ft/s)	= 1.05
Wetted Perim (ft)	= 11.77
Crit Depth, Yc (ft)	= 0.15
Top Width (ft)	= 11.68
EGL (ft)	= 0.30
FROUDE NUMBER	= 0.36

Basin OS-25 (2.7) +
Basin A6 (0.48)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jun 26 2026

East Channel 100 Year Flow

Trapezoidal

Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 2.10
N-Value	= 0.080

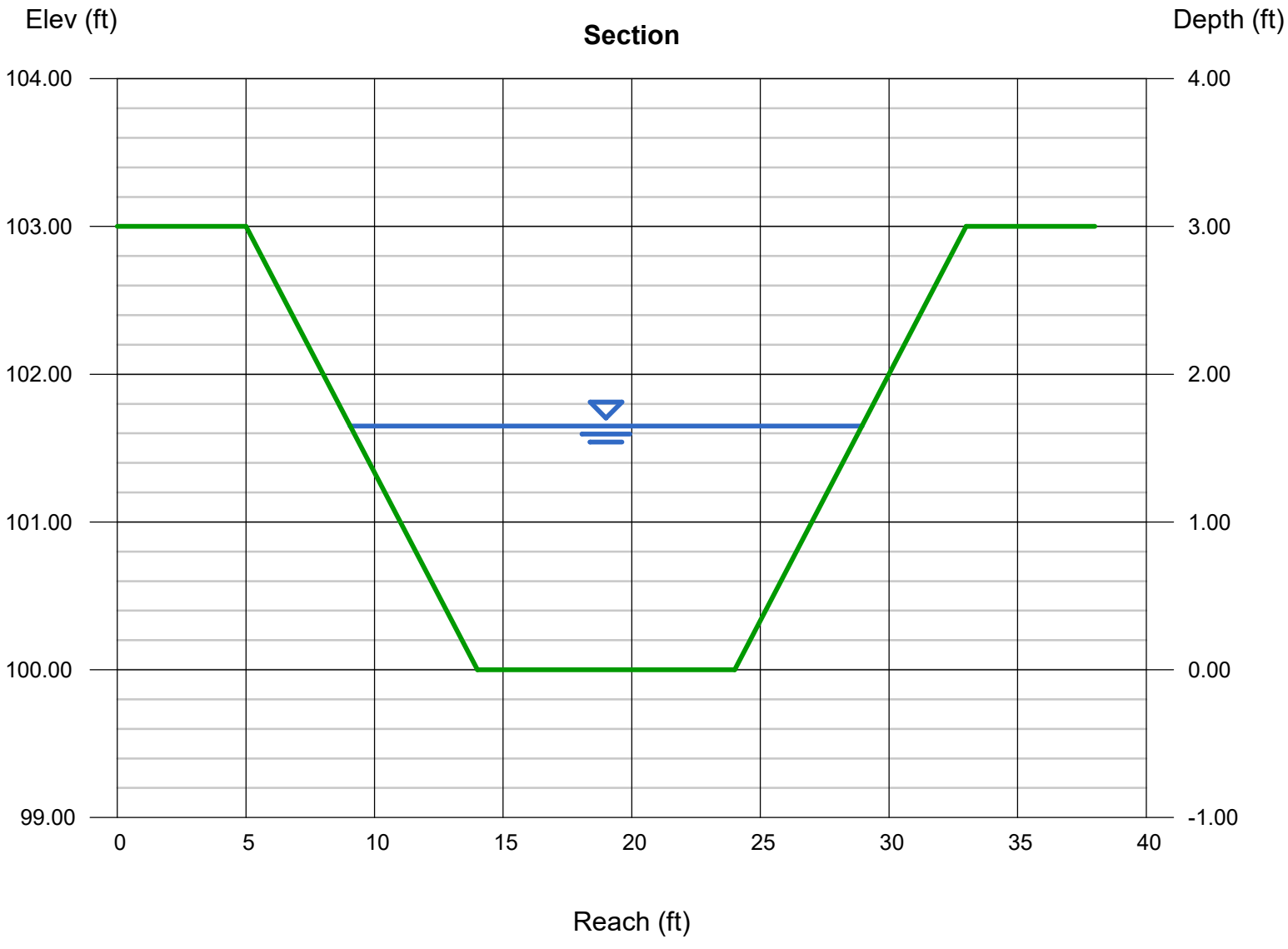
Calculations

Compute by:	Known Q
Known Q (cfs)	= 74.43

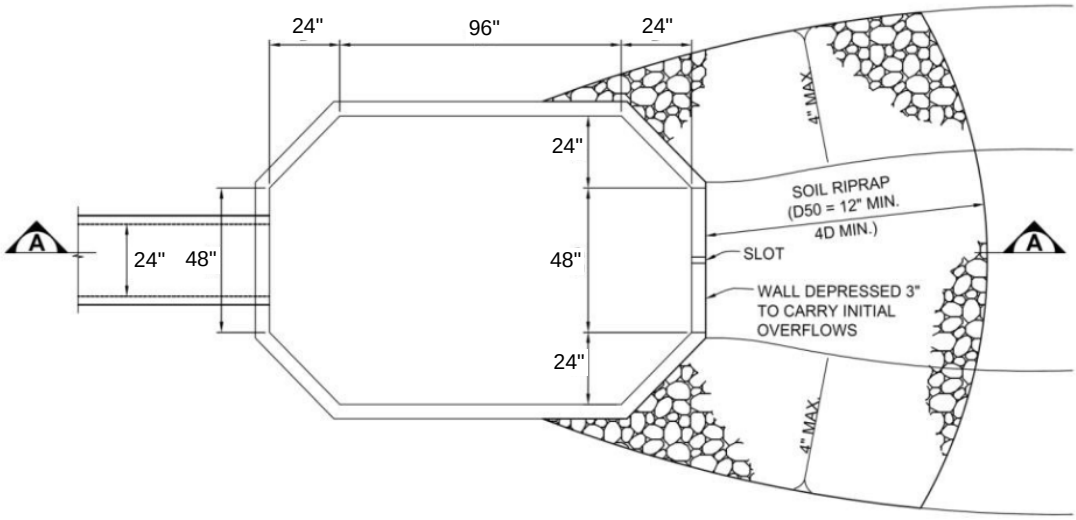
Highlighted

Depth (ft)	= 1.65
Q (cfs)	= 74.43
Area (sqft)	= 24.67
Velocity (ft/s)	= 3.02
Wetted Perim (ft)	= 20.44
Crit Depth, Yc (ft)	= 1.08
Top Width (ft)	= 19.90
EGL (ft)	= 1.79
FROUDE NUMBER	= 0.48

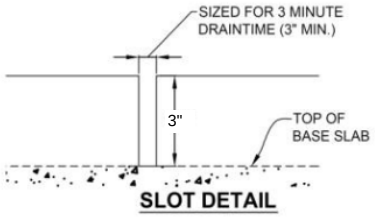
Basin OS-25 (72.5) +
Basin A6 (1.93)



NORTH FOREBAY



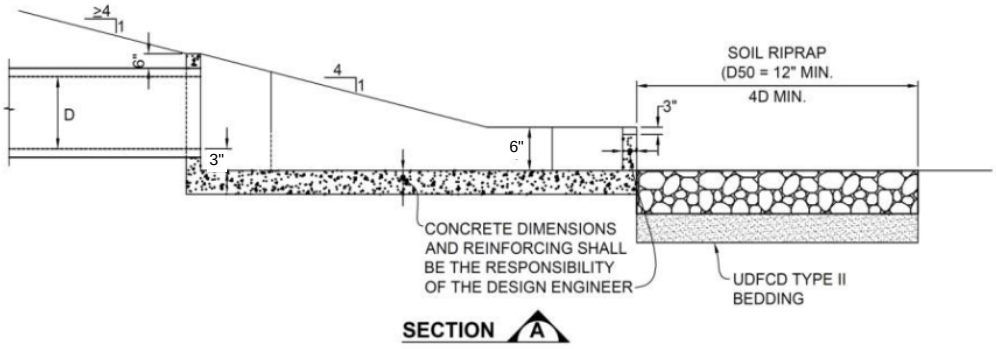
PLAN



SLOT DETAIL

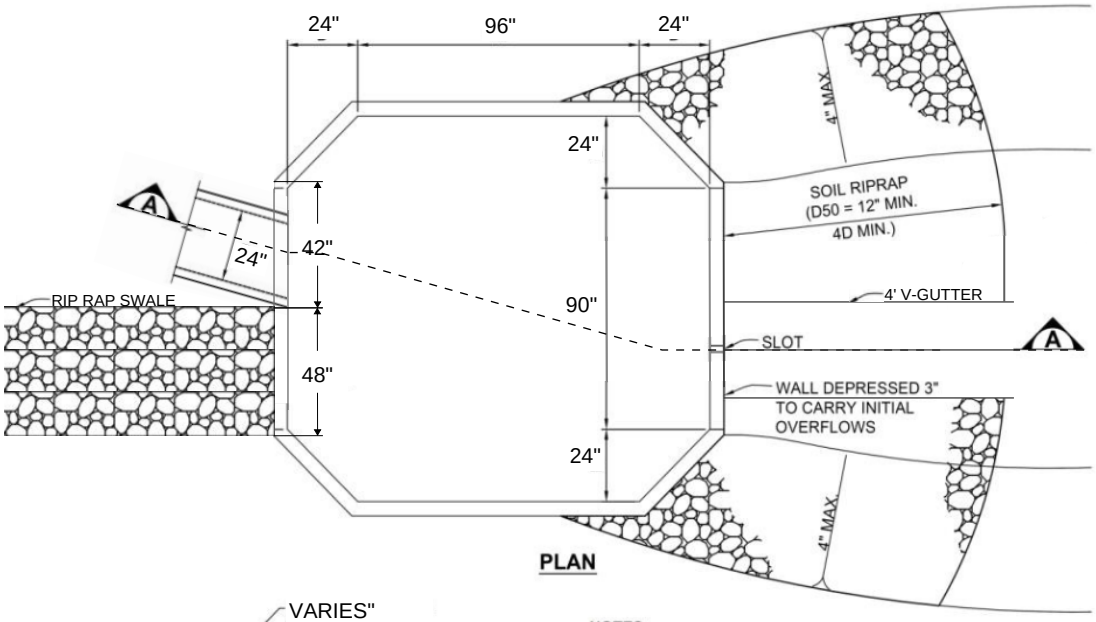
NOTES:

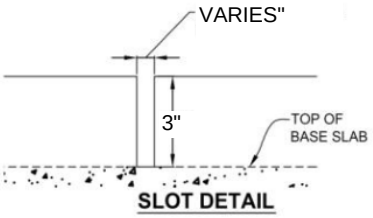
1. DIMENSIONS SHOWN ARE MINIMUMS AND APPLY TO FOREBAYS WITHIN MODIFIED EXTENDED DETENTION BASINS. FOREBAYS IN STANDARD EXTENDED DETENTION BASINS SHALL BE SIZED BASED ON UDFCD CRITERIA.
2. FOR DEPTH ≥ 2.5-FEET, FOREBAY REQUIRES RAMP INTO BOTTOM AND ACCESS ROAD LEADING TO STREET.



SECTION A

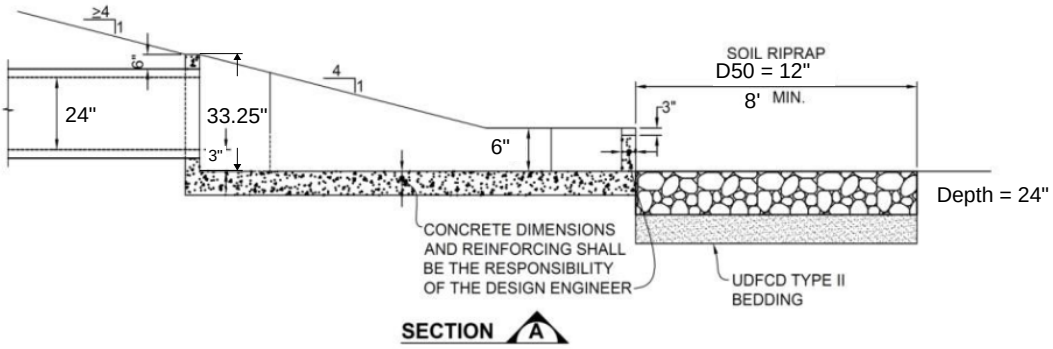
WEST FOREBAY

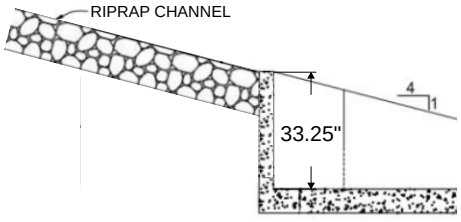




NOTES:

1. DIMENSIONS SHOWN ARE MINIMUMS AND APPLY TO FOREBAYS WITHIN MODIFIED EXTENDED DETENTION BASINS. FOREBAYS IN STANDARD EXTENDED DETENTION BASINS SHALL BE SIZED BASED ON UDFCD CRITERIA.
2. FOR DEPTH ≥ 2.5-FEET, FOREBAY REQUIRES RAMP INTO BOTTOM AND ACCESS ROAD LEADING TO STREET.





RIPRAP OVER FLOW DETAIL

NORTH FOREBAY

Basin A1 + A2 + A3.1 Forebay Sizing

5. Forebay

A) Minimum Forebay Volume
(V_{FMIN} = 1% of the WQCV) — V_{FMIN} = 0.001 ac-ft

B) Actual Forebay Volume — V_F = 0.001 ac-ft

C) Forebay Depth
(D_F = 12 inch maximum) — D_F = 6.0 in

D) Forebay Discharge

i) Undetained 100-year Peak Discharge — Q_{100} = 10.49 cfs

ii) Forebay Discharge Design Flow
($Q_F = 0.02 * Q_{100}$) — Q_F = 0.21 cfs

E) Forebay Discharge Design

Choose One
- ○ Berm With Pipe
- ◉ Wall with Rect. Notch
- ○ Wall with V-Notch Weir

Flow too small for berm w/ pipe

F) Discharge Pipe Size (minimum 8-inches) — Calculated D_P = in

G) Rectangular Notch Width — Calculated W_N = 3.3 in

WEST FOREBAY

Basin A4 + A5 Forebay Sizing

5. Forebay

A) Minimum Forebay Volume
(V_{FMIN} = 1% of the WQCV) — V_{FMIN} = 0.000 ac-ft

B) Actual Forebay Volume — V_F = 0.001 ac-ft

C) Forebay Depth
(D_F = 12 inch maximum) — D_F = 6.0 in

D) Forebay Discharge

i) Undetained 100-year Peak Discharge — Q_{100} = 10.89 cfs

ii) Forebay Discharge Design Flow
($Q_F = 0.02 * Q_{100}$) — Q_F = 0.22 cfs

E) Forebay Discharge Design

Choose One
- ○ Berm With Pipe
- ◉ Wall with Rect. Notch
- ○ Wall with V-Notch Weir

Flow too small for berm w/ pipe

F) Discharge Pipe Size (minimum 8-inches) — Calculated D_P = in

G) Rectangular Notch Width — Calculated W_N = 3.4 in

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Jul 16 2026

Trickle Channel Flow 2x Forebay Dicharge Design Rate

Triangular

Side Slopes (z:1)	= 12.50, 12.50
Total Depth (ft)	= 0.16
Invert Elev (ft)	= 100.00
Slope (%)	= 0.60
N-Value	= 0.012

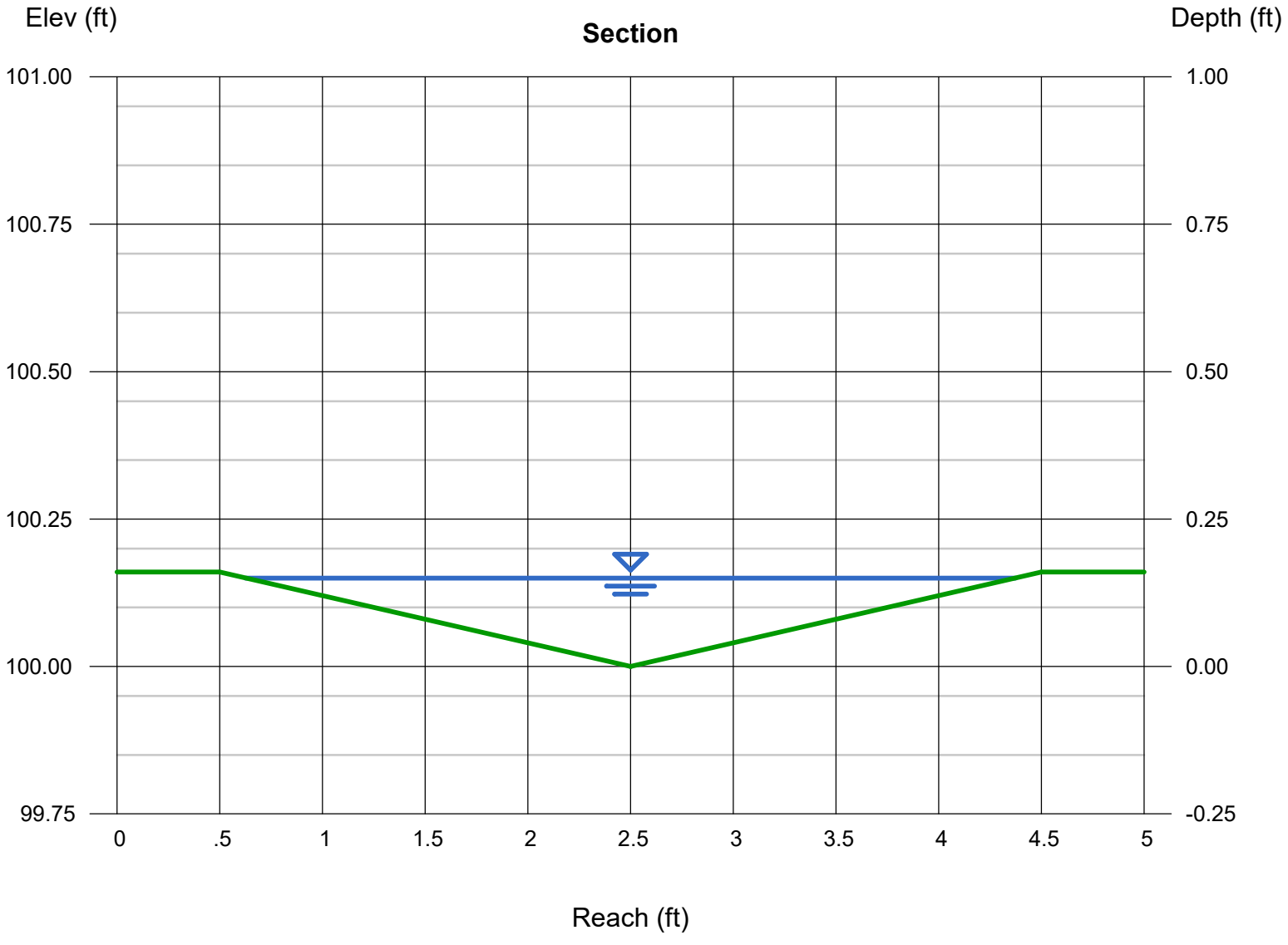
Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.44

Highlighted

Depth (ft)	= 0.15
Q (cfs)	= 0.440
Area (sqft)	= 0.28
Velocity (ft/s)	= 1.56
Wetted Perim (ft)	= 3.76
Crit Depth, Yc (ft)	= 0.16
Top Width (ft)	= 3.75
EGL (ft)	= 0.19

2 x THE WEST FOREBAY DESIGN DISCHARGE RATE



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jul 17 2026

Trickle Channel Combined Flows x 2 at Outlet

Triangular

Side Slopes (z:1)	= 12.50, 12.50
Total Depth (ft)	= 0.18
Invert Elev (ft)	= 100.00
Slope (%)	= 0.80
N-Value	= 0.012

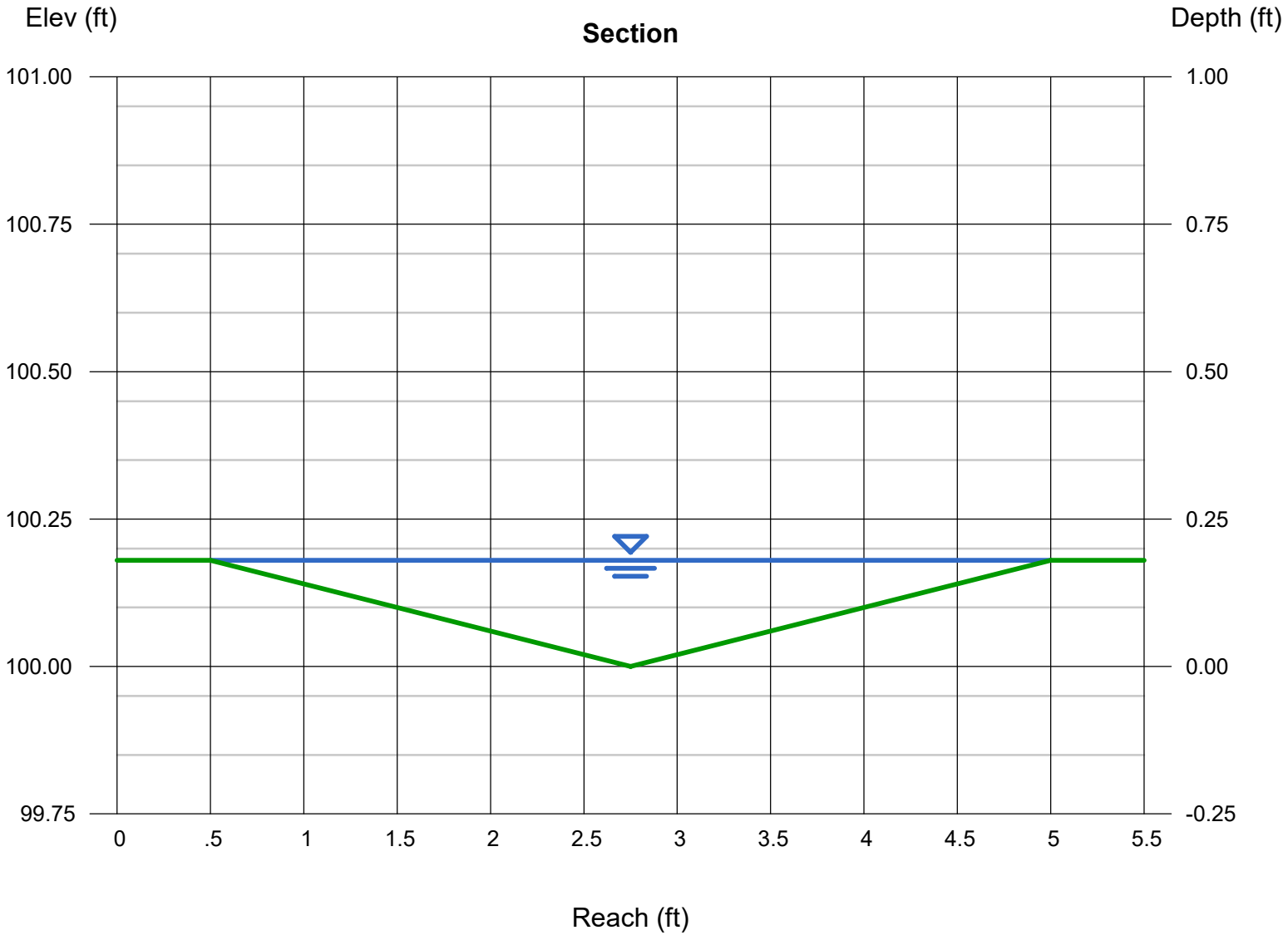
Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.86

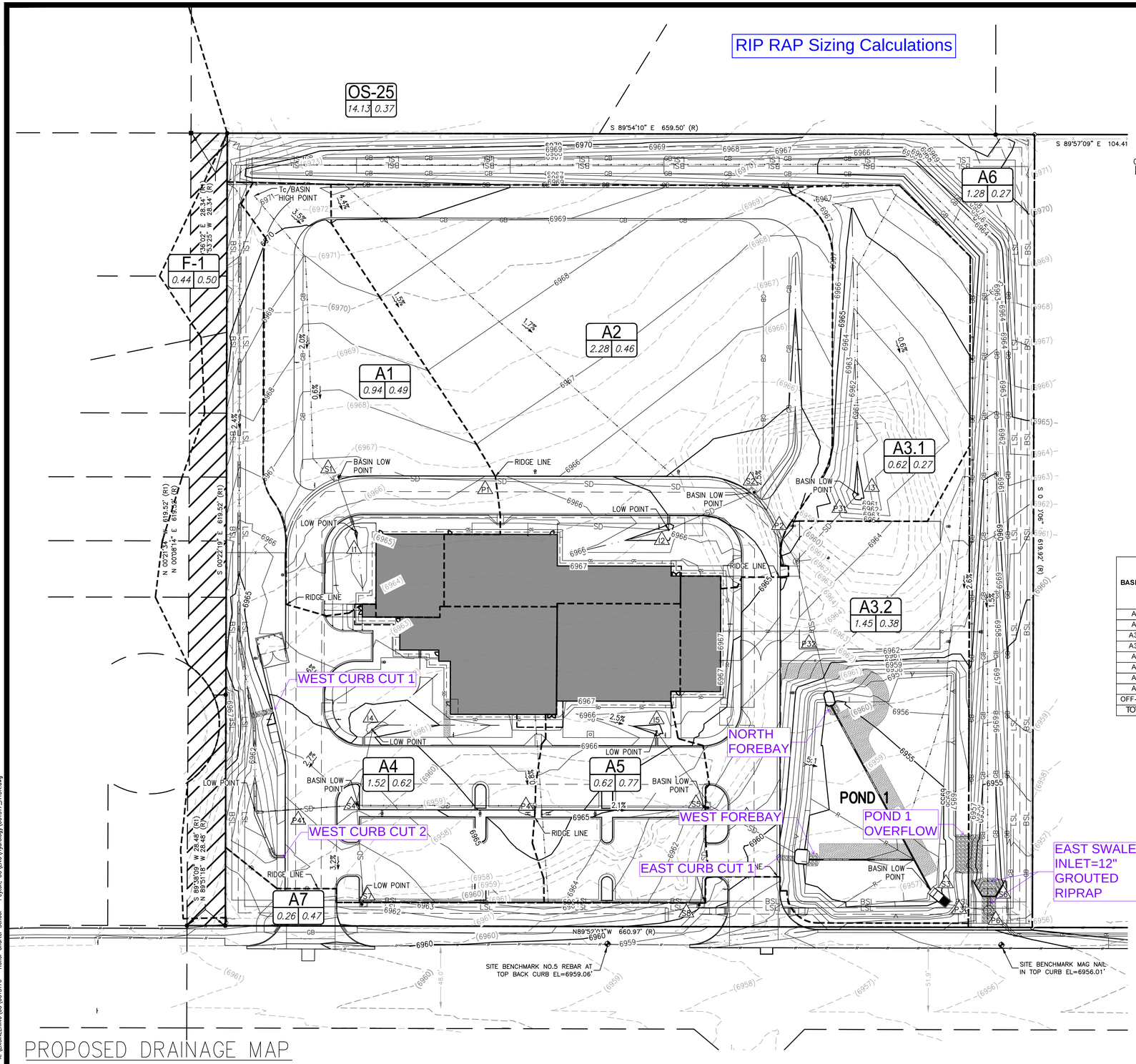
Highlighted

Depth (ft)	= 0.18
Q (cfs)	= 0.860
Area (sqft)	= 0.41
Velocity (ft/s)	= 2.12
Wetted Perim (ft)	= 4.51
Crit Depth, Yc (ft)	= 0.18
Top Width (ft)	= 4.50
EGL (ft)	= 0.25

2 x THE WEST AND NORTH FOREBAY DESIGN DISCHARGE RATES ADDED TOGETHER



RIP RAP Sizing Calculations



0 40' 80'
SCALE: 1" = 40'

SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY/ ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF CONSTRUCTION/DISTURBANCE
- W — EXISTING WATER LINE
- SS — EXISTING SEWER LINE
- T — PROPOSED TELEPHONE SERVICE LINE
- PROPOSED ELECTRIC SERVICE LINE
- W — PROPOSED WATER SERVICE LINE
- SS — PROPOSED SS SERVICE LINE
- SD — PROPOSED STORM DRAIN
- R — PROPOSED RIDGELINE
- GB — PROPOSED GRADE BREAK
- PROPOSED CURB
- PROPOSED TOP OF POND
- PROPOSED BOTTOM OF POND
- GRADING DETAIL BOUNDARY
- PROPOSED SS CLEANOUT
- PROPOSED BACKFLOW PREVENTOR
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- (40.00)ES — EXISTING ELEVATION
- 40.00FS — PROPOSED ELEVATION
- (2940) — EXISTING CONTOUR
- 2940 — PROPOSED CONTOUR
- (5.2%) — EXISTING SLOPE
- 5.4% — PROPOSED SLOPE
- EXISTING INLET
- PROPOSED INLET
- PROPOSED STORM INFRASTRUCTURE
- D — PROPOSED STORM MANHOLE
- PROPOSED TEE / THRUST BLOCK
- PROPOSED FLARED-END SECTION
- EXISTING SANITARY SEWER MANHOLE
- LONGEST FLOW PATH

BASIN ID	TOTAL AREA (AC)	TOTAL DISTURBED AREA (AC)	AREA TRIB TO POND 1 (AC)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.3.A.1.A (<20% OF SITE & UNTREATABLE)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.1.B.6 (SELF-TREATING LANDSCAPE AREAS)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.1.B.3 (EXISTING ROADWAY AREAS)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.1.B.4 (UNDERGROUND UTILITIES/STORM)
A1	0.94	0.94	0.94				
A2	2.28	2.28	2.28				
A3.1	0.62	0.62	0.62				
A3.2	1.45	1.45	1.45				
A4	1.52	1.52	1.52				
A5	0.62	0.62	0.62				
A6	1.28	1.28			1.28		
A7	0.26	0.26		0.26			
OFF-SITE	0.87					0.30	0.57
TOTAL	9.84	8.97	7.43	0.26	1.28	0.30	0.57

DRAINAGE LEGEND:

- DESIGN POINT — X
- PROPOSED SLOPE — 2.0%
- EXISTING SLOPE — (1.0%)
- BASIN LIMITS
- LIMIT OF DISTURBANCE
- Tc FLOW PATH

A (B, C)

A = BASIN DESIGNATION
B = AREA IN ACRES
C = 100-YR RUNOFF COEFFICIENT

PROPOSED DRAINAGE MAP

UNAUTHORIZED CHANGES & USES

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES OF THESE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS PRIOR TO CONSTRUCTION. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

811 Know what's below Call before you dig.

NOTE TO CONTRACTOR

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES, PIPES, AND/OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THERE MAY BE EXISTING UTILITIES NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION OF THOSE UNDERGROUND UTILITIES TO BE USED PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

BASIS OF BEARINGS:
BEARINGS ARE BASED ON THE WESTERLY BOUNDARY OF THE SUBJECT PARCEL COINCIDENT WITH THE EASTERLY BOUNDARY OF THE BENT GRASS RESIDENTIAL FILING NO.2, MONUMENTED ON THE NORTH END WITH A NO.5 REBAR & 1-3/8" RED PLASTIC CAP MARKED "ALC PLS 38087", FOUND FLUSH WITH GRADE, AND ON THE SOUTH END WITH A NO. 4 REBAR & 1" ORANGE PLASTIC CAP MARKED "PLS 38141", RECOVERED 0.6' BELOW GRADE, AND IS ASSUMED TO BEAR N 00°08'14"E A MEASURED DISTANCE OF 619.52 FEET.

BENCHMARK:
ELEVATIONS ARE BASED ON THE PROJECT BENCHMARK IDENTIFIED AS JK0239 ELEVATION=6902.3 (NAVD88). PER DATA PUBLISHED BY THE NATIONAL GEODETIC SURVEY.

FOR REVIEW ONLY NOT FOR CONSTRUCTION

PCD FILE NO. PPR2615

PREPARED UNDER THE SUPERVISION OF TAIT & ASSOCIATES, INC.

BRIAN CAMPBELL
COLORADO P.E. #40196

NO.	DESCRIPTION	REVISIONS	BY	DATE

TAIT & ASSOCIATES
Since 1964
ENGINEERING ENVIRONMENTAL BUILDING LAND
Santa Ana Sacramento Dallas
San Luis Obispo Riverside Denver
Boise
300 North Lincoln Avenue
Loveland, CO 80537
p: 970.613.1447
www.tait.com

PROPOSED DRAINAGE MAP

HONOR CHARTER SCHOOL
HIGHMARK SCHOOL DEVELOPMENT
8250 BENT GRASS MEADOWS DR.

DRAWN: CW
DATE: 06/25/2026
CHECKED:
DATE:
REVISION #:
DATE:
JOB NO. CO1517

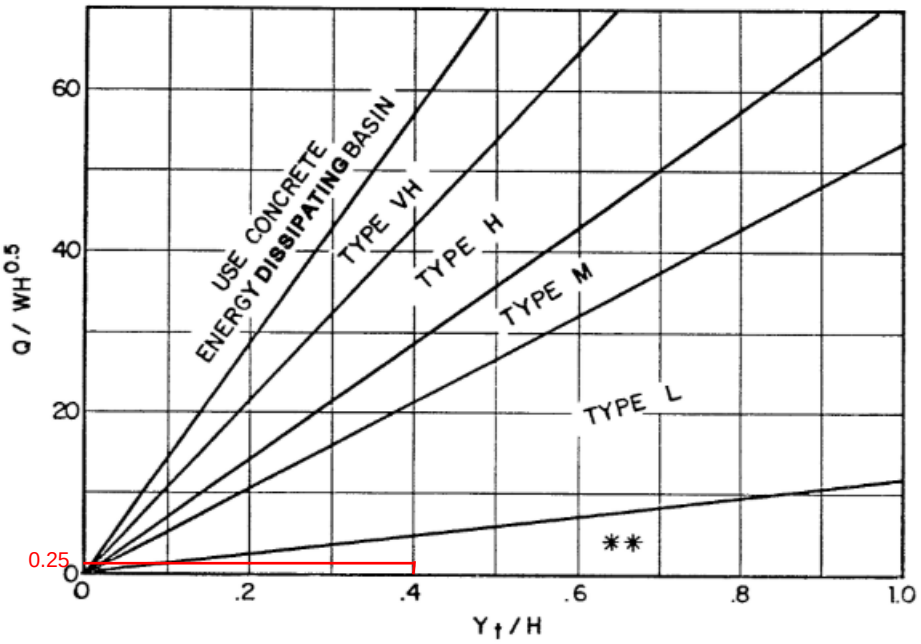
DR2

2/6/2024 Internal Review #1

FOR REVIEW ONLY - NOT FOR CONSTRUCTION

Jun 26, 2026 - 11:59am by nromsatter X:\ENGINEERING\CO\CO1517O - Honor Charter School - Peyton, CO\ENG\Hydrology\CO1517_JHDR.dwg

WEST CURB CUT 1



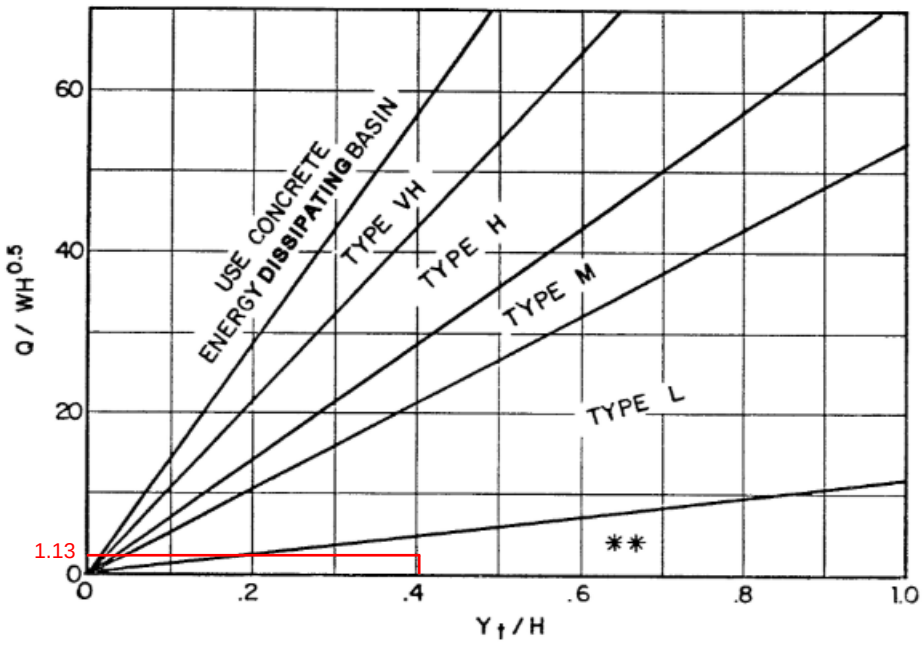
Use H_a instead of H whenever culvert has supercritical flow in the barrel.
**Use Type L for a distance of 3H downstream.

Figure 9-39. Riprap erosion protection at rectangular conduit outlet (valid for Q/WH1.5 ≤ 8.0)

Yt/H = 0.4 per MHFD Volume 2 Sect 09
Q= 0.36 CFS
W = 2 FT
H = 0.5 FT

TYPE L IS THE MINIMUM REQURIED. DUE TO CONSTRUCTION COSTS, TYPE M WILL BE USED FOR ALL ONSITE RIPRAP UNLESS A LARGER RIPRAP IS REQUIRD. THUS, TYPE M RIPRAP WILL BE USED FOR WEST CURB CUT 1. DEPTH TO BE 2*D50 OR 2' MINIMUM.

WEST CURB CUT 2



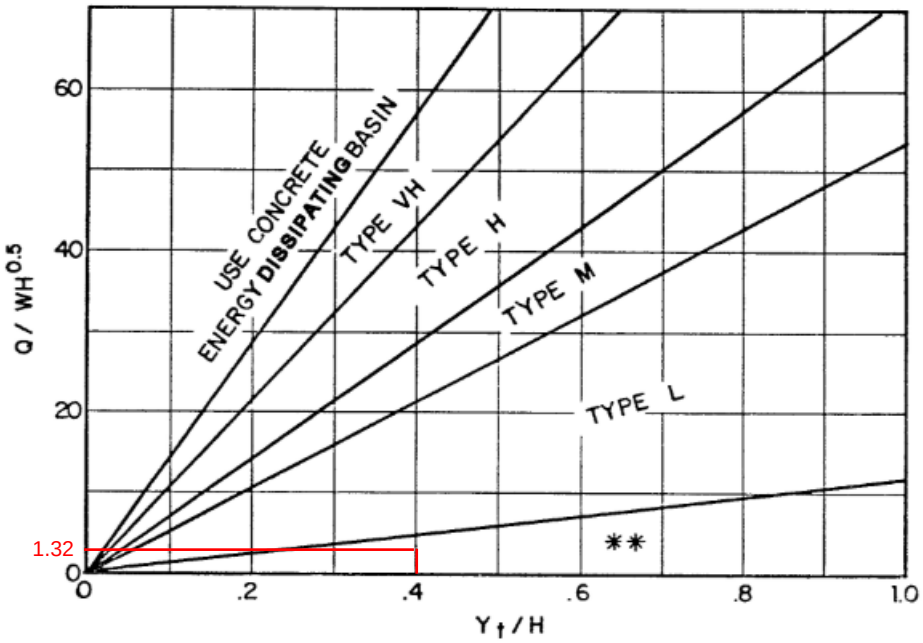
Use H_a instead of H whenever culvert has supercritical flow in the barrel.
**Use Type L for a distance of 3H downstream.

Figure 9-39. Riprap erosion protection at rectangular conduit outlet (valid for Q/WH1.5 ≤ 8.0)

Yt/H = 0.4 per MHFD Volume 2 Sect 09
Q= 1.6 CFS
W = 2 FT
H = 0.5 FT

TYPE L IS THE MINIMUM REQURIED. DUE TO CONSTRUCTION COSTS, TYPE M WILL BE USED FOR ALL ONSITE RIPRAP UNLESS A LARGER RIPRAP IS REQUIRD. THUS, TYPE M RIPRAP WILL BE USED FOR WEST CURB CUT 2. DEPTH TO BE 2*D50 OR 2' MINIMUM.

EAST CURB CUT



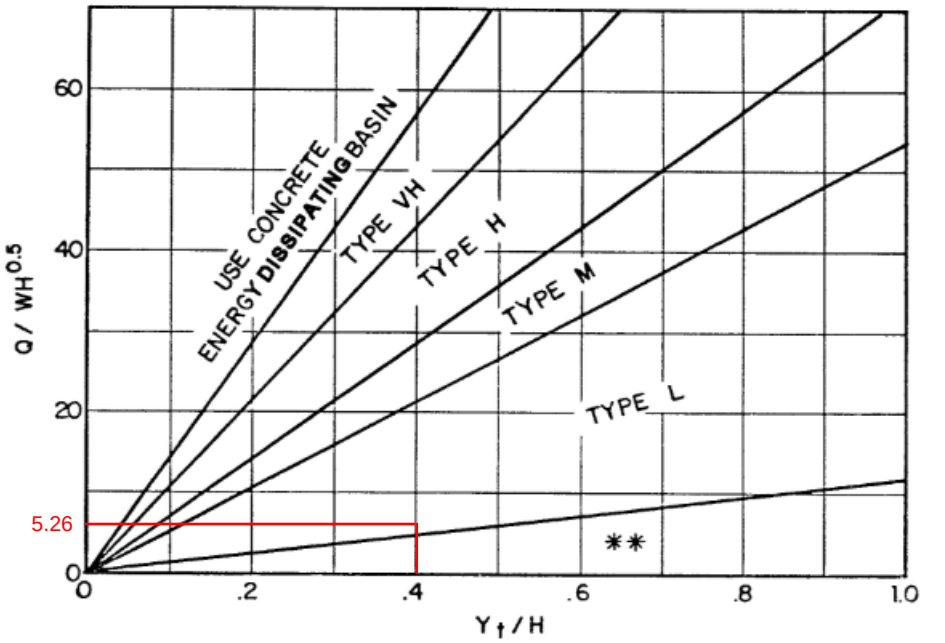
Use H_a instead of H whenever culvert has supercritical flow in the barrel.
**Use Type L for a distance of 3H downstream.

Figure 9-39. Riprap erosion protection at rectangular conduit outlet (valid for Q/WH1.5 ≤ 8.0)

Yt/H = 0.4 per MHFD Volume 2 Sect 09
Q= 1.87 CFS
W = 2 FT
H = 0.5 FT

TYPE M IS THE MINIMUM REQURIED. DEPTH TO BE 2*D50 OR 2' MINIMUM.

OFF-SITE SWALE
OVERFLOW/INFLOW LOCATION



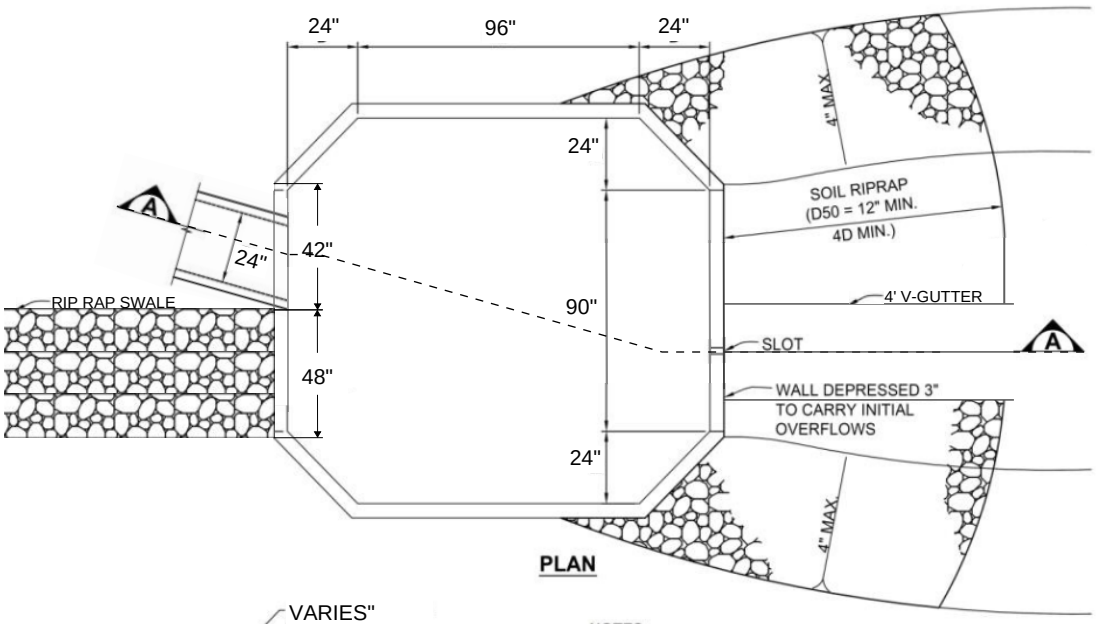
Use H_a instead of H whenever culvert has supercritical flow in the barrel.
**Use Type L for a distance of 3H downstream.

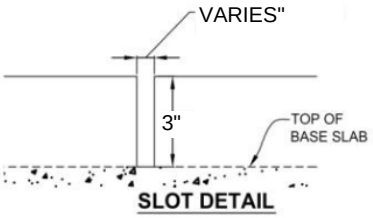
Figure 9-39. Riprap erosion protection at rectangular conduit outlet (valid for Q/WH1.5 ≤ 8.0)

Yt/H = 0.4 per MHFD Volume 2 Sect 09
Q= 74.4 CFS
W = 10 FT
H = 2 FT

TYPE L IS THE MINIMUM REQURIED. DUE TO CONSTRUCTION COSTS, TYPE M WILL BE USED FOR ALL ONSITE RIPRAP UNLESS A LARGER RIPRAP IS REQUIRD. THUS, TYPE M RIPRAP WILL BE USED FOR EAST CURB CUT. DEPTH TO BE 2*D50 OR 2' MINIMUM.

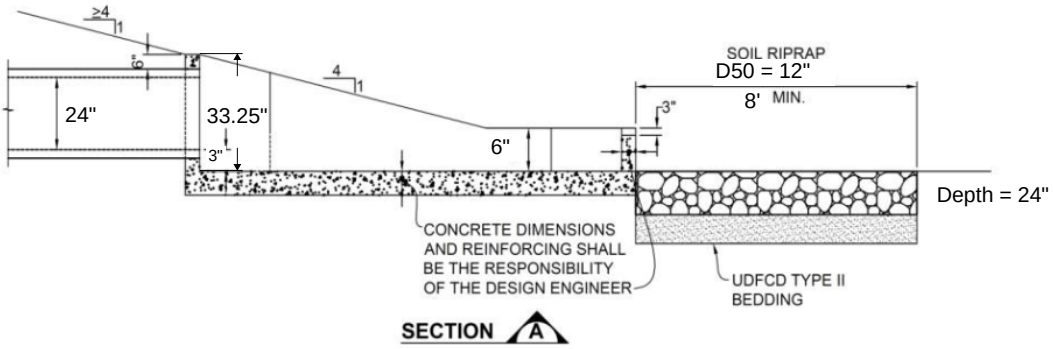
WEST FOREBAY

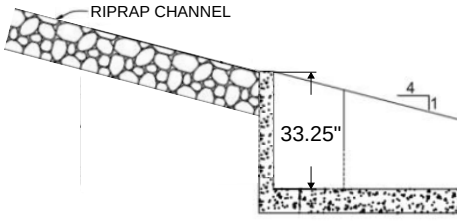




NOTES:

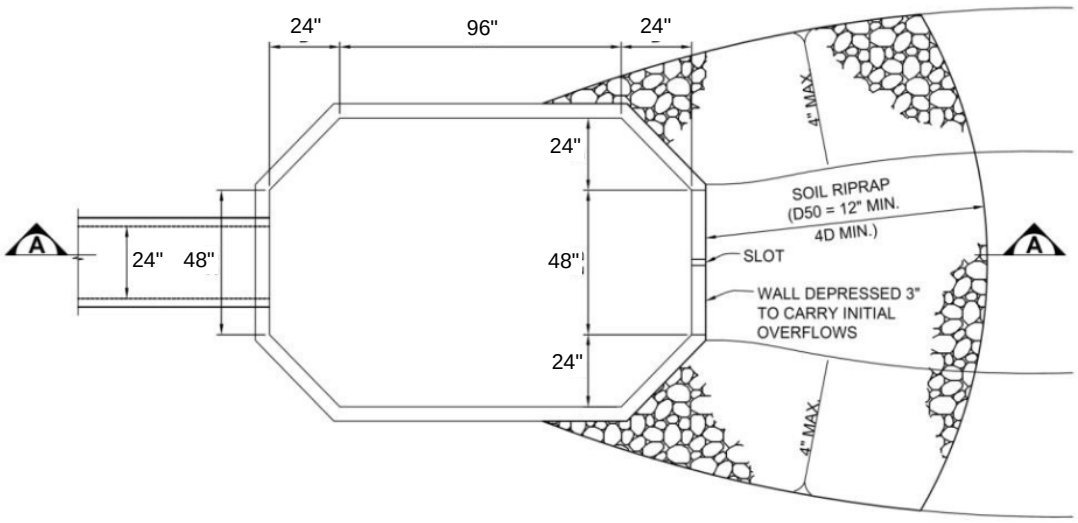
1. DIMENSIONS SHOWN ARE MINIMUMS AND APPLY TO FOREBAYS WITHIN MODIFIED EXTENDED DETENTION BASINS. FOREBAYS IN STANDARD EXTENDED DETENTION BASINS SHALL BE SIZED BASED ON UDFCD CRITERIA.
2. FOR DEPTH ≥ 2.5-FEET, FOREBAY REQUIRES RAMP INTO BOTTOM AND ACCESS ROAD LEADING TO STREET.



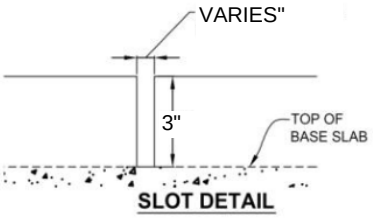


RIPRAP OVER FLOW DETAIL

PER ABOVE DETAIL, D50=12" MINIMUM. D50=12" CORRESPONDS WITH TYPE M RIPRAP, THUS TYPE M RIPRAP WILL BE USED FOR WEST FOREBAY



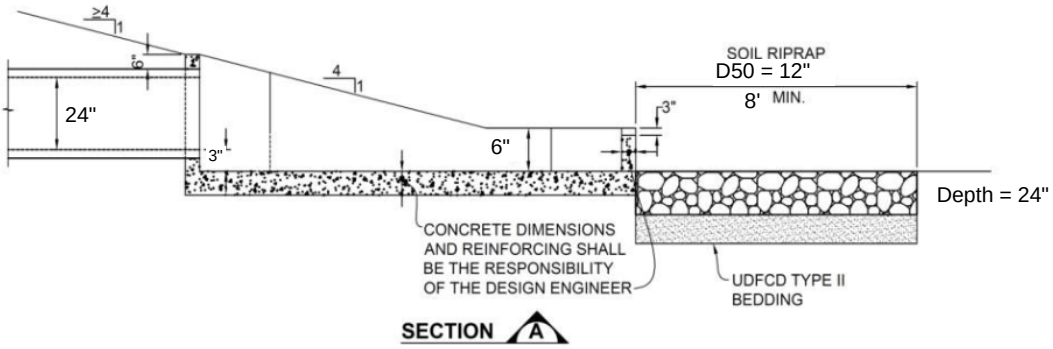
PLAN



SLOT DETAIL

NOTES:

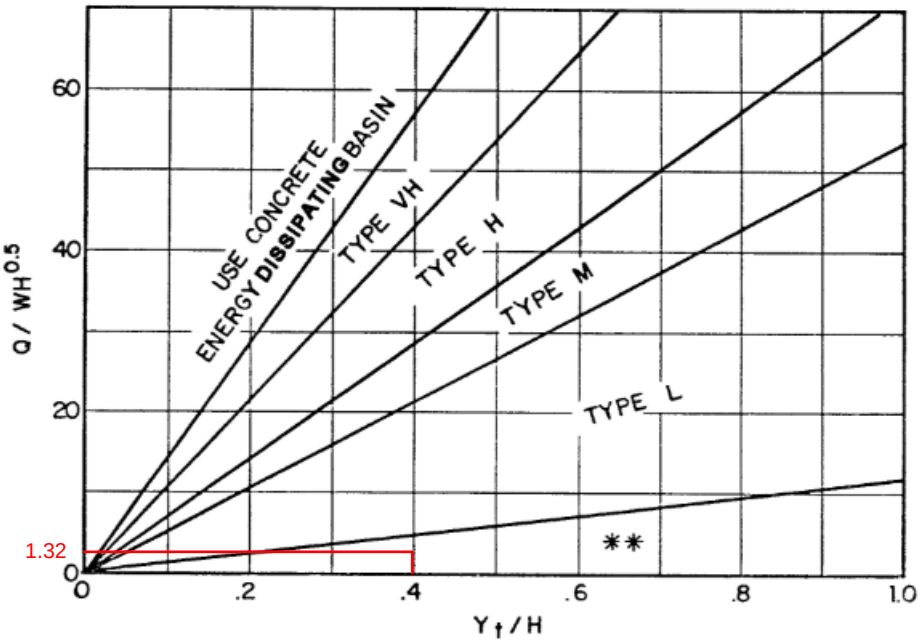
1. DIMENSIONS SHOWN ARE MINIMUMS AND APPLY TO FOREBAYS WITHIN MODIFIED EXTENDED DETENTION BASINS. FOREBAYS IN STANDARD EXTENDED DETENTION BASINS SHALL BE SIZED BASED ON UDFCD CRITERIA.
2. FOR DEPTH ≥ 2.5-FEET, FOREBAY REQUIRES RAMP INTO BOTTOM AND ACCESS ROAD LEADING TO STREET.



SECTION A

PER ABOVE DETAIL, D50=12" MINIMUM. D50=12" CORRESPONDS WITH TYPE M RIPRAP, THUS TYPE M RIPRAP WILL BE USED FOR NORTH FOREBAY

POND 1 OVERFLOW



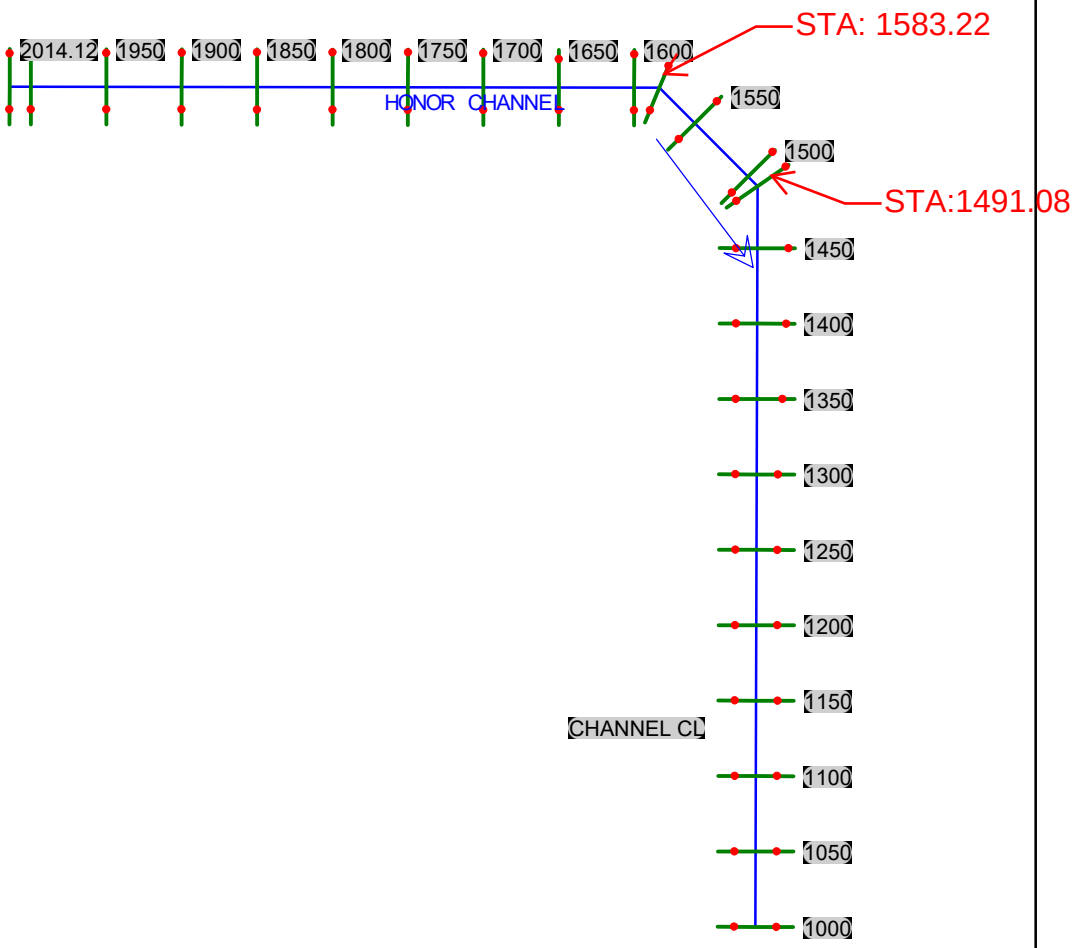
Use H_a instead of H whenever culvert has supercritical flow in the barrel.
**Use Type L for a distance of 3H downstream.

Figure 9-39. Riprap erosion protection at rectangular conduit outlet (valid for Q/WH1.5 ≤ 8.0)

Yt/H = 0.4 per MHFD Volume 2 Sect 09
Q= 26.24 CFS
W = 20 FT
H = 1 FT

TYPE L IS THE MINIMUM REQURIED. DUE TO CONSTRUCTION COSTS, TYPE M WILL BE USED FOR ALL ONSITE RIPRAP UNLESS A LARGER RIPRAP IS REQUIRD. THUS, TYPE M RIPRAP WILL BE USED FOR POND 1 OVERFLOW. DEPTH TO BE 2*D50 OR 2' MINIMUM.

