Phase III Drainage Report

Bella Mesa North, Filing 1
CD26-0003

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Project No. 17026.004

ENGINEER'S CERTIFICATION

"I affirm that this report and plan for the Phase III drainage design of Bella Mesa North, was prepared by me (or under my direct supervision) in accordance with the provisions of the Town of Castle Rock Drainage Design and Technical Criteria for the owners thereof. I understand that the Town of Castle Rock does not and will not assume liability for drainage facilities designed by others."

_____
Evan Rumney, P.E.
Registered Professional Engineer
State of Colorado No. 54401

Owner Approval:
Cardel Homes hereby certifies that the drainage facilities for Bella Mesa North will be constructed according to the design presented in this report. I understand that the Town of Castle Rock does not and will not assume liability for the drainage facilities designed and/or certified by my engineer and that the Town of Castle Rock reviews drainage plans pursuant to the Municipal Code; but cannot, on behalf of Bella Mesa North guarantee that final drainage design review will absolve Cardel Homes and/or their successors and/or assigns of future liability for improper design."

_____.
Name of Developer

_____.
Authorized Signature

Town of Castle Rock Approvals:

_____.
Utilities Department Date

_____.
Development Services Date

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Introduction – General Location and Description

INTRODUCTION

This Phase III Drainage Report presents an analysis for the proposed drainage patterns and requirements for the proposed Bella Mesa North Filing 1, hereafter referred to as the Site.

Multiple filings are currently planned for the overall Bella Mesa North development. Filing 1 will primarily include improvements in the southern portion of the site, while the future filings will focus on the northern portion of the site

Site Location

Bella Mesa North, Filing 1 is located in the Town of Castle Rock, more specifically the project is located within a part of the southwest quarter of Section 4, the southeast quarter of section 5, the northeast quarter of section 8, and the northwest quarter of section 9, Township 8 South, Range 66 West of the Sixth Principal Meridian, Douglas County, Colorado. The project is bound by Mitchell Gulch to the west and north, Mitchell Street and Mesa Middle School to the south, and Castlewood North to the east. Please see the vicinity map in Appendix A for further reference.

Site Description

The overall Bella Mesa North site consists of a total of 293 acres with filing 1 improvements consisting of approximately the southern +/- 110 acres. Native grasses, weeds and light vegetation currently cover the existing site. The western portion of the Site generally drains to the north and west towards Mitchell Gulch at slopes between 1% and 33%, the eastern portion of the site generally drains to the north and to the east towards the Castlewood North development.

Per the FEMA FIRM map, an existing floodplain (AE) associated with the Michell Gulch, is located along the northwestern edge of the overall property. The proposed improvements associated with the Site do not anticipate any disturbance within the floodplain. The FEMA floodplain maps are included in Appendix A for reference.

There is an existing detention pond central to the Site just north of the east-west portion of Mitchell Street. The pond was originally constructed as a dam for a wastewater treatment plant as part of the Villages at Castle Rock Metro District No. 4. According to a report completed by the Office of the State Engineer – Division of Water Resources – Dam Safety Branch dated September 9, 1994, the dam was never complete per the approved plans and appeared to be abandoned. Per this report the dam was found to be off-stream and non-jurisdictional. At some point an outlet structure was installed, and the pond was converted to a detention pond, however it was not confirmed when this construction occurred. Currently, Founders Village Filing 24 Detention Pond A, Castlewood Ranch Detention Pond A, Mesa Middle School, and the roadside ditches from the east-west portion of Mitchell Street are all

tributary to the existing detention pond. There are no active irrigation facilities on or across the limits of the Site. The existing detention pond is to be removed as part of the proposed project. Detention Pond A will serve as its replacement.

Proposed Project Description

The proposed overall development will include 525 single family detached lots as well as local roadways, open space, site infrastructure, two detention ponds, and a sanitary sewer lift station to serve the Site. Filing 1 will include the first 229 single family lots, sanitary sewer lift station, detention pond A and associated roadways and underground utilities. The remaining improvements will be included in future filings.

Flood Hazard and Drainage Studies Relevant to the Site

Based on the FEMA FIRM, Map 08035C0306G, effective date March 16, 2016, and 08035C0193G, effective date March 16, 2016 which can be found in Appendix A, the proposed pond and the Bella Mesa North site are located within Zone X (Area of Minimal Flood Hazard) and are not located within a 100-year floodplain. The proposed pond will not encroach into Mitchell Gulch or the regulated FEMA floodplain.

Soil Type

The Natural Resource Conservation Service (NRCS) soil survey site map indicates that the soil on site is primarily Coni rocky loam (76.3%), whose hydrologic soil group is Type D, having a very slow infiltration rate and Fondis clay loam (23.7%), whose hydrologic soil group is Type C, having a slow infiltration rate. Surfacing bedrock is also present throughout the Site, this will not have a significant impact on runoff and storm drainage infrastructure because blasting and sub-excavation will take place prior to construction. Furthermore, no infiltration facilities are proposed with the development. Portions of the Site that will not be blasted will remain in their historical runoff conditions and drainage patterns, having very slow infiltration rates. A soil map has been included in Appendix A for reference. For the purpose of this report, the entire site was assumed to be Type D soil coverage.

Drainage Basin and Sub-Basins

Existing Basins

The overall Site has 3 historic basins, H1, H2, and H3. Basin H1 is approximately 105.4 acres, Basin H2 is approximately 123.1 acres and Basin H3 is approximately 64.8 acres. Runoff from Basin H2 generally sheet flows to the north and is collected in various natural swales and channels. The swales and channels then convey runoff to the north where they outfall into Mitchell Gulch. Runoff from Basin H3 generally sheet flows to the east towards Castlewood Ranch North. Runoff from Basin H1 generally sheet flows from the southeast to the northwest. These flows are collected in the various natural swales and channels and outfall into Mitchell Gulch. Currently Pond A from Founders Village Filing 24 and Pond A from Castlewood Ranch

Filing 2 both outfall into Basin H1 and into the existing pond. The runoff from the offsite ponds is then conveyed through the outlet structure of the existing pond that is on the Site and flows to the northwest before out falling into Mitchell Gulch.

Existing Basin Summary – Historic Release Rates

	Q_5 (cfs)	Q_{100} (cfs)
Basin H1	20.6	248.4
Basin H2	25.3	305.4
Basin H3	14.6	175.9

Historic 5-year and 100-year flows and detailed calculations for the contributing historic basins are provided in Appendix B and are referenced herein as the basis for evaluating the proposed controlled release from Pond A.

Major Basins

The Site lies within the Mitchell Gulch major drainage basin, which is part of the Cherry Creek watershed. Land uses within this basin are predominantly residential and large areas of undeveloped range land. The proposed Site will be contained within the Mitchell Gulch major drainage basin, maintaining historic drainage patterns.

The proposed Pond A will discharge into an existing drainage channel to the west of the Site, eventually flowing into Mitchell Gulch. The 100-year floodplain of Mitchell Gulch lies outside the site boundaries. In line with Town of Castle Rock regulations, the pond will release water at a rate below historical predevelopment flows. Due to natural erosion, water channels have formed, directing water into Mitchell Gulch as existing point discharges. Also, according to the Mile High Flood District's Storm Drainage Criteria Manual (Volume 1, Section 4.4), overland flow in rural areas becomes concentrated after 500 feet of travel. As such, the proposed outfalls will release runoff in a way that mirrors historic flow conditions as point discharges. To minimize impacts on the existing channels, energy dissipators will be installed at all proposed discharge points into Mitchell Gulch. As a result, no negative impacts to the drainage channels are expected.

Currently Pond A from Founders Village Filing 24 and Pond A from Castlewood Ranch Filing 2 both outfall into the Site and into the existing pond. The runoff from the offsite ponds is then conveyed through the outlet structure of the existing pond that is on the Site and flows to the northwest before out falling into Mitchell Gulch. These flows are proposed to be intercepted by a Bypass Storm sewer and will be conveyed to the west and discharged to Mitchell Gulch. If the existing ponds were to fail, runoff would travel through the respective emergency spillways and be collected by proposed structures that are adequately sized to collect such flows. For Founders Village 24, the emergency overflow is approximately 32 cfs, taken from the pond routing sheet included under Appendix D. A proposed Type D inlet will be constructed just downstream of the spillway in order to collect the flows and convey them in the bypass pipe to Mitchell Gulch. For Castlewood Ranch Filing No. 2, the emergency overflow is approximately 100 cfs, taken from the pond routing sheet included under Appendix D. A

proposed inlet structure, being 6.5' x 8.5' in dimension will be constructed just downstream of the spillway in order to collect the flows and convey them in the bypass pipe to Mitchell Gulch. Refer to Appendix C for calculations showing that these collection structures are adequately sized for the emergency overflows.

The overall Bella Mesa North Site has been divided into two basins; Basin A flows to Pond A and Basin B flows to Pond B. Bella Mesa North Filing 1 includes improvements within proposed Basin A, which is located primarily within historic Basin H1.

Basin A includes the southern and western portions of the site and is 104.36 acres and has an imperviousness of 56%. Basin A is conveyed to Pond A which has an EURV of 5.593 ac-ft and corresponding release rate of 1.6 cfs, as well as post detention release rates of 16.5 cfs in the 5-year storm event and 118.5 cfs in the 100-year storm event. Basin A also includes the existing Mesa Middle School, which will be treated by Pond A and is included in the above-discussed contributing area. Mesa Middle School is 13.86 acres and has an impervious value of 70%, and accounts for approximately 29.3 cfs in the 5-year storm event and 67.4 cfs in the 100-year storm event; both flows are pre-detention and released directly from the Middle School site.

Basin B includes the 76.7 acres at the eastern and northern portions of the Site that will be developed with future filings. In the interim condition, Pond B will be constructed and utilized for the construction of the proposed lift station (by others), access road, underground utility construction, and areas that will be mass graded with the filing 1 improvements. The interim Pond B will utilize a perforated PVC riser pipe to provide detention and water quality for these areas disturbed outside of the filing 1 limits. The final design of Pond B will be included within the future Bella Mesa North filings.

Existing off-site flows from the south, discussed previously, will be collected in a separate storm sewer system. The system will bypass the Site and discharge the existing flows to the west and into Mitchell Gulch. Other offsite flows from the connecting roadways will be captured by the on-site storm sewer system and will be conveyed to and treated by the detention ponds. Off-site basins from Founders Village Filing 24 Phase 2 collected and conveyed though the Site are a combined 9.26 acres with an imperviousness of 50.8%, flows are approximated to be 11.2 cfs in the 5-year storm event and 31.2 cfs in the 100-year storm event. Off-site basins from Castlewood Ranch Filing 2 collected and conveyed through the Site are a combined 48.02 acres and has an imperviousness of 36.69%, flows are approximated to be 12.9 cfs in the 5-year storm event and 48 cfs in the 100-year storm event.

Due to the proximity of the offsite flow outfall to Mesa Middle school, the 48" FES will be constructed with a MHFD safety grate to limit access into the pipe and provide added security.

Sub Basins

Basin A1 (0.75 Acres)

Basin A1 includes single family lots, roadway, sidewalk, open space and portions of a pond access gravel road. Runoff from the basin generally sheet flows to the Street C cul-de-sac bulb flowline where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A1. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the sidewalk to the north and be conveyed overland to Pond A. The basin is approximately 0.75 acres and has an imperviousness of 62%.

$C_5 = 0.54$ $C_{100} = 0.74$

$Q_5 = 1.6$ CFS $Q_{100} = 4.0$ CFS

Basin A2 (0.91 Acres)

Basin A2 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southwestern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A2. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.91 acres and has an imperviousness of 63%.

$C_5 = 0.55$ $C_{100} = 0.74$

$Q_5 = 1.8$ CFS $Q_{100} = 4.5$ CFS

Basin A3 (0.32 Acres)

Basin A3 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northeastern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A3. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.32 acres and has an imperviousness of 71%.

$C_5 = 0.62$ $C_{100} = 0.78$

$Q_5 = 0.9$ CFS $Q_{100} = 2.1$ CFS

Basin A4 (0.78 Acres)

Basin A4 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southwestern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A4. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.78 acres and has an imperviousness of 59%.

$C_5 = 0.52$ $C_{100} = 0.73$

Q_5 = 1.5 CFS Q_{100} = 3.9 CFS

Basin A5 (0.22 Acres)

Basin A5 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northeastern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A5. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.22 acres and has an imperviousness of 73%.

C_5 = 0.64 C_{100} = 0.78

Q_5 = 0.6 CFS Q_{100} = 1.4 CFS

Basin A6 (1.44 Acres)

Basin A6 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southwestern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A6. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.44 acres and has an imperviousness of 62%.

C_5 = 0.55 C_{100} = 0.74

Q_5 = 2.9 CFS Q_{100} = 7.0 CFS

Basin A7 (0.48 Acres)

Basin A7 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northeastern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A7. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.48 acres and has an imperviousness of 71%.

C_5 = 0.62 C_{100} = 0.78

Q_5 = 1.3 CFS Q_{100} = 2.9 CFS

Basin A8 (0.42 Acres)

Basin A8 includes single family lots, roadway, sidewalk, and open space. Runoff from the basin generally sheet flows to the northern flowline bulb of Street D where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A8. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the sidewalk to the north and be conveyed overland to Pond A. The basin is approximately 0.42 acres and has an imperviousness of 70%.

$C_5 = 0.61$ $C_{100} = 0.77$

$Q_5 = 1.1$ CFS $Q_{100} = 2.6$ CFS

Basin A9 (0.56 Acres)

Basin A9 includes single family lots, roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the northern flowline of Street D where it is collected in an on-grade Type 16 Combination Inlet at Design Point A9. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.56 acres and has an imperviousness of 69%.

$C_5 = 0.60$ $C_{100} = 0.77$

$Q_5 = 1.4$ CFS $Q_{100} = 3.2$ CFS

Basin A10 (0.73 Acres)

Basin A10 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline bulb of Street D where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A10. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the street centerline and sidewalk to the north and be conveyed overland to Pond A. The basin is approximately 0.73 acres and has an imperviousness of 63%.

$C_5 = 0.55$ $C_{100} = 0.74$

$Q_5 = 1.4$ CFS $Q_{100} = 3.5$ CFS

Basin A11 (1.03 Acres)

Basin A11 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street D where it is collected in an on-grade Type 16 Combination Inlet at Design Point A11. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.03 acres and has an imperviousness of 63%.

$C_5 = 0.55$ $C_{100} = 0.74$

$Q_5 = 2.1$ CFS $Q_{100} = 5.3$ CFS

Basin A12 (0.37 Acres)

Basin A12 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street D where it is collected in an on-grade Type 16 Combination Inlet at Design Point A12. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.37 acres and has an imperviousness of 72%.
$C_5 = 0.63$ $C_{100} = 0.78$

$Q_5 = 1.0$ CFS $Q_{100} = 2.3$ CFS

Basin A13 (0.63 Acres)

Basin A13 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street E where it is collected in an on-grade Type 16 Combination Inlet at Design Point A13. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.63 acres and has an imperviousness of 69%.
$C_5 = 0.60$ $C_{100} = 0.77$

$Q_5 = 1.6$ CFS $Q_{100} = 3.7$ CFS

Basin A14 (1.50 Acres)

Basin A14 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street E where it is collected in an on-grade Type 16 Combination Inlet at Design Point A14. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.50 acres and has an imperviousness of 62%.

$C_5 = 0.54$ $C_{100} = 0.74$

$Q_5 = 3.0$ CFS $Q_{100} = 7.5$ CFS

Basin A15 (1.12 Acres)

Basin A15 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street D where it is collected in an on-grade Type 16 Combination Inlet at Design Point A15. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.12 acres and has an imperviousness of 69%.

$C_5 = 0.60$ $C_{100} = 0.77$

$Q_5 = 2.9$ CFS $Q_{100} = 6.7$ CFS

Basin A16 (0.51 Acres)

Basin A16 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the Street G cul-de-sac bulb flowline where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A16. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the sidewalk to the northwest and be conveyed overland to Pond A. The basin is approximately 0.51 acres and has an imperviousness of 68%.

$C_5 = 0.59$ $C_{100} = 0.76$

$Q_5 = 1.2$ CFS $Q_{100} = 2.9$ CFS

Basin A17 (0.97 Acres)

Basin A17 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street G where it is collected in an on-grade Type 16 Combination Inlet at Design Point A17. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.97 acres and has an imperviousness of 63%.
$C_5 = 0.55$ $C_{100} = 0.74$

$Q_5 = 2.1$ CFS $Q_{100} = 5.2$CFS

Basin A18 (0.32 Acres)

Basin A18 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street G where it is collected in an on-grade Type 16 Combination Inlet at Design Point A18. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.32 acres and has an imperviousness of 71%.

$C_5 = 0.62$ $C_{100} = 0.77$

$Q_5 = 1.0$ CFS $Q_{100} = 2.2$ CFS

Basin A18A (0.40 Acres)

Basin A18A includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street E where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A18A. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the street centerline and be conveyed to Basin A18 and eventually Pond A. The basin is approximately 0.40 acres and has an imperviousness of 66%.

$C_5 = 0.58$ $C_{100} = 0.76$

Q_5 = 0.9 CFS Q_{100} = 2.2 CFS

Basin A19 (0.74 Acres)

Basin A19 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street E where it is collected in an on-grade Type 16 Combination Inlet at Design Point A19. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.74 acres and has an imperviousness of 69%.

C_5 = 0.60 C_{100} = 0.77

Q_5 = 1.8 CFS Q_{100} = 4.2 CFS

Basin A20 (1.15 Acres)

Basin A20 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street E where it is collected in an on-grade Type 16 Combination Inlet at Design Point A20. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.15 acres and has an imperviousness of 60%.

C_5 = 0.53 C_{100} = 0.73

Q_5 = 2.3 CFS Q_{100} = 5.8 CFS

Basin A21 (0.90 Acres)

Basin A21 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street E where it is collected in an on-grade Type 16 Combination Inlet at Design Point A21. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.90 acres and has an imperviousness of 66%.

C_5 = 0.58 C_{100} = 0.75

Q_5 = 1.9 CFS Q_{100} = 4.5 CFS

Basin A22 (0.69 Acres)

Basin A22 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street G where it is collected in an on-grade Type 16 Combination Inlet at Design Point A22. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.69 acres and has an imperviousness of 74%.

C_5 = 0.64 C_{100} = 0.79

Q_5 = 1.9 CFS Q_{100} = 4.3 CFS

Basin A23 (0.46 Acres)

Basin A23 includes single family lots, roadway, sidewalk, and open space. Runoff from the basin generally sheet flows to the southern flowline of Street G where it is collected in an on-grade Type 16 Combination Inlet at Design Point A23. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.46 acres and has an imperviousness of 71%.

$C_5 = 0.61$ $C_{100} = 0.77$

$Q_5 = 1.0$ CFS $Q_{100} = 2.4$ CFS

Basin A23A (0.51 Acres)

Basin A23A includes single family lots, roadway, sidewalk, and open space. Runoff from the basin generally sheet flows to the southern flowline of Street F where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A23A. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the street centerline and be conveyed to Basin A23 and eventually Pond A. The basin is approximately 0.51 acres and has an imperviousness of 49%.

$C_5 = 0.43$ $C_{100} = 0.68$

$Q_5 = 0.7$ CFS $Q_{100} = 2.1$ CFS

Basin A23B (0.39 Acres)

Basin A23B includes single family lots, roadway, sidewalk, and open space. Runoff from the basin generally sheet flows to the southern flowline of Street G where it is collected in an on-grade Type 16 Combination Inlet at Design Point A23B. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.39 acres and has an imperviousness of 60%.

$C_5 = 0.53$ $C_{100} = 0.73$

$Q_5 = 0.9$ CFS $Q_{100} = 2.2$ CFS

Basin A24 (0.75 Acres)

Basin A24 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street F where it is collected in an on-grade Type 16 Combination Inlet at Design Point A24. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.75 acres and has an imperviousness of 69%.

$C_5 = 0.60$ $C_{100} = 0.77$

$Q_5 = 1.9$ CFS $Q_{100} = 4.4$ CFS

Basin A25 (1.32 Acres)

Basin A25 includes single family lots, roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the southern flowline of Street F where it is collected in an on-grade Type 16 Combination Inlet at Design Point A25. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.32 acres and has an imperviousness of 49%.

$C_5 = 0.43$ $C_{100} = 0.68$

$Q_5 = 2.1$ CFS $Q_{100} = 6.0$ CFS

Basin A26 (1.81 Acres)

Basin A26 includes single family lots, roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the southern flowline of Street F where it is collected in an on-grade Type 16 Combination Inlet at Design Point A26. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.81 acres and has an imperviousness of 56%.

$C_5 = 0.49$ $C_{100} = 0.71$

$Q_5 = 3.0$ CFS $Q_{100} = 8.0$ CFS

Basin A27 (9.56 Acres)

Basin A27 includes the proposed Pond A, rear yard of single family lots, as well as native and proposed open space. Runoff from the basin generally sheet flows overland to the Pond at Design Point A27. The basin is approximately 9.56 acres and has an imperviousness of 46%.

$C_5 = 0.41$ $C_{100} = 0.67$

$Q_5 = 12.6$ CFS $Q_{100} = 37.6$ CFS

Basin A28 (3.71 Acres)

Basin A28 includes the rear yard of single family lots and open space. Runoff from the basin generally sheet flows to the central portion of the basin where it is collected in Swale 5, combining with upstream flows, and conveyed to proposed storm sewer at Design Point A28. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 3.71 acres and has an imperviousness of 32%.

$C_5 = 0.30$ $C_{100} = 0.61$

$Q_5 = 3.8$ CFS $Q_{100} = 14.5$ CFS

Basin A29 (0.35 Acres)

Basin A29 includes roadway, sidewalk, and open space. Runoff from the basin generally sheet flows to the western flowline of Mitchell Street where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A29. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the sidewalk to the west and enter Basin 28 and Swale 5 where it will be conveyed to Pond A. The basin is approximately 0.35 acres and has an imperviousness of 93%.

$C_5 = 0.80$ $C_{100} = 0.87$

$Q_5 = 1.4$ CFS $Q_{100} = 2.7$ CFS

Basin A30 (0.68 Acres)

Basin A30 includes future single family lots, roadway, sidewalk, and open space. Runoff from the basin generally sheet flows to the eastern flowline of Mitchell Street where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A30. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the roadway centerline and sidewalk to the west and enter Basin A28 and Swale 5 where it will be conveyed to Pond A. The basin is approximately 0.68 acres and has an imperviousness of 77%.

$C_5 = 0.66$ $C_{100} = 0.80$

$Q_5 = 2.1$ CFS $Q_{100} = 4.5$ CFS

Basin A30A (0.31 Acres)

Basin A30A includes future single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street H where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A30A. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the street centerline and be conveyed to Basin A30 and eventually Pond A. The basin is approximately 0.31 acres and has an imperviousness of 73%.

$C_5 = 0.63$ $C_{100} = 0.78$

$Q_5 = 0.9$ CFS $Q_{100} = 2.1$ CFS

Basin A31 (3.59 Acres)

Basin A31 includes park area, sidewalk and open space. Runoff from the basin generally sheet flows to the north and west and is collected in a landscaping swale and conveyed to Swale 11. Swale 11 then conveys the flows to a Type D Inlet located in a sump condition at

Design Point A31. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the western edge of the swale and spill into Basin A30 where it will be conveyed to Pond A. The basin is approximately 3.59 acres and has an imperviousness of 15%.

$C_5 = 0.16$ $C_{100} = 0.55$

$Q_5 = 1.6$ CFS $Q_{100} = 10.2$ CFS

Basin A32 (0.16 Acres)

Basin A32 includes roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the northern flowline of Street B where it is collected in an on-grade Type 16 Combination Inlet at Design Point A32. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.16 acres and has an imperviousness of 100%.

$C_5 = 0.86$ $C_{100} = 0.89$

$Q_5 = 0.7$ CFS $Q_{100} = 1.3$ CFS

Basin A33 (2.00 Acres)

Basin A33 includes the rear yard of single family lots, roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the eastern flowline of Mitchell Street where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A33. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the roadway centerline to the west and enter Basin A34 where it will be conveyed to Pond A. The basin is approximately 2.00 acres and has an imperviousness of 55%.

$C_5 = 0.48$ $C_{100} = 0.71$

$Q_5 = 3.2$ CFS $Q_{100} = 8.6$ CFS

Basin A34 (0.25 Acres)

Basin A34 includes roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the western flowline of Mitchell Street where it is collected in an on-grade Type 16 Combination Inlet at Design Point A34. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.25 acres and has an imperviousness of 100%.

$C_5 = 0.86$ $C_{100} = 0.89$

$Q_5 = 1.0$ CFS $Q_{100} = 2.0$ CFS

Basin A35 (1.79 Acres)

Basin A35 includes the rear yard of single family lots, roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the eastern flowline of Mitchell Street where it is collected in an on-grade Type 16 Combination Inlet at Design Point A35. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.79 acres and has an imperviousness of 56%.

$C_5 = 0.49$ $C_{100} = 0.71$

$Q_5 = 3.0$ CFS $Q_{100} = 7.8$ CFS

Basin A36 (0.77 Acres)

Basin A36 includes roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the western flowline of Mitchell Street where it is collected in an on-grade Type 16 Combination Inlet at Design Point A36. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.77 acres and has an imperviousness of 90%.

$C_5 = 0.77$ $C_{100} = 0.85$

$Q_5 = 2.4$ CFS $Q_{100} = 4.7$ CFS

Basin A37 (1.12 Acres)

Basin A37 includes proposed and existing roadway (Mitchell Street) and sidewalk. Runoff from the basin generally sheet flows to the eastern flowline of Mitchell Street where it is collected in an on-grade Type 16 Combination Inlet at Design Point A37. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.12 acres and has an imperviousness of 81%.

$C_5 = 0.70$ $C_{100} = 0.82$

$Q_5 = 3.5$ CFS $Q_{100} = 7.3$ CFS

Basin A38 (0.95 Acres)

Basin A38 includes single family lots, proposed and existing roadway (Mitchell Street), sidewalk and open space. Runoff from the basin generally sheet flows to the western flowline of Mitchell Street where it is collected in an on-grade Type 16 Combination Inlet at Design Point A38. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.95 acres and has an imperviousness of 92%.

$C_5 = 0.79$ $C_{100} = 0.86$

Q_5 = 3.4 CFS Q_{100} = 6.8 CFS

Basin A39 (0.58 Acres)

Basin A39 includes roadway and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Mitchell Street where it is collected in an on-grade Type 16 Combination Inlet at Design Point A39. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.58 acres and has an imperviousness of 100%.

C_5 = 0.86 C_{100} = 0.89

Q_5 = 2.4 CFS Q_{100} = 4.6 CFS

Basin A40 (1.26 Acres)

Basin A40 includes the rear yard of single family lots, roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the southern flowline of Mitchell Street where it is collected in an on-grade Type 16 Combination Inlet at Design Point A40. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.26 acres and has an imperviousness of 61%.

C_5 = 0.53 C_{100} = 0.73

Q_5 = 2.5 CFS Q_{100} = 6.2 CFS

Basin A41 (0.71 Acres)

Basin A41 includes the rear yard of single family lots, roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the southern flowline of Mitchell Street where it is collected in an on-grade Type 16 Combination Inlet at Design Point A41. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.71 acres and has an imperviousness of 54%.

C_5 = 0.48 C_{100} = 0.71

Q_5 = 1.4 CFS Q_{100} = 3.7 CFS

Basin A42 (0.62 Acres)

Basin A42 includes roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the northern flowline of Mitchell Street where it is collected in an on-grade Type 16 Combination Inlet at Design Point A42. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.62 acres and has an imperviousness of 76%.

C_5 = 0.66 C_{100} = 0.80

Q_5 = 1.8 CFS Q_{100} = 3.9 CFS

Basin A43 (0.59 Acres)

Basin A43 includes roadway, sidewalk and open space. Runoff from the basin generally sheet flows to the southern flowline of Street B where it is collected in an on-grade Type 16 Combination Inlet at Design Point A43. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.59 acres and has an imperviousness of 76%.

C_5 = 0.66 C_{100} = 0.80

Q_5 = 1.8 CFS Q_{100} = 4.0 CFS

Basin A44 (0.42 Acres)

Basin A44 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the Street R cul-de-sac bulb flowline where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A44. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the sidewalk to the north and be conveyed overland to Basin A33. The basin is approximately 0.42 acres and has an imperviousness of 75%.

C_5 = 0.65 C_{100} = 0.79

Q_5 = 1.1 CFS Q_{100} = 2.5 CFS

Basin A44A (0.71 Acres)

Basin A44A includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street R where it is collected in an on-grade Type 16 Combination Inlet at Design Point A44A. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.71 acres and has an imperviousness of 70%.

C_5 = 0.61 C_{100} = 0.77

Q_5 = 1.8 CFS Q_{100} = 4.2 CFS

Basin A45 (2.12 Acres)

Basin A45 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street R where it is collected in an on-grade Type 16 Combination Inlet at Design Point A45. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 2.12 acres and has an imperviousness of 60%.

$C_5 = 0.53$ $C_{100} = 0.73$

$Q_5 = 4.0$ CFS $Q_{100} = 10.0$ CFS

Basin A46 (0.14 Acres)

Basin A46 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the western flowline of Street O where it is collected in an on-grade Type 16 Combination Inlet at Design Point A46. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.14 acres and has an imperviousness of 74%.

$C_5 = 0.64$ $C_{100} = 0.79$

$Q_5 = 0.4$ CFS $Q_{100} = 0.9$ CFS

Basin A47 (0.32 Acres)

Basin A47 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the eastern flowline of Street O where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A47. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the street centerline and be conveyed to Basin A40 and eventually Pond A. The basin is approximately 0.32 acres and has an imperviousness of 75%.

$C_5 = 0.65$ $C_{100} = 0.79$

$Q_5 = 0.9$ CFS $Q_{100} = 2.0$ CFS

Basin A48 (1.69 Acres)

Basin A48 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street R where it is collected in an on-grade Type 16 Combination Inlet at Design Point A48. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.69 acres and has an imperviousness of 53%.

$C_5 = 0.47$ $C_{100} = 0.70$

$Q_5 = 2.7$ CFS $Q_{100} = 7.4$ CFS

Basin A49 (2.00 Acres)

Basin A49 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street R where it is collected in an on-grade Type 16 Combination Inlet at Design Point A49. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 2.00 acres and has an imperviousness of 60%.

C_5 = 0.53 C_{100} = 0.73

Q_5 = 3.5 CFS Q_{100} = 8.9 CFS

Basin A50 (1.14 Acres)

Basin A50 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the eastern flowline of Street O where it is collected in an on-grade Type 16 Combination Inlet at Design Point A50. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.14 acres and has an imperviousness of 62%.

C_5 = 0.54 C_{100} = 0.74

Q_5 = 2.1 CFS Q_{100} = 5.3 CFS

Basin A51 (0.25 Acres)

Basin A51 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the western flowline of Street O where it is collected in an on-grade Type 16 Combination Inlet at Design Point A51. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.25 acres and has an imperviousness of 70%.

C_5 = 0.61 C_{100} = 0.77

Q_5 = 0.7 CFS Q_{100} = 1.6 CFS

Basin A52 (0.81 Acres)

Basin A52 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A52. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.81 acres and has an imperviousness of 69%.

C_5 = 0.60 C_{100} = 0.77

Q_5 = 2.1 CFS Q_{100} = 4.8 CFS

Basin A52A (0.48 Acres)

Basin A52A includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the eastern flowline of Street P where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A52A. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop

the street centerline and be conveyed to Basin A52 and eventually Pond A. The basin is approximately 0.48 acres and has an imperviousness of 73%.

$C_5 = 0.63$ $C_{100} = 0.78$

$Q_5 = 1.3$ CFS $Q_{100} = 2.9$ CFS

Basin A53 (1.07 Acres)

Basin A53 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street P where it is collected in an on-grade Type 16 Combination Inlet at Design Point A53. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.07 acres and has an imperviousness of 69%.

$C_5 = 0.60$ $C_{100} = 0.77$

$Q_5 = 2.5$ CFS $Q_{100} = 5.7$ CFS

Basin A54 (2.32 Acres)

Basin A54 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street P where it is collected in an on-grade Type 16 Combination Inlet at Design Point A54. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 2.32 acres and has an imperviousness of 64%.

$C_5 = 0.56$ $C_{100} = 0.74$

$Q_5 = 4.6$ CFS $Q_{100} = 11.2$ CFS

Basin A55 (1.03 Acres)

Basin A55 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A55. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.03 acres and has an imperviousness of 60%.

$C_5 = 0.53$ $C_{100} = 0.73$

$Q_5 = 2.0$ CFS $Q_{100} = 5.1$ CFS

Basin A56 (0.61 Acres)

Basin A56 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street C where it is collected in an on-grade Type 16

Combination Inlet at Design Point A56. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.61 acres and has an imperviousness of 63%.

$C_5 = 0.55$ $C_{100} = 0.74$

$Q_5 = 1.3$ CFS $Q_{100} = 3.3$ CFS

Basin A57 (1.02 Acres)

Basin A57 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A57. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.02 acres and has an imperviousness of 63%.

$C_5 = 0.55$ $C_{100} = 0.74$

$Q_5 = 2.1$ CFS $Q_{100} = 5.3$ CFS

Basin A58 (1.20 Acres)

Basin A58 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A58. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.20 acres and has an imperviousness of 60%.

$C_5 = 0.53$ $C_{100} = 0.73$

$Q_5 = 2.4$ CFS $Q_{100} = 6.0$ CFS

Basin A59 (0.81 Acres)

Basin A59 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A59. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.81 acres and has an imperviousness of 66%.

$C_5 = 0.57$ $C_{100} = 0.75$

$Q_5 = 1.9$ CFS $Q_{100} = 4.6$ CFS

Basin A59A (0.21 Acres)

Basin A59A includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the eastern flowline of Street O where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A59A. The flow is then

conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the street centerline and be conveyed to Basin A59 and eventually Pond A. The basin is approximately 0.21 acres and has an imperviousness of 72%.

$C_5 = 0.63$ $C_{100} = 0.78$

$Q_5 = 0.6$ CFS $Q_{100} = 1.4$ CFS

Basin A60 (0.80 Acres)

Basin A60 includes single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A60. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.80 acres and has an imperviousness of 67%.

$C_5 = 0.59$ $C_{100} = 0.76$

$Q_5 = 1.9$ CFS $Q_{100} = 4.4$ CFS

Basin A61 (1.16 Acres)

Basin A61 includes single family lots, roadway, sidewalk, and open space. Runoff from the basin generally sheet flows to the northern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A61. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.16 acres and has an imperviousness of 66%.

$C_5 = 0.58$ $C_{100} = 0.75$

$Q_5 = 2.7$ CFS $Q_{100} = 6.4$ CFS

Basin A62 (0.79 Acres)

Basin A62 includes single family lots, roadway, sidewalk, and open space. Runoff from the basin generally sheet flows to the southern flowline of Street C where it is collected in an on-grade Type 16 Combination Inlet at Design Point A62. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.79 acres and has an imperviousness of 70%.

$C_5 = 0.61$ $C_{100} = 0.77$

$Q_5 = 2.0$ CFS $Q_{100} = 4.7$ CFS

Basin A63 (0.42 Acres)

Basin A63 includes proposed and existing roadway and sidewalk. Runoff from the basin generally sheet flows to the western flowline of Mitchell Street where it is collected in a Type

16 Combination Inlet located in a sump condition at Design Point A63. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the curb and sidewalk to the west and enter Basin A66 where it will be conveyed to Pond A. The basin is approximately 0.42 acres and has an imperviousness of 100%.

$C_5 = 0.86$ $C_{100} = 0.89$

$Q_5 = 1.7$ CFS $Q_{100} = 3.3$ CFS

Basin A64 (0.68 Acres)

Basin A64 includes proposed and existing roadway, sidewalk, and open space. Runoff from the basin generally sheet flows to the eastern flowline of Mitchell Street where it is collected in a Type 16 Combination Inlet located in a sump condition at Design Point A64. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the right of way to the east and enter Basin A70 where it will be conveyed to Pond A. The basin is approximately 0.68 acres and has an imperviousness of 86%.

$C_5 = 0.74$ $C_{100} = 0.84$

$Q_5 = 2.5$ CFS $Q_{100} = 5.0$ CFS

Basin A65 (1.58 Acres)

Basin A65 includes open space. Runoff from the basin generally sheet flows to the north and into Swale 3 where it is conveyed to a Type D Inlet located in a sump condition at Design Point A65. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the swale to the west and enter Basin A37 where it will be conveyed to Pond A. The basin is approximately 1.58 acres and has an imperviousness of 20%.

$C_5 = 0.20$ $C_{100} = 0.57$

$Q_5 = 1.1$ CFS $Q_{100} = 5.7$ CFS

Basin A65A (2.23 Acres)

Basin A65A includes open space and existing lots to the south. Runoff from the basin generally sheet flows to the east and into Swale 2 where it is conveyed to a Type D Inlet located in a sump condition at Design Point A65A. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the swale to the northwest and enter Basin A65 where it will be conveyed to Pond A. The basin is approximately 2.23 acres and has an imperviousness of 37%.

$C_5 = 0.34$ $C_{100} = 0.64$

Q_5 = 3.0 CFS Q_{100} = 10.1 CFS

Basin A66 (3.85 Acres)

Basin A66 includes the rear yards of existing and proposed single family lots and open space. Runoff from the basin generally sheet flows to Swale 2A where it is conveyed to a Type D Inlet located in a sump condition at Design Point A66. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the swale to the north and enter Basin A65 where it will be conveyed to Pond A. The basin is approximately 3.85 acres and has an imperviousness of 40%.

C_5 = 0.36 C_{100} = 0.65

Q_5 = 4.3 CFS Q_{100} = 14.1 CFS

Basin A67 (0.75 Acres)

Basin A67 includes future single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the northern flowline of Street H where it is collected in an on-grade Type 16 Combination Inlet at Design Point A67. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 0.75 acres and has an imperviousness of 58%.

C_5 = 0.51 C_{100} = 0.72

Q_5 = 1.6 CFS Q_{100} = 4.1 CFS

Basin A68 (1.19 Acres)

Basin A68 includes future single family lots, roadway, and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street H where it is collected in an on-grade Type 16 Combination Inlet at Design Point A68. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.19 acres and has an imperviousness of 63%.

C_5 = 0.55 C_{100} = 0.74

Q_5 = 2.5 CFS Q_{100} = 6.2 CFS

Basin A69 (1.47 Acres)

Basin A69 includes future single family lots, roadway, parking lot and sidewalk. Runoff from the basin generally sheet flows to the southern flowline of Street H where it is collected in an on-grade Type 16 Combination Inlet at Design Point A69. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 1.47 acres and has an imperviousness of 61%.

$C_5 = 0.53$ $C_{100} = 0.73$

$Q_5 = 3.0$ CFS $Q_{100} = 7.5$ CFS

Basin A70 (4.04 Acres)

Basin A70 includes park and open space. Runoff from the basin generally sheet flows to Swale 4 where it is conveyed to a Type D Inlet located in a sump condition at Design Point A70. The flow is then conveyed via storm sewer to Pond A. In case of inlet clogging, emergency flows will overtop the swale to the west and enter Basin A69 where it will be conveyed to Pond A. The basin is approximately 4.04 acres and has an imperviousness of 18%.

$C_5 = 0.18$ $C_{100} = 0.56$

$Q_5 = 1.8$ CFS $Q_{100} = 10.3$ CFS

Basin A71 (13.86 Acres)

Basin A71 includes the existing Mesa Middle School property. Runoff from the basin generally sheet flows to the north where it is collected in an existing on-site storm sewer system. The existing storm sewer will tie to the proposed storm sewer system at Design Point A71. The flow is then conveyed via storm sewer to Pond A. The basin is approximately 13.86 acres and has an imperviousness of 70%.

$C_5 = 0.61$ $C_{100} = 0.77$

$Q_5 = 29.3$ CFS $Q_{100} = 67.4$ CFS

Basin A72 (2.00 Acres)

Basin A72 includes park and open space. Runoff from the basin generally sheet flows to Swale 1 where it is conveyed to the west and discharges to Mitchell Gulch at Design Point A72. As this area only includes proposed grading and a gravel trail it is being released undetained. However, Pond A has been sized to include the basin to provide additional control downstream. The basin is approximately 2.00 acres and has an imperviousness of 15%.

$C_5 = 0.16$ $C_{100} = 0.55$

$Q_5 = 1.0$ CFS $Q_{100} = 6.2$ CFS

Interim Basin IB1 – Lift station (16.38 Acres)

A portion of Basin B will be developed in the Filing 1 improvements for the installation of the proposed lift station (by others), access road, and underground utilities. The proposed interim basin includes approximately 16.38 acres and generally sheet flows to the northeast,

ultimately draining to the Future Pond B. In the interim condition for Filing 1, the future Pond B will utilize a perforated PVC riser pipe to provide water quality and detain the runoff from the proposed lift station. The riser pipe is designed for the interim condition to maintain the undeveloped historic release rates for historic Basin H2. See Appendix C for the interim condition calculations for future Pond B. The future Bella Mesa North Filings will include the ultimate condition and final design of Pond B, which will include approximately 76.7 acres within the overall tributary area.

Drainage Design Criteria

Regulations, Drainage Studies, Development Criteria Reference and Constraints

This Phase III Drainage Report is in accordance with the Town of Castle Rock Storm Drainage Design and Technical Criteria Manual dated February 2025, and the Mile High Flood District (MHFD) Storm Drainage Criteria Manual Volumes 1, 2, and 3. These manuals were used as a basis of design for the Site.

This Site is within the Cherry Creek Basin and is subject to the Department of Public Health and Environment Water Quality Control Commission Cherry Creek Reservoir Control Regulation 5 CCR 1002-72.

A Phase II Drainage Report was completed in August 2025 by Redland for the overall Bella Mesa North Development. This Phase III Drainage Report is in compliance with the overall Bella Mesa North Phase II Drainage Report. Additionally, a Phase III Drainage Report for the Bella Mesa Pond Relocation was completed in 2022, but the project was never constructed.

The constraints for the site include the steep grades falling from the side of the Mesa as well as shallow bedrock.

Hydrological Criteria

The hydrologic design was computed using the Rational Method as defined by the Mile High Flood District. The 5-year storm was used as the minor storm event, while the 100-year storm was used as the major event. The one-hour point rainfall depth used for the 5-year storm was 1.43 inches and 2.6 inches for the 100-year event. The Rational Method was used to analyze the proposed condition and calculations can be found in Appendix B and D. Impervious values are based on Tables 6-2 and 6-3 of Chapter 6 of the MHFD Criteria Manual Volume 1.

Hydraulic Criteria

Street and inlet capacity calculations were completed using MHFD Inlet, Version 6.00. Utilizing Bentley's StormCAD modeling software, the proposed storm sewer was analyzed for the major and minor storm events. The resultant HGLs were provided using the standard loss coefficients and the associated outputs are included in Appendix C.

Channel Hydraulics are evaluated using the Hydraflow Express Extension for Autodesk Civil 3D, version 2020 modeling software. This method utilizes Manning's equation to compute flow rates at varying depths of flow.

$$Q = \frac{1.49}{n} AR^{2/3}\sqrt{S}$$

Where:

Q = Flow rate in cfs
n = Roughness coefficient
A = Cross-sectional area in sqft
R = Hydraulic radius
S = Channel slope in ft/ft

Velocity Requirements

A minimum velocity check was completed in accordance with Section 9.8.1 of the Town of Castle Rock Storm Drainage Design and Technical Criteria Manual. This analysis was completed to verify that the storm sewer pipes conveying runoff from frequently occurring storm events provide a minimum velocity of 2.0 ft/s. For pipes designed to flow near full, the minimum velocity check is based on a flow depth equal to 25 percent of the pipe diameter and the corresponding flow rate. For pipes not designed to flow near full, the minimum velocity check is based on a flow depth equal to 25 percent of the calculated design-flow depth and the corresponding flow rate.

Based on the proposed storm sewer design, the pipes that did not meet the 2 ft/s velocity requirement were identified as not designed to flow near full under the design storm condition. Therefore, the minimum velocity check was completed using 25% of the calculated design-flow depth for each applicable pipe. The minimum velocity check calculations are included in Appendix C.

Water Quality Enhancement

The extended detention basin for the Site provides water quality enhancement as well as volume control. The proposed detention pond is designed as an extended detention basin which incorporates structures that release flows for the water quality capture volume (WQCV), excess urban runoff volume (EURV), and the 100-year storm event. The pond has been sized for the 100-year detention volume and the WQCV for the developed flows of the Site as well as Mesa Middle School. The design and record information for the proposed detention ponds and these structures can be found in Appendix C.

Water Quality Exclusions

Some of the proposed land disturbances are not treated by the proposed extended detention basin due to grading constraints. These areas include disturbances to undeveloped land that will remain undeveloped, trail construction and underground utility construction, all of which are automatic exclusions as allowed by the Town's MS4 requirements and Cherry Creek Regulation No. 72.

There is approximately 5.90 acres of land that will be disturbed but remain undeveloped and runoff from said areas will leave the site untreated. These areas comprise fill conditions that runoff the site and are not able to be captured and directed to the proposed detention pond. Excluded disturbed areas will be permanently stabilized and revegetated in accordance with the approved grading, erosion control, and landscape restoration plans.

Another improvement to the site that is excluded from the water quality treatment is the gravel trails proposed in the open space. The total area of trails not treated for water quality is 0.75 acres.

The final improvement that is excluded from water quality treatment is the installation of underground utilities. There are portions of sanitary forcemain, storm sewer including the outlet pipes for the pond and the downstream portion of the bypass pipe that cannot be directed to the detention pond and will leave the site undetained. The total area for this utility construction is 0.72 acres.

Refer to Appendix A for the completed Water Quality Conformance Form and supporting exhibit showing the excluded areas for the entire development. Additionally, see the Variances section of this report for the basis and total requested exclusion area

Stormwater Management and Facility Design

Stormwater Conveyance Facilities

Stormwater conveyance for the Site will rely on runoff sheet flowing to the curb and gutter and will be collected into stormwater inlets at necessary intervals. Swales, both lined and unlined, will also be used to collect runoff generated from the Site improvements. The storm sewer will then convey the runoff to the on-site detention pond. The detention pond will release into existing channels and eventually discharge to Mitchell Gulch.

Offsite flows to the south, including Mesa Middle School and Castlewood Ranch Filing 2, as well as runoff from the existing roadways, will be collected in the on-site storm sewer system and conveyed to and treated by the detention ponds. Off-site runoff in the current existing condition is conveyed to the existing temporary on-site pond, in the future condition runoff will be treated within the detention ponds proposed within the Site before being discharged into Mitchell Gulch. The total area of off-site flows being conveyed through the Site is

approximately 17.37 acres; including 13.86 acres from the school site, 2.38 acres from Castlewood Ranch Filing 2 and 1.13 acres from the existing roadways.

Additional offsite flows from the existing Castlewood Ranch and Founders Village Filing 24 detention ponds will be collected in a bypass storm sewer system. This bypass system will convey the flows through the Site and will discharge to the West into Mitchell Gulch. No additional treatment to existing flows collected will need to be accounted for due to the removal of the existing temporary on-site pond.

Stormwater Storage Facilities

Stormwater storage for the Site is provided by an Extended Detention Basin (EDB). Pond A is located to the west of the Site and is designed as full spectrum EDB, which have an outlet structure to treat the Water Quality Capture Volume (WQCV), the Excess Urban Runoff volume (EURV) and the 100-year storage volume. Castle Rock regulations require that the stored 100-year volume is equal to the calculated 100-year volume plus half the WQCV. The pond also include forebays to encourage settling of sediment and concrete trickle channels to aid in maintenance. Calculations for the sizing of the proposed pond are included in Appendix C. The Mitchell Gulch Watershed Master Plan Preliminary Design Report was used to determine the capacity of downstream conveyance to Mitchel Gulch. The max release rate capacity into Mitchell Gulch from the Site, including the runoff conveyed from both the ponds located in Founders Village Filing 24 – Phase 2 and Castlewood Ranch Filing 2 developments, is 355 cfs, please see Appendix D for calculations.

Given Pond A's close location to Mesa Middle School, a permanent fence will be installed around its perimeter to restrict access and enhance safety and security. Additionally, an MHFD safety grate will be installed on the 48-inch FES outfall, which conveys flow from the ponds located within Founders Village Filing 24 and Castlewood Ranch through the Site.

Total Combined Release Rate to Mitchell Gulch

	Design Point	Storage Volume (acre-ft)	100-yr Release Rate (cfs)
Pond A	A27	11.43	118.5
Pond B (Future Final Condition)	-	7.79	63.8
Ex. Pond A (Castlewood F2)	-	3.57	48.0
Ex. Pond A (Founders Village F24 – Phase 2)	-	1.04	31.2
Total	-	-	261.5

Water Quality Enhancement Best Management Practices

As part of the water quality enhancement design, the Four Step Process for Stormwater Quality Design as defined in Section 14.1 of the Town of Castel Rock Storm Drainage Criteria Manual has been utilized for this Site. Step 1 of the process highlights the utilization of grass buffers and swales to reduce directly connected impervious areas (DCIA). As proposed with this

application, swales are provided with flatter side slopes (5:1) as recommended by MHFD. This reduces the depth of flow and encourages infiltration. Step 2 is to provide water quality capture volume and flood control via full-spectrum detention. Water quality and detention measures are accounted for in the proposed detention ponds. The proposed detention ponds are designed to incorporate structures that release flows for the water quality capture volume (WQCV), excess urban runoff volume (EURV), and the 100-year storm event. The total pond volumes are designed to the 100-year plus one half the WQCV volumes, as required by the Town. The record information and design information of these structures can be found in Appendix C. Step 3 is to utilize stream stabilization techniques. No stream impacts are anticipated with the Site improvements. All on-site swales will be stabilized with proper lining to decrease the chance of erosion. Step 4 is to undertake source control if the Site has potential for chemical, oil, fertilizer, or other pollutants to discharge into the stormwater system. Potential pollutant sources common in residential developments are fertilizers and other landscape chemicals, as well as pet waste. Source controls that can mitigate these pollutants are proper landscape management of fertilizer application and handling, and pet waste stations. The proposed sewer lift station also presents a potential pollutant source to the Site. To ensure safety and no possible contamination, an emergency response plan has been created as well as all utility crossings have been designed to vertical spacing criteria outlined in the Town of Castle Rock Storm Drainage Design and Technical Criteria Manual. The lift station design and emergency response plan are being reviewed concurrently with the CDPHE Water Quality Control Division under separate cover (SA#260164).

Floodplain Modification

The applicable FEMA floodplain maps show that the floodplain for Mitchell Gulch lies outside the Site boundary. No floodplain modification or channel improvements are proposed with the Site. Floodplain maps can be found in Appendix A.

Geotechnical Investigation and Sub-surface Collection System Design

A Geologic and Preliminary Geotechnical Investigation for the Site was completed by CTL Thompson dated June 15, 2018. Conclusions summarized within the report include the presence of expansive soils, shallow bedrock, and no groundwater encountered. No groundwater mitigation measures were recommended.

Based on the documented shallow bedrock and expansive soil conditions, underdrains will be implemented within the public right-of-way where required by Sections 3.1.5 and 3.3.3 of the Town of Castle Rock criteria. Underdrain locations, typical installation details, discharge points, and coordination with adjacent storm drainage infrastructure are shown on the construction plans.

Operations and Maintenance

The Bella Mesa Metropolitan District will be responsible for the operation and maintenance of the water quality enhancement control measures and stormwater management facilities.

The Town of Castle Rock or designee shall be responsible for the maintenance of all drainage facilities including inlets, pipes, culverts, channels, ditches, hydraulic structures, and detention basins located in public right-of-way.

The HOA, Metropolitan District or designee shall be responsible for the maintenance of all drainage facilities including inlets, pipes, culverts, channels, ditches, hydraulic structures, and detention basins located outside of the public right-of-way.

It is recommended all stormwater management facilities shall be inspected by a qualified individual at a minimum of one time per year. Inspections should follow the inspection guidance found in the SOPs located in Appendix A of the Stormwater Management Facility Operation and Maintenance General Guidelines by the Castle Rock Stormwater Division.

Stormwater Management Facility Maintenance Programs are separated into three broad categories of work. The categories are separated based upon the magnitude and type of the maintenance activities performed. A description of each category follows:

1. Routine Work
   The majority of this work consists of regularly scheduled mowing, trash and debris pickups, removal of debris/material that may be clogging the outlet structure well screens and trash racks, weed control, mosquito treatment and algae treatment. These activities normally will be performed numerous times during the year.
2. Minor Work
   This work consists of a variety of isolated or small-scale maintenance/operational problems. Most of this work can be completed by a small crew, hand tools, and small equipment. These items require notification to Castle Rock Water at least 7 days prior to the start of work.
3. Major Work
   This work consists of larger maintenance/operational problems and failures within the stormwater management facilities. All of this work requires notification to Castle Rock at least 14 days prior to the start of work. Some of this work requires engineering staff review and may also require more specialized maintenance equipment, design/details, surveying, or assistance through private contractors and consultants.

Additional Permitting Requirements

No additional permits are anticipated with the proposed development.

Conclusion

Compliance with the Town of Castle Rock Code

The drainage design for Bella Mesa North conforms to the Town of Castle Rock Storm Drainage Design and Technical Criteria Manual, with supplemental information developed from the Mile High Flood District Storm Drainage Criteria Manuals. This analysis demonstrates that the proposed facilities are developed in compliance with the appropriate criteria and constraints for the relevant development needs for the project.

Variances

A variance is requested for Water Quality Exclusion per Section 13.1.5 of the Storm Drainage Design and Technical Criteria Manual. As discussed above there are portions of the site that are not feasible to be collected and conveyed to the on-site detention pond. These areas include disturbed areas that are to remain undeveloped, areas for the construction of underground utilities and areas for trail construction. All these activities qualify for Water Quality Exclusion, as detailed on the Water Quality Exclusion Forms included in Appendix A of this report. The total area requested for exclusion is 7.37acres, including 5.90 acres for undeveloped land, 0.72 acres for underground utility installation and 0.75 acres for trail construction.

Drainage Concept

The increased stormwater runoff produced as a result of the proposed improvements will be captured in a storm sewer system and conveyed to an on-site detention pond for treatment. The pond will provide volume control as well as water quality treatment and will release to the west into Mitchell Gulch below historic flow rates. The proposed stormwater facilities are designed for the minor (5-year) and major (100-year) storm events.

References

REFERENCES

1. Town of Castle Rock, Storm Drainage Design and Technical Criteria Manual, February 18, 2025.

2. Mile High Flood District, Denver, Colorado, Urban Storm Drainage Criteria Manual, Volume 1-3, latest online addition.

3. Founders Village Filing 24 Rock Canyon Phase II Drainage Report, TCB, January 2006, Revised April 2006

4. Phase II Drainage Report for Founders Village Filing 24 – Phase 1A Construction, Core Consultants dated December 28, 2018

5. Stormwater Management Facility Operation and Maintenance (O&M) General Guidelines, Castle Rock Water, Stormwater Division dated December 12, 2012.

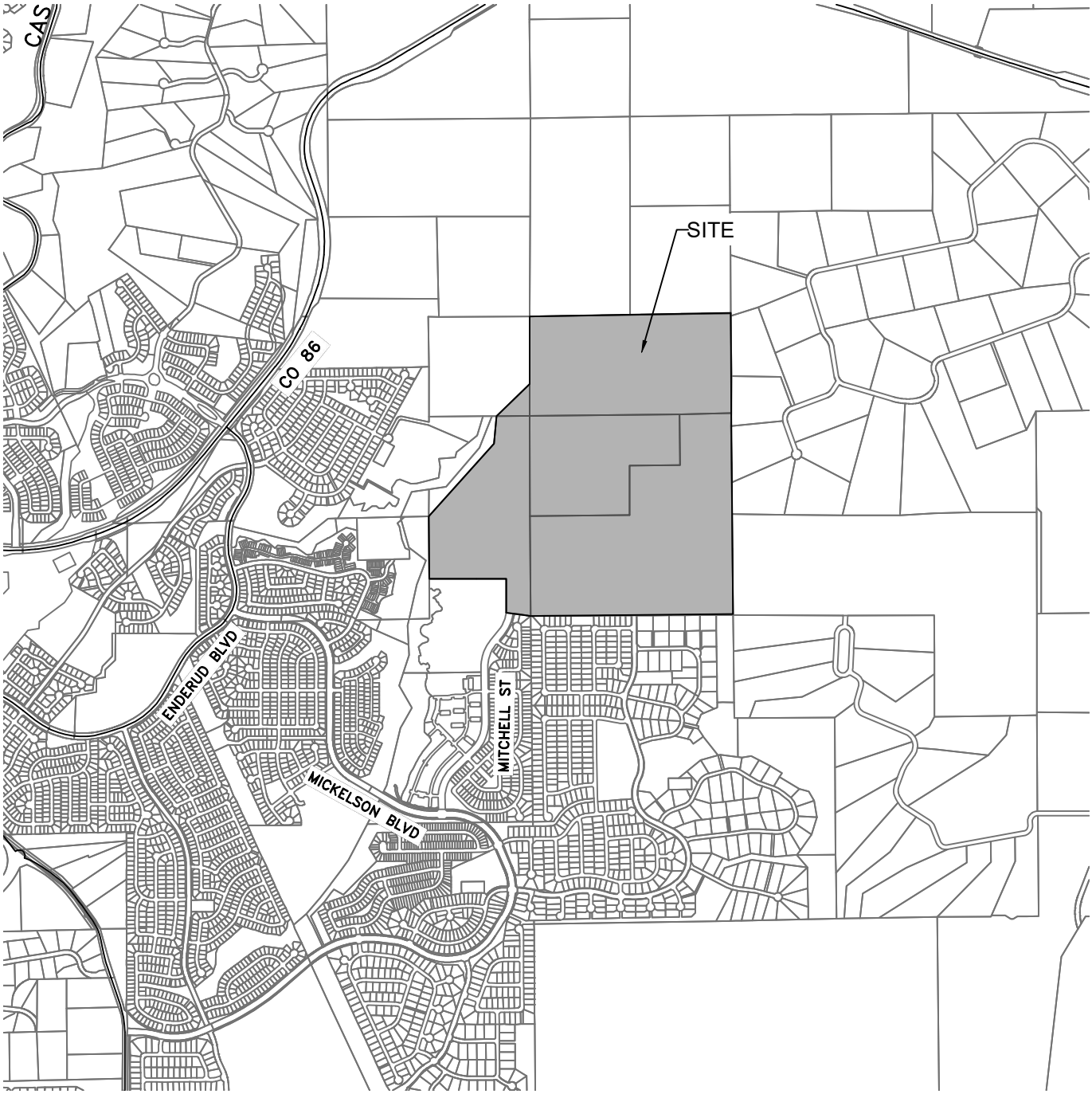
6. Geologic and Preliminary Geotechnical Investigation Bella Mesa Castle Rock, Colorado, CTL Thompson Inc., June 15, 2018.

7. Castlewood Ranch, Filing No. 2 Phase III Drainage Report, Turner Collie & Braden, October 21, 2002.

8. Department of Public Health and Environment Water Quality Control Commission Cherry Creek Reservoir Control Regulation 5 CCR 1002-72.

9. Phase II Drainage Report for Bella Mesa North, Redland dated August 8, 2025.

Appendix A - Vicinity Map, FIRM Map, Soils Map



VICINITY MAP

1" = 2000'

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 Office
1500 West Canal Court
Littleton, Colorado 80120
REDLAND.COM

VICINITY MAP

BELLA MESA NORTH

CASTLE ROCK COLORADO

DATE 06.11.2024

PROJ. NO. 17026.004

SHEET

VIC

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NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables shown on this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Floodway Data table shown on this FIRM.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

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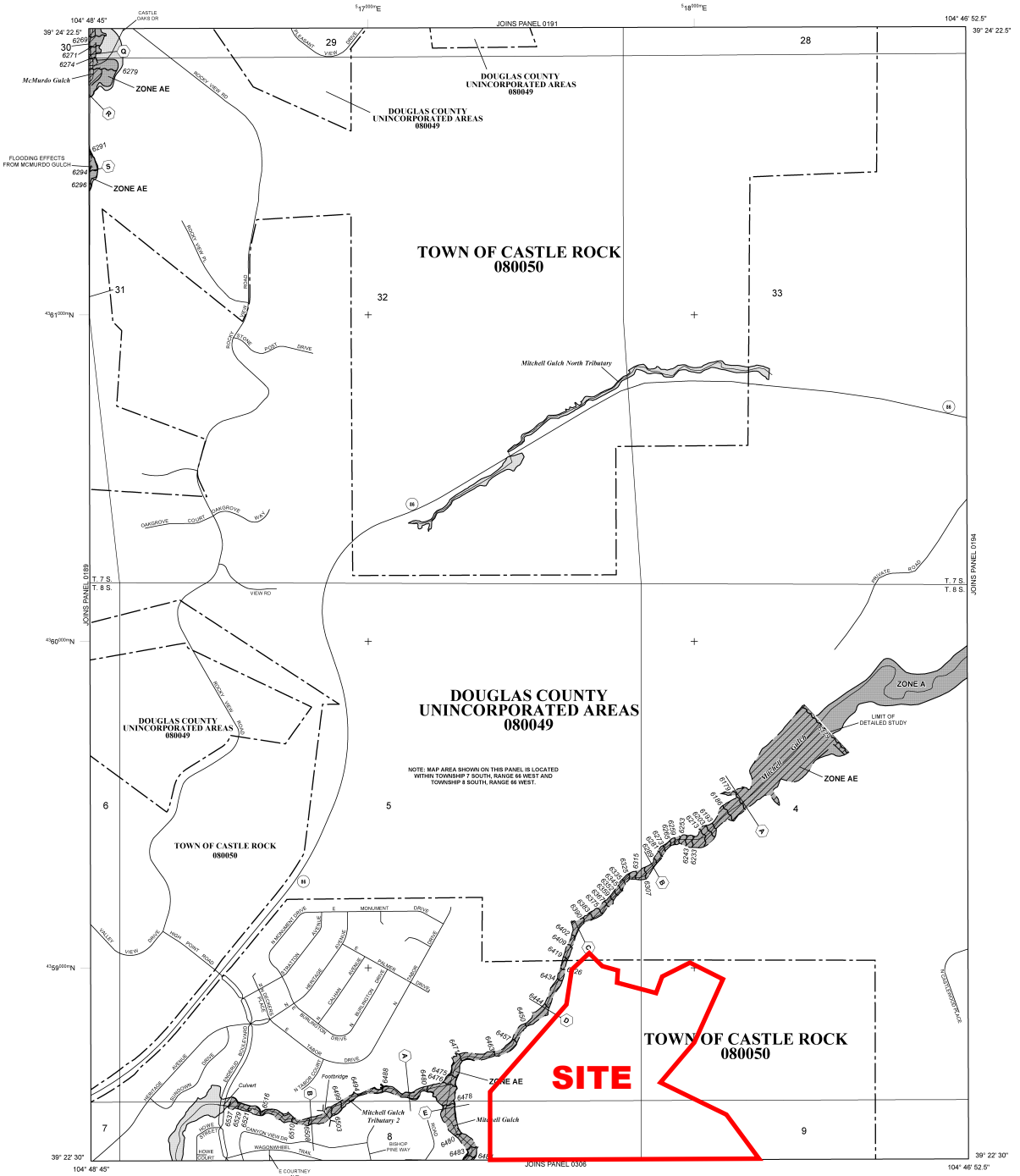

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
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- 4389000m N — 1000-meter Universal Transverse Mercator grid values, zone 13
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

SEPTEMBER 30, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

MARCH 16, 2016: to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to update map format, to add roads and road names, to reflect updated topographic information, to incorporate previously issued letters of map revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0193G

FIRM

FLOOD INSURANCE RATE MAP

DOUGLAS COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 193 OF 495
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CASTLE ROCK, TOWN OF	080050	0193	G
DOUGLAS COUNTY	080049	0193	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
08035C0193G
MAP REVISED
MARCH 16, 2016

Federal Emergency Management Agency

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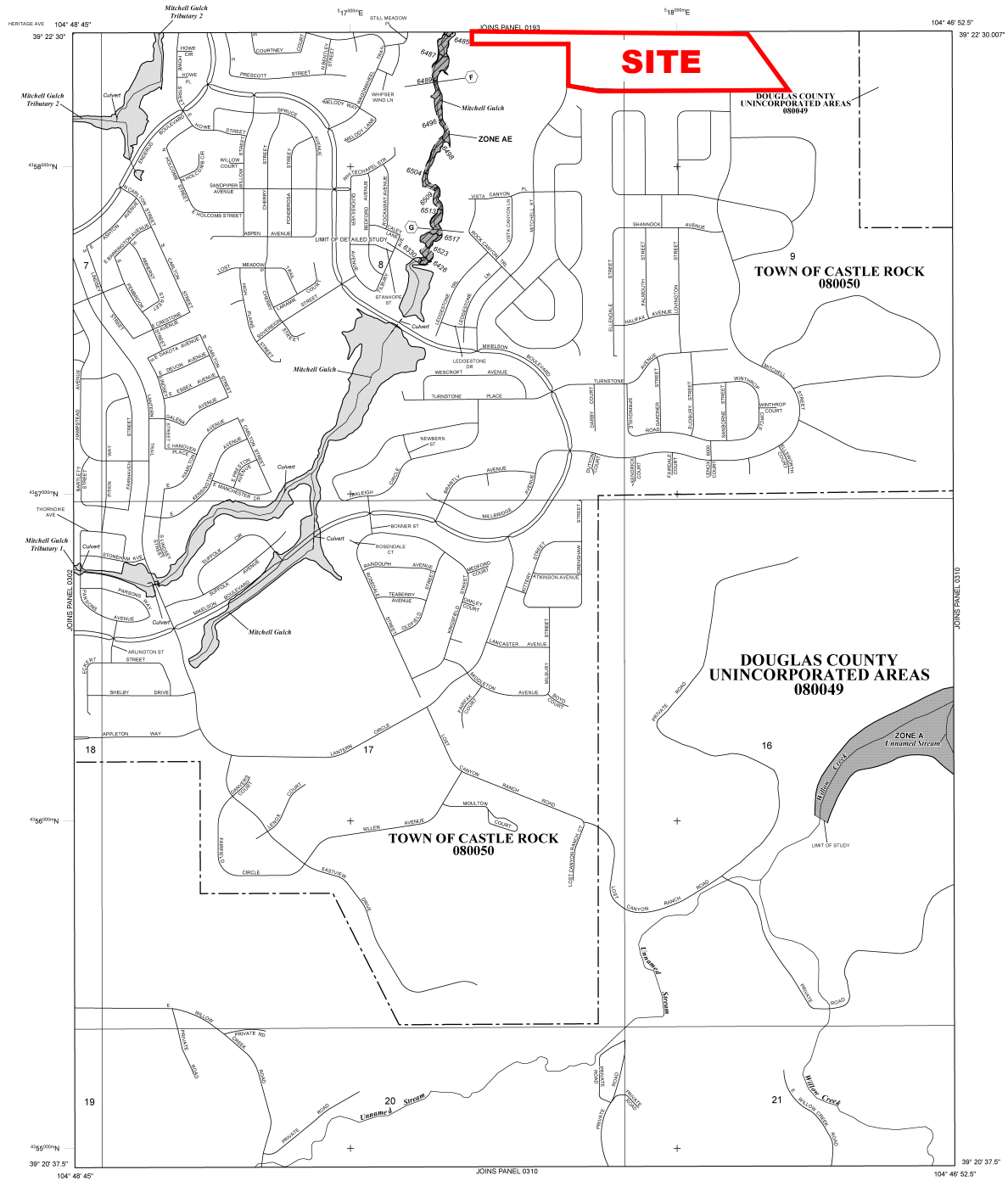

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- M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

SEPTEMBER 30, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

MARCH 16, 2016: to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to update map format, to add roads and road names, to reflect updated topographic information, to incorporate previously issued letters of map revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0306G

FIRM

FLOOD INSURANCE RATE MAP

DOUGLAS COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 306 OF 495

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

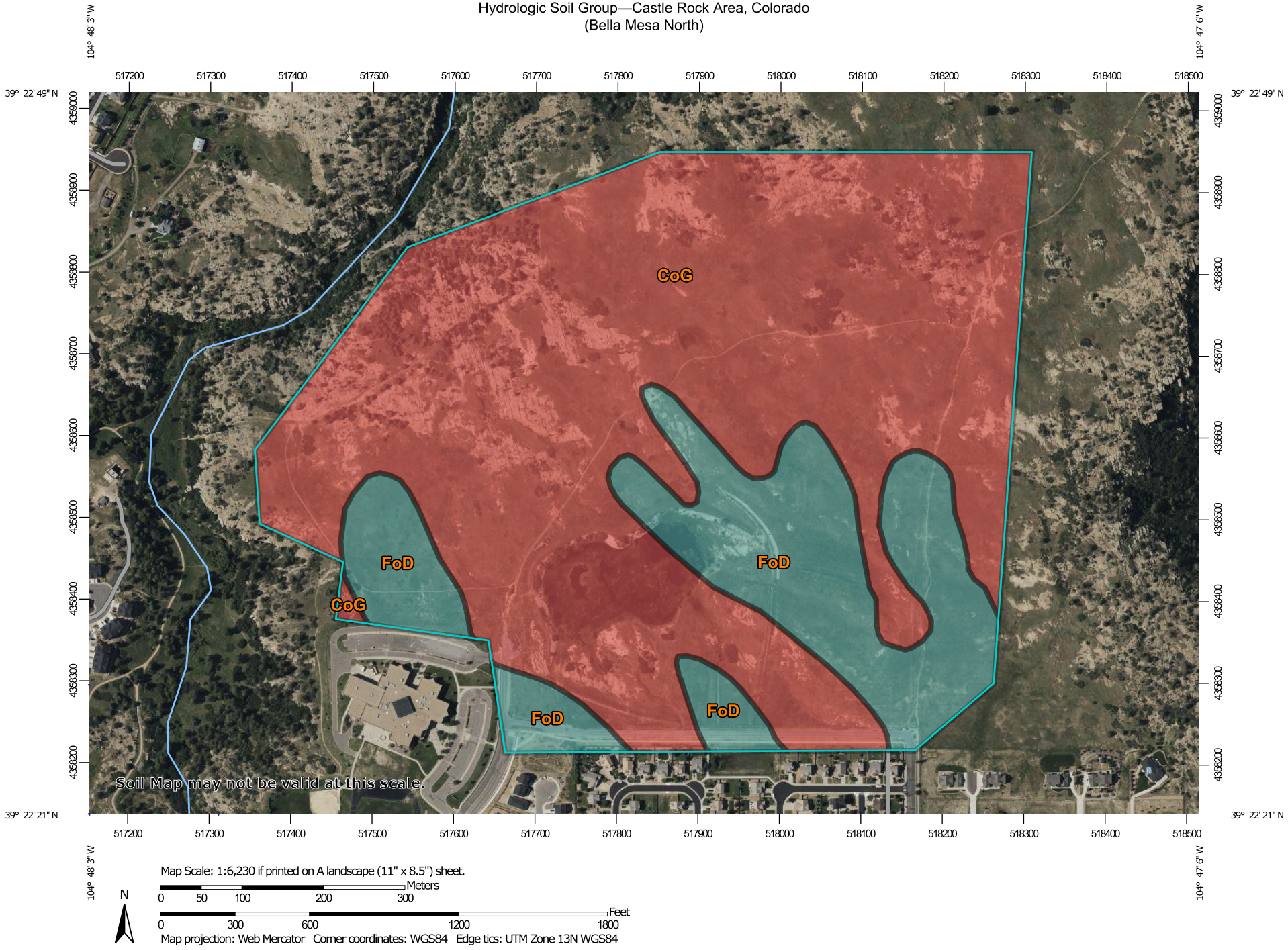
COMMUNITY	NUMBER	PANEL	SUFFIX
CASTLE ROCK, TOWN OF	080050	0306	G
DOUGLAS COUNTY	080049	0306	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
08035C0306G
MAP REVISED
MARCH 16, 2016

Federal Emergency Management Agency

Hydrologic Soil Group—Castle Rock Area, Colorado
(Bella Mesa North)



Map Scale: 1:6,230 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 300 600 1200 1800

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Castle Rock Area, Colorado
Survey Area Data: Version 17, Aug 29, 2024

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CoG	Coni rocky loam, 3 to 100 percent slopes	D	105.6	76.3%
FoD	Fondis clay loam, 3 to 9 percent slopes	C	32.7	23.7%
Totals for Area of Interest			**138.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Permanent Water Quality Determination Worksheet (Taken from 2019 SDDTCM Sections 13.1.4 and 13.1.5)

Project:		**Project#**		**Applicant:**
Section	**Questions**	**Response**	**Check those that apply**	**Instructions**
1	**Non-applicable Sites**			
1.1	Will the project result in a temporary disturbance of greater than one acre?	No	☐	Proceed to section 1.2.
		Yes	☑	Proceed to section 2.
1.2	Is the project part of a larger common plan of development or sale where multiple separate and distinct construction activities may be taking place at different times on different schedules, but remain related and are within 1/4 mile of each other? (A common plan of development will generally be documented on a site development plan, master plan, or equivalent, for the property/project)	No	☐	Proceed to section 1.3.
		Yes	☐	Proceed to section 2.
1.3	Is the project within the Cherry Creek Watershed?	Yes	☐	Permanent water quality control measures may be required. Refer to Water Qualtiy Control Regulation 72.7 for details and allowable exclusions.
		No	☐	Permanent water quality control measures are not required.
2	**Applicable Site Types and Exclusions by Variance**			
2.1	Does the project have more than 35% impervious area on the existing site?	No	☑	Project is an applicable Development Site. Proceed to section 3.
		Yes	☐	Proceed to 2.2.
2.2	Does the project have greater than 75% impervious area on the existing site?	No	☑	Project is an applicable Redevelopment Site. Proceed to section 3.
		Yes	☐	Project is an applicable Constrainted Redevelopment Site. Proceed to 2.3.
2.3	Will 100% of the runoff from the existing and proposed site be captured and treated using one or more of the allowable design standards for permanent water quality?	Yes	☐	No further action required.
		No	☐	Proceed to 2.4.
2.4	Do any other water quality exclusions apply to the site?	No	☐	Portions of the project are excluded. Proceed with design in accordance with Constrained Redevelopment standards and apply for **variance** for Constrained Redevelopment Sites.
		Yes	☐	Proceed to section 3. Following approval of other exclusions, design remaining site in accordance with Constrained Redevelopment standards and apply for **variance** for Constrained Redevelopment Sites.
3	**Applicable Sites with Other Exclusions by Variance**			
3.1	**Category 1: Roadways, bridges and trails only**			
3.1.1	Is the project a bike or pedestrian trail?	Yes	☑	Proceed to next line.
		No	☐	Proceed to 3.1.2.
	Is the trail for a roadway?	Yes	☐	Proceed to 3.1.2.
		No	☑	Project is excluded. Submit **variance** for Trails Excluded from Permanent Water Quality Requirements.
3.1.2	Is the project primarily used for parking or access to parking?	Yes	☐	This exclusion does not apply. Permanent water quality is required.
		No	☐	Proceed to 3.1.3.
3.1.3	Does the project add impervious area?	No	☐	Project is excluded. Submit **variance** for Pavement Management Sites Excluded from Permanent Water Quality Requirements.
		Yes	☐	Proceed to 3.1.4.

Section	Questions	Response	Check those that apply	Instructions
3.1.4	Does the project add more than 8.25 feet of paved width at any location to the existing roadway?	No	☐	Project is excluded. Submit **variance** for Roadway Redevelopment Sites Excluded from Permanent Water Quality Requirements.
		Yes	☐	Proceed to next line.
	Does the project add more than one acre of paved area per mile to an existing roadway?	No	☐	Project is excluded. Submit **variance** for Roadway Redevelopment Sites Excluded from Permanent Water Quality Requirements.
		Yes	☐	Proceed to next line.
	Does the project increase the width by two times or more, on average, of the original roadway area?	No	☐	Existing areas of site are excluded only. Submit **variance** for Existing Roadway Surfaces Only Excluded from Permanent Water Quality Requirements.
		Yes	☐	This exclusion does not apply. Permanent water quality is required.
3.2	**Category 2: Non-residential and non-commercial projects only**			
3.2.1	Is the project associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities, including activities necessary to prepare a site for drilling and the movement and placement of drilling equipment?	Yes	☐	Project is excluded. Submit **variance** for Oil and Gas Exploration Sites Excluded from Permanent Water Quality Requirements.
		No	☐	Proceed to 3.2.2.
3.2.2	Is the project for stream stabilization?	Yes	☐	Project is excluded. Submit **variance** for Stream Stabilization Sites Excluded from Permanent Water Quality Requirements.
		No	☐	Proceed to 3.2.3.
3.2.3	Is the project for installation or maintenance of aboveground or underground utilities or infrastructure that does not permanently alter the terrain, ground cover, or drainage patterns from those present prior to the construction activity including activities to install, replace or maintain utilities under roadways or other paved areas that return the surface to the same condition?	Yes	☐	Project is excluded. Submit **variance** for Aboveground and Underground Utilities Excluded from Permanent Water Quality Requirements.
		No	☐	Proceed to 3.2.4.
3.2.4	Is the project on undeveloped land (land with no human-made structures such as buildings or pavement) that will remain undeveloped after the project?	Yes	☐	Project is excluded. Submit **variance** for Sites with Land Disturbances to Undeveloped Land that will Remain Undeveloped Excluded from Permanent Water Quality Requirements.
		No	☐	Proceed to 3.2.5.
3.2.5	Will the post-project condition result in surface water discharge during the 80th percentile storm runoff event?	No	☐	Project is excluded. Submit **study** along with **variance** for Non-residential and Non-commercial Infiltration Conditions Excluded from Permanent Water Quality Requirements.
		Yes	☐	This exclusion does not apply. Permanent water quality is required.
3.3	**Category 3: Residential, Agricultural and Commercial projects**			
3.3.1	Is the project a single-family residential lot, or agricultural zoned lands, greater than or equal to 2.5 acres in size per dwelling unit?	Yes	☐	Proceed to next line.
		No	☑	Proceed to 3.3.2.
	Is the project site greater than 10% impervious?	No	☐	Project is excluded. Submit **variance** for Large Lot Single Family Sites Excluded from Permanent Water Quality Requirements.
		Yes	☐	Proceed to next line.
	Is the project site greater than 20% impervious?	Yes	☐	This exclusion does not apply. Permanent water quality is required.
		No	☐	Proceed to next line.
	Will the post-project condition result in surface water discharge during the 80th percentile storm runoff event?	No	☐	Project is excluded. Submit **study** along with **variance** for Large Lot Single Family Sites Excluded from Permanent Water Quality Requirements.
		Yes	☐	This exclusion does not apply. Permanent water quality is required.

Section	Questions	Response	Check those that apply	Instructions
3.3.2	Will 100% of the runoff from the residential or commercial site be captured?	Yes	☐	This exclusion does not apply. Permanent water quality is required.
		No	☑	Proceed to next line.
	Is all or a portion of the site undeveloped or will it remain undeveloped after construction?	Yes	☑	This portion of the project is excluded. Submit **variance** for Sites with Land Disturbance to Undeveloped Land that will Remain Undeveloped Excluded from Permanent Water Quality Requirements. Proceed to next line.
		No	☐	Proceed to next line.
	Is the remaining untreated impervious area greater than 20% of the site?	Yes	☐	This exclusion does not apply. Permanent water quality is required.
		No	☐	Proceed to next line.
	Is the remaining untreated impervious area greater than one acre?	Yes	☐	This exclusion does not apply. Permanent water quality is required.
		No	☐	Proceed to next line.
	Is it practicable to capture runoff from portions of the site that will not drain to a control measure?	No	☐	Document justification demonstrating that it is not practicable to capture runoff from this portion of the site in the **drainage report**. No further action is needed.
		Yes	☐	This exclusion does not apply. Permanent water quality is required.

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TOWN OF CASTLE ROCK COLORADO

Development Services
100 N. Wilcox Street
Castle Rock, CO 80104
720-733-2200 FAX 720-733-2231

NO. SDP
Project NO. 24-0040
WQE NO.

DATE July 28, 2025

WATER QUALITY EXCLUSION APPLICATION

DEVELOPMENT DESCRIPTION:

525 single family residential lots with associated streets, parks, and trails.

LEGAL DESCRIPTION OF SUBJECT PROPERTY:

Legal description too long for this area, please see cover of SDP24-0040.

IS THE PROJECT WITHIN THE PLUM CREEK BASIN? ☐ YES ☑ NO

IS THE PROJECT WITHIN THE CHERRY CREEK BASIN? ☑ YES ☐ NO

☐ Tier 2 Development/Redevelopment ☑ Tier 3 Development/Redevelopment

AREA OF PROJECT RECIEVING THE EXCLUSION? 7.37 acres

IS THE PROJECT A CONSTRAINED SITE REQUIRING A WQ EXCLUSION? ☐ YES ☑ NO

VARIANCE REQUESTED (SELECT ONE):

*Applicable exclusions for projects **outside** of the Cherry Creek Basin*

- ☐ Trails Exclusion
- ☐ Management Sites Exclusion
- ☐ Roadway Redevelopment Sites Exclusion
- ☐ Existing Roadway Areas Exclusion
- ☐ Stream Stabilization Sites Exclusion
- ☐ Aboveground and Underground Utilities Exclusion
- ☐ Large Lot Single Family Sites Exclusion
- ☐ Oil and Gas Exploration Sites Exclusion
- ☐ Sites with Land Disturbances to Undeveloped Land that will Remain Undeveloped Exclusion
- ☐ Non-residential and Non-commercial Infiltration Conditions Exclusion
- ☐ Constrained Site Exclusion

*Applicable exclusions for projects **within** the Cherry Creek Basin*

- ☐ Agricultural Activities Exclusion
- ☐ Routine Maintenance Sites Exclusion
- ☐ Excluded Roadway Project Exclusion
- ☐ Sidewalks and Driveways Exclusion
- ☑ Underground Utilities Exclusion
- ☐ Emergency Operations Sites Exclusion
- ☐ Large Lot Single Family Development using Runoff Reduction Exclusion
- ☐ Rural Roadway Construction and Maintenance Exclusion
- ☐ Residential or Commercial Subdivisions with Existing Adequate Post Construction BMPs Exclusion
- ☑ Sites with Land Disturbance to Undeveloped Land that will Remain Undeveloped Exclusion
- ☑ Trails Construction Exclusion

Docusign Envelope ID: E1FFEC91-5A1B-43D1-A9D5-C16D37B4F62E

PROPERTY OWNER

Name: Bryan Conway

Address: 9110 East Nichols Ave. Suite 120
Denver, CO 80112

Phone #: 720-798-6823

Fax #:

Signature of Applicant

APPLICANT'S REPRESENTATIVE (if applicable)

Name: Evan Rumney, P.E.

Address: 1500 W. Canal Ct.
Littleton, CO 80120

Phone #: 720-283-6783 ext.135

Fax #:

For Staff Use Only

Staff Recommendation: Approved ☑ YES ☐ NO

Signed by:
Mark Marlowe
Signature
Director of Castle Rock Water

8/8/2025 | 10:40 AM MDT
Date

Comments

Section III of Water Quality Conformance Form revised to remove 7.37 acres of A.E.

Attachments:

☑ Water Quality Conformance Form
☑ Drainage Maps

Conditions of Acceptance

None

Docusign Envelope ID: E1FFEC91-5A1B-43D1-A9D5-C16D37B4F62E

Water Quality Conformance Form - Town MS4 Permit Requirements

The purpose of this worksheet is to document conformance with the Town of Castle Rock's MS4 permit with regard to permanent water quality on land disturbance projects.

Project Name Bella Mesa North

Project Owner Cardel

Project Location 39°22'27.47"N, 104°47'31.79"W

ToCR Project Number SDP24-0040

Total Site Area 169.8 **acres**

Total Size of Common Plan of Development 293.2 **acres**

Is the total land disturbance less than 1 acre? ☐ **YES** ☑ **NO**

Is the project part of a larger common plan of development or sale? ☐ **YES** ☐ **NO**

Is the project within the Cherry Creek Basin? ☐ **YES** ☐ **NO**

Is the project within the Plum Creek Basin? ☐ **YES** ☐ **NO**

Estimated construction completion date 2030 for all three planned filings

---

1. The water quality control measure(s) for applicable development sites shall meet one of the following base design standards per the SDDTCM Section 13.1.4, SDDTCM Section 14.4, and Section 72.7 of the Cherry Creek Reservoir Control Regulation (CCR 1002-72). Please select all standards that are applied to meet conformance with the MS4 on this site.

   - ☑ WQCV standard
   - ☐ Pollutant removal standard
   - ☐ Runoff reduction standard
   - ☐ Applicable site draining to regional WQCV control measure (accepts drainage prior to discharging to WOTS)
   - ☐ Applicable site draining to regional WQCV control facility (with receiving pervious area control measure upstream of WOTS)
   - ☐ Constrained redevelopment sites standard (Applicant may skip to Question 4 of this form)
   - ☐ Existing control measure with WQCV per previous criteria standards
     - Reference Construction Permit No. _____
   - ☑ Cherry Creek Basin only, choose one: ☐ Tier 1 ☐ Tier 2 ☑ Tier 3
   - ☐ Permanent water quality not required for this project (Applicant may skip remaining questions of this form)

Docusign Envelope ID: E1FFEC91-5A1B-43D1-A9D5-C16D37B4F62E

Water Quality Conformance Form - Town MS4 Permit Requirements

2. Was an exclusion to water quality applied as per SDDTCM Section 13.1.5? ☑ Yes ☐ No

i. For projects outside of the Cherry Creek Basin: If yes, please select all that apply, provide total excluded impervious area(s) and submit variance, as applicable: WQE No. _____

- ❒ Management site
  Excluded impervious area: _____ acres
- ❒ Roadway redevelopment
  Excluded impervious area: _____ acres
- ❒ Existing roadway areas
  Excluded impervious area: _____ acres
- ❒ Aboveground and underground utilities
- ❒ Large lot single family sites
- ❒ Non-residential and non-commercial infiltration conditions
  Excluded impervious area: _____ acres
- ❒ Land disturbance for undeveloped land to remain undeveloped
  Excluded impervious area: _____ acres
- ❒ Stream stabilization sites
  Excluded impervious area: _____ acres
- ❒ Trails
  Excluded impervious area: _____ acres
- ❒ Oil and Gas Exploration

ii. For projects within Cherry Creek Basin: If yes, please select all that apply, provide total excluded impervious area(s) and submit variance, as applicable: WQE No. _____

- ❒ Automatic Exclusion: Agricultural activities
- ☑ Automatic Exclusion: Underground utilities
- ❒ Automatic Exclusion: Residential or commercial subdivisions with existing adequate post construction BMPs
- ❒ Automatic Exclusion: Routine maintenance sites
- ❒ Automatic Exclusion: Emergency operation sites
- ☑ Automatic Exclusion: Sites with land disturbance to undeveloped land that will remain undeveloped
- ❒ Automatic Exclusion: Excluded roadway projects
- ❒ Automatic Exclusion: Large lot single family development using runoff reduction

- ❒ Authorized Exclusion: Sidewalks and Driveways
- ❒ Authorized Exclusion: Rural road construction and maintenance
- ☑ Authorized Exclusion: Trails Construction

Docusign Envelope ID: E1FFEC91-5A1B-43D1-A9D5-C16D37B4F62E

Water Quality Conformance Form - Town MS4 Permit Requirements

This section does not apply since the 7.37 acres was claimed under authorized exclusions.

3. For Development and Redevelopment sites, following any exclusions claimed above, was any portion of the site excluded up to 20% of the site and not to exceed one acre? ☑ Yes ☐ No

   If yes, complete the following:

   Excluded area: 7.37 acres

   Total Site area: 169.8 acres, 4.34 % site excluded

4. For Constrained sites, was any portion of the site excluded? Is the excluded area up to 50% of the site and not exceeding 50% of the impervious area? ☐ Yes ☐ No

   If yes, complete the following:

   Imperviousness of existing site _____/_____ (Imp. Ac/Site Ac) = ____%

   Excluded area: _____ acres

   Excluded impervious area: _____ acres

   Total Site area: _____ acres, _____ % site excluded

   Total Impervious area: _____ acres, _____ % impervious excluded

   Water Quality Exclusion Required, WQE No. _____

I:\2017\17026 - Bella Mesa\CADD\Exhibits\17026.004 - Sunset Point\17026.004 - WQ Exclusions.dwg tab: Layout1 Jun 30, 2025 - 2:27pm bbaltzer

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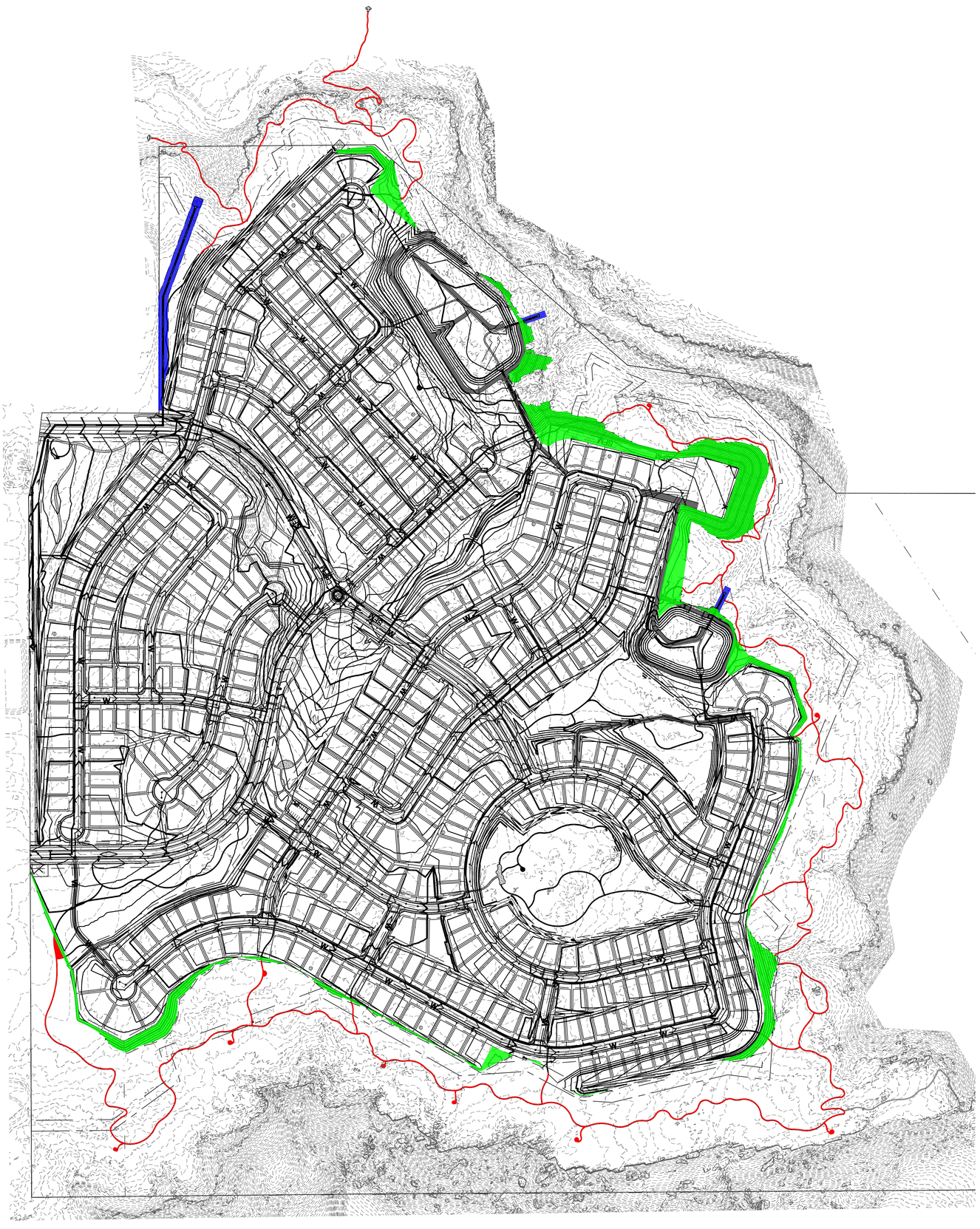


LEGEND

UNDEVELOPED AREA

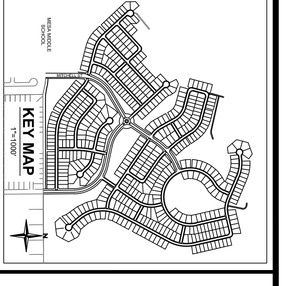
UNDERGROUND UTILITIES

TRAILS

SCALE: 1" = 200'

0 100 200 400

N



SHEET 1 of 1

BELLA MESA NORTH

SITE DEVELOPMENT PLAN

WATER QUALITY EXCLUSION MAP

PROJECT NO:		170026.004
DATE	NO.	NOTES
12.05.2024	1	FIRST SUBMITTAL TO TOWN
04.04.2025	2	SECOND SUBMITTAL TO TOWN
06.23.2025	3	THIRD SUBMITTAL TO TOWN

DATE	NO.	NOTES

NOT FOR CONSTRUCTION

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 REDLAND.COM
▪ Land Planning ▪ Civil Engineering ▪ Landscape Architecture ▪ Construction Management

Appendix B - Hydrologic Calculations

set of one hour design point rainfall values, indicated in Table 6-1, apply to the Town.

TABLE 6-1
1-HOUR POINT RAINFALL VALUES FOR
THE TOWN OF CASTLE ROCK (INCHES)

2- YR	5-YR	10-YR	50-YR	100-YR
1.06	1.43	1.66	2.26	2.60

The one-hour rainfall depths are the basis of the Town's intensity-duration rainfall curves and are used to formulate design storm distributions.

6.1.2 Intensity-Duration Curves. Rainfall intensity based on storm duration for a variety of storm return periods can be found on Figure 6-1 at the end of this chapter. These curves were developed using distribution factors provided in the NOAA Atlas and also provided in Table RA-4 of the UDFCD Manual. These Intensity-Duration curves are based on Equation RA-3 in the Rainfall Section of the UDFCD Manual.

6.1.3 Six-hour Rainfall. In order to use the Colorado Urban Hydrograph Procedure (CUHP), two, three or six-hour rainfall distributions are required, depending on watershed area. Table RA-1 in the UDFCD Manual summarizes storm durations, area adjustments, and incremental rainfall depths to be used in CUHP based on watershed area. The UD-Raincurve Spreadsheet included in the UDFCD Manual shall be used to generate the rainfall distribution curves necessary for a CUHP model. In order to generate these distribution curves, the one-hour and six-hour rainfall depths for the design return periods are necessary. Since the Town of Castle Rock is not located within UDFCD boundaries, the rainfall depth-duration-frequency curves provided in the UDFCD Manual do not provide rainfall values for the entire Town. Therefore these values are provided in these Criteria. The 1-hour point values can be found in Table 6-1 of this chapter. The six-hour point values are as follows:

TABLE 6-2
6-HOUR POINT RAINFALL VALUES FOR
THE TOWN OF CASTLE ROCK (INCHES)

2- YR	5-YR	10-YR	50-YR	100-YR
1.5	2.0	2.2	3.0	3.4

The UD-Raincurve spreadsheet shall be used for all portions of the Town. Once the rainfall distribution curves are generated using the UDFCD UD-Raincurve Spreadsheet, the CUHP model is to be set up following the procedures provided in the Runoff chapter in Volume 1 of the UDFCD Manual.

Redland

STANDARD FORM SF-1 - EXISTING RUNOFF COEFFICIENTS

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: BRB
CHECKED BY: EBR

DATE: 12/4/2025
JURISDICTION: USER DEFINED

LAND USE:	Undeveloped Land	School					
IMPERVIOUSNESS	5%	70%					

NRCS SOIL TYPE: TYPE D

OVERALL SITE STUDY AREA

DESIGN BASIN	DESIGN POINT	Undeveloped Land (AC)	School (AC)	(AC)	(AC)	(AC)	(AC)	(AC)	TOTAL AREA (AC)	$C_d(2)$	$C_d(5)$	$C_d(10)$	$C_d(100)$	Imp (%)
H1	1	105.43							105.43	0.03	0.08	0.17	0.50	5%
H2	2	123.09							123.09	0.03	0.08	0.17	0.50	5%
H3	3	64.81							64.81	0.03	0.08	0.17	0.50	5%
S1	4		13.86						13.86	0.56	0.61	0.65	0.77	70%
BASIN A		293.33	13.86						307.19	0.05	0.10	0.19	0.52	8%
		95.5%	4.5%						100.0%					

Redland

STANDARD FORM SF-2 - EXISTING
TIME OF CONCENTRATION

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: BRB
CHECKED BY: EBR

DATE: 12/4/2025
JURISDICTION: USER DEFINED

SUB-BASIN DATA			INITIAL TIME (T_i)			TRAVEL TIME (T_t)						tc CHECK (URBANIZED BASINS)			FINAL Tc	RUNOFF COEFFICIENT	
DESIGN BASIN (1)	AREA (AC) (2)	C_5 (3)	LENGTH* (FT) (4)	SLOPE (%) (5)	T_i (MINUTES) (6)	LENGTH (FT) (7)	SLOPE (%) (8)	C_v (9)	Land Surface (10)	VEL (FPS) (11)	T_t (MINUTES) (12)	COMP. t_c (13)	TOTAL LENGTH (14)	REGIONAL tc (15)	Min. t_c	C_5	C_{100}
H1	105.43	0.08	300	3.5%	21	500	6.0%	15.0	Grassed Waterway	3.7	2.3	23.7	800	25.4	23.7	0.08	0.50
H2	123.09	0.08	300	4.0%	20.5	250	7.0%	15.0	Grassed Waterway	4.0	1.0	21.5	550	25.3	21.5	0.08	0.50
H3	64.81	0.08	300	6.0%	17.9	35	12.0%	7.0	Short Pasture/Lawn	2.4	0.2	18.1	335	25.2	18.1	0.08	0.50
S1	13.86	0.61	39	2.5%	4.1	350	2.5%	20.0	Paved Areas	3.2	1.8	6.0	389	14.4	6.0	0.61	0.77

* L = 500' max for non-urban land uses and 300' max for urban land uses

$$T_i = \frac{0.395(1.1-C)L^{1/2}}{S^{1/3}}$$

$$T_t = \frac{L}{60V} \qquad V = C_v S_w^{0.5}$$

$$t_c = \frac{L}{180} + 10$$

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

Table RO-2—Conveyance Coefficient, C_v

Type of Land Surface	Conveyance Coefficient, C_v
Heavy meadow	2.5
Tillage/field	5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

Redland

STANDARD FORM SF-3 - EXISTING
STORM DRAINAGE DESIGN - RATIONAL METHOD 5 YEAR EVENT

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: BRB
CHECKED BY: EBR

P_1 (1-Hour Rainfall) = 1.43

DATE: 12/4/2025
JURISDICTION: USER DEFINED

STORM LINE	DESIGN POINT	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		DESIGN BASIN	AREA (AC)	RUNOFF COEFF C_5	t_c (minutes)	C*A(AC)	I (in/hr)	Q (cfs)	t_c(minutes)	S(C*A) (ac)	I (in/hr)	Q (cfs)	SLOPE (%)	STREET FLOW(cfs)	DESIGN FLOW(cfs)	SLOPE (%)	PIPE SIZE (in)	LENGTH (ft)	VELOCITY (fps)	t_t (Minutes)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
	1	H1	105.4	0.08	23.7	8.0	2.57	20.6	23.69	8.01	2.57	20.58									
	2	H2	123.1	0.08	21.5	9.4	2.70	25.3	21.53	9.35	2.70	25.30									
	3	H3	64.8	0.08	18.1	4.9	2.96	14.6	18.14	4.93	2.96	14.57									
	4	S1	13.9	0.61	6.0	8.4	4.61	38.9	5.99	8.44	4.61	38.94									

Redland

STANDARD FORM SF-3 - EXISTING
STORM DRAINAGE DESIGN - RATIONAL METHOD 100 YEAR EVENT

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: BRB
CHECKED BY: EBR

P_1 (1-Hour Rainfall) = 2.60

DATE: 12/4/2025
JURISDICTION: USER DEFINED

STORM LINE	DESIGN POINT	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		DESIGN BASIN	AREA (AC)	RUNOFF COEFF C_{100}	t_o (minutes)	C*A(ac)	I (in/hr)	Q (cfs)	t_o(minutes)	S(C*A) (ac)	I (in/hr)	Q (cfs)	SLOPE (%)	STREET FLOW(cfs)	DESIGN FLOW(cfs)	SLOPE (%)	PIPE SIZE (in)	LENGTH (ft)	VELOCITY (fps)	t_t (minutes)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
	H1	H1	105.4	0.50	23.7	53.2	4.67	248.4													
	H2	H2	123.1	0.50	21.5	62.1	4.92	305.4													
	H3	H3	64.8	0.50	18.1	32.7	5.38	175.9													
	S1	S1	13.9	0.77	6.0	10.7	8.39	89.6													

Redland

PROJECT NAME:	Bella Mesa North	DATE:	12/4/2025
PROJECT NUMBER:	17026.004	JURISDICTION:	USER DEFINED
CALCULATED BY:	BRB		
CHECKED BY:	EBR		

Existing Basin Summary Table

Basin	Area (AC)	Runoff Coefficients		I (%)	Peak Flows (cfs)	
		C_5	C_{100}		Q_5	Q_{100}
H1	105.43	0.08	0.50	5%	20.6	248.4
H2	123.09	0.08	0.50	5%	25.3	305.4
H3	64.81	0.08	0.50	5%	14.6	175.9
S1	13.86	0.61	0.77	70%	38.9	89.6

Redland

STANDARD FORM SF-1 - DEVELOPED RUNOFF COEFFICIENTS

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: WFS
CHECKED BY: EBR

DATE: 5/20/2026
JURISDICTION: USER DEFINED

LAND USE:	SFH Low/Medium Density (3-5 DU/AC)	Paved Road	Undeveloped Land	Gravel Road	Lawn	School	Park
IMPERVIOUSNESS	55%	100%	5%	60%	20%	70%	15%

NRCS SOIL TYPE: TYPE D

OVERALL SITE STUDY AREA

DESIGN BASIN	DESIGN POINT	SFH Low/Medium Density (3-5 DU/AC) (AC)	Paved Road (AC)	Undeveloped Land (AC)	Gravel Road (AC)	Lawn (AC)	School (AC)	Park (AC)	TOTAL AREA (AC)	$C_d(2)$	$C_d(5)$	$C_d(10)$	$C_d(100)$	Imp (%)
A1	A1	0.55	0.14		0.01	0.05			**0.75**	0.48	0.54	0.59	0.74	62%
A2	A2	0.76	0.15						**0.91**	0.49	0.55	0.59	0.74	63%
A3	A3	0.20	0.12						**0.32**	0.57	0.62	0.66	0.78	71%
A4	A4	0.58	0.13			0.07			**0.78**	0.46	0.52	0.57	0.73	59%
A5	A5	0.13	0.09						**0.22**	0.59	0.64	0.68	0.78	73%
A6	A6	1.21	0.23						**1.44**	0.49	0.55	0.59	0.74	62%
A7	A7	0.31	0.17						**0.48**	0.57	0.62	0.66	0.78	71%
A8	A8	0.22	0.17			0.03			**0.42**	0.56	0.61	0.65	0.77	70%
A9	A9	0.26	0.23			0.07			**0.56**	0.55	0.60	0.64	0.77	69%
A10	A10	0.60	0.13						**0.73**	0.49	0.55	0.60	0.74	63%
A11	A11	0.86	0.17						**1.03**	0.49	0.55	0.59	0.74	63%
A12	A12	0.23	0.14						**0.37**	0.57	0.63	0.67	0.78	72%
A13	A13	0.43	0.20						**0.63**	0.55	0.60	0.64	0.77	69%
A14	A14	1.27	0.23						**1.50**	0.48	0.54	0.59	0.74	62%
A15	A15	0.77	0.35						**1.12**	0.55	0.60	0.64	0.77	69%
A16	A16	0.37	0.15						**0.51**	0.54	0.59	0.63	0.76	68%
A17	A17	0.80	0.17						**0.97**	0.49	0.55	0.60	0.74	63%
A18	A18	0.21	0.11						**0.32**	0.56	0.62	0.66	0.77	71%
A18A	A18A	0.30	0.10						**0.40**	0.52	0.58	0.62	0.76	66%
A19	A19	0.51	0.23						**0.74**	0.55	0.60	0.64	0.77	69%
A20	A20	1.02	0.13						**1.15**	0.47	0.53	0.58	0.73	60%
A21	A21	0.68	0.22						**0.90**	0.52	0.58	0.62	0.75	66%
A22	A22	0.40	0.29						**0.69**	0.59	0.64	0.68	0.79	74%
A23	A23	0.30	0.16						**0.46**	0.56	0.61	0.65	0.77	71%
A23A	A23A	0.23	0.08			0.20			**0.51**	0.37	0.43	0.49	0.68	49%
A23B	A23B	0.07	0.16			0.15			**0.39**	0.47	0.53	0.58	0.73	60%
A24	A24	0.51	0.24						**0.75**	0.55	0.60	0.64	0.77	69%
A25	A25	0.73	0.15			0.44			**1.32**	0.37	0.43	0.49	0.68	49%
A26	A26	1.16	0.30			0.35			**1.81**	0.43	0.49	0.54	0.71	56%
A27	A27	1.45	2.88	2.67	0.08	2.49			**9.56**	0.34	0.41	0.47	0.67	46%
A28	A28	1.25				2.46			**3.71**	0.23	0.30	0.37	0.61	32%
A29	A29		0.32			0.03			**0.35**	0.77	0.80	0.82	0.87	93%
A30	A30	0.16	0.41			0.11			**0.68**	0.62	0.66	0.70	0.80	77%
A30A	A30A	0.19	0.12						**0.31**	0.58	0.63	0.67	0.78	73%
A31	A31							3.59	**3.59**	0.10	0.16	0.24	0.55	15%
A32	A32		0.16						**0.16**	0.83	0.86	0.87	0.89	100%
A33	A33	0.99	0.44			0.57			**2.00**	0.42	0.48	0.54	0.71	55%

Redland

STANDARD FORM SF-1 - DEVELOPED RUNOFF COEFFICIENTS

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: WFS
CHECKED BY: EBR

DATE: 5/20/2026
JURISDICTION: USER DEFINED

LAND USE:	SFH Low/Medium Density (3-5 DU/AC)	Paved Road	Undeveloped Land	Gravel Road	Lawn	School	Park
IMPERVIOUSNESS	55%	100%	5%	60%	20%	70%	15%

NRCS SOIL TYPE: TYPE D

OVERALL SITE STUDY AREA

DESIGN BASIN	DESIGN POINT	SFH Low/Medium Density (3-5 DU/AC) (AC)	Paved Road (AC)	Undeveloped Land (AC)	Gravel Road (AC)	Lawn (AC)	School (AC)	Park (AC)	TOTAL AREA (AC)	$C_d(2)$	$C_d(5)$	$C_d(10)$	$C_d(100)$	Imp (%)
A34	A34		0.25						0.25	0.83	0.86	0.87	0.89	100%
A35	A35	0.48	0.59			0.72			1.79	0.43	0.49	0.54	0.71	56%
A36	A36	0.09	0.63			0.04			0.77	0.74	0.77	0.80	0.85	90%
A37	A37		0.86			0.26			1.12	0.66	0.70	0.73	0.82	81%
A38	A38		0.86			0.09			0.95	0.76	0.79	0.82	0.86	92%
A39	A39		0.58						0.58	0.83	0.86	0.87	0.89	100%
A40	A40	0.51	0.42			0.33			1.26	0.47	0.53	0.58	0.73	61%
A41	A41	0.09	0.26			0.35			0.71	0.42	0.48	0.53	0.71	54%
A42	A42		0.43			0.19			0.62	0.61	0.66	0.69	0.80	76%
A43	A43		0.41			0.18			0.59	0.61	0.66	0.69	0.80	76%
A44	A44	0.24	0.19						0.42	0.60	0.65	0.69	0.79	75%
A44A	A44A	0.46	0.24			0.01			0.71	0.56	0.61	0.65	0.77	70%
A45	A45	1.89	0.23						2.12	0.47	0.53	0.58	0.73	60%
A46	A46	0.08	0.06						0.14	0.59	0.64	0.68	0.79	74%
A47	A47	0.18	0.14						0.32	0.60	0.65	0.68	0.79	75%
A48	A48	1.07	0.24			0.38			1.69	0.41	0.47	0.53	0.70	53%
A49	A49	1.78	0.22						2.00	0.47	0.53	0.58	0.73	60%
A50	A50	0.97	0.17						1.14	0.48	0.54	0.59	0.74	62%
A51	A51	0.17	0.08						0.25	0.55	0.61	0.65	0.77	70%
A52	A52	0.55	0.26						0.81	0.55	0.60	0.65	0.77	69%
A52A	A52A	0.29	0.19						0.48	0.58	0.63	0.67	0.78	73%
A53	A53	0.74	0.33						1.07	0.55	0.60	0.64	0.77	69%
A54	A54	1.88	0.44						2.32	0.50	0.56	0.60	0.74	64%
A55	A55	0.76	0.18			0.09			1.03	0.47	0.53	0.57	0.73	60%
A56	A56	0.51	0.11						0.61	0.49	0.55	0.60	0.74	63%
A57	A57	0.84	0.18						1.02	0.49	0.55	0.60	0.74	63%
A58	A58	0.92	0.19			0.08			1.20	0.47	0.53	0.58	0.73	60%
A59	A59	0.62	0.19						0.81	0.52	0.57	0.62	0.75	66%
A59A	A59A	0.13	0.08						0.21	0.58	0.63	0.67	0.78	72%
A60	A60	0.58	0.22						0.80	0.53	0.59	0.63	0.76	67%
A61	A61	0.88	0.28						1.16	0.52	0.58	0.62	0.75	66%
A62	A62	0.43	0.31			0.05			0.79	0.56	0.61	0.65	0.77	70%
A63	A63		0.42						0.42	0.83	0.86	0.87	0.89	100%
A64	A64		0.56			0.12			0.68	0.70	0.74	0.77	0.84	86%
A65	A65					1.58			1.58	0.14	0.20	0.28	0.57	20%
A65A	A65A	1.09				1.14			2.23	0.27	0.34	0.41	0.64	37%
A66	A66	2.17				1.68			3.85	0.29	0.36	0.43	0.65	40%

Redland

STANDARD FORM SF-1 - DEVELOPED RUNOFF COEFFICIENTS

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: WFS
CHECKED BY: EBR

DATE: 5/20/2026
JURISDICTION: USER DEFINED

LAND USE:	SFH Low/Medium Density (3-5 DU/AC)	Paved Road	Undeveloped Land	Gravel Road	Lawn	School	Park
IMPERVIOUSNESS	55%	100%	5%	60%	20%	70%	15%

NRCS SOIL TYPE: TYPE D

OVERALL SITE STUDY AREA

DESIGN BASIN	DESIGN POINT	SFH Low/Medium Density (3-5 DU/AC) (AC)	Paved Road (AC)	Undeveloped Land (AC)	Gravel Road (AC)	Lawn (AC)	School (AC)	Park (AC)	TOTAL AREA (AC)	$C_d(2)$	$C_d(5)$	$C_d(10)$	$C_d(100)$	Imp (%)
A67	A67	0.70	0.05						0.75	0.45	0.51	0.56	0.72	58%
A68	A68	0.99	0.21						1.19	0.49	0.55	0.60	0.74	63%
A69	A69	0.59	0.50			0.08		0.30	1.47	0.47	0.53	0.58	0.73	61%
A70	A70					2.02		2.02	4.04	0.12	0.18	0.26	0.56	18%
A71	A71						13.86		13.86	0.56	0.61	0.65	0.77	70%
A72	A72							2.00	2.00	0.10	0.16	0.24	0.55	15%
BASIN A		42.37	21.05	2.67	0.09	16.41	13.86	7.91	104.35	0.44	0.50	0.55	0.71	**56%**
		40.6%	**20.2%**	**2.6%**	**0.1%**	**15.7%**	**13.3%**	**7.6%**	**100.0%**					
IB1			1.34	13.62	0.11		1.31		16.38	0.12	0.19	0.27	0.56	18%
BASIN B			1.34	13.62	0.11		1.31		16.38	0.12	0.19	0.27	0.56	**18%**
			8.2%	**83.2%**	**0.7%**		**8.0%**		**100.0%**					

Redland

STANDARD FORM SF-2 - DEVELOPED TIME OF CONCENTRATION

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: WFS
CHECKED BY: EBR

DATE: 5/20/2026
JURISDICTION: USER DEFINED

SUB-BASIN DATA			INITIAL TIME (T_i)			TRAVEL TIME (T_t)						tc CHECK (URBANIZED BASINS)			FINAL Tc	RUNOFF COEFFICIENT	
DESIGN BASIN (1)	AREA (AC) (2)	C_5 (3)	LENGTH* (FT) (4)	SLOPE (%) (5)	T_i (MINUTES) (6)	LENGTH (FT) (7)	SLOPE (%) (8)	C_v (9)	Land Surface (10)	VEL (FPS) (11)	T_t (MINUTES) (12)	COMP. t_c (13)	TOTAL LENGTH (14)	REGIONAL tc (15)	Min. t_c	C_5	C_{100}
A1	0.75	0.54	115	2.0%	9	85	1.0%	20.0	Paved Areas	2.0	0.7	9.5	200	15.6	9.5	0.54	0.74
A2	0.91	0.55	140	2.0%	9.5	240	1.3%	20.0	Paved Areas	2.2	1.8	11.3	380	15.6	11.3	0.55	0.74
A3	0.32	0.62	45	2.0%	4.7	125	1.3%	20.0	Paved Areas	2.2	0.9	5.6	170	14.0	5.6	0.62	0.78
A4	0.78	0.52	130	2.0%	9.6	185	2.2%	20.0	Paved Areas	2.9	1.1	10.7	315	16.1	10.7	0.52	0.73
A5	0.22	0.64	85	2.0%	6.2	60	2.2%	20.0	Paved Areas	2.9	0.3	6.6	145	13.6	6.6	0.64	0.78
A6	1.44	0.55	140	2.0%	9.5	365	2.2%	20.0	Paved Areas	3.0	2.1	11.6	505	15.7	11.6	0.55	0.74
A7	0.48	0.62	80	2.0%	6.3	195	2.2%	20.0	Paved Areas	3.0	1.1	7.4	275	14.1	7.4	0.62	0.78
A8	0.42	0.61	75	2.0%	6.2	150	1.9%	20.0	Paved Areas	2.8	0.9	7.1	225	14.2	7.1	0.61	0.77
A9	0.56	0.60	65	2.0%	5.8	385	1.5%	20.0	Paved Areas	2.4	2.6	8.5	450	14.6	8.5	0.60	0.77
A10	0.73	0.55	195	2.0%	11.2	135	1.5%	20.0	Paved Areas	2.4	0.9	12.1	330	15.4	12.1	0.55	0.74
A11	1.03	0.55	150	2.5%	9.1	180	1.5%	20.0	Paved Areas	2.4	1.2	10.4	330	15.6	10.4	0.55	0.74
A12	0.37	0.63	65	2.0%	5.6	220	3.0%	20.0	Paved Areas	3.5	1.1	6.6	285	13.9	6.6	0.63	0.78
A13	0.63	0.60	62	2.0%	5.7	305	1.4%	20.0	Paved Areas	2.4	2.1	7.8	367	14.5	7.8	0.60	0.77
A14	1.50	0.54	250	4.3%	9.9	150	1.3%	20.0	Paved Areas	2.3	1.1	11.0	400	15.7	11.0	0.54	0.74
A15	1.12	0.60	50	2.0%	5.1	450	2.7%	20.0	Paved Areas	3.3	2.3	7.4	500	14.6	7.4	0.60	0.77
A16	0.51	0.59	145	2.5%	8.29	150	2.7%	20.00	Paved Areas	3.29	0.8	9.1	295	14.6	9.1	0.59	0.76
A17	0.97	0.55	115	2.5%	8.0	275	2.9%	20.00	Paved Areas	3.4	1.3	9.3	390	15.5	9.3	0.55	0.74
A18	0.32	0.62	35	8.0%	2.6	160	2.5%	20.00	Paved Areas	3.2	0.8	3.5	195	14.1	5.0	0.62	0.77
A18A	0.40	0.58	170	2.5%	9.2	85	2.2%	20.00	Paved Areas	3.0	0.5	9.7	255	14.8	9.7	0.58	0.76
A19	0.74	0.60	75	2.0%	6.3	340	1.6%	20.00	Paved Areas	2.5	2.2	8.5	415	14.6	8.5	0.60	0.77
A20	1.15	0.53	190	4.0%	9.1	210	1.8%	20.00	Paved Areas	2.7	1.3	10.4	400	16.0	10.4	0.53	0.73
A21	0.90	0.58	220	3.5%	9.4	275	1.4%	20.00	Paved Areas	2.4	1.9	11.3	495	15.1	11.3	0.58	0.75
A22	0.69	0.64	85	2.0%	6.2	255	3.1%	20.00	Paved Areas	3.5	1.2	7.4	340	13.7	7.4	0.64	0.79
A23	0.46	0.61	270	2.9%	10.3	245	2.4%	20.00	Paved Areas	3.1	1.3	11.6	515	14.2	11.6	0.61	0.77
A23A	0.51	0.43	270	2.9%	14.1	30	1.4%	20.00	Paved Areas	2.4	0.2	14.3	300	17.8	14.3	0.43	0.68
A23B	0.39	0.53	75	2.0%	7.2	145	1.5%	20.00	Paved Areas	2.4	1.0	8.2	220	16.0	8.2	0.53	0.73
A24	0.75	0.60	60	2.0%	5.6	375	1.4%	20.00	Paved Areas	2.4	2.6	8.3	435	14.6	8.3	0.60	0.77
A25	1.32	0.43	160	4.5%	9.4	290	1.4%	20.00	Paved Areas	2.4	2.0	11.4	450	18.1	11.4	0.43	0.68
A26	1.81	0.49	175	2.4%	11.0	420	2.0%	20.00	Paved Areas	2.8	2.5	13.5	595	16.9	13.5	0.49	0.71
A27	9.56	0.41	200	2.5%	13.2	575	5.8%	20.00	Paved Areas	4.8	2.0	15.2	775	18.6	15.2	0.41	0.67
A28	3.71	0.30	100	8.0%	7.4	635	1.0%	20.00	Paved Areas	2.0	5.3	12.7	735	21.4	12.7	0.30	0.61
A29	0.35	0.80	50	2.0%	3.1	90	0.8%	20.00	Paved Areas	1.7	0.9	4.0	140	10.3	5.0	0.80	0.87
A30	0.68	0.66	65	2.0%	5.1	150	1.5%	20.00	Paved Areas	2.4	1.0	6.2	215	13.1	6.2	0.66	0.80
A30A	0.31	0.63	60	2.0%	5.3	65	1.5%	20.00	Paved Areas	2.4	0.4	5.7	125	13.6	5.7	0.63	0.78
A31	3.59	0.16	135	4.5%	12.2	765	3.3%	10.00	Nearly Bare Ground	1.8	7.0	19.2	900	24.0	19.2	0.16	0.55
A32	0.16	0.86	25	2.0%	1.8	120	1.5%	20.00	Paved Areas	2.4	0.8	2.6	145	9.1	5.0	0.86	0.89
A33	2.00	0.48	300	4.8%	11.6	345	1.2%	20.00	Paved Areas	2.2	2.6	14.2	645	17.1	14.2	0.48	0.71
A34	0.25	0.86	40	2.0%	2.3	225	1.2%	20.00	Paved Areas	2.2	1.7	4.0	265	9.2	5.0	0.86	0.89
A35	1.79	0.49	130	2.0%	10.1	590	1.6%	20.00	Paved Areas	2.5	3.9	14.0	720	17.1	14.0	0.49	0.71
A36	0.77	0.77	120	2.0%	5.2	625	1.5%	20.00	Paved Areas	2.4	4.3	9.5	745	11.3	9.5	0.77	0.85
A37	1.12	0.70	25	2.0%	2.9	800	2.8%	20.00	Paved Areas	3.3	4.0	6.9	825	12.8	6.9	0.70	0.82
A38	0.95	0.79	25	2.0%	2.2	800	2.8%	20.00	Paved Areas	3.3	4.0	6.2	825	10.9	6.2	0.79	0.86
A39	0.58	0.86	25	2.0%	1.8	670	3.2%	20.00	Paved Areas	3.6	3.1	4.9	695	9.4	5.0	0.86	0.89
A40	1.26	0.53	150	2.5%	9.4	455	3.6%	20.00	Paved Areas	3.8	2.0	11.4	605	16.0	11.4	0.53	0.73
A41	0.71	0.48	100	4.0%	7.2	310	2.4%	20.00	Paved Areas	3.1	1.7	8.8	410	17.0	8.8	0.48	0.71
A42	0.62	0.66	45	2.0%	4.3	500	2.2%	20.00	Paved Areas	2.9	2.8	7.2	545	13.5	7.2	0.66	0.80