CHANNEL HEC-RAS EVALUATION



HEC-RAS Plan: HONOR PLAN ID River: HONOR CHANNEL Reach: CHANNEL CL Profile: PF 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)	
CHANNEL CL	2014.12	PF 1	74.43	6968.00	6969.14		6969.42	0.008319	4.25	17.53	18.87	0.78
CHANNEL CL	2000	PF 1	74.43	6967.88	6969.02		6969.30	0.008151	4.22	17.63	18.85	0.77
CHANNEL CL	1950	PF 1	74.43	6967.47	6968.60		6968.89	0.008383	4.26	17.47	18.82	0.78
CHANNEL CL	1900	PF 1	74.43	6967.05	6968.18		6968.47	0.008424	4.27	17.44	18.80	0.78
CHANNEL CL	1850	PF 1	74.43	6966.63	6967.77		6968.05	0.008136	4.22	17.64	18.86	0.77
CHANNEL CL	1800	PF 1	74.43	6966.22	6967.35		6967.64	0.008423	4.27	17.44	18.80	0.78
CHANNEL CL	1750	PF 1	74.43	6965.80	6966.94		6967.22	0.008138	4.22	17.64	18.85	0.77
CHANNEL CL	1700	PF 1	74.43	6965.39	6966.52		6966.80	0.008618	4.29	17.36	18.91	0.79
CHANNEL CL	1650	PF 1	74.43	6964.97	6966.11		6966.38	0.008133	4.16	17.91	19.64	0.77
CHANNEL CL	1600	PF 1	74.43	6964.55	6965.77		6966.00	0.006655	3.88	19.20	20.09	0.70
CHANNEL CL	1583.22	PF 1	74.43	6964.44	6965.58		6965.87	0.008445	4.28	17.38	18.67	0.78
CHANNEL CL	1550	PF 1	74.43	6964.15	6965.32		6965.59	0.008016	4.20	17.74	18.90	0.76
CHANNEL CL	1500	PF 1	74.43	6963.75	6964.96		6965.21	0.007098	4.02	18.50	19.17	0.72
CHANNEL CL	1491.08	PF 1	74.43	6963.64	6964.70	6964.70	6965.11	0.014568	5.14	14.47	17.86	1.01
CHANNEL CL	1450	PF 1	74.43	6962.75	6963.91	6963.91	6964.34	0.014261	5.28	14.10	16.37	1.00
CHANNEL CL	1400	PF 1	74.43	6961.72	6962.86	6962.86	6963.30	0.014459	5.31	14.03	16.33	1.01
CHANNEL CL	1350	PF 1	74.43	6960.69	6961.82	6961.82	6962.25	0.014167	5.27	14.13	16.39	1.00
CHANNEL CL	1300	PF 1	74.43	6959.65	6960.77	6960.77	6961.21	0.014389	5.29	14.07	16.39	1.01
CHANNEL CL	1250	PF 1	74.43	6958.62	6959.74	6959.74	6960.17	0.014266	5.28	14.11	16.41	1.00
CHANNEL CL	1200	PF 1	74.43	6957.59	6958.69	6958.69	6959.13	0.014306	5.28	14.09	16.39	1.00
CHANNEL CL	1150	PF 1	74.43	6956.56	6957.66	6957.66	6958.09	0.014424	5.30	14.06	16.39	1.01
CHANNEL CL	1100	PF 1	74.43	6955.53	6956.62	6956.62	6957.05	0.014195	5.27	14.13	16.41	1.00
CHANNEL CL	1050	PF 1	74.43	6954.50	6955.57	6955.57	6956.01	0.014330	5.28	14.08	16.39	1.01
CHANNEL CL	1000	PF 1	74.43	6953.47	6954.72	6954.54	6955.01	0.007996	4.31	17.28	17.61	0.77

Plan: HONOR PLAN ID HONOR CHANNEL CHANNEL CL RS: 1583.22 Profile: PF 1

E.G. Elev (ft)	6965.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.		0.030	
W.S. Elev (ft)	6965.58	Reach Len. (ft)	33.22	33.22	33.22
Crit W.S. (ft)		Flow Area (sq ft)		17.38	
E.G. Slope (ft/ft)	0.008445	Area (sq ft)		17.38	
Q Total (cfs)	74.43	Flow (cfs)		74.43	
Top Width (ft)	18.67	Top Width (ft)		18.67	
Vel Total (ft/s)	4.28	Avg. Vel. (ft/s)		4.28	
Max Chl Dpth (ft)	1.14	Hydr. Depth (ft)		0.93	
Conv. Total (cfs)	809.9	Conv. (cfs)		809.9	
Length Wtd. (ft)	33.22	Wetted Per. (ft)		19.04	
Min Ch El (ft)	6964.44	Shear (lb/sq ft)		0.48	
Alpha	1.00	Stream Power (lb/ft s)		2.06	
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)		0.20	
C & E Loss (ft)	0.00	Cum SA (acres)		0.23	

Plan: HONOR PLAN ID HONOR CHANNEL CHANNEL CL RS: 1491.08 Profile: PF 1

E.G. Elev (ft)	6965.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.		0.030	
W.S. Elev (ft)	6964.70	Reach Len. (ft)	41.08	41.08	41.08
Crit W.S. (ft)	6964.70	Flow Area (sq ft)		14.47	
E.G. Slope (ft/ft)	0.014568	Area (sq ft)		14.47	
Q Total (cfs)	74.43	Flow (cfs)		74.43	
Top Width (ft)	17.86	Top Width (ft)		17.86	
Vel Total (ft/s)	5.14	Avg. Vel. (ft/s)		5.14	
Max Chl Dpth (ft)	1.05	Hydr. Depth (ft)		0.81	
Conv. Total (cfs)	616.7	Conv. (cfs)		616.7	
Length Wtd. (ft)	41.08	Wetted Per. (ft)		18.14	
Min Ch El (ft)	6963.64	Shear (lb/sq ft)		0.73	
Alpha	1.00	Stream Power (lb/ft s)		3.73	
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)		0.16	
C & E Loss (ft)	0.00	Cum SA (acres)		0.19	

Project Name: Honor Charter

Designer: AL

Date: 07-23-2026

FROUDE NUMBER

Froude Number Equation:

$$Fr = \frac{v}{(gh_m)^{1/2}}$$

Where: v= velocity (ft/s)

g= acceleration of gravity (32.2ft/s^2)

h_m=hydraulic mean depth (ft)

Hydraulic Mean Depth Equation:

$$h_m = \frac{A}{T}$$

Where:

A= cross sectional area of filled flow in channel (sf)

T= width of channel open to surface (ft)

BEND 1 Station 15+83.22:

Parameters: A =17.8 sf, T=18.67ft, v=4.28 ft/s

Therefor:

$$h_m = \frac{17.8}{18.67} = 0.953$$

$$Fr = \frac{4.28}{(32.2*0.953)^{1/2}} = 0.77$$

BEND 2 Station 14+91.08:

Parameters: A =14.47 sf, T=17.86ft, v=5.18 ft/s

Therefor:

$$h_m = \frac{14.47}{17.86} = 0.810$$

$$Fr = \frac{5.18}{(32.2*0.810)^{1/2}} = 1.01$$

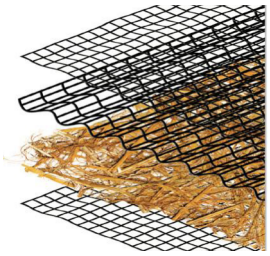
MATERIAL PROPERTY DATA SHEET

VMax® S200™

Permanent • Triple Net • Organic Fiber Matrix • Turf Reinforcement Mat

DESCRIPTION

S200 Turf Reinforcement Mat (TRM) is composed of 100% straw fibers mechanically (stitch) bound between a three-dimensional UV stabilized, synthetic net structure. Stitching is secured on two-inch centers using UV stabilized, synthetic thread. S200 is a permanent, three-dimensional TRM that provides immediate erosion protection and long-term turf reinforcement and is intended for applications requiring erosion protection for greater than thirty-six months.



Each roll of S200 is made in the USA and manufactured under Western Green's Quality Assurance Program to ensure a continuous distribution of fibers and consistent thickness.

Material Content	
Matrix	Straw
Netting	Top Net: Medium-weight, UV stable Middle Net: Corrugated Heavyweight, UV stable Bottom Net: Medium-weight, UV stable
Thread	Synthetic, UV Stable

Standard Roll Sizes		
Width	8 ft	(2.4 m)
Length	90 ft	(27.4 m)
Weight ± 10%	64 lb	(29.0 kg)
Area	80 sy	(66.9 m^2)

Material available in custom roll sizes

Approvals & Classification	
Classification	FHWA: Type 5.C / ECTC: Type 5.C
TTI Approvals	Class 2 Type H
NTPEP Number	ECP-2022-01-010

Index Property	Test Method	Typical	
Thickness	ASTM D6525	0.50 in.	(13 mm)
Mass/Unit Area	ASTM D6566	12.0 oz/sy	(400 g/sm)
Tensile Strength – MD	ASTM D6818	450 lbs/ft	(6.6 kN/m)
Tensile Strength – TD	ASTM D6818	450 lbs/ft	(6.6 kN/m)
Elongation - MD	ASTM D6818	30%	
Elongation – TD	ASTM D6818	20%	
UV Stability	ASTM D4355	80% @1000 hr	
Light Penetration	ASTM D6567	15%	
Biomass Improvement	ASTM D7322	300%	
Specific Gravity	ASTM D792	57.4 lb/ft^3	(0.92 g/cm^3)
Porosity	ECTC	N/A	

Design Parameters		
Property	**Unvegetated**	**Vegetated[3]**
RUSLE C Factor[2]	0.05	N/A
Slope Maximum Gradient[1]	0.5H:1V	0.5H:1V
Permissible Shear Stress[2]	2.3 psf (110 Pa)	10.0 psf (480 Pa)
Permissible Velocity[2]	8.5 fps (2.6 m/s)	15 fps (4.6 m/s)
τ_{veg} / τ_{TRM} (HEC-15)	N/A	0.67

Manning's n Roughness (HEC-15)		
τ_{lower}	τ_{mid}	τ_{upper}
0.038	0.030	0.026

1 Maximum Gradient a recomendation for typical installations.

2 Hydraulic thresholds compliant with ASTM D6459/D6460 but generalized for typical applications.

3 Vegetated values dependent on established stand of vegetation

DIsclaimer: The information contained herein may represent product index data, performance ratings, bench scale testing or other material utility quantifications. Each representation may have unique utility and limitations. Every effort has been made to ensure accuracy, however, no warranty is claimed and no liability shall be assumed by Western Green or its affiliates regarding the completeness, accuracy or fitness of these values for any particular application or interpretation. While testing methods are provided for reference, values shown may be derived from interpolation or adjustment to be representative of intended use. For further information, please feel free to contact Western Green.

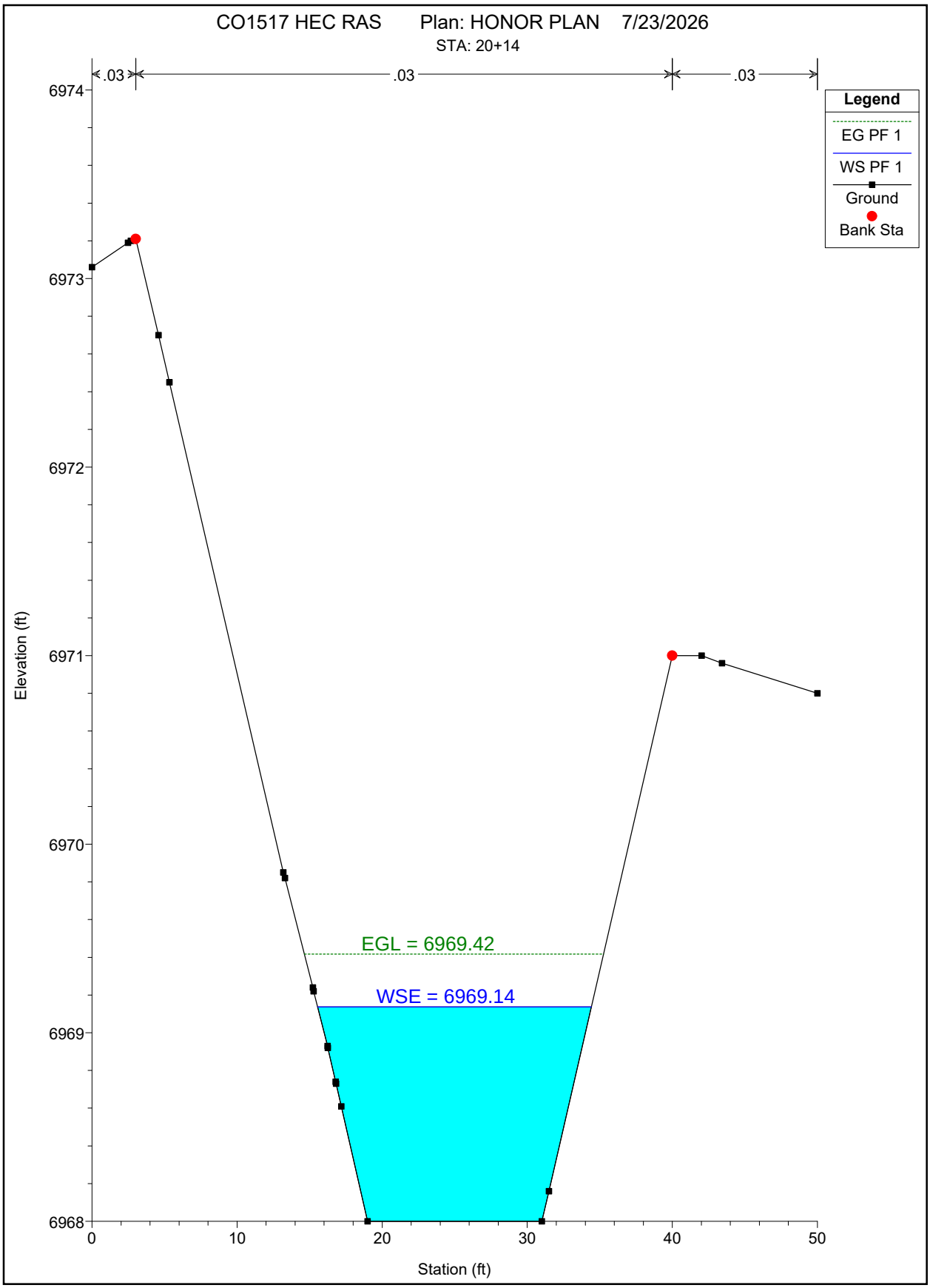
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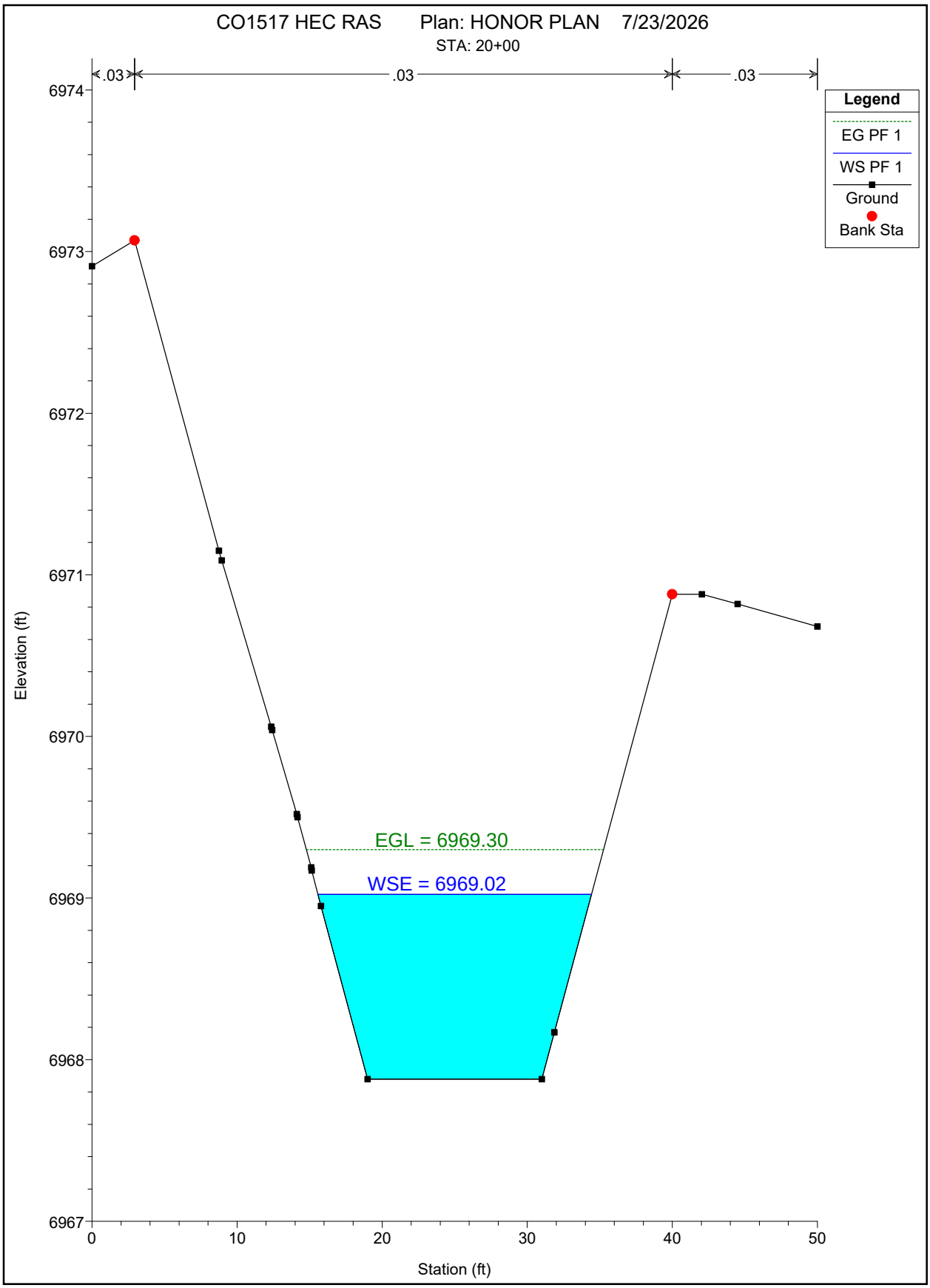
Rev. 4.2023

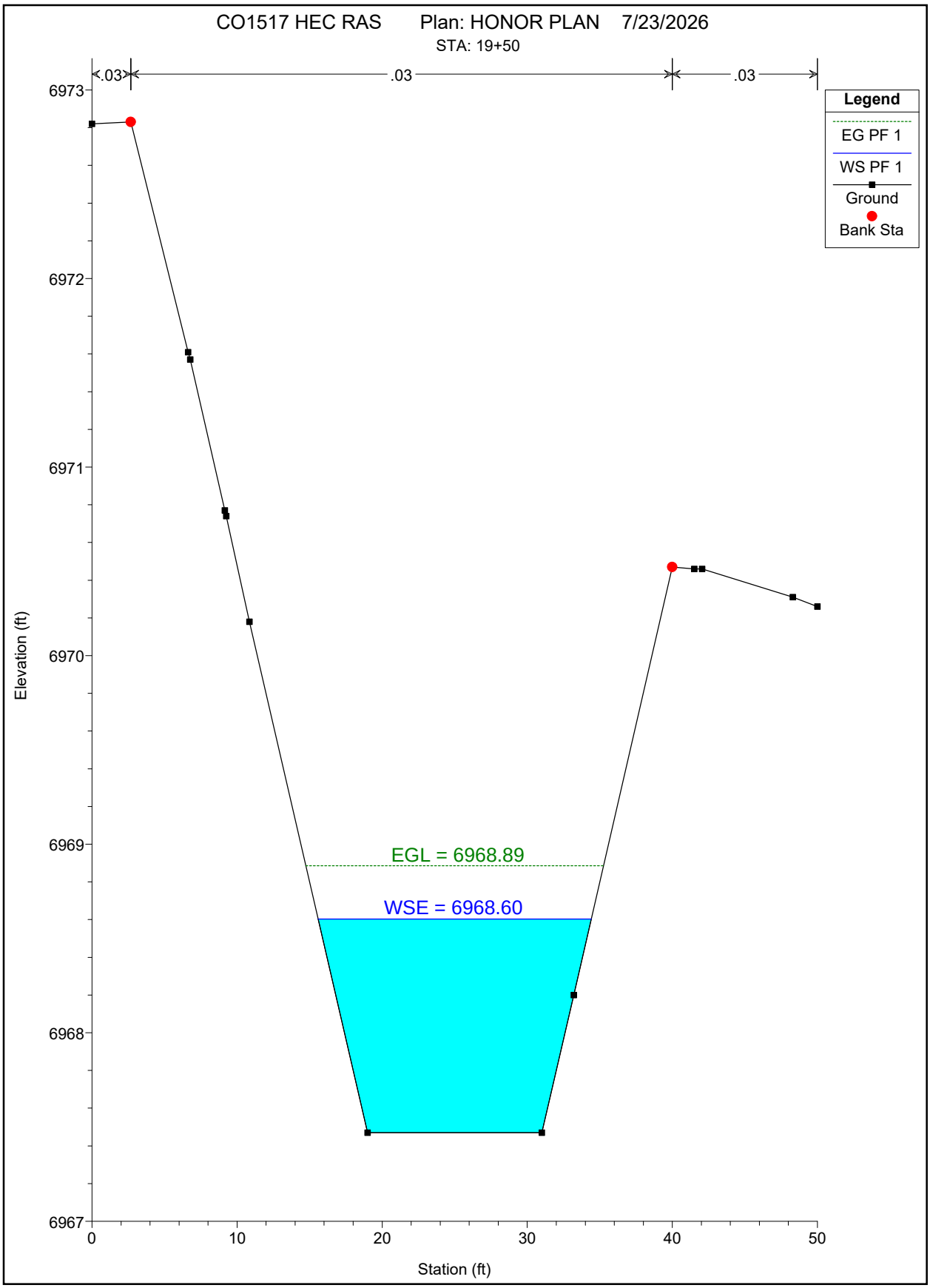
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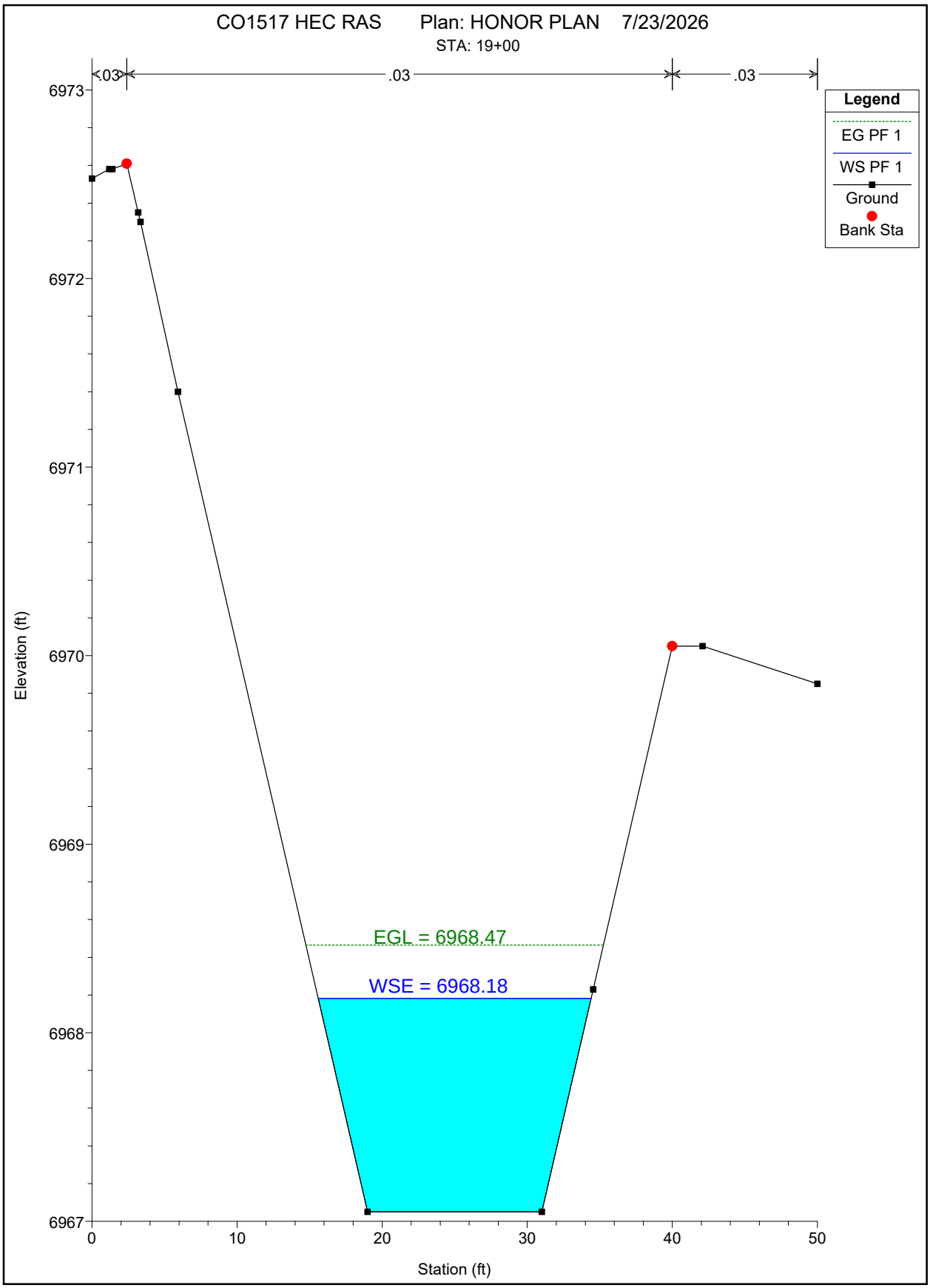
Western Green • 4609 E. Boonville-New Harmony Rd.
Evansville, IN 47725 • (800) 772-2040

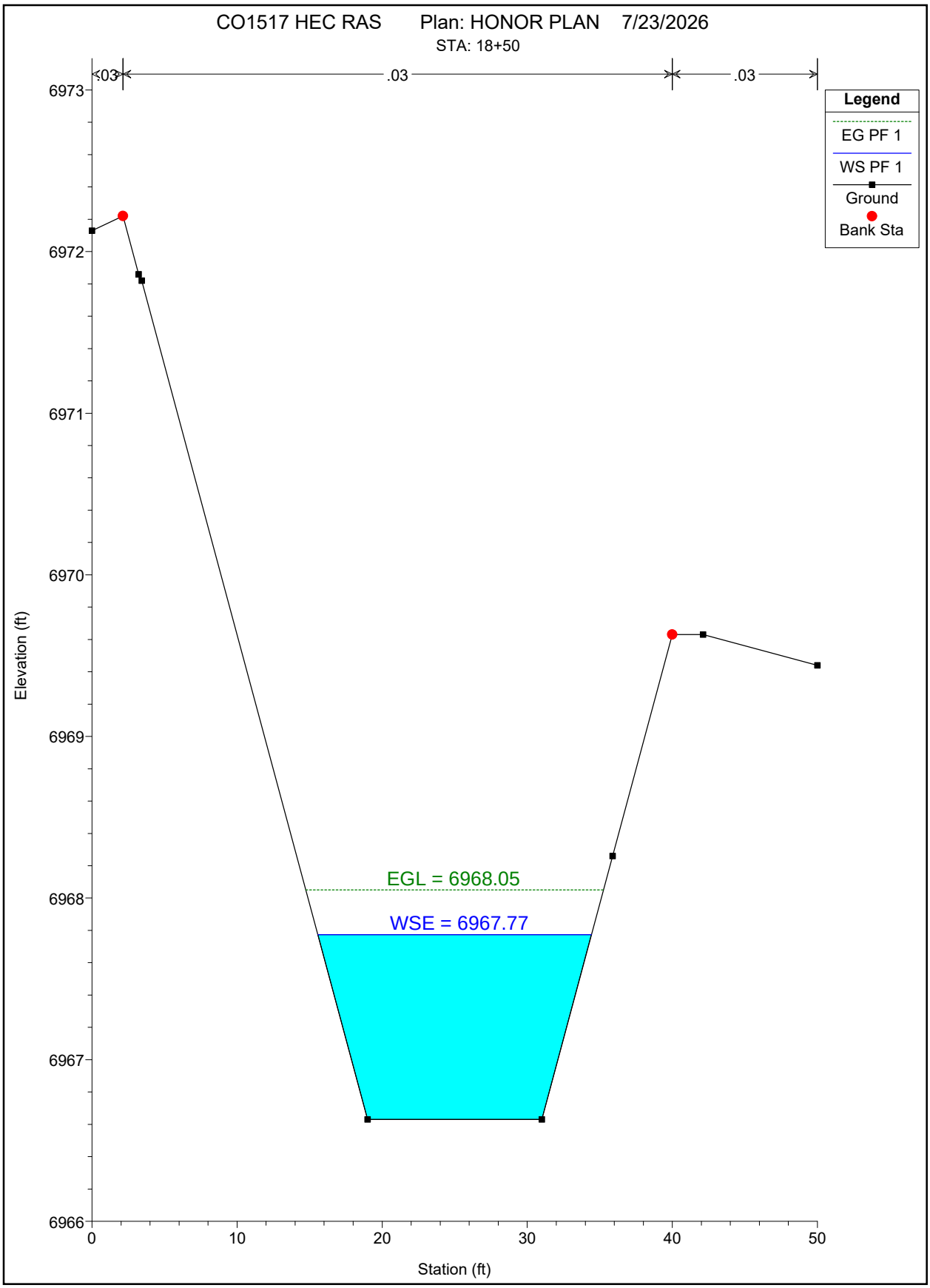
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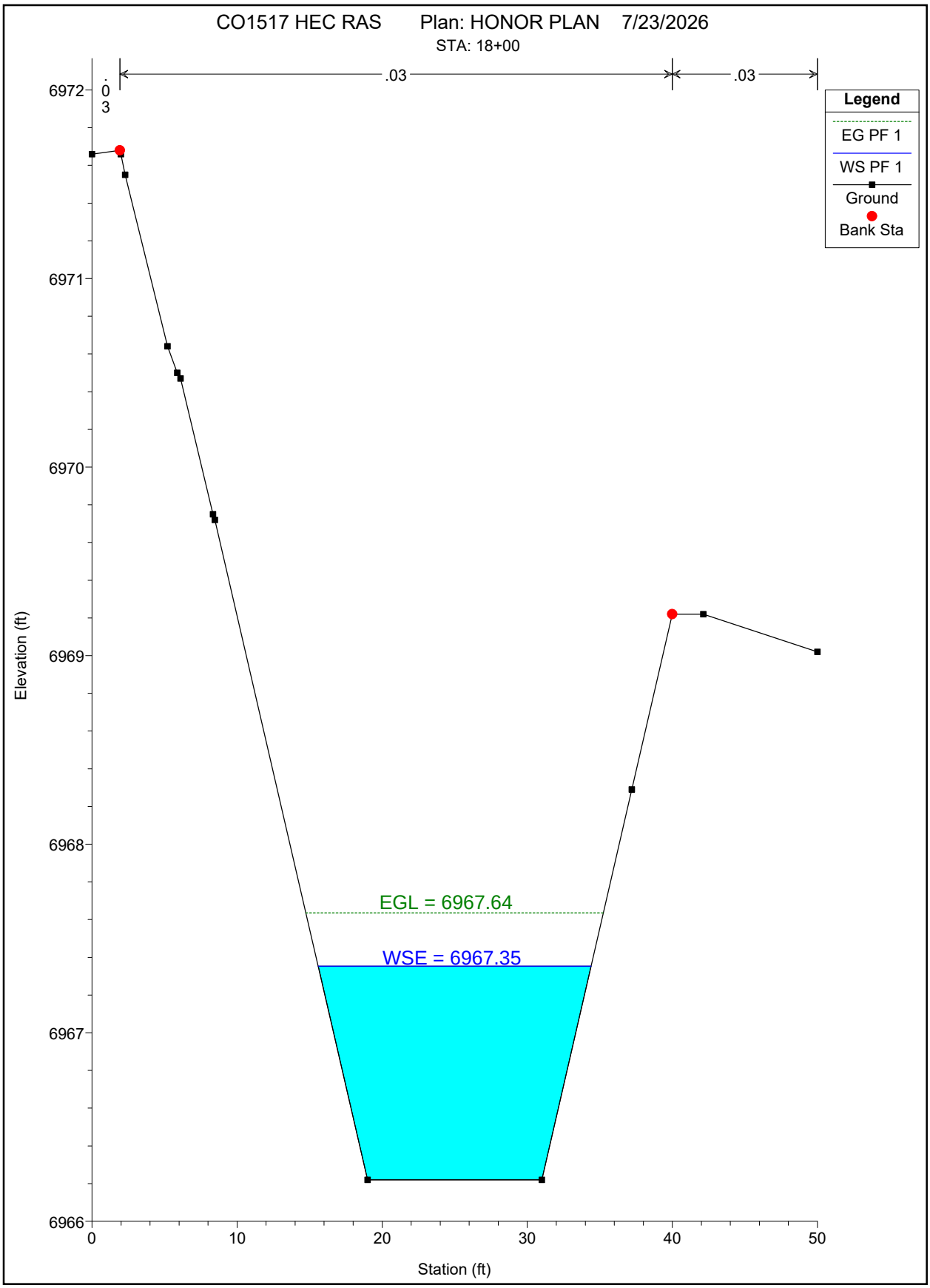

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STA: 20+14
.03
.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6969.42
WSE = 6969.14
Elevation (ft)
Station (ft)
6974
6973
6972
6971
6970
6969
6968
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10
20
30
40
50

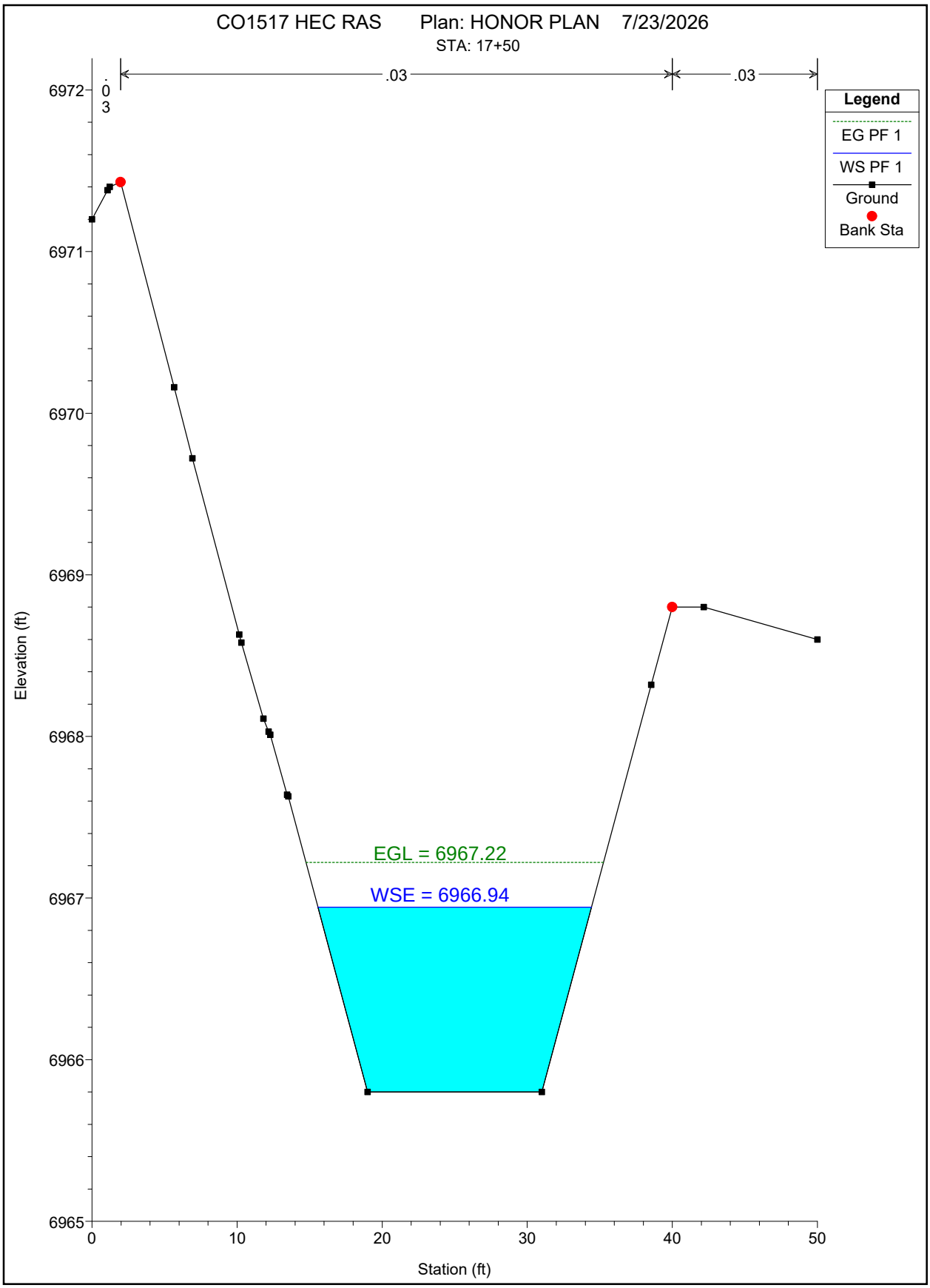

CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 20+00
.03
.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6969.30
WSE = 6969.02
Elevation (ft)
Station (ft)
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6973
6972
6971
6970
6969
6968
6967
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10
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30
40
50

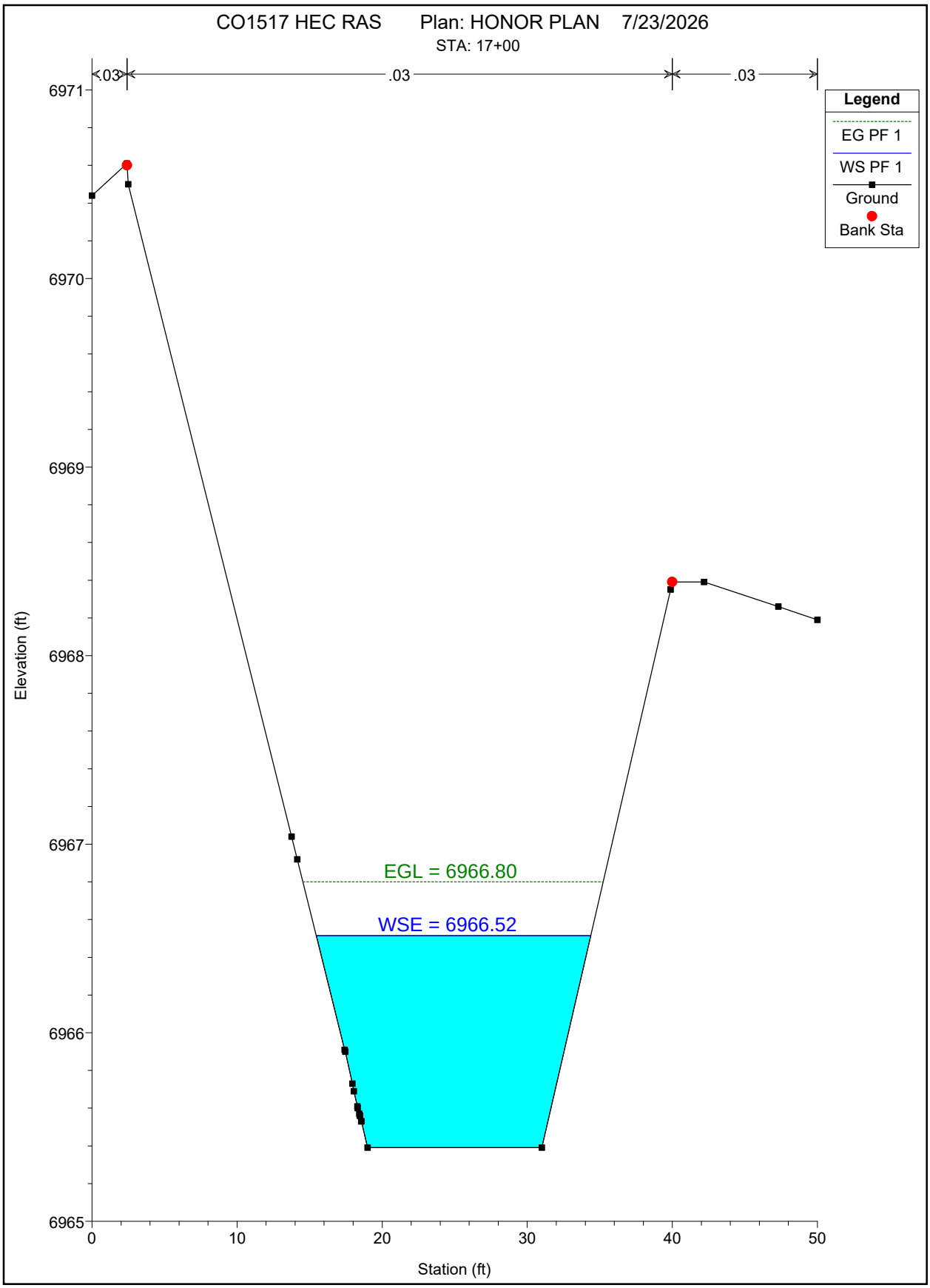

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STA: 19+50
.03
.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6968.89
WSE = 6968.60
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Station (ft)
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6972
6971
6970
6969
6968
6967
0
10
20
30
40
50

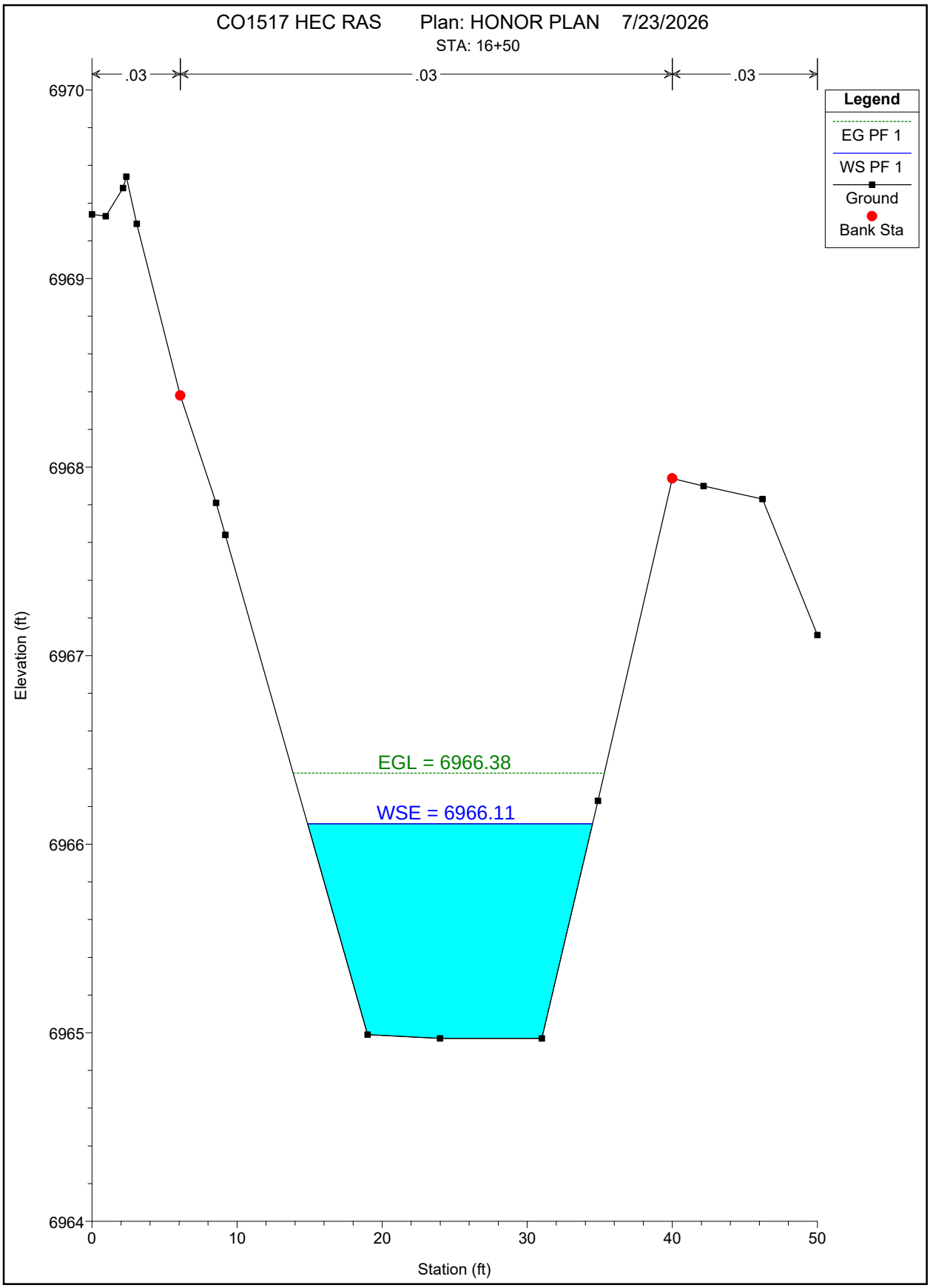

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STA: 19+00
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.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6968.47
WSE = 6968.18
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Station (ft)
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6972
6971
6970
6969
6968
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10
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30
40
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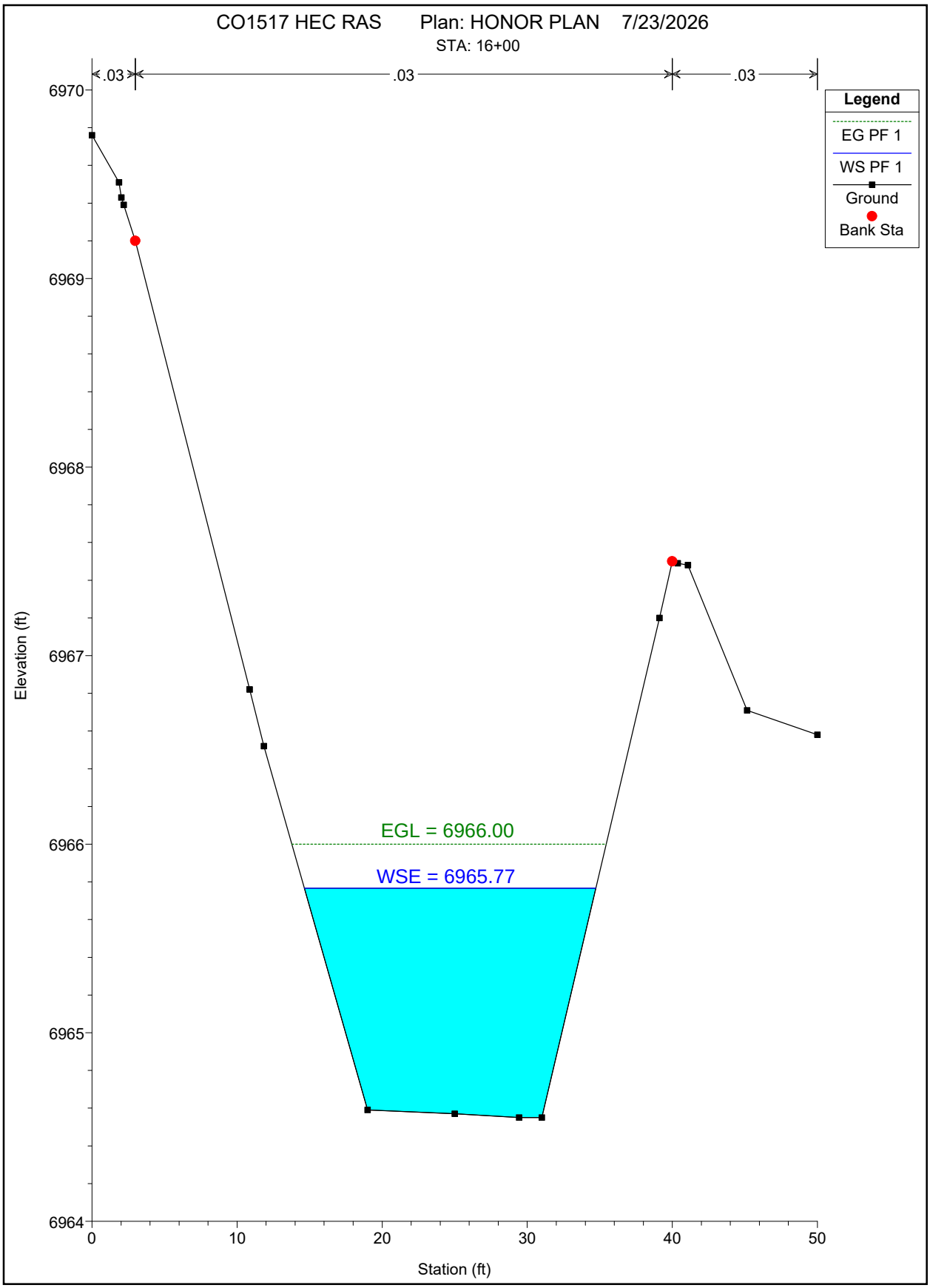

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.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
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WSE = 6967.77
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Station (ft)
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6972
6971
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6968
6967
6966
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40
50

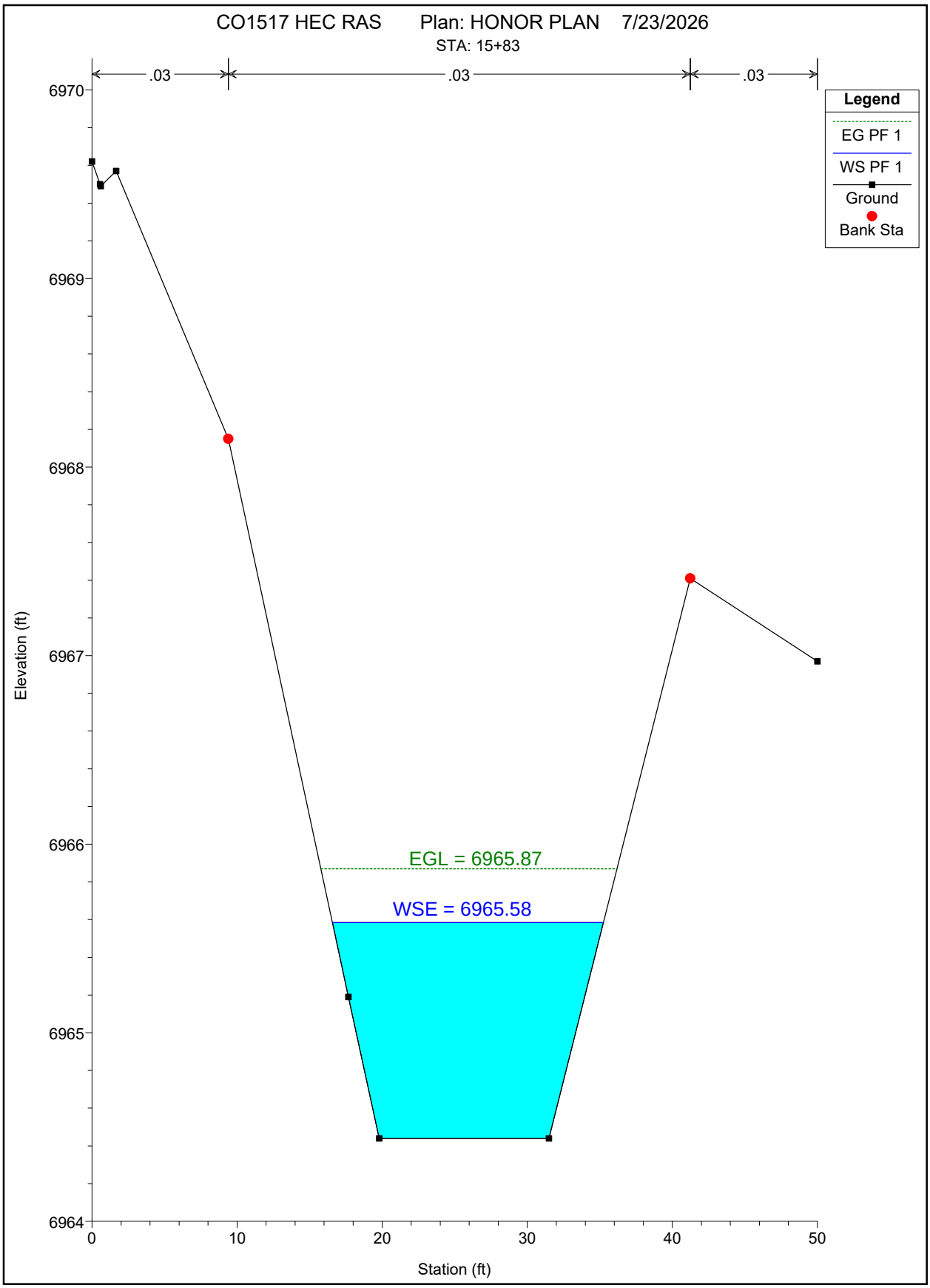

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STA: 18+00
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.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6967.64
WSE = 6967.35
Elevation (ft)
Station (ft)
6972
6971
6970
6969
6968
6967
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40
50

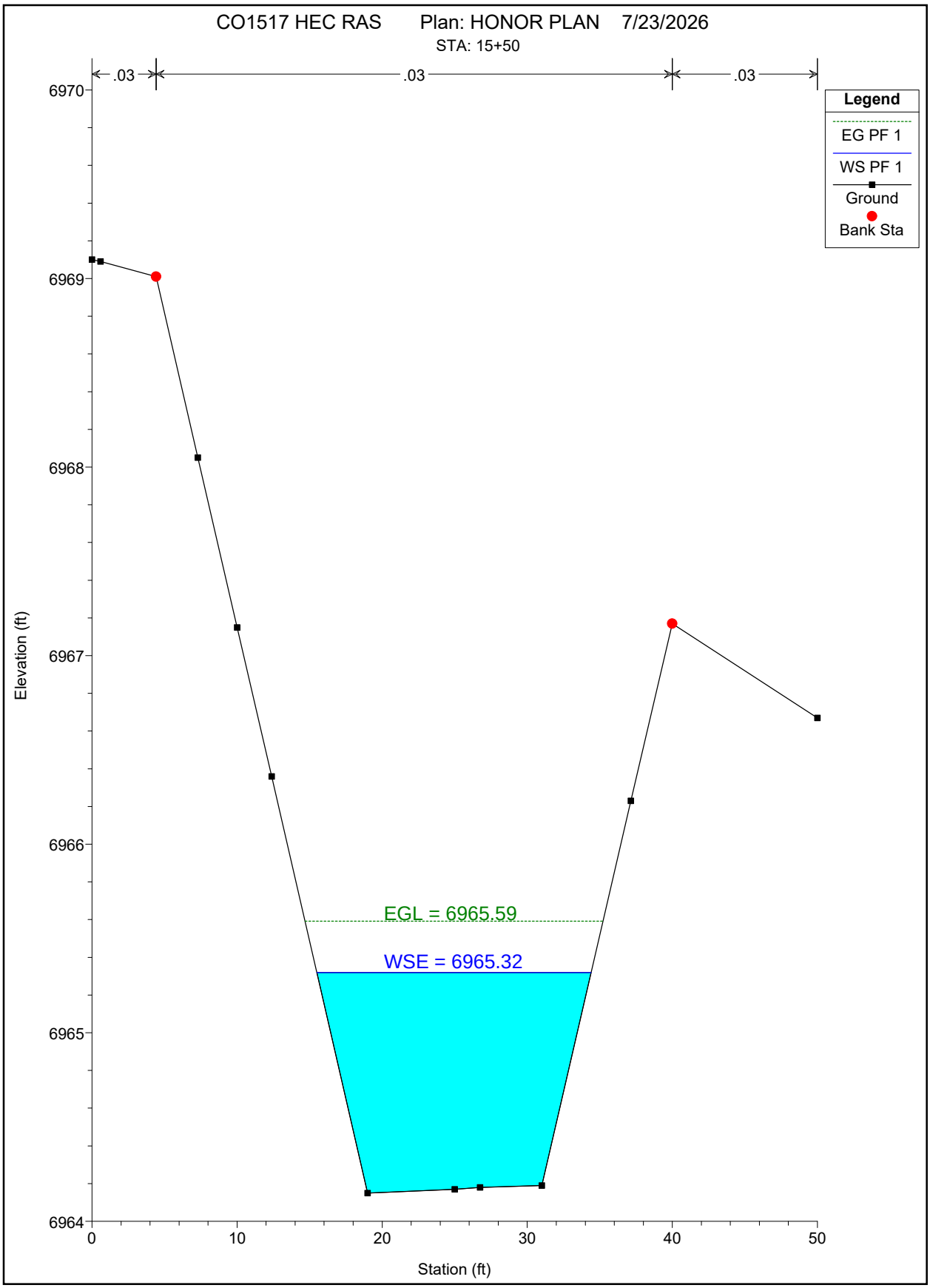

CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 17+50
.03
.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6967.22
WSE = 6966.94
Elevation (ft)
Station (ft)
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6971
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6969
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6967
6966
6965
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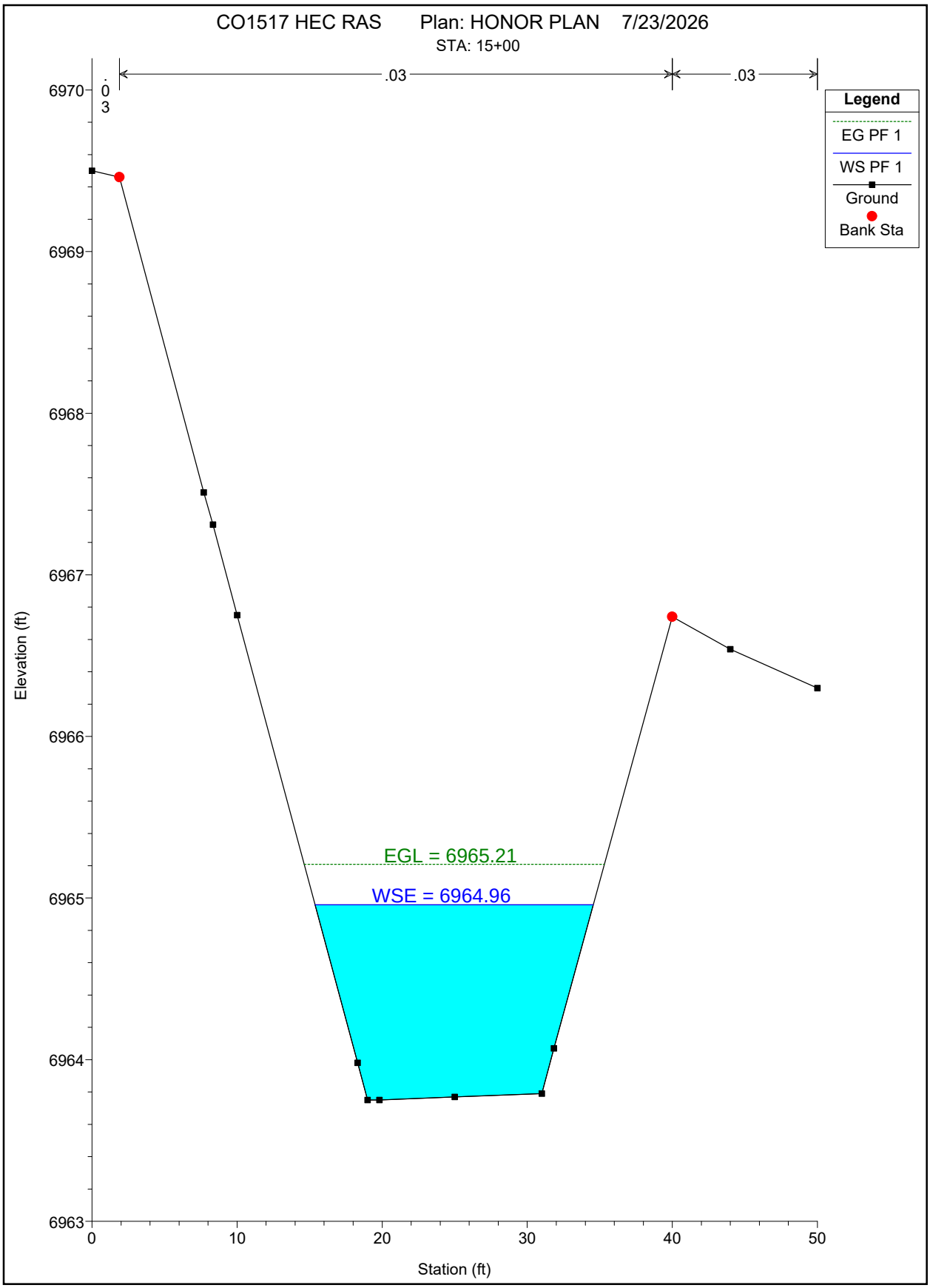

CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 17+00
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.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6966.80
WSE = 6966.52
Elevation (ft)
Station (ft)
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6970
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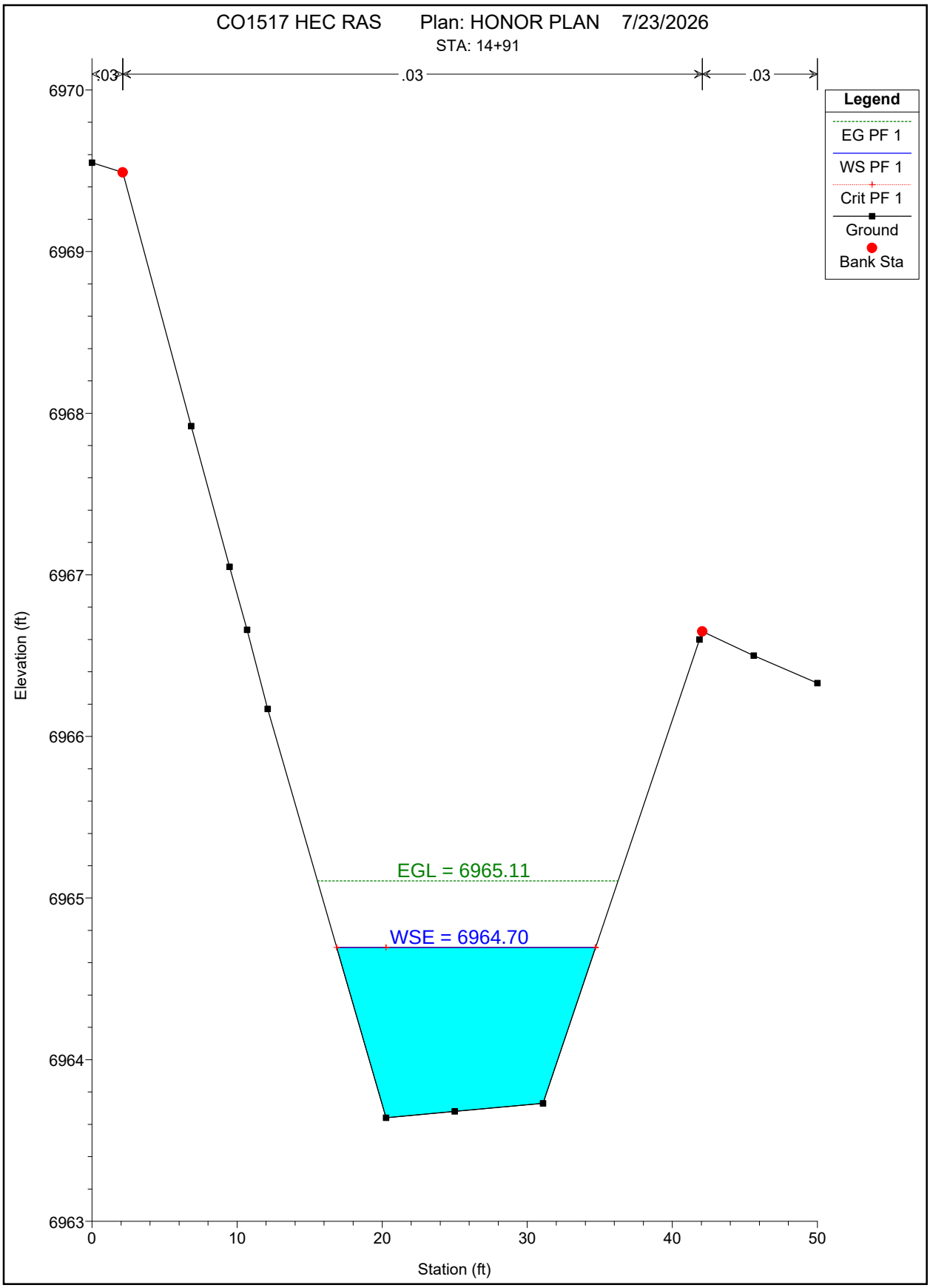

CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 16+50
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.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6966.38
WSE = 6966.11
Elevation (ft)
Station (ft)
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6969
6968
6967
6966
6965
6964
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10
20
30
40
50

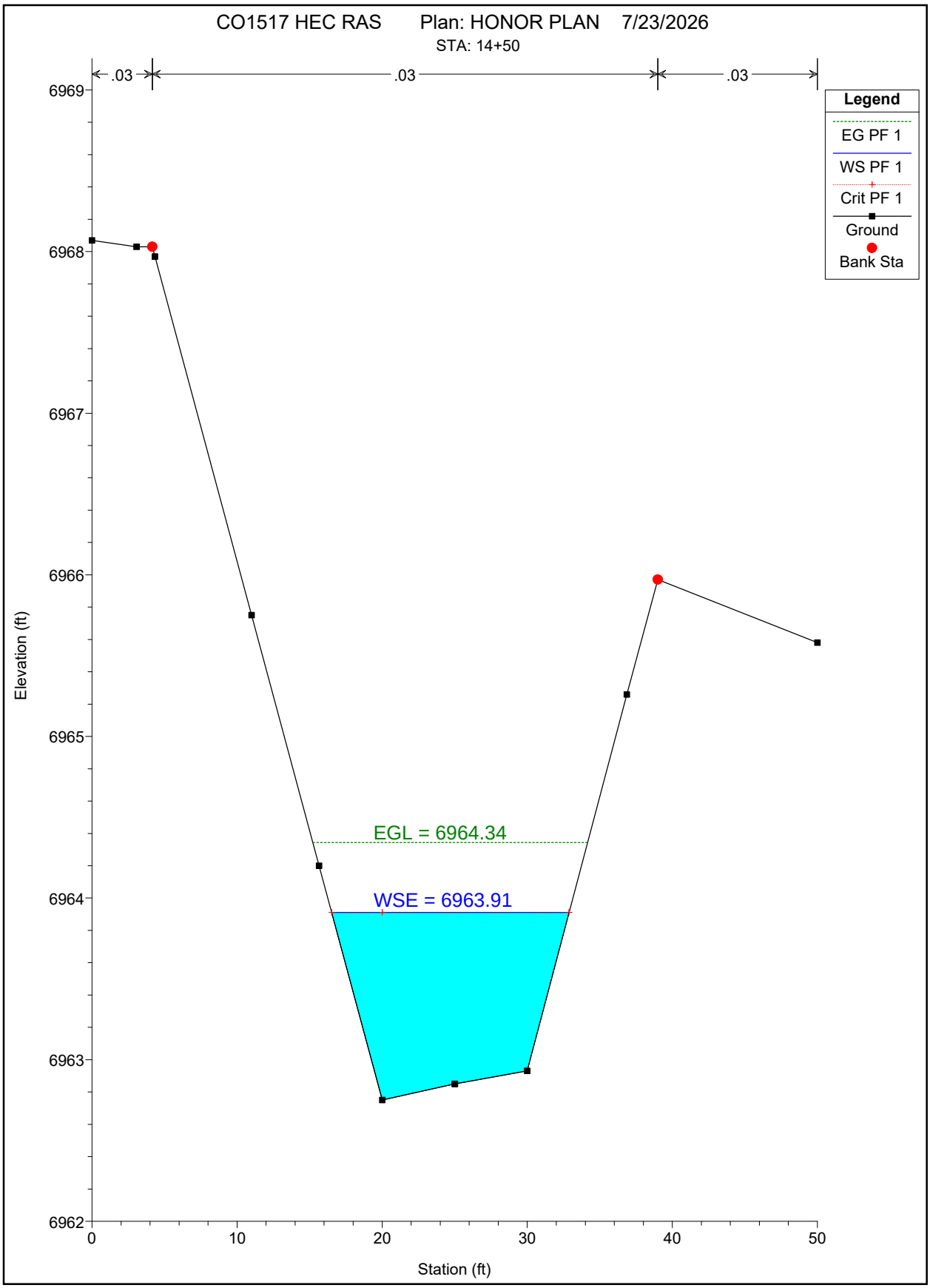

CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 16+00
.03
.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6966.00
WSE = 6965.77
Elevation (ft)
Station (ft)
6970
6969
6968
6967
6966
6965
6964
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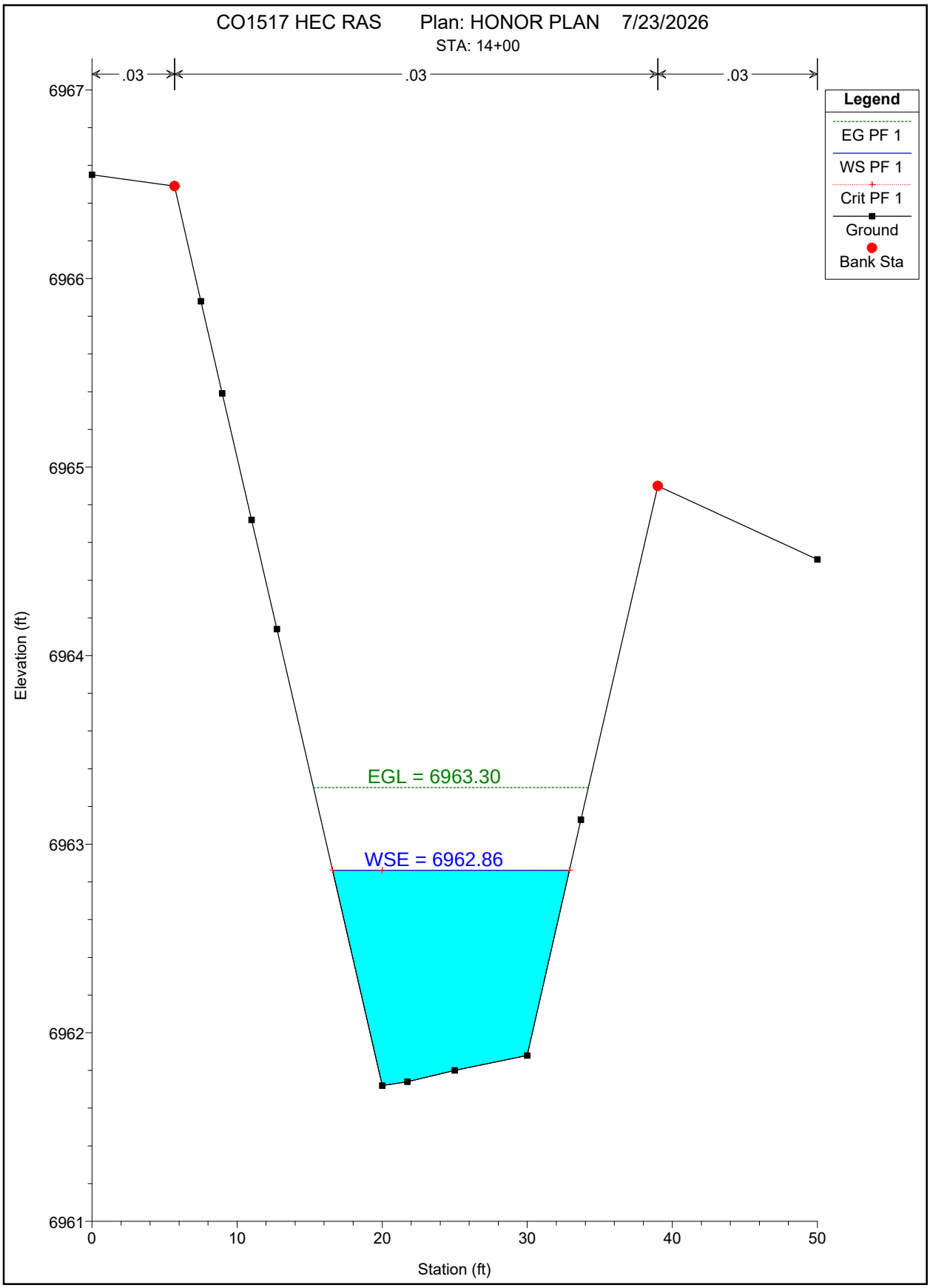

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STA: 15+83
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.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6965.87
WSE = 6965.58
Elevation (ft)
Station (ft)
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6969
6968
6967
6966
6965
6964
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50

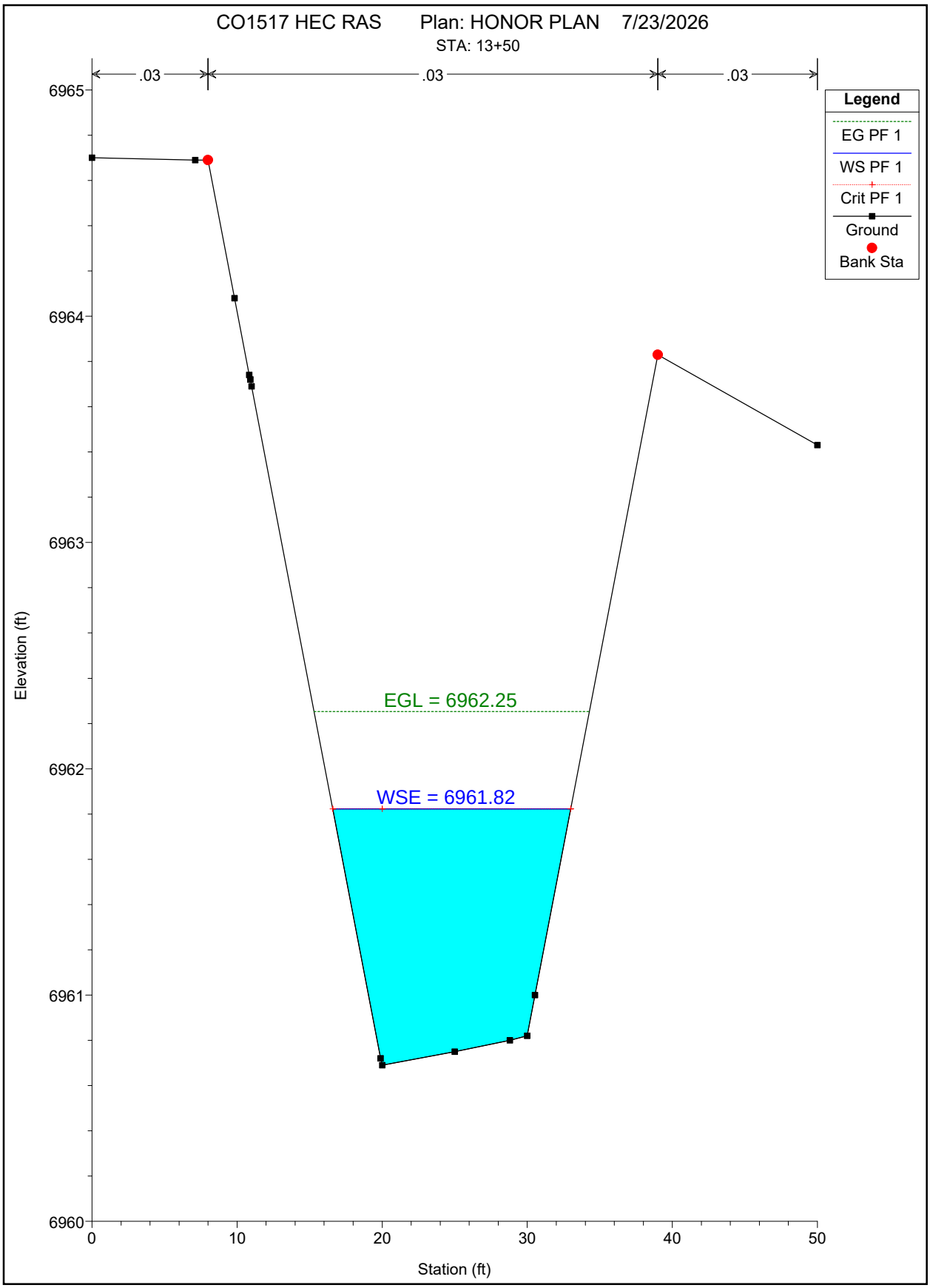

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.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6965.59
WSE = 6965.32
Elevation (ft)
Station (ft)
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6969
6968
6967
6966
6965
6964
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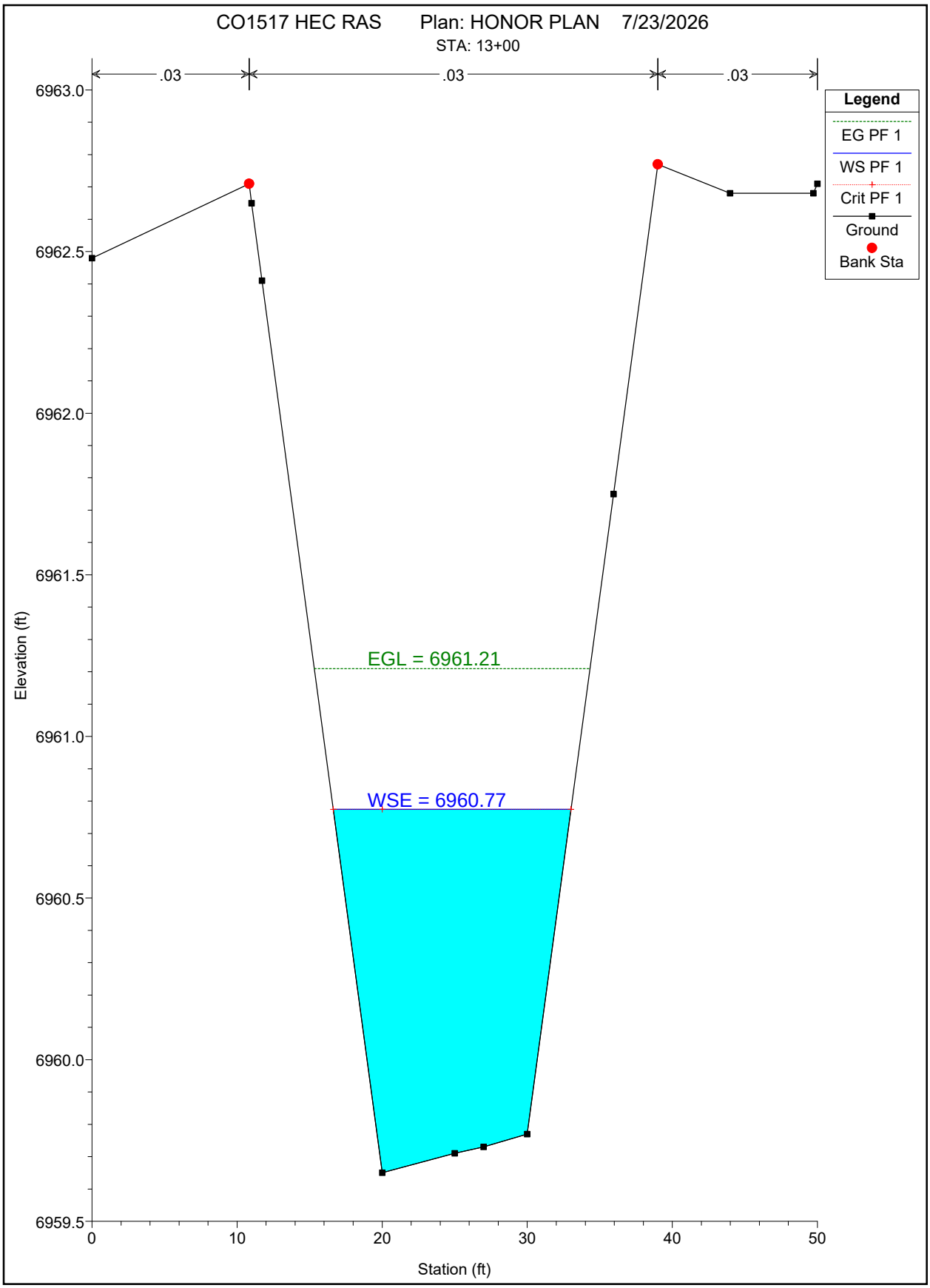

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STA: 15+00
.03
.03
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
EGL = 6965.21
WSE = 6964.96
Elevation (ft)
Station (ft)
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6969
6968
6967
6966
6965
6964
6963
0
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40
50

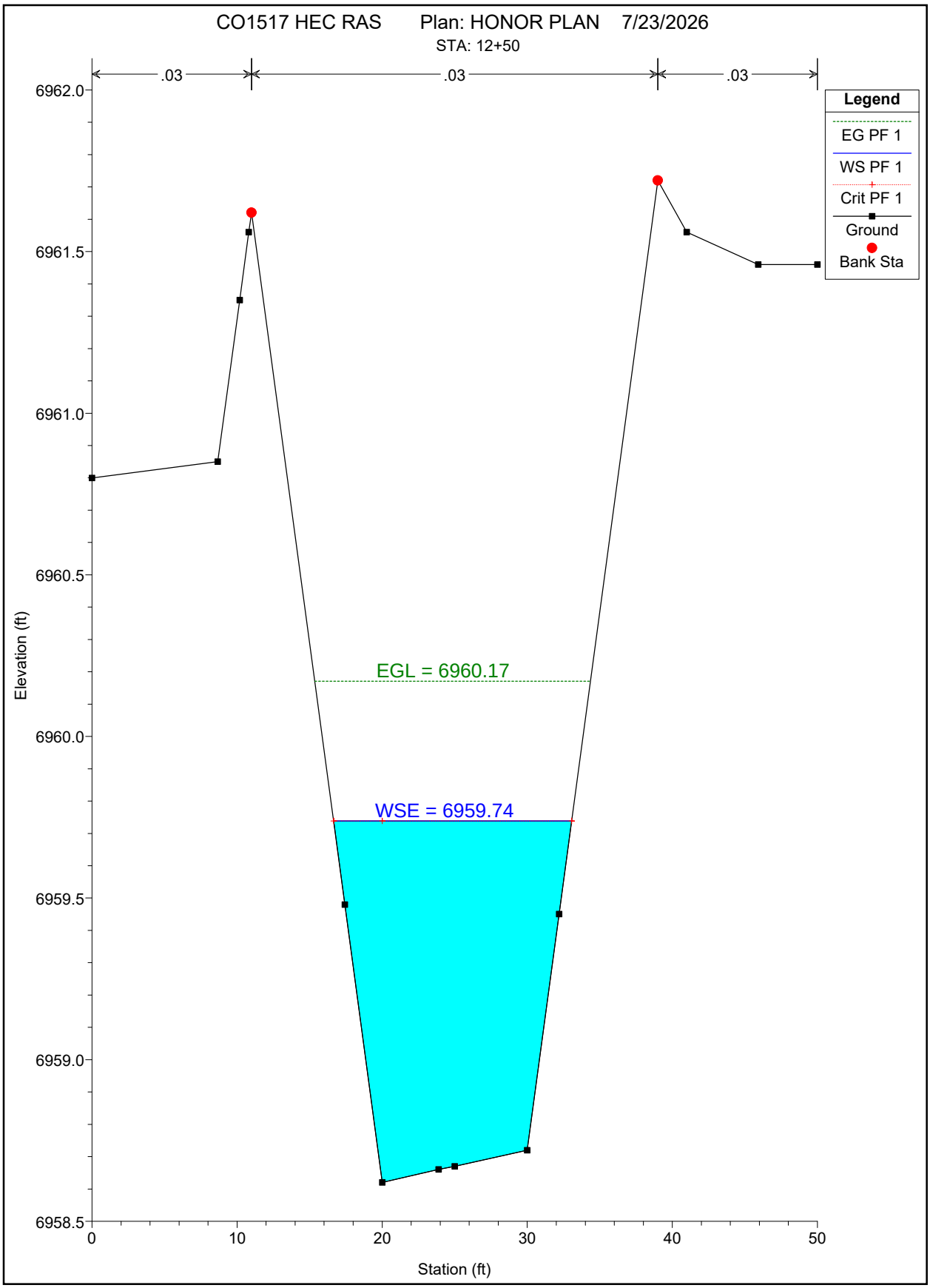

CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 14+91
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
EGL = 6965.11
WSE = 6964.70
Elevation (ft)
Station (ft)
6970
6969
6968
6967
6966
6965
6964
6963
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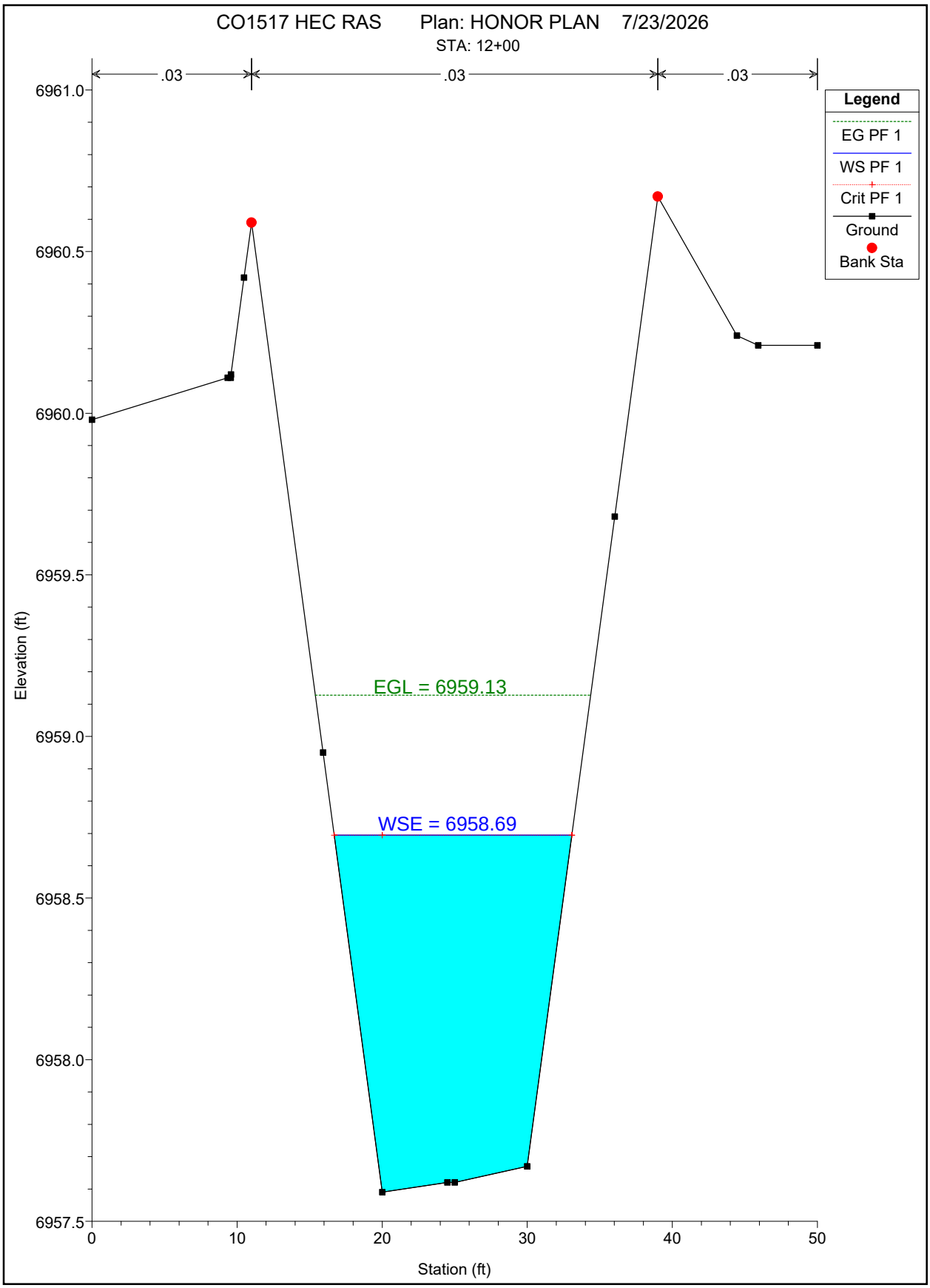

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.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
EGL = 6964.34
WSE = 6963.91
Elevation (ft)
Station (ft)
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6968
6967
6966
6965
6964
6963
6962
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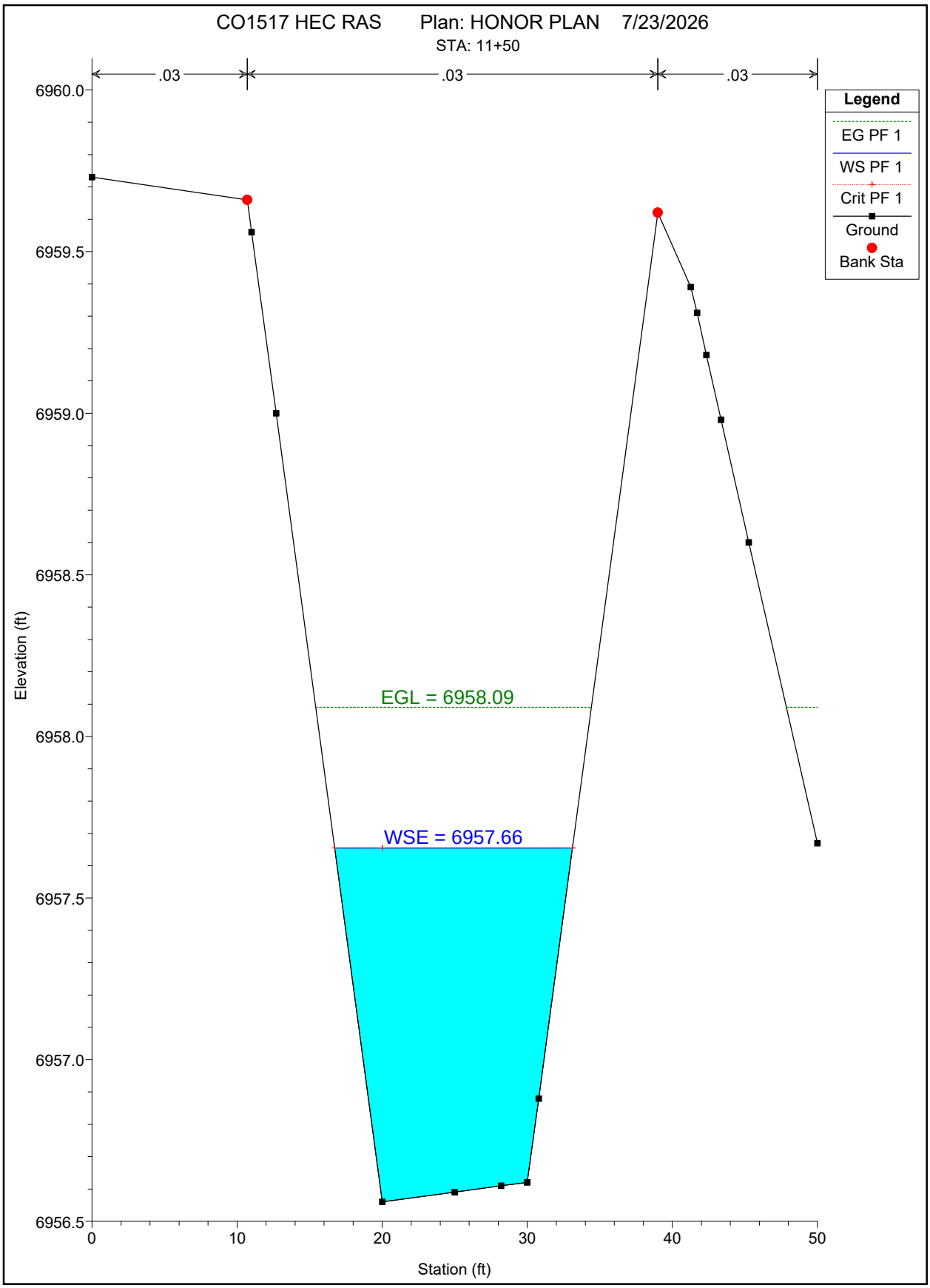

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STA: 14+00
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.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
EGL = 6963.30
WSE = 6962.86
Elevation (ft)
Station (ft)
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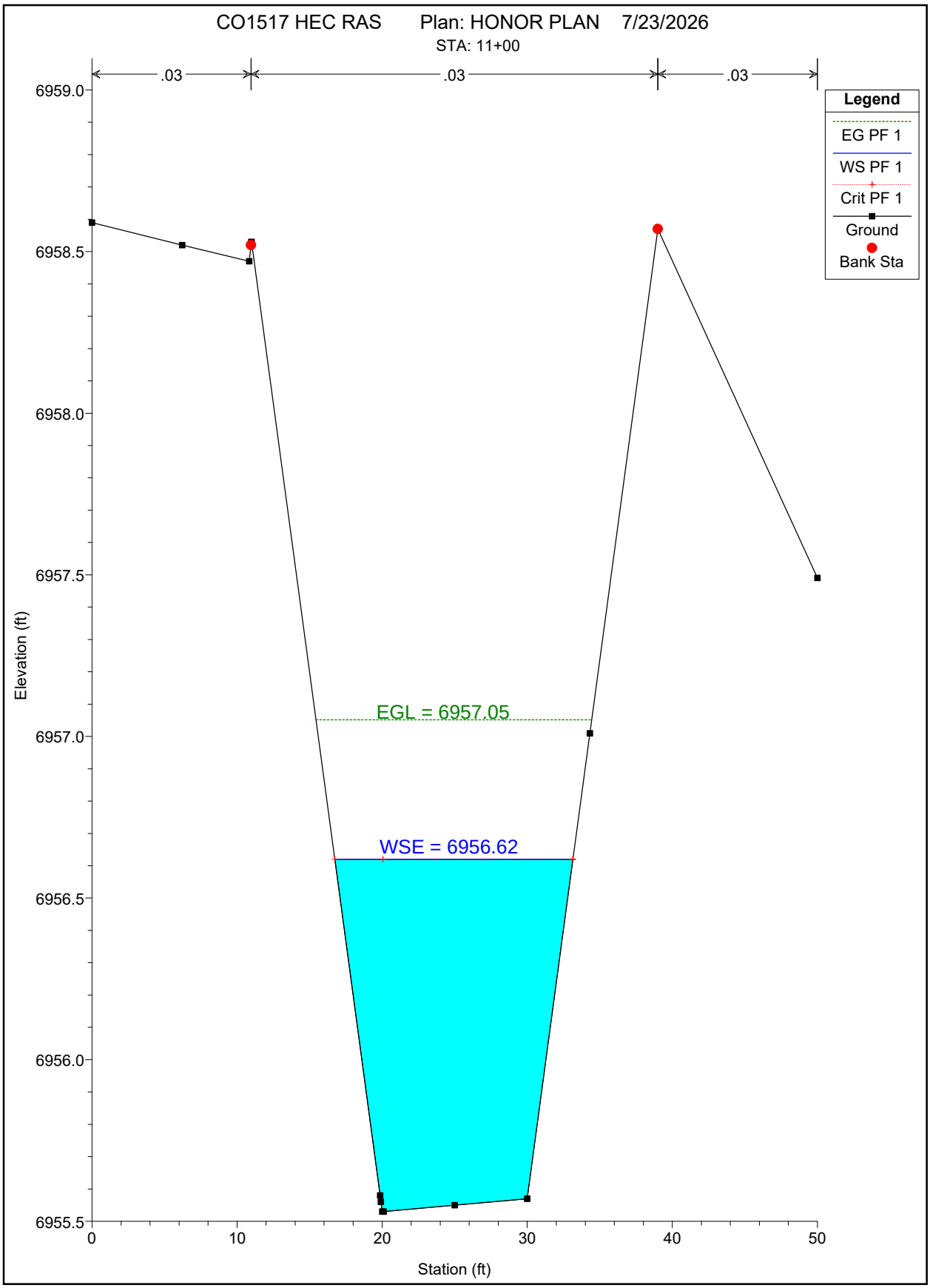

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STA: 13+50
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
EGL = 6962.25
WSE = 6961.82
Elevation (ft)
Station (ft)
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6964
6963
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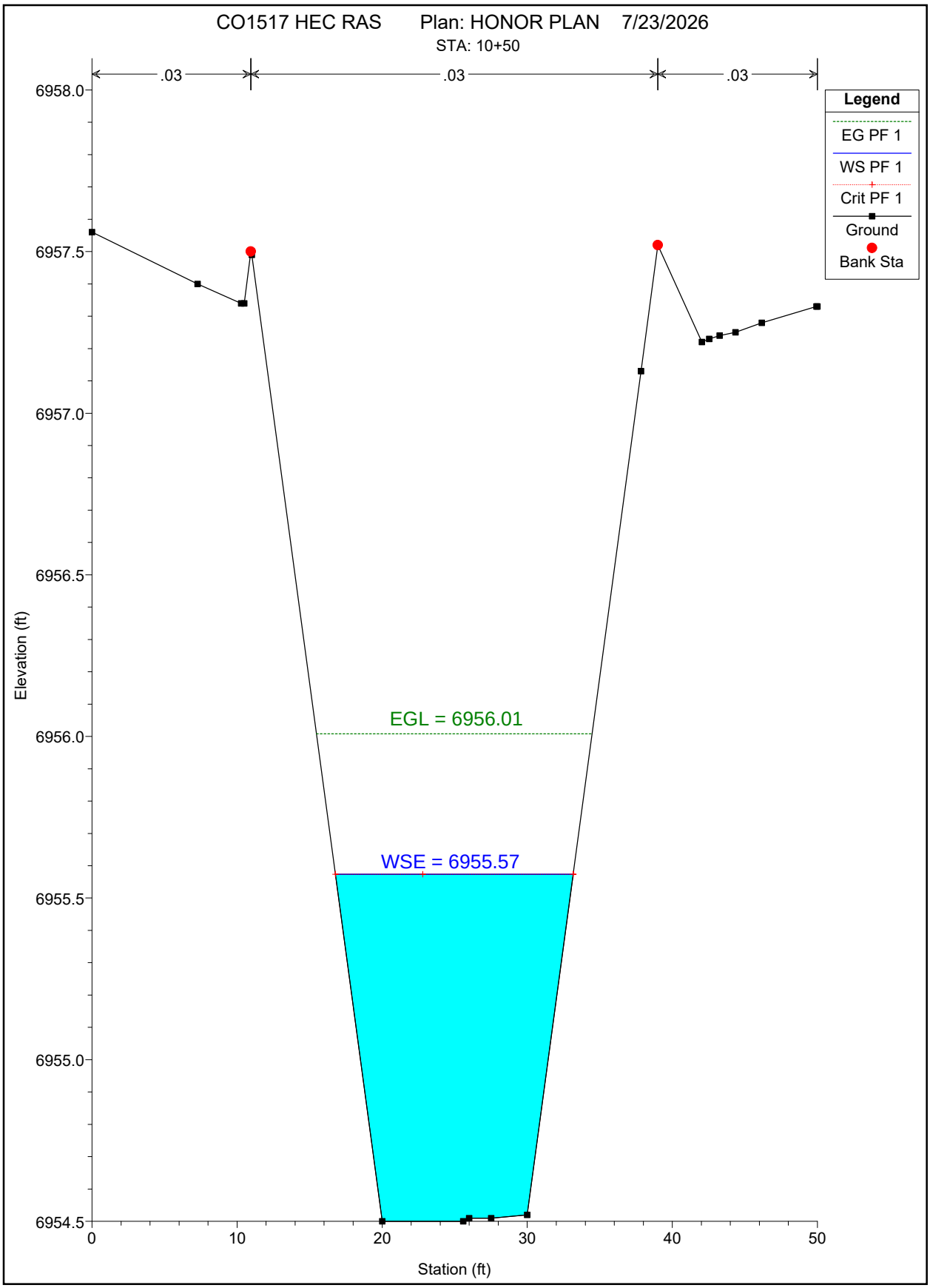

CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 13+00
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
EGL = 6961.21
WSE = 6960.77
Elevation (ft)
Station (ft)
6963.0
6962.5
6962.0
6961.5
6961.0
6960.5
6960.0
6959.5
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10
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30
40
50

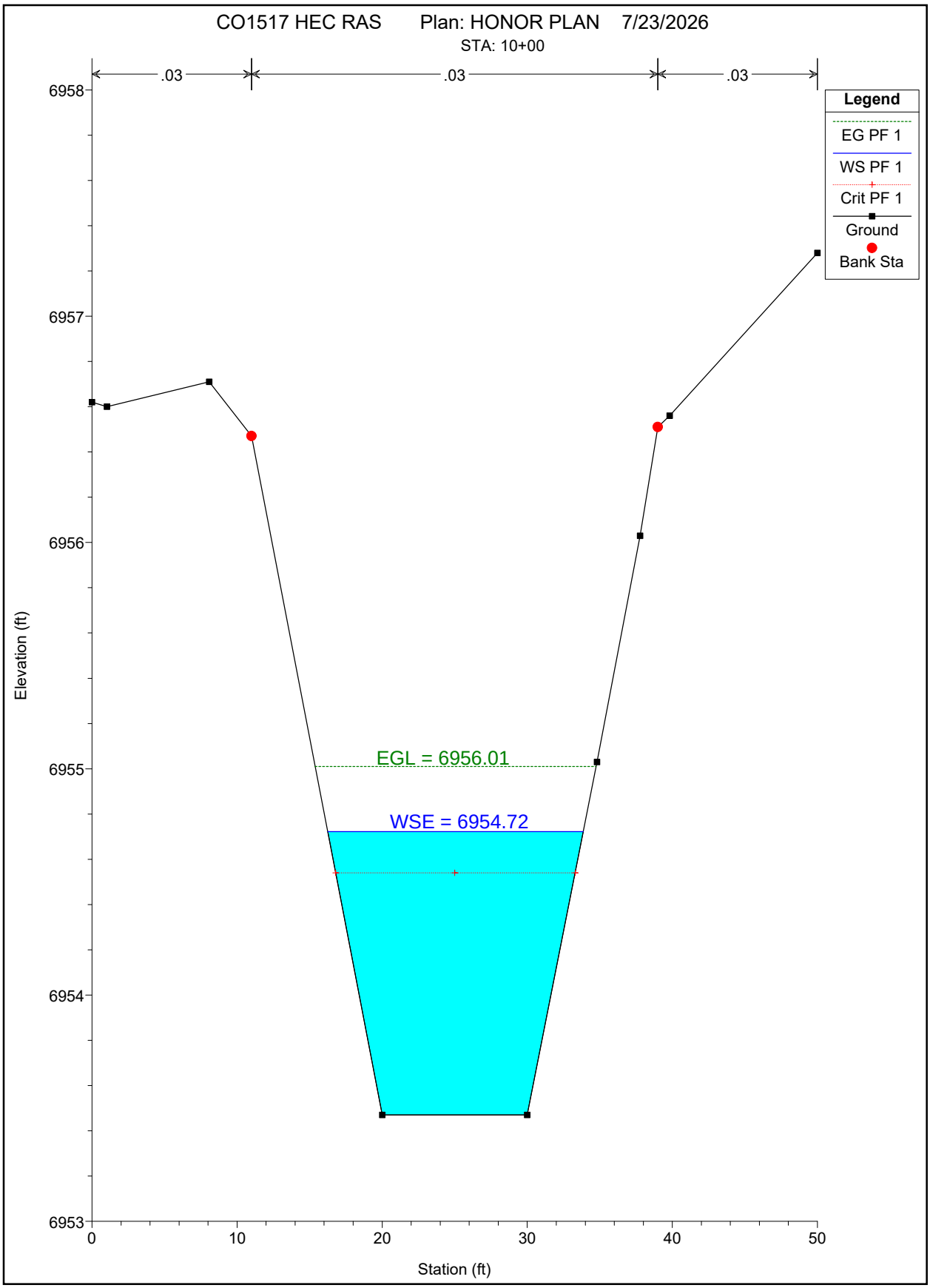

CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 12+50
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
EGL = 6960.17
WSE = 6959.74
Elevation (ft)
Station (ft)
6962.0
6961.5
6961.0
6960.5
6960.0
6959.5
6959.0
6958.5
0
10
20
30
40
50


CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 12+00
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
EGL = 6959.13
WSE = 6958.69
Elevation (ft)
Station (ft)
6961.0
6960.5
6960.0
6959.5
6959.0
6958.5
6958.0
6957.5
0
10
20
30
40
50


CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 11+50
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
EGL = 6958.09
WSE = 6957.66
Elevation (ft)
Station (ft)
6960.0
6959.5
6959.0
6958.5
6958.0
6957.5
6957.0
6956.5
0
10
20
30
40
50


CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 11+00
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
EGL = 6957.05
WSE = 6956.62
Elevation (ft)
Station (ft)
6959.0
6958.5
6958.0
6957.5
6957.0
6956.5
6956.0
6955.5
0
10
20
30
40
50


CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 10+50
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
EGL = 6956.01
WSE = 6955.57
Elevation (ft)
Station (ft)
6958.0
6957.5
6957.0
6956.5
6956.0
6955.5
6955.0
6954.5
0
10
20
30
40
50


CO1517 HEC RAS Plan: HONOR PLAN 7/23/2026
STA: 10+00
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
EGL = 6956.01
WSE = 6954.72
Elevation (ft)
Station (ft)
6958
6957
6956
6955
6954
6953
0
10
20
30
40
50

APPENDIX F

SECTIONS FROM BENT GRASS MDDP/DBPS AMENDMENT & THE FALCON DRAINAGE BASIN STUDY

FOLLOWING PAGES FROM MDDP/DBPS AMENDMENT

Galloway

MDDP & DBPS AMENDMENT

BENT GRASS DEVELOPMENT

El Paso County, Colorado

PREPARED FOR:
Challenger Communities, LLC
8605 Explorer Dr., Suite 250
Colorado Springs, CO 80920

PREPARED BY:
Galloway & Company, Inc.
1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920

DATE:
January 2021
Revised: March 2021
Revised: April 2021
Revised: June 2021
Revised: August 2021
Revised: September 2021

PUDSP-20-005

A Current Conditions drainage basin map has also been provided. This scenario includes the development of Bent Grass residential Filing No. 2. Hydrology Calculations for this scenario have been provided in Appendix B. This was also provided as the existing conditions map and calculations in the Bent Grass West PDR.

Individual basin descriptions have not been included here, as they have been addressed in previously stated reports. General overall descriptions of the drainage patterns have been provided.

The Bent Grass development will impact the West Tributary and the Middle Tributary of the Falcon Basin. All development from the west of side of Bent Grass Residential Filing No. 1 and west will be contained within the West Tributary. Everything east of that property line, including the Bent Grass Meadows/Meridian Road intersection, will impact the Middle Tributary.

MIDDLE TRIBUTARY

The Middle Tributary drainage begins at Design Point 30.

Design Point 30 (225.0 AC, Q_5 = 2.1 cfs, Q_{100} = 63.5 cfs): is the release rate of the existing Meadows Pond #3, located in Meadows Filing No. 3, just north of Woodmen Hills Drive. The flows are based on the revised HEC-HMS (Current and Future Models), which is located in Appendix B. Flows will cross under Woodmen Hills Drive via an existing culvert, then sheet flow to the southeast, passing through Basin OS-25 to DP 31. The DBPS by Matrix had 160 cfs at this location under the "Do Nothing Analysis" and 99 cfs under the "Regional" and "Sub-Regional" design alternatives. Minor flows were not provided in the report. The flows are lower in the current HEC-HMS report, as more accurate design data and as-built information for the existing Meadows Pond 2 was utilized in the pond stage/storage and storage/discharge tables.

Design Point 30 will combine with offsite basins OS-25 & OS-26, until they reach an existing sedimentation pond at DP-32, located north of Bent Grass Meadows Drive, on what's referred to as the "school" site. The current configuration of the pond has release rates of 2.1 and 63.5 cfs for the 5 and 100-year storm events, under the Current HEC HMS model. These flows will continue south to Bent Grass Meadows Drive. Curb and gutter in the roadway is able to handle 7.4 and 33.2 cfs in the minor and major storms. It is assumed that the max gutter flow will continue to the east and any remaining flow, of 30.3 cfs, will be directed to the south through the Bent Grass Filing No. 1 development. Flow will travel through curb and gutter and existing storm systems within Bent Grass Filing No. 1, ultimately out falling to Bent Grass Pond 1. Based on the local street section and slopes, flows were routed through the development based on overtopping and flows splitting at intersections. The routing of the storm flow can be found in Appendix B, under Surface Routing.

The existing detention pond, Pond 1 Bent Grass Filing No. 1, was analyzed with the additional flow and contributing area. From the FDR for Bent Grass Residential, Pond 1 had a 5-year release rate of 0.4 cfs and a 100-year release rate of 6.8 cfs. The 100-year water surface elevation was 6937.61. With the additional flow being re-routed to Pond 1, the current release rates for Pond 1 are 0.5 cfs for the 5-year event and 22.0 cfs for the 100-year event. The pond will have a 100-year water surface elevation of 6938.08. The spillway elevation for the pond is 6939.61.

Flows in Bent Grass Meadows will continue east, on the north side of the roadway, where they will combine with offsite flows from BG 50 (5-year flow is 280 cfs, 100-year flow=850 cfs), which is the flow obtained from the Falcon DBPS. There are 3 existing 45" x 29" elliptical rcp's. For the current condition, the approved FDR for Meridian Road is allowing 2 additional elliptical rcp's, which will handle the flow

from Bent Grass Meadows at Design Point 15n (5-year flow = 13.4 cfs, 100-year flow=62.2 cfs). Design Point 20 (5-year flow=304.8, 100-year flow=961.8 cfs) combines the roadside flow from offsite with the flow from Bent Grass Meadows Drive. Flows will then continue south in a roadside ditch along Meridian Road, on the west side. The Meridian Road ditch also captures flows from the Bent Grass East Commercial developments. Existing water quality facilities intercept the runoff and treat it, prior to being released into the ditch. Flows will eventually be intercepted by a set of existing twin 36" cmp's at Owl Place, at Design Point BG 25 (Q100=837.4, Q5=256.3 cfs). From the Meridian Road/Bent Grass Meadows FDR, it is shown that the existing culverts at Bent Grass Meadows Drive and Owl Place and the channel connecting the culverts are undersized and will need to be improved in the future to properly convey the flows outlined in the DBPS. Flow will continue through an existing channel and release into Pond SR-4.

The "school site" and areas north of it (Rational Basins OS-25 & OS-26), are now referred to as Basin MT060a in the HEC HMS model. MT060a is 19.8 acres and generates 8.3 cfs for the 5-year event and 28.3 cfs for the 100-year event. These flows are directed to an existing "sediment pond" which is refer ed to as the "School Pond". This area is a localized low area which holds flows and releases them through an existing spillway. This "pond" has been included in the "Current HEC_HMS model". Basin MT060-N is the area east of MT060a and north of Bent Grass Meadows Drive. MT060-N is 28.2 acres and flows towards the east to Meridian Road. MT060-N generates 17.6 cfs for the 5-year storm and 59.6 cfs for the 100-year storm.MT060-S is 70.9 acres and is south of Bent Grass Meadows Drive, It encompasses the remainder of the original DBPS MT060 basin and flows through an existing channel to the south. MT060-S generates 37.8 cfs for the 5-year storm and 125.7 cfs for the 100-year storm. These flows are released directly into Pond SR-4.

WEST TRIBUTARY

For the West Tributary of Falcon Basin, the hydrology analysis has the Bent Grass Residential Filing No. 2 as being constructed, as it is currently under construction. The basins for this development are part of the hydrology calculations which are provided in Appendix B, but a complete description of each of these basins has not been provided, as they can be referenced in the approved FDR for Bent Grass Residential Filing No. 2. With this development, there were 2 water quality ponds built, which release into the West Tributary channel. The offsite basins have also been discussed in the Bent Grass Filing No. 2 FDR.

The currently undeveloped portion of the Bent Grass site, referred to as Bent Grass West, is comprised of 8 undeveloped basins. Below is a brief description of them.

Basin EX-1 (1.19 AC, Q_5 = 0.4 cfs, Q_{100} = 2.5 cfs): is associated with the northeastern portion of the Bent Grass West site east of the existing channel. The basin is currently undeveloped. Runoff from the basin generally flows to the southwest, into Basin EX-2 at **DP 10.**

Basin EX-2 (1.56 AC, Q_5 = 0.5 cfs, Q_{100} = 3.7 cfs): is along the eastern boundary portion of the proposed site and is south of Basin EX-1, east of the existing channel. The basin is currently undeveloped and receives flows from Basins OS-4 & OS-5. Runoff from the basin generally flows to the southeast into Basin EX-3 at **DP 14** combined with flows from **DP 11 & 12**.

Basin EX-3 (0.62 AC, Q_5 = 0.2 cfs, Q_{100} = 1.5 cfs): is along the eastern boundary of the proposed site south of Basin EX-2 and east of the existing channel. The basin currently contains an existing WQCV pond created as part of Bent Grass Residential Filing No. 2. This basin receives flows from **DP 14** and **DP 8**.