Redland

STANDARD FORM SF-2 - DEVELOPED TIME OF CONCENTRATION

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: WFS
CHECKED BY: EBR

DATE: 5/20/2026
JURISDICTION: USER DEFINED

SUB-BASIN DATA			INITIAL TIME (T_i)			TRAVEL TIME (T_t)						tc CHECK (URBANIZED BASINS)			FINAL Tc	RUNOFF COEFFICIENT	
DESIGN BASIN (1)	AREA (AC) (2)	C_5 (3)	LENGTH* (FT) (4)	SLOPE (%) (5)	T_i (MINUTES) (6)	LENGTH (FT) (7)	SLOPE (%) (8)	C_v (9)	Land Surface (10)	VEL (FPS) (11)	T_t (MINUTES) (12)	COMP. t_c (13)	TOTAL LENGTH (14)	REGIONAL tc (15)	Min. t_c	C_5	C_{100}
A43	0.59	0.66	25	2.0%	3.2	480	2.2%	20.00	Paved Areas	3.0	2.7	5.9	505	13.5	5.9	0.66	0.80
A44	0.42	0.65	140	2.5%	7.2	145	1.3%	20.00	Paved Areas	2.3	1.1	8.3	285	13.4	8.3	0.65	0.79
A44A	0.71	0.61	62	2.5%	5.2	375	1.4%	20.00	Paved Areas	2.4	2.6	7.9	437	14.5	7.9	0.61	0.77
A45	2.12	0.53	225	3.2%	10.7	210	1.3%	20.00	Paved Areas	2.3	1.5	12.2	435	16.0	12.2	0.53	0.73
A46	0.14	0.64	80	2.0%	6.0	20	2.3%	20.00	Paved Areas	3.0	0.1	6.1	100	13.4	6.1	0.64	0.79
A47	0.32	0.65	115	2.5%	6.6	175	2.0%	20.00	Paved Areas	2.8	1.0	7.6	290	13.5	7.6	0.65	0.79
A48	1.69	0.47	215	3.3%	11.3	405	2.4%	20.00	Paved Areas	3.1	2.2	13.5	620	17.2	13.5	0.47	0.70
A49	2.00	0.53	235	2.5%	11.9	385	2.6%	20.00	Paved Areas	3.2	2.0	13.9	620	16.1	13.9	0.53	0.73
A50	1.14	0.54	230	2.5%	11.5	280	2.3%	20.00	Paved Areas	3.0	1.5	13.0	510	15.8	13.0	0.54	0.74
A51	0.25	0.61	60	2.0%	5.6	90	2.3%	20.00	Paved Areas	3.0	0.5	6.1	150	14.2	6.1	0.61	0.77
A52	0.81	0.60	70	2.0%	6.0	235	1.2%	20.00	Paved Areas	2.2	1.8	7.8	305	14.5	7.8	0.60	0.77
A52A	0.48	0.63	75	2.0%	5.9	215	1.2%	20.00	Paved Areas	2.2	1.6	7.6	290	13.9	7.6	0.63	0.78
A53	1.07	0.60	80	2.0%	6.5	520	1.3%	20.00	Paved Areas	2.2	3.9	10.4	600	14.8	10.4	0.60	0.77
A54	2.32	0.56	75	2.0%	6.8	790	1.5%	20.00	Paved Areas	2.4	5.4	12.2	865	16.0	12.2	0.56	0.74
A55	1.03	0.53	125	2.5%	8.7	290	1.5%	20.00	Paved Areas	2.4	2.0	10.7	415	16.1	10.7	0.53	0.73
A56	0.61	0.55	125	2.5%	8.3	140	1.5%	20.00	Paved Areas	2.4	1.0	9.3	265	15.5	9.3	0.55	0.74
A57	1.02	0.55	130	2.5%	8.4	285	1.5%	20.00	Paved Areas	2.4	1.9	10.4	415	15.6	10.4	0.55	0.74
A58	1.20	0.53	125	2.5%	8.7	310	1.6%	20.00	Paved Areas	2.5	2.0	10.7	435	16.1	10.7	0.53	0.73
A59	0.81	0.57	75	2.5%	6.2	275	1.3%	20.00	Paved Areas	2.3	2.0	8.2	350	15.1	8.2	0.57	0.75
A59A	0.21	0.63	75	2.5%	5.5	75	1.0%	20.00	Paved Areas	2.0	0.6	6.1	150	13.8	6.1	0.63	0.78
A60	0.80	0.59	75	2.0%	6.5	370	1.3%	20.00	Paved Areas	2.3	2.7	9.2	445	14.9	9.2	0.59	0.76
A61	1.16	0.58	70	2.0%	6.4	405	1.6%	20.00	Paved Areas	2.5	2.7	9.1	475	15.2	9.1	0.58	0.75
A62	0.79	0.61	45	2.0%	4.8	460	1.6%	20.00	Paved Areas	2.5	3.0	7.8	505	14.5	7.8	0.61	0.77
A63	0.42	0.86	70	2.0%	3.0	180	0.8%	20.00	Paved Areas	1.8	1.7	4.7	250	9.2	5.0	0.86	0.89
A64	0.68	0.74	35	2.0%	3.1	195	0.8%	20.00	Paved Areas	1.8	1.8	4.9	230	11.6	5.0	0.74	0.84
A65	1.58	0.20	50	2.0%	9.3	515	1.4%	20.00	Paved Areas	2.4	3.6	12.9	565	23.2	12.9	0.20	0.57
A65A	2.23	0.34	40	3.0%	6.1	435	1.0%	20.00	Paved Areas	2.0	3.6	9.7	475	20.2	9.7	0.34	0.64
A66	3.85	0.36	95	2.0%	10.5	830	1.4%	20.00	Paved Areas	2.4	5.8	16.3	925	20.1	16.3	0.36	0.65
A67	0.75	0.51	75	2.5%	6.9	325	3.2%	20.00	Paved Areas	3.6	1.5	8.4	400	16.4	8.4	0.51	0.72
A68	1.19	0.55	130	2.5%	8.5	320	3.2%	20.00	Paved Areas	3.6	1.5	10.0	450	15.6	10.0	0.55	0.74
A69	1.47	0.53	120	2.5%	8.4	360	3.2%	20.00	Paved Areas	3.6	1.7	10.1	480	16.0	10.1	0.53	0.73
A70	4.04	0.18	360	1.6%	27.4	815	0.5%	20.00	Paved Areas	1.4	9.6	37.0	1175	24.5	24.5	0.18	0.56
A71	13.86	0.61	170	2.0%	9.3	620	2.0%	20.00	Paved Areas	2.8	3.7	13.0	790	14.6	13.0	0.61	0.77
A72	2.00	0.16	45	2.0%	9.2	1100	1.7%	20.00	Paved Areas	2.6	7.0	16.2	1145	24.5	16.2	0.16	0.55

* L = 500' max for non-urban land uses and 300' max for urban land uses

$$T_i = \frac{0.395(1.1-C)L^{1/2}}{S^{1/3}}$$

$$T_t = \frac{L}{60V} \qquad V = C_v S_w^{0.5}$$

$$t_c = \frac{L}{180} + 10$$

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

Table RO-2—Conveyance Coefficient, C_v

Type of Land Surface	Conveyance Coefficient, C_v
Heavy meadow	2.5
Tillage/field	5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

Redland

STANDARD FORM SF-3 - DEVELOPED
STORM DRAINAGE DESIGN - RATIONAL METHOD 5 YEAR EVENT

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: WFS
CHECKED BY: EBR

P_1 (1-Hour Rainfall) = 1.43

DATE: 5/20/2026
JURISDICTION: USER DEFINE

STORM LINE	DESIGN POINT	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		DESIGN BASIN	AREA (AC)	RUNOFF COEFF C_5	t_c (minutes)	C*A(AC)	I (in/hr)	Q (cfs)	t_c(minutes)	S(C*A) (ac)	I (in/hr)	Q (cfs)	SLOPE (%)	STREET FLOW(cfs)	DESIGN FLOW(cfs)	SLOPE (%)	PIPE SIZE (in)	LENGTH (ft)	VELOCITY (fps)	t_t (Minutes)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
	A1	A1	0.8	0.54	9.5	0.4	3.95	1.6													
	A2	A2	0.9	0.55	11.3	0.5	3.68	1.8													
	A3	A3	0.3	0.62	5.6	0.2	4.70	0.9													
	A4	A4	0.8	0.52	10.7	0.4	3.77	1.5													
	A5	A5	0.2	0.64	6.6	0.1	4.49	0.6													
	A6	A6	1.4	0.55	11.6	0.8	3.64	2.9													
	A7	A7	0.5	0.62	7.4	0.3	4.32	1.3													
	A8	A8	0.4	0.61	7.1	0.3	4.38	1.1													
	A9	A9	0.6	0.60	8.5	0.3	4.12	1.4													
	A10	A10	0.7	0.55	12.1	0.4	3.58	1.4													
	A11	A11	1.0	0.55	10.4	0.6	3.81	2.1													
	A12	A12	0.4	0.63	6.6	0.2	4.48	1.0													
	A13	A13	0.6	0.60	7.8	0.4	4.24	1.6													
	A14	A14	1.5	0.54	11.0	0.8	3.72	3.0													
	A15	A15	1.1	0.60	7.4	0.7	4.31	2.9													
	A16	A16	0.5	0.59	9.1	0.3	4.02	1.2													
	A17	A17	1.0	0.55	9.3	0.5	3.97	2.1													
	A18	A18	0.3	0.62	5.0	0.2	4.85	1.0													
	A18A	A18A	0.4	0.58	9.7	0.2	3.92	0.9													
	A19	A19	0.7	0.60	8.5	0.4	4.11	1.8													
	A20	A20	1.2	0.53	10.4	0.6	3.81	2.3													
	A21	A21	0.9	0.58	11.3	0.5	3.68	1.9													
	A22	A22	0.7	0.64	7.4	0.4	4.32	1.9													
	A23	A23	0.5	0.61	11.6	0.3	3.64	1.0													
	A23A	A23A	0.5	0.43	14.3	0.2	3.32	0.7													
	A23B	A23B	0.4	0.53	8.2	0.2	4.16	0.9													
	A24	A24	0.8	0.60	8.3	0.5	4.16	1.9													
	A25	A25	1.3	0.43	11.4	0.6	3.67	2.1													
	A26	A26	1.8	0.49	13.5	0.9	3.41	3.0													
	A27	A27	9.6	0.41	15.2	3.9	3.22	12.6													
	A28	A28	3.7	0.30	12.7	1.1	3.51	3.8													
	A29	A29	0.4	0.80	5.0	0.3	4.85	1.4													
	A30	A30	0.7	0.66	6.2	0.5	4.58	2.1													
	A30A	A30A	0.3	0.63	5.7	0.2	4.68	0.9													
	A31	A31	3.6	0.16	19.2	0.6	2.88	1.6													
	A32	A32	0.2	0.86	5.0	0.1	4.85	0.7													
	A33	A33	2.0	0.48	14.2	1.0	3.33	3.2													
	A34	A34	0.3	0.86	5.0	0.2	4.85	1.0													
	A35	A35	1.8	0.49	14.0	0.9	3.36	3.0													
	A36	A36	0.8	0.77	9.5	0.6	3.95	2.4													
	A37	A37	1.1	0.70	6.9	0.8	4.42	3.5													
	A38	A38	1.0	0.79	6.2	0.8	4.56	3.4													
	A39	A39	0.6	0.86	5.0	0.5	4.85	2.4													
	A40	A40	1.3	0.53	11.4	0.7	3.67	2.5													
	A41	A41	0.7	0.48	8.8	0.3	4.06	1.4													
	A42	A42	0.6	0.66	7.2	0.4	4.36	1.8													
	A43	A43	0.6	0.66	5.9	0.4	4.63	1.8													
	A44	A44	0.4	0.65	8.3	0.3	4.15	1.1													

Redland

STANDARD FORM SF-3 - DEVELOPED
STORM DRAINAGE DESIGN - RATIONAL METHOD 5 YEAR EVENT

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: WFS
CHECKED BY: EBR

P_1 (1-Hour Rainfall) = 1.43

DATE: 5/20/2026
JURISDICTION: USER DEFINE

STORM LINE	DESIGN POINT	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		DESIGN BASIN	AREA (AC)	RUNOFF COEFF C_5	t_c (minutes)	C*A(AC)	I (in/hr)	Q (cfs)	t_c(minutes)	S(C*A) (ac)	I (in/hr)	Q (cfs)	SLOPE (%)	STREET FLOW(cfs)	DESIGN FLOW(cfs)	SLOPE (%)	PIPE SIZE (in)	LENGTH (ft)	VELOCITY (fps)	t_t (Minutes)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
	A44A	A44A	0.7	0.61	7.9	0.4	4.23	1.8													
	A45	A45	2.1	0.53	12.2	1.1	3.56	4.0													
	A46	A46	0.1	0.64	6.1	0.1	4.59	0.4													
	A47	A47	0.3	0.65	7.6	0.2	4.28	0.9													
	A48	A48	1.7	0.47	13.5	0.8	3.41	2.7													
	A49	A49	2.0	0.53	13.9	1.1	3.37	3.5													
	A50	A50	1.1	0.54	13.0	0.6	3.47	2.1													
	A51	A51	0.3	0.61	6.1	0.2	4.60	0.7													
	A52	A52	0.8	0.60	7.8	0.5	4.24	2.1													
	A52A	A52A	0.5	0.63	7.6	0.3	4.29	1.3													
	A53	A53	1.1	0.60	10.4	0.6	3.81	2.5													
	A54	A54	2.3	0.56	12.2	1.3	3.56	4.6													
	A55	A55	1.0	0.53	10.7	0.5	3.77	2.0													
	A56	A56	0.6	0.55	9.3	0.3	3.98	1.3													
	A57	A57	1.0	0.55	10.4	0.6	3.81	2.1													
	A58	A58	1.2	0.53	10.7	0.6	3.76	2.4													
	A59	A59	0.8	0.57	8.2	0.5	4.17	1.9													
	A59A	A59A	0.2	0.63	6.1	0.1	4.58	0.6													
	A60	A60	0.8	0.59	9.2	0.5	4.00	1.9													
	A61	A61	1.2	0.58	9.1	0.7	4.02	2.7													
	A62	A62	0.8	0.61	7.8	0.5	4.24	2.0													
	A63	A63	0.4	0.86	5.0	0.4	4.85	1.7													
	A64	A64	0.7	0.74	5.0	0.5	4.85	2.5													
	A65	A65	1.6	0.20	12.9	0.3	3.48	1.1													
	A65A	A65A	2.2	0.34	9.7	0.8	3.91	3.0													
	A66	A66	3.9	0.36	16.3	1.4	3.12	4.3													
	A67	A67	0.8	0.51	8.4	0.4	4.13	1.6													
	A68	A68	1.2	0.55	10.0	0.7	3.87	2.5													
	A69	A69	1.5	0.53	10.1	0.8	3.86	3.0													
	A70	A70	4.0	0.18	24.5	0.7	2.52	1.8													
	A71	A71	13.9	0.61	13.0	8.4	3.47	29.3													
	A72	A72	2.0	0.16	16.2	0.3	3.13	1.0													

Redland

STANDARD FORM SF-3 - DEVELOPED
STORM DRAINAGE DESIGN - RATIONAL METHOD 100 YEAR EVENT

PROJECT NAME: Bella Mesa North
PROJECT NUMBER: 17026.004
CALCULATED BY: WFS
CHECKED BY: EBR

P_1 (1-Hour Rainfall) = 2.60

DATE: 5/20/2026
JURISDICTION: USER DEFINED

STORM LINE	DESIGN POINT	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		DESIGN BASIN	AREA (AC)	RUNOFF COEFF C_{100}	t_c (minutes)	C*A(ac)	I (In/hr)	Q (cfs)	t_c(minutes)	S(C*A) (ac)	I (In/hr)	Q (cfs)	SLOPE (%)	STREET FLOW(cfs)	DESIGN FLOW(cfs)	SLOPE (%)	PIPE SIZE (In)	LENGTH (ft)	VELOCITY (fps)	t_t (minutes)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
	A1	A1	0.8	0.74	9.5	0.6	7.19	4.0													
	A2	A2	0.9	0.74	11.3	0.7	6.70	4.5													
	A3	A3	0.3	0.78	5.6	0.3	8.55	2.1													
	A4	A4	0.8	0.73	10.7	0.6	6.85	3.9													
	A5	A5	0.2	0.78	6.6	0.2	8.16	1.4													
	A6	A6	1.4	0.74	11.6	1.1	6.62	7.0													
	A7	A7	0.5	0.78	7.4	0.4	7.86	2.9	11.60	3.65	6.62	24.19									A1-A7, FOREBAY 1
	A8	A8	0.4	0.77	7.1	0.3	7.97	2.6													
	A9	A9	0.6	0.77	8.5	0.4	7.49	3.2													
	A10	A10	0.7	0.74	12.1	0.5	6.51	3.5													
	A11	A11	1.0	0.74	10.4	0.8	6.94	5.3													
	A12	A12	0.4	0.78	6.6	0.3	8.14	2.3													
	A13	A13	0.6	0.77	7.8	0.5	7.70	3.7													
	A14	A14	1.5	0.74	11.0	1.1	6.76	7.5													
	A15	A15	1.1	0.77	7.4	0.9	7.84	6.7	12.08	4.79	6.51	31.16									A8-A15, FOREBAY 2
	A16	A16	0.5	0.76	9.1	0.4	7.31	2.9													
	A17	A17	1.0	0.74	9.3	0.7	7.23	5.2													
	A18	A18	0.3	0.77	5.0	0.2	8.82	2.2													
	A18A	A18A	0.4	0.76	9.7	0.3	7.13	2.2													
	A19	A19	0.7	0.77	8.5	0.6	7.47	4.2													
	A20	A20	1.2	0.73	10.4	0.8	6.93	5.8													
	A21	A21	0.9	0.75	11.3	0.7	6.69	4.5													
	A22	A22	0.7	0.79	7.4	0.5	7.85	4.3													
	A23	A23	0.5	0.77	11.6	0.4	6.63	2.4													
	A23A	A23A	0.5	0.68	14.3	0.3	6.04	2.1													
	A23B	A23B	0.4	0.73	8.2	0.3	7.57	2.2													
	A24	A24	0.8	0.77	8.3	0.6	7.56	4.4													
	A25	A25	1.3	0.68	11.4	0.9	6.67	6.0													
	A26	A26	1.8	0.71	13.5	1.3	6.20	8.0	14.28	8.05	6.04	48.60									A16-A26, STREET G CUL
	A27	A27	9.6	0.67	15.2	6.4	5.86	37.6	24.52	56.13	4.58	257.08									A16-A26, A28-A66, A70-A71 (FOREBAY 3)
	A28	A28	3.7	0.61	12.7	2.3	6.37	14.5	24.52	50.58	4.58	231.67									A28-A71 (DP 28)
	A29	A29	0.4	0.87	5.0	0.3	8.82	2.7	24.52	48.30	4.58	221.24									A29-A71 (DP 29)
	A30	A30	0.7	0.80	6.2	0.5	8.32	4.5													
	A30A	A30A	0.3	0.78	5.7	0.2	8.51	2.1	10.09	2.74	7.01	19.23									A30A, A67-A69 (DP A30A)
	A31	A31	3.6	0.55	19.2	2.0	5.23	10.2													
	A32	A32	0.2	0.89	5.0	0.1	8.82	1.3	24.52	42.75	4.58	195.83									A32-A66, A70-A71 (DP A32)
	A33	A33	2.0	0.71	14.2	1.4	6.05	8.6	24.52	16.93	4.58	77.55									A33-A51, A70 (DP A33)
	A34	A34	0.3	0.89	5.0	0.2	8.82	2.0													
	A35	A35	1.8	0.71	14.0	1.3	6.10	7.8	16.33	29.35	5.67	166.30									A35-A38,A52-A66, A71 (DP A35)
	A36	A36	0.8	0.85	9.5	0.7	7.19	4.7													
	A37	A37	1.1	0.82	6.9	0.9	8.03	7.3													
	A38	A38	1.0	0.86	6.2	0.8	8.29	6.8													
	A39	A39	0.6	0.89	5.0	0.5	8.82	4.6													
	A40	A40	1.3	0.73	11.4	0.9	6.67	6.2													
	A41	A41	0.7	0.71	8.8	0.5	7.38	3.7													
	A42	A42	0.6	0.80	7.2	0.5	7.93	3.9													
	A43	A43	0.6	0.80	5.9	0.5	8.42	4.0													
	A44	A44	0.4	0.79	8.3	0.3	7.55	2.5	12.24	2.43	6.47	15.70									A44-A45 (DP A44)
	A44A	A44A	0.7	0.77	7.9	0.5	7.69	4.2													
	A45	A45	2.1	0.73	12.2	1.5	6.47	10.0													
	A46	A46	0.1	0.79	6.1	0.1	8.35	0.9													
	A47	A47	0.3	0.79	7.6	0.3	7.78	2.0													
	A48	A48	1.7	0.70	13.5	1.2	6.20	7.4													

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		DESIGN BASIN	AREA (AC)	RUNOFF COEFF C_{100}	t_c (minutes)	C*A(ac)	I (in/hr)	Q (cfs)	t_c(minutes)	S(C*A) (ac)	I (in/hr)	Q (cfs)	SLOPE (%)	STREET FLOW(cfs)	DESIGN FLOW(cfs)	SLOPE (%)	PIPE SIZE (in)	LENGTH (ft)	VELOCITY (fps)	t_t (minutes)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
	A49	A49	2.0	0.73	13.9	1.5	6.12	8.9													
	A50	A50	1.1	0.74	13.0	0.8	6.30	5.3													
	A51	A51	0.3	0.77	6.1	0.2	8.36	1.6													
	A52	A52	0.8	0.77	7.8	0.6	7.70	4.8	16.33	14.10	5.67	79.90									A52-A64, A65A, A66 (DP A52)
	A52A	A52A	0.5	0.78	7.6	0.4	7.79	2.9													
	A53	A53	1.1	0.77	10.4	0.8	6.93	5.7													
	A54	A54	2.3	0.74	12.2	1.7	6.47	11.2													
	A55	A55	1.0	0.73	10.7	0.7	6.86	5.1													
	A56	A56	0.6	0.74	9.3	0.5	7.24	3.3													
	A57	A57	1.0	0.74	10.4	0.8	6.93	5.3													
	A58	A58	1.2	0.73	10.7	0.9	6.84	6.0													
	A59	A59	0.8	0.75	8.2	0.6	7.59	4.6													
	A59A	A59A	0.2	0.78	6.1	0.2	8.32	1.4													
	A60	A60	0.8	0.76	9.2	0.6	7.27	4.4													
	A61	A61	1.2	0.75	9.1	0.9	7.31	6.4													
	A62	A62	0.8	0.77	7.8	0.6	7.71	4.7													
	A63	A63	0.4	0.89	5.0	0.4	8.82	3.3													
	A64	A64	0.7	0.84	5.0	0.6	8.82	5.0													
	A65	A65	1.6	0.57	12.9	0.9	6.32	5.7													
	A65A	A65A	2.2	0.64	9.7	1.4	7.11	10.1													
	A66	A66	3.9	0.65	16.3	2.5	5.67	14.1													
	A67	A67	0.8	0.72	8.4	0.5	7.50	4.1													
	A68	A68	1.2	0.74	10.0	0.9	7.04	6.2													
	A69	A69	1.5	0.73	10.1	1.1	7.01	7.5													
	A70	A70	4.0	0.56	24.5	2.2	4.58	10.3													
	A71	A71	13.9	0.77	13.0	10.7	6.31	67.4													
	A72	A72	2.0	0.55	16.2	1.1	5.68	6.2													

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Basin Summary Table

Basin	Area (AC)	Runoff Coefficients		I (%)	Peak Flows (cfs)	
		C_5	C_{100}		Q_5	Q_{100}
A1	0.75	0.54	0.74	62%	1.6	4.0
A2	0.91	0.55	0.74	63%	1.8	4.5
A3	0.32	0.62	0.78	71%	0.9	2.1
A4	0.78	0.52	0.73	59%	1.5	3.9
A5	0.22	0.64	0.78	73%	0.6	1.4
A6	1.44	0.55	0.74	62%	2.9	7.0
A7	0.48	0.62	0.78	71%	1.3	2.9
A8	0.42	0.61	0.77	70%	1.1	2.6
A9	0.56	0.60	0.77	69%	1.4	3.2
A10	0.73	0.55	0.74	63%	1.4	3.5
A11	1.03	0.55	0.74	63%	2.1	5.3
A12	0.37	0.63	0.78	72%	1.0	2.3
A13	0.63	0.60	0.77	69%	1.6	3.7
A14	1.50	0.54	0.74	62%	3.0	7.5
A15	1.12	0.60	0.77	69%	2.9	6.7
A16	0.51	0.59	0.76	68%	1.2	2.9
A17	0.97	0.55	0.74	63%	2.1	5.2
A18	0.32	0.62	0.77	71%	1.0	2.2
A18A	0.40	0.58	0.76	66%	0.9	2.2
A19	0.74	0.60	0.77	69%	1.8	4.2
A20	1.15	0.53	0.73	60%	2.3	5.8
A21	0.90	0.58	0.75	66%	1.9	4.5
A22	0.69	0.64	0.79	74%	1.9	4.3
A23	0.46	0.61	0.77	71%	1.0	2.4
A23A	0.51	0.43	0.68	49%	0.7	2.1
A23B	0.39	0.53	0.73	60%	0.9	2.2
A24	0.75	0.60	0.77	69%	1.9	4.4
A25	1.32	0.43	0.68	49%	2.1	6.0
A26	1.81	0.49	0.71	56%	3.0	8.0
A27	9.56	0.41	0.67	46%	12.6	37.6
A28	3.71	0.30	0.61	32%	3.8	14.5
A29	0.35	0.80	0.87	93%	1.4	2.7
A30	0.68	0.66	0.80	77%	2.1	4.5
A30A	0.31	0.63	0.78	73%	0.9	2.1
A31	3.59	0.16	0.55	15%	1.6	10.2
A32	0.16	0.86	0.89	100%	0.7	1.3
A33	2.00	0.48	0.71	55%	3.2	8.6
A34	0.25	0.86	0.89	100%	1.0	2.0
A35	1.79	0.49	0.71	56%	3.0	7.8
A36	0.77	0.77	0.85	90%	2.4	4.7

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Basin Summary Table

Basin	Area (AC)	Runoff Coefficients		I (%)	Peak Flows (cfs)	
		C_5	C_{100}		Q_5	Q_{100}
A37	1.12	0.70	0.82	81%	3.5	7.3
A38	0.95	0.79	0.86	92%	3.4	6.8
A39	0.58	0.86	0.89	100%	2.4	4.6
A40	1.26	0.53	0.73	61%	2.5	6.2
A41	0.71	0.48	0.71	54%	1.4	3.7
A42	0.62	0.66	0.80	76%	1.8	3.9
A43	0.59	0.66	0.80	76%	1.8	4.0
A44	0.42	0.65	0.79	75%	1.1	2.5
A44A	0.71	0.61	0.77	70%	1.8	4.2
A45	2.12	0.53	0.73	60%	4.0	10.0
A46	0.14	0.64	0.79	74%	0.4	0.9
A47	0.32	0.65	0.79	75%	0.9	2.0
A48	1.69	0.47	0.70	53%	2.7	7.4
A49	2.00	0.53	0.73	60%	3.5	8.9
A50	1.14	0.54	0.74	62%	2.1	5.3
A51	0.25	0.61	0.77	70%	0.7	1.6
A52	0.81	0.60	0.77	69%	2.1	4.8
A52A	0.48	0.63	0.78	73%	1.3	2.9
A53	1.07	0.60	0.77	69%	2.5	5.7
A54	2.32	0.56	0.74	64%	4.6	11.2
A55	1.03	0.53	0.73	60%	2.0	5.1
A56	0.61	0.55	0.74	63%	1.3	3.3
A57	1.02	0.55	0.74	63%	2.1	5.3
A58	1.20	0.53	0.73	60%	2.4	6.0
A59	0.81	0.57	0.75	66%	1.9	4.6
A59A	0.21	0.63	0.78	72%	0.6	1.4
A60	0.80	0.59	0.76	67%	1.9	4.4
A61	1.16	0.58	0.75	66%	2.7	6.4
A62	0.79	0.61	0.77	70%	2.0	4.7
A63	0.42	0.86	0.89	100%	1.7	3.3
A64	0.68	0.74	0.84	86%	2.5	5.0
A65	1.58	0.20	0.57	20%	1.1	5.7
A65A	2.23	0.34	0.64	37%	3.0	10.1
A66	3.85	0.36	0.65	40%	4.3	14.1
A67	0.75	0.51	0.72	58%	1.6	4.1
A68	1.19	0.55	0.74	63%	2.5	6.2
A69	1.47	0.53	0.73	61%	3.0	7.5
A70	4.04	0.18	0.56	18%	1.8	10.3
A71	13.86	0.61	0.77	70%	29.3	67.4
A72	2.00	0.16	0.55	15%	1.0	6.2

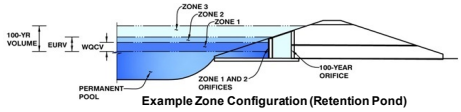
Appendix C - Hydraulic Calculations

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.06 (July 2022)

Project: **Bella Mesa North**

Basin ID: **Pond A (Invert = 6494.58)**



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	**EDB**	
Watershed Area =	104.36	acres
Watershed Length =	3,900	ft
Watershed Length to Centroid =	1,950	ft
Watershed Slope =	0.019	ft/ft
Watershed Imperviousness =	56.00%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	100.0%	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) =	1.943	acre-feet	acre-feet
Excess Urban Runoff Volume (EURV) =	5.579	acre-feet	acre-feet
2-yr Runoff Volume (P1 = 1.06 in.) =	5.304	acre-feet	1.06 inches
5-yr Runoff Volume (P1 = 1.43 in.) =	8.320	acre-feet	1.43 inches
10-yr Runoff Volume (P1 = 1.66 in.) =	10.321	acre-feet	1.66 inches
25-yr Runoff Volume (P1 = 1.72 in.) =	11.137	acre-feet	1.72 inches
50-yr Runoff Volume (P1 = 2.26 in.) =	16.037	acre-feet	2.26 inches
100-yr Runoff Volume (P1 = 2.6 in.) =	19.438	acre-feet	2.60 inches
500-yr Runoff Volume (P1 = 3.11 in.) =	24.170	acre-feet	3.11 inches
Approximate 2-yr Detention Volume =	4.413	acre-feet	
Approximate 5-yr Detention Volume =	6.879	acre-feet	
Approximate 10-yr Detention Volume =	7.806	acre-feet	
Approximate 25-yr Detention Volume =	7.606	acre-feet	
Approximate 50-yr Detention Volume =	9.178	acre-feet	
Approximate 100-yr Detention Volume =	10.542	acre-feet	

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	1.943	acre-feet
Zone 2 Volume (EURV - Zone 1) =	3.636	acre-feet
Zone 3 (100yr + 1 / 2 WQCV - Zones 1 & 2) =	5.934	acre-feet
Total Detention Basin Volume =	11.513	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	

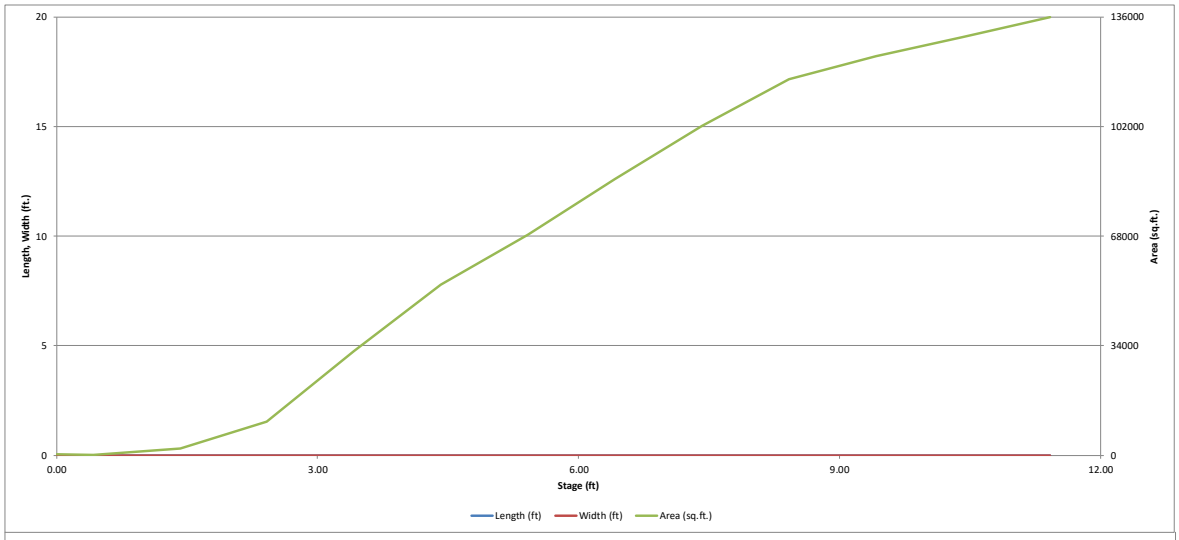
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	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

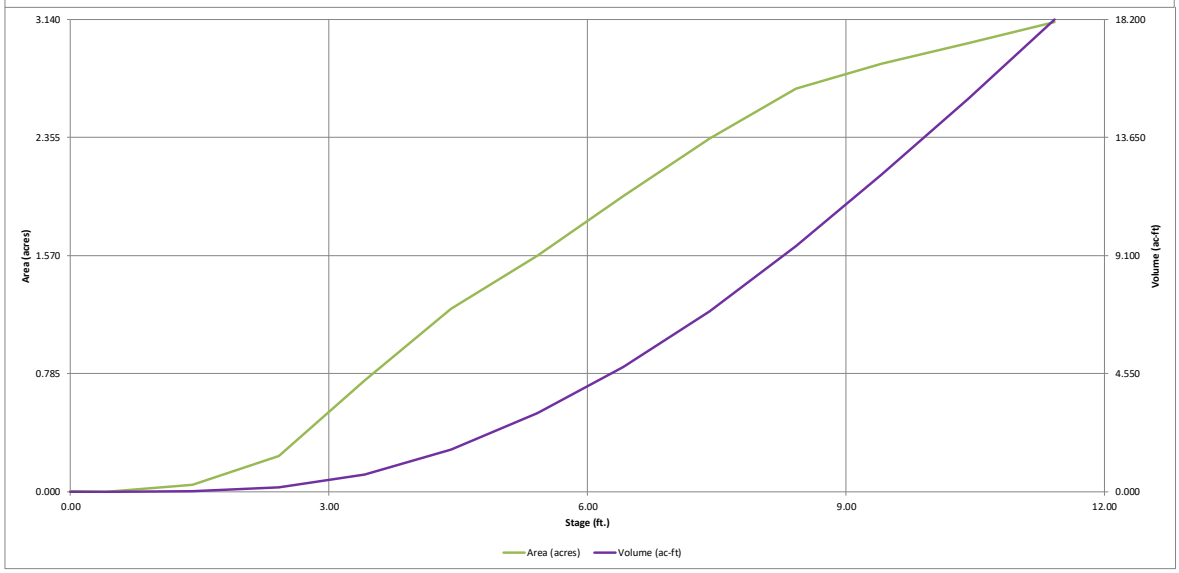
Depth Increment = 1.00 ft

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	--	--	--	250	0.006		
6495	--	0.42	--	--	--	139	0.003	82	0.002
6496	--	1.42	--	--	--	2,039	0.047	1,171	0.027
6497	--	2.42	--	--	--	10,336	0.237	7,358	0.169
6498	--	3.42	--	--	--	32,233	0.740	28,643	0.658
6499	--	4.42	--	--	--	52,939	1.215	71,228	1.635
6500	--	5.42	--	--	--	68,443	1.571	131,919	3.028
6501	--	6.42	--	--	--	85,621	1.966	208,951	4.797
6502	--	7.42	--	--	--	102,283	2.348	302,903	6.954
6503	--	8.42	--	--	--	116,692	2.679	412,391	9.467
6504	--	9.42	--	--	--	123,861	2.843	532,667	12.228
6505	--	10.42	--	--	--	129,900	2.982	659,548	15.141
6506	--	11.42	--	--	--	135,988	3.122	792,492	18.193

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.06 (July 2022)



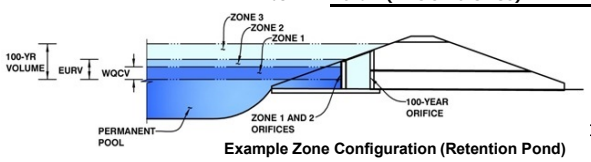


DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.06 (July 2022)

Project: **Bella Mesa North**

Basin ID: **Pond A (Invert = 6494.58)**



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	4.67	1.943	Orifice Plate
Zone 2 (EURV)	6.81	3.636	Orifice Plate
3 (100+1/2WQCV)	9.17	5.934	Weir&Pipe (Restrict)
Total (all zones)		11.513	

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

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)	Underdrain Orifice Area =	N/A	ft^2
Underdrain Orifice Diameter =	N/A	inches	Underdrain Orifice Centroid =	N/A	feet

Calculated Parameters for Underdrain

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

Centroid of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	N/A	ft^2
Depth at top of Zone using Orifice Plate =	6.81	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	27.20	inches	Elliptical Slot Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	N/A	sq. inches	Elliptical Slot Area =	N/A	ft^2

Calculated Parameters for Plate

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

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	2.27	4.54					
Orifice Area (sq. inches)	6.12	6.12	11.75					

	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			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	ft^2
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				

Calculated Parameters for Vertical Orifice

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

	Zone 3 Weir	Not Selected			Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	6.82	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	7.55	N/A	feet
Overflow Weir Front Edge Length =	34.00	N/A	feet	Overflow Weir Slope Length =	3.01	N/A	feet
Overflow Weir Grate Slope =	4.01	N/A	H:V	Grate Open Area / 100-yr Orifice Area =	8.00	N/A	
Horiz. Length of Weir Sides =	2.92	N/A	feet	Overflow Grate Open Area w/o Debris =	71.24	N/A	ft^2
Overflow Grate Type =	Type C Grate	N/A		Overflow Grate Open Area w/ Debris =	35.62	N/A	ft^2
Debris Clogging % =	50%	N/A	%				

Calculated Parameters for Overflow Weir

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

	Zone 3 Restrictor	Not Selected			Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	0.00	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	8.90	N/A	ft^2
Outlet Pipe Diameter =	48.00	N/A	inches	Outlet Orifice Centroid =	1.50	N/A	feet
Restrictor Plate Height Above Pipe Invert =	32.00		inches	Half-Central Angle of Restrictor Plate on Pipe =	1.91	N/A	radians

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	9.72	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.70	feet
Spillway Crest Length =	150.00	feet	Stage at Top of Freeboard =	11.42	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	3.12	acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	18.19	acre-ft

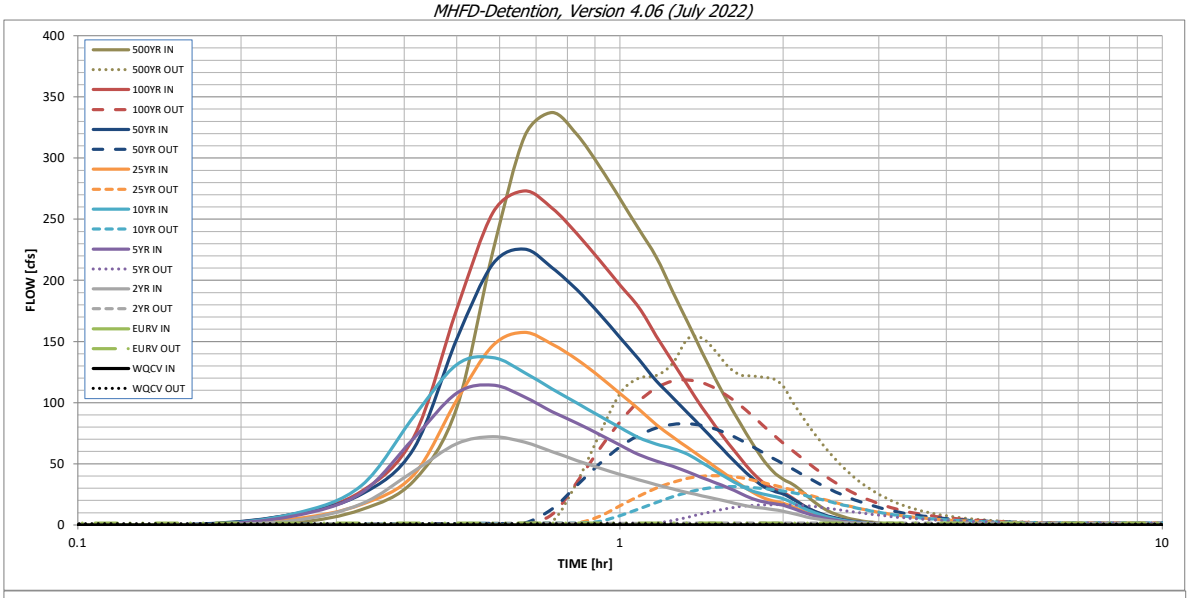
Calculated Parameters for Spillway

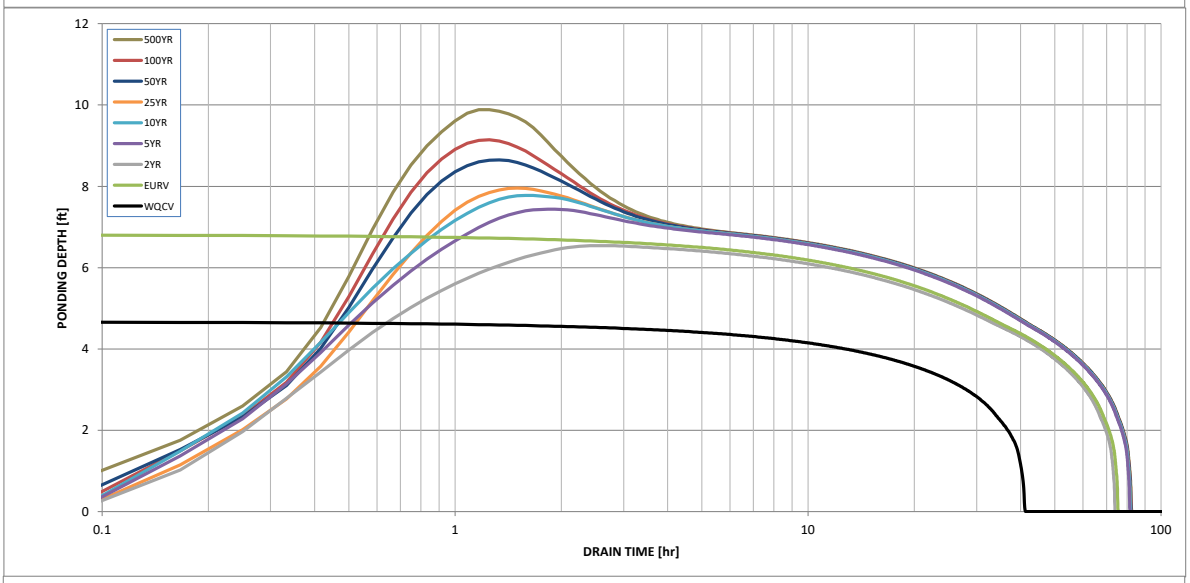
Routed Hydrograph Results *The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).*

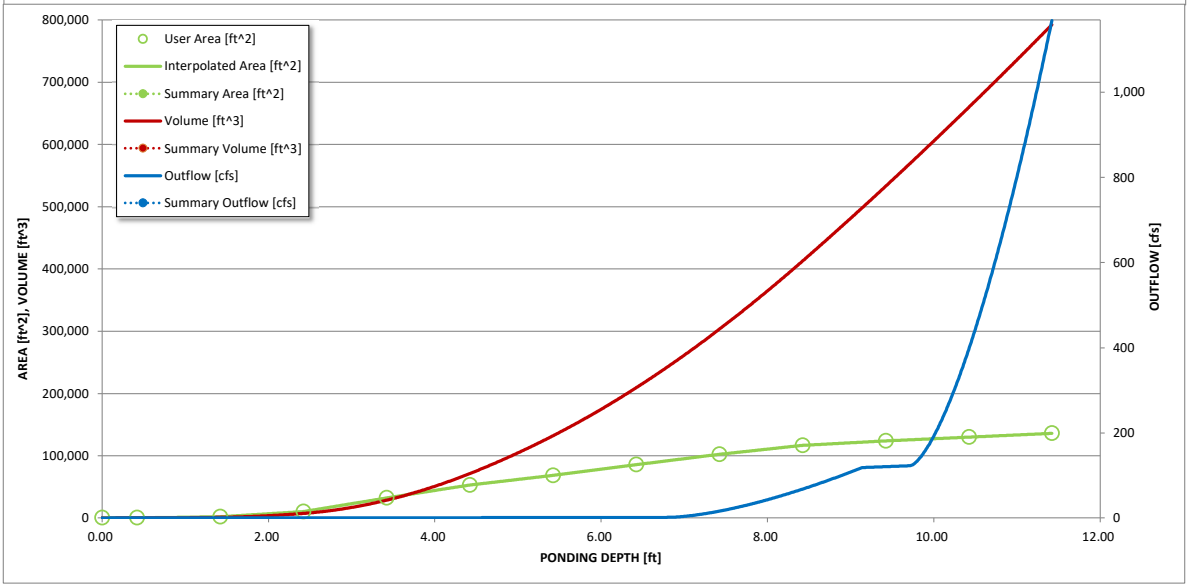
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.06	1.43	1.66	1.72	2.26	2.60	3.11
CUHP Runoff Volume (acre-ft) =	1.943	5.579	5.304	8.320	10.321	11.137	16.037	19.438	24.170
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	5.304	8.320	10.321	11.137	16.037	19.438	24.170
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	8.1	30.5	43.2	57.8	96.8	126.4	164.1
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.08	0.29	0.41	0.55	0.93	1.21	1.57
Peak Inflow Q (cfs) =	N/A	N/A	72.1	114.4	136.8	157.4	225.4	273.0	337.1
Peak Outflow Q (cfs) =	0.9	1.6	1.5	16.5	31.2	40.3	82.7	118.5	152.8
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.5	0.7	0.7	0.9	0.9	0.9
Structure Controlling Flow =	Plate	Plate	Plate	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Outlet Plate 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	0.2	0.4	0.5	1.1	1.6	1.7
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) =	38	68	67	72	71	70	67	65	62
Time to Drain 99% of Inflow Volume (hours) =	**40**	73	71	78	77	77	75	74	73
Maximum Ponding Depth (ft) =	4.67	6.81	6.54	7.43	7.77	7.95	8.65	9.14	9.88
Area at Maximum Ponding Depth (acres) =	1.30	2.11	2.01	2.35	2.46	2.52	2.72	2.80	2.91
Maximum Volume Stored (acre-ft) =	1.950	5.593	5.015	6.977	7.796	8.245	10.061	11.439	13.522

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.06 (July 2022)







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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	0.28	1.72
	0:15:00	0.00	0.00	3.63	7.36	9.11	4.78	8.79	8.80	12.58
	0:20:00	0.00	0.00	17.07	26.16	32.10	16.63	25.06	27.29	36.04
	0:25:00	0.00	0.00	43.88	70.96	88.62	41.00	62.44	71.82	95.70
	0:30:00	0.00	0.00	66.50	107.73	131.12	102.00	151.83	176.20	223.67
	0:35:00	0.00	0.00	72.08	114.38	136.81	146.72	213.41	255.36	317.59
	0:40:00	0.00	0.00	67.59	104.65	124.56	157.39	225.43	273.02	337.11
	0:45:00	0.00	0.00	59.86	92.66	111.17	147.72	210.28	258.92	319.07
	0:50:00	0.00	0.00	52.62	83.05	99.55	135.22	192.13	238.11	293.32
	0:55:00	0.00	0.00	46.59	74.03	89.09	121.32	172.66	216.49	266.79
	1:00:00	0.00	0.00	41.35	65.26	79.61	107.39	153.24	196.29	241.89
	1:05:00	0.00	0.00	36.87	57.47	71.35	94.77	135.47	177.92	219.23
	1:10:00	0.00	0.00	32.84	52.26	66.14	82.04	117.84	154.66	191.10
	1:15:00	0.00	0.00	29.38	47.95	62.55	72.03	104.32	133.52	165.61
	1:20:00	0.00	0.00	26.42	43.34	57.63	63.16	91.63	113.97	141.57
	1:25:00	0.00	0.00	23.83	38.77	50.99	55.18	79.80	96.28	119.53
	1:30:00	0.00	0.00	21.36	34.46	44.13	47.38	68.20	80.81	100.21
	1:35:00	0.00	0.00	18.92	30.40	37.80	40.02	57.33	67.01	83.03
	1:40:00	0.00	0.00	16.63	25.88	32.30	33.24	47.40	54.50	67.48
	1:45:00	0.00	0.00	14.78	21.63	27.87	27.21	38.60	43.46	53.87
	1:50:00	0.00	0.00	13.77	18.96	25.34	22.39	31.78	35.01	43.62
	1:55:00	0.00	0.00	12.56	17.37	23.49	19.59	27.82	29.86	37.32
	2:00:00	0.00	0.00	11.20	16.03	21.48	17.81	25.27	26.53	33.23
	2:05:00	0.00	0.00	9.36	13.55	18.05	14.95	21.18	21.80	27.34
	2:10:00	0.00	0.00	7.42	10.68	14.25	11.64	16.47	16.64	20.89
	2:15:00	0.00	0.00	5.80	8.29	11.05	8.93	12.60	12.42	15.59
	2:20:00	0.00	0.00	4.53	6.46	8.54	6.86	9.64	9.26	11.63
	2:25:00	0.00	0.00	3.52	5.00	6.53	5.26	7.36	6.97	8.75
	2:30:00	0.00	0.00	2.72	3.81	4.93	4.01	5.58	5.30	6.65
	2:35:00	0.00	0.00	2.09	2.86	3.69	3.01	4.17	4.00	5.01
	2:40:00	0.00	0.00	1.59	2.13	2.78	2.26	3.13	3.04	3.80
	2:45:00	0.00	0.00	1.19	1.59	2.11	1.73	2.39	2.34	2.92
	2:50:00	0.00	0.00	0.86	1.14	1.55	1.29	1.78	1.74	2.17
	2:55:00	0.00	0.00	0.58	0.79	1.07	0.92	1.26	1.23	1.53
	3:00:00	0.00	0.00	0.36	0.52	0.69	0.61	0.83	0.81	1.01
	3:05:00	0.00	0.00	0.19	0.30	0.39	0.36	0.49	0.47	0.59
	3:10:00	0.00	0.00	0.08	0.15	0.17	0.18	0.24	0.23	0.28
	3:15:00	0.00	0.00	0.03	0.04	0.05	0.06	0.07	0.07	0.09
	3:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.06 (July 2022)

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.

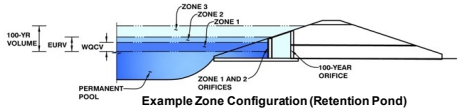
Stage - Storage Description	Stage [ft]	Area [ft^2]	Area [acres]	Volume [ft^3]	Volume [ac-ft]	Total Outflow [cfs]

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.07 (June 2025)

Project: **Bella Mesa North Filing 1**

Basin ID: **Interim Pond B**



Example Zone Configuration (Retention Pond)

Watershed Information

Selected SCM Type =	**EDB**	
Watershed Area =	16.38	acres
Watershed Length =	1,100	ft
Watershed Length to Centroid =	446	ft
Watershed Slope =	0.015	ft/ft
Watershed Imperviousness =	18.00%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	100.0%	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.

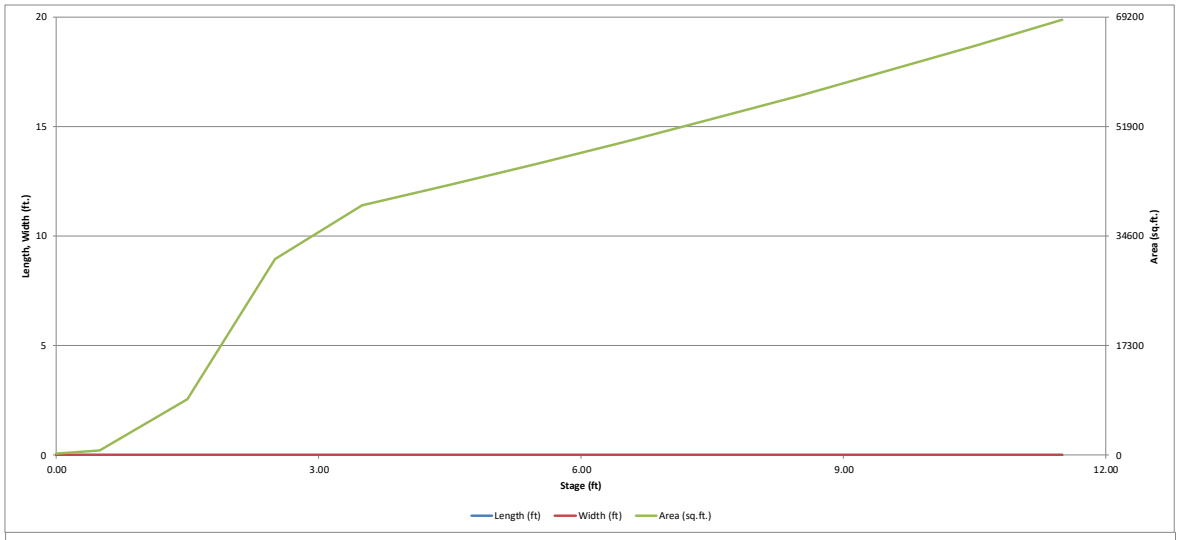
			Optional User Overrides	
Water Quality Capture Volume (WQCV) =	0.146	acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	0.257	acre-feet		acre-feet
2-yr Runoff Volume (P1 = 1.06 in.) =	0.303	acre-feet	1.06	inches
5-yr Runoff Volume (P1 = 1.43 in.) =	0.698	acre-feet	1.43	inches
10-yr Runoff Volume (P1 = 1.66 in.) =	0.986	acre-feet	1.66	inches
25-yr Runoff Volume (P1 = 1.72 in.) =	1.151	acre-feet	1.72	inches
50-yr Runoff Volume (P1 = 2.26 in.) =	1.876	acre-feet	2.26	inches
100-yr Runoff Volume (P1 = 2.6 in.) =	2.430	acre-feet	2.60	inches
500-yr Runoff Volume (P1 = 3.11 in.) =	3.142	acre-feet	3.11	inches
Approximate 2-yr Detention Volume =	0.191	acre-feet		
Approximate 5-yr Detention Volume =	0.394	acre-feet		
Approximate 10-yr Detention Volume =	0.478	acre-feet		
Approximate 25-yr Detention Volume =	0.507	acre-feet		
Approximate 50-yr Detention Volume =	0.620	acre-feet		
Approximate 100-yr Detention Volume =	0.831	acre-feet		

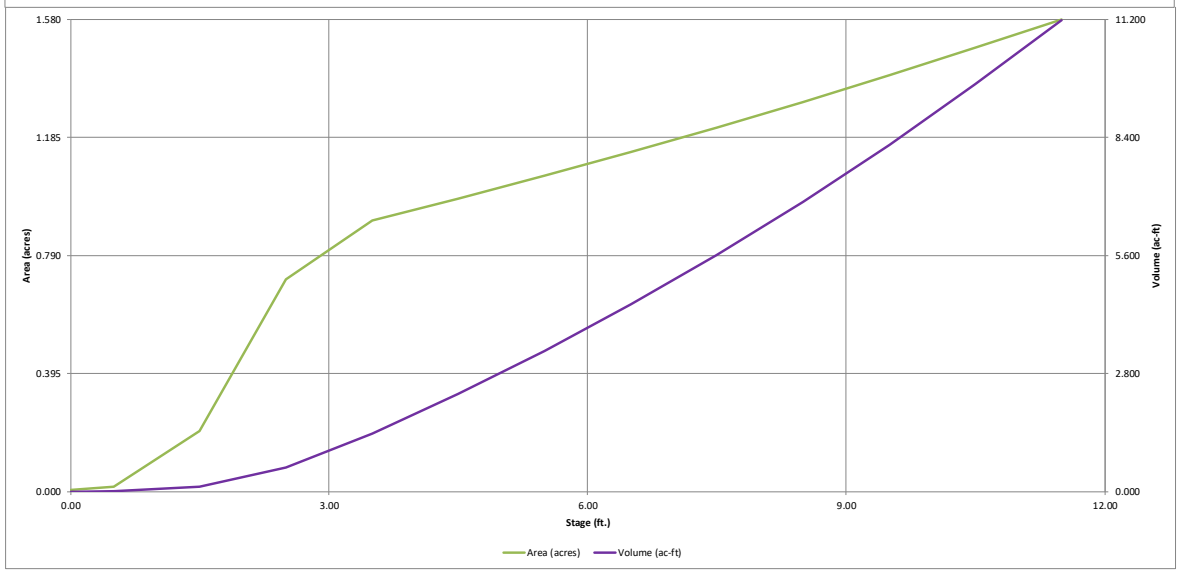
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.146	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.111	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.574	acre-feet
Total Detention Basin Volume =	0.831	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 = 1.00 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	--	--	--	250	0.006		
6499	--	0.50	--	--	--	750	0.017	250	0.006
6500	--	1.50	--	--	--	8,800	0.202	5,025	0.115
6501	--	2.50	--	--	--	30,930	0.710	24,890	0.571
6502	--	3.50	--	--	--	39,460	0.906	60,085	1.379
6503	--	4.50	--	--	--	42,660	0.979	101,145	2.322
6504	--	5.50	--	--	--	46,000	1.056	145,475	3.340
6505	--	6.50	--	--	--	49,460	1.135	193,205	4.435
6506	--	7.50	--	--	--	53,050	1.218	244,460	5.612
6507	--	8.50	--	--	--	56,775	1.303	299,372	6.873
6508	--	9.50	--	--	--	60,645	1.392	358,082	8.220
6509	--	10.50	--	--	--	64,645	1.484	420,727	9.659
6510	--	11.50	--	--	--	68,820	1.580	487,460	11.191


20
15
10
5
0
Length, Width (ft.)
69200
51900
34600
17300
0
Area (sq.ft.)
0.00
3.00
6.00
9.00
12.00
Stage (ft)
Length (ft)
Width (ft)
Area (sq.ft.)

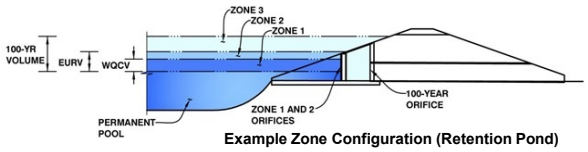

1.580
1.185
0.790
0.395
0.000
Area (acres)
11.200
8.400
5.600
2.800
0.000
Volume (ac-ft)
0.00
3.00
6.00
9.00
12.00
Stage (ft.)
Area (acres)
Volume (ac-ft)

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.07 (June 2025)

Project: **Bella Mesa North Filing 1**

Basin ID: **Interim Pond B**



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	1.64	0.146	Orifice Plate
Zone 2 (EURV)	1.95	0.111	Orifice Plate
Zone 3 (100-year)	2.85	0.574	Circular Orifice
Total (all zones)		0.831	

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

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)	Underdrain Orifice Area =	N/A	ft^2
Underdrain Orifice Diameter =	N/A	inches	Underdrain Orifice Centroid =	N/A	feet

Calculated Parameters for Underdrain

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

Centroid of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	3.333E-03	ft^2
Depth at top of Zone using Orifice Plate =	0.67	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	2.70	inches	Elliptical Slot Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	0.48	sq. inches (diameter = 3/4 inch)	Elliptical Slot Area =	N/A	ft^2

Calculated Parameters for Plate

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

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	0.22	0.45					
Orifice Area (sq. inches)	0.48	0.48	0.48					

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

User Input: Vertical Orifice (Circular or Rectangular)

	Zone 3 Circular	Not Selected			Zone 3 Circular	Not Selected	
Invert of Vertical Orifice =	1.70	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	0.20	N/A	ft^2
Depth at top of Zone using Vertical Orifice =	3.00	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	0.25	N/A	feet
Vertical Orifice Diameter =	6.00	N/A	inches				

Calculated Parameters for Vertical Orifice

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

	Not Selected	Not Selected			Not Selected	Not Selected	
Overflow Weir Front Edge Height, Ho =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	N/A	N/A	feet
Overflow Weir Front Edge Length =	N/A	N/A	feet	Overflow Weir Slope Length =	N/A	N/A	feet
Overflow Weir Grate Slope =	N/A	N/A	H:V	Grate Open Area / 100-yr Orifice Area =	N/A	N/A	
Horiz. Length of Weir Sides =	N/A	N/A	feet	Overflow Grate Open Area w/o Debris =	N/A	N/A	ft^2
Overflow Grate Type =	N/A	N/A		Overflow Grate Open Area w/ Debris =	N/A	N/A	ft^2
Debris Clogging % =	N/A	N/A	%				

Calculated Parameters for Overflow Weir

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

	Not Selected	Not Selected			Not Selected	Not Selected	
Depth to Invert of Outlet Pipe =	N/A	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	N/A	N/A	ft^2
Circular Orifice Diameter =	N/A	N/A	inches	Outlet Orifice Centroid =	N/A	N/A	feet
				Half-Central Angle of Restrictor Plate on Pipe =	N/A	N/A	radians

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	9.30	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.33	feet
Spillway Crest Length =	50.00	feet	Stage at Top of Freeboard =	10.63	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	1.50	acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	9.85	acre-ft

Calculated Parameters for Spillway

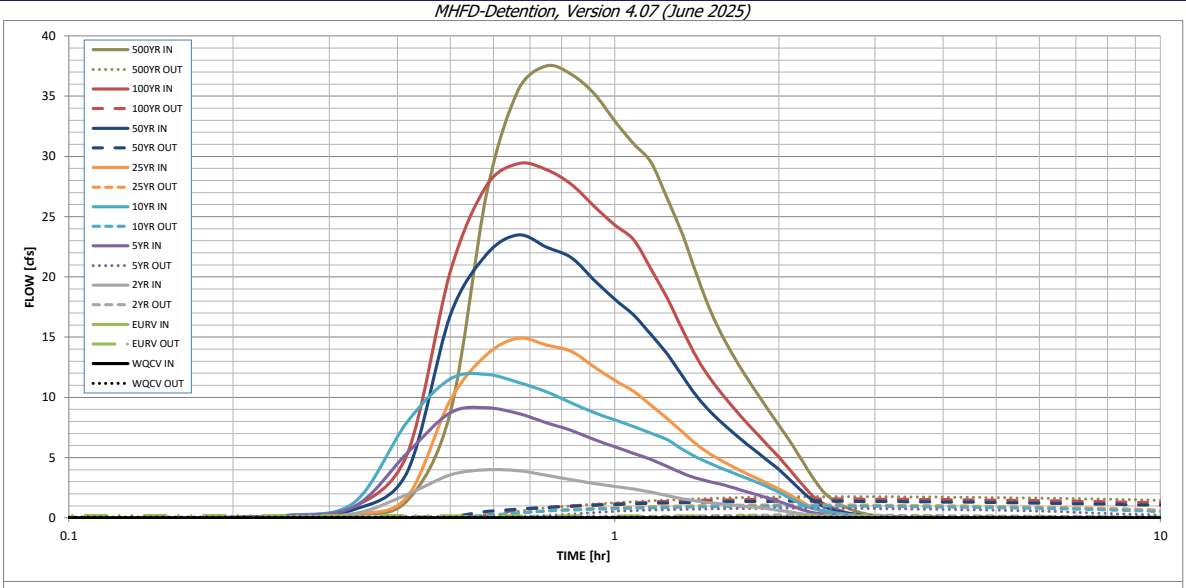
Routed Hydrograph Results

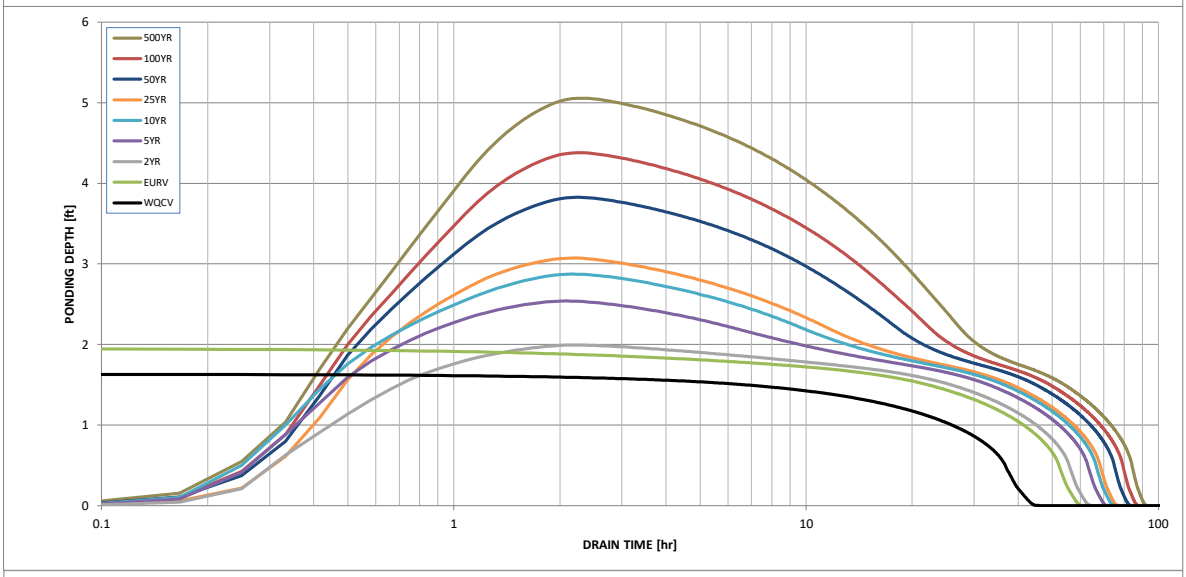
The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

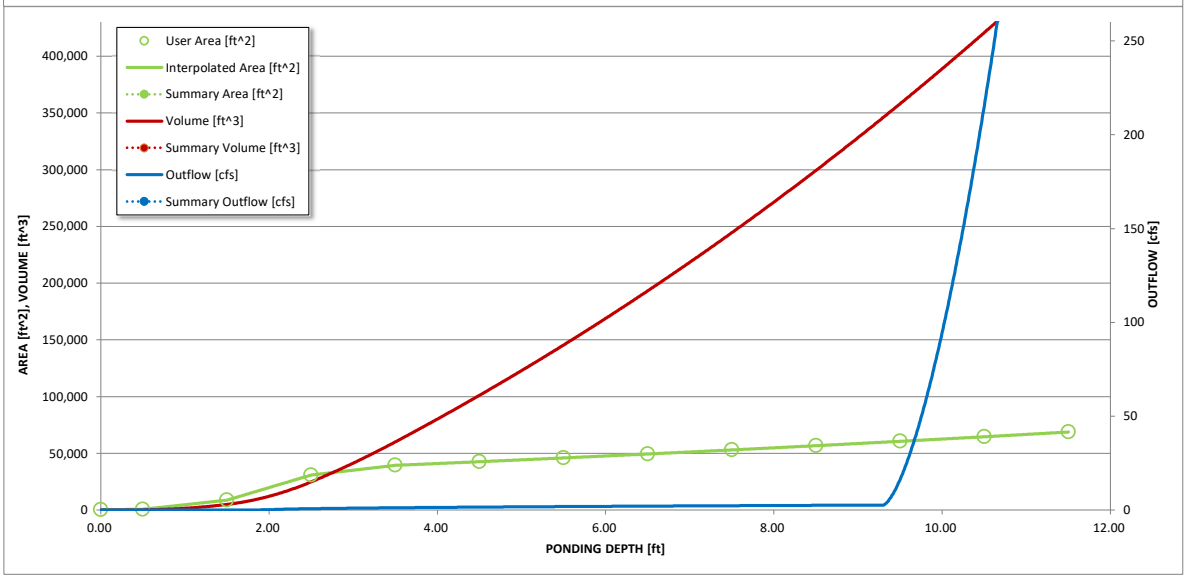
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.06	1.43	1.66	1.72	2.26	2.60	3.11
CUHP Runoff Volume (acre-ft) =	0.146	0.257	0.303	0.698	0.986	1.151	1.876	2.430	3.142
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.303	0.698	0.986	1.151	1.876	2.430	3.142
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	2.2	7.1	9.8	12.7	20.9	26.6	34.4
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.13	0.43	0.60	0.77	1.28	1.62	2.10
Peak Inflow Q (cfs) =	N/A	N/A	4.0	9.1	11.9	14.9	23.5	29.4	37.5
Peak Outflow Q (cfs) =	0.1	0.2	0.2	0.8	1.0	1.1	1.4	1.6	1.8
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.1	0.1	0.1	0.1	0.1	0.1
Structure Controlling Flow =	Plate	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	ertical Orifice
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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) =	38	51	54	57	58	58	59	59	59
Time to Drain 99% of Inflow Volume (hours) =	**41**	55	58	63	65	66	70	73	75
Maximum Ponding Depth (ft) =	1.64	1.95	1.99	2.54	2.87	3.07	3.82	4.38	5.05
Area at Maximum Ponding Depth (acres) =	0.27	0.43	0.45	0.72	0.78	0.82	0.93	0.97	1.02
Maximum Volume Stored (acre-ft) =	0.149	0.258	0.275	0.593	0.848	1.008	1.673	2.195	2.872

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.07 (June 2025)







1

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

Design Procedure Form: Extended Detention Basin (EDB)

UD-BMP (Version 3.07, March 2018) **Sheet 1 of 3**

Designer:
Company: Redland
Date: January 27, 2026
Project: Bella Mesa North
Location: Pond A - Forebay 1

1. Basin Storage Volume

A) Effective Imperviousness of Tributary Area, I_a — I_a = 63.7 %

B) Tributary Area's Imperviousness Ratio (i = I_a / 100) — i = 0.637

C) Contributing Watershed Area — Area = 4.900 ac

D) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm — d_6 = in

E) Design Concept (Select EURV when also designing for flood control)

Choose One
- ○ Water Quality Capture Volume (WQCV)
- ◉ Excess Urban Runoff Volume (EURV)

F) Design Volume (WQCV) Based on 40-hour Drain Time (V_{DESIGN} = (1.0 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i) / 12 * Area) — V_{DESIGN} = 0.102 ac-ft

G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume ($V_{WQCV\ OTHER}$ = (d_6*(V_{DESIGN}/0.43)) — $V_{DESIGN\ OTHER}$ = ac-ft

H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired) — $V_{DESIGN\ USER}$ = ac-ft

I) NRCS Hydrologic Soil Groups of Tributary Watershed
- i) Percentage of Watershed consisting of Type A Soils — HSG_A = 0 %
- ii) Percentage of Watershed consisting of Type B Soils — HSG_B = 0 %
- iii) Percentage of Watershed consisting of Type C/D Soils — $HSG_{C/D}$ = 100 %

J) Excess Urban Runoff Volume (EURV) Design Volume
For HSG A: $EURV_A$ = 1.68 * $i^{1.28}$
For HSG B: $EURV_B$ = 1.36 * $i^{1.08}$
For HSG C/D: $EURV_{C/D}$ = 1.20 * $i^{1.08}$
— $EURV_{DESIGN}$ = 0.301 ac-f t

K) User Input of Excess Urban Runoff Volume (EURV) Design Volume (Only if a different EURV Design Volume is desired) — $EURV_{DESIGN\ USER}$ = ac-f t

2. Basin Shape: Length to Width Ratio (A basin length to width ratio of at least 2:1 will improve TSS reduction.) — L : W = : 1

3. Basin Side Slopes

A) Basin Maximum Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred) — Z = 4.00 ft / ft

4. Inlet

A) Describe means of providing energy dissipation at concentrated inflow locations:

5. Forebay

A) Minimum Forebay Volume (V_{FMIN} = 2% of the WQCV) — V_{FMIN} = 0.002 ac-ft

B) Actual Forebay Volume — V_F = 0.021 ac-ft

C) Forebay Depth (D_F = 18 inch maximum) — D_F = 18.0 in

D) Forebay Discharge

i) Undetained 100-year Peak Discharge — Q_{100} = 24.19 cfs

ii) Forebay Discharge Design Flow (Q_F = 0.02 * Q_{100}) — Q_F = 0.48 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 = 4.5 in

Design Procedure Form: Extended Detention Basin (EDB)

Designer:
Company: Redland
Date: January 27, 2026
Project: Bella Mesa North
Location: Pond A - Forebay 1

6. Trickle Channel	
A) Type of Trickle Channel	Choose One: (●) Concrete ( ) Soft Bottom
F) Slope of Trickle Channel	S = 0.0100 ft / ft
7. Micropool and Outlet Structure	
A) Depth of Micropool (2.5-feet minimum)	D_M = 2.5 ft
B) Surface Area of Micropool (10 ft^2 minimum)	A_M = 48 sq ft
C) Outlet Type	Choose One: (●) Orifice Plate ( ) Other (Describe):
D) Smallest Dimension of Orifice Opening Based on Hydrograph Routing (Use UD-Detention)	$D_{orifice}$ = 2.00 inches
E) Total Outlet Area	A_{ot} = 26.37 square inches
8. Initial Surcharge Volume	
A) Depth of Initial Surcharge Volume (Minimum recommended depth is 4 inches)	D_{IS} = 4 in
B) Minimum Initial Surcharge Volume (Minimum volume of 0.3% of the WQCV)	V_{IS} = cu ft
C) Initial Surcharge Provided Above Micropool	V_s = 16.0 cu ft
9. Trash Rack	
A) Water Quality Screen Open Area: $A_t = A_{ot} * 38.5*(e^{-0.095D})$	A_t = 840 square inches
B) Type of Screen (If specifying an alternative to the materials recommended in the USDCM, indicate "other" and enter the ratio of the total open are to the total screen are for the material specified.)	*Aluminum Amico-Klemp SR Series with Cross Rods 2" O.C.*
Other (Y/N): N	
C) Ratio of Total Open Area to Total Area (only for type 'Other')	User Ratio =
D) Total Water Quality Screen Area (based on screen type)	A_{total} = 1182 sq. in.
E) Depth of Design Volume (EURV or WQCV) (Based on design concept chosen under 1E)	H= 6.86 feet
F) Height of Water Quality Screen (H_{TR})	H_{TR}= 110.32 inches
G) Width of Water Quality Screen Opening ($W_{opening}$) (Minimum of 12 inches is recommended)	$W_{opening}$ = 12.0 inches **VALUE LESS THAN RECOMMENDED MIN. WIDTH. WIDTH HAS BEEN SET TO 12 INCHES.**

Design Procedure Form: Extended Detention Basin (EDB)

Designer:
Company: Redland
Date: January 27, 2026
Project: Bella Mesa North
Location: Pond A - Forebay 1

10. Overflow Embankment	
A) Describe embankment protection for 100-year and greater overtopping:	
B) Slope of Overflow Embankment (Horizontal distance per unit vertical, 4:1 or flatter preferred)	Ze = ft / ft
11. Vegetation	Choose One: ○ Irrigated ○ Not Irrigated
12. Access	
A) Describe Sediment Removal Procedures	

Notes:

Design Procedure Form: Extended Detention Basin (EDB)

UD-BMP (Version 3.07, March 2018) **Sheet 1 of 3**

Designer:
Company: Redland
Date: January 27, 2026
Project: Bella Mesa North
Location: Pond A - Forebay 1

1. Basin Storage Volume

A) Effective Imperviousness of Tributary Area, I_a — I_a = 63.7 %

B) Tributary Area's Imperviousness Ratio (i = I_a / 100) — i = 0.637

C) Contributing Watershed Area — Area = 6.350 ac

D) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm — d_6 = in

E) Design Concept (Select EURV when also designing for flood control)

Choose One
- ○ Water Quality Capture Volume (WQCV)
- ◉ Excess Urban Runoff Volume (EURV)

F) Design Volume (WQCV) Based on 40-hour Drain Time ($V_{DESIGN} = (1.0 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i) / 12 * Area$) — V_{DESIGN} = 0.132 ac-ft

G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume ($V_{WQCV\ OTHER} = (d_6 * (V_{DESIGN}/0.43))$) — $V_{DESIGN\ OTHER}$ = ac-ft

H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired) — $V_{DESIGN\ USER}$ = ac-ft

I) NRCS Hydrologic Soil Groups of Tributary Watershed
- i) Percentage of Watershed consisting of Type A Soils — HSG_A = 0 %
- ii) Percentage of Watershed consisting of Type B Soils — HSG_B = 0 %
- iii) Percentage of Watershed consisting of Type C/D Soils — $HSG_{C/D}$ = 100 %

J) Excess Urban Runoff Volume (EURV) Design Volume
For HSG A: $EURV_A = 1.68 * i^{1.28}$
For HSG B: $EURV_B = 1.36 * i^{1.08}$
For HSG C/D: $EURV_{C/D} = 1.20 * i^{1.08}$
— $EURV_{DESIGN}$ = 0.390 ac-f t

K) User Input of Excess Urban Runoff Volume (EURV) Design Volume (Only if a different EURV Design Volume is desired) — $EURV_{DESIGN\ USER}$ = ac-f t

2. Basin Shape: Length to Width Ratio (A basin length to width ratio of at least 2:1 will improve TSS reduction.) — L : W = : 1

3. Basin Side Slopes

A) Basin Maximum Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred) — Z = 4.00 ft / ft

4. Inlet

A) Describe means of providing energy dissipation at concentrated inflow locations:

5. Forebay

A) Minimum Forebay Volume (V_{FMIN} = 2% of the WQCV) — V_{FMIN} = 0.003 ac-ft

B) Actual Forebay Volume — V_F = 0.021 ac-ft

C) Forebay Depth (D_F = 18 inch maximum) — D_F = 18.0 in

D) Forebay Discharge

i) Undetained 100-year Peak Discharge — Q_{100} = 31.16 cfs

ii) Forebay Discharge Design Flow ($Q_F = 0.02 * Q_{100}$) — Q_F = 0.62 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 = 4.8 in

Design Procedure Form: Extended Detention Basin (EDB)

Designer:
Company: Redland
Date: January 27, 2026
Project: Bella Mesa North
Location: Pond A - Forebay 1

6. Trickle Channel	
A) Type of Trickle Channel	Choose One: (●) Concrete ( ) Soft Bottom
F) Slope of Trickle Channel	S = 0.0100 ft / ft
7. Micropool and Outlet Structure	
A) Depth of Micropool (2.5-feet minimum)	D_M = 2.5 ft
B) Surface Area of Micropool (10 ft^2 minimum)	A_M = 48 sq ft
C) Outlet Type	Choose One: (●) Orifice Plate ( ) Other (Describe):
D) Smallest Dimension of Orifice Opening Based on Hydrograph Routing (Use UD-Detention)	$D_{orifice}$ = 2.00 inches
E) Total Outlet Area	A_{ot} = 26.37 square inches
8. Initial Surcharge Volume	
A) Depth of Initial Surcharge Volume (Minimum recommended depth is 4 inches)	D_{IS} = 4 in
B) Minimum Initial Surcharge Volume (Minimum volume of 0.3% of the WQCV)	V_{IS} = cu ft
C) Initial Surcharge Provided Above Micropool	V_s = 16.0 cu ft
9. Trash Rack	
A) Water Quality Screen Open Area: $A_t = A_{ot} * 38.5*(e^{-0.095D})$	A_t = 840 square inches
B) Type of Screen (If specifying an alternative to the materials recommended in the USDCM, indicate "other" and enter the ratio of the total open are to the total screen are for the material specified.)	*Aluminum Amico-Klemp SR Series with Cross Rods 2" O.C.*
Other (Y/N): N	
C) Ratio of Total Open Area to Total Area (only for type 'Other')	User Ratio =
D) Total Water Quality Screen Area (based on screen type)	A_{total} = 1182 sq. in.
E) Depth of Design Volume (EURV or WQCV) (Based on design concept chosen under 1E)	H= 6.86 feet
F) Height of Water Quality Screen (H_{TR})	H_{TR}= 110.32 inches
G) Width of Water Quality Screen Opening ($W_{opening}$) (Minimum of 12 inches is recommended)	$W_{opening}$ = 12.0 inches **VALUE LESS THAN RECOMMENDED MIN. WIDTH. WIDTH HAS BEEN SET TO 12 INCHES.**

Design Procedure Form: Extended Detention Basin (EDB)

Designer:
Company: Redland
Date: January 27, 2026
Project: Bella Mesa North
Location: Pond A - Forebay 1

10. Overflow Embankment	
A) Describe embankment protection for 100-year and greater overtopping:	
B) Slope of Overflow Embankment (Horizontal distance per unit vertical, 4:1 or flatter preferred)	Ze = ft / ft
11. Vegetation	Choose One: ○ Irrigated ○ Not Irrigated
12. Access	
A) Describe Sediment Removal Procedures	

Notes:

Design Procedure Form: Extended Detention Basin (EDB)

UD-BMP (Version 3.07, March 2018) **Sheet 1 of 3**

Designer:
Company: Redland
Date: January 27, 2026
Project: Bella Mesa North
Location: Pond A - Forebay 3

1. Basin Storage Volume

A) Effective Imperviousness of Tributary Area, I_a — I_a = 63.7 %

B) Tributary Area's Imperviousness Ratio (i = I_a / 100) — i = 0.637

C) Contributing Watershed Area — Area = 81.540 ac

D) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm — d_6 = in

E) Design Concept (Select EURV when also designing for flood control)

Choose One
- ○ Water Quality Capture Volume (WQCV)
- ◉ Excess Urban Runoff Volume (EURV)

F) Design Volume (WQCV) Based on 40-hour Drain Time
(V_{DESIGN} = (1.0 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i) / 12 * Area) — V_{DESIGN} = 1.693 ac-ft

G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume
($V_{WQCV\ OTHER}$ = (d_6*(V_{DESIGN}/0.43)) — $V_{DESIGN\ OTHER}$ = ac-ft

H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired) — $V_{DESIGN\ USER}$ = ac-ft

I) NRCS Hydrologic Soil Groups of Tributary Watershed
- i) Percentage of Watershed consisting of Type A Soils — HSG_A = 0 %
- ii) Percentage of Watershed consisting of Type B Soils — HSG_B = 0 %
- iii) Percentage of Watershed consisting of Type C/D Soils — $HSG_{C/D}$ = 100 %

J) Excess Urban Runoff Volume (EURV) Design Volume
For HSG A: $EURV_A = 1.68 * i^{1.28}$
For HSG B: $EURV_B = 1.36 * i^{1.08}$
For HSG C/D: $EURV_{C/D} = 1.20 * i^{1.08}$
— $EURV_{DESIGN}$ = 5.010 ac-f t

K) User Input of Excess Urban Runoff Volume (EURV) Design Volume (Only if a different EURV Design Volume is desired) — $EURV_{DESIGN\ USER}$ = ac-f t

2. Basin Shape: Length to Width Ratio
(A basin length to width ratio of at least 2:1 will improve TSS reduction.) — L : W = : 1

3. Basin Side Slopes

A) Basin Maximum Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred) — Z = 4.00 ft / ft

4. Inlet

A) Describe means of providing energy dissipation at concentrated inflow locations:

5. Forebay

A) Minimum Forebay Volume (V_{FMIN} = 3% of the WQCV) — V_{FMIN} = 0.051 ac-ft

B) Actual Forebay Volume — V_F = 0.081 ac-ft

C) Forebay Depth (D_F = 30 inch maximum) — D_F = 30.0 in

D) Forebay Discharge

i) Undetained 100-year Peak Discharge — Q_{100} = 268.57 cfs

ii) Forebay Discharge Design Flow (Q_F = 0.02 * Q_{100}) — Q_F = 5.37 cfs

E) Forebay Discharge Design

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

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

G) Rectangular Notch Width — Calculated W_N = 10.9 in

Design Procedure Form: Extended Detention Basin (EDB)

Designer:
Company: Redland
Date: January 27, 2026
Project: Bella Mesa North
Location: Pond A - Forebay 3

6. Trickle Channel	
A) Type of Trickle Channel	Choose One: (●) Concrete ( ) Soft Bottom
F) Slope of Trickle Channel	S = 0.0100 ft / ft
7. Micropool and Outlet Structure	
A) Depth of Micropool (2.5-feet minimum)	D_M = 2.5 ft
B) Surface Area of Micropool (10 ft^2 minimum)	A_M = 48 sq ft
C) Outlet Type	Choose One: (●) Orifice Plate ( ) Other (Describe):
D) Smallest Dimension of Orifice Opening Based on Hydrograph Routing (Use UD-Detention)	$D_{orifice}$ = 2.00 inches
E) Total Outlet Area	A_{ot} = 26.37 square inches
8. Initial Surcharge Volume	
A) Depth of Initial Surcharge Volume (Minimum recommended depth is 4 inches)	D_{IS} = 4 in
B) Minimum Initial Surcharge Volume (Minimum volume of 0.3% of the WQCV)	V_{IS} = 221 cu ft
C) Initial Surcharge Provided Above Micropool	V_s = 16.0 cu ft
9. Trash Rack	
A) Water Quality Screen Open Area: $A_t = A_{ot} * 38.5*(e^{-0.095D})$	A_t = 840 square inches
B) Type of Screen (If specifying an alternative to the materials recommended in the USDCM, indicate "other" and enter the ratio of the total open are to the total screen are for the material specified.)	*Aluminum Amico-Klemp SR Series with Cross Rods 2" O.C.*
Other (Y/N): N	
C) Ratio of Total Open Area to Total Area (only for type 'Other')	User Ratio =
D) Total Water Quality Screen Area (based on screen type)	A_{total} = 1182 sq. in.
E) Depth of Design Volume (EURV or WQCV) (Based on design concept chosen under 1E)	H= 6.86 feet
F) Height of Water Quality Screen (H_{TR})	H_{TR}= 110.32 inches
G) Width of Water Quality Screen Opening ($W_{opening}$) (Minimum of 12 inches is recommended)	$W_{opening}$ = 12.0 inches **VALUE LESS THAN RECOMMENDED MIN. WIDTH. WIDTH HAS BEEN SET TO 12 INCHES.**

Design Procedure Form: Extended Detention Basin (EDB)

Designer:
Company: Redland
Date: January 27, 2026
Project: Bella Mesa North
Location: Pond A - Forebay 3

10. Overflow Embankment	
A) Describe embankment protection for 100-year and greater overtopping:	
B) Slope of Overflow Embankment (Horizontal distance per unit vertical, 4:1 or flatter preferred)	Ze = ft / ft
11. Vegetation	Choose One: ○ Irrigated ○ Not Irrigated
12. Access	
A) Describe Sediment Removal Procedures	

Notes:

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN A-5A	SDIN A-5	SDIN A-4A	SDIN A-4
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	On Grade
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	1.30	2.90	0.60	1.50
Major Peak Flow, Q (cfs)	2.90	7.00	1.40	3.90

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

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received	SDIN A-5
Bypass Flow Description (Optional):				
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00	0.53
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00	2.61

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	1.30	2.90	0.60	2.03
Major Total Design Peak Flow, Q (cfs)	2.90	7.00	1.40	6.51
Minor Inlet Interception Capacity, Q_a (cfs)	1.26	2.37	0.60	1.81
Major Inlet Interception Capacity, Q_a (cfs)	2.37	4.39	1.34	4.19
Minor Flow Bypassed Downstream, Qb (cfs)	0.04	0.53	0.00	0.22
Major Flow Bypassed Downstream, Qb (cfs)	0.53	2.61	0.06	2.32
Minor Flow Capture Percentage, C%	97%	82%	100%	89%
Major Flow Capture Percentage, C%	82%	63%	95%	64%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN A-3	SDIN A-2	SDIN A-1	SDIN B-5A
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	In Sump	On Grade
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	1.80	0.90	1.60	3.00
Major Peak Flow, Q (cfs)	4.50	2.10	4.00	7.50

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	SDIN A-4	No Bypass Flow Received	SDIN A-3	SDIN A-5A
Bypass Flow Description (Optional):				
Minor Bypass Flow Received, Q_b (cfs)	0.22	0.00	0.06	0.04
Major Bypass Flow Received, Q_b (cfs)	2.32	0.00	1.92	0.53

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	2.02	0.90	1.66	3.04
Major Total Design Peak Flow, Q (cfs)	6.82	2.10	5.92	8.03
Minor Inlet Interception Capacity, Q_a (cfs)	1.96	0.90	2.69	2.65
Major Inlet Interception Capacity, Q_a (cfs)	4.90	1.95	6.27	5.36
Minor Flow Bypassed Downstream, Qb (cfs)	0.06	0.00	N/A	0.40
Major Flow Bypassed Downstream, Qb (cfs)	1.92	0.15	N/A	2.67
Minor Flow Capture Percentage, C%	97%	100%	100%	87%
Major Flow Capture Percentage, C%	72%	93%	100%	67%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN B-5	SDIN B-4A	SDIN B-3	SDIN B-2
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	In Sump
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	1.60	2.90	1.00	1.40
Major Peak Flow, Q (cfs)	3.70	6.70	2.30	3.50

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	User-Defined	User-Defined
Bypass Flow Description (Optional):			B-5A, B-5, B-4A	B-3, B-2A
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.96	0.41
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00	5.81	4.94

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	1.60	2.90	1.96	1.81
Major Total Design Peak Flow, Q (cfs)	3.70	6.70	8.11	8.44
Minor Inlet Interception Capacity, Q_a (cfs)	1.60	2.33	1.69	2.69
Major Inlet Interception Capacity, Q_a (cfs)	3.08	4.18	4.56	8.75
Minor Flow Bypassed Downstream, Qb (cfs)	0.00	0.57	0.27	N/A
Major Flow Bypassed Downstream, Qb (cfs)	0.62	2.52	3.56	N/A
Minor Flow Capture Percentage, C%	100%	80%	86%	100%
Major Flow Capture Percentage, C%	83%	62%	56%	100%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN B-2A	SDIN B-1A	SDIN B-1
Inlet Application (Street or Area)	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	In Sump
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	2	2

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	2.10	1.40	1.10
Major Peak Flow, Q (cfs)	5.30	3.20	2.60

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	SDIN A-4A	No Bypass Flow Received	SDIN B-1A
Bypass Flow Description (Optional):			
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.15
Major Bypass Flow Received, Q_b (cfs)	0.06	0.00	0.99

CALCULATED OUTPUT

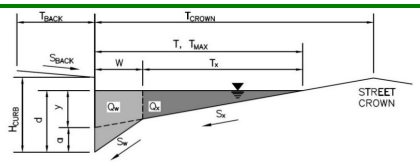
Minor Total Design Peak Flow, Q (cfs)	2.10	1.40	1.25
Major Total Design Peak Flow, Q (cfs)	5.36	3.20	3.59
Minor Inlet Interception Capacity, Q_a (cfs)	1.97	1.25	2.33
Major Inlet Interception Capacity, Q_a (cfs)	3.98	2.21	5.37
Minor Flow Bypassed Downstream, Qb (cfs)	0.13	0.15	N/A
Major Flow Bypassed Downstream, Qb (cfs)	1.39	0.99	N/A
Minor Flow Capture Percentage, C%	94%	89%	100%
Major Flow Capture Percentage, C%	74%	69%	100%

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN A-5A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

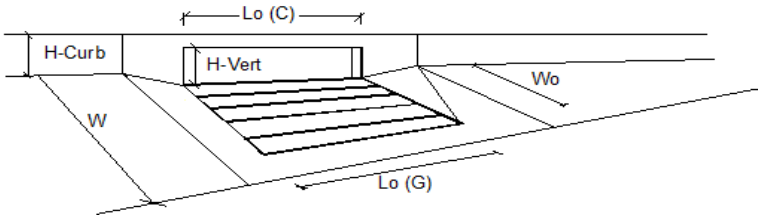
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.7**	**17.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.30 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 2.90 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



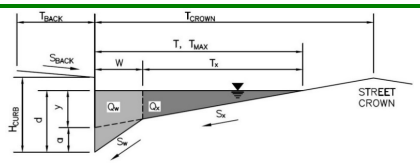
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.3**	**2.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.5**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**97**	**82**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN A-5**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

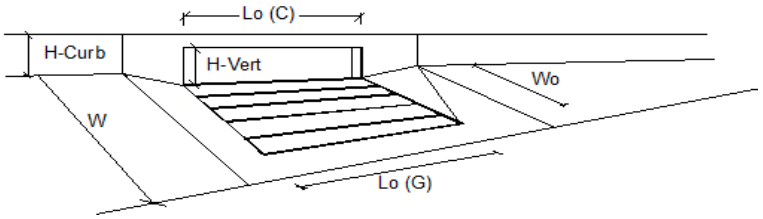
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.7**	**17.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.90 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 7.00 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



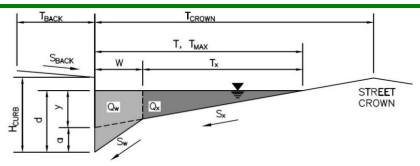
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Design Discharge for Half of Street (from *Inlet Management*)	Q_o =	2.9	7.0	cfs
Water Spread Width	T =	6.9	10.6	ft
Water Depth at Flowline (outside of local depression)	d =	3.2	4.1	inches
Water Depth at Street Crown (or at T_{MAX})	d_{CROWN} =	0.0	0.0	inches
Ratio of Gutter Flow to Design Flow	E_o =	0.760	0.549	
Discharge outside the Gutter Section W, carried in Section T_x	Q_x =	0.7	3.2	cfs
Discharge within the Gutter Section W	Q_w =	2.2	3.8	cfs
Discharge Behind the Curb Face	Q_{BACK} =	0.0	0.0	cfs
Flow Area within the Gutter Section W	A_W =	0.36	0.51	sq ft
Velocity within the Gutter Section W	V_W =	6.1	7.5	fps
Water Depth for Design Condition	d_{LOCAL} =	5.2	6.1	inches
Grate Analysis (Calculated)		MINOR	MAJOR	
Total Length of Inlet Grate Opening	L =	9.00	9.00	ft
Ratio of Grate Flow to Design Flow	$E_{o\text{-}GRATE}$ =	0.714	0.506	
Under No-Clogging Condition		MINOR	MAJOR	
Minimum Velocity Where Grate Splash-Over Begins	V_o =	3.53	3.53	fps
Interception Rate of Frontal Flow	R_f =	0.88	0.81	
Interception Rate of Side Flow	R_x =	0.55	0.48	
Interception Capacity	Q_i =	2.3	4.5	cfs
Under Clogging Condition		MINOR	MAJOR	
Clogging Coefficient for Multiple-unit Grate Inlet	GrateCoeff =	1.75	1.75	
Clogging Factor for Multiple-unit Grate Inlet	GrateClog =	0.29	0.29	
Effective (unclogged) Length of Multiple-unit Grate Inlet	L_e =	6.38	6.38	ft
Minimum Velocity Where Grate Splash-Over Begins	V_o =	2.97	2.97	fps
Interception Rate of Frontal Flow	R_f =	0.83	0.76	
Interception Rate of Side Flow	R_x =	0.35	0.30	
Actual Interception Capacity	**Q_a =**	**2.0**	**3.7**	**cfs**
Carry-Over Flow = Q_o-Q_a (to be applied to curb opening or next d/s inlet)	**Q_b =**	**0.9**	**3.3**	**cfs**
Curb Opening or Slotted Inlet Analysis (Calculated)		MINOR	MAJOR	
Equivalent Slope S_e	S_e =	0.131	0.100	ft/ft
Required Length L_T to Have 100% Interception	L_T =	5.58	12.29	ft
Under No-Clogging Condition		MINOR	MAJOR	
Effective Length of Curb Opening or Slotted Inlet (minimum of L, L_T)	L =	5.58	9.00	ft
Interception Capacity	Q_i =	0.4	0.8	cfs
Under Clogging Condition		MINOR	MAJOR	
Clogging Coefficient	CurbCoeff =	1.00	1.00	
Clogging Factor for Multiple-unit Curb Opening or Slotted Inlet	CurbClog =	0.06	0.06	
Effective (Unclogged) Length	L_e =	5.58	8.50	ft
Actual Interception Capacity	**Q_a =**	**0.4**	**0.7**	**cfs**
Carry-Over Flow = $Q_{b(GRATE)}$-Q_a	**Q_b =**	**0.5**	**2.6**	**cfs**
Summary		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.4**	**4.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.5**	**2.6**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**82**	**63**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN A-4A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

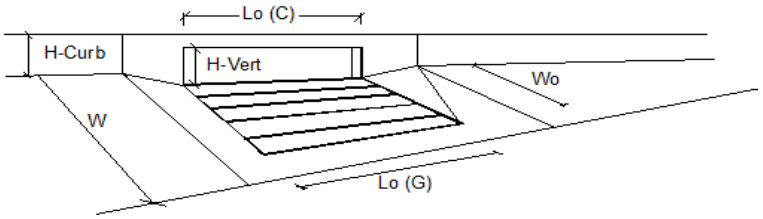
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.7**	**17.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.60 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 1.40 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



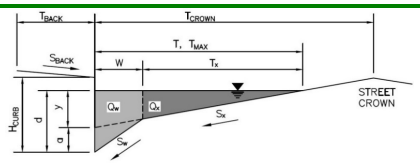
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.6**	**1.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.1**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**95**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN A-4**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

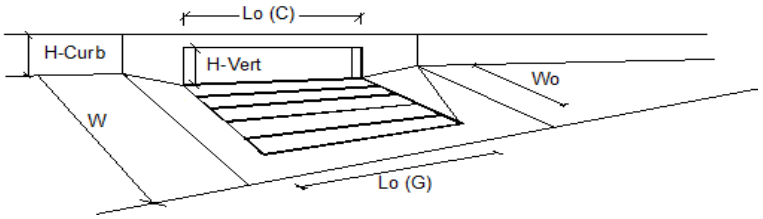
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.7**	**17.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.03 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 6.51 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



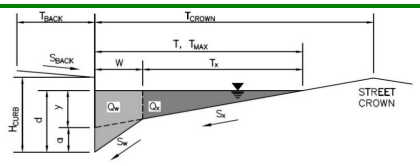
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.8**	**4.2**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**2.3**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**89**	**64**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN A-3**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.012	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

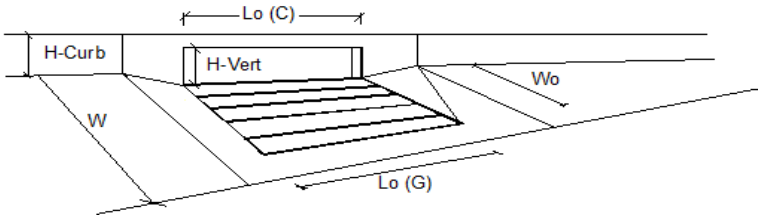
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.0**	**13.4**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.02 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 6.82 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



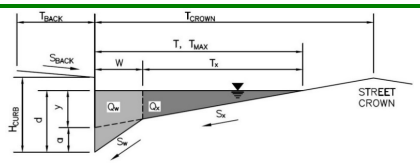
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.0**	**4.9**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**1.9**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**97**	**72**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN A-2**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	43.0	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 =	0.016	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

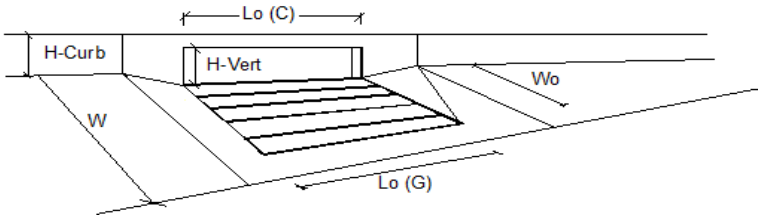
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.7**	**15.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.90 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 2.10 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



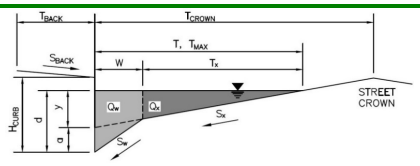
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.9**	**2.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.1**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**93**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN A-1**



Gutter Geometry:

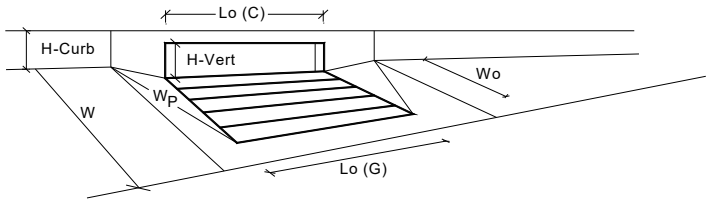
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	43.0	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} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	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)



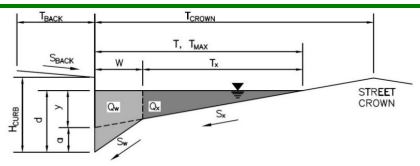
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	5.3	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	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) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	
Grate Flow Analysis (Calculated)		MINOR	MAJOR	
Clogging Coefficient for Multiple Units	Coef =	1.75	1.75	
Clogging Factor for Multiple Units	Clog =	0.29	0.29	
Grate Capacity as a Weir (based on MHFD - CSU 2010 Study)		MINOR	MAJOR	
Interception without Clogging	Q_{wi} =	2.6	5.3	cfs
Interception with Clogging	Q_{wa} =	1.9	3.7	cfs
Grate Capacity as an Orifice (based on MHFD - CSU 2010 Study)		MINOR	MAJOR	
Interception without Clogging	Q_{oi} =	13.9	15.9	cfs
Interception with Clogging	Q_{oa} =	9.8	11.3	cfs
Grate Capacity as Mixed Flow		MINOR	MAJOR	
Interception without Clogging	Q_{mi} =	5.4	8.2	cfs
Interception with Clogging	Q_{ma} =	3.8	5.8	cfs
Resulting Grate Capacity (assumes clogged condition)	**Q_{Grate} =**	**1.9**	**3.7**	**cfs**
Curb Opening Flow Analysis (Calculated)		MINOR	MAJOR	
Clogging Coefficient for Multiple Units	Coef =	1.00	1.00	
Clogging Factor for Multiple Units	Clog =	0.06	0.06	
Curb Capacity as a Weir (based on MHFD - CSU 2010 Study)		MINOR	MAJOR	
Interception without Clogging	Q_{wi} =	1.2	3.5	cfs
Interception with Clogging	Q_{wa} =	1.1	3.3	cfs
Curb Capacity as an Orifice (based on MHFD - CSU 2010 Study)		MINOR	MAJOR	
Interception without Clogging	Q_{oi} =	14.7	16.3	cfs
Interception with Clogging	Q_{oa} =	13.9	15.4	cfs
Curb Opening Capacity as Mixed Flow		MINOR	MAJOR	
Interception without Clogging	Q_{mi} =	3.6	6.5	cfs
Interception with Clogging	Q_{ma} =	3.4	6.1	cfs
Resulting Curb Opening Capacity (assumes clogged condition)	**Q_{Curb} =**	**1.1**	**3.3**	**cfs**
Resultant Street Conditions		MINOR	MAJOR	
Total Inlet Length	L =	9.00	9.00	feet
Resultant Street Flow Spread (based on street geometry from above)	T =	10.4	16.0	ft
Resultant Flow Depth at Street Crown	d_{CROWN} =	0.0	0.0	inches
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.36	0.47	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.17	0.28	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.38	0.50	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.38	0.50	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.7**	**6.3**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	1.7	5.9	cfs

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN B-5A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.012	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.014	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

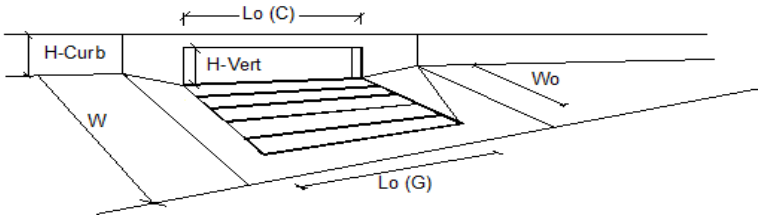
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.3**	**14.3**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 3.04 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 8.03 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



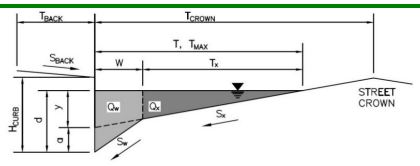
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.6**	**5.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.4**	**2.7**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**87**	**67**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN B-5**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.014	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

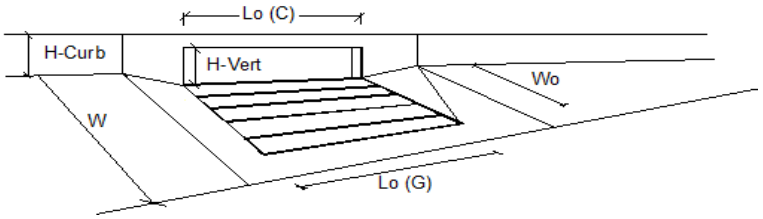
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.3**	**14.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.60 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 3.70 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



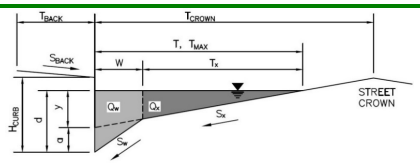
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.6**	**3.1**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.6**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**83**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN B-4A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.024	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

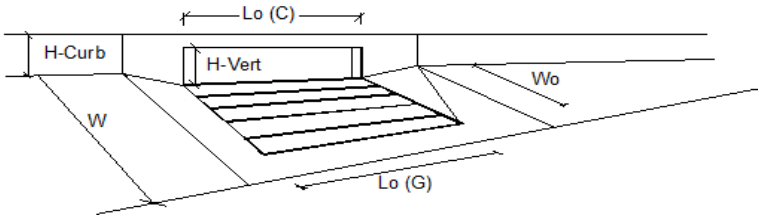
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**7.0**	**18.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.90 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 6.70 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



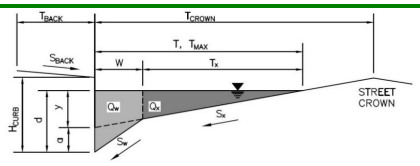
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.3**	**4.2**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.6**	**2.5**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**80**	**62**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN B-3**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.027	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

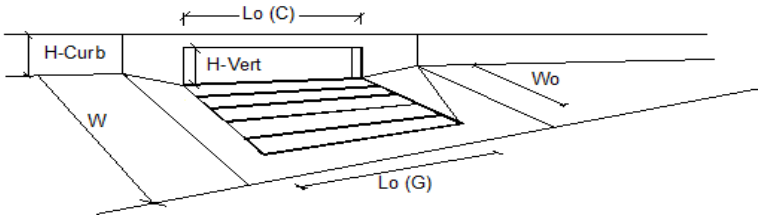
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**7.5**	**19.6**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.96 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 8.11 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



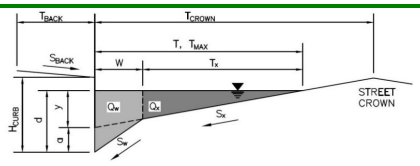
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.7**	**4.6**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.3**	**3.6**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**86**	**56**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN B-2**



Gutter Geometry:

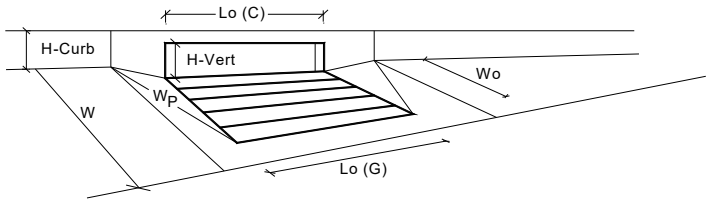
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	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 (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	6.0	inches
Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	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) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.36	0.52	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.17	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.38	0.57	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.38	0.57	

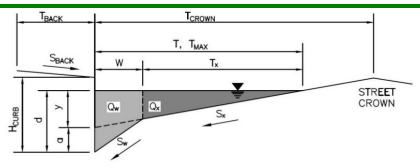
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.7**	**8.7**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	1.8	8.4	cfs

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN B-2A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.015	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

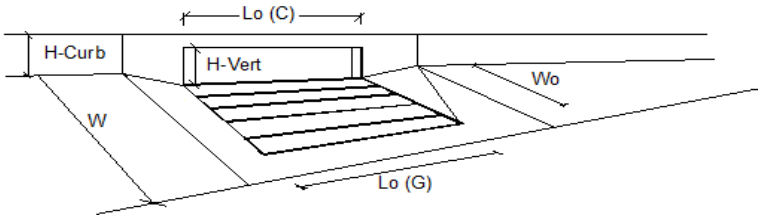
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.5**	**15.2**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.10 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 5.36 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



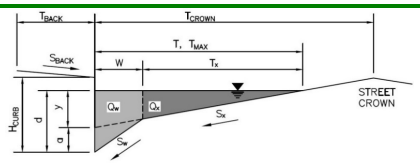
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.0**	**4.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**1.4**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**94**	**74**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN B-1A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.015	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

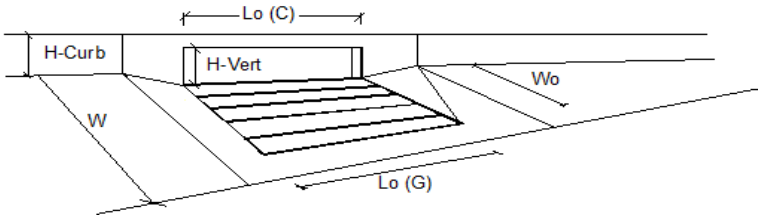
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.6**	**15.4**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.40 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 3.20 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



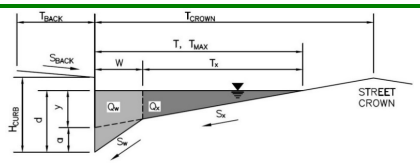
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.2**	**2.2**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**1.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**89**	**69**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN B-1**



Gutter Geometry:

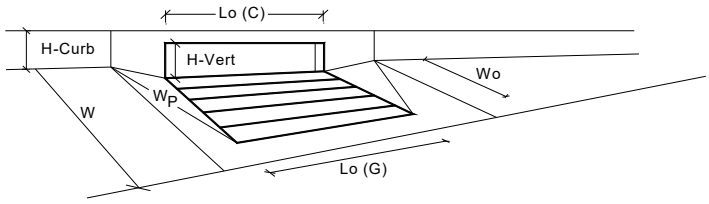
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	30.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	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} =	0.012	

		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} =	4.0	5.3	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 (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	2	2	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	5.3	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	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) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.36	0.46	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.17	0.28	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.47	0.62	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.47	0.62	

		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.3**	**5.4**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	1.3	3.6	cfs

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN C-8B	SDIN C-8A	SDIN C-8	SDIN C-7A
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	On Grade
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	1

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	3.00	2.10	1.90	0.70
Major Peak Flow, Q (cfs)	8.00	6.00	4.40	2.10

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

Receive Bypass Flow from:	No Bypass Flow Received	SDIN C-8B	No Bypass Flow Received	SDIN C-8A
Bypass Flow Description (Optional):				
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.37	0.00	0.21
Major Bypass Flow Received, Q_b (cfs)	0.00	2.63	0.00	2.97

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	3.00	2.47	1.90	0.91
Major Total Design Peak Flow, Q (cfs)	8.00	8.63	4.40	5.07
Minor Inlet Interception Capacity, Q_a (cfs)	2.63	2.26	1.84	0.78
Major Inlet Interception Capacity, Q_a (cfs)	5.37	5.66	3.50	2.27
Minor Flow Bypassed Downstream, Qb (cfs)	0.37	0.21	0.06	0.13
Major Flow Bypassed Downstream, Qb (cfs)	2.63	2.97	0.90	2.80
Minor Flow Capture Percentage, C%	88%	92%	97%	86%
Major Flow Capture Percentage, C%	67%	66%	80%	45%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN C-6B	SDIN C-6	SDIN C-6A	SDIN C-5
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	On Grade
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	0.90	1.00	1.90	1.80
Major Peak Flow, Q (cfs)	2.20	2.40	4.30	4.20

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	SDIN C-7A	SDIN C-6B	No Bypass Flow Received	No Bypass Flow Received
Bypass Flow Description (Optional):				
Minor Bypass Flow Received, Q_b (cfs)	0.13	0.15	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	2.80	1.67	0.00	0.00

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	1.03	1.15	1.90	1.80
Major Total Design Peak Flow, Q (cfs)	5.00	4.07	4.30	4.20
Minor Inlet Interception Capacity, Q_a (cfs)	0.88	0.91	1.60	1.64
Major Inlet Interception Capacity, Q_a (cfs)	3.33	2.80	2.91	3.10
Minor Flow Bypassed Downstream, Qb (cfs)	0.15	0.24	0.30	0.16
Major Flow Bypassed Downstream, Qb (cfs)	1.67	1.26	1.39	1.10
Minor Flow Capture Percentage, C%	86%	79%	84%	91%
Major Flow Capture Percentage, C%	67%	69%	68%	74%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN C-5B	SDIN C-5A	SDIN C-4	SDIN C-3
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	On Grade
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	1.90	2.30	0.90	1.00
Major Peak Flow, Q (cfs)	4.50	5.80	2.20	2.20

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	SDIN C-5B	SDIN C-5A	User-Defined
Bypass Flow Description (Optional):				C-4 & C6
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.06	0.18	0.25
Major Bypass Flow Received, Q_b (cfs)	0.00	0.94	1.98	2.35

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	1.90	2.36	1.08	1.25
Major Total Design Peak Flow, Q (cfs)	4.50	6.74	4.18	4.55
Minor Inlet Interception Capacity, Q_a (cfs)	1.84	2.18	1.07	1.13
Major Inlet Interception Capacity, Q_a (cfs)	3.56	4.76	3.09	3.02
Minor Flow Bypassed Downstream, Qb (cfs)	0.06	0.18	0.01	0.12
Major Flow Bypassed Downstream, Qb (cfs)	0.94	1.98	1.09	1.53
Minor Flow Capture Percentage, C%	97%	92%	99%	90%
Major Flow Capture Percentage, C%	79%	71%	74%	66%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN C-2	SDIN C-1
Inlet Application (Street or Area)	STREET	STREET
Hydraulic Condition	On Grade	In Sump
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	2

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	2.10	1.20
Major Peak Flow, Q (cfs)	5.20	2.90

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	SDIN C-6A	User-Defined
Bypass Flow Description (Optional):		C-3 & C-2
Minor Bypass Flow Received, Q_b (cfs)	0.30	0.47
Major Bypass Flow Received, Q_b (cfs)	1.39	3.92