Sub Regional Detention Alternative[1]						
Pond		Q_2 In (cfs)	Q_2 Out (cfs)	Q_{100} In (cfs)	Q_{100} Out (cfs)	Required Volume (AF)[2]
Paint Brush Hills Pond #4	PBH 4	38	29	200	150	1.34
Paint Brush Hills Pond A	PBH A	35	7	170	140	2.62
Paint Brush Hills Pond B1	PBH B1	80	51	420	270	9.17
Paint Brush Hills Pond B2	PBH B2	51	10	270	180	12.09
Paint Brush Hills Pond C	PBH C	56	3	300	140	6.77
Regional Pond MN	R MN	65	32	850	820	7.53
Regional Pond R1	R R1	110	77	1,600	1,500	25.00
Regional Pond R2	R R2	140	140	2,100	2,100	7.90
Regional Pond WU South	R WU	47	22	1,070	930	39.54
Sub Regional Pond SR1	SR 1	54	42	610	510	11.03
Sub Regional Pond SR2	SR 2	65	65	840	840	2.05
Sub Regional Pond SR3	SR 3	72	72	910	910	1.03
Sub Regional Pond SR4	SR 4	130	27	1,000	730	19.37
Sub Regional Pond SR6	SR 6	74	9	390	200	11.82
The Meadows Pond #1	M 1	11	0	75	2	3.25
The Meadows Pond #2	M 2	28	5	210	99	7.94
Woodmen Hills Pond #1 North	WH 1N	65	61	390	260	7.13
Woodmen Hills Pond #1 South	WH 1S	61	10	260	260	8.78
Woodmen Hills Pond #2	WH 2	37	10	270	250	9.18
Woodmen Hills Pond #3	WH 3	105	13	530	360	8.35
Woodmen Hills Pond #4	WH 4	110	15	790	260	40.45
Woodmen Hills Pond #5	WH 5	40	1	130	19	4.10
Woodmen Hills Pond H	WH H	140	110	750	750	2.66

Notes
1: Represents future hydrology with retrofit existing detention ponds and 5 new subregional detention ponds
2: Required volume to highest WSE

Reach Alternative	Total (ft)
Protect In Place	30,066
Natural Channel Design	32,359
Small Drop Structures w/ Toe Protection	76,812
Large Drop Structures w/ Toe Protection	0

BURGESS RD
GOODSON RD
STAPLETON DR
EASTONVILLE RD
JUDGE ORR RD
WOODMEN RD
TAMLIN RD
FALCON HWY
GARRETT RD
MERIDIAN RD
DIVERSION
CHANGE DUE TO BENT GRASS R2 (RWT200)
DELETE POND WITH WQCV REPLACEMENTS & CHANNEL IMPROVEMENTS
CHANGE DUE TO BENT GRASS R1 (RMT063)

LEGEND

Detention Pond
- Existing
- Proposed
- Existing Watershed Boundary
- Historical and Future Watershed Boundary
- Tributary Basin Boundary
- Subbasin Boundary
- Major Tributary
- Immediate Action Required to Preserve Existing Condition

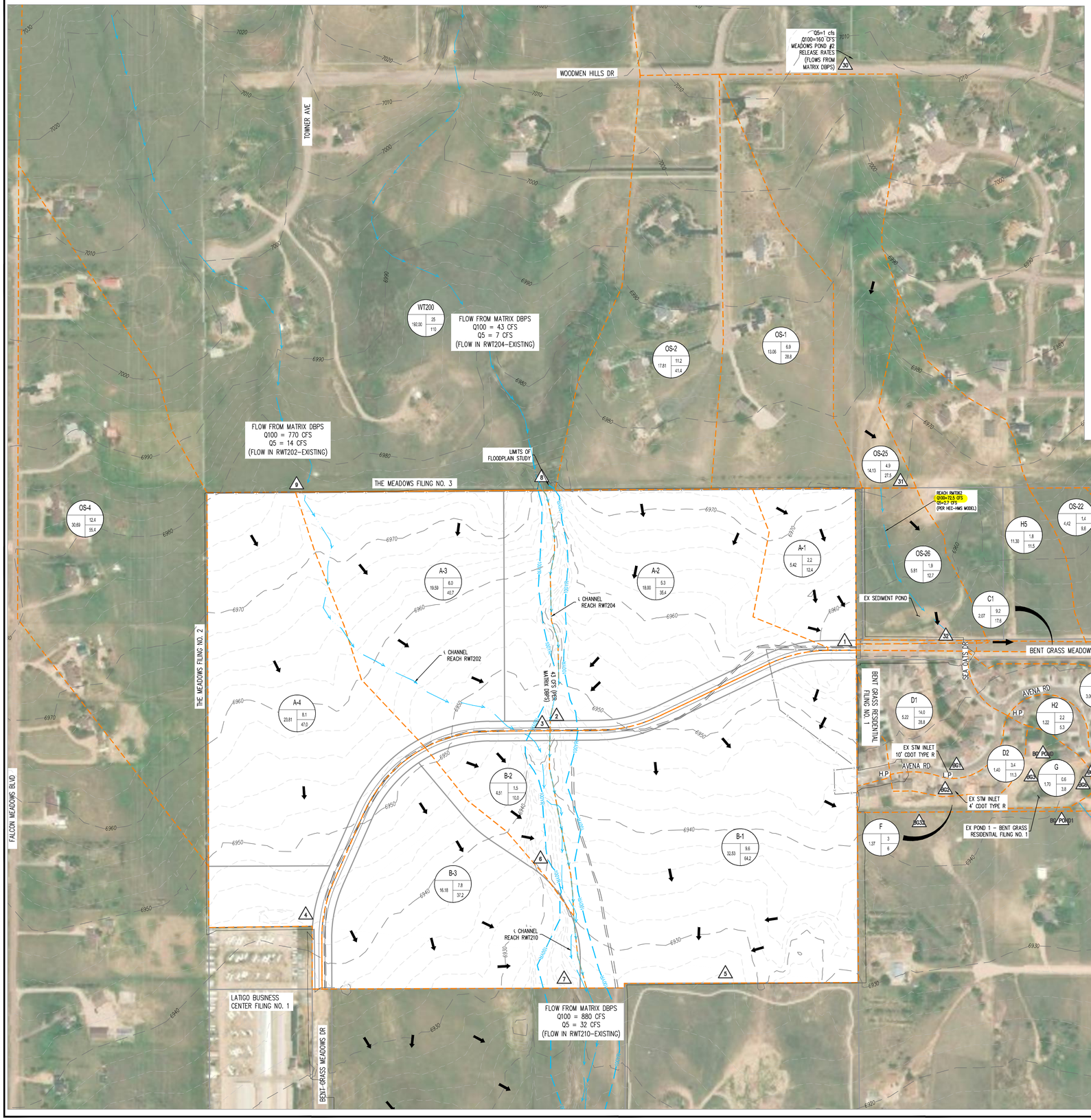
Reach Alternative
- Protect In Place
- Natural Channel Design
- Small Drop Structures w/ Toe Protection

Figure 5-3
Sub-Regional Detention Alternative
Falcon DBPS
El Paso County, CO

0 0.5 1
Miles

NOTE: FIGURE MUST BE VIEWED IN COLOR

FILE: G:\gis_projects\Falcon_Creek_DBPS\active\apps\20111215_alternatives\subregional_detention_alt.mxd, 12/19/2011, ron_ramold



RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT202	1574.40	14.0	770.0
RWT204	38.40	7.0	43.0
WT200	192.00	25.0	110.0
OS-25	14.13	4.9	27.5
OS-26	5.81	1.9	12.7
H5	11.30	1.8	11.5
OS-22	4.42	1.4	9.6
OS-23	10.24	3.3	22.5
C1	2.07	8.0	14.6
C2	2.15	8.4	15.3
D1	5.22	13.1	26.0
D2	1.40	4.0	7.8
H1	3.00	3.7	6.7
H2	1.22	1.3	2.2
F	1.37	2.6	5.9
G	1.70	2.7	5.6
H3	1.54	3.2	6.4
H4	0.42	1.0	1.9
I1	3.00	6.6	13.2
I2	1.70	3.9	7.7
J	1.64	3.0	6.8
K	1.00	1.8	4.2
L	5.90	18.5	33.2
M1	1.56	5.9	10.4
M2	0.44	1.9	3.5
D	0.41	1.8	3.0
A-1	5.42	2.2	12.4
A-2	18.00	5.3	35.4
A-3	19.59	6.0	40.7
A-4	23.81	8.1	47.0
B-1	32.53	9.6	64.2
B-2	4.51	1.5	10.0
B-3	16.18	7.8	37.2
OS-1	13.06	6.9	28.8
OS-2	17.81	11.2	41.4
OS-4	30.69	12.4	55.4
P-1	2.03	4.3	7.2

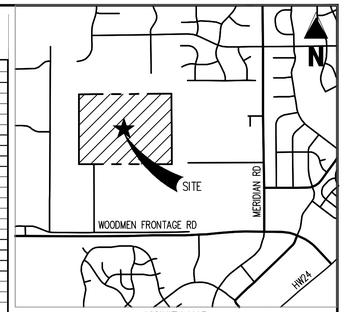
DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)
1	8.3	38.0
30	1.0	160.0
31	4.0	123.3
32	10.5	148.0
14	15.8	163.6
BG1	13.0	26.9
BG2	4.0	8.2
BG4	3.7	7.0
BG5	1.2	2.3
BG POND	21.3	43.5
BG POND 1	0.3	2.9
50	280.0	850.0
20	200.6	608.4
15	203.0	612.3
BG32	2.6	6.1
BG33	2.9	7.0
BG 7	3.1	6.4
BG 8	1.0	2.0
BG 9	6.5	13.4
BG 10	3.8	7.9
BG 11	13.5	27.8
BG 12	5.8	10.7
BG 13	7.0	13.0
BG 14	12.3	22.8
BG 15	42.2	82.0
BG POND 2	0.4	10.0
BG 30	3.0	5.0
BG31	1.8	3.1
25	205.2	616.2
8	28.7	132.6
9	14.0	770.0
2	5.0	34.9
3	42.0	865.5
4	18.2	93.7
5	9.1	63.4
6	41.1	838.2
7	44.1	843.6

N

0 50 100 200

SCALE: 1"=200'



VICINITY MAP

SCALE: 1"=1000'

N

0 50 100 200

SCALE: 1"=200'

DRAINAGE LEGEND

- PROPERTY LINE
- 6485 EXISTING MAJOR CONTOUR
- 6483 EXISTING MINOR CONTOUR
- BASIN BOUNDARY LINE
- 100YR FEMA EFFECTIVE 100–YR FLOODPLAIN
- CENTERLINE OF STREAM
- BASIN DESIGNATION
- 5–YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100–YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DIRECTION OF RUNOFF

Galloway

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GallowayUS.com

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CHALLENGER HOMES

DRAINAGE PLAN
BENT GRASS RESIDENTIAL
FOR
CHALLENGER COMMUNITIES, LLC

BENT GRASS MEADOWS DRIVE & MERIDIAN ROAD
FALCON, CO - EL PASO COUNTY

#	Date	Issue / Description	Init.

Project No:	CLH000014.20
Drawn By:	CMWJ
Checked By:	SMB
Date:	OCTOBER 2019

EXISTING CONDITIONS DRAINAGE MAP

ED-1

Sheet 1 of 1

H:\Challenger Homes Inc\ECS\ 03 Pikes County\CLH000013 Black Forest West (NDS)\ 04 Permit Comm Docs\ 04 Grading Drainage\ 04.01 Proposed Drainage\MDP\Drainage Maps\EXHIBIT 2D - West Dr.dwg - Charleston Durham - 4/16/2021

MATCH LINE - SEE SHEET CD-5

MATCH LINE - SEE SHEET CD-1

MATCH LINE - SEE SHEET CD-3

EXISTING CHANNEL (RWT204)

EXISTING CHANNEL (RWT210)

EXISTING SWALE

L CHANNEL REACH RWT204

L CHANNEL REACH RWT210

SILKY THREAD ROAD (PUBLIC-LOCAL-50' ROW)

THEDFORD COURT (PUBLIC-LOCAL-50' ROW)

BARLEY COURT (PUBLIC-LOCAL-50' ROW)

ANGLEY COURT (PUBLIC-LOCAL-50' ROW)

NIOBRARA DRIVE (PUBLIC-LOCAL-50' ROW)

MILLMORE DRIVE (PUBLIC-LOCAL-50' ROW)

BENT GRASS MEADOWS DRIVE (PUBLIC-LOCAL-50' ROW)

BERWYN LOOP (PUBLIC-LOCAL-50' ROW)

BASSETT DRIVE (PUBLIC-LOCAL-50' ROW)

AVENA ROAD (PUBLIC-LOCAL-50' ROW)

SEA OATS DR (PUBLIC-LOCAL-50' ROW)

AVENA RD (PUBLIC-LOCAL-50' ROW)

BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS RESIDENTIAL FILING NO. 1

TRACT A

TRACT B

TRACT D

NORTH POND
EX WQC POND
(PER APPROVED BENT GRASS FILING 2 FDR)

SOUTH POND
EX WQC POND
(PER APPROVED BENT GRASS FILING 2 FDR)

EX POND 1 – BENT GRASS RESIDENTIAL FILING NO. 1

EX SEDIMENT POND (SCHOOL POND)

FLOW CONTINUES EAST TO MERIDIAN ROAD DITCH (Q5=7.4, Q100=94.3)

EX 36" RCP SD

EX 20' CDOT TYPE R INLET

EX 10' CDOT TYPE R INLET

EX 16'X6' TWIN RCBC'S

EX 24" RCP SD

EX STM INLET 15' CDOT TYPE R

EX STM INLET 10' CDOT TYPE R

EX 6' STM MH

EX 30" RCP SD

EX STM INLET 20' CDOT TYPE R

EX. 30"RCP SD

EX 42" RCP SD

EX 18" RCP SD

EX 4' STM MH

EX OUTLET STRUCTURE

EX STM INLET 10' CDOT TYPE R

EX STM INLET 4' CDOT TYPE R

H.P

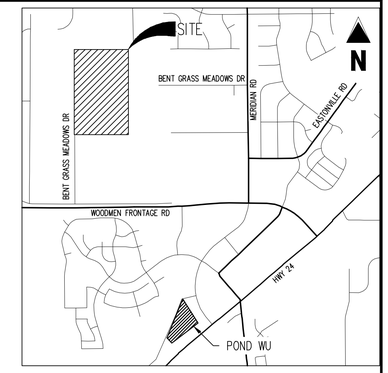
L.P

FLOW FROM MATRIX DBPS
Q100 = 1200 CFS
Q5 = 110 CFS
(FLOW IN RWT210-FUTURE)

OWNER: MOUNTAIN VIEW ELECTRIC ASSOCIATION INC.
BOOK 3233, PAGE 824
ZONE: I-2
PARCEL NO.: 5301000016

N

0 20 50 100
SCALE: 1"=100'



VICINITY MAP
1"=2,000'

DRAINAGE LEGEND

- PROPERTY LINE
- 6480 EXISTING MAJOR CONTOUR
- 6484 EXISTING MINOR CONTOUR
- 6480 PROPOSED MAJOR CONTOUR
- 6484 PROPOSED MINOR CONTOUR
- BASIN BOUNDARY LINE
- 100YR FEMA EFFECTIVE 100-YR FLOODPLAIN
- CENTERLINE OF STREAM
- BASIN DESIGNATION
- 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DIRECTION OF RUNOFF

RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT202	1574.40	220.0	1000.0
RWT204	38.40	7.0	43.0
WT200	192.00	52.0	190.0
OS-2	20.08	9.0	43.4
OS-3	10.62	4.7	22.7
OS-25	14.13	5.1	29.0
OS-26	5.81	1.9	12.6
H5	11.30	2.1	13.1
OS-22	4.42	1.5	9.7
OS-23	10.24	3.3	22.5
C1a	0.48	1.8	3.4
C1b	0.88	3.3	6.2
C1c	1.09	4.1	7.8
D1a	0.56	1.6	3.5
D1b	0.68	2.0	4.2
D1c	1.20	3.2	6.6
D1d	2.79	6.7	13.6
C2a	1.26	2.9	6.0
C2b	0.99	3.3	6.0
D2a	1.00	1.8	4.8
D2b	0.41	1.0	2.3
H1a	0.40	1.0	2.3
H1b	2.52	4.3	9.9
H1c	0.16	0.4	0.9
H2a	1.09	1.7	4.2
H2b	0.15	0.3	0.7
F	1.37	2.6	5.9
G	1.70	2.7	5.6
H3	1.54	3.2	6.4
H4	0.42	1.0	1.9
I1	3.00	6.6	13.2
I2	1.70	3.9	7.7
J	1.64	3.0	6.8
K	1.00	1.8	4.2
L	5.90	18.5	33.2
M1	1.56	5.9	10.4
M2	0.44	1.9	3.5
N	1.32	5.3	9.4
D	0.41	1.8	3.0
OS-1	32.28	15.1	65.1
OS-4	4.46	5.6	14.0
OS-5	0.46	1.1	2.3
OS-6	1.17	2.0	4.3
A-1	2.70	3.3	8.6
A-2	1.19	1.5	4.2
A-3	1.57	2.1	5.0
A-4	2.24	2.9	7.5
C-1	1.35	2.6	5.9
C-2	6.80	7.1	18.5
C-3	2.38	3.3	7.8
C-4	3.61	5.3	12.0
C-5	7.86	10.9	24.9
C-6	5.54	7.0	16.9
C-7	0.89	0.3	2.1
C-8	0.42	0.2	1.0
E-1	1.71	3.6	7.7
E-2	0.68	2.4	4.6
E-3	0.78	2.9	5.3
E-4	0.91	3.0	5.7
E-5	0.89	3.3	6.1
F-1	0.44	0.6	1.6
F-2	0.55	1.5	3.1
G-1	1.47	1.3	4.5
H-1	0.52	0.2	1.4
I-1	0.31	1.0	2.1
EX-1	1.19	0.4	2.5
EX-2	1.56	0.5	3.7
EX-3	0.62	0.2	1.5
EX-4	12.49	3.7	25.1
EX-5	5.15	1.6	10.6
EX-6	9.53	2.7	17.8
EX-7	9.16	2.8	18.9
EX-8	21.30	6.6	43.9
P-1	2.03	4.2	8.7

DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)	REV HMS FLOWS Q_5 (cfs)	REV HMS FLOWS Q_{100} (cfs)
40	277.8	1226.8	67.6	1014.5
1	3.1	8.6		
2	4.3	11.9		
3	5.9	15.9		
4	8.3	22.3		
5	1.5	10.5		
6	3.5	34.4		
7	2.9	5.5		
8	11.2	32.7		
9	0.7	1.5		
10	1.0	3.9		
11	5.3	13.9		
12	1.9	4.4		
13	7.1	17.9		
14	8.1	23.8		
15	18.3	54.1		
15A	12.2	37.0		
AA	268.8	1181.4		
BB	268.3	1176.5		
16	16.6	39.4		
17	10.6	26.8		
18	13.5	39.2		
19	9.5	29.7		
20	1.3	4.6		
20A	18.4	57.1		
20B	21.3	66.0		
28	8.6	42.8		
29	12.2	60.9		
21	2.7	18.7		
22	2.5	29.6		
23	11.5	57.6		
24	3.2	18.0		
25	3.3	10.7		
26	15.1	73.2		
27A	6.3	43.7		
27B	0.2	1.3		
CC	278.3	1224.7	186.2	1044.6
30	2.7	63.4		
31	5.1	60.9		
32	6.5	65.0		
32-N	6.5	33.2		
32-S	0.6	33.2		
BG 1a-Os	0.0	0.0		
BG 1a-Ose	0.0	0.0		
BG 1a-Osw	0.0	0.0		
BG 4a	0.4	0.9		
BG 1b	0.8	1.7		
BG 1c	2.1	4.4		
BG 1	5.2	11.0		
BG 2e	1.8	5.0		
BG 2w	1.0	2.4		
BG 2	2.8	7.3		
BG 4e	0.4	0.9		
BG 4w	2.4	5.7		
BG 4	2.6	6.1		
BG 5e	0.3	0.7		
BG 5w	1.7	4.2		
BG 5	1.9	4.7		
BG 3	7.6	16.6		
BG 6	3.5	8.4		
BG POND1	0.5	22.0		
BG 14n	13.0	63.8		
BG 15n	12.6	62.2		
BG 50	280.0	850.0		
BG 20	303.7	961.8		
BG 14s	1.5	36.4		
BG 15s	3.0	38.5		
BG 21	306.3	1007.0		
BG 32	2.6	6.1		
BG 33	2.9	7.0		
BG 7	3.1	6.4		
BG 8	1.0	2.0		
BG 9	6.5	13.4		
BG 10	3.8	7.9		
BG 11	13.5	27.8		
BG 12	5.8	10.7		
BG 13	7.0	13.0		
BG 14	12.3	22.8		
BG 15	42.2	82.0		
BG POND2	0.4	10.0		
BG 30	3.0	5.0		
BG 31	1.8	3.1		
BG 25	255.5	837.4		

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CHALLENGER HOMES

MASTER DRAINAGE DEVELOPMENT PLAN FALCON MEADOWS AT BENT GRASS FOR CHALLENGER COMMUNITIES, LLC

BENT GRASS MEADOWS DRIVE & MERDIAN ROAD
FALCON, CO 80831 - EL PASO COUNTY

#	Date	Issue / Description	Init.

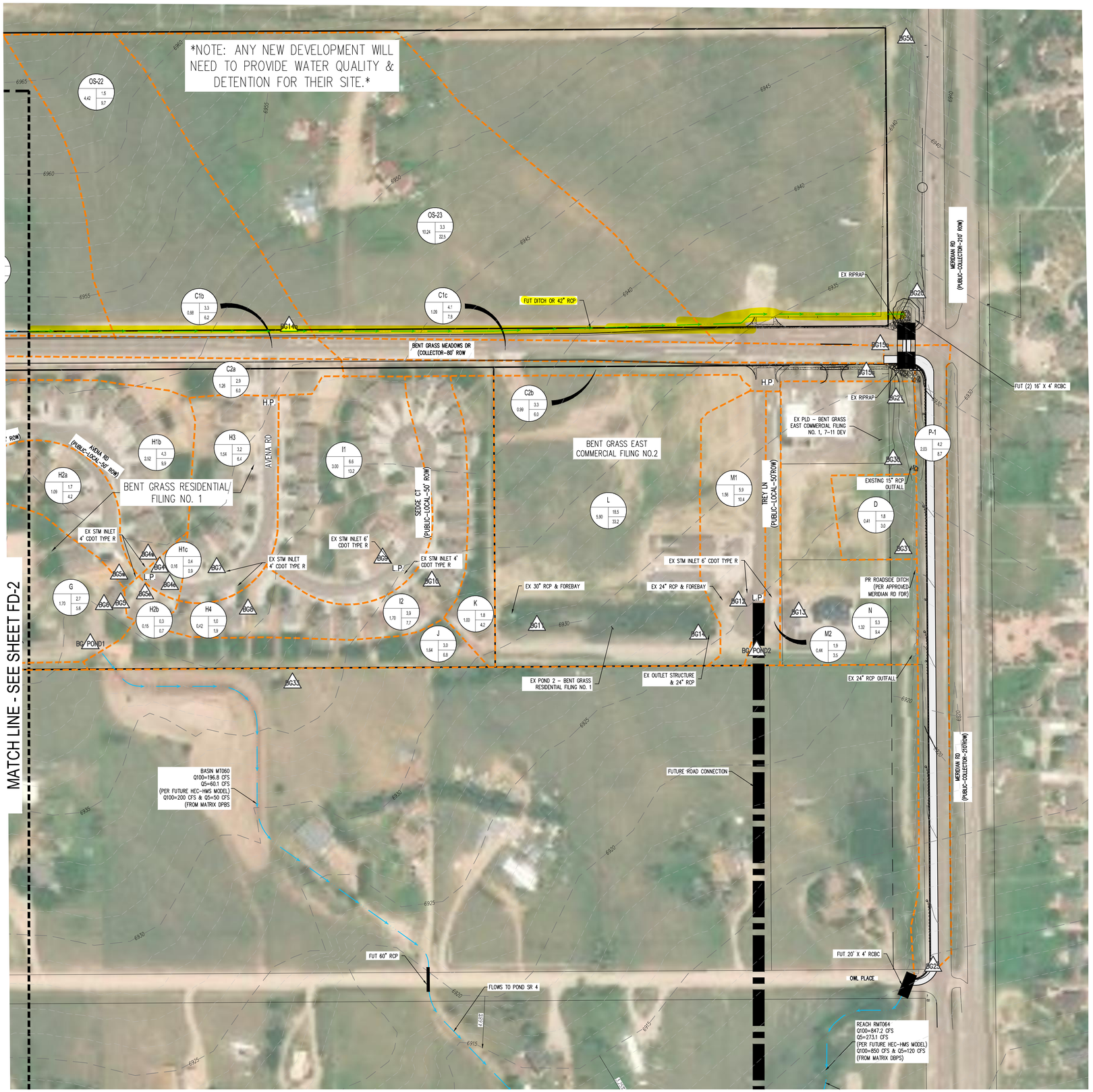
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Drawn By: CMW
Checked By: SMB
Date: OCTOBER 2019

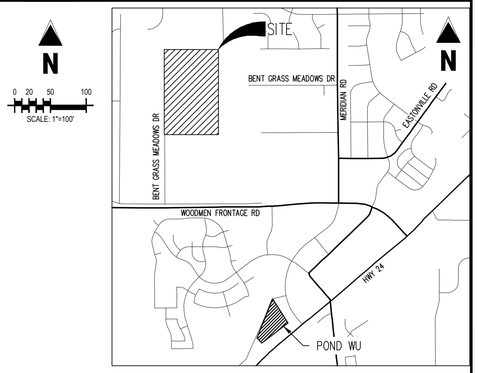
CURRENT CONDITIONS DRAINAGE MAP

CD-2

Sheet 2 of 5

H:\Challenger Homes Inc\CDS, El Paso County\FALCON\01 Falcon Estates West (Fx\01 Planning\Drainage\04 Drawings\Maps\SHT\1 DR_CD-2.dwg, JDeHaan, 8/5/2021





VICINITY MAP

DRAINAGE LEGEND 1"=2,000'

- PROPERTY LINE
- 6485 EXISTING MAJOR CONTOUR
- 6483 EXISTING MINOR CONTOUR
- 6485 PROPOSED/FUTURE MAJOR CONTOUR
- 6483 PROPOSED/FUTURE MINOR CONTOUR
- BASIN BOUNDARY LINE
- 100YR FEMA EFFECTIVE 100-YR FLOODPLAIN
- CENTERLINE OF STREAM
- BASIN DESIGNATION
- 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DIRECTION OF RUNOFF

RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT202	1574.40	220.0	1000.0
RWT204	38.40	7.0	43.0
WT200	192.00	52.0	190.0
OS-2	20.08	9.0	43.4
OS-3	10.62	4.7	22.7
OS-25	18.74	6.3	35.8
OS-26	5.81	1.9	12.6
H5	6.37	3.2	15.1
OS-22	4.42	1.5	9.7
OS-23	10.24	3.3	22.5
C1a	0.48	1.8	3.4
C1b	0.88	3.3	6.2
C1c	1.09	4.1	7.8
D1a	0.56	1.6	3.5
D1b	0.68	2.0	4.2
D1c	1.20	3.2	6.6
D1d	2.79	6.7	13.6
C2a	1.26	2.9	6.0
C2b	0.99	3.3	6.0
D2a	1.00	1.8	4.8
D2b	0.41	1.0	2.3
H1a	0.40	1.0	2.3
H1b	2.52	4.3	9.9
H1c	0.16	0.4	0.9
H2a	1.09	1.7	4.2
H2b	0.15	0.3	0.7
F	1.37	2.6	5.9
G	1.70	2.7	5.6
H3	1.54	3.2	6.4
H4	0.42	1.0	1.9
I1	3.00	6.6	13.2
I2	1.70	3.9	7.7
J	1.64	3.0	6.8
K	1.00	1.8	4.2
L	5.90	18.5	33.2
M1	1.56	5.9	10.4
M2	0.44	1.9	3.5
N	1.32	5.3	9.4
D	0.41	1.8	3.0
OS-1	33.07	15.5	66.7
OS-4	4.46	5.6	14.0
OS-5	0.46	1.1	2.3
OS-6	1.17	2.0	4.3
A-1	2.70	3.3	8.6
A-2	1.19	1.5	4.2
A-3	1.57	2.1	5.0
A-4	2.24	2.9	7.5
C-1	1.35	2.6	5.9
C-2	6.80	7.1	18.5
C-3	2.38	3.3	7.8
C-4	3.61	5.3	12.0
C-5	7.86	10.9	24.9
C-6	5.54	7.0	16.9
C-7	0.89	0.3	2.1
E-1	1.71	3.6	7.7
E-2	0.68	2.4	4.6
E-3	0.76	2.9	5.3
E-4	0.91	3.0	5.7
E-5	0.89	3.3	6.1
F-1	0.44	0.6	1.6
F-2	0.55	1.5	3.1
G-1	1.47	1.3	4.5
H-1	0.52	0.2	1.4
I-1	0.31	1.0	2.1
AA-1	2.57	4.2	9.9
AA-2	2.28	4.2	9.3
B-1	5.25	2.3	10.7
B-2	4.16	1.4	9.1
CC-1	9.07	16.9	36.0
CC-2	1.53	4.6	9.8
CC-3	1.88	6.4	12.1
CC-4	3.64	6.2	16.0
CC-5	0.45	0.2	1.4
D-1	9.07	11.2	26.6
D-2	7.42	15.5	32.2
D-3	2.03	0.8	2.3
D-4	4.38	7.8	16.6
D-5	1.08	2.2	4.6
D-6	4.01	8.2	17.2
D-7	6.39	3.2	14.8
D-8	1.69	1.3	4.5
P-1	2.03	4.2	8.7

DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)	REV HMS FLOWS Q_5 (cfs)	REV HMS FLOWS Q_{100} (cfs)
40	276.1	1227.8	181.4	1029.1
1	3.1	8.6		
2	4.3	11.9		
3	5.9	15.9		
4	8.3	22.3		
9	1.1	2.4		
11	6.0	15.5		
13	7.6	19.0		
5	10.9	27.1		
6	4.1	9.4		
7	2.9	5.5		
8	20.0	50.5		
12	4.6	10.2		
15	20.9	45.4		
10	23.9	52.7		
10A	6.0	21.9		
14	33.0	81.1		
14A	12.2	37.0		
AA	270.3	1188.7		
BB	269.5	1186.4		
16	16.6	39.4		
17	10.6	26.8		
18	13.5	39.2		
19	9.5	29.7		
20	1.3	4.6		
20A	18.4	57.1		
20B	21.3	66.0		
28	8.6	42.8		
29	12.2	60.9		
21	15.0	32.5		
22	10.5	26.0		
23	12.2	59.7		
24	2.1	15.9		
25	3.3	10.7		
26	8.0	41.7		
42	7.5	16.5		
43	10.0	21.8		
44	1.2	4.5		
45	53.8	173.9		
45A	1.1	45.8		
CC	268.2	1183.4	191.9	1075.3
30	2.1	63.5		
31	5.8	67.4		
32	6.5	64.8		
32A	4.9	34.5		
32A-N	4.9	33.2		
32A-S	12.5	3.6		
BG 1a-Os	0.0	0.0		
BG 1a-Ose	0.0	0.0		
BG 1a-Osw	0.0	0.0		
BG 4a	0.6	1.5		
BG 1b	1.3	2.8		
BG 1c	3.3	7.1		
BG 1	8.3	17.6		
BG 2e	1.8	5.0		
BG 2w	1.0	2.4		
BG 2	2.8	7.3		
BG 4e	0.4	0.9		
BG 4w	3.8	9.0		
BG 4	4.0	9.5		
BG 5e	0.3	0.7		
BG 5w	1.7	4.2		
BG 5	1.9	4.7		
BG 3	16.2	58.7		
BG 6	5.4	13.2		
BG POND1	0.3	2.9		
BG 14n	9.2	42.7		
BG 15n	8.8	40.9		
BG 50	280.0	850.0		
BG 20	292.5	969.3		
BG 14s	15.0	7.8		
BG 15s	16.8	12.4		
BG 21	304.6	915.3		
BG 32	2.6	6.1		
BG 33	2.9	7.0		
BG 7	3.1	6.4		
BG 8	1.0	2.0		
BG 9	6.5	13.4		
BG 10	3.8	7.9		
BG 11	13.5	27.8		
BG 12	5.8	10.7		
BG 13	7.0	13.0		
BG 14	12.3	22.8		
BG 15	42.2	82.0		
BG POND2	0.4	10.0		
BG 30	3.0	5.0		
BG 31	1.8	3.1		
BG 25	252.0	751.4		

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CHALLENGER HOMES

MASTER DRAINAGE DEVELOPMENT PLAN
FALCON MEADOWS AT BENT GRASS
FOR
CHALLENGER COMMUNITIES, LLC

BENT GRASS MEADOWS DRIVE & MERIDIAN ROAD
FALCON, CO 80831 - EL PASO COUNTY

#	Date	Issue / Description	Init.

Project No: CLH000014.20
Drawn By: CMWJ
Checked By: SMB
Date: OCTOBER 2019

FUTURE CONDITIONS DRAINAGE MAP

FD-3
Sheet 3 OF 5

M:\Challenger Homes Inc\CO\...\Bent Grass Drive\PLD\3 Submit\Construction\Sheet Set\FD3 Future Conditions Drainage Map.dwg, 10/17/2019 4:37:23 PM, Chelsea Dunbar, 4/24/2021

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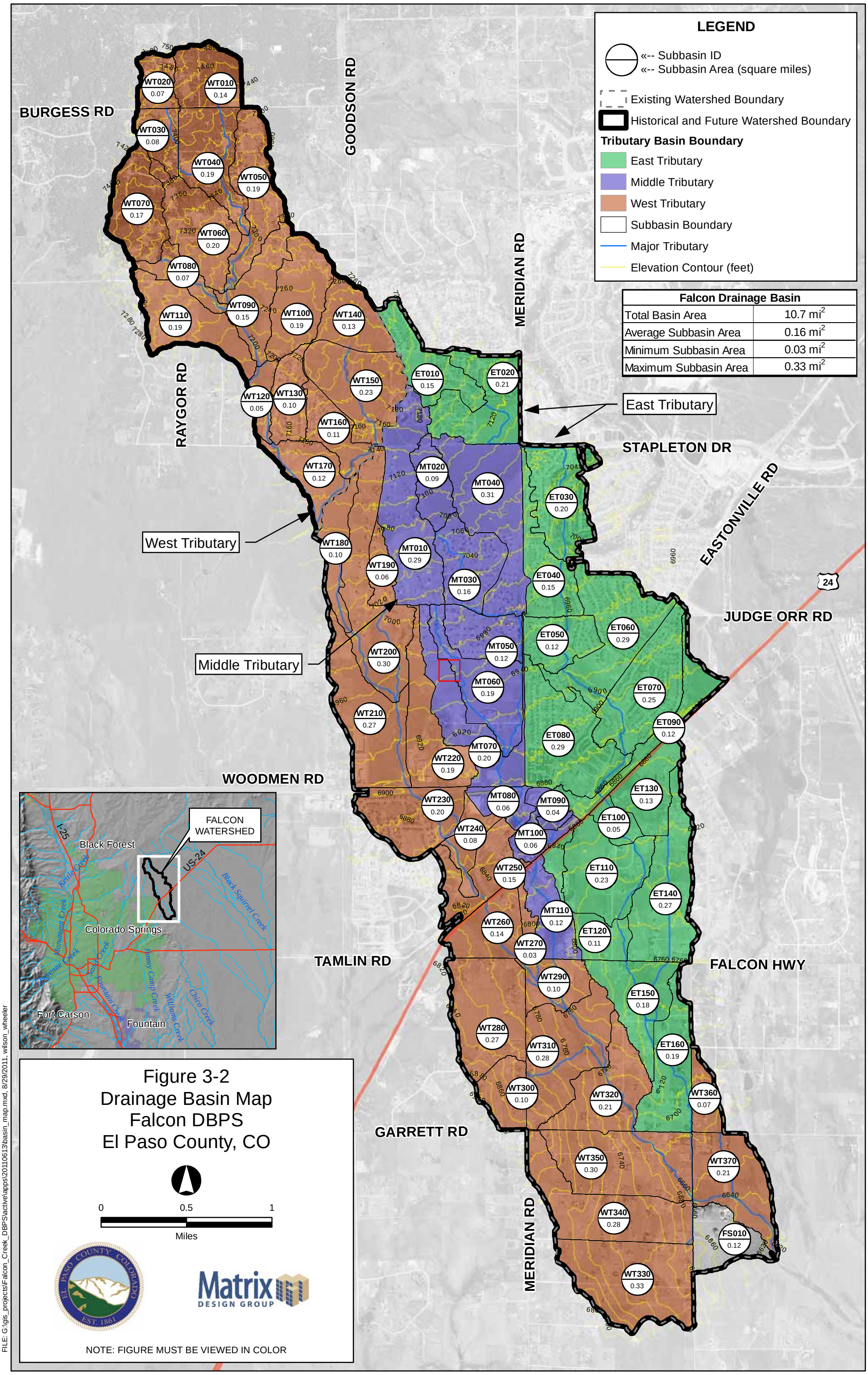
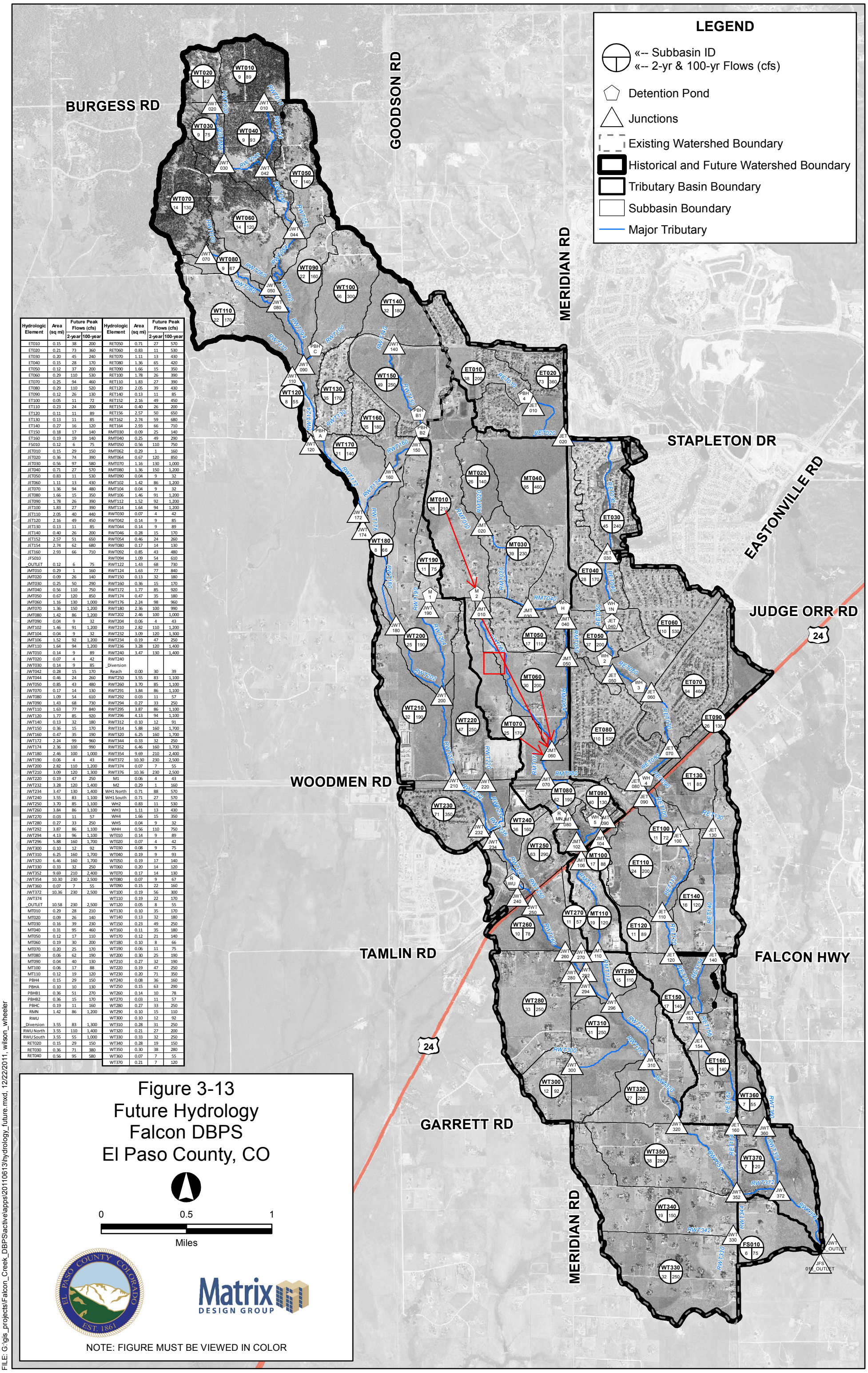


Figure 3-2
Drainage Basin Map
Falcon DBPS
El Paso County, CO

NOTE: FIGURE MUST BE VIEWED IN COLOR

FILE: G:\gis_projects\Falcon_Creek_DBPS\active\apps\20110613\basin_map.mxd, 8/29/2011, wilson_wheeler

PAGE FROM FALCON DBPS



Hydrologic Element	Area (sq mi)	Future Peak Flows (cfs) 2-year	100-year
ET010	0.15	38	200
ET020	0.21	73	360
ET030	0.20	45	240
ET040	0.15	28	170
ET050	0.12	37	200
ET060	0.29	110	530
ET070	0.25	94	460
ET080	0.29	110	520
ET090	0.12	26	130
ET100	0.05	11	72
ET110	0.23	24	200
ET120	0.11	11	89
ET130	0.13	11	85
ET140	0.27	16	120
ET150	0.18	17	140
ET160	0.19	19	140
FS010	0.12	6	75
JET010	0.15	29	150
JET020	0.36	74	390
JET030	0.56	97	580
JET040	0.71	27	570
JET050	0.83	11	530
JET060	1.11	13	430
JET070	1.36	94	480
JET080	1.66	15	350
JET090	1.78	26	390
JET100	1.83	27	390
JET110	2.05	40	440
JET120	2.16	49	450
JET130	0.13	11	85
JET140	0.40	26	200
JET152	2.57	51	650
JET154	2.74	62	680
JET160	2.93	66	710
JFS010 _OUTLET	0.12	6	75
JMT010	0.29	1	160
JMT020	0.09	26	140
JMT030	0.25	50	290
JMT040	0.56	110	750
JMT050	0.67	120	850
JMT060	1.16	130	1,000
JMT070	1.36	150	1,200
JMT080	1.42	86	1,200
JMT090	0.04	9	32
JMT102	1.46	91	1,200
JMT104	0.04	9	32
JMT106	1.52	92	1,200
JMT110	1.64	94	1,200
JWT010	0.14	9	89
JWT020	0.07	4	42
JWT030	0.14	9	85
JWT042	0.28	15	170
JWT044	0.46	24	260
JWT050	0.85	43	480
JWT070	0.17	14	130
JWT080	1.09	54	610
JWT090	1.43	68	730
JWT110	1.63	77	840
JWT120	1.77	85	920
JWT140	0.13	32	180
JWT150	0.36	15	170
JWT160	0.47	35	190
JWT172	2.24	99	960
JWT174	2.36	100	990
JWT180	2.46	100	1,000
JWT190	0.06	4	43
JWT200	2.82	110	1,200
JWT210	3.09	120	1,300
JWT220	0.19	47	250
JWT232	3.28	120	1,400
JWT234	3.47	130	1,400
JWT240	3.55	83	1,100
JWT250	3.70	85	1,100
JWT260	3.84	86	1,100
JWT270	0.03	11	57
JWT280	0.27	33	250
JWT292	3.87	86	1,100
JWT294	4.13	96	1,100
JWT296	5.88	160	1,700
JWT300	0.10	12	92
JWT310	6.25	160	1,700
JWT320	6.46	160	1,700
JWT330	0.33	32	250
JWT352	9.69	210	2,400
JWT354	10.30	230	2,500
JWT360	0.07	7	55
JWT372	10.36	230	2,500
JWT374 _OUTLET	10.58	230	2,500
MT010	0.29	28	210
MT020	0.09	26	140
MT030	0.16	39	230
MT040	0.31	95	460
MT050	0.12	17	110
MT060	0.19	30	200
MT070	0.20	25	170
MT080	0.06	62	190
MT090	0.04	40	130
MT100	0.06	17	88
MT110	0.12	19	120
PBH4	0.15	29	150
PBHA	0.10	10	130
PBHB1	0.36	51	270
PBHB2	0.36	15	170
PBHC	0.19	11	160
RMN	1.42	86	1,200
RWU Diversion	3.55	83	1,300
RWU North	3.55	110	1,400
RWU South	3.55	55	1,000
RET020	0.15	29	150
RET030	0.36	71	380
RET040	0.56	95	580

Hydrologic Element	Area (sq mi)	Future Peak Flows (cfs) 2-year	100-year
RET050	0.71	27	570
RET060	0.83	11	530
RET070	1.11	13	430
RET080	1.36	65	420
RET090	1.66	15	350
RET100	1.78	26	390
RET110	1.83	27	390
RET120	2.05	39	430
RET140	0.13	11	85
RET152	2.16	49	450
RET154	0.40	26	200
RET156	2.57	50	650
RET162	2.74	59	680
RET164	2.93	66	710
RMT030	0.09	25	140
RMT040	0.25	49	290
RMT050	0.56	110	750
RMT062	0.29	1	160
RMT064	0.67	120	850
RMT070	1.16	130	1,000
RMT080	1.36	150	1,200
RMT090	0.04	9	32
RMT102	1.42	86	1,200
RMT104	0.04	9	32
RMT106	1.46	91	1,200
RMT112	1.52	92	1,200
RMT114	1.64	94	1,200
RWT030	0.07	4	42
RWT042	0.14	9	85
RWT044	0.14	9	89
RWT046	0.28	15	170
RWT054	0.46	24	260
RWT080	0.17	14	130
RWT092	0.85	43	480
RWT094	1.09	54	610
RWT122	1.43	68	730
RWT124	1.63	77	840
RWT150	0.13	32	180
RWT160	0.36	15	170
RWT172	1.77	85	920
RWT174	0.47	35	180
RWT176	2.24	98	960
RWT180	2.36	100	990
RWT202	2.46	100	1,000
RWT204	0.06	4	43
RWT210	2.82	110	1,200
RWT232	3.09	120	1,300
RWT234	0.19	47	250
RWT236	3.28	120	1,400
RWT240 _Diversion Reach	0.00	30	39
RWT250	3.55	83	1,100
RWT260	3.70	85	1,100
RWT291	3.84	86	1,100
RWT292	0.03	11	57
RWT294	0.27	33	250
RWT295	3.87	86	1,100
RWT296	4.13	96	1,100
RWT312	0.10	12	91
RWT314	5.88	160	1,700
RWT320	6.25	160	1,700
RWT344	9.69	210	2,400
RWT372	10.30	230	2,500
RWT374	10.36	230	2,500
M1	0.06	4	43
M2	0.29	1	160
WH1 North	0.71	88	570
WH1 South	0.71	27	570
WH2	0.83	11	530
WH3	1.11	13	430
WH4	1.66	15	350
WH5	0.04	9	32
WHH	0.56	110	750
WT010	0.14	9	89
WT020	0.07	4	42
WT030	0.08	9	75
WT040	0.19	9	93
WT050	0.19	17	140
WT060	0.20	14	120
WT070	0.17	14	130
WT080	0.07	9	67
WT090	0.15	22	160
WT100	0.19	56	300
WT110	0.19	22	170
WT120	0.05	8	55
WT130	0.10	35	170
WT140	0.13	32	180
WT150	0.23	49	250
WT160	0.11	35	180
WT170	0.12	21	140
WT180	0.10	8	66
WT190	0.06	11	75
WT200	0.30	25	190
WT210	0.27	32	190
WT220	0.19	47	250
WT230	0.20	71	350
WT240	0.08	36	160
WT250	0.15	63	290
WT260	0.14	10	78
WT270	0.03	11	57
WT280	0.27	33	250
WT290	0.10	15	110
WT300	0.10	12	92
WT310	0.28	31	250
WT320	0.21	27	200
WT330	0.33	32	250
WT340	0.28	19	150
WT350	0.30	38	280
WT360	0.07	7	55
WT370	0.21	7	120

Figure 3-13
Future Hydrology
Falcon DBPS
El Paso County, CO

0 0.5 1
Miles

NOTE: FIGURE MUST BE VIEWED IN COLOR

FILE: G:\gis_projects\Falcon_Creek_DBPS\active\apps\20110613\hydrology_future.mxd, 12/22/2011, wilson_wheeler

PAGE FROM FALCON DBPS

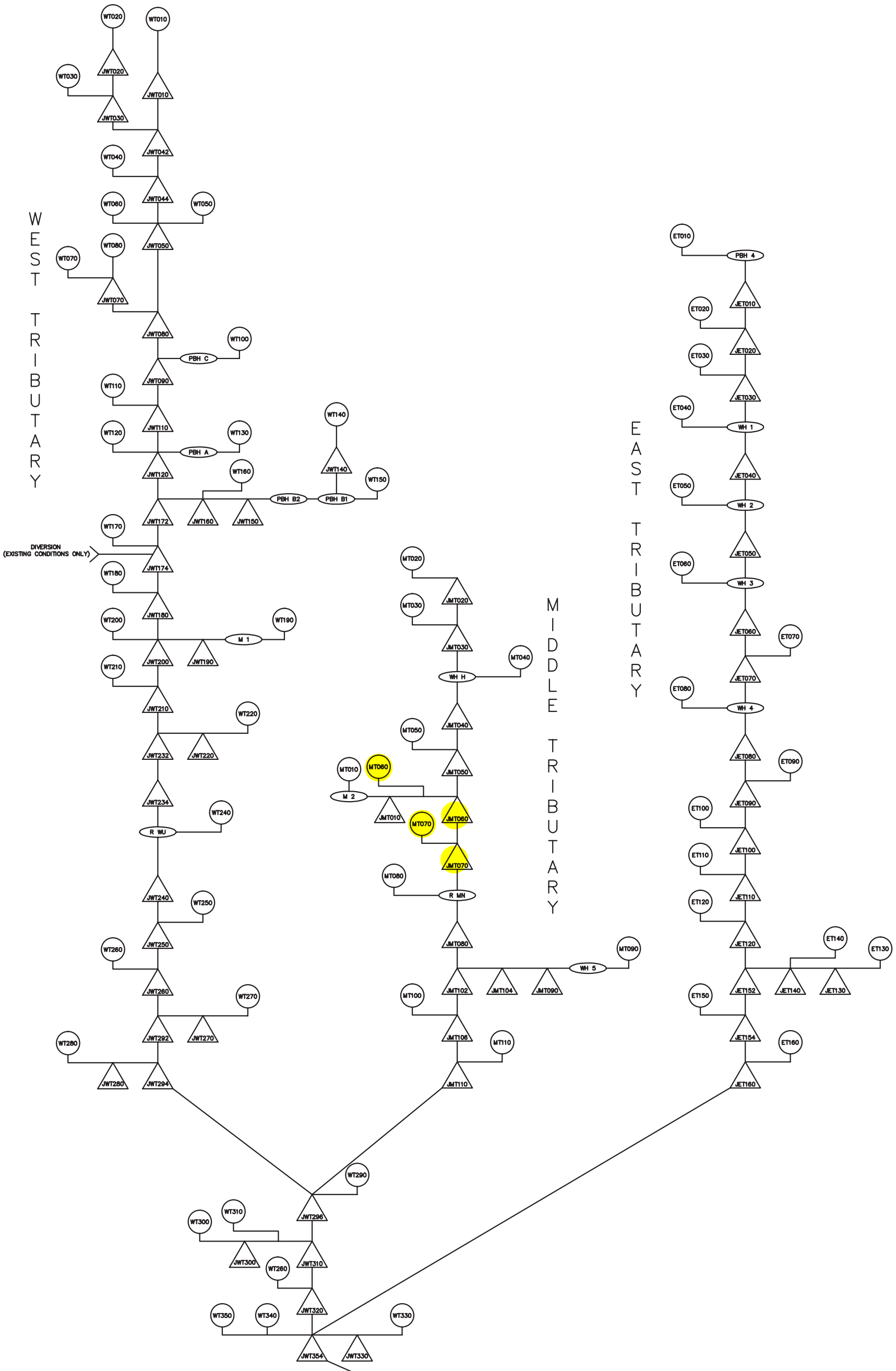


Figure 3–1
Routing Schematic
Falcon DBPS
El Paso County, CO

DRAWING NOT TO SCALE

APPENDIX G

SOILS REPORT



Map Scale: 1:1,470 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 23, Aug 29, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 23, 2024—Aug 4, 2024

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	0.0	0.1%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	9.1	99.9%
Totals for Area of Interest		**9.1**	**100.0%**

El Paso County Area, Colorado

19—Columbine gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Columbine and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbine

Setting

Landform: Fans, Fan terraces, Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam
C - 14 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XY214CO - Gravelly Foothill
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit: 1 percent

Landform: Swales
Hydric soil rating: Yes

Other soils
Percent of map unit: 1 percent
Hydric soil rating: No

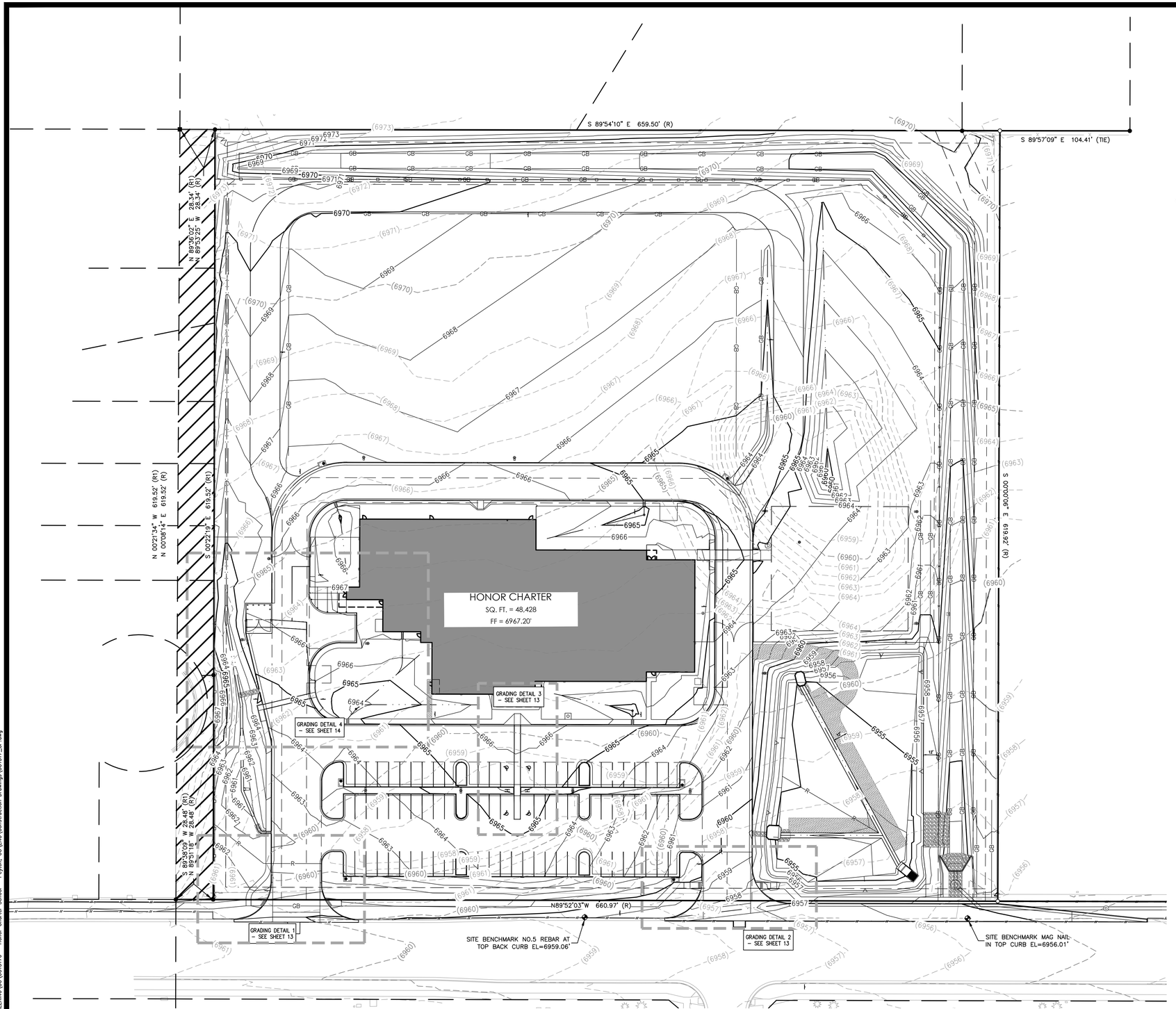
Pleasant
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 23, Aug 29, 2025

APPENDIX H

GRADING AND STORM DRAINAGE PLANS



GRADING PLAN

N

0 40' 80'

SCALE: 1" = 40'

SYMBOLS LEGEND

- PROPERTY LINE
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ABBREVIATIONS:

CURB FACE	CF
EXPOSED FOUNDATION	EF
EXISTING GROUND	EG
EXISTING SURFACE	ES
FINISHED FLOOR	FF
FLOW LINE	FL
FINISHED SURFACE	FS
INVERT	INV
SIDEWALK	SW
TOP OF CURB	TC

PCD FILE NO. PPR2615

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COLORADO P.E. #40196

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GRADING PLAN

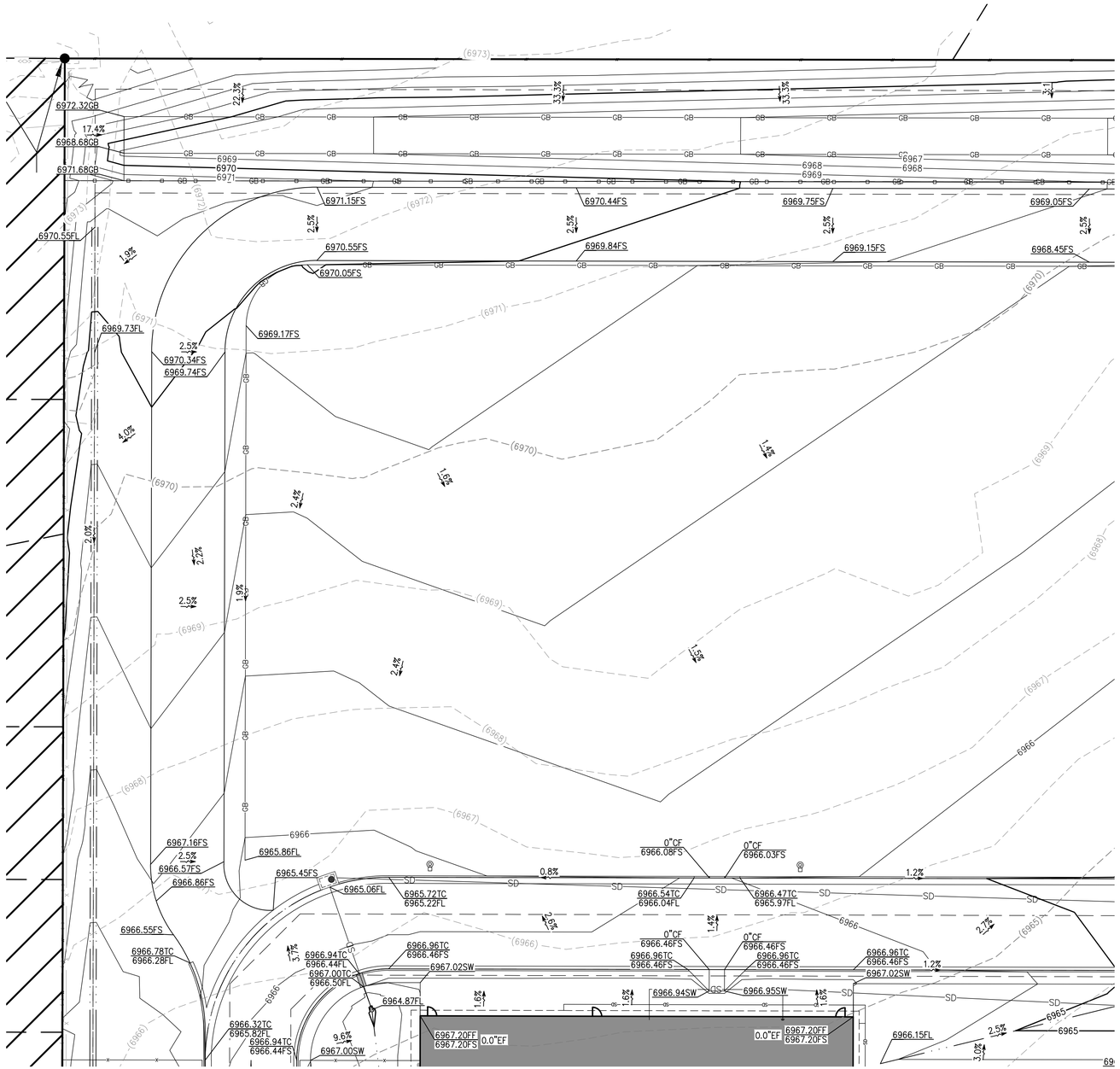
HONOR CHARTER SCHOOL
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DRAWN: CW
DATE: 11/11/2024
CHECKED:
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8 OF 38

2/6/2024 Internal Review #1

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KEY MAP

SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY/ ROW LINE
- BUILDING SETBACK LINE
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ABBREVIATIONS:

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EXISTING SURFACE	ES
FINISHED FLOOR	FF
FLOW LINE	FL
FINISHED SURFACE	FS
INVERT	INV
SIDEWALK	SW
TOP OF CURB	TC

N

0 20' 40'

SCALE: 1" = 20'

NORTHWEST GRADING PLAN

PCD FILE NO. PPR2615

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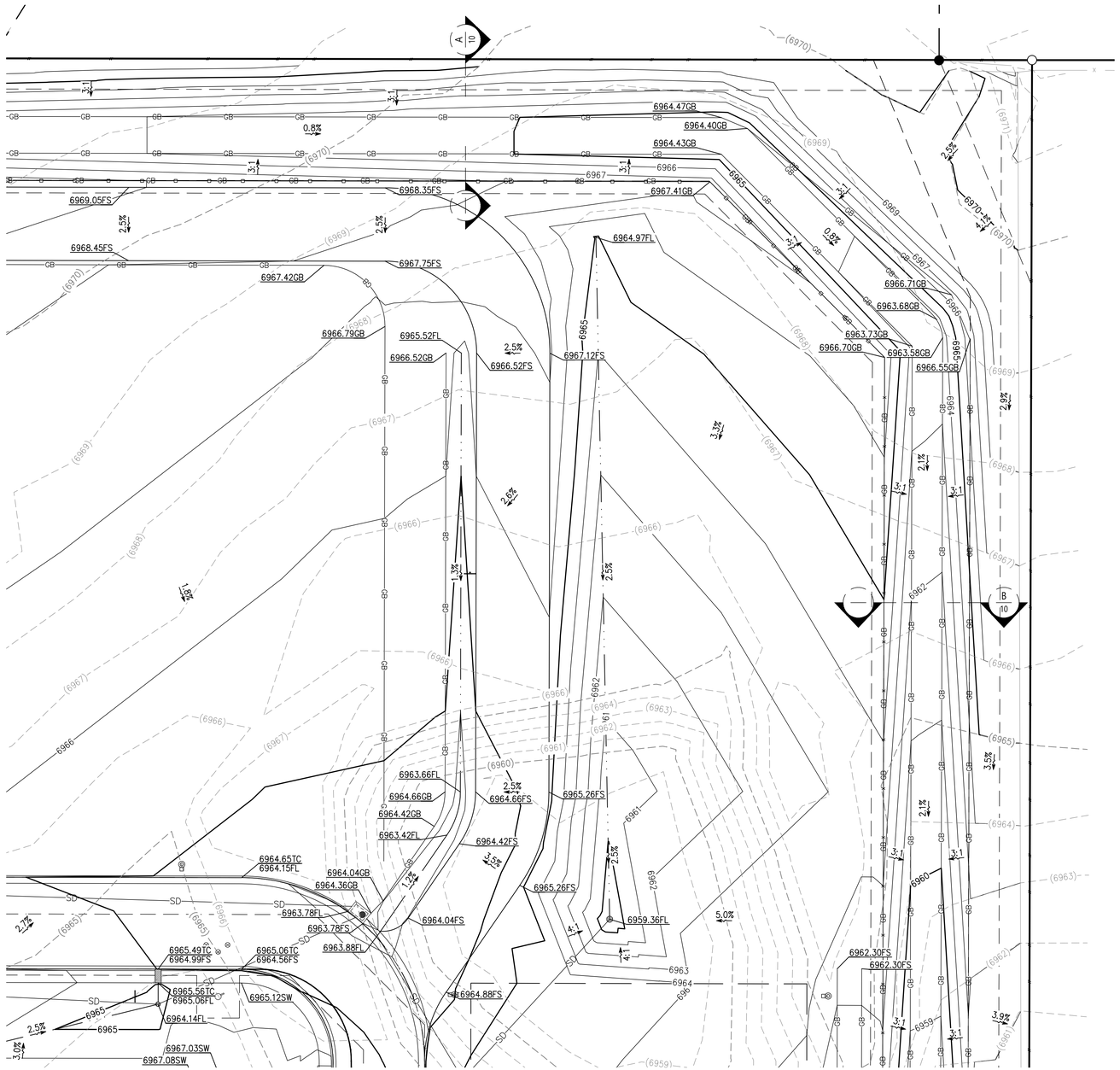
NORTHWEST GRADING PLAN

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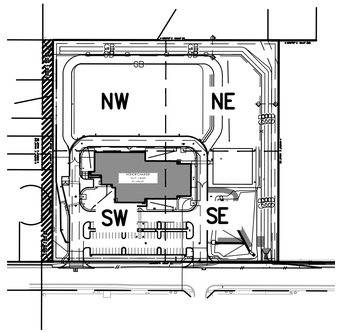
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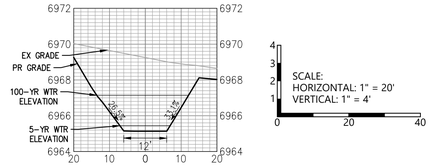
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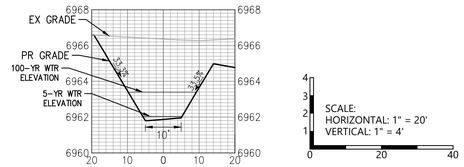
NORTHEAST GRADING PLAN



KEY MAP



SECTION A – SWALE



SECTION B – SWALE



0 20' 40'
SCALE: 1" = 20'

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NORTHEAST GRADING PLAN

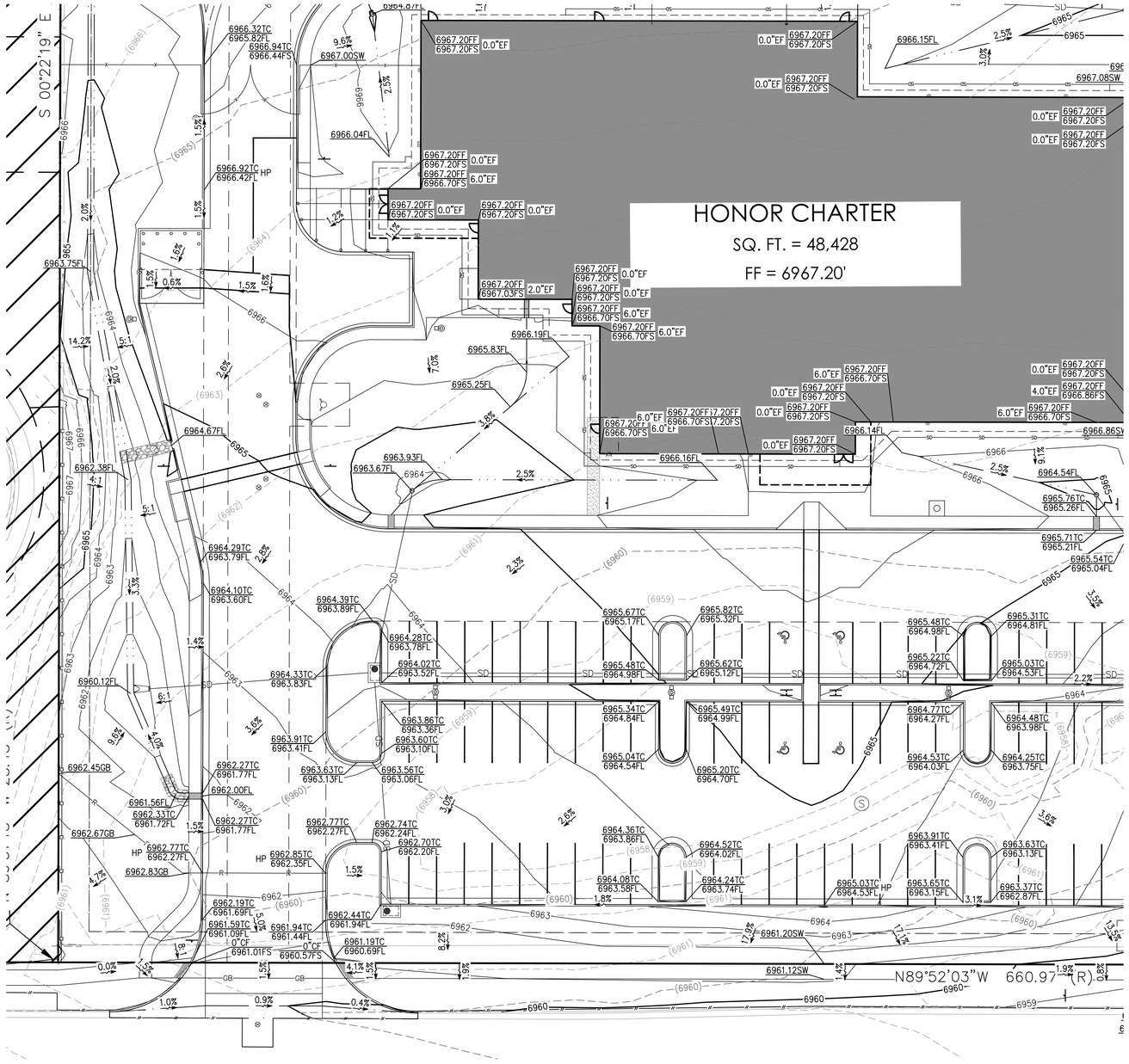
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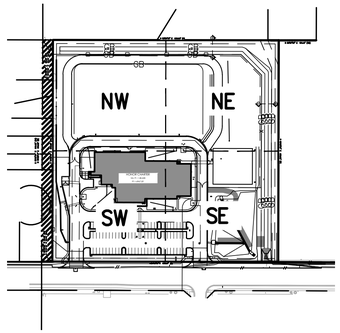
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SOUTHWEST GRADING PLAN

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PREPARED UNDER THE SUPERVISION OF TAIT & ASSOCIATES, INC.