CALCULATED OUTPUT

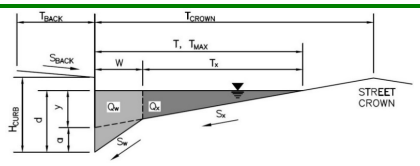
Minor Total Design Peak Flow, Q (cfs)	2.40	1.67
Major Total Design Peak Flow, Q (cfs)	6.59	6.82
Minor Inlet Interception Capacity, Q_a (cfs)	2.05	2.33
Major Inlet Interception Capacity, Q_a (cfs)	4.20	7.68
Minor Flow Bypassed Downstream, Qb (cfs)	0.35	N/A
Major Flow Bypassed Downstream, Qb (cfs)	2.39	N/A
Minor Flow Capture Percentage, C%	85%	100%
Major Flow Capture Percentage, C%	64%	100%

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-8B**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.014	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

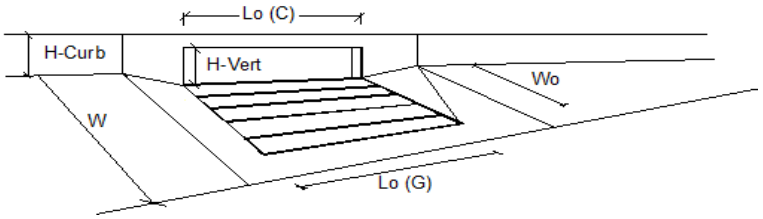
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.3**	**14.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 3.00 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 8.00 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



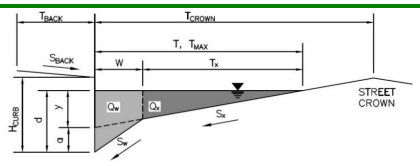
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.6**	**5.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.4**	**2.6**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**88**	**67**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-8A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.014	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

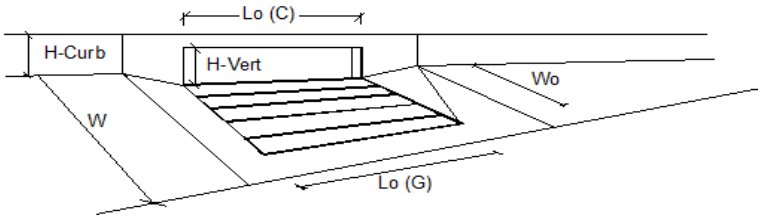
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.3**	**14.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.47 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 8.63 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



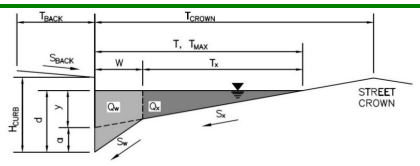
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.3**	**5.7**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**3.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**92**	**66**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-8**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.014	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

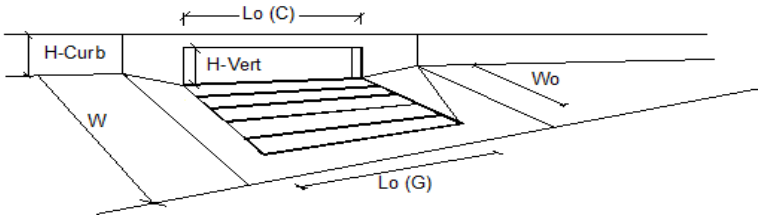
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.3**	**14.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.90 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.40 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



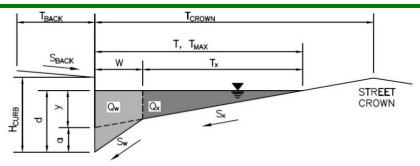
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.8**	**3.5**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**0.9**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**97**	**80**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-7A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.014	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

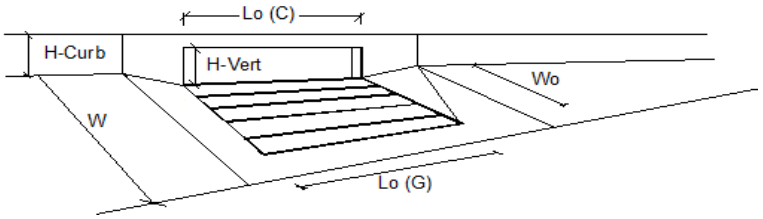
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.3**	**14.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.91 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 5.07 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



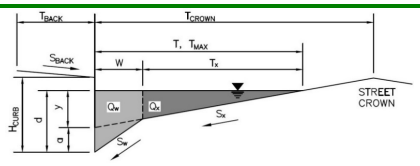
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.8**	**2.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**2.8**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**86**	**45**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-6B**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.027	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

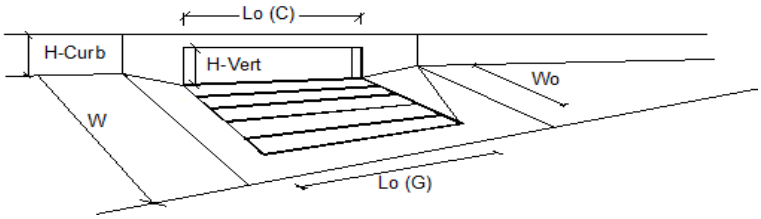
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**7.5**	**19.6**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.03 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 5.00 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



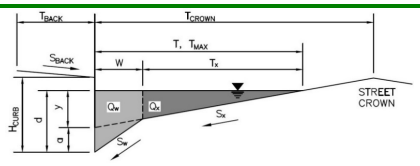
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.9**	**3.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**1.7**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**86**	**67**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-6**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.031	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

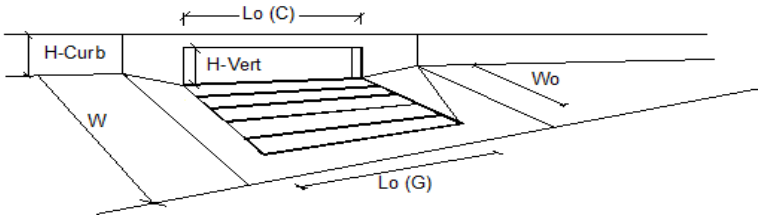
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**8.0**	**18.8**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.15 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.07 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



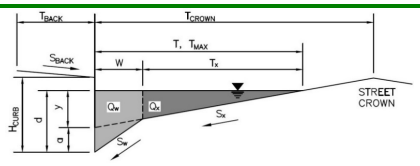
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.9**	**2.8**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**1.3**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**79**	**69**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-6A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.031	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

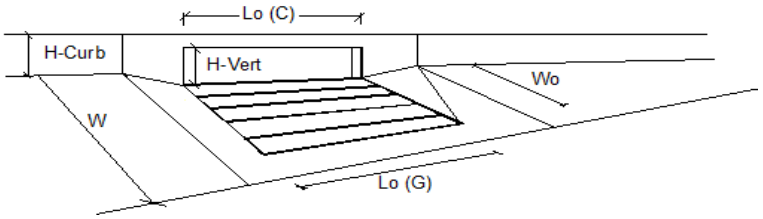
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**8.0**	**18.8**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.90 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.30 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



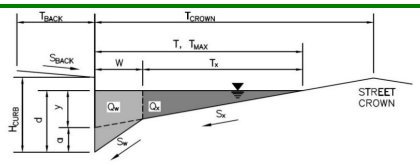
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.6**	**2.9**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.3**	**1.4**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**84**	**68**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-5**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

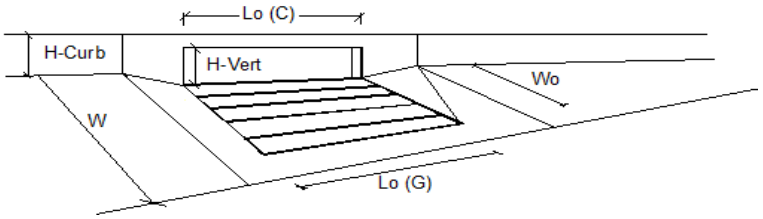
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.7**	**17.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.80 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.20 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



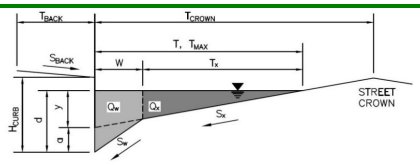
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.6**	**3.1**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**1.1**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**91**	**74**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-5B**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.014	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

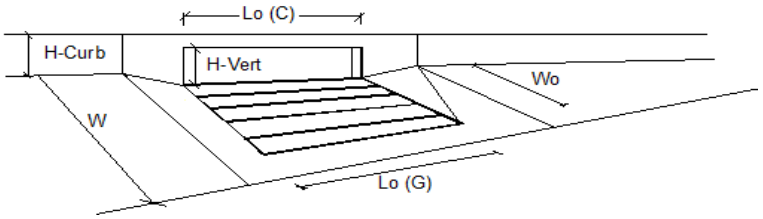
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.3**	**14.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.90 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.50 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



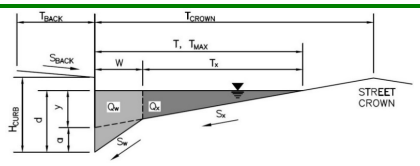
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.8**	**3.6**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**0.9**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**97**	**79**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-5A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.014	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

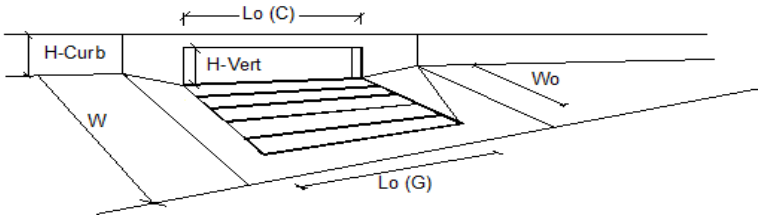
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.3**	**14.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.36 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 6.74 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



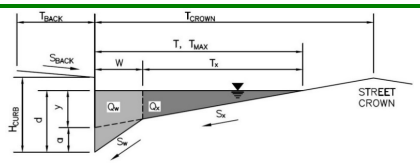
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.2**	**4.8**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**2.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**92**	**71**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-4**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

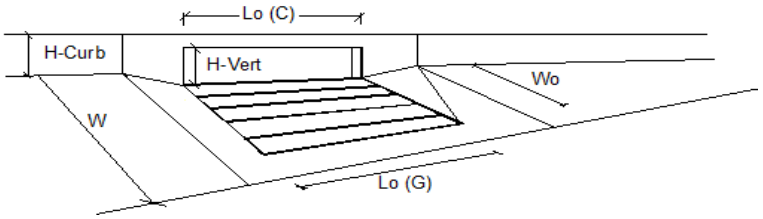
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.7**	**17.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.08 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.18 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



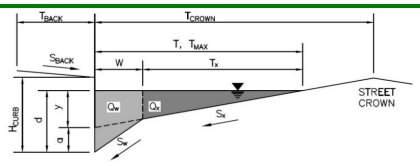
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.1**	**3.1**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.1**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**99**	**74**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-3**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.031	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

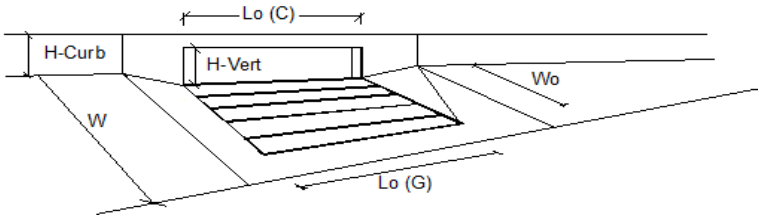
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**8.0**	**18.8**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.25 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.55 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



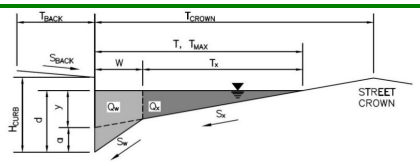
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.1**	**3.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**1.5**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**90**	**66**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-2**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	40.0	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 =	0.023	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

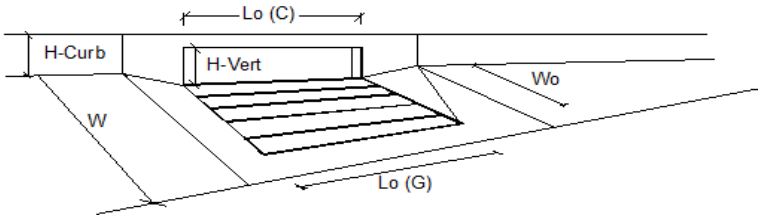
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.8**	**18.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.40 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 6.59 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



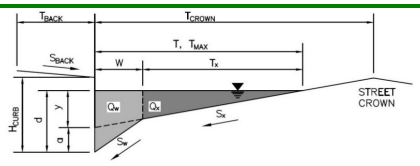
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.1**	**4.2**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.4**	**2.4**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**85**	**64**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN C-1**



Gutter Geometry:

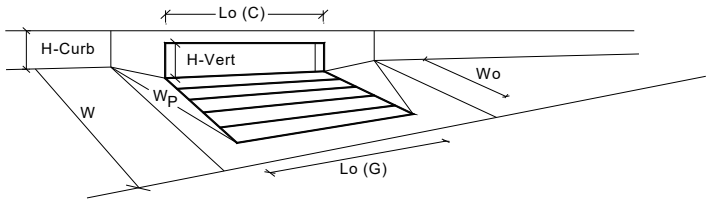
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	43.0	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} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	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 (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	2	2	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	6.0	inches
Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	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) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.36	0.52	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.17	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.47	0.71	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.47	0.71	

		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.3**	**7.7**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	1.7	6.8	cfs

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN D-11	SDIN D-11C	SDIN D-11B	SDIN D-8B
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	On Grade
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	3.50	2.10	0.70	0.90
Major Peak Flow, Q (cfs)	8.90	5.30	1.60	2.00

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received	User-Defined
Bypass Flow Description (Optional):				D-11, D-11A, D-11C
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00	1.56
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00	8.51

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	3.50	2.10	0.70	2.46
Major Total Design Peak Flow, Q (cfs)	8.90	5.30	1.60	10.51
Minor Inlet Interception Capacity, Q_a (cfs)	2.68	1.84	0.70	2.07
Major Inlet Interception Capacity, Q_a (cfs)	5.02	3.61	1.48	5.57
Minor Flow Bypassed Downstream, Qb (cfs)	0.82	0.26	0.00	0.40
Major Flow Bypassed Downstream, Qb (cfs)	3.88	1.69	0.12	4.94
Minor Flow Capture Percentage, C%	77%	88%	100%	84%
Major Flow Capture Percentage, C%	56%	68%	93%	53%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN D-8A	SDIN D-6A	SDIN D-5C	SDIN D-5B
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	In Sump
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	0.40	4.00	1.80	1.10
Major Peak Flow, Q (cfs)	0.90	10.00	4.20	2.50

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	SDIN D-11B	No Bypass Flow Received	User-Defined
Bypass Flow Description (Optional):				D-6A, D-5C
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00	0.91
Major Bypass Flow Received, Q_b (cfs)	0.00	0.12	0.00	4.95

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	0.40	4.00	1.80	2.01
Major Total Design Peak Flow, Q (cfs)	0.90	10.12	4.20	7.45
Minor Inlet Interception Capacity, Q_a (cfs)	0.40	3.25	1.64	2.69
Major Inlet Interception Capacity, Q_a (cfs)	0.84	6.28	3.09	8.75
Minor Flow Bypassed Downstream, Qb (cfs)	0.00	0.75	0.16	N/A
Major Flow Bypassed Downstream, Qb (cfs)	0.06	3.84	1.11	N/A
Minor Flow Capture Percentage, C%	100%	81%	91%	100%
Major Flow Capture Percentage, C%	93%	62%	73%	100%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN D-5	SDIN D-5A	SDIN E-25	SDIN E-25A
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	In Sump	In Sump
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	2.50	2.40	1.70	2.50
Major Peak Flow, Q (cfs)	6.20	4.60	3.30	5.00

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	User-Defined	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received
Bypass Flow Description (Optional):	D-8A, D-8B			
Minor Bypass Flow Received, Q_b (cfs)	0.40	0.00	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	5.00	0.00	0.00	0.00

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	2.90	2.40	1.70	2.50
Major Total Design Peak Flow, Q (cfs)	11.20	4.60	3.30	5.00
Minor Inlet Interception Capacity, Q_a (cfs)	2.35	2.04	2.69	2.69
Major Inlet Interception Capacity, Q_a (cfs)	5.87	3.28	7.16	7.16
Minor Flow Bypassed Downstream, Qb (cfs)	0.54	0.36	N/A	N/A
Major Flow Bypassed Downstream, Qb (cfs)	5.33	1.32	N/A	N/A
Minor Flow Capture Percentage, C%	81%	85%	100%	100%
Major Flow Capture Percentage, C%	52%	71%	100%	100%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN E-21A	SDIN E-21B	SDIN E-21	SDIN E-19
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	On Grade
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	1	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	2.00	2.70	0.60	1.90
Major Peak Flow, Q (cfs)	4.70	6.40	1.40	4.40

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	SDIN E-21B	SDIN E-21A
Bypass Flow Description (Optional):				
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.32	0.12
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00	1.93	1.11

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	2.00	2.70	0.92	2.02
Major Total Design Peak Flow, Q (cfs)	4.70	6.40	3.33	5.51
Minor Inlet Interception Capacity, Q_a (cfs)	1.88	2.38	0.81	1.90
Major Inlet Interception Capacity, Q_a (cfs)	3.59	4.47	1.83	4.02
Minor Flow Bypassed Downstream, Qb (cfs)	0.12	0.32	0.11	0.12
Major Flow Bypassed Downstream, Qb (cfs)	1.11	1.93	1.50	1.49
Minor Flow Capture Percentage, C%	94%	88%	88%	94%
Major Flow Capture Percentage, C%	76%	70%	55%	73%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN E-19A	SDIN E-15A	SDIN E-15B	SDIN E-15
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	On Grade
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	1.90	2.40	2.10	1.30
Major Peak Flow, Q (cfs)	4.60	6.00	5.30	3.30

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	SDIN E-21	SDIN E-19	SDIN E-19A	SDIN E-15B
Bypass Flow Description (Optional):				
Minor Bypass Flow Received, Q_b (cfs)	0.11	0.12	0.12	0.18
Major Bypass Flow Received, Q_b (cfs)	1.50	1.49	1.78	2.28

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	2.01	2.52	2.22	1.48
Major Total Design Peak Flow, Q (cfs)	6.10	7.49	7.08	5.58
Minor Inlet Interception Capacity, Q_a (cfs)	1.89	2.26	2.04	1.47
Major Inlet Interception Capacity, Q_a (cfs)	4.32	4.98	4.79	4.06
Minor Flow Bypassed Downstream, Qb (cfs)	0.12	0.26	0.18	0.00
Major Flow Bypassed Downstream, Qb (cfs)	1.78	2.51	2.28	1.52
Minor Flow Capture Percentage, C%	94%	90%	92%	100%
Major Flow Capture Percentage, C%	71%	67%	68%	73%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN E-14	SDIN E-14A	SDIN E-11	SDIN E-7A
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	On Grade
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	1	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	4.60	2.50	1.30	2.00
Major Peak Flow, Q (cfs)	11.20	5.70	2.90	5.10

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	SDIN E-14	SDIN E-15A
Bypass Flow Description (Optional):				
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.90	0.26
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00	4.22	2.51

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	4.60	2.50	2.20	2.26
Major Total Design Peak Flow, Q (cfs)	11.20	5.70	7.12	7.61
Minor Inlet Interception Capacity, Q_a (cfs)	3.70	2.32	1.44	2.08
Major Inlet Interception Capacity, Q_a (cfs)	6.98	4.33	2.71	5.04
Minor Flow Bypassed Downstream, Qb (cfs)	0.90	0.18	0.76	0.19
Major Flow Bypassed Downstream, Qb (cfs)	4.22	1.37	4.41	2.57
Minor Flow Capture Percentage, C%	80%	93%	65%	92%
Major Flow Capture Percentage, C%	62%	76%	38%	66%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN E-7B	SDIN E-8	SDIN E-8A	SDIN E-1
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	On Grade
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	2.10	3.40	3.50	2.40
Major Peak Flow, Q (cfs)	4.80	6.80	7.30	4.70

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	User-Defined	No Bypass Flow Received	No Bypass Flow Received	SDIN E-8
Bypass Flow Description (Optional):	E-11,E-14A			
Minor Bypass Flow Received, Q_b (cfs)	0.94	0.00	0.00	0.61
Major Bypass Flow Received, Q_b (cfs)	5.79	0.00	0.00	2.22

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	3.04	3.40	3.50	3.01
Major Total Design Peak Flow, Q (cfs)	10.59	6.80	7.30	6.92
Minor Inlet Interception Capacity, Q_a (cfs)	2.60	2.79	2.85	2.55
Major Inlet Interception Capacity, Q_a (cfs)	6.30	4.58	4.80	4.63
Minor Flow Bypassed Downstream, Qb (cfs)	0.44	0.61	0.65	0.46
Major Flow Bypassed Downstream, Qb (cfs)	4.29	2.22	2.50	2.29
Minor Flow Capture Percentage, C%	86%	82%	81%	85%
Major Flow Capture Percentage, C%	59%	67%	66%	67%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN E-1A	SDIN D-4	SDIN D-3	SDIN D-2D
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	In Sump	On Grade	On Grade
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	3.00	3.20	1.00	0.70
Major Peak Flow, Q (cfs)	7.80	8.60	2.00	1.30

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	User-Defined	User-Defined	SDIN E-1	SDIN D-5A
Bypass Flow Description (Optional):	E-7A, E-7B, E-8A	E-1A, D-3		
Minor Bypass Flow Received, Q_b (cfs)	1.27	1.04	0.46	0.36
Major Bypass Flow Received, Q_b (cfs)	9.36	9.76	2.29	1.32

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	4.27	4.24	1.46	1.06
Major Total Design Peak Flow, Q (cfs)	17.16	18.36	4.29	2.62
Minor Inlet Interception Capacity, Q_a (cfs)	3.30	5.19	1.39	0.91
Major Inlet Interception Capacity, Q_a (cfs)	8.38	19.51	3.32	2.08
Minor Flow Bypassed Downstream, Qb (cfs)	0.97	N/A	0.07	0.15
Major Flow Bypassed Downstream, Qb (cfs)	8.78	N/A	0.98	0.54
Minor Flow Capture Percentage, C%	77%	100%	95%	86%
Major Flow Capture Percentage, C%	49%	100%	77%	79%

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN D-1	SDIN D-2
Inlet Application (Street or Area)	STREET	STREET
Hydraulic Condition	In Sump	In Sump
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	3	3

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	1.40	2.10
Major Peak Flow, Q (cfs)	2.70	4.50

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	SDIN D-2D
Bypass Flow Description (Optional):		
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.15
Major Bypass Flow Received, Q_b (cfs)	0.00	0.54

CALCULATED OUTPUT

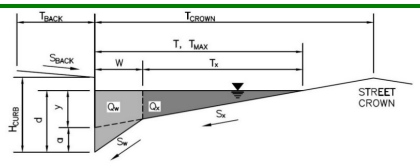
Minor Total Design Peak Flow, Q (cfs)	1.40	2.25
Major Total Design Peak Flow, Q (cfs)	2.70	5.04
Minor Inlet Interception Capacity, Q_a (cfs)	2.69	2.69
Major Inlet Interception Capacity, Q_a (cfs)	7.16	7.16
Minor Flow Bypassed Downstream, Qb (cfs)	N/A	N/A
Major Flow Bypassed Downstream, Qb (cfs)	N/A	N/A
Minor Flow Capture Percentage, C%	100%	100%
Major Flow Capture Percentage, C%	100%	100%

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-9A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	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 =	0.023	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

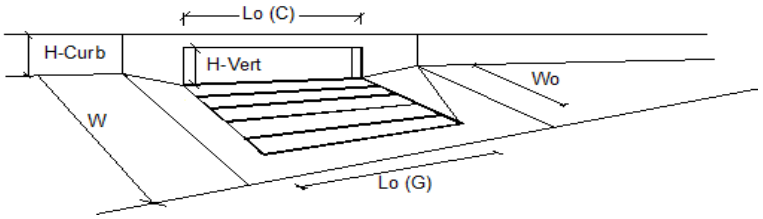
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.8**	**20.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.80 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 3.90 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



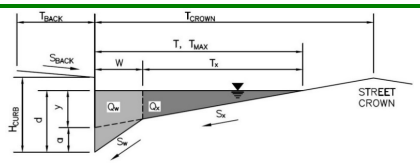
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.6**	**2.9**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**1.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**91**	**75**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-9**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	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 =	0.023	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

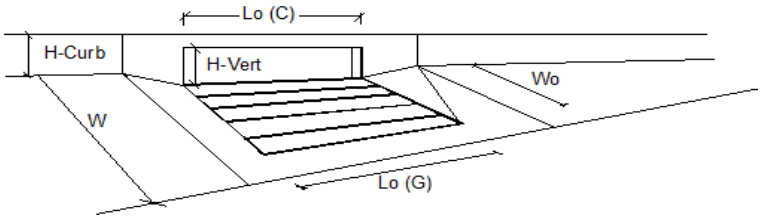
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.8**	**20.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.80 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.00 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



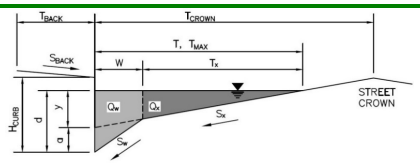
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.6**	**3.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**1.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**91**	**74**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-8**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	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 =	0.023	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

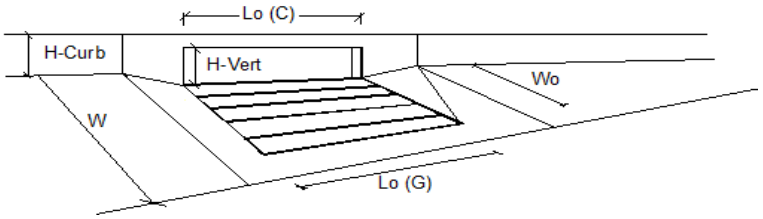
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.8**	**20.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.57 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.73 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



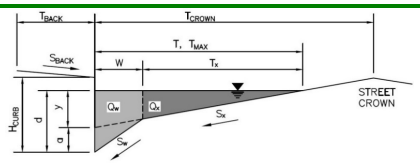
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.5**	**3.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**1.4**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**93**	**71**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-11A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.024	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

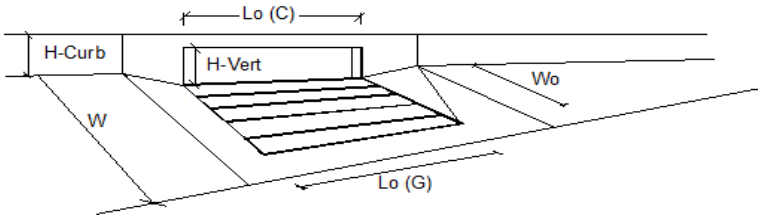
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**7.0**	**18.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.70 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 7.40 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



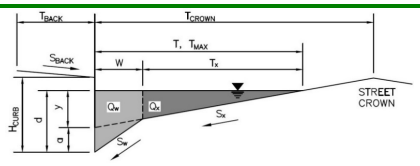
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.2**	**4.5**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.5**	**2.9**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**82**	**60**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-11**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.024	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

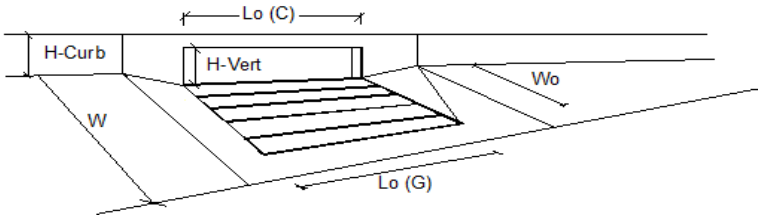
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**7.0**	**18.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 3.50 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 8.90 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



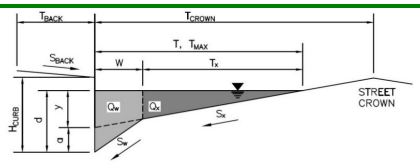
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.7**	**5.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.8**	**3.9**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**77**	**56**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-11C**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.023	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

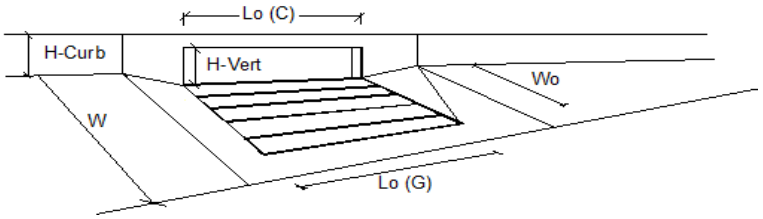
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.8**	**18.3**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.10 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 5.30 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



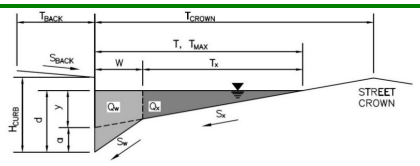
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.8**	**3.6**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.3**	**1.7**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**88**	**68**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-11B**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.023	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

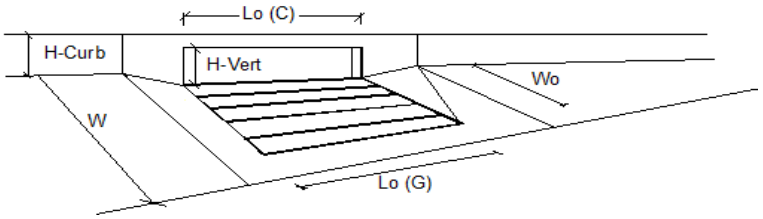
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.8**	**18.3**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.70 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 1.60 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



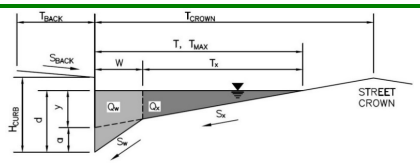
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.7**	**1.5**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.1**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**93**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-8B**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.024	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

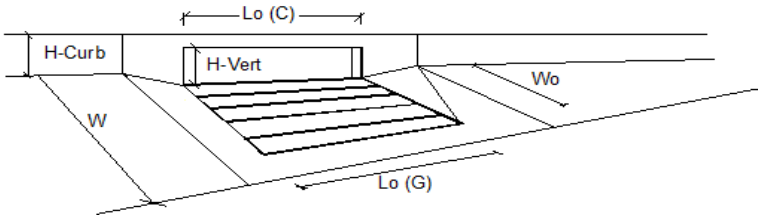
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**7.0**	**18.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.46 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 10.51 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



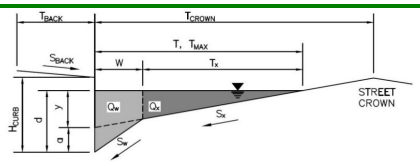
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.1**	**5.6**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.4**	**4.9**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**84**	**53**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-8A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.024	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

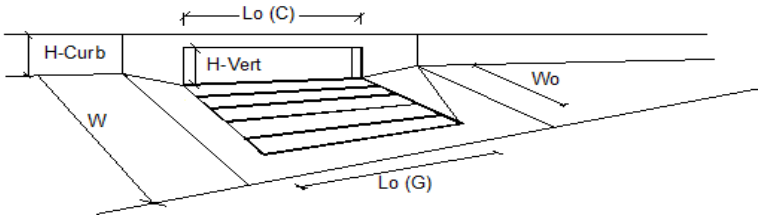
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**7.0**	**18.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.40 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 0.90 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



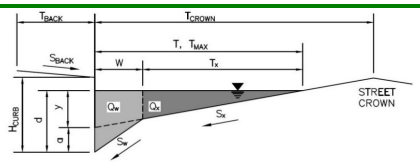
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.4**	**0.8**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.1**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**93**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-6A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.014	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

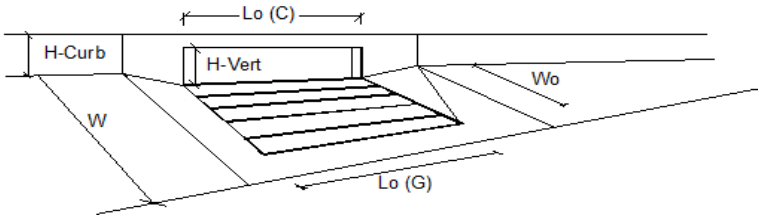
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.3**	**14.3**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 4.00 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 10.12 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



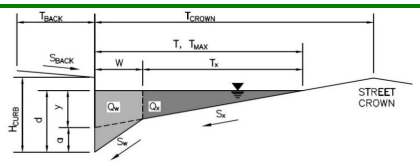
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**3.3**	**6.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.7**	**3.8**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**81**	**62**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-5C**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.023	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

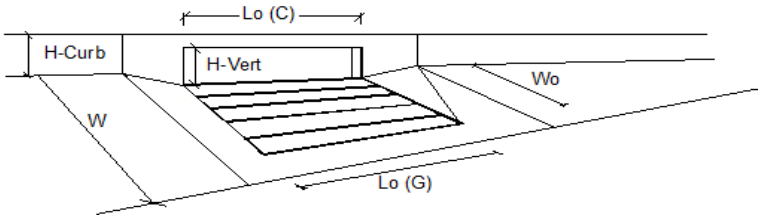
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.8**	**18.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.80 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.20 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



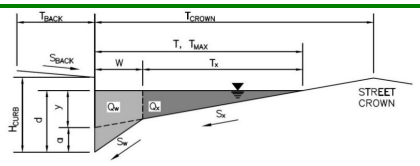
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.6**	**3.1**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**1.1**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**91**	**73**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-5B**



Gutter Geometry:

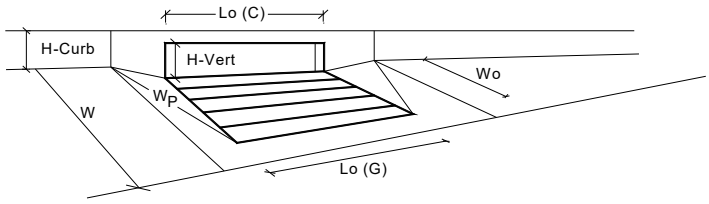
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	43.0	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} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	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 (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	6.0	inches
Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	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) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.36	0.52	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.17	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.38	0.57	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.38	0.57	

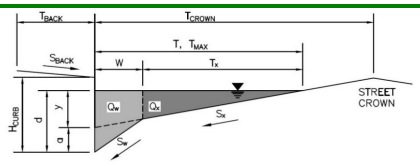
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.7**	**8.7**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	2.0	7.5	cfs

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-5**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	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 =	0.023	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

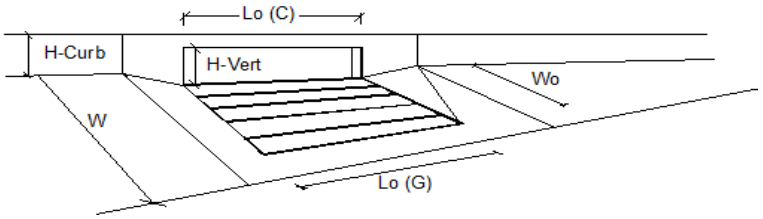
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.8**	**20.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.90 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 11.20 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



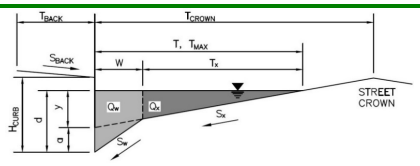
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.4**	**5.9**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.5**	**5.3**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**81**	**52**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-5A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	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 =	0.023	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

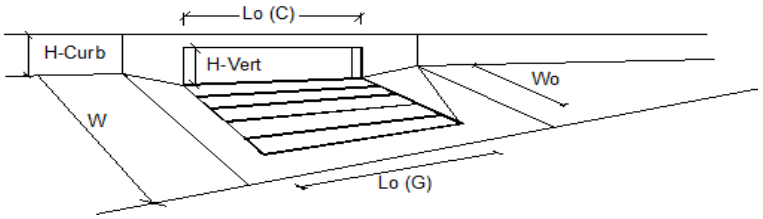
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.8**	**18.3**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.40 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.60 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



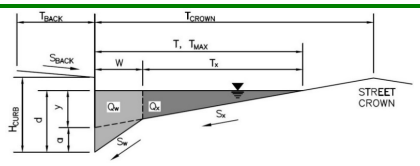
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.0**	**3.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.4**	**1.3**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**85**	**71**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-25**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	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} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

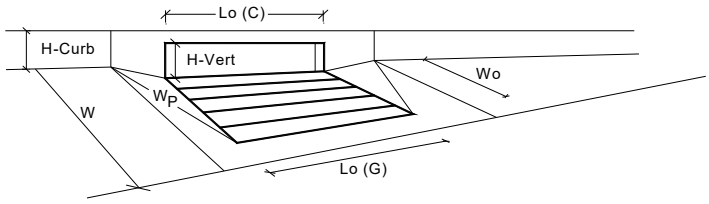
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

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

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	5.6	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	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) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.36	0.49	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.17	0.30	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.38	0.53	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.38	0.53	

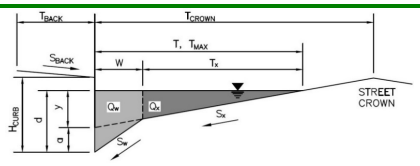
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.7**	**7.2**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	1.7	3.3	cfs

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-25A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	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} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

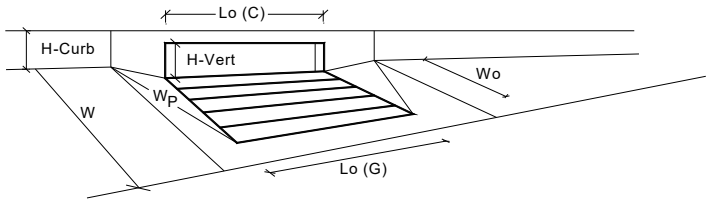
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

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

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	5.6	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	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) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.36	0.49	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.17	0.30	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.38	0.53	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.38	0.53	

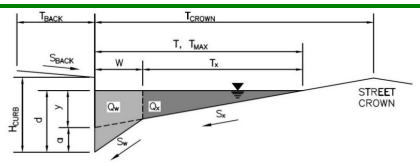
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.7**	**7.2**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	2.5	5.0	cfs

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-21A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.016	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

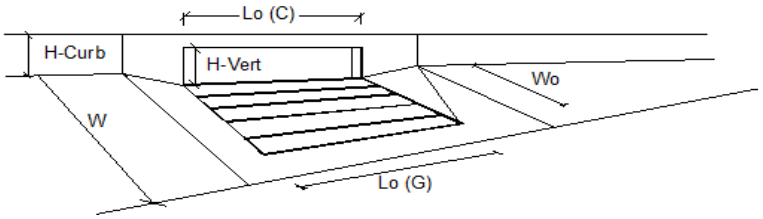
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**5.6**	**15.6**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.00 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.70 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



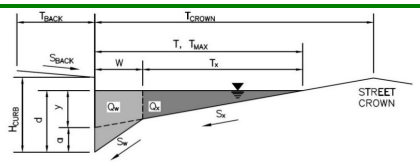
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.9**	**3.6**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**1.1**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**94**	**76**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-21B**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.016	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

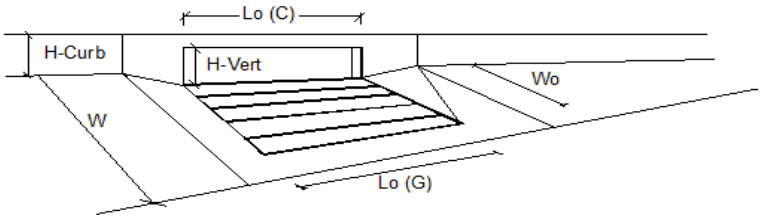
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.6**	**15.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.70 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 6.40 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



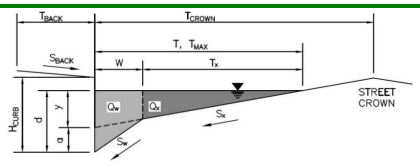
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.4**	**4.5**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.3**	**1.9**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**88**	**70**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-21**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

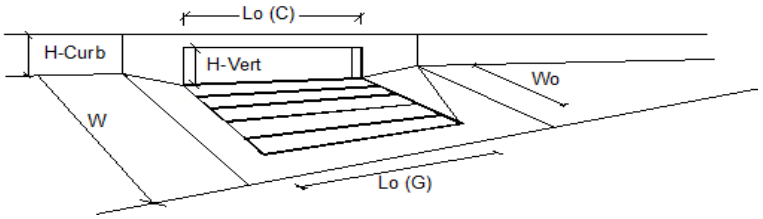
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**4.5**	**12.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 0.92 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 3.33 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



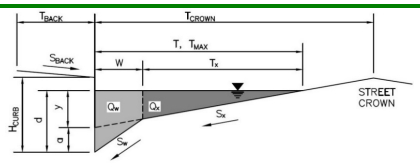
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.8**	**1.8**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**1.5**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**88**	**55**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-19**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.016	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

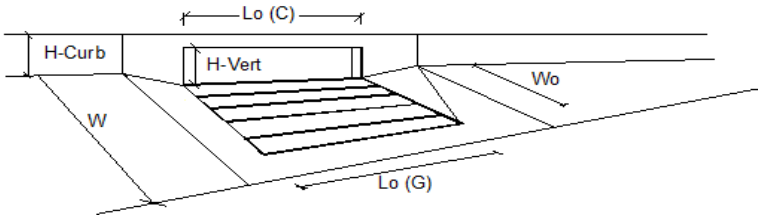
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.6**	**15.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.02 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 5.51 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



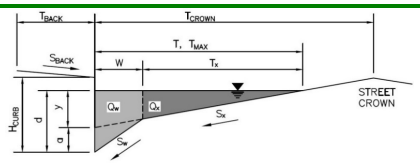
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.9**	**4.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**1.5**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**94**	**73**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-19A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.016	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

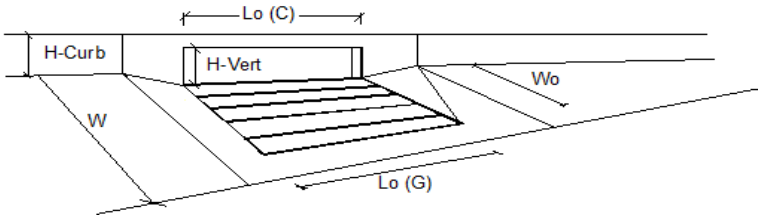
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.6**	**15.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.01 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 6.10 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



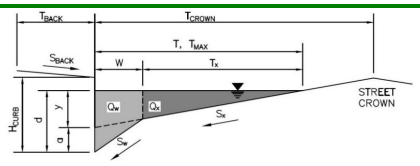
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.9**	**4.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**1.8**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**94**	**71**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-15A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.016	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

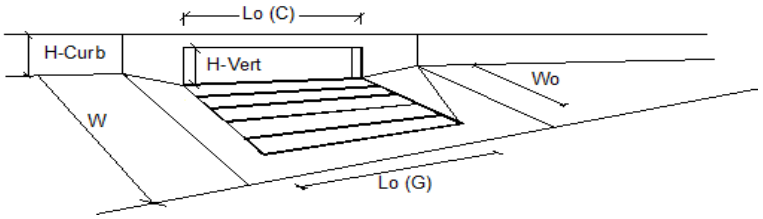
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.6**	**15.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.52 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 7.49 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



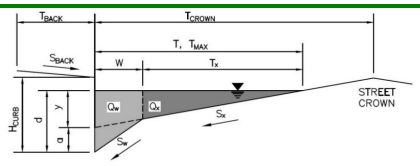
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.3**	**5.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.3**	**2.5**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**90**	**67**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-15B**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.016	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

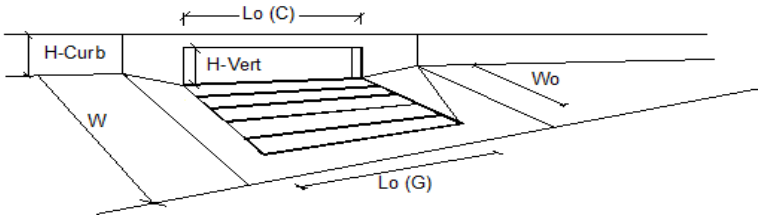
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.6**	**15.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.22 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 7.08 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



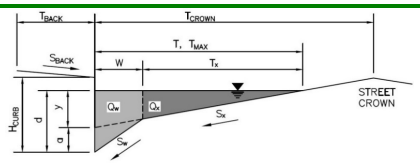
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.0**	**4.8**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**2.3**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**92**	**68**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-15**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.016	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

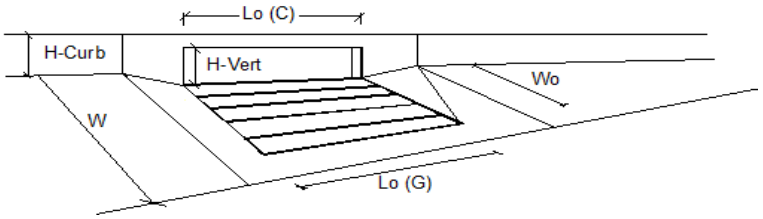
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.6**	**15.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.48 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 5.58 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



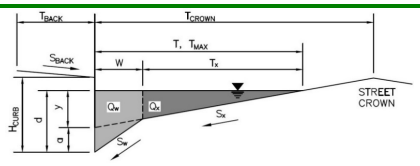
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.5**	**4.1**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.5**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**100**	**73**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-14**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.012	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

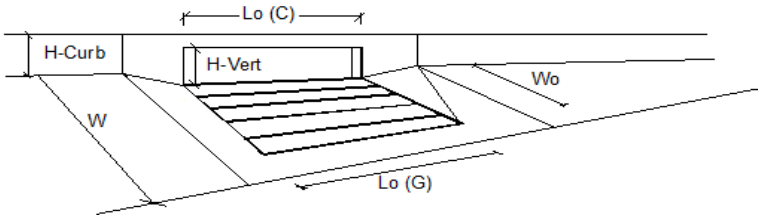
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**4.9**	**13.2**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 4.60 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 11.20 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



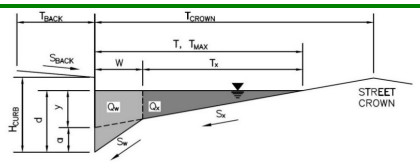
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**3.7**	**7.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.9**	**4.2**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**80**	**62**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-14A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.012	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

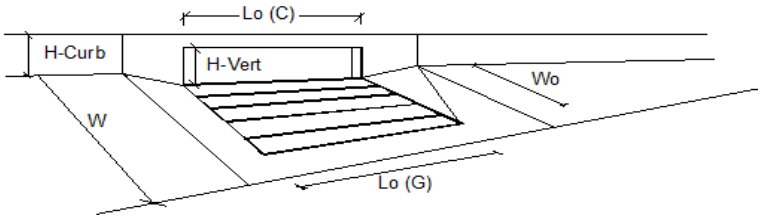
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**4.9**	**13.2**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.50 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 5.70 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



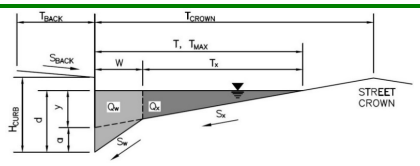
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.3**	**4.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**1.4**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**93**	**76**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-11**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.012	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

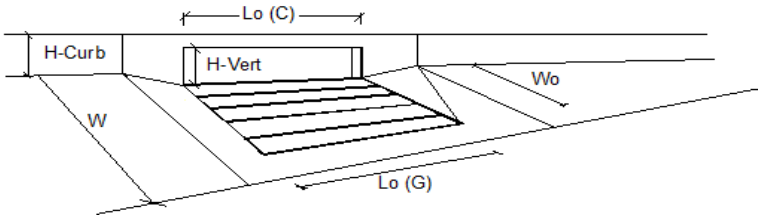
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.0**	**13.3**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.20 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 7.12 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



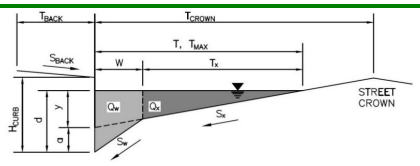
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.4**	**2.7**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.8**	**4.4**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**65**	**38**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-7A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.016	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

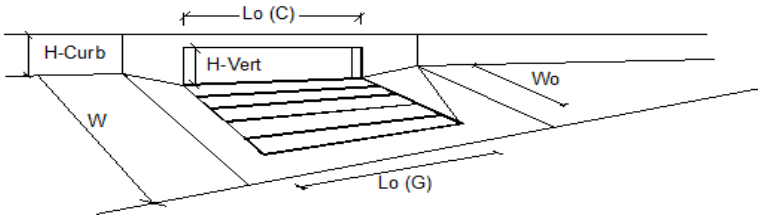
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.6**	**15.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.26 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 7.61 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



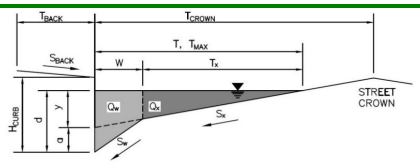
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.1**	**5.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.2**	**2.6**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**92**	**66**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-7B**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	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 =	0.016	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.3	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

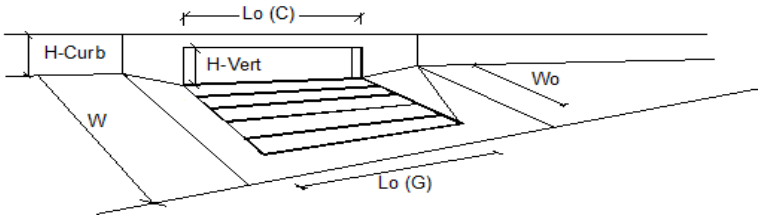
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.6**	**15.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 3.04 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 10.59 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



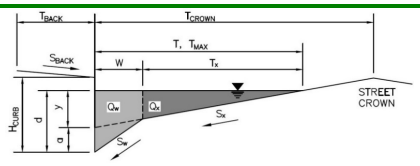
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.6**	**6.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.4**	**4.3**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**86**	**59**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-8**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	13.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	31.5	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 =	0.017	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	31.5	31.5	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

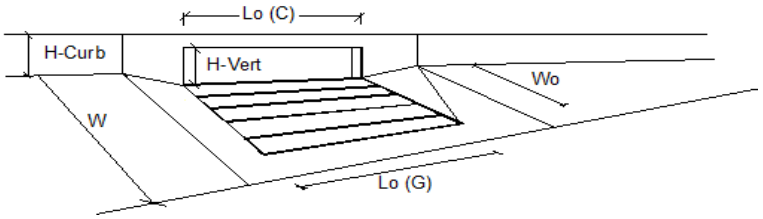
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.9**	**19.0**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 3.40 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 6.80 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



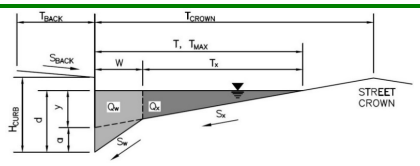
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.8**	**4.6**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.6**	**2.2**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**82**	**67**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-8A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	13.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	31.5	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 =	0.017	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	31.5	31.5	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

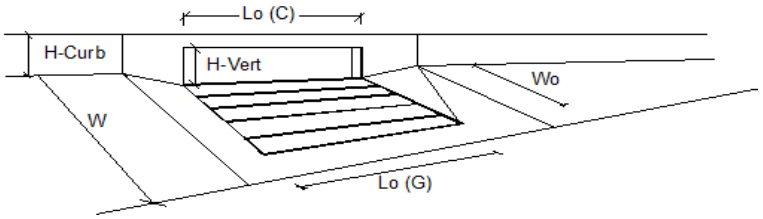
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**5.9**	**19.0**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 3.50 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 7.30 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



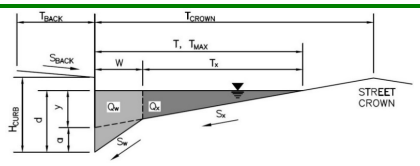
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.9**	**4.8**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.6**	**2.5**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**81**	**66**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-1**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	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 =	0.017	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

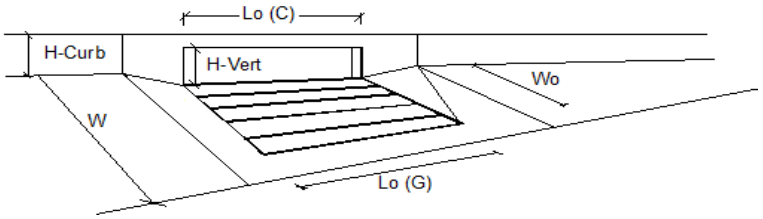
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**5.9**	**18.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 3.01 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 6.92 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



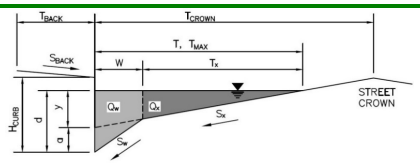
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**2.5**	**4.6**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.5**	**2.3**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**85**	**67**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN E-1A**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	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 =	0.017	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

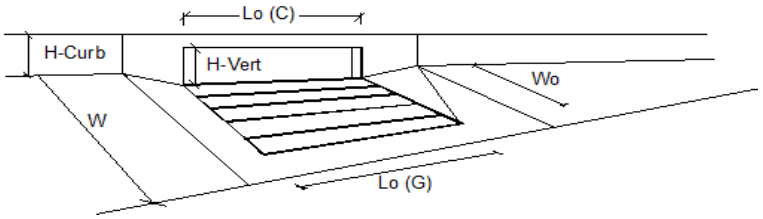
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**5.9**	**18.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 4.27 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 17.16 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



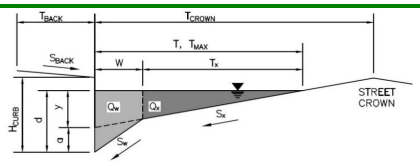
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**3.3**	**8.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**1.0**	**8.8**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**77**	**49**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-4**



Gutter Geometry:

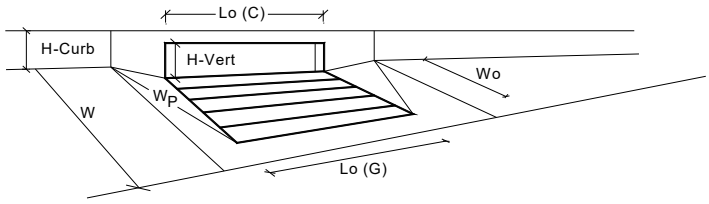
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	19.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.039	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} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	19.0	19.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	5.0	8.0	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 (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	5.0	8.0	inches
Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	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) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.44	0.69	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.25	0.50	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.47	0.75	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.47	0.75	

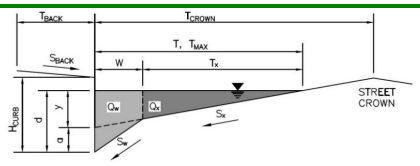
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**5.2**	**19.5**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	4.2	18.4	cfs

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-3**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	19.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.051	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 =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	19.0	19.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

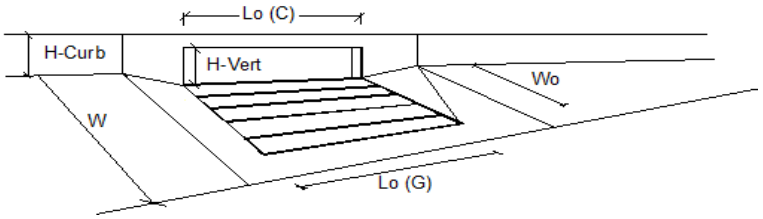
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**4.9**	**12.5**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.46 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.29 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



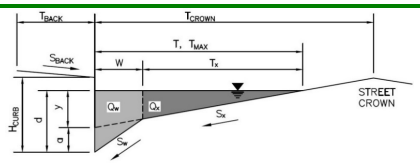
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**1.4**	**3.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**1.0**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**95**	**77**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-2D**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	19.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.034	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.030	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	19.0	19.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Allow Flow Depth at Street Crown (check box for yes, leave blank for no)		☐	☐	

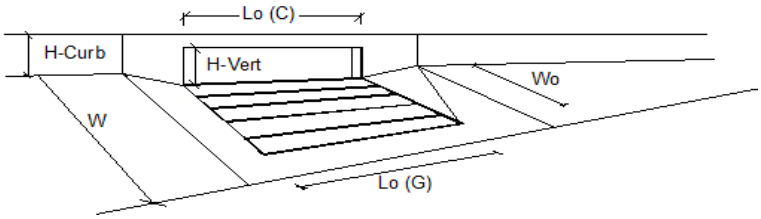
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**6.4**	**13.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design peak flow of 1.06 cfs on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design peak flow of 2.62 cfs on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 6.00 (August 2025)



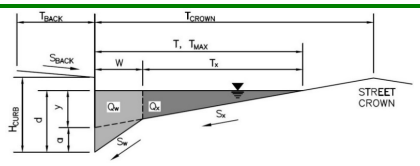
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f (G) =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f (C) =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q_a =**	**0.9**	**2.1**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**0.5**	**cfs**
Capture Percentage = Q_a/Q_o	**C% =**	**86**	**79**	**%**

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-1**



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	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} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

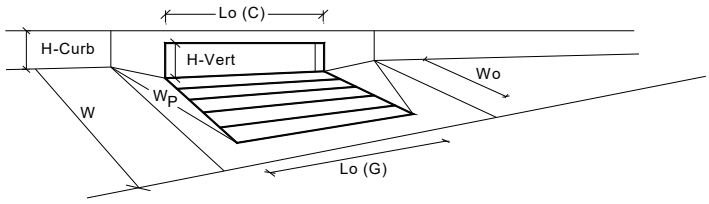
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

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

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	5.6	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	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) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.36	0.49	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.17	0.30	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.38	0.53	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.38	0.53	

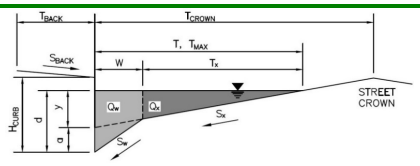
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.7**	**7.2**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	1.4	2.7	cfs

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

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

Project: **Bella Mesa North Filing 1**

Inlet ID: **SDIN D-2**



Gutter Geometry:

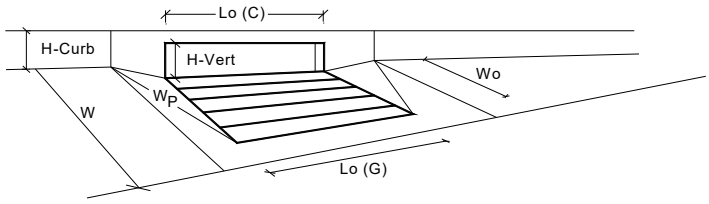
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	19.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	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} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	5.6	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 (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	5.6	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	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) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.36	0.49	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.17	0.30	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.38	0.53	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.38	0.53	

		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.7**	**7.2**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	2.2	5.0	cfs

MHFD-Inlet, Version 6.00 (August 2025)

INLET MANAGEMENT

Project: Bella Mesa North Filing 1
Minor: 5-year
Major: 100-year

Worksheet Protected

INLET NAME	SDIN D-2C	SDIN D-10	SDIN E-9A	SDIN E-18	SDIN E-18A
Inlet Application (Street or Area)	AREA	AREA	AREA	AREA	AREA
Hydraulic Condition	Swale	Swale	Swale	Swale	Swale
Inlet Type	CDOT Type D (In Series & Depressed)	CDOT Type D (In Series & Depressed)	CDOT TYPE D (Parallel & Depressed)	CDOT TYPE D (Parallel & Depressed)	CDOT TYPE D (Parallel & Depressed)
Number of Inlet Units	1	1	1	1	1

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	1.60	1.80	1.10	3.00	4.30
Major Peak Flow, Q (cfs)	10.20	10.30	5.70	10.10	14.10

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

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received
Bypass Flow Description (Optional):					
Minor Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00	0.00	0.00
Major Bypass Flow Received, Q_b (cfs)	0.00	0.00	0.00	0.00	0.00

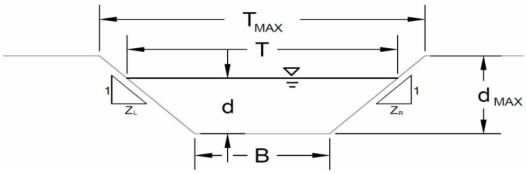
CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	1.60	1.80	1.10	3.00	4.30
Major Total Design Peak Flow, Q (cfs)	10.20	10.30	5.70	10.10	14.10
Minor Inlet Interception Capacity, Q_a (cfs)	37.04	39.48	34.56	33.41	37.19
Major Inlet Interception Capacity, Q_a (cfs)	40.93	44.08	37.36	35.11	40.29
Minor Flow Bypassed Downstream, Qb (cfs)	0.00	0.00	0.00	0.00	0.00
Major Flow Bypassed Downstream, Qb (cfs)	0.00	0.00	0.00	0.00	0.00
Minor Flow Capture Percentage, C%	100%	100%	100%	100%	100%
Major Flow Capture Percentage, C%	100%	100%	100%	100%	100%

AREA INLET IN A SWALE

Bella Mesa North Filing 1

SDIN D-2C



This worksheet uses the NRCS vegetal retardance method to determine Manning's n for grass-lined channels.

An override Manning's n can be entered for other channel materials.

Analysis of Trapezoidal Channel (Grass-Lined uses SCS Method)

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D, or E =	D	
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	see details below	
Channel Invert Slope	S_O =	0.0150	ft/ft
Bottom Width	B =	2.00	ft
Left Side Slope	Z1 =	5.00	ft/ft
Right Side Sloe	Z2 =	5.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- ○ Non-Cohesive
- ◉ Cohesive
- ○ Paved

		Minor Storm	Major Storm	
Maximum Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	**17.00**	**17.00**	**ft**
Maximum Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	**1.50**	**1.50**	**ft**

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion	Q_{allow} =	**61.0**	**61.0**	**cfs**
MAJOR STORM Allowable Capacity is based on Depth Criterion	d_{allow} =	**1.50**	**1.50**	**ft**

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	**1.6**	**10.2**	**cfs**
Water Depth	**d** =	**0.51**	**0.84**	**ft**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

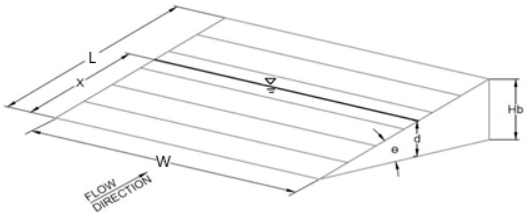
AREA INLET IN A SWALE

Bella Mesa North Filing 1

SDIN D-2C

Inlet Design Information (Input)

Type of Inlet: CDOT Type D (In Series & Depressed) — Inlet Type = CDOT Type D (In Series & Depressed)



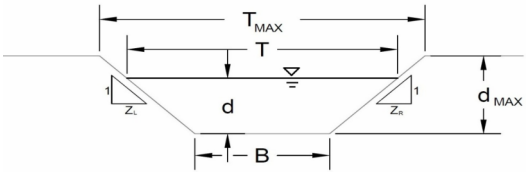
Angle of Inclined Grate (must be <= 30 degrees)	θ =	0.00	degrees
Width of Grate	W =	3.00	ft
Length of Grate	L =	6.00	ft
Open Area Ratio	A_{RATIO} =	0.70	
Height of Inclined Grate	H_B =	0.00	ft
Clogging Factor	C_f =	0.38	
Grate Discharge Coefficient	C_d =	0.72	
Orifice Coefficient	C_o =	0.48	
Weir Coefficient	C_w =	1.53	

		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	1.51	1.84	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**37.0**	**40.9**	**cfs**
Bypassed Flow	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Qa/Qo	**C% =**	**100**	**100**	**%**

AREA INLET IN A SWALE

Bella Mesa North Filing 1

SDIN D-10



This worksheet uses the NRCS vegetal retardance method to determine Manning's n for grass-lined channels.

An override Manning's n can be entered for other channel materials.

Analysis of Trapezoidal Channel (Grass-Lined uses SCS Method)

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D, or E =	D	
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	see details below	
Channel Invert Slope	S_O =	0.0050	ft/ft
Bottom Width	B =	2.00	ft
Left Side Slope	Z1 =	5.00	ft/ft
Right Side Sloe	Z2 =	5.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- ○ Non-Cohesive
- ◉ Cohesive
- ○ Paved

		Minor Storm	Major Storm	
Maximum Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	**17.00**	**17.00**	**ft**
Maximum Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	**1.25**	**1.25**	**ft**

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion	Q_{allow} =	**14.8**	**14.8**	**cfs**
MAJOR STORM Allowable Capacity is based on Depth Criterion	d_{allow} =	**1.25**	**1.25**	**ft**

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	**1.8**	**10.3**	**cfs**
Water Depth	d =	**0.72**	**1.14**	**ft**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

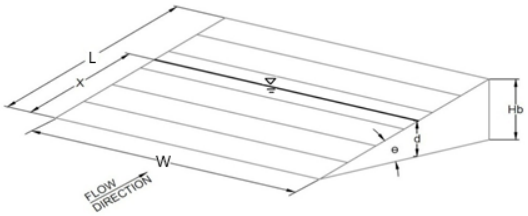
AREA INLET IN A SWALE

Bella Mesa North Filing 1

SDIN D-10

Inlet Design Information (Input)

Type of Inlet: CDOT Type D (In Series & Depressed) — Inlet Type = CDOT Type D (In Series & Depressed)



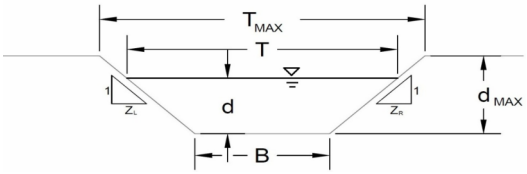
Angle of Inclined Grade (must be <= 30 degrees)	θ =	0.00	degrees
Width of Grate	W =	3.00	ft
Length of Grate	L =	6.00	ft
Open Area Ratio	A_{RATIO} =	0.70	
Height of Inclined Grate	H_B =	0.00	ft
Clogging Factor	C_f =	0.38	
Grate Discharge Coefficient	C_d =	0.72	
Orifice Coefficient	C_o =	0.48	
Weir Coefficient	C_w =	1.53	

		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	1.72	2.14	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**39.5**	**44.1**	**cfs**
Bypassed Flow	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Qa/Qo	**C% =**	**100**	**100**	**%**

AREA INLET IN A SWALE

Bella Mesa North Filing 1

SDIN E-9A



This worksheet uses the NRCS vegetal retardance method to determine Manning's n for grass-lined channels.

An override Manning's n can be entered for other channel materials.

Analysis of Trapezoidal Channel (Grass-Lined uses SCS Method)

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D, or E =	D	
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	see details below	
Channel Invert Slope	S_O =	0.0160	ft/ft
Bottom Width	B =	2.00	ft
Left Side Slope	Z1 =	5.00	ft/ft
Right Side Sloe	Z2 =	5.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- ○ Non-Cohesive
- ◉ Cohesive
- ○ Paved

		Minor Storm	Major Storm	
Maximum Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	**17.00**	**17.00**	**ft**
Maximum Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	**0.75**	**0.75**	**ft**

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion	Q_{allow} =	**7.1**	**7.1**	**cfs**
MAJOR STORM Allowable Capacity is based on Depth Criterion	d_{allow} =	**0.75**	**0.75**	**ft**

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	**1.1**	**5.7**	**cfs**
Water Depth	d =	**0.45**	**0.70**	**ft**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

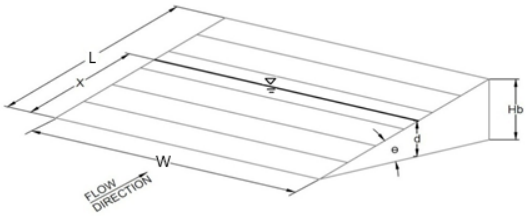
AREA INLET IN A SWALE

Bella Mesa North Filing 1

SDIN E-9A

Inlet Design Information (Input)

Type of Inlet: CDOT TYPE D (Parallel & Depressed) — Inlet Type = CDOT TYPE D (Parallel & Depressed)



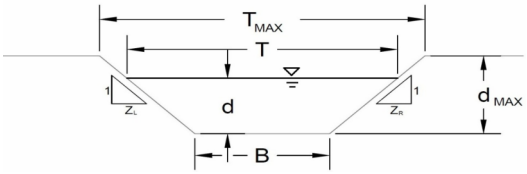
Angle of Inclined Grate (must be <= 30 degrees)	θ =	0.00	degrees
Width of Grate	W =	6.00	ft
Length of Grate	L =	3.00	ft
Open Area Ratio	A_{RATIO} =	0.70	
Height of Inclined Grate	H_B =	0.00	ft
Clogging Factor	C_f =	0.38	
Grate Discharge Coefficient	C_d =	0.68	
Orifice Coefficient	C_o =	0.45	
Weir Coefficient	C_w =	1.46	

		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	1.45	1.70	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**34.6**	**37.4**	**cfs**
Bypassed Flow	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Qa/Qo	**C% =**	**100**	**100**	**%**

AREA INLET IN A SWALE

Bella Mesa North Filing 1

SDIN E-18



This worksheet uses the NRCS vegetal retardance method to determine Manning's n for grass-lined channels.

An override Manning's n can be entered for other channel materials.

Analysis of Trapezoidal Channel (Grass-Lined uses SCS Method)

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D, or E =	D	
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	see details below	
Channel Invert Slope	S_O =	0.0780	ft/ft
Bottom Width	B =	2.00	ft
Left Side Slope	Z1 =	5.00	ft/ft
Right Side Sloe	Z2 =	15.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- ○ Non-Cohesive
- ◉ Cohesive
- ○ Paved

		Minor Storm	Major Storm	
Maximum Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	**17.00**	**17.00**	**ft**
Maximum Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	**1.80**	**1.80**	**ft**

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Top Width Criterion	Q_{allow} =	**37.8**	**37.8**	**cfs**
MAJOR STORM Allowable Capacity is based on Top Width Criterion	d_{allow} =	**0.75**	**0.75**	**ft**

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	**3.0**	**10.1**	**cfs**
Water Depth	d =	**0.36**	**0.50**	**ft**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

AREA INLET IN A SWALE

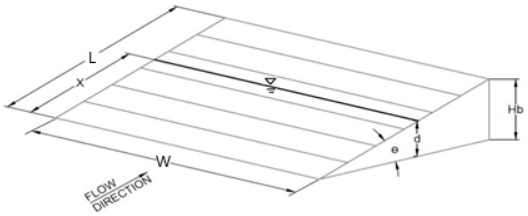
Bella Mesa North Filing 1

SDIN E-18

Inlet Design Information (Input)

Type of Inlet	CDOT TYPE D (Parallel & Depressed)	Inlet Type =	CDOT TYPE D (Parallel & Depressed)

Angle of Inclined Grate (must be <= 30 degrees)	θ =	0.00	degrees
Width of Grate	W =	6.00	ft
Length of Grate	L =	3.00	ft
Open Area Ratio	A_{RATIO} =	0.70	
Height of Inclined Grate	H_B =	0.00	ft
Clogging Factor	C_f =	0.38	
Grate Discharge Coefficient	C_d =	0.68	
Orifice Coefficient	C_o =	0.45	
Weir Coefficient	C_w =	1.46	



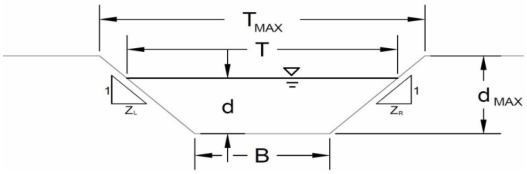
		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	1.36	1.50	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**33.4**	**35.1**	**cfs**
Bypassed Flow	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Qa/Qo	**C% =**	**100**	**100**	**%**

Warning 04: Froude No. exceeds USDCM Volume I recommendation.

AREA INLET IN A SWALE

Bella Mesa North Filing 1

SDIN E-18A



This worksheet uses the NRCS vegetal retardance method to determine Manning's n for grass-lined channels.

An override Manning's n can be entered for other channel materials.

Analysis of Trapezoidal Channel (Grass-Lined uses SCS Method)

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D, or E =	D	
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	see details below	
Channel Invert Slope	S_O =	0.0130	ft/ft
Bottom Width	B =	2.00	ft
Left Side Slope	Z1 =	5.00	ft/ft
Right Side Sloe	Z2 =	5.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- ○ Non-Cohesive
- ◉ Cohesive
- ○ Paved

		Minor Storm	Major Storm	
Maximum Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	**17.00**	**17.00**	**ft**
Maximum Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	**1.50**	**1.50**	**ft**

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion	Q_{allow} =	**54.0**	**54.0**	**cfs**
MAJOR STORM Allowable Capacity is based on Depth Criterion	d_{allow} =	**1.50**	**1.50**	**ft**

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	**4.3**	**14.1**	**cfs**
Water Depth	**d** =	**0.68**	**0.98**	**ft**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

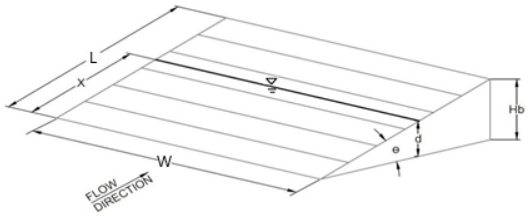
AREA INLET IN A SWALE

Bella Mesa North Filing 1

SDIN E-18A

Inlet Design Information (Input)

Type of Inlet: CDOT TYPE D (Parallel & Depressed) — Inlet Type = CDOT TYPE D (Parallel & Depressed)



Angle of Inclined Grate (must be <= 30 degrees)	θ =	0.00		degrees
Width of Grate	W =	6.00		ft
Length of Grate	L =	3.00		ft
Open Area Ratio	A_{RATIO} =	0.70		
Height of Inclined Grate	H_B =	0.00		ft
Clogging Factor	C_f =	0.38		
Grate Discharge Coefficient	C_d =	0.68		
Orifice Coefficient	C_o =	0.45		
Weir Coefficient	C_w =	1.46		

		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	1.68	1.98	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**37.2**	**40.3**	**cfs**
Bypassed Flow	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Qa/Qo	**C% =**	**100**	**100**	**%**

FOUNDERS VILLAGE 24
EMERGENCY OVERFLOW
STRUCTURE

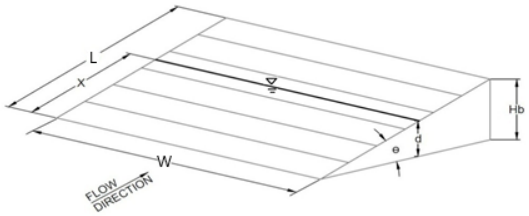
MHFD-Inlet, Version 5.03 (August 2023)

AREA INLET IN A SWALE

Emergency Overflow FV24

Inlet Design Information (Input)

Type of Inlet: CDOT Type D (In Series & Depressed) — Inlet Type = CDOT Type D (In Series & Depressed)



Angle of Inclined Grade (must be <= 30 degrees)	θ =	0.00	degrees
Width of Grade	W =	3.00	ft
Length of Grade	L =	6.00	ft
Open Area Ratio	A_{RATIO} =	0.70	
Height of Inclined Grade	H_B =	0.00	ft
Clogging Factor	C_f =	0.38	
Grade Discharge Coefficient	C_d =	0.72	
Orifice Coefficient	C_o =	0.48	
Weir Coefficient	C_w =	1.53	

		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	1.35	1.59	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**35.0**	**38.0**	**cfs**
Bypassed Flow	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Qa/Qo	**C% =**	**100**	**100**	**%**

Warning 04: Froude No. exceeds USDCM Volume I recommendation.

EMERGENCY OVERFLOW = 32 CFS
TAKEN FROM MHFD DETENTION
BASIN SPREADSHEET PROVIDED
IN APPENDIX D.

Castlewood Ranch Filing 2
Emergency Overflow Collection Structure

1.) MHFD Eq. 7-38 (Orifice Flow)

$$Q_i = C_o A_o (2gd)^{0.5}$$

Q_i = Emergency Flow $\cong$ 100 cfs (from included UD Detention Sheet)
A_o = Open Area (to solve for)
d = 1'
g = 32.2 ft/sec^2

2.) Solve for A_o

$$A_o = \frac{Q_i}{C_o (2gd)^{0.5}} = 18.6 \text{ ft}^2$$

3.) Open Area for Open Mesh Grate $\cong$ 71% (back calc from UD Detention)

Area = 18.6 ft^2 / 0.71 = 26.2 ft^2

4.) Assume 50% clogging

26.2 ft^2 / 0.5 = 52.4 ft^2

5.) Use 8.5' x 6.5' structure with open mesh grate

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Mar 11 2025

SWALE 1 CAPACITY

Trapezoidal

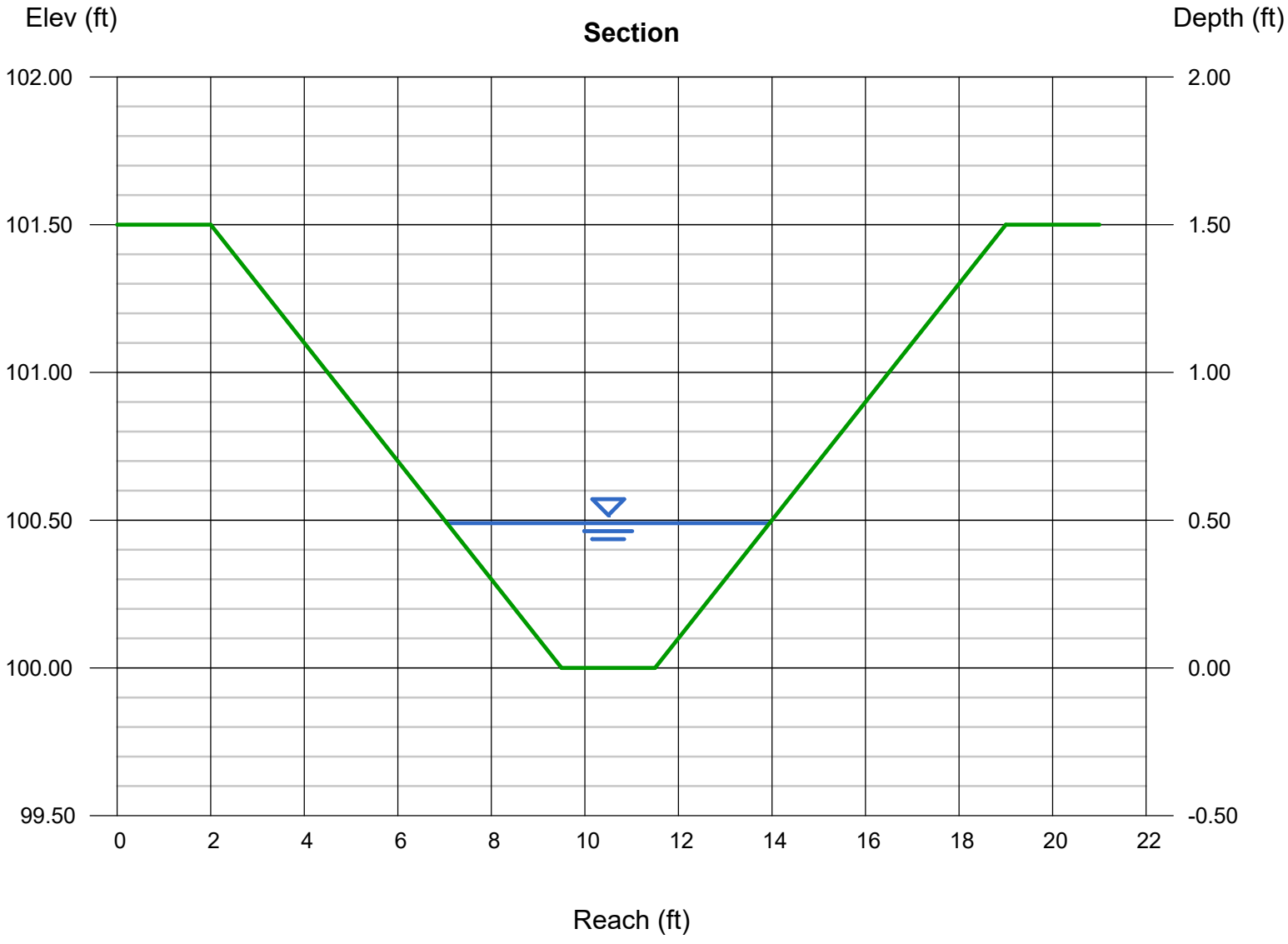
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 5.00, 5.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 2.20
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 6.20

Highlighted

Depth (ft)	= 0.49
Q (cfs)	= 6.200
Area (sqft)	= 2.18
Velocity (ft/s)	= 2.84
Wetted Perim (ft)	= 7.00
Crit Depth, Yc (ft)	= 0.47
Top Width (ft)	= 6.90
EGL (ft)	= 0.62



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Mar 11 2025

SWALE 2 CAPACITY

Trapezoidal

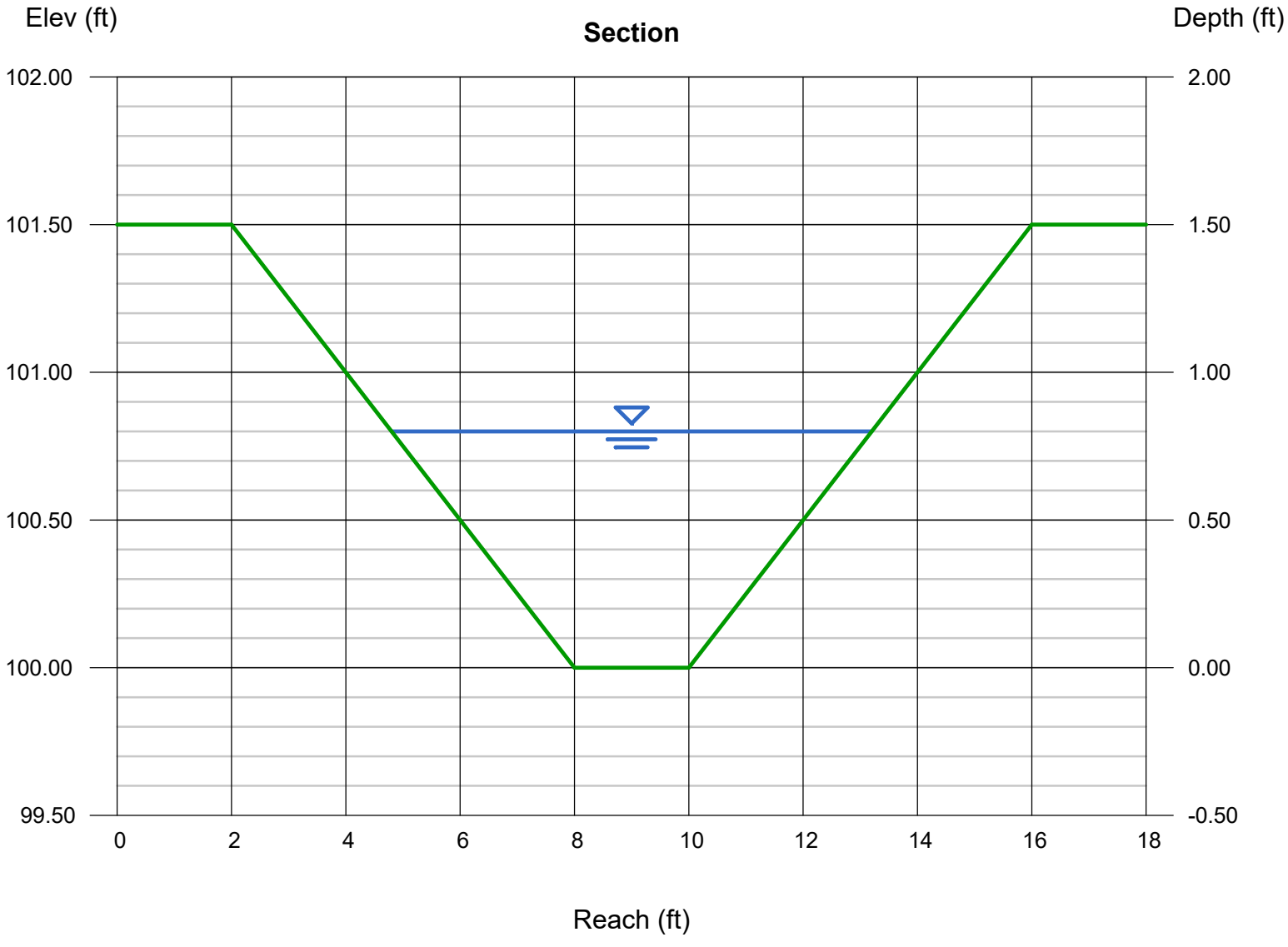
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 10.60

Highlighted

Depth (ft)	= 0.80
Q (cfs)	= 10.60
Area (sqft)	= 4.16
Velocity (ft/s)	= 2.55
Wetted Perim (ft)	= 8.60
Crit Depth, Yc (ft)	= 0.65
Top Width (ft)	= 8.40
EGL (ft)	= 0.90



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Mar 11 2025

SWALE 3 CAPACITY

Trapezoidal

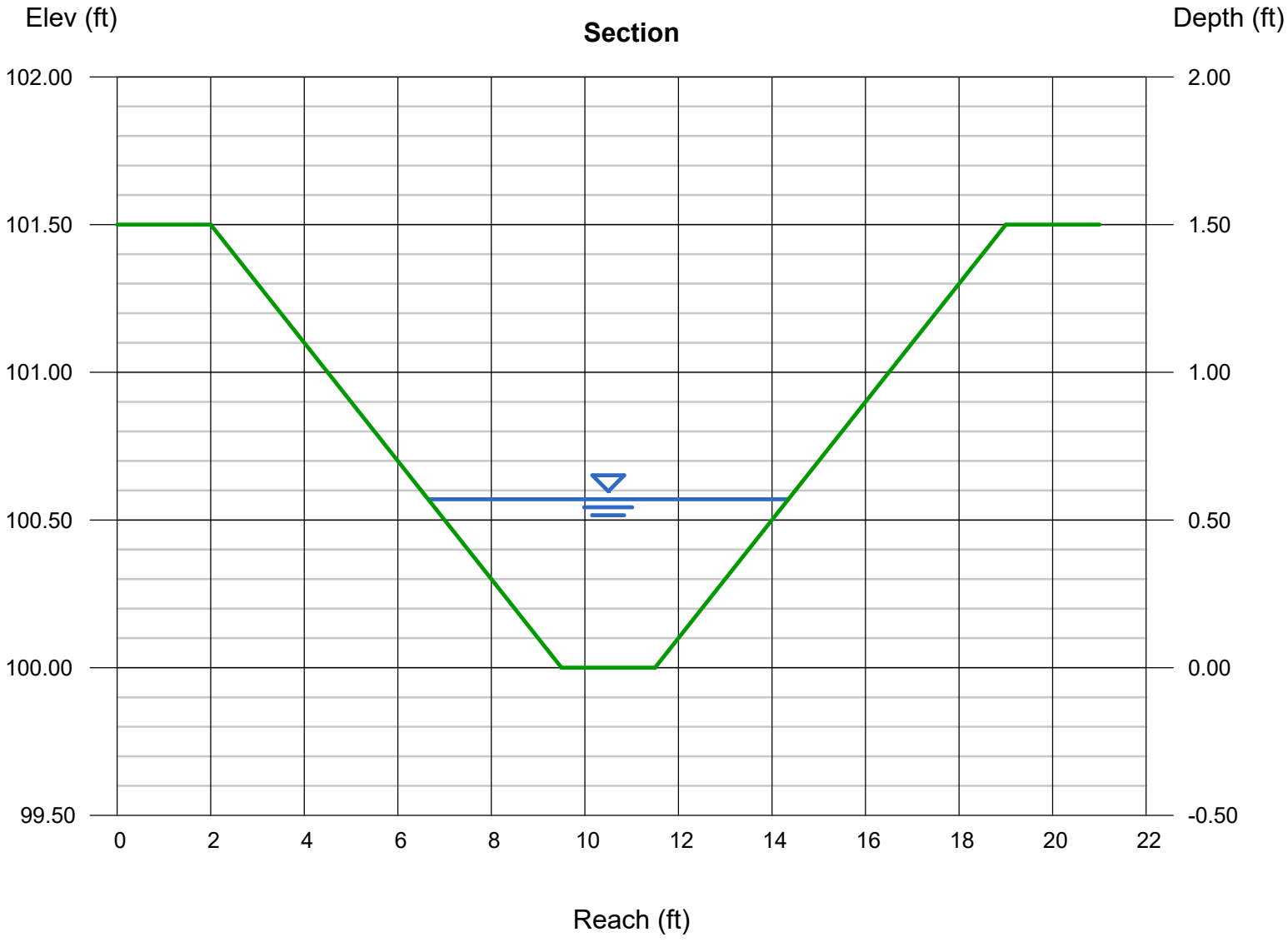
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 5.00, 5.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.60
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 7.30

Highlighted

Depth (ft)	= 0.57
Q (cfs)	= 7.300
Area (sqft)	= 2.76
Velocity (ft/s)	= 2.64
Wetted Perim (ft)	= 7.81
Crit Depth, Yc (ft)	= 0.51
Top Width (ft)	= 7.70
EGL (ft)	= 0.68



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Mar 11 2025

SWALE 4 CAPACITY

Trapezoidal

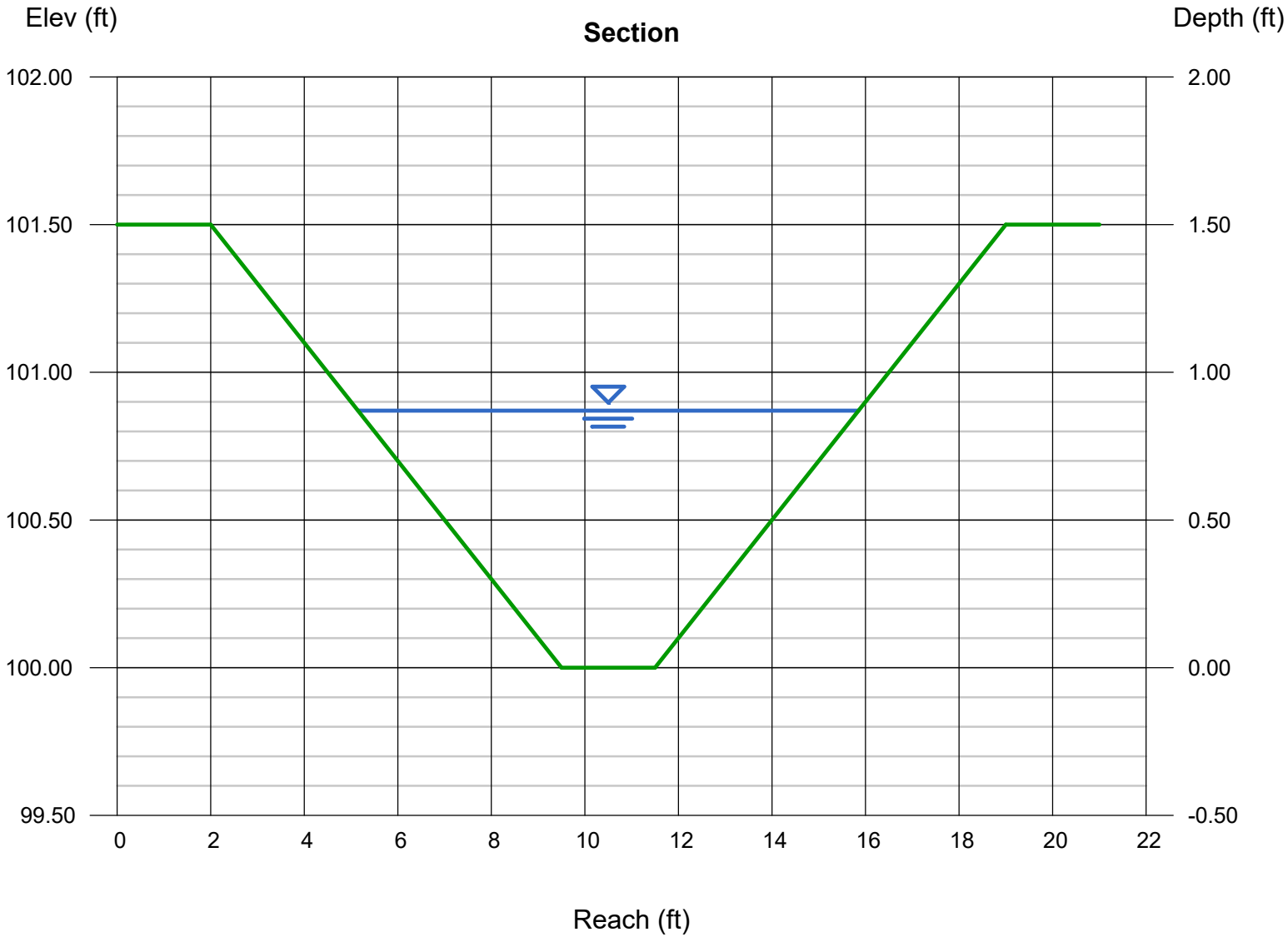
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 5.00, 5.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 10.30

Highlighted

Depth (ft)	= 0.87
Q (cfs)	= 10.30
Area (sqft)	= 5.52
Velocity (ft/s)	= 1.86
Wetted Perim (ft)	= 10.87
Crit Depth, Yc (ft)	= 0.60
Top Width (ft)	= 10.70
EGL (ft)	= 0.92



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Mar 11 2025

SWALE 5 CAPACITY

Trapezoidal

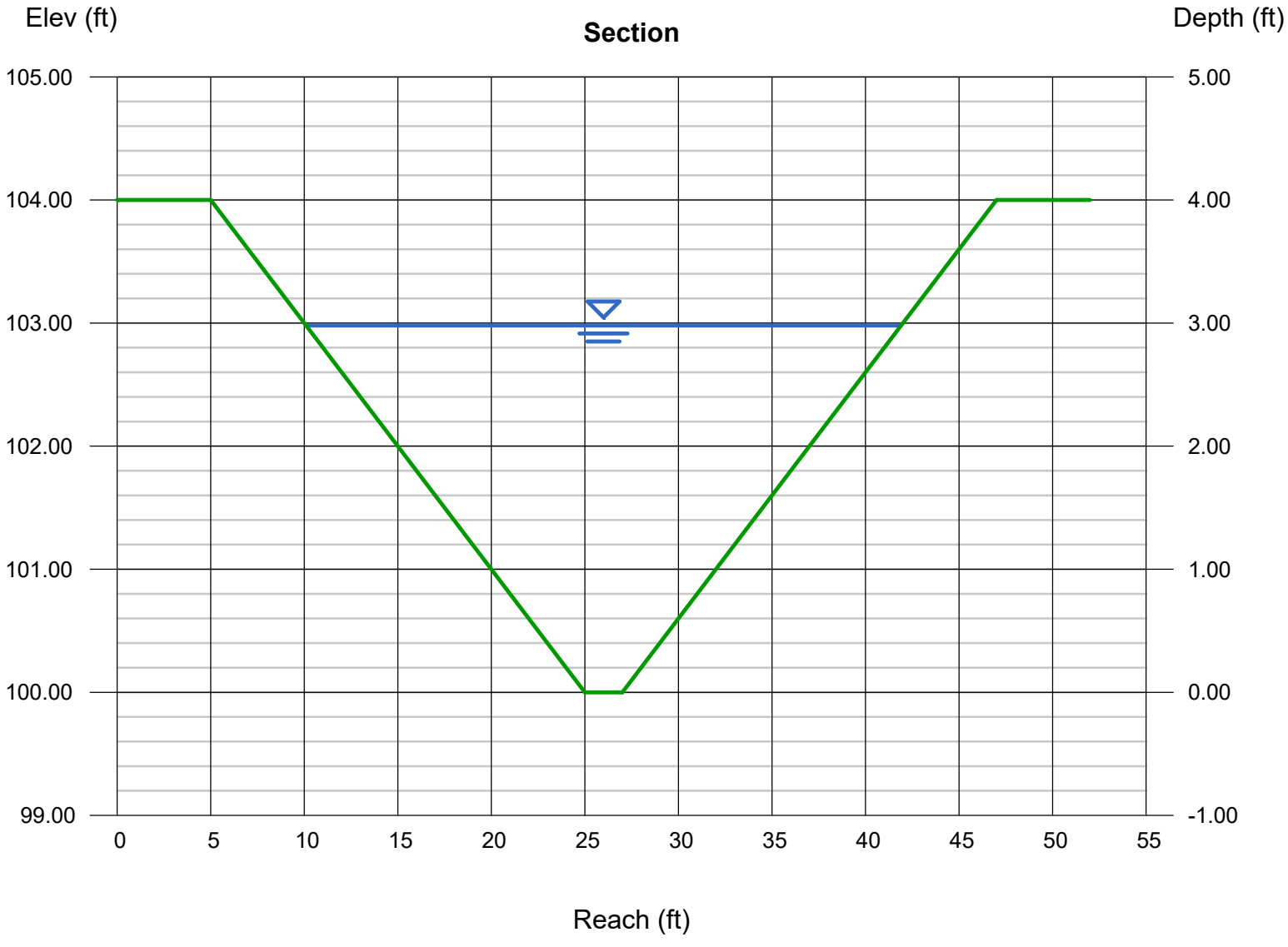
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 5.00, 5.00
Total Depth (ft)	= 4.00
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 286.00

Highlighted

Depth (ft)	= 2.98
Q (cfs)	= 286.00
Area (sqft)	= 50.36
Velocity (ft/s)	= 5.68
Wetted Perim (ft)	= 32.39
Crit Depth, Yc (ft)	= 2.71
Top Width (ft)	= 31.80
EGL (ft)	= 3.48



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Mar 11 2025

SWALE 6 CAPACITY

Trapezoidal

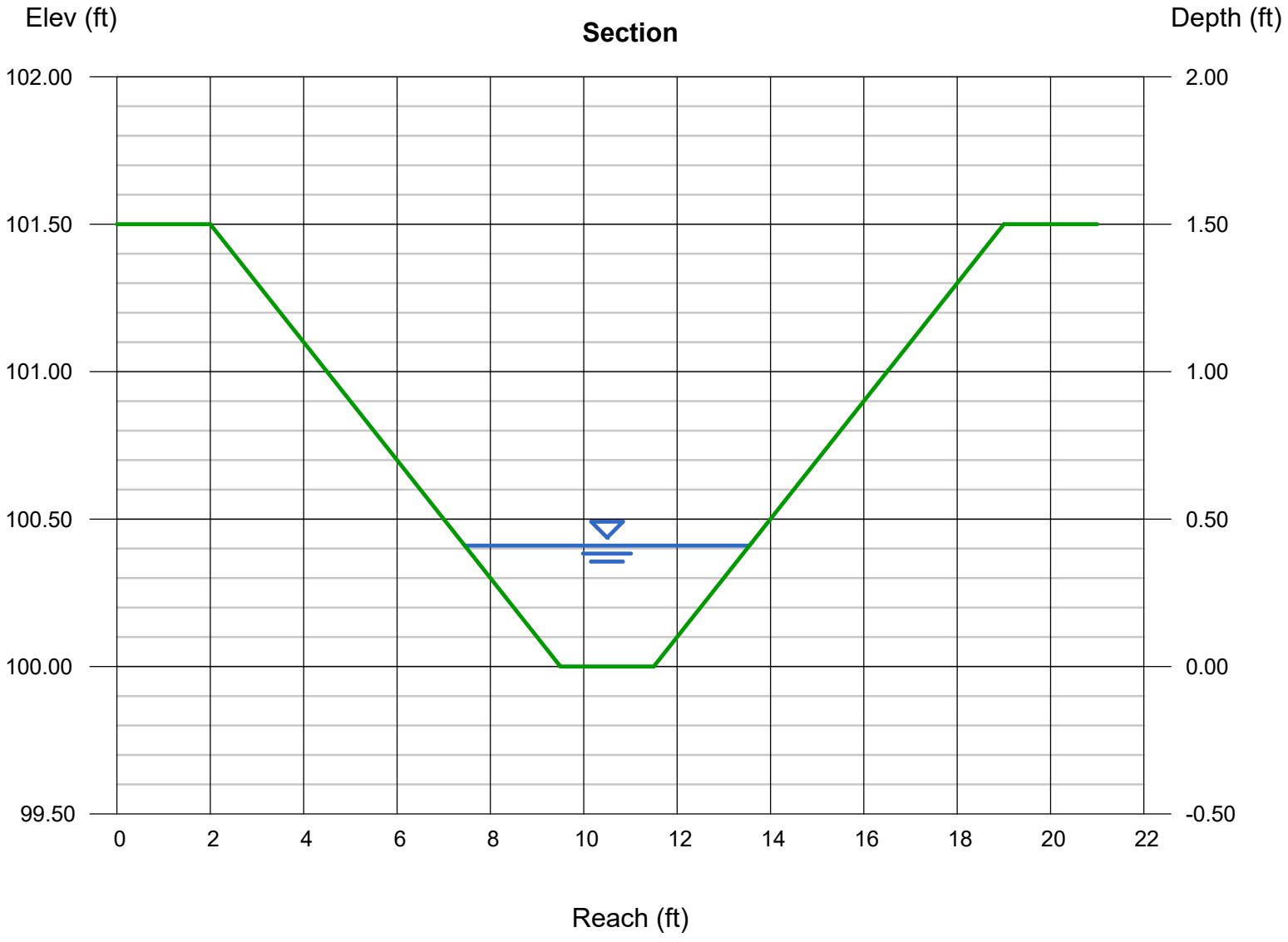
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 5.00, 5.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.40
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.30

Highlighted

Depth (ft)	= 0.41
Q (cfs)	= 3.300
Area (sqft)	= 1.66
Velocity (ft/s)	= 1.99
Wetted Perim (ft)	= 6.18
Crit Depth, Yc (ft)	= 0.34
Top Width (ft)	= 6.10
EGL (ft)	= 0.47



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Mar 11 2025

SWALE 7 CAPACITY

Trapezoidal

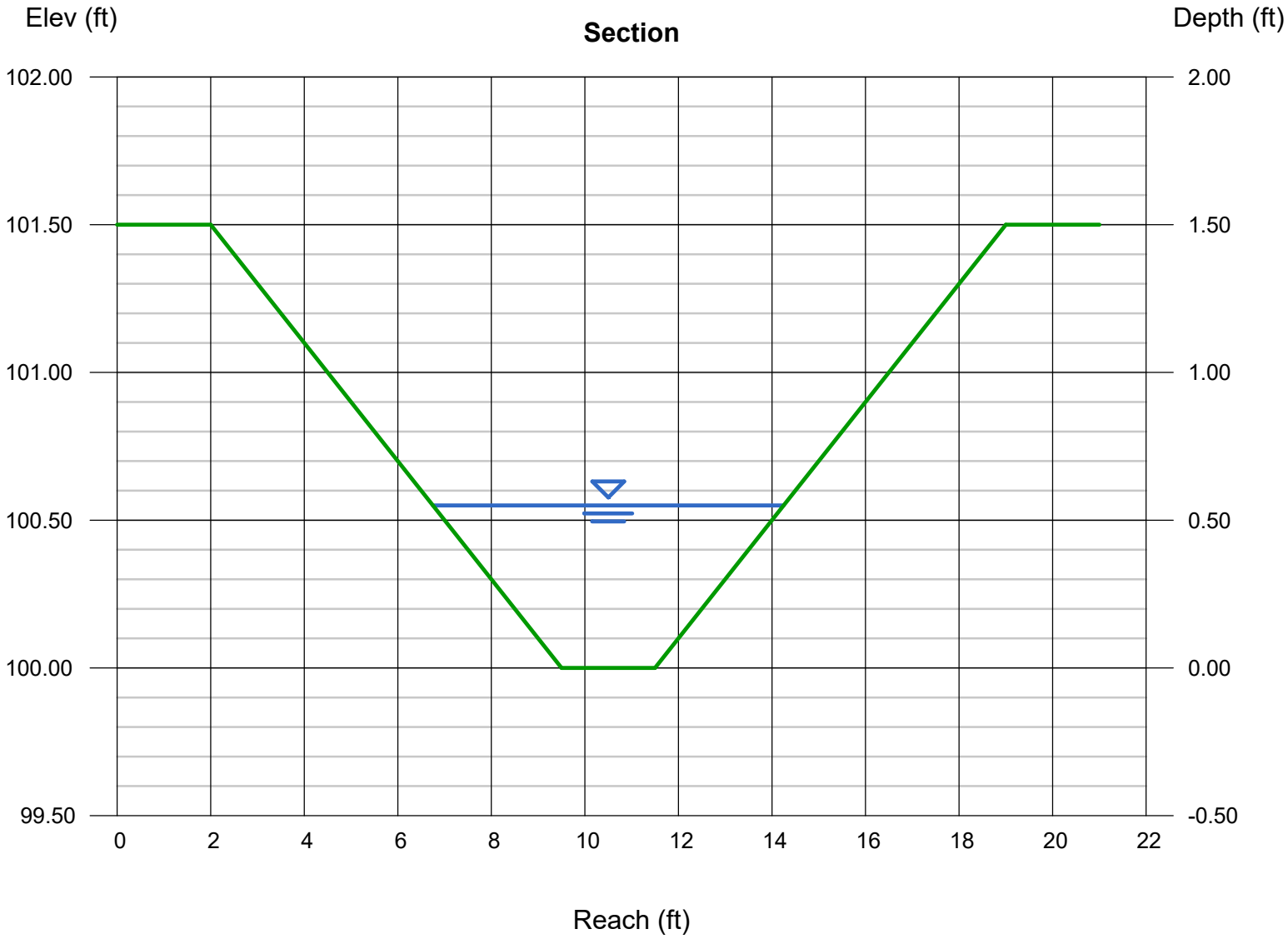
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 5.00, 5.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 3.00
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 9.20

Highlighted

Depth (ft)	= 0.55
Q (cfs)	= 9.200
Area (sqft)	= 2.61
Velocity (ft/s)	= 3.52
Wetted Perim (ft)	= 7.61
Crit Depth, Yc (ft)	= 0.57
Top Width (ft)	= 7.50
EGL (ft)	= 0.74



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Mar 11 2025

SWALE 8 CAPACITY

Trapezoidal

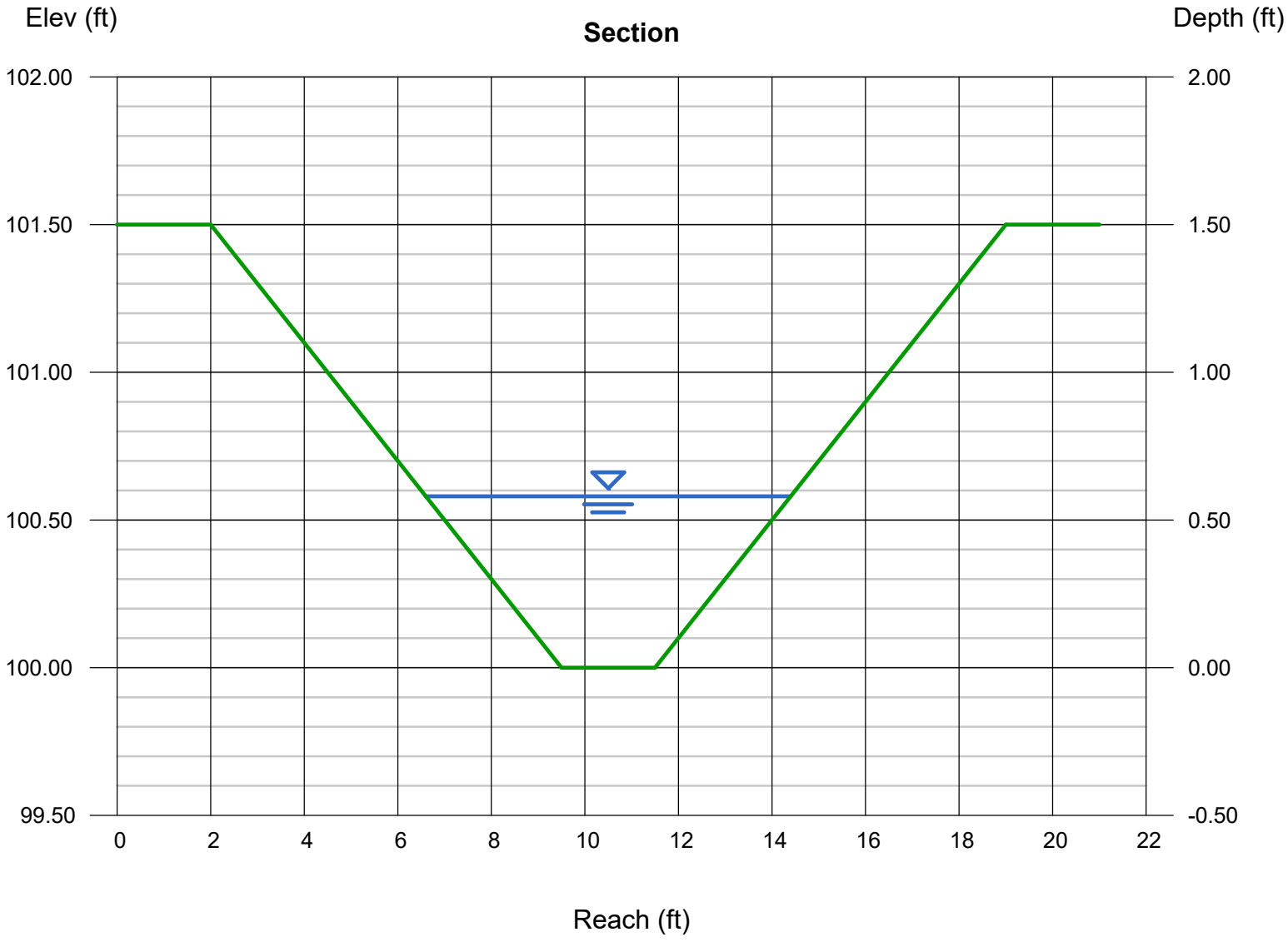
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 5.00, 5.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 3.00
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 10.30

Highlighted

Depth (ft)	= 0.58
Q (cfs)	= 10.30
Area (sqft)	= 2.84
Velocity (ft/s)	= 3.62
Wetted Perim (ft)	= 7.91
Crit Depth, Yc (ft)	= 0.60
Top Width (ft)	= 7.80
EGL (ft)	= 0.78



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Mar 11 2025

SWALE 9 CAPACITY

Trapezoidal

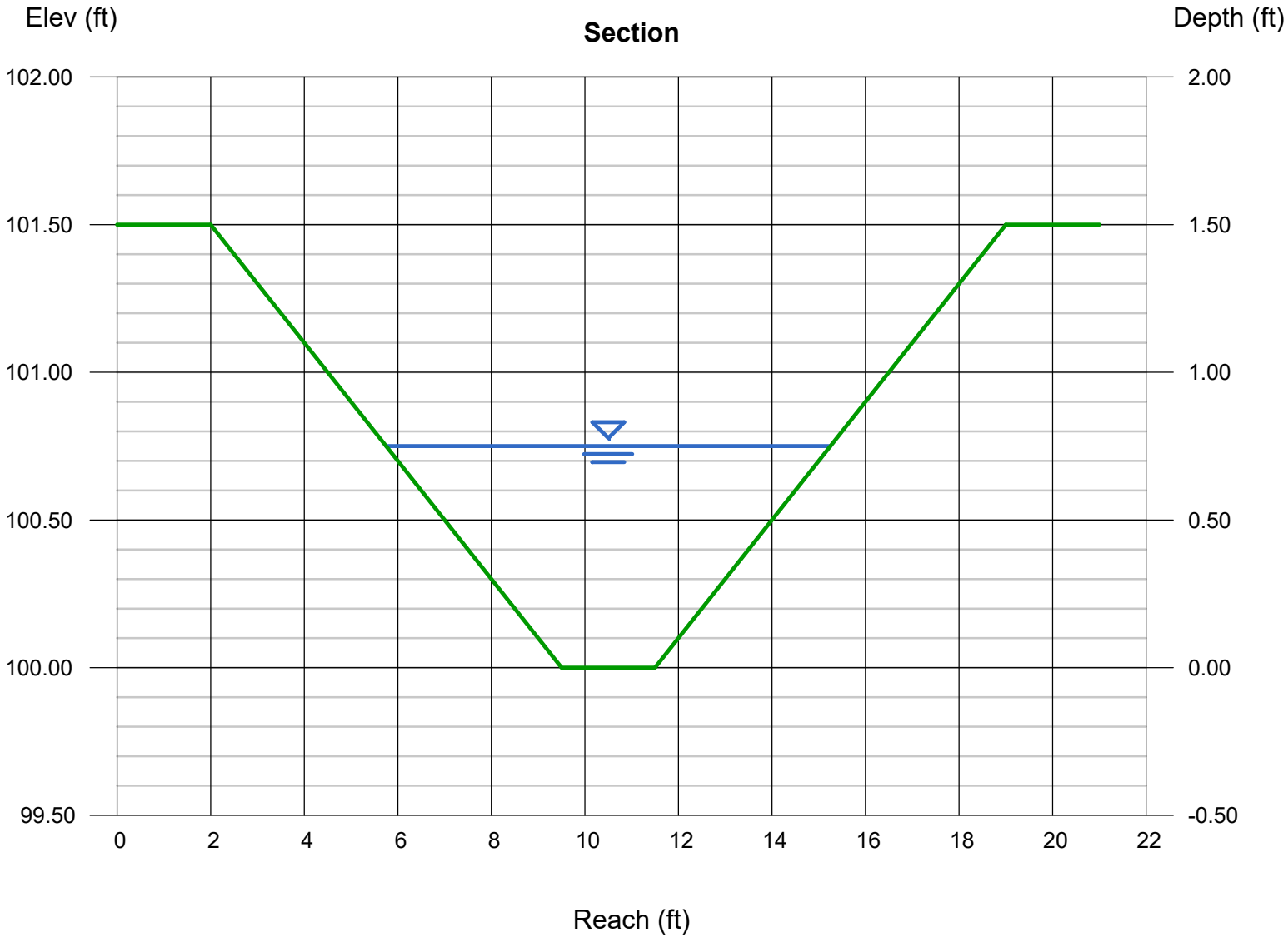
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 5.00, 5.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.30
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 12.20

Highlighted

Depth (ft)	= 0.75
Q (cfs)	= 12.20
Area (sqft)	= 4.31
Velocity (ft/s)	= 2.83
Wetted Perim (ft)	= 9.65
Crit Depth, Yc (ft)	= 0.65
Top Width (ft)	= 9.50
EGL (ft)	= 0.87



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Mar 11 2025

SWALE 10 CAPACITY

Trapezoidal

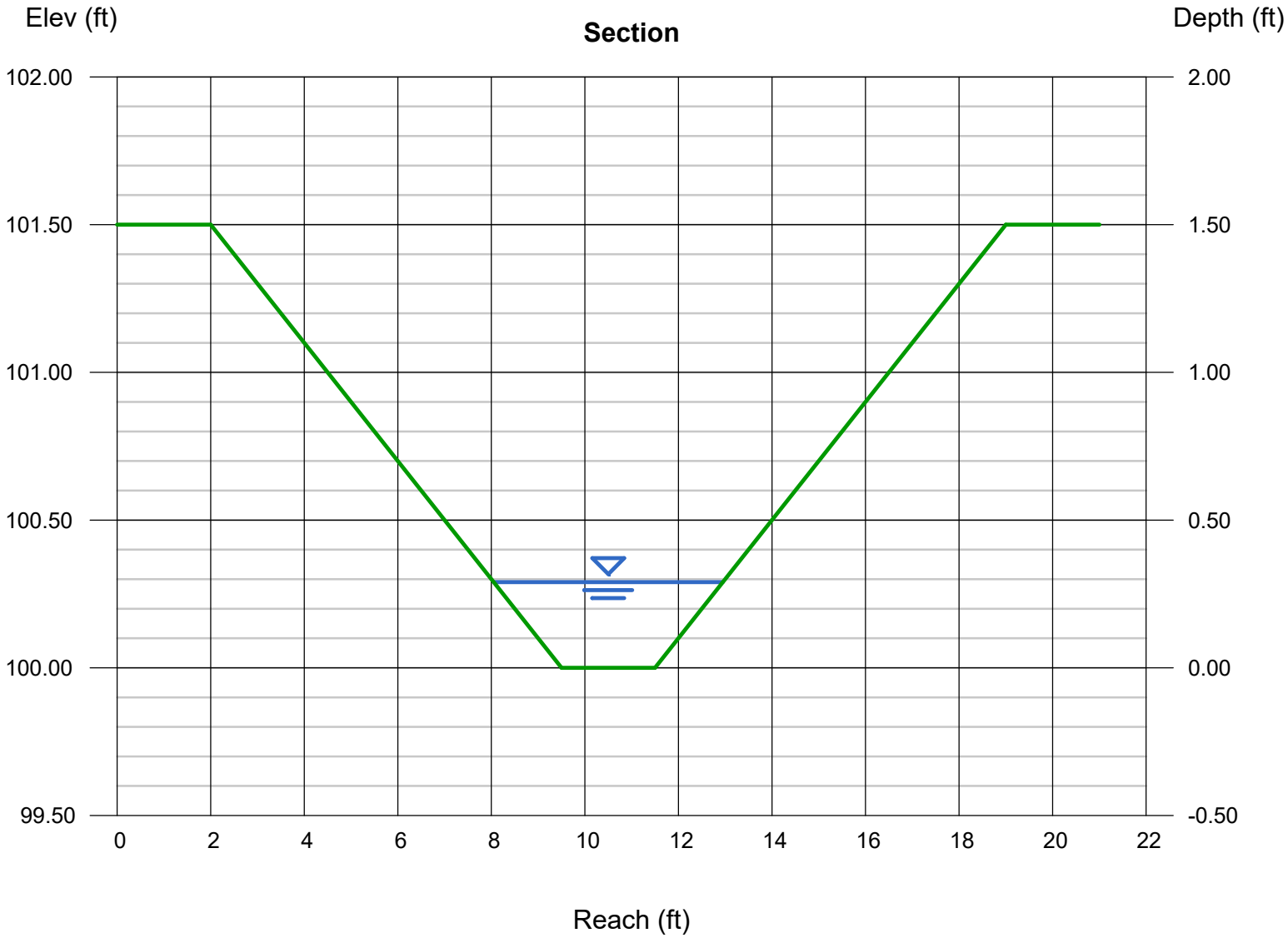
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 5.00, 5.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.75
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.90

Highlighted

Depth (ft)	= 0.29
Q (cfs)	= 1.900
Area (sqft)	= 1.00
Velocity (ft/s)	= 1.90
Wetted Perim (ft)	= 4.96
Crit Depth, Yc (ft)	= 0.25
Top Width (ft)	= 4.90
EGL (ft)	= 0.35