BRIAN CAMPBELL
COLORADO P.E. #40196

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320 North Lincoln Avenue
Loveland, CO 80537
p: 970.613.1447
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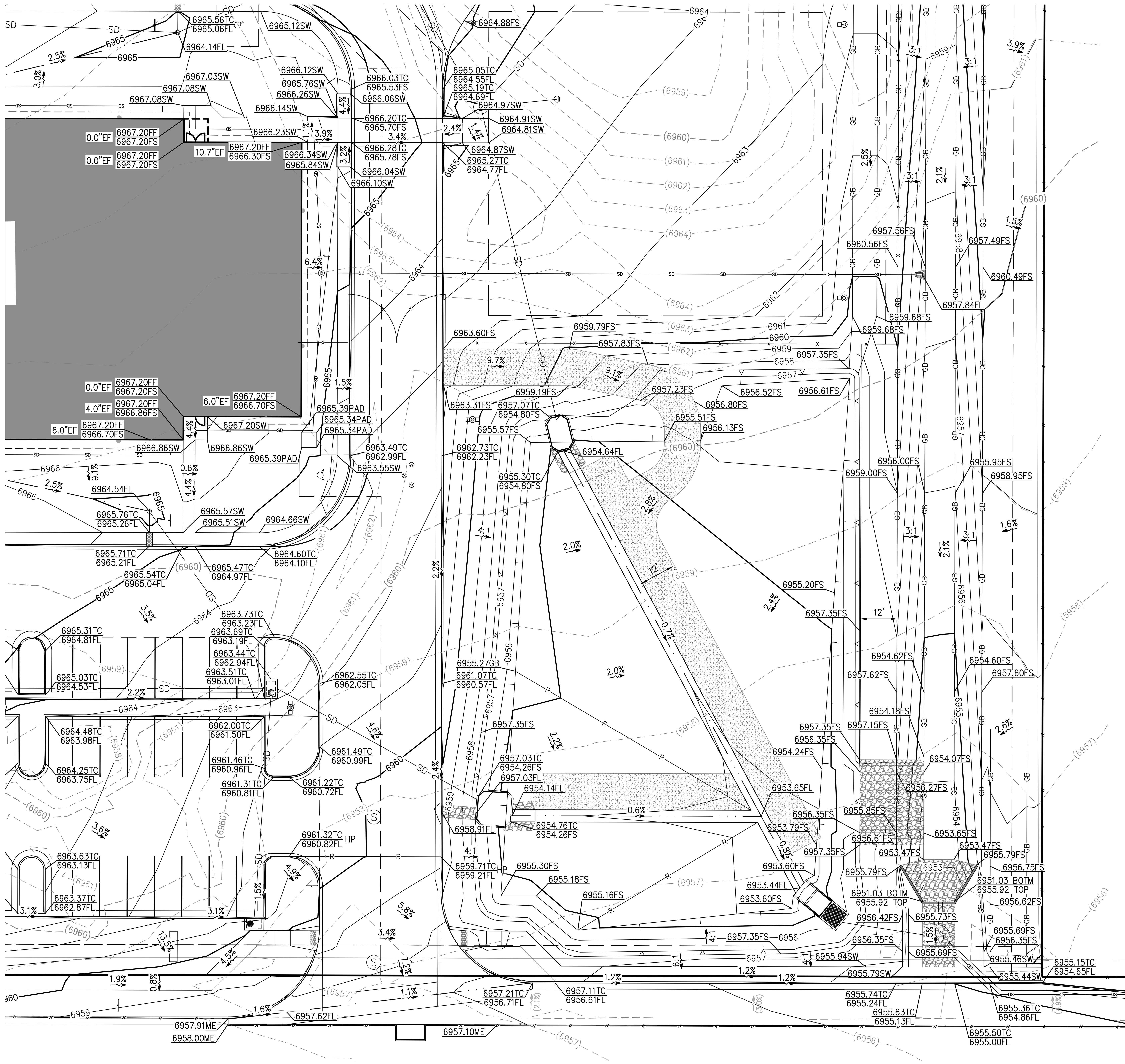
SOUTHWEST GRADING PLAN

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HIGHMARK SCHOOL DEVELOPMENT
8250 BENT GRASS MEADOWS DR.

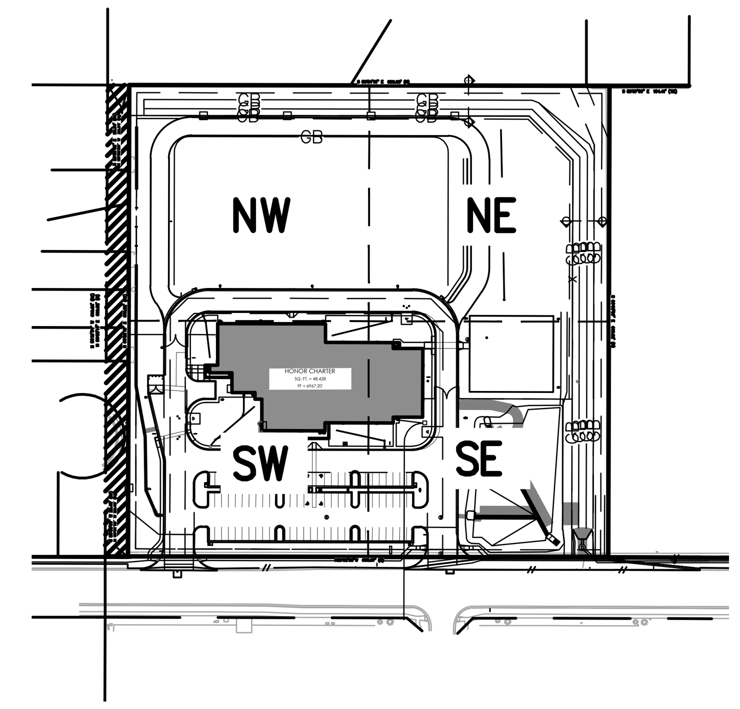
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JOB NO: CO1517

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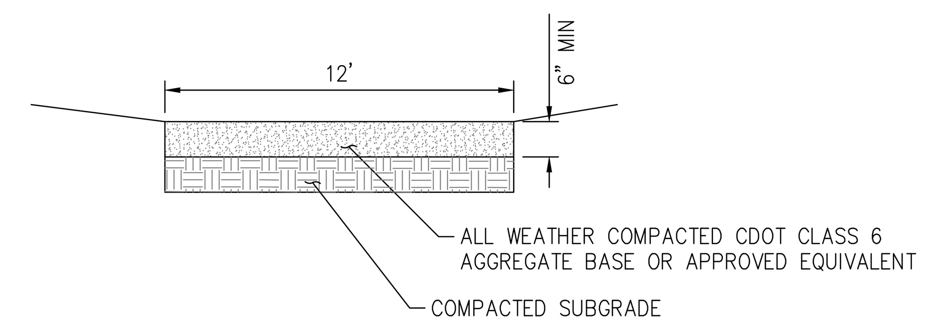
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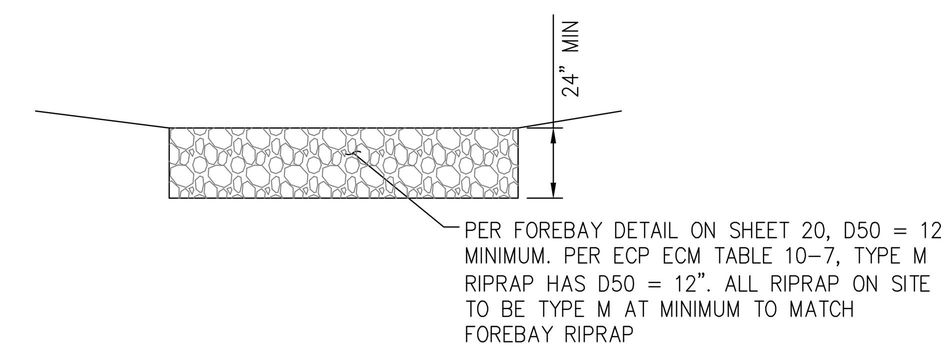
SOUTHEAST GRADING PLAN



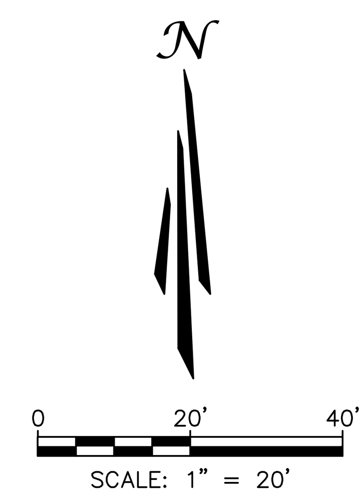
KEY MAP



DRIVE ACCESS DETAIL



RIPRAP DETAIL



SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY/ ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF CONSTRUCTION/DISTURBANCE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- PROPOSED TELEPHONE SERVICE LINE
- PROPOSED ELECTRIC SERVICE LINE
- PROPOSED WATER SERVICE LINE
- PROPOSED SS SERVICE LINE
- PROPOSED STORM DRAIN
- PROPOSED RIDGELINE
- PROPOSED GRADE BREAK
- PROPOSED CURB
- PROPOSED TOP OF POND
- PROPOSED BOTTOM OF POND
- GRADING DETAIL BOUNDARY
- PROPOSED SS CLEANOUT
- PROPOSED BACKFLOW PREVENTOR
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
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- (40.00)ES EXISTING ELEVATION
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- PROPOSED STORM MANHOLE
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ABBREVIATIONS:

CURB FACE	CF
EXPOSED FOUNDATION	EF
EXISTING GROUND	EG
EXISTING SURFACE	ES
FINISHED FLOOR	FF
FLOW LINE	FL
FINISHED SURFACE	FS
INVERT	INV
SIDEWALK	SW
TOP OF CURB	TC

UNAUTHORIZED CHANGES & USES

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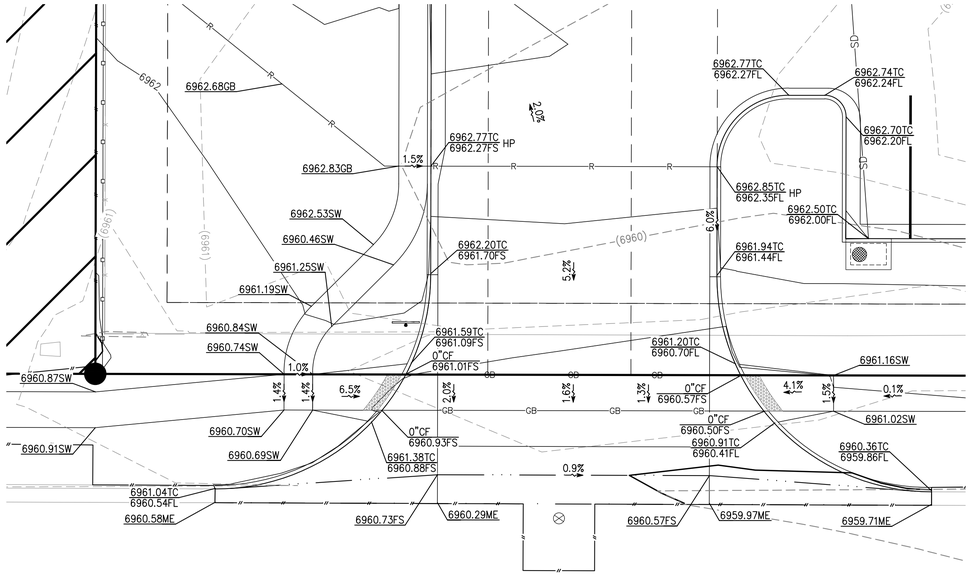
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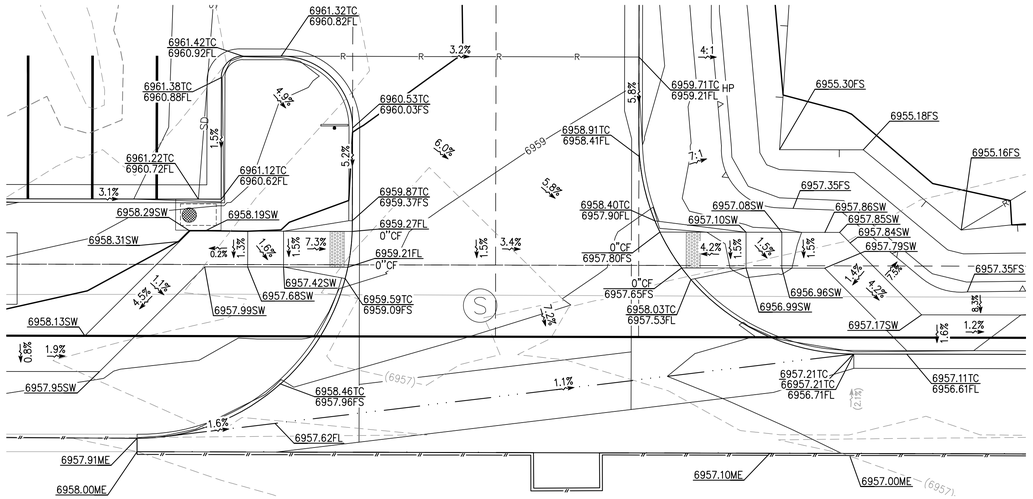
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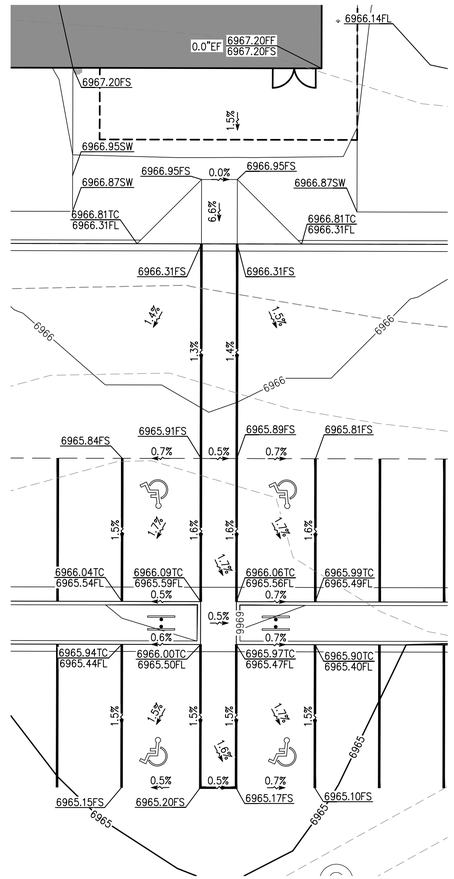
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GRADING DETAIL 1



GRADING DETAIL 2



GRADING DETAIL 3







SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY/ ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF CONSTRUCTION/DISTURBANCE
- W — EXISTING WATER LINE
- SS — EXISTING SEWER LINE
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- SD — PROPOSED STORM DRAIN
- R — PROPOSED RIDGELINE
- GB — PROPOSED GRADE BREAK
- PROPOSED CURB
- PROPOSED TOP OF POND
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ABBREVIATIONS:

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GRADING DETAILS

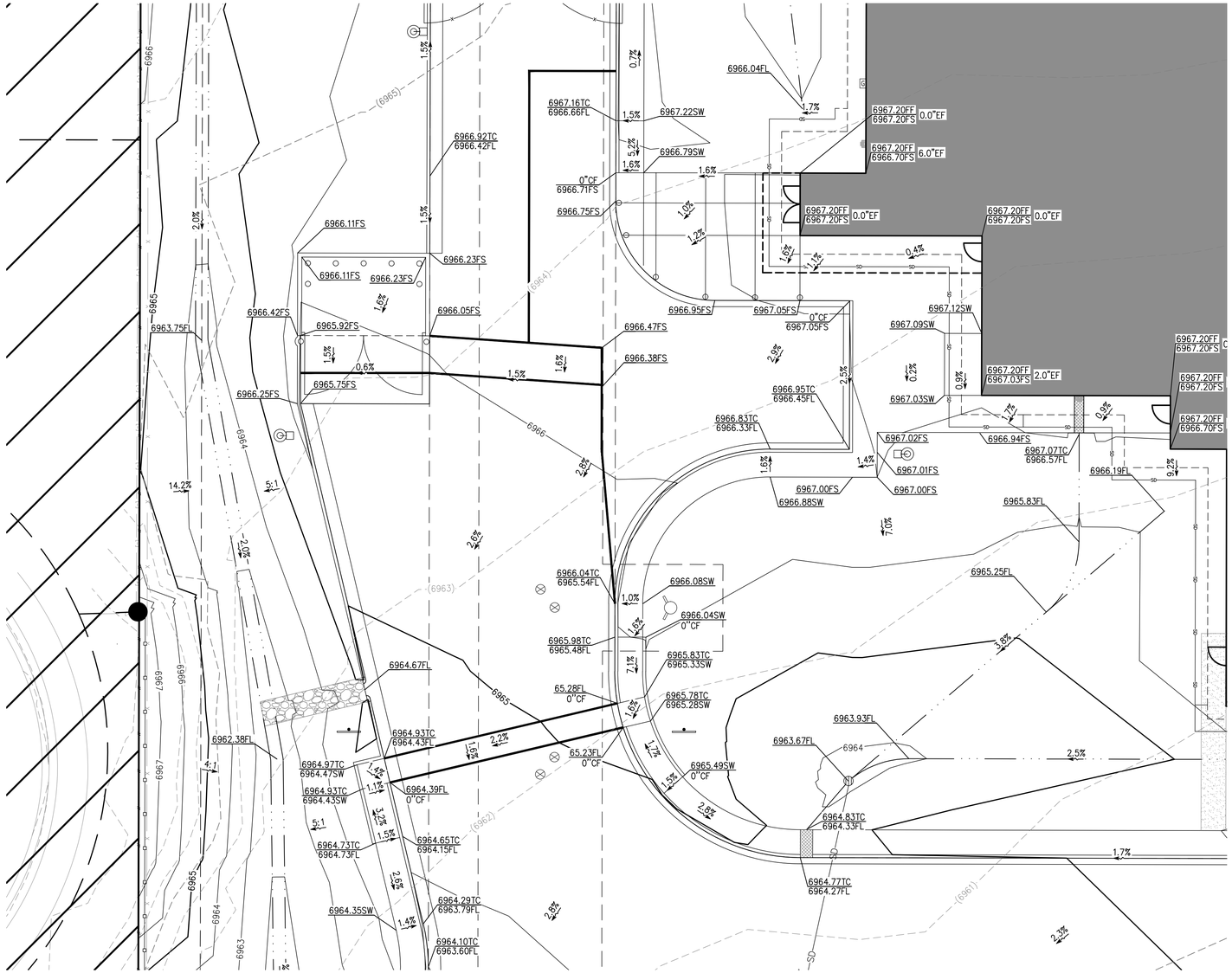
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GRADING DETAIL 4

SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY/ ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF CONSTRUCTION/DISTURBANCE
- EXISTING WATER LINE
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- PROPOSED STORM MANHOLE
- PROPOSED TEE / THRUST BLOCK
- PROPOSED FLARED-END SECTION
- EXISTING SANITARY SEWER MANHOLE

N

0 10' 20'

SCALE: 1" = 10'

ABBREVIATIONS:

CURB FACE	CF
EXPOSED FOUNDATION	EF
EXISTING GROUND	EG
EXISTING SURFACE	ES
FINISHED FLOOR	FF
FLOW LINE	FL
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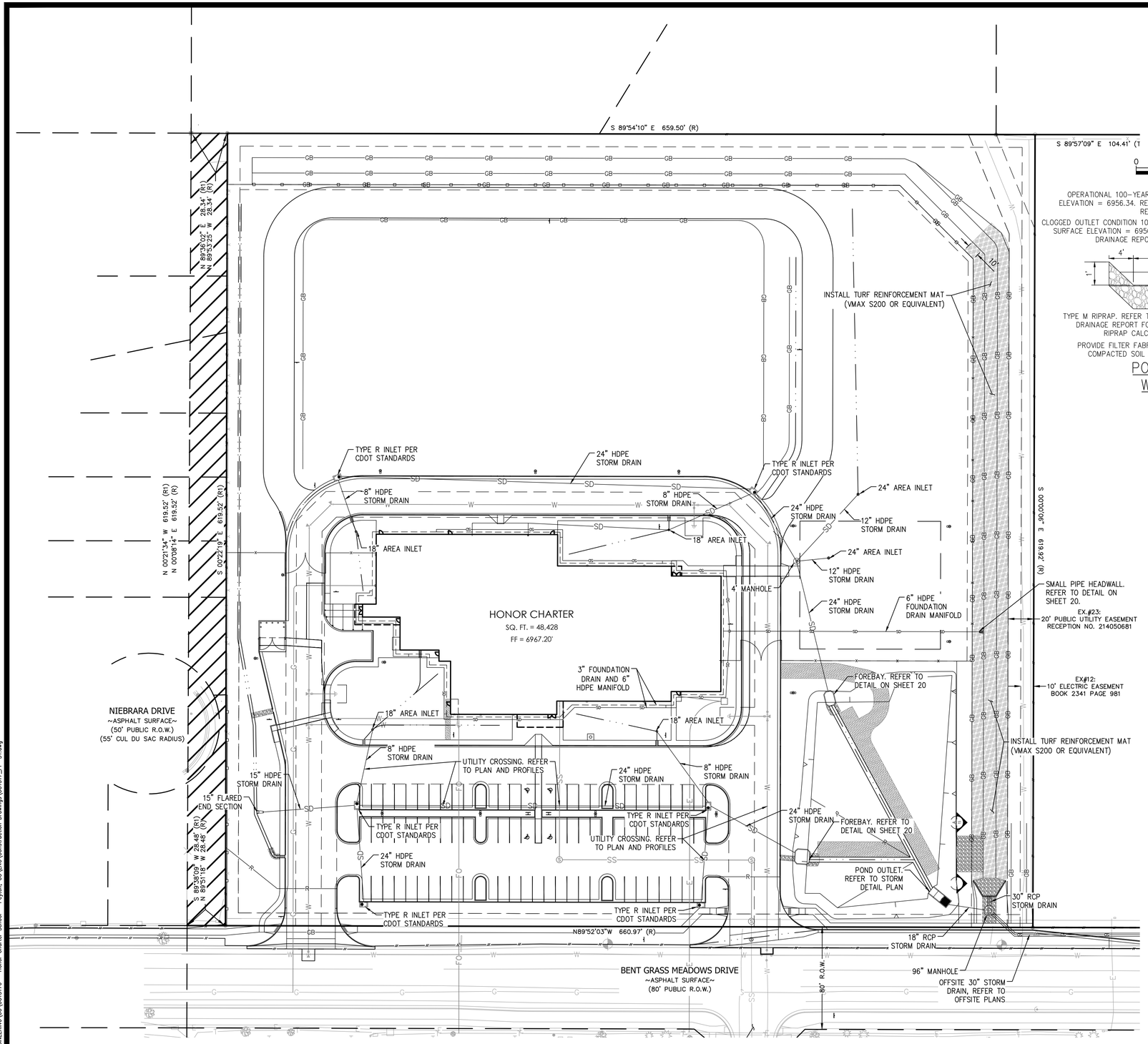
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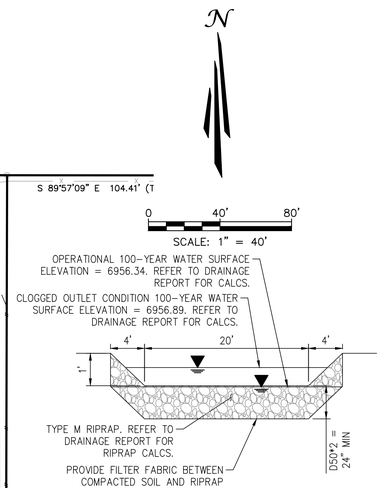
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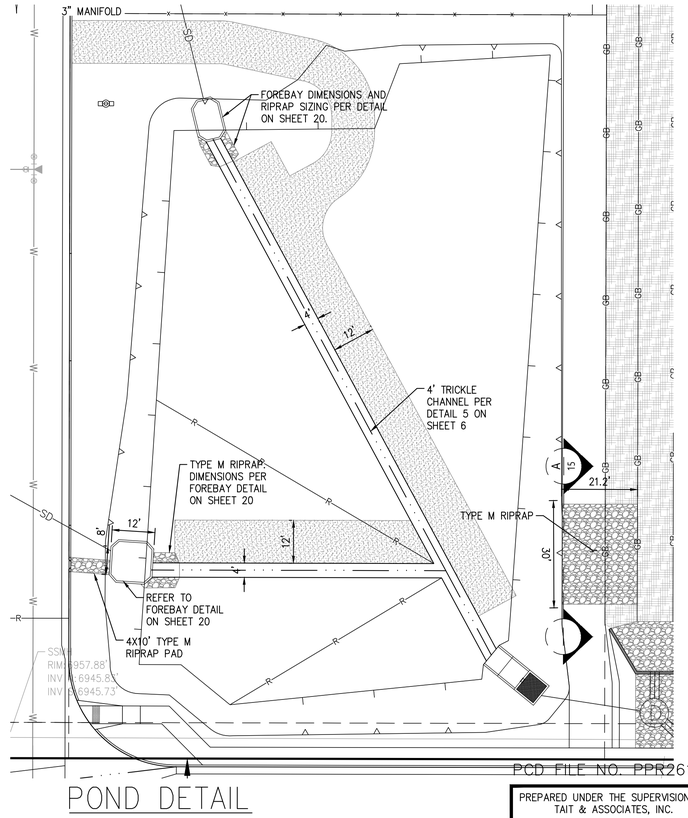




POND 1 OVERFLOW WEIR SECTION A

SYMBOLS LEGEND

- PROPERTY LINE
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- ROW LINE
- BUILDING SETBACK LINE
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- D — PROPOSED STORM MANHOLE
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POND DETAIL

STORMWATER PLAN

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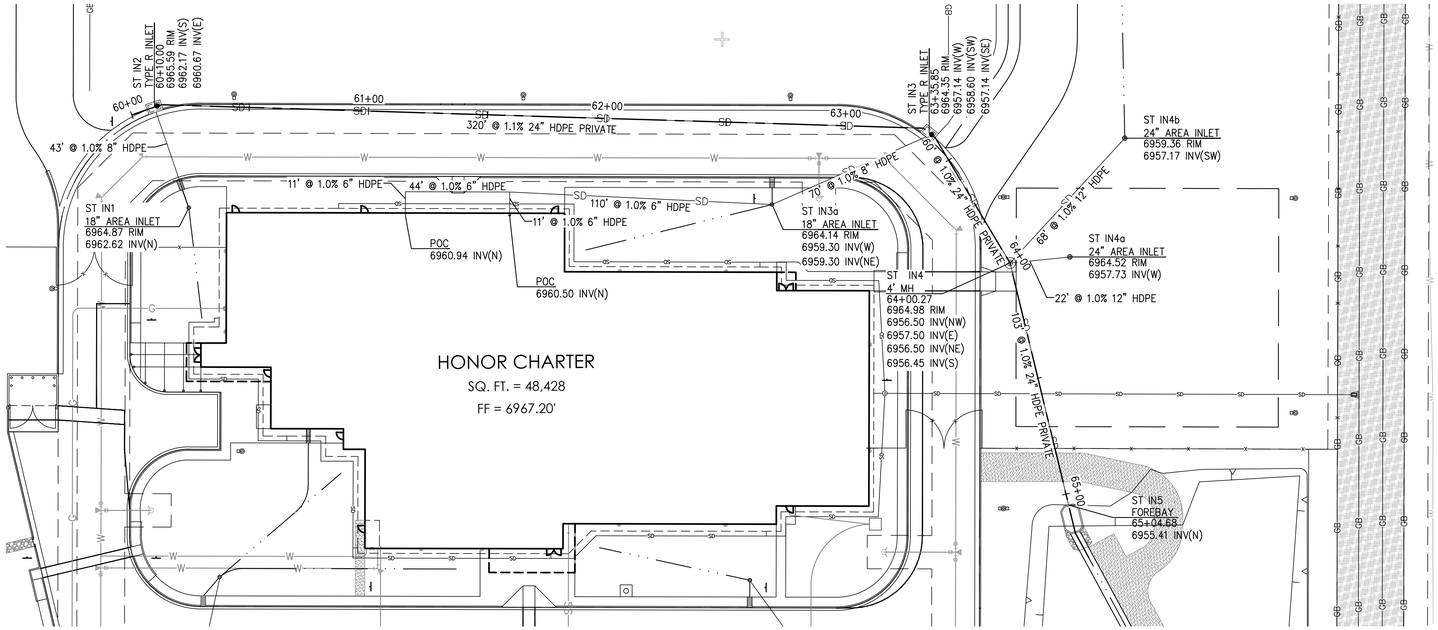
STORMWATER PLAN

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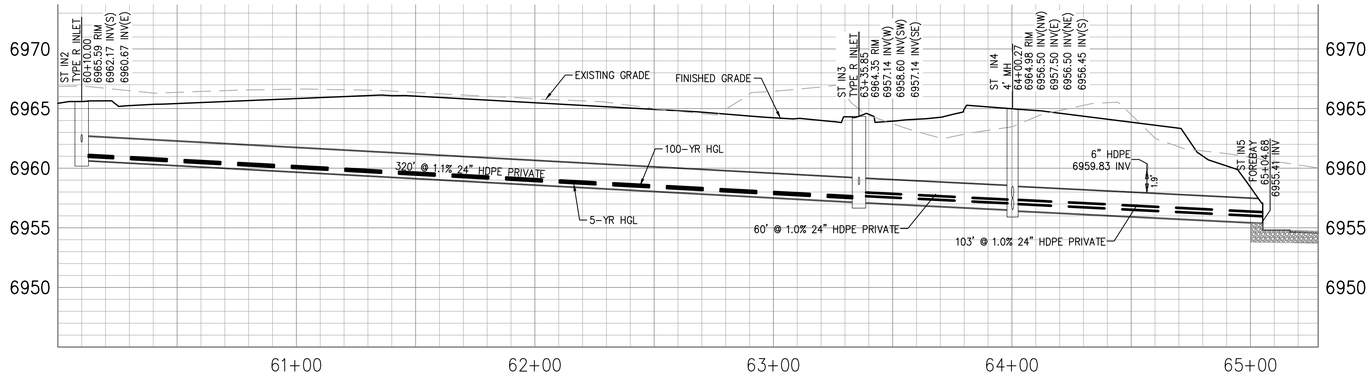
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STORMWATER PLAN 1



STORMWATER PROFILE 1

SCALE:
HORIZONTAL: 1" = 30'
VERTICAL: 1" = 6'

SCALE: 1" = 30'

SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF DISTURBANCE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- PROPOSED TELEPHONE SERVICE LINE
- PROPOSED ELECTRIC SERVICE LINE
- PROPOSED WATER SERVICE LINE
- PROPOSED SS SERVICE LINE
- PROPOSED STORM DRAIN
- PROPOSED RIDGELINE
- PROPOSED GRADE BREAK
- PROPOSED TOP OF POND
- PROPOSED BOTTOM OF POND
- PROPOSED SIGN
- PROPOSED SS CLEANOUT
- PROPOSED BACKFLOW PREVENTOR
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- EXISTING INLET
- PROPOSED INLET
- PROPOSED STORM INFRASTRUCTURE
- PROPOSED STORM MANHOLE
- PROPOSED TEE / THRUST BLOCK
- PROPOSED FLARED-END SECTION
- EXISTING SANITARY SEWER MANHOLE

UNAUTHORIZED CHANGES & USES

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PCD FILE NO. PPR2615

PREPARED UNDER THE SUPERVISION OF TAIT & ASSOCIATES, INC.

BRIAN CAMPBELL
COLORADO P.E. #40196

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	REVISIONS		

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STORMWATER P&P

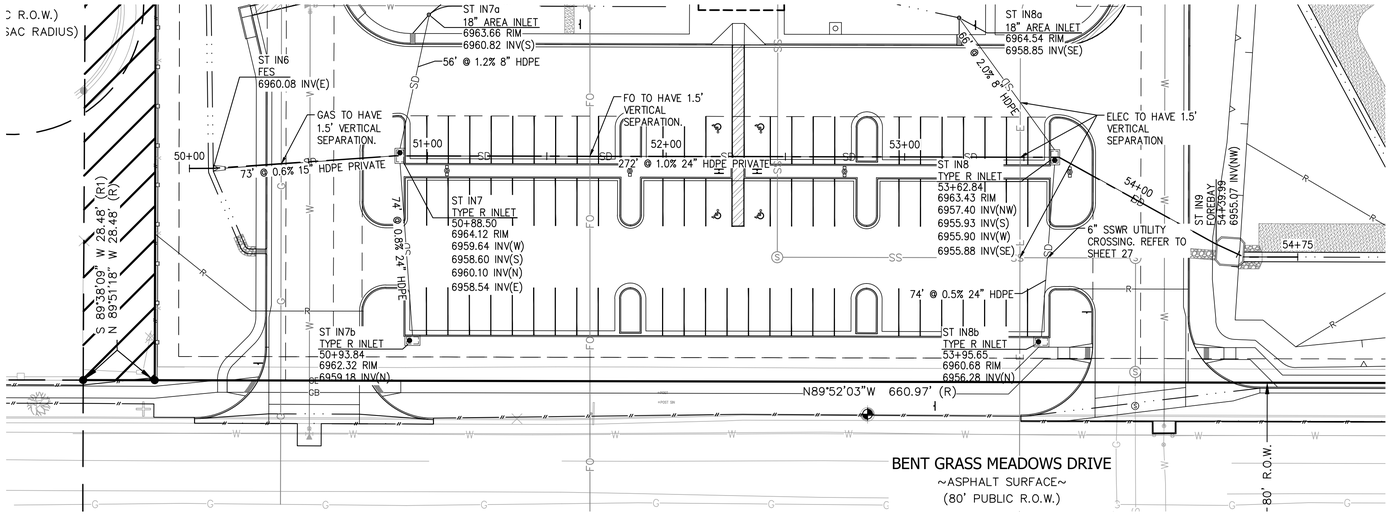
HONOR CHARTER SCHOOL
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DRAWN: CW
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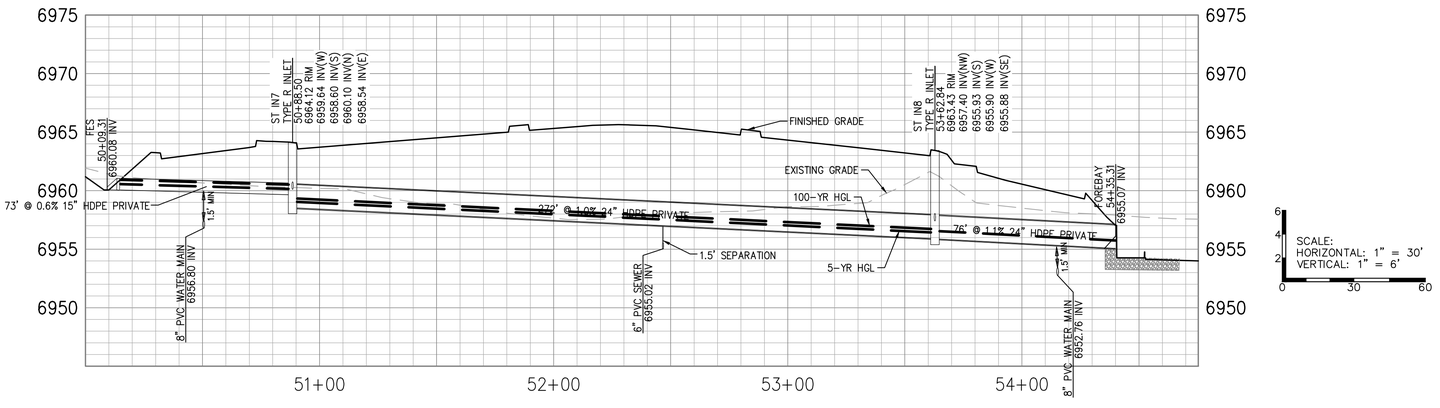
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2/6/2024 Internal Review #1

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STORMWATER PLAN 2



STORMWATER PROFILE 2



SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF DISTURBANCE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- PROPOSED TELEPHONE SERVICE LINE
- PROPOSED ELECTRIC SERVICE LINE
- PROPOSED WATER SERVICE LINE
- PROPOSED SS SERVICE LINE
- PROPOSED STORM DRAIN
- PROPOSED RIDGELINE
- PROPOSED GRADE BREAK
- PROPOSED TOP OF POND
- PROPOSED BOTTOM OF POND
- PROPOSED SIGN
- PROPOSED SS CLEANOUT
- PROPOSED BACKFLOW PREVENTOR
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- EXISTING INLET
- PROPOSED INLET
- PROPOSED STORM INFRASTRUCTURE
- PROPOSED STORM MANHOLE
- PROPOSED TEE / THRUST BLOCK
- PROPOSED FLARED-END SECTION
- EXISTING SANITARY SEWER MANHOLE

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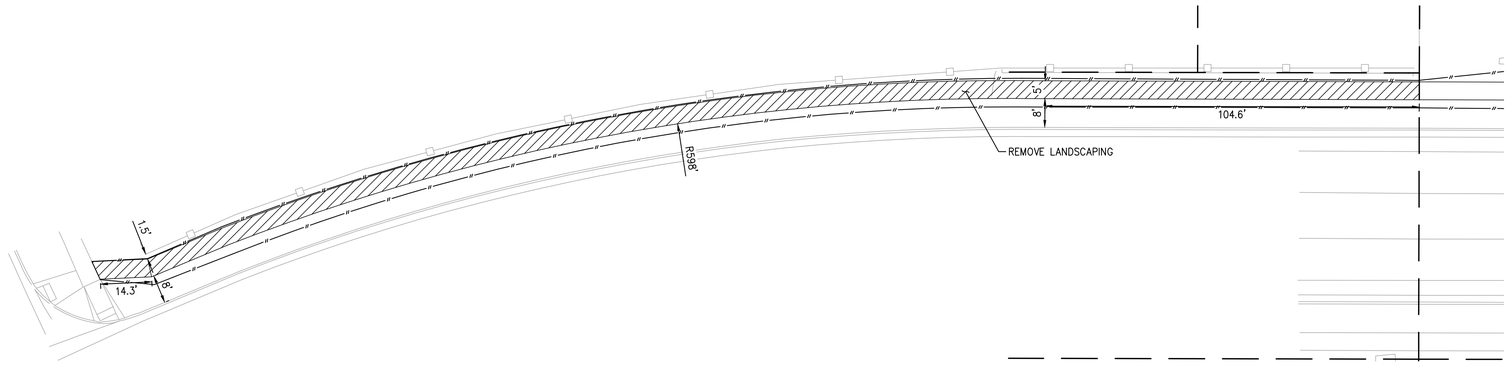
STORMWATER P&P 2

HONOR CHARTER SCHOOL
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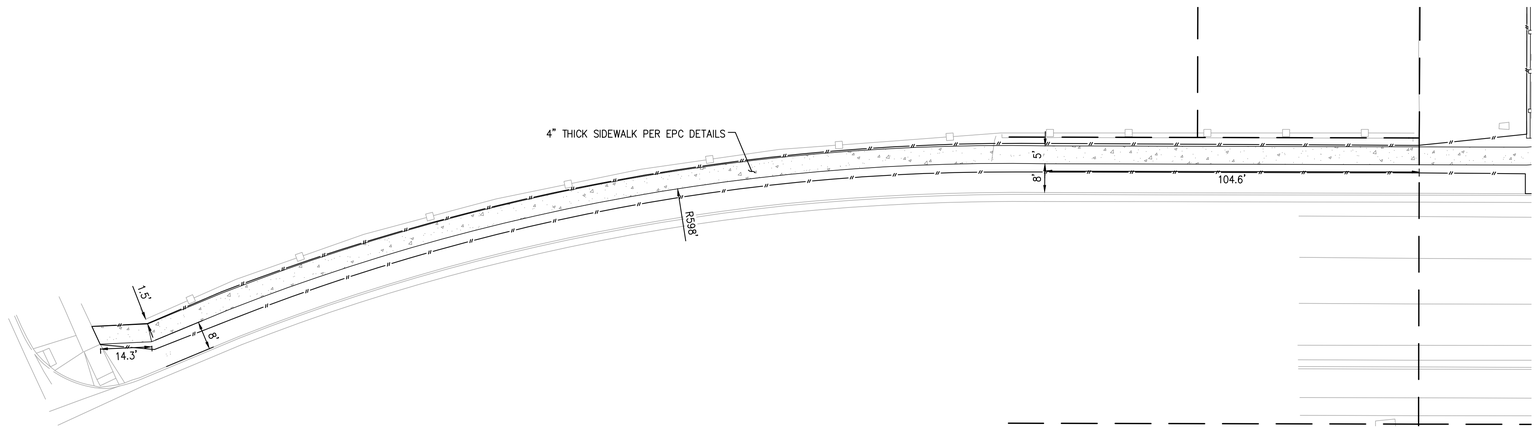
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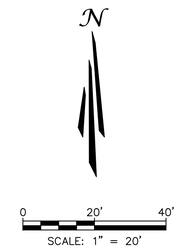
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OFFSITE PED DEMO PLAN



OFFSITE PED HORIZONTAL CONTROL PLAN



SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY/ ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF DISTURBANCE
- PROPOSED SOLID SCREEN FENCE
- PROPOSED FENCE
- PROPOSED RIDGELINE
- PROPOSED GRADE BREAK
- PROPOSED TOP OF POND
- PROPOSED BOTTOM OF POND
- PROPOSED SWALE
- BUILDING SETBACK LINE
- LANDSCAPE SETBACK LINE
- PROPOSED FLAGPOLE
- PROPOSED SIGN
- PROPOSED SS CLEANOUT
- PROPOSED BACKFLOW PREVENTOR
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- EXISTING INLET
- PROPOSED INLET
- PROPOSED STORM INFRASTRUCTURE
- PROPOSED STORM MANHOLE
- PROPOSED TEE / THRUST BLOCK
- PROPOSED FLARED-END SECTION
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED HEAVY DUTY ASPHALT

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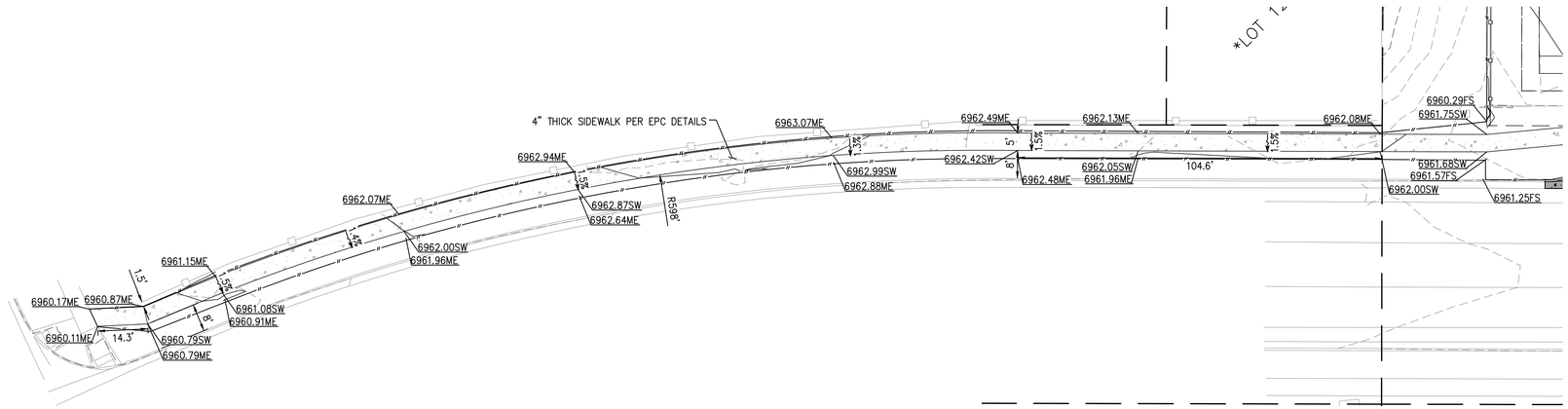
OFFSITE SIDEWALK HORIZONTAL CONTROL PLAN

HONOR CHARTER SCHOOL
HIGHMARK SCHOOL DEVELOPMENT
8250 BENT GRASS MEADOWS DR.

DRAWN: CW
DATE: 11/11/2024
CHECKED:
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2/6/2024 Internal Review #1

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OFFSITE PED GRADING PLAN

N

0 20' 40'

SCALE: 1" = 20'

SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY/ ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF CONSTRUCTION/DISTURBANCE
- W — EXISTING WATER LINE
- SS — EXISTING SEWER LINE
- T — PROPOSED TELEPHONE SERVICE LINE
- E — PROPOSED ELECTRIC SERVICE LINE
- W — PROPOSED WATER SERVICE LINE
- SS — PROPOSED SS SERVICE LINE
- SD — PROPOSED STORM DRAIN
- R — PROPOSED RIDGELINE
- GB — PROPOSED GRADE BREAK
- PROPOSED CURB
- PROPOSED TOP OF POND
- PROPOSED BOTTOM OF POND
- GRADING DETAIL BOUNDARY
- PROPOSED SS CLEANOUT
- PROPOSED BACKFLOW PREVENTOR
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- (40.00)ES — EXISTING ELEVATION
- 40.00FS — PROPOSED ELEVATION
- (2940) — EXISTING CONTOUR
- 2940 — PROPOSED CONTOUR
- (5.2%) — EXISTING SLOPE
- 5.4% — PROPOSED SLOPE
- EXISTING INLET
- PROPOSED INLET
- PROPOSED STORM INFRASTRUCTURE
- D — PROPOSED STORM MANHOLE
- PROPOSED TEE / THRUST BLOCK
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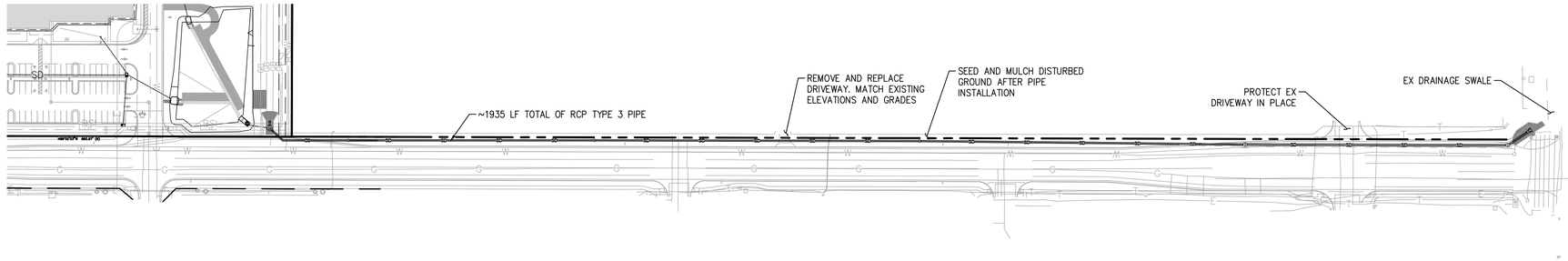
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OFFSITE OVERALL STORM PLAN

SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF DISTURBANCE
- W — EXISTING WATER LINE
- SS — EXISTING SEWER LINE
- T — PROPOSED TELEPHONE SERVICE LINE
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- W — PROPOSED WATER SERVICE LINE
- SS — PROPOSED SS SERVICE LINE
- SD — PROPOSED STORM DRAIN
- R — PROPOSED RIDGELINE
- GB — PROPOSED GRADE BREAK
- PROPOSED TOP OF POND
- PROPOSED BOTTOM OF POND
- PROPOSED SIGN
- PROPOSED SS CLEANOUT
- PROPOSED BACKFLOW PREVENTOR
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- EXISTING INLET
- PROPOSED INLET
- PROPOSED STORM INFRASTRUCTURE
- PROPOSED STORM MANHOLE
- PROPOSED TEE / THRUST BLOCK
- PROPOSED FLARED-END SECTION
- EXISTING SANITARY SEWER MANHOLE

0 100' 200'
SCALE: 1" = 100'

N

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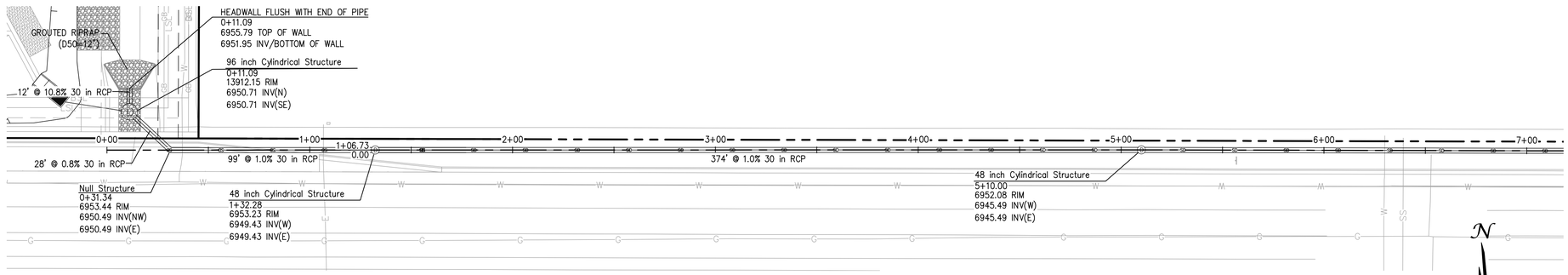
OFFSITE OVERALL STORM PLAN

HONOR CHARTER SCHOOL
HIGHMARK SCHOOL DEVELOPMENT
8250 BENT GRASS MEADOWS DR.