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Mar 11 2025

SWALE 11 CAPACITY

Trapezoidal

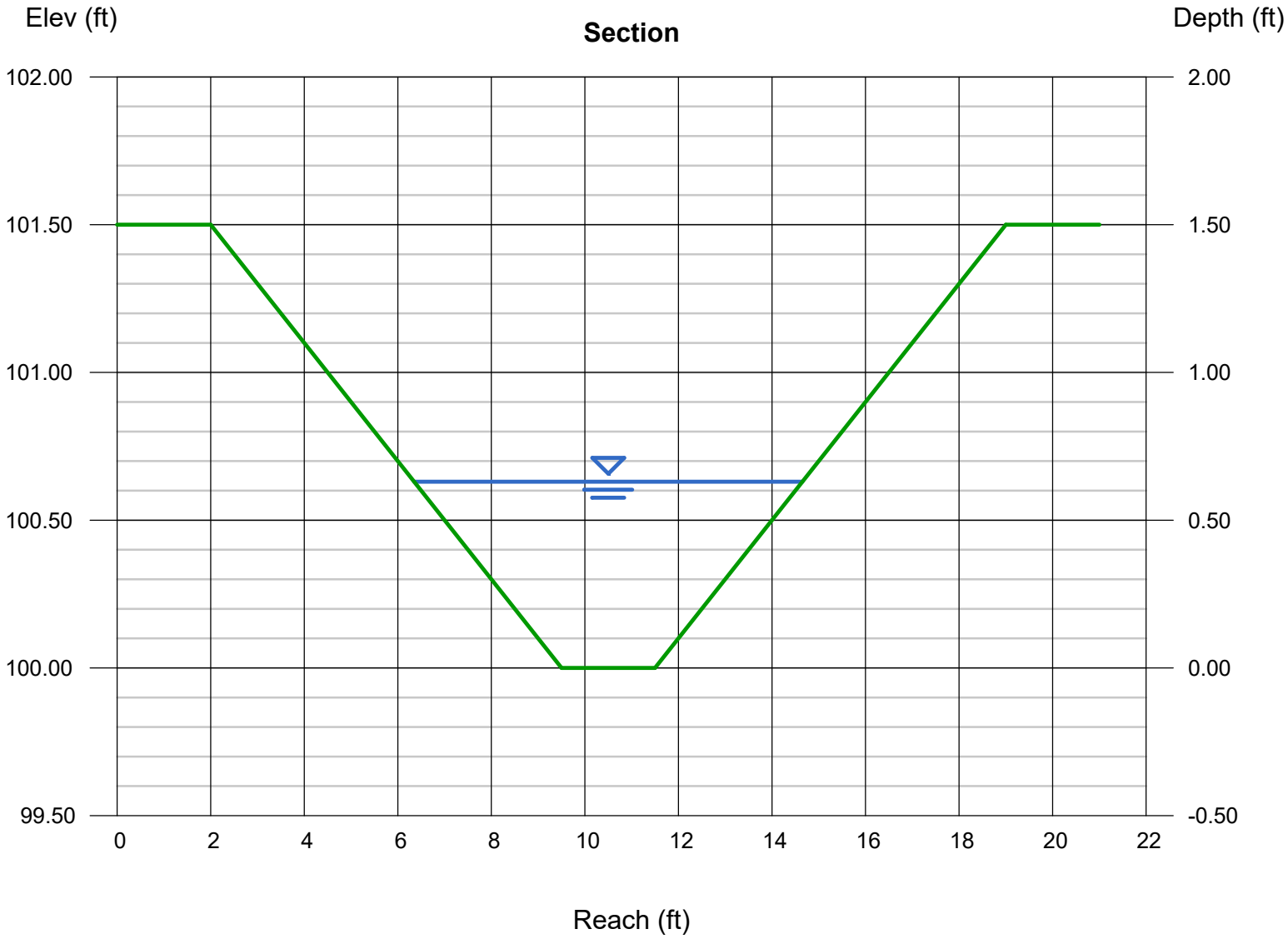
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 5.00, 5.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 2.00
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 10.20

Highlighted

Depth (ft)	= 0.63
Q (cfs)	= 10.20
Area (sqft)	= 3.24
Velocity (ft/s)	= 3.14
Wetted Perim (ft)	= 8.42
Crit Depth, Yc (ft)	= 0.60
Top Width (ft)	= 8.30
EGL (ft)	= 0.78



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Aug 8 2025

SWALE 12 - EMERGENCY OVERFLOW PATH

Trapezoidal

Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.75
N-Value	= 0.013

Calculations

Compute by:	Known Q
Known Q (cfs)	= 20.60

TRAPEZOIDAL CHANNEL
4:1 SIDE SLOPES, 1.5' DEEP
Q100 @ DESIGN POINT B30 = 20.6 CFS

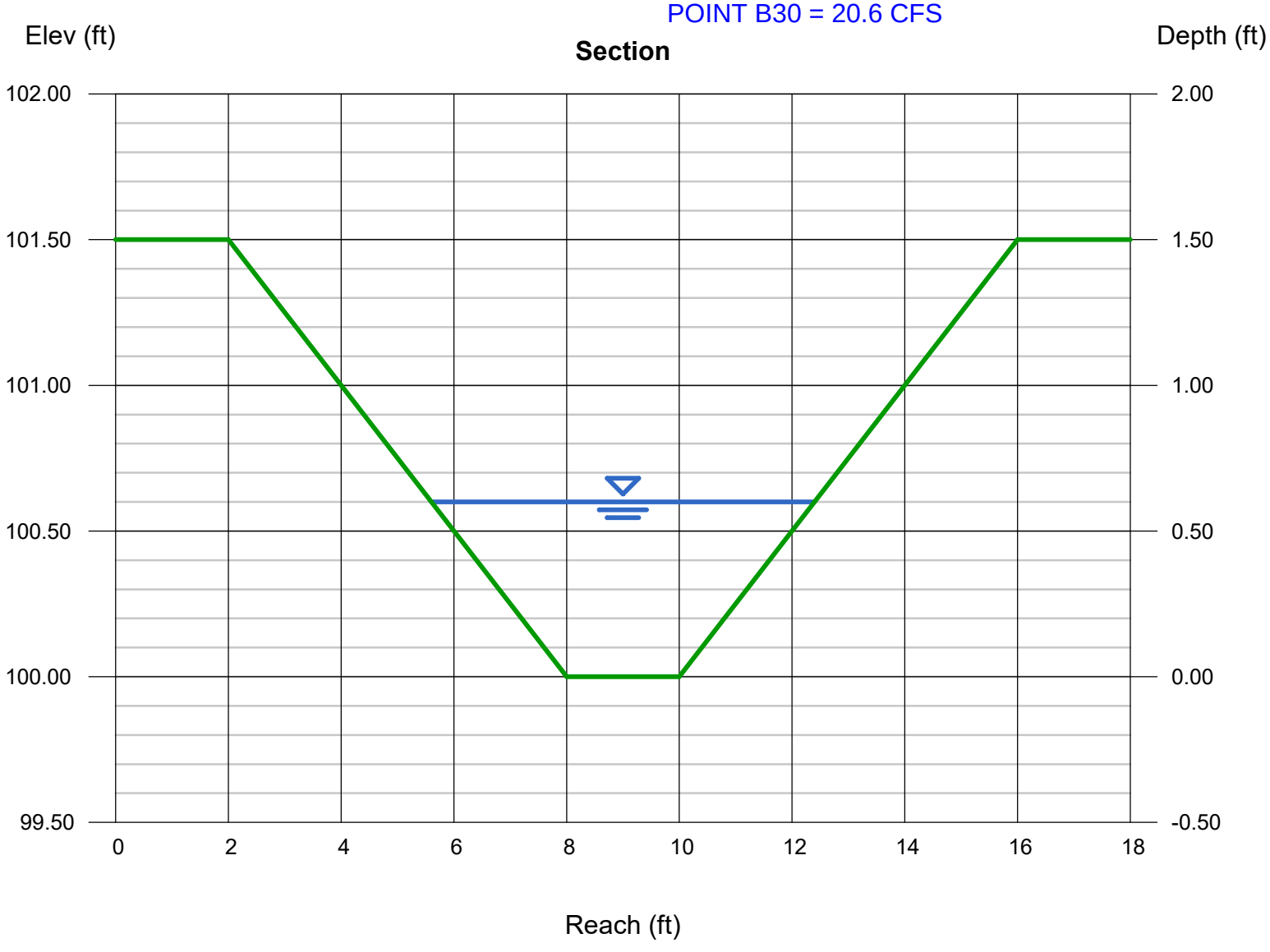
Highlighted

Depth (ft)	= 0.60
Q (cfs)	= 20.60
Area (sqft)	= 2.64
Velocity (ft/s)	= 7.80
Wetted Perim (ft)	= 6.95
Crit Depth, Yc (ft)	= 0.89
Top Width (ft)	= 6.80
EGL (ft)	= 1.55

BYPASS FLOWS:
B54 = 0.9 CFS
B55 = 1.3 CFS
B59 = 3.5 CFS
B67 = 1.9 CFS
TOTAL = 7.6 CFS

FULLY CLOGGED SUMP CONDITION:
B30 = 5.9 CFS
B31 = 7.1 CFS
TOTAL = 13.0 CFS

TOTAL COMBINED Q100 FLOW @ DESIGN POINT B30 = 20.6 CFS



SDMH C-1
SDMH C-1A
SDMH C-1B
FES C-1
FES C-2
SDIN C-1
SDIN C-2
SDMH C-2
SDIN C-3
SDMH C-3
SDMH C-4
SDIN C-4
SDIN C-5
SDIN C-5A
SDIN C-6A
SDIN C-6
SDMH C-5
SDMH C-6
SDMH C-7
SDIN C-6B
SDIN C-7
SDIN C-8
SDIN C-8A
SDMH C-8
SDIN C-5B
SDMH C-9
SDIN C-9
SDIN C-9A
SDMH C-10
SDIN C-10
SDIN C-10A
SDIN C-10B
SDIN C-10C
SDIN C-10D
SDMH C-11
SDIN C-11
SDIN C-11A
SDIN C-11B
SDIN C-11C
SDMH C-12
SDIN C-12
SDIN C-12A
SDIN C-12B
SDIN C-12C
SDIN C-12D
SDMH C-13
SDIN C-13
SDIN C-13A
SDIN C-13B
SDIN C-13C
SDIN C-13D
SDMH C-14
SDIN C-14
SDIN C-14A
SDIN C-14B
SDIN C-14C
SDIN C-14D
SDMH

FlexTable: Conduit Table (5 YR)

Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	Manning's n	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
568: SDMH B-1	333: FOREBAY-2	6,503.88	6,501.05	87.0	3.50	24.0	0.013	13.28	42.34	11.92	6,505.19	6,503.02	6,505.77	6,503.30
430: SDMH D-10	52: SDMH D-9	6,552.07	6,550.60	146.7	1.00	18.0	0.013	1.77	10.50	4.42	6,552.57	6,551.02	6,552.75	6,551.32
429: EX. 5' TYPE R INLET	92: SDMH E-10	6,548.11	6,544.04	172.4	2.36	30.0	0.013	29.35	63.00	12.60	6,549.96	6,546.14	6,550.85	6,546.83
422: SDIN E-1	119: SDMH D-3	6,531.29	6,527.36	262.3	1.50	54.0	0.013	61.52	240.70	12.66	6,533.57	6,528.91	6,534.47	6,531.40
421: SDIN E-1A	422: SDIN E-1	6,535.01	6,533.56	34.0	4.26	18.0	0.013	3.04	21.68	8.66	6,535.68	6,533.95	6,535.93	6,535.03
420: SDMH E-9A	87: SDMH E-9	6,546.89	6,546.38	100.6	0.50	24.0	0.013	1.05	16.02	2.88	6,547.24	6,546.73	6,547.37	6,546.86
419: SDIN E-15	82: SDMH E-15	6,547.49	6,547.14	35.4	0.99	18.0	0.013	1.20	10.44	3.94	6,547.90	6,547.48	6,548.05	6,547.72
418: SDIN E-18	57: SDMH E-18	6,552.33	6,552.00	65.1	0.51	24.0	0.013	6.81	16.11	4.91	6,553.26	6,552.91	6,553.61	6,553.28
417: SDIN E-18A	418: SDIN E-18	6,553.27	6,552.58	138.3	0.50	24.0	0.013	4.40	15.98	4.34	6,554.01	6,553.43	6,554.28	6,553.62
416: SDIN E-25A	36: SDMH E-25	6,565.66	6,565.16	20.0	2.50	18.0	0.013	2.44	16.59	6.72	6,566.25	6,565.57	6,566.47	6,566.17
415: SDIN E-25	36: SDMH E-25	6,565.51	6,565.16	14.0	2.50	18.0	0.013	1.96	16.60	6.30	6,566.04	6,565.53	6,566.23	6,566.04
414: SDIN E-21B	413: SDIN E-21A	6,558.05	6,557.79	32.0	0.80	18.0	0.013	2.06	9.39	4.26	6,558.73	6,558.75	6,558.84	6,558.80
413: SDIN E-21A	41: SDMH E-21	6,557.53	6,556.86	66.7	1.01	24.0	0.013	7.77	22.68	6.54	6,558.52	6,557.87	6,558.91	6,558.24
412: SDIN E-21	41: SDMH E-21	6,558.00	6,557.11	70.7	1.26	18.0	0.013	0.46	11.78	3.23	6,558.25	6,557.87	6,558.34	6,557.87
411: SDIN E-19A	410: SDIN E-19	6,556.60	6,554.27	46.6	4.99	18.0	0.013	2.10	23.47	8.22	6,557.15	6,554.58	6,557.35	6,555.63
410: SDIN E-19	54: SDMH E-19	6,552.61	6,552.07	53.3	1.01	24.0	0.013	11.75	22.77	7.31	6,553.84	6,553.31	6,554.36	6,553.82
409: SDIN E-15B	408: SDIN E-15A	6,550.78	6,549.17	39.0	4.13	18.0	0.013	2.30	21.36	7.90	6,551.36	6,549.50	6,551.57	6,550.47
408: SDIN E-15A	82: SDMH E-15	6,547.42	6,545.64	177.8	1.00	36.0	0.013	19.04	66.73	8.14	6,548.82	6,547.15	6,549.36	6,547.59
407: SDIN E-14A	406: SDIN E-14	6,550.23	6,549.45	52.3	1.49	24.0	0.013	2.30	27.63	5.33	6,550.76	6,550.34	6,550.95	6,550.39
406: SDIN E-14	77: SDMH E-13	6,549.20	6,548.71	48.0	1.01	24.0	0.013	6.83	22.75	6.33	6,550.13	6,549.47	6,550.48	6,550.08
405: SDIN E-11	86: SDMH E-11	6,545.65	6,544.94	70.8	1.00	30.0	0.013	7.72	41.01	6.41	6,546.57	6,546.49	6,546.92	6,546.58
404: SDIN E-8A	93: SDMH E-8	6,545.08	6,544.28	53.2	1.51	24.0	0.013	3.77	27.83	6.19	6,545.77	6,545.35	6,546.01	6,545.43
403: SDIN E-8	93: SDMH E-8	6,544.75	6,544.55	9.8	2.00	18.0	0.013	3.68	14.85	6.97	6,545.48	6,545.35	6,545.77	6,545.58
402: SDIN E-7B	401: SDIN E-7A	6,544.53	6,544.20	32.0	1.03	18.0	0.013	2.14	10.67	4.71	6,545.08	6,544.66	6,545.29	6,545.00
401: SDIN E-7A	100: SDMH E-7	6,542.21	6,541.71	98.1	0.51	48.0	0.013	28.87	102.57	7.01	6,544.27	6,544.30	6,544.58	6,544.48
400: SDIN E-7	100: SDMH E-7	6,544.57	6,544.21	42.0	0.86	18.0	0.013	0.00	9.76	0.00	6,544.57	6,544.30	6,544.57	6,544.30
399: SDMH D-6A	94: SDMH D-6	6,546.08	6,544.56	101.3	1.50	18.0	0.013	3.95	12.86	6.41	6,546.84	6,545.13	6,547.14	6,545.77
398: SDIN D-5C	98: SDMH D-5	6,541.39	6,540.52	35.2	2.47	18.0	0.013	1.70	16.50	6.03	6,541.88	6,541.27	6,542.06	6,541.33
397: SDIN D-5B	98: SDMH D-5	6,541.99	6,540.52	42.0	3.50	18.0	0.013	1.25	19.65	6.23	6,542.41	6,541.27	6,542.56	6,541.30
396: SDIN D-11C	395: SDIN D-11B	6,551.58	6,550.49	36.6	3.00	18.0	0.013	2.45	18.19	7.17	6,552.18	6,550.86	6,552.40	6,551.64
395: SDIN D-11B	65: SDMH D-11	6,549.74	6,547.69	68.1	3.00	24.0	0.013	3.14	39.17	7.47	6,550.35	6,548.84	6,550.58	6,548.88
393: SDIN D-11A	392: SDIN D-11	6,551.54	6,550.56	32.0	3.06	18.0	0.013	2.75	18.38	7.47	6,552.17	6,550.96	6,552.41	6,551.77

FlexTable: Conduit Table (5 YR)

Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	Manning's n	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
392: SDIN D-11	65: SDMH D-11	6,549.81	6,547.68	77.0	2.76	24.0	0.013	6.78	37.62	9.08	6,550.73	6,548.84	6,551.09	6,549.04
391: SDIN D-8B	390: SDIN D-8A	6,545.39	6,544.43	32.0	3.00	18.0	0.013	0.86	18.19	5.28	6,545.74	6,545.40	6,545.86	6,545.41
390: SDIN D-8A	83: SDMH D-8	6,543.94	6,542.89	41.8	2.50	24.0	0.013	10.69	35.76	9.94	6,545.11	6,543.69	6,545.60	6,544.98
389: SDIN D-10	430: SDMH D-10	6,553.69	6,552.81	88.0	1.00	18.0	0.013	1.78	10.51	4.42	6,554.19	6,553.23	6,554.38	6,553.53
387: SDIN D-9A	386: SDIN D-9	6,554.40	6,552.70	34.0	4.99	18.0	0.013	1.76	23.47	7.80	6,554.90	6,552.98	6,555.08	6,553.93
386: SDIN D-9	52: SDMH D-9	6,552.20	6,550.10	105.0	2.00	24.0	0.013	3.50	31.99	6.69	6,552.86	6,550.55	6,553.10	6,551.25
385: SDIN D-8	83: SDMH D-8	6,545.36	6,542.89	82.2	3.00	24.0	0.013	4.43	39.17	8.27	6,546.10	6,543.84	6,546.37	6,543.98
384: SDIN D-5A	383: SDIN D-5	6,533.17	6,531.49	34.0	4.94	18.0	0.013	2.44	23.35	8.56	6,533.76	6,532.70	6,533.98	6,532.74
383: SDIN D-5	382: SDIN D-4	6,530.74	6,529.44	129.6	1.00	36.0	0.013	19.38	66.78	8.18	6,532.15	6,530.98	6,532.70	6,531.42
382: SDIN D-4	119: SDMH D-3	6,529.19	6,528.61	58.0	1.00	36.0	0.013	21.67	66.70	8.43	6,530.69	6,529.82	6,531.27	6,530.84
381: SDIN D-3	119: SDMH D-3	6,530.01	6,529.63	18.8	2.00	18.0	0.013	0.98	14.85	4.75	6,530.38	6,529.90	6,530.51	6,530.23
380: SDIN D-2D	125: SDMH D-2	6,530.33	6,528.75	63.4	2.50	18.0	0.013	0.49	16.60	4.18	6,530.59	6,529.38	6,530.68	6,529.39
379: FUTURE SDIN D-1D	378: FUTURE SDIN D-1B	6,541.17	6,529.47	390.0	3.00	18.0	0.013	3.11	18.19	7.69	6,541.84	6,529.89	6,542.10	6,530.81
378: FUTURE SDIN D-1B	130: FUTURE SDMH D-1A	6,528.97	6,528.22	74.7	1.00	24.0	0.013	7.15	22.62	6.38	6,529.92	6,529.20	6,530.29	6,529.54
377: FUTURE SDIN D-1C	378: FUTURE SDIN D-1B	6,529.78	6,529.46	32.1	1.00	18.0	0.013	1.67	10.49	4.34	6,530.27	6,530.14	6,530.44	6,530.21
376: FUTURE SDIN D-1A	130: FUTURE SDMH D-1A	6,528.92	6,528.21	35.4	2.00	18.0	0.013	0.94	14.87	4.71	6,529.28	6,529.20	6,529.41	6,529.21
375: SDIN D-2C	372: SDIN D-2	6,526.12	6,525.90	42.8	0.51	30.0	0.013	1.74	29.41	3.28	6,527.41	6,527.41	6,527.42	6,527.42
372: SDIN D-2	371: SDIN D-1	6,525.41	6,525.24	34.0	0.50	36.0	0.013	3.17	47.16	3.80	6,527.41	6,527.41	6,527.41	6,527.41
371: SDIN D-1	370: FES D-1	6,523.82	6,523.48	67.9	0.50	60.0	0.013	82.24	184.28	9.12	6,526.39	6,525.85	6,527.41	6,527.10
369: SDIN C-8B	121: SDMH C-8	6,530.17	6,529.73	44.6	1.00	18.0	0.013	3.09	10.50	5.17	6,530.84	6,530.28	6,531.10	6,530.70
368: SDIN C-8A	367: SDIN C-8	6,527.11	6,526.79	32.0	1.00	18.0	0.013	2.22	10.50	4.71	6,527.68	6,527.41	6,527.88	6,527.57
367: SDIN C-8	140: SDMH C-7	6,526.29	6,525.36	92.7	1.00	24.0	0.013	6.65	22.62	6.26	6,527.20	6,526.29	6,527.55	6,526.63
366: SDIN C-7A	140: SDMH C-7	6,526.32	6,525.61	35.6	2.00	18.0	0.013	0.67	14.85	4.25	6,526.63	6,526.29	6,526.73	6,526.30
365: SDIN C-6B	147: SDMH C-6	6,527.52	6,524.94	62.7	4.11	18.0	0.013	0.84	21.30	5.85	6,527.86	6,525.43	6,527.98	6,525.47
364: SDIN C-6A	363: SDIN C-6	6,520.31	6,519.83	32.0	1.50	18.0	0.013	1.74	12.86	5.08	6,520.81	6,520.21	6,520.99	6,520.60
363: SDIN C-6	171: SDMH C-3	6,517.43	6,514.24	96.9	3.29	24.0	0.013	10.12	41.04	10.82	6,518.57	6,515.83	6,519.03	6,516.05
362: SDIN C-5B	151: SDMH C-5	6,525.37	6,524.82	36.2	1.50	18.0	0.013	1.86	12.88	5.18	6,525.88	6,525.20	6,526.07	6,525.62
360: SDIN C-5A	359: SDIN C-5	6,520.07	6,519.43	32.0	2.00	18.0	0.013	2.30	14.85	6.10	6,520.65	6,519.84	6,520.86	6,520.39
359: SDIN C-5	168: SDMH C-4	6,518.93	6,517.34	90.9	1.75	24.0	0.013	5.38	29.92	7.22	6,519.75	6,518.20	6,520.06	6,518.47
358: SDIN C-4	168: SDMH C-4	6,518.55	6,517.84	35.4	2.00	18.0	0.013	1.18	14.85	5.03	6,518.96	6,518.13	6,519.10	6,518.52
356: SDIN C-3	176: SDMH C-2	6,511.24	6,509.03	110.7	2.00	30.0	0.013	16.52	58.00	10.18	6,512.62	6,510.57	6,513.17	6,510.99
355: SDIN C-2	176: SDMH C-2	6,511.46	6,509.78	56.0	3.00	18.0	0.013	2.01	18.19	6.77	6,512.00	6,510.57	6,512.19	6,510.64

FlexTable: Conduit Table (5 YR)

Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	Manning's n	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
354: SDIN C-1	178: SDMH C-1	6,507.83	6,504.37	172.7	2.00	30.0	0.013	18.98	58.00	10.58	6,509.30	6,505.36	6,509.92	6,507.10
352: SDIN B-5A	351: SDIN B-5	6,527.76	6,526.96	32.0	2.50	18.0	0.013	3.00	16.61	7.13	6,528.42	6,528.29	6,528.67	6,528.34
351: SDIN B-5	135: SDMH B-4	6,527.21	6,525.11	83.9	2.50	18.0	0.013	4.49	16.61	7.98	6,528.02	6,525.65	6,528.35	6,526.64
350: SDIN B-4A	135: SDMH B-4	6,527.42	6,525.11	77.0	3.00	18.0	0.013	3.05	18.19	7.64	6,528.09	6,525.53	6,528.34	6,526.44
349: SDIN B-3	347: SDIN B-2	6,519.02	6,517.72	43.5	3.00	24.0	0.013	7.72	39.17	9.69	6,520.01	6,519.07	6,520.40	6,519.25
348: SDIN B-2A	158: SDMH B-2	6,522.71	6,518.76	175.3	2.25	18.0	0.013	2.30	15.75	6.36	6,523.28	6,519.15	6,523.49	6,519.78
347: SDIN B-2	345: SDIN B-1	6,517.47	6,516.09	45.9	3.00	24.0	0.013	11.18	39.17	10.75	6,518.67	6,516.87	6,519.17	6,518.38
346: SDIN B-1A	345: SDIN B-1	6,518.34	6,516.59	34.9	4.99	18.0	0.013	1.24	23.47	7.04	6,518.76	6,516.83	6,518.90	6,517.60
345: SDIN B-1	568: SDMH B-1	6,510.49	6,509.13	32.6	3.51	24.0	0.013	13.31	42.38	11.94	6,511.80	6,509.98	6,512.38	6,511.70
344: SDIN A-5A	343: SDIN A-5	6,536.24	6,535.92	32.0	1.00	18.0	0.013	1.31	10.50	4.05	6,536.67	6,536.69	6,536.82	6,536.72
343: SDIN A-5	340: SDIN A-4	6,535.67	6,529.45	249.0	2.50	18.0	0.013	4.04	16.61	7.75	6,536.44	6,529.95	6,536.75	6,530.88
342: SDIN A-4A	340: SDIN A-4	6,530.09	6,529.45	32.0	2.00	18.0	0.013	0.45	14.85	3.77	6,530.34	6,529.98	6,530.42	6,529.99
340: SDIN A-4	339: SDIN A-3	6,528.94	6,521.44	300.0	2.50	24.0	0.013	5.76	35.76	8.36	6,529.79	6,522.37	6,530.11	6,522.62
339: SDIN A-3	148: SDMH A-2	6,521.18	6,520.63	53.3	1.01	24.0	0.013	7.40	22.72	6.47	6,522.15	6,521.68	6,522.52	6,521.99
338: SDIN A-2	148: SDMH A-2	6,521.31	6,520.76	58.7	1.01	18.0	0.013	0.95	10.53	3.70	6,521.67	6,521.68	6,521.80	6,521.69
336: SDIN A-1	156: SDMH A-1	6,519.94	6,519.23	32.8	2.01	24.0	0.013	9.45	32.04	8.87	6,521.04	6,520.02	6,521.48	6,521.05
178: SDMH C-1	353: FOREBAY 3	6,501.87	6,499.43	244.2	1.00	60.0	0.013	22.33	260.42	8.11	6,503.18	6,500.42	6,503.65	6,501.44
176: SDMH C-2	354: SDIN C-1	6,508.78	6,508.32	22.9	2.00	30.0	0.013	18.04	58.00	10.43	6,510.22	6,509.42	6,510.81	6,510.59
174: SDMH C-1A	178: SDMH C-1	6,503.91	6,502.37	51.3	3.00	54.0	0.013	3.82	340.51	7.12	6,504.46	6,503.46	6,504.65	6,503.49
172: SDMH C-1B	174: SDMH C-1A	6,510.00	6,504.16	194.8	3.00	54.0	0.013	3.88	340.51	7.15	6,510.56	6,504.50	6,510.74	6,505.29
171: SDMH C-3	356: SDIN C-3	6,513.99	6,511.74	68.1	3.29	24.0	0.013	15.92	41.04	12.23	6,515.42	6,512.65	6,516.10	6,514.71
170: FES C-1	172: SDMH C-1B	6,517.11	6,514.28	28.3	9.71	54.0	0.013	3.88	612.77	10.77	6,517.66	6,514.54	6,517.85	6,516.26
168: SDMH C-4	171: SDMH C-3	6,517.09	6,516.39	35.3	2.00	24.0	0.013	6.41	31.99	7.96	6,517.99	6,517.02	6,518.33	6,517.89
158: SDMH B-2	347: SDIN B-2	6,518.51	6,517.97	21.6	2.50	18.0	0.013	2.26	16.61	6.57	6,519.08	6,519.07	6,519.29	6,519.11
156: SDMH A-1	332: FOREBAY-1	6,512.74	6,502.85	245.0	4.10	24.0	0.013	9.43	45.81	11.48	6,513.84	6,503.47	6,514.28	6,505.51
151: SDMH C-5	359: SDIN C-5	6,524.08	6,519.43	265.7	1.75	18.0	0.013	1.85	13.89	5.46	6,524.59	6,519.80	6,524.78	6,520.26
148: SDMH A-2	336: SDIN A-1	6,520.43	6,520.14	30.6	0.99	24.0	0.013	8.07	22.47	6.56	6,521.44	6,521.26	6,521.84	6,521.57
147: SDMH C-6	363: SDIN C-6	6,524.19	6,517.68	168.0	3.88	24.0	0.013	7.90	44.54	10.69	6,525.19	6,518.85	6,525.59	6,519.11
140: SDMH C-7	147: SDMH C-6	6,525.11	6,524.44	33.5	2.00	24.0	0.013	7.25	31.99	8.24	6,526.07	6,525.43	6,526.44	6,525.77
135: SDMH B-4	349: SDIN B-3	6,524.61	6,519.27	178.0	3.00	24.0	0.013	7.06	39.17	9.45	6,525.56	6,519.85	6,525.92	6,521.24
134: FUTURE SDMH D-1	371: SDIN D-1	6,527.11	6,526.33	155.1	0.50	30.0	0.013	7.80	29.00	5.01	6,528.04	6,527.41	6,528.38	6,527.64
130: FUTURE SDMH D-1A	134: FUTURE SDMH D-1	6,527.97	6,527.36	61.0	1.00	24.0	0.013	7.84	22.62	6.55	6,528.97	6,528.18	6,529.36	6,528.84

FlexTable: Conduit Table (5 YR)

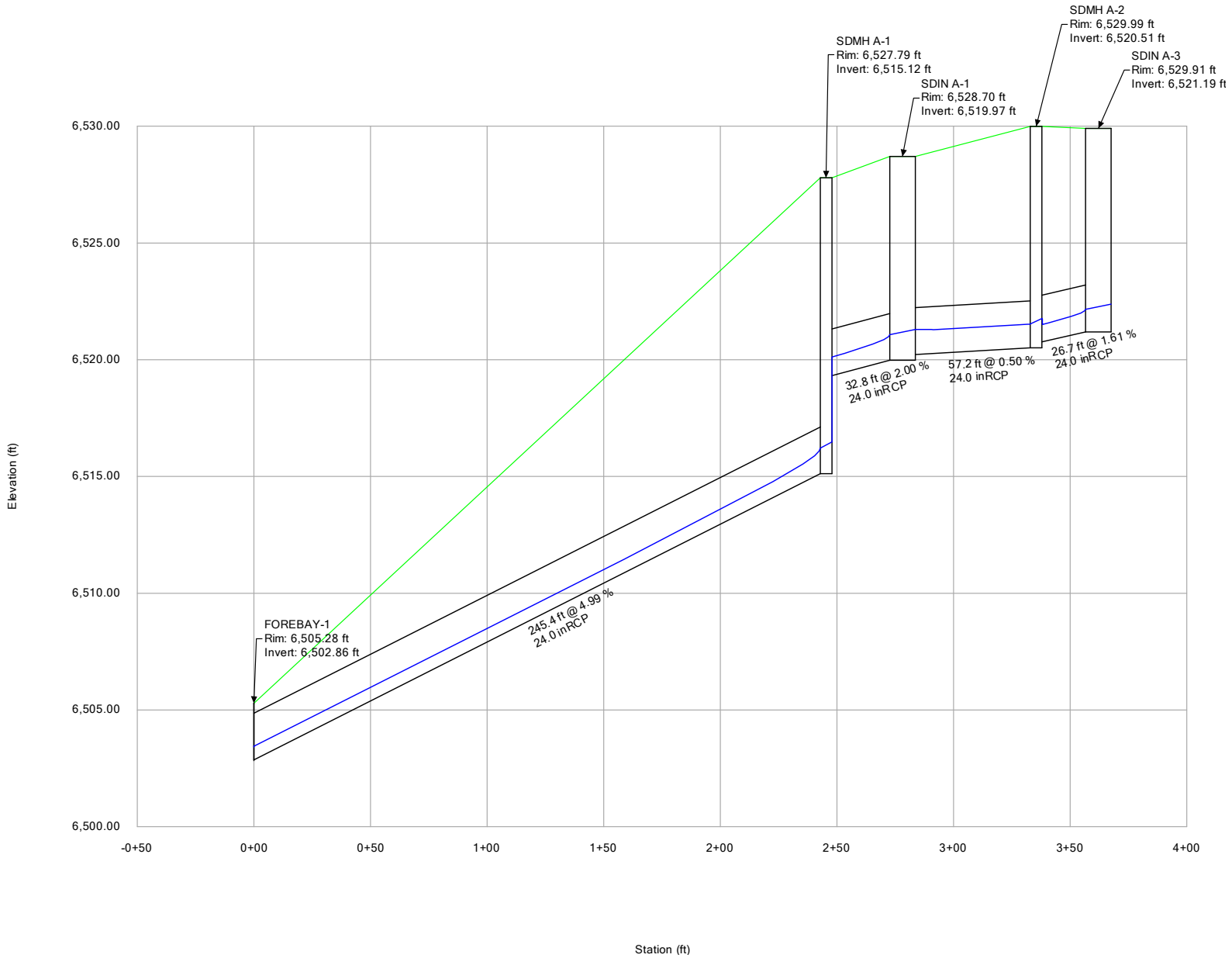
Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	Manning's n	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
125: SDMH D-2	371: SDIN D-1	6,526.25	6,524.32	193.3	1.00	54.0	0.013	74.33	196.47	11.49	6,528.77	6,527.41	6,529.79	6,528.04
121: SDMH C-8	367: SDIN C-8	6,529.48	6,526.79	268.3	1.00	18.0	0.013	3.08	10.50	5.16	6,530.14	6,527.35	6,530.40	6,527.76
119: SDMH D-3	125: SDMH D-2	6,527.11	6,526.50	61.4	0.99	54.0	0.013	74.23	196.06	11.47	6,529.63	6,529.38	6,530.65	6,530.12
111: SDMH E-1	422: SDIN E-1	6,533.79	6,531.54	150.1	1.50	54.0	0.013	57.57	240.76	12.43	6,535.99	6,534.11	6,536.85	6,534.69
110: SDMH E-2	111: SDMH E-1	6,535.09	6,534.04	70.0	1.50	54.0	0.013	57.71	240.82	12.44	6,537.30	6,536.42	6,538.16	6,537.13
109: SDMH E-3	110: SDMH E-2	6,536.39	6,535.34	70.0	1.50	54.0	0.013	57.86	240.82	12.45	6,538.60	6,537.73	6,539.46	6,538.44
108: SDMH D-7	383: SDIN D-5	6,536.39	6,530.99	188.5	2.86	36.0	0.013	12.19	112.87	10.44	6,537.50	6,532.70	6,537.91	6,532.83
107: SDMH E-4	109: SDMH E-3	6,537.69	6,536.64	70.0	1.50	54.0	0.013	58.00	240.82	12.46	6,539.90	6,539.03	6,540.77	6,539.74
106: SDMH E-5	107: SDMH E-4	6,538.99	6,537.94	69.9	1.50	54.0	0.013	58.15	240.97	12.47	6,541.20	6,540.33	6,542.07	6,541.04
104: SDMH E-6	106: SDMH E-5	6,540.05	6,539.24	70.1	1.16	54.0	0.013	58.31	211.34	11.35	6,542.27	6,541.64	6,543.13	6,542.35
100: SDMH E-7	104: SDMH E-6	6,541.21	6,540.30	90.9	1.00	54.0	0.013	58.53	196.78	10.79	6,543.43	6,542.70	6,544.30	6,543.42
98: SDMH D-5	383: SDIN D-5	6,540.03	6,531.99	116.5	6.88	24.0	0.013	6.38	59.35	12.34	6,540.93	6,532.43	6,541.27	6,534.80
94: SDMH D-6	98: SDMH D-5	6,543.80	6,543.00	53.2	1.50	18.0	0.013	3.92	12.88	6.40	6,544.56	6,543.57	6,544.85	6,544.20
93: SDMH E-8	100: SDMH E-7	6,542.78	6,542.21	57.6	0.99	42.0	0.013	35.17	100.12	9.49	6,544.62	6,544.30	6,545.35	6,544.84
92: SDMH E-10	93: SDMH E-8	6,544.03	6,543.78	24.7	1.01	36.0	0.013	29.12	67.06	9.15	6,545.78	6,545.28	6,546.50	6,546.34
89: SDMH O-2	78: SDMH O-1	6,537.01	6,535.02	397.8	0.50	48.0	0.013	12.50	101.56	5.49	6,538.04	6,535.97	6,538.41	6,536.44
88: SDMH O-3	89: SDMH O-2	6,537.51	6,537.26	50.6	0.50	48.0	0.013	12.50	101.56	5.49	6,538.55	6,538.21	6,538.91	6,538.68
87: SDMH E-9	404: SDIN E-8A	6,545.38	6,545.33	8.8	0.50	24.0	0.013	1.03	16.02	2.87	6,545.91	6,545.91	6,545.95	6,545.94
86: SDMH E-11	401: SDIN E-7A	6,544.44	6,543.22	121.6	1.00	36.0	0.013	26.11	66.69	8.86	6,546.09	6,544.53	6,546.76	6,545.74
83: SDMH D-8	108: SDMH D-7	6,542.40	6,536.70	189.9	3.00	30.0	0.013	12.27	71.02	10.84	6,543.57	6,537.40	6,544.03	6,539.23
82: SDMH E-15	86: SDMH E-11	6,545.39	6,544.68	71.5	0.99	36.0	0.013	19.74	66.46	8.20	6,546.81	6,546.49	6,547.37	6,546.79
80: SDMH E-12	405: SDIN E-11	6,547.89	6,546.14	173.5	1.00	24.0	0.013	6.77	22.65	6.30	6,548.81	6,546.89	6,549.17	6,547.51
78: SDMH O-1	118: FES O-1	6,534.77	6,532.82	389.7	0.50	48.0	0.013	12.50	101.56	5.49	6,535.80	6,533.77	6,536.17	6,534.24
77: SDMH E-13	80: SDMH E-12	6,548.46	6,548.14	32.6	0.98	24.0	0.013	6.80	22.41	6.26	6,549.38	6,548.91	6,549.74	6,549.48
65: SDMH D-11	390: SDIN D-8A	6,547.44	6,544.19	162.9	2.00	24.0	0.013	9.79	31.99	8.94	6,548.56	6,545.40	6,549.02	6,545.78
62: SDMH E-16	408: SDIN E-15A	6,549.71	6,547.67	204.2	1.00	36.0	0.013	15.67	66.66	7.71	6,550.97	6,549.14	6,551.45	6,549.46
60: SDINH O-9	55: SDMH O-8	6,551.44	6,549.94	301.5	0.50	48.0	0.013	48.94	101.56	8.01	6,553.54	6,551.89	6,554.38	6,552.89
59: SDIN O-7	47: SDMH O-6	6,547.93	6,547.60	66.5	0.50	48.0	0.013	48.94	101.56	8.01	6,550.03	6,549.56	6,550.87	6,550.55
57: SDMH E-18	49: SDMH E-17	6,551.51	6,551.03	95.3	0.50	30.0	0.013	6.77	29.00	4.82	6,552.37	6,551.85	6,552.69	6,552.22
55: SDMH O-8	59: SDIN O-7	6,549.69	6,548.18	300.5	0.50	48.0	0.013	48.94	101.56	8.01	6,551.78	6,550.14	6,552.62	6,551.14
54: SDMH E-19	62: SDMH E-16	6,551.82	6,550.71	111.2	1.00	24.0	0.013	11.70	22.60	7.26	6,553.05	6,551.73	6,553.57	6,552.55
52: SDMH D-9	385: SDIN D-8	6,549.85	6,545.61	212.1	2.00	24.0	0.013	3.74	31.99	6.81	6,550.53	6,546.07	6,550.78	6,546.80

FlexTable: Conduit Table (5 YR)

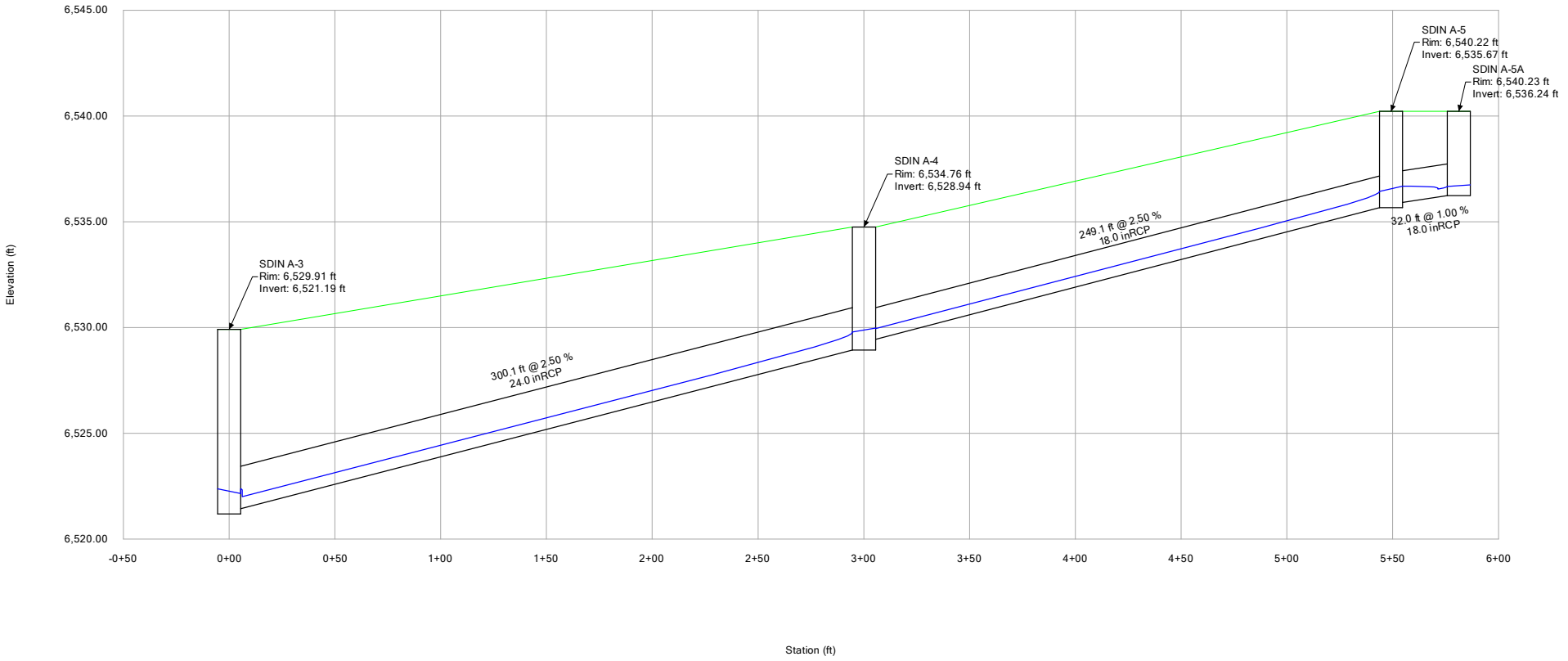
Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	Manning's n	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
49: SDMH E-17	62: SDMH E-16	6,550.77	6,550.21	112.9	0.50	30.0	0.013	6.70	28.89	4.79	6,551.63	6,551.26	6,551.94	6,551.44
48: SDMH E-20	410: SDIN E-19	6,553.39	6,552.86	53.4	0.99	24.0	0.013	7.88	22.54	6.54	6,554.39	6,554.26	6,554.78	6,554.43
47: SDMH O-6	44: SDMH O-5	6,547.35	6,546.74	121.8	0.50	48.0	0.013	12.50	101.56	5.49	6,548.38	6,547.69	6,548.75	6,548.16
44: SDMH O-5	43: SDMH O-4	6,546.49	6,546.16	66.3	0.50	48.0	0.013	12.50	101.56	5.49	6,547.53	6,547.11	6,547.89	6,547.58
43: SDMH O-4	88: SDMH O-3	6,545.90	6,539.50	407.3	1.57	48.0	0.013	12.50	180.02	8.23	6,546.93	6,540.21	6,547.30	6,541.27
41: SDMH E-21	48: SDMH E-20	6,556.61	6,553.64	297.5	1.00	24.0	0.013	8.12	22.60	6.60	6,557.63	6,554.47	6,558.02	6,555.15
36: SDMH E-25	35: SDMH E-24	6,564.66	6,564.05	80.7	0.76	24.0	0.013	4.39	19.67	5.04	6,565.40	6,564.69	6,565.67	6,565.09
35: SDMH E-24	33: SDMH E-23	6,563.06	6,562.37	92.8	0.75	24.0	0.013	4.33	19.59	5.01	6,563.79	6,563.01	6,564.06	6,563.40
34: SDMH E-22	413: SDIN E-21A	6,561.69	6,557.78	392.4	1.00	24.0	0.013	4.25	22.59	5.52	6,562.42	6,558.75	6,562.68	6,558.88
33: SDMH E-23	34: SDMH E-22	6,562.11	6,561.95	22.1	0.75	24.0	0.013	4.26	19.59	4.99	6,562.84	6,562.59	6,563.11	6,562.96

Profile Report

Engineering Profile - FOREBAY-1 to SDIN A-3 (L) (17026.004 - BMN F1_2026.01.24.stsw)



Profile Report
Engineering Profile - SDIN A-5A to SDIN A-5A (L) (17026.004 - BMN F1_2026.01.24.stsw)



Profile Report

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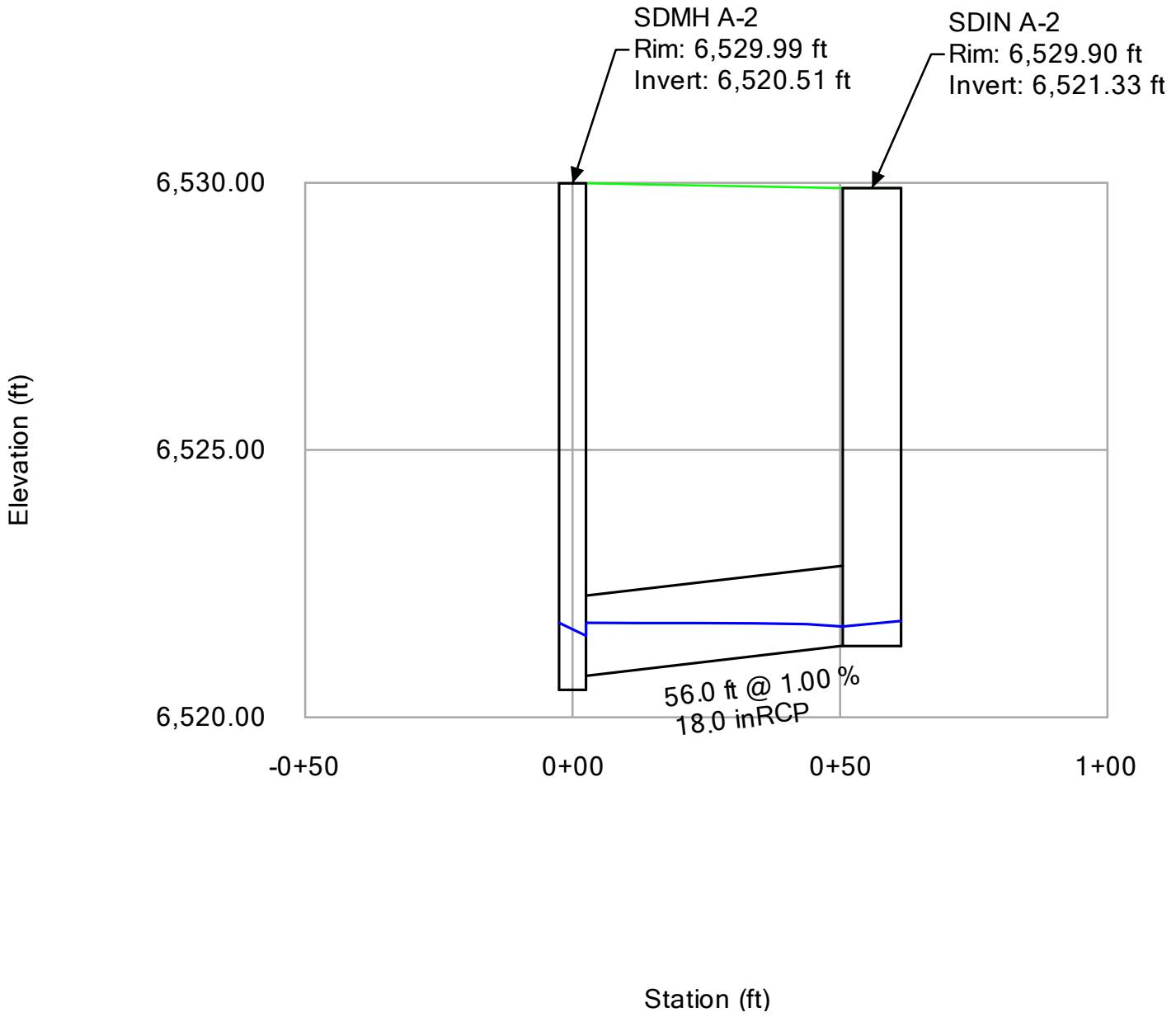
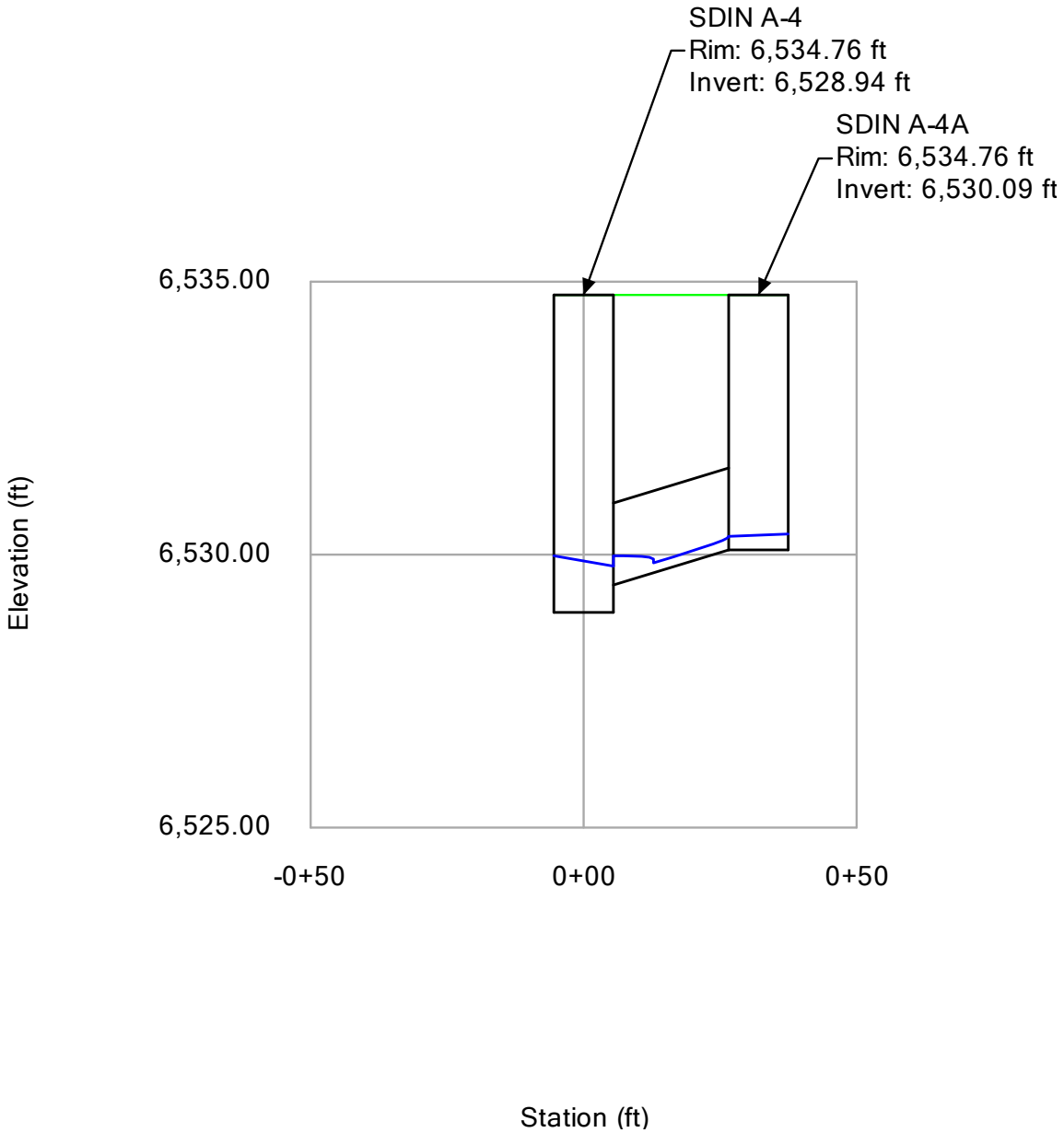


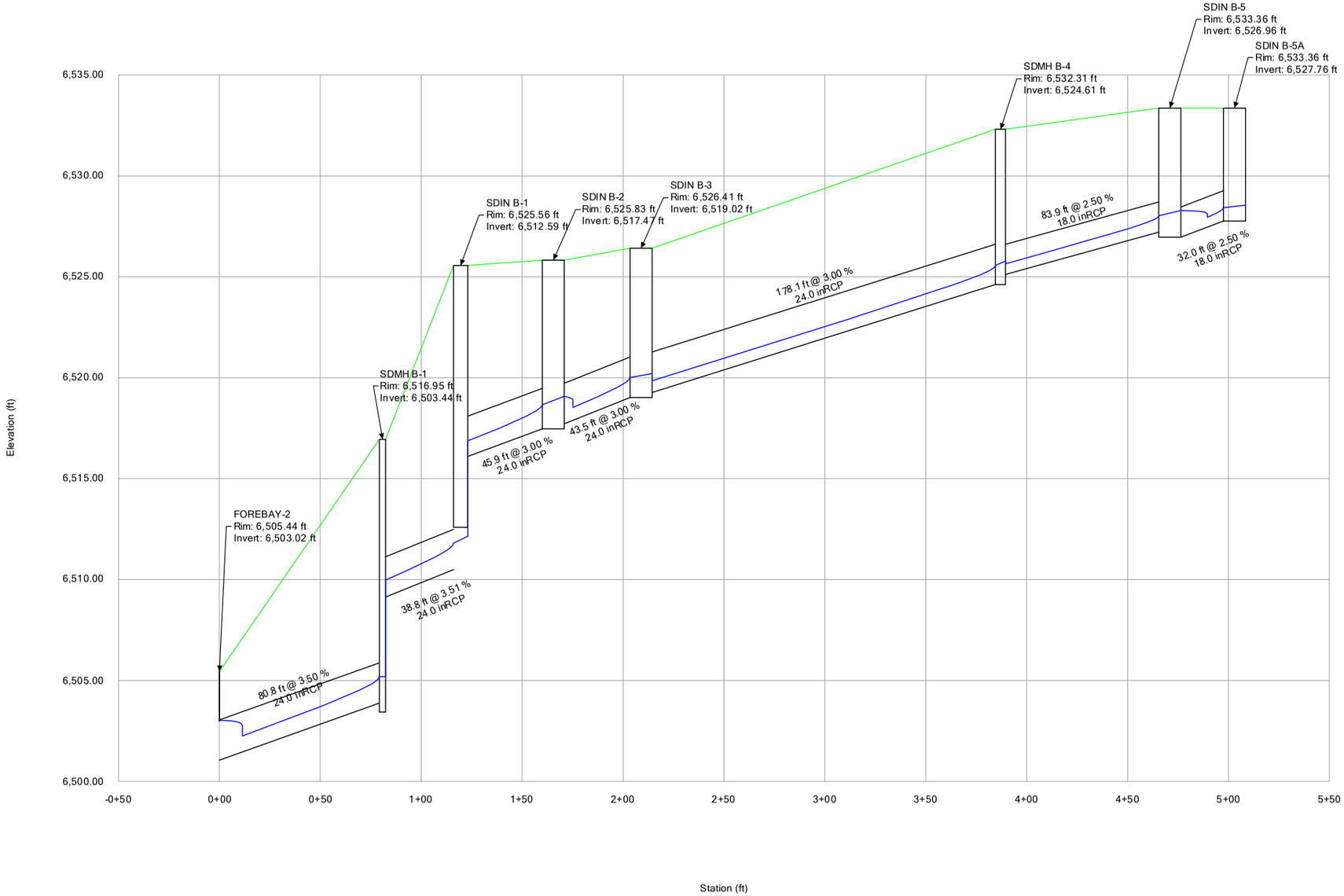
Profile Report

Engineering Profile - SDIN A-4 to SDIN A-4A (s) (17026.004 - BMN F1_2026.01.24.stsw)



Profile Report

Engineering Profile - FOREBAY-2 to SDIN B-5A (17026.004 - BMN F1_2026.01.24.stsw)

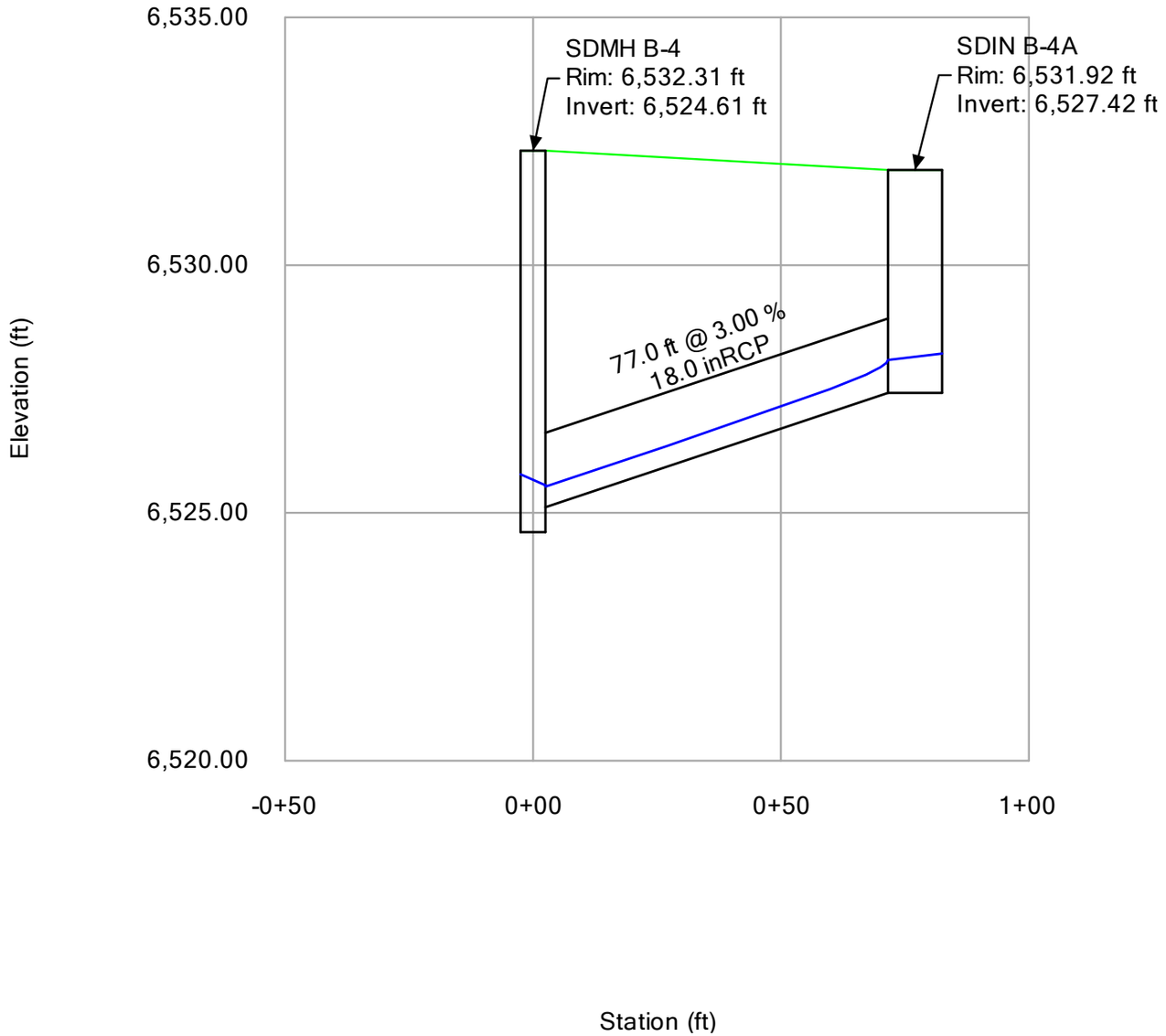


5 YR

5 YR

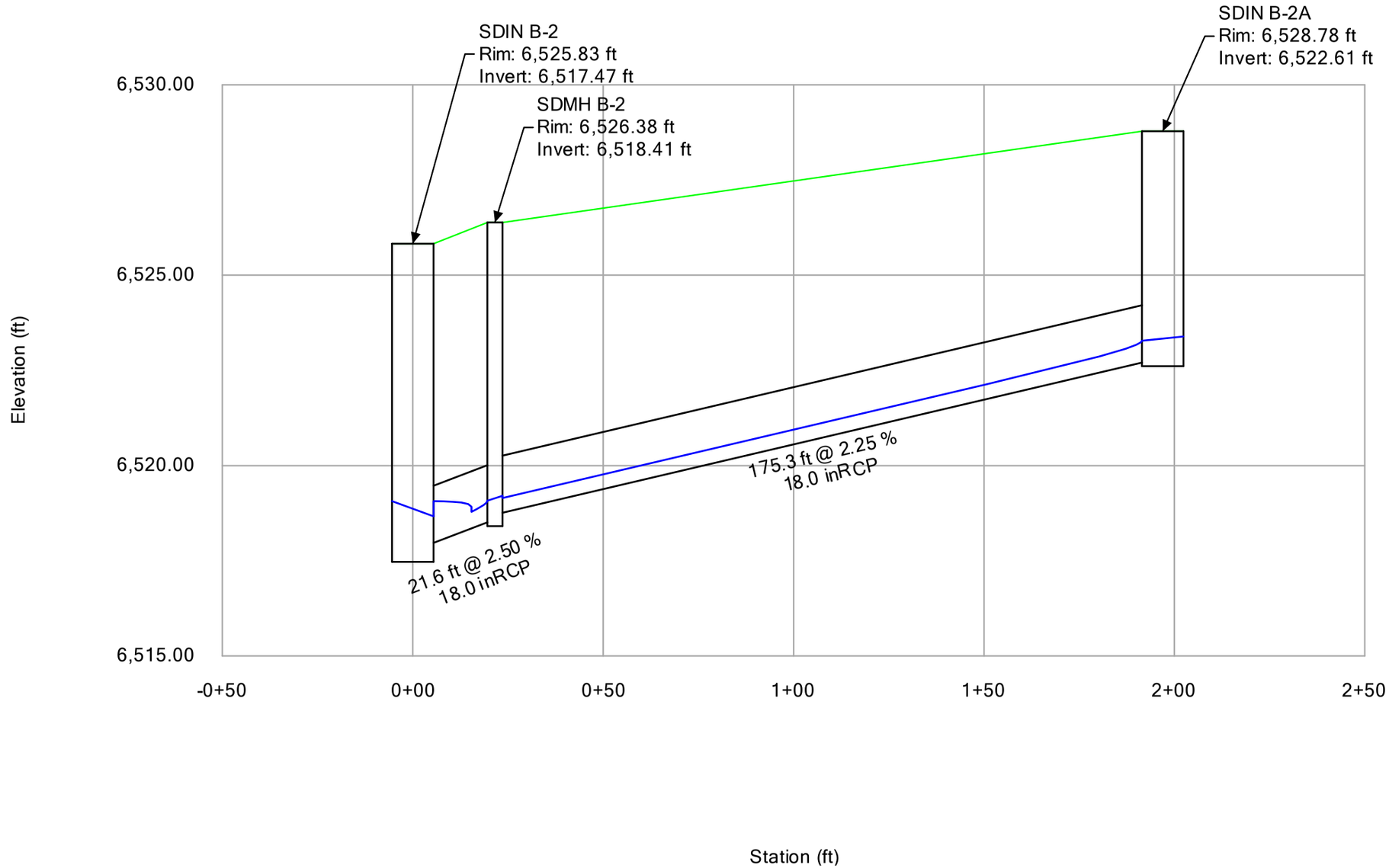
Profile Report

Engineering Profile - SDMH B-4 to SDIN B-4A (s) (17026.004 - BMN F1_2026.01.24.stsw)



Profile Report

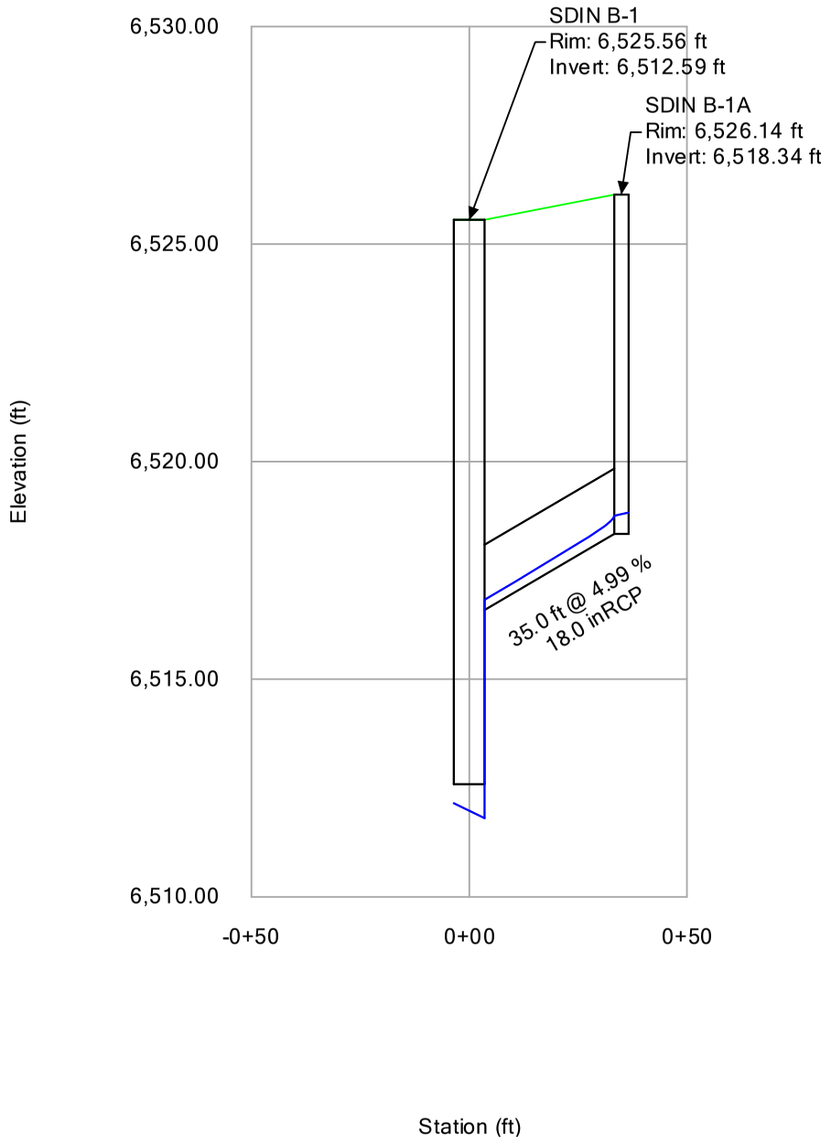
Engineering Profile - SDIN B-2 to SDIN B-2A (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

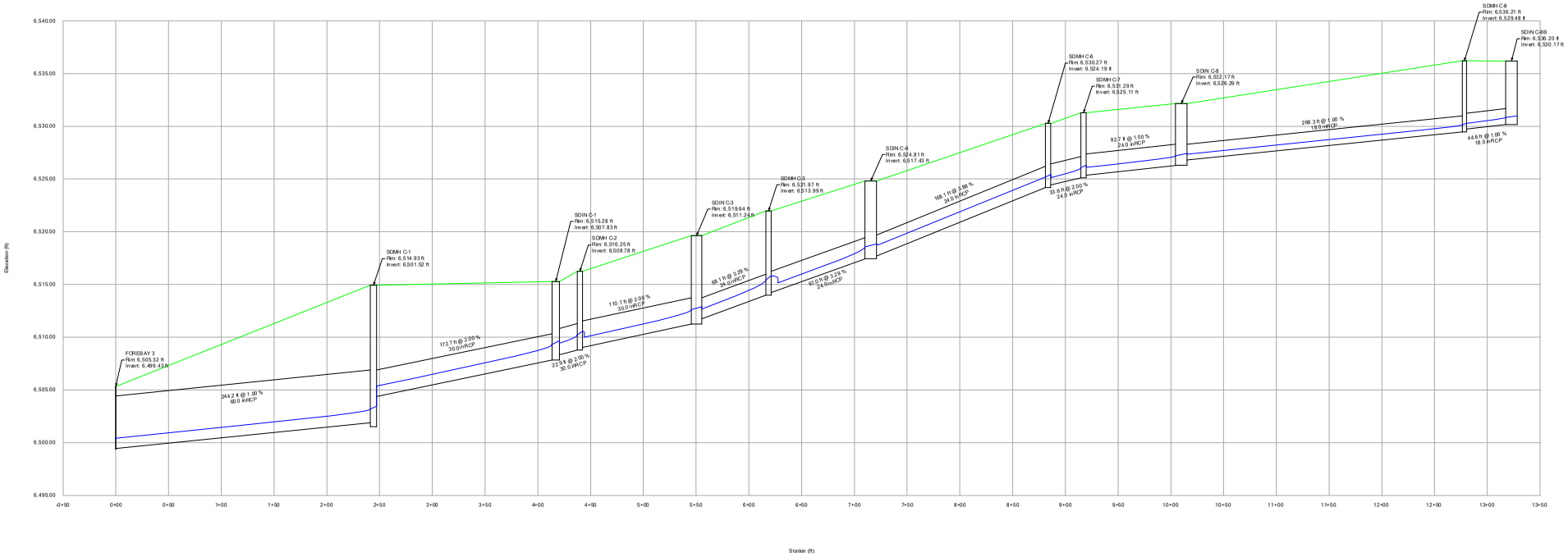
Profile Report

Engineering Profile - SDIN B-1 to SDIN B-1A (s) (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

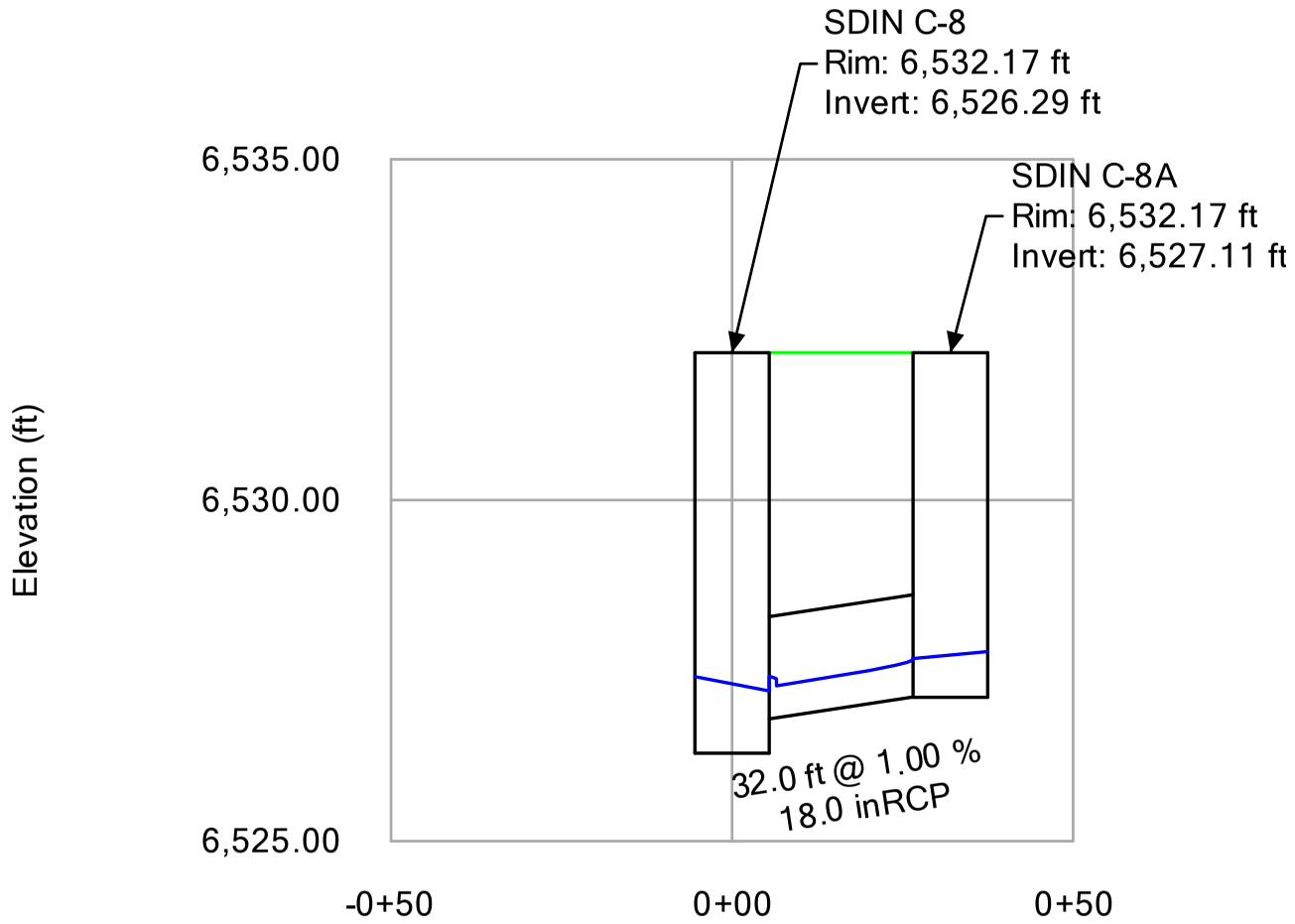
Profile Report
Engineering Profile - FOREBAY 3 to SDIN C-8B (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

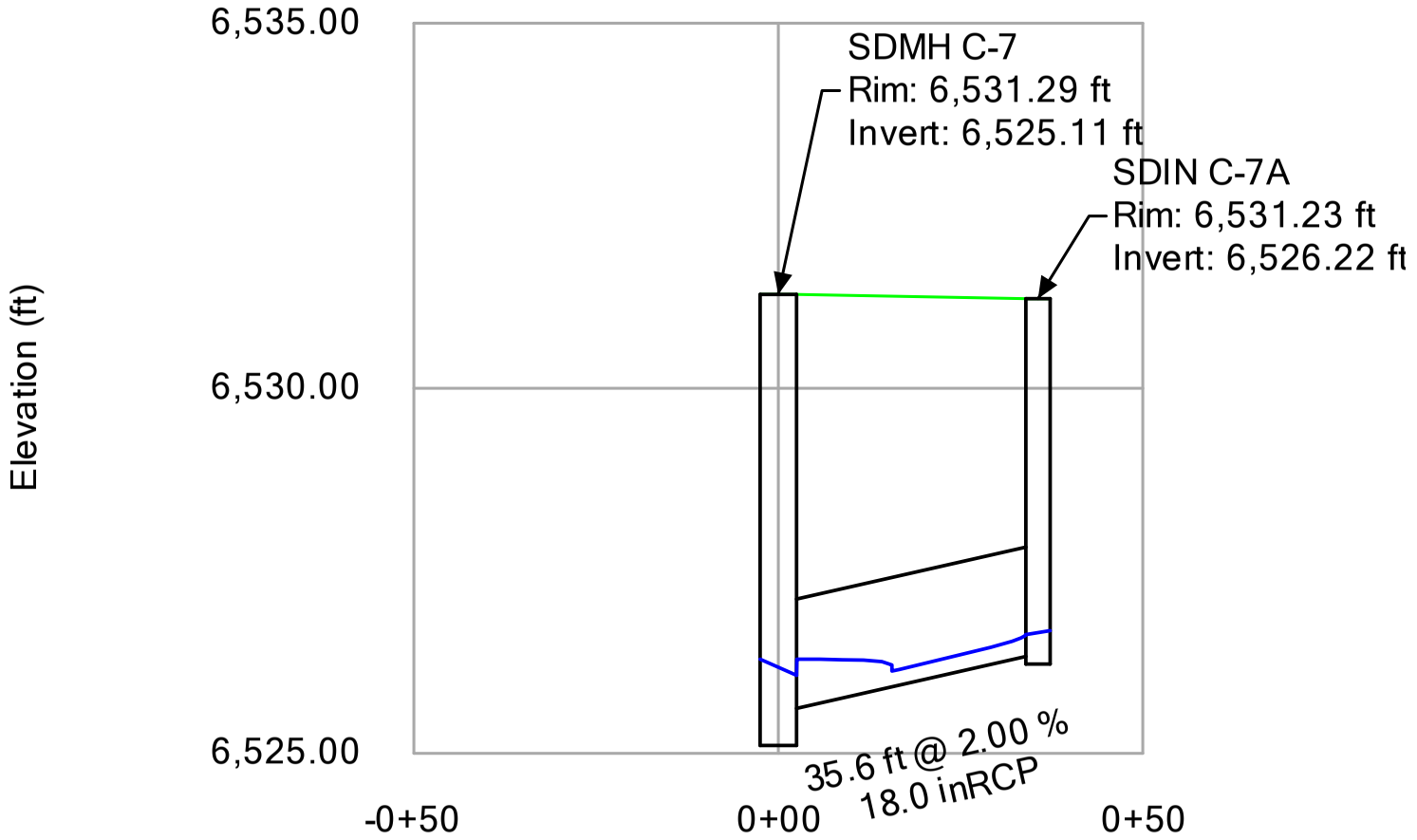
Engineering Profile - SDIN C-8 to SDIN C-8A (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

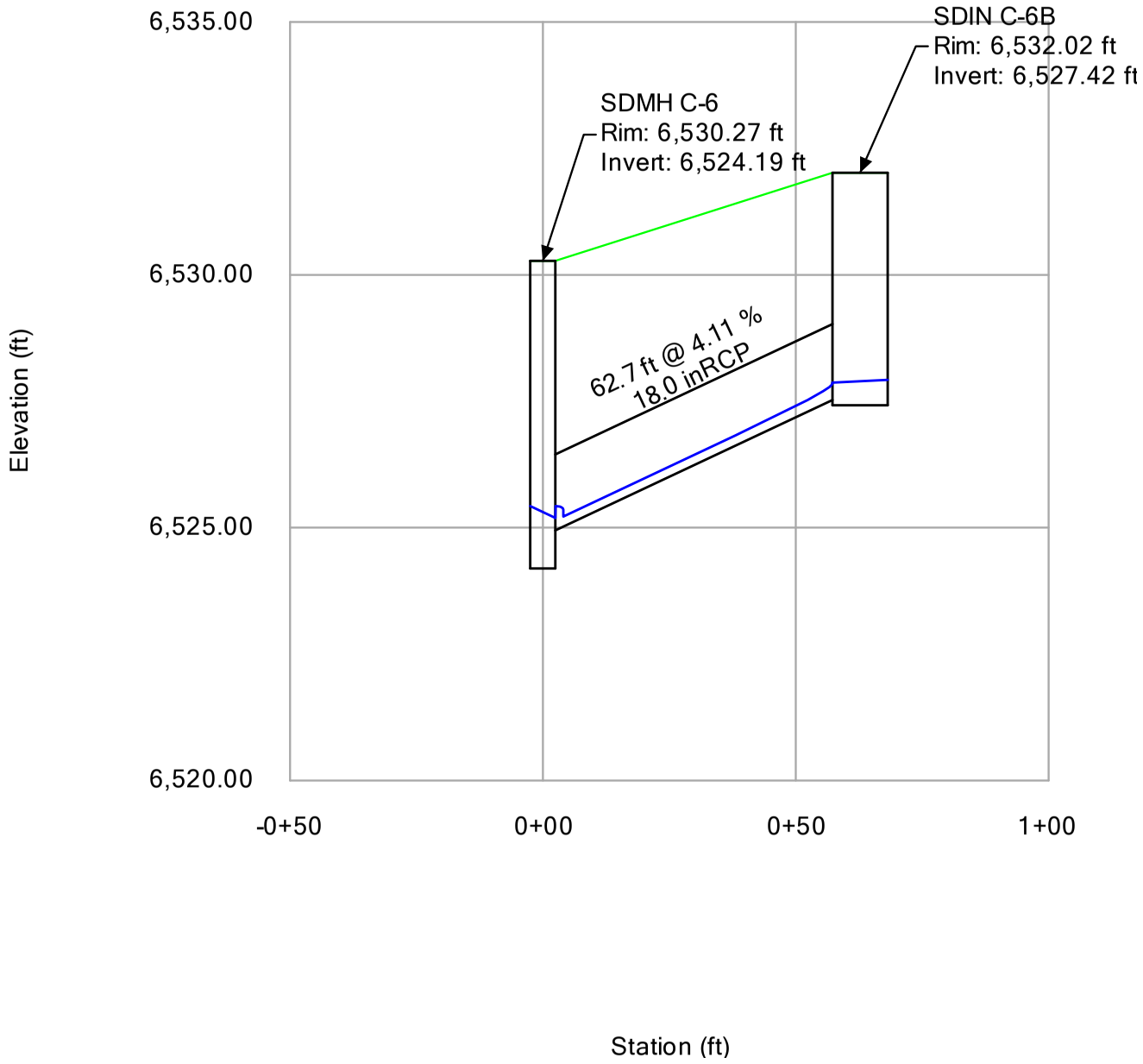
Engineering Profile - SDMH C-7 to SDIN C-7A (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

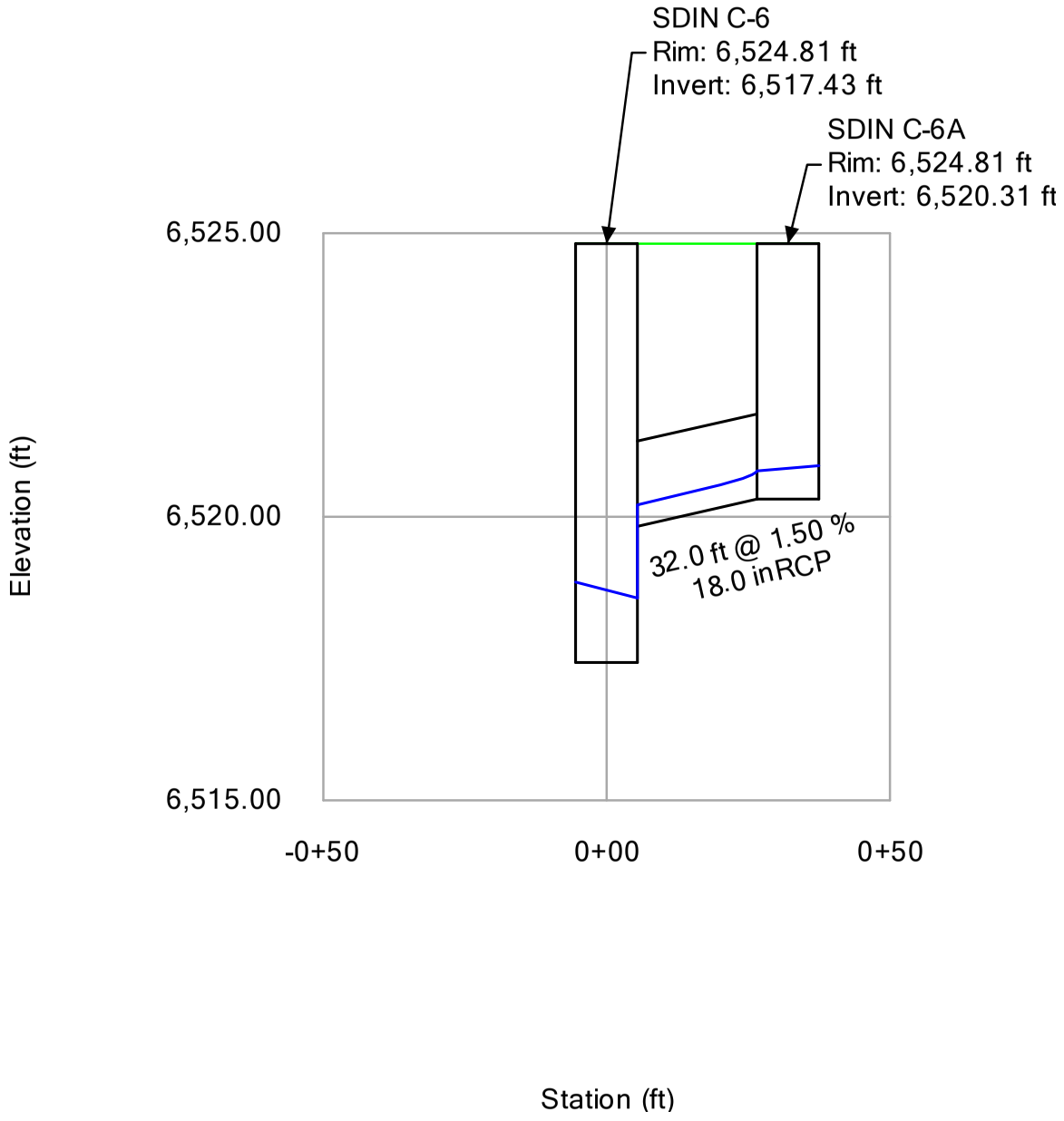
Engineering Profile - SDMH C-6 to SDIN C-6B (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

Engineering Profile - SDIN C-6 to SDIN C-6A (17026.004 - BMN F1_2026.01.24.stsw)

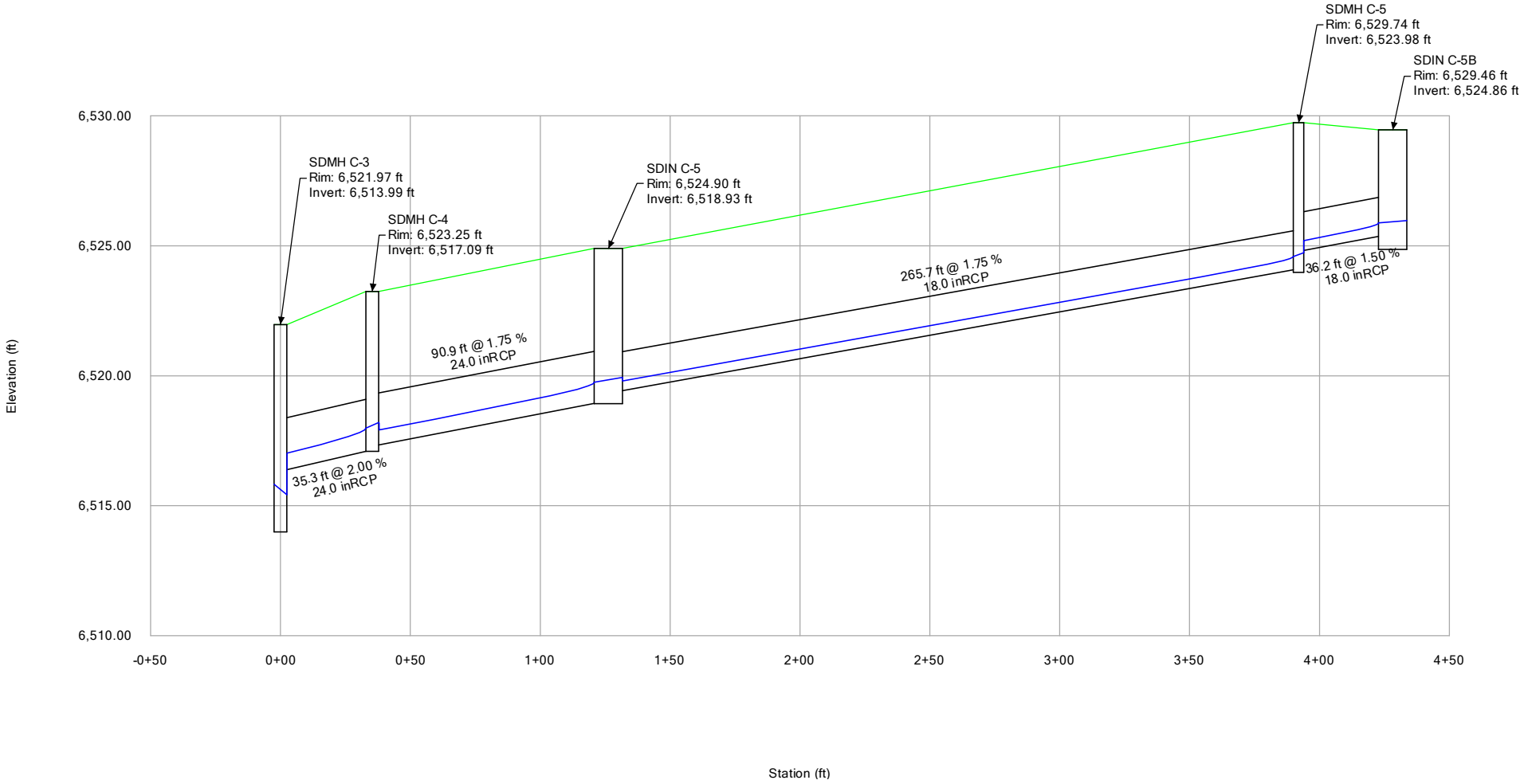


5 YR

5 YR

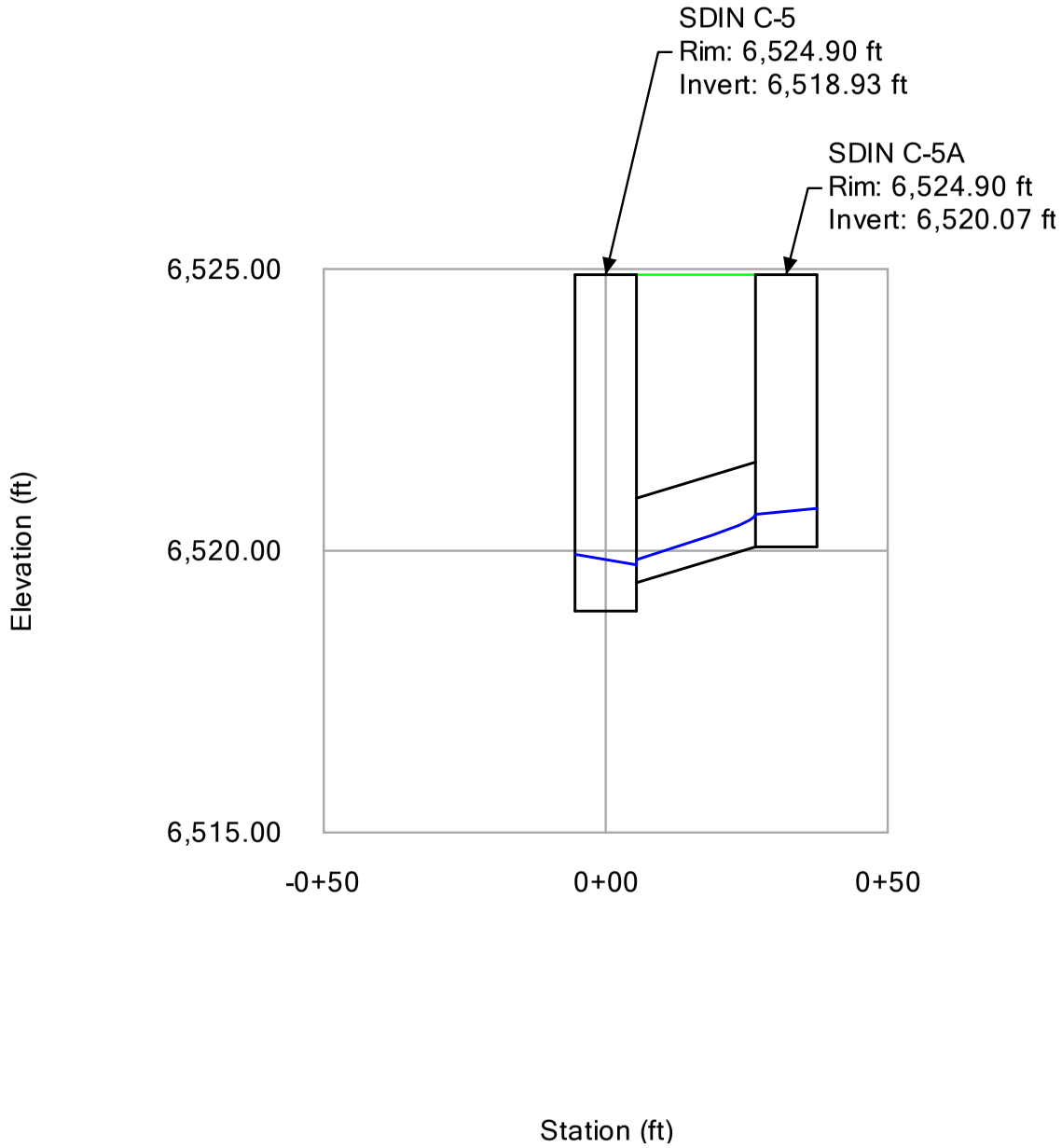
Profile Report

Engineering Profile - SDMH C-3 to SDIN C-5B (17026.004 - BMN F1_2026.05.15.stsw)



Profile Report

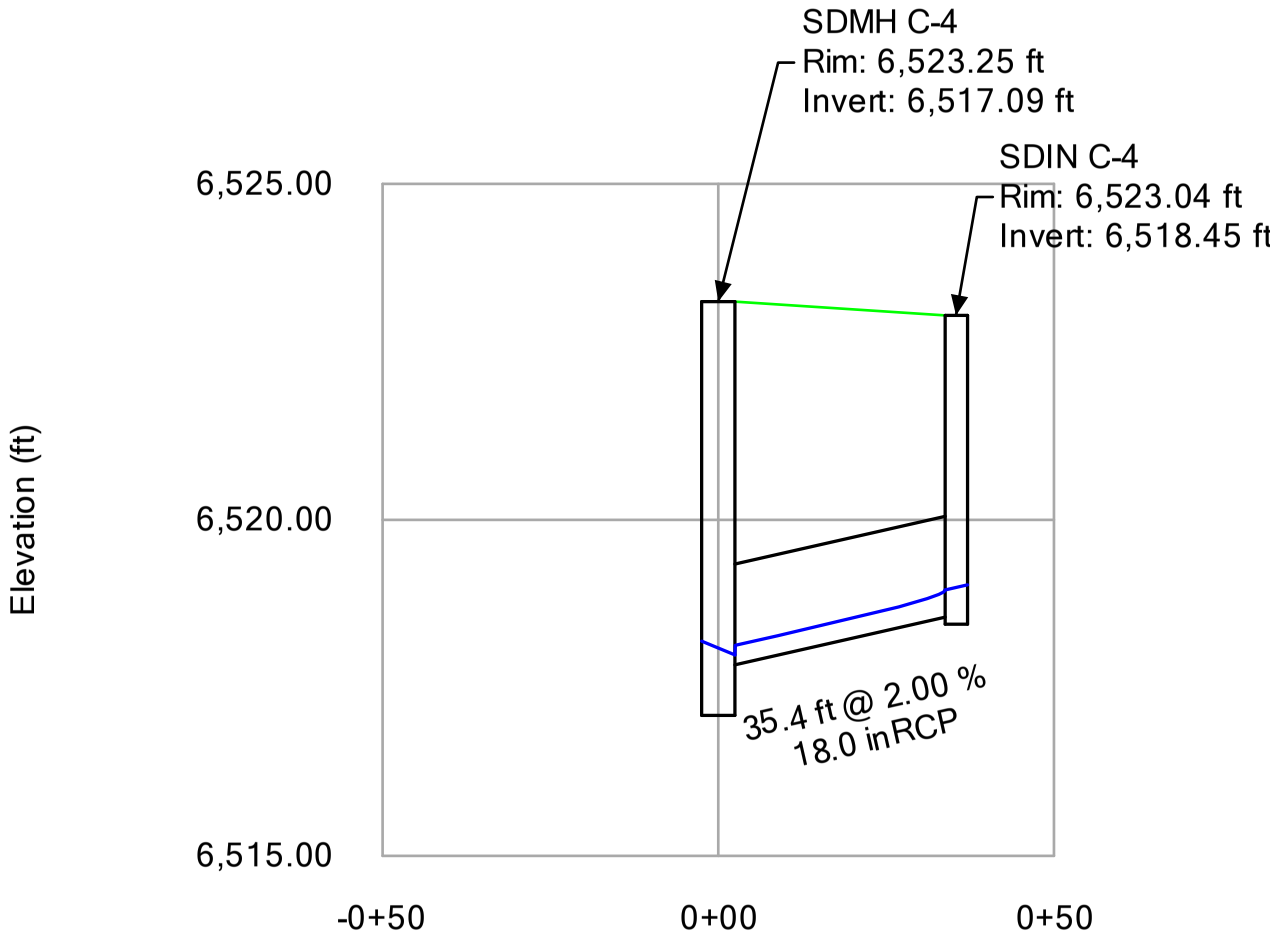
Engineering Profile - SDIN C-5 to SDIN C-5A (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

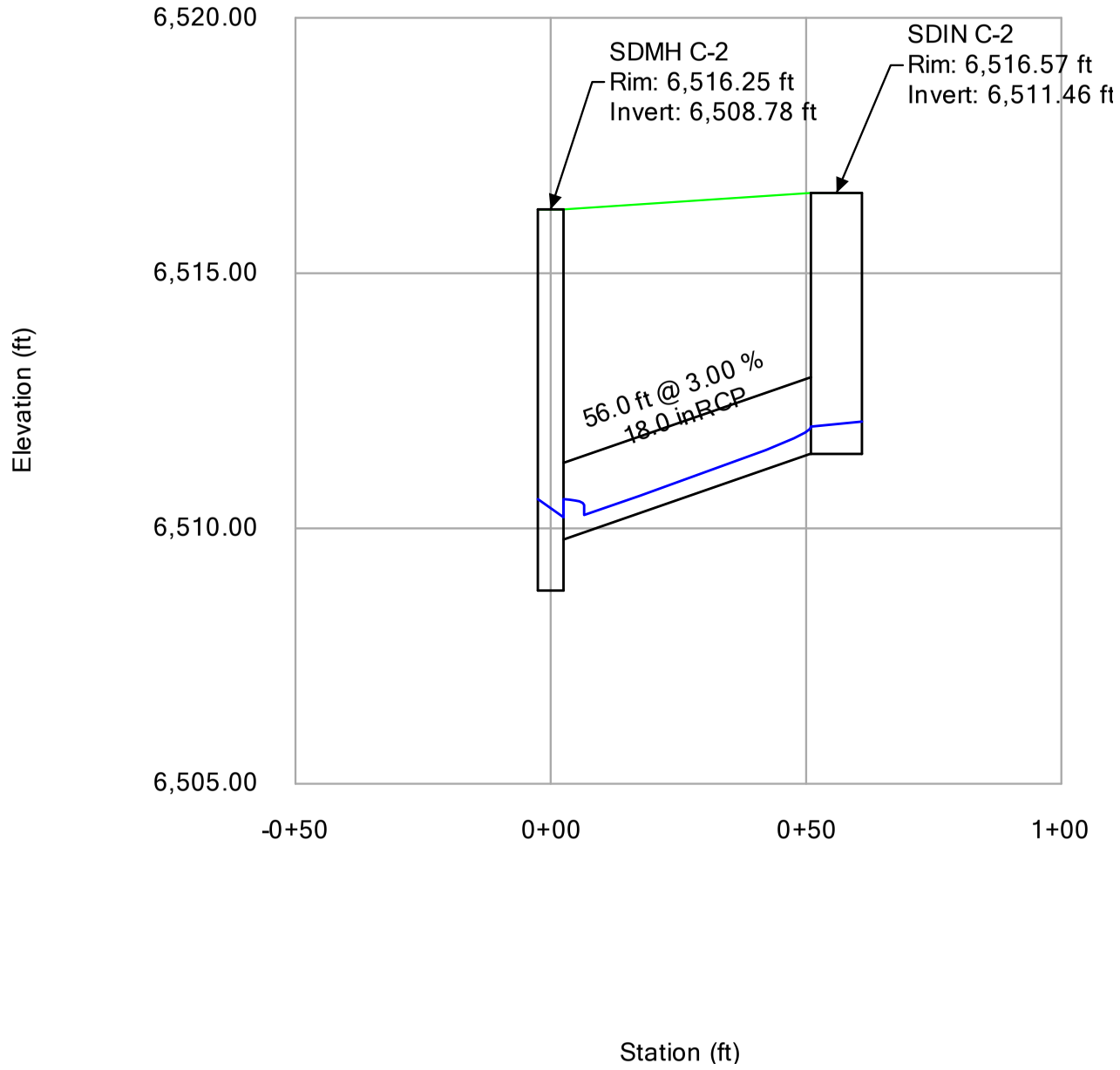
Engineering Profile - SDMH C-4 to SDIN C-4 (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

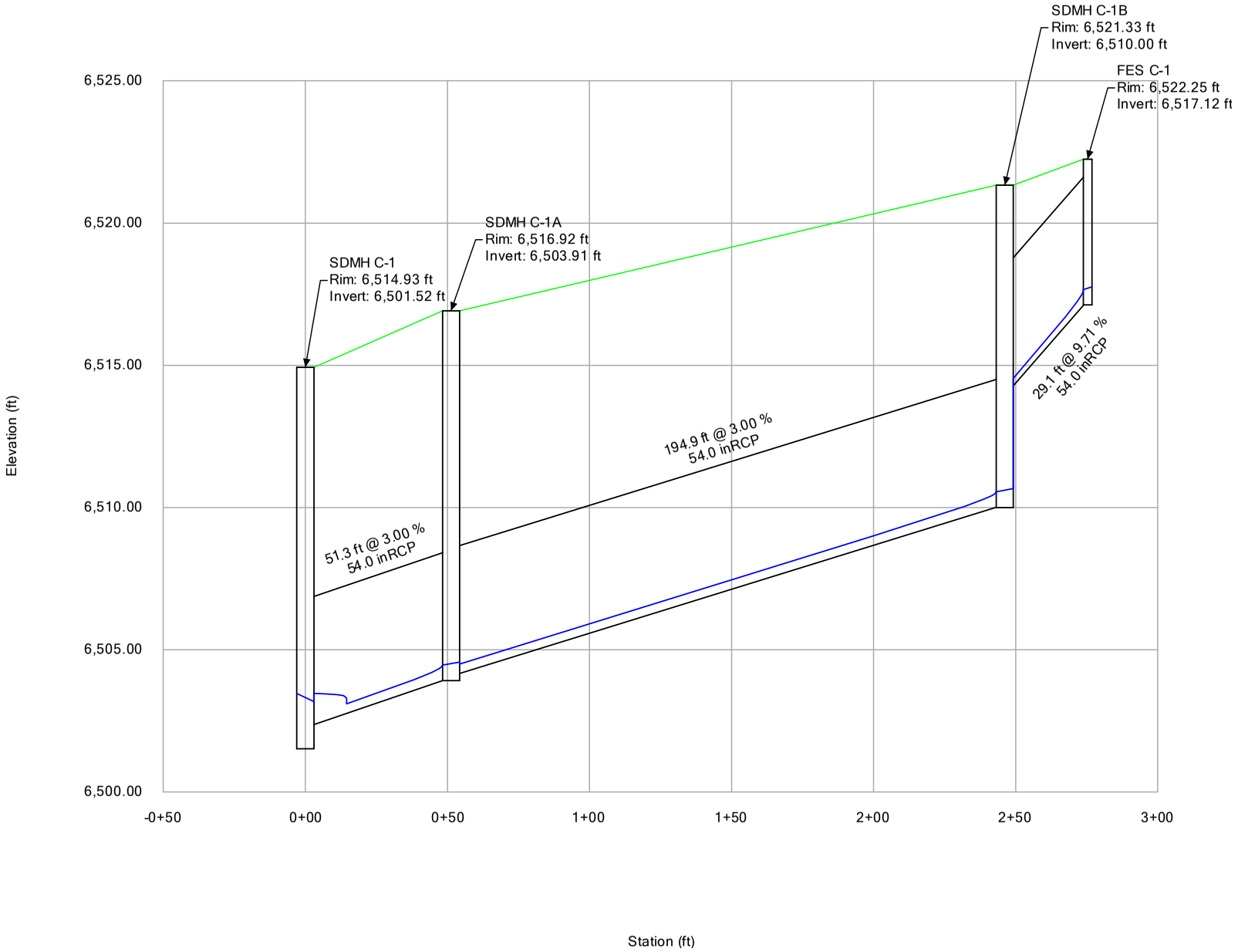
Engineering Profile - SDMH C-2 to SDIN C-2 (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

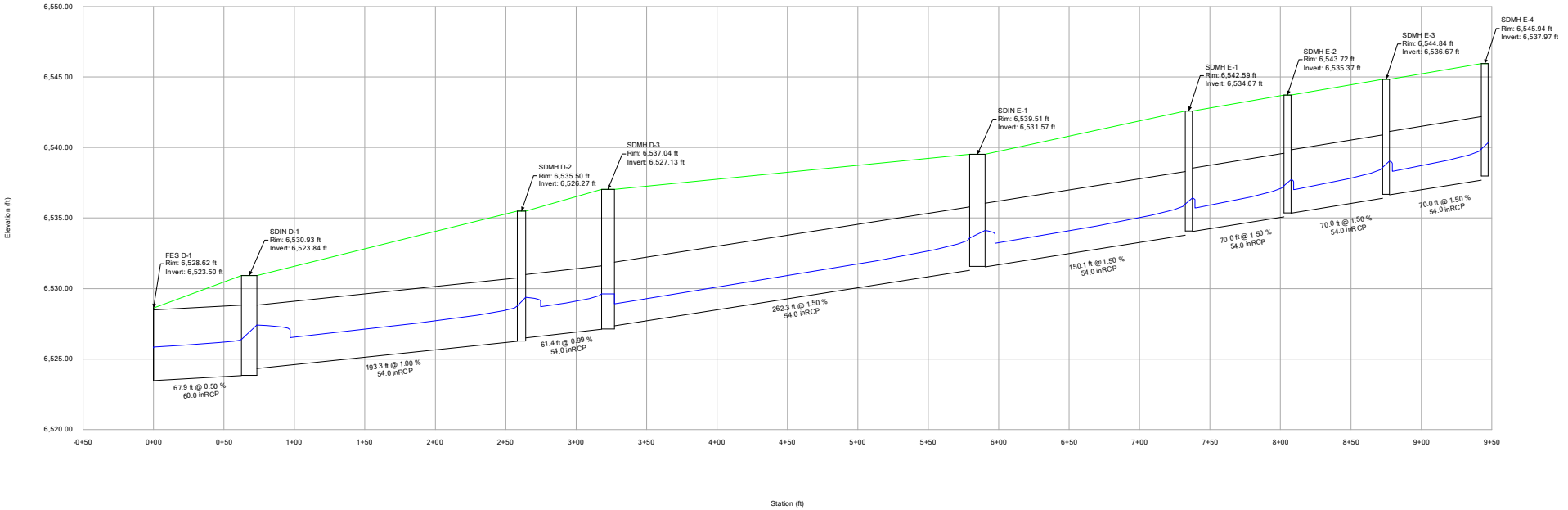
Profile Report

Engineering Profile - SDMH C-1 to FES C-1 (17026.004 - BMN F1_2026.01.24.stsw)

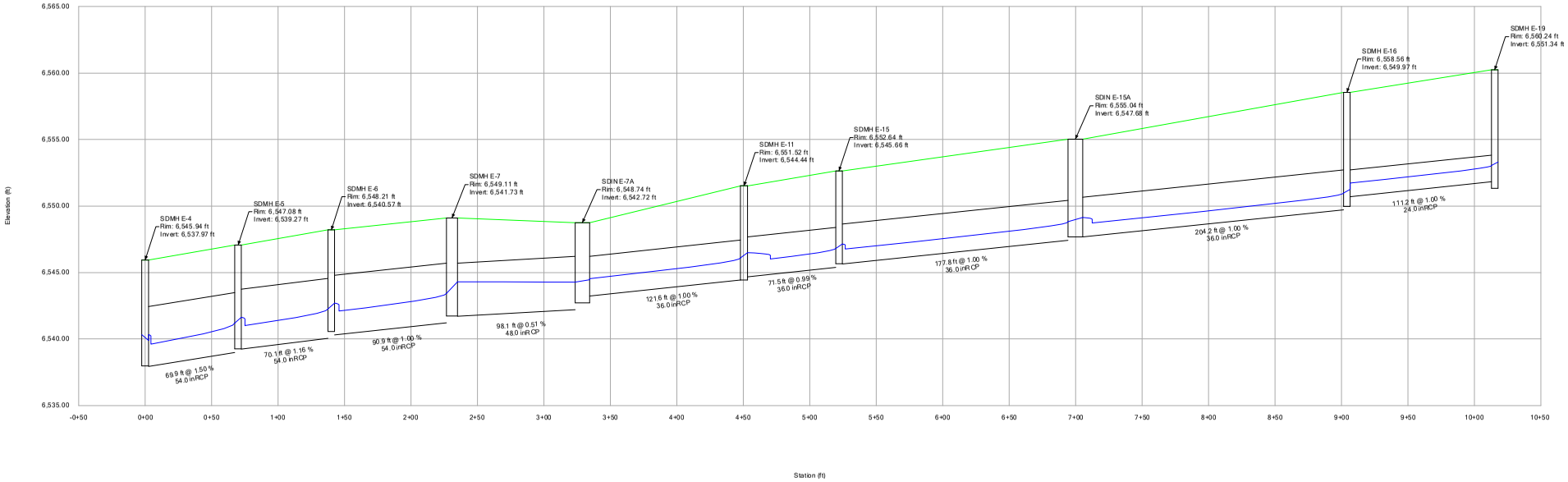


5 YR

Profile Report
Engineering Profile - FES D-1 to SDIN E-4 (17026.004 - BMN F1_2026.01.24.stsw)

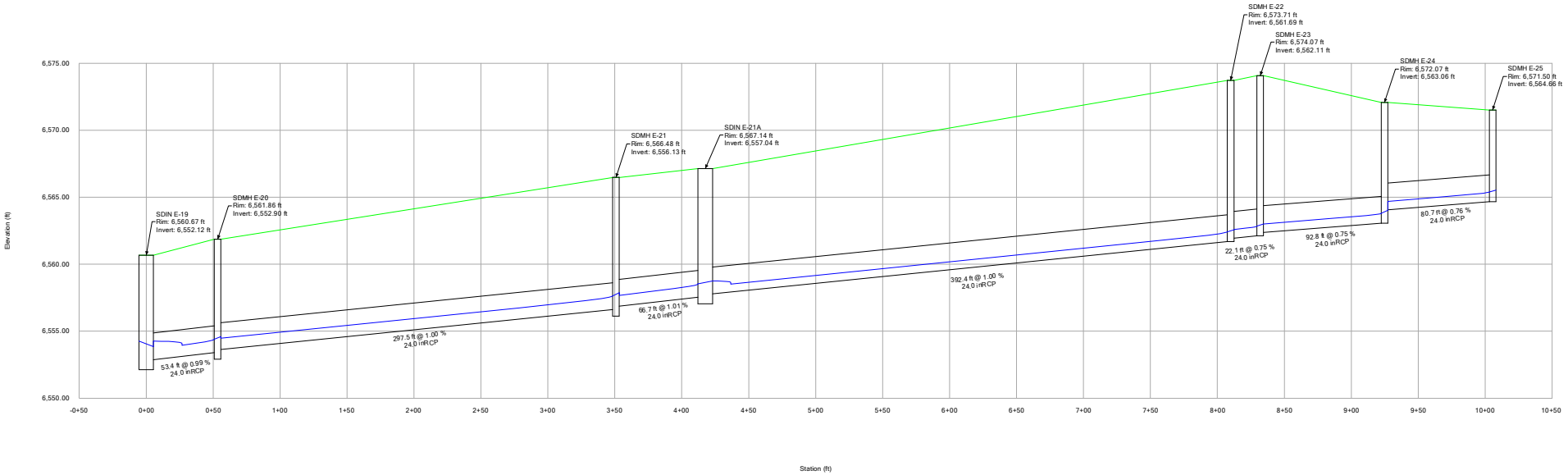


Profile Report
Engineering Profile - SDIN E-4 to SDIN E-19 (17026.004 - BMN F1_2026.01.24.stsw)



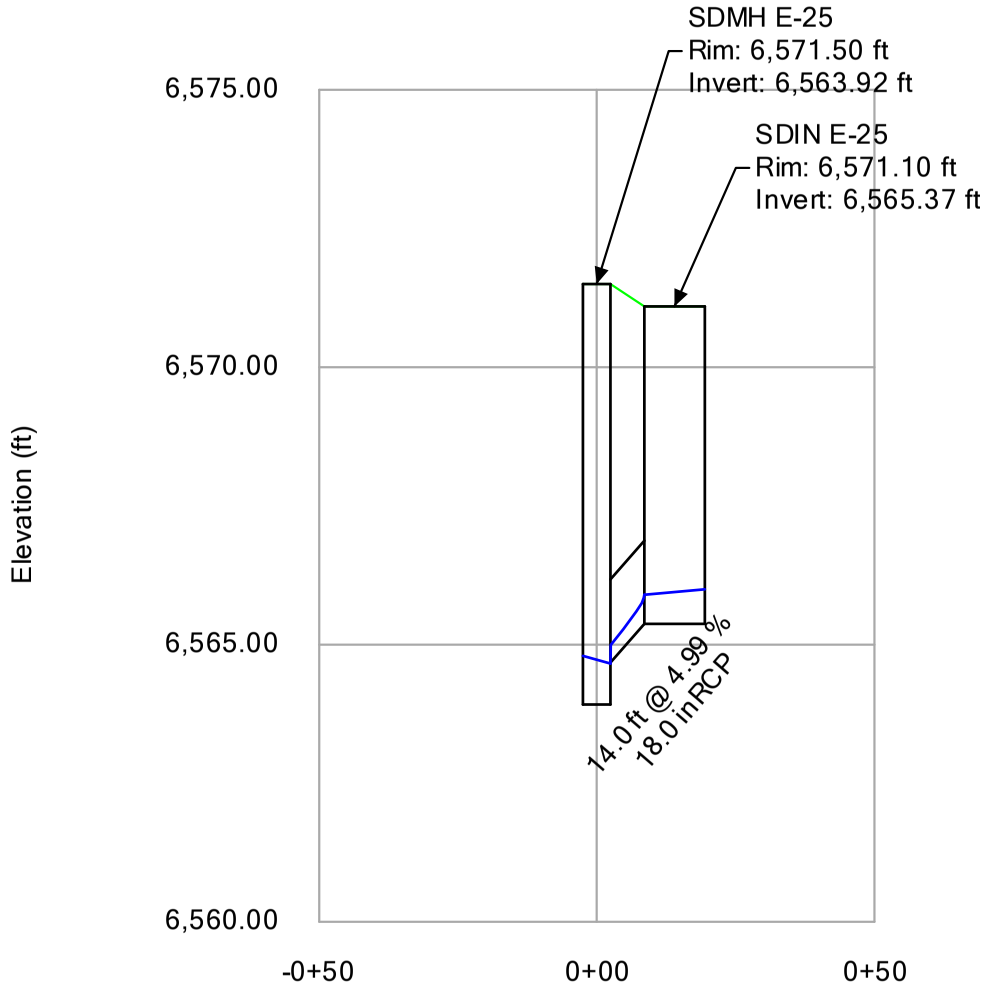
5 YR

Profile Report
Engineering Profile - SDIN E-19 to SDMH E-25 (17026.004 - BMN F1_2026.05.15.stsw)