DRAWN: CW
DATE: 11/11/2024
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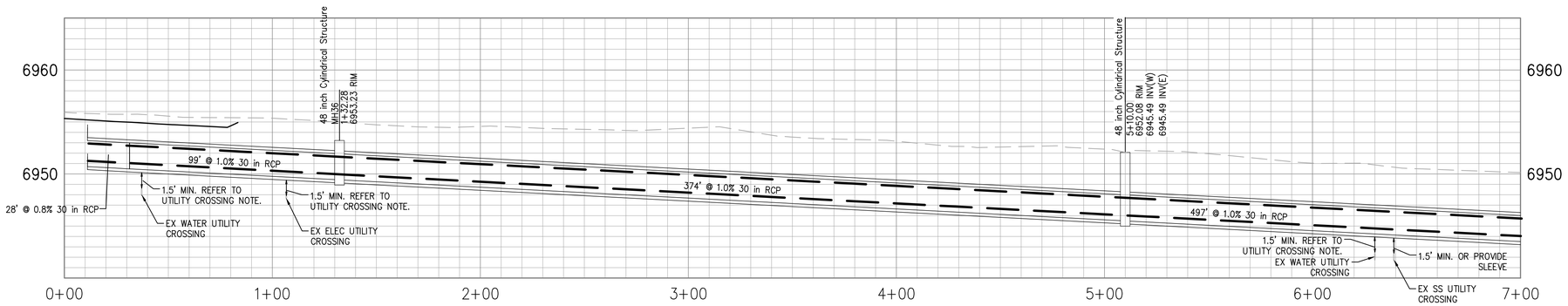


OFFSITE STORM PLAN 1

0 30' 60'
SCALE: 1" = 30'

SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF DISTURBANCE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- PROPOSED TELEPHONE SERVICE LINE
- PROPOSED ELECTRIC SERVICE LINE
- PROPOSED WATER SERVICE LINE
- PROPOSED SS SERVICE LINE
- PROPOSED STORM DRAIN
- PROPOSED RIDGELINE
- PROPOSED GRADE BREAK
- PROPOSED TOP OF POND
- PROPOSED BOTTOM OF POND
- PROPOSED SIGN
- PROPOSED SS CLEANOUT
- PROPOSED BACKFLOW PREVENTOR
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- EXISTING INLET
- PROPOSED INLET
- PROPOSED STORM INFRASTRUCTURE
- PROPOSED STORM MANHOLE
- PROPOSED TEE / THRUST BLOCK
- PROPOSED FLARED-END SECTION
- EXISTING SANITARY SEWER MANHOLE



OFFSITE STORM PROFILE 1

6 4 2 0 30 60
SCALE:
HORIZONTAL: 1" = 30'
VERTICAL: 1" = 6'

UTILITY CROSSING NOTE:
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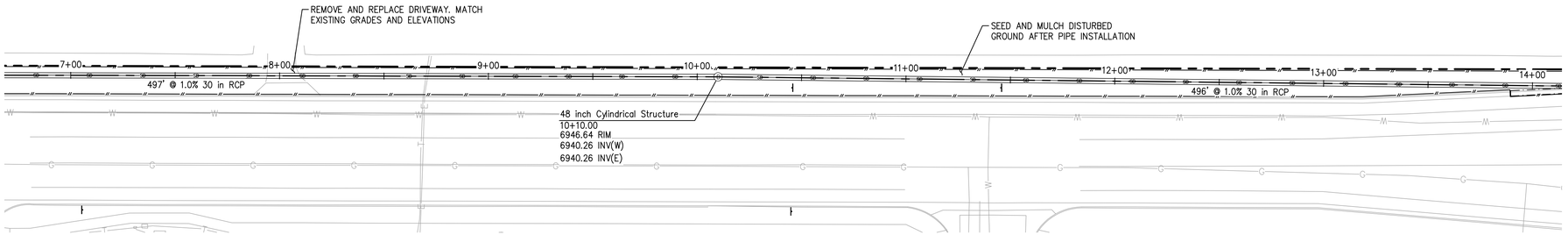
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HIGHMARK SCHOOL DEVELOPMENT
8250 BENT GRASS MEADOWS DR.

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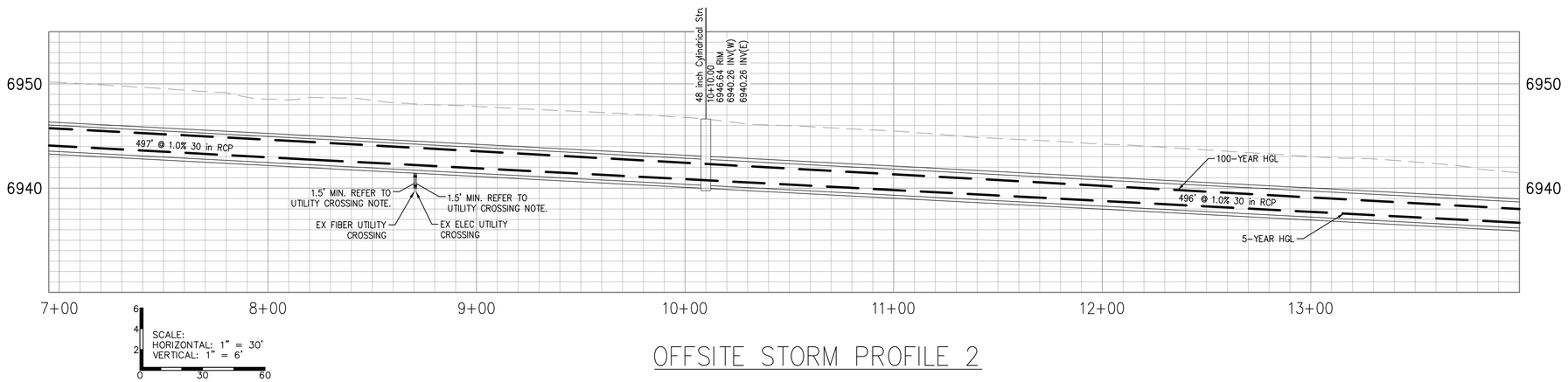
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OFFSITE STORM PLAN 2

SCALE: 1" = 30'



OFFSITE STORM PROFILE 2

SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF DISTURBANCE
- W — EXISTING WATER LINE
- SS — EXISTING SEWER LINE
- T — PROPOSED TELEPHONE SERVICE LINE
- E — PROPOSED ELECTRIC SERVICE LINE
- W — PROPOSED WATER SERVICE LINE
- SS — PROPOSED SS SERVICE LINE
- SD — PROPOSED STORM DRAIN
- R — PROPOSED RIDGELINE
- GB — PROPOSED GRADE BREAK
- PROPOSED TOP OF POND
- PROPOSED BOTTOM OF POND
- PROPOSED SIGN
- PROPOSED SS CLEANOUT
- PROPOSED BACKFLOW PREVENTOR
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
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- EXISTING INLET
- PROPOSED INLET
- PROPOSED STORM INFRASTRUCTURE
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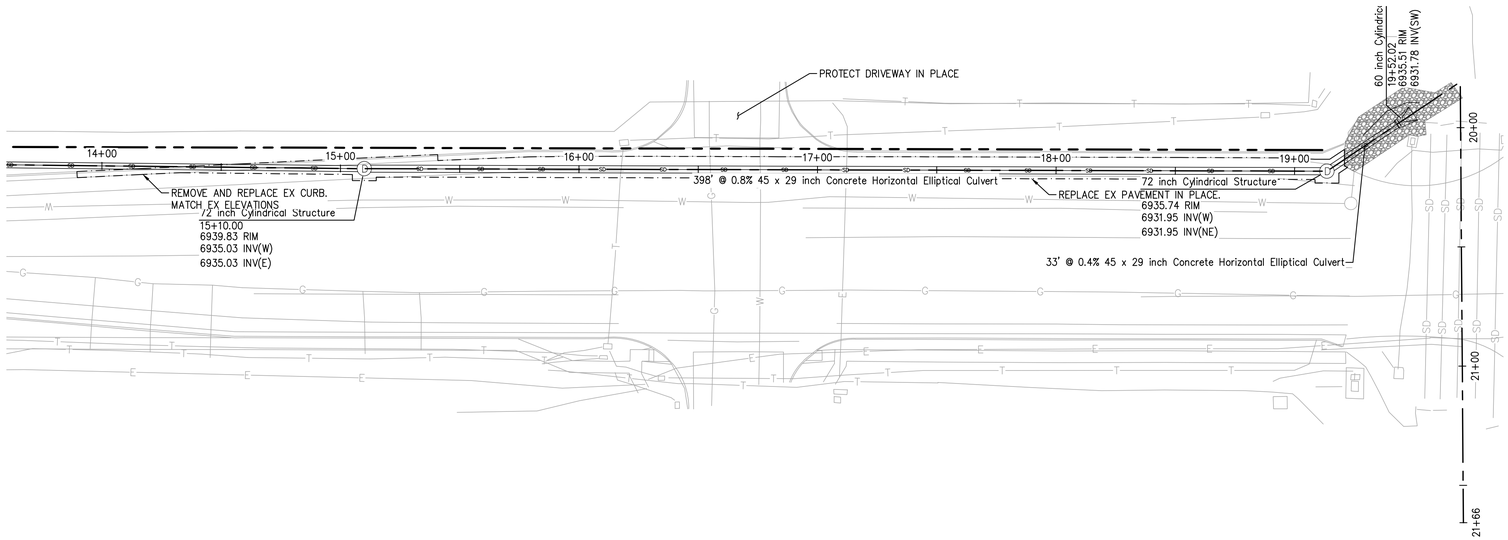
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8250 BENT GRASS MEADOWS DR.

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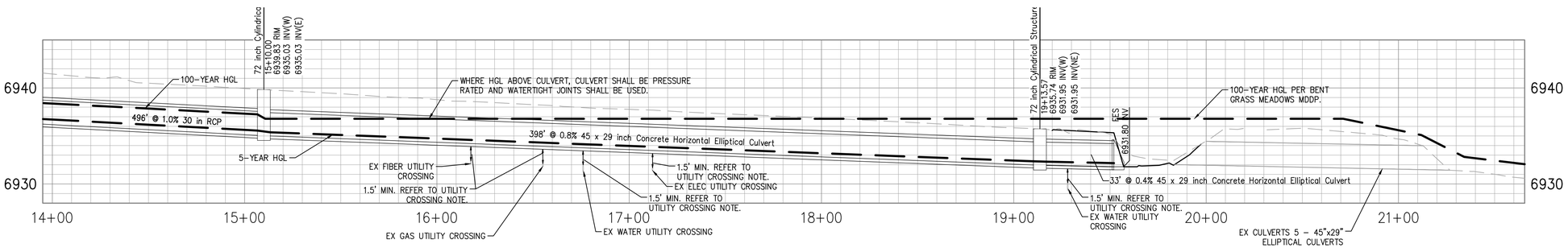




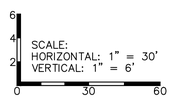
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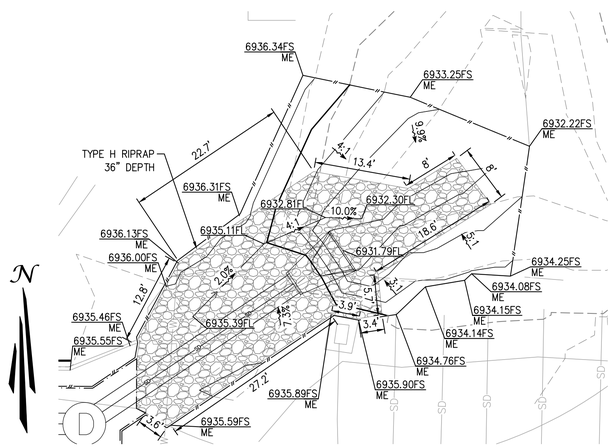
OFFSITE STORM PLAN 3



OFFSITE STORM PROFILE 3



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APPENDIX I

GEOTECHNICAL REPORT

3/30/2026

Geotechnical Evaluation Report (Rev. 1)

Proposed Honor Charter School Development

Bent Grass Meadows Drive

Peyton, Colorado

VIVID Project No.: D25-2-1113

VIVID Engineering Group

Only the client or it's designated representatives may use this document
and only for the specific project for which this report was prepared.

March 30, 2026

Report prepared for:

Dominic Chapman
Waltz Construction
dchapman@waltzconstruction.com

GEOTECHNICAL EVALUATION REPORT (REV. 1)
Proposed Honor Charter School Development
Bent Grass Meadows Drive
Peyton, Colorado
VIVID Project No.: D25-2-1113

Prepared by:

Mary Beth Ray, PE
Project Engineer

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3/30/26
PROFESSIONAL ENGINEER

Nathan A. Dowden, PE
Senior Geotechnical Engineer

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Figure 1: Vicinity Map

Figure 2: Field Exploration Plan - Aerial

Figure 3: Field Exploration Plan – Conceptual

Figure 4: Typical Drain Detail

Figure 5: Fire Access Lanes

Appendix A: Logs of Exploratory Borings

Appendix B: Geotechnical Laboratory Test Results

Appendix C: Analytical Laboratory Test Results

Appendix D: Site Photographs

Appendix E: Important Information About This Geotechnical Engineering Report

1.0 INTRODUCTION

1.1 GENERAL

This report presents the results of a geotechnical investigation performed for the proposed Honor Charter School Development located on Bent Grass Meadows Drive in Peyton, Colorado. An attached Vicinity Map (Figure 1) shows the general location of the project. Our investigation was performed for Waltz Construction and was authorized by Mr. Dominic Chapman.

This Revision 1 includes:

- Clarification of shallow foundation recommendations for precast, tilt-up construction;
- Typical Foundation Drain Detail; and
- Revised pavement recommendations for proposed Fire Access Lanes.

This report includes our recommendations relating to the geotechnical aspects of project design and construction. The conclusions and recommendations stated in this report are based upon the subsurface conditions found at the locations of our exploratory borings at the time our exploration was performed. They are also subject to the provisions stated in the report section titled **Additional Services & Limitations**. Our findings, conclusions, and recommendations should not be extrapolated to other areas or used for other projects without our prior review. Furthermore, they should not be used if the site has been altered, or if a prolonged period has elapsed since the date of the report, without VIVID's prior review to determine if they remain valid.

1.2 PROJECT DESCRIPTION

Based on the information provided, we understand that the project consists of the future development of a 2-story, approximately 40,000 square foot school building and associated paved parking areas, drive aisles, and playground/outdoor areas on a vacant 8.98-acre parcel (#53010000038) located along Bent Grass Meadows Drive in Peyton, Colorado. Other site activities are anticipated to include site grading and utility installation. We understand that no below-grade construction or retaining walls are planned for this site.

We have not been provided with the proposed grading plan at the time of preparation of this report. We anticipate, in general, planned additional overlot grading cuts and fills to achieve finish site grades will be minimal (i.e. approximately 1 to 3 feet or less). This does not include deeper excavations that will be required for foundations, utilities, etc., that will likely range from approximately 3 to 10 feet in depth unless deep foundation elements (i.e. drilled piers) are required.

No structural loads were provided at the time this report was written. We assume lateral loads on the building structure foundations will not be significant, and the building will not be subject to large live loads or dynamic loads. **If the type of construction, planned grading, finished floor elevations, building locations or actual building loads vary significantly from those assumed above, VIVID should be notified to revise our recommendations, if required.**

1.3 PURPOSE AND SCOPE

The purpose of our investigation was to explore and evaluate subsurface conditions within or near the new building footprint, based upon the conditions found, develop recommendations relating to the geotechnical aspects of project design and construction. Our conclusions and recommendations in this report are based upon analysis of the data from our field exploration, laboratory tests, and our experience with similar soil and geologic conditions in the area.

VIVID's scope of services included:

- A visual reconnaissance to observe surface and geologic conditions at the project site and locating the exploratory borings;
- Notification of the Colorado 811 one-call center and a private locator to identify underground utility lines at the boring locations prior to our drilling;
- The drilling of 10 exploratory borings across the site including 3 within or near the building footprint and 2 within the proposed parking area and drive lanes. Boring locations were selected based upon the proposed site layout and utilities;
- Laboratory testing of selected samples obtained during the field exploration to evaluate relevant physical and engineering properties of the soil and bedrock;
- Evaluation and engineering analysis of the field and laboratory data collected to develop our geotechnical conclusions and recommendations; and
- Preparation of this report, which includes a description of the proposed project, a description of the surface and subsurface site conditions found during our investigation, our conclusions and recommendations as to foundation and floor slab design and construction, pavement design, other related geotechnical issues, and appendices which summarize our field and laboratory investigations.

2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1 FIELD EXPLORATION

A field exploration performed on February 6, 2026, included drilling 10 exploratory borings at the approximate locations indicated on the attached Field Exploration Plans (Figures 2 and 3). The borings were drilled across the site, including 3 borings within or near the proposed building and 2 borings within the proposed parking area and access lanes. Borings were advanced to depths between approximately 14.4 and 34.6 feet below the existing ground surface.

The borings were advanced using a truck-mounted Diedrich D-90 drill rig equipped with 6-inch diameter, continuous-flight, solid-stem auger. Samples were taken with a California-type sampler (2.0-inch I.D./2.5-inch O.D.), a standard penetration (SPT) sampler and by bulk methods. Penetration tests were obtained at the various sample depths.

Appendix A to this report includes logs describing the subsurface conditions. The lines defining boundaries between soil and rock types on the logs are based upon drill behavior and interpolation between samples and are therefore approximate. Transition between soil and rock types may be abrupt or may be gradual.

2.2 GEOTECHNICAL LABORATORY TESTING

Laboratory tests were performed on selected soil and bedrock samples to estimate their relative engineering properties. Tests were performed in general accordance with the following methods of ASTM or other recognized standards-setting bodies, and local practice:

- Description and Identification of Soils (Visual-Manual Procedure)
- Moisture Content and Unit Weight of Soils
- Sieve Analysis
- Atterberg Limits
- Swell/Settlement Test
- R-Value
- Unconfined Compression Test

Results of the geotechnical laboratory tests are presented in the report text, where applicable, and included in Appendix B of this report. Selected test results are also shown on the boring logs in Appendix A.

2.3 ANALYTICAL LABORATORY TESTING

Analytical testing for soil corrosivity was performed on selected samples and included the following tests:

- pH
- Resistivity
- Redox Potential
- Water-soluble Sulfates
- Water-soluble Chlorides

- Sulfides

Results of the analytical laboratory tests are presented in the report text, where applicable, and included in Appendix C of this report.

3.0 SITE CONDITIONS

3.1 SURFACE

The new school is planned to be located on a vacant parcel north of the intersection of Bent Grass Meadows Drive and Sea Oats Drive in Peyton, Colorado. The site is surrounded by residential properties to the north and west, Bent Grass Meadows Drive to the south, and vacant land to the east. At time of our exploration, the ground surface was covered with grasses and weeds, with some small trees in the vicinity. Topographically, the site generally slopes to the southeast, with an approximate difference in elevation of 15 feet across the site. Drainage structures were also present on the south side of the site, and a seasonal pond on the east side of the site, both of which were dry during the time of our investigation. Representative photographs of the site, obtained at the time of our field exploration, are presented in Appendix D to this report. The school is planned to be located in the southwest portion of the parcel.

3.2 GEOLOGY

Prior to drilling, the site geology was evaluated by reviewing available geologic information including the Colorado Geologic Survey (CGS) Falcon Quadrangle Geologic Map, El Paso County, Colorado (Morgan, M.L. and White, J.L., 2012). Mapping indicates the surficial soils in the general area of the project site comprise predominantly alluvium consisting of silt, sand and gravel underlain by sandstone and claystone bedrock of the Dawson Formation. The mapping is generally consistent with what was encountered in our exploratory borings.

3.3 SEISMICITY

Based upon the geologic setting, subsurface soil and bedrock conditions, and low seismic activity in this region, liquefaction is not expected to be a hazard at the site. Based on correlation of blow count data (N-values) from the borings advanced during this evaluation, the subsurface soil and bedrock profiles correspond with Site Class D of the 2015 International Building Code (IBC). The intermediate design acceleration values from IBC are presented below.

Table 1
Design Acceleration for Short Periods

S_S	F_a
0.169	1.6

S_S = The mapped spectral accelerations for short periods (seismicmaps.org, 2025)

F_a = Site coefficient from seismicmaps.org

Table 2
Design Acceleration for 1-Second Period

S_1	F_V
0.058	2.4

S_1 = The mapped spectral accelerations for 1-second period (seismicmaps.org, 2025)

F_v = Site coefficient from seismicmaps.org

3.4 SUBSURFACE

VIVID explored the subsurface conditions by drilling, logging and sampling 3 exploratory borings within or near the proposed building footprint, 2 within the proposed pavement area, and 5 at widely spaced locations within the surrounding site as shown approximately on Figure 2 and Figure 3. The building borings were drilled to depths of approximately 34 to 35 feet and the site and pavement borings were drilled to depths of approximately 14 to 15 feet below the existing ground surface. The general profile encountered in our borings consisted of the following:

Sand

The overburden soils encountered at this site predominately consisted of clayey to silty sand and poorly to well graded sand soils, extending from the ground surface to depths ranging from approximately 7 to 14 feet below the existing ground surface in every boring. The sand soils were generally light to medium brown or light gray in color, slightly moist to wet, and field penetration testing (blow counts) indicated the soils are very loose to medium dense. Swell/consolidation testing performed on samples of the poorly graded sand and silty sand materials exhibited no movement when wetted under loads ranging from 1,000 to 2,000 psf.

Clay

Sandy lean clay was encountered below the sand layer in one boring, P-4, from a depth of 7 to 12 feet below the existing ground surface. The clay soils were dark grayish brown, moist, and very stiff based on field penetration testing.

Bedrock

Weathered to relatively unweathered sandstone and claystone bedrock of the Dawson Formation was encountered in every boring at depths of approximately 7 to 14 feet below the ground surface and extended to the maximum depths explored. The bedrock materials were bluish gray, light grey and brown to tan in color, moist, and field penetration resistance testing (blow counts) indicated the relative density of the bedrock materials ranged from moderately hard to very hard. Swell/consolidation testing performed on samples of the sandstone and claystone materials exhibited swells of between 0.4 and 2.7 percent when wetted under loads of 1,000 or 2,000 psf. One clayey sandstone sample exhibited 0.5 percent compression when wetted under a 1,000 psf load.

The boring logs in Appendix A should be reviewed for more detailed descriptions of the subsurface conditions at each of the boring locations explored.

3.4.1 Groundwater

Groundwater was encountered in six of the borings at depths of 5.5 to 9 feet below the existing ground surface during the time of drilling or after drilling. **Groundwater will be a construction consideration for this project.** Soil and bedrock moisture levels and groundwater levels commonly vary over time and space depending on seasonal precipitation, irrigation practices, land use, and runoff conditions. These conditions and the variations that they create often are not apparent at the time of field investigation. Accordingly, the soil and bedrock moisture and groundwater data in this report pertain only to the locations and times at which exploration was performed. They can be extrapolated to other locations and times only with caution. It should also be noted that VIVID has not performed a hydrologic study to verify the seasonal high-water level.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 GEOTECHNICAL FEASIBILITY OF PROPOSED CONSTRUCTION

Based on the information obtained during our exploration, it is VIVID's opinion that construction of the proposed building and new pavement, as planned, is feasible, provided the recommendations in this report are incorporated into the design and construction of the project. We did not identify geotechnical conditions we believe will preclude construction of the retail buildings as planned.

The main geotechnical issue is the presence of shallow groundwater at the site. The presence of shallow groundwater will likely impact utility trench installation and possibly excavation for building foundations. Additionally, consideration of use of moisture vapor barrier beneath slabs on grade should be evaluated where adhesive-bonding flooring materials are utilized. The contractor should be prepared for dewatering as described in Section 4.2.3 of this report.

Our geotechnical design and construction recommendations for site preparation, foundations, floor systems, and other related construction topics are provided in the following sections.

4.2 CONSTRUCTION CONSIDERATIONS

4.2.1 General

All site preparation and earthwork operations should be performed in accordance with applicable codes, safety regulations and other local, State or Federal guidelines.

4.2.2 Site Preparation and Grading

Initial site work should consist of removing debris, organic material, and other deleterious materials from areas to be filled and areas to be cut. This type of material should be removed for offsite disposal in accordance with local laws and regulations or, if appropriate, stockpiled in proposed landscaped areas for future use. Excavations to remove existing site features must be backfilled and properly compacted. Any loose soil shall be processed, recompacted, and tested. Areas to receive fill should be evaluated by the geotechnical engineer prior to the placement of any fill materials.

After performing the required excavations and prior to the placement of any compacted fill and/or structural elements, processing of the subgrade should be performed. This should include scarifying the subgrade to a depth of at least 8 inches and compacting as recommended in Section 4.2.6 of this report. All fill materials should be placed on a horizontal plane and placed in loose lifts not to exceed 8 inches in thickness, unless otherwise accepted by the geotechnical engineer.

4.2.3 Excavation Characteristics

Proposed site grading plans were not provided to us prior to compilation of this report. However, we anticipate localized cuts and fills for general grading will be on the order of about 1 to 3 feet. We anticipate that excavation of the on-site overburden soils can be performed with conventional heavy-duty earthmoving equipment. Excavations penetrating bedrock are not anticipated.

We anticipate that temporary (construction) dewatering techniques will need to be implemented due to the shallow groundwater conditions. Temporary techniques could involve the use of trenches, drains and sumps, as determined by the contractor.

All excavations must comply with applicable local, State and Federal safety regulations, and particularly with the excavation standards of the Occupational Safety and Health Administration (OSHA). Construction site safety, including excavation safety, is the sole responsibility of the Contractor as part of its overall responsibility for the means, methods and sequencing of construction operations. VIVID's recommendations for excavation support are intended for the Client's use in planning the project, and in no way relieve the Contractor of its responsibility to construct, support and maintain safe slopes. Under no circumstances should the following recommendations be interpreted to mean that VIVID is assuming responsibility for either construction site safety or the Contractor's activities.

We believe the soils on this site will classify as Type C materials using OSHA criteria. OSHA requires that unsupported cuts in Type C materials be laid back to ratios no steeper than 1½:1 (horizontal to vertical). In general, we believe that these slope ratios will be temporarily stable under unsaturated conditions. If groundwater seepage were to occur, flatter slopes will be required. Please note that the actual determination of soil type and allowable sloping must be made in the field by an OSHA-qualified "competent person."

4.2.4 Structural Fill

Based upon our subsurface investigation and laboratory testing, the on-site sand soils may be reused as structural fill. Due to the relatively clean and cohesionless nature of the on-site soils, compaction machinery with small footprints like jumping jacks and use of vibration on final upper lifts may prove problematic for compaction. In these cases, large plate compactors and smooth drum rollers without vibration for final lifts may be more efficient.

If imported structural fill is required at this site, it should consist of a non-expansive, non-plastic granular material with a maximum particle size of 2 inches, and between about 5 and 20 percent passing the No. 200 sieve. A sample of any imported fill material should be submitted to our office for approval and testing at least 1 week prior to stockpiling at the site. Specific recommendations in regard to depth of structural fill are presented in the following sections of this report for foundations, floor slabs, etc.

Structural fill should be compacted according to the recommendations in Section 4.2.6 of this report. We recommend that a qualified representative of VIVID visit the site during excavation and during placement of the structural fill to verify the soils exposed in the excavations are consistent with those encountered during our subsurface exploration and that proper foundation subgrade preparation and placement is performed.

4.2.5 Utility Trench Backfill

Backfill material should comprise of on-site soils or imported structural fill and be essentially free of plant matter, organic soil, debris, trash, other deleterious matter, and rock particles larger than 3 inches. However, backfill material in the "pipe zone" (from the trench floor to 1 foot above the top of pipe) should not contain rock particles larger than 1 inch. Strictly observe any requirements specified by the utility

agency for bedding and pipe-zone fill. In general, backfill above the pipe zone in utility trenches should be placed in lifts of 6 to 8 inches, and compacted using power equipment designed for trench work. Backfill in the pipe zone should be placed in lifts of 8-inches or less and compacted with hand-held equipment. Compact trench backfill as recommended in Section 4.2.6 of this report.

Shallow groundwater was encountered during our investigation. The utility installation contractor should be prepared to use trench dewatering techniques during excavation and installation.

4.2.6 Compaction Requirements

Fill materials should be placed in horizontal lifts compatible with the type of compaction equipment being used, moisture conditioned, and compacted in accordance with the following criteria:

Table 3
Compaction Specifications

FILL LOCATION [2]	MATERIAL TYPE	PERCENT COMPACTION[1]	MOISTURE CONTENT
Subgrade Preparation	On-site Sand Soil (8 inches Scarified, Moisture Treated, Re-compacted)	95 minimum of ASTM D 1557	± 2 % of optimum
Structural Fill	On-site Sand Soils or Imported Structure Backfill (see Section 4.2.4)	95 minimum of ASTM D 1557	± 2 % of optimum
Pavement Section Aggregate Base Course	Imported CDOT Class 5 or Class 6 ABC	95 minimum of ASTM D 1557	± 2 % of optimum
Exterior Flatwork Subgrade	On-site Sand Soils or Imported CDOT Class I Structure Backfill	95 minimum of ASTM D 1557	± 2 % of optimum
General Site Grading Fill	On-site Sand Soils	95 minimum of ASTM D 1557	± 2 % of optimum
Utility Trenches	(see Section 4.2.5)	95 minimum of ASTM D1557 or D698[3]	± 2 % of optimum

1) In non-structural or landscaped areas, the compaction specification may be reduced to 90 percent.
2) Where two or more "Fill Locations" coincide, the more stringent specification should be used.
3) Proctor type will be dependent on soils type.

Fill should be placed in level lifts not exceeding 8 inches in loose thickness and compacted to the specified percent compaction to produce a firm and unyielding surface. If field density tests indicate the required moisture content or percent compaction has not been obtained, the fill material should be reconditioned as necessary and re-compacted to the required percent compaction before placing any additional material.

4.2.7 Construction in Wet or Cold Weather

During construction, grade the site such that surface water can drain readily away from the building and pavement areas. Promptly pump out or otherwise remove any water that may accumulate in excavations

or on subgrade surfaces and allow these areas to dry before resuming construction. The use of berms, ditches and similar means may be used to prevent stormwater from entering the work area and to convey any water off site efficiently.

If earthwork is performed during the winter months when freezing is a factor, no grading fill, structural fill or other fill should be placed on frosted or frozen ground, nor should frozen material be placed as fill. Frozen ground should be allowed to thaw or be completely removed prior to placement of fill. A good practice is to cover the compacted fill with a "blanket" of loose fill to help prevent the compacted fill from freezing.

If the buildings or other site features are erected during cold weather, foundations, concrete slabs-on-grade, or other concrete elements should not be constructed on frozen soil. Frozen soil should be completely removed from beneath the concrete elements, or thawed, scarified and recompacted. The amount of time passing between excavation or subgrade preparation and placing concrete should be minimized during freezing conditions to prevent the prepared soils from freezing. The use of blankets, soil cover or heating as required may be utilized to prevent the subgrade from freezing.

4.2.8 Construction Testing and Observation

Testing and construction observation should take place under the direction of VIVID to support that engineer's professional opinion as to whether the earthwork does or does not substantially conform to the recommendations in this report. Furthermore, the opinions and conclusions of a geotechnical report are based upon the interpretation of a limited amount of information obtained from the field exploration. It is therefore not uncommon to find that actual site conditions differ somewhat from those indicated in the report. The geotechnical engineer should remain involved throughout the project to evaluate such differing conditions as they appear, and to modify or add to the geotechnical recommendations, as necessary.

4.2.9 Surface Drainage and Landscaping

Positive drainage away from the structures is essential to the performance of foundations and flatwork and should be provided during the life of the structures. Landscape areas within 10 feet of the structures should slope away at a minimum of 8 percent. Areas where pavements or slabs are constructed adjacent to the structures should slope away at a minimum grade of 2 percent. All downspouts from roof drains should be tight-lined to the on-site stormwater system or, at a minimum, cross all backfilled areas such that they discharge all water away from the backfill zone and the structures. Drainage should be created such that water is diverted off the site and away from backfill areas of adjacent buildings. **Landscaping improvements requiring supplemental watering are not recommended adjacent to improved areas including foundations or slabs.**

4.2.10 Permanent Cut and Fill Slopes

If required, permanent cut and fill slopes exposing the materials encountered in our borings are anticipated to be stable at slope ratios as steep as 3:1 (horizontal to vertical) under dry conditions. We believe that slope ratios of 4:1 or flatter are more reliable if subjected to wetting, and present less of a maintenance problem. New slopes should be revegetated as soon as possible after completion to reduce erosion problems.

4.3 SHALLOW FOUNDATIONS

Provided the following recommendations are complied with, the proposed building may be supported on shallow footing foundations. Our subsurface investigation indicates excavation for construction of shallow foundations for the proposed structures will likely expose sand materials comprised predominantly of silty and clayey sand and well to poorly graded sand with silt. Although not encountered in our borings, if existing fill is encountered at bottom of foundation elevation, it must be removed to a depth at which native sand soils are exposed. Structural fill, as described in Section 4.2.4 of this report, should be used as over-excavation backfill, if required. If native sand soils are encountered at bottom of foundation elevation, it should be scarified to a minimum depth of 8 inches, moisture conditioned and compacted as specified in Section 4.2.6 of this report. Anticipated bottom of footing elevations are presented on the boring logs for B-5 through B-7. If bottom of footing elevations vary significantly from what is presented, Vivid should be notified to re-evaluate foundation recommendations.

We recommend conventional spread foundations with the following criteria:

- Foundations bearing upon properly prepared subgrade should be designed for a maximum allowable soil bearing capacity of 2,800 psf. A one-third increase in bearing capacity is allowable for transient loads (e.g. wind loads). All foundations should be proportioned as much as practicable to minimize differential settlement.
- Foundation sizes should be determined by a structural engineer. However, as a minimum, we recommend isolated columns be supported on square pads of at least 24 inches by 24 inches in dimension. Continuous wall footings should be at least 18 inches in width.
- Where precast concrete, tilt-up construction techniques are implemented, precast panels can bear directly upon foundation footings designed by the structural engineer.
- To resist lateral loading, a sliding coefficient of 0.4 may be used between the bottom of the footing and underlying sand soil. In addition, for compacted sand soil adjacent to footings, a passive earth pressure of 375 pounds per cubic foot may be utilized. As a significant amount of movement is required to fully mobilize passive earth pressures, we recommend a minimum factor of safety of 2 be applied.
- Exterior foundations must be protected from frost action. We recommend footings be protected with at least 30 inches of soil cover or that which is required by local building codes, whichever is greater. Foundation components must not be placed on frozen soils.
- If unstable conditions exist below foundation elements, stabilization options can only be determined when the conditions are observed but may include deeper Aggregate base course sections in combination with additional geo-grid placement, structural fill, rock stabilization, or similar options.
- A representative of VIVID should observe all foundation excavations prior to placement of fill and/or concrete. Additionally, the placement and compaction of structural fill should be observed and tested by a representative of our firm.

4.4 FLOOR SLABS

Similar to the recommendations provided for construction of foundations, we recommend slabs bear on at least 8 inches of properly prepared subgrade or structural fill material of the type recommended in

Section 4.2.4 of this report and compacted as recommended in Section 4.2.6. If existing fill is encountered at bottom of floor slab elevation, it should be removed and replaced with properly prepared structural fill. Subgrade preparation as described above for the interior slab shall be applied to exterior flatwork that is constructed adjacent the building structure as well.

The criteria presented below should be observed for design and construction of floor slabs on this site. The construction details should be considered when preparing the project documents.

- For concrete slab-on-grade design purposes, a modulus of subgrade reaction of 200 pounds per cubic inch (pci) can be used for slabs bearing on at least 8 inches of properly prepared subgrade or structural fill. Additional reinforcement can also be used to help resist damage due to differential movement of slabs.
- Floor slabs should be separated from all bearing walls and columns with expansion joints that allow unrestrained vertical movement. At door thresholds only, both interior and exterior slabs can be dowelled into the foundation stem wall to resist movement that can create a trip hazard or impede proper door operation.
- Floor slab control joints should be used to reduce damage due to shrinkage cracking. Control joint spacing is a function of slab thickness, aggregate size, slump and curing conditions. The requirements for concrete slab thickness, joint spacing and reinforcement should be established by the designer based on experience, recognized design guidelines and the intended slab use. Placement and curing conditions will have a strong impact on the final concrete slab integrity.

4.4.1 Capillary Break or Moisture Barrier

A capillary break or moisture barrier should be constructed below slabs at this site. Follow the floor manufacturers requirements for construction and slab moisture testing, as required. If no requirements exist, the following paragraphs provide general guidelines for the construction of such systems.

Construct slabs on grade over a **capillary break** at least 6 inches thick, consisting of gravel or crushed rock meeting the following criteria.

- The largest particle size should not exceed 1 inch,
- No more than 20 percent by weight should pass the No. 4 sieve,
- No more than 5 percent by weight, as placed, should pass the No. 200 sieve, and
- The material should be non-plastic.
- If material meeting these criteria cannot be obtained, please contact VIVID for a revised recommendation.

As an alternative, a **moisture barrier** may be utilized that consists of an impermeable membrane (e.g. 10-mil thick polyethylene) placed over the subgrade materials to reduce migration of moisture vapor through the concrete slabs. Take great care to prevent damage to the barrier during construction. The sheeting used for the barrier should be lapped and properly taped or joined at all seams and all penetrations by walls, pipes, or other objects. To avoid problems with concrete curing in the floor slab, spread a layer of fine sand at least 3 inches thick on the barrier before placing concrete.

4.4.2 Perimeter Drain System

Due to the presence of shallow groundwater, we recommend installation of a foundation perimeter drain connected to a gravity outlet or sump. A typical drain detail is presented in Figure 4.

4.5 EXTERIOR CONCRETE FLATWORK/SLABS-ON-GRADE

The project will include exterior concrete slabs-on-grade for walkways, sidewalks, driveways etc. Subgrade preparation as described above for the interior slab shall be applied to exterior flatwork that is constructed adjacent the building structure as well. Additional techniques are available to reduce the expected long-term movement of the slab, including:

- Removal of any clay soils, and proper scarification, moisture conditioning, and re-compaction of the on-site sand soils or approved import granular fills,
- Avoidance of watering adjacent to slabs, and
- Structural reinforcement of slabs.

4.6 CORROSIVITY AND CONCRETE

4.6.1 Corrosion Potential

Laboratory testing was completed to provide data regarding corrosivity of onsite soils. Our scope of services does not include corrosion engineering and, therefore, a detailed analysis of the corrosion test results is not included. A qualified corrosion engineer should be retained to review the test results and design protective systems that may be required.

Laboratory chloride concentration, sulfate concentration, pH, and electrical resistivity tests were performed on samples of onsite materials obtained during our field investigation. The results of the tests are included in Appendix C to this report and are summarized below in Table 4.

Table 4
Summary of Laboratory Soil Corrosivity Testing

Boring No.	Sample Depth (ft)	Material	Water Soluble Chloride (%)	pH	Redox Potential (mV)	Resistivity (ohm-cm)	Water Soluble Sulfate (%)	Sulfide Content
B-2	0-4	Well-graded SAND with silt	0.001	8.3	100.9	2100	0.002	Trace
B-6	0-4	Clayey SAND	0.001	7.2	114.2	9700	<0.001	Trace

Metal and concrete elements in contact with soil, whether part of a foundation system or part of a supported structure, are subject to degradation due to corrosion or chemical attack. Therefore, buried metal and concrete elements should be designed to resist corrosion and degradation based on accepted practices.

Based on the "10-point" method developed by the American Water Works Association (AWWA) in standard AWWA C105/A21.5, the corrosivity test results indicate the on-site sand soils have low corrosion potential.

4.6.2 Chemical Sulfate Susceptibility and Concrete Type

The degradation of concrete or cement grout can be caused by chemical agents in the soil or groundwater that react with concrete to either dissolve the cement paste or precipitate larger compounds within the concrete, causing cracking and flaking. The concentration of water-soluble sulfates in the soils is a good indicator of the potential for chemical attack of concrete or cement grout. The American Concrete Institute (ACI) in their publication Guide to Durable Concrete (ACI 201.2R-08) provides guidelines for this assessment.

The concentration of water-soluble sulfates measured on the on-site sand materials submitted for testing represents Class 0 exposure of sulfate attack on concrete exposed to the soils per CDOT Standard Specifications for Road and Bridge Construction, 2023, Section 601.04.

4.7 PAVEMENT RECOMMENDATIONS

4.7.1 General

Paved parking lots and access/drive lanes are proposed for the site. Our borings indicate the pavement subgrade soils will generally consist of sandy materials. These types of soils are generally considered to provide fair to good support for pavements. Laboratory testing performed from samples obtained from the upper 4 feet of the pavement area borings resulted in a subgrade support value (R-value) of 74. All subgrade preparation, fill, and aggregate base course shall be compacted as recommended in Sections 4.2.2, 4.2.4, and 4.2.6 of this report.

4.7.2 Traffic Values

No traffic estimates were available for our use at the time this report was written. Based on past experience with similar projects, we anticipate areas of the pavement will be subjected to "light" passenger vehicle traffic, while other areas will be subject to heavier delivery trucks, trash trucks, and maintenance vehicles. For our design we have assigned a 20-year, 18-kip Equivalent Single Axle Load (ESAL) of 50,000 for areas of "light duty" vehicle use only, and an ESAL of 125,000 where heavier traffic loads are anticipated.

Where pavements are intended to directly support fire-fighting apparatus, we have provided recommended pavement sections to account for the significant dynamic loads of very heavy fire apparatus and long-term performance and durability of pavements. The proposed fire access lanes, as presented to VIVID via email on 03/17/26, are shown in Figure 5.

If traffic estimates vary significantly from those assumed, we should be contacted to re-evaluate our recommendations. The following pavement sections were designed using the AASHTO design methods for flexible and rigid pavements.

Table 5
Pavement Section Thickness Recommendations

PAVEMENT AREA	PORTLAND CEMENT CONCRETE/ AGGREGATE BASE COURSE (INCHES)[1]	ASPHALT CONCRETE/ AGGREGATE BASE COURSE (INCHES)[1]
Light Duty Use	5 / 6	3 / 6
Heavy Duty Use	6 / 6	3 / 6
Fire Access lanes	6 / 6	4 / 6

1) Overlying a properly prepared subgrade as described in Section 4.7.3.

Concrete pavements should be provided with adequate reinforcement based upon anticipated loads. Asphalt does not perform well where trucks perform tight turn maneuvers, therefore concrete should be considered for these areas. A concrete pad is recommended in front of trash dumpster locations to support the heavy front wheel loads of trash trucks.

4.7.3 Pavement Subgrade Preparation

The prepared subgrade should be proof-rolled with a heavily loaded pneumatic-tired vehicle (such as a fully-loaded dump truck or similar weight equipment) after subgrade preparation and prior to placement of the pavement section and structural fill, if required. Pavement design procedures assume a firm and stable subgrade. Areas that deform under heavy wheel loads are not stable and should be removed to firm material and replaced to achieve a stable subgrade prior to paving. Care should be taken to ensure areas around manholes or other utility protrusions are proof-rolled adequately.

Subgrade soils may be at risk of pumping during construction. This risk is increased if pavements are being constructed during adverse weather conditions (e.g., heavy precipitation). In this event, stabilization options can only be determined when the conditions are observed but may include deeper Aggregate Base Course sections in combination with additional geo-grid placement, structural fill, rock stabilization, or similar options.

4.7.4 Pavement Construction Considerations

Pavement construction must be completed in accordance with El Paso County specifications. The specifications contain requirements for the roadway materials (asphalt concrete, concrete pavement, and aggregate base course) and the construction practices used (compaction and material sampling). Of particular importance are those specifications directed towards embankment construction, subgrade compaction, base course compaction, and utility trench compaction. Prior to pavement construction, the prepared subgrade should be proof-rolled with heavy construction equipment. A fully loaded dump truck or water truck would be acceptable for this purpose. During proof-rolling, particular attention should be directed to the areas immediately adjacent to manholes, valves, catch basins, and other similar surface features. Areas which exhibit excessive deflection during proof-rolling should be over-excavated and stabilized as required. If soil is imported to the subject site for final grading, the soil materials must be of a character similar to those described in this report.

Proper drainage is of paramount importance in enhancing pavement performance. To avoid distress to pavement from wet subgrade soils, we recommend the maintenance of good drainage away from all pavements. Possible water sources include storm runoff, irrigation of landscaping adjacent the pavement and localized groundwater seepage, among others. Landscaping adjacent to the pavements should be avoided. Joints in the pavement or at asphalt/concrete interfaces should be sealed. Any cracks or openings in the finished pavement surface should be sealed and/or repaired as quickly as possible.

5.0 ADDITIONAL SERVICES & LIMITATIONS

5.1 ADDITIONAL SERVICES

Attached to this report is a document by the Geoprofessional Business Association (GBA) that summarizes limitations of geotechnical reports as well as additional services that are required to further confirm subgrade materials are consistent with that encountered at the specific boring locations presented in this report. This document should be read in its entirety before implementing design or construction activities. Examples of other services beyond completion of a geotechnical report are necessary or desirable to complete a project satisfactorily include:

- Review of design plans and specifications to verify that our recommendations were properly interpreted and implemented.
- Attendance at pre-bid and pre-construction meetings to highlight important items and clear up misunderstandings, ambiguities, or conflicts with design plans and specifications.
- Performance of construction observation and testing which allows verification that existing materials at locations beyond our borings are consistent with that presented in our report, construction is compliant with the requirements/recommendations, evaluation of changed conditions.

5.2 LIMITATIONS

This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of VIVID's profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions, and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. VIVID makes no other representation, guarantee, or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

This report may be used only by the Client and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two (2) years from the date of the report.

The work performed was based on project information provided by Client. If Client does not retain VIVID to review any plans and specifications, including any revisions or modifications to the plans and specifications, VIVID assumes no responsibility for the suitability of our recommendations. In addition, if there are any changes in the field to the plans and specifications, Client must obtain written approval from VIVID's engineer that such changes do not affect our recommendations. Failure to do so will vitiate VIVID's recommendations.

Figures



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REFERENCE:
Base image obtained from
OpenStreetMap 2/11/2026

VIVID Engineering Group, Inc.
1053 Elkton Drive
Colorado Springs, CO 80907
719-896-4356

Project No. D25-2-1113

Date: 2/11/2026

Drawn by: SAM

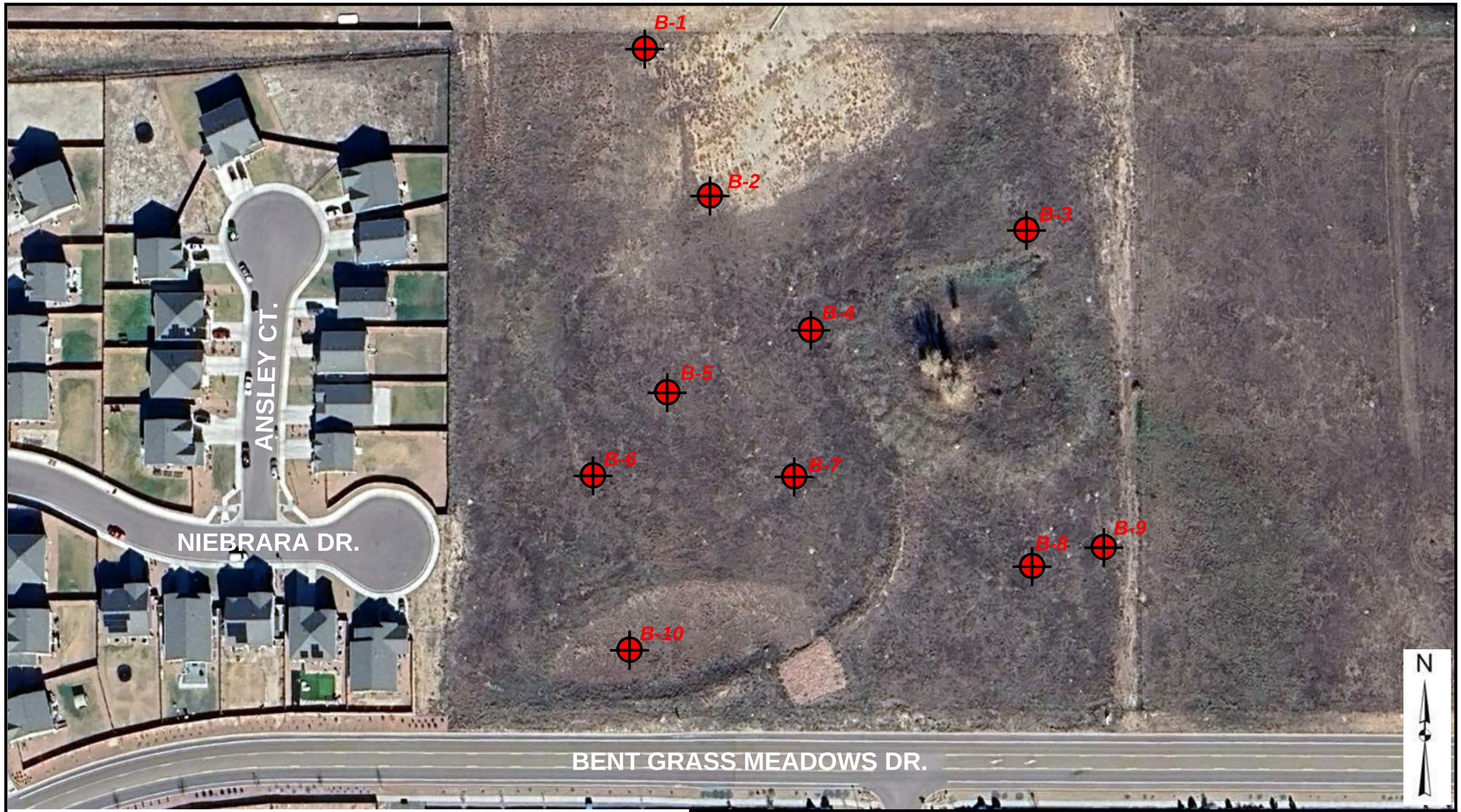
Reviewed by: MBR

VICINITY MAP

Proposed Honor Charter School Development
Bent Grass Meadows Drive
Peyton, Colorado

FIGURE

1



Note: Not to Scale.

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REFERENCE
Base Image obtained from Google Earth Pro, 2025.

LEGEND
B-1 Approximate Boring Location

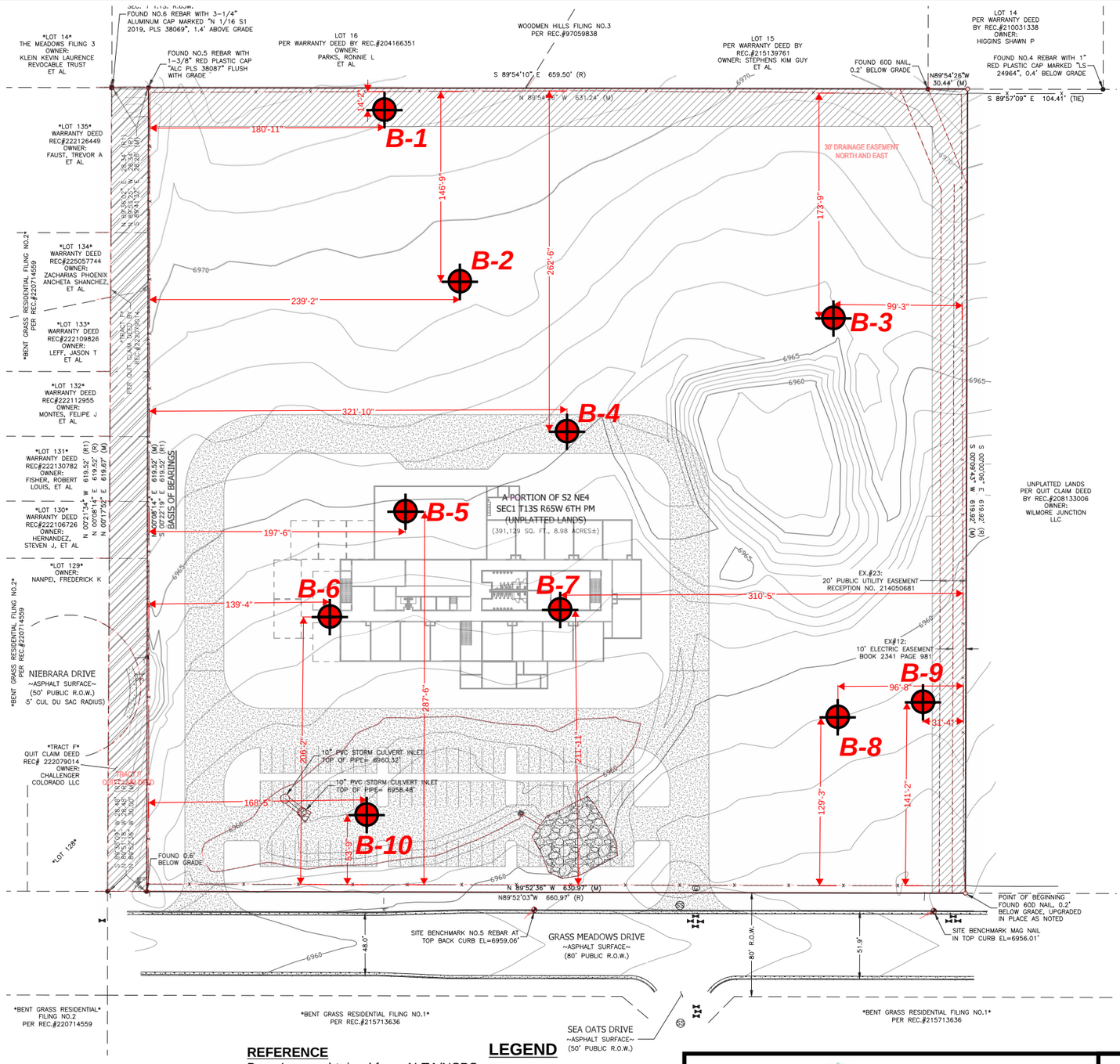
VIVID Engineering Group, Inc.
1053 Elkton Drive
Colorado Springs, CO 80907
719-896-4356

Project No. D25-2-1113
Date: 2/11/2026
Drawn by: SAM
Reviewed by: MBR

FIELD EXPLORATION PLAN
(AERIAL)

Proposed Honor Charter School Development
Bent Grass Meadows Drive
Peyton, Colorado

FIGURE
2



Note: Not to Scale.

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REFERENCE

Base Image obtained from ALTA/NSPS LAND TITLE SURVEY; BEING A PART OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 13 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPLE MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO by Apex Land Surveying and Mapping LLC dated 10/10/2025.

LEGEND

B-1 Approximate Boring Location

VIVID Engineering Group, Inc.
1053 Elkton Drive
Colorado Springs, CO 80907
719-896-4356

Project No. D25-2-1113

Date: 2/12/2026

Drawn by: SAM

Reviewed by: MBR

FIELD EXPLORATION PLAN (CONCEPTUAL)

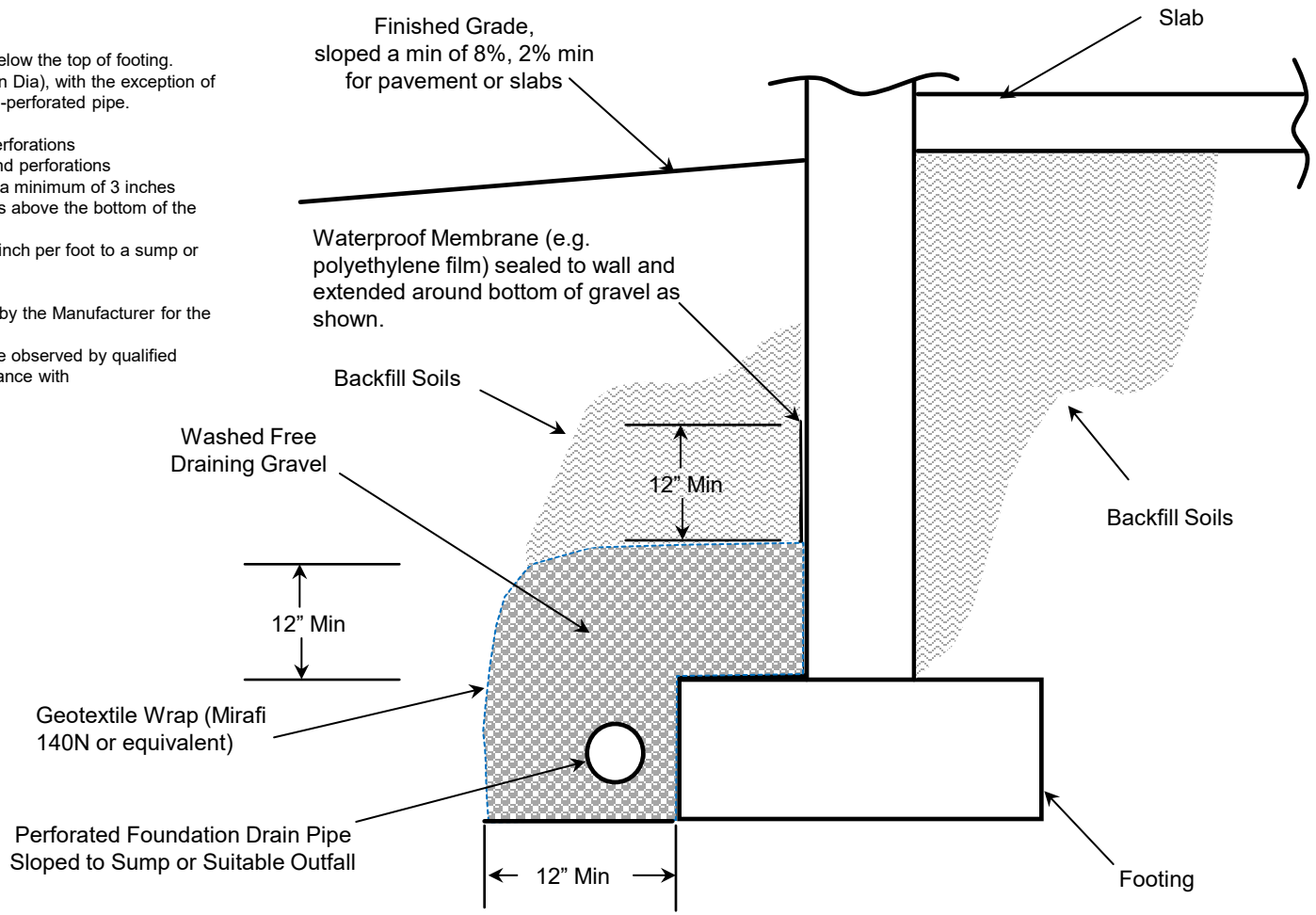
Proposed Honor Charter School Development
Bent Grass Meadows Drive
Peyton, Colorado

FIGURE

3

Notes:

1. The top of the perforated pipe must be at or below the top of footing.
2. All drain pipe shall be perforated plastic (3" Min Dia), with the exception of the discharge portion which shall be solid, non-perforated pipe.
3. Washed free-draining gravel must be sized:
   - at least 2X the width of slotted perforations
   - at least 1.5X the diameter of round perforations
4. The washed free-draining gravel must extend a minimum of 3 inches beneath the pipe and extend at least 12 inches above the bottom of the foundation wall.
5. The drain should be sloped a minimum of 1/8 inch per foot to a sump or suitable outfall.
6. Drain pipe shall have positive fall throughout.
7. All drain components shall be rated/approved by the Manufacturer for the installed depth and application.
8. All drain components, including outfall, shall be observed by qualified personnel prior to backfilling to verify conformance with recommendations.



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Colorado Springs, CO 80907
719-896-4356

Project No. D25-2-1113

Date: March 6, 2026

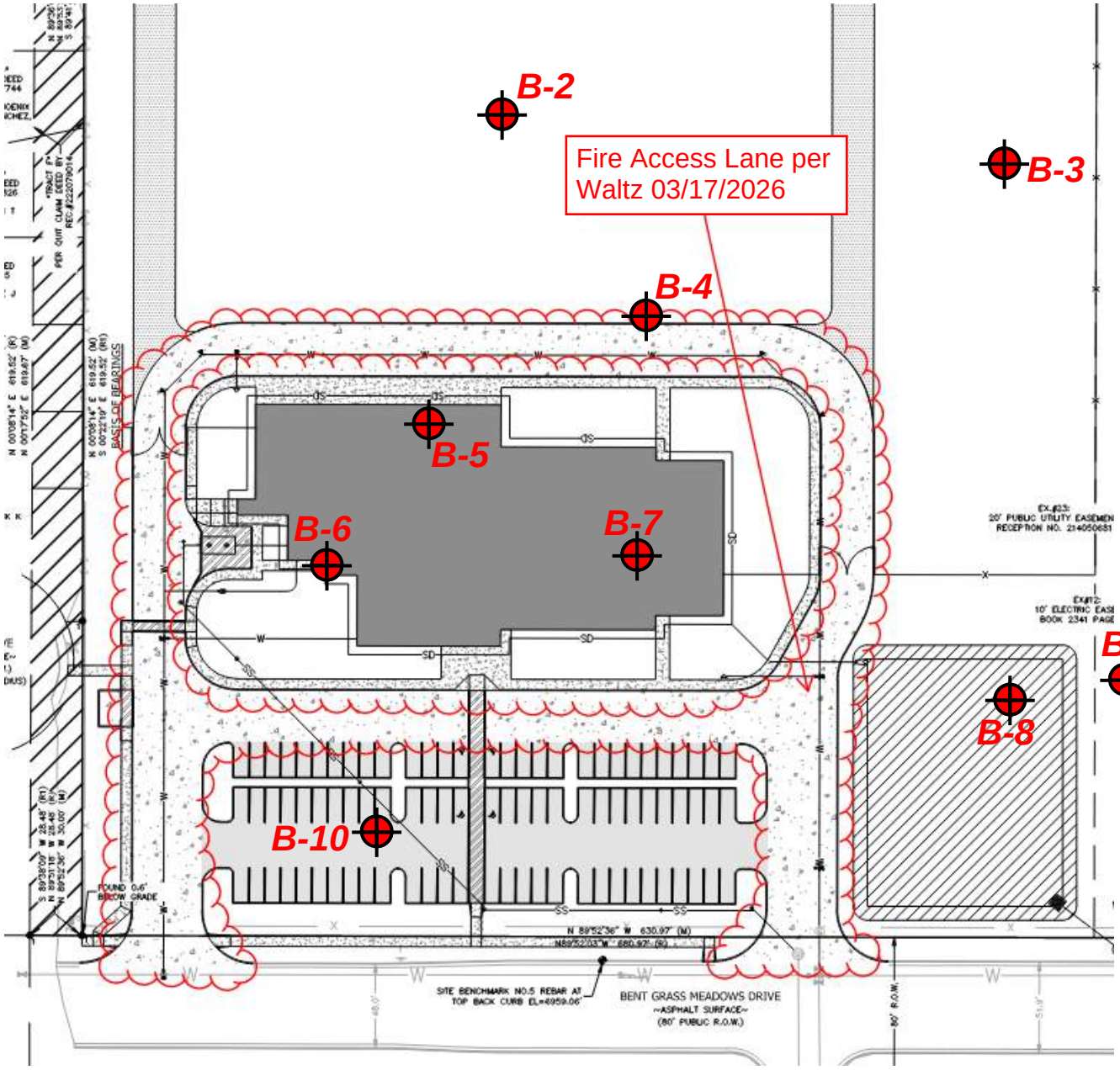
Drawn by: NAD

Reviewed by: MBR

TYPICAL FOUNDATION DRAIN

Proposed Honor Charter School Development
Bent Grass Meadows Drive
Peyton, Colorado

FIGURE
4



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REFERENCE

Base image obtained from Waltz 3/17/2026

LEGEND

B-1 Approximate Boring Location

N

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Colorado Springs, CO 80907
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Project No. D25-2-1113

Date: 3/25/2026

Drawn by: SAM

Reviewed by: ND

FIRE ACCESS LANE

Proposed Honor Charter School Development
Bent Grass Meadows Drive
Peyton, Colorado

FIGURE

5

Appendix A

Logs of Exploratory Borings

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KEY TO SYMBOLS

CLIENT Waltz Construction

PROJECT NAME Proposed Honor Charter School Development

PROJECT NUMBER D25-2-1113

PROJECT LOCATION Peyton, Colorado

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)


CL: USCS Low Plasticity Clay


CLAYSTONE


SANDSTONE


SC: USCS Clayey Sand


SM: USCS Silty Sand


SP: USCS Poorly-graded Sand


SP-SM: USCS Poorly-graded Sand with Silt


SW-SC: USCS Well-graded Sand with Clay


SW-SM: USCS Well-graded Sand with Silt


WEATHERED SANDSTONE

SAMPLER SYMBOLS


Grab Sample


2" I.D. Modified California Sampler (MC)


Standard Penetration Test (SPT)

WELL CONSTRUCTION SYMBOLS


No Backfill (just pipe): 1 pipe group, 1 pipe


Slotted Pipe: 1 pipe group, 1 pipe


Slough at bottom of hole

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
MC - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
NP - NON PLASTIC
FINES- PERCENT PASSING NO. 200 SIEVE
UCS - UNCONFINED COMPRESSIVE STRENGTH


Water Level at Time Drilling, or as Shown


Water Level at End of Drilling, or as Shown


Water Level After 24 Hours, or as Shown

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WELL NUMBER B-1

CLIENT Waltz Construction
PROJECT NAME Proposed Honor Charter School Development
PROJECT NUMBER D25-2-1113
PROJECT LOCATION Peyton, Colorado
DATE STARTED 2/6/26 **COMPLETED** 2/6/26
GROUND ELEVATION ___ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GDI Drilling, Inc. (Diedrich D-90 Truck)
GROUND WATER LEVELS:
DRILLING METHOD 6" Solid Stem Auger
AT TIME OF DRILLING 9.00 ft
LOGGED BY S. Mulcahey **CHECKED BY** M. Ray
AT END OF DRILLING ---
NOTES
AFTER DRILLING 7.00 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0.0					Silty SAND, light brown, moist to wet, medium dense	
2.5	GB					
5.0	MC	13-17				2' of stick-up above grade, no backfill, just pipe, solid riser pipe (1.5" diameter)
7.5						
10.0	MC	14-22	MC = 12.8% DD = 117.6 pcf LL = NP PL = NP Fines = 13.0%	10.0	**Dawson Formation** Weathered SANDSTONE, fine-grained, light gray with iron oxide staining, wet, moderately hard	Slotted pipe (1.5" diameter)
12.5	MC	50/9"		12.0	**Dawson Formation** Clayey SANDSTONE, fine-grained, bluish gray, slightly moist, hard	
				14.8		

Bottom of borehole at 14.8 feet.

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WELL NUMBER B-2

CLIENT Waltz Construction
PROJECT NAME Proposed Honor Charter School Development
PROJECT NUMBER D25-2-1113
PROJECT LOCATION Peyton, Colorado
DATE STARTED 2/6/26 **COMPLETED** 2/6/26
GROUND ELEVATION _____ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GDI Drilling, Inc. (Diedrich D-90 Truck)
GROUND WATER LEVELS:
DRILLING METHOD 6" Solid Stem Auger
AT TIME OF DRILLING --- None Encountered
LOGGED BY S. Mulcahey **CHECKED BY** M. Ray
AT END OF DRILLING ---
NOTES
AFTER DRILLING 8.00 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0.0					Well-graded SAND with silt, light brown, moist, medium dense	
2.5	GB		MC = 4.9% LL = NP PL = NP Fines = 10.0%			
5.0	MC	13-16				6" of stick-up above grade, no backfill, just pipe, solid riser pipe (1.5" diameter)
7.0					Clayey SAND, grayish-brown, moist to wet, medium dense	
7.5						
10.0	MC	9-19	MC = 12.1% DD = 121.5 pcf LL = 27 PL = 16 Fines = 32.0%			
12.0					**Dawson Formation** Sandstone, fine-grained, gray to brown, moist, hard	Slotted pipe (1.5" diameter)
12.5						
	MC	50/9"				
14.8					Bottom of borehole at 14.8 feet.	

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WELL NUMBER B-3

CLIENT Waltz Construction
PROJECT NAME Proposed Honor Charter School Development
PROJECT NUMBER D25-2-1113
PROJECT LOCATION Peyton, Colorado
DATE STARTED 2/6/26 **COMPLETED** 2/6/26
GROUND ELEVATION _____ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GDI Drilling, Inc. (Diedrich D-90 Truck)
GROUND WATER LEVELS:
DRILLING METHOD 6" Solid Stem Auger
AT TIME OF DRILLING --- None Encountered
LOGGED BY S. Mulcahey **CHECKED BY** M. Ray
AT END OF DRILLING 8.00 ft
NOTES
AFTER DRILLING 5.50 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0.0					Well-graded SAND with silty clay, light brown, moist to wet, medium dense	
2.5	GB					
5.0	MC	13-12	MC = 11.2% DD = 110.1 pcf LL = 26 PL = 19 Fines = 9.0%			6" of stick-up above grade, no backfill, just pipe, solid riser pipe (1.5" diameter)
7.0					**Dawson Formation** Clayey SANDSTONE with silt, light gray, moist, hard	
7.5	MC	50/9"	MC = 9.9% DD = 115.4 pcf Compression = 0.5% when wetted under 1,000 psf load			Slotted pipe (1.5" diameter)
10.0						
12.5	MC	50/7"				
14.6					- brownish-gray at approximately 14 feet below the existing ground surface	

Bottom of borehole at 14.6 feet.

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BORING NUMBER B-4

CLIENT Waltz Construction
PROJECT NAME Proposed Honor Charter School Development
PROJECT NUMBER D25-2-1113
PROJECT LOCATION Peyton, Colorado
DATE STARTED 2/6/26 **COMPLETED** 2/6/26
GROUND ELEVATION _____ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GDI Drilling, Inc. (Diedrich D-90 Truck)
GROUND WATER LEVELS:
DRILLING METHOD 6" Solid Stem Auger
AT TIME OF DRILLING --- None Encountered
LOGGED BY S. Mulcahey **CHECKED BY** M. Ray
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0	GB		MC = 5.3% LL = NP PL = NP Fines = 12.0%		Well-graded SAND with silt, medium brown, moist, very loose, organics
	MC	1-2			
2.5	GB				
3.0					Poorly Graded SAND with silt, light brown, very moist, medium dense
	MC	8-13			
5.0					
7.0					Sandy Lean CLAY, dark grayish-brown, moist, very stiff
7.5					
10.0	MC	11-19	MC = 14.1% DD = 116.8 pcf UCS = 8,226 psf		
12.0					**Dawson Formation** Clayey SANDSTONE, brownish-gray, slightly moist, hard
12.5					
	MC	50/10"			
14.8					

Bottom of borehole at 14.8 feet.

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Vivid Engineering Group, Inc.
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Fax: 719-896-4357

BORING NUMBER B-5

CLIENT Waltz Construction
PROJECT NAME Proposed Honor Charter School Development
PROJECT NUMBER D25-2-1113
PROJECT LOCATION Peyton, Colorado
DATE STARTED 2/6/26 **COMPLETED** 2/6/26
GROUND ELEVATION ___ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GDI Drilling, Inc. (Diedrich D-90 Truck)
GROUND WATER LEVELS:
DRILLING METHOD 6" Solid Stem Auger
▽ **AT TIME OF DRILLING** 8.00 ft
LOGGED BY S. Mulcahey **CHECKED BY** M. Ray
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION
0	GB				Poorly Graded SAND with silt, light brown to light gray, slightly moist to wet, loose to medium dense
	MC	3-7			
	GB				
5	MC	10-12	MC = 4.2% DD = 72.1 pcf LL = NP PL = NP Fines = 5.0%		
	MC	11-14	MC = 10.8% DD = 114.9 pcf No movement when wetted under 1,000 psf load		▽
10	SPT	4-5-8 (13)	MC = 15.5%		- clayey with iron oxide staining at approximately 9 feet below the existing ground surface 10.0 **Dawson Formation** SANDSTONE, gray to bluish-gray, moist, hard
15	MC	50/8"	MC = 10.1% DD = 119.6 pcf Swell = 0.1% when wetted under 1,000 psf load		
20	MC	50/7"			24.0
25	MC	50/8"	MC = 17.5% Fines = 85.0%		**Dawson Formation** CLAYSTONE, gray to bluish-gray, moist, hard to very hard
30	MC	50/5"			
	MC	50/5"	MC = 13.0% DD = 113.0 pcf Swell = 2.7% when wetted under 1,000 psf load		34.4 Bottom of borehole at 34.4 feet.

Anticipated Approximate Bottom of Footing Elevation

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BORING NUMBER B-6

CLIENT Waltz Construction
PROJECT NAME Proposed Honor Charter School Development
PROJECT NUMBER D25-2-1113
PROJECT LOCATION Peyton, Colorado
DATE STARTED 2/6/26 **COMPLETED** 2/6/26
GROUND ELEVATION ___ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GDI Drilling, Inc. (Diedrich D-90 Truck)
GROUND WATER LEVELS:
DRILLING METHOD 6" Solid Stem Auger
▽ **AT TIME OF DRILLING** 7.00 ft
LOGGED BY S. Mulcahey **CHECKED BY** M. Ray
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION
0	GB				Clayey SAND with organics, dark brown to medium brown, very moist, loose
	MC	4-5			
2.5					Well-graded SAND with clay, medium brown to light brown, moist, loose to medium dense
	GB				
5	MC	14-16	MC = 7.4% DD = 121.2 pcf LL = 30 PL = 17 Fines = 11.0%		- with gravel at approximately 4 feet below the existing ground surface
6.0					Silty SAND, light brownish-gray, wet, medium dense
	MC	15-15	MC = 11.1% DD = 122.5 pcf Fines = 18.0% No movement when wetted under 1,000 psf load		
10	MC	7-9			
			MC = 9.8% DD = 122.0 pcf LL = NP PL = NP Fines = 13.0%		
14.0					**Dawson Formation** SANDSTONE, bluish-gray to light gray with pink grains, moist, hard to very hard
15	MC	50/9"			
20	MC	50/10"	MC = 14.0% DD = 114.5 pcf Swell = 0.7% when wetted under 2,000 psf load		- with iron oxide staining at approximately 19 feet below the existing ground surface
25	MC	50/5"			- coarse-grained with some silt from approximately 24 to 34 feet below the existing ground surface
30	MC	50/6"			
34.6	MC	50/7"			

Anticipated Approximate Bottom of Footing Elevation

Bottom of borehole at 34.6 feet.

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BORING NUMBER B-7

CLIENT Waltz Construction
PROJECT NAME Proposed Honor Charter School Development
PROJECT NUMBER D25-2-1113
PROJECT LOCATION Peyton, Colorado
DATE STARTED 2/6/26 **COMPLETED** 2/6/26
GROUND ELEVATION _____ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GDI Drilling, Inc. (Diedrich D-90 Truck)
GROUND WATER LEVELS:
DRILLING METHOD 6" Solid Stem Auger
AT TIME OF DRILLING --- None Encountered
LOGGED BY S. Mulcahey **CHECKED BY** M. Ray
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION
0	GB				Well-graded SAND with silt and gravel, medium brown to light brown, slightly moist, loose to medium dense
	MC	3-6	MC = 3.4% DD = 106.3 pcf LL = NP PL = NP Fines = 5.0%		
	GB				
5	MC	14-15	MC = 4.5% DD = 113.0 pcf LL = NP PL = NP Fines = 6.0%		
				6.0	Silty SAND, light gray, moist, medium dense
	MC	7-11			Anticipated Approximate Bottom of Footing Elevation
				8.0	**Dawson Formation** Weathered Clayey SANDSTONE, gray, moist, moderately hard
10	MC	18-21	MC = 18.3% DD = 108.8 pcf Fines = 38.0% No movement when wetted under 2,000 psf load		
				12.0	**Dawson Formation** SANDSTONE, gray to bluish gray with brown to olive staining, slightly moist, hard to very hard
			MC = 9.6% DD = 121.1 pcf UCS = 679 psf		
15	MC	50/7"	MC = 12.1% DD = 119.9 pcf Swell = 0.9% when wetted under 2,000 psf load		
20	MC	50/7"			
25	MC	50/7"			
30	MC	50/5"			- clayey at approximately 29 feet below the existing ground surface
	MC	50/6"		34.5	- very coarse and light gray with pink grains at approximately 34 feet below the existing ground surface

Bottom of borehole at 34.5 feet.

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WELL NUMBER B-8

CLIENT Waltz Construction
PROJECT NAME Proposed Honor Charter School Development
PROJECT NUMBER D25-2-1113
PROJECT LOCATION Peyton, Colorado
DATE STARTED 2/6/26 **COMPLETED** 2/6/26
GROUND ELEVATION _____ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GDI Drilling, Inc. (Diedrich D-90 Truck)
GROUND WATER LEVELS:
DRILLING METHOD 6" Solid Stem Auger
AT TIME OF DRILLING --- None Encountered
LOGGED BY S. Mulcahey **CHECKED BY** M. Ray
AT END OF DRILLING ---
NOTES
AFTER DRILLING --- None Encountered

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0.0	GB		MC = 10.0% DD = 116.3 pcf LL = NP PL = NP Fines = 10.0%		Well-graded SAND with silt, light brown, moist, medium dense	2' of stick-up above grade, no backfill, just pipe, solid riser pipe (1.5" diameter)'
2.5						
5.0	MC	13-14				
7.5					7.0 **Dawson Formation** Weathered Clayey SANDSTONE, light gray, moist, moderately hard	
10.0	MC	20-29	MC = 16.4% DD = 110.4 pcf LL = 36 PL = 18 Swell = 0.4% when wetted under 2,000 psf load			Slotted pipe (1.5" diameter)
12.5					12.0 **Dawson Formation** Silty SANDSTONE, light gray to tan, slightly moist, very hard	
	MC	50/5"			14.4	

Bottom of borehole at 14.4 feet.

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Vivid Engineering Group, Inc.
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Fax: 719-896-4357

BORING NUMBER B-9

CLIENT Waltz Construction
PROJECT NAME Proposed Honor Charter School Development
PROJECT NUMBER D25-2-1113
PROJECT LOCATION Peyton, Colorado
DATE STARTED 2/6/26 **COMPLETED** 2/6/26
GROUND ELEVATION _____ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GDI Drilling, Inc. (Diedrich D-90 Truck)
GROUND WATER LEVELS:
DRILLING METHOD 6" Solid Stem Auger
AT TIME OF DRILLING --- None Encountered
LOGGED BY S. Mulcahey **CHECKED BY** M. Ray
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0					Well-graded SAND with silt, light brown, very moist, medium dense
2.5	GB				
5.0	MC	11-12			
7.0					
7.5					Clayey SAND, light grayish-brown, moist, medium dense
10.0	MC	11-23	MC = 14.5% DD = 115.8 pcf LL = 30 PL = 16 Fines = 41.0%		
12.0					**Dawson Formation** CLAYSTONE, grayish-brown with iron oxide, slightly moist, hard
12.5					
	MC	50/8"			
14.7					Bottom of borehole at 14.7 feet.

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BORING NUMBER B-10

CLIENT Waltz Construction
PROJECT NAME Proposed Honor Charter School Development
PROJECT NUMBER D25-2-1113
PROJECT LOCATION Peyton, Colorado
DATE STARTED 2/6/26 **COMPLETED** 2/6/26
GROUND ELEVATION ___ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GDI Drilling, Inc. (Diedrich D-90 Truck)
GROUND WATER LEVELS:
DRILLING METHOD 6" Solid Stem Auger
▽ **AT TIME OF DRILLING** 9.00 ft
LOGGED BY S. Mulcahey **CHECKED BY** M. Ray
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0	GB		MC = 6.2% LL = 21 PL = 18 Fines = 13.0%		Silty SAND, light brown, moist, medium dense
	MC	6-7			
2.5	GB				
					4.0
	MC	9-10	MC = 11.8% DD = 121.7 pcf LL = 24 PL = 16 Fines = 18.0%		Clayey SAND, light gray, moist, medium dense
5.0					
					7.0
7.5					Silty SAND, light brown, wet, medium dense
	MC	14-30			▽
10.0					
					12.0
12.5					**Dawson Formation** SANDSTONE, light brown with medium brown and yellow, slightly moist, hard
	MC	50/9"			
					14.8

Bottom of borehole at 14.8 feet.

GENERAL BH / TP / WELL - MODIFIED - GINT STD US LAB.GDT - 2/25/26 14:25 - C:\USERS\SARAH MULCAHEY\VIVID ENGINEERING GROUP\GEO - DOCUMENTS\PROJECTS_2025\D25-2-1113_WALTZ_HONOR CHARTER SCHOOL\6 - DRAFTING\D25-2-1113.GPJ

Appendix B

Geotechnical Laboratory Test Results

Vivid Engineering Group, Inc.
1053 Elkton Drive
Colorado Springs, Colorado 80907
Telephone: 719-896-4356
Fax: 719-896-4357

SUMMARY OF LABORATORY RESULTS

CLIENT Waltz Construction

PROJECT NAME Proposed Honor Charter School Development

PROJECT NUMBER D25-2-1113

PROJECT LOCATION Peyton, Colorado

Exploration ID	Approx. Sample Depth (ft)	Sample Description	Passing 3/4" Sieve (%)	Passing #4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Moisture Content (%)	Dry Density (pcf)
B-1	9.0	SILTY SAND(SM)		91	13	NP	NP	NP	12.8	117.6
B-2	0.0	WELL-GRADED SAND with SILT(SW-SM)		96	10	NP	NP	NP	4.9	
B-2	9.0	CLAYEY SAND(SC)		100	32	27	16	11	12.1	121.5
B-3	4.0	WELL-GRADED SAND with SILTY CLAY(SW-SC)		98	9	26	19	7	11.2	110.1
B-3	9.0								9.9	115.4
B-4	0.0	WELL-GRADED SAND with SILT(SW-SM)		93	12	NP	NP	NP	5.3	
B-4	9.0								14.1	116.8
B-5	4.0	POORLY GRADED SAND with SILT(SP-SM)		99	5	NP	NP	NP	4.2	72.1
B-5	7.0								10.8	114.9
B-5	9.0								15.5	
B-5	14.0								10.1	119.6
B-5	24.0				85				17.5	
B-5	34.0								13.0	113.0
B-6	4.0	WELL-GRADED SAND with CLAY(SW-SC)		97	11	30	17	13	7.4	121.2
B-6	7.0			100	18				11.1	122.5
B-6	9.0	SILTY SAND(SM)		97	13	NP	NP	NP	9.8	122.0
B-6	19.0								14.0	114.5
B-7	2.0	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)	100	85	5	NP	NP	NP	3.4	106.3
B-7	4.0	WELL-GRADED SAND with SILT(SW-SM)		90	6	NP	NP	NP	4.5	113.0
B-7	7.0				38				18.3	108.8
B-7	9.0								9.6	121.1
B-7	14.0								12.1	119.9
B-8	0.0	WELL-GRADED SAND with SILT(SW-SM)		96	10	NP	NP	NP	10.0	116.3
B-8	9.0					36	18	18	16.4	110.4
B-9	9.0	CLAYEY SAND(SC)		100	41	30	16	14	14.5	115.8
B-10	0.0	SILTY SAND(SM)		96	13	21	18	3	6.2	
B-10	4.0	CLAYEY SAND(SC)		98	18	24	16	8	11.8	121.7

LAB SUMMARY - MODIFIED - GINT STD US LAB.GDT - 3/2/26 14:09 - C:\USERS\MARY BETH RAY\VIVID ENGINEERING GROUP\GEO - DOCUMENTS\PROJECTS_2025\D25-2-1113_WALTZ_HONOR CHARTER SCHOOL\6 - DRAFTING\D25-2-1113.GPJ

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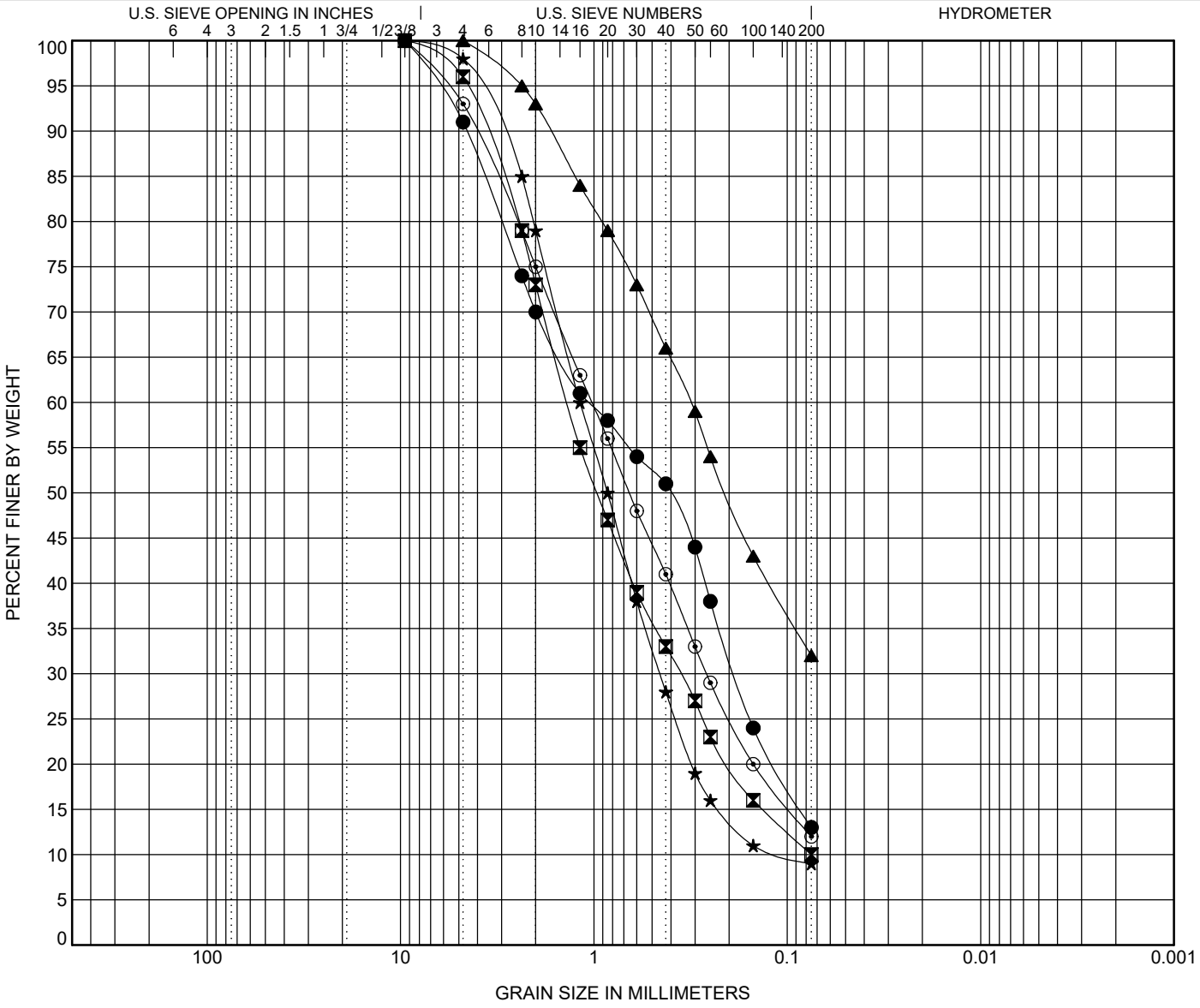
GRAIN SIZE DISTRIBUTION

CLIENT Waltz Construction

PROJECT NAME Proposed Honor Charter School Development

PROJECT NUMBER D25-2-1113

PROJECT LOCATION Peyton, Colorado



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	B-1	9.0	SILTY SAND(SM)	NP	NP	NP		
⊠	B-2	0.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP	1.24	18.22
▲	B-2	9.0	CLAYEY SAND(SC)	27	16	11		
★	B-3	4.0	WELL-GRADED SAND with SILTY CLAY(SW-SC)	26	19	7	1.66	11.13
⊙	B-4	0.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP	1.06	16.26

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-1	9.0	9.5	1.058	0.187		9.0	78.0	13.0	
⊠	B-2	0.0	9.5	1.366	0.357	0.075	4.0	86.0	10.0	
▲	B-2	9.0	4.75	0.315			0.0	68.0	32.0	
★	B-3	4.0	9.5	1.18	0.455	0.106	2.0	89.0	9.0	
⊙	B-4	0.0	9.5	1.025	0.262		7.0	81.0	12.0	

GRAIN SIZE - GINT STD US LAB.GDT - 3/2/26 14:13 - C:\USERS\MARY BETH RAY\VIVID ENGINEERING GROUP\GEO - DOCUMENTS\PROJECTS_2025\D25-2-1113_WALTZ_HONOR CHARTER SCHOOL\6 - DRAFTING\D25-2-1113.GPJ

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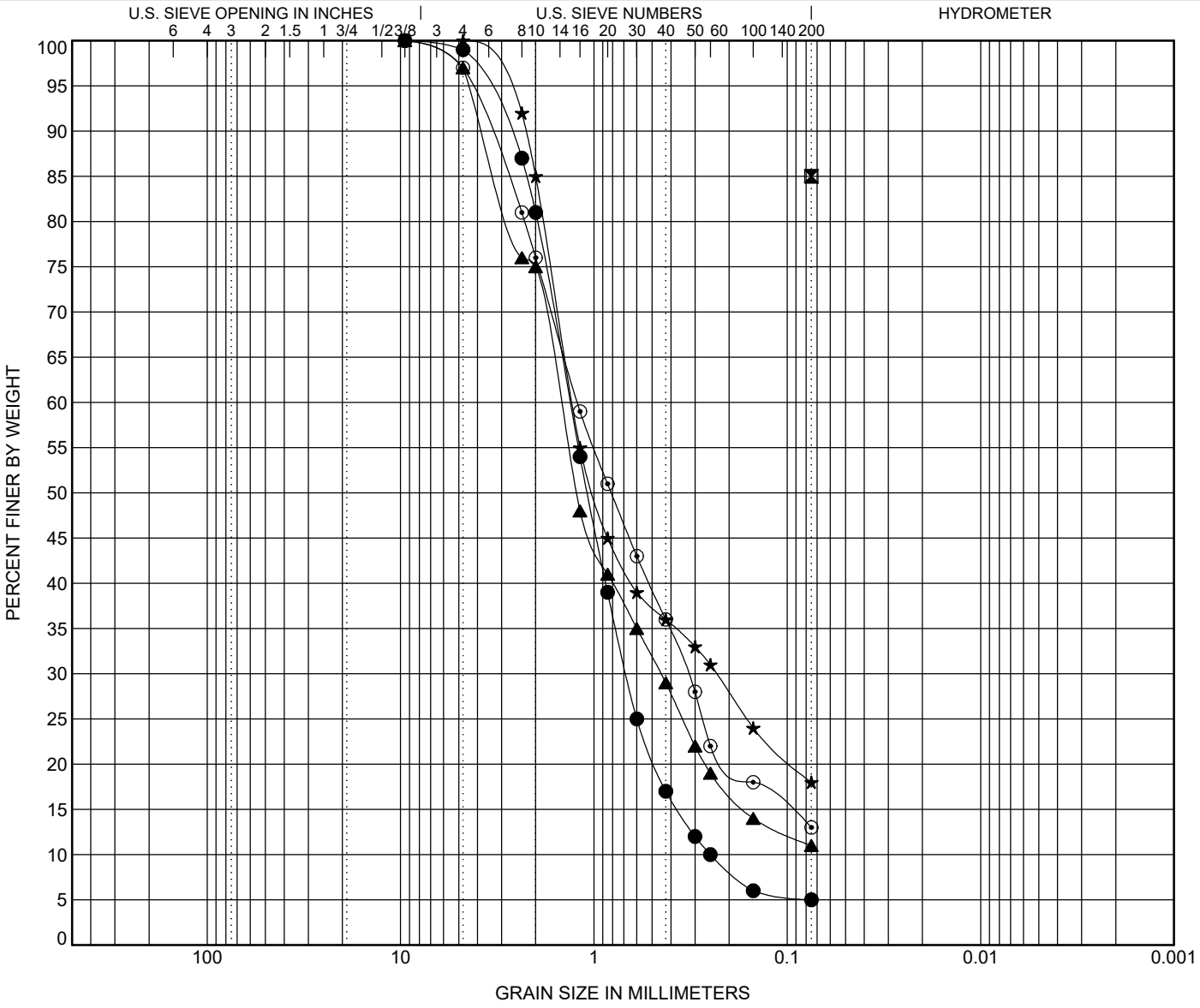
GRAIN SIZE DISTRIBUTION

CLIENT Waltz Construction

PROJECT NAME Proposed Honor Charter School Development

PROJECT NUMBER D25-2-1113

PROJECT LOCATION Peyton, Colorado



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE		DEPTH	Classification	LL	PL	PI	Cc	Cu
●	B-5	4.0	POORLY GRADED SAND with SILT(SP-SM)	NP	NP	NP	1.39	5.31
⊠	B-5	24.0						
▲	B-6	4.0	WELL-GRADED SAND with CLAY(SW-SC)	30	17	13	2.28	25.06
★	B-6	7.0						
⊙	B-6	9.0	SILTY SAND(SM)	NP	NP	NP		

BOREHOLE		DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-5	4.0	9.5	1.327	0.679	0.25	1.0	94.0	5.0	
⊠	B-5	24.0	0.075						85.0	
▲	B-6	4.0	9.5	1.492	0.45		3.0	86.0	11.0	
★	B-6	7.0	4.75	1.288	0.232		0.0	82.0	18.0	
⊙	B-6	9.0	9.5	1.217	0.327		3.0	84.0	13.0	

GRAIN SIZE - GINT STD US LAB.GDT - 3/2/26 14:13 - C:\USERS\MARY BETH RAY\VIVID ENGINEERING GROUP\GEO - DOCUMENTS\PROJECTS_2025\D25-2-1113_WALTZ_HONOR CHARTER SCHOOL\6 - DRAFTING\D25-2-1113.GPJ

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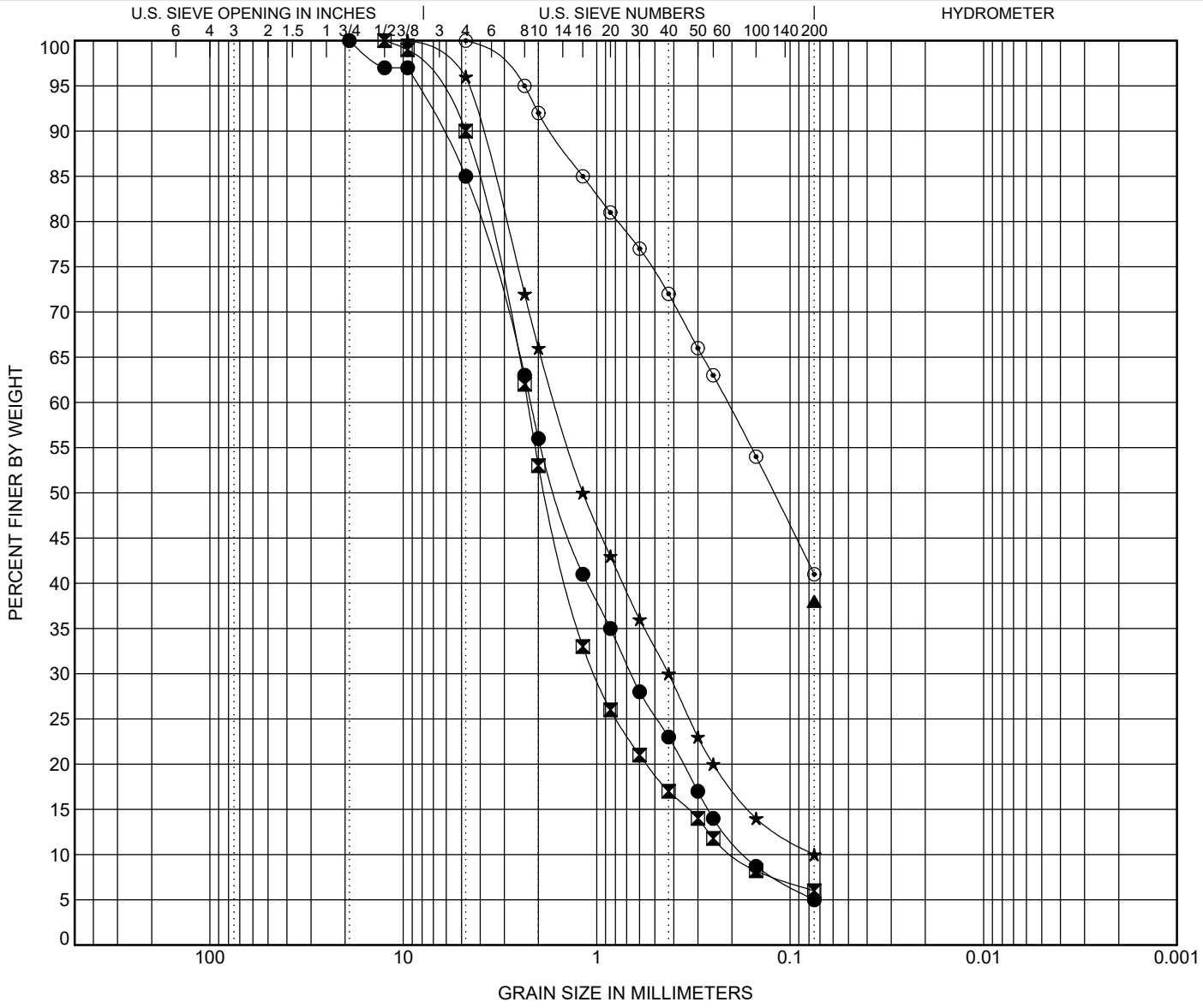
GRAIN SIZE DISTRIBUTION

CLIENT Waltz Construction

PROJECT NAME Proposed Honor Charter School Development

PROJECT NUMBER D25-2-1113

PROJECT LOCATION Peyton, Colorado



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	B-7	2.0	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)	NP	NP	NP	1.18	12.93
⊠	B-7	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP	2.39	11.75
▲	B-7	7.0						
★	B-8	0.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP	1.47	21.88
⊙	B-9	9.0	CLAYEY SAND(SC)	30	16	14		

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-7	2.0	19	2.198	0.663	0.17	15.0	80.0	5.0	
⊠	B-7	4.0	12.5	2.275	1.025	0.194	10.0	84.0	6.0	
▲	B-7	7.0	0.075						38.0	
★	B-8	0.0	9.5	1.641	0.425	0.075	4.0	86.0	10.0	
⊙	B-9	9.0	4.75	0.211			0.0	59.0	41.0	

GRAIN SIZE - GINT STD US LAB.GDT - 3/2/26 14:13 - C:\USERS\MARY BETH RAY\VIVID ENGINEERING GROUP\GEO - DOCUMENTS\PROJECTS_2025\D25-2-1113_WALTZ_HONOR CHARTER SCHOOL\6 - DRAFTING\D25-2-1113.GPJ

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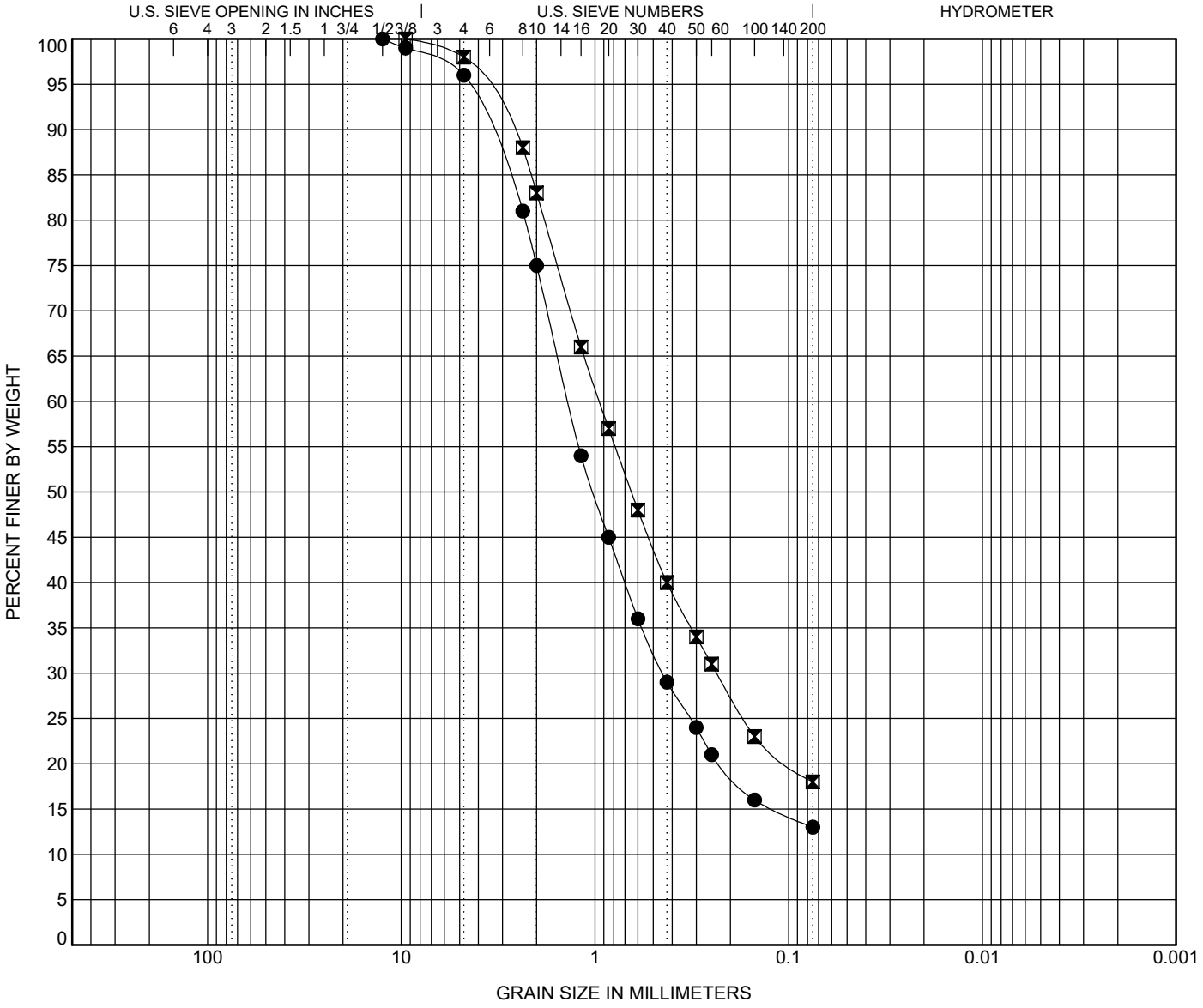
GRAIN SIZE DISTRIBUTION

CLIENT Waltz Construction

PROJECT NAME Proposed Honor Charter School Development

PROJECT NUMBER D25-2-1113

PROJECT LOCATION Peyton, Colorado



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	**B-10**	**0.0**	**SILTY SAND(SM)**	**21**	**18**	**3**		
⊠	**B-10**	**4.0**	**CLAYEY SAND(SC)**	**24**	**16**	**8**		

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-10**	**0.0**	**12.5**	**1.372**	**0.446**		**4.0**	**83.0**	**13.0**	
⊠	**B-10**	**4.0**	**9.5**	**0.948**	**0.235**		**2.0**	**80.0**	**18.0**	

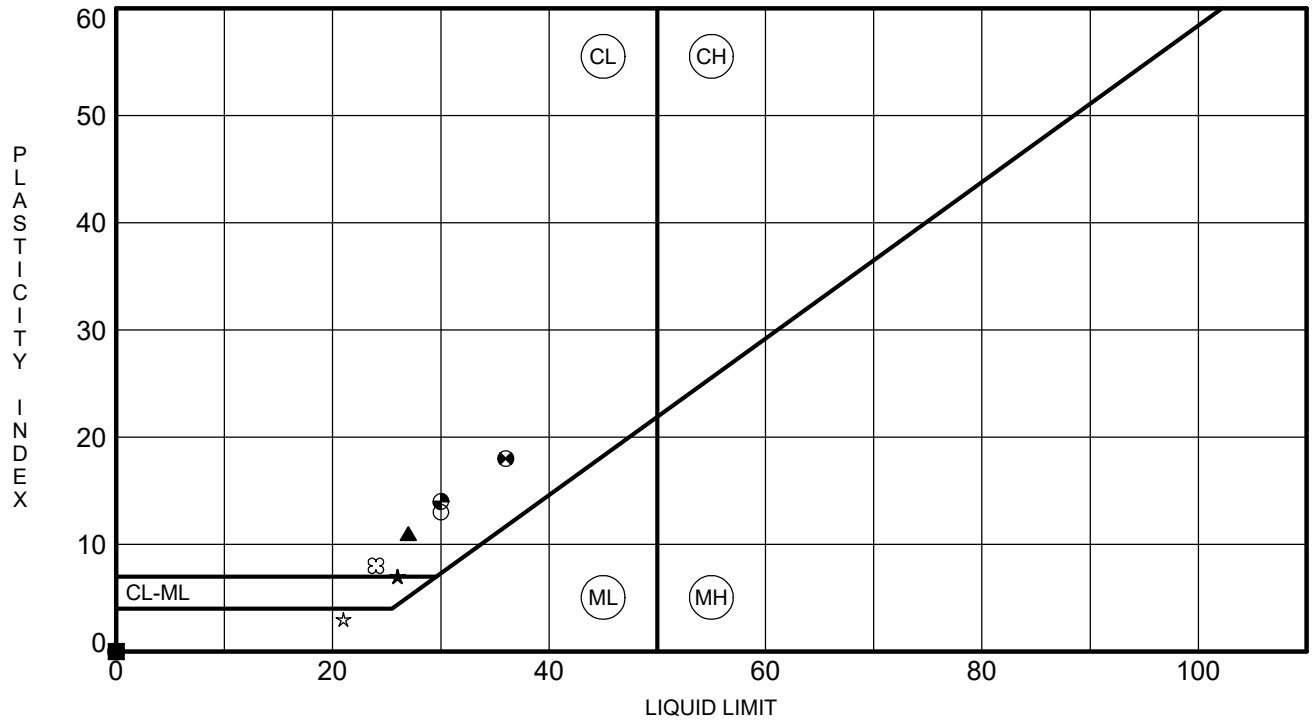
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ATTERBERG LIMITS' RESULTS

CLIENT Waltz Construction **PROJECT NAME** Proposed Honor Charter School Development

PROJECT NUMBER D25-2-1113 **PROJECT LOCATION** Peyton, Colorado



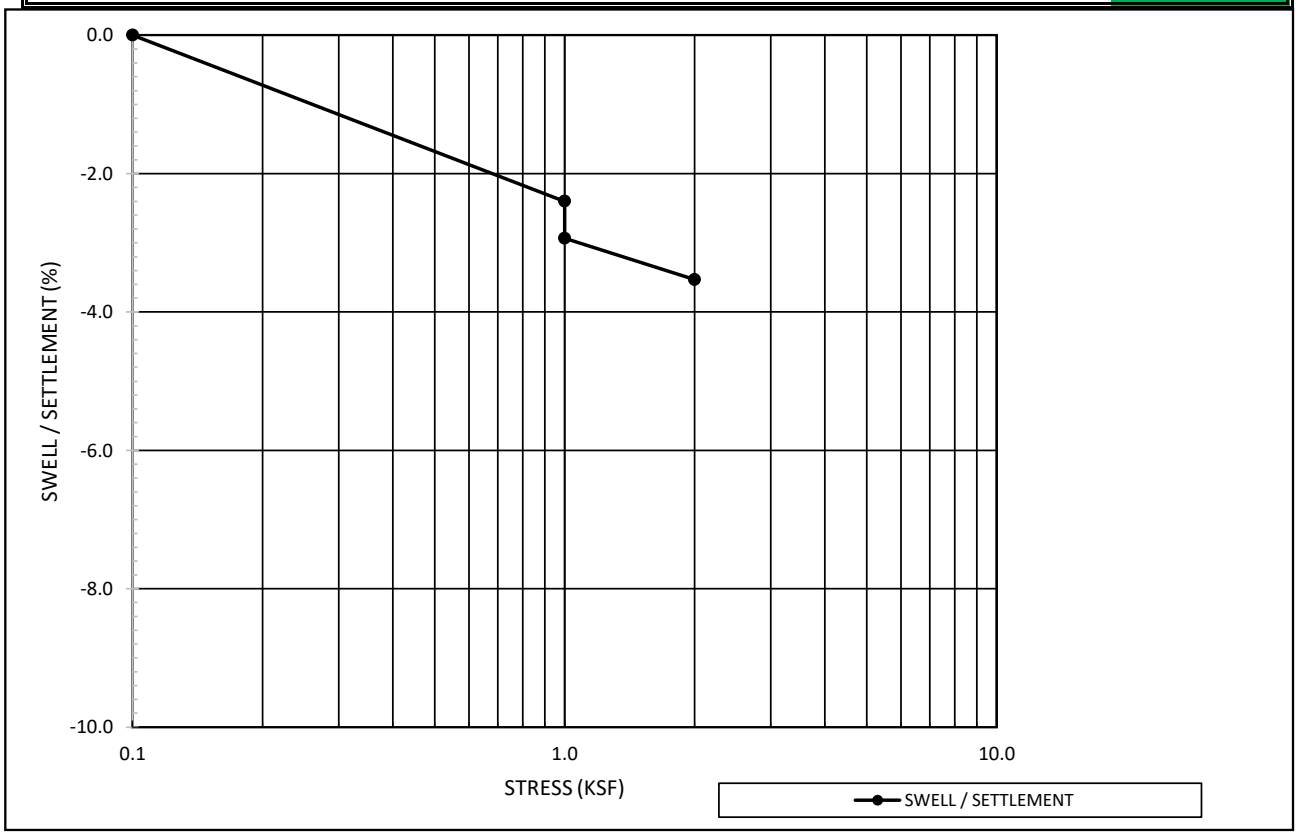
	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	B-1	9.0	NP	NP	NP	13	SILTY SAND(SM)
⊠	B-2	0.0	NP	NP	NP	10	WELL-GRADED SAND with SILT(SW-SM)
▲	B-2	9.0	27	16	11	32	CLAYEY SAND(SC)
★	B-3	4.0	26	19	7	9	WELL-GRADED SAND with SILTY CLAY(SW-SC)
⊙	B-4	0.0	NP	NP	NP	12	WELL-GRADED SAND with SILT(SW-SM)
✿	B-5	4.0	NP	NP	NP	5	POORLY GRADED SAND with SILT(SP-SM)
○	B-6	4.0	30	17	13	11	WELL-GRADED SAND with CLAY(SW-SC)
△	B-6	9.0	NP	NP	NP	13	SILTY SAND(SM)
⊗	B-7	2.0	NP	NP	NP	5	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)
⊕	B-7	4.0	NP	NP	NP	6	WELL-GRADED SAND with SILT(SW-SM)
□	B-8	0.0	NP	NP	NP	10	WELL-GRADED SAND with SILT(SW-SM)
⊛	B-8	9.0	36	18	18		
◕	B-9	9.0	30	16	14	41	CLAYEY SAND(SC)
☆	B-10	0.0	21	18	3	13	SILTY SAND(SM)
⊠	B-10	4.0	24	16	8	18	CLAYEY SAND(SC)

ATTERBERG LIMITS - GINT STD US LAB.GDT - 3/2/26 14:14 - C:\USERS\MARY BETH RAY\VIVID ENGINEERING GROUP\GEO - DOCUMENTS\PROJECTS_2025\D25-2-1113_WALTZ_HONOR CHARTER SCHOOL\6 - DRAFTING\D25-2-1113.GPJ

VIVID Engineering Group, Inc.

Project Name:	Proposed Honor Charter School Development	**Date**	2/20/2026
Project No.:	D25-2-1113		
Boring ID.:	B-3	**Sample Depth (ft)**	9
Sample Description:	Clayey SANDSTONE, light gray, moist		

	%
Compression @ Wetting Weight:	**-0.5**

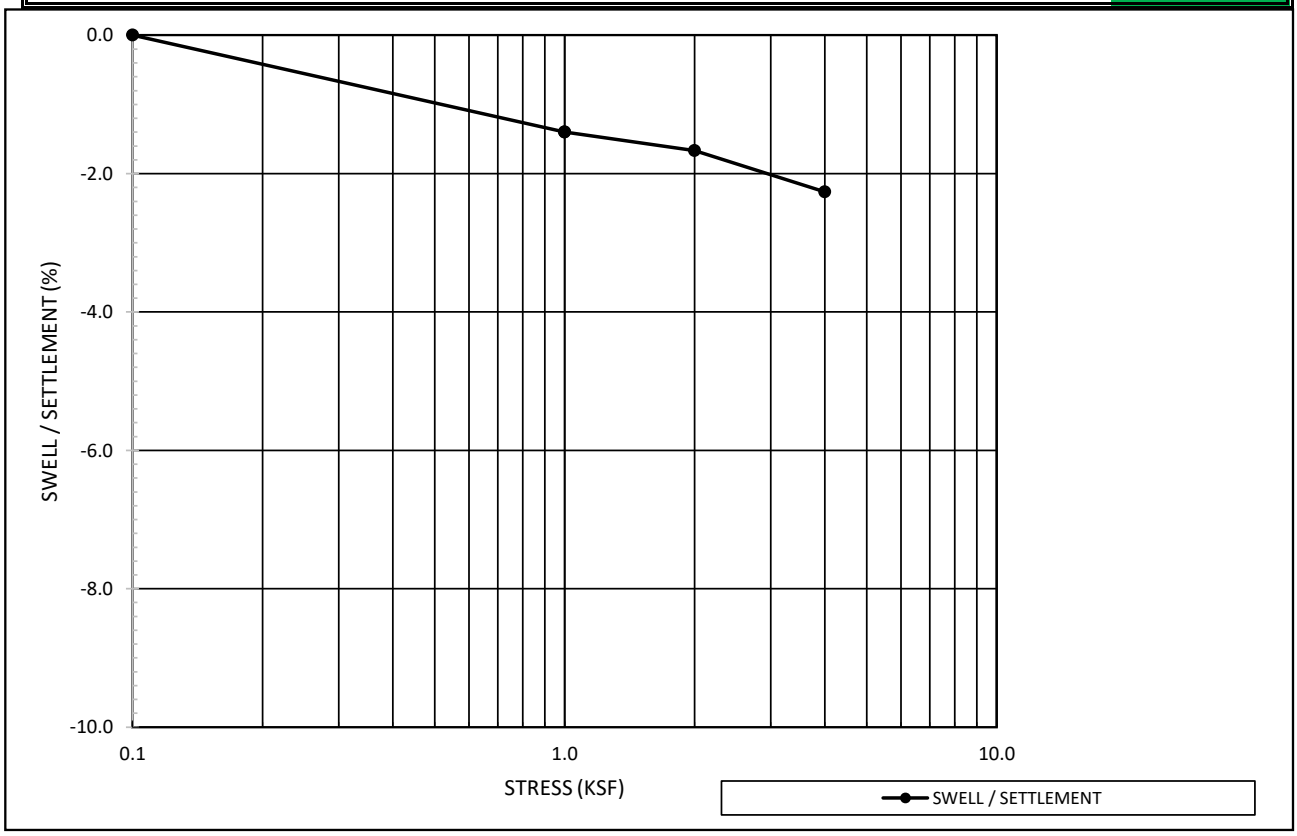


Initial Condition	
Moisture Content %	**9.9**
Dry Density (pcf)	**115.4**
Post-Swell Condition	
Moisture Content %	**14.5**

VIVID Engineering Group, Inc.