Profile Report

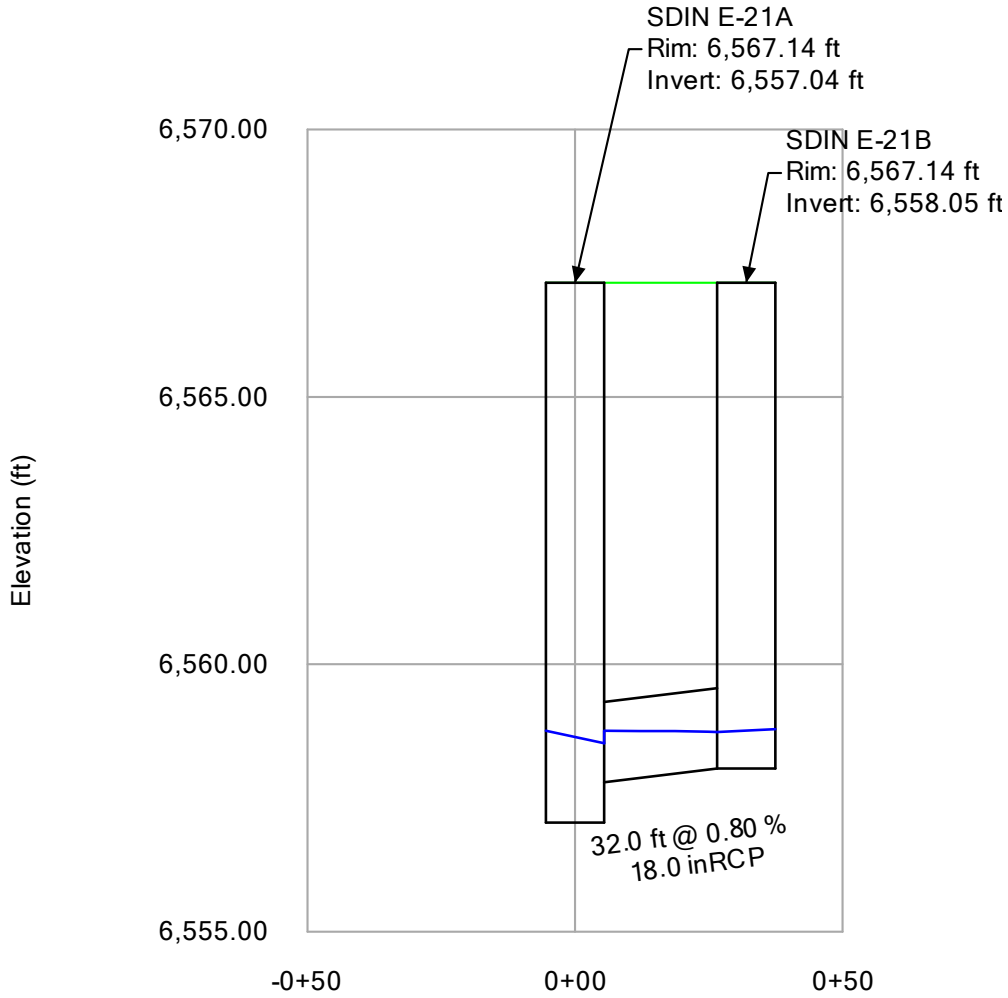
Engineering Profile - SDMH E-25 to SDIN E-25 (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

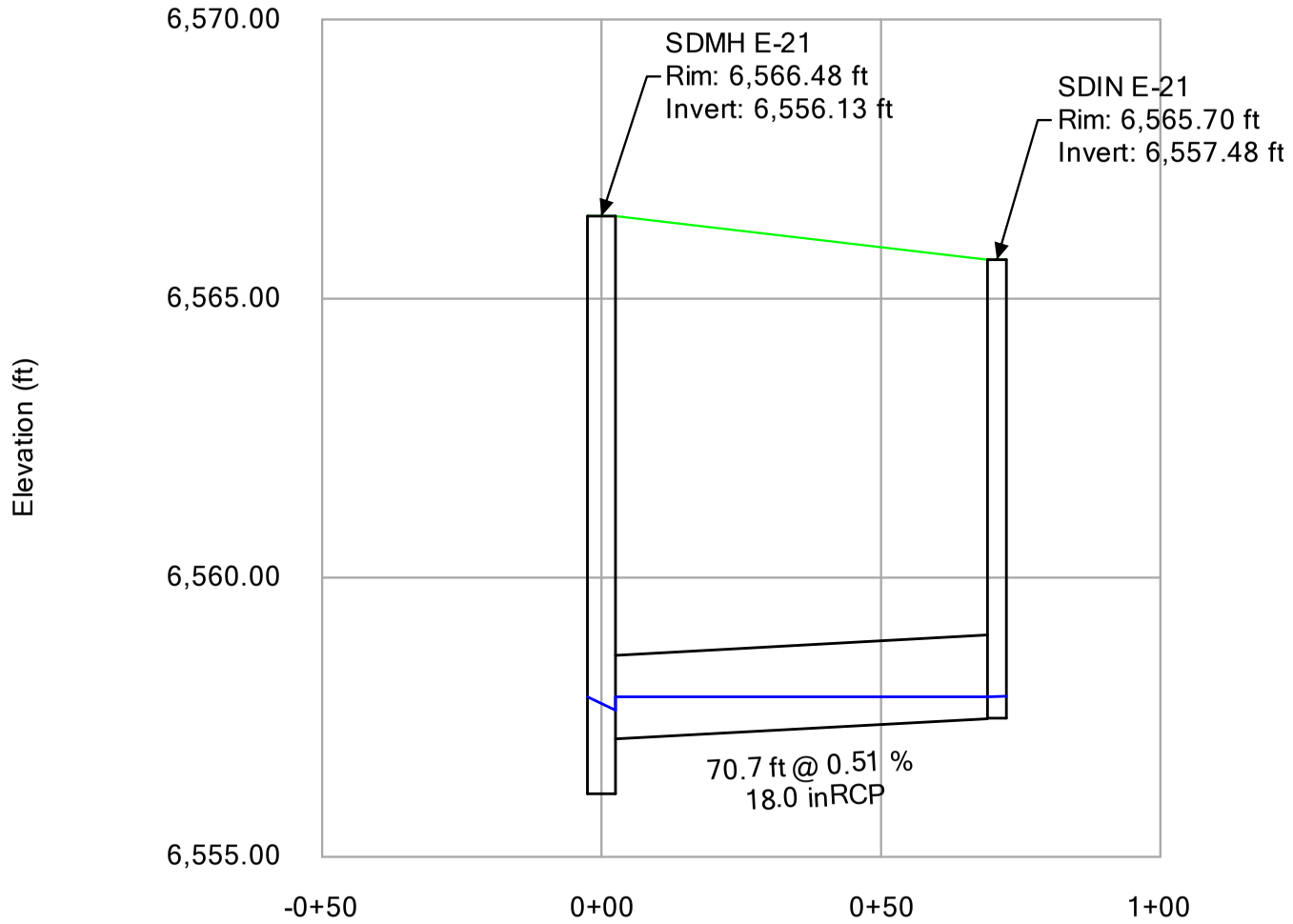
Profile Report

Engineering Profile - SDIN E-21A to SDIN E-21B (17026.004 - BMN F1_2026.01.24.stsw)



Profile Report

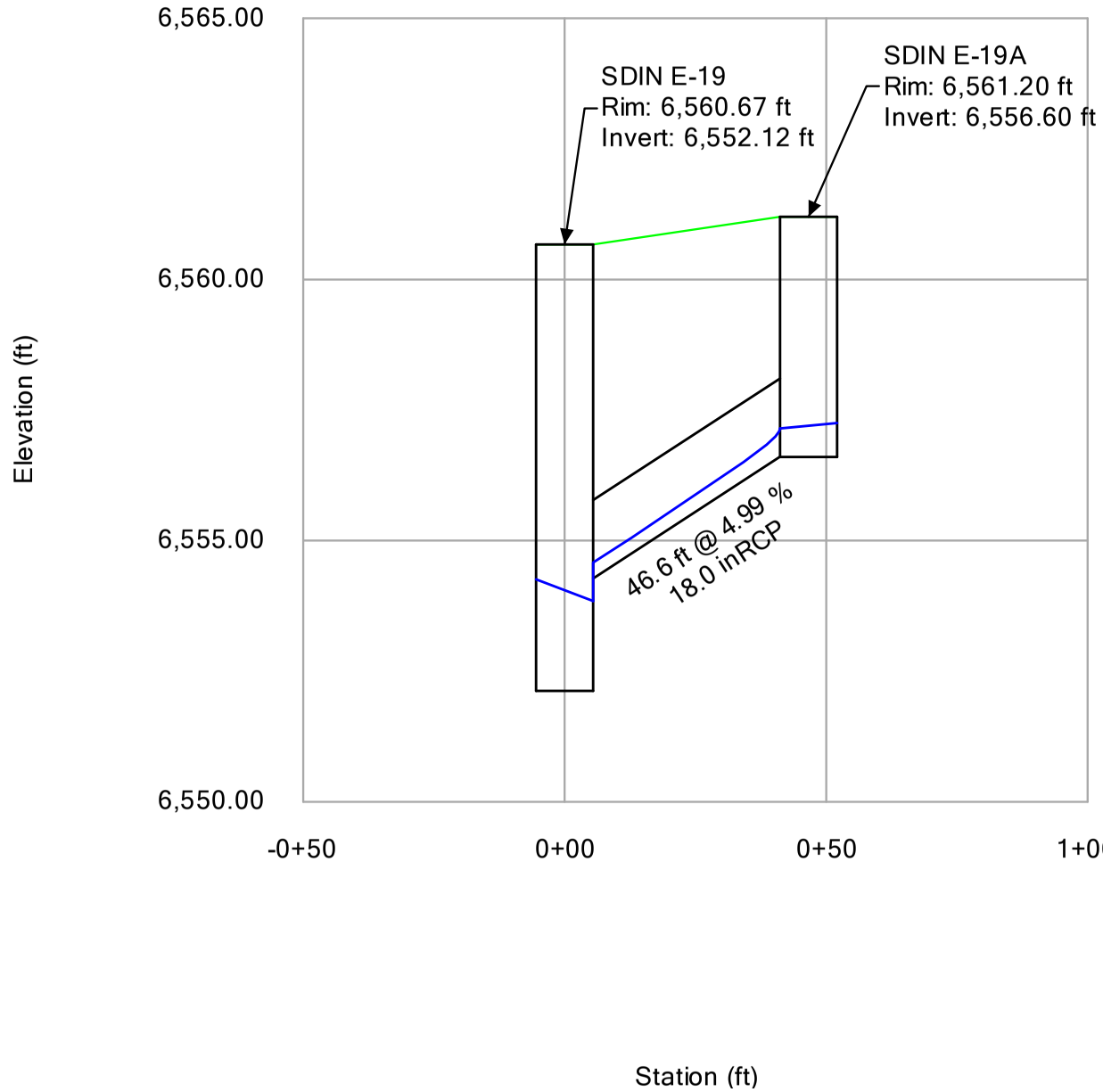
Engineering Profile - SDMH E-21 to SDIN E-21 (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

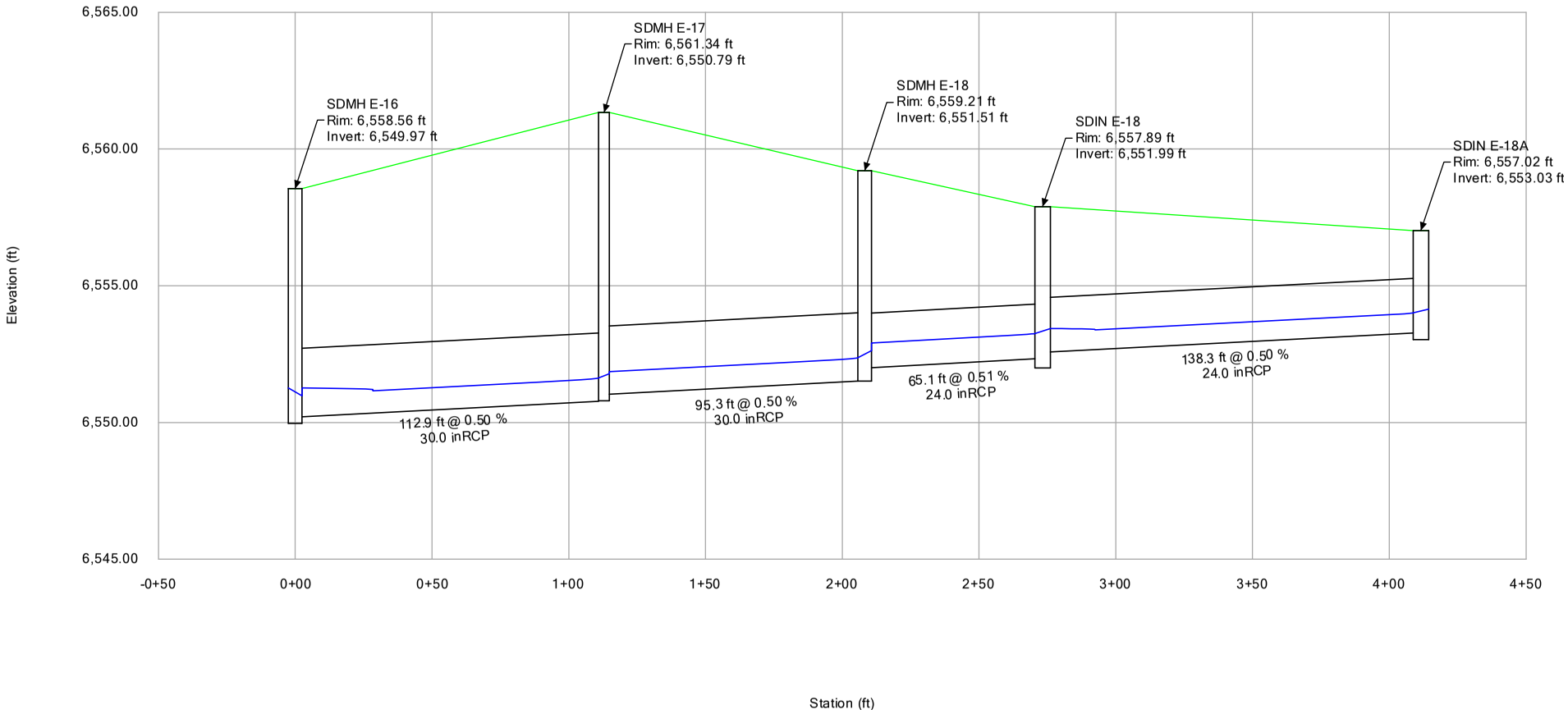
Profile Report

Engineering Profile - SDIN E-19 to SDIN E-19A (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

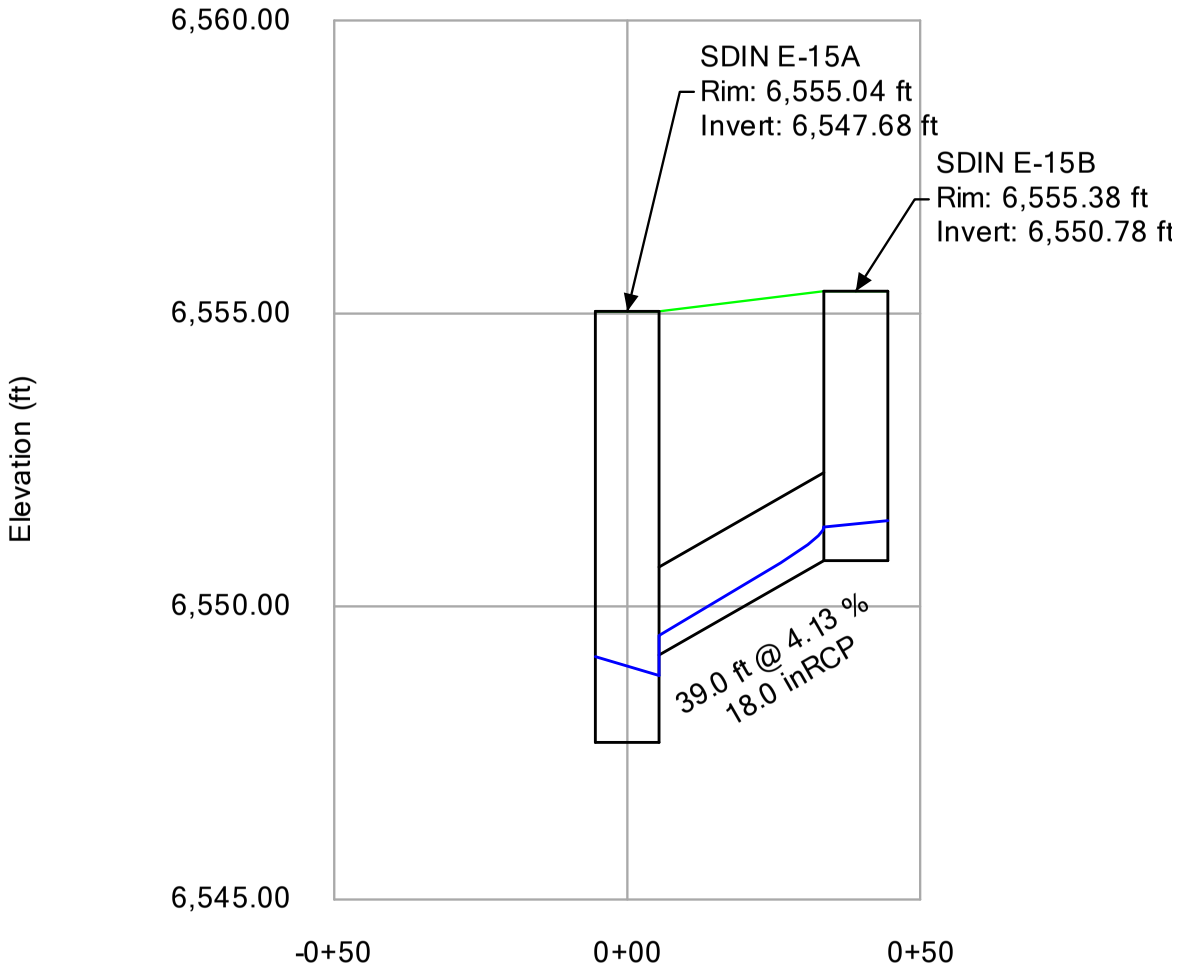
Profile Report
Engineering Profile - SDMH E-16 to SDIN E-18A (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

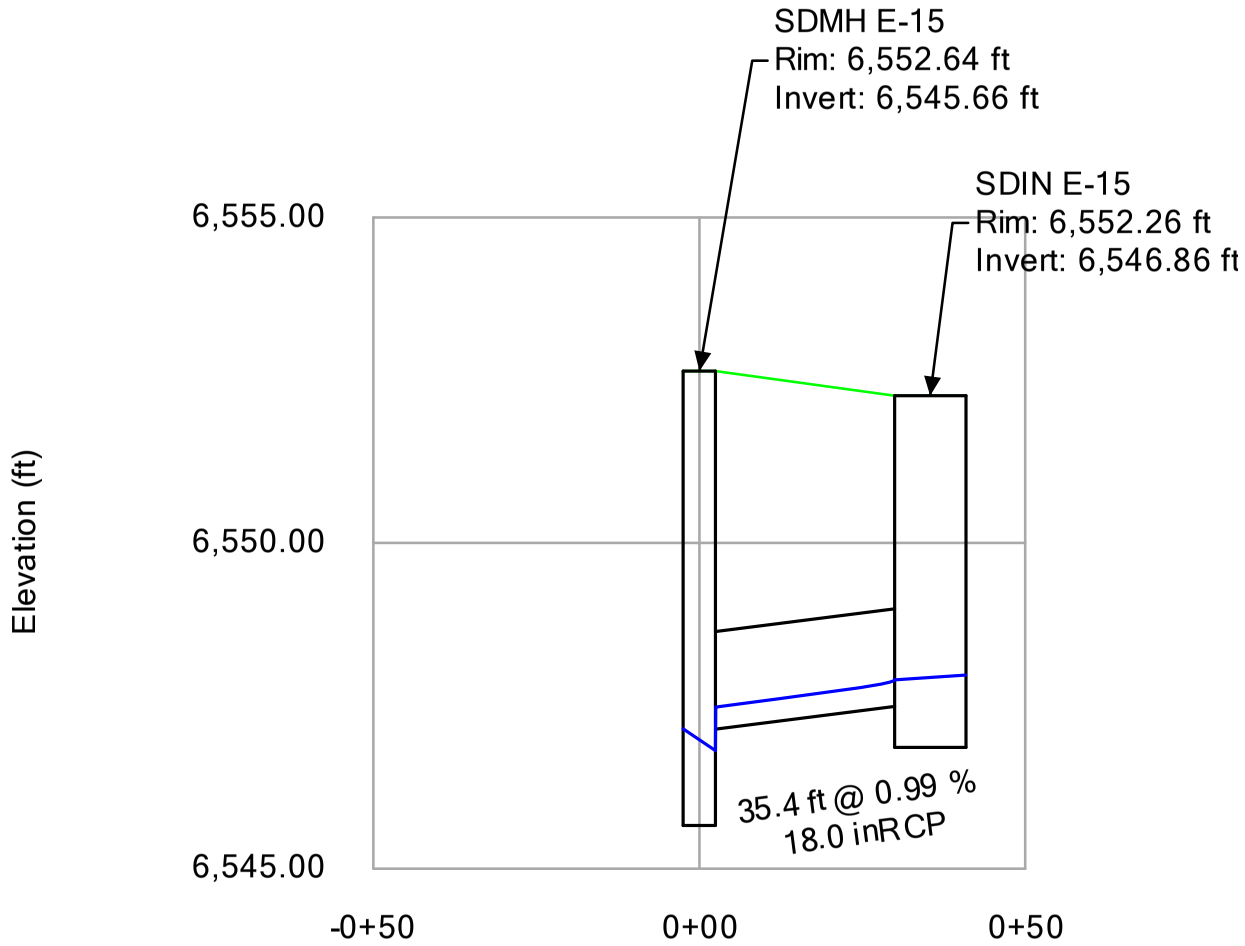
Engineering Profile - SDIN E-15A to SDIN E-15B (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

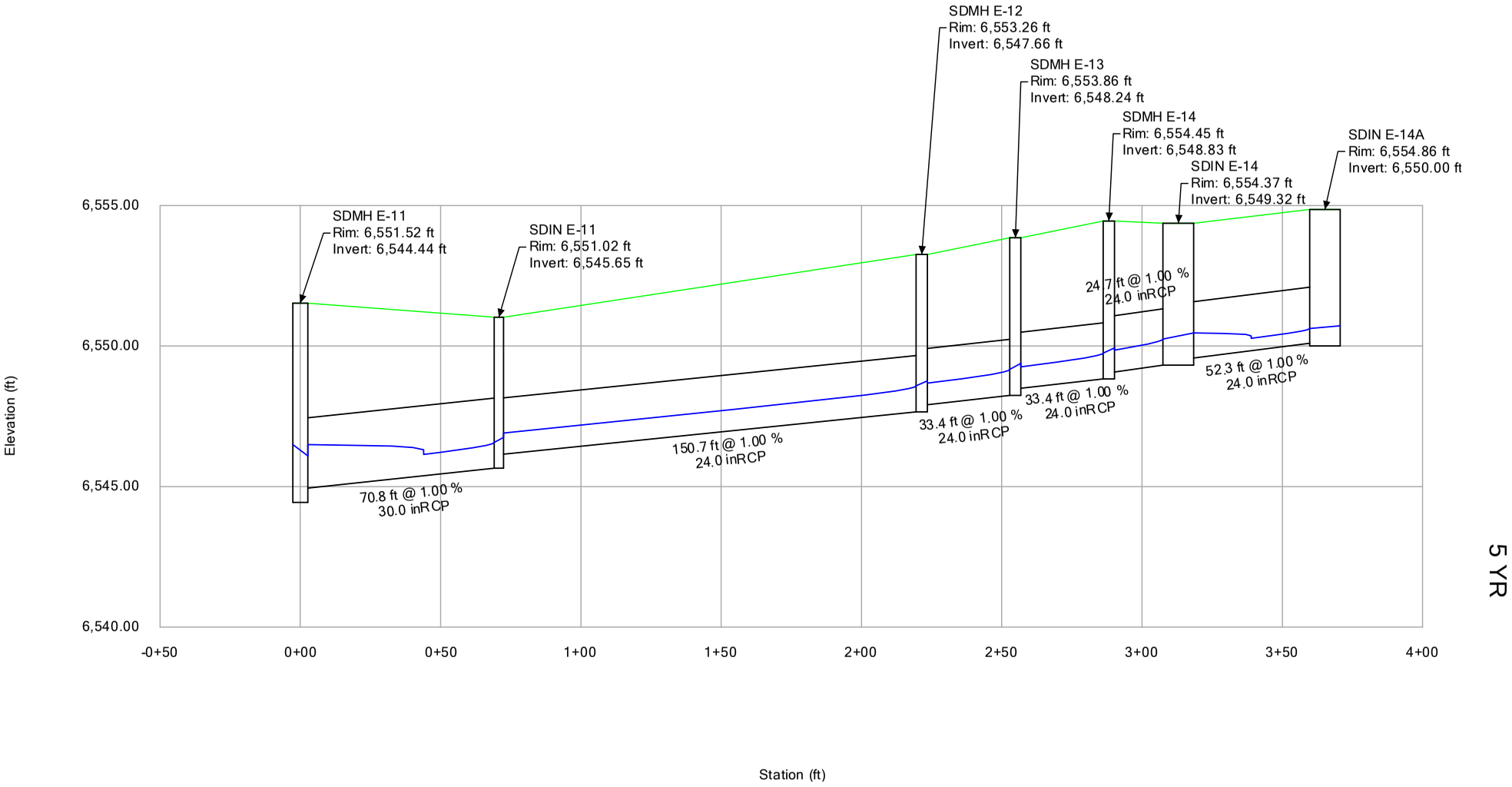
Profile Report

Engineering Profile - SDMH E-15 to SDIN E-15 (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

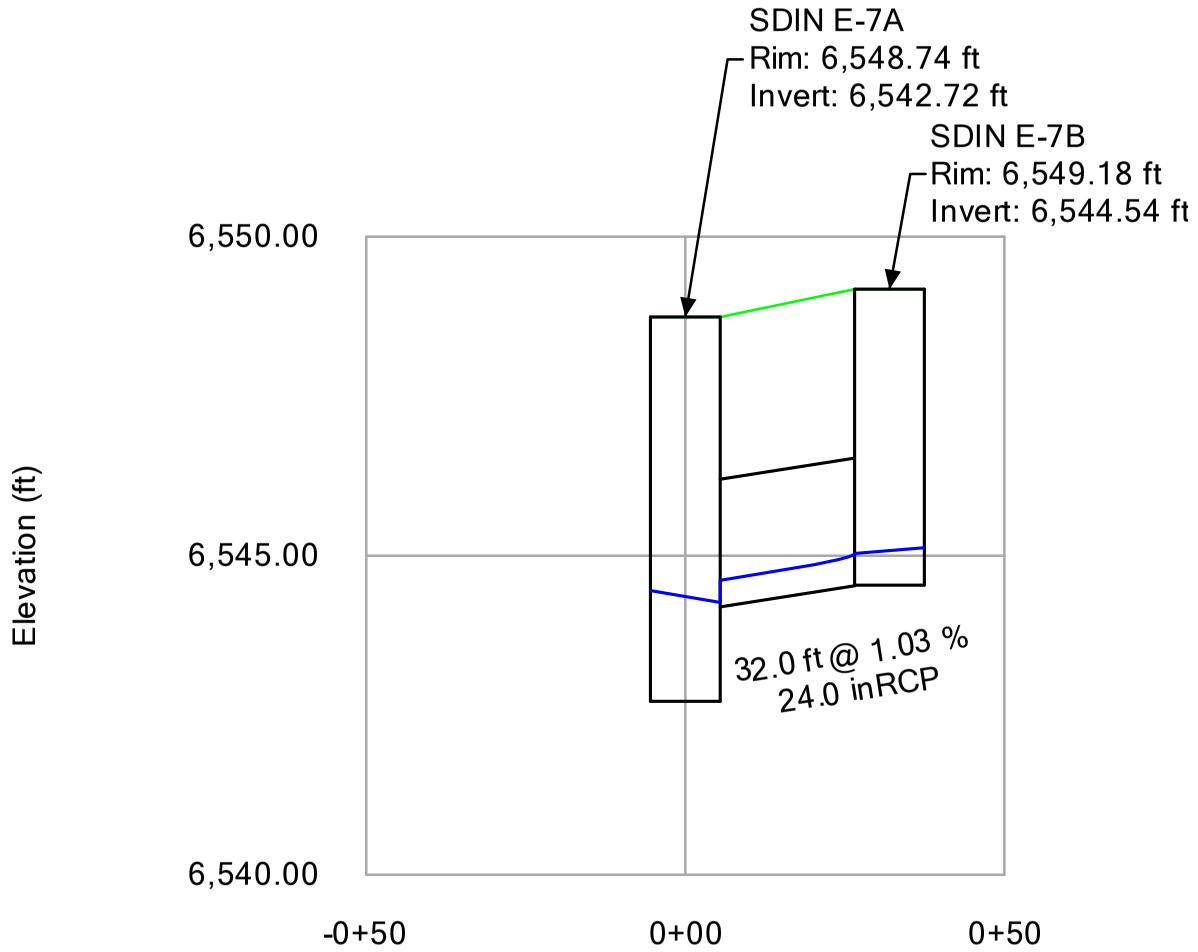
Profile Report
Engineering Profile - SDMH E-11 to SDIN E-14A (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

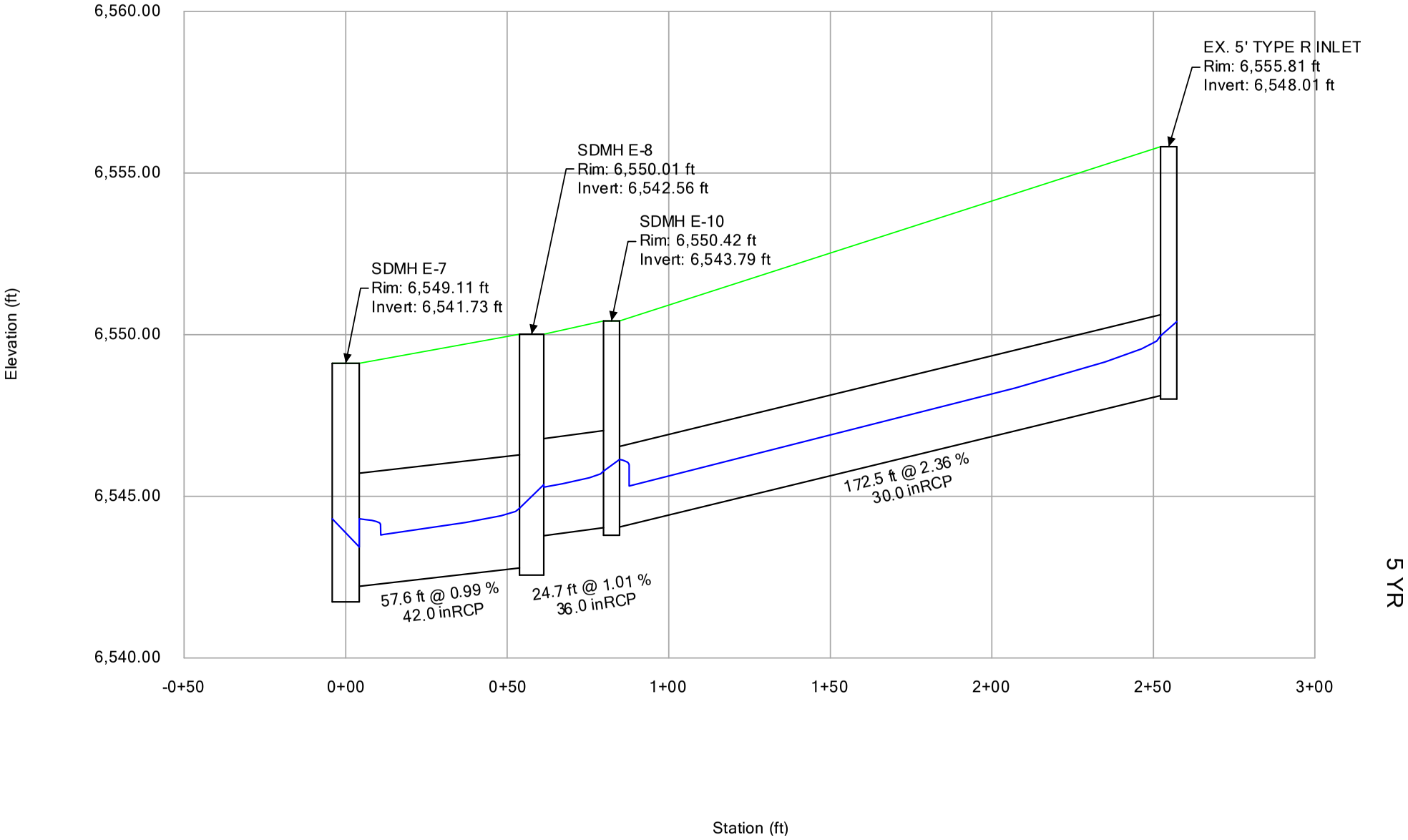
Engineering Profile - SDIN E-7A to SDIN E-7B (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

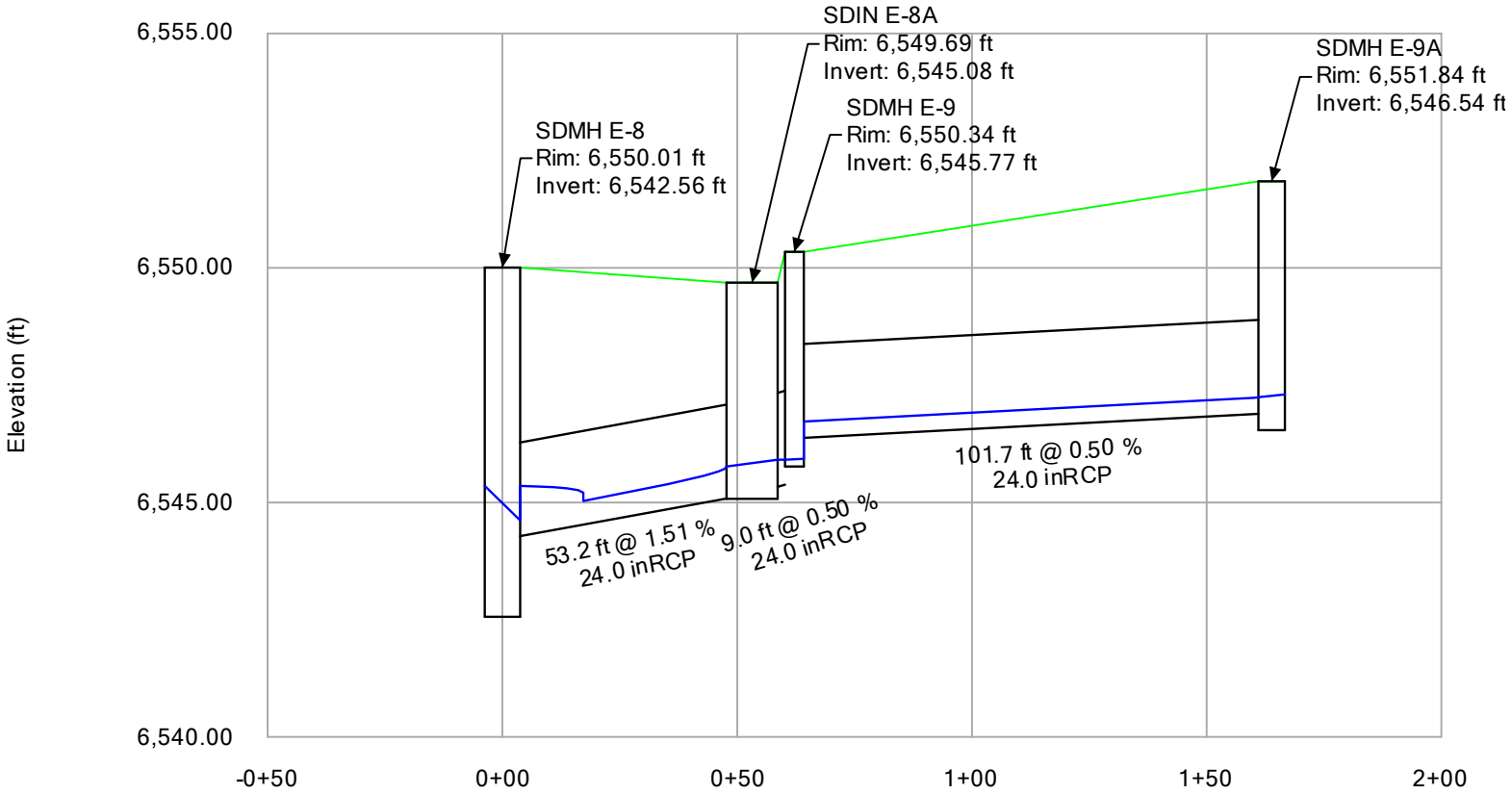
Profile Report

Engineering Profile - SDMH E-7 to EX. 5' TYPE R INLET (17026.004 - BMN F1_2026.01.24.stsw)



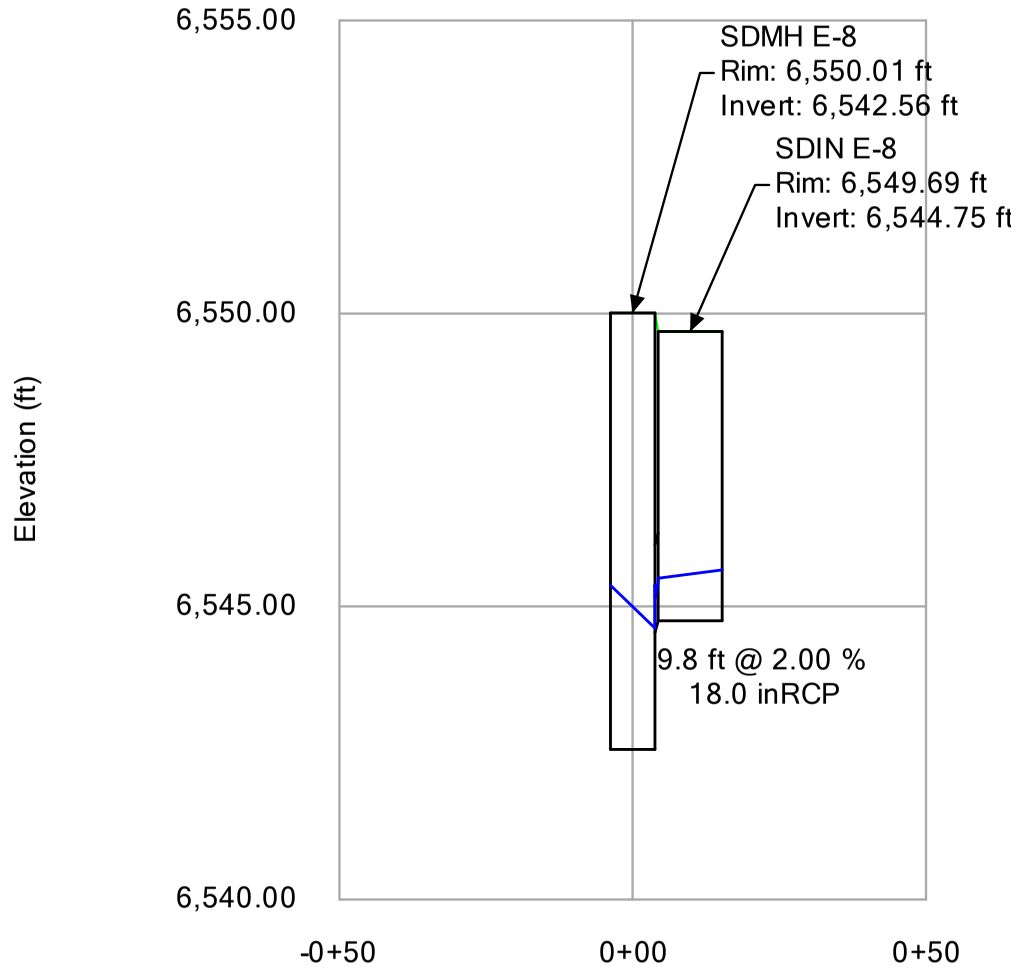
Profile Report

Engineering Profile - SDMH E-8 to SDMH E-9A (17026.004 - BMN F1_2026.05.15.stsw)



Profile Report

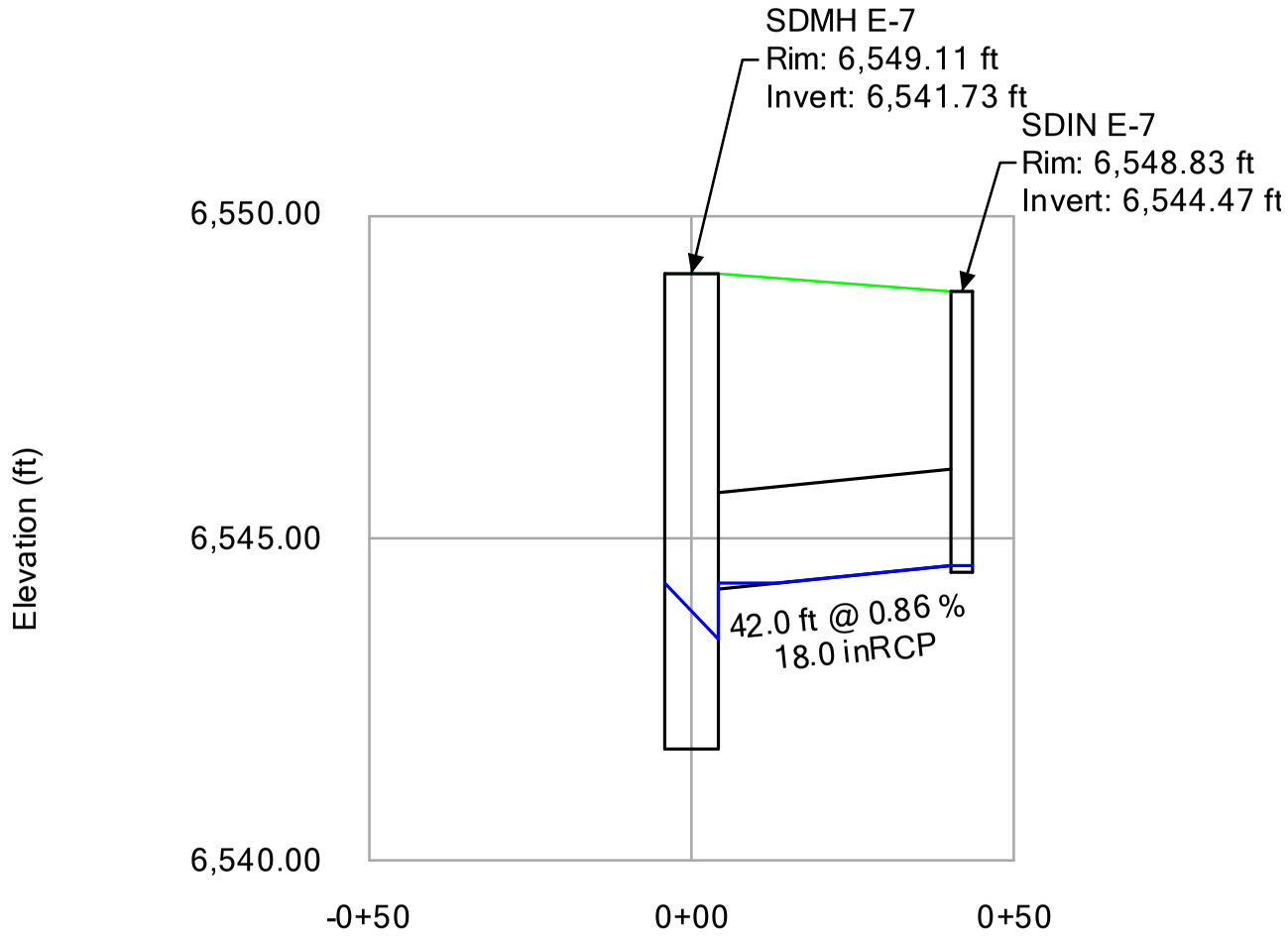
Engineering Profile - SDMH E-8 to SDIN E-8 (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

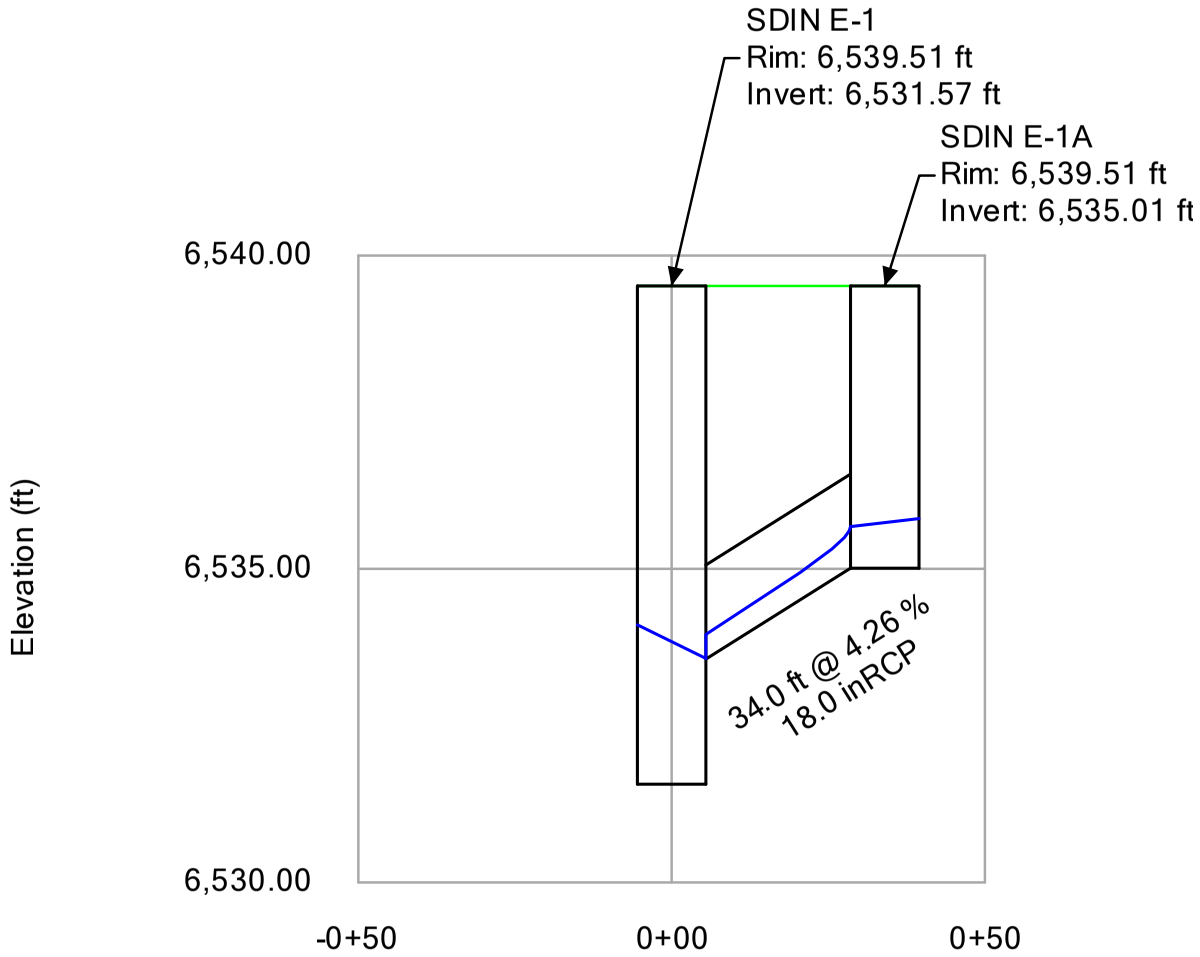
Engineering Profile - SDMH E-7 to SDIN E-7 (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

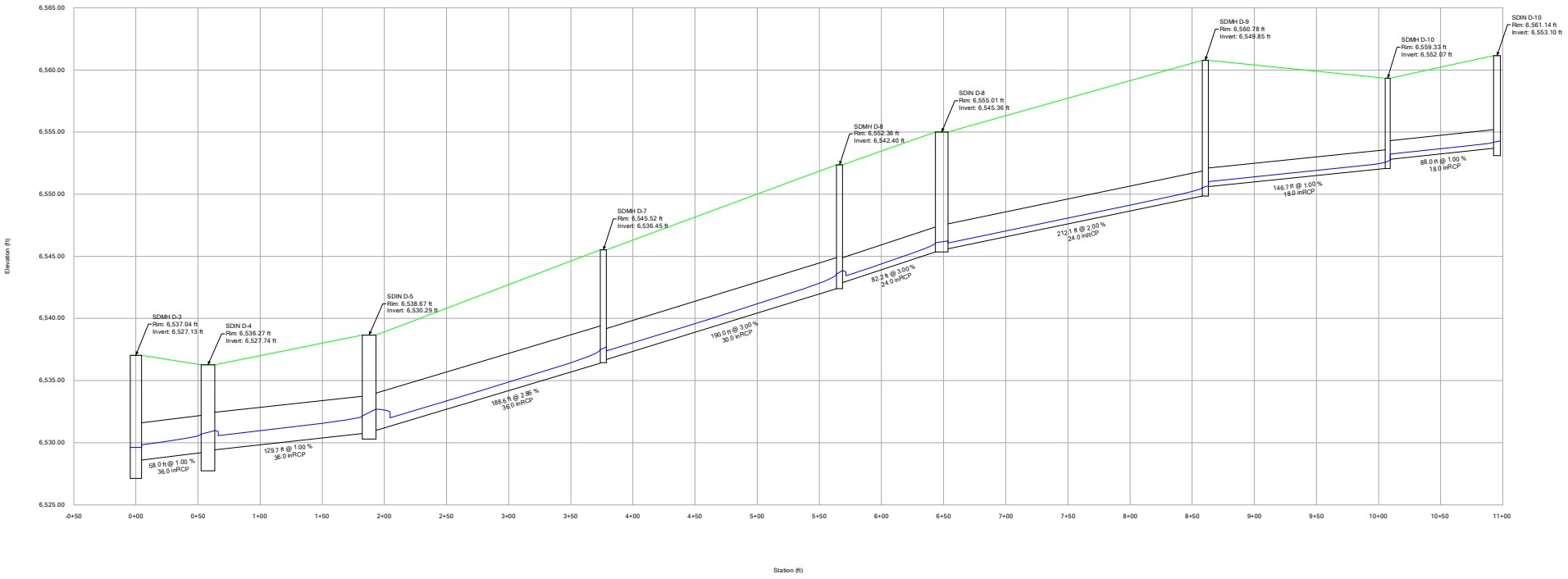
Profile Report

Engineering Profile - SDIN E-1 to SDIN E-1A (17026.004 - BMN F1_2026.01.24.stsw)



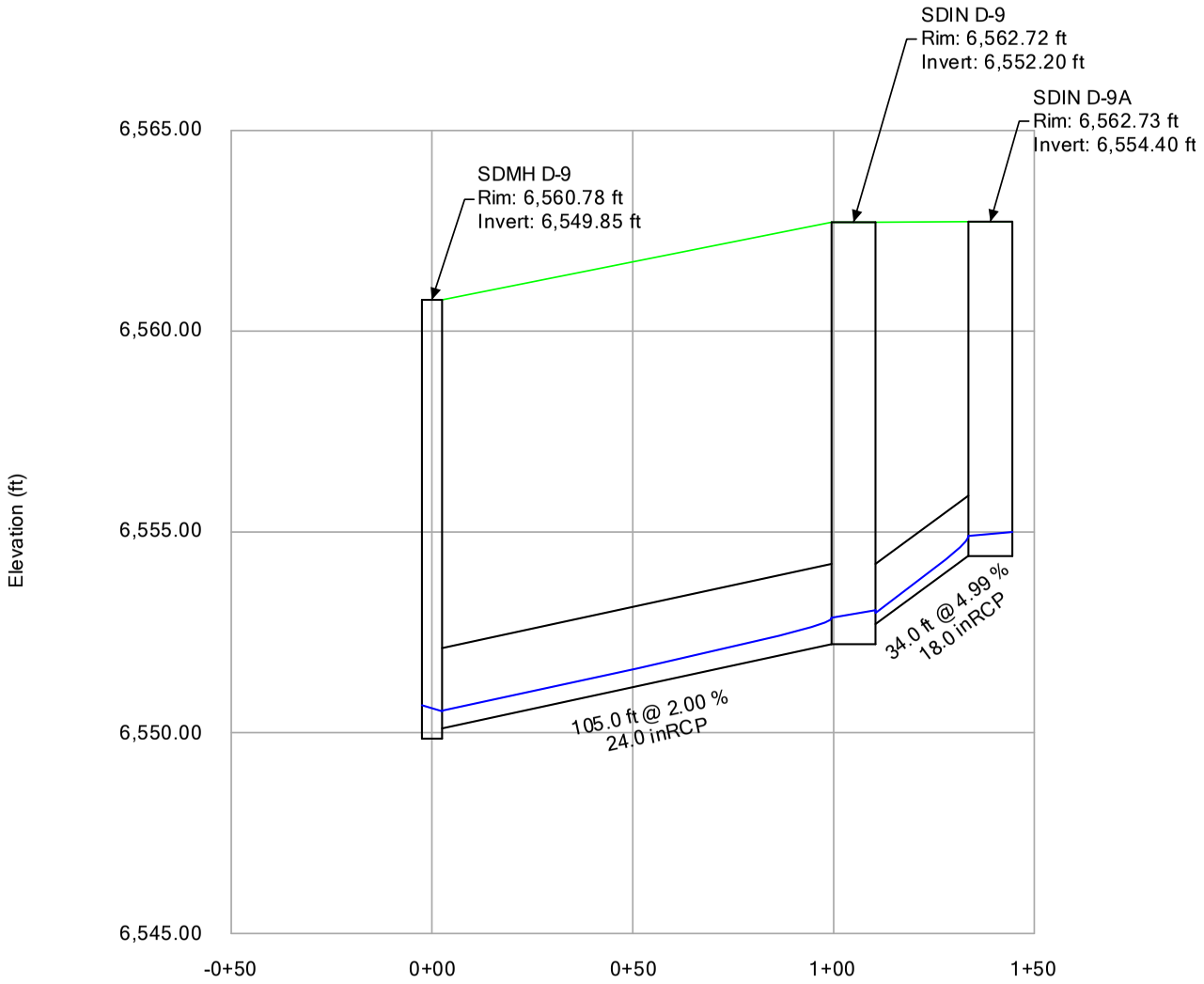
5 YR

Profile Report
Engineering Profile - SDMH D-3 to SDIN D-10 (17026.004 - BMN F1_2026.05.15.stsw)



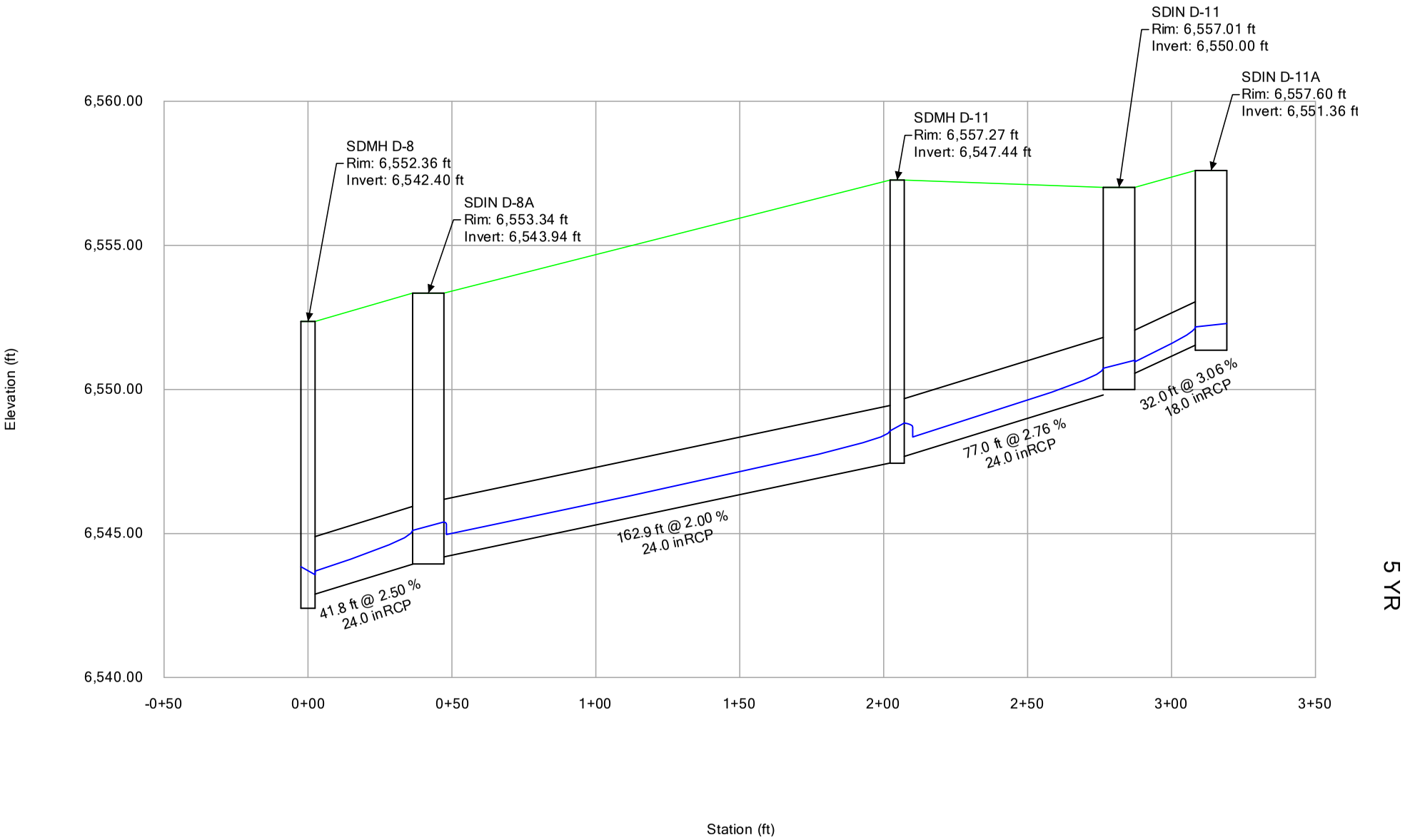
Profile Report

Engineering Profile - SDMH D-9 to SDIN D-9A (17026.004 - BMN F1_2026.01.24.stsw)



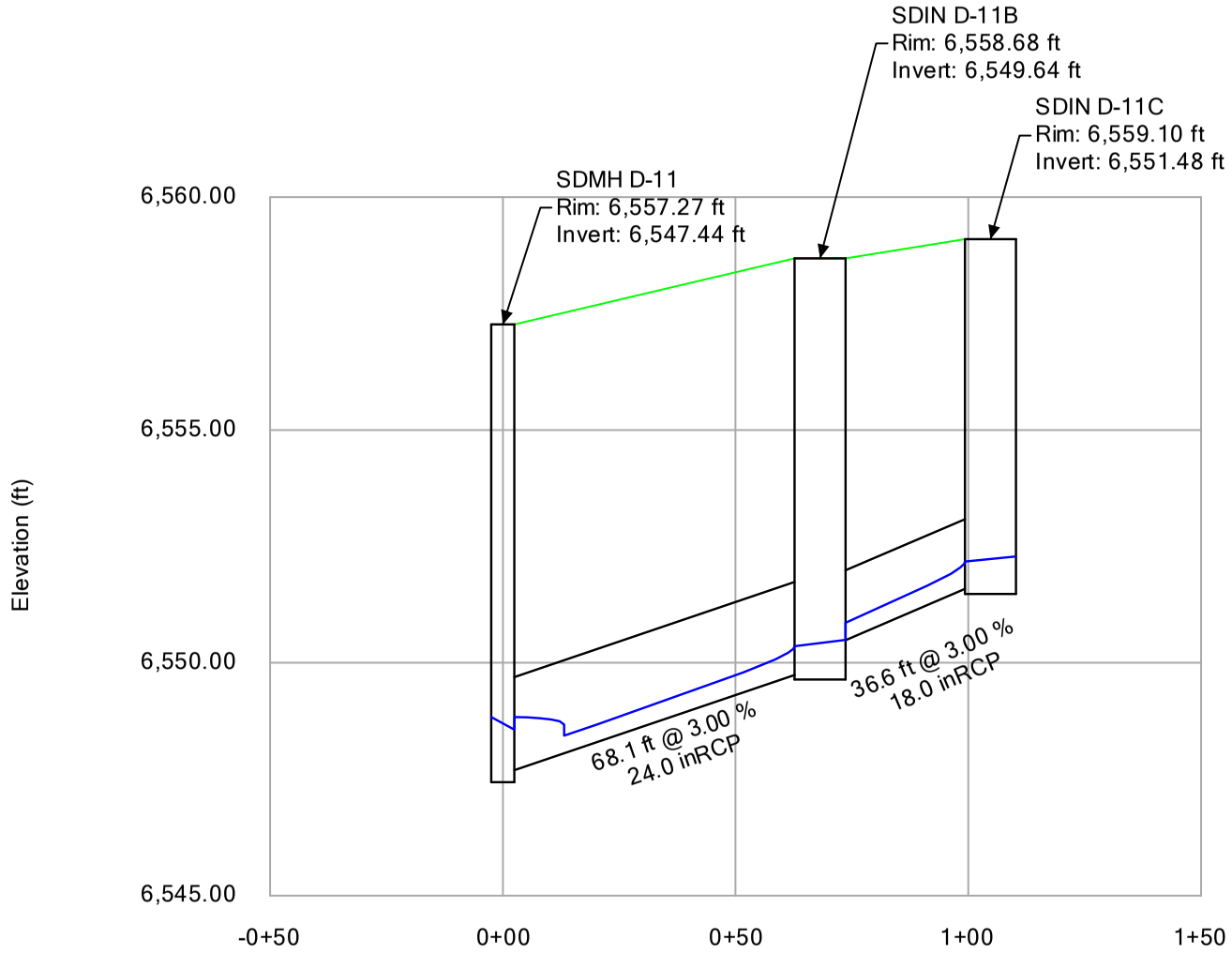
5 YR

Profile Report
Engineering Profile - SDMH D-8 to SDIN D-11A (17026.004 - BMN F1_2026.01.24.stsw)



Profile Report

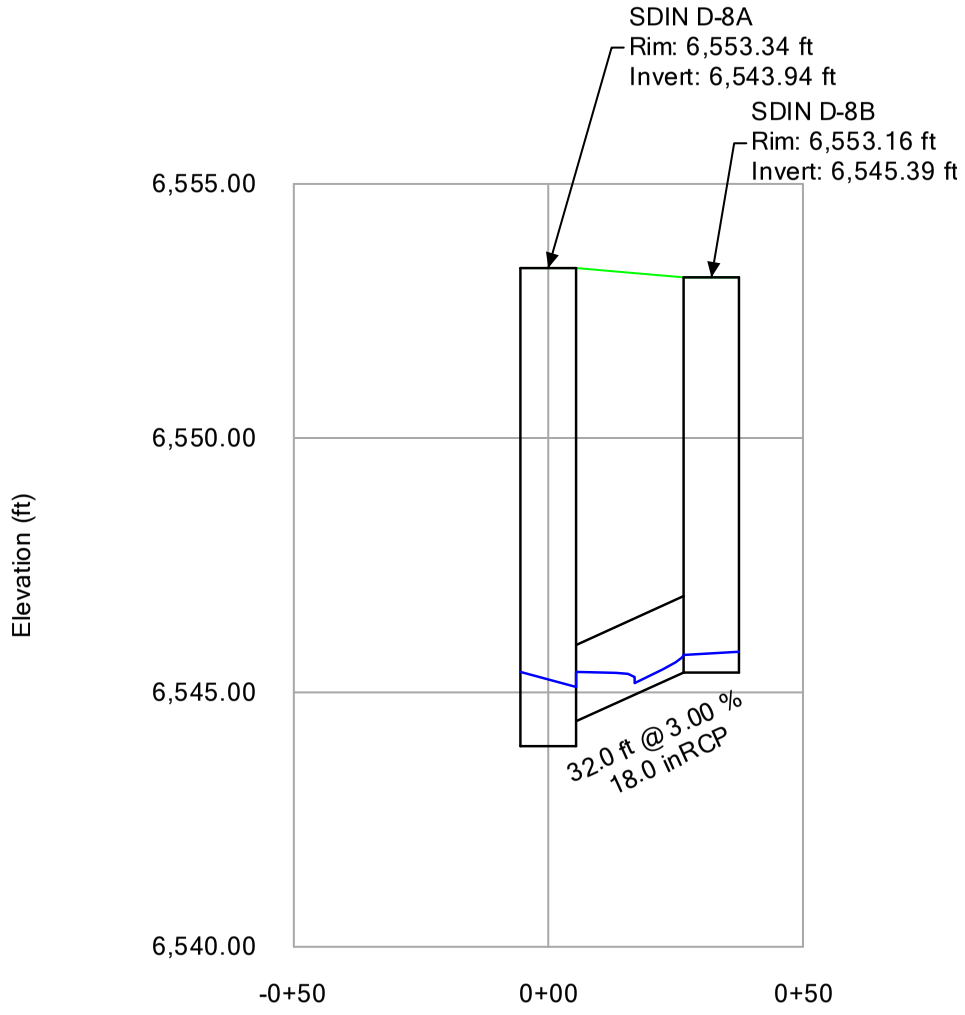
Engineering Profile - SDMH D-11 to SDIN D-11C (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

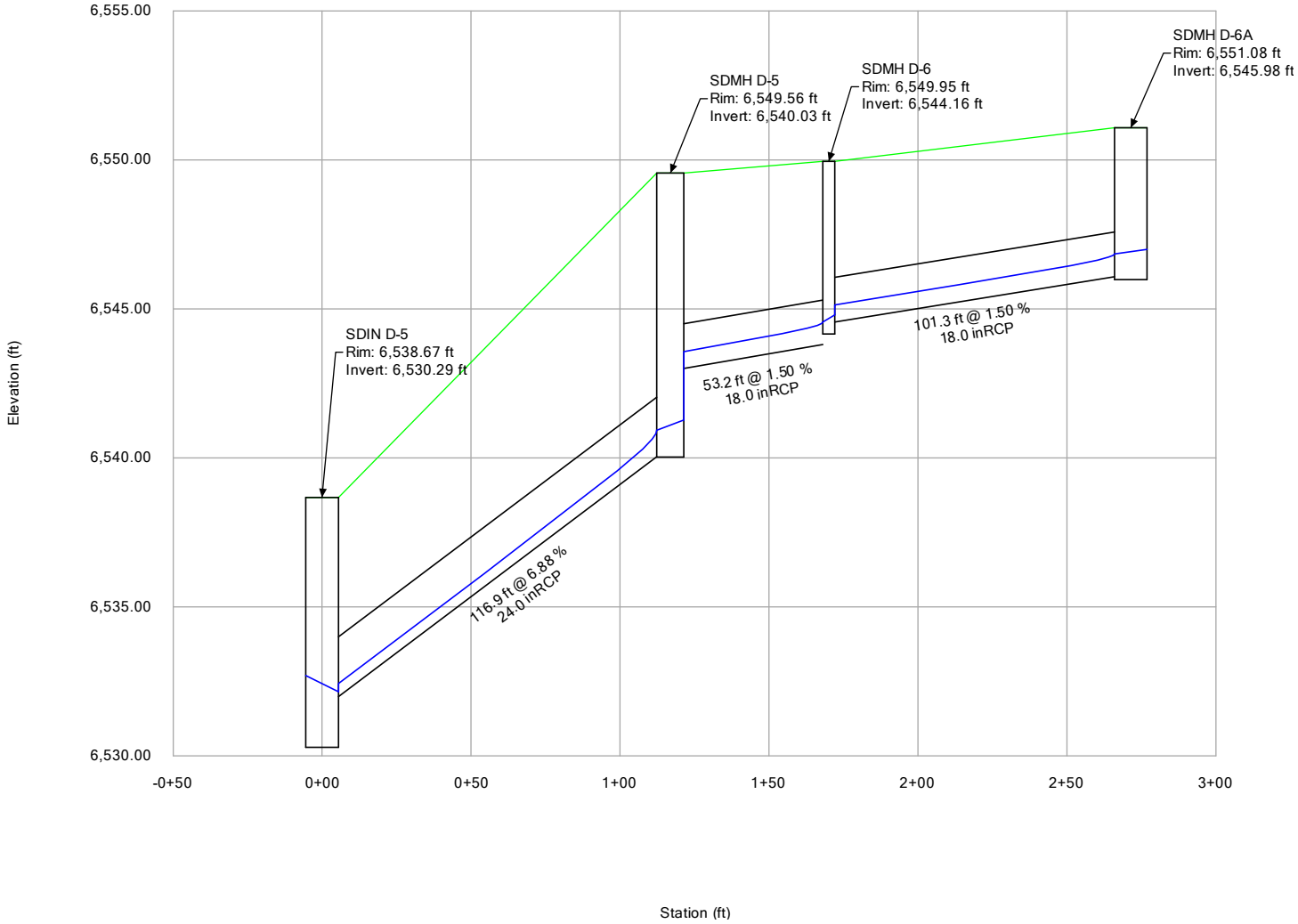
Engineering Profile - SDIN D-8A to SDIN D-8B (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

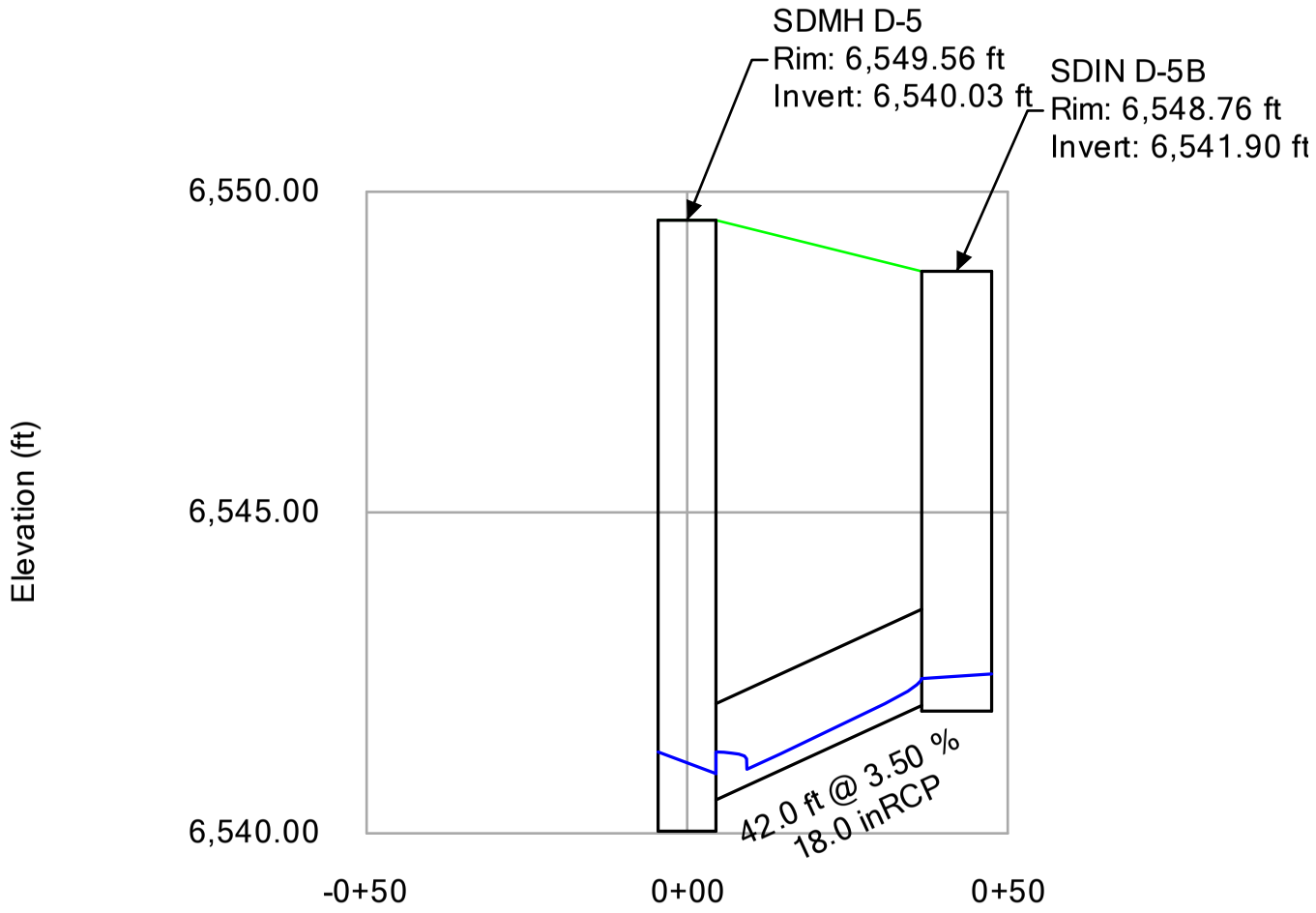
Profile Report

Engineering Profile - SDIN D-5 to SDMH D-6A (17026.004 - BMN F1_2026.05.15.stsw)



Profile Report

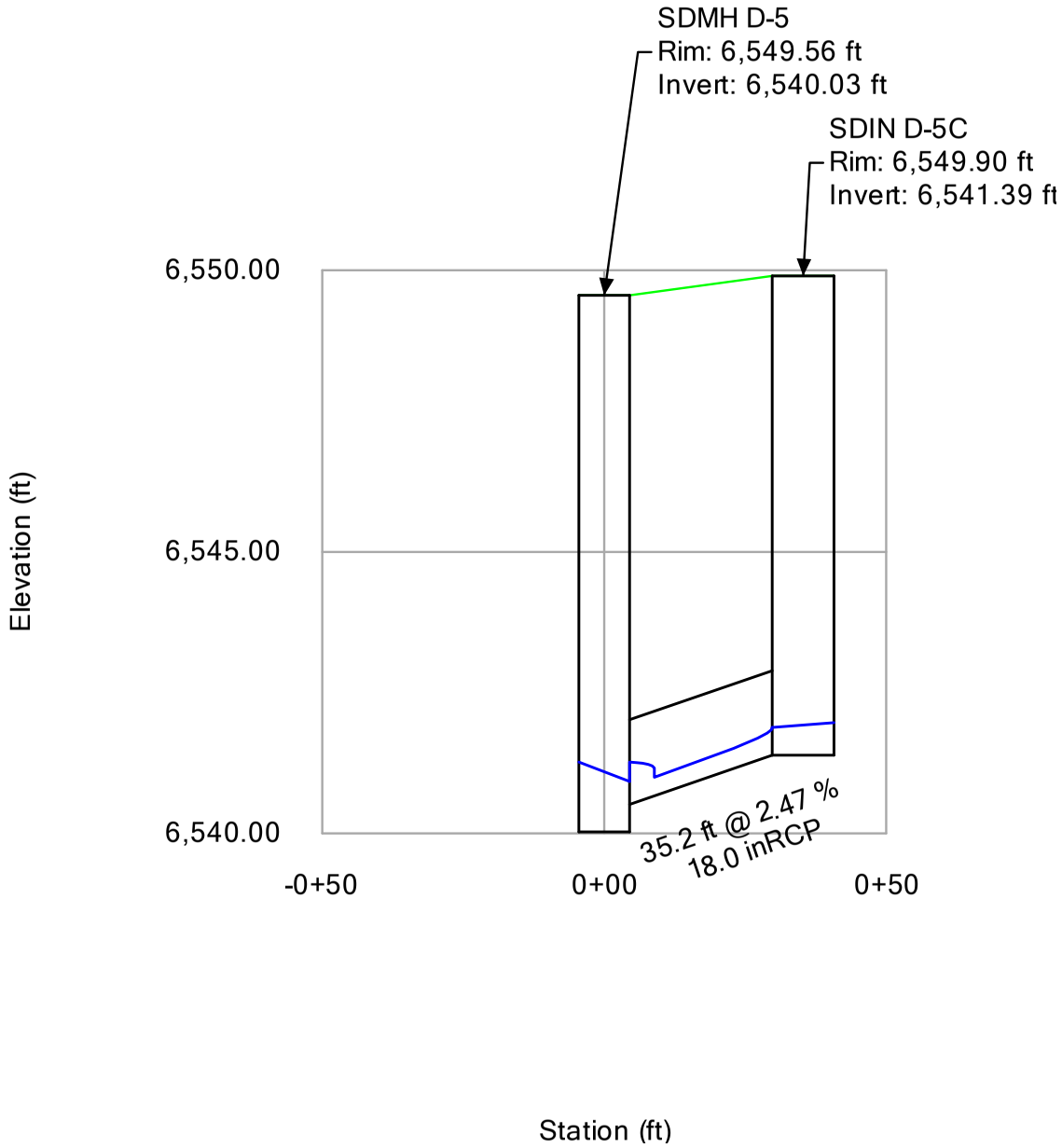
Engineering Profile - SDMH D-5 to SDIN D-5B (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

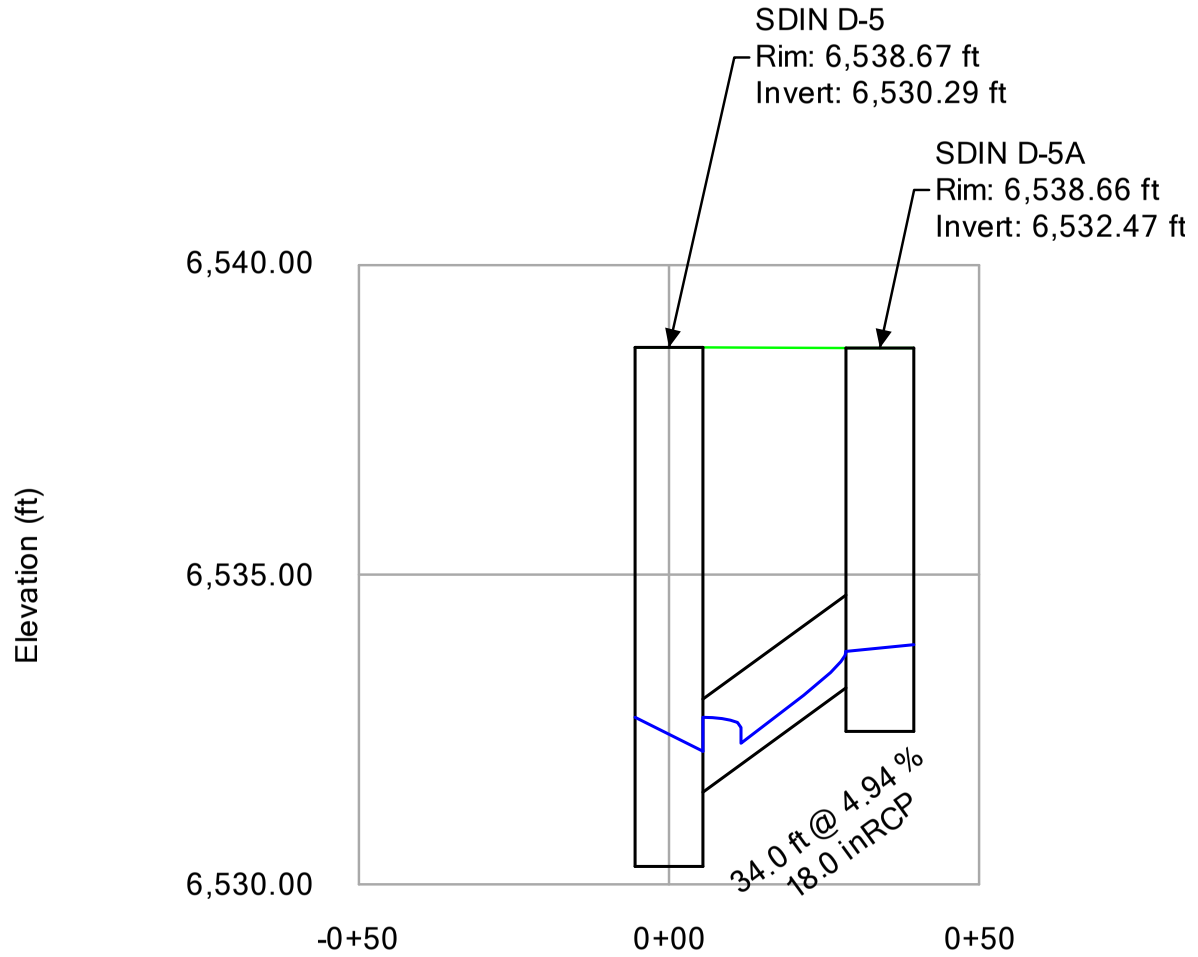
Engineering Profile - SDMH D-5 to SDIN D-5C (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

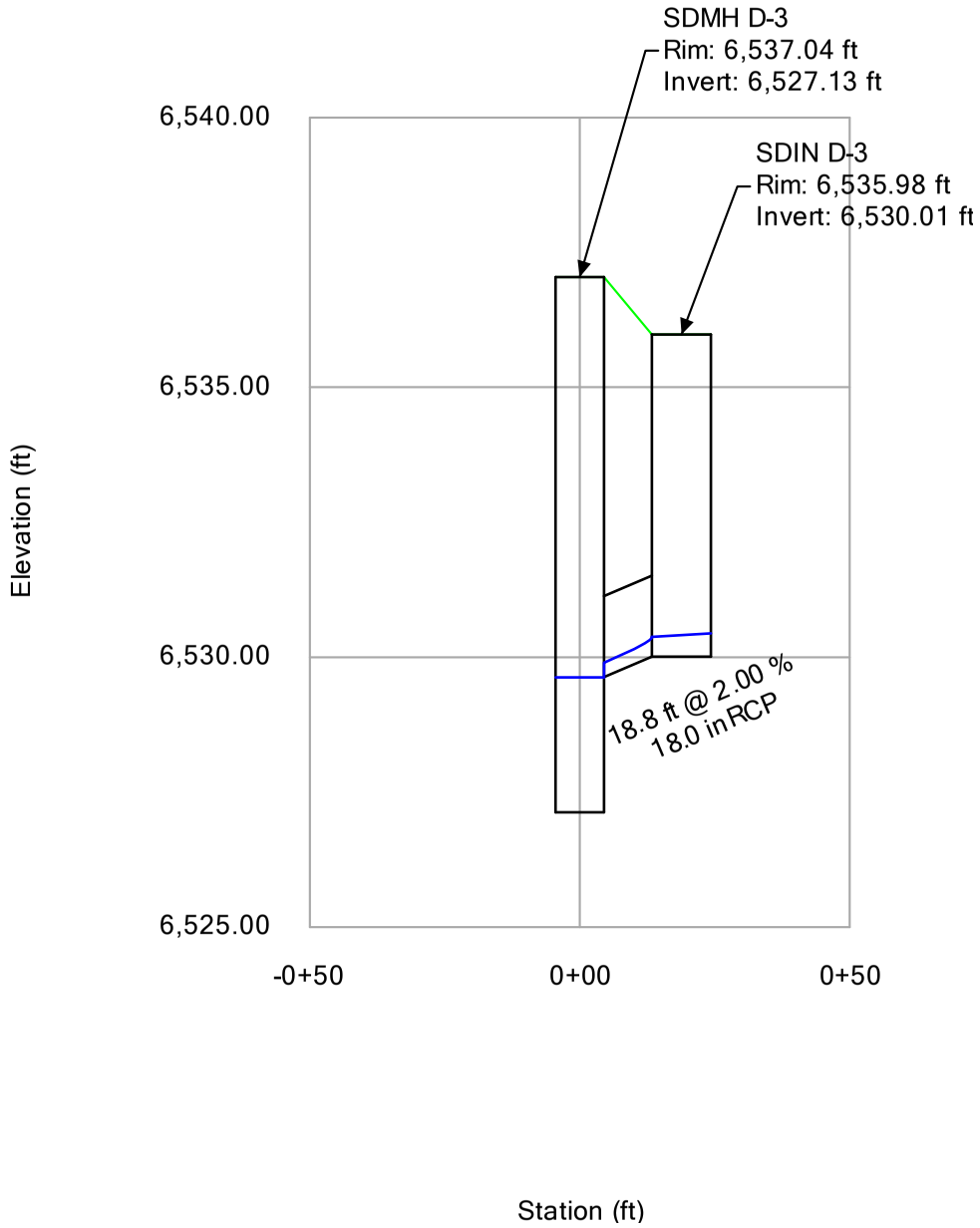
Engineering Profile - SDIN D-5 to SDIN D-5A (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

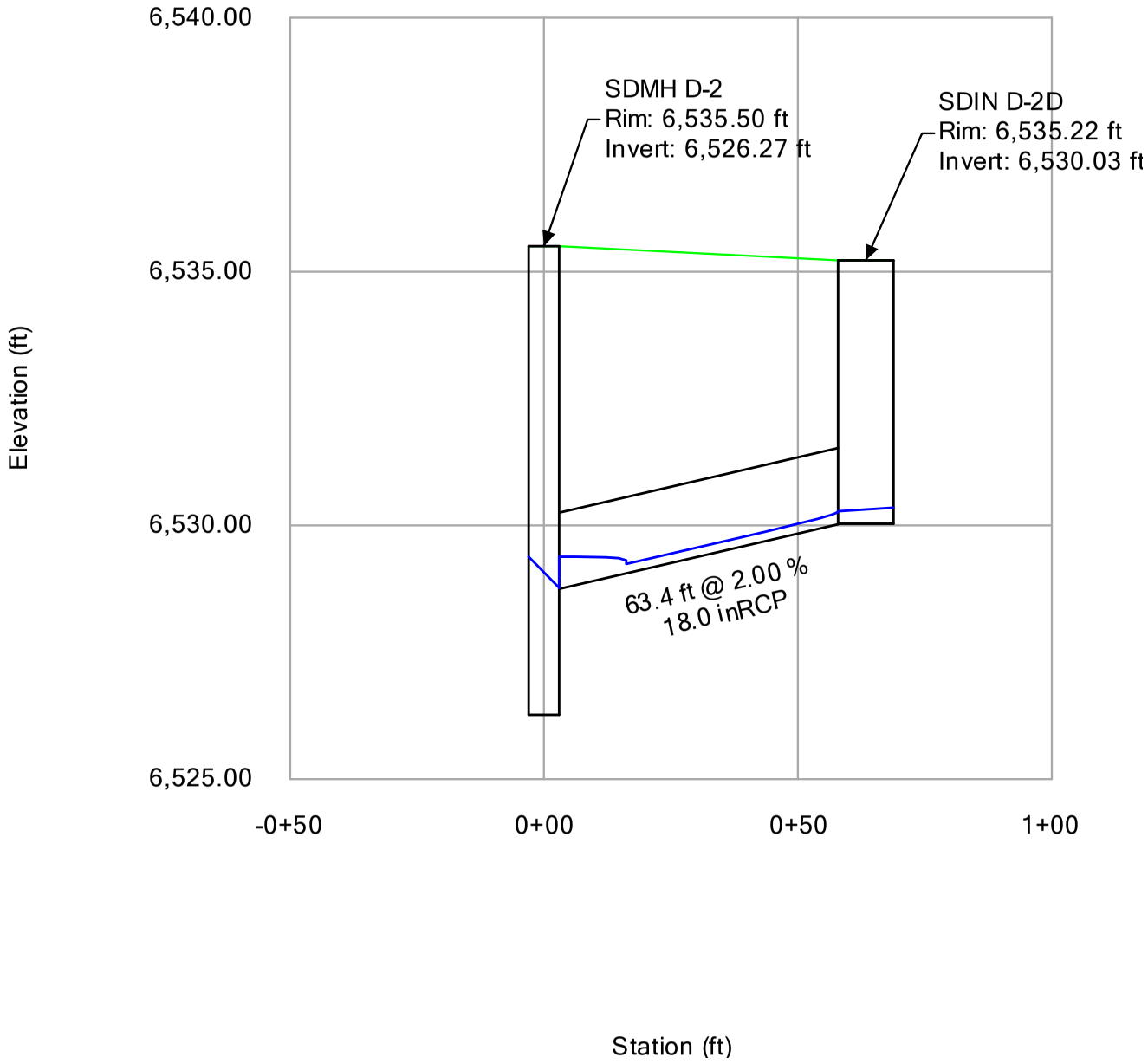
Engineering Profile - SDMH D-3 to SDIN D-3 (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

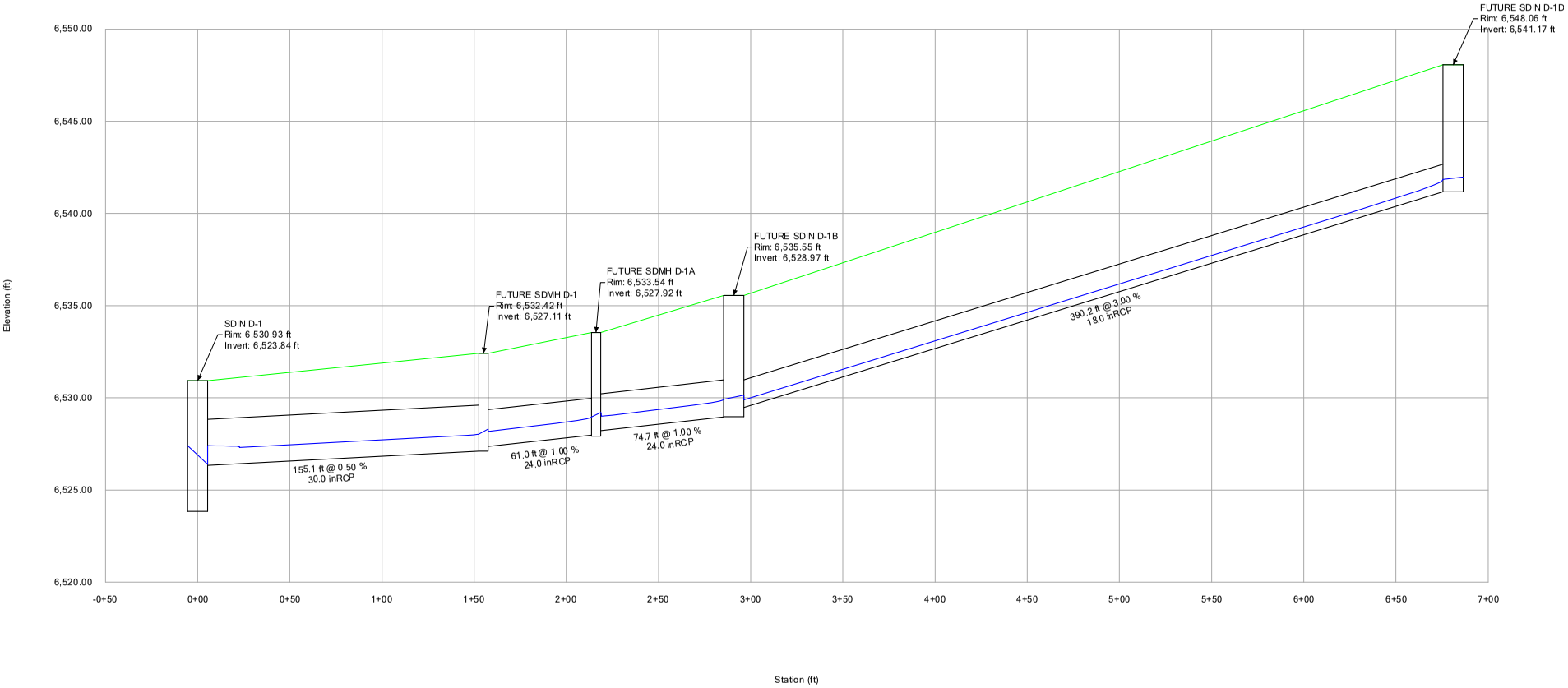
Profile Report

Engineering Profile - SDMH D-2 to SDIN D-2D (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

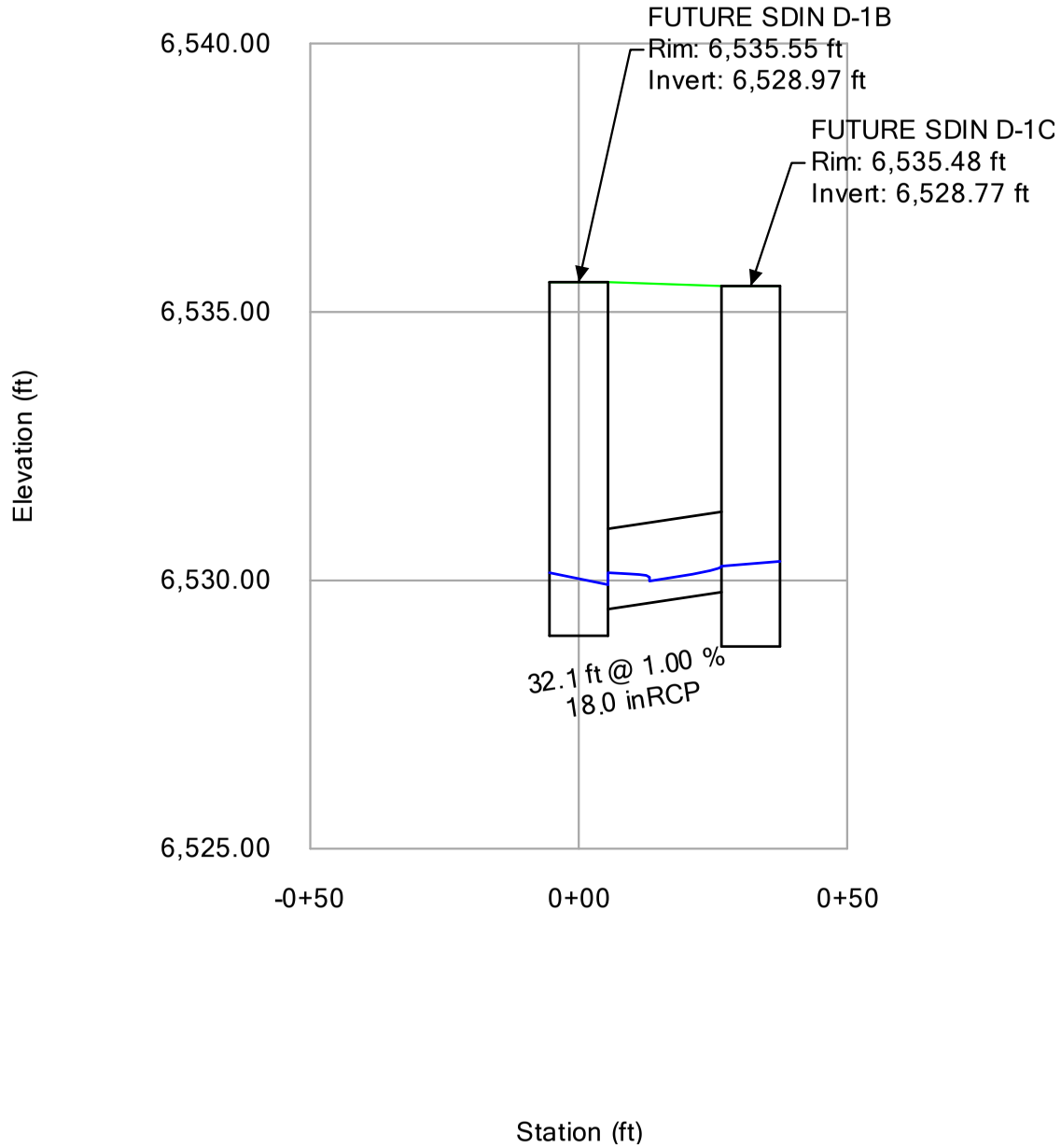
Profile Report
Engineering Profile - SDIN D-1 to FUTURE SDIN D-1D (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

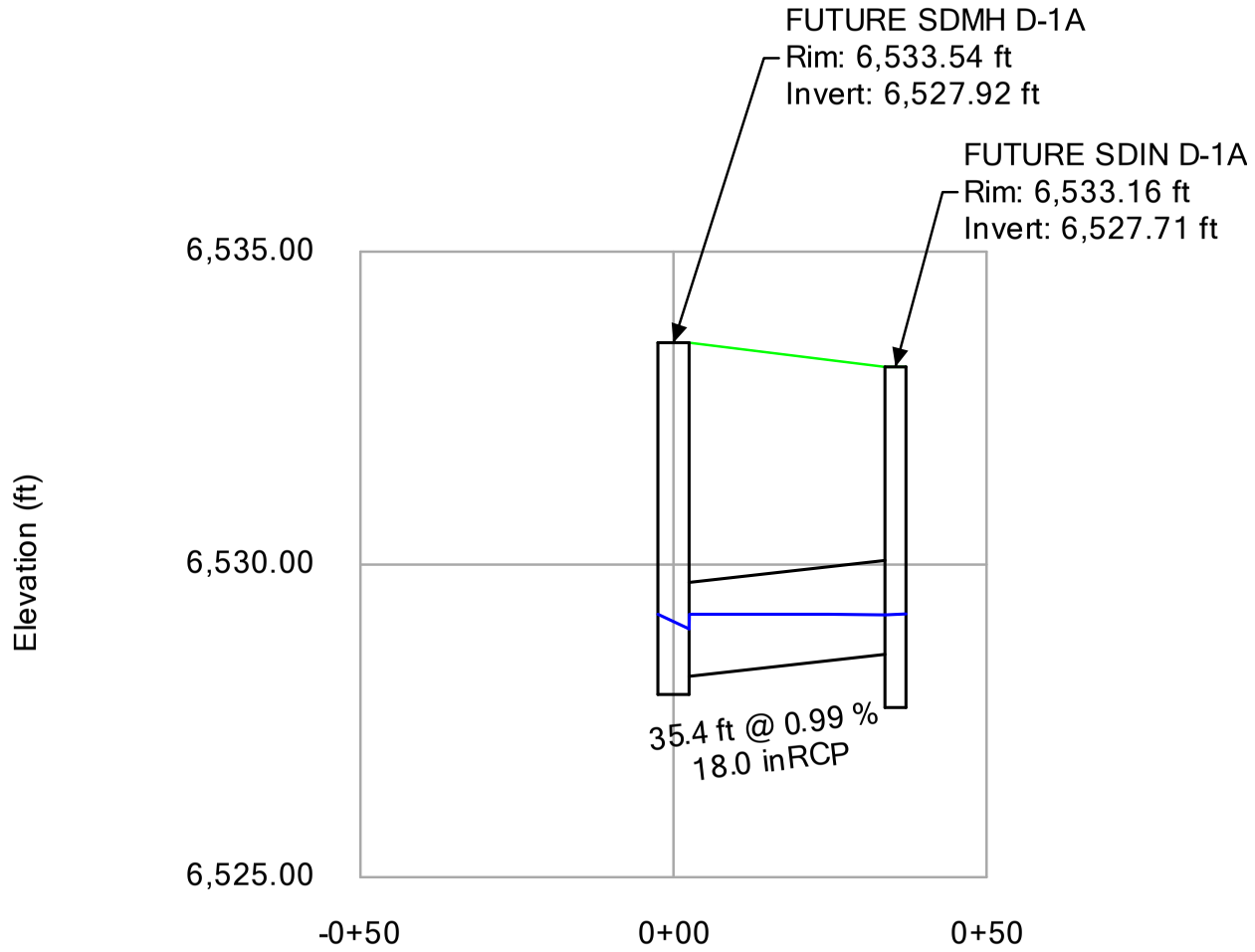
Engineering Profile - FUTURE SDIN D-1B to FUTURE SDIN D-1C (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report

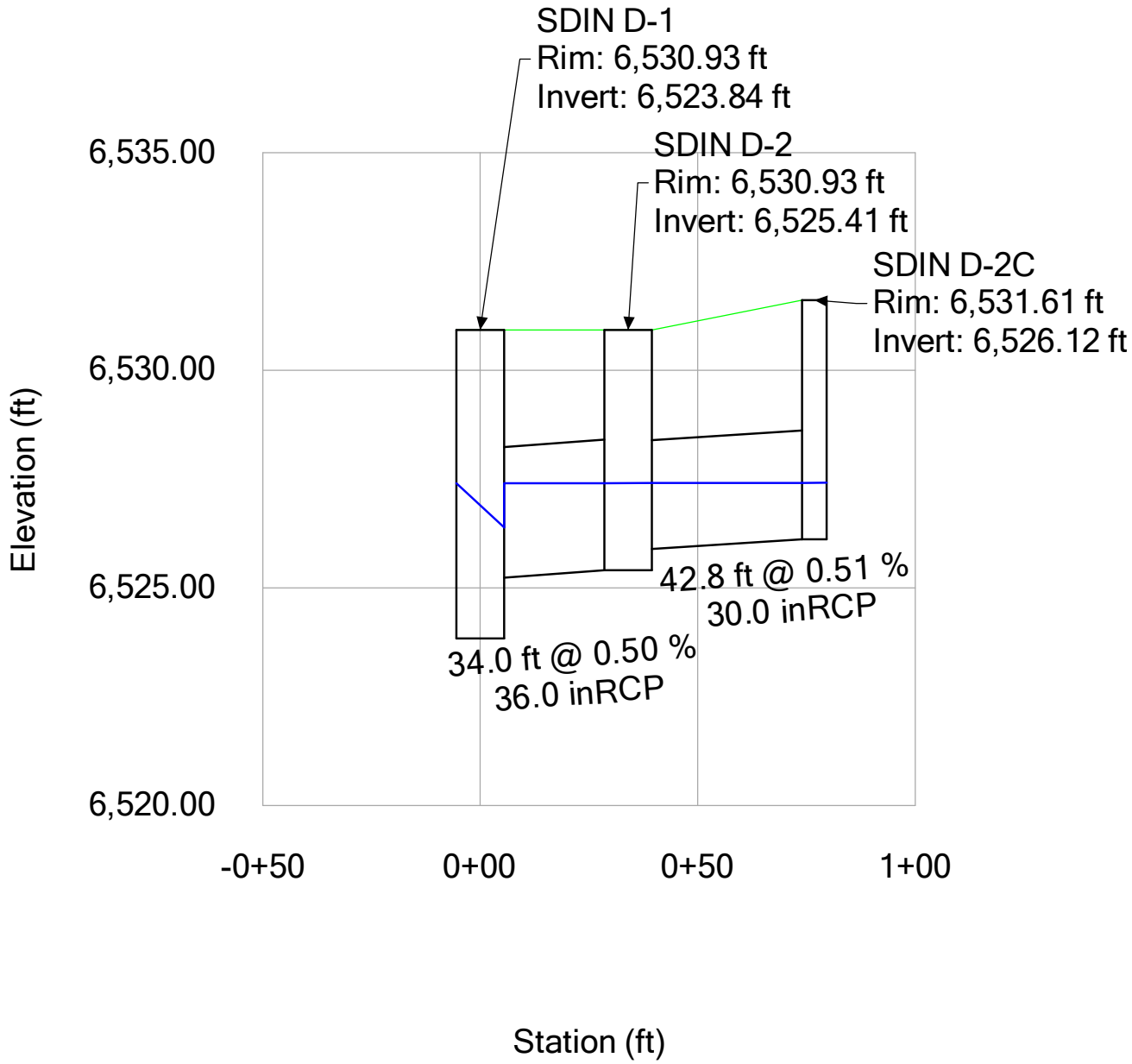
Engineering Profile - FUTURE SDMH D-1A to FUTURE SDIN D-1A (17026.004 - BMN F1_2026.01.24.stsw)



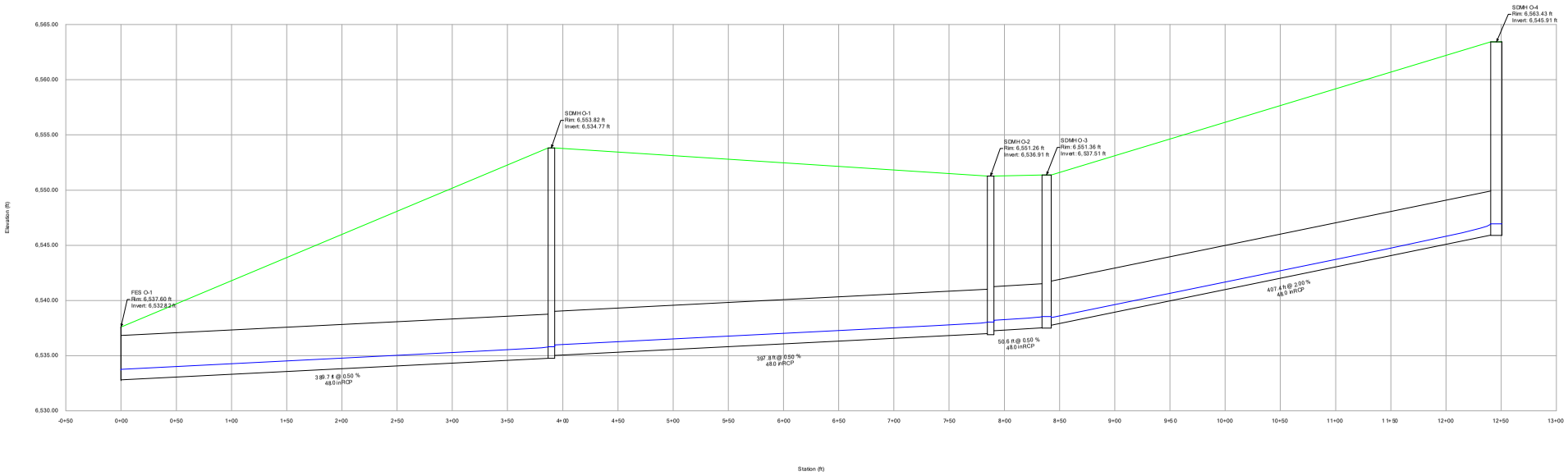
5 YR

Profile Report

Engineering Profile - SDIN D-1 to SDIN D-2C (17026.004 - BMN F1_2026.01.24.stsw)

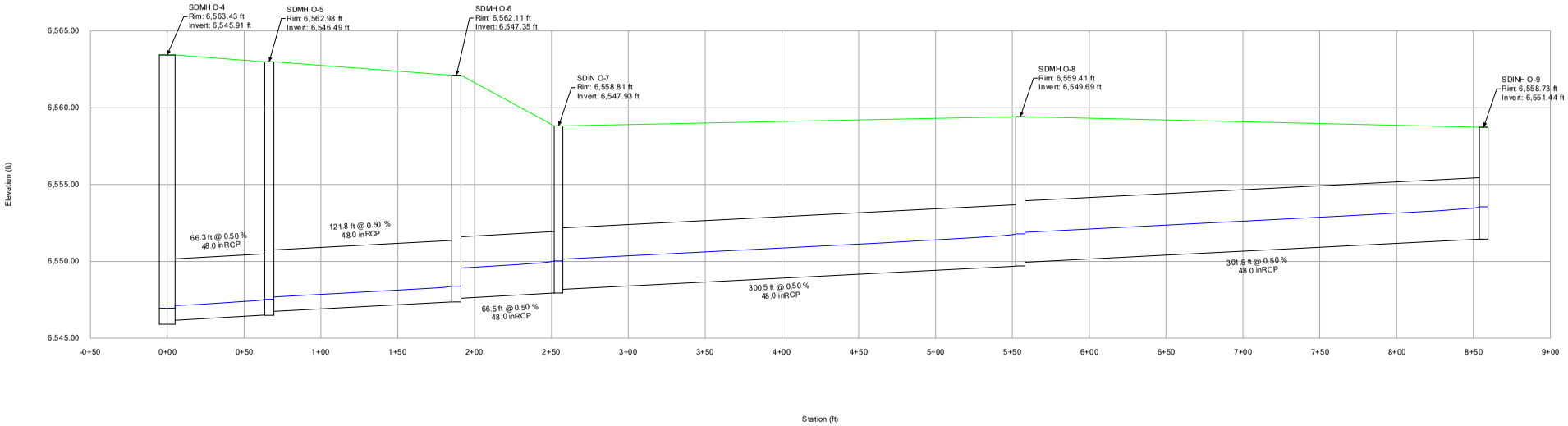


Profile Report
Engineering Profile - FES O-1 to SDINH O-4 (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

Profile Report
Engineering Profile - FES O-4 to SDINH O-9 (17026.004 - BMN F1_2026.01.24.stsw)



5 YR

FlexTable: Conduit Table (100 YR)

Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	Manning's n	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
568: SDMH B-1	333: FOREBAY-2	6,503.88	6,501.05	87.0	3.50	24.0	0.013	31.35	42.34	14.75	6,505.76	6,503.02	6,507.39	6,504.58
430: SDMH D-10	52: SDMH D-9	6,552.07	6,550.60	146.7	1.00	18.0	0.013	10.11	10.50	6.77	6,553.30	6,551.79	6,553.96	6,552.50
429: EX. 5' TYPE R INLET	92: SDMH E-10	6,548.11	6,544.04	172.4	2.36	30.0	0.013	67.97	63.00	13.85	6,553.80	6,549.07	6,556.78	6,552.05
422: SDIN E-1	119: SDMH D-3	6,531.29	6,527.36	262.3	1.50	54.0	0.013	152.89	240.70	16.03	6,535.48	6,534.00	6,537.00	6,535.43
421: SDIN E-1A	422: SDIN E-1	6,535.01	6,533.56	34.0	4.26	18.0	0.013	7.99	21.68	4.52	6,536.59	6,536.39	6,536.91	6,536.71
420: SDMH E-9A	87: SDMH E-9	6,546.89	6,546.38	100.6	0.50	24.0	0.013	5.74	16.02	4.68	6,548.43	6,548.39	6,548.50	6,548.44
419: SDIN E-15	82: SDMH E-15	6,547.49	6,547.14	35.4	0.99	18.0	0.013	3.65	10.44	2.06	6,550.33	6,550.28	6,550.39	6,550.35
418: SDIN E-18	57: SDMH E-18	6,552.33	6,552.00	65.1	0.51	24.0	0.013	21.97	16.11	6.99	6,554.51	6,553.88	6,555.27	6,554.68
417: SDIN E-18A	418: SDIN E-18	6,553.27	6,552.58	138.3	0.50	24.0	0.013	14.29	15.98	4.55	6,555.44	6,554.89	6,555.76	6,555.21
416: SDIN E-25A	36: SDMH E-25	6,565.66	6,565.16	20.0	2.50	18.0	0.013	5.33	16.59	8.36	6,566.55	6,565.80	6,566.92	6,566.65
415: SDIN E-25	36: SDMH E-25	6,565.51	6,565.16	14.0	2.50	18.0	0.013	3.56	16.60	7.48	6,566.23	6,565.94	6,566.51	6,566.17
414: SDIN E-21B	413: SDIN E-21A	6,558.05	6,557.79	32.0	0.80	18.0	0.013	5.23	9.39	2.96	6,560.10	6,560.02	6,560.24	6,560.16
413: SDIN E-21A	41: SDMH E-21	6,557.53	6,556.86	66.7	1.01	24.0	0.013	17.06	22.68	5.43	6,559.75	6,559.37	6,560.21	6,559.83
412: SDIN E-21	41: SDMH E-21	6,558.00	6,557.11	70.7	1.26	18.0	0.013	1.68	11.78	4.73	6,559.39	6,559.37	6,559.40	6,559.38
411: SDIN E-19A	410: SDIN E-19	6,556.60	6,554.27	46.6	4.99	18.0	0.013	4.58	23.47	10.30	6,557.43	6,556.50	6,557.76	6,556.61
410: SDIN E-19	54: SDMH E-19	6,552.61	6,552.07	53.3	1.01	24.0	0.013	26.14	22.77	8.32	6,555.64	6,554.93	6,556.72	6,556.01
409: SDIN E-15B	408: SDIN E-15A	6,550.78	6,549.17	39.0	4.13	18.0	0.013	5.58	21.36	10.17	6,551.69	6,551.80	6,552.08	6,551.95
408: SDIN E-15A	82: SDMH E-15	6,547.42	6,545.64	177.8	1.00	36.0	0.013	50.85	66.73	7.19	6,551.32	6,550.28	6,552.12	6,551.09
407: SDIN E-14A	406: SDIN E-14	6,550.23	6,549.45	52.3	1.49	24.0	0.013	5.58	27.63	6.89	6,551.57	6,551.58	6,551.67	6,551.63
406: SDIN E-14	77: SDMH E-13	6,549.20	6,548.71	48.0	1.01	24.0	0.013	16.33	22.75	5.20	6,551.33	6,551.08	6,551.75	6,551.50
405: SDIN E-11	86: SDMH E-11	6,545.65	6,544.94	70.8	1.00	30.0	0.013	18.41	41.01	3.75	6,549.45	6,549.31	6,549.67	6,549.53
404: SDIN E-8A	93: SDMH E-8	6,545.08	6,544.28	53.2	1.51	24.0	0.013	11.30	27.83	3.60	6,548.24	6,548.10	6,548.44	6,548.31
403: SDIN E-8	93: SDMH E-8	6,544.75	6,544.55	9.8	2.00	18.0	0.013	6.69	14.85	3.79	6,548.14	6,548.10	6,548.37	6,548.33
402: SDIN E-7B	401: SDIN E-7A	6,544.53	6,544.20	32.0	1.03	18.0	0.013	4.66	10.67	2.64	6,547.22	6,547.16	6,547.33	6,547.27
401: SDIN E-7A	100: SDMH E-7	6,542.21	6,541.71	98.1	0.51	48.0	0.013	74.90	102.57	5.96	6,546.83	6,546.56	6,547.38	6,547.11
400: SDIN E-7	100: SDMH E-7	6,544.57	6,544.21	42.0	0.86	18.0	0.013	0.00	9.76	0.00	6,546.56	6,546.56	6,546.56	6,546.56
399: SDMH D-6A	94: SDMH D-6	6,546.08	6,544.56	101.3	1.50	18.0	0.013	9.80	12.86	8.01	6,547.29	6,545.54	6,547.93	6,546.54
398: SDIN D-5C	98: SDMH D-5	6,541.39	6,540.52	35.2	2.47	18.0	0.013	3.87	16.50	7.63	6,542.14	6,542.05	6,542.44	6,542.13
397: SDIN D-5B	98: SDMH D-5	6,541.99	6,540.52	42.0	3.50	18.0	0.013	2.28	19.65	7.43	6,542.56	6,542.05	6,542.77	6,542.08
396: SDIN D-11C	395: SDIN D-11B	6,551.58	6,550.49	36.6	3.00	18.0	0.013	5.72	18.19	9.11	6,552.51	6,551.09	6,552.90	6,552.22
395: SDIN D-11B	65: SDMH D-11	6,549.74	6,547.69	68.1	3.00	24.0	0.013	6.97	39.17	9.42	6,550.67	6,549.82	6,551.04	6,549.89
393: SDIN D-11A	392: SDIN D-11	6,551.54	6,550.56	32.0	3.06	18.0	0.013	7.50	18.38	9.87	6,552.60	6,551.89	6,553.09	6,552.21

FlexTable: Conduit Table (100 YR)

Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	Manning's n	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
392: SDIN D-11	65: SDMH D-11	6,549.81	6,547.68	77.0	2.76	24.0	0.013	17.26	37.62	11.72	6,551.31	6,549.82	6,552.03	6,550.29
391: SDIN D-8B	390: SDIN D-8A	6,545.39	6,544.43	32.0	3.00	18.0	0.013	2.35	18.19	7.09	6,546.45	6,546.46	6,546.50	6,546.48
390: SDIN D-8A	83: SDMH D-8	6,543.94	6,542.89	41.8	2.50	24.0	0.013	26.20	35.76	12.44	6,545.73	6,545.10	6,546.94	6,546.18
389: SDIN D-10	430: SDMH D-10	6,553.69	6,552.81	88.0	1.00	18.0	0.013	10.16	10.51	6.77	6,554.92	6,554.00	6,555.59	6,554.71
387: SDIN D-9A	386: SDIN D-9	6,554.40	6,552.70	34.0	4.99	18.0	0.013	3.99	23.47	9.90	6,555.17	6,553.52	6,555.47	6,553.78
386: SDIN D-9	52: SDMH D-9	6,552.20	6,550.10	105.0	2.00	24.0	0.013	7.96	31.99	8.45	6,553.21	6,551.60	6,553.60	6,551.76
385: SDIN D-8	83: SDMH D-8	6,545.36	6,542.89	82.2	3.00	24.0	0.013	16.74	39.17	11.98	6,546.83	6,545.10	6,547.54	6,545.54
384: SDIN D-5A	383: SDIN D-5	6,533.17	6,531.49	34.0	4.94	18.0	0.013	4.44	23.35	2.52	6,536.67	6,536.61	6,536.77	6,536.71
383: SDIN D-5	382: SDIN D-4	6,530.74	6,529.44	129.6	1.00	36.0	0.013	52.28	66.78	7.40	6,535.76	6,534.96	6,536.61	6,535.81
382: SDIN D-4	119: SDMH D-3	6,529.19	6,528.61	58.0	1.00	36.0	0.013	58.16	66.70	8.23	6,534.44	6,534.00	6,535.49	6,535.05
381: SDIN D-3	119: SDMH D-3	6,530.01	6,529.63	18.8	2.00	18.0	0.013	1.78	14.85	1.01	6,534.00	6,534.00	6,534.02	6,534.01
380: SDIN D-2D	125: SDMH D-2	6,530.33	6,528.75	63.4	2.50	18.0	0.013	0.89	16.60	0.50	6,533.44	6,533.43	6,533.44	6,533.43
379: FUTURE SDIN D-1D	378: FUTURE SDIN D-1B	6,541.17	6,529.47	390.0	3.00	18.0	0.013	7.77	18.19	9.88	6,542.25	6,532.26	6,542.76	6,532.56
378: FUTURE SDIN D-1B	130: FUTURE SDMH D-1A	6,528.97	6,528.22	74.7	1.00	24.0	0.013	17.22	22.62	5.48	6,531.98	6,531.54	6,532.44	6,532.01
377: FUTURE SDIN D-1C	378: FUTURE SDIN D-1B	6,529.78	6,529.46	32.1	1.00	18.0	0.013	3.79	10.49	2.14	6,532.30	6,532.26	6,532.37	6,532.33
376: FUTURE SDIN D-1A	130: FUTURE SDMH D-1A	6,528.92	6,528.21	35.4	2.00	18.0	0.013	1.72	14.87	0.97	6,531.55	6,531.54	6,531.57	6,531.56
375: SDIN D-2C	372: SDIN D-2	6,526.12	6,525.90	42.8	0.51	30.0	0.013	10.53	29.41	2.15	6,530.42	6,530.39	6,530.49	6,530.46
372: SDIN D-2	371: SDIN D-1	6,525.41	6,525.24	34.0	0.50	36.0	0.013	13.05	47.16	1.85	6,530.35	6,530.34	6,530.40	6,530.39
371: SDIN D-1	370: FES D-1	6,523.82	6,523.48	67.9	0.50	60.0	0.013	211.83	184.28	10.79	6,528.33	6,527.62	6,530.34	6,529.93
369: SDIN C-8B	121: SDMH C-8	6,530.17	6,529.73	44.6	1.00	18.0	0.013	8.12	10.50	6.56	6,531.28	6,530.89	6,531.80	6,531.36
368: SDIN C-8A	367: SDIN C-8	6,527.11	6,526.79	32.0	1.00	18.0	0.013	6.05	10.50	6.15	6,528.21	6,528.21	6,528.50	6,528.40
367: SDIN C-8	140: SDMH C-7	6,526.29	6,525.36	92.7	1.00	24.0	0.013	17.04	22.62	7.91	6,527.78	6,527.15	6,528.50	6,527.66
366: SDIN C-7A	140: SDMH C-7	6,526.32	6,525.61	35.6	2.00	18.0	0.013	1.83	14.85	5.70	6,527.12	6,527.15	6,527.18	6,527.16
365: SDIN C-6B	147: SDMH C-6	6,527.52	6,524.94	62.7	4.11	18.0	0.013	2.29	21.30	7.87	6,528.10	6,526.34	6,528.31	6,526.37
364: SDIN C-6A	363: SDIN C-6	6,520.31	6,519.83	32.0	1.50	18.0	0.013	3.96	12.86	6.41	6,521.07	6,520.42	6,521.37	6,521.01
363: SDIN C-6	171: SDMH C-3	6,517.43	6,514.24	96.9	3.29	24.0	0.013	25.79	41.04	13.80	6,519.21	6,517.70	6,520.39	6,518.74
362: SDIN C-5B	151: SDMH C-5	6,525.37	6,524.82	36.2	1.50	18.0	0.013	4.72	12.88	6.73	6,526.20	6,525.46	6,526.54	6,526.13
360: SDIN C-5A	359: SDIN C-5	6,520.07	6,519.43	32.0	2.00	18.0	0.013	5.58	14.85	7.81	6,520.98	6,520.63	6,521.37	6,520.84
359: SDIN C-5	168: SDMH C-4	6,518.93	6,517.34	90.9	1.75	24.0	0.013	13.81	29.92	9.34	6,520.27	6,518.92	6,520.86	6,519.34
358: SDIN C-4	168: SDMH C-4	6,518.55	6,517.84	35.4	2.00	18.0	0.013	2.15	14.85	5.99	6,519.11	6,518.92	6,519.31	6,518.96
356: SDIN C-3	176: SDMH C-2	6,511.24	6,509.03	110.7	2.00	30.0	0.013	41.12	58.00	12.82	6,513.40	6,512.11	6,514.70	6,513.20
355: SDIN C-2	176: SDMH C-2	6,511.46	6,509.78	56.0	3.00	18.0	0.013	5.10	18.19	8.83	6,512.33	6,512.11	6,512.69	6,512.24

FlexTable: Conduit Table (100 YR)

Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	Manning's n	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
354: SDIN C-1	178: SDMH C-1	6,507.83	6,504.37	172.7	2.00	30.0	0.013	47.39	58.00	13.18	6,510.09	6,506.11	6,511.69	6,508.75
352: SDIN B-5A	351: SDIN B-5	6,527.76	6,526.96	32.0	2.50	18.0	0.013	7.51	16.61	9.16	6,529.22	6,529.06	6,529.50	6,529.34
351: SDIN B-5	135: SDMH B-4	6,527.21	6,525.11	83.9	2.50	18.0	0.013	10.89	16.61	10.02	6,528.48	6,526.52	6,529.20	6,527.14
350: SDIN B-4A	135: SDMH B-4	6,527.42	6,525.11	77.0	3.00	18.0	0.013	7.12	18.19	9.66	6,528.46	6,526.52	6,528.92	6,526.79
349: SDIN B-3	347: SDIN B-2	6,519.02	6,517.72	43.5	3.00	24.0	0.013	18.79	39.17	12.34	6,520.58	6,520.28	6,521.38	6,520.84
348: SDIN B-2A	158: SDMH B-2	6,522.71	6,518.76	175.3	2.25	18.0	0.013	5.58	15.75	8.15	6,523.62	6,520.43	6,524.00	6,520.59
347: SDIN B-2	345: SDIN B-1	6,517.47	6,516.09	45.9	3.00	24.0	0.013	26.88	39.17	13.43	6,519.27	6,517.43	6,520.53	6,519.68
346: SDIN B-1A	345: SDIN B-1	6,518.34	6,516.59	34.9	4.99	18.0	0.013	3.02	23.47	9.14	6,519.00	6,516.96	6,519.25	6,518.18
345: SDIN B-1	568: SDMH B-1	6,510.49	6,509.13	32.6	3.51	24.0	0.013	31.40	42.38	14.77	6,512.37	6,510.58	6,514.00	6,513.17
344: SDIN A-5A	343: SDIN A-5	6,536.24	6,535.92	32.0	1.00	18.0	0.013	3.16	10.50	5.20	6,537.43	6,537.42	6,537.50	6,537.47
343: SDIN A-5	340: SDIN A-4	6,535.67	6,529.45	249.0	2.50	18.0	0.013	10.01	16.61	9.83	6,536.89	6,530.73	6,537.55	6,531.33
342: SDIN A-4A	340: SDIN A-4	6,530.09	6,529.45	32.0	2.00	18.0	0.013	1.64	14.85	5.53	6,530.66	6,530.73	6,530.77	6,530.75
340: SDIN A-4	339: SDIN A-3	6,528.94	6,521.44	300.0	2.50	24.0	0.013	15.12	35.76	10.91	6,530.34	6,523.71	6,530.99	6,524.07
339: SDIN A-3	148: SDMH A-2	6,521.18	6,520.63	53.3	1.01	24.0	0.013	19.40	22.72	6.18	6,523.36	6,522.95	6,523.95	6,523.55
338: SDIN A-2	148: SDMH A-2	6,521.31	6,520.76	58.7	1.01	18.0	0.013	2.59	10.53	1.46	6,522.99	6,522.95	6,523.02	6,522.99
336: SDIN A-1	156: SDMH A-1	6,519.94	6,519.23	32.8	2.01	24.0	0.013	25.03	32.04	11.28	6,521.70	6,520.67	6,522.84	6,522.33
178: SDMH C-1	353: FOREBAY 3	6,501.87	6,499.43	244.2	1.00	60.0	0.013	60.61	260.42	10.81	6,504.06	6,501.07	6,504.90	6,502.89
176: SDMH C-2	354: SDIN C-1	6,508.78	6,508.32	22.9	2.00	30.0	0.013	45.08	58.00	9.18	6,511.33	6,511.05	6,512.64	6,512.36
174: SDMH C-1A	178: SDMH C-1	6,503.91	6,502.37	51.3	3.00	54.0	0.013	14.59	340.51	10.65	6,504.99	6,504.57	6,505.38	6,504.62
172: SDMH C-1B	174: SDMH C-1A	6,510.00	6,504.16	194.8	3.00	54.0	0.013	14.75	340.51	10.69	6,511.09	6,504.80	6,511.48	6,506.58
171: SDMH C-3	356: SDIN C-3	6,513.99	6,511.74	68.1	3.29	24.0	0.013	40.04	41.04	12.74	6,516.18	6,514.05	6,518.70	6,516.57
170: FES C-1	172: SDMH C-1B	6,517.11	6,514.28	28.3	9.71	54.0	0.013	14.76	612.77	16.13	6,518.20	6,514.83	6,518.58	6,517.61
168: SDMH C-4	171: SDMH C-3	6,517.09	6,516.39	35.3	2.00	24.0	0.013	15.69	31.99	10.13	6,518.52	6,517.46	6,519.19	6,518.76
158: SDMH B-2	347: SDIN B-2	6,518.51	6,517.97	21.6	2.50	18.0	0.013	5.51	16.61	3.12	6,520.34	6,520.28	6,520.49	6,520.43
156: SDMH A-1	332: FOREBAY-1	6,512.74	6,502.85	245.0	4.10	24.0	0.013	24.99	45.81	14.90	6,514.50	6,503.90	6,515.63	6,507.35
151: SDMH C-5	359: SDIN C-5	6,524.08	6,519.43	265.7	1.75	18.0	0.013	4.71	13.89	7.10	6,524.91	6,520.63	6,525.25	6,520.78
148: SDMH A-2	336: SDIN A-1	6,520.43	6,520.14	30.6	0.99	24.0	0.013	21.23	22.47	6.76	6,522.53	6,522.27	6,523.24	6,522.98
147: SDMH C-6	363: SDIN C-6	6,524.19	6,517.68	168.0	3.88	24.0	0.013	20.52	44.54	13.89	6,525.82	6,519.92	6,526.69	6,520.58
140: SDMH C-7	147: SDMH C-6	6,525.11	6,524.44	33.5	2.00	24.0	0.013	18.75	31.99	10.58	6,526.67	6,526.34	6,527.46	6,526.92
135: SDMH B-4	349: SDIN B-3	6,524.61	6,519.27	178.0	3.00	24.0	0.013	16.93	39.17	12.01	6,526.10	6,520.98	6,526.81	6,521.53
134: FUTURE SDMH D-1	371: SDIN D-1	6,527.11	6,526.33	155.1	0.50	30.0	0.013	18.32	29.00	3.73	6,530.65	6,530.34	6,530.86	6,530.55
130: FUTURE SDMH D-1A	134: FUTURE SDMH D-1	6,527.97	6,527.36	61.0	1.00	24.0	0.013	18.43	22.62	5.87	6,531.22	6,530.82	6,531.76	6,531.35

FlexTable: Conduit Table (100 YR)

Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	Manning's n	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
125: SDMH D-2	371: SDIN D-1	6,526.25	6,524.32	193.3	1.00	54.0	0.013	188.76	196.47	11.87	6,532.12	6,530.34	6,534.31	6,532.52
121: SDMH C-8	367: SDIN C-8	6,529.48	6,526.79	268.3	1.00	18.0	0.013	8.09	10.50	6.56	6,530.58	6,528.21	6,531.10	6,528.55
119: SDMH D-3	125: SDMH D-2	6,527.11	6,526.50	61.4	0.99	54.0	0.013	188.67	196.06	11.86	6,534.00	6,533.43	6,536.18	6,535.62
111: SDMH E-1	422: SDIN E-1	6,533.79	6,531.54	150.1	1.50	54.0	0.013	143.06	240.76	15.79	6,537.30	6,536.39	6,539.10	6,537.65
110: SDMH E-2	111: SDMH E-1	6,535.09	6,534.04	70.0	1.50	54.0	0.013	143.34	240.82	15.80	6,538.61	6,538.20	6,540.40	6,539.55
109: SDMH E-3	110: SDMH E-2	6,536.39	6,535.34	70.0	1.50	54.0	0.013	143.63	240.82	15.80	6,539.91	6,539.51	6,541.71	6,540.86
108: SDMH D-7	383: SDIN D-5	6,536.39	6,530.99	188.5	2.86	36.0	0.013	35.92	112.87	14.18	6,538.34	6,536.61	6,539.19	6,537.01
107: SDMH E-4	109: SDMH E-3	6,537.69	6,536.64	70.0	1.50	54.0	0.013	143.91	240.82	15.81	6,541.21	6,540.81	6,543.02	6,542.17
106: SDMH E-5	107: SDMH E-4	6,538.99	6,537.94	69.9	1.50	54.0	0.013	144.20	240.97	15.83	6,542.52	6,542.12	6,544.32	6,543.48
104: SDMH E-6	106: SDMH E-5	6,540.05	6,539.24	70.1	1.16	54.0	0.013	144.52	211.34	14.30	6,543.58	6,543.42	6,545.39	6,544.79
100: SDMH E-7	104: SDMH E-6	6,541.21	6,540.30	90.9	1.00	54.0	0.013	144.96	196.78	13.53	6,544.75	6,544.49	6,546.56	6,545.86
98: SDMH D-5	383: SDIN D-5	6,540.03	6,531.99	116.5	6.88	24.0	0.013	14.85	59.35	15.71	6,541.42	6,536.61	6,542.05	6,536.96
94: SDMH D-6	98: SDMH D-5	6,543.80	6,543.00	53.2	1.50	18.0	0.013	9.73	12.88	8.01	6,545.00	6,543.99	6,545.64	6,544.95
93: SDMH E-8	100: SDMH E-7	6,542.78	6,542.21	57.6	0.99	42.0	0.013	82.82	100.12	8.61	6,546.95	6,546.56	6,548.10	6,547.71
92: SDMH E-10	93: SDMH E-8	6,544.03	6,543.78	24.7	1.01	36.0	0.013	67.50	67.06	9.55	6,548.36	6,548.10	6,549.77	6,549.52
89: SDMH O-2	78: SDMH O-1	6,537.01	6,535.02	397.8	0.50	48.0	0.013	12.50	101.56	5.49	6,538.04	6,535.97	6,538.41	6,536.44
88: SDMH O-3	89: SDMH O-2	6,537.51	6,537.26	50.6	0.50	48.0	0.013	12.50	101.56	5.49	6,538.55	6,538.21	6,538.91	6,538.68
87: SDMH E-9	404: SDIN E-8A	6,545.38	6,545.33	8.8	0.50	24.0	0.013	5.67	16.02	1.80	6,548.36	6,548.36	6,548.41	6,548.41
86: SDMH E-11	401: SDIN E-7A	6,544.44	6,543.22	121.6	1.00	36.0	0.013	68.34	66.69	9.67	6,548.44	6,547.16	6,549.89	6,548.61
83: SDMH D-8	108: SDMH D-7	6,542.40	6,536.70	189.9	3.00	30.0	0.013	36.09	71.02	14.52	6,544.43	6,538.76	6,545.54	6,539.84
82: SDMH E-15	86: SDMH E-11	6,545.39	6,544.68	71.5	0.99	36.0	0.013	52.97	66.46	7.49	6,549.76	6,549.31	6,550.63	6,550.18
80: SDMH E-12	405: SDIN E-11	6,547.89	6,546.14	173.5	1.00	24.0	0.013	16.18	22.65	5.15	6,550.45	6,549.56	6,550.87	6,549.97
78: SDMH O-1	118: FES O-1	6,534.77	6,532.82	389.7	0.50	48.0	0.013	12.50	101.56	5.49	6,535.80	6,533.77	6,536.17	6,534.24
77: SDMH E-13	80: SDMH E-12	6,548.46	6,548.14	32.6	0.98	24.0	0.013	16.24	22.41	5.17	6,550.83	6,550.66	6,551.24	6,551.08
65: SDMH D-11	390: SDIN D-8A	6,547.44	6,544.19	162.9	2.00	24.0	0.013	23.95	31.99	11.17	6,549.18	6,546.46	6,550.24	6,547.36
62: SDMH E-16	408: SDIN E-15A	6,549.71	6,547.67	204.2	1.00	36.0	0.013	41.96	66.66	9.97	6,552.59	6,551.80	6,553.15	6,552.35
60: SDINH O-9	55: SDMH O-8	6,551.44	6,549.94	301.5	0.50	48.0	0.013	48.94	101.56	8.01	6,553.54	6,551.89	6,554.38	6,552.89
59: SDIN O-7	47: SDMH O-6	6,547.93	6,547.60	66.5	0.50	48.0	0.013	48.94	101.56	8.01	6,550.03	6,549.56	6,550.87	6,550.55
57: SDMH E-18	49: SDMH E-17	6,551.51	6,551.03	95.3	0.50	30.0	0.013	21.87	29.00	6.49	6,553.56	6,553.39	6,553.96	6,553.71
55: SDMH O-8	59: SDIN O-7	6,549.69	6,548.18	300.5	0.50	48.0	0.013	48.94	101.56	8.01	6,551.78	6,550.14	6,552.62	6,551.14
54: SDMH E-19	62: SDMH E-16	6,551.82	6,550.71	111.2	1.00	24.0	0.013	26.03	22.60	8.29	6,554.40	6,552.93	6,555.47	6,553.99
52: SDMH D-9	385: SDIN D-8	6,549.85	6,545.61	212.1	2.00	24.0	0.013	14.59	31.99	9.95	6,551.23	6,547.19	6,551.85	6,547.66

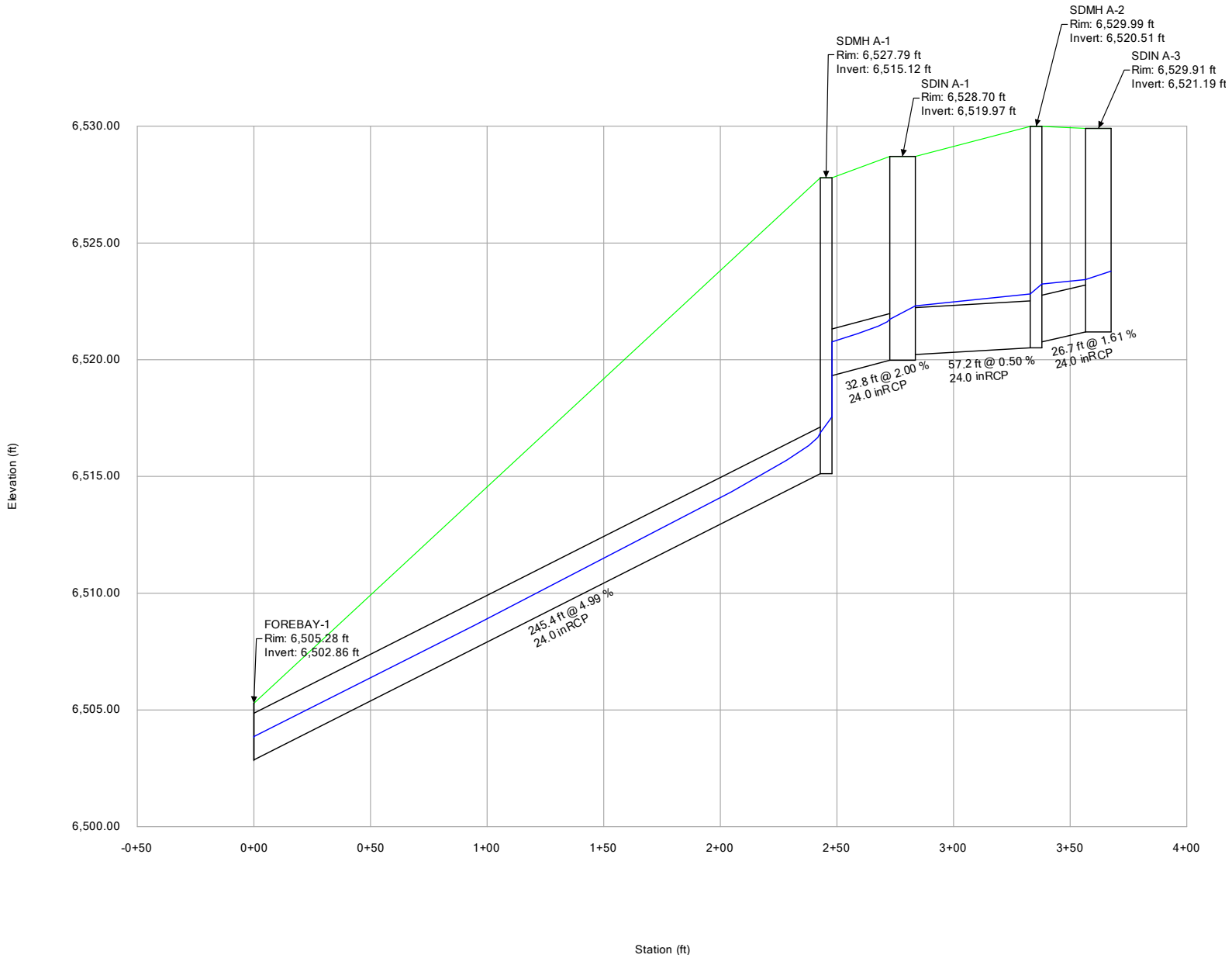
FlexTable: Conduit Table (100 YR)

Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	Manning's n	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
49: SDMH E-17	62: SDMH E-16	6,550.77	6,550.21	112.9	0.50	30.0	0.013	21.71	28.89	6.46	6,553.24	6,552.93	6,553.54	6,553.23
48: SDMH E-20	410: SDIN E-19	6,553.39	6,552.86	53.4	0.99	24.0	0.013	17.77	22.54	5.66	6,556.83	6,556.50	6,557.33	6,557.00
47: SDMH O-6	44: SDMH O-5	6,547.35	6,546.74	121.8	0.50	48.0	0.013	12.50	101.56	5.49	6,548.38	6,547.69	6,548.75	6,548.16
44: SDMH O-5	43: SDMH O-4	6,546.49	6,546.16	66.3	0.50	48.0	0.013	12.50	101.56	5.49	6,547.53	6,547.11	6,547.89	6,547.58
43: SDMH O-4	88: SDMH O-3	6,545.90	6,539.50	407.3	1.57	48.0	0.013	12.50	180.02	8.23	6,546.93	6,540.21	6,547.30	6,541.27
41: SDMH E-21	48: SDMH E-20	6,556.61	6,553.64	297.5	1.00	24.0	0.013	18.39	22.60	5.85	6,559.05	6,557.08	6,559.58	6,557.62
36: SDMH E-25	35: SDMH E-24	6,564.66	6,564.05	80.7	0.76	24.0	0.013	8.87	19.67	6.10	6,565.72	6,564.99	6,566.15	6,565.57
35: SDMH E-24	33: SDMH E-23	6,563.06	6,562.37	92.8	0.75	24.0	0.013	8.77	19.59	6.06	6,564.12	6,563.31	6,564.54	6,563.88
34: SDMH E-22	413: SDIN E-21A	6,561.69	6,557.78	392.4	1.00	24.0	0.013	8.63	22.59	6.71	6,562.74	6,560.02	6,563.16	6,560.14
33: SDMH E-23	34: SDMH E-22	6,562.11	6,561.95	22.1	0.75	24.0	0.013	8.66	19.59	6.04	6,563.16	6,562.90	6,563.58	6,563.44

100 YR

Profile Report

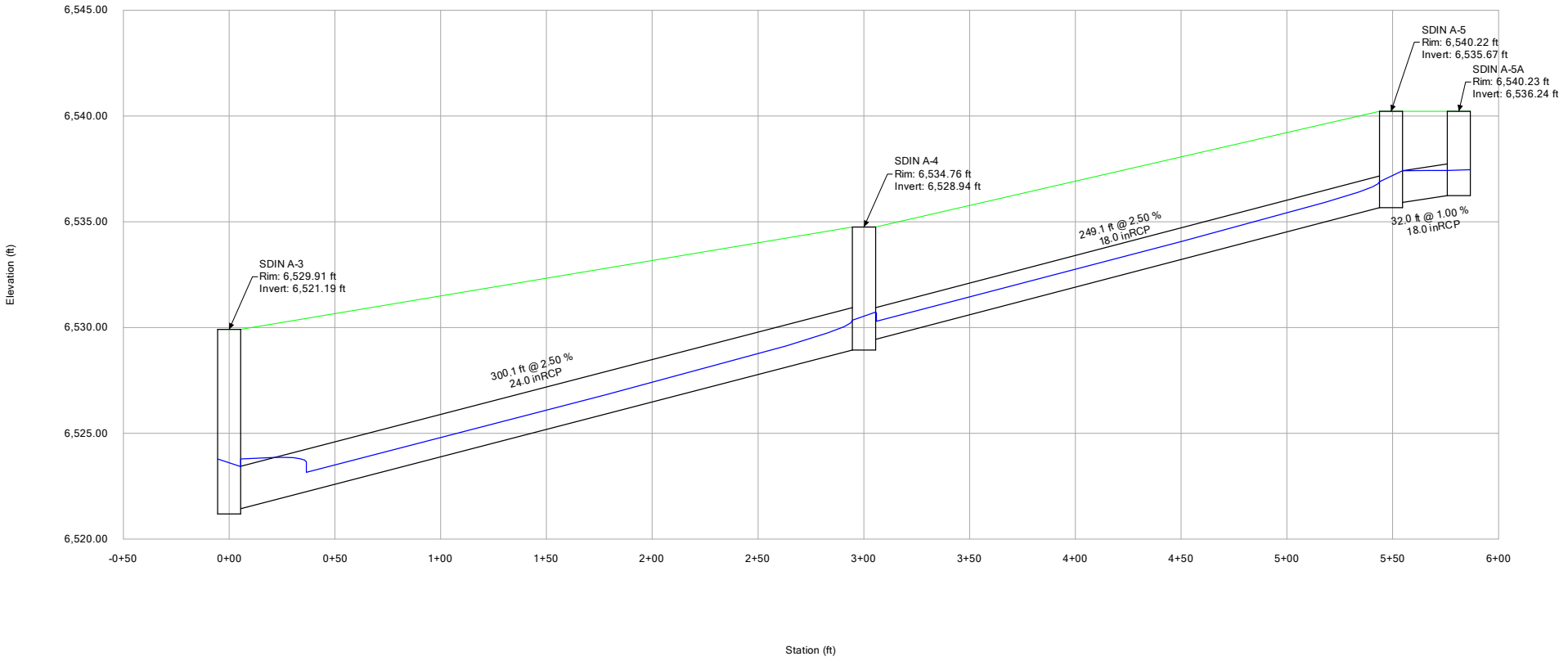
Engineering Profile - FOREBAY-1 to SDIN A-3 (L) (17026.004 - BMN F1_2026.01.24.stsw)



100 YR

Profile Report

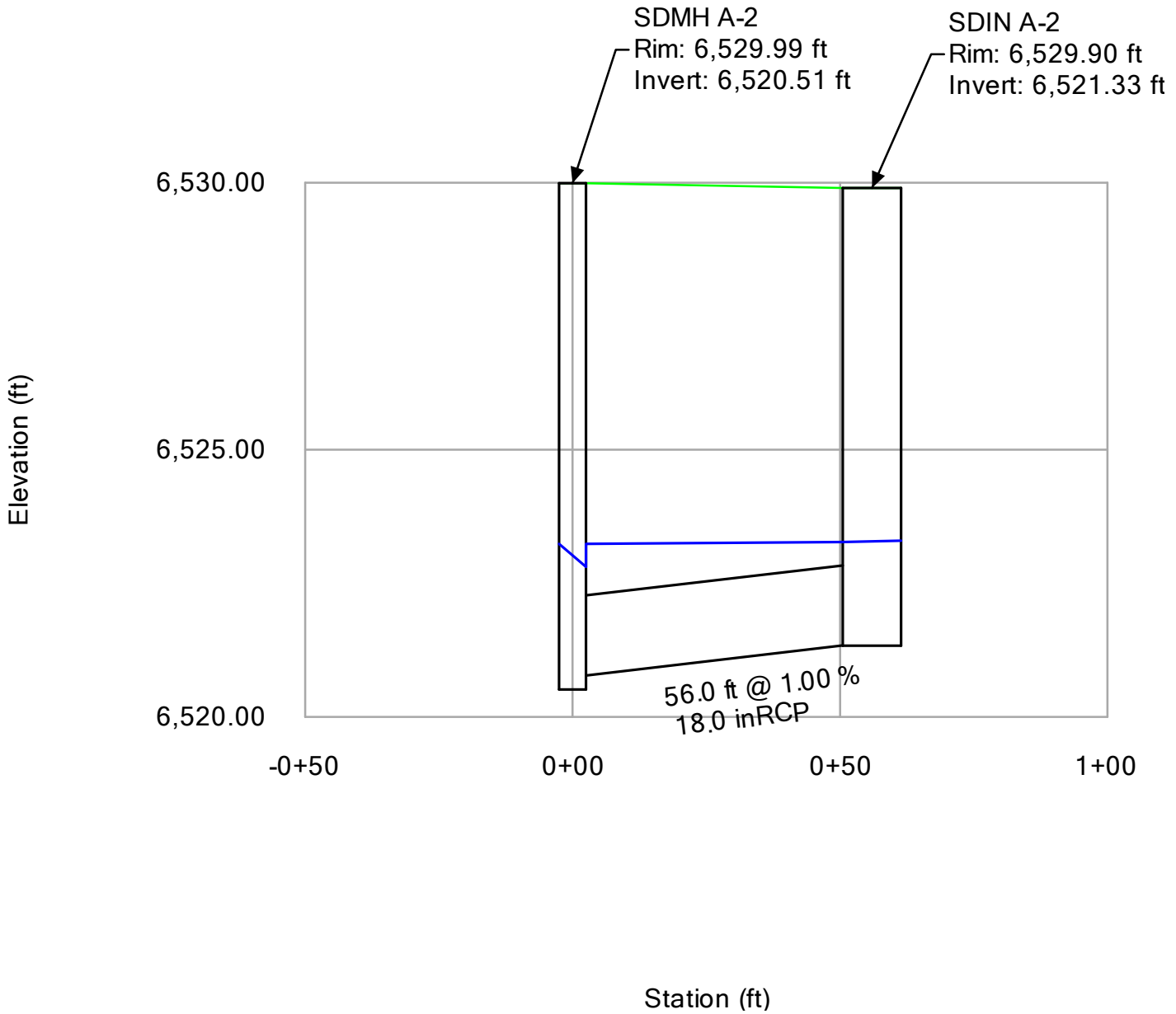
Engineering Profile - SDIN A-5A to SDIN A-5A (L) (17026.004 - BMN F1_2026.01.24.stsw)



100 YR

Profile Report

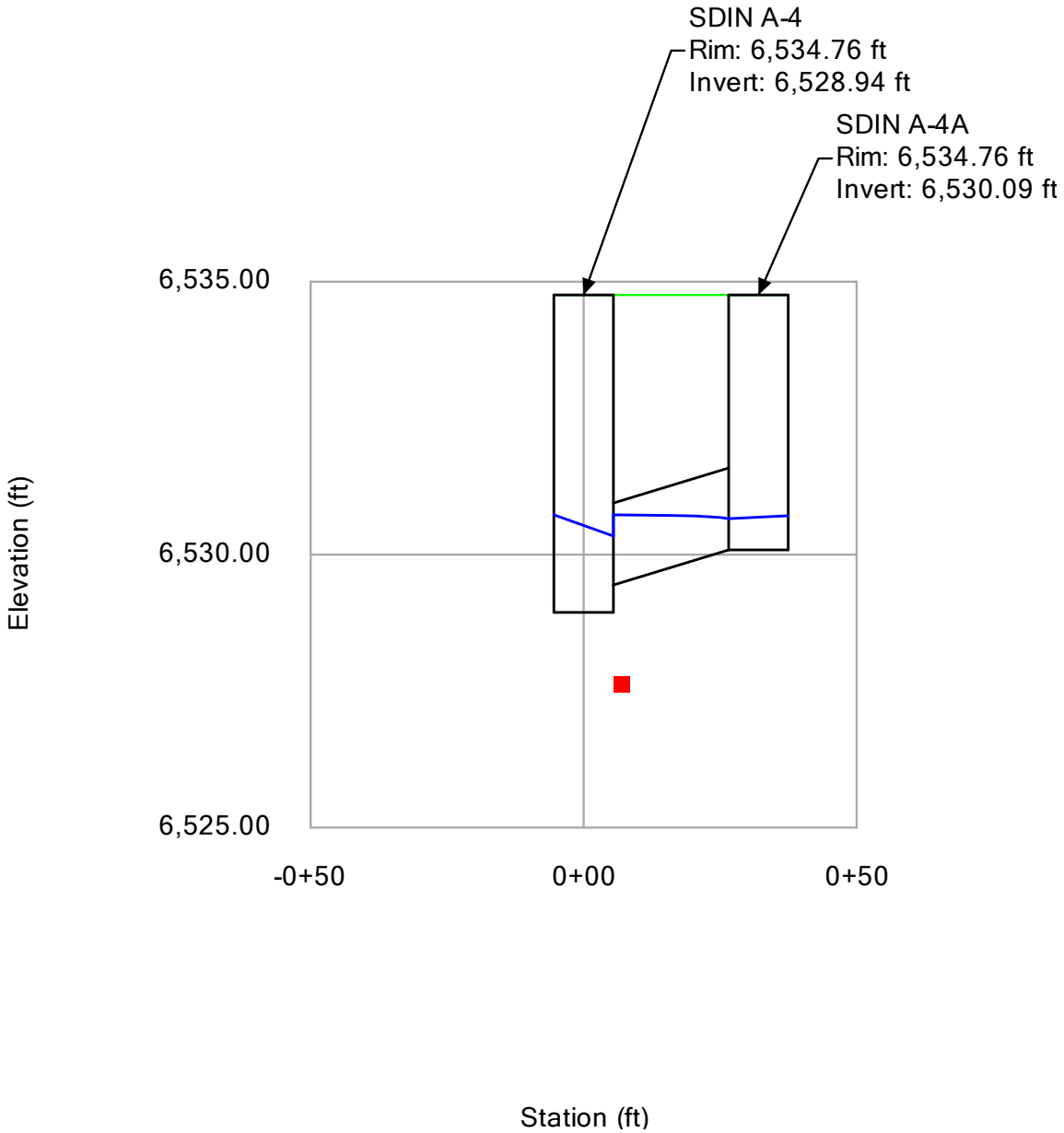
Engineering Profile - SDMH A-2 to SDIN A-2 (s) (17026.004 - BMN F1_2026.01.24.stsw)



100 YR

Profile Report

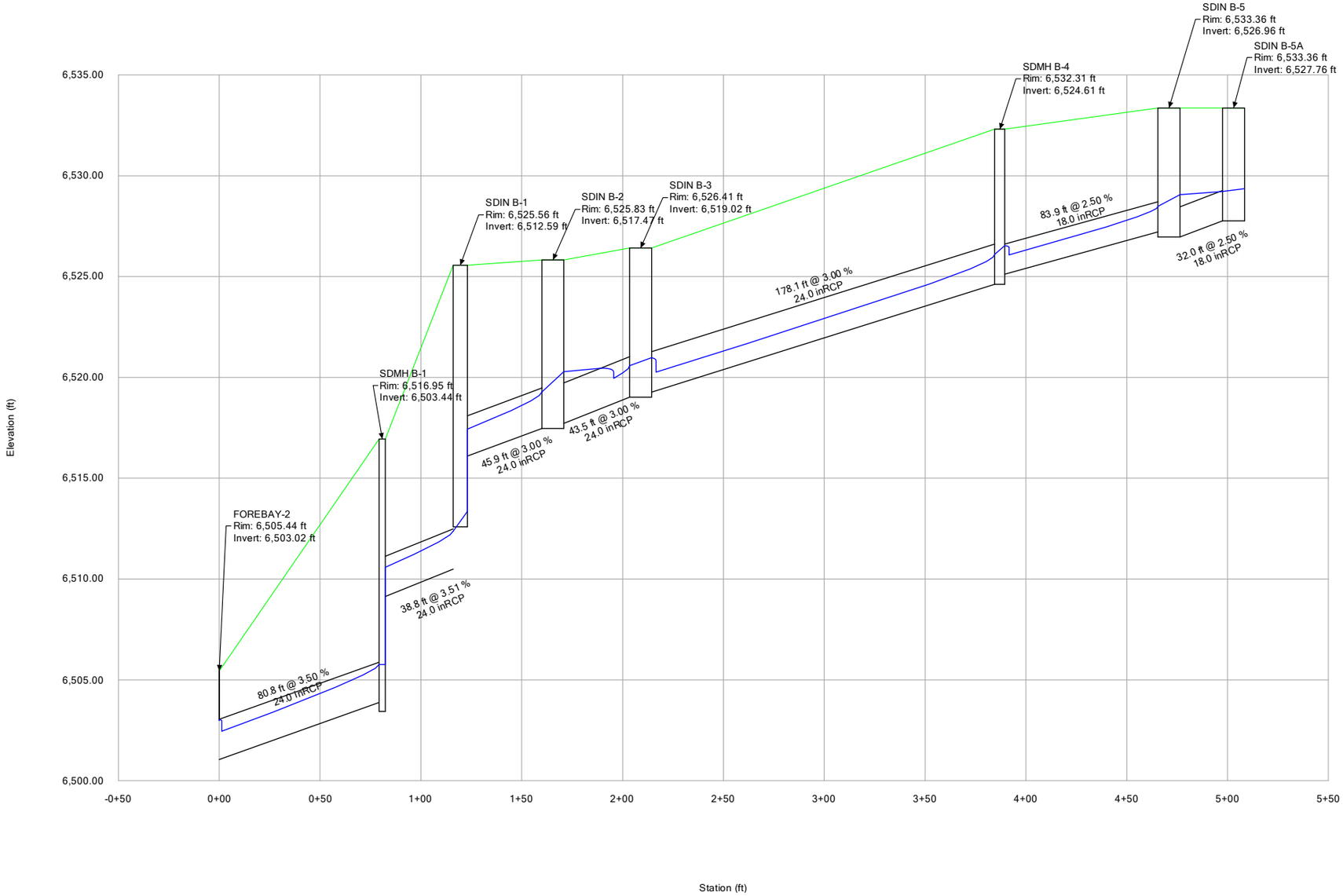
Engineering Profile - SDIN A-4 to SDIN A-4A (s) (17026.004 - BMN F1_2026.01.24.stsw)



100 YR

Profile Report

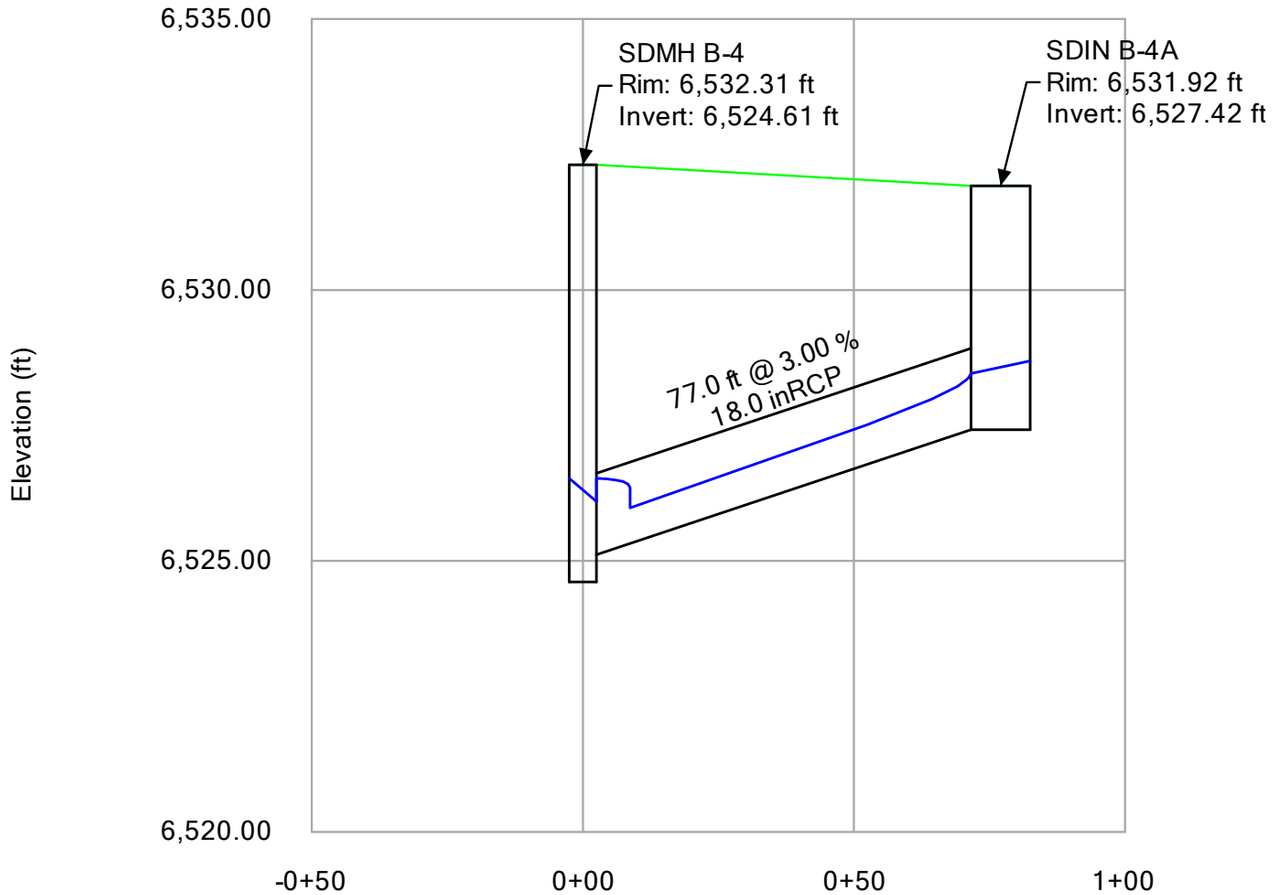
Engineering Profile - FOREBAY-2 to SDIN B-5A (17026.004 - BMN F1_2026.01.24.stsw)



100 YR

Profile Report

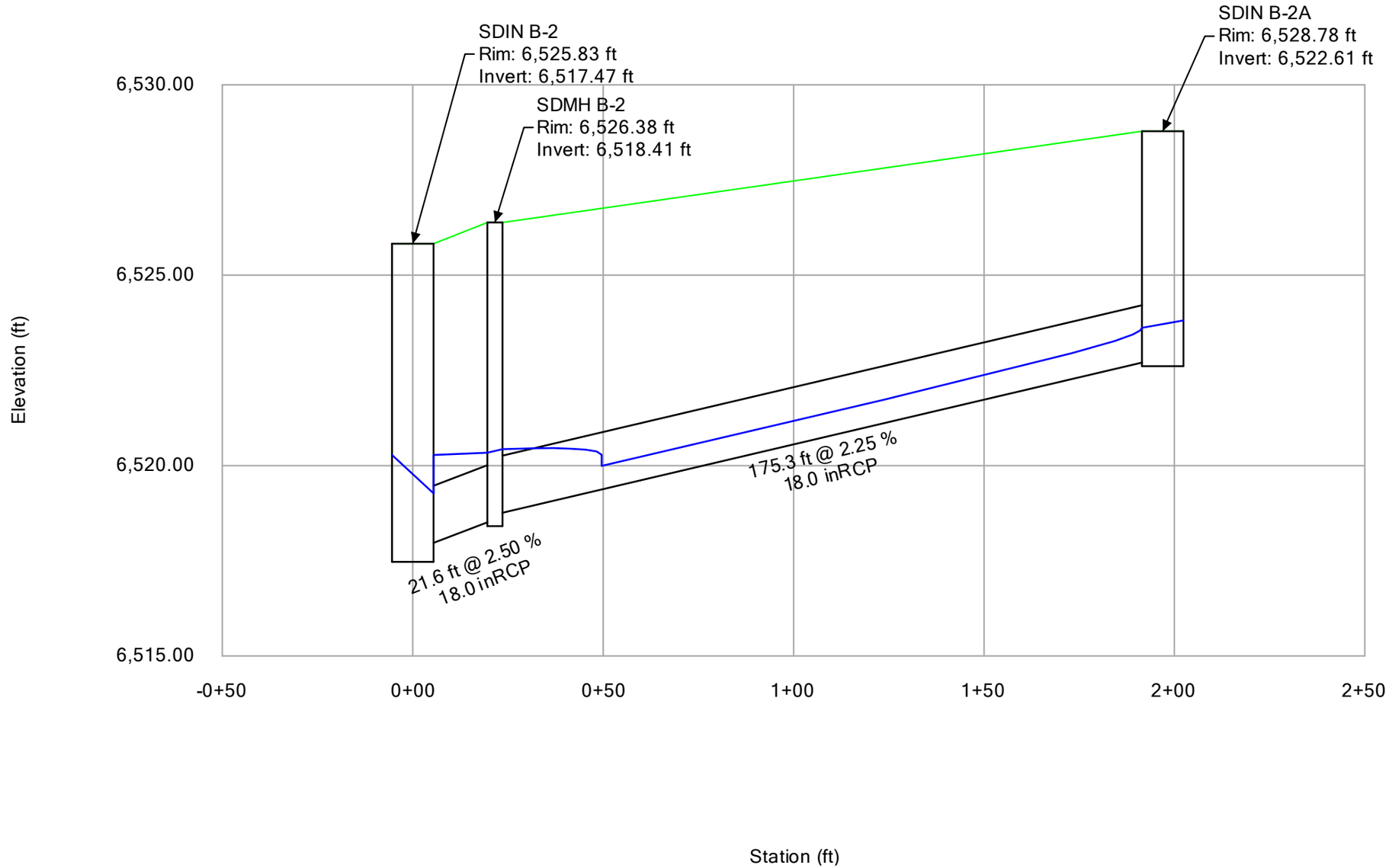
Engineering Profile - SDMH B-4 to SDIN B-4A (s) (17026.004 - BMN F1_2026.01.24.stsw)



100 YR

Profile Report

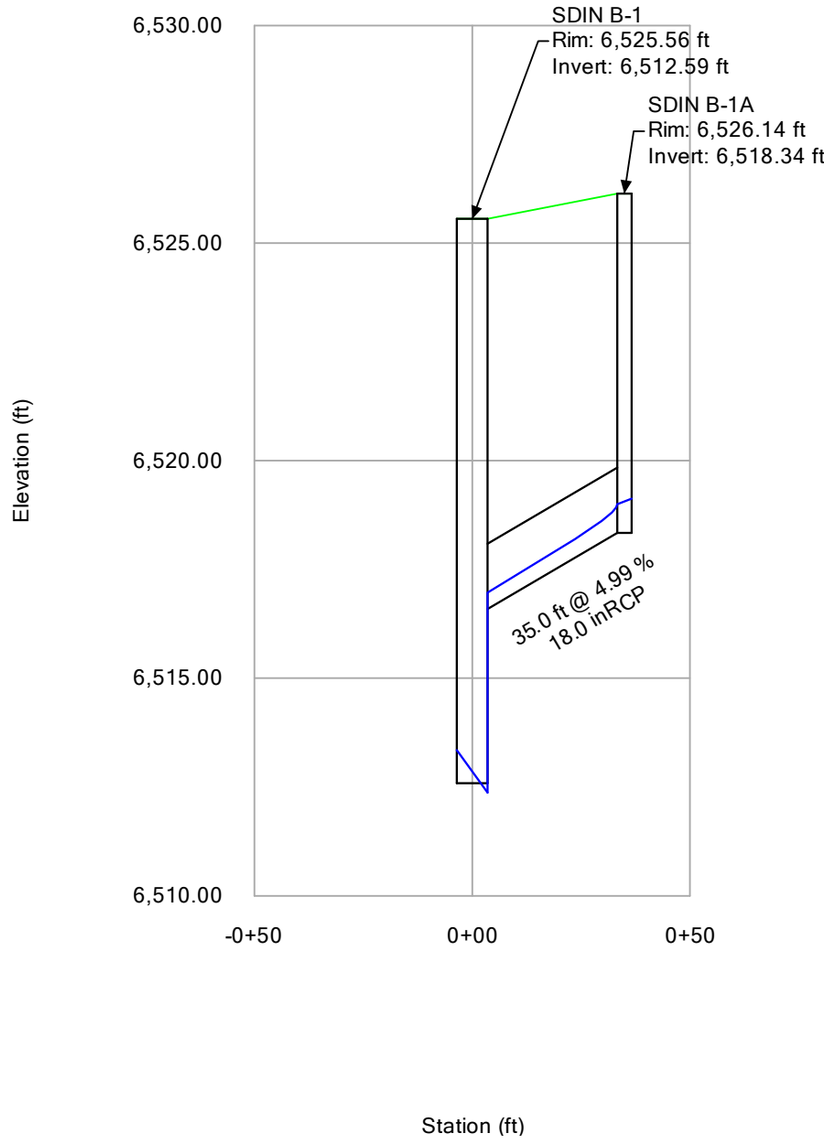
Engineering Profile - SDIN B-2 to SDIN B-2A (17026.004 - BMN F1_2026.01.24.stsw)



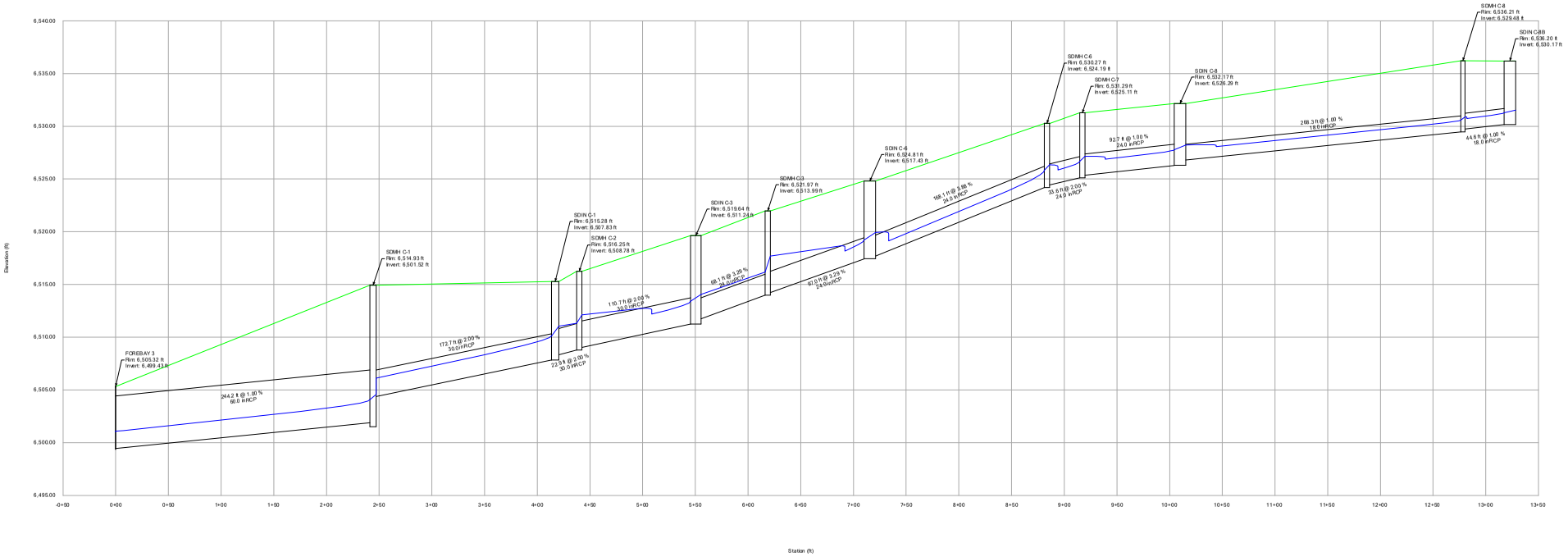
100 YR

Profile Report

Engineering Profile - SDIN B-1 to SDIN B-1A (s) (17026.004 - BMN F1_2026.01.24.stsw)

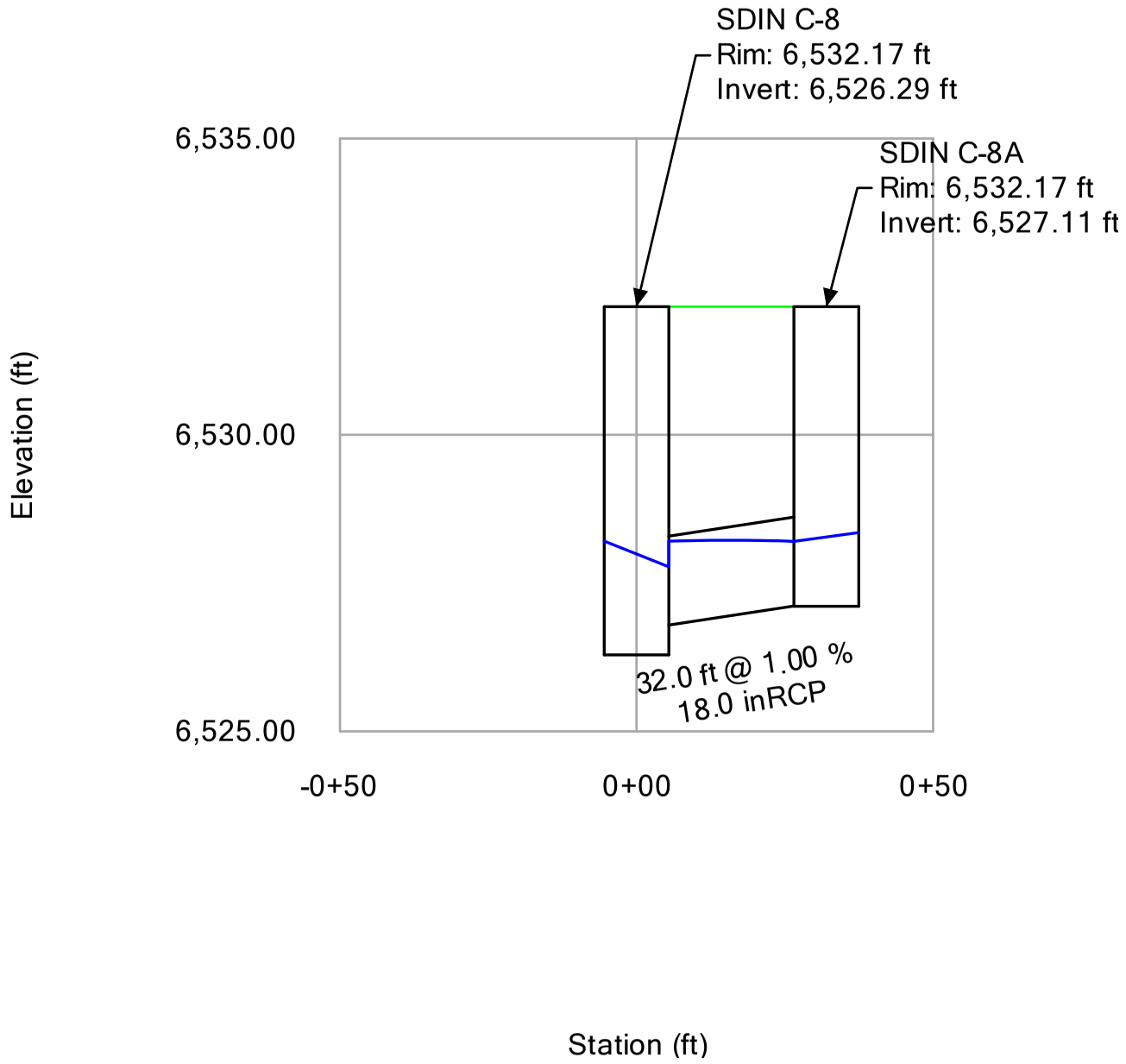


Profile Report
Engineering Profile - FOREBAY 3 to SDIN C-8B (17026.004 - BMN F1_2026.01.24.stsw)



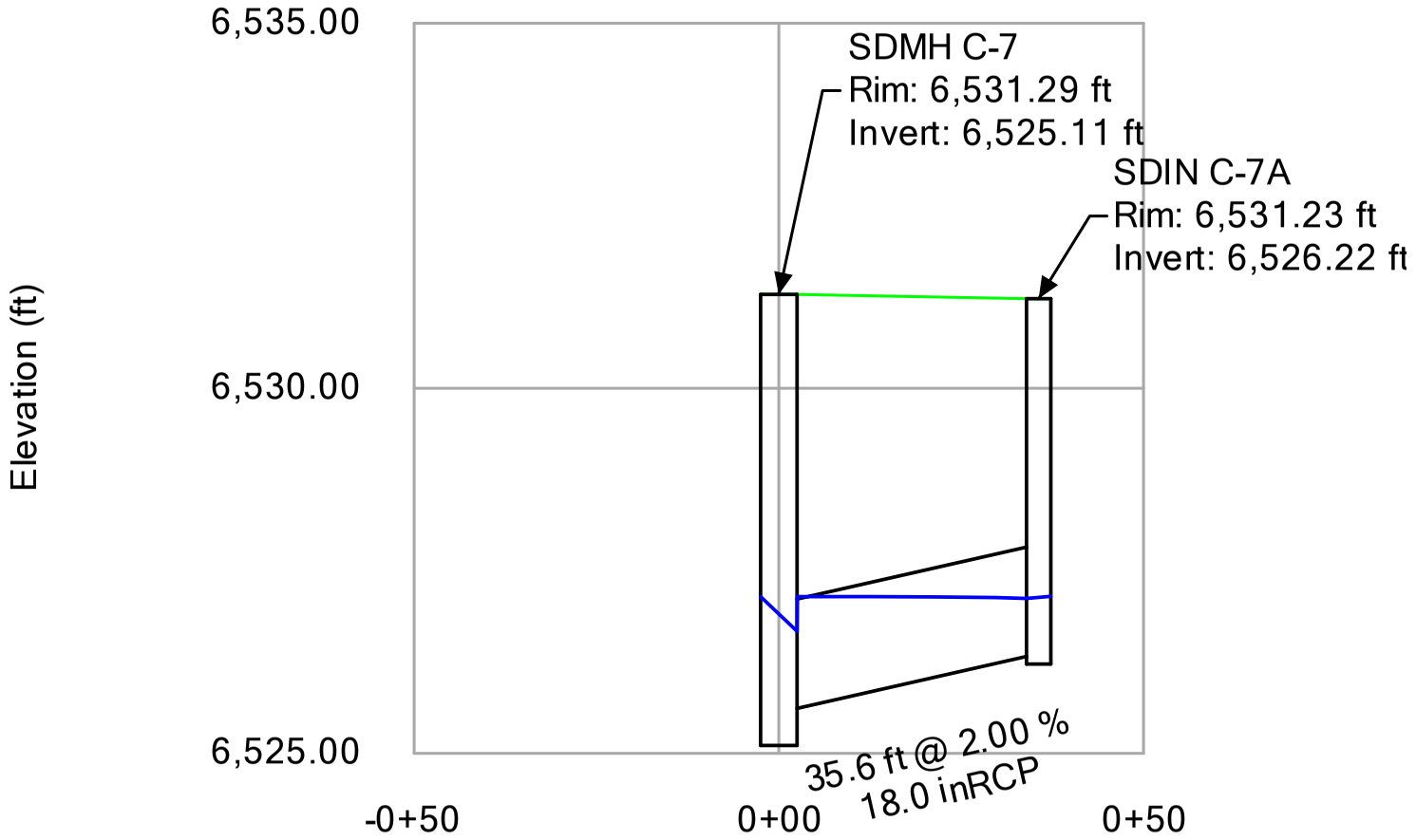
Profile Report

Engineering Profile - SDIN C-8 to SDIN C-8A (17026.004 - BMN F1_2026.01.24.stsw)



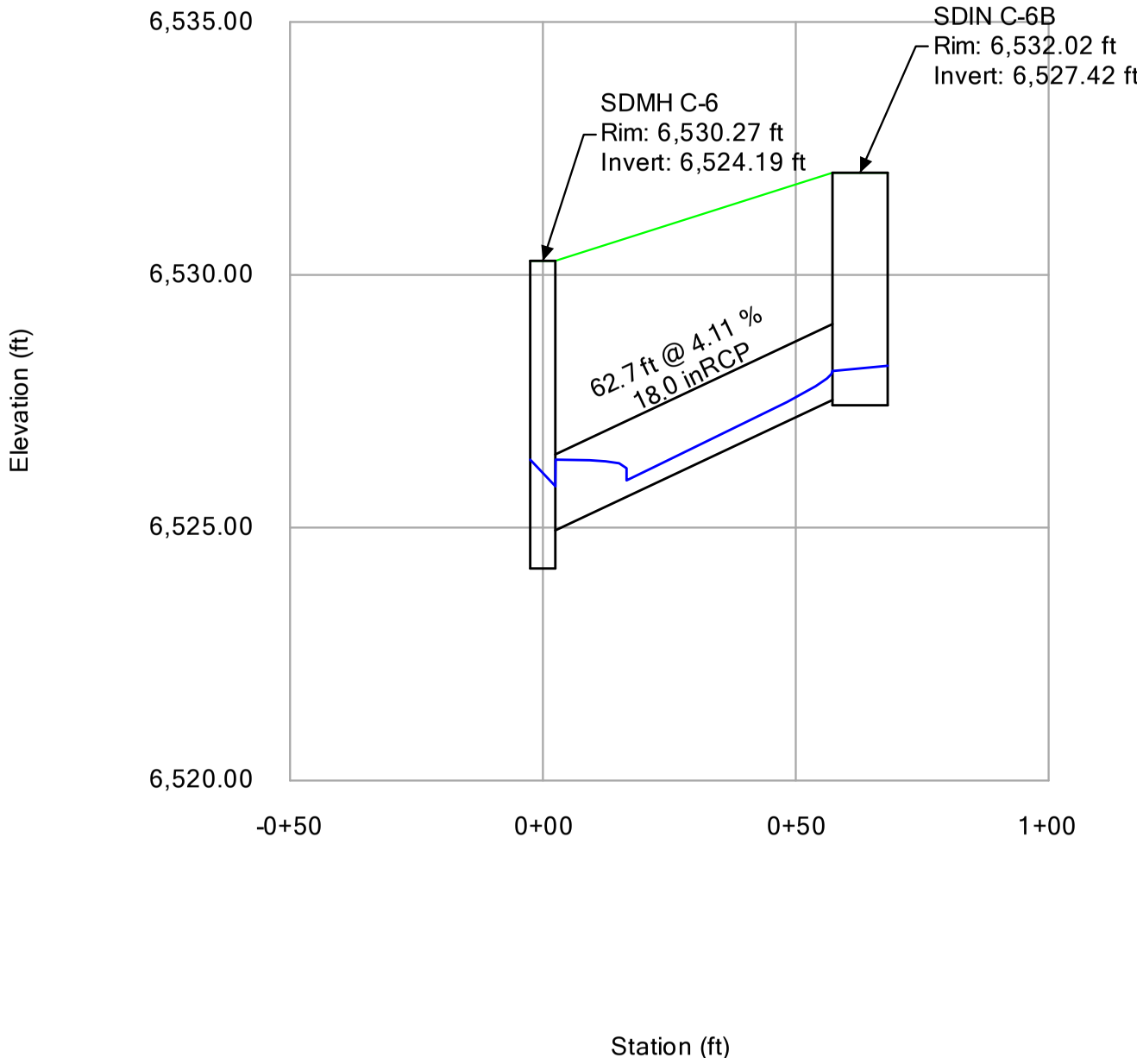
Profile Report

Engineering Profile - SDMH C-7 to SDIN C-7A (17026.004 - BMN F1_2026.01.24.stsw)



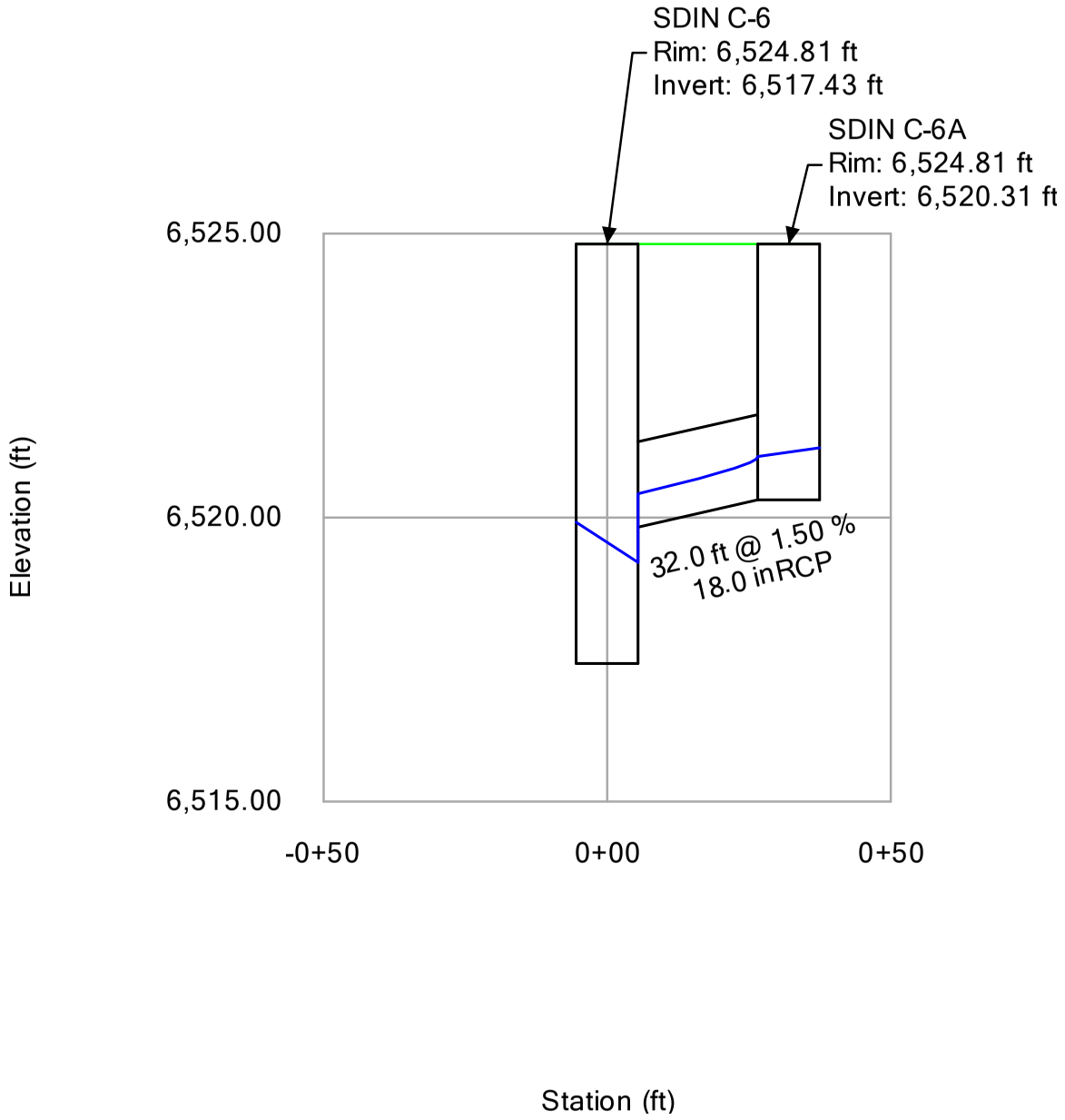
Profile Report

Engineering Profile - SDMH C-6 to SDIN C-6B (17026.004 - BMN F1_2026.01.24.stsw)

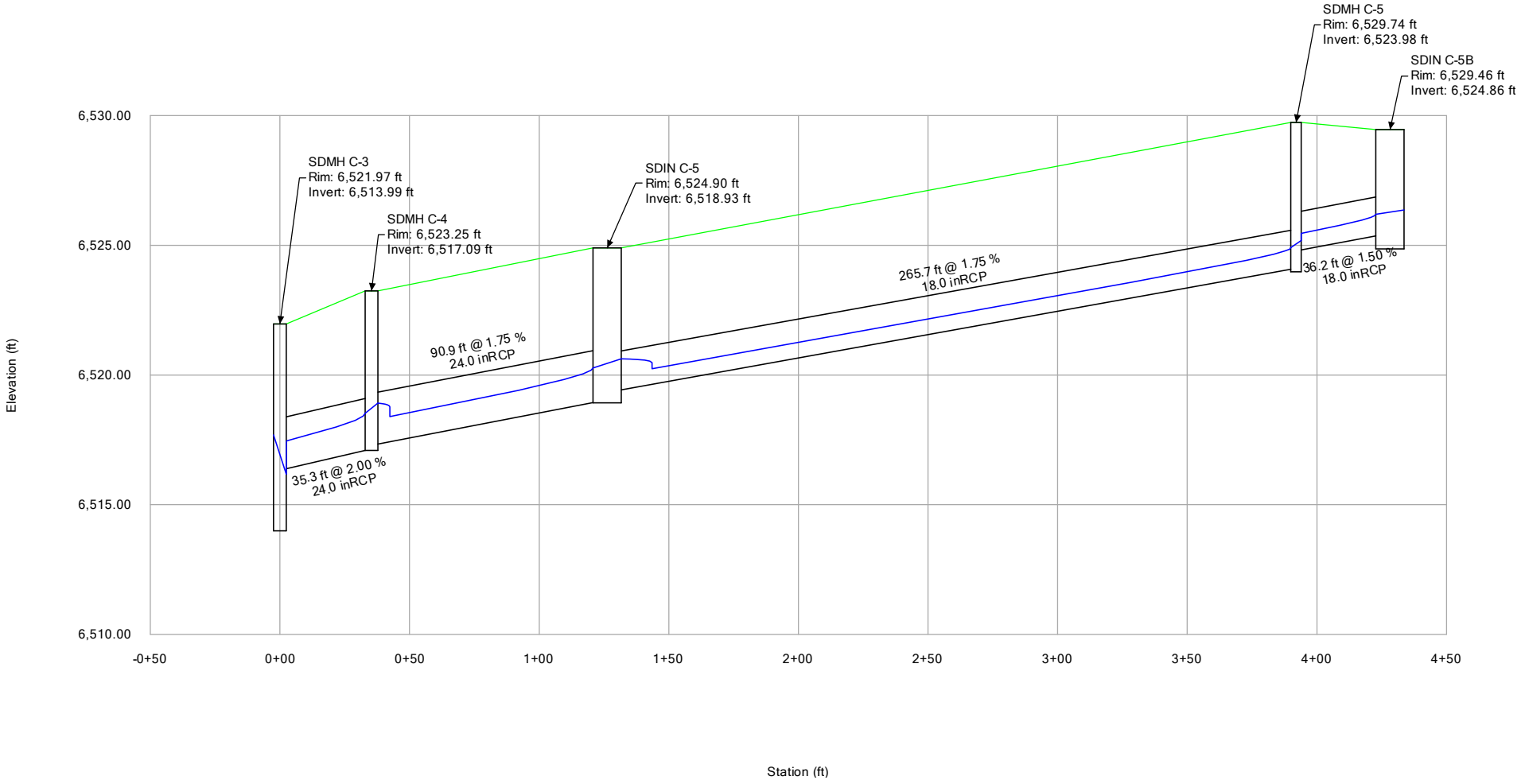


Profile Report

Engineering Profile - SDIN C-6 to SDIN C-6A (17026.004 - BMN F1_2026.01.24.stsw)

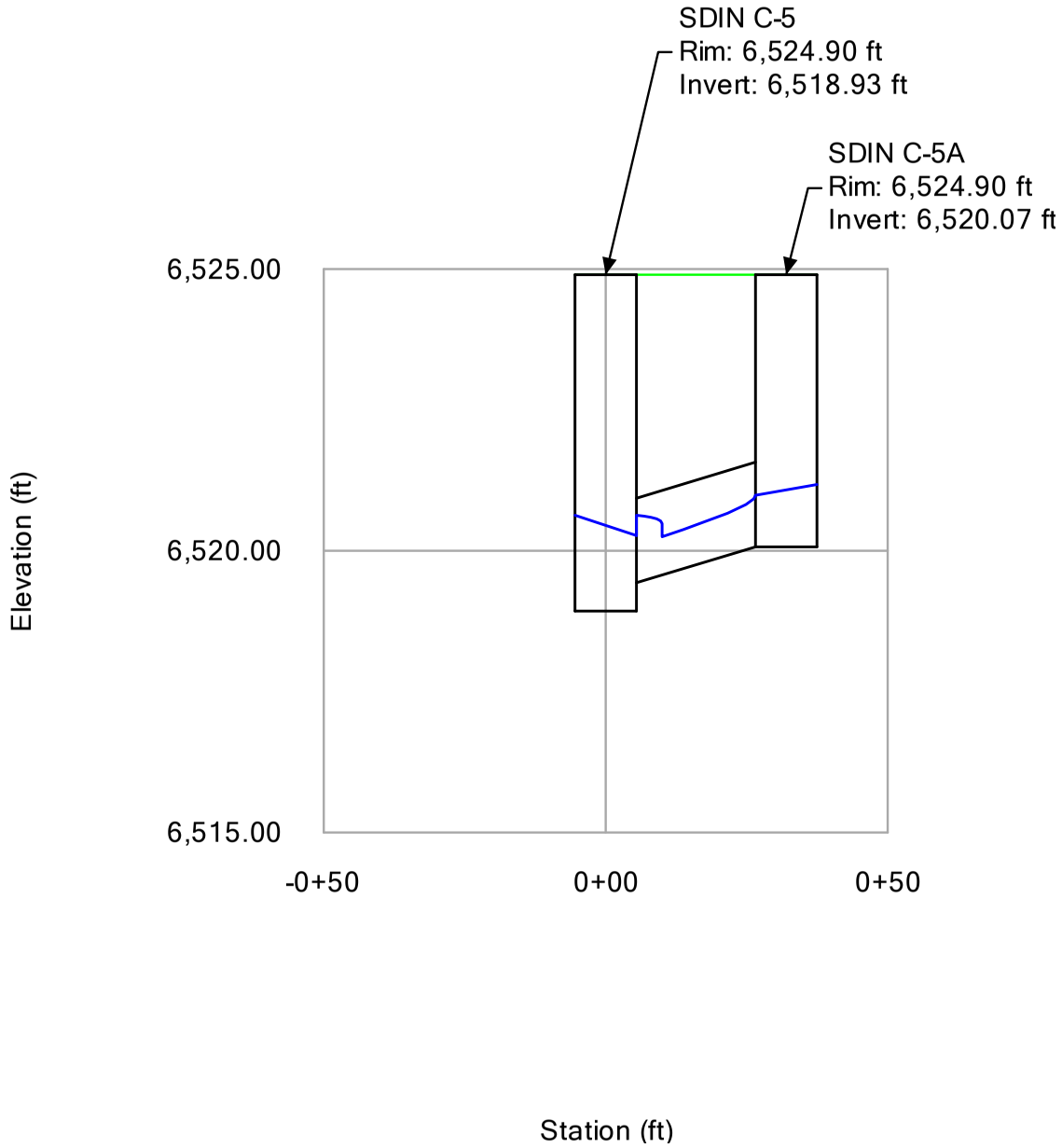


Profile Report
Engineering Profile - SDMH C-3 to SDIN C-5B (17026.004 - BMN F1_2026.05.15.stsw)



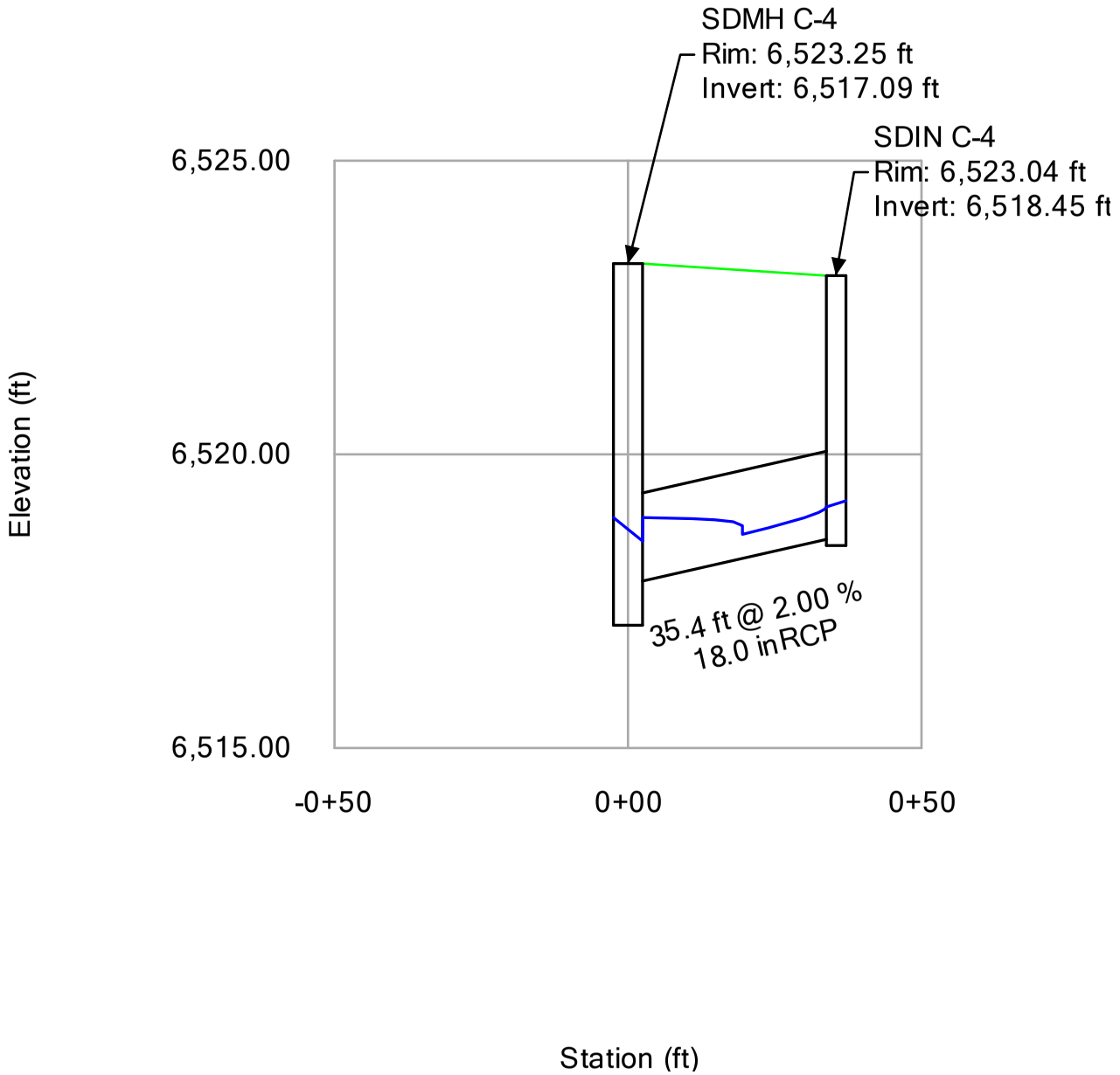
Profile Report

Engineering Profile - SDIN C-5 to SDIN C-5A (17026.004 - BMN F1_2026.01.24.stsw)



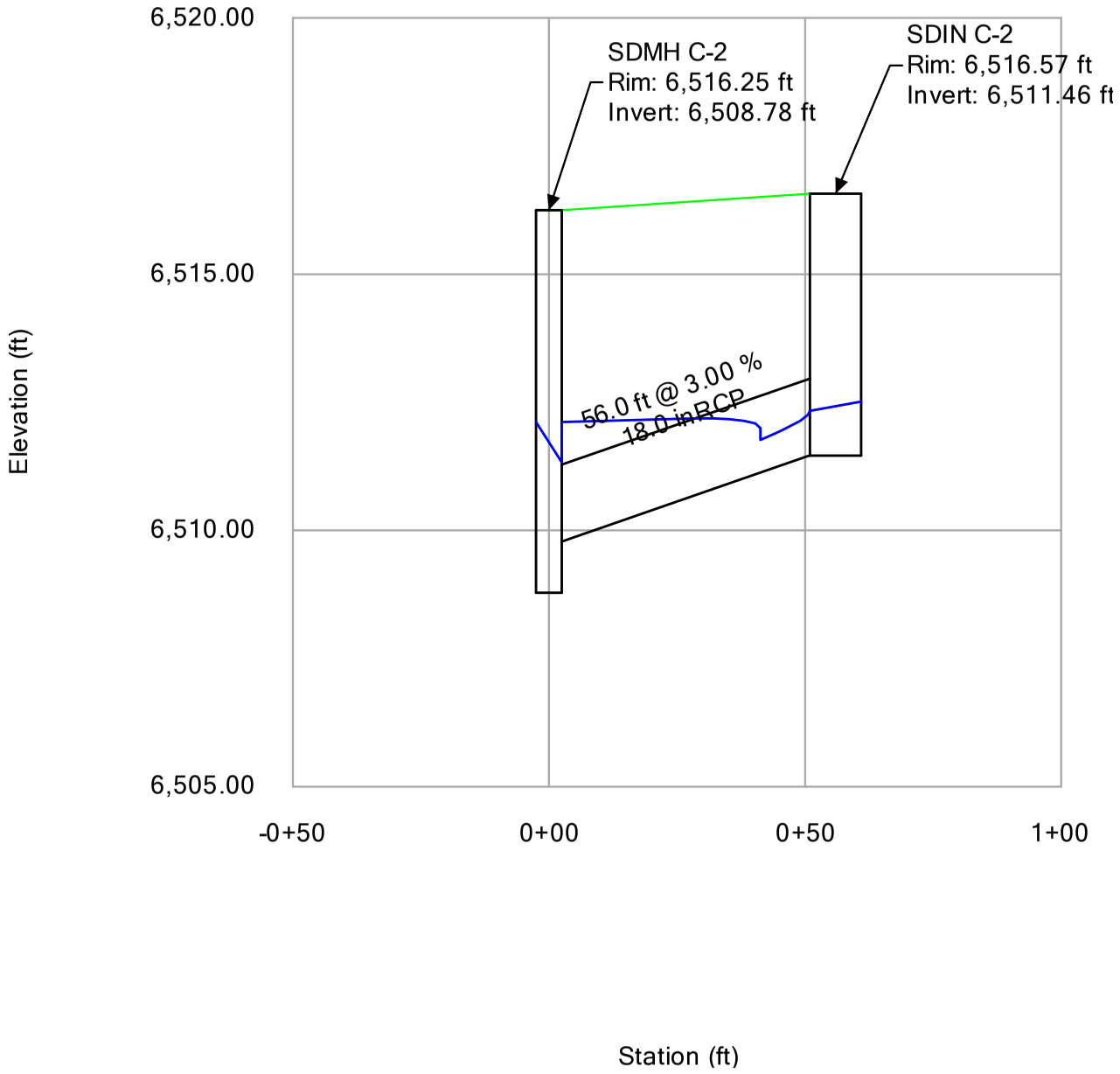
Profile Report

Engineering Profile - SDMH C-4 to SDIN C-4 (17026.004 - BMN F1_2026.01.24.stsw)



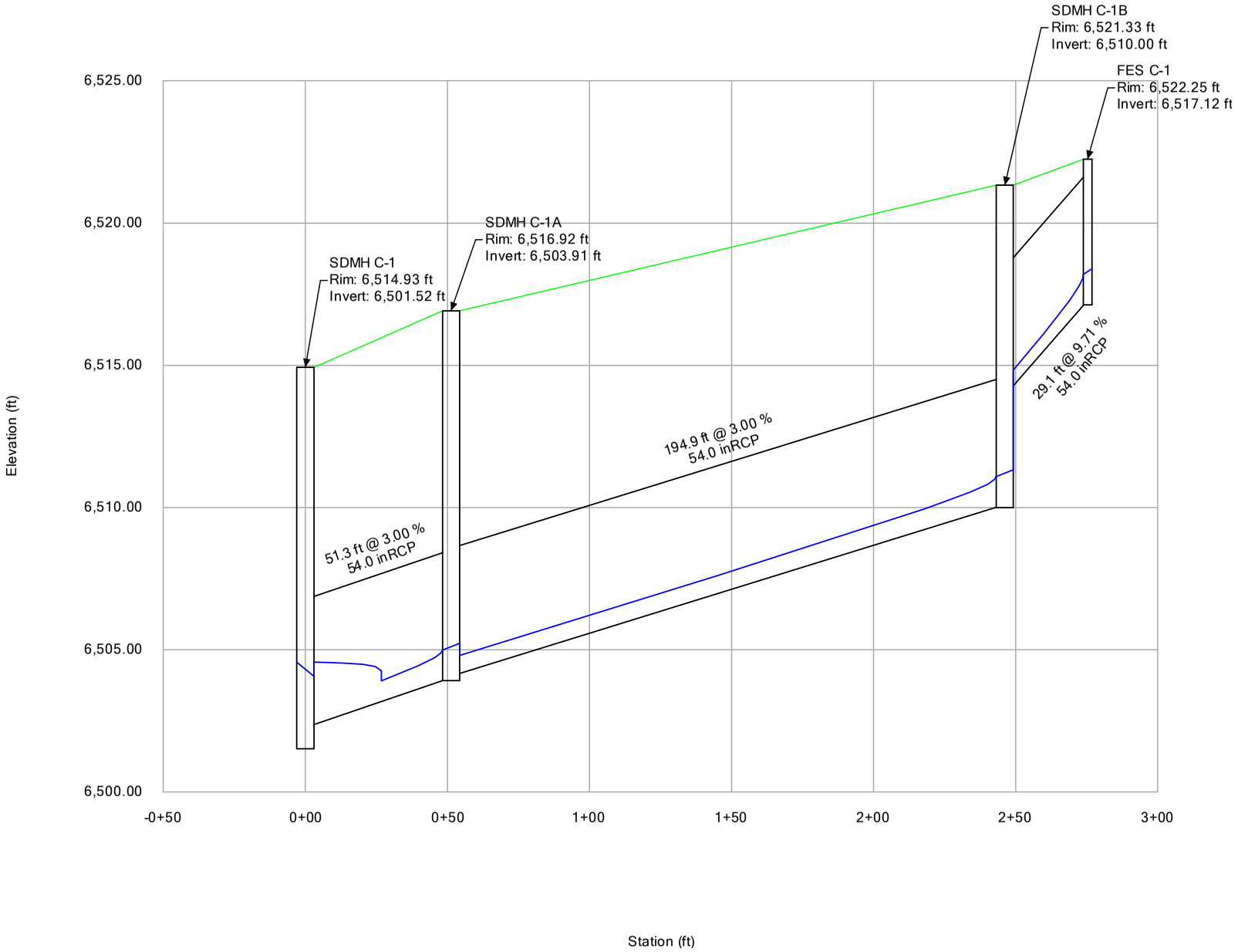
Profile Report

Engineering Profile - SDMH C-2 to SDIN C-2 (17026.004 - BMN F1_2026.01.24.stsw)

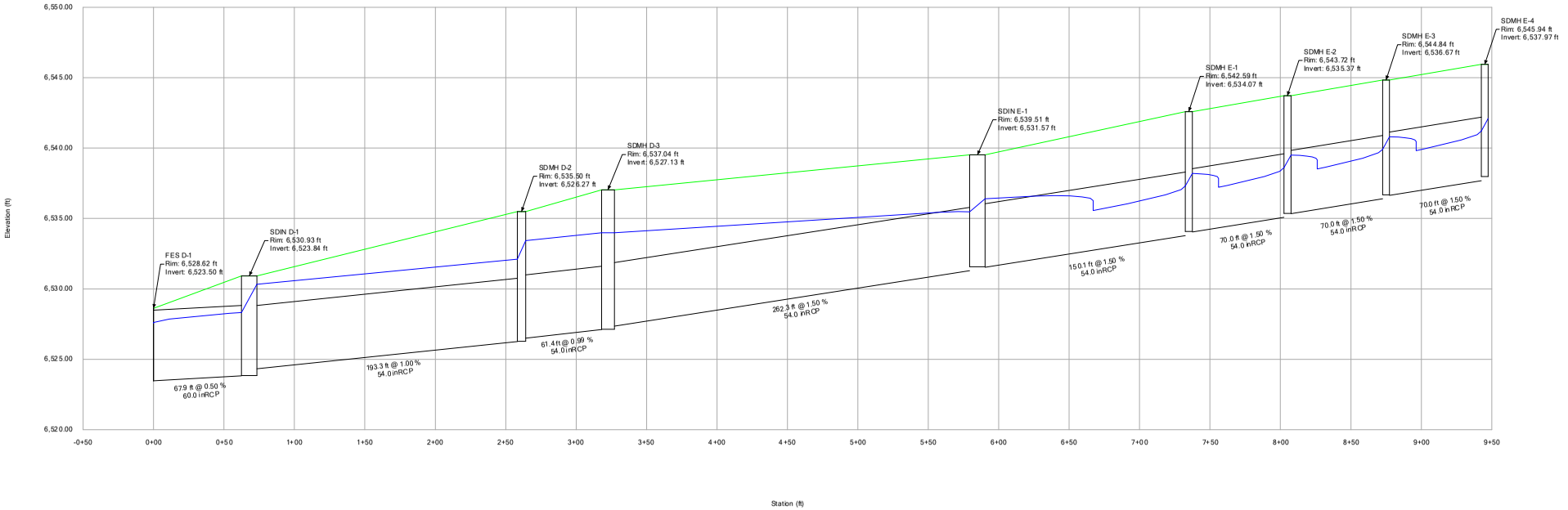


Profile Report

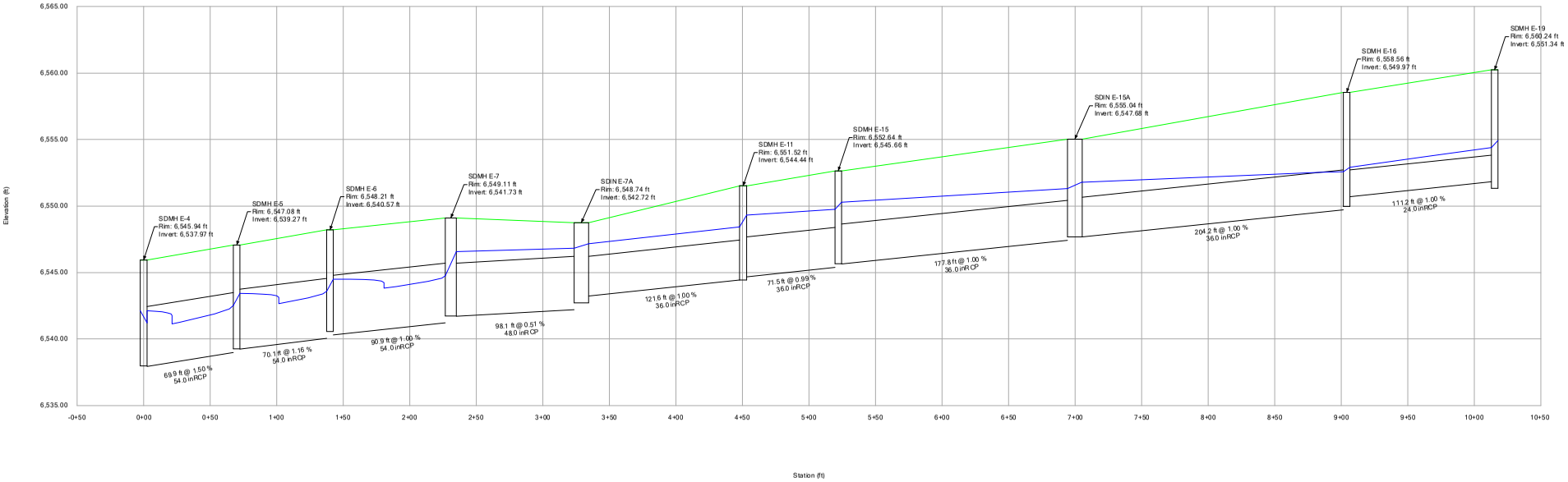
Engineering Profile - SDMH C-1 to FES C-1 (17026.004 - BMN F1_2026.01.24.stsw)



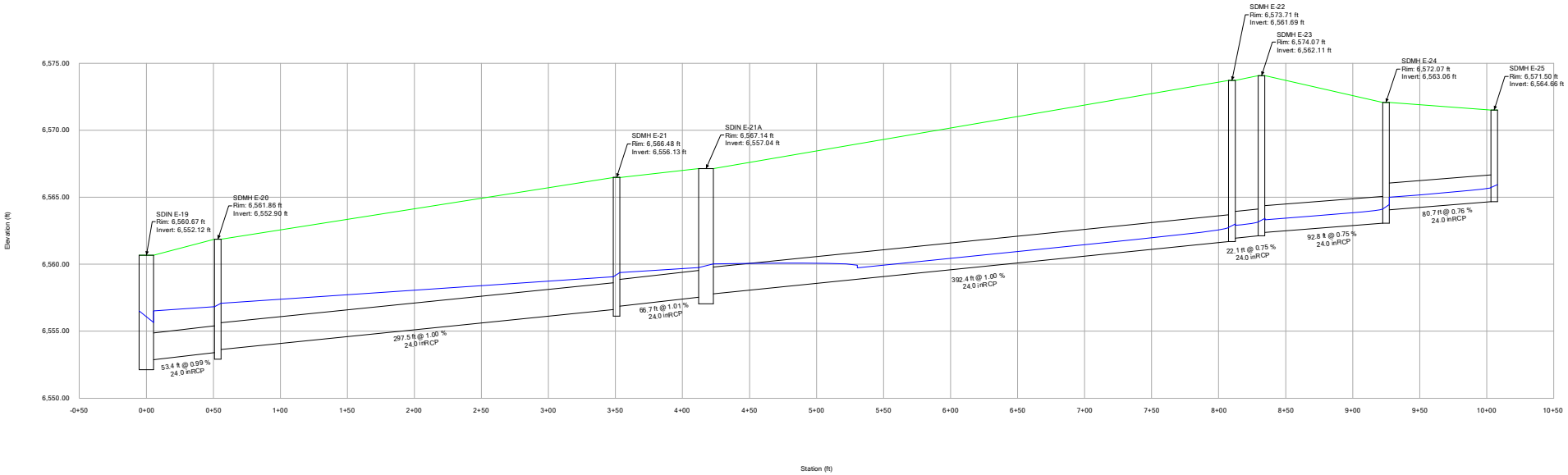
Profile Report
Engineering Profile - FES D-1 to SDIN E-4 (17026.004 - BMN F1_2026.01.24.stsw)



Profile Report
Engineering Profile - SDIN E-4 to SDIN E-19 (17026.004 - BMN F1_2026.01.24.stsw)

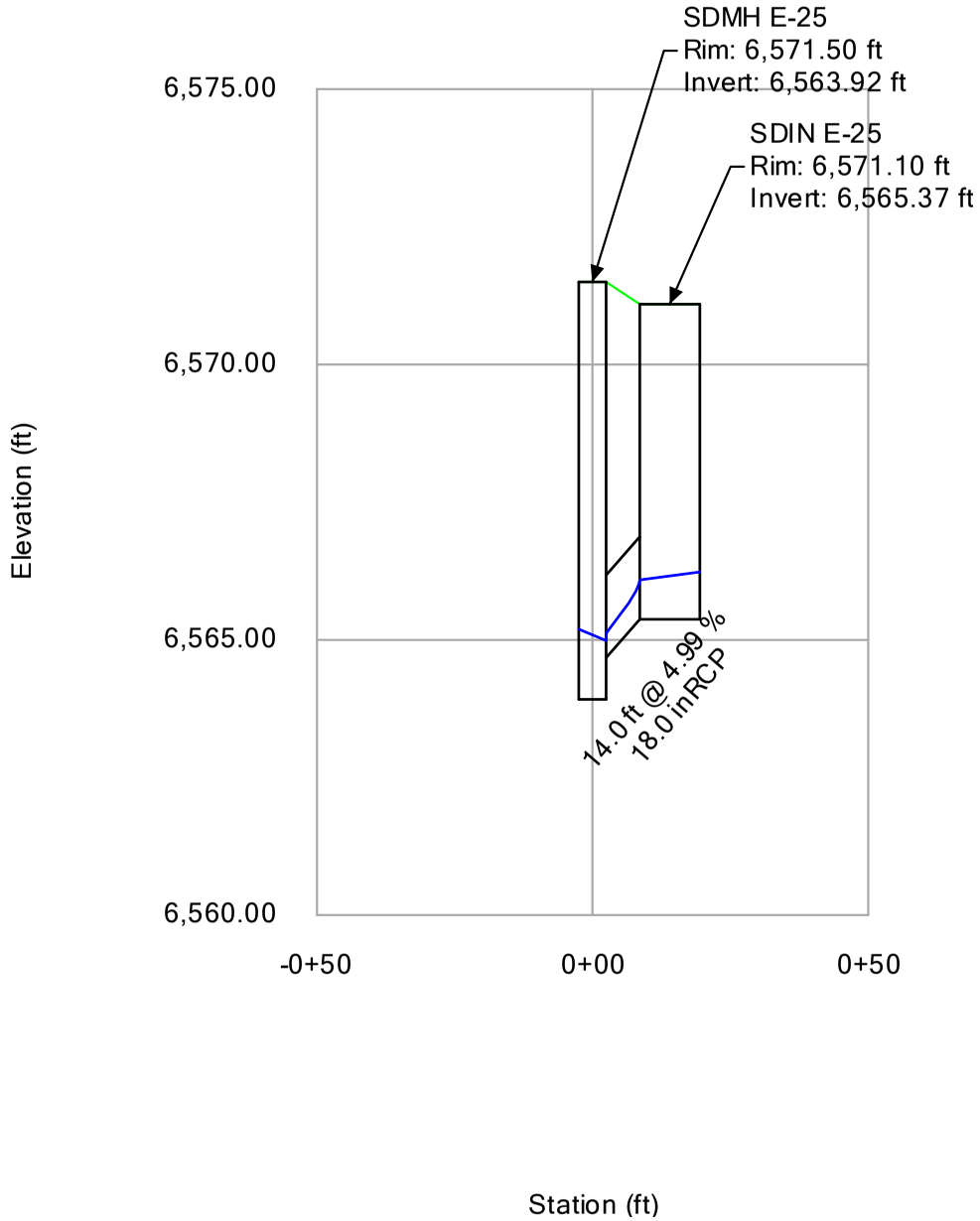


Profile Report
Engineering Profile - SDIN E-19 to SDMH E-25 (17026.004 - BMN F1_2026.05.15.stsw)



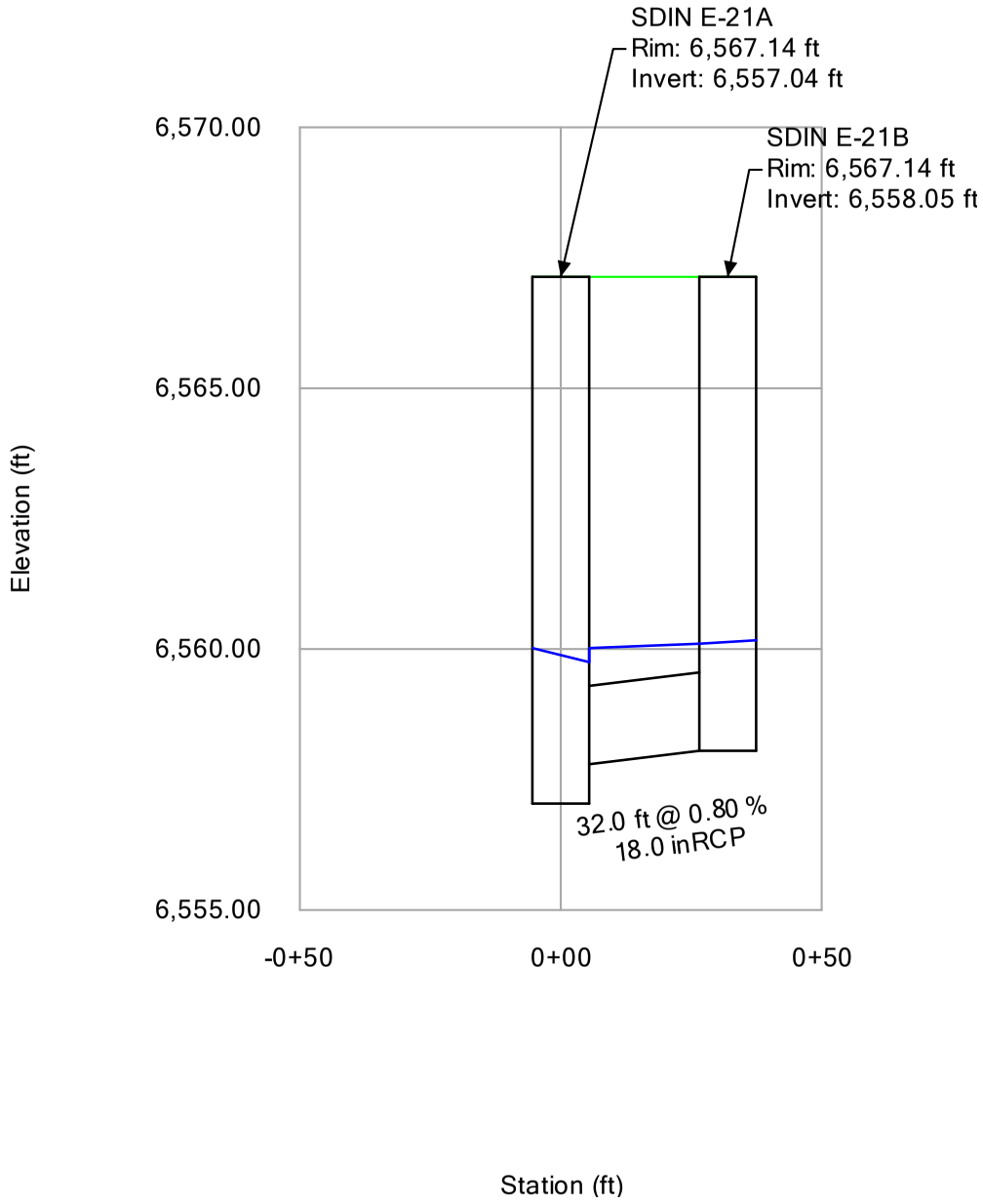
Profile Report

Engineering Profile - SDMH E-25 to SDIN E-25 (17026.004 - BMN F1_2026.01.24.stsw)



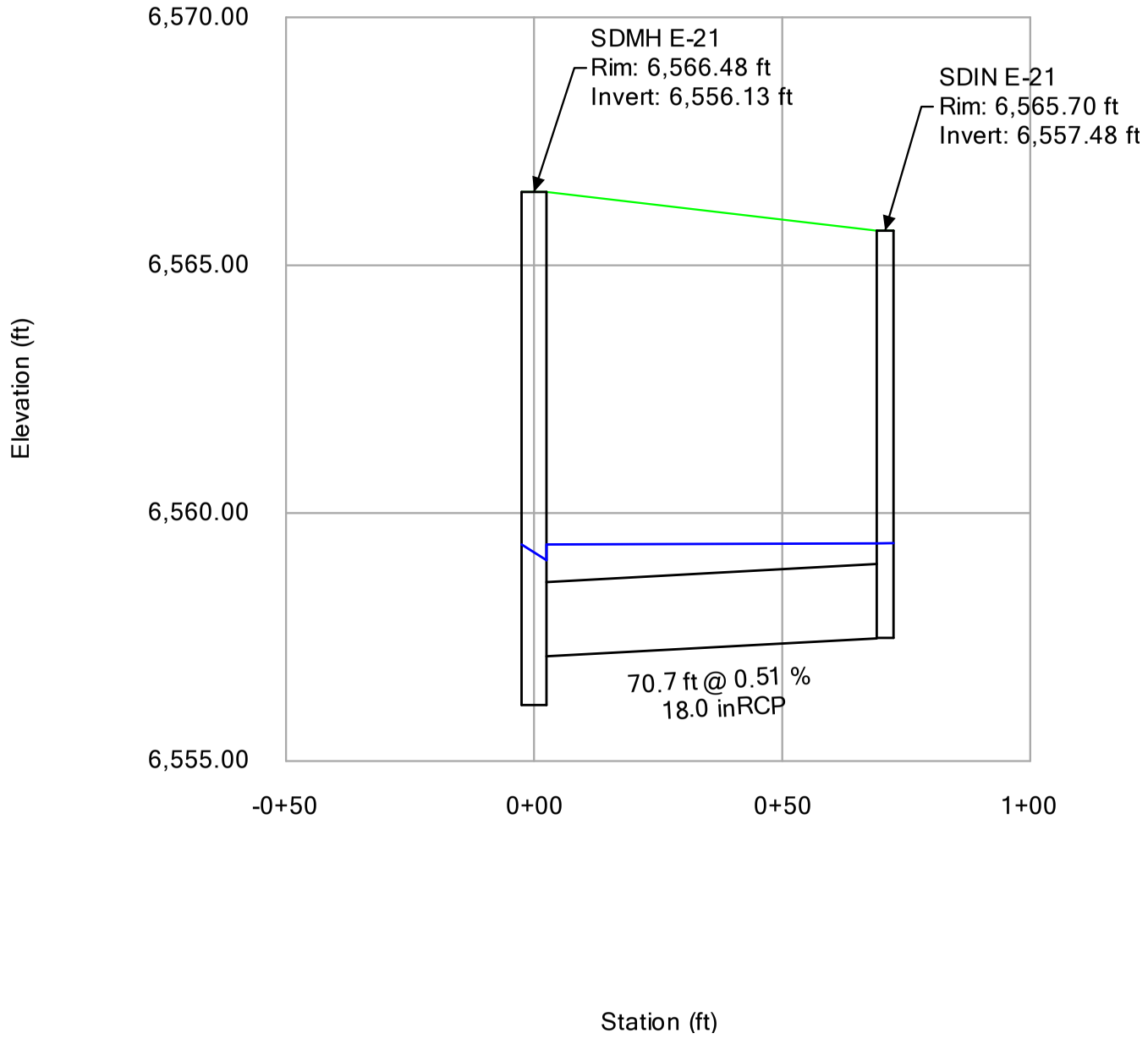
Profile Report

Engineering Profile - SDIN E-21A to SDIN E-21B (17026.004 - BMN F1_2026.01.24.stsw)



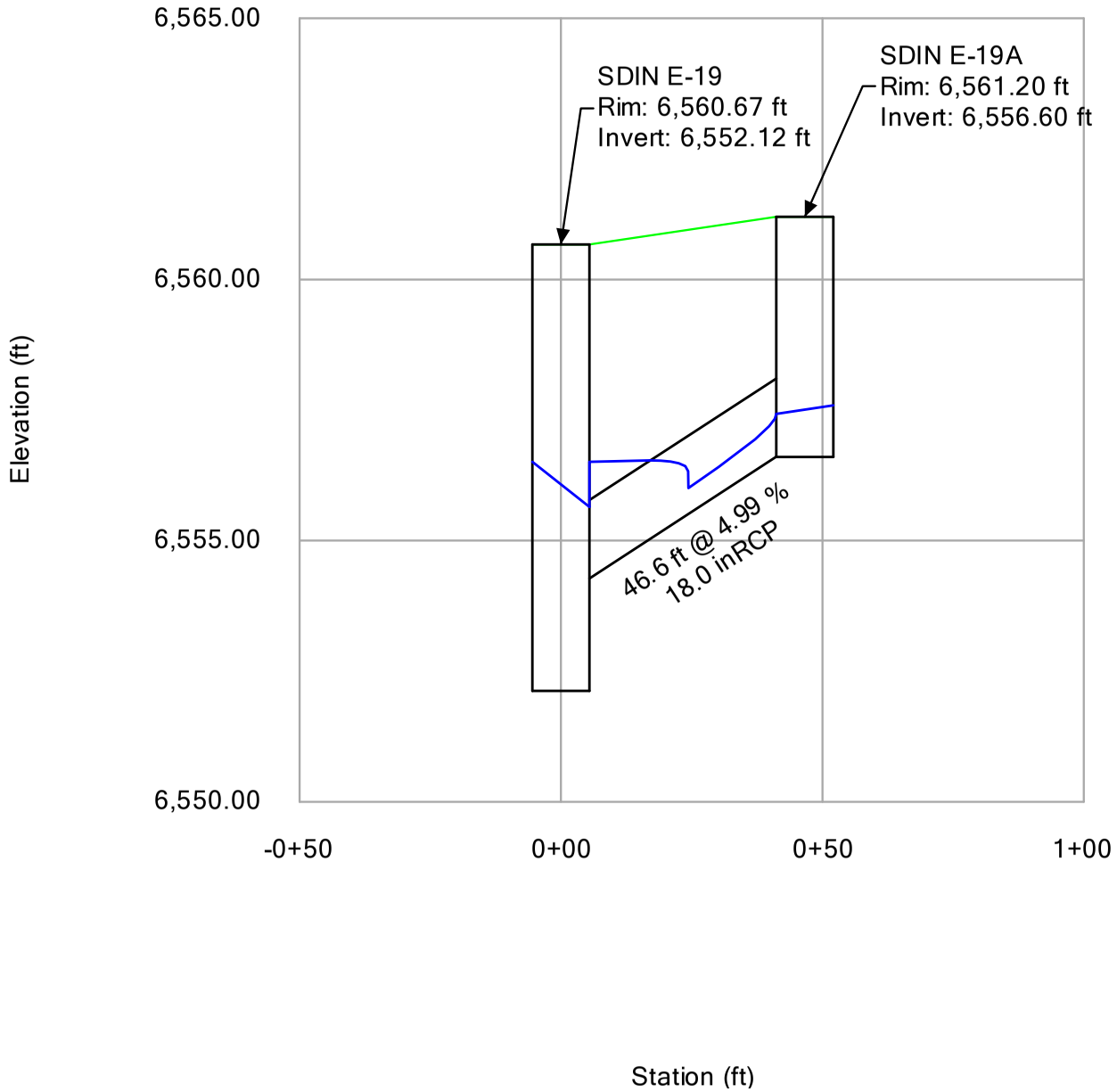
Profile Report

Engineering Profile - SDMH E-21 to SDIN E-21 (17026.004 - BMN F1_2026.01.24.stsw)

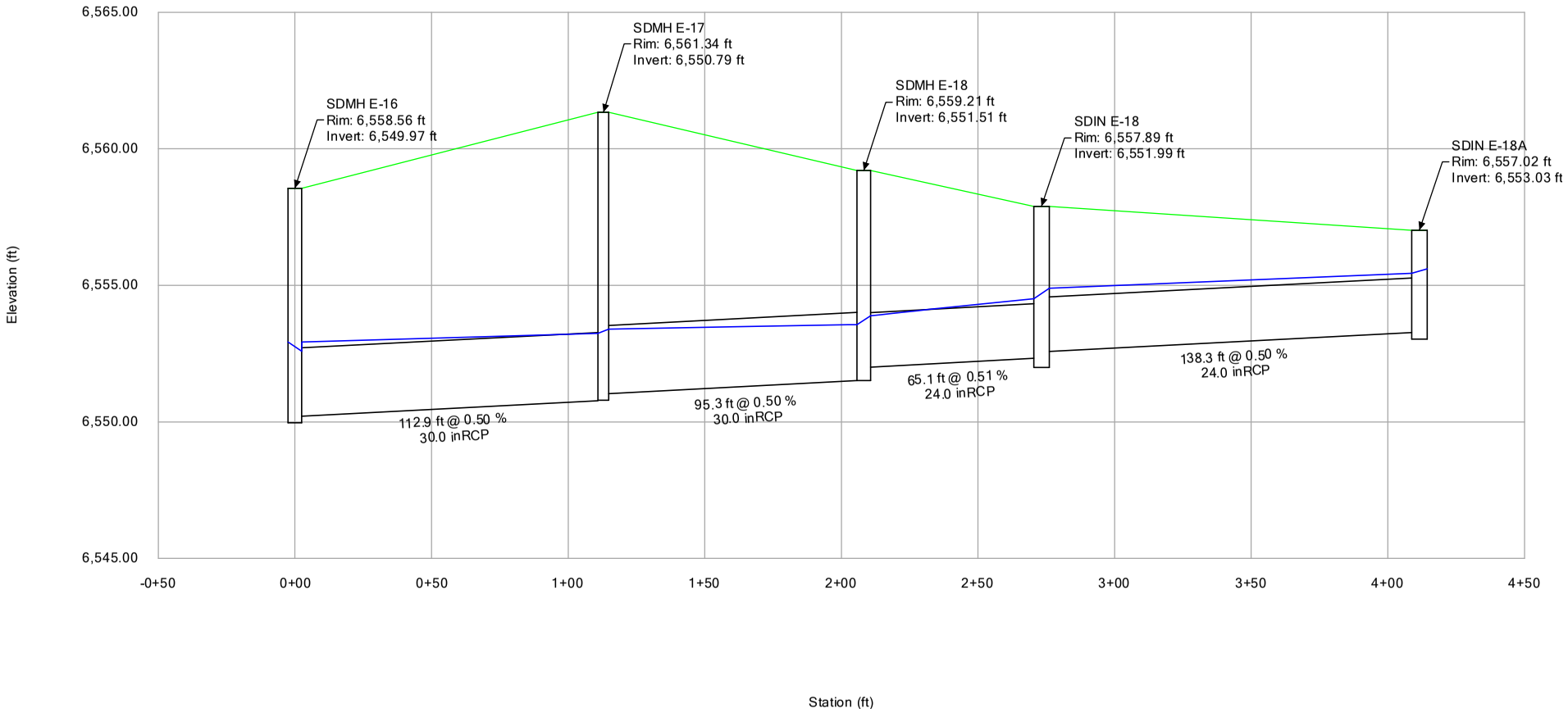


Profile Report

Engineering Profile - SDIN E-19 to SDIN E-19A (17026.004 - BMN F1_2026.01.24.stsw)

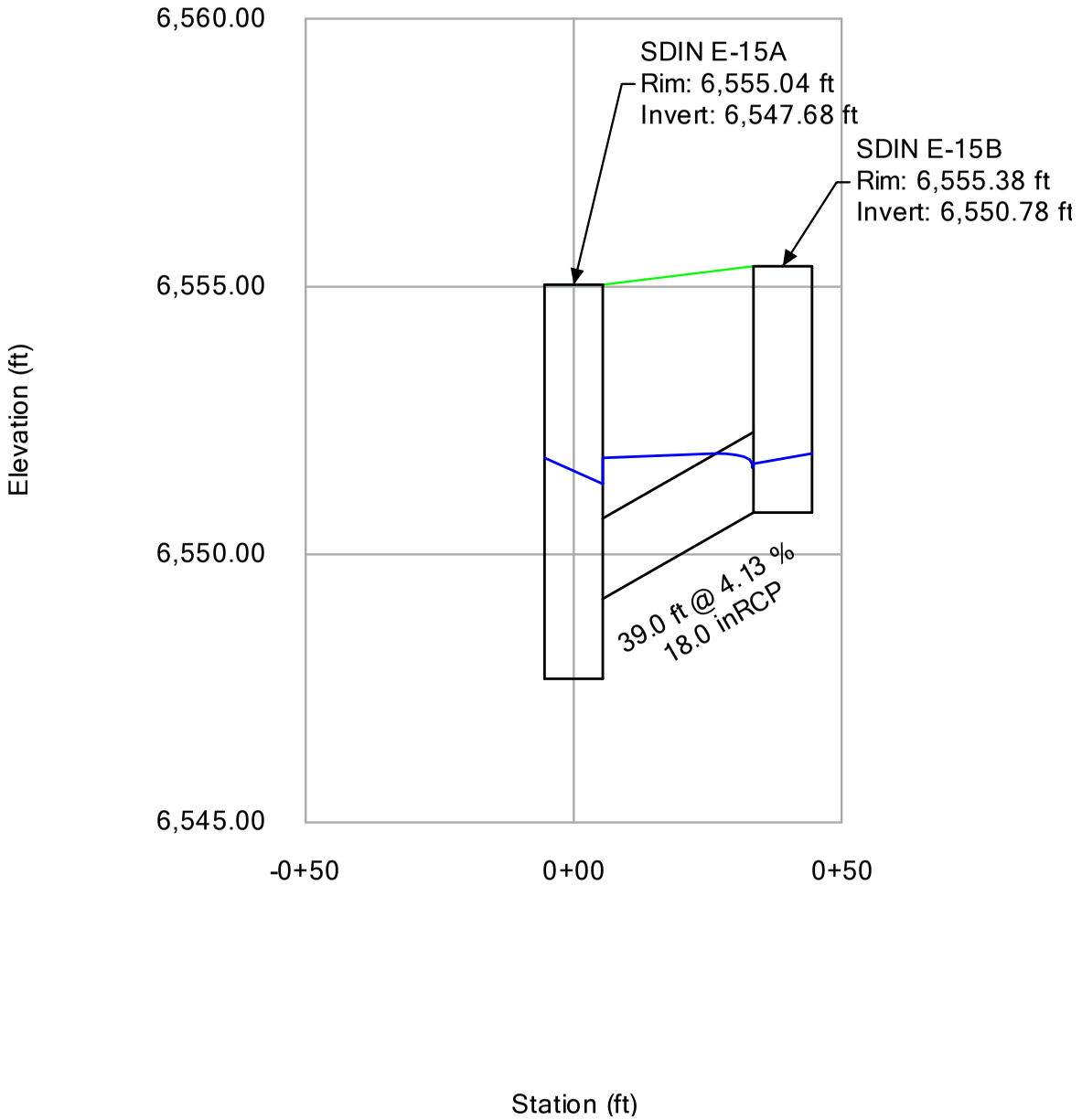


Profile Report
Engineering Profile - SDMH E-16 to SDIN E-18A (17026.004 - BMN F1_2026.01.24.stsw)



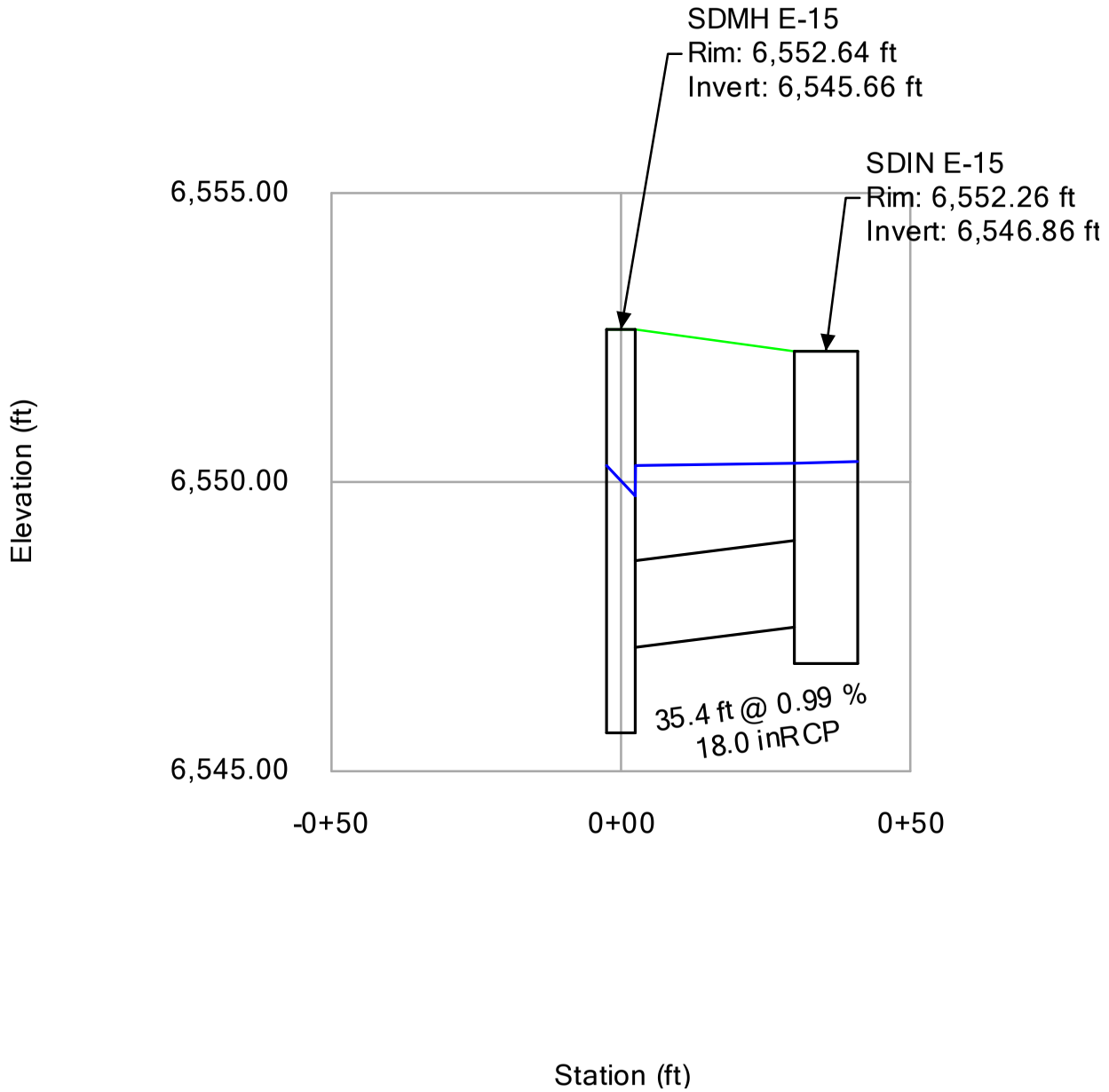
Profile Report

Engineering Profile - SDIN E-15A to SDIN E-15B (17026.004 - BMN F1_2026.01.24.stsw)