Project Name:	Proposed Honor Charter School Development	**Date**	2/20/2026
Project No.:	D25-2-1113		
Boring ID.:	B-5	**Sample Depth (ft)**	7
Sample Description:	Poorly Graded SAND with silt, light gray, moist		

	%
No Movement @ Wetting Weight:	**0.0**

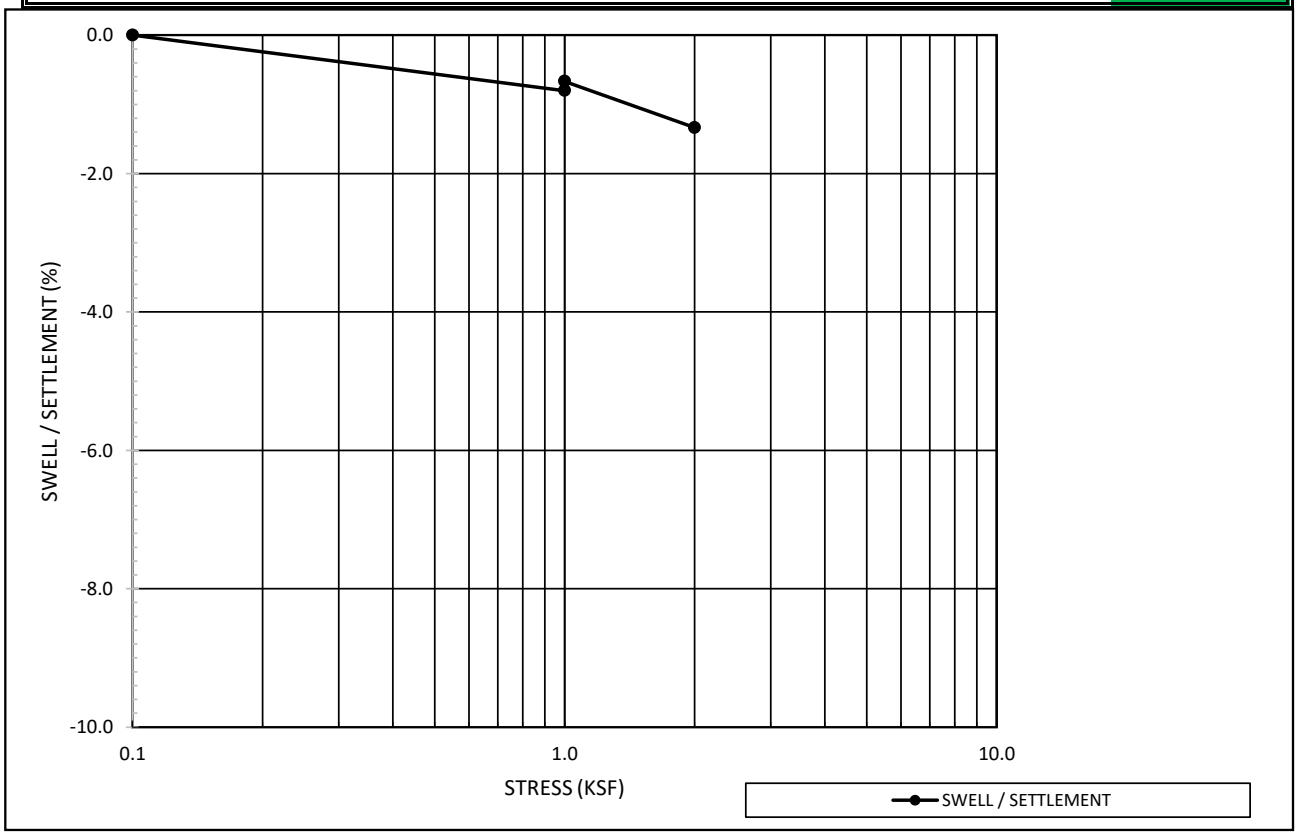


Initial Condition	
Moisture Content %	**10.8**
Dry Density (pcf)	**114.9**
Post-Swell Condition	
Moisture Content %	**14.0**

VIVID Engineering Group, Inc.

Project Name:	Proposed Honor Charter School Development	**Date**	2/20/2026
Project No.:	D25-2-1113		
Boring ID.:	B-5	**Sample Depth (ft)**	14
Sample Description:	SANDSTONE, gray, moist		

	%
Swell @ Wetting Weight:	**0.1**

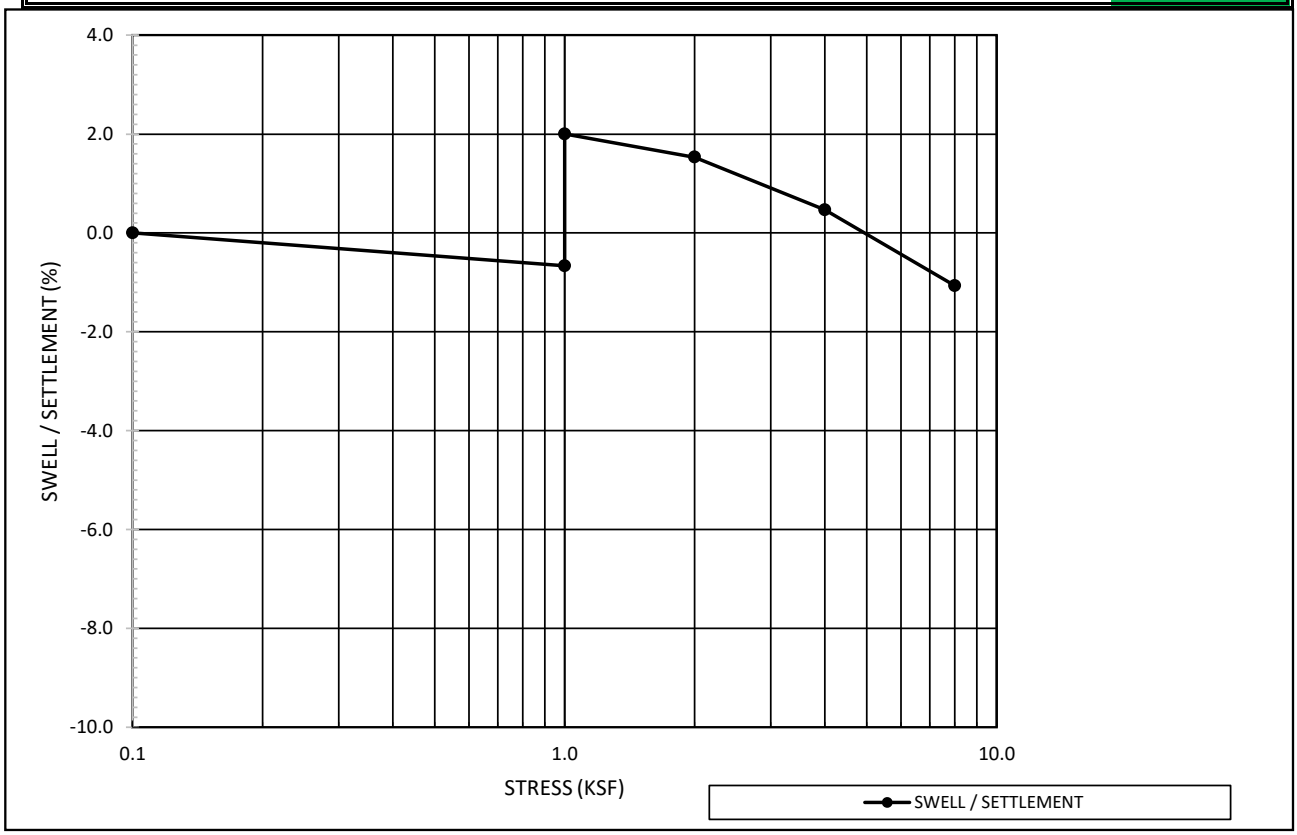


Initial Condition	
Moisture Content %	**10.1**
Dry Density (pcf)	**119.6**
Post-Swell Condition	
Moisture Content %	**14.5**

VIVID Engineering Group, Inc.

Project Name:	Proposed Honor Charter School Development	**Date**	2/20/2026
Project No.:	D25-2-1113		
Boring ID.:	B-5	**Sample Depth (ft)**	34
Sample Description:	CLAYSTONE, gray, moist		

	%
Swell @ Wetting Weight:	**2.7**

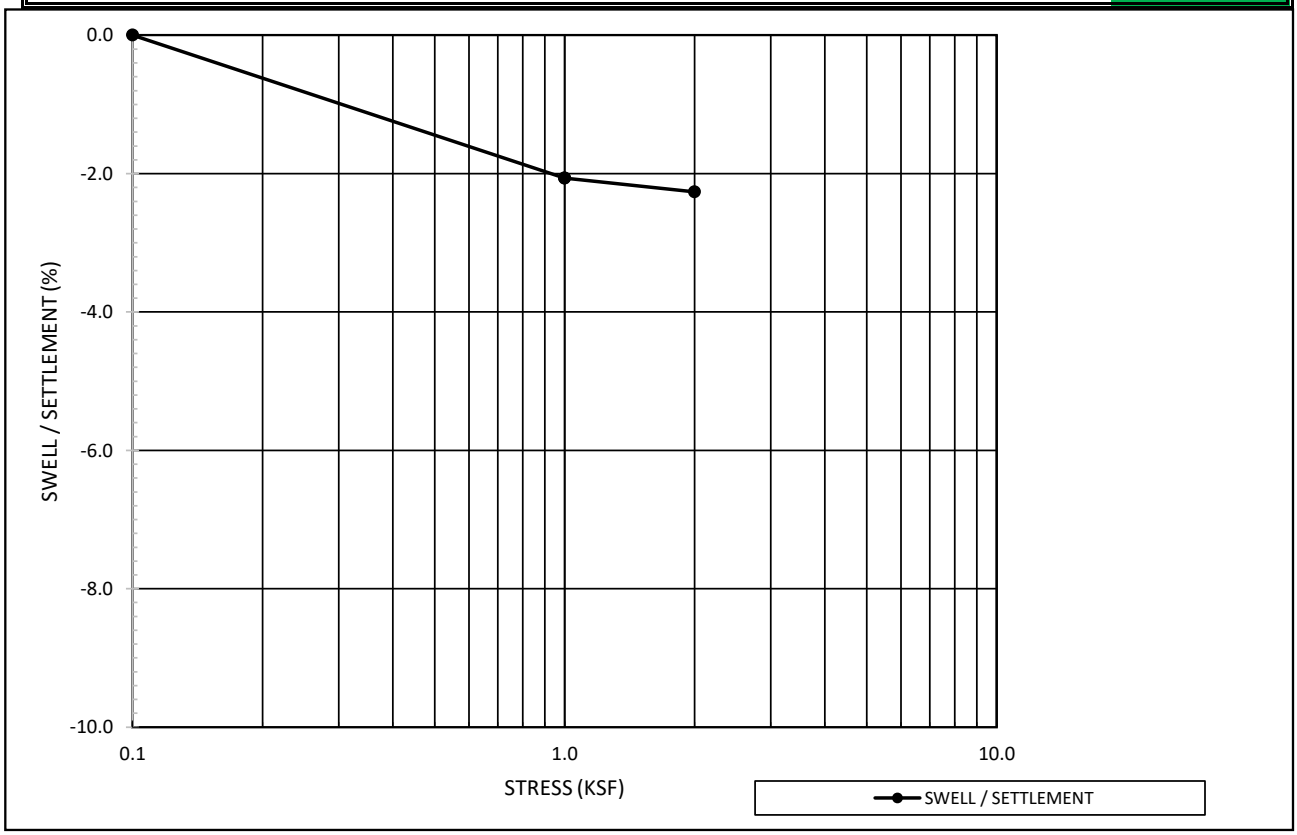


Initial Condition	
Moisture Content %	**13.0**
Dry Density (pcf)	**113.0**
Post-Swell Condition	
Moisture Content %	**18.5**

VIVID Engineering Group, Inc.

Project Name:	Proposed Honor Charter School Development	**Date**	2/20/2026
Project No.:	D25-2-1113		
Boring ID.:	B-6	**Sample Depth (ft)**	7
Sample Description:	Silty SAND, light brownish-gray, wet		

	%
No Movement @ Wetting Weight:	**0.0**

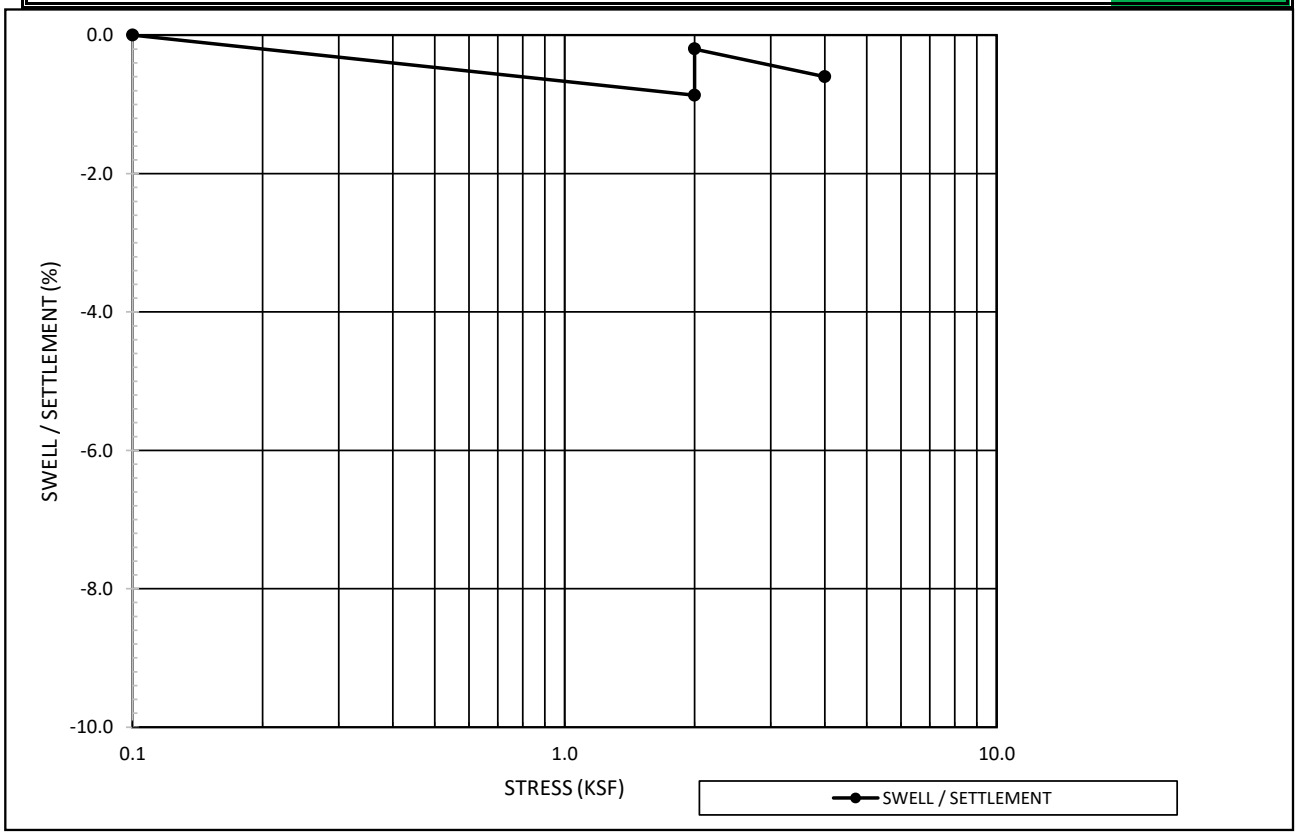


Initial Condition	
Moisture Content %	**11.7**
Dry Density (pcf)	**122.5**
Post-Swell Condition	
Moisture Content %	**13.1**

VIVID Engineering Group, Inc.

Project Name:	Proposed Honor Charter School Development	**Date**	2/20/2026
Project No.:	D25-2-1113		
Boring ID.:	B-6	**Sample Depth (ft)**	19
Sample Description:	SANDSTONE, light gray, moist		

	%
Swell @ Wetting Weight:	**0.7**

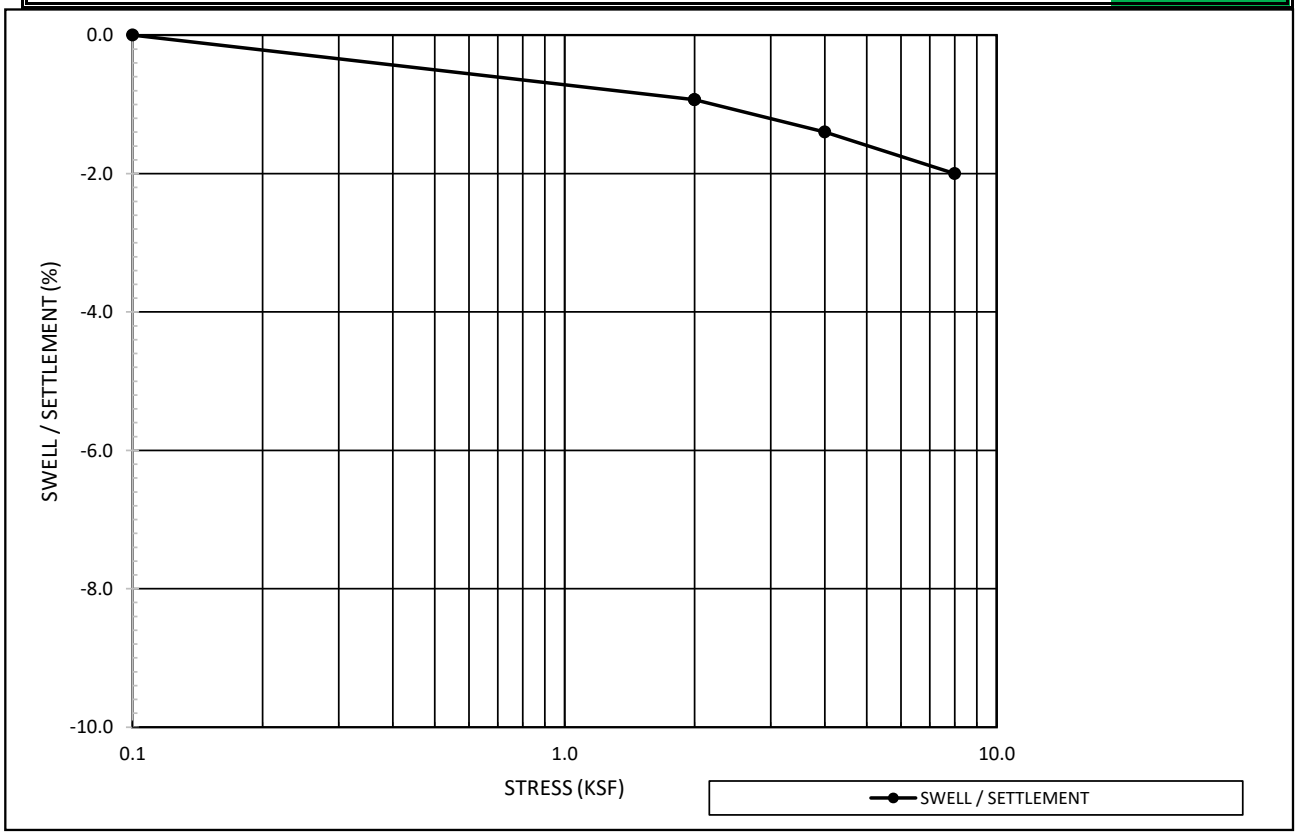


Initial Condition	
Moisture Content %	**14.0**
Dry Density (pcf)	**114.5**
Post-Swell Condition	
Moisture Content %	**17.5**

VIVID Engineering Group, Inc.

Project Name:	Proposed Honor Charter School Development	**Date**	2/20/2026
Project No.:	D25-2-1113		
Boring ID.:	B-7	**Sample Depth (ft)**	7
Sample Description:	Silty SAND, light gray, moist		

	%
No Movement @ Wetting Weight:	**0.0**

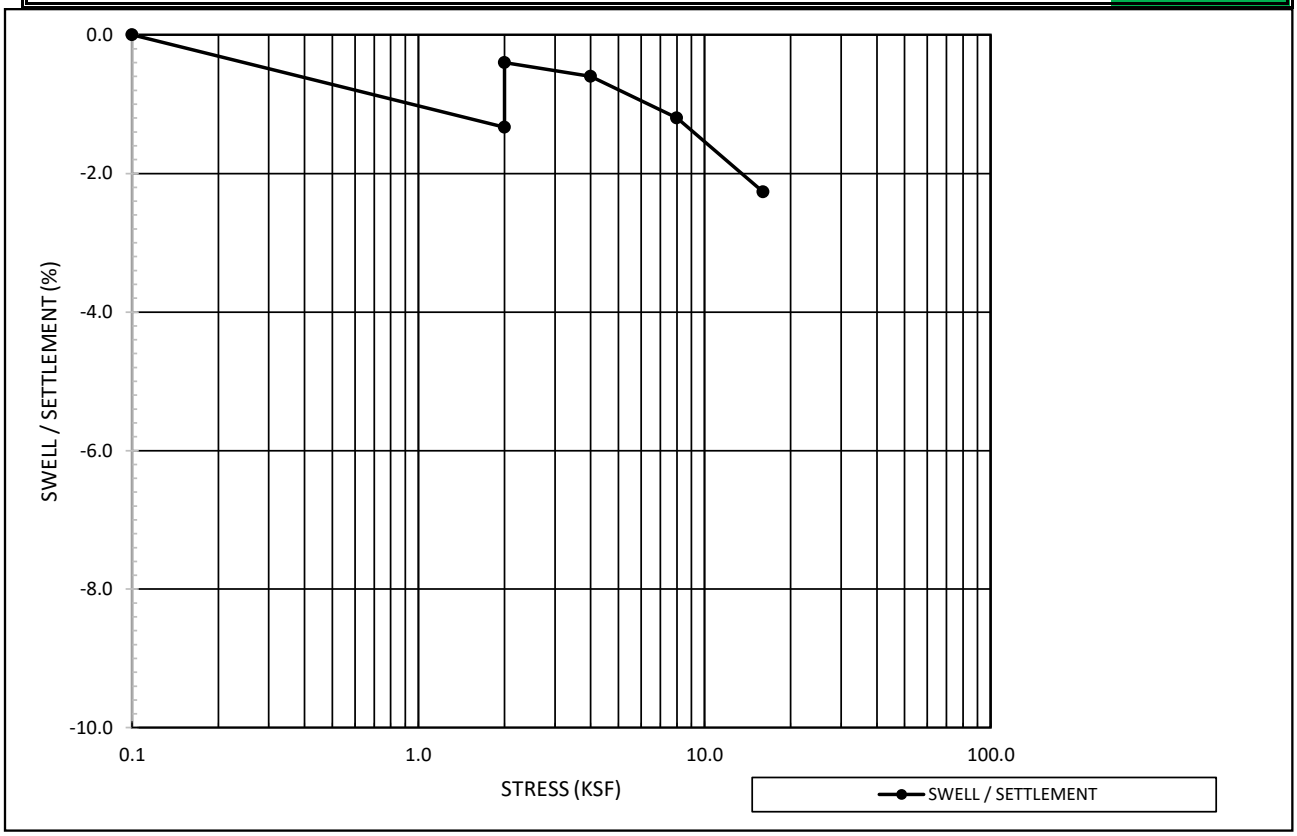


Initial Condition	
Moisture Content %	**19.7**
Dry Density (pcf)	**108.8**
Post-Swell Condition	
Moisture Content %	**20.0**

VIVID Engineering Group, Inc.

Project Name:	Proposed Honor Charter School Development	**Date**	2/20/2026
Project No.:	D25-2-1113		
Boring ID.:	B-7	**Sample Depth (ft)**	14
Sample Description:	Clayey SANDSTONE, gray, moist		

	%
Swell @ Wetting Weight:	**0.9**

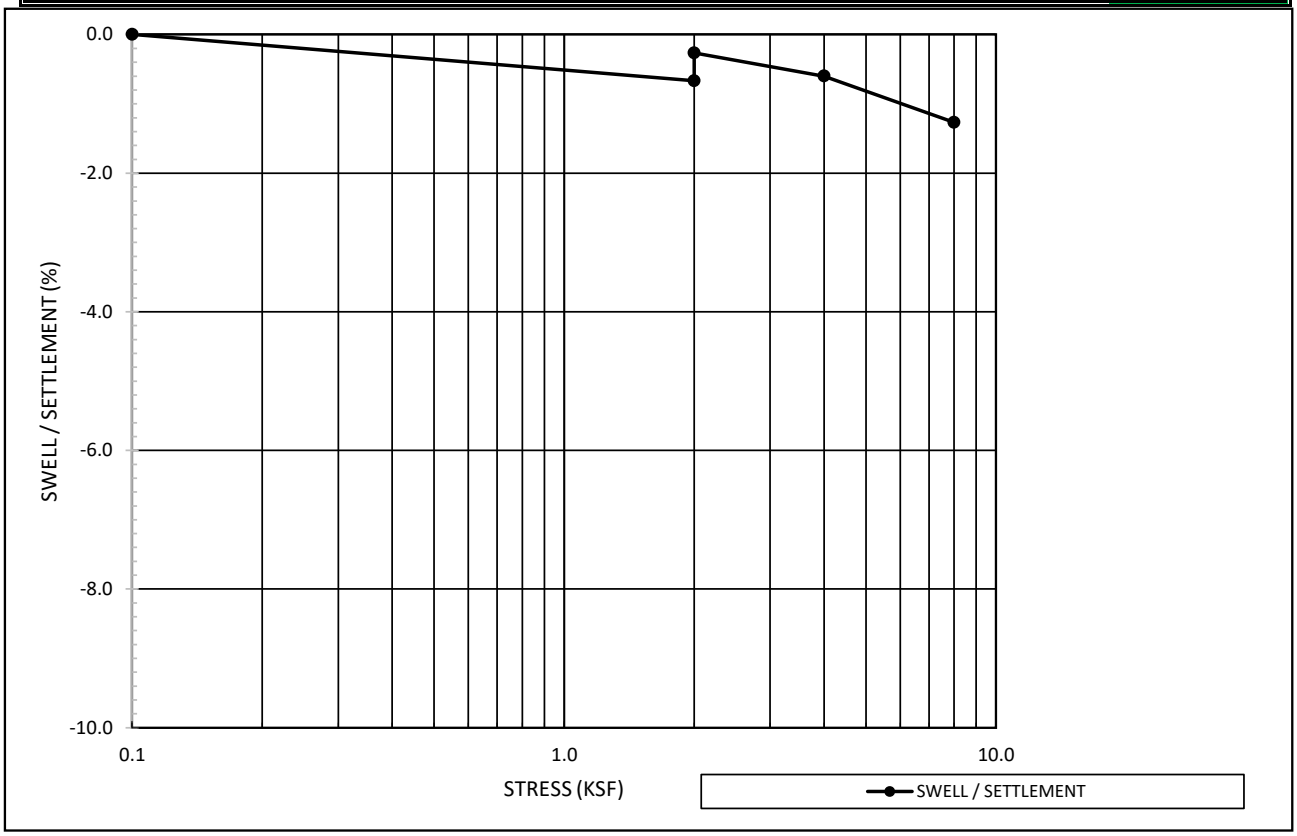


Initial Condition	
Moisture Content %	**12.1**
Dry Density (pcf)	**119.9**
Post-Swell Condition	
Moisture Content %	**15.1**

VIVID Engineering Group, Inc.

Project Name:	Proposed Honor Charter School Development	**Date**	2/20/2026
Project No.:	D25-2-1113		
Boring ID.:	B-8	**Sample Depth (ft)**	9
Sample Description:	Weathered Clayey SANDSTONE, light gray, moist		

	%
Swell @ Wetting Weight:	**0.4**



Initial Condition	
Moisture Content %	**16.4**
Dry Density (pcf)	**110.4**
Post-Swell Condition	
Moisture Content %	**18.9**

UNCONFINED COMPRESSION TEST
ASTM D 2166

PROJECT NAME:	Proposed Honor Charter School	PROJECT ENG.:	NAD
PROJECT NO. :	D25-2-1113	DATE RECEIVED:	2/11/2026
CLIENT NAME:	Waltz Construction	DATE TESTED:	2/13/2026
		TESTED BY:	A Jones
BORING NO. :	B-4	DATA ENTRY:	A Jones
SAMPLE NO.:			
DEPTH, FT. :	9 FT	DESCRIPTION:	Sandy Lean CLAY,
TEST SPECIMEN NO.:		dark grayish-brown, moist	

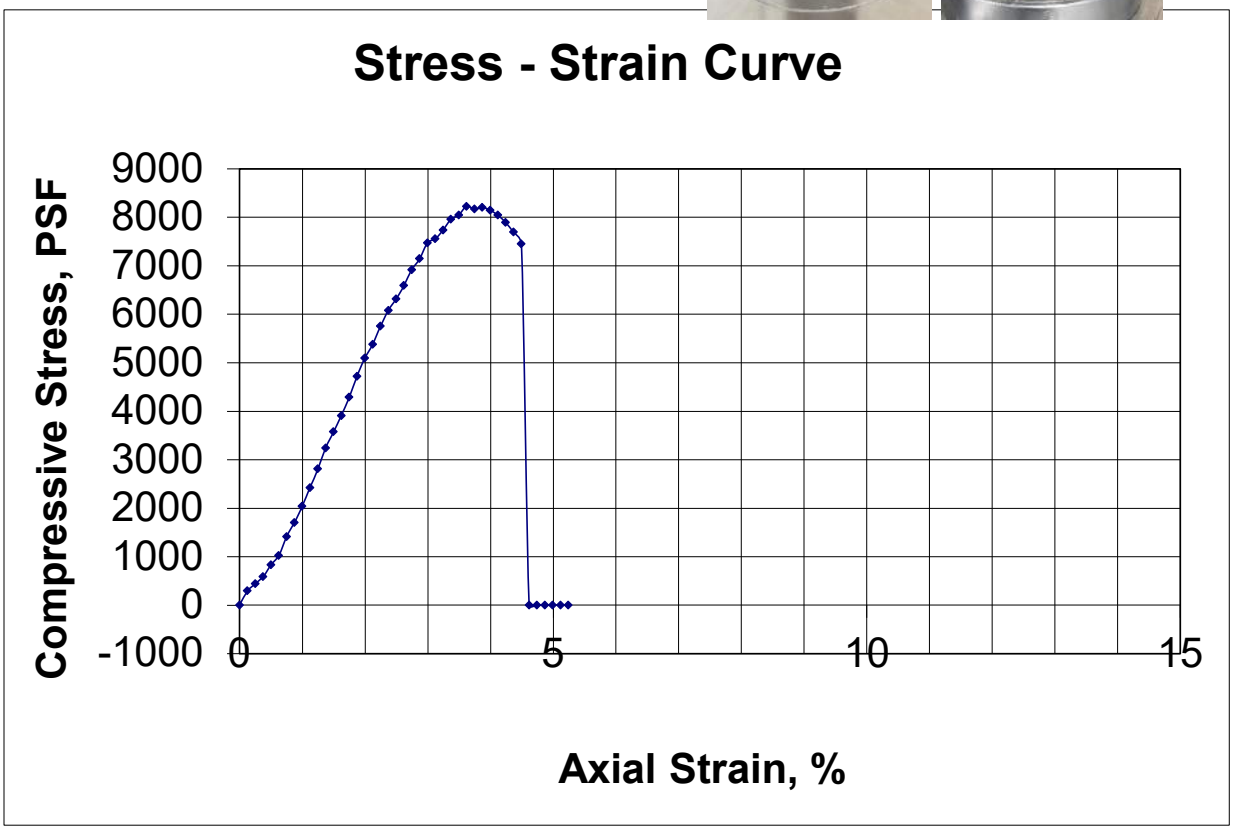
INITIAL DATA

Avg. Height, In.:	4.007
Avg. Diameter, In.:	1.933
L/D Ratio:	2.1
Moisture Content, %: (Sample, After test)	14.1
Dry Density, pcf:	116.8
Assumed Specific Gravity:	2.7
Saturation, %:	86.4
Void Ratio:	0.442
Rate of Strain, %/Minute:	1.0

Photo:



	PSF	PSI
Compressive Strength @ Failure:	8226	57
Shear Strength @ Failure:	4113	29
Axial Strain @ Failure,%:	3.6	3.6



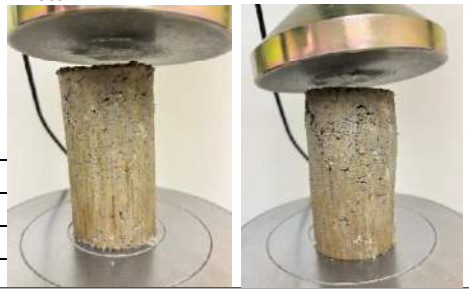
UNCONFINED COMPRESSION TEST
ASTM D 2166

PROJECT NAME:	Proposed Honor Charter School	PROJECT ENG.:	NAD
PROJECT NO. :	D25-2-1113	DATE RECEIVED:	2/11/2026
CLIENT NAME:	Waltz Construction	DATE TESTED:	2/13/2026
		TESTED BY:	A Jones
BORING NO. :	B-7	DATA ENTRY:	A Jones
SAMPLE NO.:			
DEPTH, FT. :	9 FT	DESCRIPTION:	Clayey SANDSTONE, gray, moist
TEST SPECIMEN NO.:			

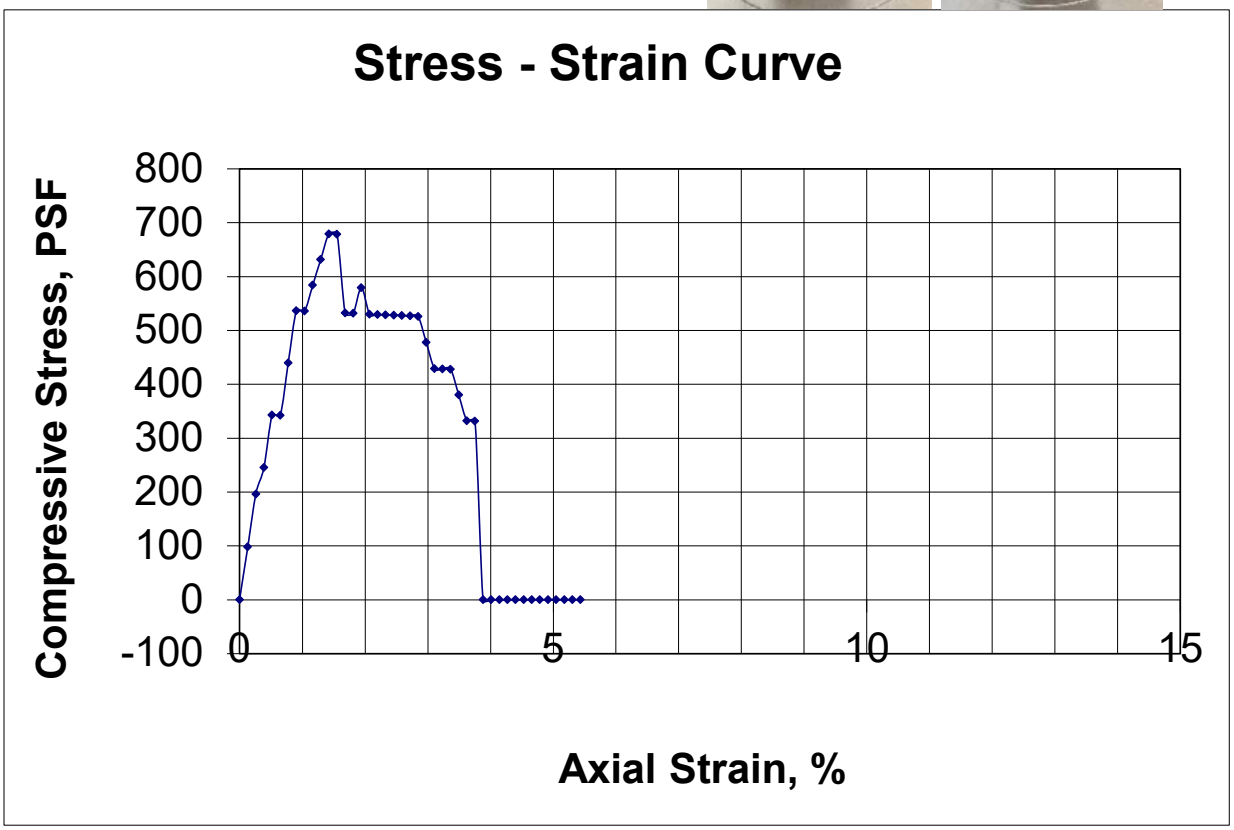
INITIAL DATA

Avg. Height, In.:	3.863
Avg. Diameter, In.:	1.930
L/D Ratio:	2.0
Moisture Content, %: (Sample, After test)	9.6
Dry Density, pcf:	121.1
Assumed Specific Gravity:	2.7
Saturation, %:	66.3
Void Ratio:	0.391
Rate of Strain, %/Minute:	1.0

Photo:



	PSF	PSI
Compressive Strength @ Failure:	679	5
Shear Strength @ Failure:	340	2
Axial Strain @ Failure,%:	1.4	1.4

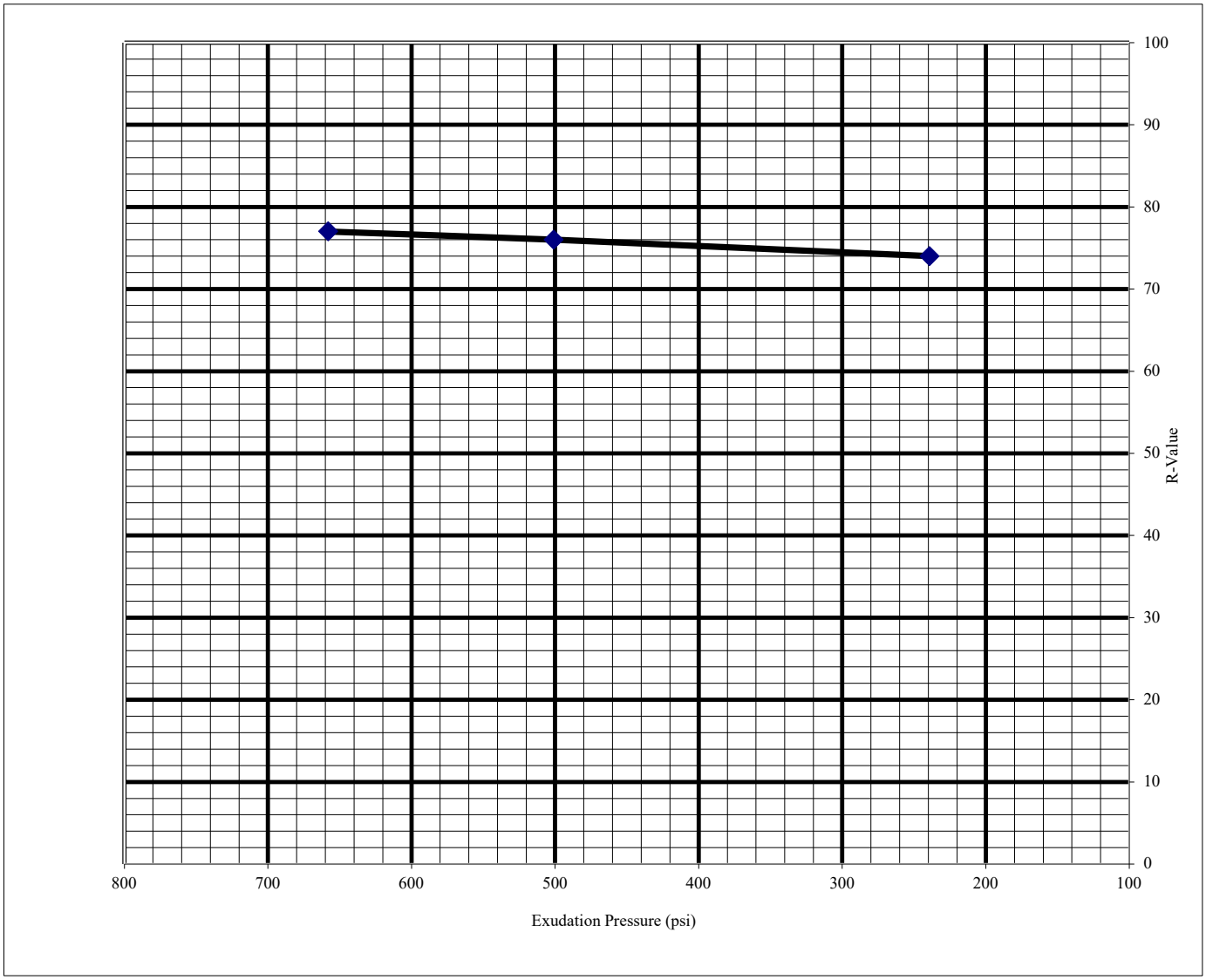


3885 Forest Street
Denver, CO 80207

Vivid Engineering Group
R-Value Test Report

Project Number:	D25-2-1113	**Project Name:**	Proposed Honor Charter School Development
Sample Id:	n/a	**Depth (ft):**	0-4'
Location:	B-10	**Sample Description:**	Silty SAND, light brown
Date Sampled:	2/9/2026	**Date Tested:**	2/16/2026

R-Value at 300 psi exudation pressure = **74**



Test No.	Compact. Press. (psi)	Density (pcf)	Moist. (%)	Horizont. Pressure (psi)'@ 160 psi	Sample Height (in).	Exud. Pressure (psi)	R Value	R Value Correct.
1	350	128.3	7.9	25	2.50	658	77	77
2	350	125.5	8.1	25	2.50	501	76	76
3	350	127.8	9.1	25	2.38	239	75	74

Sampled by: SAM **Tested by:** LV **Checked by:**

Rev. 12-13-2022

Appendix C

Analytical Laboratory Test Results

Corrosion Test Results

Project Name: Proposed Honor Charter School Development
Project No. D25-2-1113

Tested By: NB
Date Sampled: 2/6/2026
Date Tested: 3/3/2026

Sample ID: **B-2 @ 0-4'** Matrix: Soil

Test	Results		Method
Chloride - Water Soluble	0.001	%	AASHTO T291-91/ASTM D4327
pH	8.3	units	AASHTO T289-91/ASTM G51
Redox Potential	100.9	mv	ASTM D1498
Electrical Resistivity	21000	ohm-cm	AASHTO T288-91/ASTM G57
Sulfate - Water Soluble	0.002	%	CDOT CP-L 2103/ASTM D4327
Sulfide	Trace	-	AWWA C105

Sample ID: **B-6 @ 0-4'** Matrix: Soil

Test	Results		Method
Chloride - Water Soluble	0.001	%	AASHTO T291-91/ASTM D4327
pH	7.2	units	AASHTO T289-91/ASTM G51
Redox Potential	114.2	mv	ASTM D1498
Electrical Resistivity	9700	ohm-cm	AASHTO T288-91/ASTM G57
Sulfate - Water Soluble	<0.001	%	CDOT CP-L 2103/ASTM D4327
Sulfide	Trace	-	AWWA C105

3885 Forest Street / Denver, CO 80207 / 303-478-9087
1053 Elkton Drive / Colorado Springs, CO 80907 / 719-896-4356

Appendix D

Site Photographs



SITE CONDITIONS AND DRILLING AT BORING B-2 - LOOKING NORTH



SITE CONDITIONS AND DRILLING AT BORING B-3 - LOOKING EAST

VIVID Engineering Group	Project No: D25-2-1113	**SITE PHOTOS**	**FIGURE**
	Date: 2/12/2026	Proposed Honor Charter School Development	
	Drawn by: SAM	Bent Grass Meadows Drive	**D-1**
	Reviewed by: ND	Peyton, Colorado	



SITE CONDITIONS AND DRILLING AT BORING B-6 - LOOKING NORTH



SITE CONDITIONS AND DRILLING AT BORING B-9 - LOOKING EAST

VIVID Engineering Group	Project No: D25-2-1113	**SITE PHOTOS**	**FIGURE**
	Date: 2/12/2026	Proposed Honor Charter School Development	
	Drawn by: SAM	Bent Grass Meadows Drive	**D-2**
	Reviewed by: ND	Peyton, Colorado	

Appendix E

Important Information About This Geotechnical Engineering Report

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

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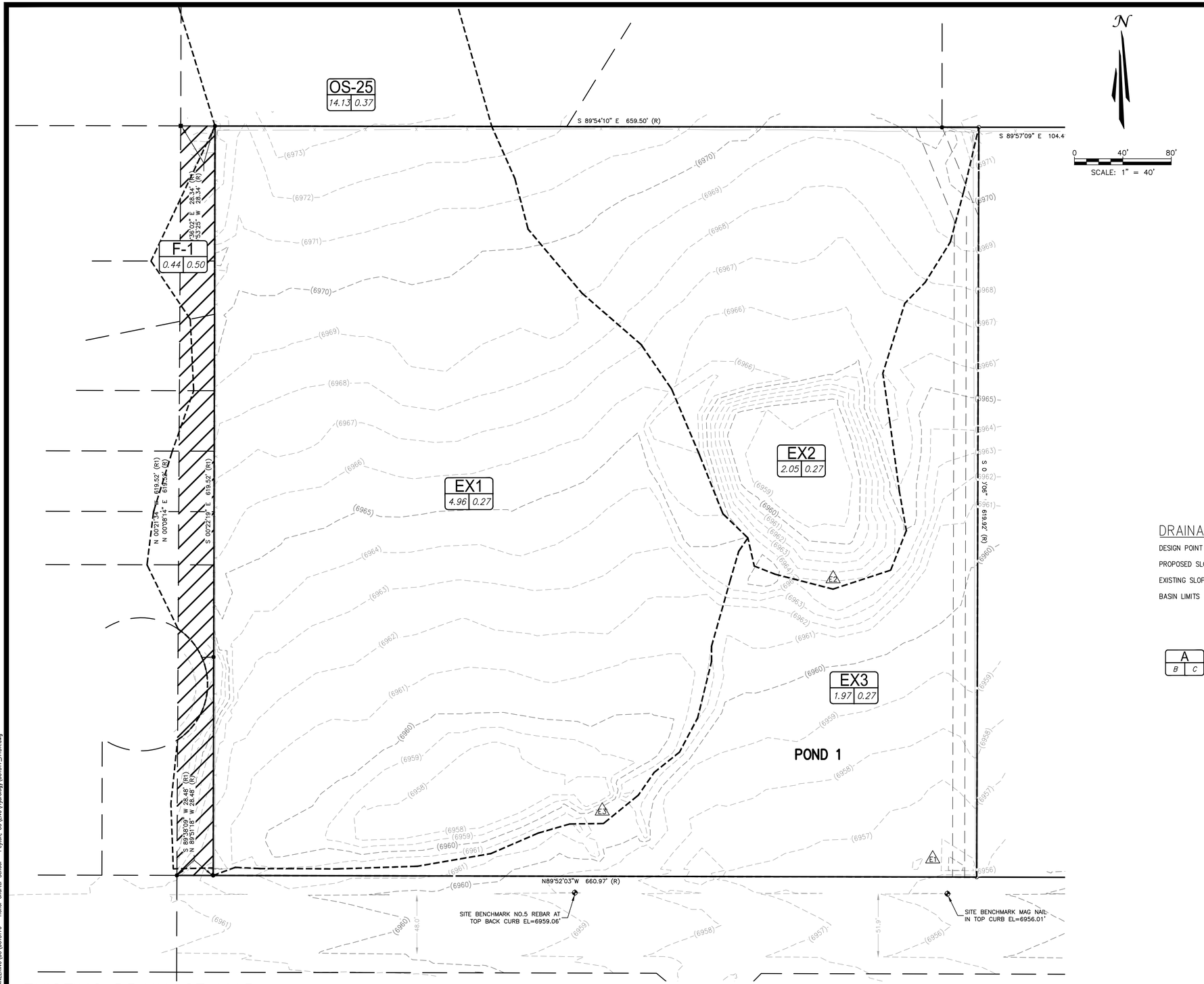
APPENDIX J

EXISTING AND PROPOSED DEVELOPMENT EXHIBITS

PCM Cost Estimate
Honor Charter Academy - El Paso County
Prepared by: TAIT & Associates, Inc
July 24, 2026

Description	Quantity	Unit	Unit Cost	Opinion of Probable Cost
PCM Detention Pond On-site (Labor Costs included)				
Riprap	9	CY	$175.00	$1,575.00
Road Base	59	CY	$65.00	$3,835.00
Forebay	2	EA	$8,000.00	$16,000.00
Trickle Channel	245	EA	$85.00	$20,825.00
Outlet Structure	1	LF	$14,000.00	$14,000.00
Outlet Pipe	28	LF	$185.00	$5,180.00
Spillway	1	EA	$7,000.00	$7,000.00
Sub-total				**$68,415.00**

Grand Total	**$68,415.00**



SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY/ ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF CONSTRUCTION/DISTURBANCE
- W — EXISTING WATER LINE
- SS — EXISTING SEWER LINE
- T — PROPOSED TELEPHONE SERVICE LINE
- PROPOSED ELECTRIC SERVICE LINE
- W — PROPOSED WATER SERVICE LINE
- SS — PROPOSED SS SERVICE LINE
- SD — PROPOSED STORM DRAIN
- R — PROPOSED RIDGELINE
- GB — PROPOSED GRADE BREAK
- PROPOSED CURB
- PROPOSED TOP OF POND
- PROPOSED BOTTOM OF POND
- GRADING DETAIL BOUNDARY
- PROPOSED SS CLEANOUT
- PROPOSED BACKFLOW PREVENTOR
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- (40.00)ES — EXISTING ELEVATION
- 40.00FS — PROPOSED ELEVATION
- (2940) — EXISTING CONTOUR
- 2940 — PROPOSED CONTOUR
- (5.2%) — EXISTING SLOPE
- 5.4% — PROPOSED SLOPE
- EXISTING INLET
- PROPOSED INLET
- PROPOSED STORM INFRASTRUCTURE
- D — PROPOSED STORM MANHOLE
- PROPOSED TEE / THRUST BLOCK
- PROPOSED FLARED-END SECTION
- EXISTING SANITARY SEWER MANHOLE

DRAINAGE LEGEND:

- DESIGN POINT — X
- PROPOSED SLOPE — 2.0%
- EXISTING SLOPE — (1.0%)
- BASIN LIMITS

A (B | C)

A = BASIN DESIGNATION
B = AREA IN ACRES
C = 100-YR RUNOFF COEFFICIENT

EXISTING DRAINAGE MAP

UNAUTHORIZED CHANGES & USES

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES OF THESE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS PRIOR TO CONSTRUCTION. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

Know what's below Call before you dig.

NOTE TO CONTRACTOR

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES, PIPES, AND/OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THERE MAY BE EXISTING UTILITIES NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION OF THOSE UNDERGROUND UTILITIES TO BE USED PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

BASIS OF BEARINGS:
BEARINGS ARE BASED ON THE WESTERLY BOUNDARY OF THE SUBJECT PARCEL COINCIDENT WITH THE EASTERLY BOUNDARY OF THE BENT GRASS RESIDENTIAL FILING NO.2, MONUMENTED ON THE NORTH END WITH A NO.5 REBAR & 1-3/8" RED PLASTIC CAP MARKED "ALC PLS 38087", FOUND FLUSH WITH GRADE, AND ON THE SOUTH END WITH A NO. 4 REBAR & 1" ORANGE PLASTIC CAP MARKED "PLS 38141", RECOVERED 0.6' BELOW GRADE, AND IS ASSUMED TO BEAR N 00°08'14" E A MEASURED DISTANCE OF 619.52 FEET.

BENCHMARK:
ELEVATIONS ARE BASED ON THE PROJECT BENCHMARK IDENTIFIED AS JK0239 ELEVATION=6902.3' (NAVD88). PER DATA PUBLISHED BY THE NATIONAL GEODETIC SURVEY.

FOR REVIEW ONLY NOT FOR CONSTRUCTION

PCD FILE NO. PRR2615

PREPARED UNDER THE SUPERVISION OF TAIT & ASSOCIATES, INC.

BRIAN CAMPBELL
COLORADO P.E. #40190

NO.	DESCRIPTION	REVISIONS	BY	DATE

TAIT & ASSOCIATES
ENGINEERING ENVIRONMENTAL BUILDING LAND
Since 1964
Denver Boise Dallas
Sacramento Riverside
Santa Ana San Luis Obispo
p: 970.613.1447
www.tait.com
350 North Lincoln Avenue
Loveland, CO 80537

EXISTING DRAINAGE MAP

HONOR CHARTER SCHOOL
HIGHMARK SCHOOL DEVELOPMENT
8250 BENT GRASS MEADOWS DR.

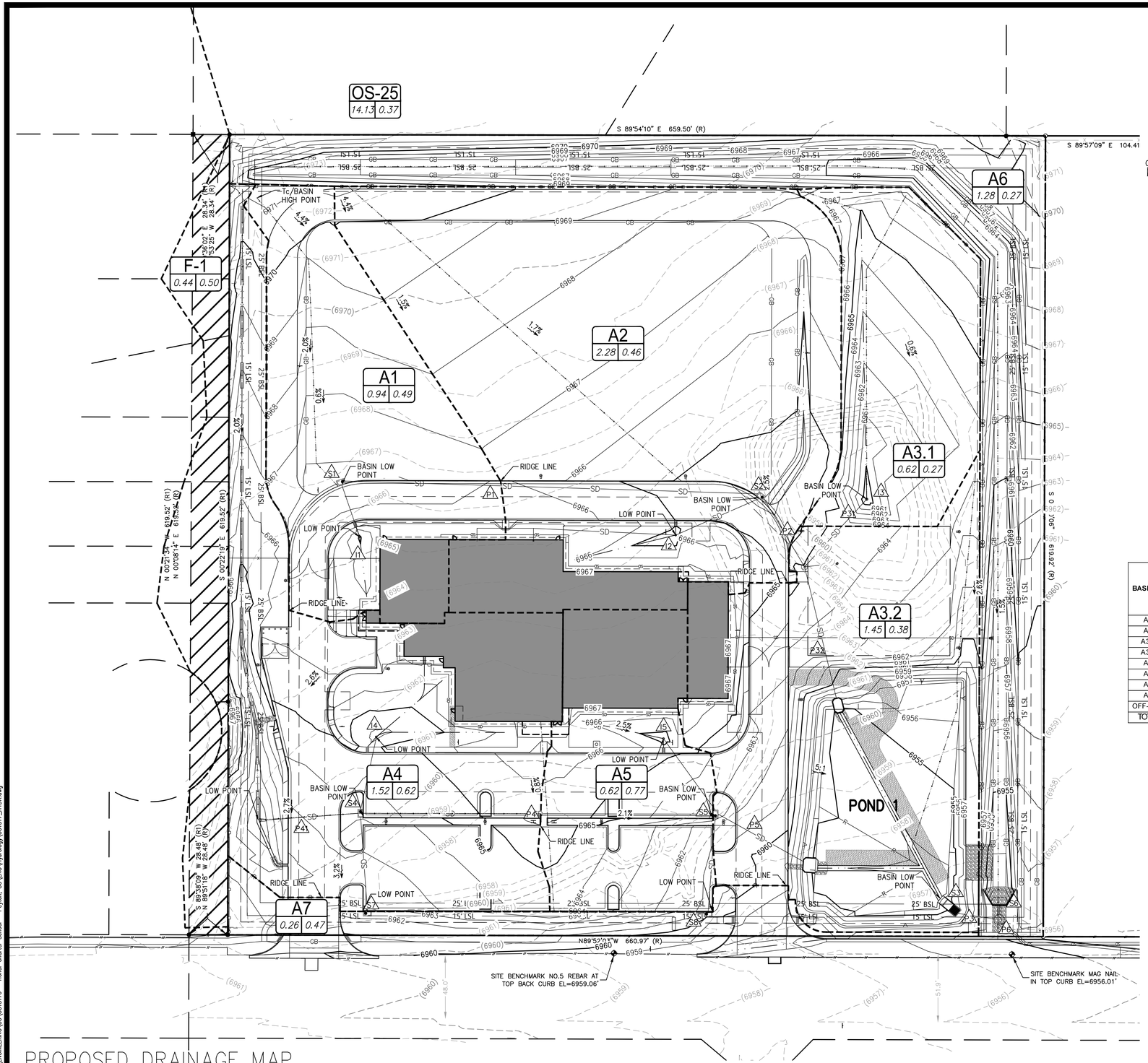
DRAWN: CW
DATE: 06/25/2026
CHECKED:
DATE:
REVISION #:
DATE:
JOB NO. CO1517

DR1

2/6/2024 Internal Review #1

FOR REVIEW ONLY - NOT FOR CONSTRUCTION

Jun 26, 2026 - 12:01pm by ironstetter X:\ENGINEERING\CO\CO1517 - Honor Charter School - Peyton, CO\ENG\Hydrology\CO1517_HYDR.dwg



PROPOSED DRAINAGE MAP

N

0 40' 80'

SCALE: 1" = 40'

SYMBOLS LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY/ ROW LINE
- BUILDING SETBACK LINE
- PROPOSED EASEMENT
- LIMIT OF CONSTRUCTION/DISTURBANCE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- PROPOSED TELEPHONE SERVICE LINE
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- PROPOSED WATER SERVICE LINE
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- (40.00)ES EXISTING ELEVATION
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- 2940 PROPOSED CONTOUR
- (5.2%) EXISTING SLOPE
- 5.4% PROPOSED SLOPE
- EXISTING INLET
- PROPOSED INLET
- PROPOSED STORM INFRASTRUCTURE
- PROPOSED STORM MANHOLE
- PROPOSED TEE / THRUST BLOCK
- PROPOSED FLARED-END SECTION
- EXISTING SANITARY SEWER MANHOLE
- LONGEST FLOW PATH

BASIN ID	TOTAL AREA (AC)	TOTAL DISTURBED AREA (AC)	AREA TRIB TO POND 1 (AC)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.3.A.1.A (<20% OF SITE & UNTREATABLE)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.1.B.6 (SELF-TREATING LANDSCAPE AREAS)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.1.B.3 (EXISTING ROADWAY AREAS)	DISTURBED AREA EXCLUDED VIA ECM APPENDIX I.6.1.B.4 (UNDERGROUND UTILITIES/STORM)
A1	0.94	0.94	0.94				
A2	2.28	2.28	2.28				
A3.1	0.62	0.62	0.62				
A3.2	1.45	1.45	1.45				
A4	1.52	1.52	1.52				
A5	0.62	0.62	0.62				
A6	1.28	1.28			1.28		
A7	0.26	0.26		0.26			
OFF-SITE	0.87					0.30	0.57
TOTAL	9.84	8.97	7.43	0.26	1.28	0.30	0.57

DRAINAGE LEGEND:

- DESIGN POINT (X)
- PROPOSED SLOPE 2.0%
- EXISTING SLOPE (1.0%)
- BASIN LIMITS
- LIMIT OF DISTURBANCE
- Tc FLOW PATH

A
B | C

A = BASIN DESIGNATION
B = AREA IN ACRES
C = 100-YR RUNOFF COEFFICIENT

PCD FILE NO. PPR2615

PREPARED UNDER THE SUPERVISION OF TAIT & ASSOCIATES, INC.

BRIAN CAMPBELL
COLORADO P.E. #40196

UNAUTHORIZED CHANGES & USES

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811 Know what's below Call before you dig.

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BENCHMARK:
ELEVATIONS ARE BASED ON THE PROJECT BENCHMARK IDENTIFIED AS JK0239 ELEVATION=6902.3'(NAVD88). PER DATA PUBLISHED BY THE NATIONAL GEODETIC SURVEY.

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

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PROPOSED DRAINAGE MAP

HONOR CHARTER SCHOOL
HIGHMARK SCHOOL DEVELOPMENT
8250 BENT GRASS MEADOWS DR.

DRAWN: CW
DATE: 06/25/2026
CHECKED:
DATE:
REVISION #:
DATE:
JOB NO: CO1517

DR2

2/6/2024 Internal Review #1

Sep. 18, 2026 - 3:05pm by nromstetter X:\ENGINEERING\CO\CO1517O - Honor Charter School - Peyton, CO\ENG\Hydrology\CO1517_PPR.dwg