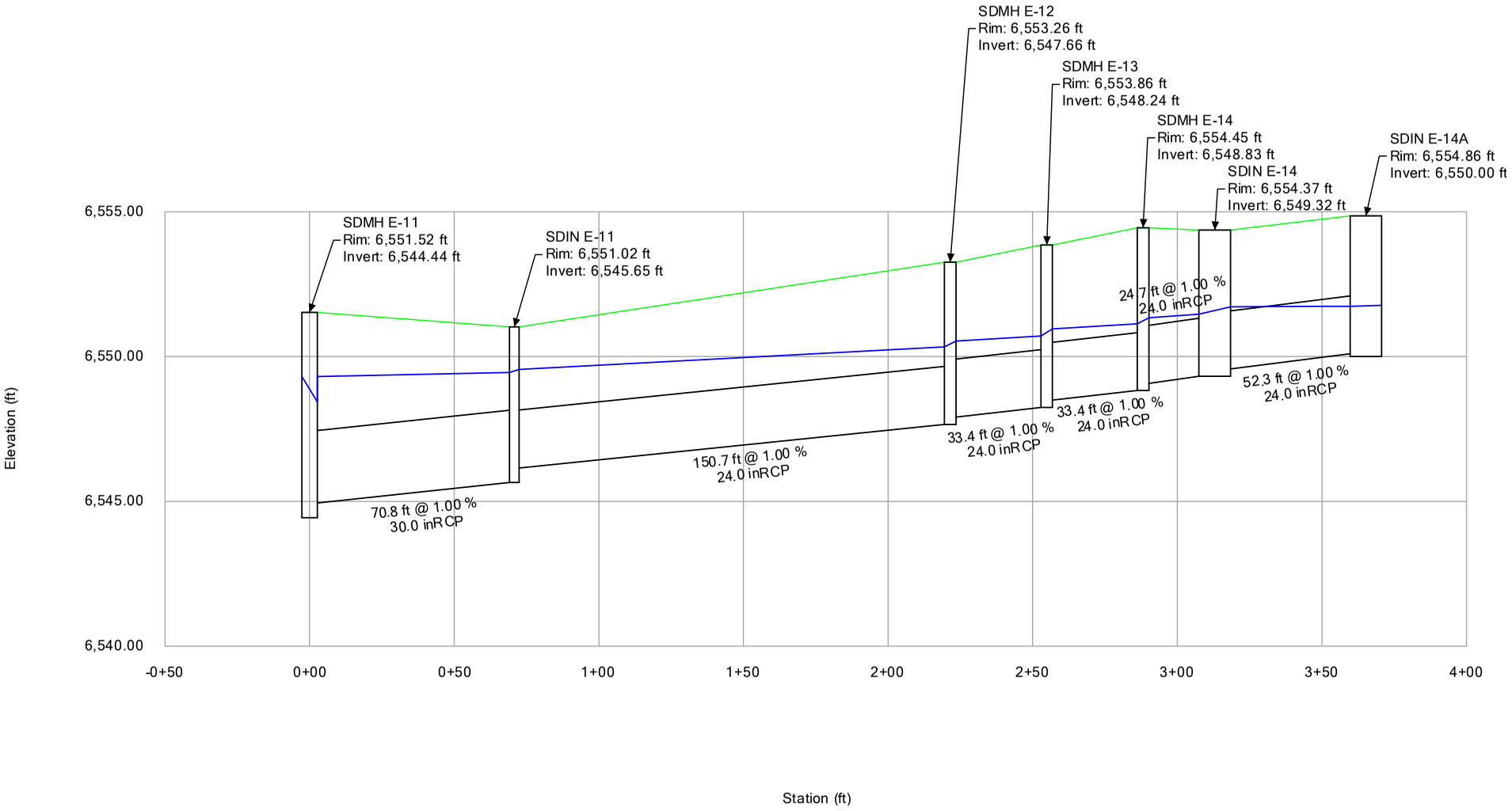


Profile Report

Engineering Profile - SDMH E-15 to SDIN E-15 (17026.004 - BMN F1_2026.01.24.stsw)

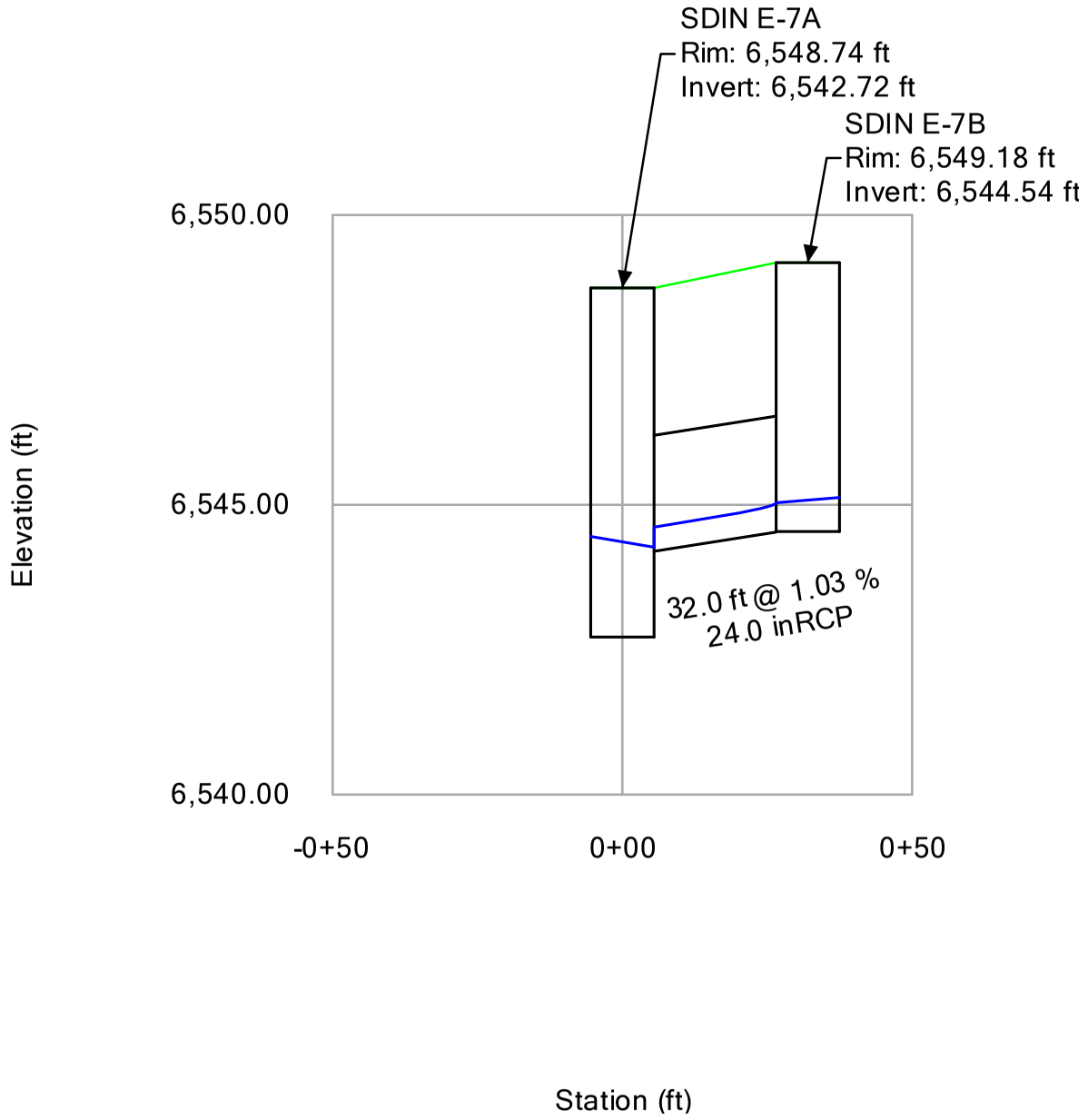


Profile Report
Engineering Profile - SDMH E-11 to SDIN E-14A (17026.004 - BMN F1_2026.01.24.stsw)



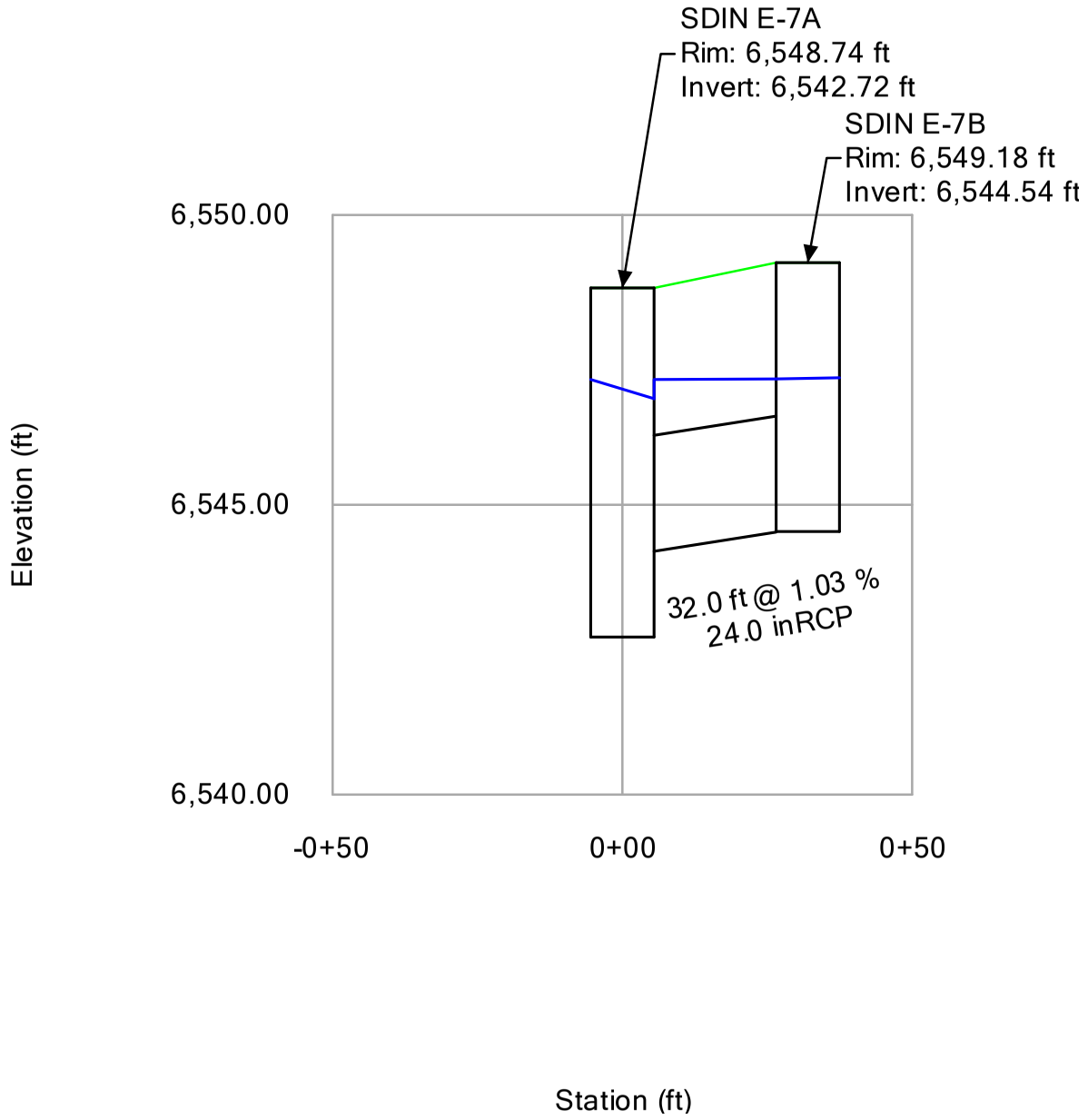
Profile Report

Engineering Profile - SDIN E-7A to SDIN E-7B (17026.004 - BMN F1_2026.01.24.stsw)



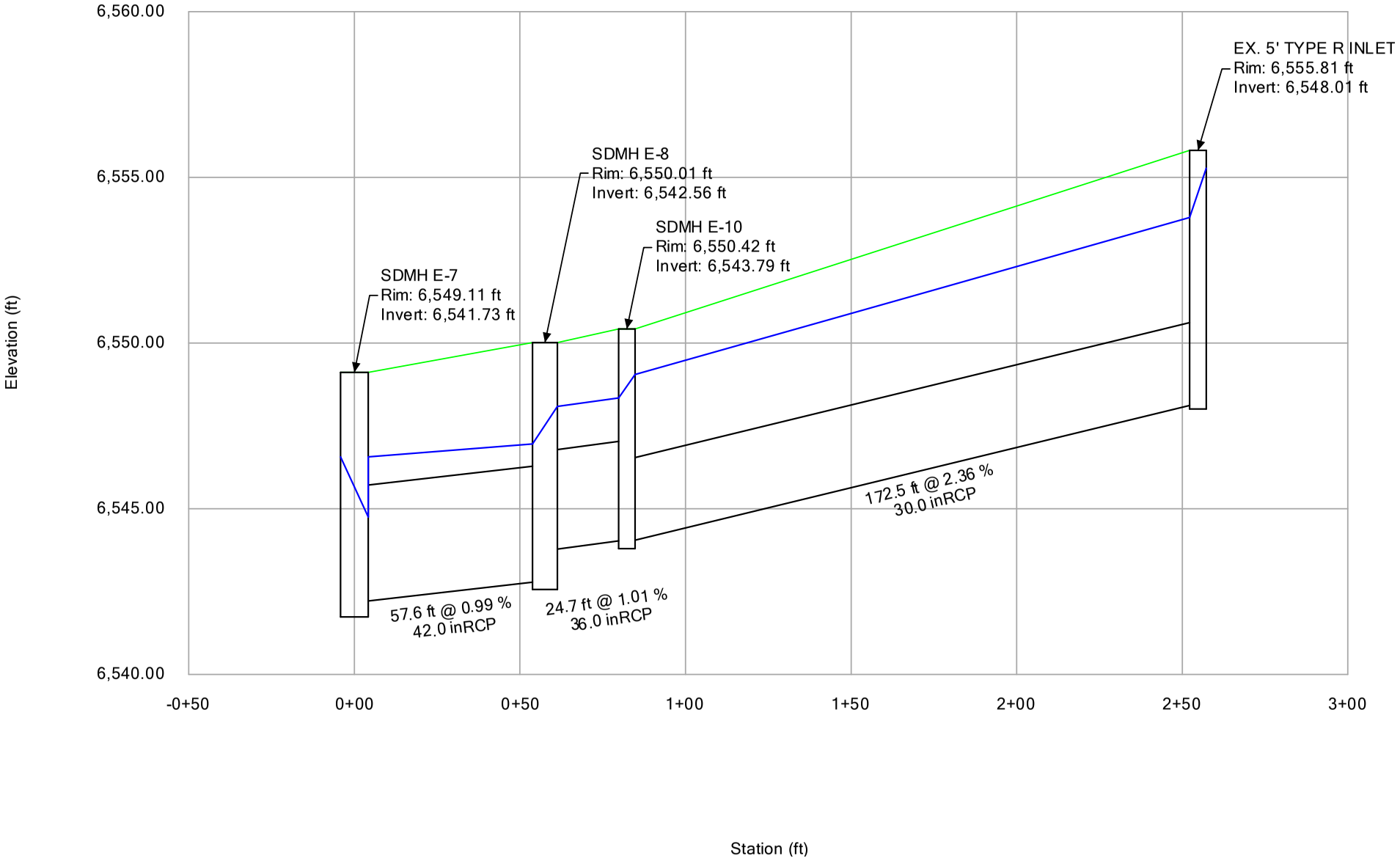
Profile Report

Engineering Profile - SDIN E-7A to SDIN E-7B (17026.004 - BMN F1_2026.01.24.stsw)



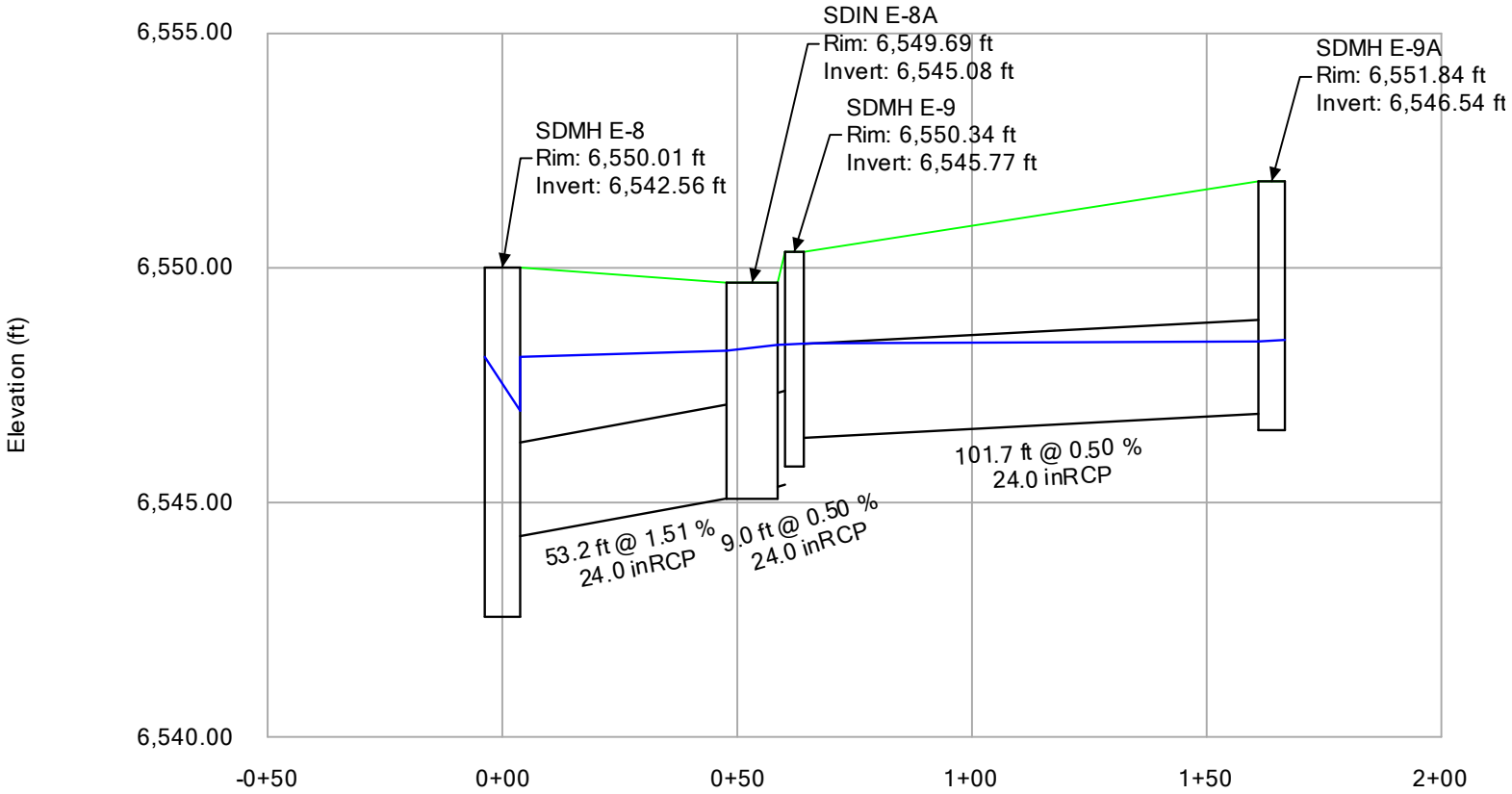
Profile Report

Engineering Profile - SDMH E-7 to EX. 5' TYPE R INLET (17026.004 - BMN F1_2026.01.24.stsw)



Profile Report

Engineering Profile - SDMH E-8 to SDMH E-9A (17026.004 - BMN F1_2026.05.15.stsw)



Profile Report

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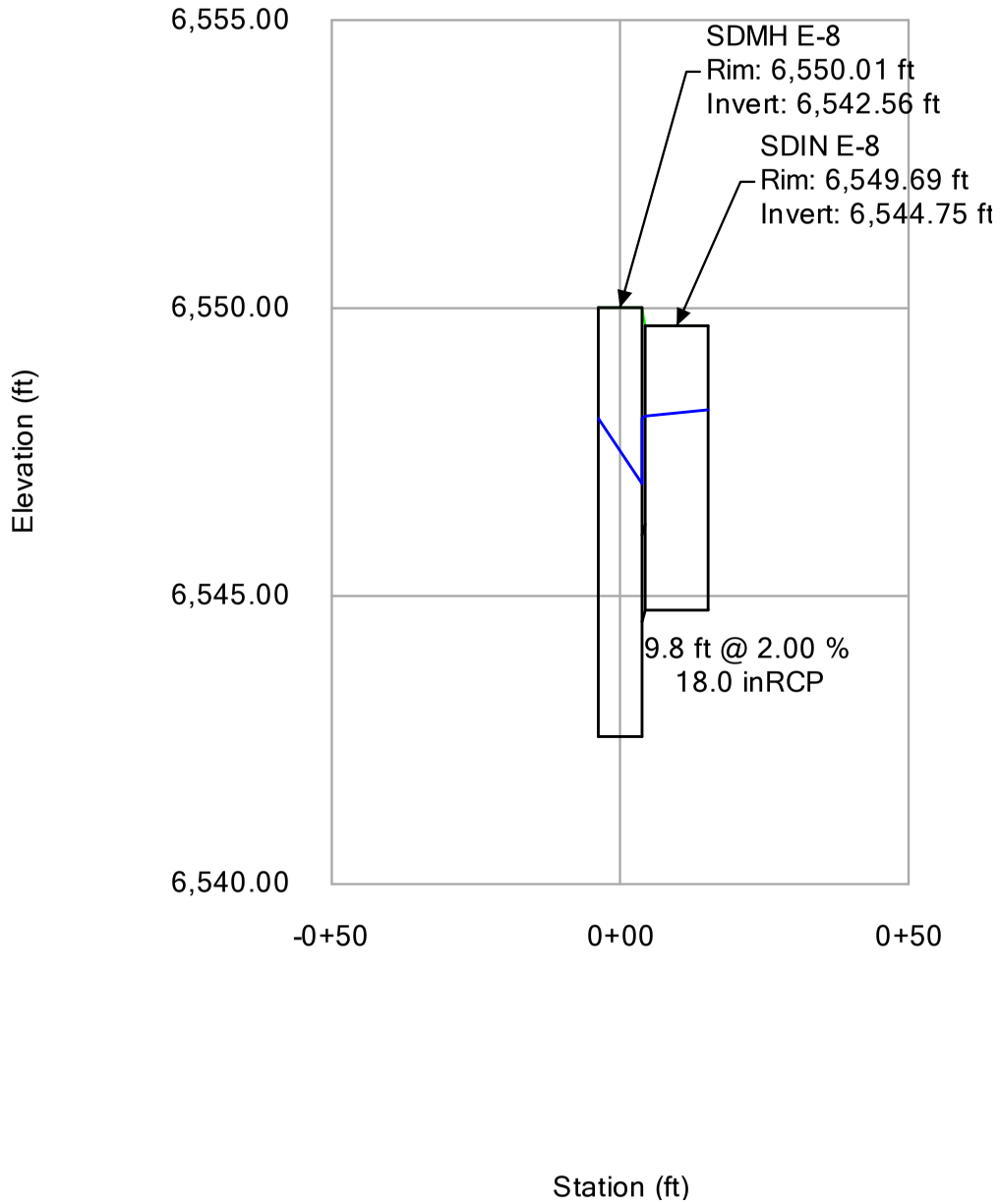
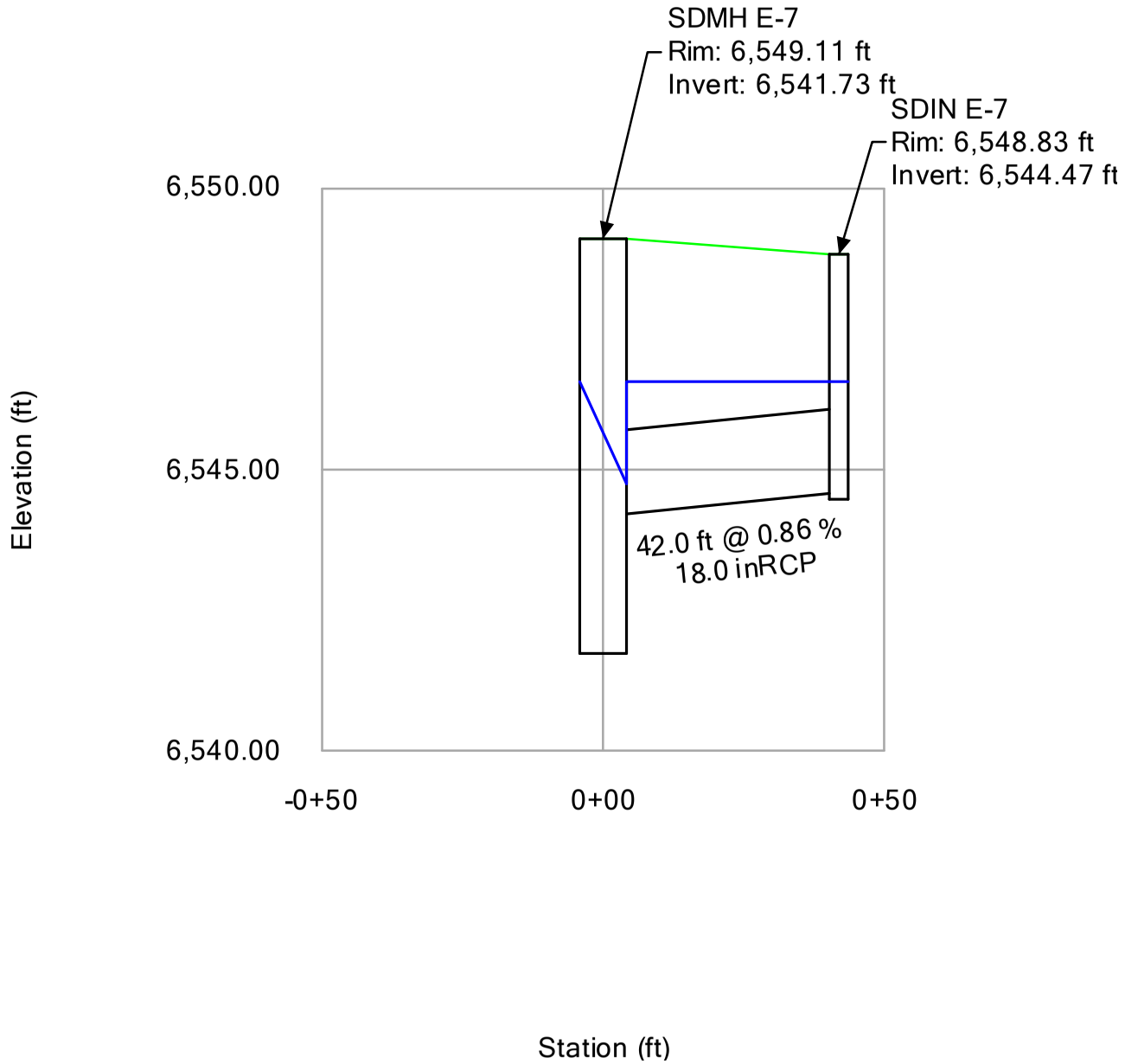


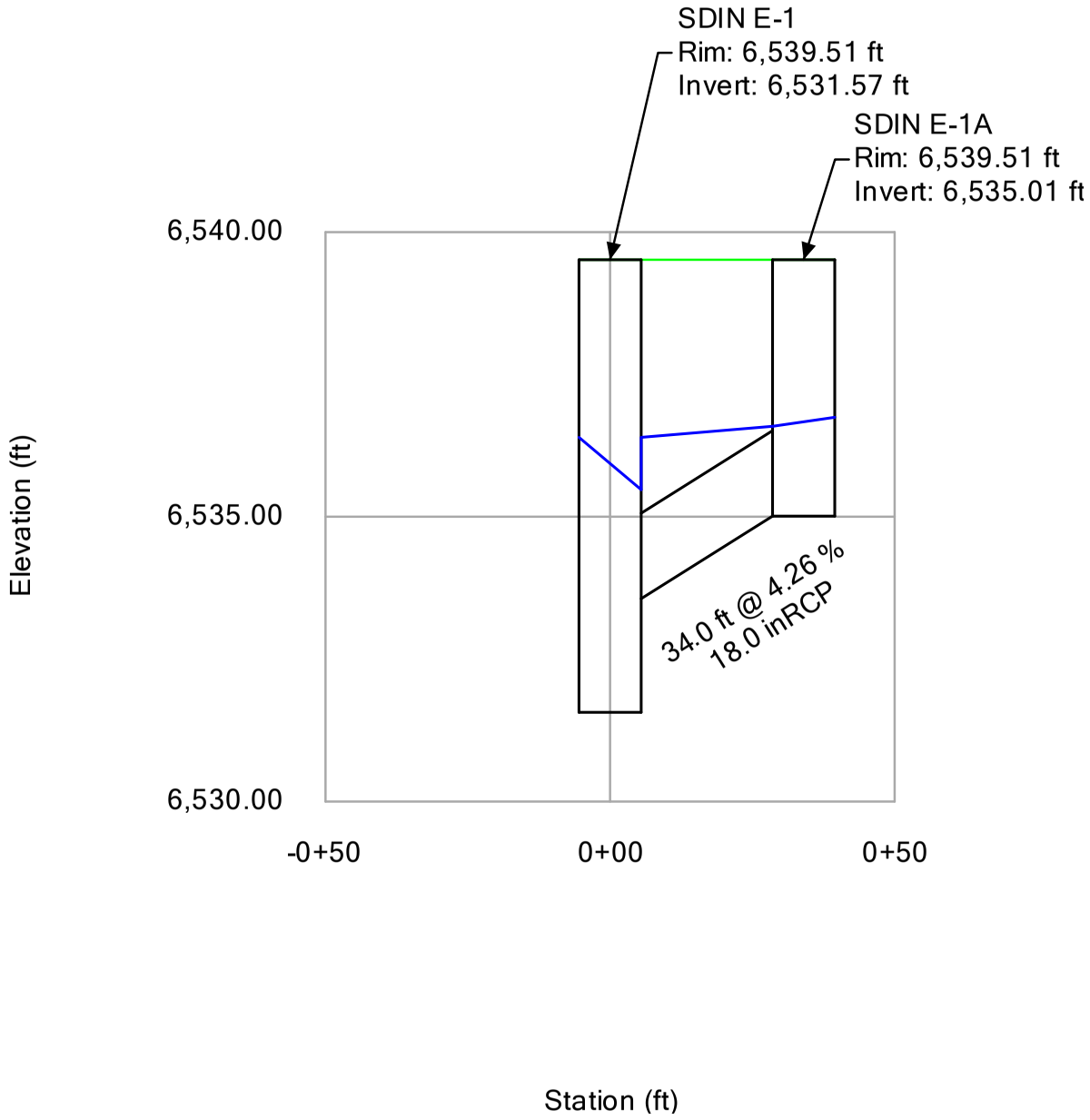
Profile Report

Engineering Profile - SDMH E-7 to SDIN E-7 (17026.004 - BMN F1_2026.01.24.stsw)

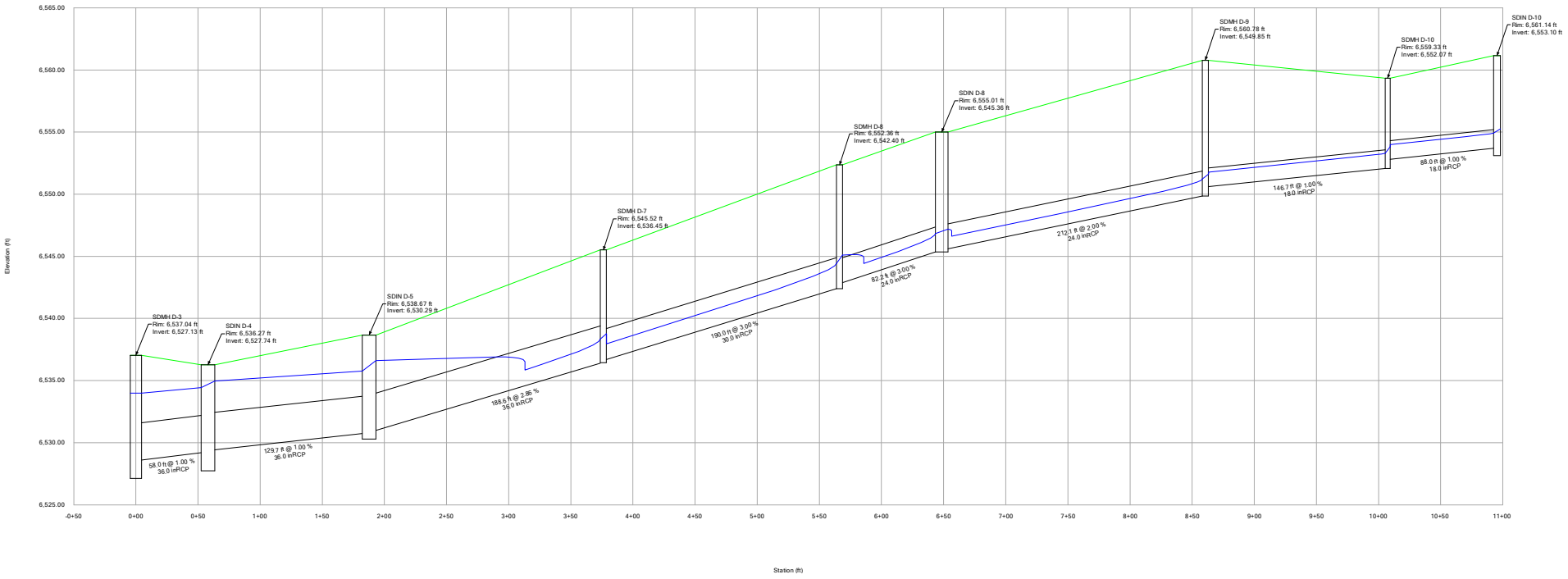


Profile Report

Engineering Profile - SDIN E-1 to SDIN E-1A (17026.004 - BMN F1_2026.01.24.stsw)

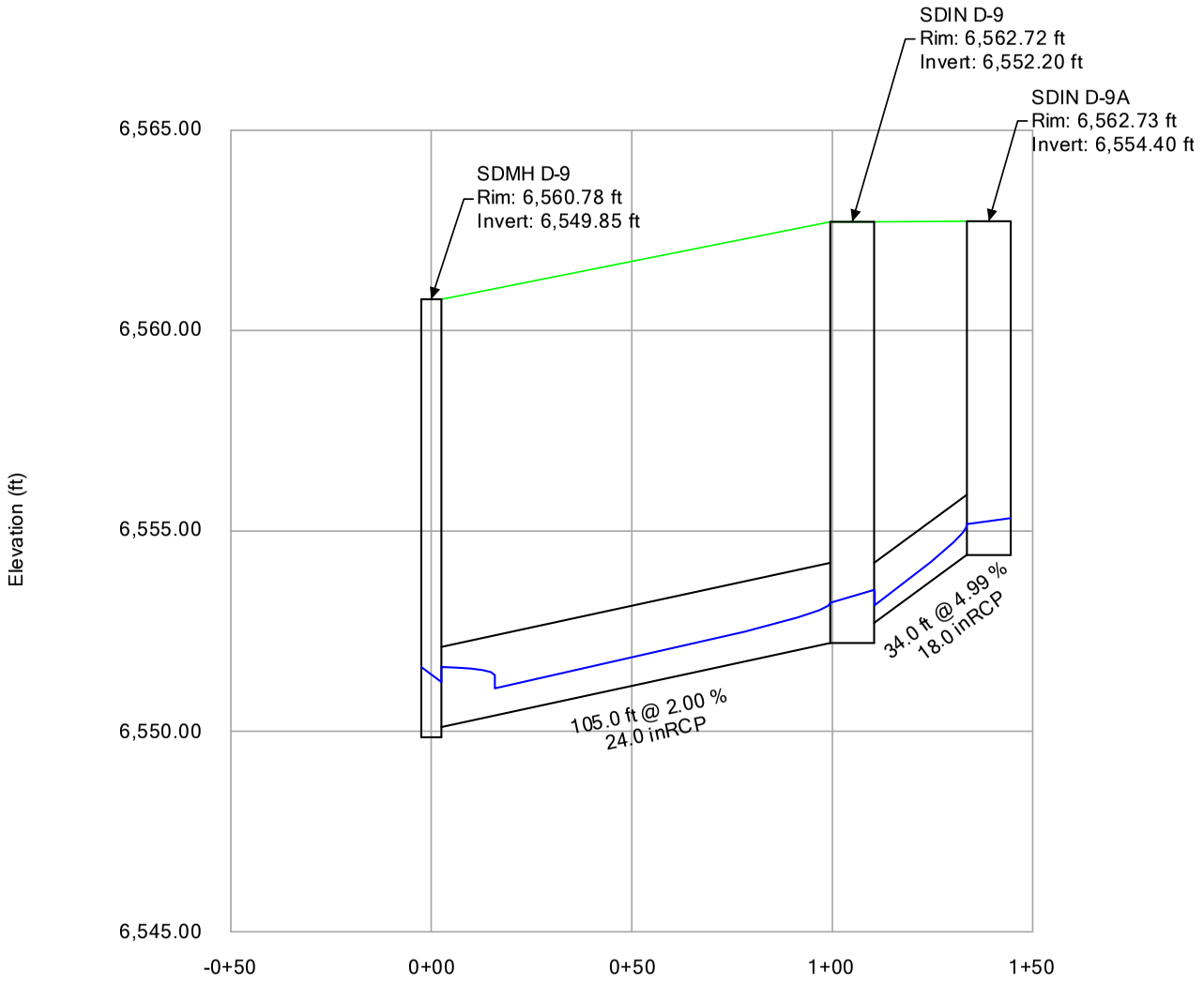


Profile Report
Engineering Profile - SDMH D-3 to SDIN D-10 (17026.004 - BMN F1_2026.05.15.stsw)

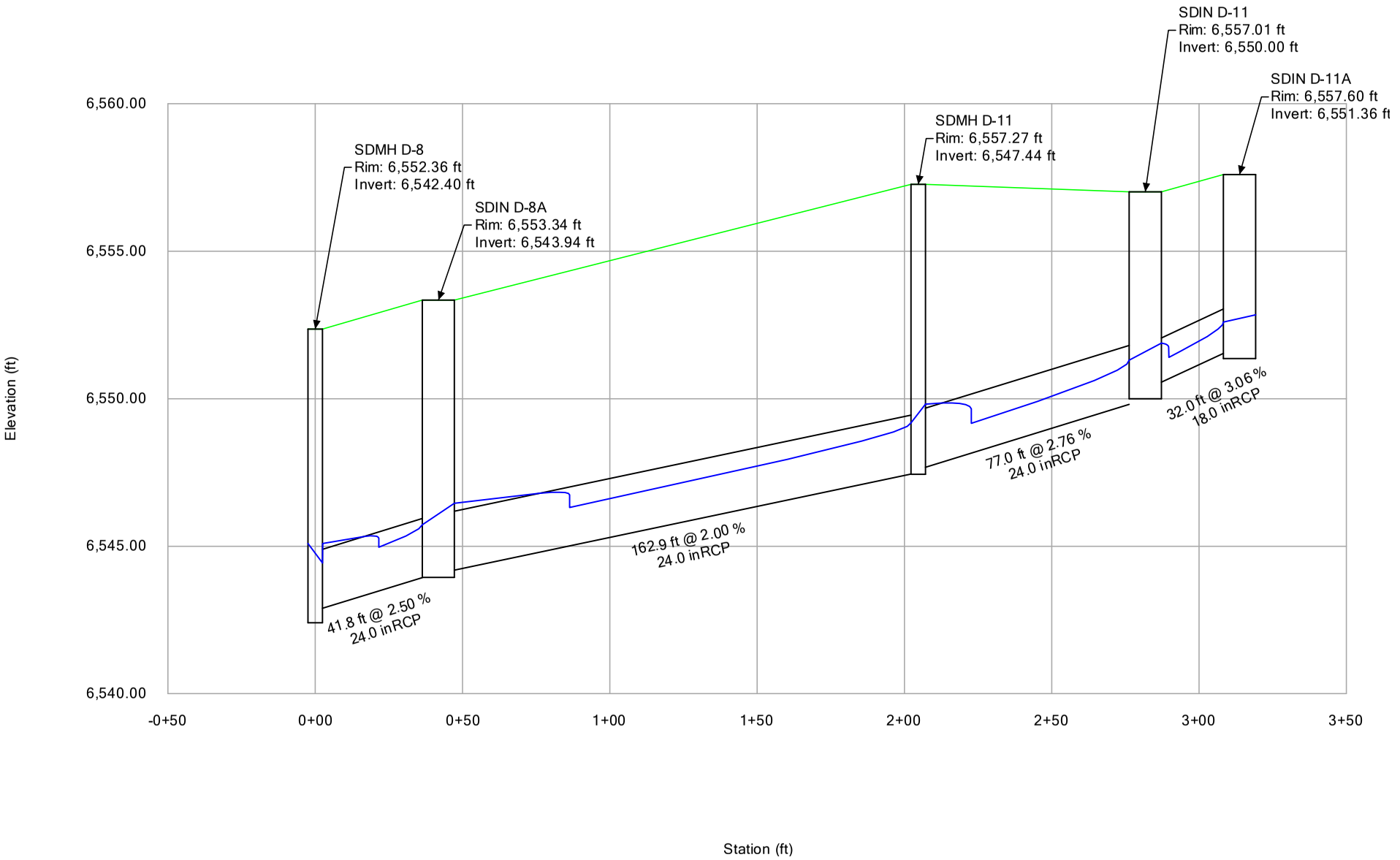


Profile Report

Engineering Profile - SDMH D-9 to SDIN D-9A (17026.004 - BMN F1_2026.01.24.stsw)

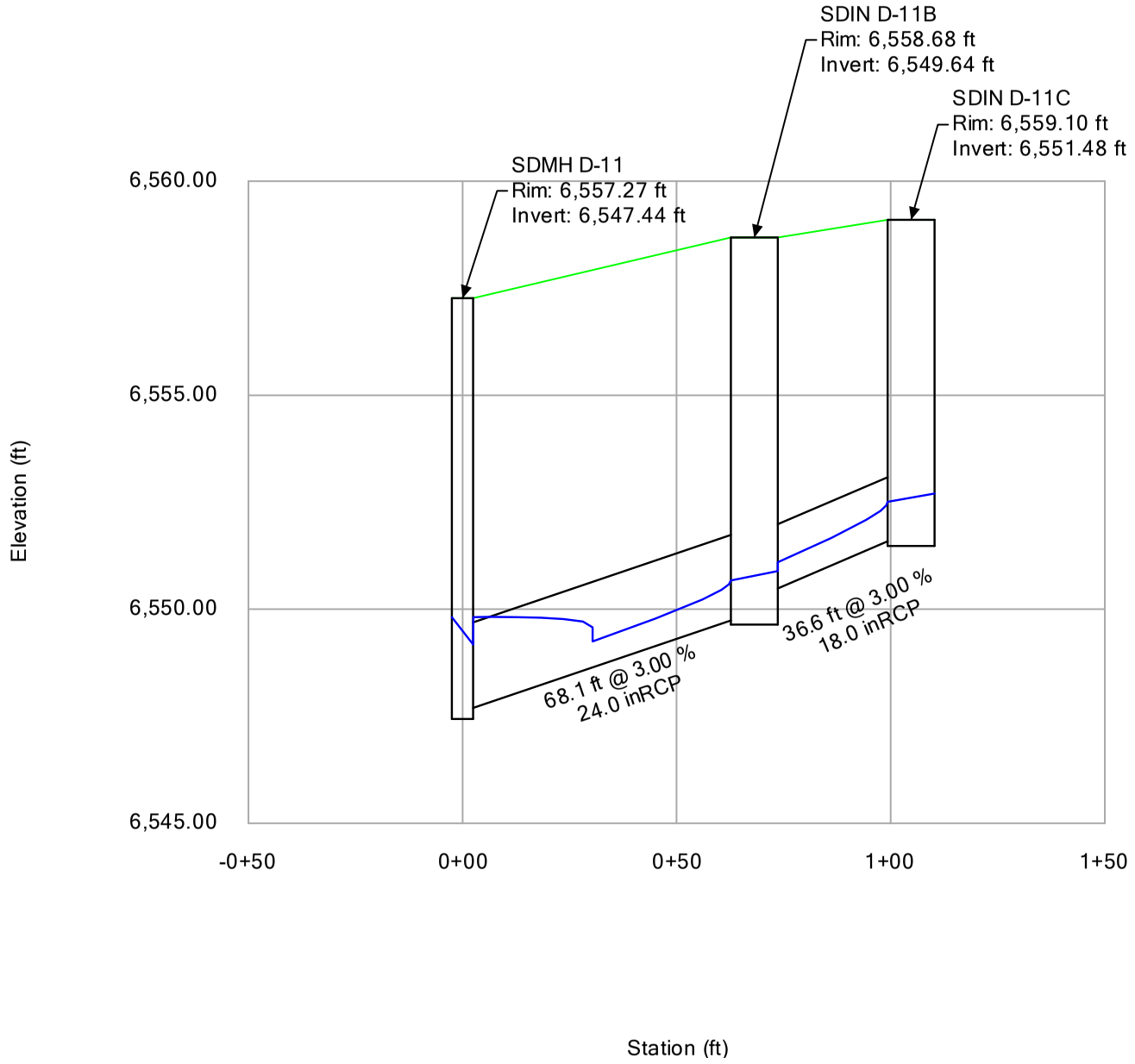


Profile Report
Engineering Profile - SDMH D-8 to SDIN D-11A (17026.004 - BMN F1_2026.01.24.stsw)



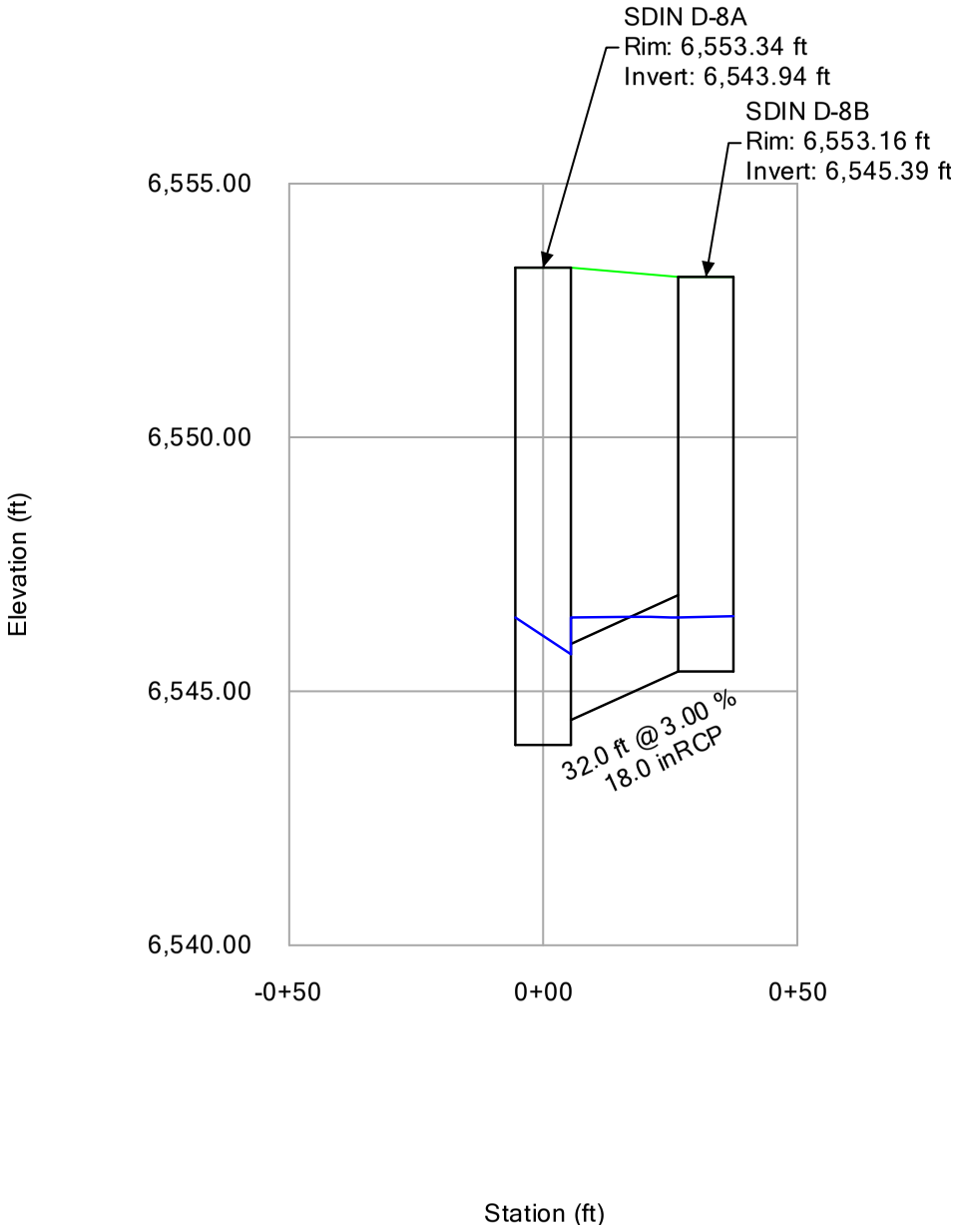
Profile Report

Engineering Profile - SDMH D-11 to SDIN D-11C (17026.004 - BMN F1_2026.01.24.stsw)



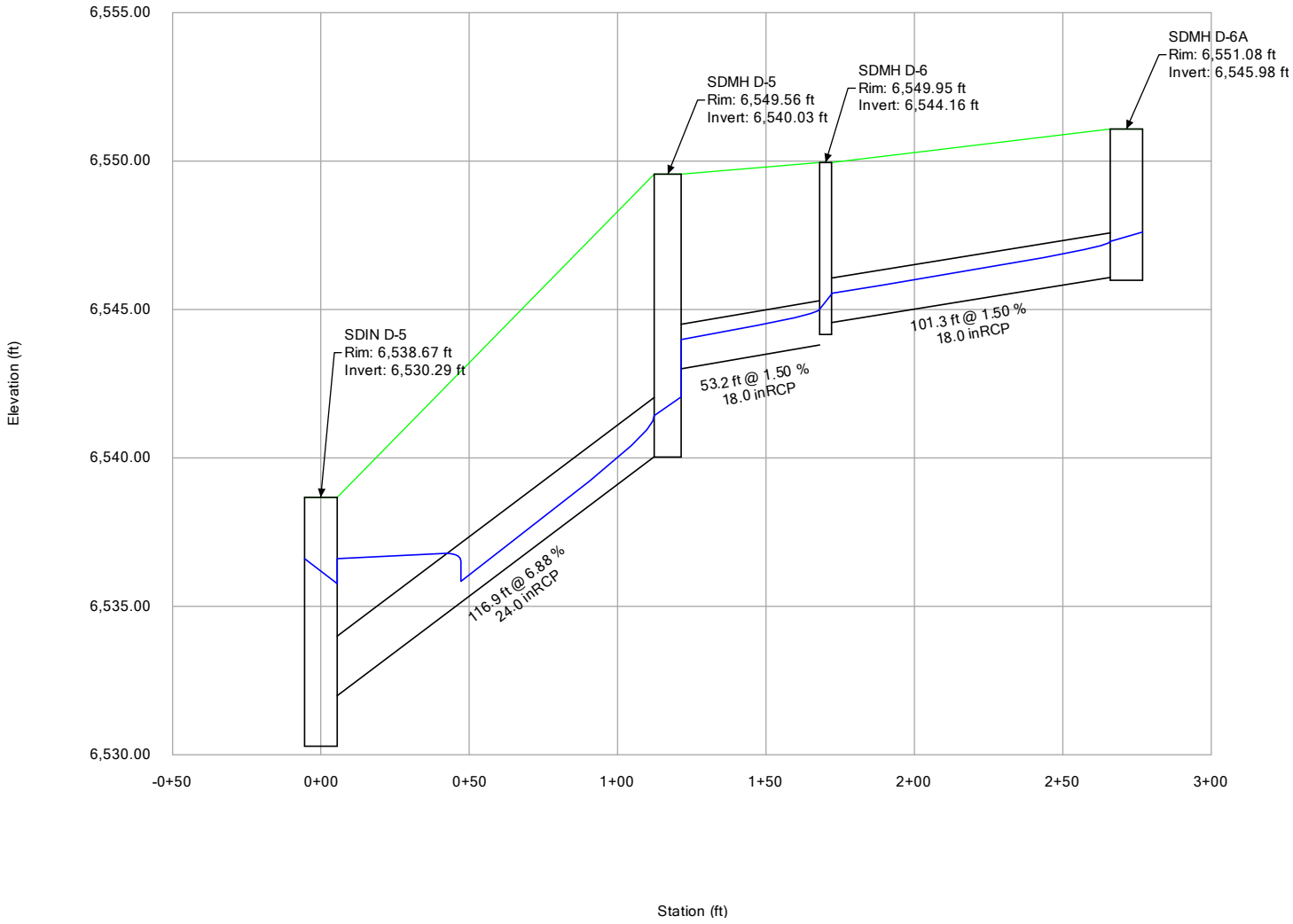
Profile Report

Engineering Profile - SDIN D-8A to SDIN D-8B (17026.004 - BMN F1_2026.01.24.stsw)



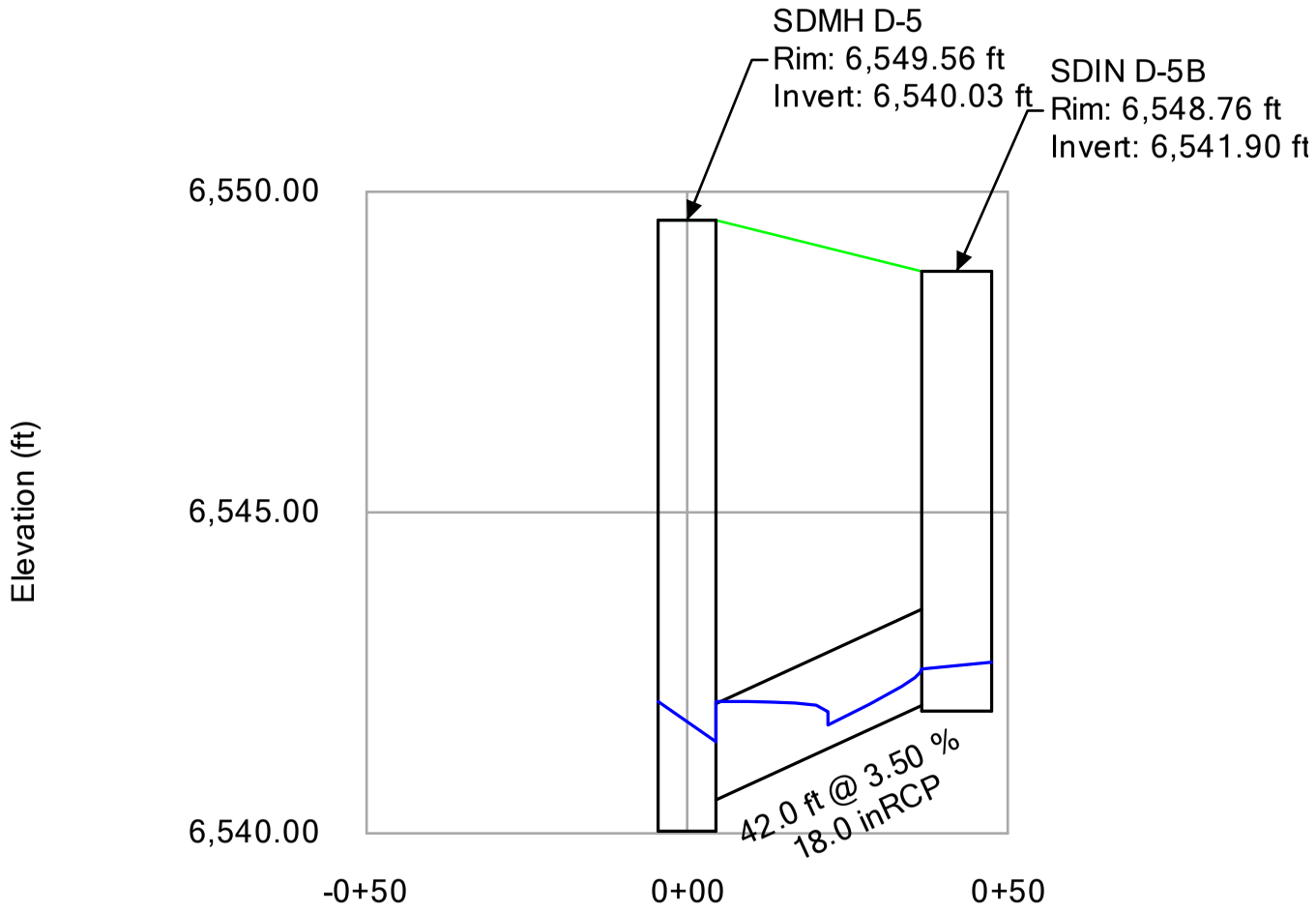
Profile Report

Engineering Profile - SDIN D-5 to SDMH D-6A (17026.004 - BMN F1_2026.05.15.stsw)



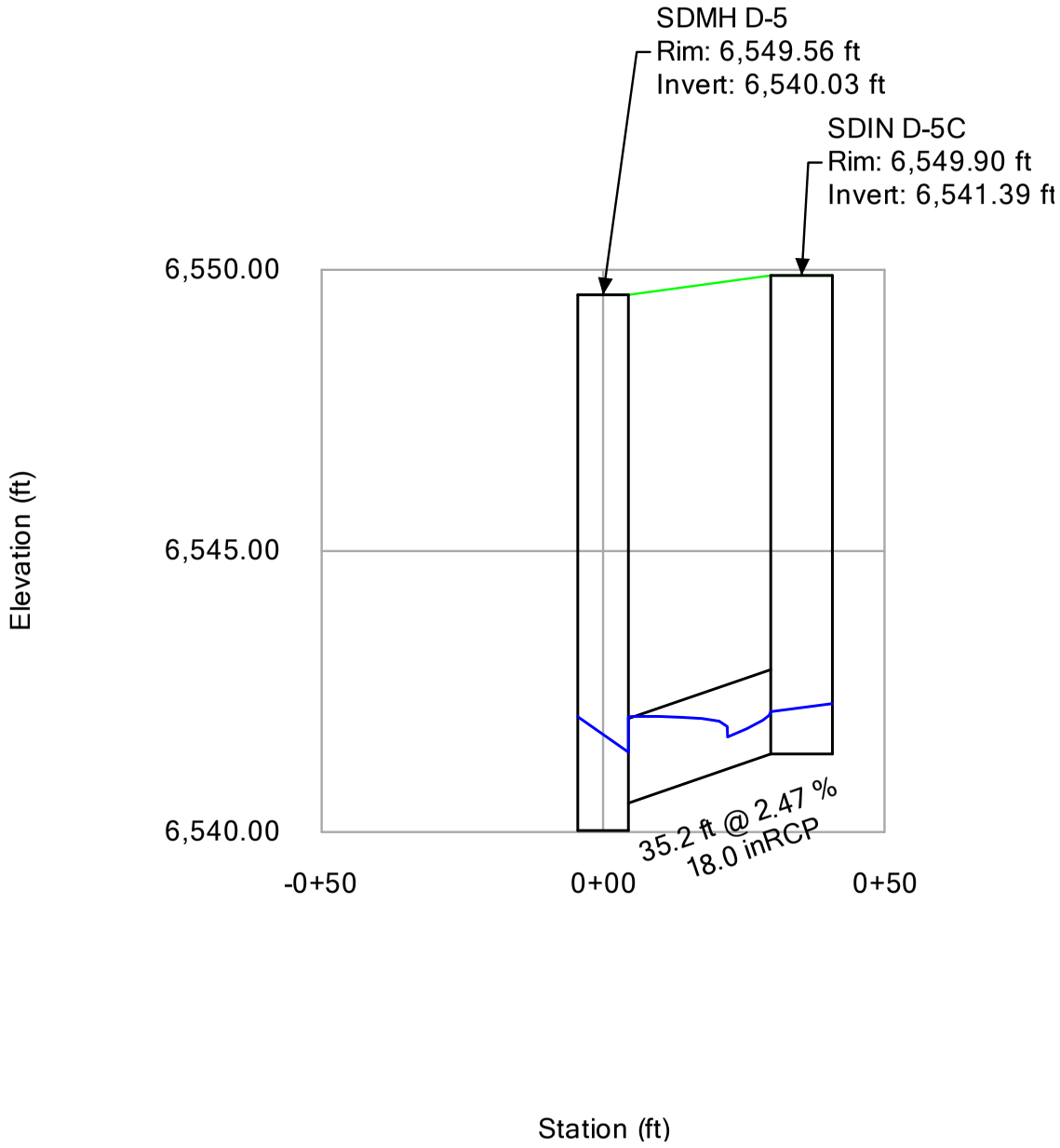
Profile Report

Engineering Profile - SDMH D-5 to SDIN D-5B (17026.004 - BMN F1_2026.01.24.stsw)



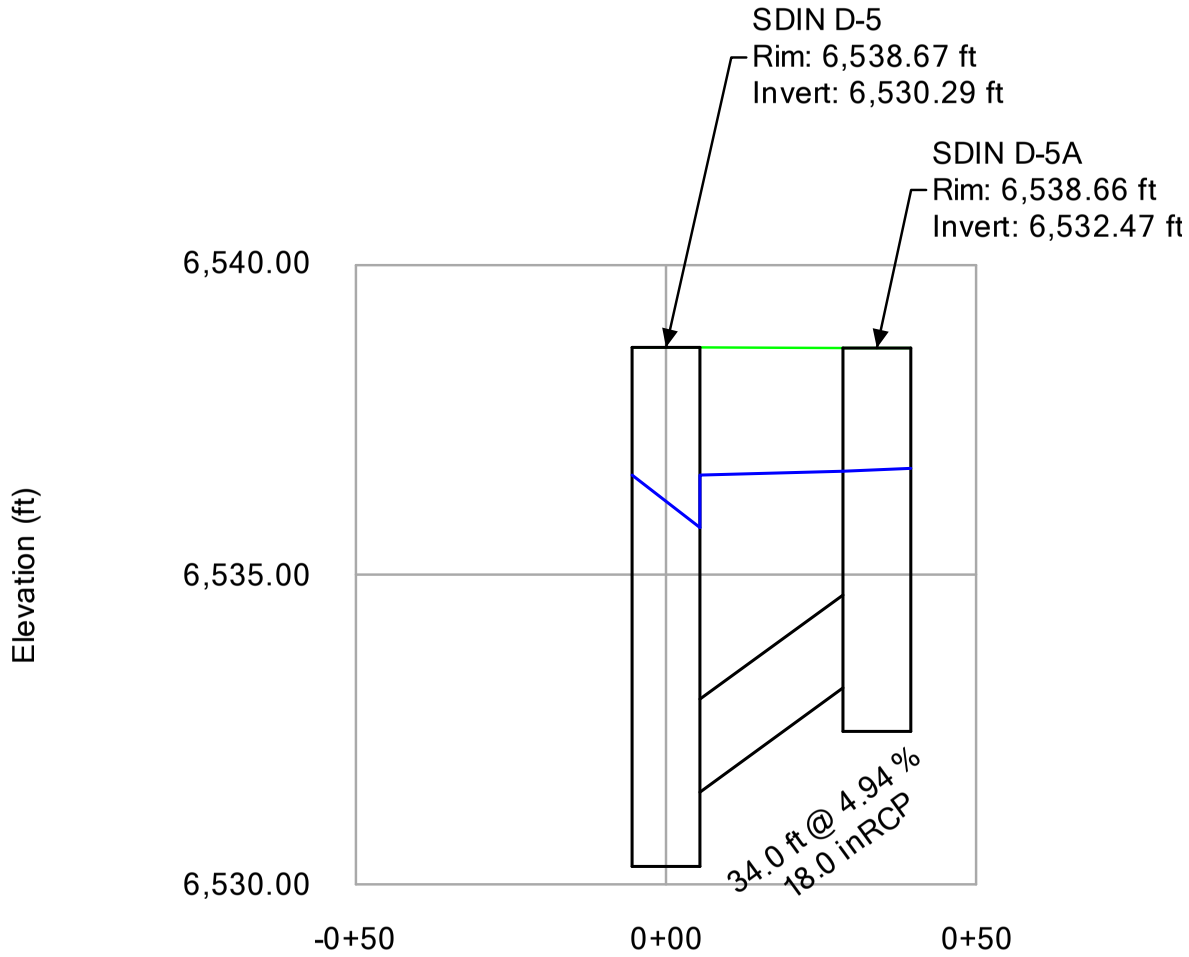
Profile Report

Engineering Profile - SDMH D-5 to SDIN D-5C (17026.004 - BMN F1_2026.01.24.stsw)



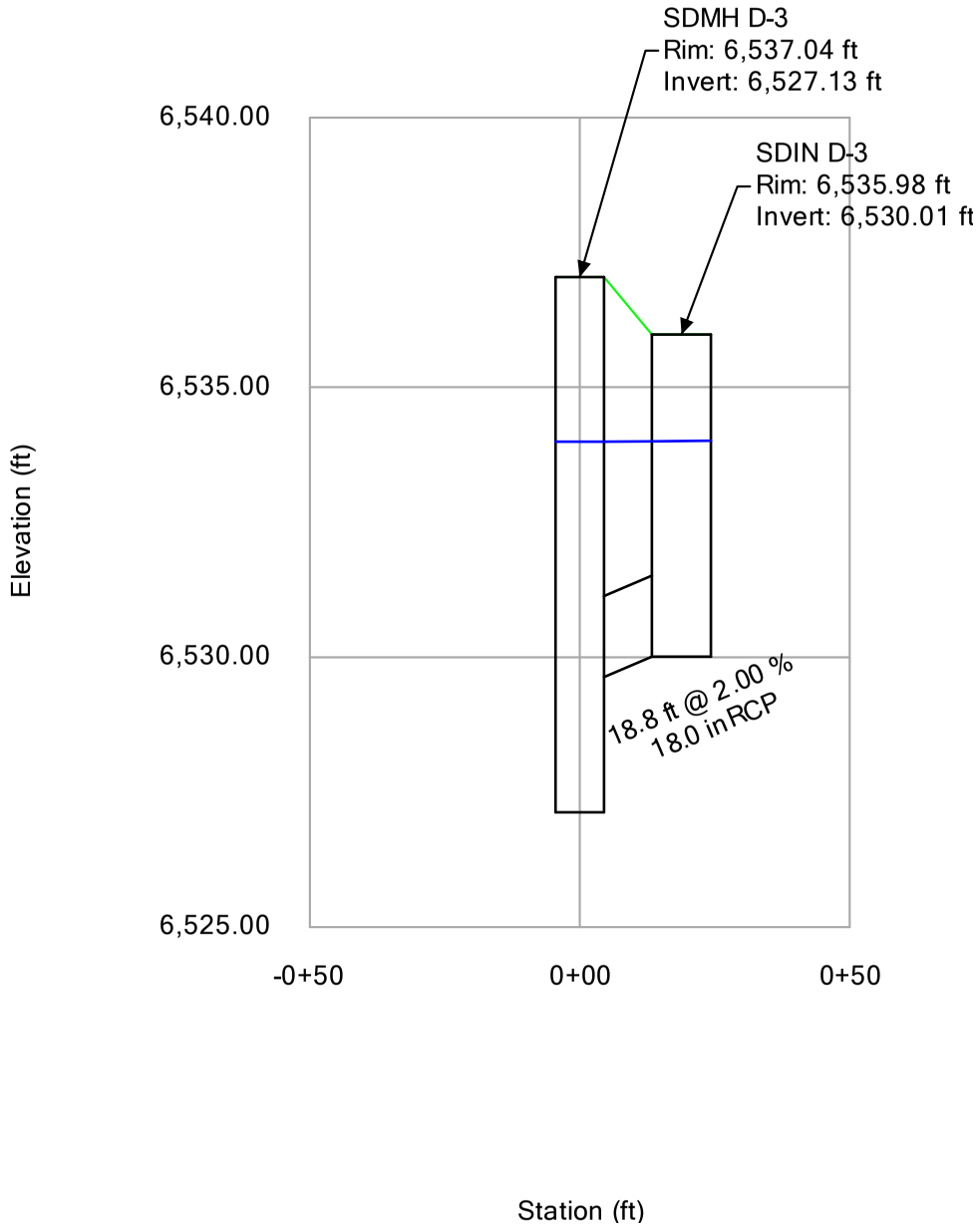
Profile Report

Engineering Profile - SDIN D-5 to SDIN D-5A (17026.004 - BMN F1_2026.01.24.stsw)



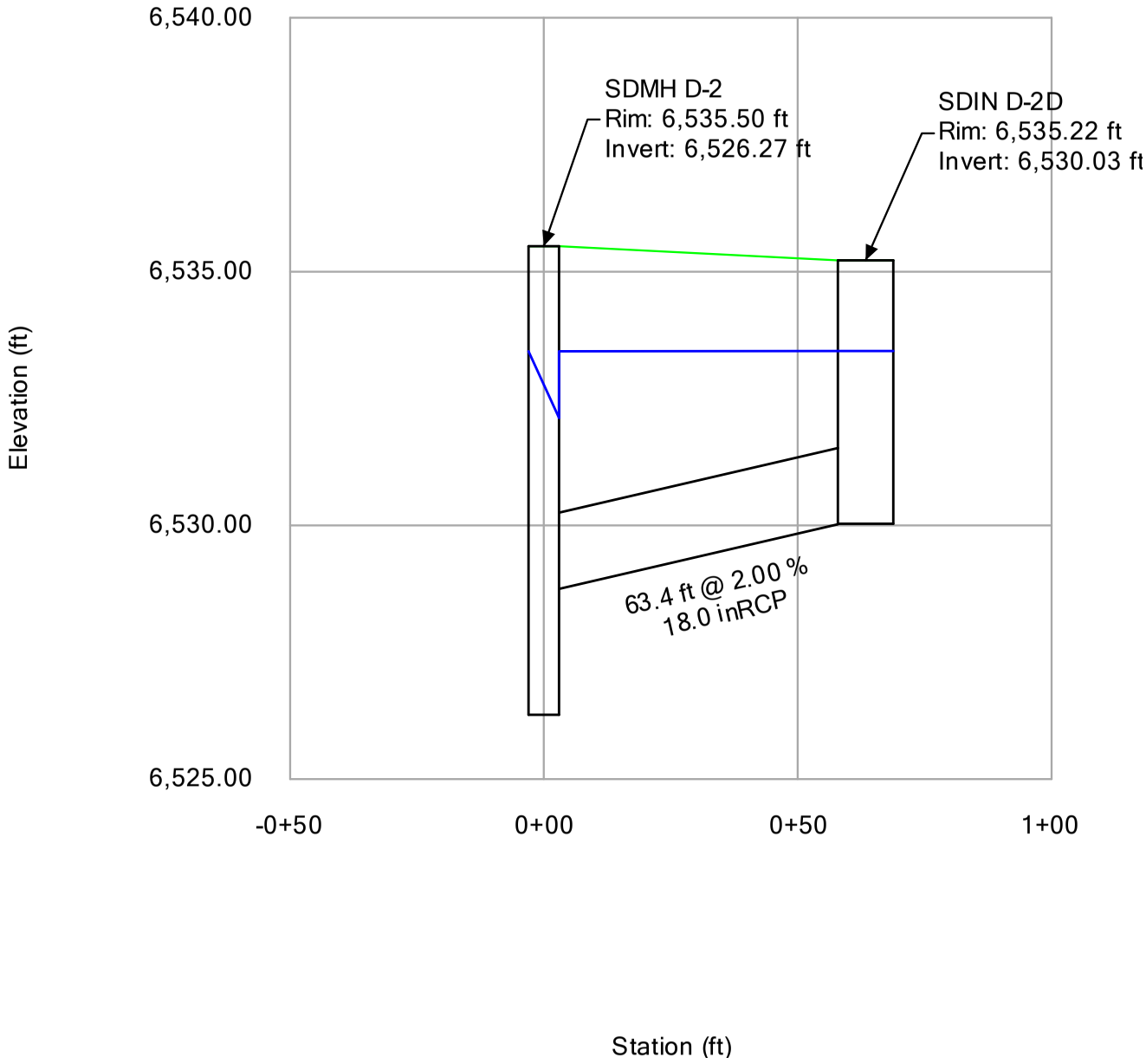
Profile Report

Engineering Profile - SDMH D-3 to SDIN D-3 (17026.004 - BMN F1_2026.01.24.stsw)

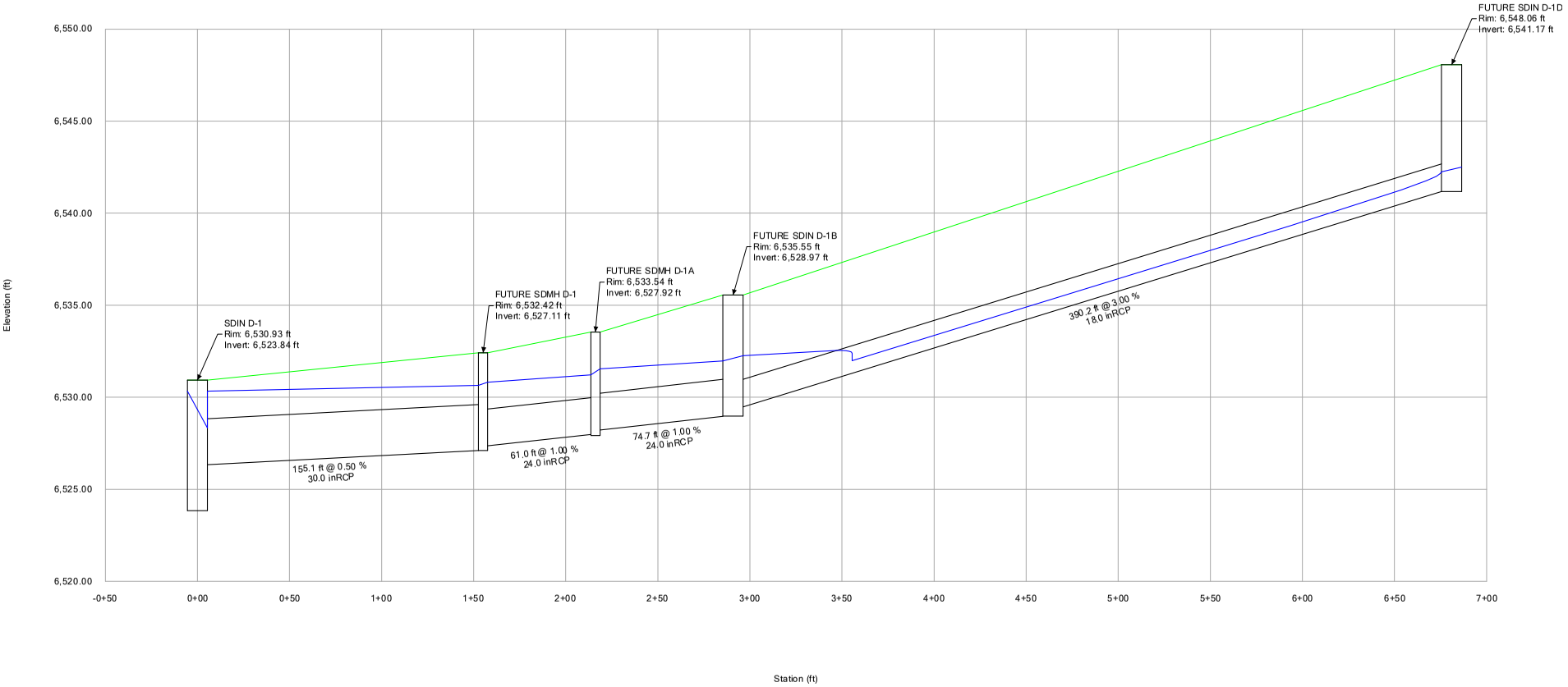


Profile Report

Engineering Profile - SDMH D-2 to SDIN D-2D (17026.004 - BMN F1_2026.01.24.stsw)

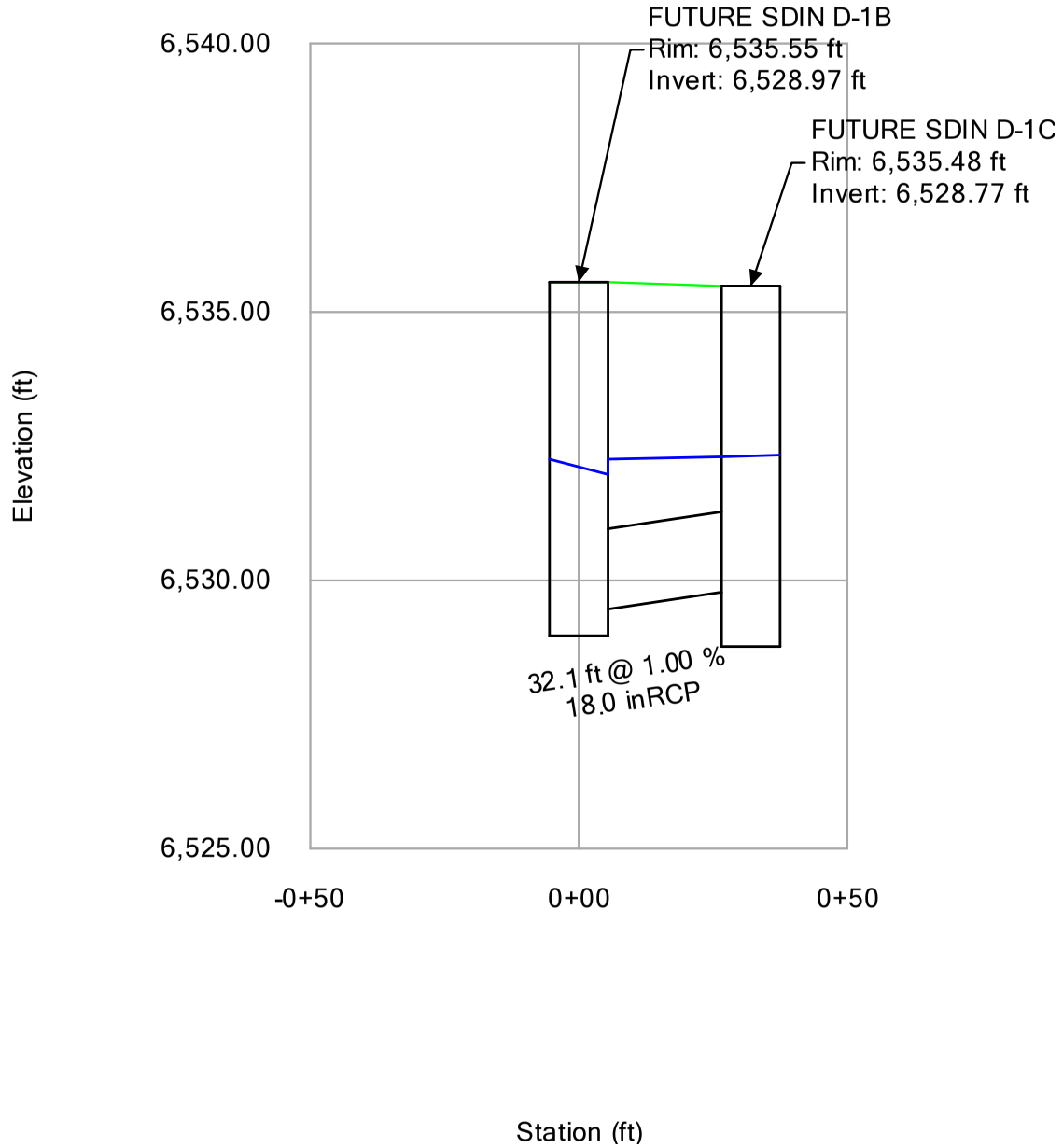


Profile Report
Engineering Profile - SDIN D-1 to FUTURE SDIN D-1D (17026.004 - BMN F1_2026.01.24.stsw)



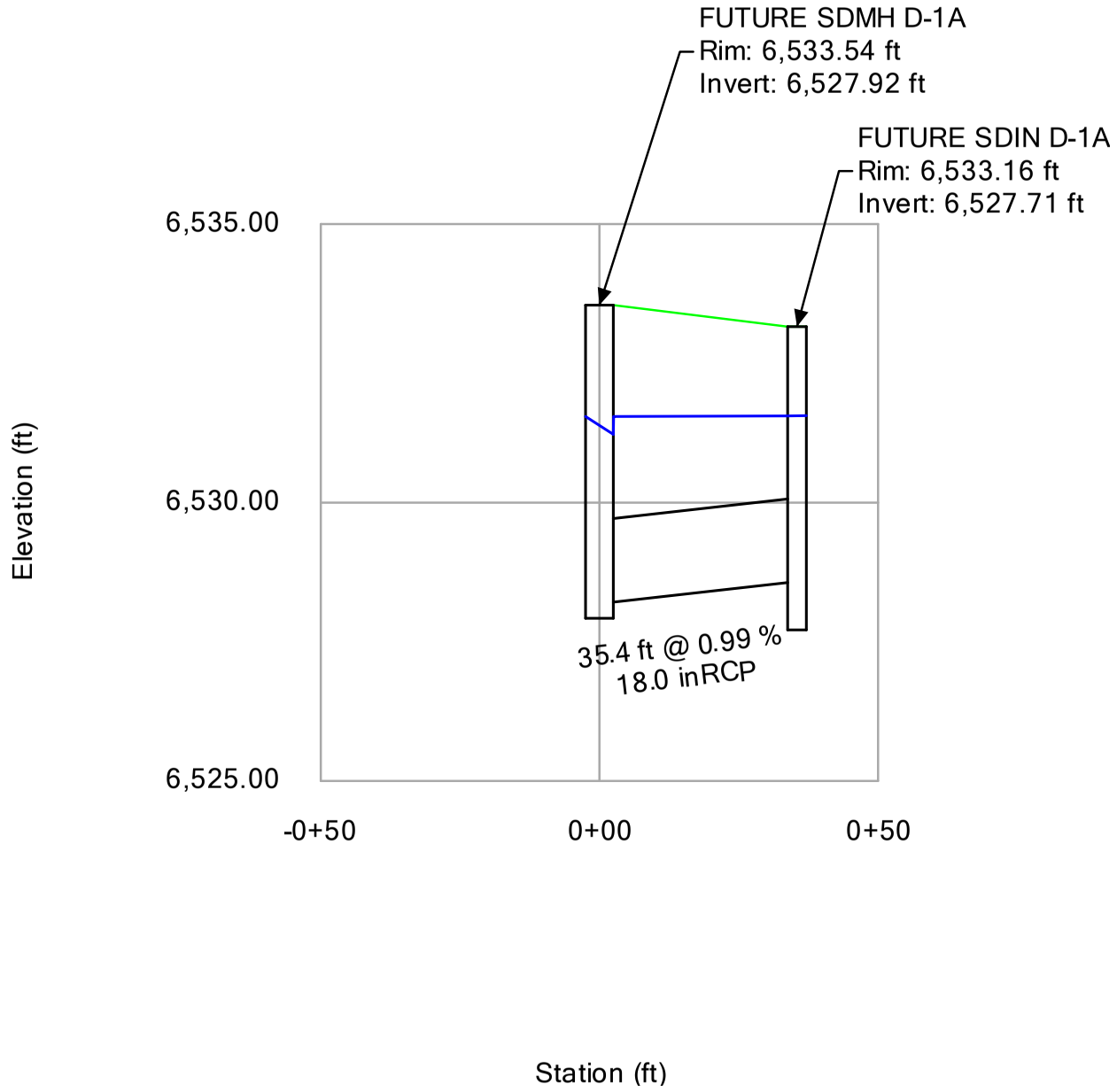
Profile Report

Engineering Profile - FUTURE SDIN D-1B to FUTURE SDIN D-1C (17026.004 - BMN F1_2026.01.24.stsw)



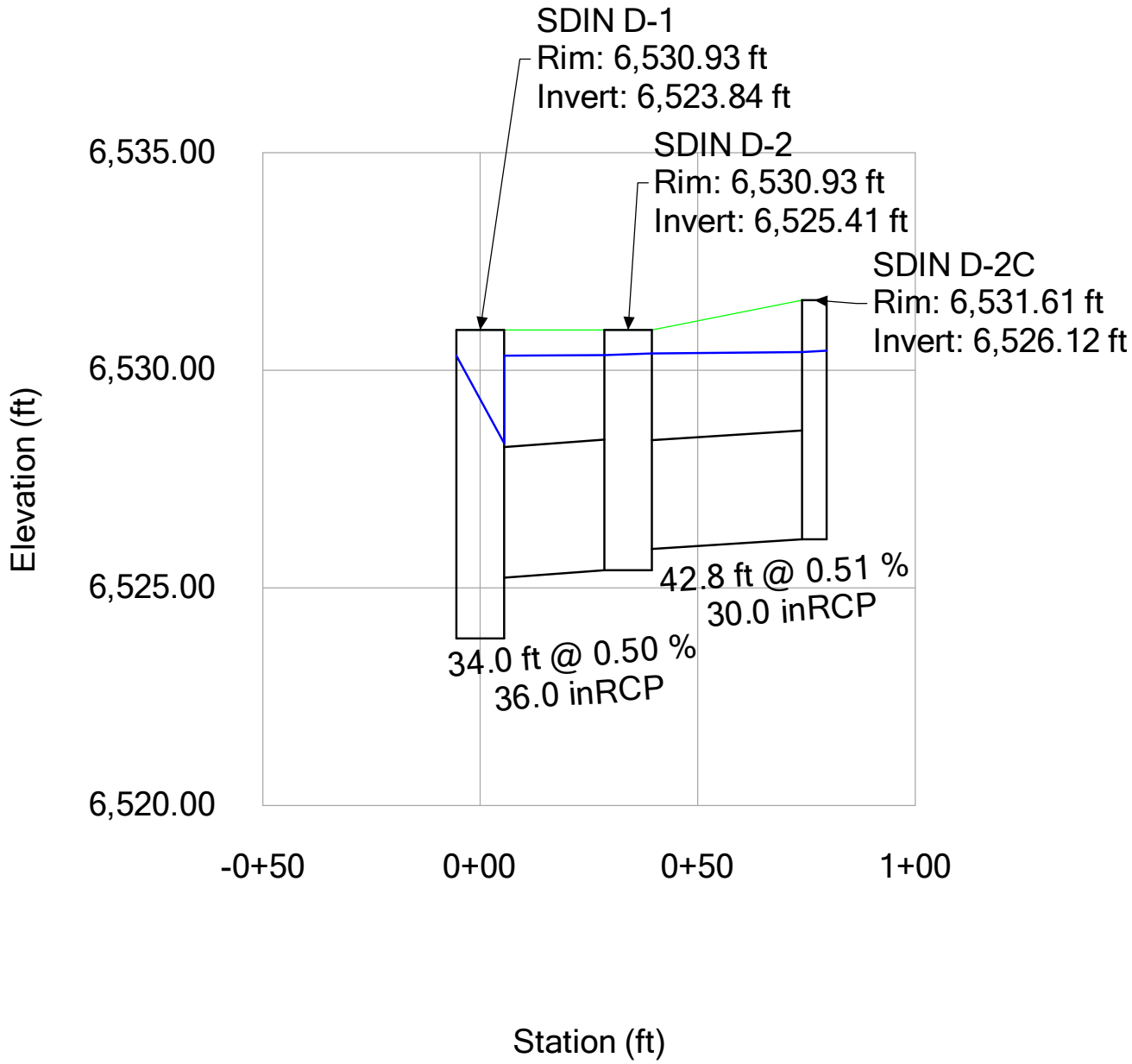
Profile Report

Engineering Profile - FUTURE SDMH D-1A to FUTURE SDIN D-1A (17026.004 - BMN F1_2026.01.24.stsw)

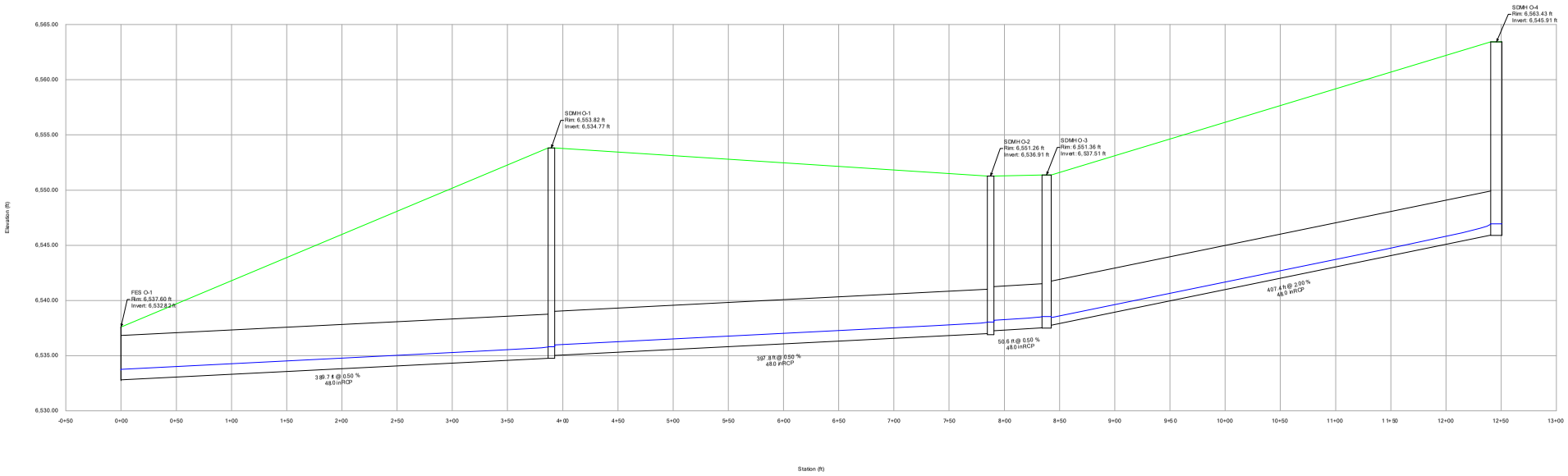


Profile Report

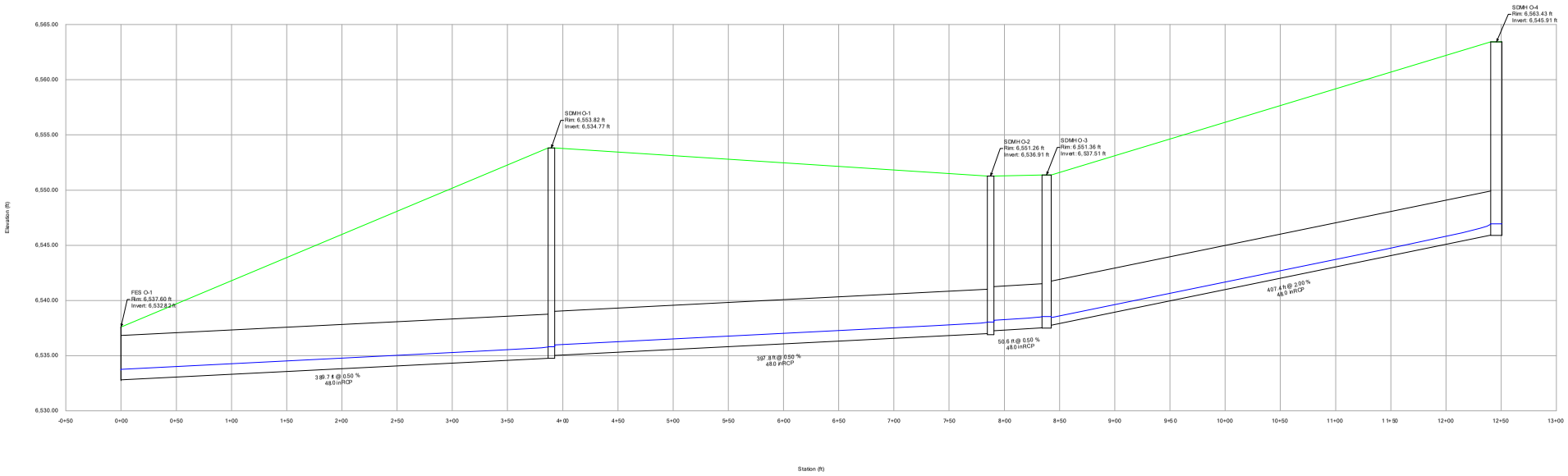
Engineering Profile - SDIN D-1 to SDIN D-2C (17026.004 - BMN F1_2026.01.24.stsw)



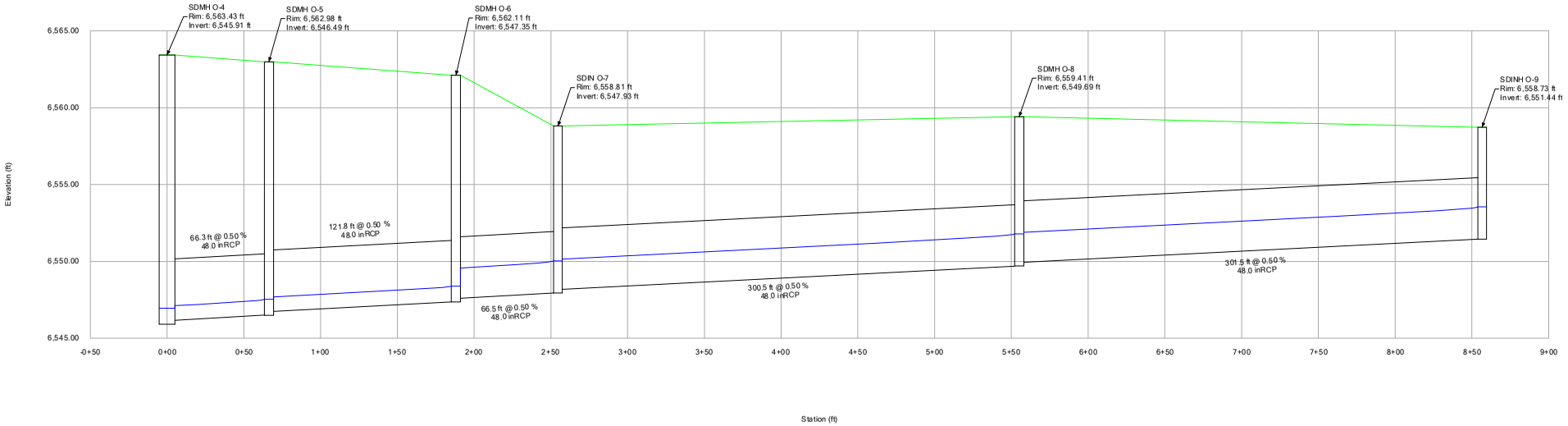
Profile Report
Engineering Profile - FES O-1 to SDINH O-4 (17026.004 - BMN F1_2026.01.24.stsw)



Profile Report
Engineering Profile - FES O-1 to SDINH O-4 (17026.004 - BMN F1_2026.01.24.stsw)



Profile Report
Engineering Profile - FES O-4 to SDINH O-9 (17026.004 - BMN F1_2026.01.24.stsw)



Velocity Check Summary

	Pipe	Diameter (in)	Design Slope	Design Flow (cfs)	Design Depth (in)	Check Depth (in)	Check Depth (ft)	Check Flow (cfs)	Check Velocity (ft/s)
1	SDIN D-2D to SDMH D-2	18	2.50%	0.89	2.83	0.71	0.06	0.048	**2.10**
2	SDIN D-3 to SDMH D-3	18	2.00%	1.78	4.21	1.05	0.09	0.099	**2.40**
3	SDIN A-2 to SDMH A-2	18	1.00%	2.59	6.07	1.52	0.13	0.154	**2.14**
4	SDMH E-9 to SDIN E-8A	24	0.50%	5.56	9.76	2.44	0.20	0.346	**2.07**
5	SDIN D-2 to SDIN D-1	36	0.50%	13.05	12.95	3.24	0.27	0.787	**2.51**

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, May 20 2026

SDIN D-2D TO SDMH D-2 VELOCITY CHECK

Circular

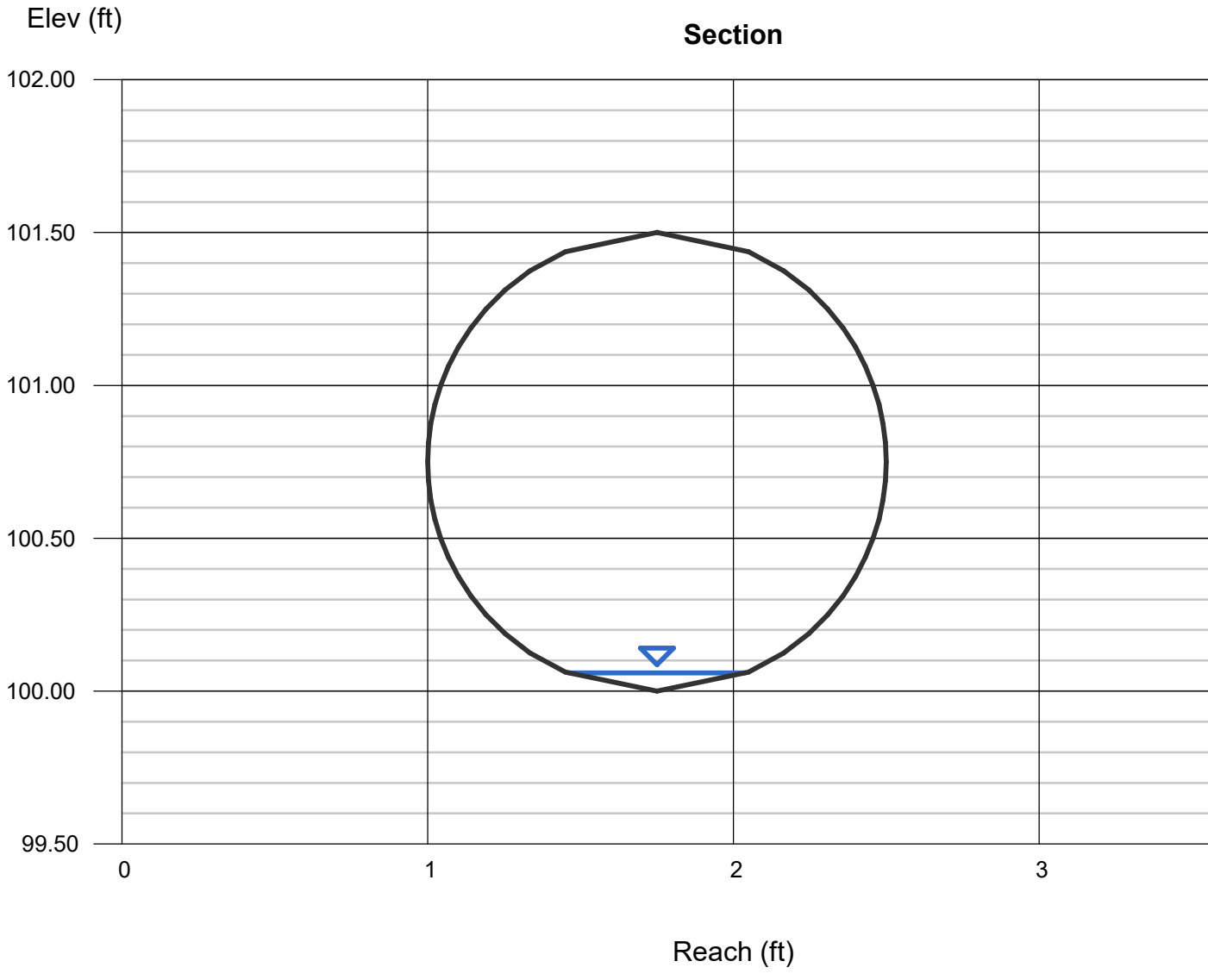
Diameter (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 2.50
N-Value	= 0.013

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.06

Highlighted

Depth (ft)	= 0.06
Q (cfs)	= 0.051
Area (sqft)	= 0.02
Velocity (ft/s)	= 2.10
Wetted Perim (ft)	= 0.61
Crit Depth, Yc (ft)	= 0.09
Top Width (ft)	= 0.59
EGL (ft)	= 0.13



Channel Report

SDIN D-3 to SDMH D-3 VELOCITY CHECK

Circular

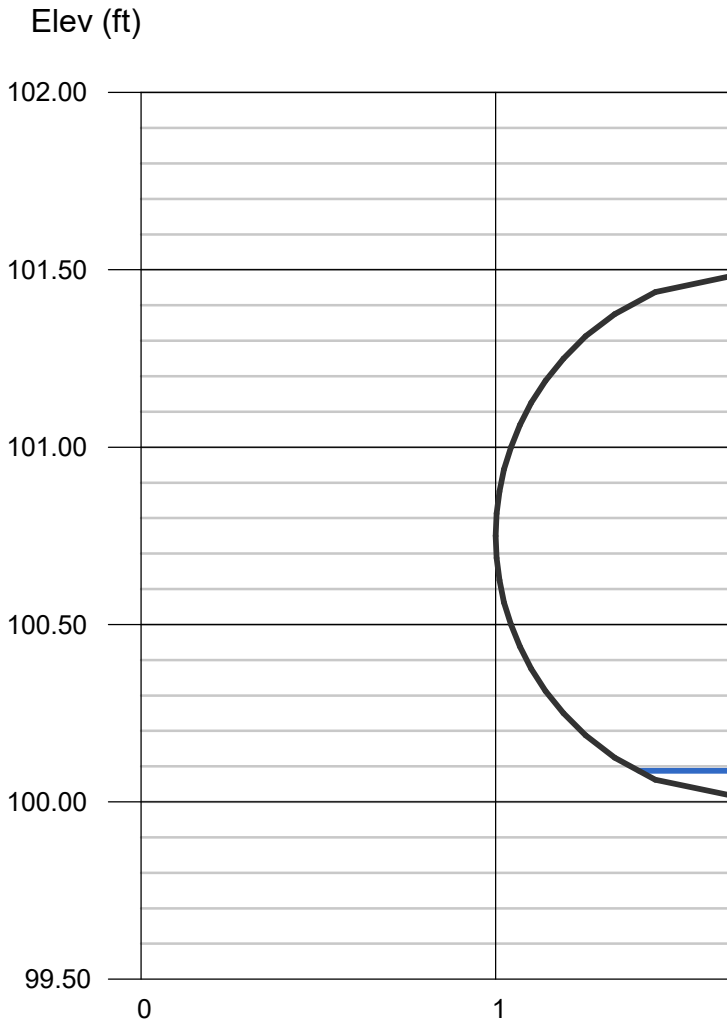
Diameter (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 2.00
N-Value	= 0.013

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.09

Highlighted

Depth (ft)	= 0.09
Q (cfs)	= 0.101
Area (sqft)	= 0.04
Velocity (ft/s)	= 2.40
Wetted Perim (ft)	= 0.73
Crit Depth, Yc (ft)	= 0.12
Top Width (ft)	= 0.71
EGL (ft)	= 0.18



Channel Report

SDIN A-2 to SDMH A-2 VELOCITY CHECK

Circular

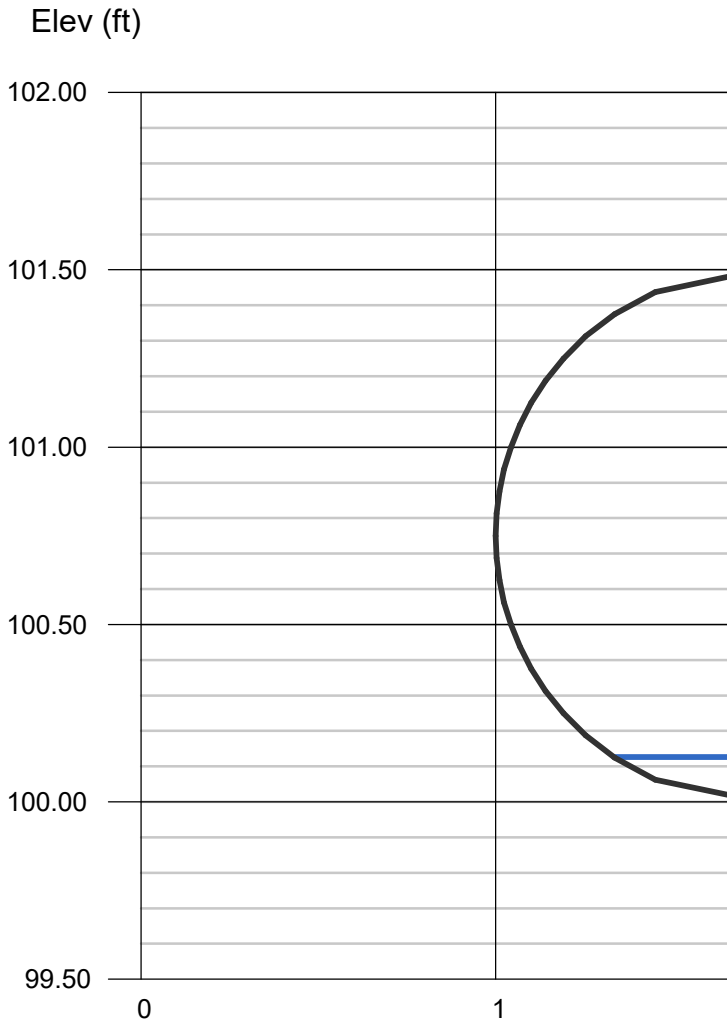
Diameter (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.013

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.13

Highlighted

Depth (ft)	= 0.13
Q (cfs)	= 0.154
Area (sqft)	= 0.07
Velocity (ft/s)	= 2.14
Wetted Perim (ft)	= 0.88
Crit Depth, Yc (ft)	= 0.15
Top Width (ft)	= 0.83
EGL (ft)	= 0.20



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Apr 24 2026

SDMH E-9 to SDIN E-8A VELOCITY CHECK

Circular

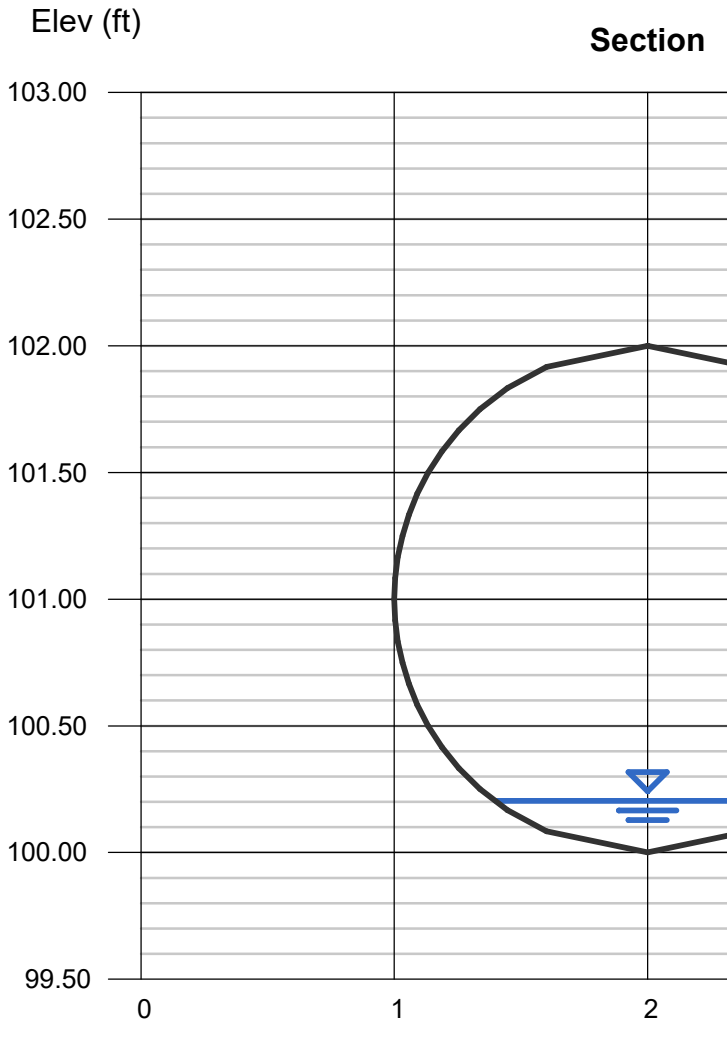
Diameter (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.013

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.20

Highlighted

Depth (ft)	= 0.20
Q (cfs)	= 0.348
Area (sqft)	= 0.17
Velocity (ft/s)	= 2.07
Wetted Perim (ft)	= 1.30
Crit Depth, Yc (ft)	= 0.21
Top Width (ft)	= 1.21
EGL (ft)	= 0.27



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Apr 24 2026

SDIN D-2 to SDIN D-1 VELOCITY CHECK

Circular

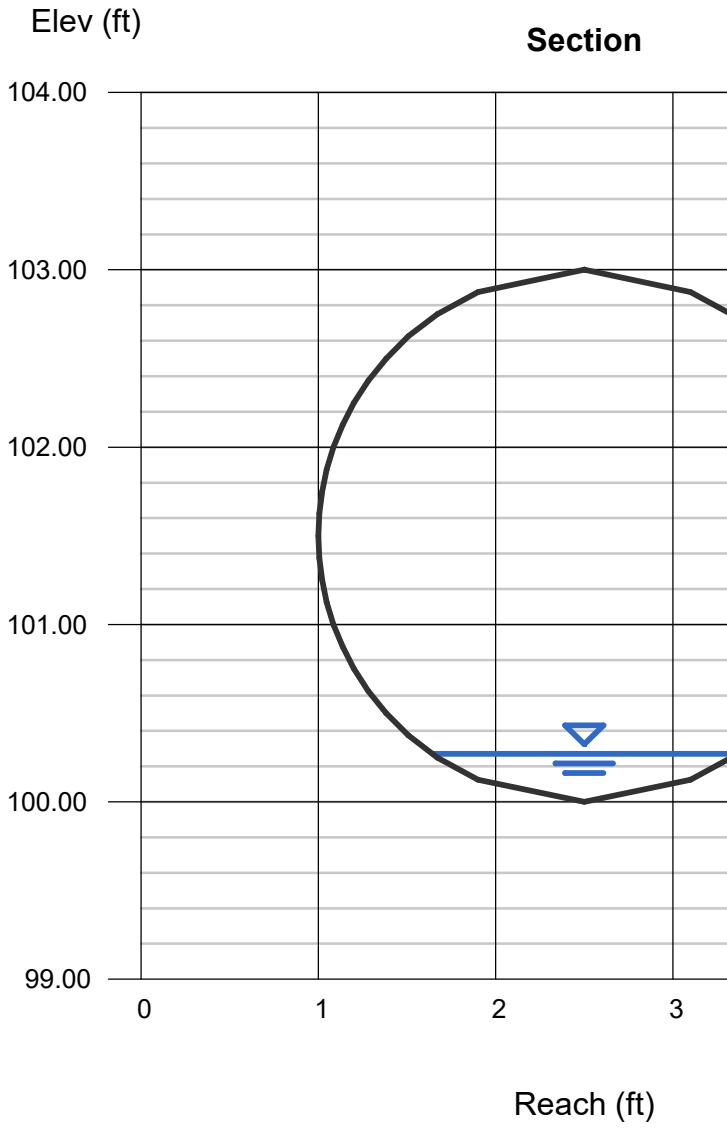
Diameter (ft)	= 3.00
Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.013

Calculations

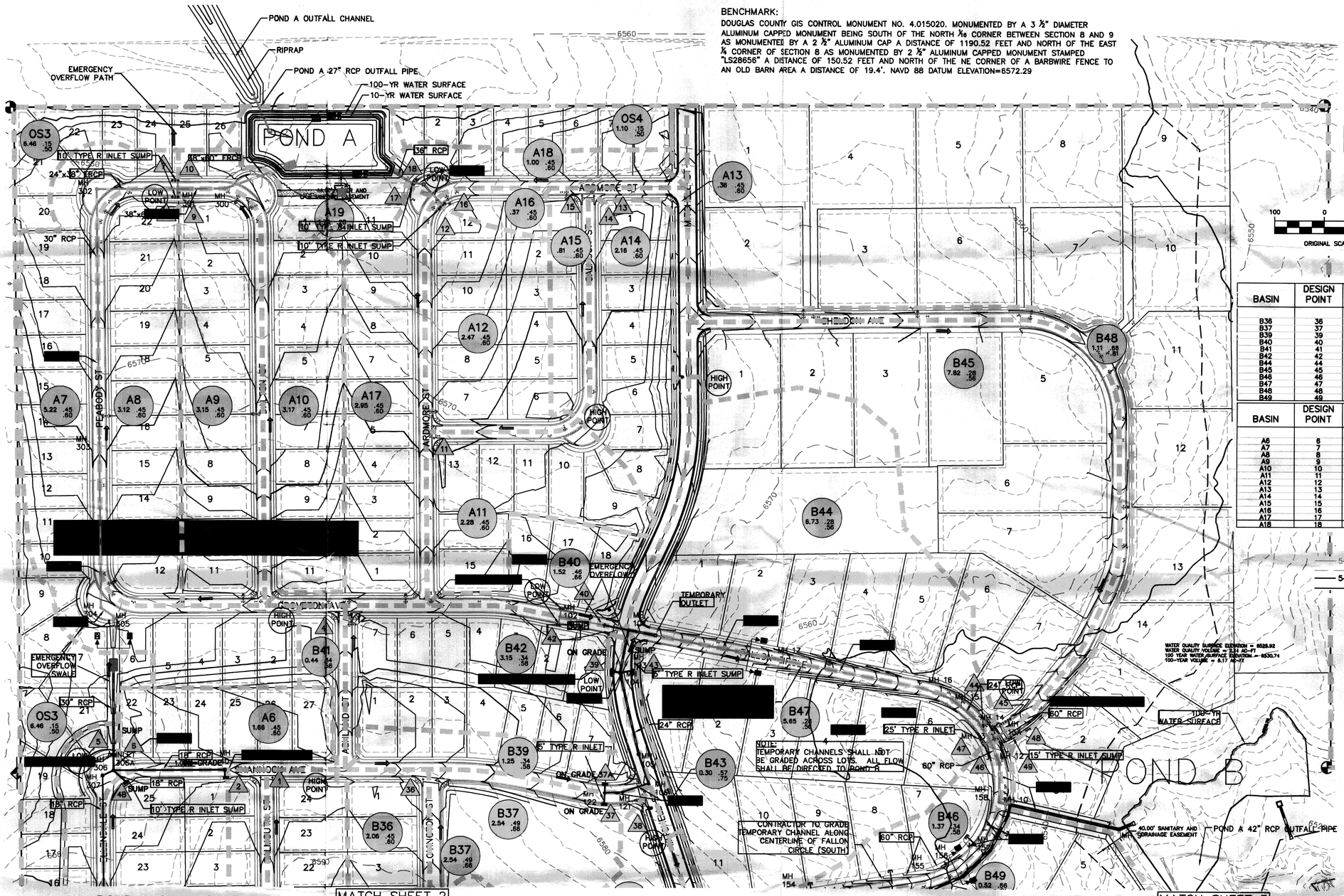
Compute by:	Known Depth
Known Depth (ft)	= 0.27

Highlighted

Depth (ft)	= 0.27
Q (cfs)	= 0.792
Area (sqft)	= 0.32
Velocity (ft/s)	= 2.51
Wetted Perim (ft)	= 1.83
Crit Depth, Yc (ft)	= 0.28
Top Width (ft)	= 1.72
EGL (ft)	= 0.37



Appendix D - Reference Documents



BENCHMARK:

DOUGLAS COUNTY GIS CONTROL MONUMENT NO. 4.015020. MONUMENTED BY A 3 ½" DIAMETER ALUMINUM CAPPED MONUMENT BEING SOUTH OF THE NORTH ⅛ CORNER BETWEEN SECTION 8 AND 9 AS MONUMENTED BY A 2 ½" ALUMINUM CAP A DISTANCE OF 1190.52 FEET AND NORTH OF THE EAST ¼ CORNER OF SECTION 8 AS MONUMENTED BY 2 ½" ALUMINUM CAPPED MONUMENT STAMPED "LS28656" A DISTANCE OF 150.52 FEET AND NORTH OF THE NE CORNER OF A BARBWIRE FENCE TO AN OLD BARN AREA A DISTANCE OF 19.4'. NAVD 88 DATUM ELEVATION=6572.29

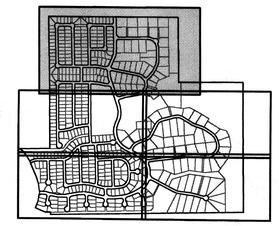
CALL UTILITY NOTIFICATION CENTER OF COLORADO

1-800-922-1987

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

100 0 50 100 200

ORIGINAL SCALE: 1" = 100'



KEY MAP

RUNOFF SUMMARY TABLES

BASIN	DESIGN POINT	LOCAL 5-YEAR	LOCAL 100-YEAR	TOTAL RUNOFF 5-YEAR	TOTAL RUNOFF 100-YEAR	TRIBUTARY SUB-BASINS
B36	36	2.4	7.4	–	–	–
B37	37	4.9	12.1	–	–	–
B39	39	1.4	4.4	8.0	22.1	–
B40	40	2.5	6.5	–	–	–
B41	41	1.6	5.0	–	–	–
B42	42	3.7	11.5	7.7	22.71	–
B44	44	8.2	22.4	–	–	–
B45	45	8.3	22.9	–	–	–
B46	46	1.6	5.2	–	–	–
B47	47	5.2	17.0	–	–	–
B48	48	2.6	5.8	–	–	–
B49	49	1.7	3.7	39.1	121.3	–

BASIN	DESIGN POINT	LOCAL 5-YEAR	LOCAL 100-YEAR	TOTAL RUNOFF 5-YEAR	TOTAL RUNOFF 100-YEAR	TRIBUTARY SUB-BASINS
A6	6	–	6.3	–	16.8	–
A7	7	7.2	17.4	–	–	–
A8	8	4.4	10.7	–	–	–
A9	9	4.5	10.8	21.5	69.9	–
A10	10	4.9	12.0	62.2	89.8	–
A11	11	3.6	8.6	–	–	–
A12	12	3.8	9.2	–	–	–
A13	13	0.8	1.9	–	–	–
A14	14	3.3	8.0	–	–	–
A15	15	1.4	3.3	–	–	–
A16	16	0.7	1.6	–	–	–
A17	17	4.2	10.3	–	–	–
A18	18	2.7	6.6	18.9	45.8	–

LEGEND

- 5450 — EXISTING MAJOR CONTOUR
- 5450 — EXISTING MINOR CONTOUR
- 5450 — PROPOSED MAJOR CONTOUR
- 5450 — PROPOSED MINOR CONTOUR
- INLET
- FLOW DIRECTION
- DESIGN POINT
- NOTE: EACH MAJOR BASIN STARTS OVER AT DP 1
- A — BASIN ID
- 1.32 0.45 0.60 — 5 YEAR "C" VALUE, 100 YEAR "C" VALUE, AREA IN ACRES
- D — MANHOLE
- F.E.S.
- RIPRAP

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE TOWN OF CASTLE ROCK AND STATE OF COLORADO STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN, REVISIONS AND AS-BUILT CONDITIONS RELATIVE TO SAID PLANS.

TOWN OF CASTLE ROCK APPROVALS

THESE PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM DATE OF PUBLIC WORKS DIRECTOR APPROVAL

RECOMMEND APPROVAL BY:

ENGINEERING DIVISION DATE

APPROVED BY:

PUBLIC WORKS DIRECTOR DATE

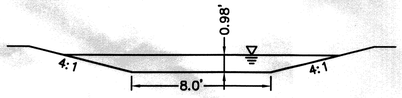
POND A SUMMARY TABLE

STORM DESIGN	POND VOLUME (AC-FT)	WATER SURFACE ELEVATION	RELEASE RATE (CFS)
WQCV	0.73	6554.32	0.42 (PEAK)
10 YEAR	2.32	6557.45	14.4
100 YEAR	3.57	6559.08	48.0

POND B SUMMARY TABLE

STORM DESIGN	POND VOLUME (AC-FT)	WATER SURFACE ELEVATION	RELEASE RATE (CFS)
WQCV	2.31	6525.92	1.24 (PEAK)
100 YEAR	8.17	6530.74	143.0

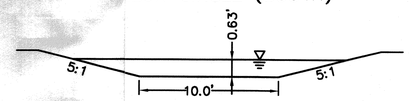
SHANNOCK AVENUE OVERFLOW CHANNEL CROSS SECTION



CROSS SECTION A-A
NTS

DESIGN INFORMATION	
GRASS MANNING'S N	N = 0.035
CHANNEL INVERT SLOPE	So = 0.015 ft/ft
DESIGN DISCHARGE	Q = 48.4 cfs

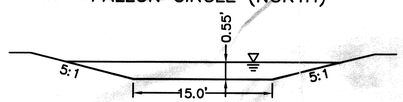
TEMPORARY CHANNEL FALLON CIRCLE (SOUTH)



CROSS SECTION B-B
NTS

DESIGN INFORMATION	
GRASS MANNING'S N	N = 0.035
CHANNEL INVERT SLOPE	So = 0.050 ft/ft
DESIGN DISCHARGE	Q = 49.3 cfs

TEMPORARY CHANNEL FALLON CIRCLE (NORTH)



CROSS SECTION C-C
NTS

DESIGN INFORMATION	
GRASS MANNING'S N	N = 0.035
CHANNEL INVERT SLOPE	So = 0.040 ft/ft
DESIGN DISCHARGE	Q = 49.5 cfs

NO.	DATE	REVISION	BY
4			
3	08/30/02	2ND TOWN OF CASTLE ROCK DRAINAGE COMMENTS	CLK
2	06/17/02	REVISED PER PUBLIC MEETING REQUESTS	CLK
1	04/03/02	FIRST TOWN OF CASTLE ROCK GRADING COMMENTS	

CASTLEWOOD RANCH FILING NO. 2

CASTLEWOOD RANCH, LLC

PHASE III DRAINAGE MAP

Turner Collie & Braden Inc.
ENGINEERS PLANNERS PROJECT MANAGERS
999 EIGHTEENTH STREET, SUITE 1500
DENVER, COLORADO 80202
PHONE (303) 298-7117 FAX (303) 296-1124

Unit INF	Scale: Horz. 1"=100' Vert.	Date 02/09/02	
Designed TJN	Checked RAG	Job No. 25-50088	Contract 001
Drawn TJN	Approved TBM	Sheet 1	of 5

L:\Castlewood Ranch\25000\25-001\cad\Dwg\pnt_pond B\1-drain.dwg 11/13/02 03:35:10 PM MST

APPENDIX B
Pond A

DETENTION POND STORAGE VOLUME

Subdivision: Castlewood Ranch
Calculated By: CLK
Date: August 20, 2002

Project: **Detention Pond A**

SITE INFORMATION

I = Percent Impervious = 36.69 (From UDFCD V. 1, Fig. RO-5, 38% for 46.11 acres of housing, 5% for 1.91 acres of open grass area)

A = Area (acres) = 48.02 (Includes 1.91 acre-ft from area adjacent to Pond A)

VOLUME

$V_{WQCV} = A*I/2400$	31,977	ft^3		0.73	ac-feet
$V_{10} = (0.95*I-1.9)/1000*A$	68,933	ft^3		1.58	ac-feet
$V_{100} = (1.78*I-.002*I^2-3.56)/1000*A$	123,528	ft^3		2.84	ac-feet
			Vt=	3.57	ac-feet

RELEASE RATE

(Per TCR Standards, Hydrologic Soil Group C/D)

$Q_{10} = 0.30*A =$ 14.41 cfs

$Q_{100} = 1.0*A =$ 48.02 cfs

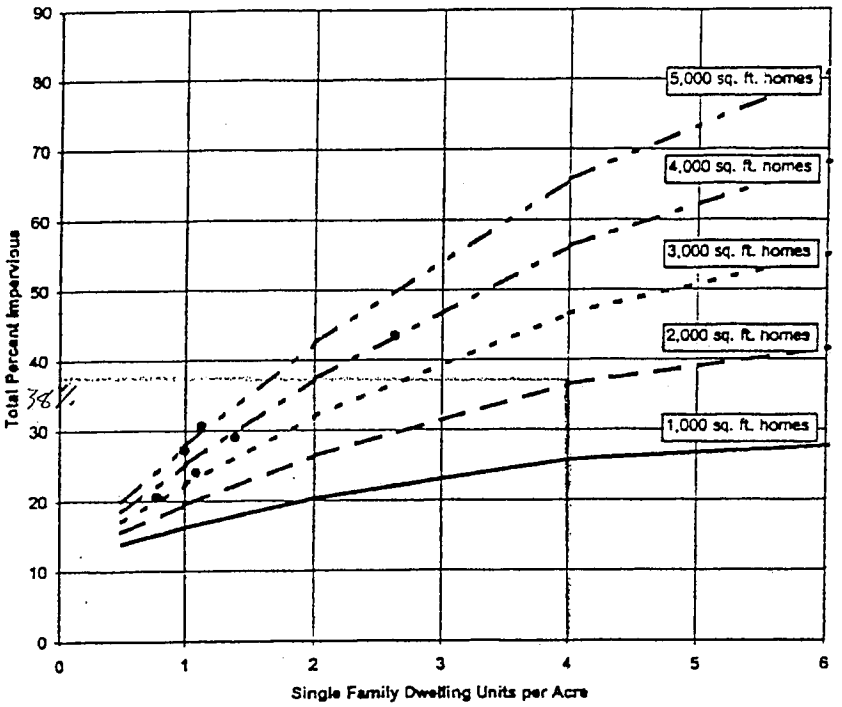


FIGURE RO-5

Watershed Imperviousness, Single-Family Residential Two-Story Houses

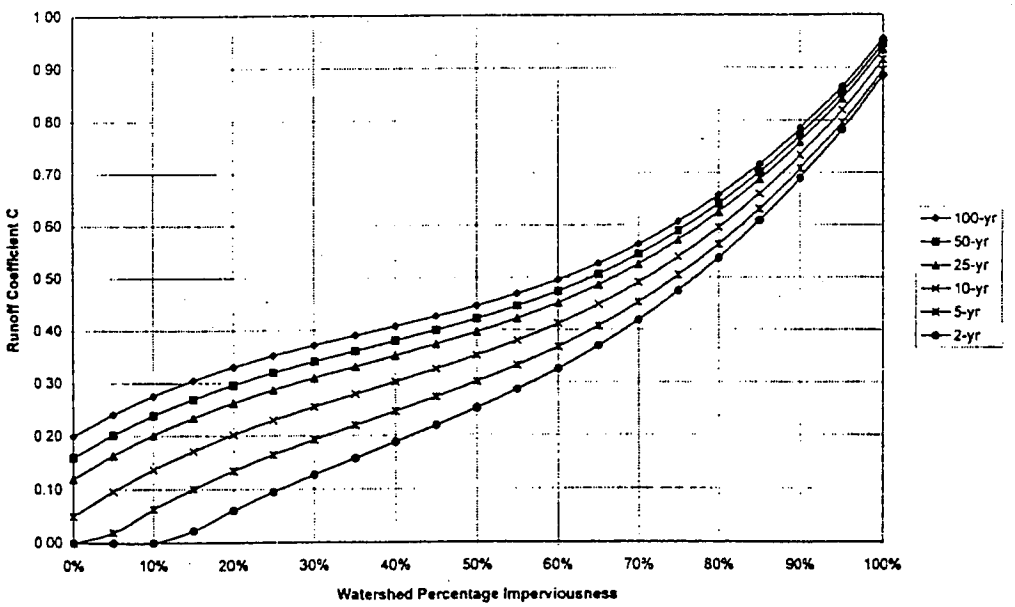
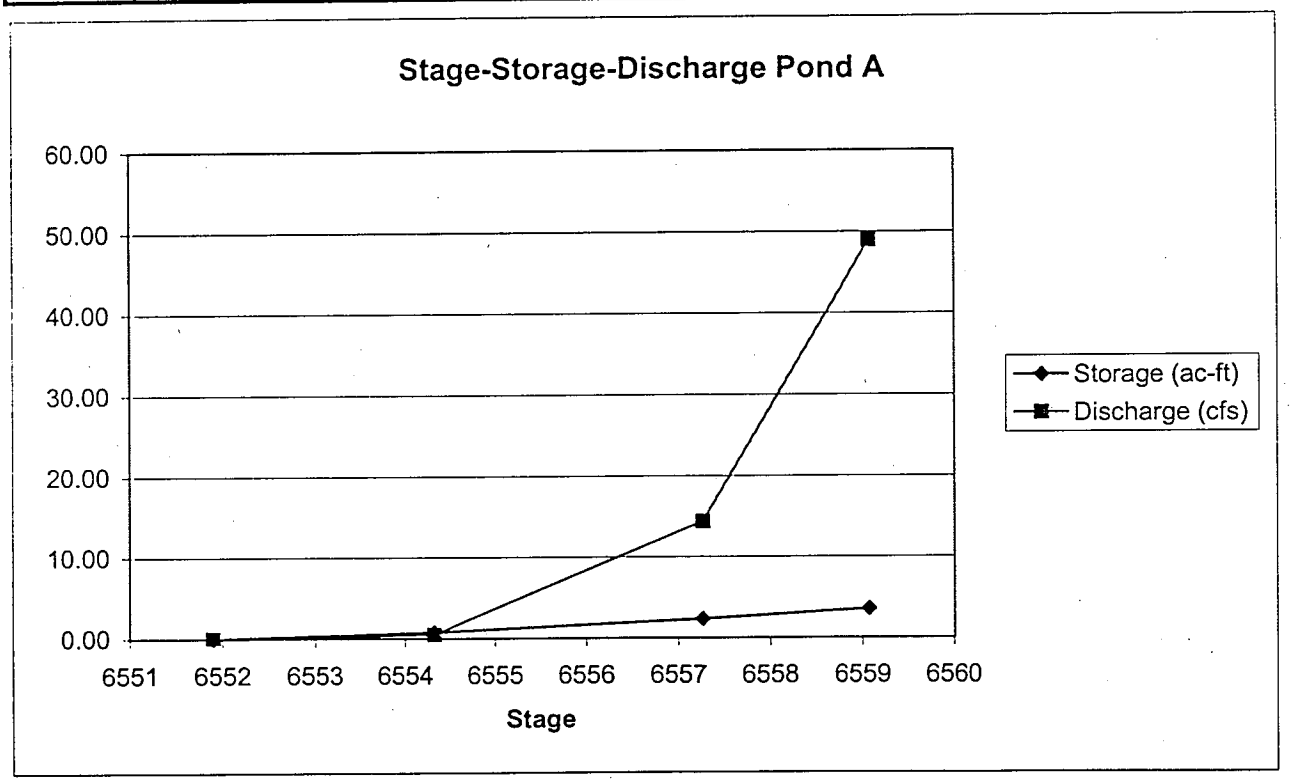


FIGURE RO-6

Runoff Coefficient, *C*, vs. Watershed Percentage Imperviousness NRCS Hydrologic Soil Group A

Castlewood Ranch Detention Pond A
Stage Discharge Curve for Pond A
8/20/02
CLK

Stage (ft)	Q riser (cfs)	Q 10-year orifiice) (cfs)	Q cir pipe	Storage (ac-ft)	Discharge (cfs)
6551.90	0.00	water qual inlet control	water qual inlet control	0.00	0.00
6554.32	0.46	water qual inlet control	water qual inlet control	0.73	0.46
6557.27	10-year orifice control	14.38	10-year orifice control	2.32	14.38
6559.08	100-year orifice control	100-year orifice control	48.94	3.57	48.94



Castlewood Ranch Detention Pond A
Detention Pond Volume
6/13/02
DRC
CLK

Filename: L:\Castlewood Ranch\050086-001\Admin\Report\pond volume.xls

Elevation (ft)	Area (ft2)	Vol @ El. (ft3)	Vol @ El. (acre-ft)	Cumul. Vol (ft3)	Cumul. Vol (acre-ft)
6551.9	0				
		13	0.00		
6552	252			13	0.00
		8,208	0.19		
6553	16163			8,208	0.19
		17,365	0.40		
6554	18566			25,572	0.59
		19,893	0.46		
6555	21220			45,465	1.04
		22,591	0.52		
6556	23961			68,056	1.56
		25,389	0.58		
6557	26816			93,444	2.15
		28,300	0.65		
6558	29784			121,744	2.79
		31,325	0.72		
6559	32866			153,069	3.51
		34,677	0.80		
6560	36488			187,746	4.31

WQCV (ac-ft) =	0.73	
WQCV water surface		
6554 + (WQCV - 0.59)/(1.04-0.59)=	6554.32	
10 yr required volume + WQCV (ac-ft) =	2.32	
10 yr water surface		
6555 + (WQCV -2022)/(1.56-1.47)=	6557.45	
100 yr required volume + WQCV (ac-ft) =	3.57	
100 yr water surface		
6558 + (WQCV - 2.79)/(3.51-2.79)=	6559.08	7.18

Required Maximum Average Discharge to Achieve 40-hour Drawdown Time:
Q = (0.68ac-ft/40hr)*(hr/3000s)*(43,560ft^2/ac) = 0.22 cfs

Assume Linear Flow (verified in Chart WQ1 for Pond C)
Average Q (design) = 0.21

Design Procedure Form: Extended Detention Basin (EDB) - Sedimentation Facility

Designer: Charlton Kennedy
Company: TC&B
Date: June 16, 2002
Project: Castlwood Ranch
Location: Pond A

1. Basin Storage Volume	
A) Tributary Area's Imperviousness Ratio ($i = I_a / 100$)	I_a = 36.69 % i = 0.37
B) Contributing Watershed Area (Area)	Area = 48.02 acres
C) Water Quality Capture Volume (WQCV) ($WQCV = 1.0 * (0.91 * I^3 - 1.19 * I^2 + 0.78 * I)$)	WQCV = 0.17 watershed inches
D) Design Volume: Vol = (WQCV / 12) * Area * 1.2	Vol = 0.821 acre-feet
2. Outlet Works	
A) Outlet Type (Check One)	x Orifice Plate Perforated Riser Pipe Other:
B) Depth at Outlet Above Lowest Perforation (H)	H = 2.18 feet
C) Required Maximum Outlet Area per Row, (A_o)	A_o = 1.55 square inches
D) Perforation Dimensions **(enter one only)**: i) Circular Perforation Diameter **OR** ii) 2" Height Rectangular Perforation Width	D = 0.7500 inches, **OR** W = inches
E) Number of Columns (nc, See Table 6a-1 For Maximum)	nc = 3 number
F) Actual Design Outlet Area per Row (A_o)	A_o = 1.33 square inches
G) Number of Rows (nr)	nr = 7 number
H) Total Outlet Area (A_{ot})	A_{ot} = 8.67 square inches
3. Trash Rack	
A) Needed Open Area: A_t = 0.5 * (Figure 7 Value) * A_{ot}	A_t = 304 square inches
B) Type of Outlet Opening (Check One)	X ≤ 2" Diameter **Round** 2" High **Rectangular** Other:
C) For 2", or Smaller, **Round Opening** (Ref.: Figure 6a):	
i) Width of Trash Rack and Concrete Opening (W_{conc}) from Table 6a-1	W_{conc} = 18 inches
ii) Height of Trash Rack Screen (H_{TR})	H_{TR} = 50 inches

Design Procedure Form: Extended Detention Basin (EDB) - Sedimentation Facility

Designer: Charlton Kennedy
Company: TC&B
Date: June 16, 2002
Project: Castlwood Ranch
Location: Pond A

iii) Type of Screen (Based on Depth H), Describe if "Other"	x S.S. #93 VEE Wire (US Filter) Other:
iv) Screen Opening Slot Dimension, Describe if "Other"	X 0.139" (US Filter) Other:
v) Spacing of Support Rod (O.C.) Type and Size of Support Rod (Ref.: Table 6a-2)	1.00 inches TE 0.074 in. x 0.50 in.
vi) Type and Size of Holding Frame (Ref.: Table 6a-2)	0.75 in. x 1.00 in. angle
D) For 2" High **Rectangular Opening** (Refer to Figure 6b):	
I) Width of Rectangular Opening (W)	W = _____ inches
ii) Width of Perforated Plate Opening (W_{conc} = W + 12")	W_{conc} = _____ inches
iii) Width of Trashrack Opening ($W_{opening}$) from Table 6b-1	$W_{opening}$ = _____ inches
iv) Height of Trash Rack Screen (H_{TR})	H_{TR} = _____ inches
v) Type of Screen (based on depth H) (Describe if "Other")	_____ Klemp™ KPP Series Aluminum Other:
vi) Cross-bar Spacing (Based on Table 6b-1, Klemp™ KPP Grating). Describe if "Other"	_____ inches Other:
vii) Minimum Bearing Bar Size (Klemp™ Series, Table 6b-2) (Based on depth of WQCV surcharge)	
4. Detention Basin length to width ratio	_____ (L/W)
5 Pre-sedimentation Forebay Basin - Enter design values	
A) Volume (5 to 10% of the Design Volume in 1D)	_____ acre-feet
B) Surface Area	_____ acres
C) Connector Pipe Diameter (Size to drain this volume in 5-minutes under inlet control)	_____ inches
D) Paved/Hard Bottom and Sides	_____ yes/no

DESIGN OF RIP RAP BASINS FOR STORM OUTLETS

Location: Outlet into Pond A

By: CLK
Date: 6/24/02

Given:

Q =	89.80
Y_t =	3.2
D =	4.00
S_o =	0.40%
n =	0.013

Calculation:

Tailwater depth verses pipe diameter:
$D/3$ = 1.33 (ft)

Pipe flowing full capacity:
Q_{full} = 91.09 (cfs)

Full Depth Ratio:
Q/Q_{full} = 0.99
d/d_{full} = 0.95 (from figure 2)

Froude Number
$Q/D^{2.5}$ = 2.81
d/d_{full} = 0.58 (from figure 3)

Flow depth at end of pipe:
d = 2.32 (ft) Use d/d_{full} = 0.58

Area of design flow in the end of pipe:
A/A_{full} = 0.98 (from figure 2)
A = 12.32 (sq ft)

Velocity:
V = 7.3 (fps)

Rip rap sizing design parameter:
P_d = 11.3

Results:

Rip rap requirements:
Use Type L Rip Rap (from figure 4)

Minimum width of rip rap:
W = 16.0 (ft)

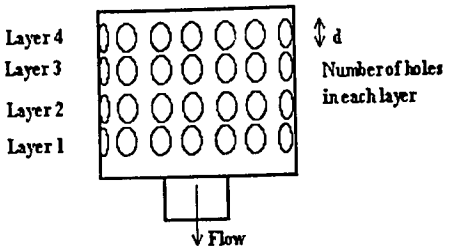
Minimum length of rip rap:
L = 24.0 (ft) (6D instead of 4D per Castle Rock Standards)

Minimum thickness of rip rap:
T = 16 (in) d_{50} = 9

Riprap Type	D_{50} - Median Rock Size (inches)
L	9
M	12
H	18
HG	18

Pond A - WQCV Riser (Orifice Plate)

Flow Capacity of a Riser (Inlet Control)



Design Information (Input):

Diameter of holes	d =	0.750 in
Number of holes per layer	n =	4
Number of layers	N_L =	7
Vertical distance between layers	h =	0.33 in
Orifice discharge coefficient	C_o =	0.62
Total opening area at each layer	A_o =	1.7672 sq in
	A_o =	0.0123 sq ft

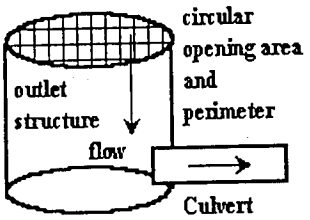
Calculation of Collection Capacity :

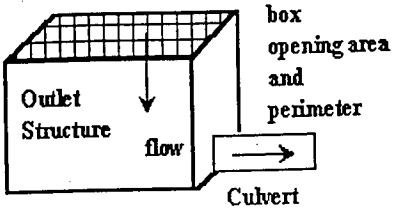
The starting water surface elevation must be ≥ the central elevation of the first layer.
Enter water surface elevations in ascending order.

	Water Surface Elevation ft (input)	Central Elevations of Layers of Holes in feet										Flow Rate cfs
		Layer 1	Layer 2	Layer 3	Layer 4	Layer 5	Layer 6	Layer 7	Layer 8	Layer 9	Layer 10	
		0.03	0.36	0.69	1.02	1.35	1.68	2.01				
		Collection Capacity for Each Layer of Holes in cfs										
start	0.40	0.04	0.01	0.00	0.00	0.00	0.00	0.00				0.05
	0.80	0.05	0.04	0.02	0.00	0.00	0.00	0.00				0.11
	1.30	0.07	0.06	0.05	0.03	0.00	0.00	0.00				0.21
	2.30	0.09	0.09	0.08	0.07	0.06	0.05	0.03				0.46
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00

Pond A - Verification of 100-year Grate Size Adequacy

Collection Capacity of Horizontal Orifice (Inlet Control)





Design Information (Input):

Net Opening Area (after Trash Rack Reduction)	A_o = 11.4 sq ft
Net Perimeter as Weir Length	L_w = 12.6 ft
Orifice Coefficient	C_o = 0.65
Weir Coefficient	C_w = 3.10
Center Elevation of Orifice Opening	E_o = 6551.90 ft

Calculation of Collection Capacity:

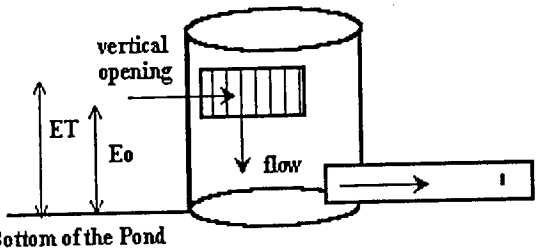
Enter water surface elevations in ascending order.

	Water Surface Elevation ft (input)	Weir Flow cfs (output)	Orifice Flow cfs (output)	Collection Capacity cfs (output)
start	6551.90	0.00	0.00	0.00
	6558.72	693.82	154.75	154.75

> $Q_{100} \times 2$

Pond A - Design of 10-year Orifice (connects chambers)

Collection Capacity of Vertical Orifice (Inlet Control)



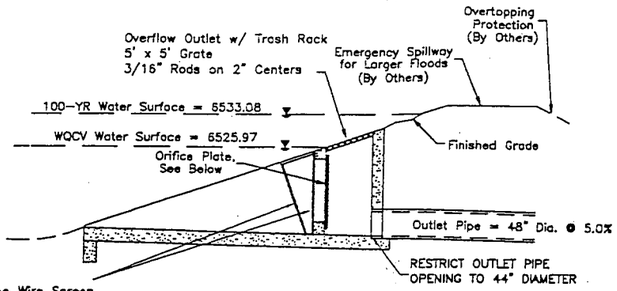
Design Information (Input):

Net Opening Area	A_o = 1.2 sq ft	– 1'x1.19' orifice connecting chambers
Orifice Coefficient	C_o = 0.65	
Top Elevation of Orifice Opening Area	E_t = 6552.90 ft	
Center Elevation of Orifice Opening	E_o = 6551.90 ft	

Calculation of Collection Capacity:

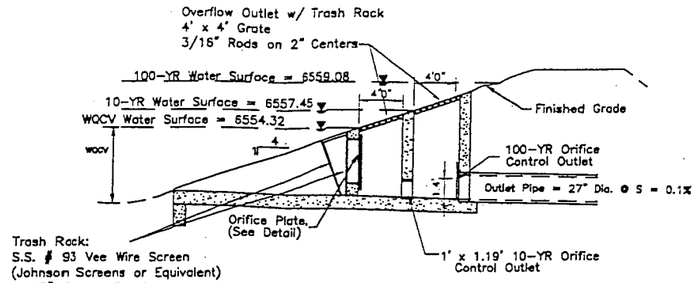
Enter water surface elevations in ascending order.

	Water Surface Elevation ft (input)	Collection Capacity cfs (output)
start	6557.27	14.38 ~ Q_{10}



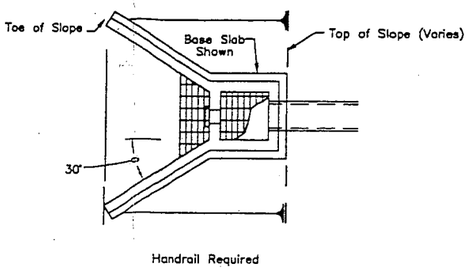
Trash Rack:
S.S. # 93 Vee Wire Screen
(Johnson Screens or Equivalent)
0.193" Screen Opening
Support Rod: TE 0.074" x 0.50"
Holding Frame: 0.75 in. x 1.00 in. Angle

Pond B Drop Box Outlet



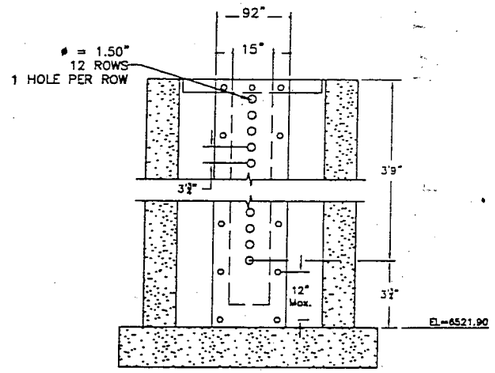
Trash Rack:
S.S. # 93 Vee Wire Screen
(Johnson Screens or Equivalent)
0.193" Screen Opening
Support Rod: TE 0.074" x 0.50"
Holding Frame: 0.75 in. x 1.00 in. Angle

Pond A Drop Box Outlet Option

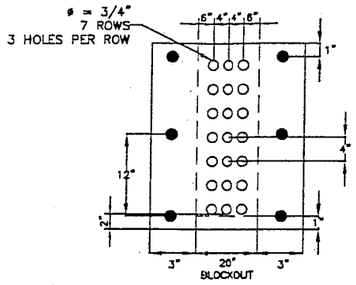


Handrail Required

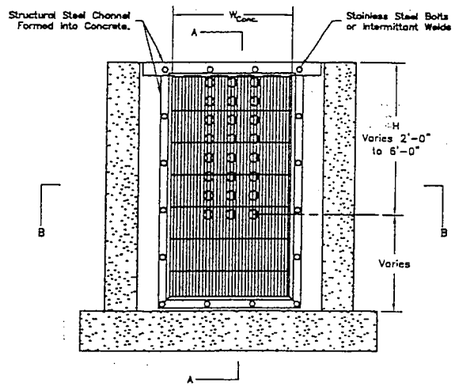
Plan View-Flared Wingwall



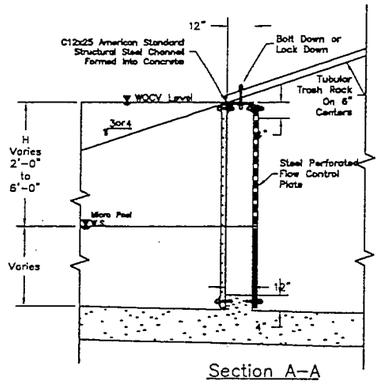
Pond B Orifice Perforation Details



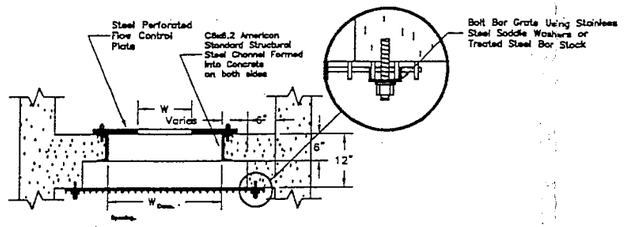
POND A WATER QUALITY ORIFICE PLATE
NTS



Elevation



Section A-A



Section B-B - Plan View

WQCV Trash Racks:

1. Well-screen trash racks shall be stainless steel and shall be attached by intermittant welds along the edge of the mounting frame.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

RECOMMENDED APPROVAL BY:

ENGINEERING DIVISION DATE

APPROVED BY:

PUBLIC WORKS DIRECTOR DATE

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE TOWN OF CASTLE ROCK AND STATE OF COLORADO STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

TIMOTHY B. MASTERS PE 30381 DATE

COLORADO REGISTERED TIMOTHY BRIAN MASTERS 30381 PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY
4			
3			
2			
1	08/31/02	TOWN OF CASTLE ROCK COMMENTS	

CASTLEWOOD RANCH FILING NO. 2 PARCEL 1
CASTLEWOOD RANCH, LLC.

POND A/B OUTLET STRUCTURE DETAILS

Turner Collie & Braden Inc.
ENGINEERS PLANNERS PROJECT MANAGERS
999 EIGHTEENTH STREET, SUITE 1500
DENVER, COLORADO 80202
PHONE (303) 298-7117 FAX (303) 296-1124

Unit 2505	Scales: Horz. / Vert.	Date 7/9/02	
Designed CLK	Checked CLH	Job No. 25-50086	Contract 001
Drawn CLK	Approved TBM	Sheet 109	of 110

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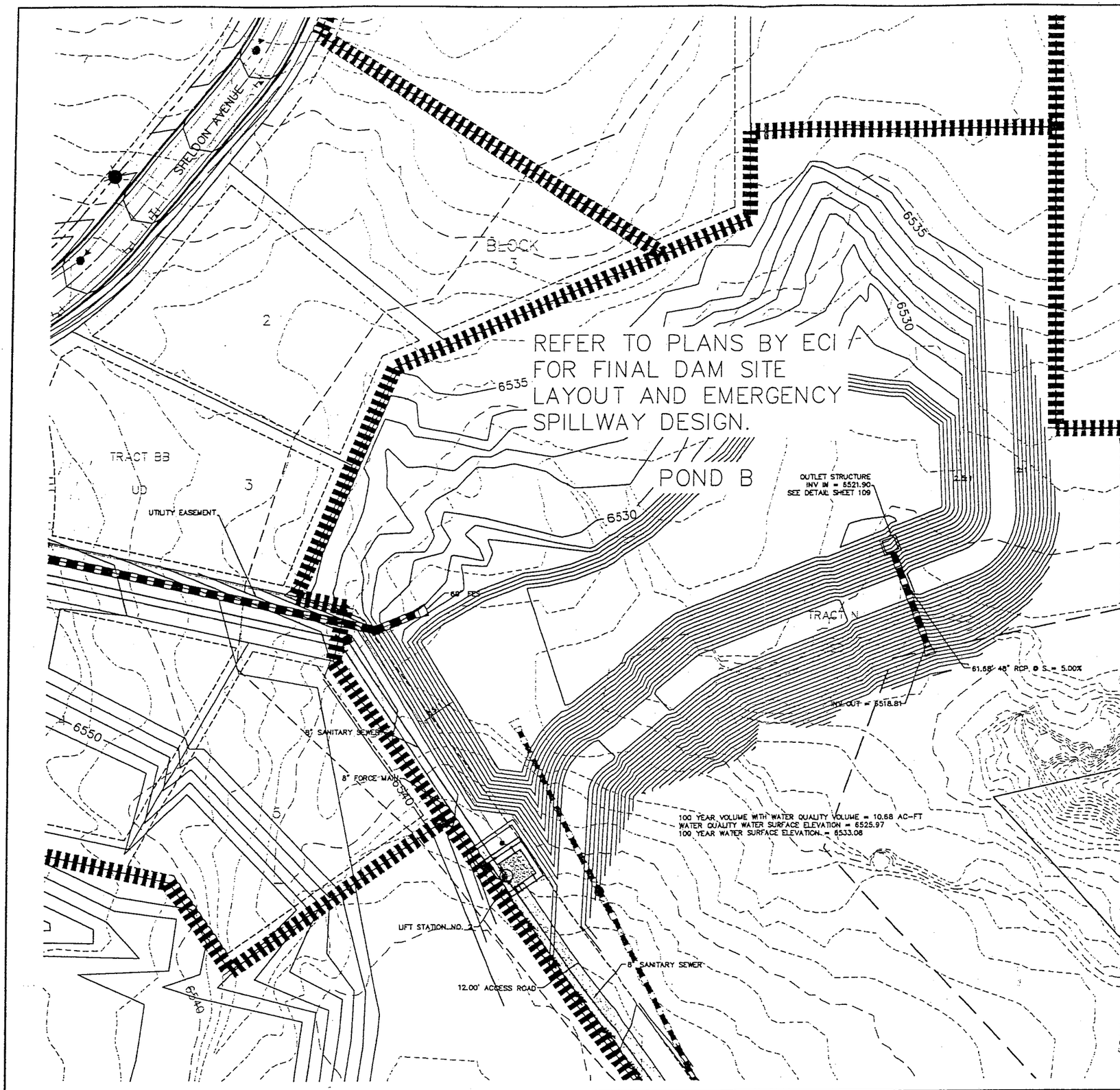
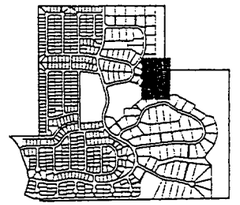
CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.





KEY MAP

LEGEND

6450	EXISTING MAJOR CONTOUR
6450	EXISTING MINOR CONTOUR
6450	PROPOSED MAJOR CONTOUR
6450	PROPOSED MINOR CONTOUR
4.00%	PROPOSED STREET GRADE
4:1	PROPOSED SLOPE
10+00.00 FS=6249.00 / 170' VC PVI 6250.00	PROPOSED VERTICAL CURVE
	PROPOSED STRAW BALE
SF	PROPOSED SILT FENCE
	PROPOSED VEHICLE TRACKING
VTC VEHICLE TRACKING CONTROL	10 LOT NUMBER

TYPICAL DAM SECTION

RECOMMENDED APPROVAL BY:

ENGINEERING DIVISION DATE

APPROVED BY:

PUBLIC WORKS DIRECTOR DATE

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE TOWN OF CASTLE ROCK AND STATE OF COLORADO STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

TIMOTHY B. MASTERS PE 30381 DATE

COLORADO REGISTERED TIMOTHY BRIAN MASTERS 30381 PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY
4			
3			
2			
1	06/31/02	TOWN OF CASTLE ROCK COMMENTS	

CASTLEWOOD RANCH FILING NO. 2 PARCEL 1

CASTLEWOOD RANCH, LLC.

POND B GRADING

Turner Collie & Braden Inc.
ENGINEERS PLANNERS PROJECT MANAGERS
999 EIGHTEENTH STREET, SUITE 1500
DENVER, COLORADO 80202
PHONE (303) 296-7117 FAX (303) 296-1124

Unit LDS	Scale: Horiz. 1"=30' Vert.	Date 02/11/02	
Designed TJM	Checked RDC	Job No. 25-50087 Contract 001	
Drawn TJM	Approved TBM	Sheet 110 of 110	

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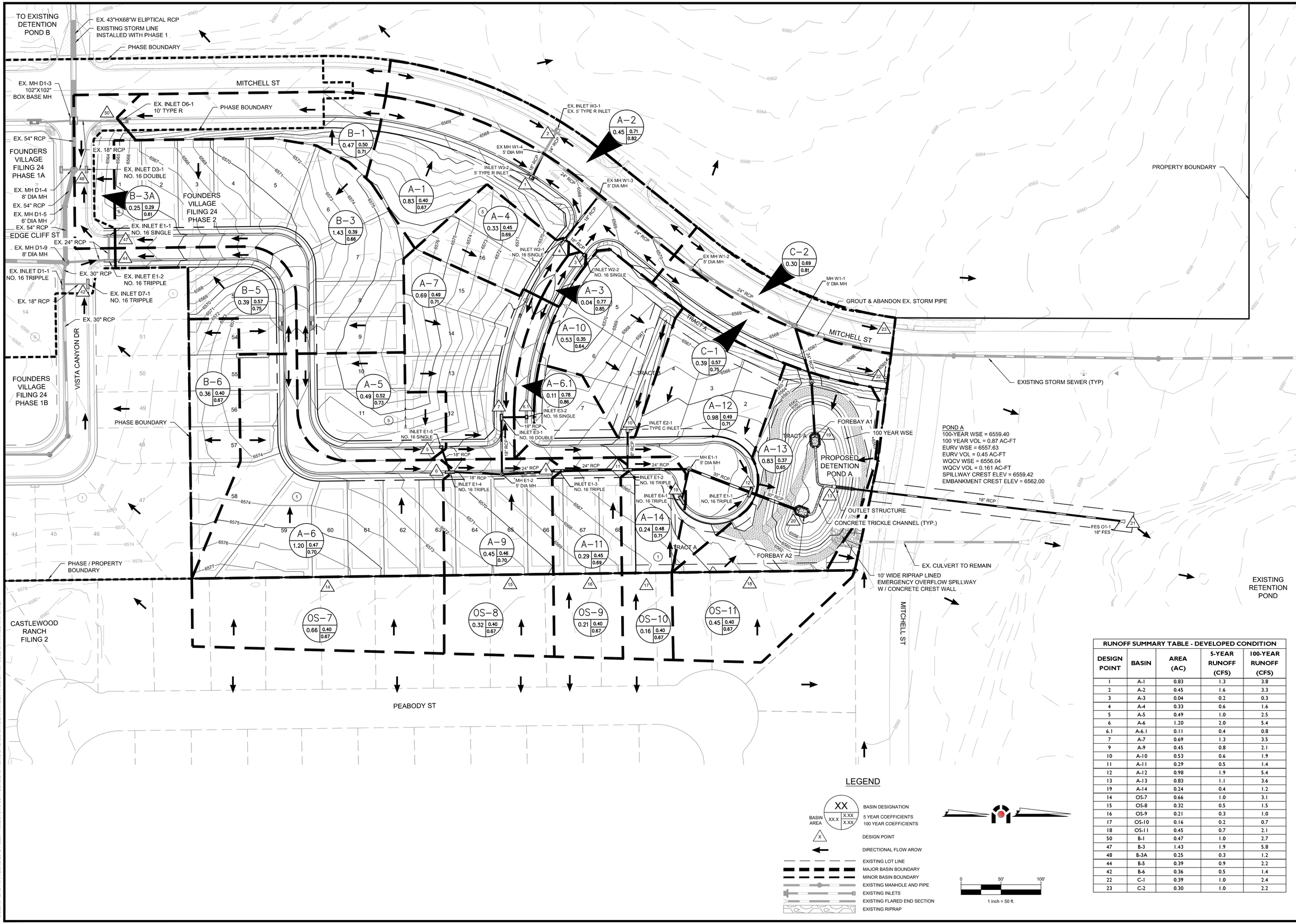

RUNOFF SUMMARY TABLE - DEVELOPED CONDITION

DESIGN POINT	BASIN	AREA (AC)	5-YEAR RUNOFF (CFS)	100-YEAR RUNOFF (CFS)
1	A-1	0.83	1.3	3.8
2	A-2	0.45	1.6	3.3
3	A-3	0.04	0.2	0.3
4	A-4	0.33	0.6	1.6
5	A-5	0.49	1.0	2.5
6	A-6	1.20	2.0	5.4
6.1	A-6.1	0.11	0.4	0.8
7	A-7	0.69	1.3	3.5
9	A-9	0.45	0.8	2.1
10	A-10	0.53	0.6	1.9
11	A-11	0.29	0.5	1.4
12	A-12	0.98	1.9	5.4
13	A-13	0.83	1.1	3.6
19	A-14	0.24	0.4	1.2
14	OS-7	0.66	1.0	3.1
15	OS-8	0.32	0.5	1.5
16	OS-9	0.21	0.3	1.0
17	OS-10	0.16	0.2	0.7
18	OS-11	0.45	0.7	2.1
50	B-1	0.47	1.0	2.7
47	B-3	1.43	1.9	5.8
48	B-3A	0.25	0.3	1.2
44	B-5	0.39	0.9	2.2
42	B-6	0.36	0.5	1.4
22	C-1	0.39	1.0	2.4
23	C-2	0.30	1.0	2.2

LEGEND

- XX — BASIN DESIGNATION
- BASIN AREA XX.X — 5 YEAR COEFFICIENTS X.XX / 100 YEAR COEFFICIENTS X.XX
- X — DESIGN POINT
- DIRECTIONAL FLOW AROW
- EXISTING LOT LINE
- MAJOR BASIN BOUNDARY
- MINOR BASIN BOUNDARY
- EXISTING MANHOLE AND PIPE
- EXISTING INLETS
- EXISTING FLARED END SECTION
- EXISTING RIPRAP

0 50' 100'

1 inch = 50 ft.

CIVIL ENGINEERING
DEVELOPMENT CONSULTING
NATURAL RESOURCES CONSULTING
LAND SURVEYING
303.703.4444
1950 W. Littleton Blvd., Ste. 109
Littleton, CO 80120

CORE CONSULTANTS

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

Know what's below. Call before you dig. 811

CORE ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL AND VERTICAL). THE EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

#	REVISION DESCRIPTION	DATE	BY
A	1ST SUBMISSION	6/28/2019	BCT
B	2ND SUBMISSION	8/5/2019	KR
C	3RD SUBMISSION	9/6/2019	KR

FOUNDERS VILLAGE FILING 24
TOWN OF CASTLE ROCK, DOUGLAS COUNTY

DRAINAGE PLANS - PHASE 2
PROPOSED DRAINAGE MAP

DESIGNED BY: DJB
DRAWN BY: DJB
CHECKED BY: KR

JOB NO. 18-007

SHEET 2 OF 2

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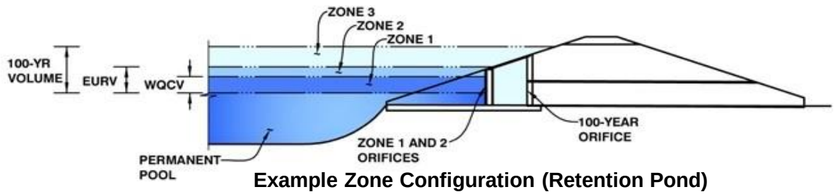
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Project: Founders Village Filing 24 - Phase 2

Basin ID: Pond A



Example Zone Configuration (Retention Pond)

Required Volume Calculation

Selected BMP Type =	EDB	
Watershed Area =	9.26	acres
Watershed Length =	675	ft
Watershed Slope =	0.018	ft/ft
Watershed Imperviousness =	50.80%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	100.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	
Water Quality Capture Volume (WQCV) =	0.161	acre-feet
Excess Urban Runoff Volume (EURV) =	0.446	acre-feet
2-yr Runoff Volume (P1 = 1.06 in.) =	0.374	acre-feet
5-yr Runoff Volume (P1 = 1.43 in.) =	0.591	acre-feet
10-yr Runoff Volume (P1 = 1.66 in.) =	0.754	acre-feet
25-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet
50-yr Runoff Volume (P1 = 2.26 in.) =	1.306	acre-feet
100-yr Runoff Volume (P1 = 2.6 in.) =	1.621	acre-feet
500-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet
Approximate 2-yr Detention Volume =	0.351	acre-feet
Approximate 5-yr Detention Volume =	0.557	acre-feet
Approximate 10-yr Detention Volume =	0.632	acre-feet
Approximate 25-yr Detention Volume =	0.000	acre-feet
Approximate 50-yr Detention Volume =	0.749	acre-feet
Approximate 100-yr Detention Volume =	0.874	acre-feet

Optional User Override 1-hr Precipitation

1.06	inches
1.43	inches
1.66	inches
	inches
2.26	inches
2.60	inches
	inches

Stage-Storage Calculation

Zone 1 Volume (User Defined) =	0.161	acre-feet
Zone 2 Volume (User Defined - Zone 1) =		acre-feet
Zone 3 Volume (User Defined - Zones 1 & 2) =	0.874	acre-feet
Total Detention Basin Volume =	1.035	acre-feet

Depth Increment = ft

6553.52

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	--	--	--	48	0.001		
6553.85	--	0.33	--	--	--	48	0.001	15	0.000
6554	--	0.48	--	--	--	98	0.002	26	0.001
6555	--	1.48	--	--	--	3,036	0.070	1,564	0.036
6556	--	2.48	--	--	--	6,366	0.146	6,295	0.145
6557	--	3.48	--	--	--	7,789	0.179	13,372	0.307
6558	--	4.48	--	--	--	9,299	0.213	21,916	0.503
6559	--	5.48	--	--	--	12,355	0.284	32,743	0.752
6560	--	6.48	--	--	--	14,268	0.328	46,055	1.057
6561	--	7.48	--	--	--	16,317	0.375	61,347	1.408
6562	--	8.48	--	--	--	18,388	0.422	78,700	1.807
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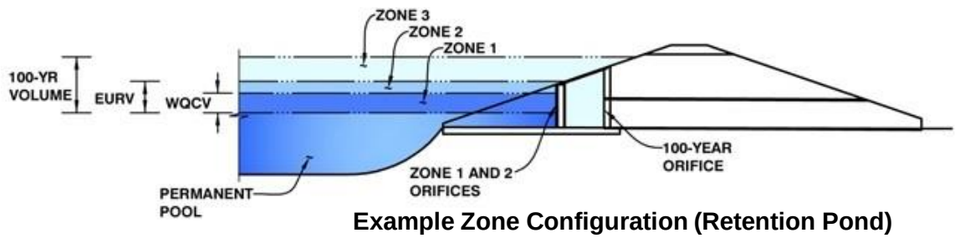
Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: Founders Village Filing 24 - Phase 2

Basin ID: Pond A



Example Zone Configuration (Retention Pond)

	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (User)	2.60	0.161	Orifice Plate
Zone 2 (User)			Orifice Plate
Zone 3 (User)	6.42	0.874	Weir&Pipe (Restrict)
		1.035	Total

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

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	N/A	inches

Calculated Parameters for Underdrain

Underdrain Orifice Area =	N/A	ft^2
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 BMP)

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	4.21	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	16.80	inches
Orifice Plate: Orifice Area per Row =	N/A	inches

Calculated Parameters for Plate

WQ Orifice Area per Row =	N/A	ft^2
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft^2

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

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.40	2.81					
Orifice Area (sq. inches)	0.81	0.81	2.00					

	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	
Invert of Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =	N/A	N/A	inches

Calculated Parameters for Vertical Orifice

	Not Selected	Not Selected	
Vertical Orifice Area =	N/A	N/A	ft^2
Vertical Orifice Centroid =	N/A	N/A	feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	5.25	N/A	ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	3.00	N/A	feet
Overflow Weir Slope =	4.00	N/A	H:V (enter zero for flat grate)
Horiz. Length of Weir Sides =	4.00	N/A	feet
Overflow Grate Open Area % =	70%	N/A	%, grate open area/total area
Debris Clogging % =	50%	N/A	%

Calculated Parameters for Overflow Weir

	Zone 3 Weir	Not Selected	
Height of Grate Upper Edge, H_t =	6.25	N/A	feet
Over Flow Weir Slope Length =	4.12	N/A	feet
Grate Open Area / 100-yr Orifice Area =	8.09	N/A	should be ≥ 4
Overflow Grate Open Area w/o Debris =	8.66	N/A	ft^2
Overflow Grate Open Area w/ Debris =	4.33	N/A	ft^2

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

	Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	0.00	N/A	ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter =	18.00	N/A	inches
Restrictor Plate Height Above Pipe Invert =	10.50		inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

	Zone 3 Restrictor	Not Selected	
Outlet Orifice Area =	1.07	N/A	ft^2
Outlet Orifice Centroid =	0.50	N/A	feet
Half-Central Angle of Restrictor Plate on Pipe =	1.74	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

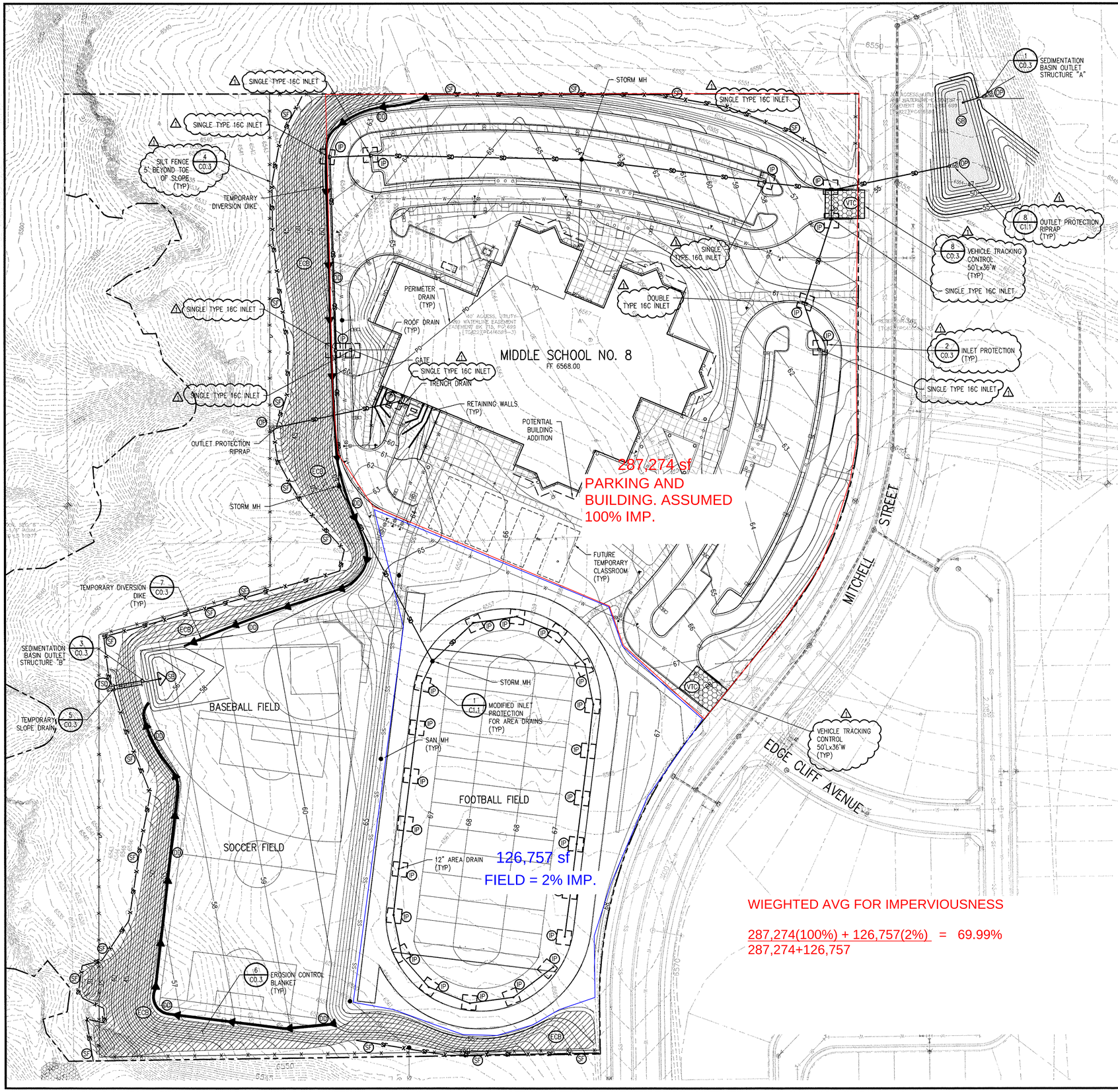
Spillway Invert Stage=	6.48	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	10.00	feet
Spillway End Slopes =	10.00	H:V
Freeboard above Max Water Surface =	1.00	feet

Calculated Parameters for Spillway

Spillway Design Flow Depth=	0.75	feet
Stage at Top of Freeboard =	8.23	feet
Basin Area at Top of Freeboard =	0.41	acres

Routed Hydrograph Results

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) =	0.53	1.07	1.06	1.43	1.66	0.00	2.26	2.60	0.00
Calculated Runoff Volume (acre-ft) =	0.161	0.446	0.374	0.591	0.754	0.000	1.306	1.621	0.000
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	0.160	0.445	0.373	0.591	0.754	#N/A	1.306	1.621	#N/A
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.02	0.15	0.40	0.00	1.26	1.68	0.00
Predevelopment Peak Q (cfs) =	0.0	0.0	0.1	1.4	3.7	0.0	11.7	15.5	0.0
Peak Inflow Q (cfs) =	3.2	8.7	7.3	11.5	14.7	#N/A	25.2	31.2	#N/A
Peak Outflow Q (cfs) =	0.1	0.2	0.2	0.2	0.4	#N/A	8.4	12.5	#N/A
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.1	0.1	#N/A	0.7	0.8	#N/A
Structure Controlling Flow =	Plate	Plate	Plate	Plate	Overflow Grate 1	#N/A	Overflow Grate 1	Outlet Plate 1	#N/A
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	0.0	#N/A	0.9	1.4	#N/A
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) =	38	62	58	69	75	#N/A	71	68	#N/A
Time to Drain 99% of Inflow Volume (hours) =	**40**	66	61	74	82	#N/A	80	79	#N/A
Maximum Ponding Depth (ft) =	2.52	4.09	3.74	4.76	5.36	#N/A	6.14	6.42	#N/A
Area at Maximum Ponding Depth (acres) =	0.15	0.20	0.19	0.23	0.28	#N/A	0.31	0.32	#N/A
Maximum Volume Stored (acre-ft) =	0.150	0.423	0.353	0.563	0.718	#N/A	0.945	1.038	#N/A



TOWN OF CASTLE ROCK GRADING AND EROSION CONTROL NOTES

1. ALL GRADING AND EROSION CONTROL MEASURES ARE SUBJECT TO GENERAL NOTES ON THE COVER SHEET OF THESE PLANS AS WELL AS THE GRADING AND EROSION CONTROL LISTED HERE.
2. AT ALL TIMES DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING AND CONTROLLING ON-SITE EROSION DUE TO WIND AND RUNOFF, AS WELL AS VEHICLE TRACKING. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR INSTALLING AND MAINTAINING ALL EROSION CONTROL FACILITIES SHOWN HERE.
3. ALL PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED AND FUNCTIONAL, PRIOR TO ANY OTHER EARTH-DISTURBING ACTIVITY. ALL OTHER STRUCTURAL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AS SOON AS THE FACILITIES, AROUND WHICH THEY ARE BASED, BECOME OPERATIONAL.
4. ANY EROSION CONTROL FACILITY DAMAGED OR DESTROYED PREMATURELY, BY ANY MEANS, SHALL BE IMMEDIATELY REPAIRED BY THE CONTRACTOR.
5. THERE SHALL BE NO EARTH-DISTURBING ACTIVITY OUTSIDE THE LIMITS DESIGNATED ON THESE PLANS.
6. TOP SOIL SHALL BE REMOVED AND STOCK PILED PRIOR TO OVERLOT GRADING OPERATIONS.
7. A WATER TRUCK SHALL BE KEPT ON-SITE AT ALL TIMES DURING EARTHWORK ACTIVITIES FOR DUST ABATEMENT.
8. CONDITIONS IN THE FIELD MAY WARRANT EROSION CONTROL MEASURES IN ADDITION TO WHAT IS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL IMPLEMENT WHATEVER MEASURES ARE DETERMINED NECESSARY, AS DIRECTED BY THE TCR PUBLIC WORKS INSPECTOR.
9. SILT AND SEDIMENT SHALL BE REMOVED AFTER EACH SUBSTANTIAL RAINFALL.
10. NEGATIVE IMPACTS TO DOWNSTREAM AREAS CAUSED BY OVERLOT GRADING ARE TO BE MONITORED AND CORRECTED BY THE CONTRACTOR. ANY OFF-SITE CLEAN-UP, DIRECTED BY THE TCR PUBLIC WORKS INSPECTOR, (INCLUDING STREET CLEANING), SHALL BE COMPLETED WITHIN 24-HOURS OF WRITTEN INSTRUCTION, OR RISK CONSTRUCTION STOPPAGE.
11. TEMPORARY EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL SUCH TIME AS ALL TRIBUTARY-DISTURBED AREAS ARE SUFFICIENTLY STABILIZED IN THE OPINION OF THE TCR PUBLIC WORKS INSPECTOR, TO MINIMIZE EROSION POTENTIAL.
12. WHEN TEMPORARY EROSION CONTROL MEASURES ARE REMOVED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEAN-UP AND REMOVAL OF ALL SEDIMENT AND DEBRIS FROM ALL DRAINAGE AND OTHER PUBLIC FACILITIES.
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E) SEED PLANTED WITH A DRILL SHALL BE COVERED WITH SOIL TO A DEPTH OF 1/4 TO 3/4 INCH. SEED PLANTED BY THE BROADCAST METHOD SHALL BE INCORPORATED INTO THE SURFACE SOIL, TO A MAXIMUM DEPTH OF 3/4 INCH, BY RAKING, HARROWING, OR OTHER PROVEN METHODS.

F) HYDRO-MULCHING SHALL BE ALLOWED. MULCH SHALL CONSIST OF EITHER CEREAL GRAIN STRAW OR GRASS HAY, AT LEAST 50% BY WEIGHT, BEING 10" OR LONGER. APPLICATION RATE TO BE 2000 LBS./ACRE TO ACHIEVE A STUBBLED SURFACE. ANCHORING WITH A MULCH CRIMPER IS ACCEPTABLE, OR WITH THE USE OF A DISC PLOW, SET VERTICAL TO THE GROUND WITH SUFFICIENT WEIGHT TO ACHIEVE A CRIMPING DEPTH OF AT LEAST 4 INCHES INTO THE SOIL. ALL MULCHED AREAS SHALL BE TACKIFIED AFTER CRIMPING. THE TACKIFIER SOLUTION SHALL BE IN ACCORDANCE WITH NOTE J BELOW.

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H) ALL SLOPES STEEPER THAN 4:1 SHALL BE TACKIFIED (SEE NOTE J BELOW) AFTER THE COMPLETION OF SEEDING AND FERTILIZING. SLOPES SHALL THEN BE COVERED WITH A SOIL RETENTION BLANKET. THE SOIL RETENTION BLANKET SHALL BE A MACHINE-PRODUCED MAT CONSISTING OF 70% AGRICULTURAL STRAW (0.35 LB./SY.) AND 30% COCONUT FIBER (0.15LB./SY). THE BLANKET SHALL BE OF CONSISTENT THICKNESS, WITH THE STRAW EVENLY DISTRIBUTED OVER THE ENTIRE AREA OF THE MAT. THE BLANKET SHALL BE COVERED ON THE TOP SIDE WITH POLYPROPYLENE NETTING HAVING AN APPROXIMATE 5/8" X 5/8" MESH (1.65 - 3.00 LB./KSF.), AND ON THE BOTTOM WITH POLYPROPYLENE NETTING WITH AN APPROXIMATE 3" X 3" TO 2" X 2" MESH (1.00 - 1.65 LB/KSF). THE BLANKET SHALL BE SEWN TOGETHER WITH COTTON, BIODEGRADABLE OR PHOTO-DEGRADABLE THREAD. ALL NETTING SHALL BE PHOTO-DEGRADABLE. A SAMPLE OF THE BLANKET SHALL BE SUBMITTED AT LEAST TWO WEEKS IN ADVANCE OF ITS USE FOR APPROVAL BY THE TCR ENGINEER. THE SOILS ENGINEER MAY REQUIRE BLANKETS FOR UNSTABLE SOILS WITH SLOPES UNDER 4:1 IF DEEMED NECESSARY.

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K) ALL SEEDED AREAS SHALL BE KEPT IN A DAMP CONDITION, FOR AT LEAST 14 DAYS AFTER SEEDING, TO AID IN GERMINATION. SOME FORM OF IRRIGATION MAY BE REQUIRED TO ACHIEVE THIS GOAL, AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ANY AND ALL NECESSARY OPERATIONS TO THAT END. THE MEANS OF IRRIGATION SHALL BE APPROVED BY THE TCR PUBLIC WORKS INSPECTOR PRIOR TO IMPLEMENTATION. DIRECTOR FLOWS FROM LARGE HOSES, WHICH COULD DAMAGE THE MULCH, WILL NOT BE PERMITTED. ADDITIONAL MAINTENANCE, AS DESCRIBED IN CHAPTER 11 - EROSION CONTROL OF THESE REGULATIONS, IS ALSO REQUIRED.

14. (SEE SHEET C0.3 FOR - SPECIFIC SEED MIX).

LEGEND

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- SF — SILT FENCE
- DD — TEMPORARY DIVERSION DIKE
- ECB — EROSION CONTROL BLANKET
- TSD — TEMPORARY SLOPE DRAIN
- OP — OUTLET PROTECTION
- SB — SEDIMENTATION BASIN

60 0 60 120
SCALE OF FEET

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE TOWN OF CASTLE ROCK AND STATE OF COLORADO STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

ENGINEER P.E. NO. DATE

TOWN OF CASTLE ROCK APPROVALS
THESE PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM DATE OF DEVELOPMENT SERVICES DIRECTOR APPROVAL

RECOMMENDED APPROVAL BY:

ENGINEERING DIVISION DATE

APPROVED BY:

DEVELOPMENT SERVICES DIRECTOR DATE

JVA, Incorporated 1319 Spruce Street
Boulder, CO 80302 Phone: 303.444.1951
Fax: 303.444.1957 E-mail: info@jvajva.com

NO.	DATE	DES'D	DWN	REVISION DESCRIPTION
1	06/15/06	BJC	GAJ	PWP 06-012 ISSUED FOR CONSTRUCTION

DESIGNED BY:	BJC
DRAWN BY:	GAJ
CHECKED BY:	KAT
JOB #:	1315c
DATE:	06/15/06

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DOUGLAS COUNTY SCHOOL DISTRICT
MIDDLE SCHOOL NO. 8
CASTLE ROCK, COLORADO

EROSION CONTROL PLAN

SHEET NO.
C0.2

ENTERED AUG 2 3 2011

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TOWN OF CASTLE ROCK GRADING AND EROSION CONTROL NOTES

1. ALL GRADING AND EROSION CONTROL MEASURES ARE SUBJECT TO GENERAL NOTES ON THE COVER SHEET OF THESE PLANS AS WELL AS THE GRADING AND EROSION CONTROL LISTED HERE.
2. AT ALL TIMES DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING AND CONTROLLING ON-SITE EROSION DUE TO WIND AND RUNOFF, AS WELL AS VEHICLE TRACKING. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR INSTALLING AND MAINTAINING ALL EROSION CONTROL FACILITIES SHOWN HERE.
3. ALL PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED AND FUNCTIONAL, PRIOR TO ANY OTHER EARTH-DISTURBING ACTIVITY. ALL OTHER STRUCTURAL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AS SOON AS THE FACILITIES, AROUND WHICH THEY ARE BASED, BECOME OPERATIONAL.
4. ANY EROSION CONTROL FACILITY DAMAGED OR DESTROYED PREMATURELY, BY ANY MEANS, SHALL BE IMMEDIATELY REPAIRED BY THE CONTRACTOR.
5. THERE SHALL BE NO EARTH-DISTURBING ACTIVITY OUTSIDE THE LIMITS DESIGNATED ON THESE PLANS.
6. TOP SOIL SHALL BE REMOVED AND STOCK PILED PRIOR TO OVERLOT GRADING OPERATIONS.
7. A WATER TRUCK SHALL BE KEPT ON-SITE AT ALL TIMES DURING EARTHWORK ACTIVITIES FOR DUST ABATEMENT.
8. CONDITIONS IN THE FIELD MAY WARRANT EROSION CONTROL MEASURES IN ADDITION TO WHAT IS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL IMPLEMENT WHATEVER MEASURES ARE DETERMINED NECESSARY, AS DIRECTED BY THE TCR PUBLIC WORKS INSPECTOR.
9. SILT AND SEDIMENT SHALL BE REMOVED AFTER EACH SUBSTANTIAL RAINFALL.
10. NEGATIVE IMPACTS TO DOWNSTREAM AREAS CAUSED BY OVERLOT GRADING ARE TO BE MONITORED AND CORRECTED BY THE CONTRACTOR. ANY OFF-SITE CLEAN-UP, DIRECTED BY THE TCR PUBLIC WORKS INSPECTOR, (INCLUDING STREET CLEANING), SHALL BE COMPLETED WITHIN 24-HOURS OF WRITTEN INSTRUCTION, OR RISK CONSTRUCTION STOPPAGE.
11. TEMPORARY EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL SUCH TIME AS ALL TRIBUTARY-DISTURBED AREAS ARE SUFFICIENTLY STABILIZED IN THE OPINION OF THE TCR PUBLIC WORKS INSPECTOR, TO MINIMIZE EROSION POTENTIAL.
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ENGINEER P.E. NO. DATE

TOWN OF CASTLE ROCK APPROVALS
THESE PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM DATE OF DEVELOPMENT SERVICES DIRECTOR APPROVAL

RECOMMENDED APPROVAL BY:

ENGINEERING DIVISION DATE

APPROVED BY:

DEVELOPMENT SERVICES DIRECTOR DATE

60 0 60 120
SCALE OF FEET

CONSULTING ENGINEERS
JVA, Incorporated 1319 Spruce Street
Boulder, CO 80302 Phone: 303.444.1951
Fax: 303.444.1957 E-mail: info@jvajva.com

NO.	DATE	DESD	DRWN	REVISION DESCRIPTION
1	06/15/06	BJC	GAJ	PWP 06-012 ISSUED FOR CONSTRUCTION

DESIGNED BY:	BJC
DRAWN BY:	GAJ
CHECKED BY:	KAT
JOB #:	1315c
DATE:	06/15/06

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DOUGLAS COUNTY SCHOOL DISTRICT
MIDDLE SCHOOL NO. 8
CASTLE ROCK, COLORADO

EROSION CONTROL PLAN

SHEET NO.
C0.2

ENTERED AUG 23 2011

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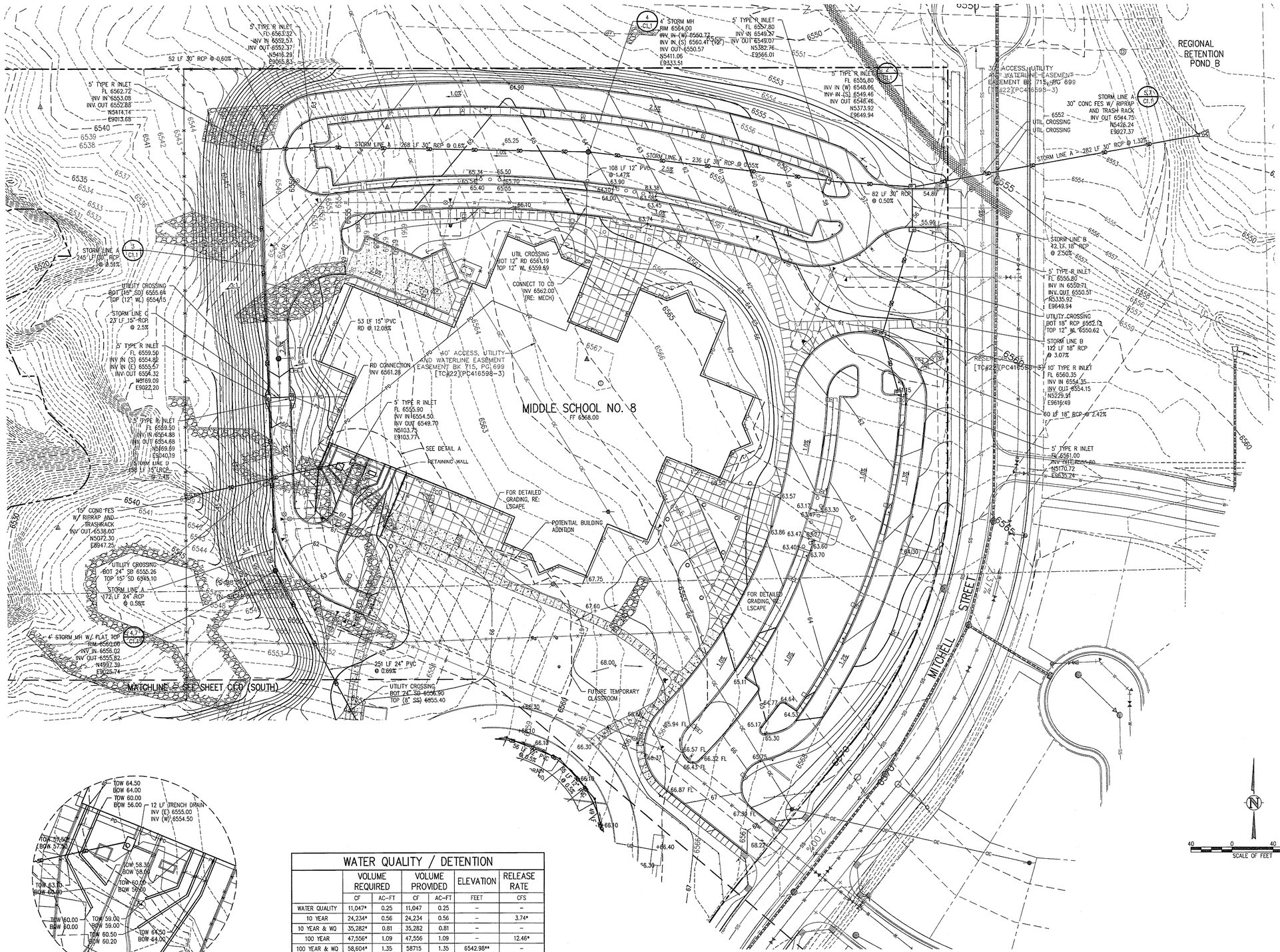

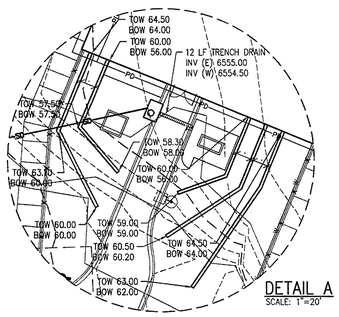

DETAIL A
SCALE: 1"=20'

WATER QUALITY / DETENTION						
	VOLUME REQUIRED		VOLUME PROVIDED		ELEVATION	RELEASE RATE
	CF	AC-FT	CF	AC-FT	FEET	CFS
WATER QUALITY	11,047*	0.25	11,047	0.25	–	–
10 YEAR	24,234*	0.56	24,234	0.56	–	3.74*
10 YEAR & WQ	35,282*	0.81	35,282	0.81	–	–
100 YEAR	47,556*	1.09	47,556	1.09	–	12.46*
100 YEAR & WQ	58,604*	1.35	58715	1.35	6542.98**	–

VOLUME PROVIDED AT REGIONAL RETENTION POND B = 62 AC/FT (2,698,542 CF)

DOUGLAS COUNTY MIDDLE SCHOOL NO. 8

DOUGLAS COUNTY SCHOOL DISTRICT RE-1

JVA, Incorporated
1319 Spruce Street
Boulder, CO 80302
Phone: 303.444.1951
Fax: 303.444.1957
e-mail info@jvajva.com
CONSULTING ENGINEERS

OWNERSHIP OF INSTRUMENTS OF SERVICE:
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CRP

Christiansen, Reece & Partners PC
architects and planners AIA
100 East St. Vrain Street Suite 300
Colorado Springs, Colorado 80903

GRADING AND DRAINAGE PLAN (NORTH)

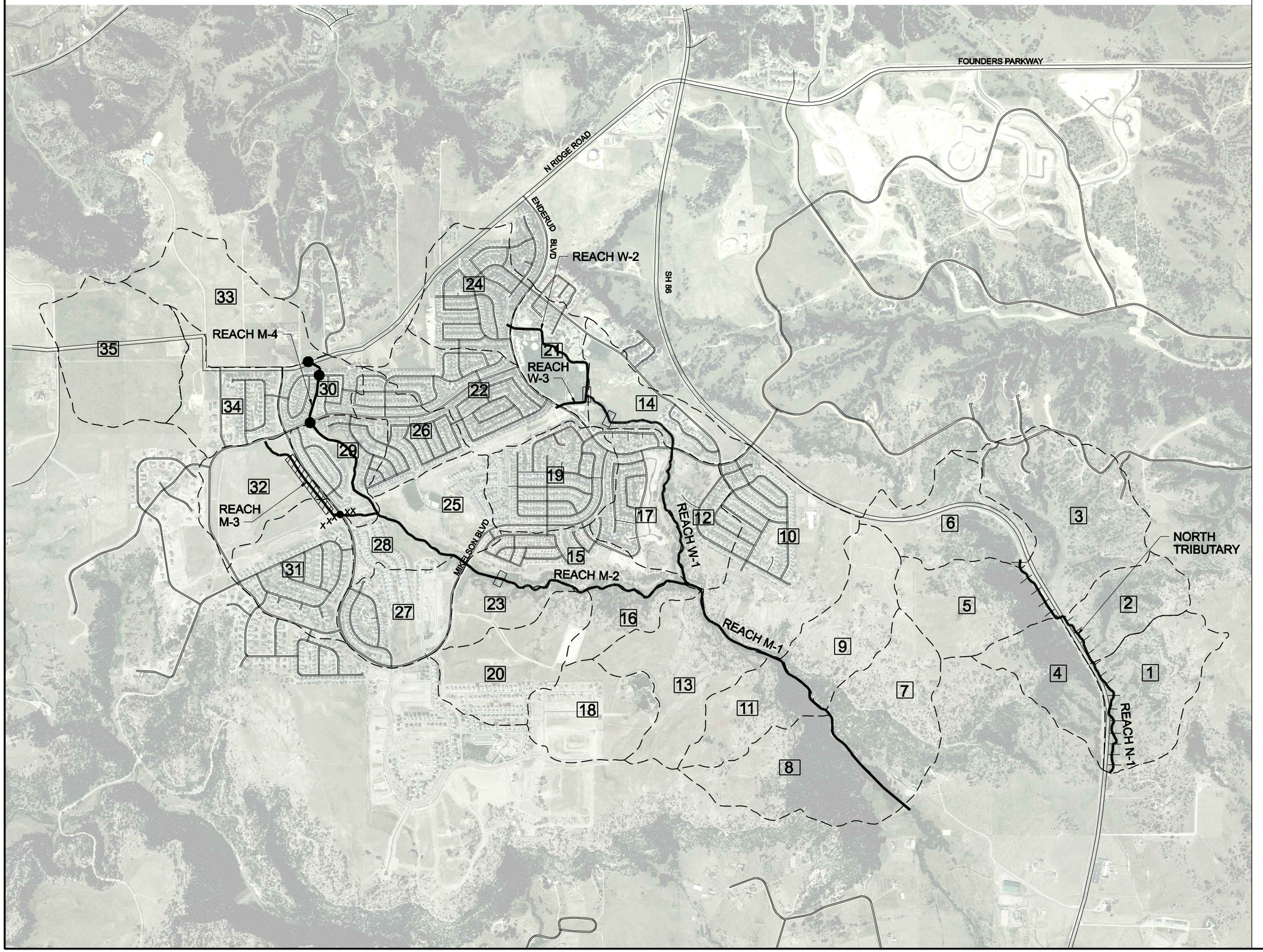
SCALE: 1"=40'

DATE: 04/17/06
DRAWN BY: GAJ
CHECKED: KAT
REVISED:

ENTERED SEP 18 2006

C1.0 NORTH

J:\13\cs\dwg\13cs-C10.dwg, 30x42-CRP-north, 4/12/2006 10:56:18 AM, gaj, 1:1



N

0 800 1600 2400

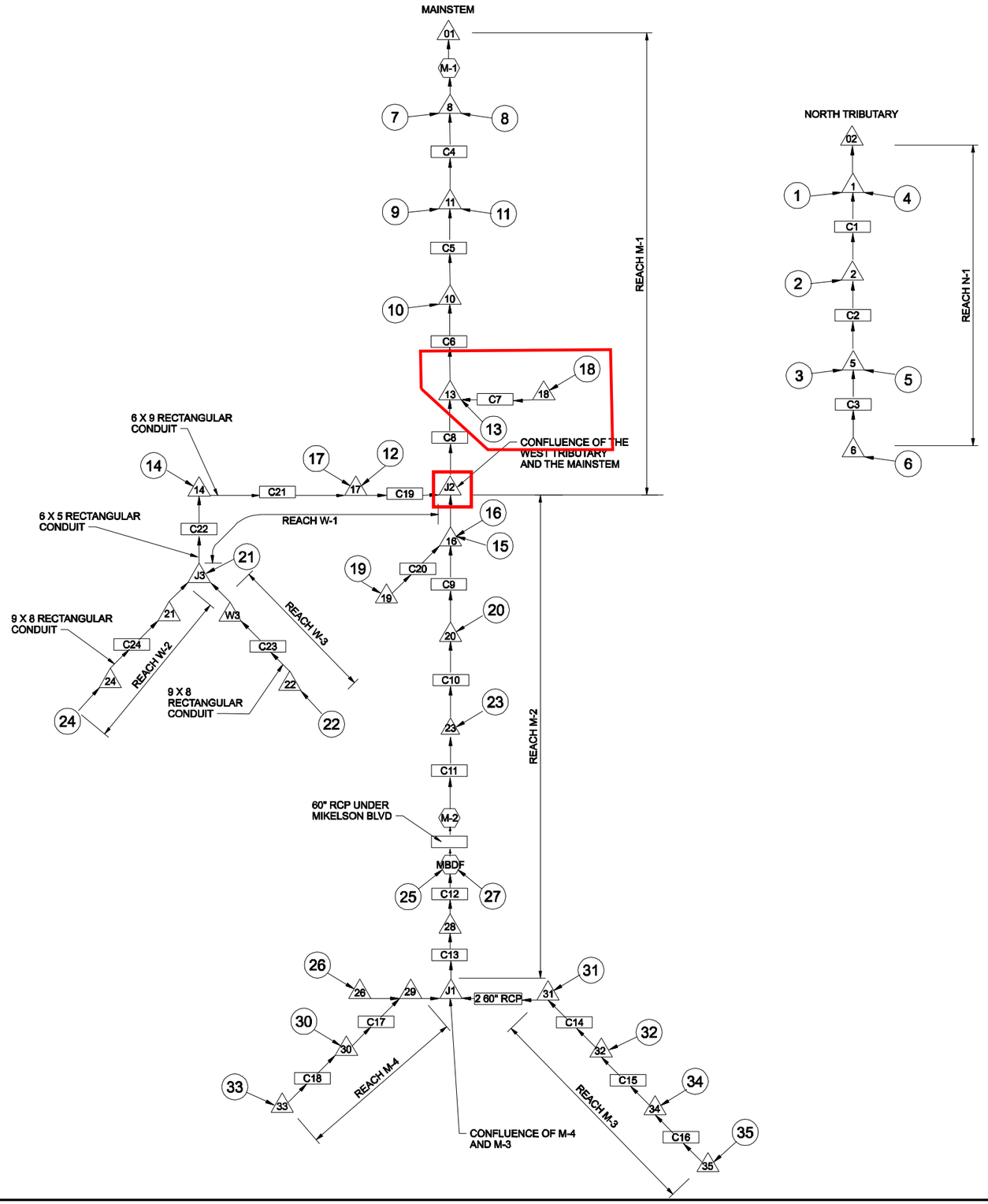
1"=800'

LEGEND

- ROADS
- DRAINAGE BASIN
- CHANNEL CENTERLINE
- 23 SUB-BASIN ID
- INCREASE CULVERT CAPACITY
- SPILLWAY PROTECTION
- CHANNEL WIDENING
- X X X X TRAIL IMPROVEMENTS
- GRADE CONTROL STRUCTURES

FIGURE V-1
MITCHELL GULCH
FULL CONVEYANCE
ALTERNATIVE PLAN

CH2MHILL



LEGEND

DP	DESIGN POINT
STG	STORAGE
CONV	CONVEYANCE
B	CONTRIBUTING BASIN ID

FIGURE III-5
MITCHELL GULCH
CONNECTIVITY

mgconn02.dgn

TABLE III-9

SWMM5 DESIGN POINT FLOW SUMMARY

SWMM5 DESIGN POINT	EXISTING IMPERVIOUS CONDITIONS PEAK INFLOW (CFS) 2-YR 1-hr (1.06")	5-YR 1-hr (1.43")	10-YR 1-hr (1.66")	25-YR 1-hr (1.97")	50-YR 1-hr (2.26")	100-YR 1-hr (2.60")	FUTURE IMPERVIOUS CONDITIONS PEAK INFLOW (CFS) 2-YR 1-hr (1.06")	5-YR 1-hr (1.43")	10-YR 1-hr (1.66")	25-YR 1-hr (1.97")	50-YR 1-hr (2.26")	100-YR 1-hr (2.60")
4	33	177	258	469	617	805	34	178	259	471	618	806
2	31	141	204	358	463	597	33	142	206	359	464	598
5	28	124	175	304	390	502	30	125	176	305	391	503
6	8	32	45	77	100	128	8	32	46	78	101	129
8	187	461	643	1092	1397	1860	285	581	766	1232	1555	2033
10	182	406	546	899	1145	1498	263	505	645	1021	1270	1631
11	184	430	583	976	1252	1649	279	546	705	1119	1400	1809
13	167	363	485	793	1009	1315	247	461	583	914	1133	1447
14	76	150	189	297	369	468	84	161	201	311	386	486
16	60	233	309	392	444	517	102	266	337	412	467	540
17	99	197	251	403	502	642	108	209	263	419	519	661
18	26	50	63	94	115	142	39	65	80	112	135	165
19	42	73	90	129	157	191	42	73	90	129	157	191
20	20	224	285	351	386	428	64	255	308	367	402	442
21	40	78	95	149	185	233	40	78	95	150	185	233
22	26	49	61	92	113	140	26	49	61	92	113	140
23	23	216	272	331	359	388	41	240	288	339	365	390
24	32	60	75	111	135	166	32	60	75	111	135	166
26	26	31	39	57	69	85	26	31	39	57	69	85
27 (MBDF)	160	355	471	763	954	1210	198	396	514	803	1004	1264
28	109	271	365	603	761	969	147	309	407	644	810	1023
29	55	121	158	252	314	396	55	121	158	252	314	396
30	30	57	78	130	165	211	30	57	78	130	165	211
31	46	136	187	320	407	522	83	172	226	363	452	572
32	32	91	130	232	298	385	54	122	162	267	336	427
33	33	37	51	89	114	146	33	37	51	89	114	146
34	34	67	95	168	216	279	34	67	95	168	216	279
35	35	40	58	104	136	176	35	40	58	104	136	176
CONFLUENCE AND OUTFALL DESIGN POINTS (PEAK CFS)												
J1	100	257	345	572	721	918	136	294	384	616	766	968
J2	153	321	426	679	848	1092	202	378	478	748	920	1173
J3	63	124	154	240	295	370	63	124	154	240	295	370
O1	18	76	82	314	568	981	21	79	85	400	692	1105
O2	19	119	185	361	478	657	20	120	186	362	479	658

MAX RELEASE RATE TO MITCHELL GULCH:

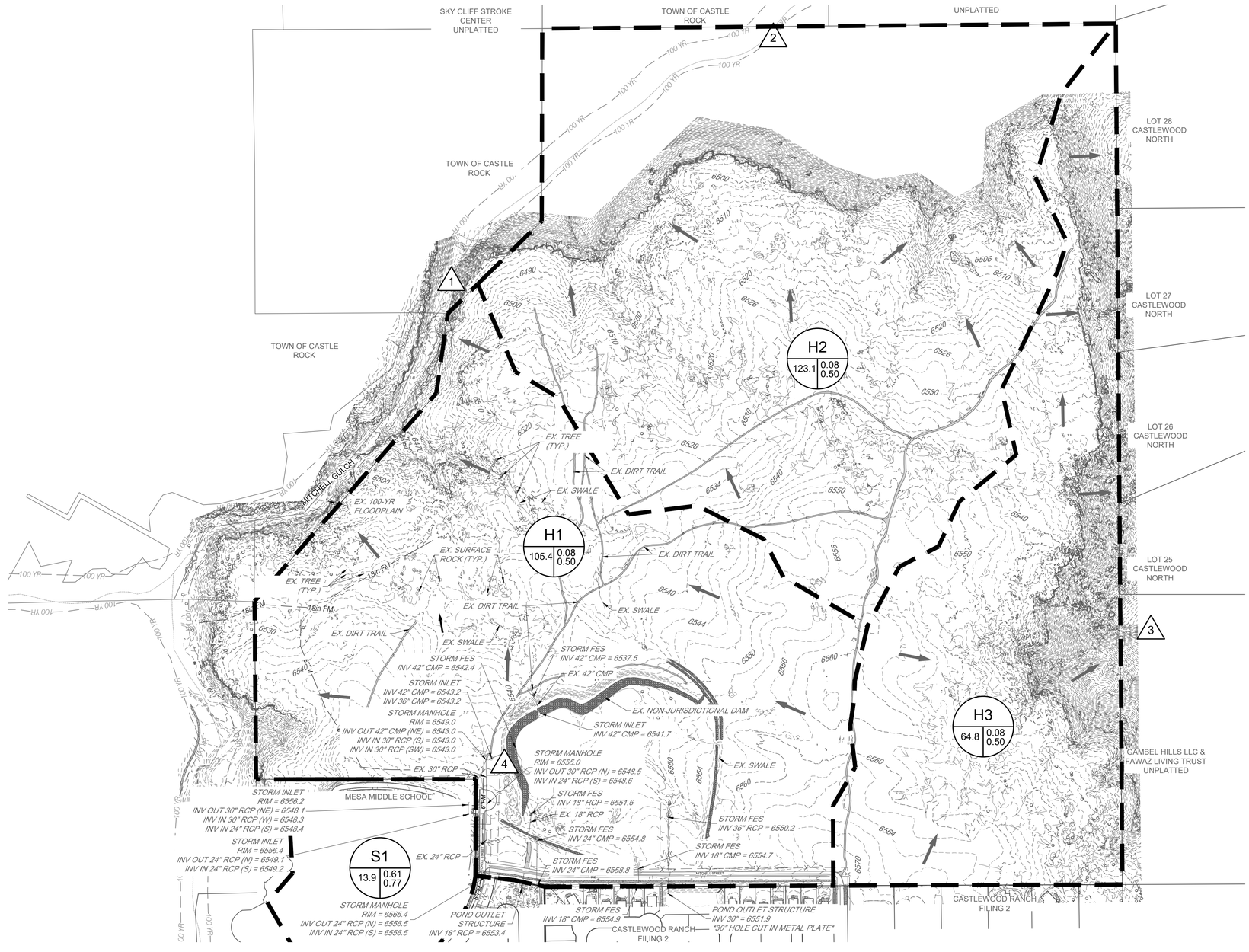
DESIGN POINT 13 (100 YR) = 1447 CFS
- DESIGN POINT J2 (100 YR) = 1092 CFS
MAX RELEASE RATE (100 YR) = 355 CFS

TABLE III-10

SWMM5 CONVEYANCE FLOW SUMMARY

HYDRAULIC STRUCTURES IN MODEL STRUCTURE	SWMM5 DOWNSTREAM ELEMENT	EXISTING IMPERVIOUS CONDITIONS PEAK FLOW (CFS) 2-YR 1-hr (1.06")	5-YR 1-hr (1.43")	10-YR 1-hr (1.66")	25-YR 1-hr (1.97")	50-YR 1-hr (2.26")	100-YR 1-hr (2.60")	FUTURE IMPERVIOUS CONDITIONS PEAK FLOW (CFS) 2-YR 1-hr (1.06")	5-YR 1-hr (1.43")	10-YR 1-hr (1.66")	25-YR 1-hr (1.97")	50-YR 1-hr (2.26")	100-YR 1-hr (2.60")
60" RCP	POND	146	240	274	325	349	375	176	252	283	330	353	378
9' x 8' CBC	C23	25	47	60	91	112	139	25	47	60	91	112	139
5' x 6' CBC	C22	63	124	154	240	295	370	63	125	155	241	295	370
9' x 6' CBC	C21	76	150	189	297	369	467	84	161	201	311	386	486

Appendix E - Drainage Maps



LEGEND:

- EXISTING MINOR CONTOUR (2FT)
- EXISTING MAJOR CONTOUR (10 FT)
- EXISTING STORM SEWER
- EXISTING FLOODPLAIN (FIRM)
- HISTORICAL DRAINAGE BASIN BOUNDARY
- EXISTING FLOW DIRECTION
- DESIGN POINT (1)

HISTORICAL DRAINAGE BASIN ID: A
BASIN ACREAGE (AC): 2.30 | 0.18 (C_5) | 0.52 (C_{100})

Existing Basin Summary Table

Basin	Area (AC)	Runoff Coefficients C_5	Runoff Coefficients C_{100}	I (%)	Peak Flows (cfs) Q_5	Peak Flows (cfs) Q_{100}
H1	105.43	0.08	0.50	5%	20.6	248.4
H2	123.09	0.08	0.50	5%	25.3	305.4
H3	64.81	0.08	0.50	5%	14.6	175.9
S1	13.86	0.61	0.77	70%	38.9	89.6

N

0 125 250 500

SCALE: 1" = 250'

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EXISTING DRAINAGE MAP

SHEET 1 OF 1

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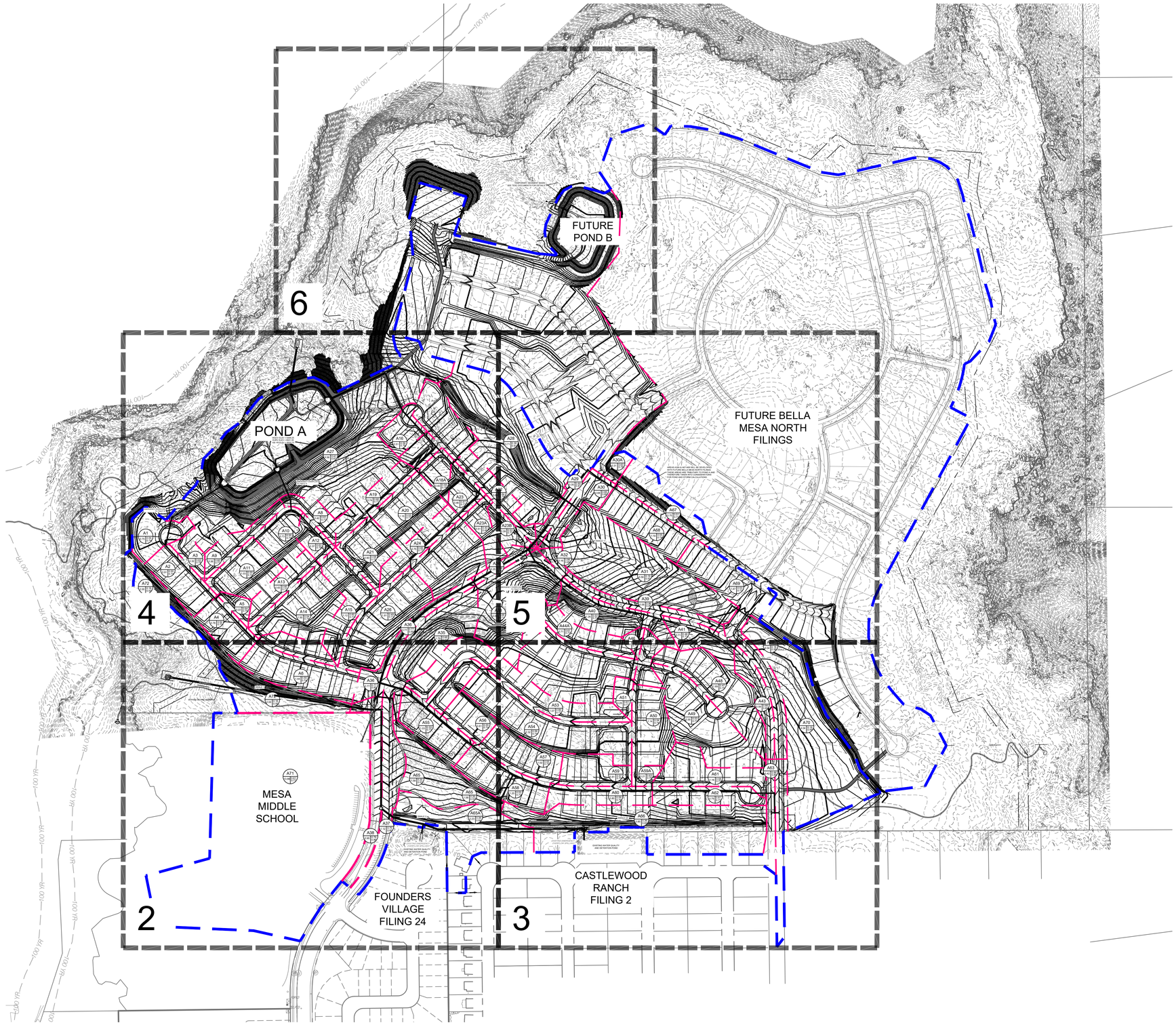

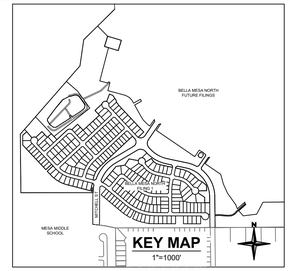

LEGEND:

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- EXISTING MAJOR CONTOUR (10 FT)
- PROPOSED MINOR CONTOUR (2 FT)
- PROPOSED MAJOR CONTOUR (10 FT)
- EXISTING STORM SEWER
- MINOR DRAINAGE BASIN
- MAJOR DRAINAGE BASIN
- PROPOSED STORM SEWER
- PROPOSED SUBSURFACE UNDERDRAIN
- FLOW DIRECTION
- DESIGN POINT
- DRAINAGE BASIN ID
- BASIN ACREAGE (AC)
- OVERFLOW PATH ARROWS

N

0 100 200 400

SCALE: 1" = 200'

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OVERALL DRAINAGE PLAN

SHEET
1 OF 6

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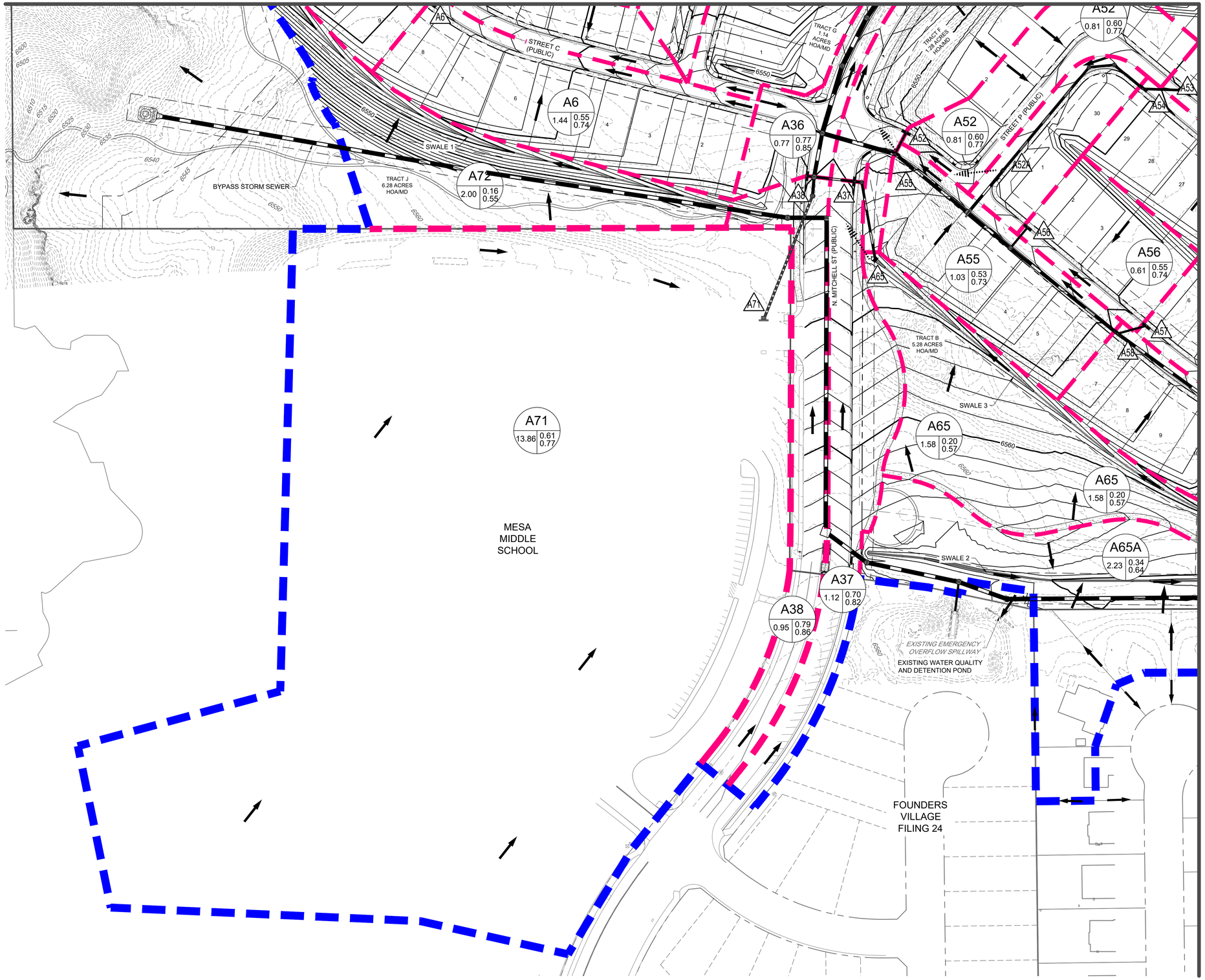
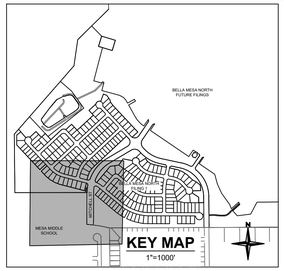
MATCHLINE - SEE SHEET 4

MATCHLINE - SEE SHEET 3





LEGEND:

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- PROPOSED MINOR CONTOUR (2 FT)
- PROPOSED MAJOR CONTOUR (10 FT)
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- MINOR DRAINAGE BASIN
- MAJOR DRAINAGE BASIN
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- PROPOSED SUBSURFACE UNDERDRAIN
- FLOW DIRECTION
- DESIGN POINT
- DRAINAGE BASIN ID
- BASIN ACREAGE (AC)
- OVERFLOW PATH ARROWS

N

0 30 60 120

SCALE: 1" = 60'

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DRAINAGE PLAN

SHEET 2 OF 6

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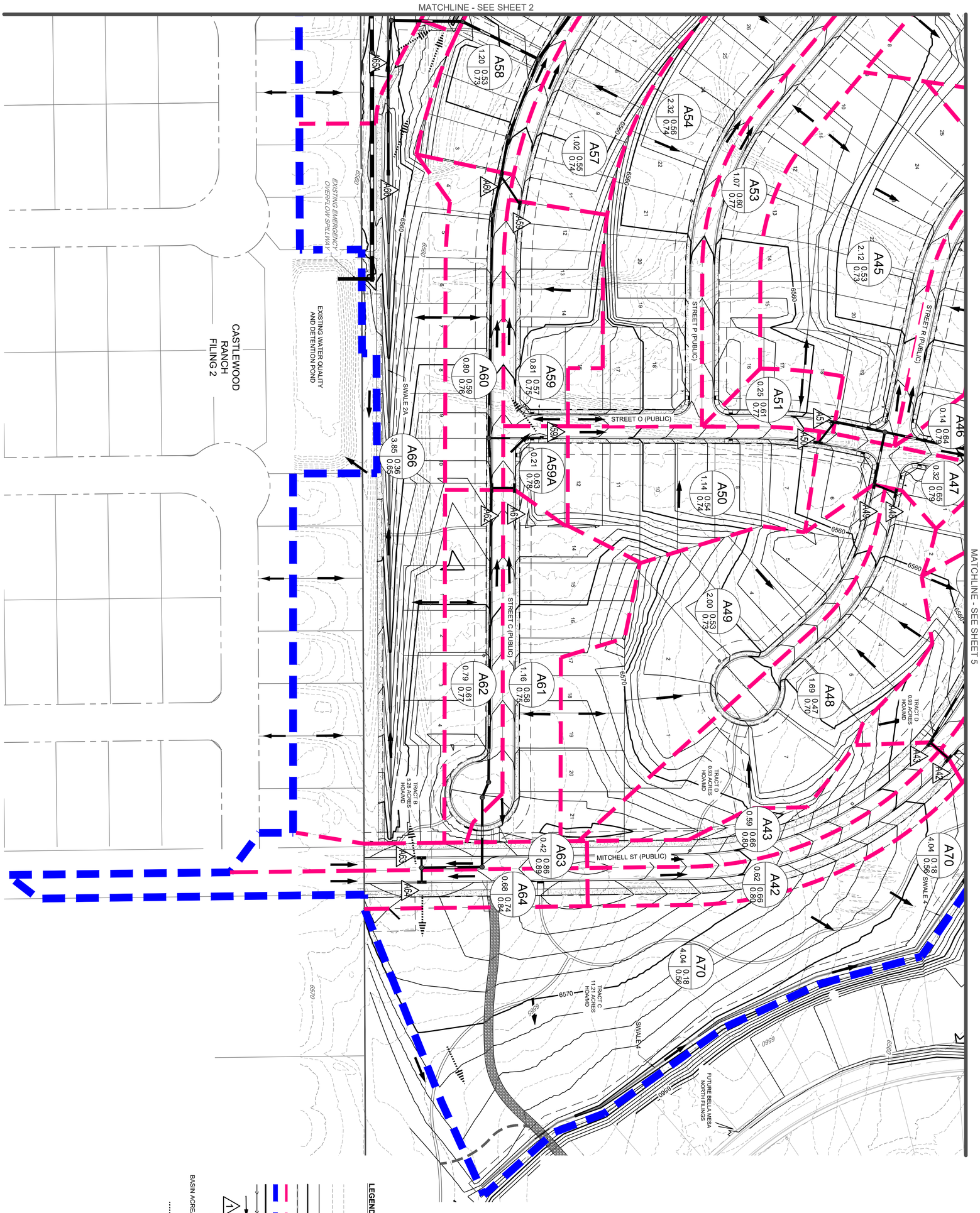

SHEET 3 OF 6

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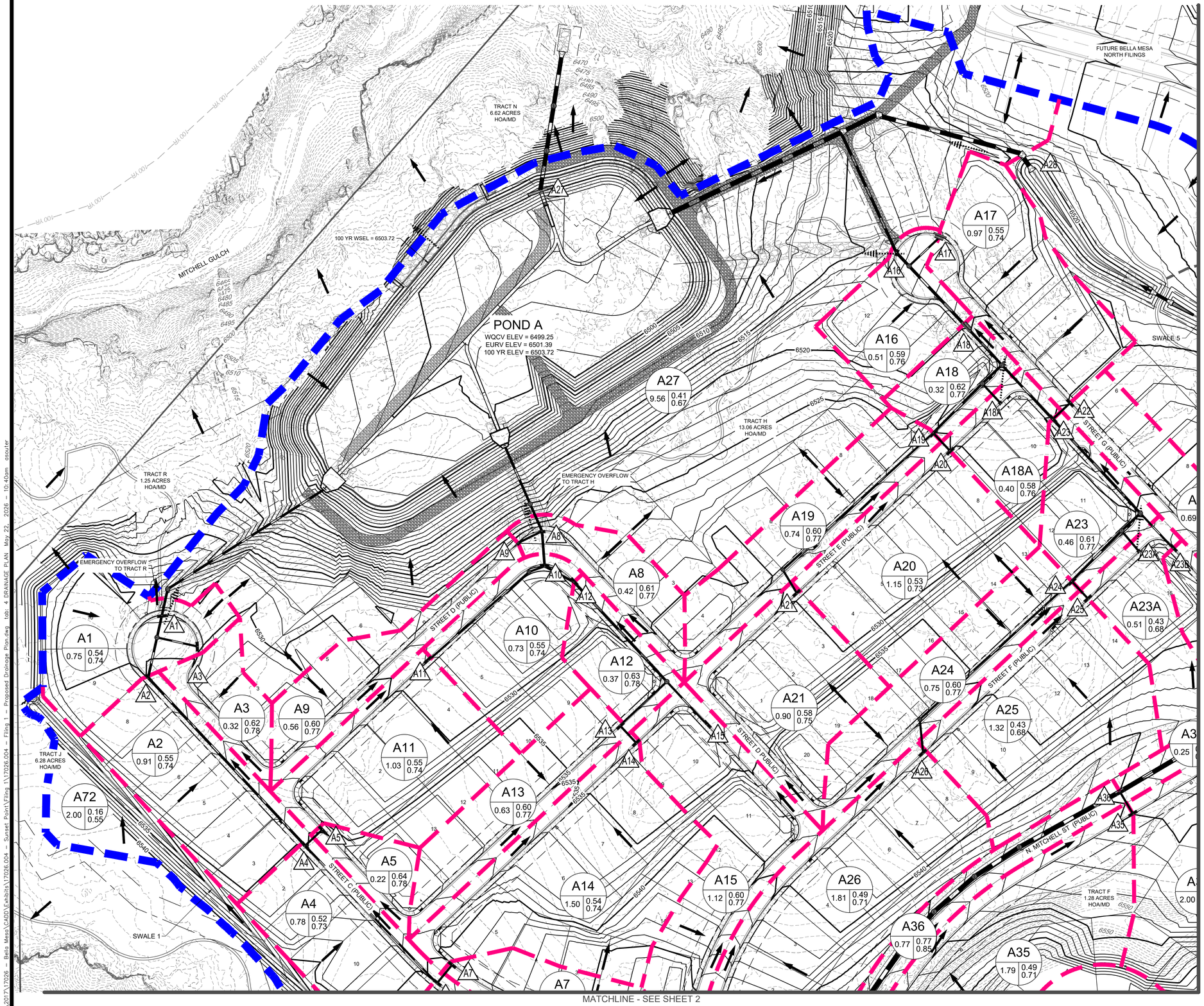

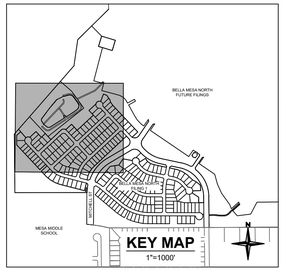

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- PROPOSED MINOR CONTOUR (2 FT)
- PROPOSED MAJOR CONTOUR (10 FT)
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- MINOR DRAINAGE BASIN
- MAJOR DRAINAGE BASIN
- PROPOSED STORM SEWER
- PROPOSED SUBSURFACE UNDERDRAIN
- FLOW DIRECTION
- DESIGN POINT
- DRAINAGE BASIN ID
- BASIN ACREAGE (AC)
- C_5 / C_{100}
- OVERFLOW PATH ARROWS

N

0 30 60 120

SCALE: 1" = 60'

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DRAINAGE PLAN

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4 OF 6

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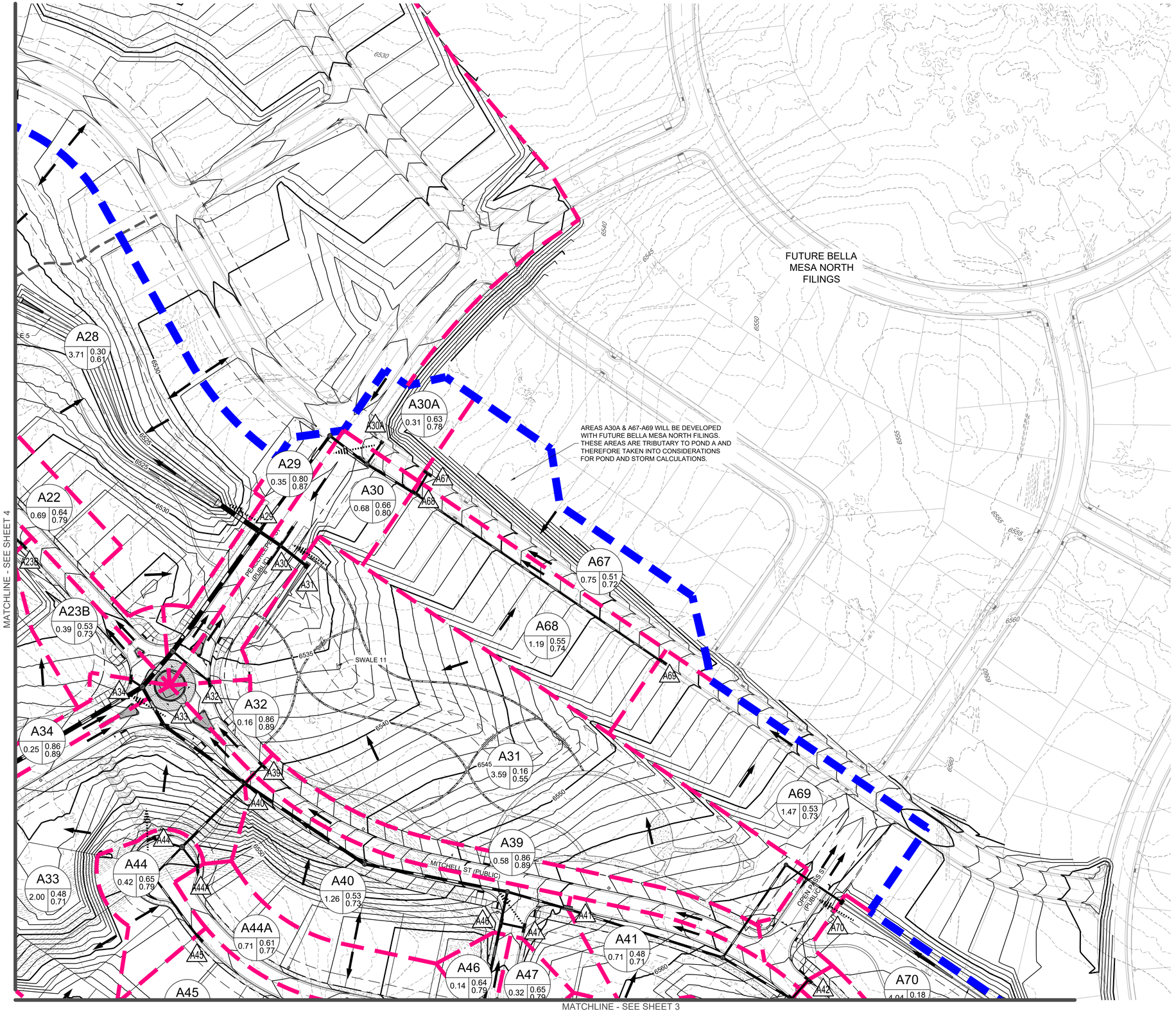

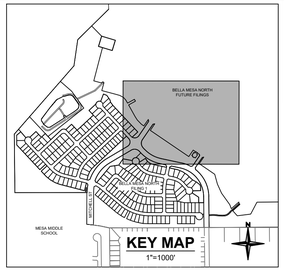

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0 30 60 120

SCALE: 1" = 60'

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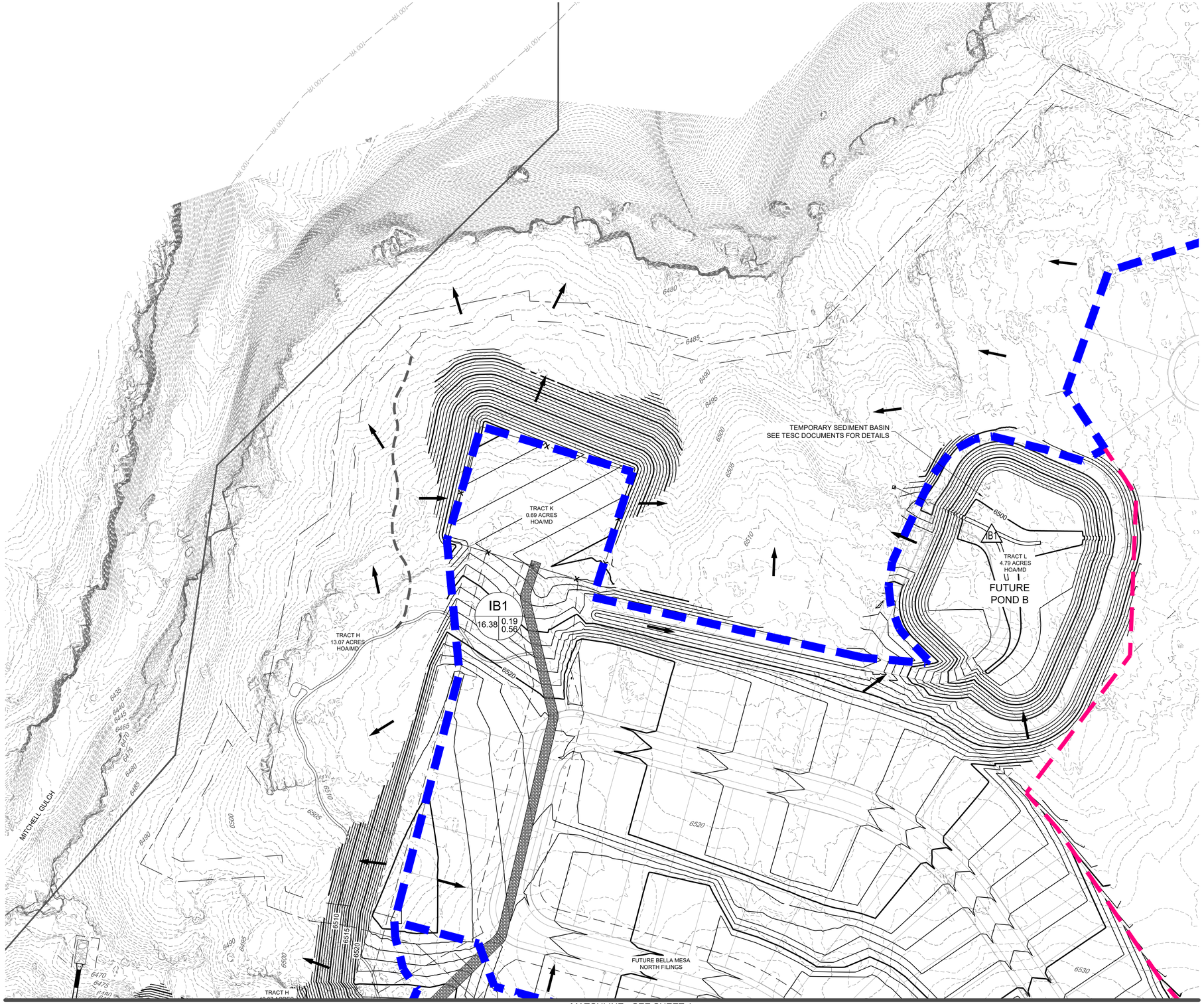
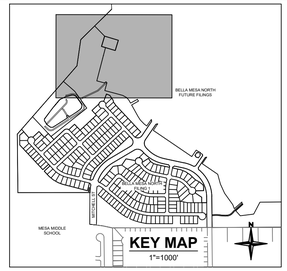


MATCHLINE - SEE SHEET 4



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SCALE: 1" = 60'

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